LG Chem

Product Information Guide
RESU HV

RESU

22nd Nov, ’19 (V1.5)

LG Chem RESU Product Guide

2019.11.22

Rev	Date	Writer	Updates
Version1.4	2019.07.09	Max Im	RESU HV Compatible Inverter List updated (to ver1.4)
			RESU HV Deep Discharge Issue Solved added
			Deep Discharged Battery & Charging Caution Letter updated
			RESU Improvements and Availability Update added
Version1.5	2019.11.22	Jenny Hwang	RESU HV Compatible Inverter List updated (to ver1.5)
			Expansion Pack Installation Manual_ Two-Battery Configuration added
			RESU Pack System Checks & Check Fuse Instruction added

About this product guide

This product guide includes essential information for RESU High Voltage (HV) battery products. The information included in this product guide is accurate at the time of publication. However, the product specifications are subject to change without prior notice. If changes occur, LG Chem will make the updated product guide available to our RESU Partners.

Contents

0.0 Document revision history 02
0.1 About this product guide 03
0.2 Contents 04

1. RESU Improvements and Availability Update 05

2. Compatible Inverter List

2.1 RESU HV Compatible Inverter List (v1.5) 06

3. RESU HV Deep Discharge Issue Solved 07

4. Deep Discharged Battery & Charging Caution Letter 08

5. Datasheet

5.1 RESU HV
5.1.1 RESU10H(Type-R) Datasheet 11
5.1.2 RESU10H(Type-C) Datasheet 13

6. Installation Manual

6.1 RESU HV, RESU 10H (Type R) 15

7. Expansion Pack Installation Manual

7.1 RESU HV, RESU10H (Type R) Secondary 51
7.2 Two-Battery Configuration 57

8. Appendix

8.1 Letter from LG Chem 60
8.2 How to read RESU s/n 61
8.3 RESU Pack System Checks_RESU10H Type-R (HV) 62
8.4 Check Fuse_RESU10H Type-R & Type-C (HV) 66

1. RESU Improvements and Availability Update

LG Chem RESU Improvements and Availability Update, as of November 2019:

Dear RESU Partners,

LG Chem always appreciates your cooperation and interest in our residential battery products.
The purpose of this letter is to share a few updates the RESU Team has been working on since the onset of the year.

1. Steady RESU Availability :
We are happy to announce that our increased production is in full swing and we are fulfilling orders on time or even earlier. We repeat, there are no issues with product availability in 2019.

2. Customer Service Improvements:
We have on boarded a 3rd party service company, called ETS, who will be servicing our grid and residential battery modules in North America. ETS has done business with LG for 30+ years and will be located in City of Industry, CA and Louisville, KY. These two additional locations will be an extension of our Warranty Center in Michigan, which will remain in operation. Your first point of contact will be LG Chem. LG Chem is also adding a Customer Service Support Specialist to the RESU Team in an effort to increase our increase our post-sales support for our RESU partners.

3. RMA Process Improvements:
The RESU RMA Process has changed to include reimbursements for labor ($250 per RMA) in additional to shipping costs. These reimbursements will be credited to your Authorized RESU Distributor of choice.

We look forward to working alongside you into 2019.
Please reach out directly to Linh Tran for any questions, comments or concerns.
ltran@lgchem.com 415.715.4673.

For service issues, please reach out directly to our Authorized Service Center, ETS.
help@etsssi.com 888.375.8044.

With best regards,

LG Chem Michigan Inc. Residential ESS Team

2. Compatible Inverter List

2.1 Compatible storage Inverters with RESU HV in North America (v1.5)

All RESU installations require a compatible inverter.
Using a non-approved inverter will void the warranty provided by LG Chem.
See below important instructions when installing and using RESU HV.

1) Battery/Hybrid inverters should operate in On-Grid only. (Not in Off-Grid)
2) For On-Grid applications where Back-up mode may be sometimes utilized, the backed up circuits and inverters AC draw must not exceed the battery current limit specifications.

※ More compatible inverters will be added.

Inverter			Battery		Remark
Brand	Model	Software Version*	RESU10H		
			Type C	Type R	
SMA	Sunny Boy Storage 3.8 – US Sunny Boy Storage 5.0 – US Sunny Boy Storage 6.0 – US	1.50.14.R or above	○		- Can use in Back-up Mode - SPS(Secure Power Supply) mode is supported
solaredge	SE7600A-USS2 / SE3800A-USS2 (US)	3.2468 or above		○	- Can use in Back-up Mode - RESU10H can be expanded up to 2 units
DELTA LG	A005KEEN261.AUSZN(E6-TL-US) D007KEEN261.AUSZN(E8-TL-US)	System 02.02.02 Power 01.04.01 EMS 01.04.01		○	- Can use in Back-up Mode - RESU10H can be expanded up to 2 units
HUAWEI	SUN2000-3.8KTL-USL0 (NA) SUN2000-5KTL-USL0 (NA)	V100R001C10SPC 107 or above		○	- Can use in Back-up Mode only with PV in operation under rated power - In case of RESU10H, Charge/Discharge Power is limited to 3.5kW
	SUN2000-7.6KTL-USL0 (NA) SUN2000-9KTL-USL0 (NA) SUN2000-10KTL-USL0 (NA) SUN2000-11.4KTL-USL0 (NA)			○	- Can use in Back-up Mode only with PV in operation under rated power

※ Only compatible with the software versions which are mentioned above. Nov, 2019

3. RESU HV Deep Discharge Issue Solved

RESU HV(Type-R) Deep Discharge Issue Solved
(※ based on manufacturing date)
- RESU10H(Type-R): Sep, ’19 and forward

BEFORE:

Aux switch located near circuit breaker

AFTER:

Applied disconnect switch

: Disconnect switch automatically shuts off after 60 seconds when CB trips.

4. Deep Discharged Battery & Charging Caution Letter

Dear Valued Customers,

LG Chem has addressed this potential concern for all new production RESU HV (Type R) batteries since late 2018 by adding a new smart BMS controlled breaker for additional protection.

Since 2017 LG Chem has notified the market with bulletins, product stickers and updated user manuals explaining the ways to protect already installed batteries from potentially becoming deep discharged.

This letter serves a reminder to installers and also the system owners of how to ensure this models battery is not deep discharged in a protection mode due to the Auxiliary (AUX) power drawing small amounts of energy over time during a system fault state stopping the system's ability to charge the battery.

Reminder

1. The Battery **DC/DC Circuit Breaker must be turned OFF first** and then importantly the **AUX Power switch turned OFF second** for any of the below cases immediately then contact your installer or LG Chem to resolve the fault.

Potential States where system must be turned off

- System not operating immediately after installation and commissioning test
- Battery DC/DC Circuit Breaker (CB) is automatically tripped by fault diagnosis
- DCDC Converter Link Overvoltage (Ex. inverter error code: 3 or 8)
- Communication fault between the inverter and the battery. (Ex. error code : 3x6b)
- Failure of remote firmware update
- Failure of an inverter or PV system
- In case of not using the battery (Ex. When leave home for a long time)
- In case of turn off the battery for any other reasons

This guide covers units with the AUX switch with production serial numbers in the table below.

Product (Type-R)	Production Before	Battery Serial No.
RESU10H Primary	September 17th 2018	R15563P3SSEG1**180917**9045
RESU10H Secondary	October 10th 2018	R15563P3SSEG2**181010**9001

2. The battery must be installed and operated within 6 months after the battery production date

4. Deep Discharged Battery & Charging Caution Letter

Instructions to prevent deep discharged battery

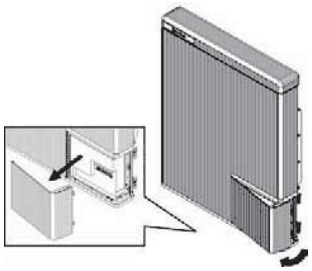
To prevent deep discharged battery, when the RESU battery is not in use after installation**, please turn off the Circuit Breaker(CB) first and then be sure to turn the AUX POWER switch off afterwards. Even if the Circuit Breaker(CB) is automatically tripped, the AUX POWER switch must be turned off manually.**

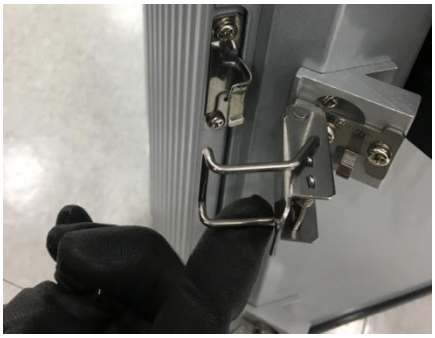
Also, ensure that the battery must be installed and operated within six months of the date of production.

Please follow the procedure below to prevent deep discharged battery. We recommend contacting your certified RESU installer for guidance on how to turn off the AUX switch. If RESU installer cannot immediately act available, End-customer shall follow the procedure.

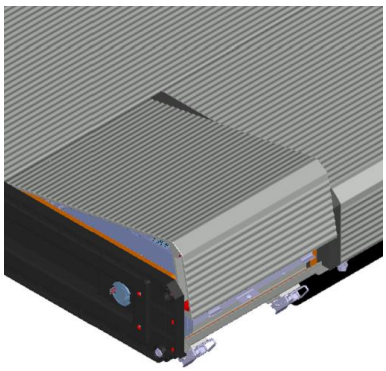
<How to turn off AUX POWER switch>

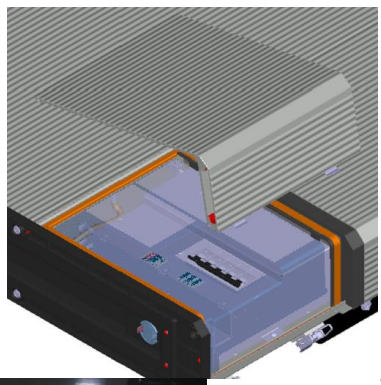
1) Turn OFF the inverter and system AC & DC isolators
2) Open the RESU front door by releasing the 2 child proof latches on the right-hand side of the unit.



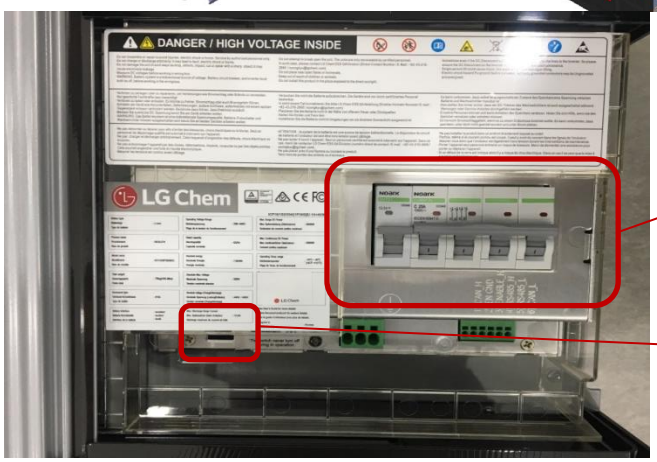


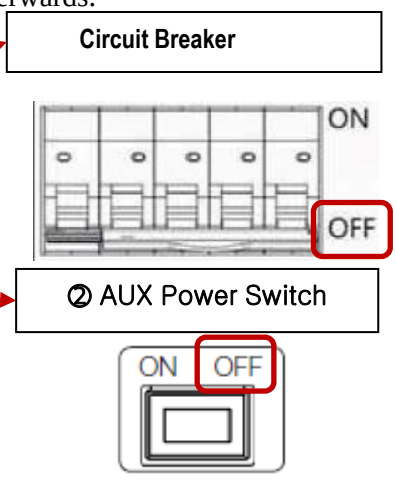
3) Open the wiring box cover (about 2~10 degress) and pull to remove it.





4) Turn off the Circuit Breaker (CB) first and then be sure AUX POWER switch off afterwards.





4. Deep Discharged Battery & Charging Caution Letter

LG Chem guideline for charging battery

•Manual charge is possible for the RESU HV batteries only if the measured voltage is higher than the values mentioned in the table below.

RESU10H
84V

•LG Chem requires suitably qualified electricians to be trained with use of the battery charger prior to performing manually charging of RESUs and follow our strict procedures.

> Please contact LG Chem prior to any manually charging of a RESU battery.

•Only a charger supplied or approved by LG Chem can be used.

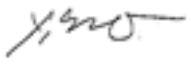
•Please be aware that charger settings are different for RESU7H and RESU10H and the Voltage & current controller of the charger shall be blocked to prevent potential safety concerns with wrong value setting.

Regional contact point of LG Chem Service

HQ (KOR) / Other Regions		essservice@lgchem.com
United States	+1 888 375 8044	CSNorthAmericaESS@lgchem.com
EUROPE / UK (EXCEPT ITALY)	+49 (0)6196 5719 660	lgchem@e-service48.de
Italy	+39 (0)2 9475 9742	lgchemresu@kndpoweritalia.com
Australia / New Zealand	+61 1300 178 064	essserviceau@lgchem.com

We thank you for your support while we continue to improve our RESU support service.

