Residential Energy Storage Unit
6.4 EX Battery Pack
For Photovoltaic Systems
This manual describes how to safely install the RESU® 6.4 EX battery pack from LG Chem.

Read this manual thoroughly before you attempt to install the product, and follow the instructions carefully throughout the installation process.

If you are uncertain about any of the requirements, recommendations, or safety procedures described in this manual, contact LG Chem immediately for advice and clarification.

**NOTE**

The information included in this document is accurate at the time of publication. However, this product is subject to change without prior notice. In addition, the illustrations in this document are meant only to help explain system configuration concepts and installation instructions. The illustrated items may differ from the actual items at the installation location.
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1 Introduction

1.1 Features

The RESU® 6.4 EX battery pack has the following features:

**Photovoltaic system**: This battery pack is designed for photovoltaic system compatibility.

**Battery management system (BMS)**: The battery pack’s built-in BMS monitors its operation and prevents the battery from operating outside design limitations. See Troubleshooting on page 32.

**Expandability**: The battery capacity can be increased by adding expansion battery packs. Up to two expansion battery packs can be added. An expansion battery pack can be purchased either with the main battery pack or as a separate unit. See Installing the Expansion Battery Pack on page 22.

1.2 Package Items

**Main battery pack**

Items other than those listed below, such as a power cable, may be provided separately.

For details on how these items are used, see Installation on page 15.
NOTE
A tag is attached to the gender changer side of the provided communication cable adapter. The tag is labeled as TYPE-S or TYPE-N. TYPE-S adapters are used with most inverters, including SMA inverters, whereas TYPE-N adapters are supposed to be used only with Nedap inverters. If the wrong cable adapter is identified, contact LG Chem or your distributor.

Expansion battery pack

Expansion battery pack
Fuse
Connecting brackets

Anchor bolt for mounting

1)When an expansion battery pack is later installed, if it is difficult to reuse the anchor bolt and mounting bolt used on the right side of the main battery pack, use these bolts.

For details on how these items are used, see Installing the Expansion Battery Pack on page 22.
1.3 LED Indicators

Main battery pack

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

**Initializing**: While the main pack is initializing itself, the Status indicator is lit orange.

**Normal operation**: When the main pack is in normal operation, the Status indicator is lit green.

**Charge in progress**: While the main pack is charging, the Charge / Discharge indicator is lit red.

**Discharge in progress**: While the main pack is discharging, the Charge / Discharge indicator is lit green.

**Alarm**: When the main pack is in a warning or fault state, the Status indicator alternately flashes green and orange. See Troubleshooting on page 32.

Expansion battery pack
Introduction

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

**Initializing** 🔴: While the expansion pack is initializing itself, the Status indicator is lit red.

**Normal operation** 🟢: When the expansion pack is in normal operation, the Status indicator is lit green.

**Standby** 🌟: When the expansion pack is in the standby state, the Status indicator flashes green. See Starting the Battery Pack on page 31.

**Charge in progress** 🔴: While the expansion pack is charging, the Charge / Discharge indicator is lit red.

**Discharge in progress** 🟢: While the expansion pack is discharging, the Charge / Discharge indicator is lit green.

**Alarm** 🌟🌟: When the expansion pack is in a fault state, the Status indicator alternately flashes green and red. See Troubleshooting on page 32.

1.4 Specifications

**Main battery pack’s dimensions and weight**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>406 mm</td>
</tr>
<tr>
<td>Width</td>
<td>165 mm</td>
</tr>
<tr>
<td>Height</td>
<td>664 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>60 kg</td>
</tr>
</tbody>
</table>

**Expansion battery pack’s dimensions and weight**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
<td>230 mm</td>
</tr>
<tr>
<td>Width</td>
<td>165 mm</td>
</tr>
<tr>
<td>Height</td>
<td>664 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>32 kg</td>
</tr>
</tbody>
</table>
Performance

