LG Energy Solution

LG Home Battery

PRODUCT BOOK

Essential Information for Certified Installers

RESU

RESU Prime / LV / HV

10th Dec, ’21 (v2.0)

About this product book

This product book includes essential information for RESU Low Voltage (LV), High Voltage (HV), Modular, and the RESU Prime, RESU FLEX 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 Energy Solution will share the updated product book to our RESU Partners.

LG Energy Solution RESU Product Guide

10.12.2021

Rev	Date	Writer	Updates
Version1.7	30.06.2020	Owen Kang	RESU LV/HV Compatible Inverter List Updated (to ver8.4/ver1.8)
			Important Reminder regarding Prevention of Remote F/W Update Failure of RESU HV (Type-C) updated
			How to read RESU S/N added
			Important Reminder regarding Prevention of Battery Fuse Blown of RESU HV updated
			More Independence: New Backup Option for RESU HV batteries (Blog article) added
Version1.8	13.11.2020	Owen Kang	RESU LV/HV Compatible Inverter List Updated (to ver8.6/ver2.0)
			RESU3.3 / RESU7H_DLT datasheet, Blog article deleted
			Contact point for LG Chem Service in Italy changed
Version1.9	31.05.2021	Jennifer Hwang Owen Kang	Introduction of RESU Prime added (Newsletter / Improvements / Datasheet / Compatible Inverter List)
			Notification for the model change from RESU13 to RESU12 added (Official notice / RESU12 Datasheet)
			RESU LV/HV/10M Compatible Inverter List Updated (to ver9.0 / ver2.3 / ver1.9)

LG Energy Solution RESU Product Guide

10.12.2021

Rev	Date	Writer	Updates
Version2.0	10.12.2021	Jennifer Hwang Owen Kang	Introduction of RESU FLEX added
			RESU Prime / LV / HV Compatible Inverter List Updated (to ver1.1 / ver9.4 / ver2.4) & note on product discontinuation added
			Manual of battery installation mass upload on ESS Battery Website added (Appendix)

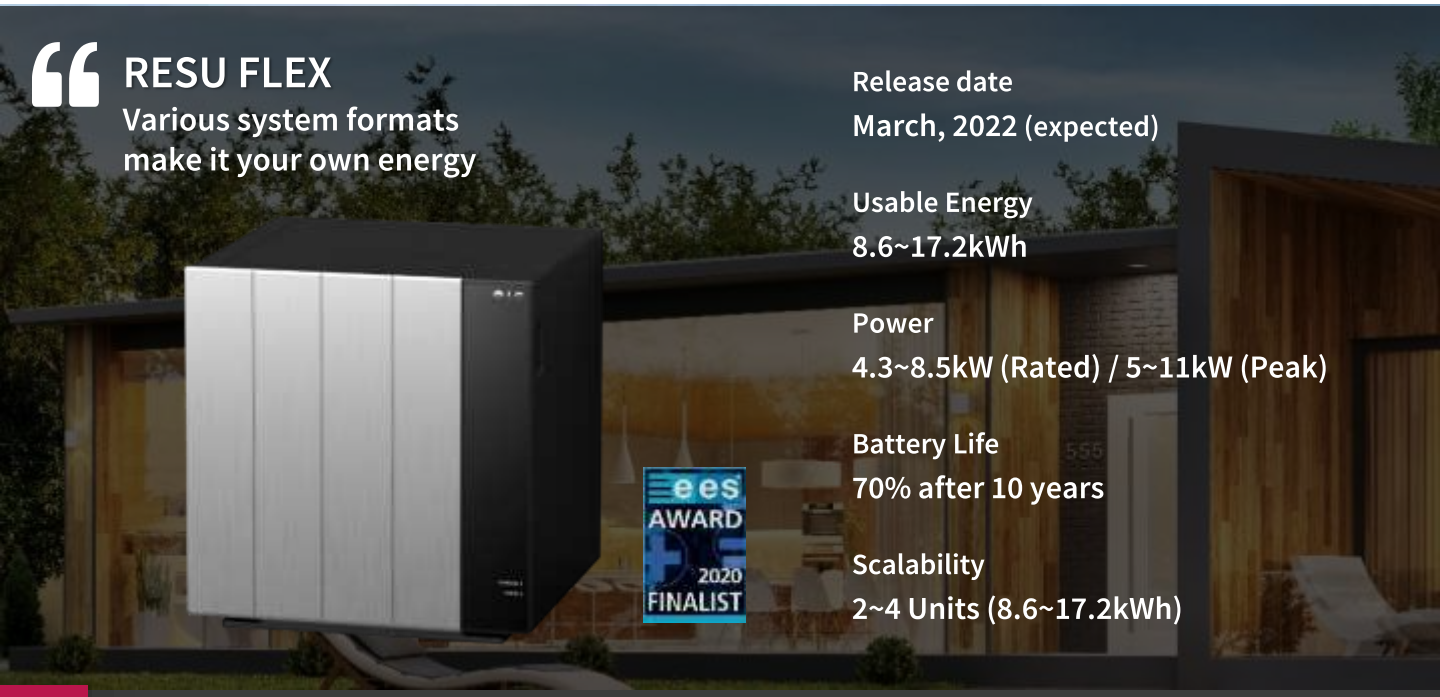
Contents

Contents

1. Introduction of RESU FLEX

1.1. Introduction to RESU FLEX

LG Energy Solution's next-generation product, RESU FLEX, will be officially released in the market in the 1st Quarter of 2022. More information and product trainings will be provided before the market release.



Release date
March, 2022 (expected)

Usable Energy
8.6~17.2kWh

Power
4.3~8.5kW (Rated) / 5~11kW (Peak)

Battery Life
70% after 10 years

Scalability
2~4 Units (8.6~17.2kWh)

Key Features

Maximum Flexibility in Energy and Installation
Battery units can be connected in many different ways while offering an optimal capacity for each household

Higher Performance, Wider Applications
The capacity range of 8.6~17.2kWh and compatibility with high power inverters allow wider applications from home to small C&U

Remote Battery Monitoring
Real time battery status monitoring and early diagnosis with RESU Monitor, LG Energy Solution's remote battery monitoring system

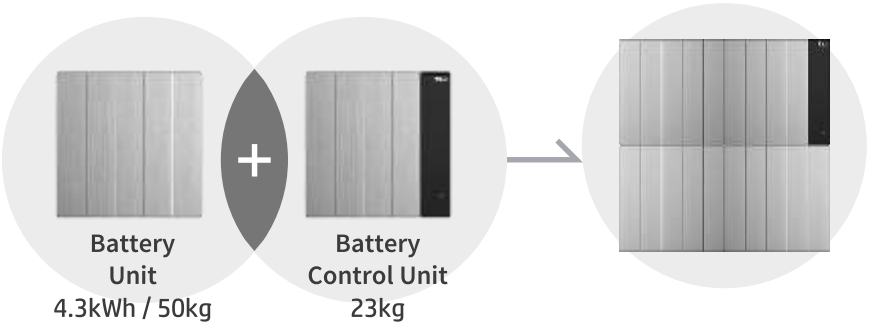
On-the-Spot Maintenance
The detachable control unit can be replaced on site, saving maintenance time and cost

Compatible Inverters KOSTAL Fronius SMA (planned)

1. Introduction of RESU FLEX

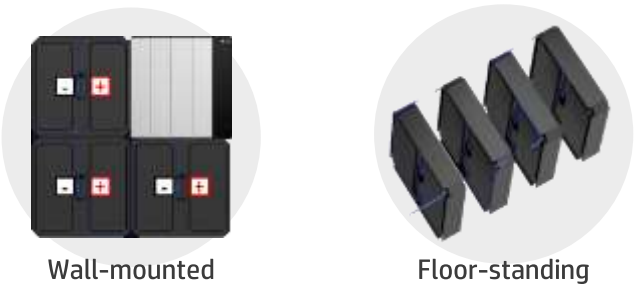
✓ INSTALLATION FLEXIBILITY

1 Installer Sufficient



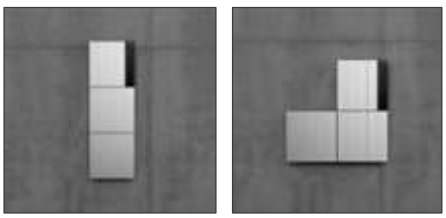
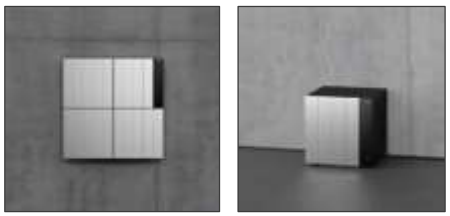
Each component can be carried by a single installer

Easy Installation



Both wall-mounted and floor-standing are available

✓ All available formats of wall-mounting will be introduced in our RESU FLEX installation manual.

System Formats	Configuration	Installation Examples
Light • An affordable solution • Shaving peak hours' loads in daily use • Back up critical loads in emergency	• BCU + 2 Modules • 8.6kWh	
Standard • A powerful solution • Cover energy consuming devices (Heat pumps, EVs) • Back up entire home	• BCU + 3 Modules • 12.9kWh	
Complete • A versatile solution with wide application from home to small C&I	• BCU + 4 Modules • 17.2kWh * can parallel up to 8 Modules	

1.3. RESU FLEX Datasheet (1/2)

Electrical Characteristics				
Usable Energy[1] @77°F(25°C)		8.6 kWh	12.9 kWh	17.2 kWh
Voltage Range	Charge	192 V	288 V	384 V
	Discharge	265.6 V	398.4 V	531.2 V
Max. Charge/Discharge Current		22A	22A	22A
Max. Charge/Discharge Power		4.3 kW	6.5 kW	8.5 kW
Peak Power (only discharging, for 3 sec.)[2]		5 kW	7kW	11 kW
Communication Interface		RS485, CAN(TBD)		
DC Protection		Circuit Breaker		
Connection Method		Spring Type Connector		
User interface		LEDs for Normal and Fault operation		
Protection Features		Over Voltage / Over Current / short circuit		
Scalability (Total Energy, Max. Charge/Discharge Power)		Max. 2 in parallel(TBD) (34.4 kWh @77°F (25°C))		

