Please read this manual carefully before installing your set and retain it for future reference.

MODEL
ED05K000E00
Safety Information

IMPORTANT : THIS PRODUCT SHOULD NOT BE USED FOR ANY PURPOSE OTHER THAN THE PURPOSE DESCRIBED IN THIS INSTALLATION MANUAL.

⚠️ WARNING  Indicates a potentially dangerous situation. Death or serious injury may result if appropriate precautions are not taken.

- There is high possibility of electric shock or serious burns due to the high voltages in power conditioning circuits.
- High voltages on AC and DC cables. Risk of death or serious injury due to electric shock.
- A potentially hazardous circumstance such as excessive heat or electrolyte mist may occur due to improper operating conditions, damage, misuse and/or abuse.
- This product have potential danger such as death or serious injury by fire, high voltages or explosion if appropriate precautions are not read or fully understood.
- Do not place flammable or potentially explosive objects near the product.
- Do not place any kind of objects on top of the product during operation.
- All work on the PV modules, power conditioning system, and battery system must be carried out by qualified personnel only.
- Electrical installations must be done in accordance with the local and national electrical safety standards.
- Wear rubber gloves and protective clothing (protective glasses and boots) when working on high voltage/high current systems such as PCS and battery systems.
- There is a risk of electric shock. Do not remove cover. There is no user serviceable parts inside. Refer servicing to qualified and accredited service technician.
- Electrical shock hazard. Do not touch uninsulated wires when the product cover is removed.
- In the event of fault, the system must not be restarted. Product maintenance of repairs must be performed by qualified personnel, or personnel from an authorized support center.

⚠️ CAUTION  Indicates a situation where damage or injury could occur. If it is not avoided, minor injury and/or damage to property may result.

- This product is intended for residential use only and should not be used for commercial or industrial.
- Before testing electrical parts inside the system, it takes at least 10-minute standby period of time to complete discharging the system.
- The contents included in this box are power conditioning system and its accessories, and the entire weight amounts to over 34 kg. Serious injury may occur due to the heavy weight of the product. Therefore, special care must be taken in handling. Make sure to have at least two persons deliver and remove the package.
- Do not use the damaged, cracked or frayed electrical cables and connectors. Protect the electrical cables from physical or mechanical abuse, such as being twisted, kinked, pinched, closed in a door or walked upon. Periodically examine the electrical cables of your product, and if its appearance indicates damage or deterioration, discontinue use of this product, and have the cables replaced with an exact replacement part by a qualified personnel.
CAUTION Indicates a situation where damage or injury could occur. If it is not avoided, minor injury and/or damage to property may result.

- Ensure that you connect the earth ground wire to prevent possible electric shock. Do not try to ground the product by connecting it to telephone wires, lightning rods or gas pipes.
- The product should not be exposed to water (dripping or splashing) and no objects filled with liquids, such as vases, should be placed on the product.
- To prevent fire or electric shock hazard, do not expose this production to rain or moisture.
- Do not block any ventilation openings. Ensure reliable operation of the product and protect it from overheating. The openings shall never be blocked by placing any object on this product.
- The temperature of metal enclosure may be high during operation.
- In order to avoid radio-interference, all accessories (like a smart meter) intended for connection to the product shall be suitable for use in residential, commercial and light-industry areas. Usually this requirement is fulfilled if the equipment complies with the class B limits of EN55022.
- The product must be disposed of according to local regulations.
- The electrical installation of this unit must only be performed by electricians or technicians, qualified to install PCS.
- Danger of damaging the PCS by overload. Only connect the proper wire to DC terminal block. Refer to the installation wiring diagram for details.
- Connect the DC+ and DC- cables to the correct DC+ and DC- terminals on the product.
- Do not step on the product or the product package. The product may be damaged.
- Do not dispose of batteries in a fire. The batteries may explode.
- Do not open or damage batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.
- A battery can present a risk of electrical shock and high short-circuit current. The following precautions should be observed when working on batteries.
  a) Remove watches, ring, or other metal objects.
  b) Use tools with insulated handles.
  c) Wear rubber gloves and boots.
  d) Do not lay tools or metal parts on top of battery.

NOTE Indicates a risk of possible damage to the product.

- Before making connections, please make sure the PV array open circuit voltage is within 800 V. Otherwise the product could be damaged.
- Never use any solvents, abrasives or corrosive materials to clean this product.
- Do not store on or place against any objects to the product. It may cause serious defects or malfunction.
- Before making a connection, make sure the PV switch on this product is switched off.
- This unit is designed to feed power to the public power grid only. Do not connect this unit to an AC source or generator. Connecting the product to external devices could result in serious damage to your equipment.
- Serving of batteries should be performed or supervised by personnel knowledgeable about batteries and the required precautions.
Table of Contents

Getting Started

Safety Information ................................................................. 2
Product Features .................................................................. 6
Unpacking ........................................................................... 9
   Contents of this product .................................................. 9
   Additional components for installation ................................. 9
Name of each part ................................................................. 10
   Front and Rear .............................................................. 10
   LED indications ............................................................. 10
   Lower parts ................................................................. 11
   Inner parts (lower cover opened) ....................................... 11

Installation

Choice of location ................................................................ 12
   Mounting Location ....................................................... 12
   Minimum clearance ........................................................ 13
Wall Mounting ..................................................................... 14
Connections ........................................................................ 17
   Connection Overview .................................................... 17
   PV array connections .................................................... 18
   Battery connections ....................................................... 20
   Power grid connections .................................................. 23
   Smart meter and internet connection ................................. 26

Settings

Installer settings ................................................................. 29
   Basic operation ............................................................. 29
   [Network] settings ......................................................... 30
   [PV/Meter] settings ....................................................... 31
   [PCS/Battery] settings .................................................. 32
   [Operating Test] settings ............................................... 33
   [Firmware/Reset] settings .............................................. 34
   [Change Password] settings .......................................... 35
   System Log ................................................................. 35