Sincerely yours,
30th of January, 2019
LG Chem HQ ESS Customer Service Team Leader
Yunseong Hwang

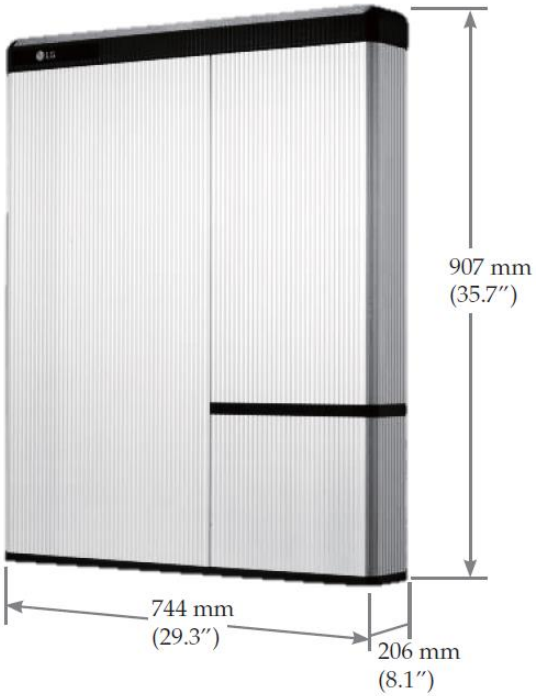


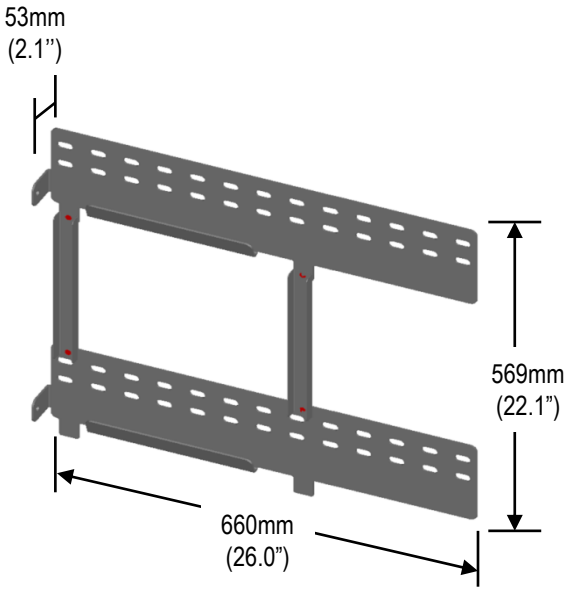
5.1 RESU HV (400V)

5.1.1 RESU10H_ Type-R (v4.1)

Features

- ❑ Emergency Power Back-up
- ❑ Compact size and space saving
- ❑ Wide range of inverters available for matching
- ❑ Wall mounting installation
- ❑ Proven safety and 10 year warranty





Mechanical Characteristics		
Dimensions	Width	744 mm (29.3”)
	Height	907 mm (35.7”)
	Depth	206 mm (8.1”)
Weight		97 kg (214lbs)

5.1 RESU HV (400V)

5.1.1 RESU10H_ Type-R (v4.1)

Electrical Characteristics		
Total Energy Capacity [1]		9.8 kWh @25°C (77°F), Beginning of Life
Usable Energy Capacity [1]		9.3 kWh @25°C (77°F)
Battery Capacity		63 Ah
Voltage Range	Charge	400 to 450 V_{DC}
	Discharge	350 to 430 V_{DC}
Absolute Max. Voltage		520 V_{DC}
Max. Charge/Discharge Current		11.9A@420V / 14.3A@350V
Max. Charge/Discharge Power [2]		5kW
Peak Power (only discharging) [3]		7kW for 10 sec.
Peak Current (only discharging)		18.9A@370V for 10 sec.
Communication Interface		RS485
DC Disconnect		Circuit Breaker, 25A, 600V rating
Connection Method		Spring Type Connector
User interface		LEDs for Normal and Fault operation

Operating Conditions	
Installation Location	Indoor / Outdoor (Wall-Mounted)
Operating Temperature	14 to 113°F (-10 to 45°C)
Operating Temperature (Recommended)	59 to 86°F (15 to 30°C)
Storage Temperature	-22 to 131°F (-30 to 55°C)
Humidity	5% to 95%
Altitude	Max. 6,562ft (2,000m)
Cooling Strategy	Natural Convection
Noise Emission	< 40 dBA

Certification		
Safety	Cell	UL1642
	Battery Pack	UL1973 / CE / RCM / TUV (IEC 62619)
Emissions		FCC
Hazardous Materials Classification		Class 9
Transportation		UN38.3 (UNDOT)
Ingress Rating		IP55

※ Test Conditions - Temperature 25°C, at the beginning of life
※ Total Energy is measured under specific condition from LGC(0.3CCCV/0.3CC)

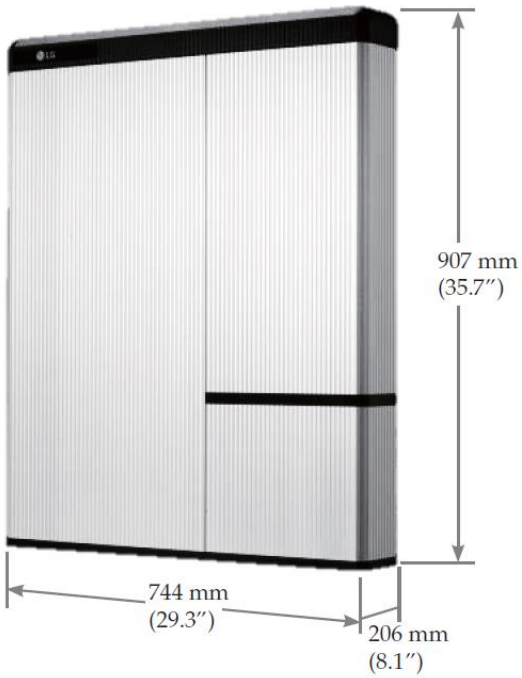
1) Value for Battery Cell Only (Depth of Discharge 95%). Actual usable energy at the AC output may vary by condition, such as the battery converter, inverter efficiency and temperature.
2) LG Chem recommends 3.3kW for maximum battery lifetime
3) Peak Current excludes repeated short duration (less than 10 sec. of current pattern).

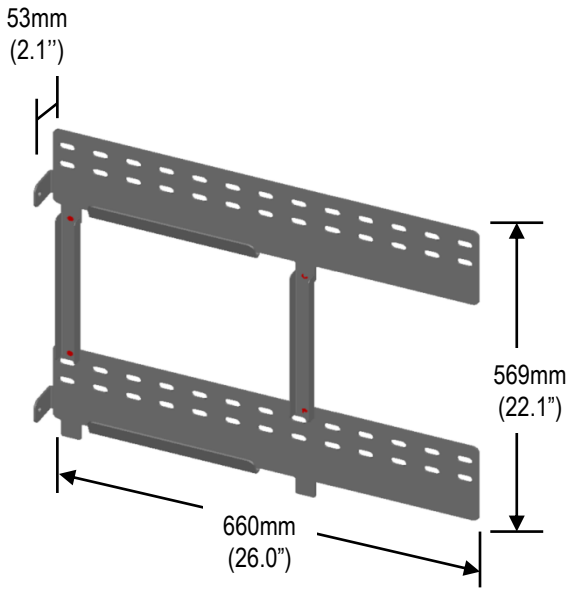
5.1 RESU HV (400V)

5.1.2 RESU10H_ Type-C (v4.1)

Features

- ❑ Emergency Power Back-up
- ❑ Compact size and space saving
- ❑ Matched with SMA Sunny Boy Storage models
- ❑ Wall mounting installation
- ❑ Proven safety and 10 year warranty





Mechanical Characteristics		
Dimensions	Width	744 mm (29.3”)
	Height	907 mm (35.7”)
	Depth	206 mm (8.1”)
Weight		99.8 kg (220lbs)

5.1 RESU HV (400V)

5.1.2 RESU10H_ Type-C (v4.1)

Electrical Characteristics		
Total Energy Capacity [1]		9.8 kWh @25°C (77°F), Beginning of Life
Usable Energy Capacity [1]		9.3 kWh @25°C (77°F)
Battery Capacity		63 Ah
Voltage Range	Charge	468 to 550 V_{DC}
	Discharge	430 to 507 V_{DC}
Absolute Max. Voltage		570 V_{DC}
Max. Charge/Discharge Current		10.7A@467V / 11.7A@427V
Max. Charge/Discharge Power [2]		5kW
Peak Power (only discharging) [3]		7kW for 10 sec.
Peak Current (only discharging)		16.3A@430V for 10 sec.
Communication Interface		CAN
DC Disconnect		Circuit Breaker, 25A, 600V rating
Connection Method		Spring Type Connector
User interface		LEDs for Normal and Fault operation

Operating Conditions	
Installation Location	Indoor / Outdoor (Wall-Mounted)
Operating Temperature	14 to 113°F (-10 to 45°C)
Operating Temperature (Recommended)	59 to 86°F (15 to 30°C)
Storage Temperature	-22 to 131°F (-30 to 55°C)
Humidity	5% to 95%
Altitude	Max. 6,562ft (2,000m)
Cooling Strategy	Natural Convection
Noise Emission	< 40 dBA

Certification		
Safety	Cell	UL1642
	Battery Pack	UL1973 / CE / RCM / TUV (IEC 62619)
Emissions		FCC
Hazardous Materials Classification		Class 9
Transportation		UN38.3 (UNDOT)
Ingress Rating		IP55

※ Test Conditions - Temperature 25°C, at the beginning of life
※ Total Energy is measured under specific condition from LGC(0.3CCCV/0.3CC)

1) Value for Battery Cell Only (Depth of Discharge 95%). Actual usable energy at the AC output may vary by condition, such as battery converter, inverter efficiency and temperature.
2) LG Chem recommends 3.3kW for maximum battery lifetime
3) Peak Current excludes repeated short duration (less than 10 sec. of current pattern).

RESU

Installation Manual for RESU10H (Type-R)

Compatible Inverter : SolarEdge

Version 1.3

LG Chem

The information included in this manual is accurate at the time of publication. However, this manual is subject to change without prior notice. In addition, the illustrations in this manual are meant only to help explain system configuration concepts and installation instructions.
Please note the image shown is for illustration purposes only.

⚠ CAUTION

After installation, the installer must explain the User Guide to the end-user.

Contents

1 Safety 5

1.1 Symbols 5
1.2 Safety instructions 6
1.2.1 General safety precautions 6
1.2.2 Battery handling guide 6
1.2.3 Response to emergency situations 8
1.3 Warning label 9
1.4 Qualified personnel 10

2 Product Introduction 11

2.1 Technical data 11
2.1.1 Dimensions and weight 11
2.1.2 Performance 12
2.2 Feature 13
2.3 Packaging specification 13

3 Installation 14

3.1 Mechanical requirements 14
3.1.1 Unboxing the package 15
3.1.2 Items in the package 16
3.1.3 Installation locations 16
3.1.4 Clearance 17
3.1.5 Tools & safety gears required 17
3.1.6 Mounting bracket 19
3.1.7 Appearance and dimension 20
3.1.8 System clearance 20
3.1.9 Installing the battery pack 21
3.2 Cable connection 24
3.2.1 Auxiliary power switch and spring terminal blocks 26

Contents

4 Operation **27**

4.1 LED indicators 27

4.2 Turning on battery pack 28

4.3 Shutting off battery pack 28

5 Troubleshooting **29**

5.1 Troubleshooting 29

5.1.1 Post-Installation Check List 30

5.1.2 Troubleshooting Guideline 30

6 Uninstallation & Return **32**

6.1 Return/replacement instructions 32

6.1.1 Uninstallation from the wall 32

6.1.2 Contact information 34

1 Safety

1.1 Symbols

Caution, risk of electric shock

Do not place nor install near flammable or explosive materials.

Install the product out of reach of children.

Read the instruction manual before starting installation and operation.

Heavy weight may cause serious injury to the back.

Do not dispose of the product with household wastes.

Recyclable

Disconnect the equipment before carrying out maintenance or repair.

Observe precautions for handling electrostatic discharge sensitive devices.

1.2 Safety instructions

For safety reasons, installers are responsible for familiarizing themselves with the contents of this document and all warnings before performing installation.

1.2.1 General safety precautions

Over-voltages or wrong wiring can damage the battery pack and cause deflagration, which can be extremely dangerous.

All types of breakdown of the product may lead to a leakage of electrolyte or flammable gas.

Avoid installing the battery pack where flammable materials are stored. Do not install in places where explosive gas or chemicals are present.

During installation of the battery, the utility grid, solar input must be disconnected from the Battery Pack wiring. Wiring must be carried out by a qualified personnel.

Battery Pack is not user serviceable. High voltage is present in the device.

The electronics inside the Battery Pack are vulnerable to electrostatic discharge.

Be sure to be grounded before handling the battery pack.

Read the label with Warning Symbols and Precautions, which is visibly under to the Battery Cover (see Section 1.3)

1.2.2 Battery handling guide

- Do not expose battery to open flame.
- Do not place the product nearby highly flammable materials. It may lead to fire or explosion in case of accident.
- Do not expose or place near water sources like downspouts or sprinklers.
- Do not store this product in a place exposed to direct sunlight.
- A ventilated area is strongly recommended for handling the product.
- Store at cool and dry place. (Do not store in greenhouses and storage areas for hay, straw, chaff, animal feed, fertilizers, vegetables or fruit products.)
- Store the product on a flat surface.
- Store the product out of reach of children and animals.
- Store the product where it should be minimal dust and dirt in the area.

- Do not disconnect, disassemble or repair by unqualified personnel. Services must be made by qualified personnel only.
- Do not damage the unit in such ways as dropping, deforming, impacting, cutting or penetrating with a sharp object. It may cause a leakage of electrolyte or fire.
- Do not touch if liquid is spilled on the product. There is a risk of electric shock. Handle the battery wearing the insulated gloves.
- Do not step on the product or the product package. The product may be damaged.
- Do not place any foreign objects on the top of the Battery Pack and on the cooling fin.
- Do not put the battery pack upside down on the ground.
- Do not connect the power cables at terminal block opposite direction.
- Do not charge or discharge damaged battery.
- If the battery pack is installed in the garage then ensure the product is above the height of the vehicle bumper and/or door.
- The RESU battery pack has been cerified IP55 and can be installed indoors as well as outdoors. However, if installed outdoors, do not allow the battery pack to be exposed to direct sunlight and water source as it may cause :
  - Power limitation phenomena in the battery (with a resulting decreased energy production by the system)
  - Premature wear of the electrical/electromechanical components and mechanical components.
  - Reduction in performance, service life and possible damage of the battery
- Only use the product with a LGC-authorized inverter. For a list of compatible inverters, go to : http://www.lgesspartner.com
- Do not connect any AC conductors or Photo-voltaic conductors directly to the battery pack and should be only connected to the Inverter.

1.2.3 Response to emergency situations

The RESU10H battery pack comprises multiple batteries that are designed to prevent hazards resulting from failures. However, LG Chem cannot guarantee their absolute safety.

- If a user happens to be exposed to internal materials of the battery cell due to damage on the outer casing, the following actions are recommended.

  Inhalation : Leave the contaminated area immediately and seek medical attention.

  Eye contact : Rinse eyes with running water for 15 minutes and seek medical attention.

  Contact with skin : Wash the contacted area with soap thoroughly and seek medical attention.

  Ingestion: Induce vomiting and seek medical attention.

If a fire breaks out in the place where the battery pack is installed, perform the following countermeasures:

- **Fire extinguishing media**

  Respirator is not required during normal operations.
  Use FM-200 or CO2 extinguisher for battery fire.
  Use an ABC fire extinguisher, if the fire is not from battery and not spread to it yet.

- **Fire fighting instructions**

  1. If fire occurs when charging batteries, if it is safe to do so, disconnect the battery pack circuit breaker to shut off the power to charge.
  2. If the battery pack is not on fire yet, extinguish the fire before the battery pack catches fire.
  3. If the battery pack is on fire, do not try to extinguish but evacuate people immediately.

