LG Chem

LG Home Battery

PRODUCT BOOK

Essential Information for Certified Installers



RESU

RESU LV / HV

30th June, ’20 (V1.7)

LG Chem RESU Product Guide

30.06.2020

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 LV Compatible Inverter List updated (to ver8.21)
			RESU HV Compatible Inverter List updated (to ver1.5)
			RESU Pack System Checks & Check Fuse Instruction added
Version1.6	2020.04.20	Patrick Choi	RESU Gen2 Data Sheet updated
			RESU LV Compatible Inverter List updated (to ver8.4)
			RESU HV Compatible Inverter List updated (to ver1.6)
			F/W Update Guidelilne for RESU HV Type-C updated
			How to read RESU S/N updated
Version1.7	2020.06.30	Yesol Choi	RESU HV Compatible Inverter List updated (to ver1.8)
			Important Reminder regarding Prevention of Battery Fuse Blown of RESU HV updated

About this product book

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

Please note that LG Chem battery products may not be warranted unless

1. Installed by Certified Installer
2. Serial number is registered on ESS Partner Portal www.lghomebattery.com

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1. Compatible Inverter List

1.1 Compatible storage Inverters with RESU LV (v8.4)

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 LV.

1) Battery inverters should operate **On-Grid only. (Not in Off-Grid)**
2) For On-Grid applications where back-up mode may be sometimes utilised, 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*	RESU3.3 (3kW)	RESU6.5 (4.2kW)	RESU10 (5kW)	RESU13 (5kW)	
SUNGROW	SH5K SH5K+	SH5K_V11_V1_A SH5K-V13_FW_V13	○	○	○		*Can use in Back-up Mode under the condition 2) above
	SH3K6 SH4K6 SH5K-20	SH3K6-V11_FW_V28 SH4K6-V11_FW_V28 SH5K-20_FW_V57	○	○	○	○	
SOLAX POWER	SK-SU5000E SK-SU3700E SK-SU3000E SK-TL5000E SK-TL3700E SK-TL3000E	Inverter_M V2.15 Charger_28035_M_2.23	○	○	○	○	*Can use in Back-up Mode under the condition 2) above
Ingeteam	ISS1Play 3TL ISS1Play 3 with Transformer	FW : ABH1002_Z DFW : ABH1003_P D.BOOT : ABH100	○	○	○		*Can use in Back-up Mode under the condition 2) above
victron	MultiPlus 48/3000/35	CCGX v2.31	○	○	○		*Can use in Back-up Mode under the condition 2) above
GOODWE	GW3048D-ES GW3648D-ES GW5048D-ES	FW : 15158 App : V3.6.3	○	○	○	○	*Can use in Back-up Mode under the condition 2) above
	GW3048-EM GW3648-EM GW5048-EM	FW : 06068 App : V3.6.3	○	○	○	○	
	GW3600S-BP GW5000S-BP	FW : 05058 App : V3.6.3		○	○	○	
SELECTRONIC	SPMC481 SPMC482	SP Link : 11.15.7006	○	○	○	○	*Exclusively, can use in Off-Grid
锦浪科技 solis	RHI-3K-48ES RHI-3.6K-48ES RHI-4.6K-48ES RHI-5K-48ES RHI-6K-48ES	270015	○	○	○	○	*Can use in Back-up Mode under the condition 2) above

* Only compatible with the software versions which are mentioned above.

Apr.. 2020

2. Important Reminder regarding Prevention of Battery Fuse Blown of RESU HV

Dear Valued Customers,

LG Chem would like to thank you for you for choosing RESU and your confidence in LG Chem as your battery supplier.
As market leader, we have an ongoing commitment to providing a safe, reliable and quality residential storage solutions.
We are seeing an increase of RESU HV batteries with blown battery fuses with damage to the DCDC converter. This is caused when the RESU is not being powered on & off properly, per the Installation Manual caution notes. The sequence of powering the RESU on & off during installation, commissioning or in other situations must be properly followed to avoid damaging the RESU. This damage is not covered by the RESU Product Warranty.

Reminder

To prevent this issue of blown battery fuse with damage to the DCDC converter, please make sure to follow the power on & off sequence. Each RESU will either have an Auxiliary switch or an applied Disconnect Switch.
Please refer to below guide.