EnerVu settings ................................................................. 36
   Creating a new account (Owner) ....................................... 36
   Creating a new account (Installer) ................................. 38
   Registering the PCS (Installer) ....................................... 39
Troubleshooting

Error Codes and Messages ........................................................... 40
  PCS error codes .................................................................................. 40
  Battery error codes .............................................................................. 42

Appendix

Maintenance ................................................................. 45
  Cleaning the product ............................................................................. 45
  Inspecting regularly .............................................................................. 45
  Disposing the product ............................................................................ 45
  Disassemble the product ......................................................................... 45
  Checking the PCS setting information ............................................................ 47

Specifications ................................................................. 48
Product Features

This product is intended to store direct current (DC) electricity generated from photovoltaic (PV) to the connected Lithium-Ion Battery, and convert direct current (DC) electricity from the connected battery to alternating current (AC) electricity and feed this into the power grid.

The electricity generated from a PV array can be stored to the connected battery or sold to energy supply companies.

- DC-Coupled ESS
  LG ESS can achieve higher system efficiency due to simpler power conversion process.

- Three-Phase Connection
  3-phase connection secures phase balancing.

- Smart Management
  With built-in Smart PMS, it analyses PV generation and load consumption and implements to charge and discharge immediately. Also it monitors main system & battery conditions to maintain its stable condition always.

- Web-monitoring Service
  Customers and installers can monitor their ESS with various devices such as PC, tablet or smart phones.

- Easy System Setup
  With 7” touch-screen, installer does not need a PC for system installation. Touch screen UI allows installer to set-up, pre-test and monitor system.
## Symbol used on the label

### Label

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC INPUT (OVC II)</td>
<td>Direct current input</td>
</tr>
<tr>
<td>AC OUTPUT (3W/NE)</td>
<td>Three phase four wire alternating current conductor</td>
</tr>
<tr>
<td>IP21</td>
<td>This product is protected against insertion of fingers and will not damaged during a specified test in which it is exposed to vertically dripping water.</td>
</tr>
<tr>
<td>!</td>
<td>This product should not be disposed of with other household waste. Disposal regulations should be observed in this country.</td>
</tr>
<tr>
<td>☢️</td>
<td>Caution, risk of danger</td>
</tr>
<tr>
<td>☢️</td>
<td>Refer to the installation manual or operating manual.</td>
</tr>
<tr>
<td>☢️</td>
<td>Caution, hot surface</td>
</tr>
<tr>
<td>☢️</td>
<td>Caution, risk of electric shock, energy storage timed discharge</td>
</tr>
<tr>
<td>☢️</td>
<td>The relevant equipment complies with the requirements of IEC 62109-1, IEC 62109-2.</td>
</tr>
<tr>
<td>☢️</td>
<td>The relevant equipment complies with the requirements of EN 61000-6-3.</td>
</tr>
</tbody>
</table>

### Table

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vdc Max</td>
<td>800V</td>
</tr>
<tr>
<td>Voc</td>
<td>210-680V</td>
</tr>
<tr>
<td>Iac Max</td>
<td>12A(per MPP)</td>
</tr>
<tr>
<td>Voc</td>
<td>13A(per MPP)</td>
</tr>
<tr>
<td>Voc</td>
<td>400/230V</td>
</tr>
<tr>
<td>Iac Max</td>
<td>8.5A</td>
</tr>
<tr>
<td>Iac Nom</td>
<td>50Hz</td>
</tr>
<tr>
<td>Pdc Nom</td>
<td>5000W</td>
</tr>
<tr>
<td>Power Factor</td>
<td>0.95±0.95</td>
</tr>
</tbody>
</table>

### SCHUTZKLASSE IP21, KLASSE I

IEC 62109-1/2, VDE-AR-N 4105, VDE 0126-1-1

**KLAUSE B GRUPPE 1 PRODUKT**

**Bemessung DC Eingangsspannung Li-Ion Batterie**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vdc Nom</td>
<td>207.2V</td>
</tr>
<tr>
<td>Iac Max</td>
<td>19A</td>
</tr>
</tbody>
</table>

---

**GEFAHR**

- LEBENSGEFÄHR DURCH HOCHSPANNUNG AM PV GENERATOR
- LEBENSGEFÄHR DURCH HOCHSPANNUNG AM BATTERIE GENERATOR
- LEBENSGEFÄHR DURCH ELEKTRISCHE STROMSCHLAGE
- BERÜHREN SIE KEINE ELEKTRISCH AKTIVEN BAUTEILE
- UM FEUER ODER STROMSCHLAGE ZU VERMEIDEN, SCHUTZEN SIE DAS PRODUKT VON WASSER ODER FEUCHTigkeit.

**WARNUNG**

- BEACHTEN SIE DIE INSTALLATIONSANLEITUNG SOWIE DAS BENUTZER- UND SERVICEHANDBUCH BEVOR SIE MIT INSTALLATION, BETRIEB ODER INSTANDHALTUNG AM GEBÄR EINIGEN.

---

LG Electronics EU Representative:
LG Electronics European Shared
Service Center BV
Krijgsman 1, 1186 DM Amstelveen,
The Netherlands.