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage</td>
<td>51.8 V</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>45.2 V to 58.1 V</td>
</tr>
<tr>
<td>Nominal capacity with no expansion pack</td>
<td>126 A·h</td>
</tr>
<tr>
<td>Nominal capacity with 1 expansion pack</td>
<td>189 A·h</td>
</tr>
<tr>
<td>Nominal capacity with 2 expansion packs</td>
<td>252 A·h</td>
</tr>
<tr>
<td>Nominal energy with no expansion pack</td>
<td>6.4 kW·h</td>
</tr>
<tr>
<td>Nominal energy with 1 expansion pack</td>
<td>9.6 kW·h</td>
</tr>
<tr>
<td>Nominal energy with 2 expansion packs</td>
<td>12.8 kW·h</td>
</tr>
<tr>
<td>Nominal charge current(^1)</td>
<td>42 A</td>
</tr>
<tr>
<td>Nominal discharge current(^2)</td>
<td>42 A</td>
</tr>
<tr>
<td>Maximum discharge current(^3)</td>
<td>110 A</td>
</tr>
</tbody>
</table>

\(^1\) in constant-current/constant-voltage charging mode

\(^2\) in constant-current discharging mode

\(^3\) If the temperature inside the battery pack rises, the charging and discharging current may be derated to keep the battery safety and lifetime.
Introduction

Power cable requirements

<table>
<thead>
<tr>
<th>Specification</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conductor cross-sectional area</td>
<td>33 mm$^2$ to 50 mm$^2$</td>
</tr>
<tr>
<td>Cable outer diameter</td>
<td>12 mm to 18 mm</td>
</tr>
<tr>
<td>Cable lug hole size</td>
<td>M8</td>
</tr>
<tr>
<td>Cable lug width</td>
<td>21 mm</td>
</tr>
<tr>
<td>Maximum cable length</td>
<td>5 m per cable</td>
</tr>
</tbody>
</table>

1) The external resistance of the power cable between the battery pack and the inverter must be below 10 mΩ.

If these requirements cannot be met, contact LG Chem or your distributor.

Environmental requirements

<table>
<thead>
<tr>
<th>Specification</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available operating temperature</td>
<td>0°C to 40°C</td>
</tr>
<tr>
<td>Optimal operating temperature</td>
<td>15°C to 30°C</td>
</tr>
<tr>
<td>Operating relative humidity</td>
<td>25% to 95%</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>−30°C to 50°C</td>
</tr>
<tr>
<td>Storage relative humidity</td>
<td>25% to 95%</td>
</tr>
</tbody>
</table>

1) When the ambient temperature is below 10°C, charging and discharging current may be derated to keep the battery safety and lifetime.

Communication interface

<table>
<thead>
<tr>
<th>Specification</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protocol</td>
<td>CAN 2.0B</td>
</tr>
<tr>
<td>Channel</td>
<td>1</td>
</tr>
</tbody>
</table>

Fuse for the expansion pack

<table>
<thead>
<tr>
<th>Specification</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>PV14 63A gG</td>
</tr>
<tr>
<td>Length</td>
<td>51 mm</td>
</tr>
<tr>
<td>Diameter</td>
<td>14 mm</td>
</tr>
<tr>
<td>Rated current</td>
<td>63 A DC</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>250 V DC</td>
</tr>
<tr>
<td>Standards</td>
<td>IEC 60269, EN 60269</td>
</tr>
</tbody>
</table>
2 Safety

2.1 General Precautions for the Battery Pack

⚠️ WARNING

Failure to observe the precautions described in this section can cause serious injury to persons or damage to property.

Observe the following precautions:

- **Risks of explosion**
  - Do not subject the battery pack to strong impacts.
  - Do not crush or puncture the battery pack.
  - Do not dispose of the battery pack in a fire.

- **Risks of fire**
  - Do not expose the battery pack to temperatures in excess of 50°C.
  - Do not place the battery pack near a heat source such as a fireplace.
  - Do not expose the battery pack to direct sunlight.
  - Do not allow the battery connectors to touch conductive objects such as wires.

- **Risks of electric shock**
  - Do not disassemble the battery pack.
  - Do not touch the battery pack with wet hands.
  - Do not expose the battery pack to moisture or liquids.
  - Keep the battery pack away from children and animals.

- **Risks of damage to the battery pack**
  - Do not allow the battery pack to come in contact with liquids.
  - Do not subject the battery pack to high pressures.
  - Do not place any objects on top of the battery pack.
2.2 Tools

The following tools are required to install the battery pack:

- Torque screwdriver
- Phillips-screwdriver bit
- Hex-key bit
- Phillips-head screwdriver
- Wire cutter
- Voltmeter
- Tape measure

Use properly insulated tools to prevent accidental electric shock or short circuits. It is highly recommended to use adjustable tools and measuring instruments that are certified for precision and accuracy.