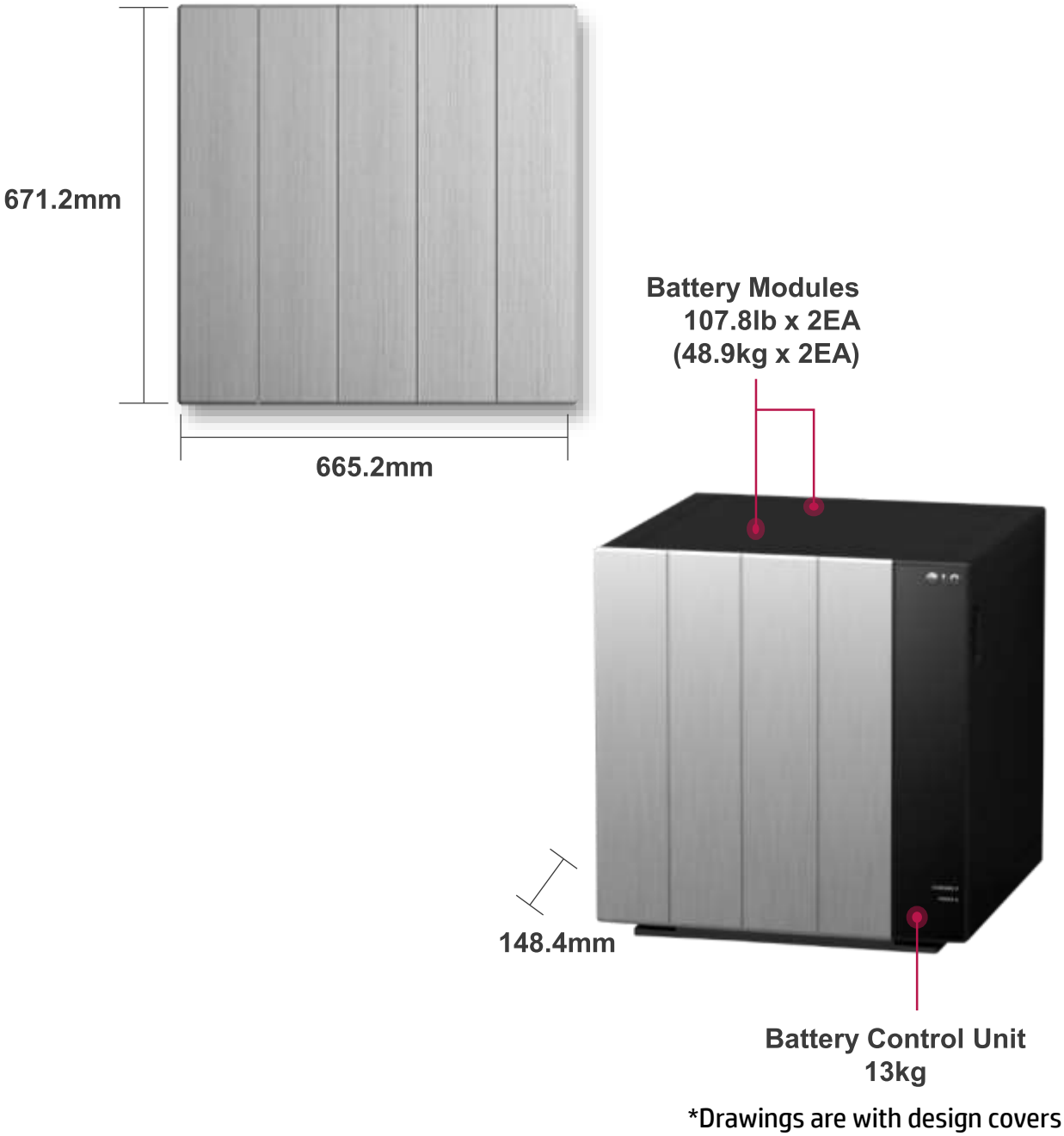
Operating Conditions		
Installation Location		Indoor / Outdoor
Installation Type		Stand / Wall Mount
Operating Temperature	Charge	14 ~ 122°F (-10 ~ 50°C)
	Discharge	14 ~ 122°F (-10 ~ 50°C)
Operating Temperature (Recommended)		68 ~ 86°F (20 ~ 30°C)
Storage Temperature (At shipping state)		-22 to 140°F (-30 to 60°C), acceptable for 7 days in total -4 to 113°F (-20 to 45°C), acceptable for the first 6 months -4 to 86°F (-20 to 30°C), acceptable for 7th month~12th month
Humidity		5%~95%
Altitude		Max. 6,562ft (2,000m)
Cooling Strategy		Natural Convection

Certification & Reliability		
Safety	Cell	UL1642, IEC62619
	Battery Pack	CE, RCM,UL1973, IEC62619, IEC62477-1
EMC		FCC, IEC61000-6-1/-2/-3
Transportation		UN38.3 (UNDOT)
Hazardous Materials Classification		Class 9
Ingress Rating		IP55

※ Test Conditions - Temperature 77°F (25°C), at the beginning of life
※ Usable Energy is measured under specific condition from LGC(0.3CCCV/0.3CC)
※ Product specification may change without notice
1) DOD 100%
2) Peak Current excludes repeated short duration (less than 10 sec. of current pattern).

1.3. RESU FLEX Datasheet (2/2)

Mechanical Characteristics		*Without design cover
Dimensions	Width	665.2 mm
	Height	671.2 mm
	Depth	148.4 mm
Weight		48.9 kg



*Drawings are with design covers

2. Notification of model change from RESU13 to RESU12

2.1. Official notice for the model change from RESU13 to RESU12

Dear Valued Customers,

We sincerely thank you for the strong partnership to cultivate Residential Energy Storage market with LG Energy Solution.

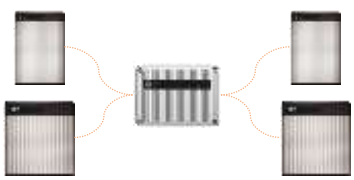
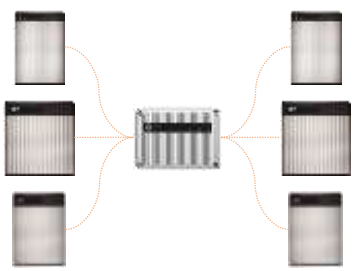
We would like to officially inform you that LG Energy Solution will be changing the current RESU13 product to a succeeding model named RESU12.

The decision was made to provide expandability and compatibility of RESU12 with other RESU LV models, RESU6.5 and RESU10, through the connection of RESU Plus. In order to do so, the synchronization of SOC-range of RESU12 with RESU6.5 and RESU10 was necessary. For your information, RESU13 did not support this function and only able to be expanded with another RESU13.

The succeeding model RESU12 will maintain the same performance warranty level as the RESU13.

The succeeding model RESU12 is expected to be available in the market from early to mid September. For further details, LG Energy Solution will share updates to the customers once more.

✓ Changes in product specifications

Change list	As-Is : RESU13	To-be : RESU12
Usable DoD	95% (SOC: 3~98%)	90% (SOC: 5~95%)
Useable Energy	12.39kWh	11.7kWh
Max charge voltage	58.2V	57.7V
Available combinations using RESU Plus	 RESU6.5 – RESU6.5 RESU6.5 – RESU10 RESU10 – RESU10  **RESU13 – RESU13**	 RESU6.5 – RESU6.5 RESU6.5 – RESU10 RESU10 – RESU10 **RESU12 – RESU12** **RESU6.5 – RESU12** **RESU10 – RESU12**

Best Regards,
Stefan Krokowski
Head of Sales & Marketing - Residential ESS (EMEA)

2. Notification of model change from RESU13 to RESU12

2.2. RESU12 Datasheet (v1.3)

Features

RESU12 battery pack designed for photovoltaic systems is easily adaptable energy storage solution. With RESU Plus, RESU3.3/6.5/10 /12 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

❑ Emergency Power Back-up

❑ 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	626 mm (24.7”)
	Depth	227 mm (8.9”)
Weight		98.5 kg (217.2lbs)

2. Notification of model change from RESU13 to RESU12

2.2. RESU12 Datasheet (v1.3)

Electrical Characteristics	
Total Energy Capacity	13.1 kWh
Usable Energy Capacity[1)]	11.7 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[3)]	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)
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 / IEC 62619 / FCC / UL1973
EMC		IEC61000-6-1, IEC61000-6-3
Hazardous Materials Classification		Class 9
Transportation		UN38.3
Ingress Rating		IP55

※ Test Conditions - Temperature 25℃, at the beginning of life
※ Total/Usable 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 Energy Solution recommends 0.3CP for maximum battery lifetime. Maximum power will vary due to temperature and SOC

2. Notification of model change from RESU13 to RESU12

2.3. Compatible storage Inverters with RESU12

Following list of Inverters are currently compatible with LG Energy Solution home battery, RESU 12.

※ More compatible inverters will be added.

INVERTER			BATTERY	REMARK
Brand	Model	Software Version*	RESU12 (5kW)	
SMA	Sunny Island 3.0M(EU)	3.110		*Cannot use in Back-up Mode *Exclusively, RESU10 and RESU13 can be used in Back-up Mode
	Sunny Island 4.4M(EU)	3.00.03.R	○	
	Sunny Island 6.0H(EU)	3.00.03.R	○	*Cannot use in Back-up Mode *Exclusively, RESU13 can be used in Back-up Mode
GOODWE	GW3048D-ES GW3648D-ES GW5048D-ES	FW : 15158	○	*Can use in Back-up Mode under the condition 2) above
	GW3048-EM GW3648-EM GW5048-EM	FW : 06068	○	
	GW3600S-BP GW5000S-BP	FW : 05058	○	
WESTERN CO	Leonardo Pro Ⅱ 3000/48 Li	FW: 2648433 WRD: 2.1, WBM: 1A	○	*Cannot use in Back-up Mode *Exclusively, RESU13 can be used in Back-up Mode
CHK 科技 solis	S5-EH1P3K-L S5-EH1P3.6K-L S5-EH1P4.6K-L S5-EH1P5K-L S5-EH1P6K-L	320020	○	*Can use in Back-up Mode under the condition 2) above
	RHI-3K-48ES-5G RHI-3.6K-48ES-5G RHI-4.6K-48ES-5G RHI-5K-48ES-5G RHI-6K-48ES-5G	320020	○	*Can use in Back-up Mode under the condition 2) above

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

December. 2021

3. Compatible Inverter List

3.1. Compatible storage Inverters with RESU Prime (v1.1)

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

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.

Following list of Inverters are currently compatible with LG Energy Solution home battery, RESU Prime Series.

[EU]

※ More compatible inverters will be added.

INVERTER			BATTERY		REMARK
Brand	Model	Software Version 1)	RESU10H Prime	RESU16H Prime	
solaredge	SE2200H SE3000H SE3500H SE3680H SE4000H SE5000H SE6000H	4.13 or above	○	○	
SMA	SBS3.7 SBS5.0 SBS6.0	3.12.23.R or above	○	○	- Can use in Back-up Mode - Multi Battery mode will be available soon - Battery software package version : 23.12.0.R or above

1) Only compatible with the software versions which are mentioned above.

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3. Compatible Inverter List

3.2. Compatible storage Inverters with RESU LV (v9.4)

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

1) Battery 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.

Following list of Inverters are currently compatible with LG Energy Solution home battery, RESU LV Series.

※ More compatible inverters will be added.

INVERTER			BATTERY					REMARK
Brand	Model	Software Version*	RESU3.3 (3kW)	RESU6.5 (4.2kW)	RESU10 (5kW)	RESU12 (5kW)	RESU13 (5kW)	
SMA	Sunny Island 3.0M(EU)	3.110	○	○	○			*Cannot use in Back-up Mode *Exclusively, RESU10 and RESU13 can be used in Back-up Mode
	Sunny Island 4.4M(EU)	3.00.03.R	○	○	○	○	○	
	Sunny Island 6.0H(EU)	3.00.03.R		○	○	○	○	*Cannot use in Back-up Mode *Exclusively, RESU13 can be used in Back-up Mode
SUNGROW	SH5K SH5K+	SH5K_V11_V1_A SH5K-V13_FW_V13	○	○	○			
	SH3K6 SH4K6 SH5K-20 SH5K-30	SH3K6-V11_FW_V28 SH4K6-V11_FW_V28 SH5K-20_FW_V57 SH5K-30_V01_V006	○	○	○		○	
SOLAX	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 ISS 1Play 6TL ISS 1Play 3TL M ISS 1Play 6TL M	FW : ABH1007_B 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	○	○	○	○	○	*Can use in Back-up Mode under the condition 2) above
	GW3048-EM GW3648-EM GW5048-EM	FW : 06068	○	○	○	○	○	
	GW3600S-BP GW5000S-BP	FW : 05058		○	○	○	○	

* RESU3.3 is no longer available in the market.
* RESU13 has been discontinued and changed to the succeeding model named RESU12
* Only compatible with the software versions which are mentioned above.