MADE IN KOREA
www.lg.com/global/business/ess
MCZ6577201
Abbreviations on this manual

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Designation</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESS</td>
<td>Energy Storage System</td>
<td>Inverter system that stores energy into a battery and uses it.</td>
</tr>
<tr>
<td>PCS</td>
<td>Power Conditioning System</td>
<td>A device intended to convert DC electricity generated from PV system to AC electricity and feed it to household appliances.</td>
</tr>
<tr>
<td>PV</td>
<td>Photovoltaic</td>
<td>Solar panel system that converts solar energy into direct current electricity</td>
</tr>
<tr>
<td>SOC</td>
<td>State of charge</td>
<td>Current state of a battery</td>
</tr>
<tr>
<td>BMS</td>
<td>Battery Management System</td>
<td>Electronic system that manages a rechargeable battery.</td>
</tr>
<tr>
<td>DC</td>
<td>Direct Current</td>
<td>-</td>
</tr>
<tr>
<td>AC</td>
<td>Alternating Current</td>
<td>-</td>
</tr>
<tr>
<td>DHCP</td>
<td>Dynamic Host Configuration Protocol</td>
<td>Standardized network protocol used on Internet Protocol (IP) networks for automatic distributing network configuration parameters, such as IP addresses for interfaces and services.</td>
</tr>
<tr>
<td>LAN</td>
<td>Local Area Network</td>
<td>Network that interconnects computers within a limited area.</td>
</tr>
<tr>
<td>IP</td>
<td>Internet Protocol</td>
<td>A set of rules for sending data across a network</td>
</tr>
</tbody>
</table>

Glossary

<table>
<thead>
<tr>
<th>Terms</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azimuth</td>
<td>In the Northern hemisphere, the azimuth angle indicates by how much degrees the module surface deviates from a full south aspect. In the southern hemisphere, it indicates the deviation from a full north aspect. The azimuth angle is counted with positive values within the range from south (0°) to west (90°) and it counted with negative values within the range from south (0°) to east (-90°).</td>
</tr>
<tr>
<td>Tilt angle</td>
<td>The tilt angle indicates by how much degrees the tilt of the module surface deviates from the horizontal.</td>
</tr>
<tr>
<td>PV module</td>
<td>The PV module refers to a panel designed to absorb the sun's rays as a source of energy for generating electricity.</td>
</tr>
<tr>
<td>PV array</td>
<td>Technical device for the conversion of solar energy into electrical energy. All serial and parallel installed and connected to PV modules of a PV system are referred to as a PV array.</td>
</tr>
</tbody>
</table>
Unpacking

Contents of this product

- Power conditioning system (1EA)
- Installation Manual and Operating Manual (1EA each)
- Upper wall bracket (1EA)
- Middle wall bracket (1EA)
- BMS cable (3m, 1EA)

Additional components for installation

<table>
<thead>
<tr>
<th>Applied to</th>
<th>Additional Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall mounting</td>
<td>• Stainless steel screws with diameter 6 mm - 8mm</td>
</tr>
<tr>
<td></td>
<td>• Anchors</td>
</tr>
<tr>
<td>PV connections</td>
<td>• MC4 connectors</td>
</tr>
<tr>
<td></td>
<td>• Lead wires with the cross-sectional area 2.5 mm(^2) - 6 mm(^2)</td>
</tr>
<tr>
<td>Battery Connections</td>
<td>• Lead wires with the cross-sectional area 2.5 mm(^2) - 4 mm(^2)</td>
</tr>
<tr>
<td></td>
<td>• Wire-end-ferrules</td>
</tr>
<tr>
<td>Power grid connections</td>
<td>• Lead wires with the cross-sectional area 2.5 mm(^2) - 6 mm(^2) (including yellow green stripe cable)</td>
</tr>
<tr>
<td></td>
<td>• M4 size screws with spring washer</td>
</tr>
<tr>
<td></td>
<td>• Tin plated round terminals with 4.0 mm or 4.5 mm of inner diameter</td>
</tr>
<tr>
<td></td>
<td>• Wire-end-ferrules</td>
</tr>
<tr>
<td>Smart meter and internet connections</td>
<td>• LAN cable</td>
</tr>
<tr>
<td></td>
<td>• RJ-45 plug</td>
</tr>
<tr>
<td></td>
<td>• Smart meter cable</td>
</tr>
</tbody>
</table>
Name of each part

Front and Rear

1 Front Cover
2 LCD touch panel
3 LED Indications
4 Lower Cover
5 Upper bracket connected part
6 Lower bracket connected part (Left)
7 Lower bracket connected part (Right)
8 Lower wall bracket

LED indications

<table>
<thead>
<tr>
<th></th>
<th>Power</th>
<th>Solar</th>
<th>Battery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>Power grid is not connected.</td>
<td>Energy is not being generated.</td>
<td>Battery is in stop mode</td>
</tr>
<tr>
<td>Green</td>
<td>Power grid is connected.</td>
<td>Energy is being generated.</td>
<td>Battery is in charging</td>
</tr>
<tr>
<td>Red (Blink)</td>
<td>-</td>
<td>Fault</td>
<td>Fault</td>
</tr>
<tr>
<td>Blue</td>
<td>-</td>
<td>-</td>
<td>Battery is in discharging</td>
</tr>
</tbody>
</table>
**Lower parts**

1. PV switch (DC Disconnect)
2. PV1 (+ and -) connectors
3. PV2 (+ and -) connectors
4. Battery DC cable gland
5. BMS control connector
6. Meter/LAN cable gland
7. AC grid cable gland

**Inner parts (lower cover opened)**

1. Power Switch
2. Buzzer
3. RESET button
4. USB port
5. Ethernet port
6. Smart Meter connector
7. PCS port
Choice of location

Mounting Location

- This product is designed to be installed indoor use only. Do not install this product outdoor.
- Install this product on the place where PV cables, smart meter cables, grid cables and battery cables are easily accessible.
- This product is designed to be installed on the wall only. Do not install this product on the ground.
- The mounting surface must be able to support the weight of this product (34 kg).
- Do not install the product on the ceiling.
- Do not install the product widthwise or install on a wall with lean more than 10 degrees.
- Do not install the product tilting forward.
- Install the product the connection side down.
- Appropriate operating temperature is from 0°C to 40°C.
- Do not install this product in the place exposed to the direct sunlight.
- Install the product in a clean, cool room.