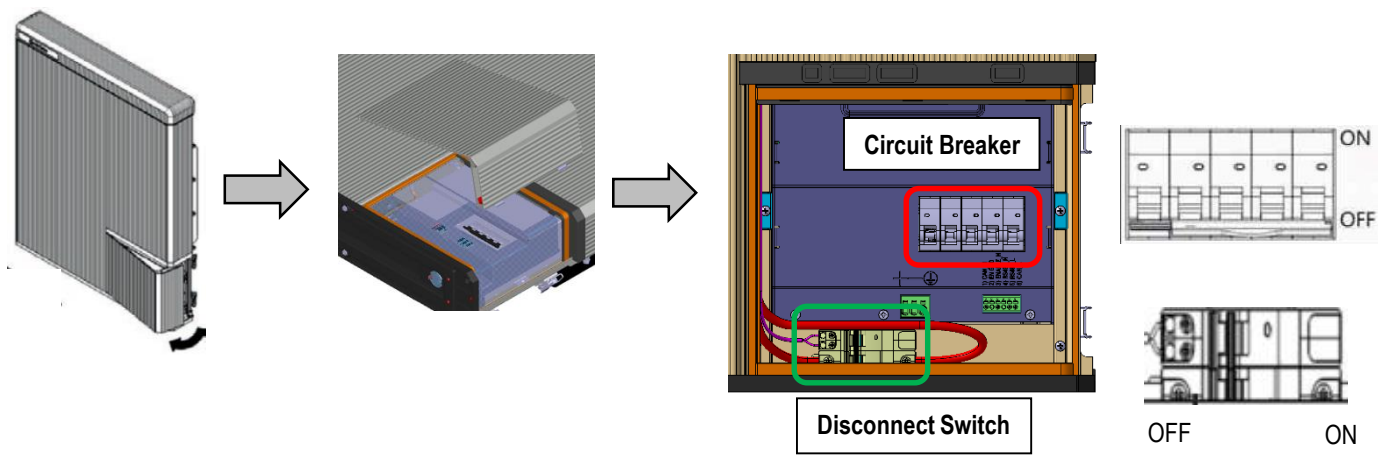
1. Disconnect Switch (DS) Product

1) Serial Numbers for Disconnect Switch Product :

Model	Production Since	Battery Serial No. Since
RESU10H_Type-R Primary	Sep 17th 2018	R15563P3SSEG1**1809179**045
RESU10H_Type-R Secondary	Oct 10th 2018	R15563P3SSEG2**1810109**001
RESU10H_Type-C	May 10th 2019	R15563P3SDLT1**1905107**001

2) Sequence to Power On & Off

Turn ON Sequence	Turn OFF Sequence
1. Disconnect Switch ON 2. Circuit Breaker ON	1. Disconnect Switch OFF 2. Circuit Breaker OFF



2. AUX Switch Product

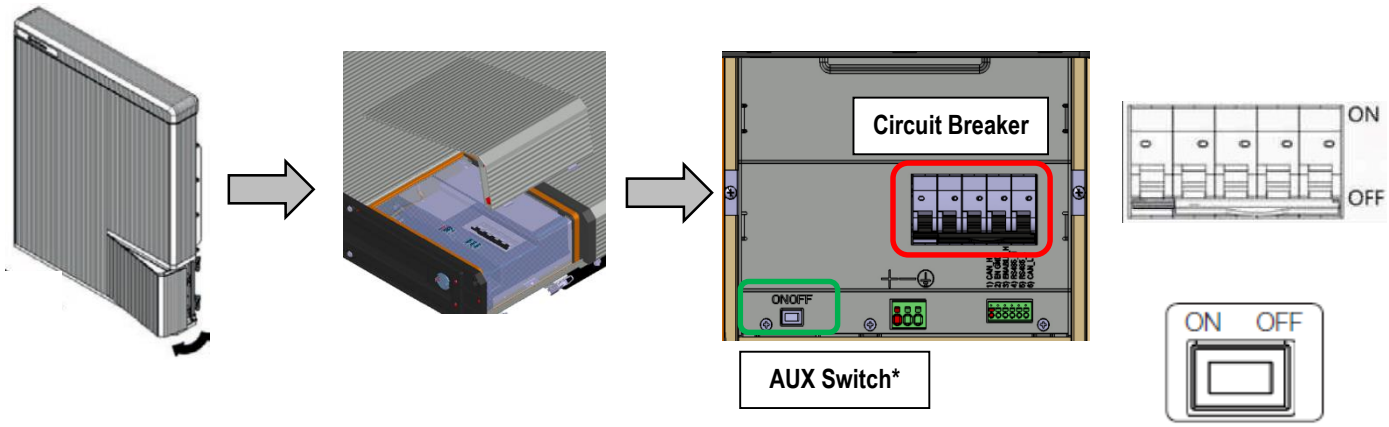
1) Serial Numbers for AUX Switch Product :

Model	Production Since	Battery Serial No. Since
RESU10H_Type-R Primary	Sep 17th 2018	R15563P3SSEG1**1809179**045
RESU10H_Type-R Secondary	Oct 10th 2018	R15563P3SSEG2**1810109**001
RESU10H_Type-C	May 10th 2019	R15563P3SDLT1**1905107**001

2) Sequence to Power On & Off

Turn ON Sequence	Turn OFF Sequence
1. AUX Switch ON 2. Circuit Breaker ON	1. Circuit Breaker OFF 2. AUX Switch OFF

* In case of Type-C product, there is only Circuit Breaker (No AUX Switch)



*** Type-C does not have an AUX switch**

Regional contact point of LG Chem Service

Country	Tel	E-mail
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,
9th 0f June, 2020
LG Chem HQ ESS Customer Service Team Leader
Sangyeol Heo

3.1 RESU LV (48V)

3.1.1 RESU6.5 (v2.7)

Features

RESU6.5 battery pack designed for photovoltaic systems is easily adaptable energy storage solution. With RESU Plus, RESU3.3/6.5/10 can be “cross-connected” with each other.