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3. Compatible Inverter List

3.2. Compatible storage Inverters with RESU LV (v9.4)

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

1) Battery 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.

Following list of Inverters are currently compatible with LG Energy Solution home battery, RESU LV Series.

※ More compatible inverters will be added.

INVERTER			BATTERY					REMARK
Brand	Model	Software Version*	RESU3.3 (3kW)	RESU6.5 (4.2kW)	RESU10 (5kW)	RESU12 (5kW)	RESU13 (5kW)	
SELECTRONIC	SPMC481 SPMC482	SP Link : 11.15.7006	○	○	○		○	*Exclusively, can use in Off-Grid
WESTERN CO	Leonardo Pro Ⅱ 3000/48 Li	FW: 2648433 WRD: 2.1, WBM: 1A	○	○	○	○	○	*Cannot use in Back-up Mode *Exclusively, RESU13 can be used in Back-up Mode
solaredge	SE 5K-RWS SE 7K-RWS SE 8K-RWS SE 10K-RWS	4.7.28	○	○	○		○	*Cannot use in Back-up Mode
CE 科技 solis	S5-EH1P3K-L S5-EH1P3.6K-L S5-EH1P4.6K-L S5-EH1P5K-L S5-EH1P6K-L	320020	○	○	○	○	○	*Can use in Back-up Mode under the condition 2) above
	RHI-3K-48ES-5G RHI-3.6K-48ES-5G RHI-4.6K-48ES-5G RHI-5K-48ES-5G RHI-6K-48ES-5G	320020	○	○	○	○	○	*Can use in Back-up Mode under the condition 2) above
VIESMANN	Hybrid Inverter 3.0-1 Hybrid Inverter 3.6-1 Hybrid Inverter 5.0-1	0909A	○	○	○		○	*Can use in Back-up Mode under the condition 2) above
SOFAR SOLAR	ME3000SP	V2.80 or above	○	○	○		○	*Can use in Back-up Mode under the condition 2) above
	HYD 3000-ES HYD 3600-ES HYD 4000-ES HYD 4600-ES HYD 5000-ES	V2.70 or above	○	○	○		○	*Can use in Back-up Mode under the condition 2) above
	HYD 3000-EP HYD 3680-EP HYD 4000-EP HYD 4600-EP HYD 5000-EP(Australia) HYD 5500-EP HYD 6000-EP	V01000 or above	○	○	○		○	*Can use in Back-up Mode under the condition 2) above

* RESU3.3 is no longer available in the market.
* RESU13 has been discontinued and changed to the succeeding model named RESU12
* Only compatible with the software versions which are mentioned above.

December. 2021

3. Compatible Inverter List

3.3. Compatible storage Inverters with RESU HV (v2.3)

All RESU installations require a compatible inverter. Using a non-approved inverter will void the warranty provided by LG Energy Solution. 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.

Following list of Inverters are currently compatible with LG Energy Solution home battery, RESU HV Series.

※ More compatible inverters will be added.

INVERTER			BATTERY				REMARK
Brand	Model	Software Version*	RESU7H		RESU10H		
			Type C	Type R	Type C	Type R	
SMA	Sunny Boy Storage 2.5	2.04.24.R or above	○		○		- Cannot use in Back-up Mode
	Sunny Boy Storage 3.7 Sunny Boy Storage 5.0 Sunny Boy Storage 6.0	1.50.14.R or above	○		○		- Can use in Back-up Mode - SPS(Secure Power Supply) mode is supported
	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	SE5000-RWS / SE6000-RWS (EU)	3.24.68 or above		○			- Can use in Back-up Mode - RESU10H can be expanded up to 2 units
	SE7600A-USS2 / SE3800A-USS2 (US)					○	
	SE5000-RWS2 / SE6000-RWS2 (EU)					○	
	SE5000-AUS2 / SE6000-AUS2 (AU)			○		○	
	SE2000H ~ SE10000H with SESTI-S4			○		○	- Can use in AC coupled - Cannot use in Back-up Mode
	SE3000H-US ~ SE7600H-US with Backup Interface (BUI)	4.13.40 or above				○	
Fronius	Symo Hybrid 3.0-3-S Symo Hybrid 4.0-3-S Symo Hybrid 5.0-3-S	1.11.3-2 or above		○		○	- Cannot use in Back-up Mode
HUAWEI	SUN2000- 2KTL-L1 (EU/AU) SUN2000- 3KTL-L1 (EU/AU) SUN2000- 3.68KTL-L1 (EU/AU) SUN2000- 4KTL-L1 (EU/AU) SUN2000- 4.6KTL-L1 (EU/AU) SUN2000- 5KTL-L1 (EU/AU)	V100R001C00SPC329 or above		○		○	- In case of RESU10H, Charge/Discharge Power is limited to 3.5kW
	SUN2000-3.8KTL-USL0 (NA) SUN2000-5KTL-USL0 (NA)	V100R001C10SPC107 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

* RESU Gen2 HV batteries have been discontinued from July '21.
* Only compatible with the software versions which are mentioned above.

October. 2021

3. Compatible Inverter List

3.3. Compatible storage Inverters with RESU HV (v2.3)

All RESU installations require a compatible inverter. Using a non-approved inverter will void the warranty provided by LG Energy Solution. 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.

Following list of Inverters are currently compatible with LG Energy Solution home battery, RESU HV Series.

※ More compatible inverters will be added.

INVERTER			BATTERY				REMARK
Brand	Model	Software Version*	RESU7H		RESU10H		
			Type C	Type R	Type C	Type R	
solis	RHI-1P5K-HVES-5G RHI-1P6K-HVES-5G RHI-1P7K-HVES-5G RHI-1P7.6K-HVES-5G RHI-1P8K-HVES-5G RHI-1P9K-HVES-5G RHI-1P10K-HVES-5G	V040006				O	- Can use in Back-up Mode *Exclusively, can use in Off-Grid with PV connected
SUNGROW	SH5.0RT SH6.0RT SH8.0RT SH10RT	ARM_SAPPHIRE-H_V11_V01_A MDSP_SAPPHIRE-H_V11_V01_A or above		O		O	- Can use in Back-up Mode
Growatt	MIN 2500TL-XH MIN 3000TL-XH MIN 3600TL-XH MIN 4200TL-XH MIN 4600TL-XH MIN 5000TL-XH MIN 6000TL-XH	ALAA0501 ZAbc0001				O	- Cannot use in Back-up Mode

* RESU Gen2 HV batteries have been discontinued from July '21.
* Only compatible with the software versions which are mentioned above.

October. 2021

3. Compatible Inverter List

3.4. Compatible storage Inverters with RESU 10M (v1.9)

All RESU installations require a compatible inverter.
Using a non-approved inverter will void the warranty provided by LG Energy Solution.
See below important instructions when installing and using RESU 10M.

1) Battery 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.

Following list of Inverters are currently compatible with LG Energy Solution home battery, RESU 10M.

※ More compatible inverters will be added.

INVERTER			BATTERY	REMARK
Brand	Model	Software Version*	RESU10M	
SMA	Sunny Boy Storage 3.7	3.00.20.R or above	○	- Can use in Back-up Mode - SPS (Secure Power Supply) mode is supported

* Only compatible with the software versions which are mentioned above.
* RESU10M has been discontinued from July '21.

Feb. 2021

4. Datasheet

4.1. RESU Prime Datasheet

4.1.1 RESU 16H Prime (v3.8)

Features

❑ World's Largest Capacity

: Whole home backup with world's largest capacity, 16kWh~32kWh

❑ Quicker & Easier Handling

: The modular design provides easier transportation, handling, and installation

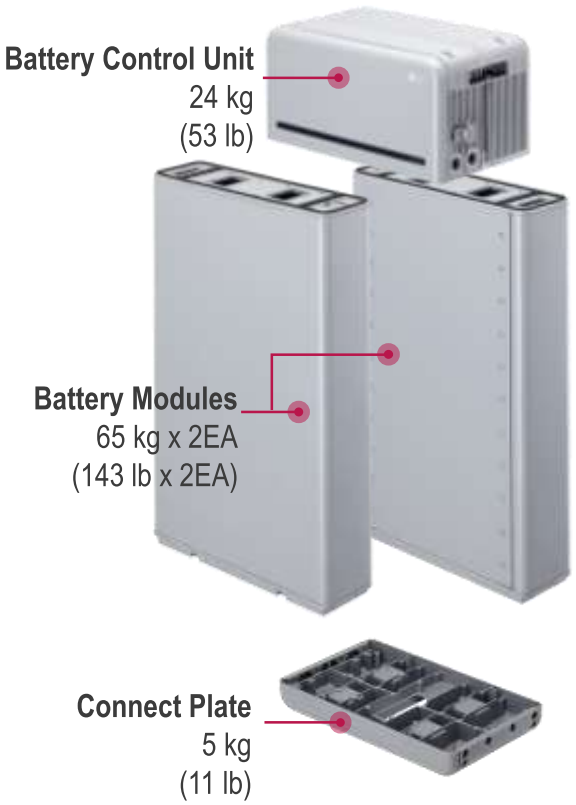
❑ Remote Battery Monitoring

: Real time battery status monitoring and early diagnosis with RESU Monitor*

(* LG Energy Solution's remote battery monitoring system)

❑ On-the-Spot Maintenance

: The detachable Control Unit can be replaced on site, saving maintenance time and cost



Mechanical Characteristics		
Dimensions	Width	504 mm (19.8”)
	Height	1086 mm (42.8”)
	Depth	295 mm (11.6”)
Weight		159 kg (350 lb)

4. Datasheet

4.1. RESU Prime Datasheet

4.1.1 RESU 16H Prime (v3.8)

Electrical Characteristics		
Usable Energy1)		16.0 kWh @77°F (25°C)
Voltage Range	Charge	420 ~ 450 V_{DC}
	Discharge	350 ~ 410V_{DC}
Max. Charge/Discharge Current		20A@350V
Max. Charge/Discharge Power		7 kW
Peak Power (only discharging)2)		11 kW for 10 sec.
Peak Current (only discharging)		32.8A for 10 sec.
Communication Interface		RS485/CAN
DC Protection		Circuit Breaker, Fuse, DCDC converter
Connection Method		Spring Type Connector
User interface		LEDs for Normal and Fault operation
Protection Features		Over Voltage / Over Current / short circuit / Reverse Polarity
Scalability (Total Energy, Max. Charge/Discharge Power)		Max. 2 in parallel (32.0 kWh @77°F (25°C), 14kW)
Operating Conditions		
Installation Location		Indoor / Outdoor, Stand only
Operating Temperature	Charge	14 ~ 122°F (-10 ~ 50°C)
	Discharge	-4 ~ 122°F (-20 ~ 50°C)
Operating Temperature (Recommended)		59 ~ 86°F (15 ~ 30°C)
Storage Temperature (At shipping state)		-22 to 140°F (-30 to 60°C), acceptable for 7 days in total -4 to 113°F (-20 to 45°C), acceptable for the first 6 months -4 to 86°F (-20 to 30°C), acceptable for 7th month~12th month
Humidity		5%~95%
Altitude		Max. 6,562ft (2,000m)
Cooling Strategy		Natural Convection
Certification		
Safety	Cell	UL1642
	Battery Pack	UL1973 / CE / RCM / IEC 62619
Emissions		FCC
Hazardous Materials Classification		Class 9
Transportation		UN38.3 (UNDOT)
Ingress Rating		IP55