This product must not be installed or used at altitudes above 2 000 m.

Do not install this product in places where flooding frequently occurs.
• Do not install this product to highly humid area such as bathroom.
• This product generates low levels of noise at certain times, it should not be installed close to living areas.
• Noise level may differ depending on the installed location.
• Do not install the product where there is vibration.

• Do not install this product in a place with ammonia, corrosive vapours, acids or salts.
• Install this product out of reach from children and pet.

Do not install this product in places and environments subject to heavy build-up of dust.

Minimum clearance

This product must be installed with clearance at the left, right, top, bottom and front of the product as shown in the figure.

Only the battery can be installed at the bottom clearance space of the product. If you install the battery unit at the bottom clearance space, leave the clearance space between the battery and the product more than 300 mm.
Wall Mounting

This product must be installed on the wall considering appropriate environments described in previous pages. Follow the mounting instruction described below exactly and securely.

1. Disassemble the lower wall bracket from the product.

2. Place the upper wall bracket on a wall where meets every installation conditions and clearance. And indicate the positions to drill using a pencil or the like. And drill holes on the indicated positions.

   **WARNING**
   
   It is important to ensure the drilling locations are not located on any electrical wiring within the wall.

   **NOTE**
   
   When attaching the wall bracket to a wall, adjust the horizontal level using inclinometer.

3. Fix the upper wall bracket with screws and anchors.

   **NOTE**
   
   - Before fixing the bracket screws, check the horizontal level once again using inclinometer.
   - Depending on the surface, different screws and anchors may be required for installing the wall bracket. Therefore, these screws and anchors are not content of the product. The system installer is responsible for selecting the proper screws and anchors.
   - It is recommended to use stainless steel screws with diameter of 6-8 mm.
Assemble the upper wall bracket and middle wall bracket and fix it with screw.

Assemble the lower wall bracket and middle wall bracket. And indicate the positions to drill using a pencil or the like. After making indications, disassemble the lower wall bracket.

Drill holes on the indicated positions and attach the anchors.

**WARNING**

It is important to ensure the drilling locations are not located on any electrical wiring within the wall.

**NOTE**

When attaching the wall bracket to a wall, adjust the horizontal level using inclinometer.

Assemble the lower wall bracket and middle wall bracket. And fix the lower wall bracket with screws.

**NOTE**

- Before fixing the bracket screws, check the horizontal level once again using inclinometer.
- Depending on the surface, different screws and anchors may be required for installing the wall brackets. Therefore, these screws and anchors are not content of the product. The system installer is responsible for selecting the proper screws and anchors.
- It is recommended to use stainless steel screws with diameter of 6-8 mm.
Hang this product to the upper wall bracket. Make sure that at least two persons work together to move the product.

Check the screw holes at the bottom are matched with lower bracket holes correctly. And fix the product with screws removed from the lower wall bracket in step 1.
Connections

Connection Overview

![Connection Diagram]

- **WARNING**
  - Electrical shock hazard. Do not touch uninsulated wires when the PCS cover is removed.
  - Before starting electrical cable connections or removing the cover, turn off the AC circuit breaker, PV switch and DC circuit breaker of the battery. (In case of re-installation, turn them off and wait at least 10-minute standby period of time for complete discharge within this product.)
  - When the photovoltaic array is exposed to light, it supplies a DC voltage to the PCS.

- **CAUTION**
  - The electrical installation of these PCS and battery must only be performed by electricians or technicians, qualified to install PCS and battery.
  - When removing the cover, make sure not to damage internal components.
**PV array connections**
You can connect up to two PV arrays directly to the MC4 connectors on this product.

---

**WARNING**
Make sure the AC circuit breaker, PV switch and DC circuit breaker of the battery are disconnected before starting electrical cable connections.

---

**CAUTION**
- Before connecting PV array, make sure that the open circuit voltage of PV array is less than 800 V. Otherwise this product could be damaged.
- Do not connect a ground to a PV+ or PV- connector. It may cause electric shock or the product may permanently be damaged.

---

**NOTE**
- PV modules shall have an IEC61730 Application Class A rating or equivalent.
- For DC cables of PV connections, it is recommended to use the cross-sectional area of lead wire between 2.5mm² and 6 mm².
- Use MC4 branch connector if you want to use both PV1 and PV2 connectors together in order to connect two PV arrays serially.
- When you connect only one PV array to the PCS, the PV array must be connected to the PV1 (+ and -) connectors.
- When you use both PV1 and PV2 connectors, use the PV1 connectors for bigger PV array.

---

**PV1 connection**
Connect DC cables of a PV array to PV1 connectors on this product.

---

**PV2 connection**
Connect DC cables of a PV array to PV2 connectors on this product.
**WARNING**

- Do not mismatch the connection of the electric poles + to - and - to + when installing. It may cause electric shock or the product may permanently be damaged.
- Do not connect the PV cable from one PV array to the PV1+, PV2- or PV1-, PV2+ connectors on the product. It may cause electric shock or the product may permanently be damaged.
- Do not connect PV arrays in parallel connection to the one PV input on the product. It may cause electric shock or the product may permanently be damaged.
Battery connections
You can connect a battery to this product. The electricity generated from the connected PV array will be stored in the battery.

The battery for this product are not included with this product package. Before connecting the battery to this product, install the battery on the place where the battery cables are easily accessible to this product. Refer to the installation manual of the battery for more information about battery installation.

**WARNING**
- Make sure the AC circuit breaker, PV switch and DC circuit breaker of the battery are disconnected before starting electrical cable connections.
- Battery replacement can only be carried out by qualified personnel. If the battery needs to be changed, it should be placed with a product which meets the manufacturer's specifications.
- Do not mismatch the connection of the electric poles + to - and - to + when installing. It may cause electric shock or the product may permanently be damaged.