  ⚠ WARNING

  There may be a possible explosion when batteries are heated above 150• •••
  When the battery pack is burning, it leaks poisonous gases. Do not approach.

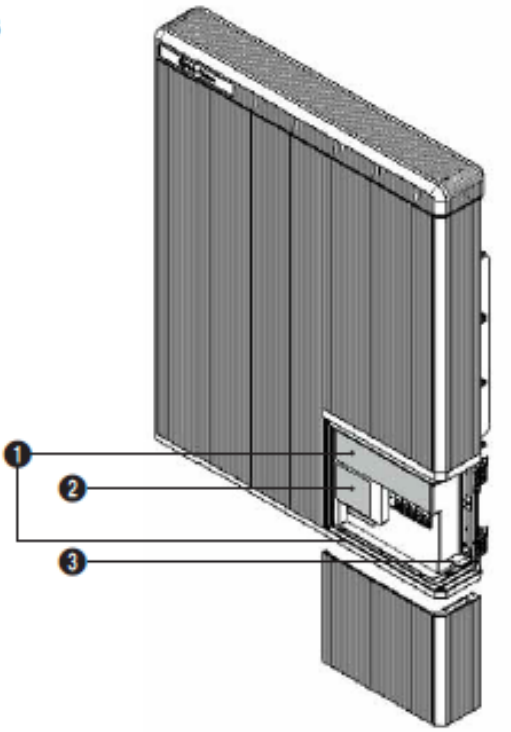
- **Effective ways to deal with accidents**

  On land : Place damaged battery into a segregated place and call local fire department or service engineer.

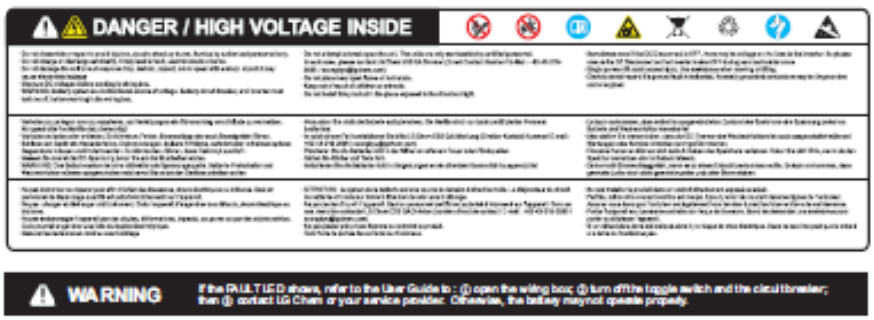
  In water : Stay out of the water and don't touch anything if any part of the battery, inverter, or wiring is submerged.
  Do not use submerged battery again and contact the service engineer.

1.3 Warning label

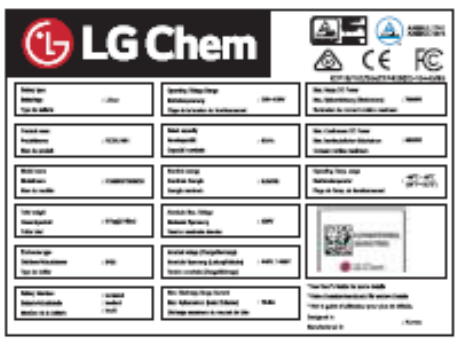
Warning labels and other relevant labels are attached to the inside of the battery pack.



1. Warning label



2. Product label



3. Traceability label

1.4 Qualified personnel

This guide and the tasks and procedures described herein are intended for use by skilled workers only. A skilled worker is defined as a trained and qualified electrician or installer who has all of the following skills and experience:

- Knowledge of the functional principles and operation of on-grid and off-grid (backup) systems.
- Knowledge of the dangers and risks associated with installing and using electrical devices and acceptable mitigation methods.
- Knowledge of the installation of electrical devices
- Knowledge of and adherence to this guide and all safety precautions and best practices.

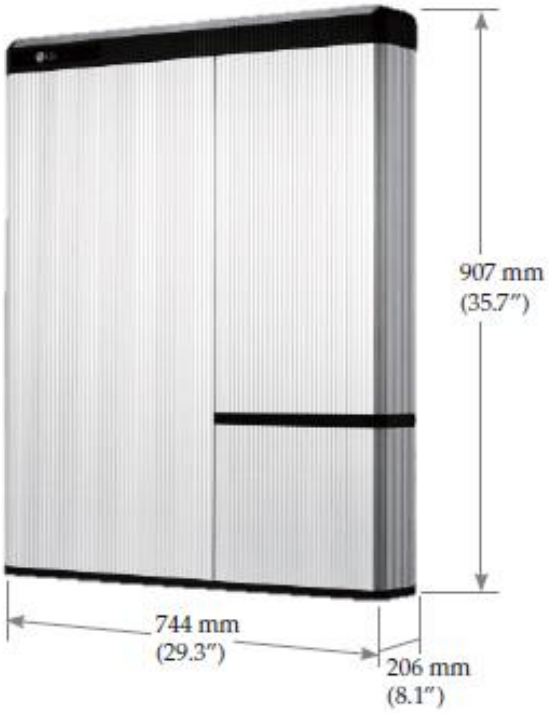
2 Product Introduction

2.1 Technical data

2.1.1 Dimensions and weight

	RESU10H
P/N	EVESPBO0100B0
Width	744 mm (29.3″)
Height	907 mm (35.7″)
Depth	206 mm (8.1″)
Weight [1)]	97 kg (214 lbs)

1) A battery pack's weight varies slightly.



2.1.2 Performance

RESU10H

Electrical Characteristics		
Total Energy Capacity		9.8 kWh@25°C (77°F), 100% State of Energy
Usable Energy Capacity [1]		9.3 kWh
Battery Capacity		63 Ah
Voltage Range	Charge	400 to 450 VDC
	Discharge	350 to 430 VDC
Absolute Max. Voltage		520VDC
Max. Charge/Discharge Current		11.9A@420V / 14.3A@350V
Max. Charge/Discharge Power [2]		5kW
Peak Power [3] (only discharging)		7kW for 10 sec.
Peak Current (only discharging)		18.9A@370V for 10 sec.
Communication Interface		RS485
DC Disconnect		Circuit Breaker
Connection Method		Spring Type Connector
User interface		LEDs for Normal and Fault operation

Operating Conditions	
Installation Location	Indoor / Outdoor (Wall-Mounted)
Operating Temperature	14 to 113°F (-10 to 45°C)
Operating Temperature (Recommended)	59 to 86°F (15 to 30°C)
Storage Temperature	-22 to 131°F (-30 to 55°C)
Humidity	5% to 95%
Altitude	Max. 6,562ft (2,000m)
Cooling Strategy	Natural Convection

Certification		
Safety	Cell	UL1642
	Battery Pack	UL1973 / CE / RCM / TUV (IEC 62619)
Emissions		FCC
Hazardous Materials Classification		Class 9
Transportation		UN38.3
Ingress Rating		IP55

※ Test Conditions - Temperature 25± 2at the beginning of life.
※ Energy is measured under specific condition from LGC (0.3CCCV/0.3CC).

1) Value for Battery Cell Only(Depth of Discharge 95%).

2) LG Chem recommends 3kW for maximum battery lifetime.

3) Peak Current excludes repeated short duration(less than 10 sec. of current pattern).

2.2 Feature

- Compact Energy storage unit for domestic photovoltaic system compatibility
- Residential 400V DC battery pack system : Daily cycle residential battery system
- No Additional Devices : Aux Power and Protection Devices* Included

  *Protection Devices
  - Inverter interface (between Battery Pack and Inverter) : Over Voltage, Over Current, External Short Circuit, Reverse Polarity, Inrush Current, Ground Fault , Over Temp.
  - Battery inside (between Li-Ion battery and DC/DC converter) : Internal Short Circuit, Over Voltage, Over Current, Over Temp, Under Voltage
- Flexible installation : Indoor or Outdoor

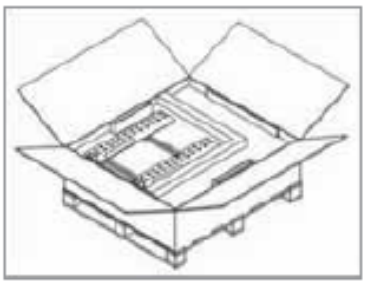
2.3 Packaging specification

Category		Contents			
Size (LxWxH) (mm)		960 (37.8")	1,070 (42.2")	450 (17.7")	Outer Size
Qty /Box (ea)		1			1 piece X 2 layers
Packaging Materials	Box	Corrugrated Cardboard			Disposable
	Inner	EPS			Disposable
	Pallet	Wood			Disposable
Weight (kg)	Product	102 (225lbs)			1 piece/Box (Battery + Package Items)
	Packaging	31 (68lbs)			Pallet + Box
	Gross	133 (293lbs)			Product + Packaging

3 Installation

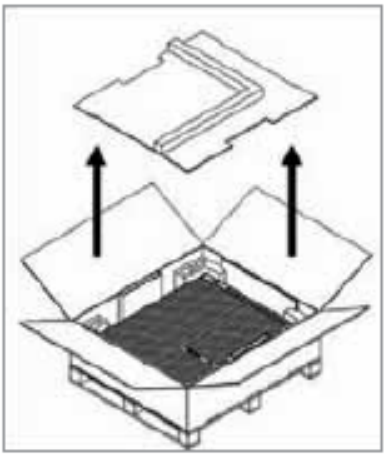
3.1 Mechanical requirements

3.1.1 Unboxing the package

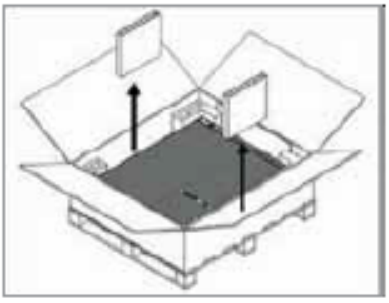


1. Cut the packing tape and open the carton.

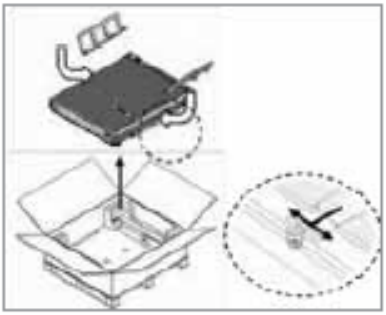
2. Pull out other items.
   Take them out and check if any item is missing.
   See Package items on section 3.1.2



3. Remove the wall bracket guide pad & cushioning pad.



4. Remove the side pad.



5. Pull out the battery pack using handles and stand it up.
(Lift handles are sold separately for this product.)

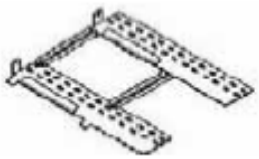
⚠ CAUTION

According to regional regulations, several people may be required for moving equipment.

3.1.2 Items in the package

These items are included in the package.

Battery pack



Wall bracket

M6 wall mount bolts (2EA)

Manual

User Guide

3.1.3 Installation locations

Required :

- There must be no highly flammable or explosive materials nearby.
- The ambient temperature should be within the range of 14 ~ 113°F (-10 ~ 45°C).
- Battery pack must be installed on walls that are upright and can support battery weight.
- Product shall be installed in the order of: indoor (ex. basement or garage); or, outdoor but under the roof shades facing north; or, other sides of the house that minimizes direct sunlight.

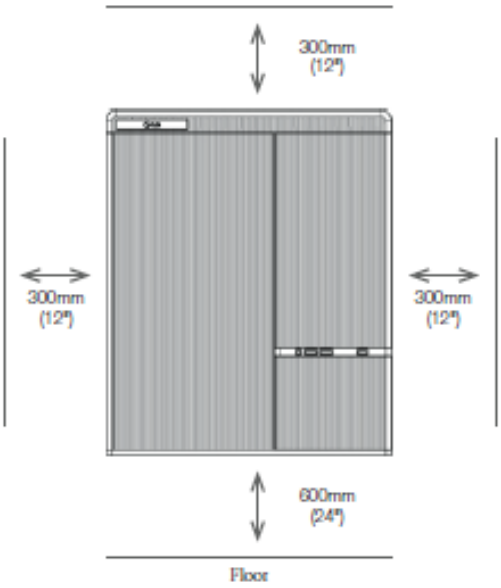
Recommended :

- The building should be designed to withstand earthquakes.
- The waterproof and properly ventilated area is recommended. (IP55)
- Install the product on a flat wall.
- Install this product out of reach of children and animals.

⚠ CAUTION

If the ambient temperature is outside the operating range, the battery pack stops operating to protect itself. The optimal temperature range for the battery pack to operate is from 59 to 86°F (15 to 30°C).
Frequent exposure to harsh temperatures may deteriorate the performance and life of the battery pack.

3.1.4 Clearance



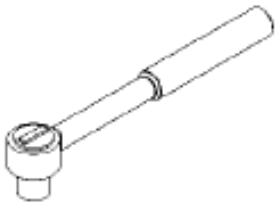
- Recommended clearances for the left, right, top and bottom of the product is shown in the figure for the proper ventilation and installer convenience.

3.1.5 Tools & safety gears required

- **Tools**

The following tools are required to install the battery pack :

Precision screwdriver



M6 Torque wrench

Inclinometer

Drill
(Min. Diameter 10mm, 0.4")

Pencil or Marker

- **Safety gears for personal protection**

  It is recommended to wear the following safety gears when handling the battery pack.

Insulated gloves

Safety goggles

Safety shoes

NOTE

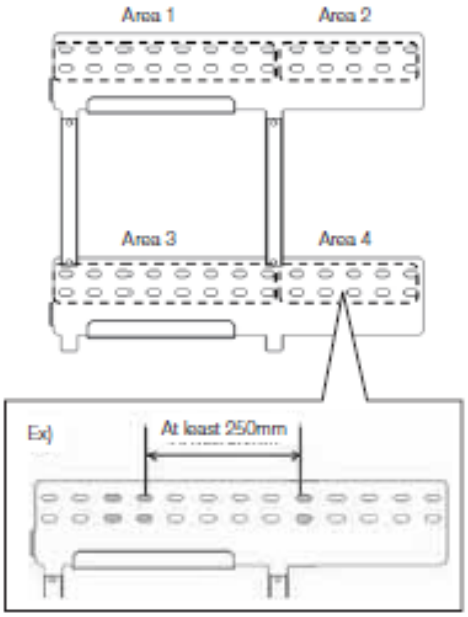
RESU HV is heavy and challenging to lift. Lift handles are recommended.