※ Test Conditions - Temperature 77°F (25°C), at the beginning of life

※ Usable Energy is measured under specific condition from LGC(0.3CCCV/0.3CC)

※ Product specification may change without notice

1) DOD 100%. DC/DC converter one way efficiency 97.5%. Ambient 77°F (25°C)

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

4. Datasheet

4.1. RESU Prime Datasheet

4.1.2 RESU 10H Prime (v3.8)

Features

❑ Optimal Capacity for Daily Use

: Enough capacity to back up essential loads during peak time and emergency outages

❑ Quicker & Easier Handling

: The modular design provides easier transportation, handling, and installation

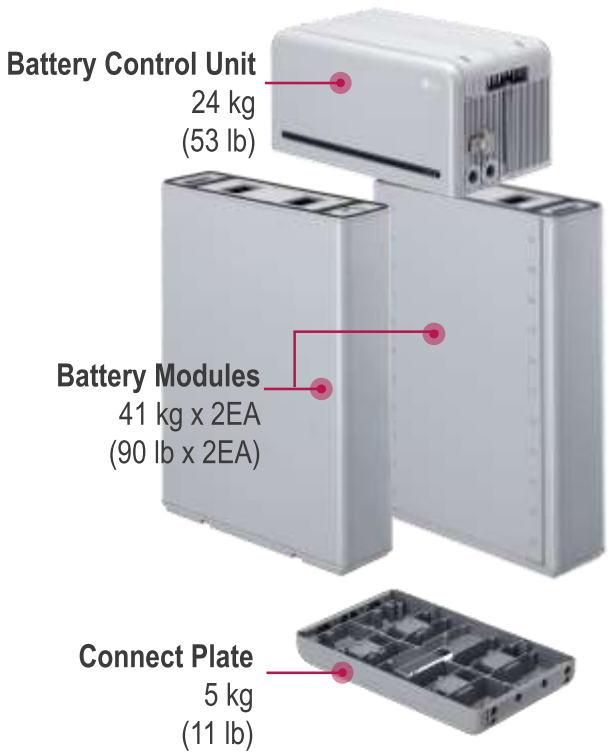
❑ Remote Battery Monitoring

: Real time battery status monitoring and early diagnosis with RESU Monitor*

(* LG Energy Solution's remote battery monitoring system)

❑ On-the-Spot Maintenance

: The detachable Control Unit can be replaced on site, saving maintenance time and cost



Mechanical Characteristics		
Dimensions	Width	504 mm (19.8")
	Height	817 mm (32.2")
	Depth	295 mm (11.6")
Weight		111 kg (244 lb)

4. Datasheet

4.1. RESU Prime Datasheet

4.1.2 RESU 10H Prime (v3.8)

Electrical Characteristics		
Usable Energy1)		9.6 kWh @77°F (25°C)
Voltage Range	Charge	420 ~ 450 V_{DC}
	Discharge	350 ~ 410V_{DC}
Max. Charge/Discharge Current		14.3A@350V
Max. Charge/Discharge Power		5kW
Peak Power (only discharging)2)		7kW for 10 sec.
Peak Current (only discharging)		20A for 10 sec.
Communication Interface		RS485/CAN
DC Protection		Circuit Breaker, Fuse, DCDC converter
Connection Method		Spring Type Connector
User interface		LEDs for Normal and Fault operation
Protection Features		Over Voltage / Over Current / short circuit / Reverse Polarity
Scalability (Total Energy, Max. Charge/Discharge Power)		Max. 2 in parallel (19.2 kWh @77°F (25°C), 10kW)
Operating Conditions		
Installation Location		Indoor/Outdoor, Floor standing, Wall-mounted
Operating Temperature	Charge	14 ~ 122°F (-10 ~ 50°C)
	Discharge	-4 ~ 122°F (-20 ~ 50°C)
Operating Temperature (Recommended)		59 ~ 86°F (15 ~ 30°C)
Storage Temperature (At shipping state)		-22 to 140°F (-30 to 60°C), acceptable for 7 days in total -4 to 113°F (-20 to 45°C), acceptable for the first 6 months -4 to 86°F (-20 to 30°C), acceptable for 7th month~12th month
Humidity		5%~95%
Altitude		Max. 6,562ft (2,000m)
Cooling Strategy		Natural Convection
Certification		
Safety	Cell	UL1642
	Battery Pack	UL1973 / CE / RCM / IEC 62619
Emissions		FCC
Hazardous Materials Classification		Class 9
Transportation		UN38.3 (UNDOT)
Ingress Rating		IP55

※ Test Conditions - Temperature 77°F (25°C), at the beginning of life

※ Usable Energy is measured under specific condition from LGC(0.3CCCV/0.3CC)

※ Product specification may change without notice

1) DOD 100%. DC/DC converter one way efficiency 97.5%. Ambient 77°F (25°C)

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

4. Datasheet

4.1. RESU Prime Datasheet

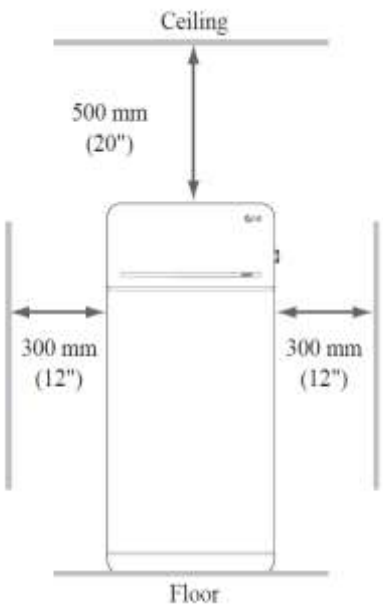
4.1.3 Important Reminder regarding Installation Location of RESU Prime

✓ **Requirements for installation location :**

- ❑ The 'Products' shall not be installed in an airtight enclosure or in an area without **adequate air flow** to **support natural air convection cooling methods**.
- ❑ There must be no highly flammable or explosive materials nearby.
- ❑ The ambient temperature should be within the range of 14°F to 122°F (-10°C to 50°C).
- ❑ The battery pack must be installed on flat leveled ground that can support its weight.
- ❑ Product shall be installed indoors (ex. In a basement or a garage) or outdoors under an eave and out of direct sunlight.

✓ **Recommendations for installation location :**

- ❑ The building should be designed to withstand earthquakes.
- ❑ The area should be waterproof and properly ventilated. (IP55)
- ❑ The product should be installed out of reach of children and animals.
- ❑ Recommended clearances for the left, right and top of the product are shown in the figure for the proper ventilation and installer convenience



* For more details on the guide for the installation of RESU Prime, please refer to RESU Prime installation guide.

4.2. RESU LV (48V)

4.2.1. 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)

4.2. RESU LV (48V)

4.2.1. 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 Energy Solution recommends 0.3CP for maximum battery lifetime. Maximum power will vary due to temperature and SOC.

4.2. RESU LV (48V)

4.2.2. 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)

4.2. RESU LV (48V)

4.2.2. 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 Energy Solution recommends 0.3CP for maximum battery lifetime. Maximum power will vary due to temperature and SOC

4.2. RESU LV (48V)

4.2.3. 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)

4.2. RESU LV (48V)

4.2.3. 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[3)]	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)
※ RESU13 is no longer available in the market. It will be replaced with RESU12.

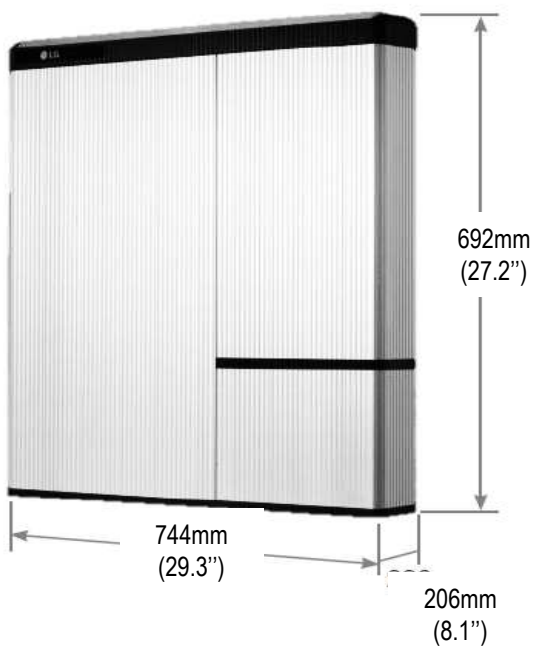
1) Value for Battery Cell Only (Depth of Discharge 95%). Actual usable energy at the AC output may vary by condition, such as the inverter efficiency and temperature.
2) Peak Current excludes repeated short duration (less than 3 sec. of current pattern).
3) LG Energy Solution recommends 0.3CP for maximum battery lifetime. Maximum power will vary due to temperature and SOC

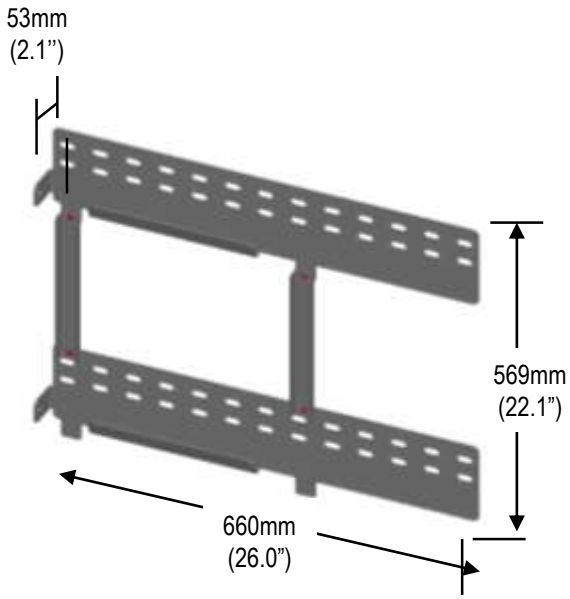
4.3. RESU HV (400V)

4.3.1. RESU7H_Type-R (v4.3)

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	692 mm (27.2")
	Depth	206 mm (8.1")
Weight		75kg (165.4lbs)

*** Please be noted that the production of RESU7H Type-R has been discontinued from July '21, and will no longer be available in the market.**

4.3. RESU HV (400V)

4.3.1. RESU7H_Type-R (v4.3)

Electrical Characteristics		
Total Energy Capacity		7.0 kWh @25°C (77°F), Beginning of Life
Usable Energy Capacity [1]		6.6 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		8.5A@420V / 10.0A@350V
Max. Charge/Discharge Power [2]		3.5kW
Peak Power (only discharging) [3]		5kW for 5 sec.
Peak Current (only discharging)		13.5A@370V for 5 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	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)
※ DC/DC Discharge Efficiency 94.5% @ 2.3kW
※ RESU 7H is no longer available in market. This page will be deleted in the next product book.