※ RESU Plus is an expansion kit specially designed for 48V models.
Number of expandable battery units : up to 2EA

❑ Easy and Flexible installation

: Easy to wall mount or install on floor

: Wide range of inverters available

❑ Proven Safety and 10 year warranty

❑ Compact size and space saving



Mechanical Characteristics		
Dimensions	Width	452 mm (17.8”)
	Height	656 mm (25.8”)
	Depth	120 mm (4.7”)
Weight		52 kg (114.6lbs)

3.1 RESU LV (48V)

3.1.1 RESU6.5 (v2.7)

Electrical Characteristics	
Total Energy Capacity	6.5 kWh
Usable Energy Capacity[1)]	5.9 kWh
Battery Capacity	126 Ah
Voltage Range	42.0 to 58.8 V_{DC}
Nominal Voltage	51.8 V_{DC}
Max. Charge/Discharge Current	100A
Peak Current[2)]	109.5A for 3 sec.
Max. Charge/Discharge Power[3)]	4.2kW
Peak Power[2)]	4.6kW for 3 sec.
Battery Pack Round-Trip Efficiency	>95% (under specific condition)
Communication Interface	CAN 2.0B
DC Disconnect	Circuit Breaker, Contactor, Fuse

Operating Conditions	
Installation Location	Indoor / Outdoor (Stand / Wall-Mounted)
Ingress Rating	IP55
Operating Temperature	-10 to 50°C
Operating Temperature (Recommended)	15 to 30°C
Storage Temperature	-30 to 60°C : ~7 days -20 to 45°C : ~ 6 months
Humidity	5% to 95%
Altitude	Max. 2,000m
Cooling Strategy	Natural Convection

Certification		
Safety	Cell	UL1642
	Battery Pack	CE / RCM / FCC / TUV (IEC 62619) / UL1973
Emissions		IEC61000-6-1, IEC61000-6-3
Hazardous Materials Classification		Class 9
Transportation		UN38.3

※ 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 90%). Actual usable energy at the AC output may vary by condition, such as the inverter efficiency and temperature.
2) Peak Current excludes repeated short duration (less than 3 sec.) of current pattern.
3) LG Chem recommends 0.3CP for maximum battery lifetime. Maximum power will vary due to temperature and SOC.

3.1 RESU LV (48V)

3.1.2 RESU10 (v1.6)

Features

RESU10 battery pack designed for photovoltaic systems is easily adaptable energy storage solution. With RESU Plus, RESU3.3/6.5/10 can be “cross-connected” with each other.

.

※ RESU Plus is an expansion kit specially designed for 48V models.
Number of expandable battery units : up to 2EA

❑ Easy and Flexible installation

: Easy to wall mount or install on floor

: Wide range of inverters available

❑ Proven Safety and 10 year warranty

❑ Compact size and space saving



Mechanical Characteristics		
Dimensions	Width	452 mm (17.8’’)
	Height	484 mm (19.0’’)
	Depth	227 mm (8.9’’)
Weight		75 kg (165.3lbs)

3.1 RESU LV (48V)

3.1.2 RESU10 (v1.6)

Electrical Characteristics	
Total Energy Capacity	9.8 kWh
Usable Energy Capacity[1)]	8.8 kWh
Battery Capacity	189 Ah
Voltage Range	42.0 to 58.8 V_{DC}
Nominal Voltage	51.8 V_{DC}
Max. Charge/Discharge Current	119A
Peak Current[2)]	166.7A for 3 sec.
Max. Charge/Discharge Power[3)]	5.0kW
Peak Power[2)]	7.0kW for 3 sec.
Battery Pack Round-Trip Efficiency	>95% (under specific condition)
Communication Interface	CAN 2.0B
DC Disconnect	Circuit Breaker, Contactor, Fuse

Operating Conditions	
Installation Location	Indoor / Outdoor (Stand / Wall-Mounted)
Ingress Rating	IP55
Operating Temperature	-10 to 45°C
Operating Temperature (Recommended)	15 to 30°C
Storage Temperature	-30 to 60°C : ~7 days -20 to 45°C : ~ 6 months
Humidity	5% to 95%
Altitude	Max. 2,000m
Cooling Strategy	Natural Convection

Certification		
Safety	Cell	UL1642
	Battery Pack	CE / RCM / FCC / TUV (IEC 62619) / UL1973
Emissions		IEC61000-6-1, IEC61000-6-3
Hazardous Materials Classification		Class 9
Transportation		UN38.3

※ 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 90%). Actual usable energy at the AC output may vary by condition, such as the inverter efficiency and temperature.
2) Peak Current excludes repeated short duration (less than 3 sec.) of current pattern.
3) LG Chem recommends 0.3CP for maximum battery lifetime. Maximum power will vary due to temperature and SOC

3.1 RESU LV (48V)

3.1.3 RESU13 (v1.2)

Features

RESU13 battery pack designed for photovoltaic systems is easily adaptable energy storage solution. With RESU Plus, RESU13 can be connected with the same model.