2.3 Safety Gear

It is recommended to wear the following safety gear when dealing with the battery pack.

- Insulated gloves
- Safety goggles
- Safety shoes
2.4 Warning Labels

Main battery pack

The nameplate is attached to the right side of the main battery pack, and warning labels are attached to the top and left side.
Safety

Expansion battery pack
3 Installation

3.1 Installation Location

The RESU 6.4 EX battery pack must be installed indoors. Make sure that the installation location meets the following conditions:

- The area is completely waterproof.
- The floor is flat and level.
- There are no flammable or explosive materials.
- The ambient temperature is within the range from 0°C to 40°C.
- The temperature and humidity is maintained at a constant level.
- There is minimal dust and dirt in the area.

⚠️ CAUTION

If the ambient temperature is outside the operating range, the battery pack stops operating to protect itself. The optimal temperature range for the battery pack to operate is 15°C to 30°C. Frequent exposure to harsh temperatures may deteriorate the performance and lifetime of the battery pack.
3.2 Installing the Main Battery Pack

Securing the battery pack to a wall
Secure the battery pack to a wall to prevent the battery pack from moving. The provided mounting brackets cannot support the full weight of the battery pack. The battery pack must be supported by the floor or an appropriate platform. When installing the battery pack on a platform, make sure that the platform is capable of supporting the weight of the battery pack.

Make sure to leave a space of at least 20 mm between the battery pack and the wall. A clearance of at least 20 mm must be left around the battery pack for proper cooling.

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

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

1. Drill holes to suit M6 (¼ in) anchor bolts in the wall. The drilling depth should be at least 33 mm.
NOTE
If one or two expansion battery packs should be installed together, take the full length of the battery packs into account to determine the appropriate position for the mounting bracket on the right side.

2. Drive the anchor bolts through the mounting brackets into the holes.
3. Tighten the nuts to a torque of 6 N·m.

4. There are holes for mounting brackets on both edges of the back. Cut the removable pieces out of the holes using a wire cutter.
5. Secure the mounting brackets to the holes using the M5 screws. Tighten the screws to a torque of 4 N·m.
NOTE
If an expansion battery pack should be installed, leave the right side unfastened. Secure the right side of the expansion pack to the wall after the expansion pack is fully installed.

Connecting the battery pack to the inverter

CAUTION
Make sure that the inverter is turned off before connecting the battery pack to the inverter.

To connect the cables coming from the inverter to the battery pack, take the following steps:

1. Remove the top cover. Hold both sides of the top cover and pull it upwards.

2. Remove the protective tape that covers the circuit breaker switch.
3. Make sure that the circuit breaker switch is in the OFF position.

4. Cut the removable pieces out of the grommets on the upper part of the left side.

5. Connect the provided cable adapter to the communication port, and then connect the communication cable coming from the inverter to the cable adapter through the right grommet.
**NOTE**

The battery pack must be connected to the inverter via a communication cable for proper operation.

6. If the inverter has a ground wire, connect it to the ground screw through the grommet. The screw type is M6.

7. Use 33 to 50 mm² cables as the power cables to connect the battery pack to the inverter. Connect the power cables to the terminal block through the grommets.
   a) Remove the terminal cover plate, which is placed over the terminal block to protect it.
   b) Connect the negative cable to the left terminal and the positive cable to the right terminal. Tighten the hex-socket screws to a torque of 6 N·m.
   c) Restore the terminal cover plate.

**NOTE**

If you have an expansion battery pack to be installed, do not proceed to the next step but install the expansion battery pack. See Installing the Expansion Battery Pack on page 22.
8. Perform the pre-operation checks described in *Checking Before Operation* on page 29.

9. Perform the procedure described in *Starting the Battery Pack* on page 31.

10. Restore the top cover. Press down on the top cover until it locks in place.
3.3 Installing the Expansion Battery Pack

Up to two expansion battery packs can be additionally installed.

**NOTE**

Expansion battery packs cannot be used independently of the main battery pack.

---

Connecting an expansion pack to the main pack

**CAUTION**

Make sure that the inverter is turned off before installing the expansion battery pack.

To connect an expansion battery pack to the main battery pack, take the following steps:

1. Remove the top cover from the main battery pack.
2. Make sure that the circuit breaker switch is in the OFF position and that the indicators on the front are off. If the main pack has been operating, it would take 60 seconds at maximum for the indicators to turn off.