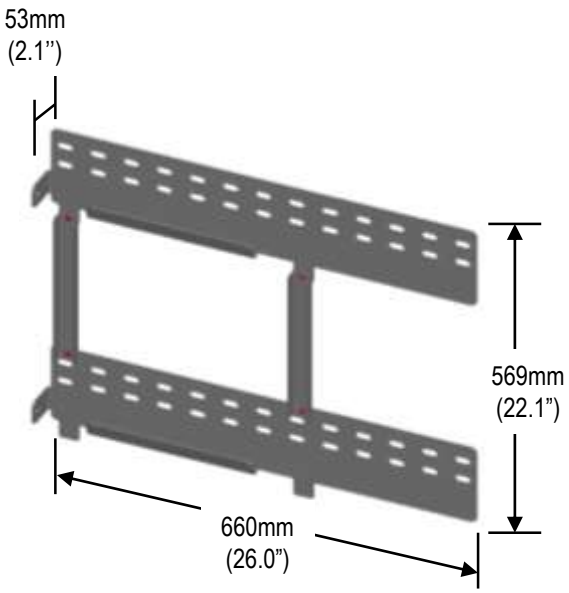
1) Value for Battery Cell Only (Depth of Discharge 95%). Actual usable energy at the AC output may vary by condition, such as the battery converter, inverter efficiency and temperature.
2) LG Energy Solution recommends 0.3CP for maximum battery lifetime. Maximum power will vary due to temperature and SOC.
3) Peak Current excludes repeated short duration (less than 5 sec. of current pattern).

4.3. RESU HV (400V)

4.3.2. 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)

*** Please be noted that the production of RESU10H Type-R has been discontinued from July '21, and will no longer be available in the market.**

4.3. RESU HV (400V)

4.3.2. 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)
※ DC/DC Discharge Efficiency 94.5% @ 2.3kW

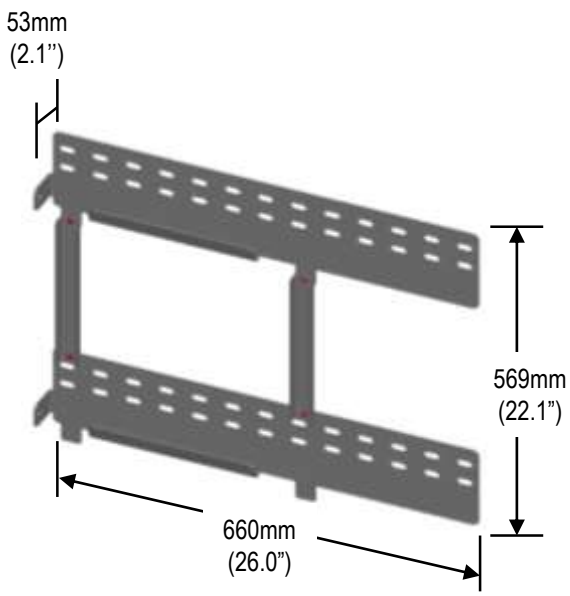
1) Value for Battery Cell Only (Depth of Discharge 95%). Actual usable energy at the AC output may vary by condition, such as the battery converter, inverter efficiency and temperature.
2) LG Energy Solution recommends 0.3CP for maximum battery lifetime. Maximum power will vary due to temperature and SOC.
3) Peak Current excludes repeated short duration (less than 5 sec. of current pattern).

4.3. RESU HV (400V)

4.3.3. 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)

*** Please be noted that the production of RESU10H Type-C has been discontinued from July '21, and will no longer be available in the market.**

4.3. RESU HV (400V)

4.3.3. 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

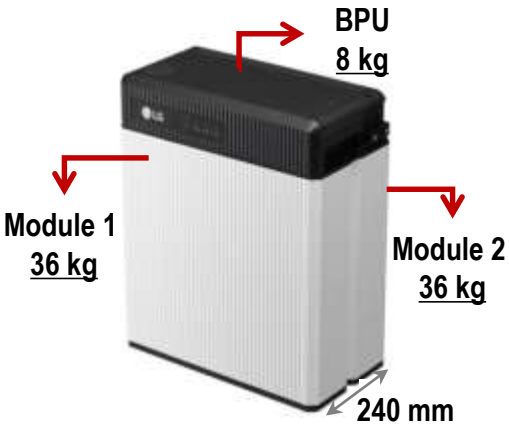
Certification		
Safety	Cell	UL1642
	Battery Pack	UL1973 / CE / RCM / TUV (IEC 62619)
Emissions		FCC
Hazardous Materials Classification		Class 9
Transportation		UN38.3 (UNDOT)

※ Test Conditions - Temperature 25°C, at the beginning of life
※ Total Energy is measured under specific condition from LGC(0.3CCCV/0.3CC)
※ DC/DC Discharge Efficiency 94.5% @ 2.3kW

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 Energy Solution 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 5 sec. of current pattern).

4. Datasheet

4.4. RESU10M



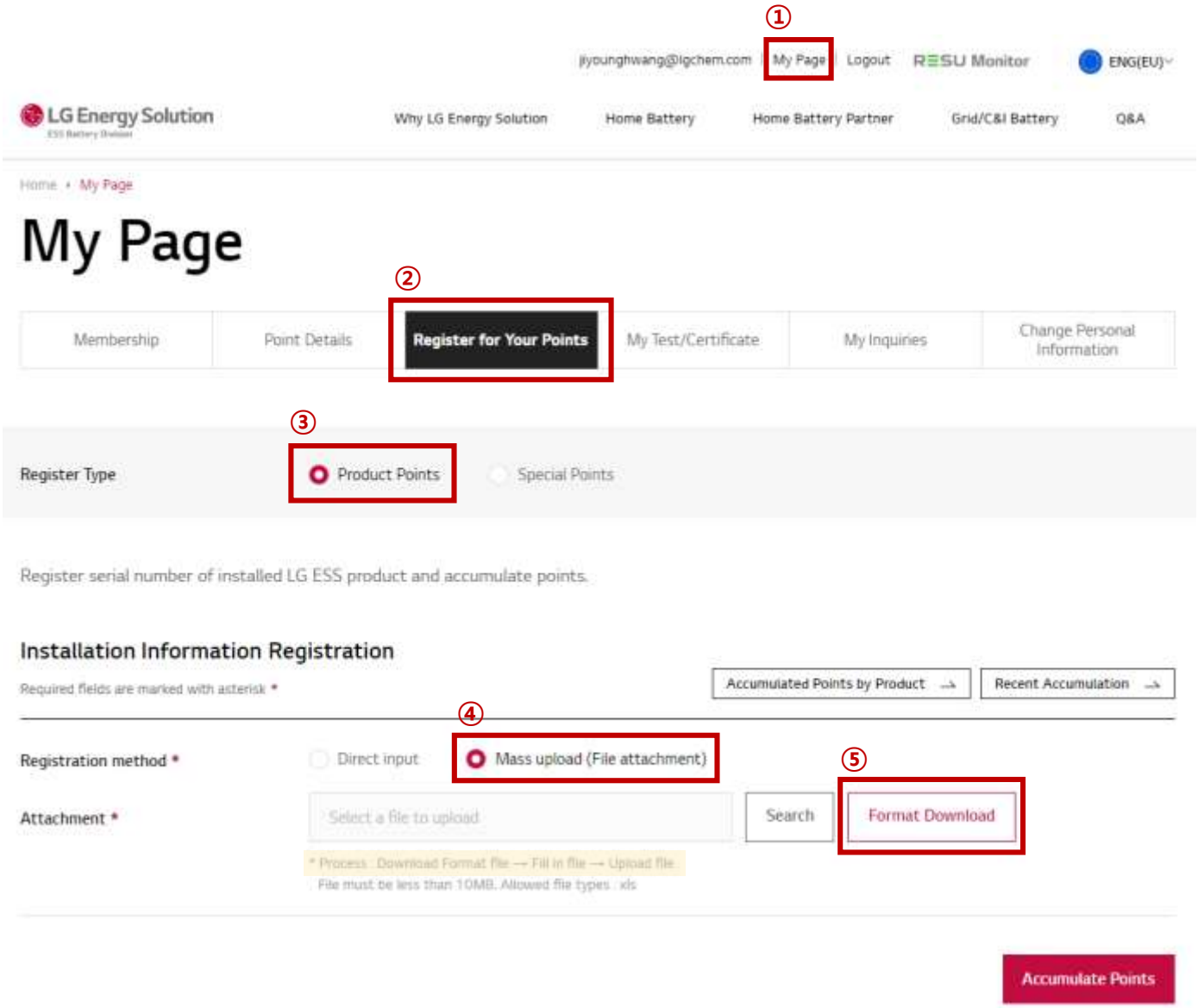
- ✓ **Easy Handling → Labor cost down**
  - Only one person can carry and install
- ✓ **No deep discharge issue → CS cost down & Product quality up**
  - No DC/DC converter inside
- ✓ **Improved energy efficiency → Usable energy up**
  - No DC/DC converter's energy consumption
- ✓ **Separable BPU → On-spot service chance up & RMA cost down**
- ✓ **Flexible installation → Space saving up**
  - Support both stand type & wall-mounting
  - Fits anywhere with compact & light design

Electrical Characteristics		
Total Energy Capacity		9.8 kWh
Usable Energy Capacity[1)]		9.3 kWh[1)]
Battery Capacity		63 Ah
Voltage Range		126.0 to 176.4 V_{DC}
Nominal Voltage		155.4 V_{DC}
Max. Charge/Discharge Current		39.6 A
Max. Charge/Discharge Power[3)]		5.0 kW
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 (Wall-mounted / Floor Standing)
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. 2,000 m
Cooling Strategy		Natural Convection
Certification		
Safety	Cell	UL1642
	Battery Pack	IEC62619 / IEC60950(LVD) / CE
Emissions		IEC61000-6-1, IEC61000-6-3
Hazardous Materials Classification		Class 9
Transportation		UN38.3

*** Please be noted that the production of RESU10M has been discontinued from July '21, and will no longer be available in the market.**

Appendix 1. ESS Battery Website
How to register your battery installation (Mass Upload)

1. Go to [My Page] → [Register for your Points]
2. Click [Product Points] → [Mass upload (File attachment)] → [Format Download]
3. Open the downloaded excel file



Appendix 1. ESS Battery Website
How to register your battery installation (Mass Upload)

4. Fill in all the information of your battery installations on the excel file from line 4.

   Do not delete or change any data on line 1~3 as it may cause an error.