※ RESU Plus is an expansion kit specially designed for 48V models.
Number of expandable battery units : up to 2EA

- ❑ Back-up functionality supported
- ❑ Powerful Performance : World Best Energy Density
- ❑ Easy and Flexible installation
  - : Easy wall-mounted or floor-standing installation enable
  - : Diverse Matched Inverters Available
- ❑ BMS firmware can be updated easily by using SD Card



Mechanical Characteristics		
Dimensions	Width	452 mm (17.8”)
	Height	626 mm (24.7”)
	Depth	227 mm (8.9”)
Weight		98.5 kg (217.2lbs)

3.1 RESU LV (48V)

3.1.3 RESU13 (v1.2)

Electrical Characteristics	
Total Energy Capacity	13.0 kWh
Usable Energy Capacity[1)]	12.4 kWh
Battery Capacity	252 Ah
Voltage Range	42.0 to 58.8 V_{DC}
Nominal Voltage	51.8 V_{DC}
Max. Charge/Discharge Current	119A
Peak Current[2)]	166.7A for 3 sec.
Max. Charge/Discharge Power[)]	5.0kW
Peak Power[2)]	7.0kW for 3 sec.
Peak Power for backup mode	11.0kW for 3 sec.
Battery Pack Round-Trip Efficiency	>95% (under specific condition)
Communication Interface	CAN 2.0B
DC Disconnect	Circuit Breaker, Contactor, Fuse

Operating Conditions	
Installation Location	Indoor / Outdoor (Stand / Wall-Mounted)
Ingress Rating	IP55
Operating Temperature	-10 to 50°C
Operating Temperature (Recommended)	15 to 30°C
Storage Temperature	-30 to 60°C : ~7 days -20 to 45°C : ~ 6 months
Humidity	5% to 95%
Altitude	Max. 2,000m
Cooling Strategy	Natural Convection

Certification		
Safety	Cell	UL1642
	Battery Pack	CE / RCM / TUV (IEC 62619) / FCC
EMC		IEC61000-6-1, IEC61000-6-3
Hazardous Materials Classification		Class 9
Transportation		UN38.3

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

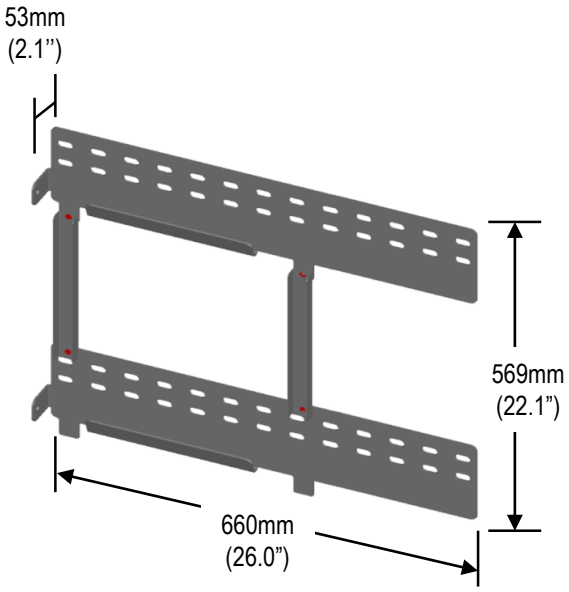
3.2 RESU HV (400V)

3.2.1 RESU10H_Type-R (v5.0)

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)

3.2 RESU HV (400V)

3.2.1 RESU10H_Type-R (v5.0)

Electrical Characteristics		
Total Energy Capacity		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)
Ingress Rating	IP55
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)

※ 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 0.3CP for maximum battery lifetime. Maximum power will vary due to temperature and SOC
3) Peak Current excludes repeated short duration (less than 10 sec. of current pattern).

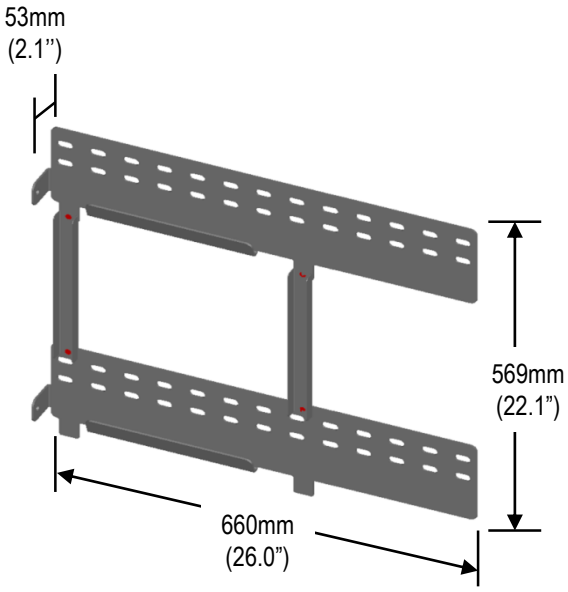
3.2 RESU HV (400V)

3.2.2 RESU10H_Type-C (v5.0)

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)

3.2 RESU HV (400V)

3.2.2 RESU10H_Type-C (v5.0)

Electrical Characteristics		
Total Energy Capacity		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)
Ingress Rating	IP55
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)

※ 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 0.3CP for maximum battery lifetime. Maximum power will vary due to temperature and SOC
3) Peak Current excludes repeated short duration (less than 10 sec. of current pattern).