3.1.6 Mounting bracket

When installing the battery pack on a wall, make sure that the wall is capable of supporting the weight of the battery pack.

To mount the battery pack on a wall, take the following steps :

1. Mark the location on the wall for the holes.
2. Drill holes for fasteners in the wall.
3. Drive the fasteners through the mounting bracket into the holes.



- Recommended diameter :
  10mm(0.4") Min.
- Recommended length :
  70mm(2.8") Min.
- Recommended material :
  Stainless steel (8.8T)
- Recommended fastener count :
  4(Area1)/2(Area2)/4(Area3)/2(Area4)
  - Vertically
- Recommended minimum fastener clearance :
  At least 250mm (10")
  ex. Between Area 1's last fastener and Area 2's first fastener

⚠ CAUTION

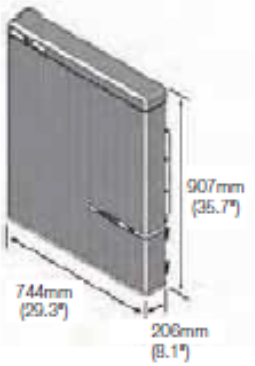
Make sure that the battery pack is at all times exposed to the ambient air.
The battery pack is cooled by natural convection. If the battery pack is entirely or partially covered or shielded, it may cause the battery pack to stop operating.

3.1.7 Appearance and dimension

- Appearance

  Proper handling and care is recommended as disassembly, change of color, scratches, leakage of liquid, and stains may influence the economic value of the battery pack.

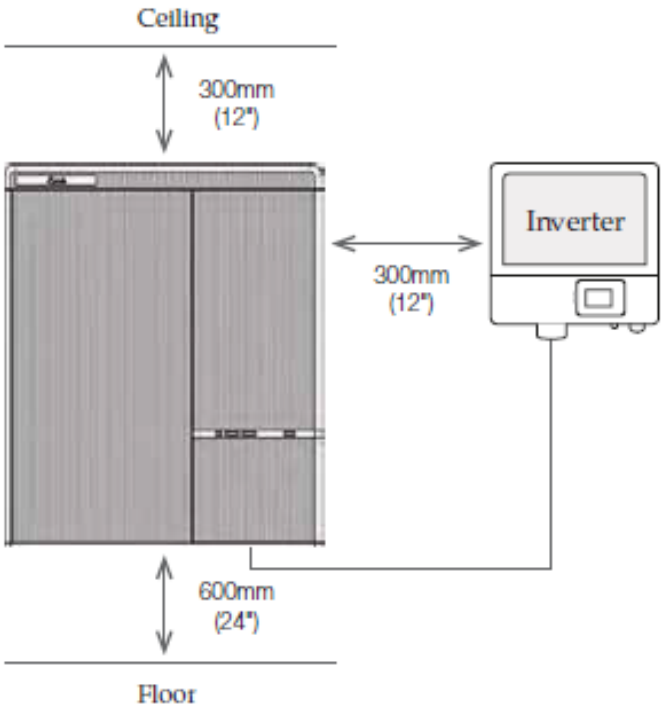
- Pack appearance and dimension



Color and Material
- Front / Rear Cover : Silver or Gold, Aluminum
- Top / Bottom / LED Cover : Black, Plastic

3.1.8 System clearance

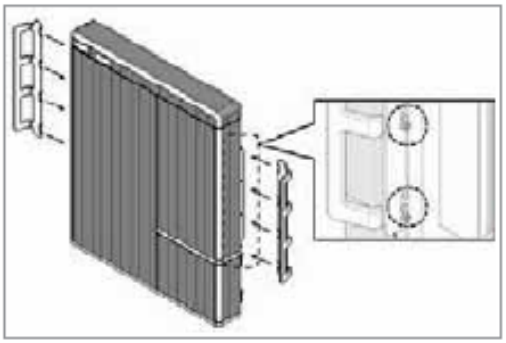
Battery requires adequate clearance for installation, cabling and airflow.
Minimum clearance in the system configuration is as follows.



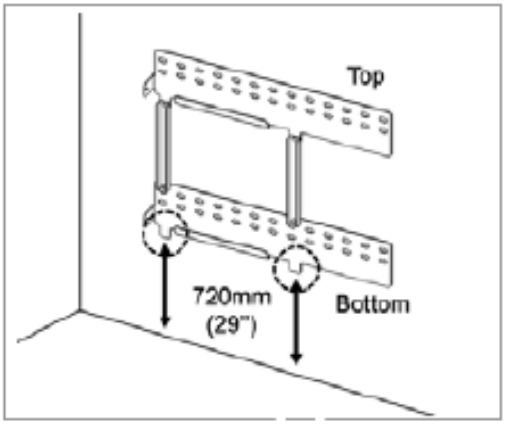
3.1.9 Installing the battery pack

⚠ CAUTION

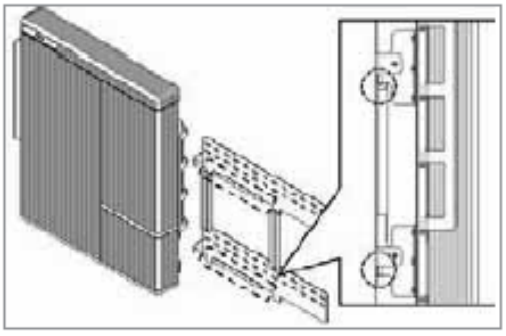
Make sure that the inverter AC and DC disconnects are turned off before connecting the power cable to the battery pack.



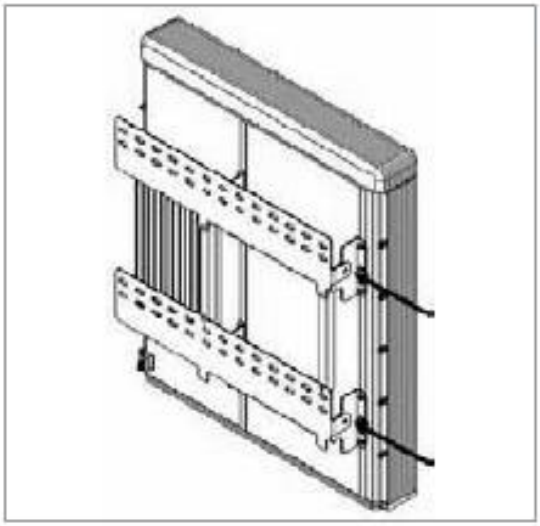
1. Fix the lift handles to the hex-socket screws on the rear (marked position) of both left and right sides.



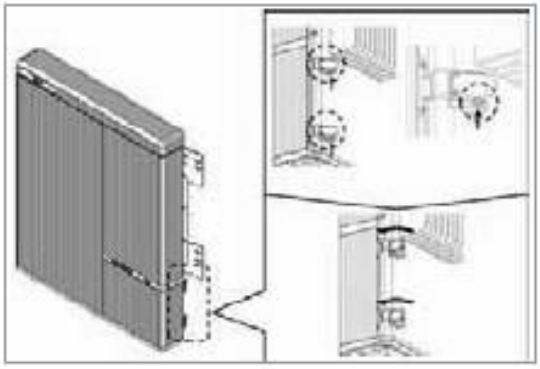
2. Mount the wall bracket to a wall. Tighten the screws, ensuring that they are horizontally driven into the wall. (Must be installed with recommended clearances(720mm[29"]) on the edge of the wall bracket as shown in the figure)



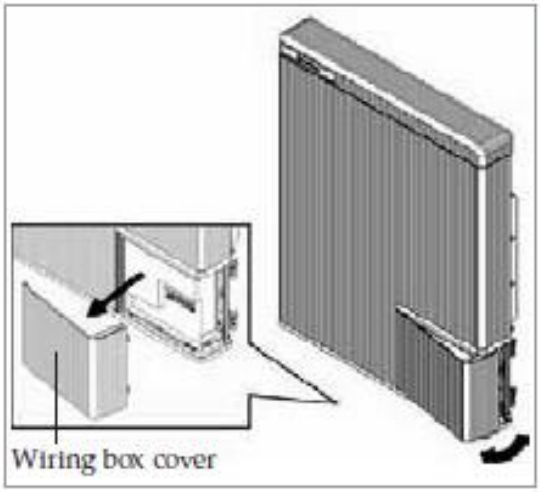
3. Mount the battery pack to a wall bracket's "U" shape clip using the support by lift handles. Remove the lift handles.



4. Tighten the two hex-socket screws enclosed and remove the lift handles. The nuts for these screws are welded to the battery pack chassis. Tighten to a torque of 5 N·m using the M6 torque wrench.



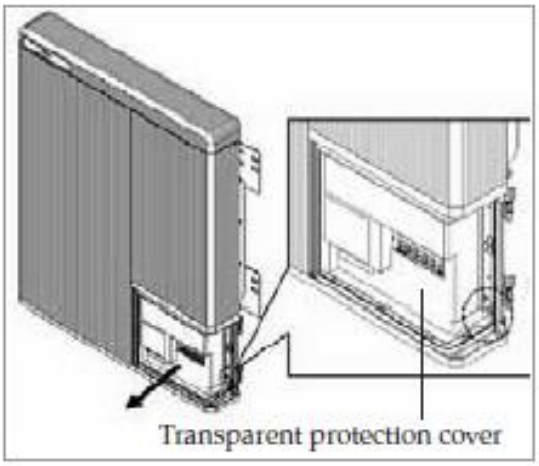
5. Press the two buttons and pull the two latches (marked position) on the rear side of the wiring box cover (hinged door).



6. Open the wiring box cover (about 2~10 degrees), and pull to remove it.

⚠ CAUTION

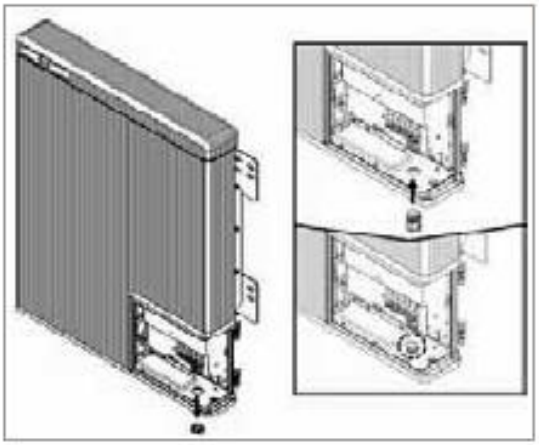
The wiring box cover is heavy. [approx. 1.6kg(3.5lb)] If dropped it may cause injury.



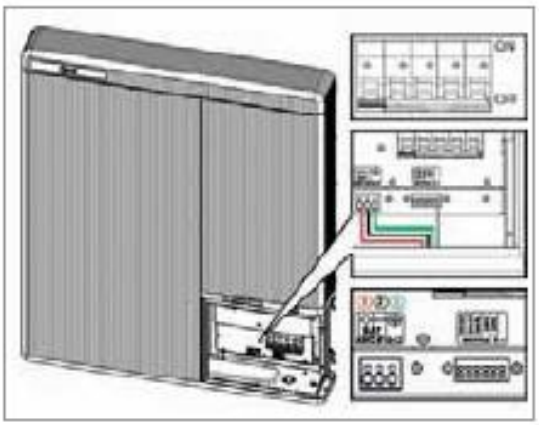
7. Loosen the screw (marked position), and remove the transparent protection cover.

⚠ CAUTION

If you lose or break a protection cover, that violates NEC Regulation.

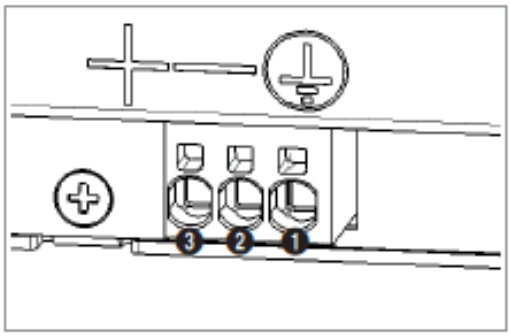


8. Remove the cap on hole in the bottom side, and assemble the ¾" conduit plug. In the case outdoor, it must be sealed to comply "IP55" [ex) gasket, sealing foam, silicon, etc], where the battery pack installation is outdoor.

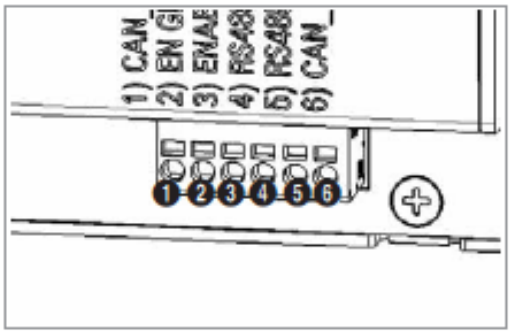


9. Connection Power / Communication cables, according to the labels marked.

3.2 Cable connection



1. See 3.2.1. for Power Cable specifications
   a) Connect the ground wire to terminal 1.
   b) Connect the negative line of the power cable to terminal 2.
   c) Connect the positive line of the power cable to terminal 3.



2. See 3.2.1. for Communication Cable specifications

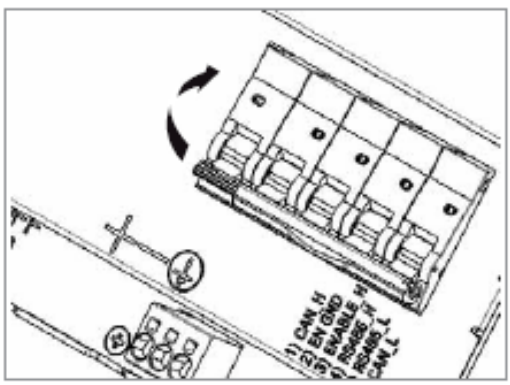
   At first, connect the ground wire to terminal 2. Then, make connections to the other terminals one after another.

   Install protection cover before turning on.

3. Auxiliary power ON/OFF switch (for shipping and storage)

   Turn on the auxiliary power switch.

   ※ Must turn off to reduce self-discharge of battery during shipping and storage.



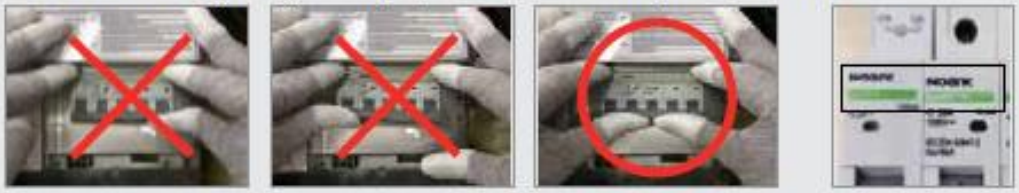
4. Connecting the battery pack to the inverter.