   1) Enter the S/N of the battery on Column A

   2) Enter the Distributor name on Column B : *Select one from the drop box*

   3) Enter the Installation Date, Entire Address, City, and Zip Code on Column C,D,E and F

   4) Enter the Inverter manufacturer on Column G : *Select one from the drop box*

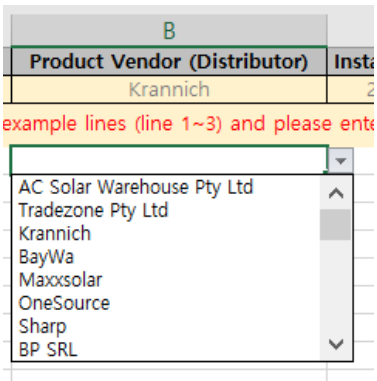
   5) Enter the Inverter product model on Column H

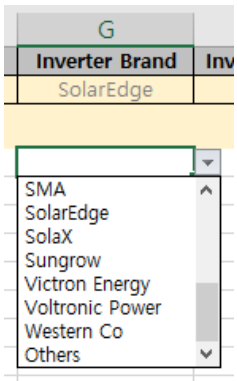
   ***** *For RESU Prime, please have all 3 S/Ns entered for each battery (1 for BPU, 2 for BMA)*

5. After all data have been entered, save the file

(Example)

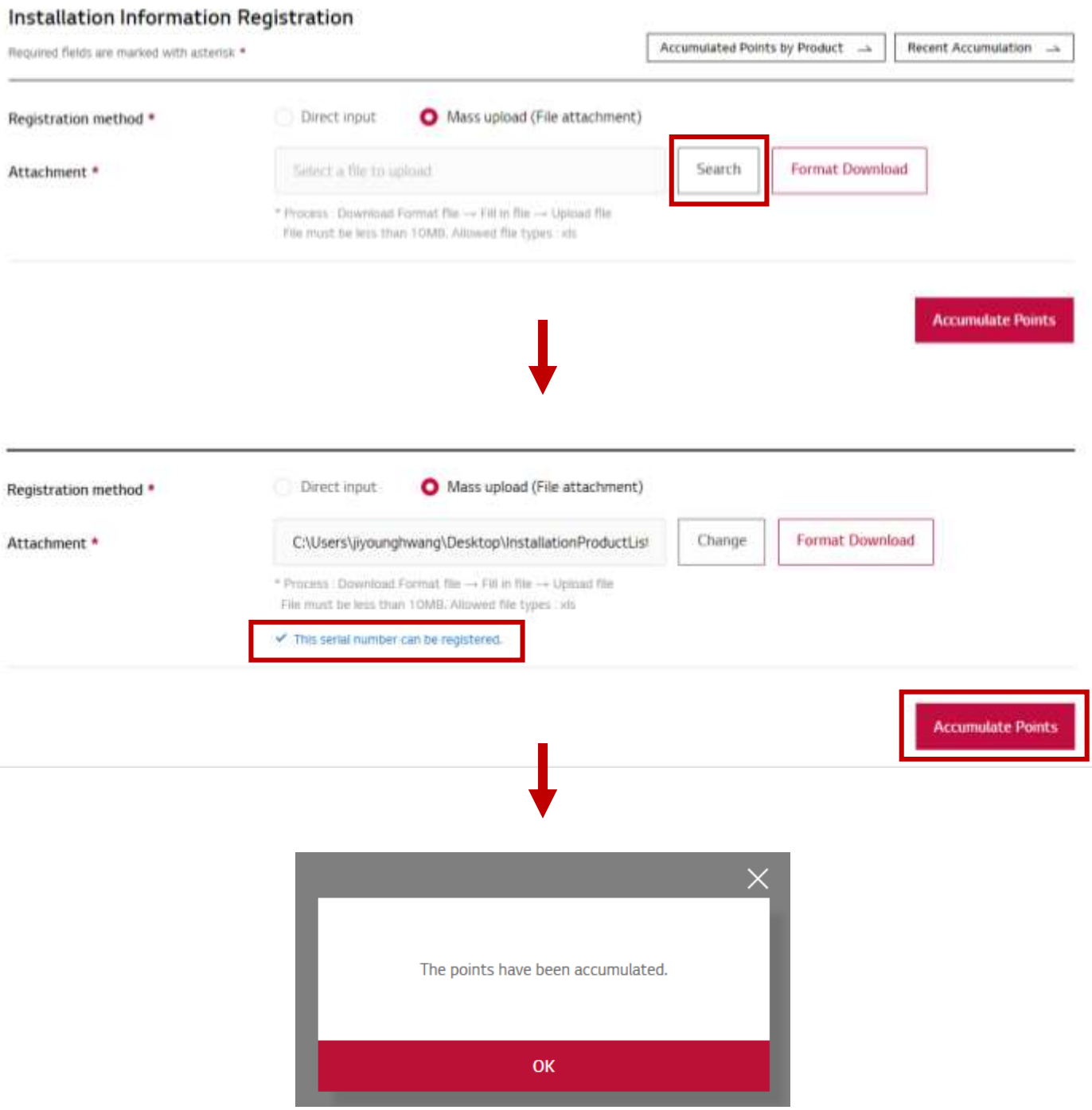
	A	B	C	D	E	F	G	H
1	Product Serial Number	Product Vendor (Distributor)	Installation Date	Installation Region Address	Installation Region City	Installation Region ZIP Code	Inverter Brand	Inverter Product Name
2	[redacted]	Krannich	2020.12.31	128, Yeeui-daero, Yeongdeungpo-gu, Seoul, Republic of Korea	Seoul	07338	SolarEdge	SE6000H
3	* Do not delete the category and example lines (line 1~2) and please enter starting from the line below.							
4	EH257064P851DMA2100009999	Other	2021.10.31	Otto-Volger-Str.7C, 65843 Sulzbach (Taunus), Germany	Sulzbach	65843	Western Co	SE6000H
5	SH128064P851BMA2100009999A	Other	2021.10.31	Otto-Volger-Str.7C, 65843 Sulzbach (Taunus), Germany	Sulzbach	65843	SolarEdge	SE6000H
6	SH128064P851BMA2100009999B	Other	2021.10.31	Otto-Volger-Str.7C, 65843 Sulzbach (Taunus), Germany	Sulzbach	65843	SolarEdge	SE6000H
7	EH153064P851DMA2100009999	Other	2021.11.01	Otto-Volger-Str.7C, 65843 Sulzbach (Taunus), Germany	Sulzbach	65843	SMA	SB56.0
8	SH077064P851BMA2100009999A	Other	2021.11.01	Otto-Volger-Str.7C, 65843 Sulzbach (Taunus), Germany	Sulzbach	65843	SMA	SB56.0
9	SH077064P851BMA2100009999B	Other	2021.11.01	Otto-Volger-Str.7C, 65843 Sulzbach (Taunus), Germany	Sulzbach	65843	SMA	SB56.0
10	R15563P355EG12100009999	Other	2021.11.02	Otto-Volger-Str.7C, 65843 Sulzbach (Taunus), Germany	Sulzbach	65843	Others	ABCDE
11								
12								





Appendix 1. ESS Battery Website
How to register your battery installation (Mass Upload)

6. Click [Search] and select the excel file that you have just saved.
7. If you had entered all the data correctly in the correct format, you will see the blue message “This serial number can be registered.”
8. Click [Accumulate Points] and a pop-up message will show that the installations have been registered and that the points have been accumulated.



Appendix 1. ESS Battery Website
How to register your battery installation (Mass Upload)

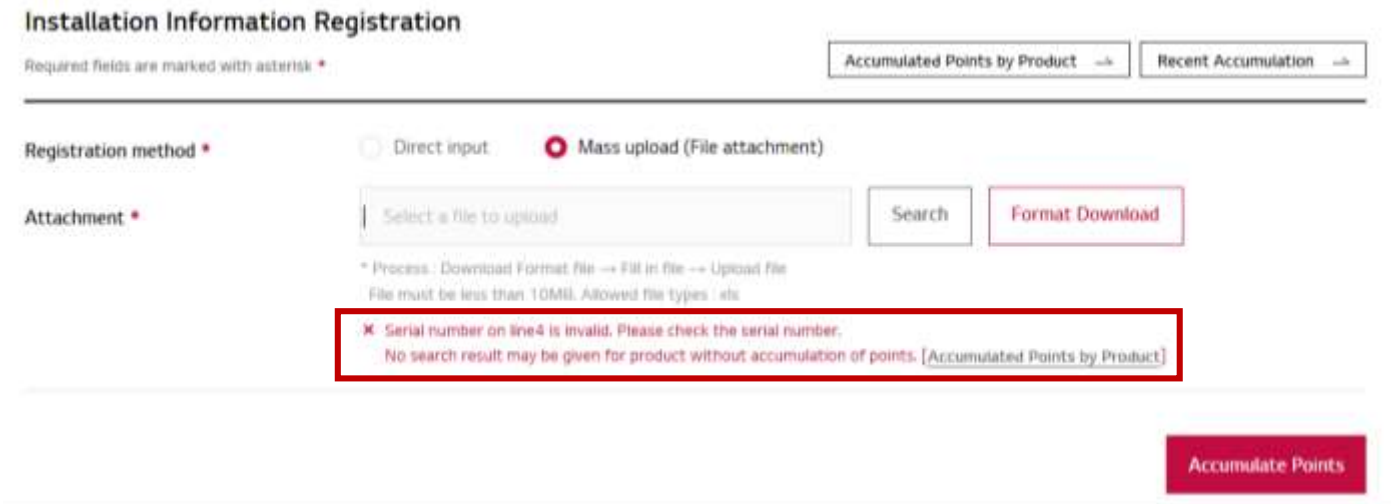
✓ If you had NOT entered the data correctly or in the incorrect format, you will see the red message "Serial number on line X is invalid. Please check the serial number."

In this case, please check your data again, especially the line specified on the error message

1) Double check if the S/N was correctly entered

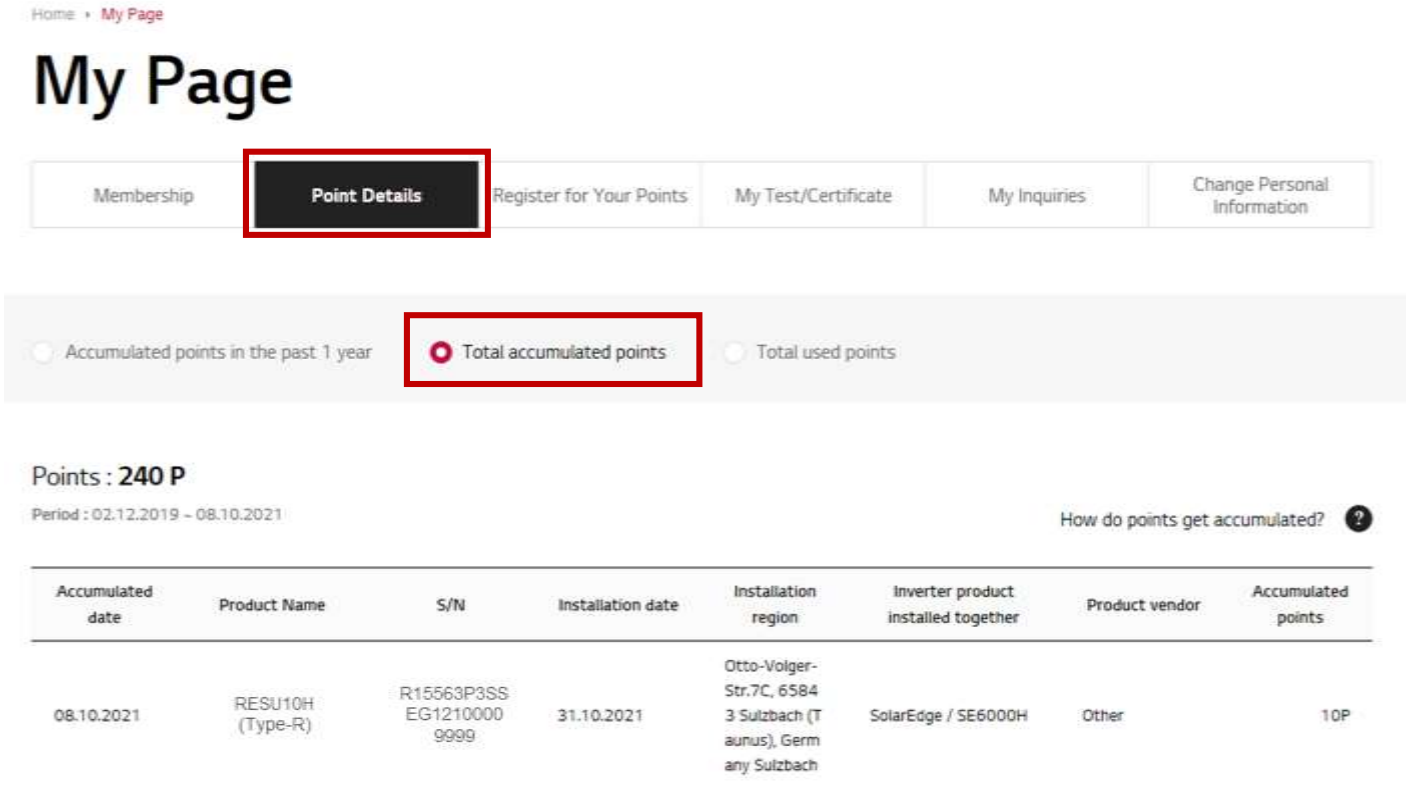
2) Double check if the date was entered in the format of YYYY.MM.DD

3) Double check if the Distributor and the Inverter brand name was selected from the drop box



Appendix 1. ESS Battery Website
How to register your battery installation (Mass Upload)

✓ You can check all the accumulated points (registered installations) as below.