3. Cut the removable pieces out of the grommets on the upper part of the right side.

4. Remove the top cover from the expansion battery pack.
5. Fasten the connecting bracket to the main pack.
   a) Loosen the M4 screw on the top left.
   b) Insert the connecting bracket through the left grommet.
   c) Hold the bracket in place and tighten the screw in the left hole of the bracket to a torque of 2 N·m.

6. Loosen the screw in the corresponding position of the expansion pack.

NOTE
When connecting an expansion pack to another one, use the right hole of the connecting bracket.

7. Insert the cables coming from the expansion pack into the main pack through the grommets.
8. Adhere the expansion pack closely to the main pack.

9. A terminal resistor is attached to the communication port in the middle. Remove it from the port.

10. Connect the cables to the connectors.

   1) The connector on the left supplies power to the expansion pack for operation.

   2) The main pack communicates with the expansion pack through the port in the middle.

   3) The expansion pack charges and discharges through the connector on the right.

11. Attach the terminal resistor detached from the main pack to the unused port on the right side of the expansion pack.
12. Fasten the connecting bracket to the expansion pack. Hold the bracket in place and tighten the screw to a torque of 2 N·m.

13. Install the fuse in the expansion pack.
   a) Pull the fuse holder upwards to open it.
   b) Insert the fuse into the fuse holder.
   c) Restore the fuse holder.

14. Restore the top cover of the expansion pack.
15. Perform the pre-operation checks described in Checking Before Operation on page 29.

16. Perform the procedure described in Starting the Battery Pack on page 31.

17. Restore the top cover of the main pack.

If you have another expansion pack, repeat the aforementioned steps to connect the first expansion pack to the second one.

**Securing the expansion pack to a wall**

Secure the right side of the expansion battery pack to the wall using a mounting bracket. If the expansion pack is additionally installed later, remove the
bracket on the right side of the main battery pack. For details how to install mounting brackets, see Securing the battery pack to a wall on page 16.
3.4 Checking Before Operation

There are things that need to be checked before starting the battery pack to ensure that it has no defects.

⚠️ CAUTION
Make sure that the inverter is turned off while checking the battery pack.

**Circuit breaker switch**

Move the circuit breaker switch to the **ON** position. If the switch is in the Trip position between the **ON** and **OFF** positions, move it to the **OFF** position and then to the **ON** position. If the switch moves by itself to any of the other positions, contact LG Chem or your distributor.

**Circuit breaker’s trip button**

Make sure that the circuit breaker switch is put in the **ON** position, and then push the circuit breaker’s trip button. If the circuit breaker switch has not moved to the Trip position, contact LG Chem or your distributor.
Voltage

Measure the voltage at the terminal block using a voltmeter.

1. Make sure that the circuit breaker switch is put in the Trip position, and then measure the voltage. If the voltage is higher than 0 V, contact LG Chem or your distributor.

2. Move the circuit breaker switch to the ON position, and then measure the voltage. If the voltage is lower than 36 V, contact LG Chem or your distributor.
3.5 Starting the Battery Pack

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

1. Make sure that the circuit breaker switch is in the **OFF** or Trip position.

2. Move the circuit breaker switch to the **ON** position to turn on the main battery pack. See if the battery pack is successfully initialized.
   - The **Status** indicator on the front should turn on in orange and then change to green in 7 seconds. If it stays orange, contact LG Chem or your distributor.
   - If an expansion battery pack is installed, its **Status** indicator also should turn on in red and then change to green in 7 seconds. If it stays red, contact LG Chem or your distributor.
   - The expansion pack takes around 65 seconds to check itself for proper operation after it has been initialized. After that, the **Status** indicator may begin flashing green. The expansion pack is not operational until the voltage level of the main pack becomes the same as that of the expansion pack. As long as the two voltage levels are not the same, the **Status** indicator keeps flashing green.

3. Turn on the inverter.

3.6 Shutting Down the Battery Pack

To shut down the battery pack, take the following steps:

1. Turn off the inverter.

2. Turn off the battery pack by moving the circuit breaker switch to the **OFF** position.

3. Make sure that every indicator on the battery pack is off. It would take 60 seconds at maximum for the indicators to turn off.
4 Troubleshooting

4.1 Main Battery Pack

Check the indicators on the front to determine in what state the main battery pack is.