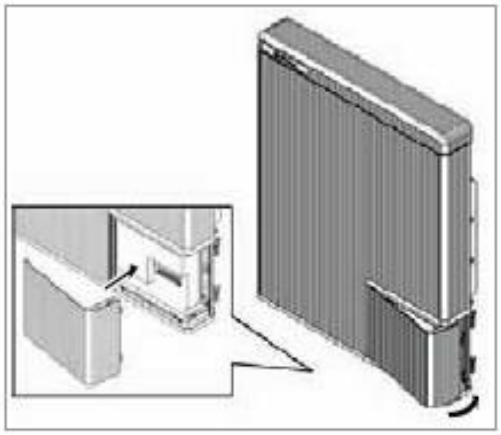
   Refer to the installation instructions for the inverter to connect the power cable and communication cable to the inverter.

   Then, push the circuit breaker switch up so that it is in the ON position.

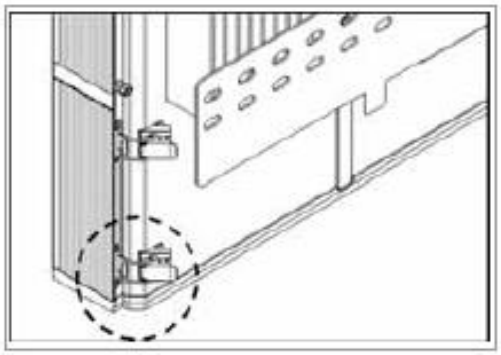
⚠ CAUTION

Please must do the switch on & off operation at the middle side of SHT31 and Ex9BP combined. It's forbidden to do the operation at the left or right edge side of combined body. Any wrong operation cause the products break off.



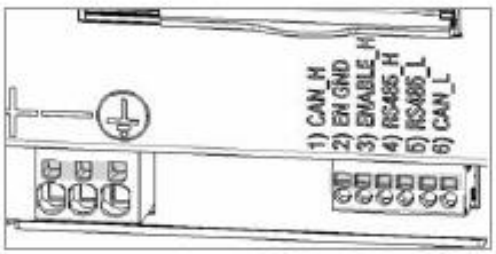


5. Close the wiring box cover. Reattach battery over the two latches on the rear.



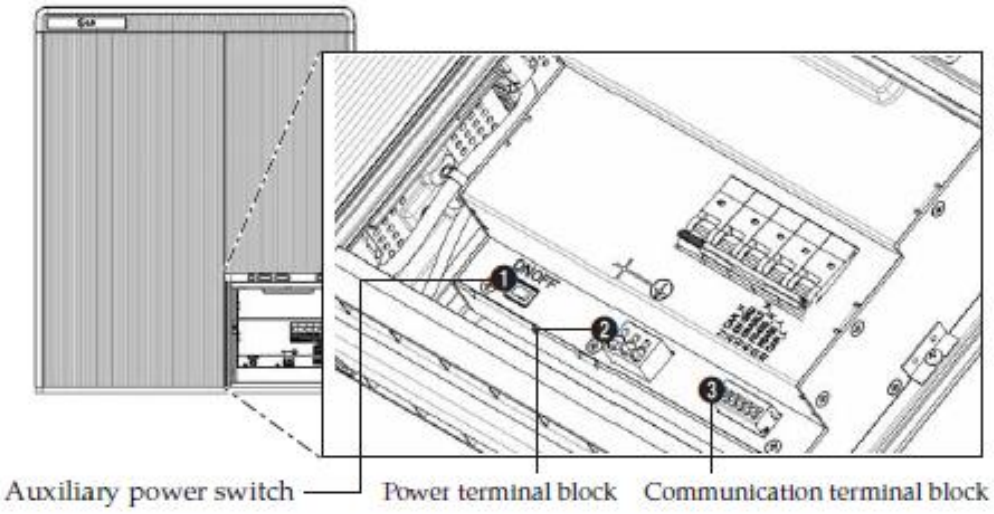
6. Hang the User Guide onto the latch on the rear of the battery.

※ **Connect/disconnect the wire to connector sequence**



1. Make sure CB off and Aux. switch off. If removing power cables, check for voltage at power cable terminal
2. To remove one of the wires from its terminal, insert a small screwdriver into the rectangular hall above the terminal.
3. Apply slight pressure to the screwdriver and at the same time pull out the wire.

3.2.1 Auxiliary power switch and spring terminal blocks

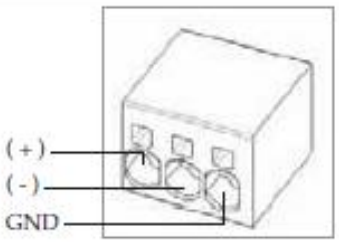


1. Auxiliary power switch

- SPG-Electronics
- Rocker Switch
- SPG-R36

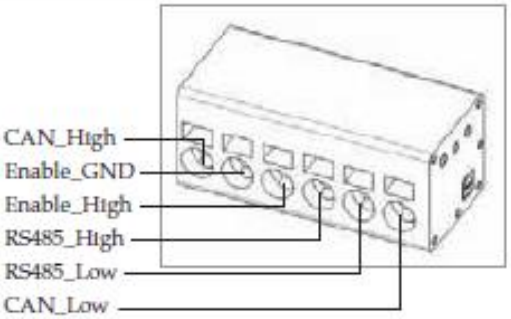
2. Power terminal block

- Max cable length: 10m (35ft)
- Cable Type : 4~10㎟ (8~12AWG)
- DC 600V insulatedz
- Pinning
- Phoenix Contact
- PCB Terminal Block SPT 5/3-V-7,5-ZB
- P/N : 1719325



3. Communication terminal block

- Max cable length: 10m (35ft)
- Cable Type : 0.2~1.5㎟ (18~24AWG)
- Pinning
- Phoenix Contact
- PCB Terminal Block SPT 2,5/6-V-5,0
- P/N : 1991134



4 Commissioning

4.1 LED indicators

The LED indicators on the front of the battery pack show its operational state as follows:

LED Status	Action
	Power on, Idle
	Charging
	Discharging
	Fault

There are four LED indicators on the front of the battery packs to show its operating status.

ON: This indicator stays on while the battery pack is ON.

Charging: This stays on while the battery pack is charging.

Discharging: This stays on while the battery pack is discharging.

FAULT: This comes on when the battery pack is in a warning state.
See Troubleshooting on page 29

4.2 Powering up battery pack

Put the battery pack in operation by taking the following steps :

1. Turn on the Auxiliary power ON/OFF switch after installation battery pack. Make sure that the Circuit Breaker switch is in the OFF position. (including Trip position)
2. Move the Circuit Breaker switch to the ON position.
3. Seconds after the Circuit Breaker switch is ON, 4 LEDs will be lit.
4. Make sure that ON indicator is on and see if the battery pack is successfully initialized. The power on indicator on the front should turn on in green.
5. Close wiring box cover.
6. Turn on the inverter.

⚠ CAUTION

If it stays off, indicates FAULT or fails to operate, do not use the battery pack and contact LG Chem (page 34) or your distributor.

4.3 Shutting off the battery pack

To shut down the battery pack, follow these steps :

1. Turn off the inverter.
2. Remove the wiring box cover.
3. Turn off the battery pack by moving the Circuit Breaker switch to the OFF position.
4. Make sure that every indicator on the battery pack is off. It should take 60 seconds at most for the indicators to turn off.
5. Turn off the Auxiliary Power ON/OFF switch.
6. Close wiring box cover.

⚠ WARNING

Do not turn off the Auxiliary Power ON/OFF switch at normal operation mode such as charge and discharge mode.

If not using the battery pack for a long time or there is any fault on the battery pack, turn off the Circuit Breaker, then turn off the Auxiliary Power ON/OFF switch.

5 Troubleshooting

5.1 Troubleshooting

Check the indicators on the front to determine the state of the battery pack. A warning state is triggered when a condition, such as with voltage or temperature, is beyond design limitations. The battery pack's BMS periodically reports its operating state to the inverter.

When the battery pack falls outside prescribed limits, it enters a warning state. When a warning is reported, the inverter immediately stops operation.

Use the monitoring software on the inverter to identify what caused the warning. The possible warning messages are as follows:

- Battery Over Voltage
- Battery Under Voltage
- Battery Over Temperature
- Battery Under Temperature
- Battery Discharge Over Current
- Battery Charge Over Current
- BMS Internal Communication
- Battery Cell Voltage Imbalance

The abnormal state is cleared when the battery pack recovers normal operation. If battery pack is not working correctly and the issue persists, contact a Qualified personnel, Installer or LGC regional contact point.

NOTE

For a serious warning, if no proper corrective actions are taken by the inverter, the battery pack's circuit breaker automatically trips to protect itself.

⚠ CAUTION

If the battery pack or the inverter indicates FAULT or fails to operate, contact LGC regional contact point (page 34) or your distributor immediately.

5.1.1 Post-Installation Check List

	YES	NO
1. Visual check if the wiring matches with the installation manual. (3.2 Cable connection)	○	○
2. Both the Auxilliary Power Switch and Circuit Breaker are ON.	○	○
3. The battery "ON" LED is ON.	○	○
4. The inverter power is ON.	○	○
5.[1] The inverter has the latest firmware.	○	○
6.[2] The inverter recognizes the battery.	○	○
7. The battery can operate after installation is correctly done.	○	○
7-1. The AC grid is connected.	○	○
7-2. The Meter is installed.	○	○
7-3. The government approval is complete.	○	○
8.[3] IF ANY OF #7 IS CHECKED AS "NO" OR THE INVERTER NEEDS TO BE TURNED OFF, TURN OFF THE CIRCUIT BREAKER FIRST, THEN TURN OFF THE AUX POWER SWITCH.	○	○

5.1.2 Troubleshooting Guideline

If the battery LED is OFF

1. Turn off the Circuit Breaker first, then turn off the Aux Power Switch.
2. Turn off the inverter. Verify there is no power at the battery connection.
3. Unplug all the wires and reconnect. Re-check the wiring on the battery is done correctly. Refer to the installation manual (3.2 Cable connection).
4. Turn on the Aux Power Switch first. Then, turn on the Circuit Breaker.
5. Turn on the inverter.
6. If the LED is still off, turn off the Circuit Breaker first, then turn off the Aux Power Switch.
7. Contact LGC regional contact point.

1) Contact the inverter manufacturer.
2) Refer to the inverter installation manual or troubleshooting guideline.
3) Refer to the User guide or Installation manual (3.2 Cable connection) for the location of the battery Aux Power Switch and the Circuit Breaker.

If the battery LED is ON, but the battery is not charging or discharging

1. Update both the inverter and battery firmware version. Refer to the inverter's troubleshooting guide for instruction.
2. Check the inverter's setting for battery.
   Refer to the inverter's troubleshooting guide for the battery set-up instruction.
3. If the battery is recognized, inverter set up is correct.
4. If the issue persists,
   4-1. Turn off the Circuit Breaker first, then turn off the Aux Power Switch.
   4-2. Turn off the inverter. Verify there is no power at the battery connection.
   4-3. Unplug all the wires and reconnect. Re-check the wiring on the battery is done correctly. Refer to the installation manual (3.2 Cable connection).
   4-4. Turn on the Aux Power Switch first. Then, turn on the Circuit Breaker.
   4-5. Turn on the inverter.
5. If the battery set up is correctly done, but the battery still does not operate, turn off the Circuit Breaker first, then turn off the Aux Power Switch.
6. Contact LGC regional contact point.

LED Status	Action
	Power on, Idle
	Charging
	Discharging

If the battery FAULT LED is ON

1. Check if the inverter recognizes the battery. Refer to the inverter's troubleshooting guide on the battery set-up instruction.
2. If the inverter is connected to the internet, collect the log file from the inverter company.
   2-1. Send the log file to LGC regional contact point.
   2-2. Turn off the Circuit Breaker first, then turn off the Aux Power Switch.
   2-3. Wait further instruction from LGC
3. If the inverter is not connected to the internet, check the inverter LCD to read battery's fault ID. Refer to the inverter's troubleshooting guide for instruction.
   3-1. Send the fault ID to LGC regional contact point.
   3-2. Turn off the Circuit Breaker first, then turn off the Aux Power Switch.
   3-3. Wait further instruction from LGC

LED Status	Action
	Fault

5.1.2 Troubleshooting Guideline (Summary)

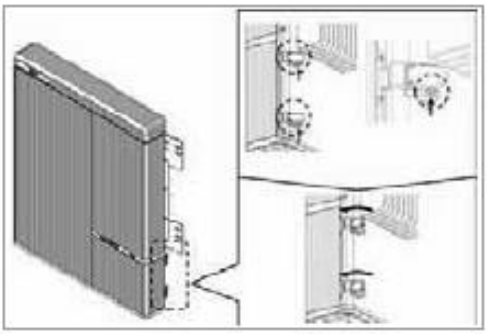
Situation	User action required
① Communication Error	**Step 1**. Check the connection of communication cable between battery and inverter. **Step 2**. Check the port(CAN H/L/GND etc.) of communication cable whether it is matched. → Proceed the cable test using the digital multi-meter whether the current is flowed. **Step 3**. Check the specification of communication cable.(Refer to Appendix 1)
② ON LED Blinking (FW update error)	**Step 1**. In case of F/W update error, reboot the whole system and check the LED status whether the battery is turned off. **Step 2**. Retry battery pack update.(Refer to Appendix 2 ~ 2-8)
③ ON LED permanent off	**Step 1**. Check the pack voltage. (Refer to Appendix 3 ~ 3-2 when you measure the voltage) → If the each cell voltage is lower than 2.85V, the battery cannot be turned on. *RESU 10H: Approx. 119.7V/Pack, RESU 7H: Approx. 85.5V/Pack **Step 2**. Turn ON the circuit breaker & AUX switch. **Step 3**. Check the connection of battery power cable whether it is properly connected. **Step 4**. System Reboot: Turn the circuit breaker & AUX switch off and on.
④ Error code 30 (BMS Internal Fault) ⑤ Abnormal status of SOC	**Step 1**. System Reboot: Turn the circuit breaker & AUX switch off and on. **Step 2**. Retry to operate the battery system.
⑥ Error code 3 or 8 (DCDC Converter_ Link Over Voltage)	**Step 1**. Check the connection of inverter power cable whether it is properly connected. **Step 2**. System Reboot: Turn the circuit breaker & AUX switch off and on.