Accumulated date	Product Name	S/N	Installation date	Installation region	Inverter product installed together	Product vendor	Accumulated points
08.10.2021	RESU10H (Type-R)	R15563P3SSEG12100009999	31.10.2021	Otto-Volger-Str.7C, 65843 Sulzbach (Taunus), Germany Sulzbach	SolarEdge / SE6000H	Other	10P

Appendix 2. Important Reminder regarding Prevention of Remote F/W Update Failure of RESU HV (Type-C)

Dear Valued Customers,

LG Energy Solution would like to thank you for choosing RESU and your confidence in LG Energy Solution 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(Type-C) batteries where the SMA Sunny Boy Storage inverter will display "battery not configured". These units were manufactured prior to Jun 2019 for the RESU10H and Dec 2019 for model RESU7H and this nuance is due to a firmware update failure during commissioning.

Reminder

When commissioning the RESU/SMA system, the SMA inverter tries to remotely perform the battery firmware update by the Sunny portal. Once the firmware update starts, first the GREEN (ON) LED will blink. This is the firmware update signal of the DCDC converter. Next GREEN (ON) and RED (FAULT) LED will illuminate. This is the firmware update signal of the BMS. If RED (FAULT) LED is illuminated, do not mistake this for a faulty battery and attempt to shut down or reset the battery system. At this stage, the RED (FAULT) LED is not a real fault situation; it is normal process for updating firmware. If the battery is turned off or reset during this firmware update, the battery will not automatically recover even when turned on again. If this happens, next steps must be performed by an LG Energy Solution technician. **Therefore, please do not turn off or reset the battery during firmware update.** The firmware update is complete when only the GREEN (ON) LED is left on. Firmware update process takes 20~40 minutes to complete.

If a RESU technician must be dispatched on site or if an RMA is caused by not complying with the above, a service fee may be charged.

The firmware update process for RESU10H (Type-C) batteries manufactured since May, '19 and RESU7H (Type-C) batteries manufactured since Nov, '19, only the GREEN (ON) LED light will blink for the DCDC converter and BMS updates.

Please refer to this table for production serial numbers:

Product (Type-C)	Production Before	Battery Serial No.
RESU10H	May 10th 2019	R15563P3SDLT1**1905107**001
RESU7H	Nov 27th 2019	R111063P3S3**1911279**001

Regional contact point of LG Energy Solution Service

Country	Tel	E-mail
EUROPE / UK (EXCEPT ITALY)	+49 (0)6196 5719 660	lgchem@e-service48.de
Italy	+39 (0)2 8239 7609	assistenza@lgresu.eu

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

Sincerely yours,
17th of April, 2020
LG Energy Solution HQ ESS Customer Service Team Leader
Sangyeol Heo

Appendix 3. Important Reminder regarding Prevention of Battery Fuse Blown of RESU HV

Dear Valued Customers,

LG Energy Solution would like to thank you for choosing RESU and your confidence in LG Energy Solution 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

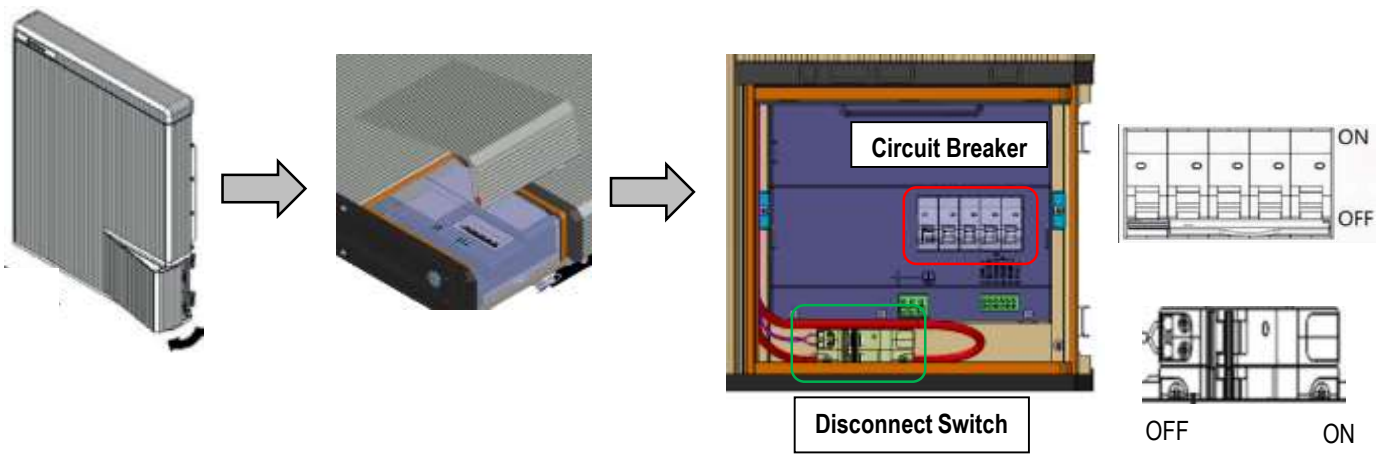
To prevent this issue of blown battery fuse with damage to the DCDC converter, please make sure to follow the power on & off sequence. Each RESU will either have an Auxiliary switch or an applied Disconnect Switch.
Please refer to below guide.

1. DS(Disconnect Switch) Serial Numbers :

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
RESU7H_Type-R	Sep 19th 2018	R11163P3SSEG1**1809199**001
RESU10H_Type-C	May 10th 2019	R15563P3SDLT1**1905107**001
RESU7H_Type-C	Nov 27th 2019	EH111063P3S3**1911279**001

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



Appendix 3. Important Reminder regarding Prevention of Battery Fuse Blown of RESU HV

2. AUX Switch Product

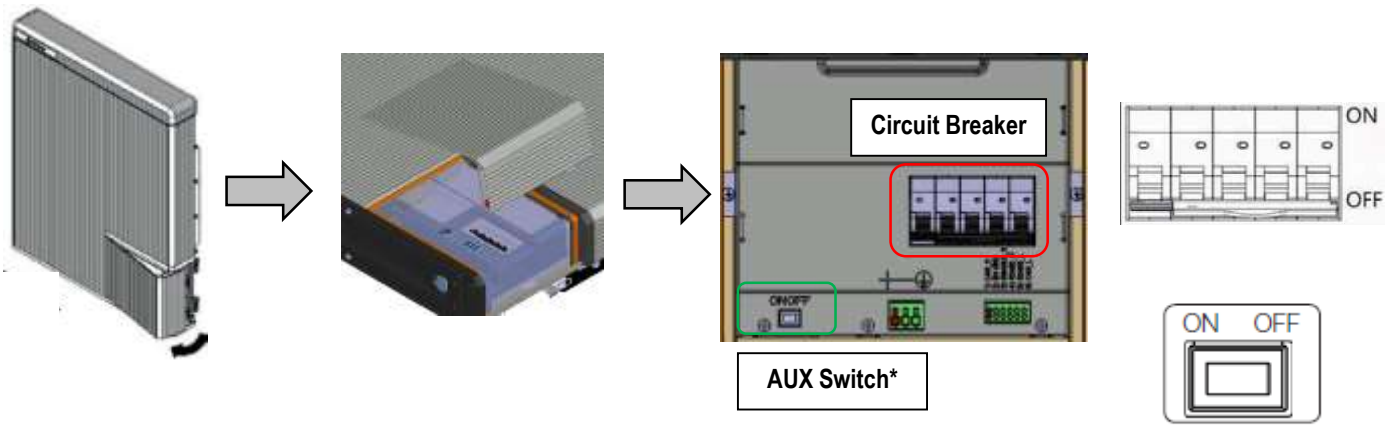
1) Serial Numbers for AUX Switch Product :

Model	Production Since	Battery Serial No. Since
RESU10H_Type-R Primary	Sep 17th 2018	R15563P3SSEG11809179045
RESU10H_Type-R Secondary	Oct 10th 2018	R15563P3SSEG21810109001
RESU7H_Type-R	Sep 19th 2018	R11163P3SSEG11809199001
RESU10H_Type-C	May 10th 2019	R15563P3SDLT11905107001
RESU7H_Type-C	Nov 27th 2019	EH111063P3S31911279001

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)



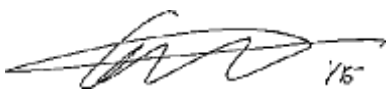
*** Type-C does not have an AUX switch**

Regional contact point of LG Chem Service

Country	Tel	E-mail
EUROPE / UK (EXCEPT ITALY)	+49 (0)6196 5719 660	lgchem@e-service48.de
Italy	+39 (0)2 8239 7609	assistenza@lgresu.eu

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

Sincerely yours,
9th 0f June, 2020
LG Energy Solution HQ ESS Customer Service Team Leader
Sangyeol Heo



4.1. RESU Pack Voltage Checks

When certified installers are to check RESU battery pack voltage status to diagnose issue, please follow LG Energy Solution's guideline below. Please contact LGCEG CS team before trying testing the battery or fuse.
(Tel. +49 (0)6196 5719 660 / Email. lgchem@e-service48.de) – except in Italy
(Tel. +39 (0)2 8239 7609 / Email. assistenza@lgresu.eu) – in Italy

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.

4.1. 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 remain in operation or in the field.

4.1. 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 remain in operation or in the field.

4.1. 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

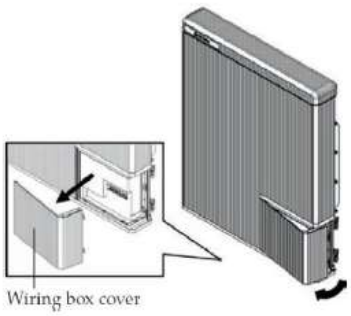
RESU10H pack voltage must remain above > 84V in order to remain in operation or in the field.