Appendix 1 – RESU HV Battery Voltage & Fuse Check Manual

1.1 RESU Pack Voltage Checks

When certified installers are to check RESU battery pack voltage status to diagnose issue, please follow LG Chem's guideline below. Please contact LGCAU CS team before trying testing the battery or fuse.
(Tel. +61 1300 178 064 / Email. essserviceau@lgchem.com)

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 re main in operation or in the field.

1.1 RESU Pack Voltage Checks

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.

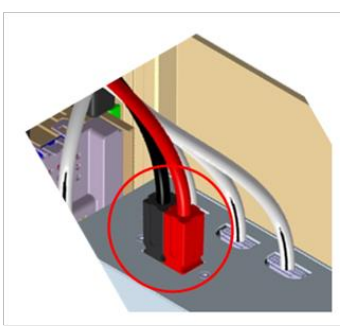
2) Remove the inside top cover user a 10mm socket or driver.

[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 re main in operation or in the field.

1.1 RESU Pack Voltage Checks

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 re main in operation or in the field.

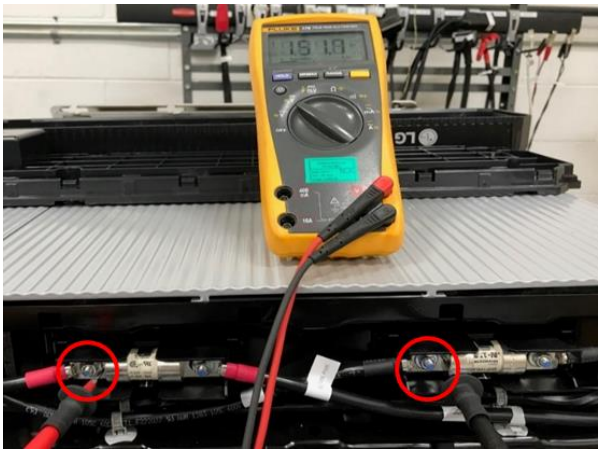
1.1 RESU Pack Voltage Checks

Sect. 3 Check Battery Pack Voltage

A. Auxiliary Switch

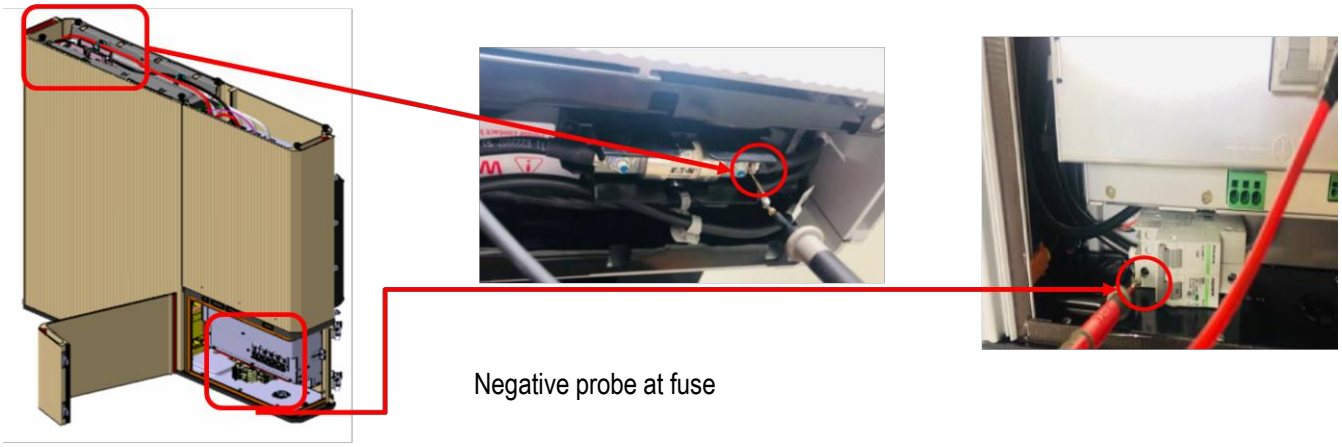
Warning

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



B. Disconnect Switch

- PROBE SETUP: set voltmeter to DC volts.