"Caution" – Correct sequence must be followed when turning battery pack ON & OFF.
Battery pack can be damaged if not followed.
1) Turning OFF : First, circuit breaker must be turned off and AUX switch second.
2) Turning ON : First, AUX switch must be turned on and circuit breaker second.

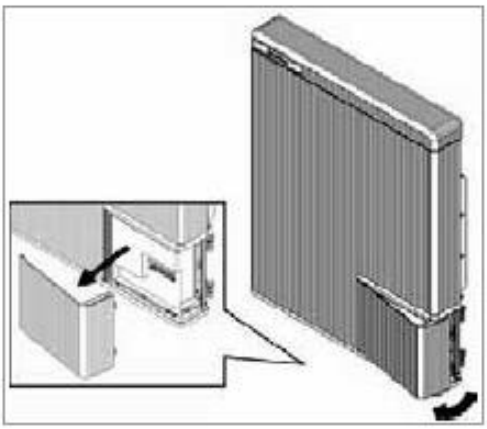
6 Uninstallation & Return

6.1 Return/replacement instructions

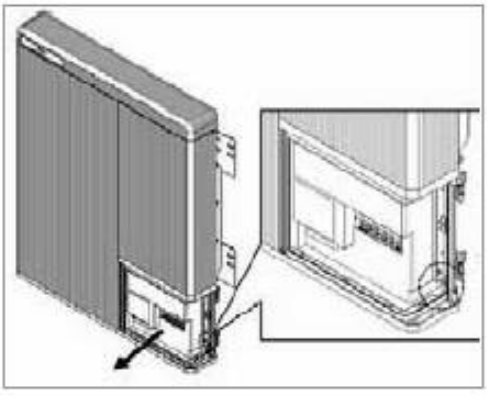
6.1.1 Uninstallation from the wall



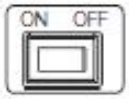
1. Switch OFF the Inverter before starting the uninstallation of the battery pack.
2. Press the two buttons and pull the two latches (marked position) on the rear.



3. Open the wiring box cover (about 2~10 degrees), and pull to remove it.

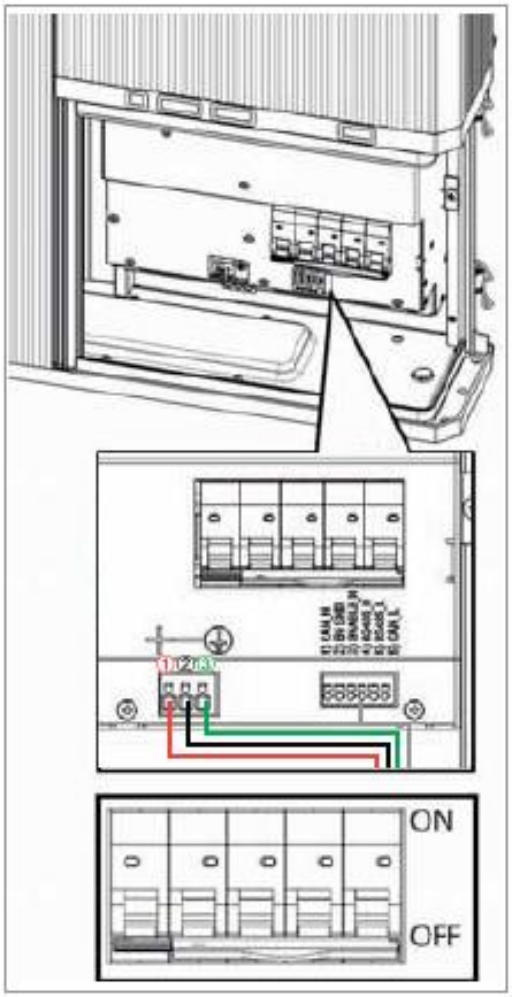


4. Switch off the circuit breaker.
   ※ If you have Auxiliary Power ON/OFF switch, turn off Auxiliary Power switch

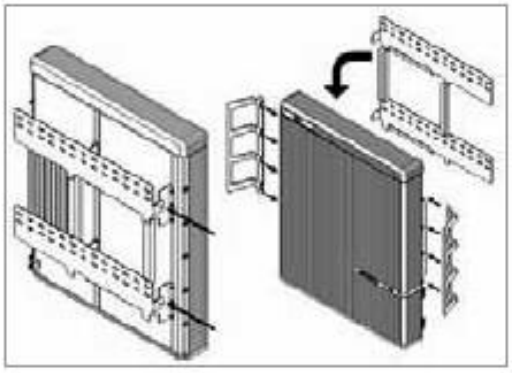


> **⚠ CAUTION**
> Do not turn off the Auxiliary Switch while the battery is in operation.

5. Loosen the screw (marked position), and remove the transparent protection cover.



6. Check for voltage at power cable terminal.
7. Disconnect the communication cable from the communication port.
8. Disconnect the power cable from the terminal block. Disconnect the positive terminal (+) ① first, and next the negative terminal (−) ②, and finally ground terminal ③.
9. Assemble transparent protection cover. Close the wiring box cover, and lock the ratchet.



10. Loosen the two hex-socket screws using a socket wrench to detach the battery pack from the wall using lift handles.

⚠ CAUTION

According to regional regulations, several people may be required for moving equipment.

11. Repack in Box (See 3.1.1)

6.1.2 Contact information

Damaged batteries are dangerous and must be handled with extreme caution. They are not fit for use and may pose a danger to people or property. If the battery pack seems to be damaged, contact LGC regional contact point or your distributor.
Use the contacts below for technical assistance. These phone numbers are available only during business hours on weekdays.

Contact Information		
HQ (KOR) / Other Regions	Address	29, Gwahaksaneop-3-ro, Oksan-myeon, Heungdeok-gu, Cheongju-si , Chungcheongbuk-do, South Korea
	Email	essservice@lgchem.com
US	Address	1064 Chicago Rd, Troy, MI 48083, USA
	Telephone	+1 888 375 8044
	Email	CSNorthAmericaESS@lgchem.com
Europe	Address	Otto-Volger Str. 7C 65843 Sulzbach (Taunus),Germany
	Telephone	+49 162 297 0918
	Email	kalies@lgchem.com
Australia	Address	3/6 Pelle St Mitchell ACT 291
	Telephone	+61 1300 178 064
	Email	m_AUservice@lgchem.com

LG Chem

Keep this manual for later use.

FKI Tower 37th, 24, Yeoui-daero, Yeongdeungpo-gu, Seoul 07320, Rep. of KOR.
TEL : (82) 2-3773-1114 FAX : (82) 2-3773-7005
http://www.lgesspartner.com http://www.lgchem.com

7.1 Installation Manual for RESU10H (Type R) Secondary

RESU

Installation Manual for RESU10H for Secondary (Type-R)

LG Chem strongly advises to take due care in following LGC's RESU10H installation manual and user guide. A warranty claim is invalid if damage is caused by human error, inconsistent with the installation manual and/or the user guide.

Version 1.2

LG Chem

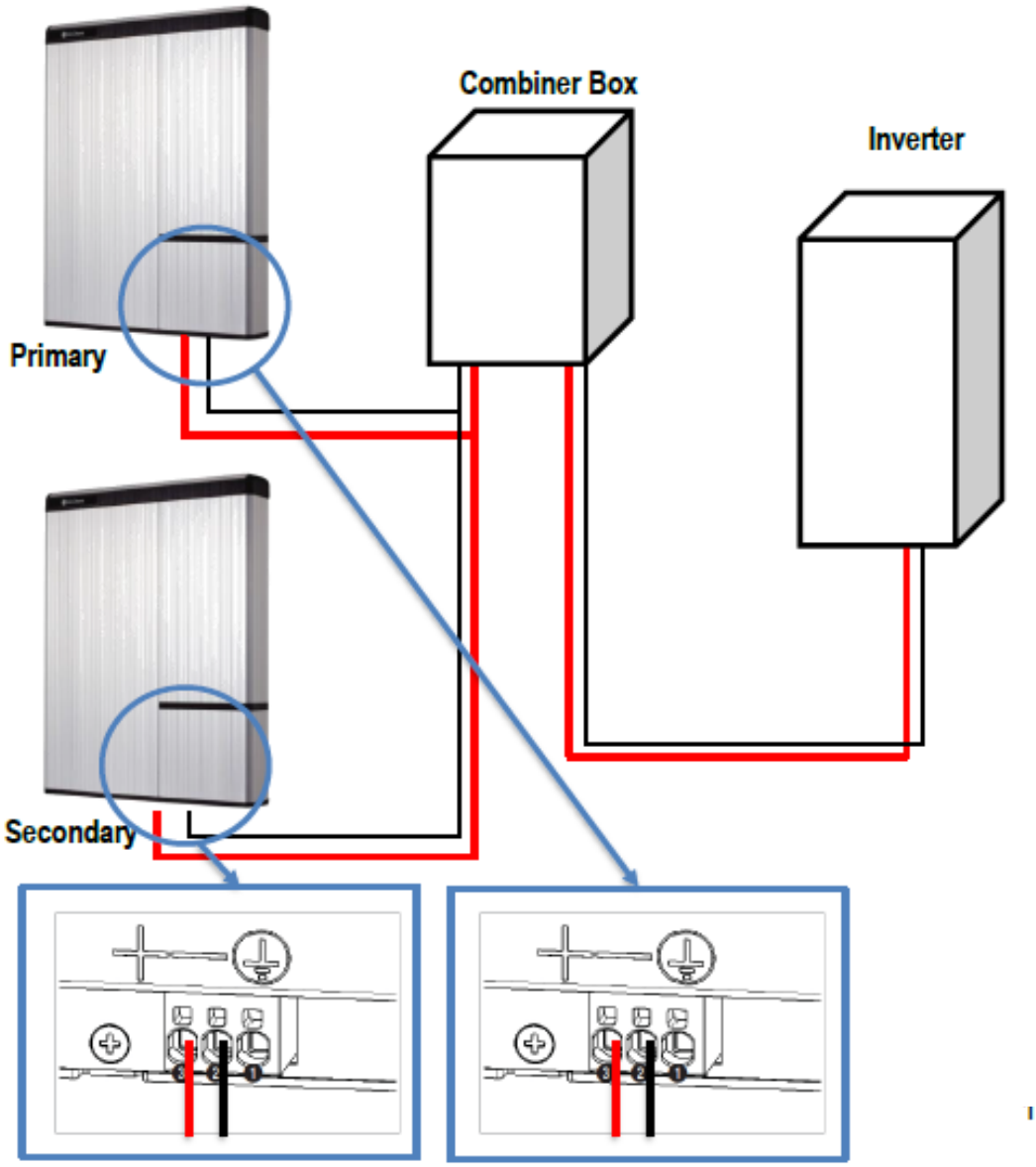
7.1 Installation Manual for RESU10H (Type R) Secondary

10H Type R Parallel extension is for increased capacity of battery system. This installation Manual indicate to distinguish Primary and Secondary Pack. And make user to know connection in battery system.

1. Connection in 10H Type R parallel battery system.

1.1 Power Cable

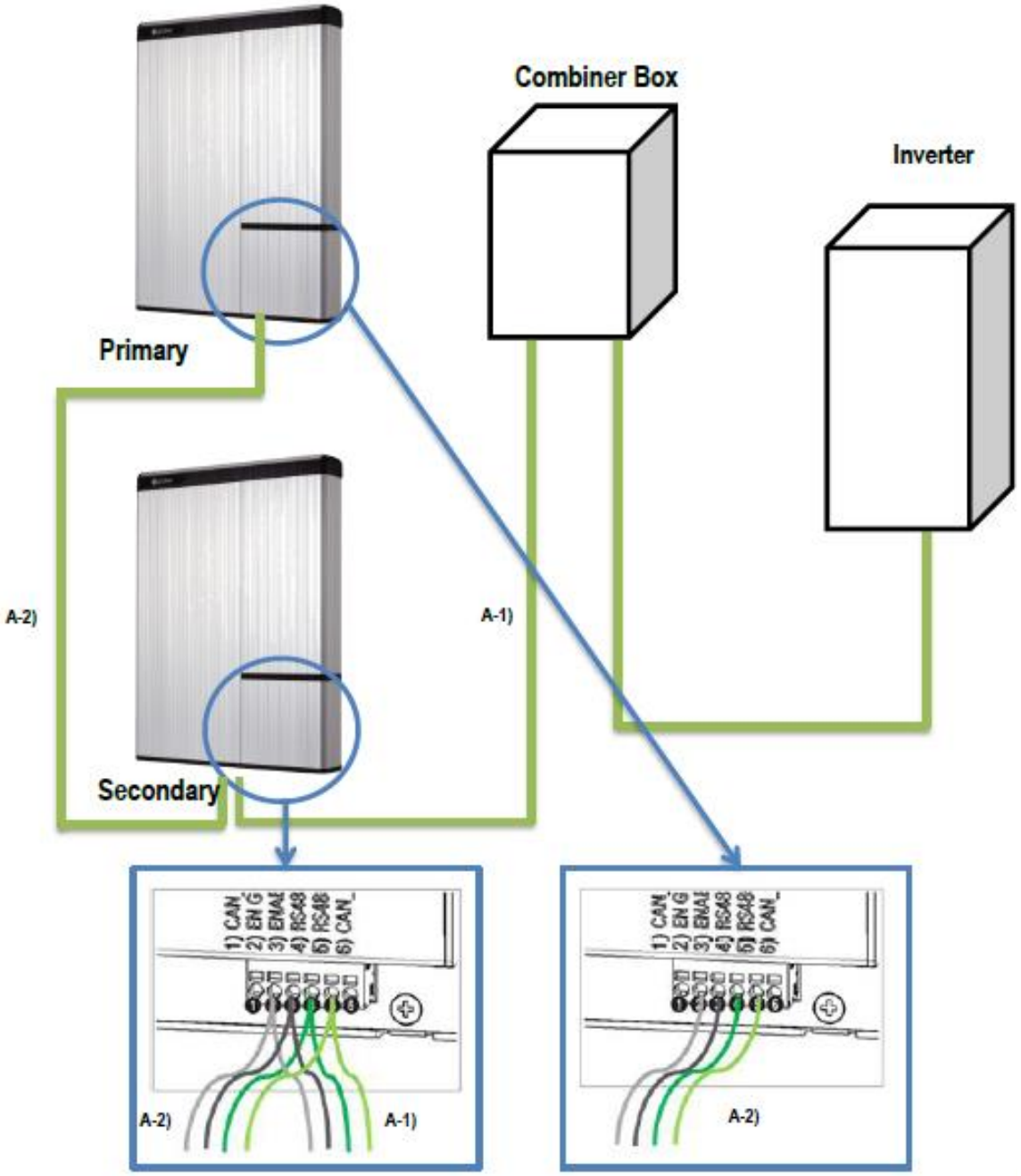
Power cable is connected by combiner Box. Positive and negative line should be connected same polarity line by combiner box. Joint connection is in the combiner box. If installer connected reverse polarity position of the power line, the battery system is not normally operated.