4.2. Check Fuse

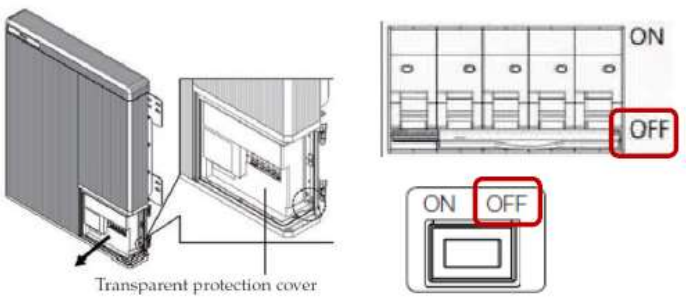
When certified installers are to check RESU battery pack voltage status to diagnose issue, please follow LG Energy Solution's guideline below. Please contact LGCEG CS team before trying testing the battery or fuse.
(Tel. +49 (0)6196 5719 660 / Email. lgchem@e-service48.de) – except in Italy
(Tel. +39 (0)2 8239 7609 / Email. assistenza@lgresu.eu) – in Italy

Check Fuse – Probe setup, set voltmeter to Ω resistance

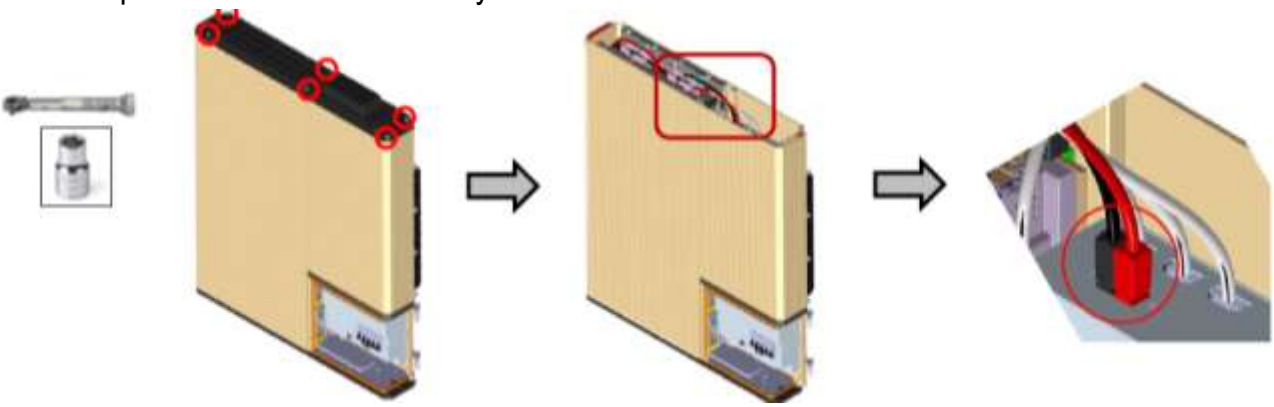
① Open the wiring box cover(about 2~10 degrees), and pull to remove it



② Make sure the internal battery breaker(also the AUX power switch RESU10H_Type-R models) is in OFF position.
Important : If the battery is connected to the inverter make sure the inverter switch is off.



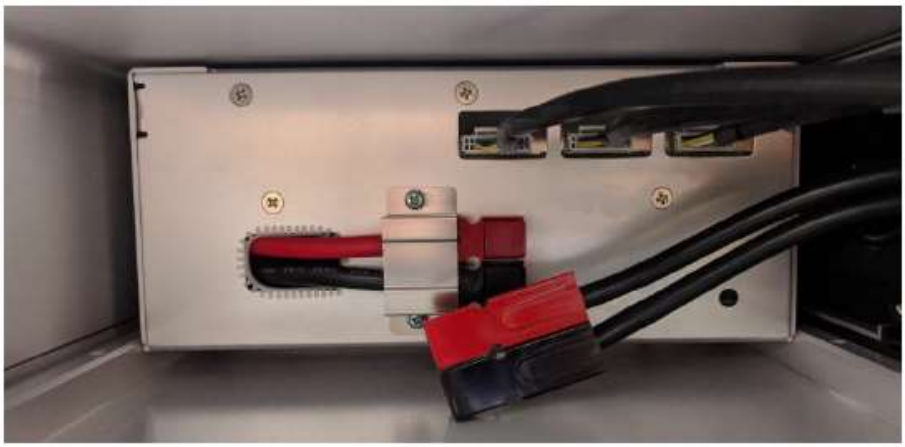
③ Remove the top cover prying up at the back corners
Remove the inside top cover using a socket wrench and a 10mm bolt.
6Nm torque for dis-and re-assembly



4.2. 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 5. RESU HV(Type-R) Forced Charging Guideline

5.1. RESU HV Forced Charging Process

Purpose

Forced (external) charging of RESU HV ("High Voltage") batteries requires upfront training.
LG Energy Solution offers the necessary training through an online process.

This document describes the defined process. It is meant to support the maintenance of the required resources and to document changes made after the initial establishment.
The objective is to restrict the access to high voltage chargers to trained personnel.

Process

The process will be activated once a RESU HV battery requires external charging.
It comprises the following steps:

01. **Support agent** identifies recharge demand.
02. **Support agent** sends webinar access link to installer
03. **Installer** registers for webinar
04. **Webinar platform** sends link to certification test form by the time of registration.
05. **Installer** attends webinar
06. **Installer** takes the test
07. **LG Energy Solution** sends the "charging certificate"
08. **Installer** uses the link provided in the certificate to download the rental contract for the charger
09. **Installer** sends the filled in contract to E-service
10. **E-service** provides the charger to the certified installer

The required certification resources are being provided in 3 languages: English, German and Italian (yet to be done)

Resources

ITEM	ENG	DEU
Webinar Registration		
Test Form		
Rental Agreement		
Slide Deck		

LG Energy Solution Europe GmbH Residential ESS Team

Appendix 5. RESU HV(Type-R) Forced Charging Guideline

5.2. 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. Before
RESU10H	September 17th 2018	R15563P3SSEG1**1809179**045
RESU7H	September 19th 2018	R11163P3SSEG1**1809199**001

※ For Europe region,
Disconnect switch is applied to RESU HV(Type-R) models based on manufacturing date written below.
- RESU7H(Type-R) : 21th, Sep, '18 and forward
- RESU10H(Type-R): 24th, Nov, '18 and forward

Dear Valued Customers,

LG Energy Solution 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 Energy Solution 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 Energy Solution 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

Appendix 5. RESU HV(Type-R) Forced Charging Guideline

5.2. RESU HV Forced Charging Manual and Precaution

Instructions to prevent deep discharged battery

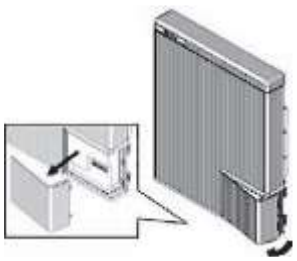
To prevent deep discharged battery, when the RESU battery is not in use after installation**, please turn off the Circuit Breaker(CB) first and then be sure to turn the AUX POWER switch off afterwards. Even if the Circuit Breaker(CB) is automatically tripped, the AUX POWER switch must be turned off manually.**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

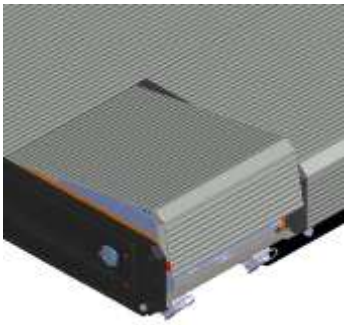
<How to turn off AUX POWER switch>

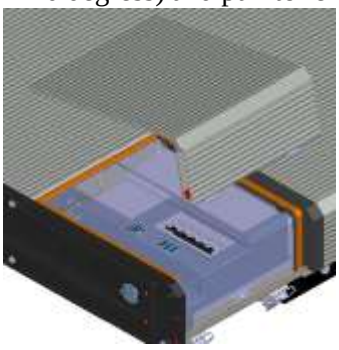
1) Turn OFF the inverter and system AC & DC isolators

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

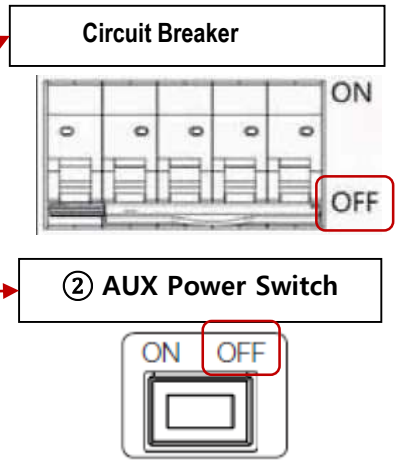


3) Open the wiring box cover (about 2~10 degress) and pull to remove it.





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



Appendix 5. RESU HV(Type-R) Forced Charging Guideline

5.2. RESU HV Forced Charging Manual and Precaution

LG Energy Solution 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

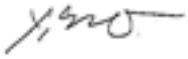
- LG Energy Solution requires suitably qualified electricians to be trained with use of the battery charger prior to performing manually charging of RESUs and follow our strict procedures.
- Please contact LG Energy Solution prior to any manually charging of a RESU battery.
- Only a charger supplied or approved by LG Energy Solution 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 Energy Solution 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 8239 7609	assistenza@lgresu.eu
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 Energy Solution HQ ESS Customer Service Team Leader
Yunseong Hwang



Appendix 6. RESU HV Product Update

6.1. RESU HV Deep Discharge Issue Solved

RESU HV(Type-R) Deep Discharge Issue Solved

(※ based on manufacturing date)

- RESU7H_Type-R : 21th, Sep, ’18 and forward
- RESU10H_Type-R: 24th, Nov, ’18 and forward

RESU HV(Type-C) Deep Discharge Issue Solved

(※ based on manufacturing date)

- RESU7H_Type-C: CW35, Aug, ’19 and forward (planned)
- RESU10H_Type-C: 10th, May, ’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.

Appendix 7. How to read RESU S/N

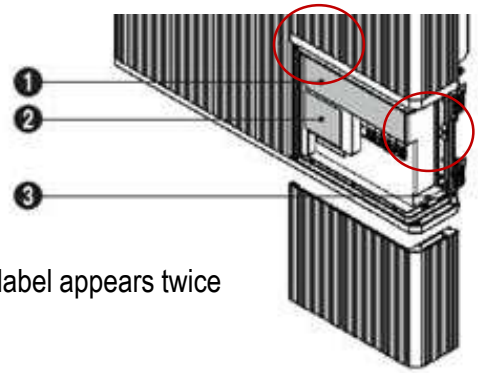
How To Interpret RESU S/N

S/N location

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

When you look from top

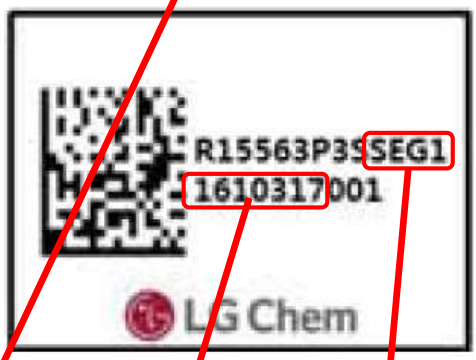
2. RESU7H / RESU10H



Same label appears twice

How to interpret S/N

RESU LV



RESU HV

Mfr Date: yy/mm/dd format

Please read the installation manual thoroughly.