**CAUTION**
Incorrect battery polarity connection will damage the product seriously. This damage is not covered by the warranty.

**NOTE**
The total length of DC battery cable and BMS cable must be 10 m or less.

**DC cable connection**
Connect the DC cable on the battery to the DC terminal on this product.

1. Disassemble the lower cover from the product.

2. Release the cap of battery DC cable gland.
3. Insert the battery DC cables into the cap of the cable gland and insert the cables into two holes of the rubber fitting one by one.

**NOTE**
- For DC cables of battery connections, the cross-sectional area of lead wire between 2.5 mm² and 4 mm² is recommended.
- The maximum cable diameter for the cable gland is 4 mm. (including sheath)

4. Insert the battery DC cables through the battery DC cable gland.

**NOTE**
When inserting cables into the product, make sure not to damage internal components.

5. Strip the battery DC cables and assemble wire-end ferrules on each wire.
1. Strip a DC cable about 15 mm length and insert a wire-end ferrule into the cable.
2. Crimp the ferrule end using wire-end ferrule crimping tool (A).

**NOTE**
Cables and wire-end ferrules are not supplied on this product package. The system installer is responsible for selecting proper components for the installation such as cables and wire-end ferrules.

Wire-end Ferrules
Battery DC cable
15 mm
(A)
Insert each wire-end to the corresponding ferrule-hole in the Battery DC terminals and tighten the cable tie securely.

![Battery DC Terminals](image)

**CAUTION**

Incorrect battery polarity will damage the product. This damage is not covered by the warranty.

Fasten the cap of cable gland to fix the cable.

Assemble the lower cover to the product. And then fix the screws in numbering order.

**Battery communication connection**

Connect the supplied BMS cable to the battery and connect the other end of the BMS cable to the product as figure below. After making a connection, fasten the screws on the connector to fix it.
Power grid connections

To use or sell the generated energy through power grid connection, you should connect power grid to this product. This product converts DC electricity generated from PV array to AC electricity. The generated energy can be sold to the electric utility or used for the household appliance.

**WARNING**

Make sure the AC circuit breaker, PV switch and DC circuit breaker of the battery are disconnected before starting electrical cable connections.

**NOTE**

- AC circuit breaker must be the current ratings of 16A.
- This product can cause current with a DC component. Where a Residual Current-operated protective (RCD) or monitoring (RCM) device is used for protection in case of direct or indirect contact, only an RCD or RCM of Type A (or type B) is allowed on the supply side of this product.
- Connect the equipment grounding before connecting the AC wires to the grid.

Before making a power grid connection, other end of an AC cable should be connected to an AC circuit breaker on the distribution box.

1. Release the cap of AC cable gland.

   **NOTE**
   
   Select an appropriate size of sealing ring inside the AC cable gland according to the thickness of the AC cable.

2. Disassemble the lower cover from the product.

3. Strip an AC cable about 200 mm length. And cut wires about 50 mm except grounding wire (PE).

   **NOTE**
   
   - It is recommended to use a yellow green stripe wire for the PE grounding connection.
   - For AC wires of grid connections, it is recommended to use the cross-sectional area of lead wire between 2.5 mm² and 6 mm².
   - The maximum cable diameter for the AC cable gland is 19 mm. (including sheath)
Insert an AC cable through the AC cable gland.

**WARNING**
Before connecting an AC cable, make sure that the AC circuit breaker of the power grid is turned off securely.

Insert the AC cable into the cap of cable gland before inserting cable into the product.

Assemble wire-end ferrules and round terminal on each wire.

1. Strip the grounding wire (PE) about 15 mm and insert a round terminal into the wire. Recommended round terminal: 4.0 mm or 4.5 mm of inner diameter with tin plated terminal
2. Crimp the round terminal using crimping tool (A).
3. Strip remaining wires about 15 mm and insert a wire-end ferrule into the wire.
4. Crimp the ferrule ends using crimping tool (A).

**NOTE**
Cables, round terminal and wire-end ferrules are not supplied on this product package. The system installer is responsible for selecting proper components for the installation.

Connect the grounding wire (PE) to the grounding connector. (Torque of 1.5 ± 0.3 N.m)

**NOTE**
- Connect the equipment grounding before connecting the AC wires to the AC circuit breaker.
- Screw for grounding connection is not supplied on this product package. Prepare a M4 size screw with spring washer for the grounding connection.
Insert remaining wire-ends to the corresponding ferrule-hole in the AC terminal.

**NOTE**

- The N (neutral) hole in the AC terminal must be connected to the N (neutral) terminal of the AC circuit breaker on the distribution box correctly. Otherwise the product could be damaged seriously.
- The PE (Protective Earth) grounding connector must be connected to the G (Grounding) terminal of the distribution box correctly. Otherwise the product could be damaged seriously.

Assemble the lower cover to the product. And then fix the screws in numbering order.

Fasten the cap of cable gland to fix the cable.
### Smart meter and internet connection

The smart meter connection is required to get information of energy flow. The Smart Meter for this product is not included with this product package. Before connecting the smart meter to this product, install the smart meter. Refer to installation manual of the smart meter for more information about smart meter installation.

Internet connection is required to use variety of functions such as network update, EnerVu monitoring system, etc. You may need to contact your Internet service provider (ISP) to connect this product to the internet.

---

**WARNING**

Make sure the AC circuit breaker, PV switch and DC circuit breaker of the battery are disconnected before starting electrical cable connections.

---

1. Release the cap from the Meter/LAN cable gland.

2. Make cut openings on each hole of the rubber fitting using a scissors.

3. Insert the LAN cable, smart meter cable and the additional grounding wire into the cap of the cable gland and insert the cables into three holes of the rubber fitting one by one.