7.1 Installation Manual for RESU10H (Type R) Secondary

1.2 Communication Cable (RS485 High/Low, Enable High/Low)

Communication cable is connected by daisy chain. Communication line from inverter should be connected secondary battery pack. And the additional communication line is connected from secondary battery pack to Primary battery pack. Secondary communication connector is fixed 2 communication line. 1st line is connected from inverter to Secondary battery pack. 2nd line is connected between Primary and secondary. If installer connected wrong position, battery pack is not normally operated.



7.1 Installation Manual for RESU10H (Type R) Secondary

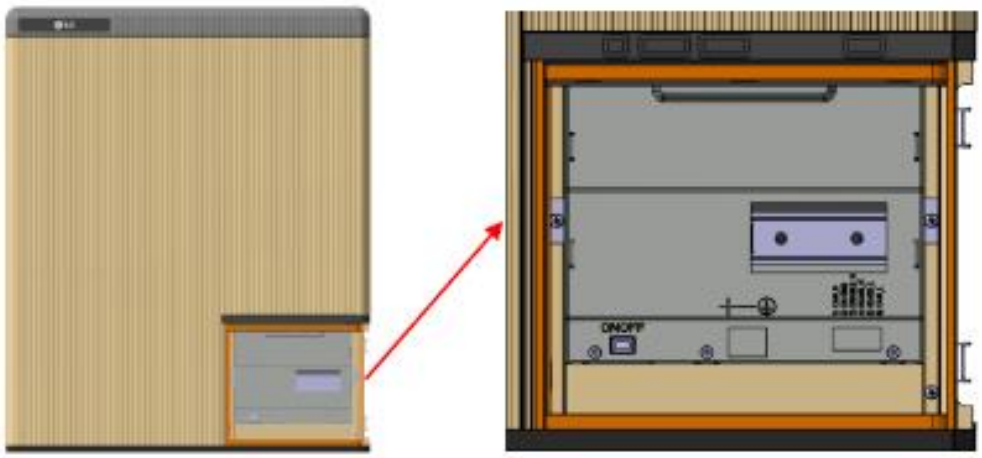
2. Primary/Secondary Label

Primary and Secondary battery pack can identify by the label. Primary battery pack is not apply any type of the symbol. Secondary pack is applied the "Secondary pack" label in the battery pack and package. The label position is the right bottom side into the cover of battery pack. if installer want to identify the label, open the right bottom cover.

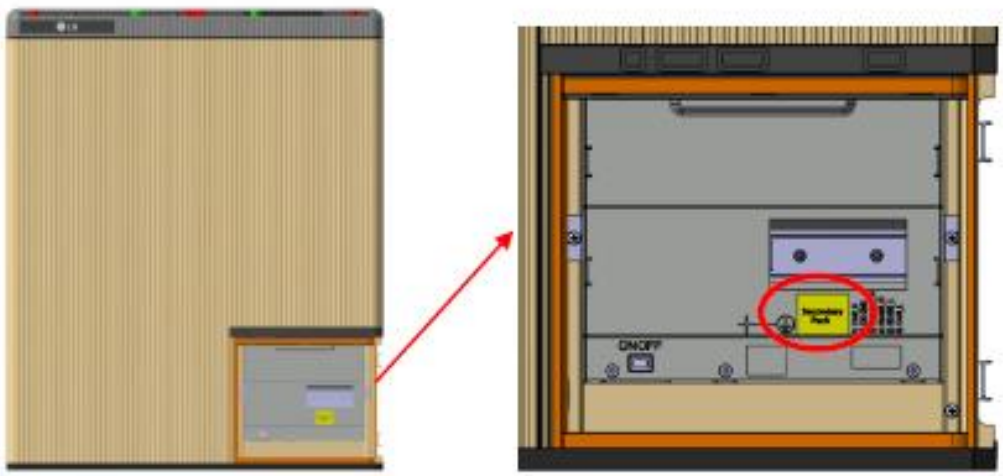
2.1 Pack Protection Cover

* Secondary Pack Only have "Secondary Pack" Label on the Protection Cover

Primary Pack



Secondary Pack



7.1 Installation Manual for RESU10H (Type R) Secondary

2.2 Box

*Secondary Pack Box Only have "Secondary Pack" marks on the side of box.

Primary Pack

Secondary Pack

3. Note

3.1 Combiner Box

Combiner Box Installation refer to the combiner box installation guide.

3.2 Battery Pack Indicator

Battery pack LED Indicator is power ON after the installation of the battery pack. If installation of the battery pack is different than the guide, battery pack Fault LED is on. The detail indicator status refers to the battery pack installation manual of the Primary side.

3.3 Warning

If not commissioning after installation or there is any fault on the Primary/ Secondary pack, turn off the circuit breaker, then turn off the whole auxiliary power on/off switch on the Primary/Secondary pack.

7.1 Installation Manual for RESU10H (Type R) Secondary

Keep this manual for later use.

FKI Tower 37th, 24, Yeoui-daero, Yeongdeungpo-gu, Seoul 07320, Rep. of KOR.
TEL : (82) 2-3773-1114 FAX : (82) 2-3773-7005
http://www.lgesspartner.com http://www.lgchem.com

7.2 Two-Battery Configuration

Two-Battery Configuration

The following diagram illustrates the connection of the system components when using two batteries. In this case, an external fused combiner box is needed. The next diagrams are enlarged segments of this diagram.

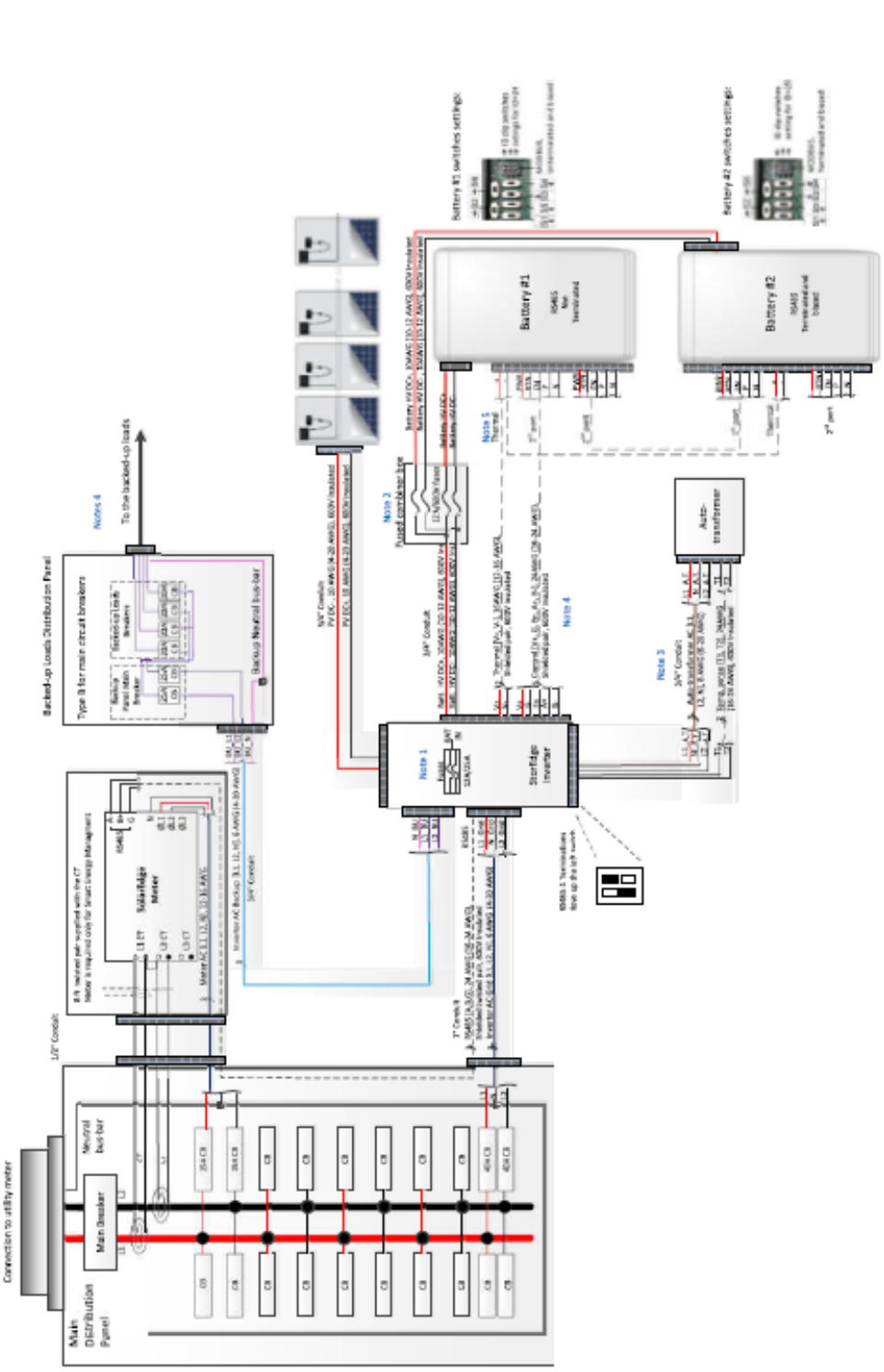


Figure 33: Backup Power with Smart Energy Management - Two-Battery Configuration

7.2 Two-Battery Configuration

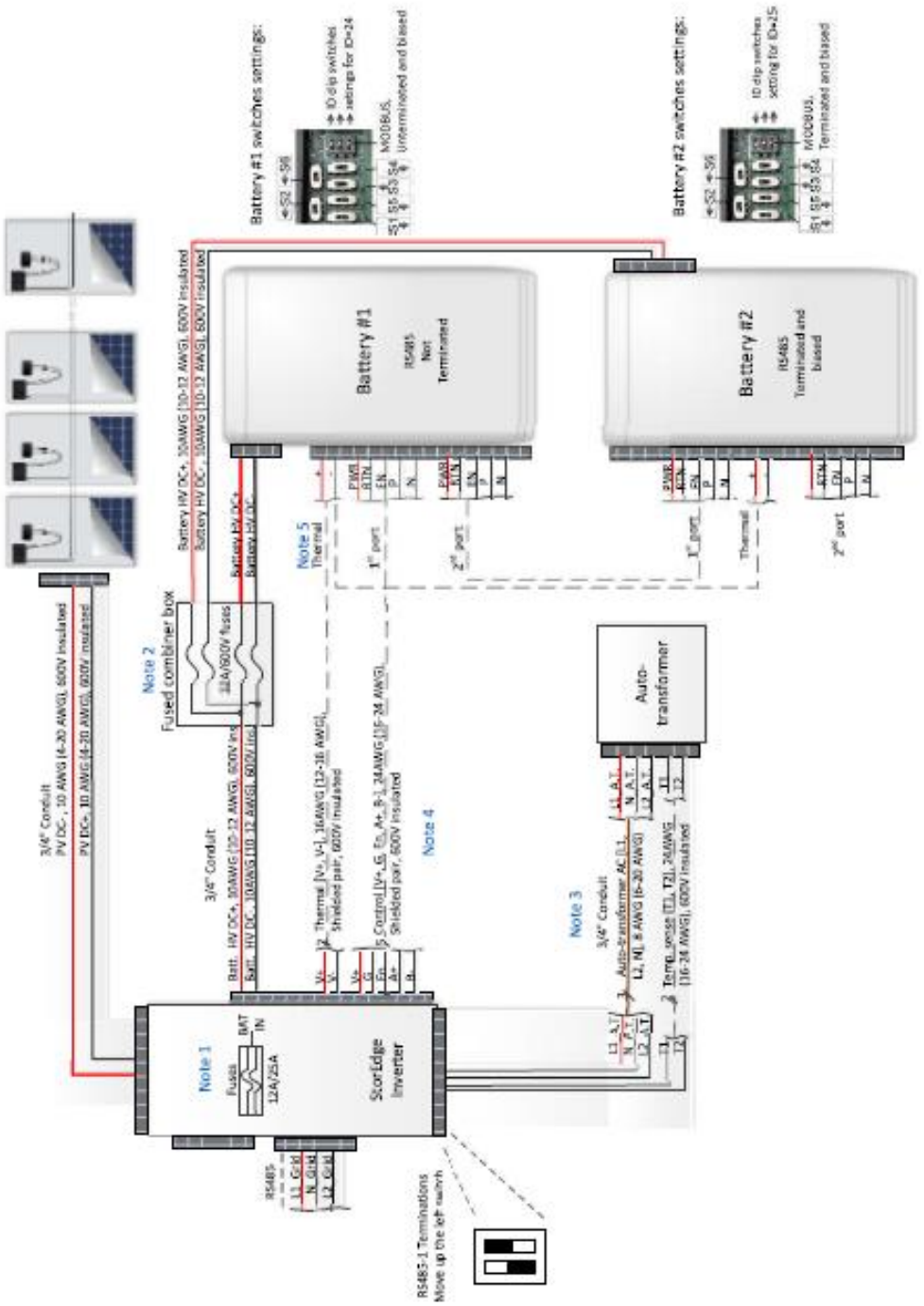


Figure 34: Backup Power with Smart Energy Management - Two-Battery Configuration, Batteries – StorEdge Inverter Connection