<table>
<thead>
<tr>
<th>Status</th>
<th>Charge/Discharge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orange → Green(^1)</td>
<td>Off</td>
</tr>
<tr>
<td>Orange → Orange</td>
<td>Off</td>
</tr>
<tr>
<td>Green</td>
<td>Green</td>
</tr>
<tr>
<td>Green</td>
<td>Red</td>
</tr>
<tr>
<td>Green</td>
<td>Off</td>
</tr>
<tr>
<td>Flashing Green/Orange</td>
<td>Green</td>
</tr>
<tr>
<td>Flashing Green/Orange</td>
<td>Red</td>
</tr>
<tr>
<td>Flashing Green/Orange</td>
<td>Off</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
</tr>
</tbody>
</table>

\(^1\)This should occur in 7 seconds.
\(^2\)Contact LG Chem or your distributor in this case.

A warning state is triggered when a condition, such as voltage or temperature, is beyond its design limitations.

The main pack’s BMS periodically reports its operational state to the inverter. There are two abnormal states:

**Warning:** When the main pack is likely to become faulty, it goes into a warning state. When a warning is reported, the inverter shows the warning message on its display but takes no action about it.

**Fault:** When the main pack falls outside prescribed limits, it goes into a fault state. When a fault is reported, the inverter immediately stops its operation and shows the fault message on the display.

The possible warning or fault messages are as follows:

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

An abnormal state is cleared when the main pack recovers its normal condition.

**NOTE**

For a serious fault, if no proper corrective actions are taken by the inverter, the main pack’s circuit breaker automatically trips to protect itself. For example, if the Status indicator stays orange for more than 5 minutes, the circuit breaker trips. Use the monitoring software on the inverter to identify what caused the fault.

### 4.2 Expansion Battery Pack

If an expansion battery pack is installed, check the indicators on its front to determine in what state it is.

<table>
<thead>
<tr>
<th>Status</th>
<th>Charge/Discharge</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red → Green¹</td>
<td>Off</td>
<td>Successfully initialized</td>
</tr>
<tr>
<td>Red → Red</td>
<td>Off</td>
<td>Initialization failed²</td>
</tr>
<tr>
<td>Green</td>
<td>Green</td>
<td>Discharging in normal state</td>
</tr>
<tr>
<td>Green</td>
<td>Red</td>
<td>Charging in normal state</td>
</tr>
<tr>
<td>Green</td>
<td>Off</td>
<td>Waiting in normal state</td>
</tr>
<tr>
<td>Flashing Green</td>
<td>Off</td>
<td>Standby state</td>
</tr>
<tr>
<td>Flashing Red/Green</td>
<td>Off</td>
<td>Protection mode²</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
<td>No power supplied ³</td>
</tr>
</tbody>
</table>

¹This should change in 7 seconds.
²Contact LG Chem or your distributor in this case.
³The main battery pack is turned off.

If a fault is detected, the expansion pack shuts itself down and enters into protection mode. Even when the expansion pack is faulty, the main pack can operate normally. On the contrary, when the main pack is faulty, the expansion pack is also unavailable.
5 Emergency Situations

The RESU 6.4 EX battery pack comprises multiple batteries that are designed to prevent hazards resulting from failures. However, LG Chem cannot guarantee their absolute safety.

5.1 Leaking Batteries

If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If one is exposed to the leaked substance, immediately perform the actions described below.

**Inhalation:** Evacuate the contaminated area, and seek medical attention.

**Contact with eyes:** Rinse eyes with flowing water for 15 minutes, and seek medical attention.

**Contact with skin:** Wash the affected area thoroughly with soap and water, and seek medical attention.

**Ingestion:** Induce vomiting, and seek medical attention.

5.2 Fire

In case of fires, it is recommended to have an ABC or carbon dioxide extinguisher.

> **WARNING**
> The battery pack may catch fire when heated above 150°C.

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

1. Extinguish the fire before the battery pack catches fire.
2. If it is nearly impossible to extinguish the fire but you have time, move the battery pack to a safe area before it catches fire.
3. If the battery pack has caught fire, do not try to extinguish the fire on the battery pack, but evacuate people immediately.

**WARNING**
When the battery pack is burning, it produces poisonous gases.

5.3 Wet Batteries
If the battery pack is wet or submerged in water, do not let people access it. Contact LG Chem or your distributor for technical assistance.