---

**NOTE**

- For additional grounding wire, the cross-sectional area of lead wire between 2.5 mm² and 6 mm² is recommended.
- The cross-sectional area of the additional grounding wire must be the same or larger than the grounding wire (PE).
- Recommended color of additional grounding wire is yellow green stripe.
- Screw for grounding connection is not supplied on this product package. Prepare a M4 size screw with spring washer for the grounding connection.
- The maximum diameter of each cable for the holes on rubber fitting is 5 mm. (including sheath)
Disassemble the lower cover from the product. Insert the cables into the product through Meter/LAN cable gland.

**NOTE**
The total length of smart meter cable and LAN cable must be 30 m or less.

Strip the LAN cable and attach a RJ-45 plug at the end of the cable. Insert the LAN plug to the Ethernet port on the product.

Detach the plug from smart meter connector.

Strip two wires of the smart meter cable and insert stripped wire-ends to the corresponding wire hole on the plug, making a match each A and B. Refer to installation manual of the smart meter for more information about smart meter installation.

Insert the plug to the smart meter connector.
Strip the additional grounding wire about 15 mm and insert a round terminal into the wire. And then connect the additional grounding wire to the additional grounding connector (mandatory, Torque of 1.5 ± 0.3 N.m)

**NOTE**

The additional grounding connector must be connected to the G (Grounding) terminal of the distribution box correctly. Otherwise the product could be damaged seriously.

Assemble the lower cover to the product. And then fix the screws in numbering order.

Fasten the cap of cable gland to fix the cable.

---

**Smart Meter and LAN connection diagram**

When all the connections are finished, check the status in numbering order below.

1) Switch the DC circuit breaker of the connected battery to the 'ON' position.
2) Switch the AC circuit breaker to the 'ON' position.
3) Turn the PV switch of the PCS to the 'ON' position.
Installer settings

When this product is turned on for the first time, settings in [Installer settings] menu must be set by authorized service personnel.

Before starting [Installer Settings], make sure that physical connection and installation are done as described in this manual exactly and securely.

Basic operation

To enter [Installer Settings] menu, system requires installer password. Before setting installer settings menu, input installer password.

1. Tab [ ] on the main screen and tab [Installer Settings] option.

2. [Installer Log In] menu appears on the screen. Input installer password and tab [LOG IN] to enter [Installer Settings] menu.

3. Tab a desired menu option on the left side.

4. Tab a desired setting option and set the appropriate value.
[Network] settings

If there is a DHCP server on the local area network (LAN) via wired connection, this product will be automatically allocated an IP address. After making the physical connection, a small number of home networks may require the network setting to be adjusted.

1. Tab [Network] on [Installer Settings]. Current status of the network connection is displayed.
   If you want to connect the EnerVu server, tab [Web server data upload] to change to [On].
   Tab [Web server data upload] again for turning off the option.
   [On]: The energy data of the system is saved and uploaded to the server in every 15 minutes.
   [Off]: The energy data of the system is not saved. And it is not uploaded to the server.
   Tab [Test] to check the server connection.
   If the [Web server data upload] option is not set to [On], the data may not be uploaded to the server.

2. Tab [Wired settings]. Wired connection options are displayed.
   If [IP Setting] option in [Wired settings] tab is set to [Auto], this product will be automatically allocated an IP address from local area network (LAN) via wired connection. You may need to set network connection manually depending on the network conditions. In this case, tab [Auto] to change to [Manual].

3. Fill in [IP address], [Subnet Mask], [Gateway] and [DNS address] option manually.

NOTE

Notes on internet Connection:
- This product does not support wireless network connection.
- Many network connection problems during set up can often be fixed by re-setting the router or modem. After connecting the product to the home network, quickly power off and/or disconnect the power cable of the home network router or cable modem. Then power on and/or connect the power cable again.
- Depending on the internet service provider (ISP), the number of devices that can receive internet service may be limited by the applicable terms of service. For details, contact your ISP.
- Our company is not responsible for any malfunction of this product and/or the internet connection feature due to communication errors/malfunctions associated with your broadband internet connection, or other connected equipment.
NOTE

Notes on internet Connection:

- Some internet connection operations may not be possible due to certain restrictions set by the Internet service provider (ISP) supplying your broadband Internet connection.

- A 10 Base-T or 100 Base-TX LAN port is required for wired connection to this product. If your internet service does not allow for such a connection, you will not be able to connect this product.

- A DSL modem is required to use DSL service and a cable modem is required to use cable modem service. Depending on the access method and subscriber agreement with your ISP, you may not be able to use the internet connection feature contained in this product or you may be limited to the number of devices you can connect at the same time. (If your ISP limits subscription to one device, this product may not be allowed to connect when a PC has been already connected.)

- The use of a “Router” may not be allowed or its usage may be limited depending on the policies and restrictions of your ISP. For details, contact your ISP directly.

- Turn off all unused network equipment in your local home network. Some devices may generate network traffic.

**[PV/Meter] settings**

You can check the PV and Meter information.

Tab [PV/Meter] on [Installer Settings]. PV and smart meter information is displayed.

**[PV], [PV1] and [PV2]**

1. Select the currently selected value of each option to change. Input menu appears on the screen.
2. Input the desired value.
3. Select [Accept] to complete the setting.

**[Meter]**

1. Select the currently selected value of each option to change. Input menu appears on the screen.
2. Input the desired value.
3. Select [Accept] to complete the setting.
**[PCS/Battery] settings**

You can set battery use and operation.

Tab [PCS/Battery] on [Installer Settings]. PCS and battery information is displayed.

**[PCS]**

[PV Feed-in Limitation] is displayed. The value can be changed manually.