Negative probe at fuse

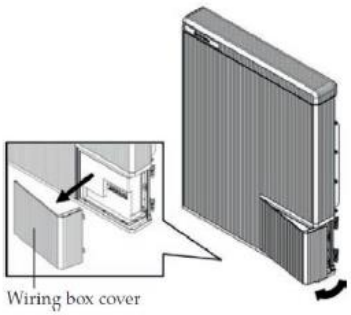
RESU10H pack voltage must remain above > 84V in order to re main in operation or in the field.

1.2 Check Fuse

When certified installers are to check RESU battery pack voltage status to diagnose issue, please follow LG Chem's guideline below. Please contact LGCAU CS team before trying testing the battery or fuse.
(Tel. +61 1300 178 064 / Email. essserviceau@lgchem.com)

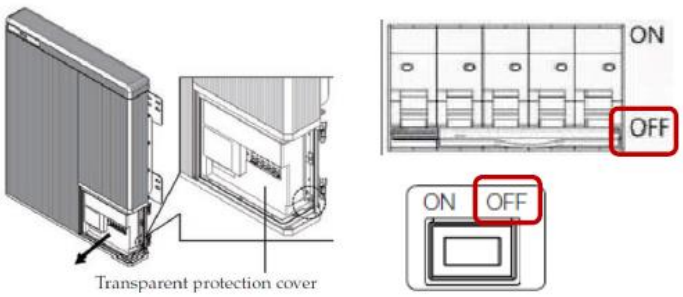
Check Fuse – Probe setup, set voltmeter to Ω resistance

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

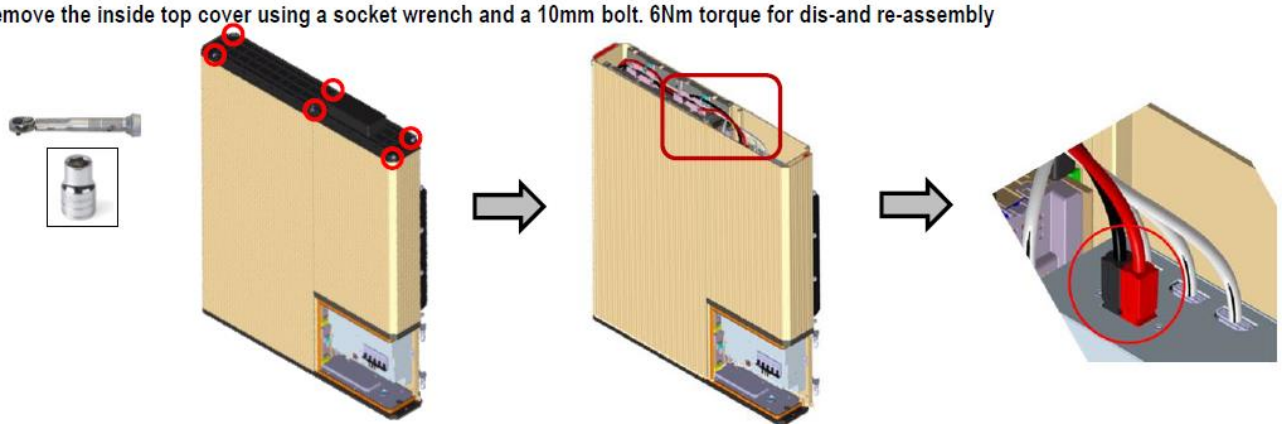


② Make sure the internal battery breaker(also the AUX power switch RESU10H-SEG models) is in OFF position.

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



1.2 Check Fuse

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.

Appendix 2 - RESU HV(Type-R) Forced Charging Guideline

2.1 RESU HV Forced Charging Process

Purpose

Forced (external) charging of RESU HV (“High Voltage”) batteries requires involvement of LG Chem Service Department.

LG Chem provides a specific charger and offers the necessary consultation by a defined process

Process

01. **Installer** identifies recharge demand by checking voltage and phoning LG Chem on 1300 178064
02. **LG Chem** confirms details and sends link for HV Loan Charger Agreement
03. **Installer** completes Agreement and attaches photo of voltage reading
04. **LG Chem** sends loan charger link to certification test form by the time of registration.
05. **Installer** attends site between 9am - 5pm Monday to Friday and contacts LG Chem by phone.
06. **LG Chem** supervises the use of the charger
07. **Installer** notifies LG Chem when charger is ready for return
08. **LG Chem** organises courier to collect the charger

Resources

ITEM	ENG
HV Loan Charger Agreement	

LG Chem Australia Service Department.

Appendix 2 – RESU HV(Type-R) Forced Charging Guideline

2.2 RESU HV Forced Charging Manual and Precaution

Introduction

This guide covers units with the AUX switch, before Disconnect Switch is applied,
with production serial numbers in the table below.