5.4 Damaged Batteries
Damaged batteries are dangerous and must be handled with the utmost care. They are not fit for use and may pose a danger to people or property.

If the battery pack seems to be damaged, pack it in its original container, and then return it to LG Chem or your distributor.

**CAUTION**
Damaged batteries may leak electrolyte or produce flammable gas. If such a damage occurs, immediately contact LG Chem at +82-43-219-2720.
6 Warranty

6.1 Warranty Coverage

LG Chem protects this product under warranty when this product is installed and used as detailed in this manual. Violating the installation procedure or using this product in any way not described in this manual immediately voids all warranties on this product.

6.2 Limitation of Liability

LG Chem does not provide warranty coverage or assume any liability for direct or indirect damages or defects that result from the following causes:

- Improper transportation or storage
- Incorrect installation
- Operating the product in an inappropriate environment
- Incorrect or inappropriate operation
- Insufficient ventilation
- Failure to adhere to safety warnings or instructions
- Repairs or modifications performed by unauthorized personnel
- Inverter failure or overcurrent.
- Force majeure events
- External influences, such as unusual physical or electrical stress.
- Use of an incompatible inverter

6.3 Contact Information

You can call LG Chem for technical assistance at +82-43-219-2720. This phone number is available only during business hours on weekdays.
## Technical Information

<table>
<thead>
<tr>
<th>Product configuration</th>
<th>Product code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main battery pack</td>
<td>RESU 6.4 EX / R48126P2S</td>
</tr>
<tr>
<td>Expansion battery pack</td>
<td>RESU 6.4 EX (EXP) / R4863P2B</td>
</tr>
<tr>
<td>Main pack + 1 expansion pack</td>
<td>RESU 6.4 EX (SYS1) / R48189P2S</td>
</tr>
<tr>
<td>Main pack + 2 expansion packs</td>
<td>RESU 6.4 EX (SYS2) / R48252P2S</td>
</tr>
</tbody>
</table>
## A.1 Main Battery Pack

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage</td>
<td>51.8 V</td>
</tr>
<tr>
<td>Operating voltage</td>
<td>45.2 V to 58.1 V</td>
</tr>
<tr>
<td>Nominal capacity</td>
<td>126 A·h</td>
</tr>
<tr>
<td>Nominal energy</td>
<td>6.4 kW·h</td>
</tr>
<tr>
<td>Nominal charge current</td>
<td>42 A, 1/3 C</td>
</tr>
<tr>
<td>Nominal discharge current</td>
<td>42 A, 1/3 C</td>
</tr>
<tr>
<td>Maximum discharge current</td>
<td>110 A</td>
</tr>
<tr>
<td>Peak power</td>
<td>5 kW</td>
</tr>
<tr>
<td>Faradic charge efficiency (25°C/77°F)</td>
<td>99%</td>
</tr>
<tr>
<td>Battery round-trip efficiency (C/3, 25°C/77°F)</td>
<td>95%</td>
</tr>
<tr>
<td>Expected lifetime at 25°C/77°F</td>
<td>More than 10 years</td>
</tr>
<tr>
<td>Cycle life (90% DOD, 25°C/77°F)</td>
<td>6000 cycles (EOL 60%)</td>
</tr>
<tr>
<td>Cycle life (80% DOD, 25°C/77°F)</td>
<td>10000 cycles (EOL 60%)</td>
</tr>
<tr>
<td>Communication interface</td>
<td>CAN 2.0B</td>
</tr>
<tr>
<td>Dimensions</td>
<td>406 mm × 165 mm × 664 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>60 kg</td>
</tr>
<tr>
<td>Available operating temperature</td>
<td>0°C to 40°C</td>
</tr>
<tr>
<td>Optimal operating temperature</td>
<td>15°C to 30°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>–30°C to 50°C</td>
</tr>
<tr>
<td>Cooling</td>
<td>Natural convection</td>
</tr>
<tr>
<td>Battery pack safety</td>
<td>CE, TUV (IEC 62619), RCM</td>
</tr>
<tr>
<td>Battery cell safety</td>
<td>IEC 62133</td>
</tr>
<tr>
<td>UN number</td>
<td>UN 3481</td>
</tr>
<tr>
<td>Hazardous materials classification</td>
<td>Class 9</td>
</tr>
<tr>
<td>UN transportation testing requirements</td>
<td>UN 38.3</td>
</tr>
<tr>
<td>International protection marking</td>
<td>IP21</td>
</tr>
</tbody>
</table>

1) If the temperature inside the battery pack rises, the charging and discharging current may be derated to keep the battery safety and lifetime.