1. Select the currently selected value. Input menu appears on the screen.
2. Input the desired value.
3. Select [Accept] to complete the setting.

**[Battery]**

You can change [Use batteries] setting. Tab the switch to set [On] or [Off]. If the setting is set to [Off], generated energy will not charge the connected battery.

[Battery maker], [Operating range], [Winter Mode SOC] [Battery Installation Date] and [Battery Capacity] can be set manually.

1. Select the currently selected value of each option to change. Input menu appears on the screen.
2. Input the desired value.
3. Select [Accept] to complete the setting.

---

**CAUTION**

If the [Use batteries] setting is set to off or the system is turned off for a long period time, the battery can be completely discharged and cannot be used anymore. Be sure not to stop using the battery for a long period of time.
[Operating Test] settings

This is the last stage at setting process. Before operating this product, [Operating Test] must be done for checking all the systems are ready to run. If [Operating Test] is not proceeded, this product does not work.

Tab [Operating Test] on [Installer Settings]. The operating test menu is displayed.

You should perform 4 operating tests. To start the test, tab [START] of each test. Start the tests one by one from left.

- **Charging (Grid to Battery)**: The operating test for battery charging through power grid.
- **Charging (PV to Battery)**: The operating test for battery charging through PV.
- **Discharging (Battery to Grid)**: The operating test for battery discharging to power grid.
- **Inverter (PV to Grid)**: The operating test for converting PV's DC power to AC power.

The result is displayed when each test is completed. When there is no problem with the test, [Success] is displayed. When [Fail] is displayed, tab each test result to display the detailed information. Check and solve the error referring to the error code in the information, and perform the test again. For information on the error code, refer to page 40.
[Firmware/Reset] settings

Firmware Upgrade
You can upgrade the firmware to the latest version using USB storage device.

1. Tab [Firmware/Reset] on [Installer Settings]. [Firmware Upgrade] tab and [Factory Reset] tab are displayed. For firmware upgrade, select [Firmware Upgrade].

2. Before starting firmware upgrade, download the latest firmware to a USB storage device and insert it into the USB port on this product. Tab [UPGRADE] to start upgrade.

3. [Reboot] button is displayed when upgrade is completed. Remove the USB storage device from this product and tab [Reboot] to reboot the product.

NOTE
Firmware upgrade must be done by the installer only. And firmware must not be distributed by installer.

Factory reset
You can reset the settings of the product to its original factory settings.


2. You can reset this product to its original factory settings. All the settings and system logs will be deleted after resetting. Tab [Accept Reset]. A pop-up message appears on the LCD screen. Tab [Accept] to start factory resetting.
[Change Password] settings

You can change the password for entering [Installer settings] menu.

1. Tab [Change Password] on [Installer Settings]. Change Password menu is displayed.

2. Tab [Change]. Input menu for new password is displayed. Tab \(\Rightarrow\) repeatedly to delete the current password and input the new password. Select [OK]. The password is changed.

System Log

You can see the list of mode changes, system fault and system warning log. Refer to page 40 for more information of error codes, messages and solutions.

1. The list of all notice occurring in this product during certain period.
Tab [System Log] on [Installer Settings].

2. Tab current [Period] value and select the period using \(\downarrow\) or \(\uparrow\).
Tab [Accept] to select the period. Tab [Search] to display the list of the notice during the selected period.
\(\downarrow\) : Goes to next page.
\(\uparrow\) : Goes to previous page.
EnerVu settings

To use the EnerVu web monitoring system, the product must be registered to the system server by the installer. After registering, the user can check the variety of information such as system status, information, report using LG EnerVu web monitoring system.

Preparation

- An internet browser installed computer, tablet or mobile with internet access is needed to access EnerVu web monitoring system.
- This product must be connected to internet. Check [Network] setting menu in the LCD touch panel of the product.
- The system owner must create a LG ESS account before registering the product. Refer to 'Creating a new account (Owner)' section below.

Creating a new account (Owner)


   If you agree with every term and condition, click the [I Agree] check box and select [AGREE].
   The [Create Account] page appears.

3. Fill your e-mail address in [User ID] field and select [CHECK AVAILABILITY].
   Fill in [Password], [Password confirm] and [Birthday] fields and select [CONFIRM].
   The E-mail confirmation page appears.
A confirmation e-mail will be sent to your e-mail address. On your e-mail, select [CONFIRM] to complete the e-mail confirmation.

On the account creation page, select [CONFIRM] to complete creating your account.

Select [SIGN IN] to go to the [SIGN IN WITH LG ACCOUNT] page. Input your [User ID] and [Password] and select [SIGN IN].

Available LG account services are displayed on the screen.
Creating a new account (Installer)

A


B

Select [Sign Up]. The [Sign Up] page appears. Fill your mail address in [Email] field and select [Check]. And then fill the [First Name] and [Last Name] fields.

C

Fill the required information on [Company Details] section. And then read the [Installer Terms] and [Installer Privacy Policy] carefully. If you agree with every terms and policies, click [I agree] check box in each section. [Submit] button appears on the screen.

D

Select [Submit] to complete creating an installer account.
Registering the PCS (Installer)


2. Select [Installer]. The [Installer Sign In] page appears. And then input the installer’s e-mail address and the password and select [Installer Sign In]. If the installer does not have an account, select [Sign Up] and make a new installer account.


4. Fill every information in the [System Info] section and select [Save] to save the information.

5. In the [ESS Info] field, fill the product registration number and select [Check]. The ESS information will automatically be filled. Select [Save] to go to the next step.