Product (Type-R)	Production Before	Battery Serial No.
RESU10H Primary	September 17th 2018	R15563P3SSEG11**809179**045
RESU10H Secondary	October 10th 2018	R15563P3SSEG21**810109**001

※ For Australia region,
Disconnect switch is applied to RESU HV(Type-R) models based on manufacturing date written below.
- RESU10H_Type-R Primary : September 21st, 2018 and forward
- RESU10H_Type-R Secondary : October 10th, 2018 and forward

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

2.2 RESU HV Forced Charging Manual and Precaution

Instructions to prevent deep discharged battery

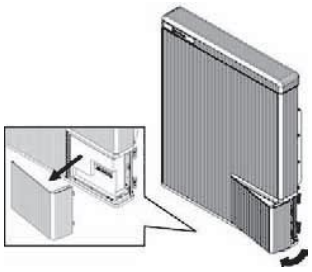
To prevent deep discharged battery, when the RESU battery is not in use after installation**, please turn off the Circuit Breaker(CB) first and then be sure to turn the AUX POWER switch off afterwards. Even if the Circuit Breaker(CB) is automatically tripped, the AUX POWER switch must be turned off manually.**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

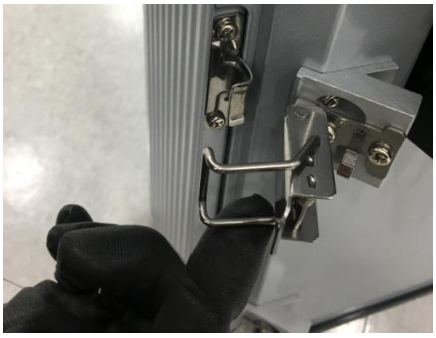
<How to turn off AUX POWER switch>

1) Turn OFF the inverter and system AC & DC isolators

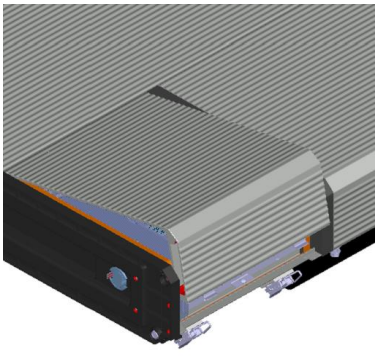
2) Open the RESU front door by releasing the 2 child proof latches on the right-hand side of the unit.

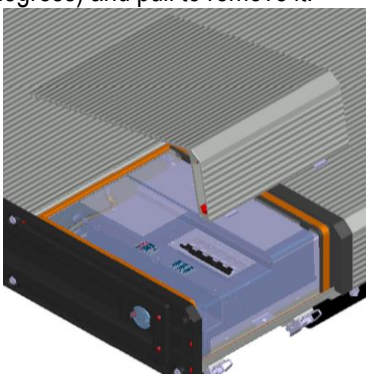




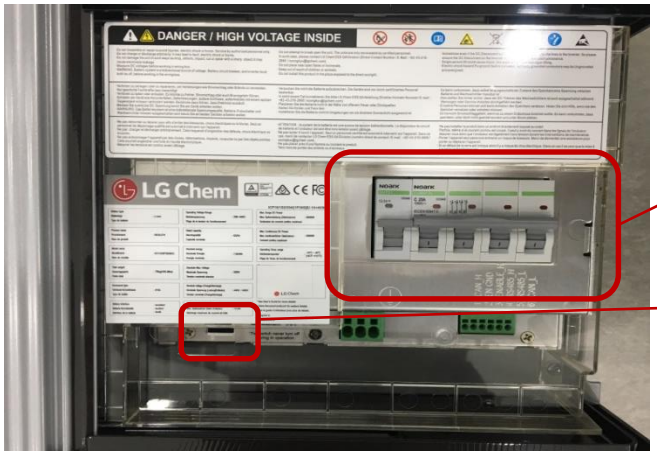


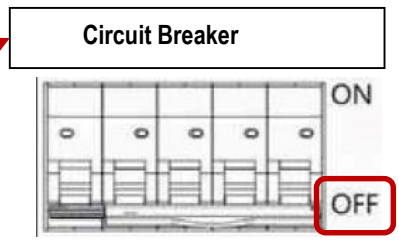
3) Open the wiring box cover (about 2~10 degress) and pull to remove it.

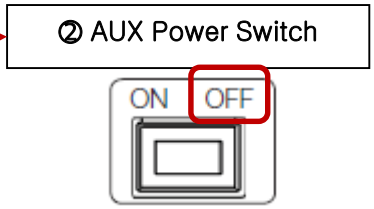




4) Turn off the Circuit Breaker (CB) first and then be sure AUX POWER switch off afterwards.







2.2 RESU HV Forced Charging Manual and Precaution

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.