2) As the degradation of battery products is accelerated in high temperatures, it is not recommended to place the battery pack in an area above 40°C.
### A.2 Expansion Battery Pack

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal capacity</td>
<td>63 A·h</td>
</tr>
<tr>
<td>Nominal energy</td>
<td>3.2 kW·h</td>
</tr>
<tr>
<td>Dimensions</td>
<td>230 mm × 165 mm × 664 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>32 kg</td>
</tr>
</tbody>
</table>

### A.3 Main Pack plus 1 Expansion Pack

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal capacity</td>
<td>189 A·h</td>
</tr>
<tr>
<td>Nominal energy</td>
<td>9.6 kW·h</td>
</tr>
<tr>
<td>Dimensions</td>
<td>636 mm × 165 mm × 664 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>92 kg</td>
</tr>
</tbody>
</table>

### A.4 Main Pack plus 2 Expansion Packs

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal capacity</td>
<td>252 A·h</td>
</tr>
<tr>
<td>Nominal energy</td>
<td>12.8 kW·h</td>
</tr>
<tr>
<td>Dimensions</td>
<td>866 mm × 165 mm × 664 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>124 kg</td>
</tr>
</tbody>
</table>
A.5 Compatible Inverters

NOTE
The list of inverters that are compatible with the RESU 6.4 EX battery pack may change without prior notice.

NOTE
RESU 6.4 EX does not support multiple inverters that are connected in parallel. For example, SMA inverters operating as a single phase cluster are not supported. If you want to build a single system using multiple inverters and multiple battery packs, contact your installer, inverter manufacturer, or LG Chem for consultation.

### SMA

<table>
<thead>
<tr>
<th>Model</th>
<th>Backup</th>
<th>Number of phases(^1)</th>
<th>Compatible with RESU 6.4 EX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunny Island 3.0M</td>
<td>O</td>
<td>1</td>
<td>O</td>
</tr>
<tr>
<td>Sunny Island 3.0M</td>
<td>O</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td>Sunny Island 3.0M</td>
<td>X</td>
<td>1</td>
<td>O</td>
</tr>
<tr>
<td>Sunny Island 3.0M</td>
<td>X</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td>Sunny Island 4.4M</td>
<td>O</td>
<td>1</td>
<td>O</td>
</tr>
<tr>
<td>Sunny Island 4.4M</td>
<td>O</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td>Sunny Island 4.4M</td>
<td>X</td>
<td>1</td>
<td>O</td>
</tr>
<tr>
<td>Sunny Island 4.4M</td>
<td>X</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td>Sunny Island 6.0H-11</td>
<td>O</td>
<td>1</td>
<td>O</td>
</tr>
<tr>
<td>Sunny Island 6.0H-11</td>
<td>O</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td>Sunny Island 6.0H-11</td>
<td>X</td>
<td>1</td>
<td>O</td>
</tr>
<tr>
<td>Sunny Island 6.0H-11</td>
<td>X</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td>Sunny Island 8.0H-11</td>
<td>O</td>
<td>1</td>
<td>X</td>
</tr>
<tr>
<td>Sunny Island 8.0H-11</td>
<td>O</td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td>Sunny Island 8.0H-11</td>
<td>X</td>
<td>1</td>
<td>X</td>
</tr>
<tr>
<td>Sunny Island 8.0H-11</td>
<td>X</td>
<td>3</td>
<td>X</td>
</tr>
</tbody>
</table>

\(^1\)Number of inverters
### Technical Information

**Nedap**

<table>
<thead>
<tr>
<th>Model</th>
<th>Compatible with RESU 6.4 EX</th>
</tr>
</thead>
<tbody>
<tr>
<td>PR50SB-BU</td>
<td>O</td>
</tr>
<tr>
<td>PR37SB-BU</td>
<td>O</td>
</tr>
<tr>
<td>PR30SB-BU</td>
<td>O</td>
</tr>
</tbody>
</table>

**Sungrow**

<table>
<thead>
<tr>
<th>Model</th>
<th>Compatible with RESU 6.4 EX</th>
</tr>
</thead>
<tbody>
<tr>
<td>SH5k</td>
<td>O</td>
</tr>
</tbody>
</table>