7.2 Two-Battery Configuration

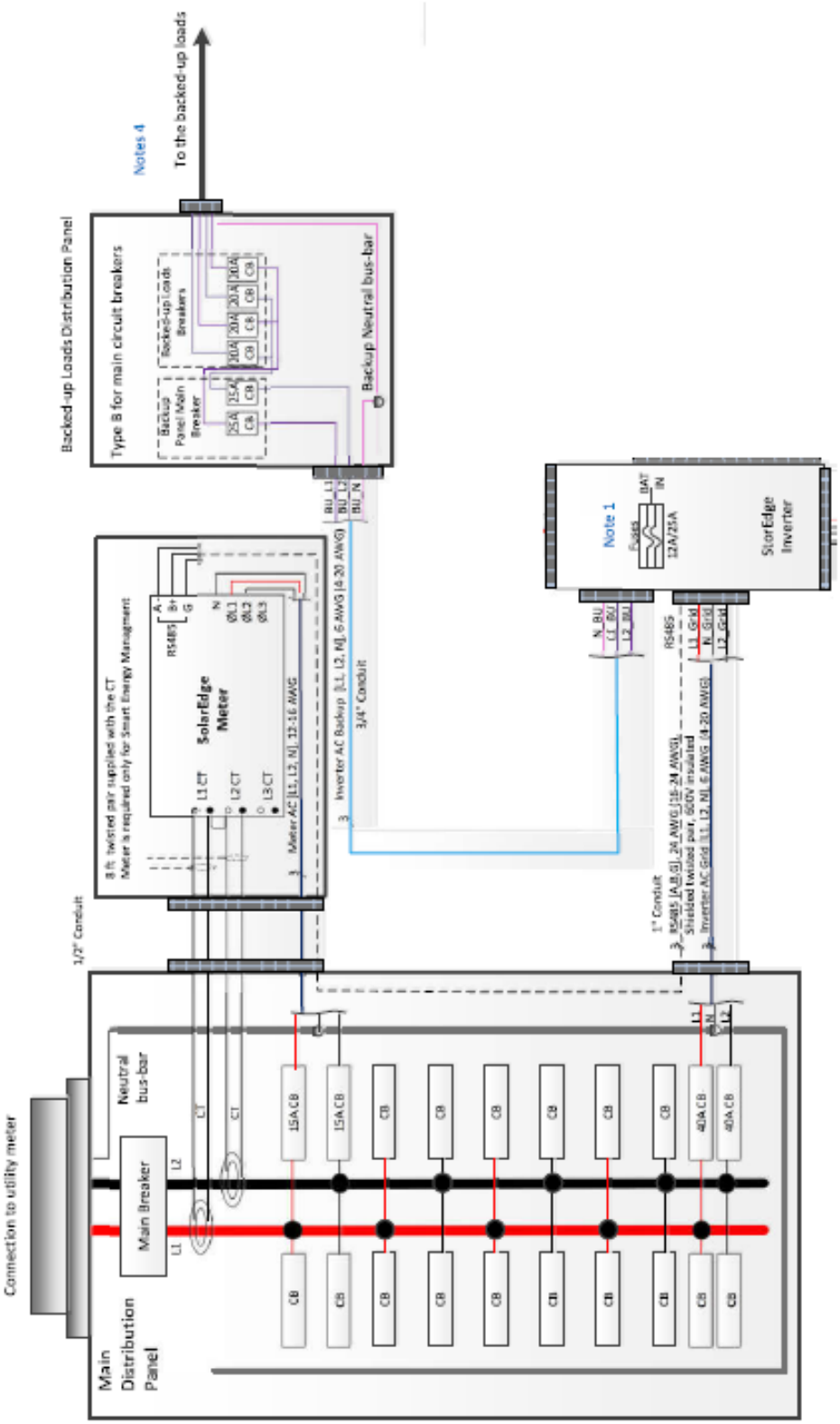


Figure 35: Backup Power with Smart Energy Management - Two-Battery Configuration, Main Distribution Panel – Backed-up Loads Distribution Panel Connection

8.1 Letter from LG Chem

Letter from LG Chem ESS Customer Service Team

Dear Customer,

First of all, we would like to thank you for purchasing LG Chem's RESU high voltage battery. LG Chem is focused on the customer experience and we want to reiterate, but we can only maintain the product quality with your help, too. As the installation volume grow, we are finding a growing number of reports related to the Auxiliary power switch.

This is a non-safety related problem, but it can affect the battery functionality.
Your caution is required in order to avoid the problem as the battery can be damaged.

Do not turn off the 'Auxiliary power switch' when the circuit breaker is in on position, as follows.

1) Operation mode(Charging/Discharging)
2) F/W update mode
3) Beginning of the initialization
4) Commissioning

LG Chem has found that the power created from the Auxiliary switch when switched off can damage the major parts in the DC/DC convertor, if the circuit breaker is in on position.
The current still exit the DC/DC converter even though inverter is turned off.

Please be aware that customers are allowed to turn off the power switch after moving the circuit breaker to the off position.

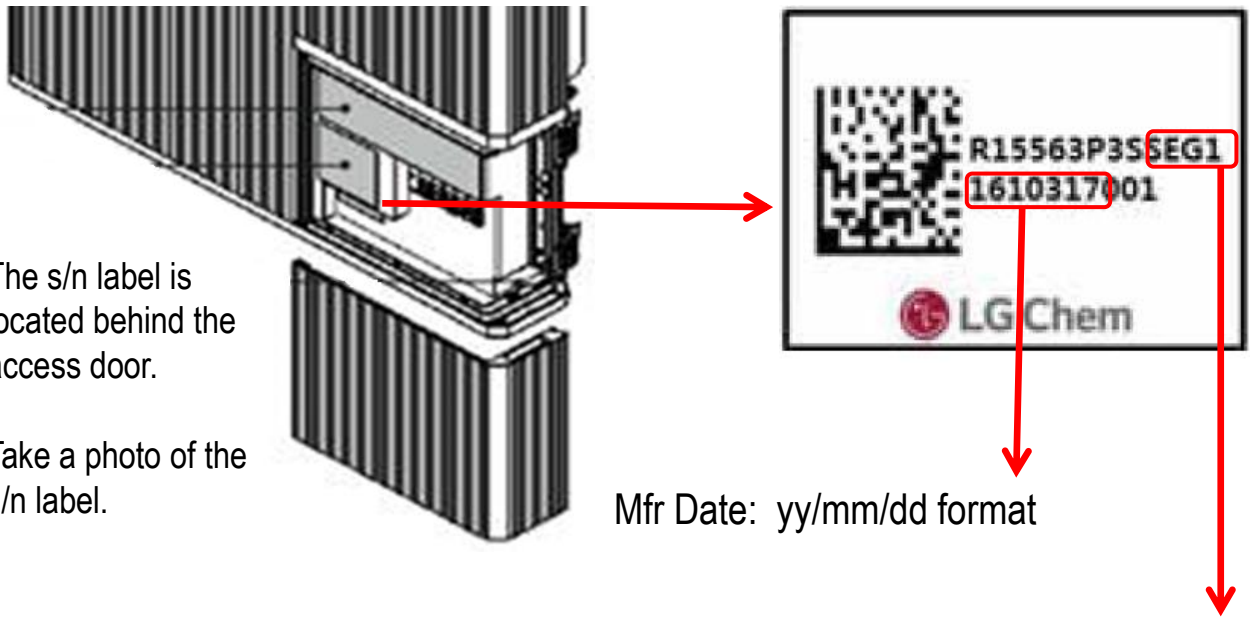
Notify your LG Chem regional contact immediately when failed to do so or if you find another
unfamiliar symptom.

Please be aware that the product can be used again after the repair by a certified personnel from LG Chem. However, LG Chem cannot guarantee a defective product caused
by the customer.

Sincerely yours,
Hyunchul Lyu
LG Chem ESS Customer service team leader

How To Interpret RESU S/N

Serial Numbers can be found behind the access door.



The s/n label is located behind the access door.

Take a photo of the s/n label.

Mfr Date: yy/mm/dd format

DLT 1 = RESU10H Type C (SMA battery)

SEG 1 = Primary RESU10H (SolarEdge)

SEG 2 = Secondary RESU10H (SolarEdge)

RESU pack voltage should be checked by the Distributor after 180 days from manufac ture date. Verify this if your RESU is approaching 180 days.

8.3 RESU Pack System Checks_RESU10H Type-R (HV)

Sect. 1 Tools

- Tools must have insulated grips.
- Tools should have minimal exposed metal.

• Socket wrench & 10mm nut

• Insulation shoes

• Insulation gloves

- Insulation tape should be attached on the exposed metal of the tools.

• Voltmeter

• Insulation Tape

RESU10H pack voltage must remain above > 84V
in order to remain in operation or in the field.

Sect. 2 Disassemble RESU10H (Type-R)

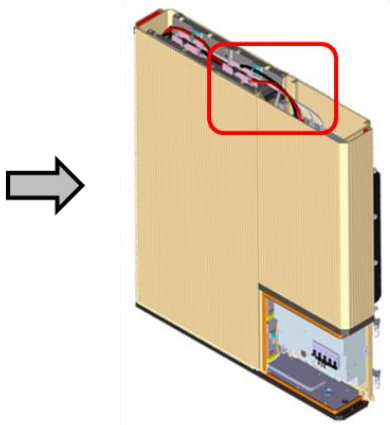
1) Carefully remove the top cover by prying the black casing at the rear corners

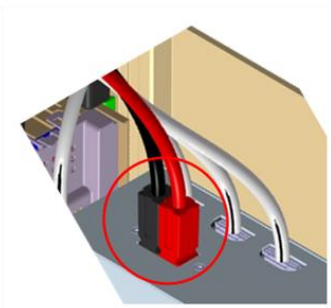
Warning

1. Before opening the top cover of battery, please make sure to check the following:
   - The battery must be disconnected from the inverter.
   - Battery circuit breaker(also the AUX power or DS switch) is in OFF position.
2. Wear Insulation gloves when disassembling the battery.

2) Remove the inside top cover user a 10mm socket or driver.

[torque to 6nm for dis and re-assembly]





- Loosen 6 Hexagonal bolts

- Disassemble the power cable plug-in connector)

RESU10H pack voltage must remain above > 84V
in order to remain in operation or in the field.

Sect. 2 Disassemble RESU10H (Type-R)

3) Disassemble the power cable (plug-in connector) from the DC/DC converter

Caution

After disconnecting power cable, attach insulation tape on the power cable connector to prevent shorting.

4) Determine if RESU has an AUX switch or applied Disconnect switch (breaker)

AUX Switch

OR

Applied Disconnect Switch

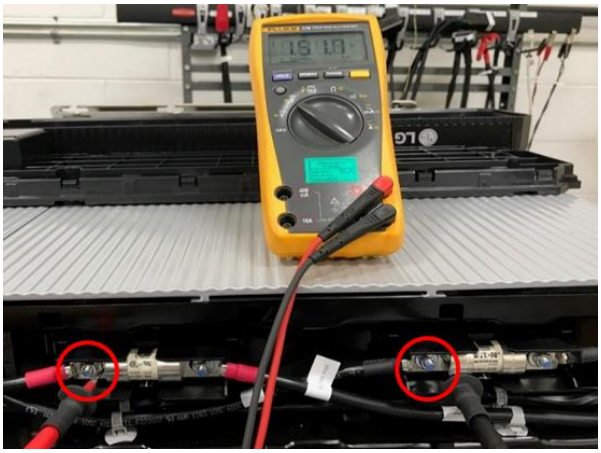
RESU10H pack voltage must remain above > 84V
in order to remain in operation or in the field.

Sect. 3 Check Battery Pack Voltage

A. Auxiliary Switch

Warning

Use caution to avoid shorting when (+) / (-) terminals are exposed.



B. Disconnect Switch

- PROBE SETUP: set voltmeter to DC volts.

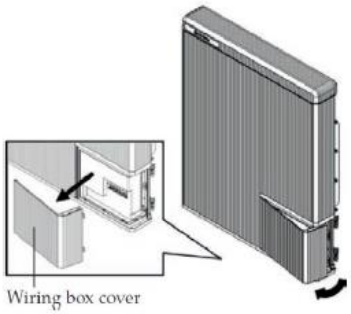
Negative probe at fuse

RESU10H pack voltage must remain above > 84V
in order to remain in operation or in the field.

8.4 Check Fuse_RESU10H Type-R & Type-C (HV)

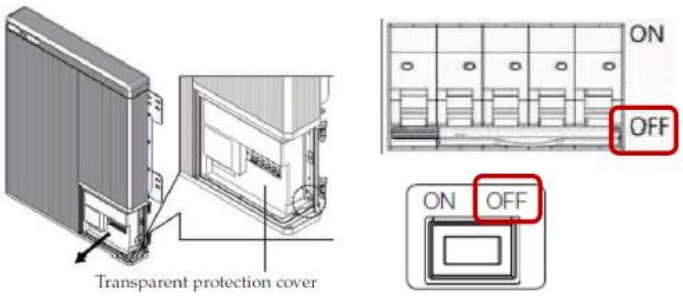
Check Fuse – Probe setup, set voltmeter to Ω resistance

① Open the wiring box cover(about 2~10 degrees),
and pull to remove it

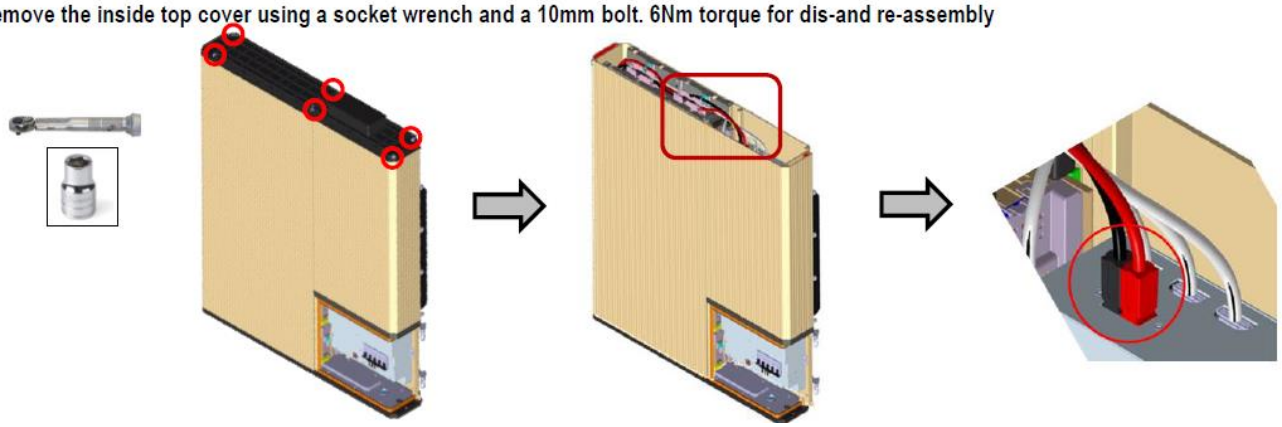


② Make sure the internal battery breaker(also the AUX power switch RESU10H-SEG models) is in OFF position.

Important : If the battery is connected to the inverter make sure the inverter switch is off.



③ Remove the top cover prying up at the back corners
Remove the inside top cover using a socket wrench and a 10mm bolt. 6Nm torque for dis-and re-assembly



8.4 Check Fuse_RESU10H Type-R & Type-C (HV)

Check Fuse

① Disconnect power cable

② Verify the resistance of the fuses (+) and (-).
The value should be 0.2 ± 0.1 Ω

Caution

After disconnecting power cable, attach insulation tape on the power cable connector to prevent shorting.