RESU7H	RESU10H
60V	84V

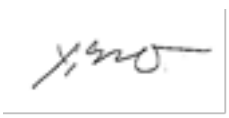
- LG Chem requires suitably qualified electricians to be trained with use of the battery charger prior to performing manually charging of RESUs and follow our strict procedures.
- Please contact LG Chem prior to any manually charging of a RESU battery.
- Only a charger supplied or approved by LG Chem 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



Appendix 3. RESU HV Product Update

3.1 RESU HV Deep Discharge Issue Solved

RESU HV(Type-R) Deep Discharge Issue Solved
(※ based on manufacturing date)
- RESU10H_Type-R : Sep, 2018 and forward

RESU HV(Type-C) Deep Discharge Issue Solved
(※ based on manufacturing date)
- RESU10H_Type-C : May, 2019 and forward

BEFORE:

Aux switch located near circuit breaker



AFTER:

Applied disconnect switch

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



Recording the Serial Number

S/N location

1. RESU3.3 / RESU6.5 / RESU10 / RESU 13

When you look from top

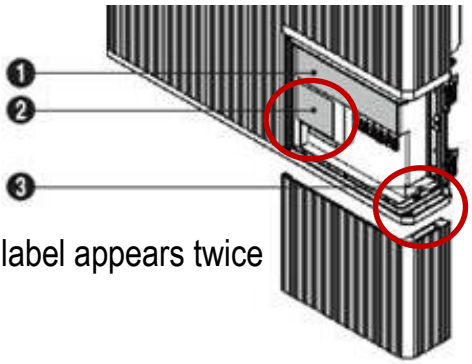


How to interpret S/N



Mfr Date: yy/mm/dd format

2. RESU7H / RESU10H



Same label appears twice



Mfr Date: yy/mm/dd format

DLT 1 = RESU10H_Type-C

SEG 1 = RESU7H/10H_Type-R Primary

SEG 2 = RESU10H_Type-R Secondary

Note 1. Take a **photo** of the s/n label for upload to Partner Portal

Note 2. RESU pack voltage should be checked by Distributor after 180 days from manufacture date.

Please read the installation manual thoroughly.

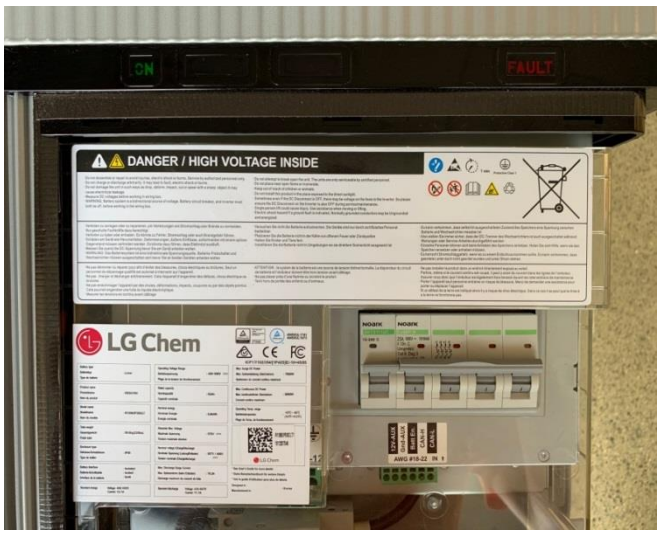
Appendix 5. Important NOTICE regarding Prevention of Remote F/W Update Failure of RESU HV (Type-C)

Dear Valued Customers,

LG Chem would like to thank you for choosing RESU and for your confidence in LG Chem as your battery supplier. As a market leader we have an ongoing commitment to provide a safe, reliable and high-quality residential storage solution and to prevent failure from remote firmware updates. This notice provides information necessary to prevent failures related to remote firmware updates. We are seeing an increase of RESU HV(Type-C) batteries produced prior to Jun 2019(RESU10H) and Dec 2019(RESU7H) that have become damaged when SMA Sunny Boy Storage displays “battery not configured” due to a firmware update failure during commissioning.

Notice

When you proceed initial commissioning of the battery system, the SMA inverter will detect firmware and, if necessary, attempt to update remote via Sunny Portal.
Once the update is started, firstly the GREEN (ON) LED will blink. This is firmware update signal of the DC-DC converter. Next, GREEN(ON) and RED(FAULT) LED are turned on together. This is firmware update signal of the BMS.



If RED(FAULT) LED is turned on, installer can easily assume a fault, and may attempt to shut down or reset the battery system. RED(FAULT) LED is **not** a real fault situation, it is a normal firmware update indicator. If the battery is turned off or reset during firmware update, it will not automatically recover even when turned on again. Action to service or replace the unit must be taken by LG Chem technician.

Therefore, please **do not turn off or reset the battery during firmware update**. Please wait until the firmware update is completed and the indicator lights change back GREEN(ON) LED only. It will take about 20~40 minutes to complete the F/W update. If this advice is not followed and the unit must be serviced or replaced by LG Chem, a service fee may be charged.

For your information, Updated firmware are applied to RESU10H(Type-C) batteries since May, ’19 and RESU7H(Type-C) batteries since Nov, ’19. This firmware includes only GREEN(ON) LED blinking regardless of the DCDC converter and BMS.
This guide covers units with production serial numbers in the table below.

Product (Type-C)	Production Before	Battery Serial No.
RESU10H	May 10th 2019	R15563P3SDLT11**905107**001
RESU7H	Nov 27th 2019	EH111063P3S3**191127**9001

Regional contact point of LG Chem Service

Country	Tel	E-mail
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,
17th of April, 2020
LG Chem HQ ESS Customer Service Team Leader
Sangyeol Heo