6. Fill the every information in the [Owner] field and select [Save] to save the information. And Select [Activation] at the bottom of the page to finish the activation process.
## Error Codes and Messages

### PCS error codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Message</th>
<th>Description</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>P301</td>
<td>BMS CAN Comm Fault</td>
<td>Communication error with the connected battery for over 10 seconds.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>P302</td>
<td>PMS Comm Fault</td>
<td>Communication error on PCS system.</td>
<td>Fault Reset &amp; Restart</td>
</tr>
<tr>
<td>P303</td>
<td>DSP SCI Comm Fault</td>
<td>Communication error with the processing unit for over a minute.</td>
<td>Contact service center</td>
</tr>
<tr>
<td>P304</td>
<td>Meter Comm Fault</td>
<td>Communication error with the smart meter.</td>
<td>Stop, Fault Reset &amp; Restart</td>
</tr>
<tr>
<td>P305</td>
<td>Grid Relay(L1-1) F</td>
<td>Grid relay is not operable. (L1-1)</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P306</td>
<td>Grid Relay(L2-1) F</td>
<td>Grid relay is not operable. (L2-1)</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P307</td>
<td>Grid Relay(L3-1) F</td>
<td>Grid relay is not operable. (L3-1)</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P308</td>
<td>Grid Relay(N-1) F</td>
<td>Grid relay is not operable. (N-1)</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P309</td>
<td>Grid Relay(L1-2) F</td>
<td>Grid relay is not operable. (L1-2)</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P310</td>
<td>Grid Relay(L2-2) F</td>
<td>Grid relay is not operable. (L2-1)</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P311</td>
<td>Grid Relay(L3-2) F</td>
<td>Grid relay is not operable. (L3-2)</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P312</td>
<td>Grid Relay(N-2) F</td>
<td>Grid relay is not operable. (N-2)</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P315</td>
<td>PCS IGBT Fault</td>
<td>The PCS IGBT is not operable.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P316</td>
<td>ESS Fan Fault</td>
<td>The cooling fan in the product is in fault.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P317</td>
<td>Fault Reset Fail</td>
<td>Fault reset has been failed 3 times.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>P318</td>
<td>Fuction Safety F</td>
<td>The processing unit has a hardware fault.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P320</td>
<td>DSP SCI Comm Error</td>
<td>Communication error with the processing unit for over 5 seconds.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P321</td>
<td>Grid Conn Fault</td>
<td>Incorrect power grid connection has detected.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>Code</td>
<td>Description</td>
<td>Details</td>
<td>Action</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------</td>
<td>--------------------------------------------------------------------------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>P201</td>
<td>PV A Over Volt P</td>
<td>Voltage level of PV A is higher than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P202</td>
<td>PV B Over Volt P</td>
<td>Voltage level of PV B is higher than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P203</td>
<td>PV A Over Curr P</td>
<td>Current level of PV A is higher than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P204</td>
<td>PV B Over Curr P</td>
<td>Current level of PV B is higher than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P205</td>
<td>PV Insulation P</td>
<td>Insulation resistance level on PV is lower than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P206</td>
<td>Batt Over Volt P</td>
<td>Voltage level of the battery is higher than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P207</td>
<td>Batt Over Curr P</td>
<td>Current level of the battery is higher than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P208</td>
<td>DC Link Over Volt P</td>
<td>Voltage level of the DC Link is higher than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P209</td>
<td>Grid Under Volt P</td>
<td>Voltage level of the grid is lower than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P210</td>
<td>Grid Over Volt P</td>
<td>Voltage level of the grid is higher than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P211</td>
<td>Grid Over Curr P</td>
<td>Current level of the grid is higher than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P212</td>
<td>Grid Under Freq P</td>
<td>Frequency level of the grid is lower than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P213</td>
<td>Grid Over Freq P</td>
<td>Frequency level of the grid is higher than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P214</td>
<td>Residual Curr P</td>
<td>Residual current level is higher than the limitation</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P215</td>
<td>Over Temperature P</td>
<td>The PCS temperature is higher than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P216</td>
<td>Anti Islanding P</td>
<td>There was a power failure.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P217</td>
<td>Grid Avg Volt P</td>
<td>An average voltage level within 10 minutes is higher than the limitation.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P218</td>
<td>Grid DC Curr P</td>
<td>DC offset current is added on Grid</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P219</td>
<td>PCS Starting Error</td>
<td>The Error is happened when PCS is running in the starting sequence.</td>
<td>Automatically reboot within a minute.</td>
</tr>
<tr>
<td>P220</td>
<td>Batt Under Volt P</td>
<td>Voltage level of the battery is lower than the limitation</td>
<td>Contact service center</td>
</tr>
<tr>
<td>P101</td>
<td>Batt Over Volt W</td>
<td>Voltage level of Battery is higher than the limitation</td>
<td>Warning</td>
</tr>
</tbody>
</table>
### Troubleshooting

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Warning</th>
</tr>
</thead>
<tbody>
<tr>
<td>P102</td>
<td>Batt Over Curr W Current level of Battery is higher than the limitation.</td>
<td>Warning</td>
</tr>
<tr>
<td>P103</td>
<td>Batt Under Volt W Voltage level of Battery is lower than the limitation.</td>
<td>Warning</td>
</tr>
<tr>
<td>P104</td>
<td>PV Low Power W PV power is lower than limitation.</td>
<td>Warning</td>
</tr>
</tbody>
</table>

### Battery error codes

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>B301</td>
<td>Cell OverVolt F Voltage level of battery cell is higher than the protection limitation.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B302</td>
<td>Cell OverVolt_2 F Voltage level of battery cell is higher than the second protection limitation.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B303</td>
<td>Cell Under Volt F Voltage level of battery cell is lower than the protection limitation.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B304</td>
<td>Cell Volt Imbal F Voltage differences between the battery cells are higher than 3.5 V.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B305</td>
<td>Pack Over Volt F Voltage level of battery pack is higher than the protection limitation.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B306</td>
<td>Pack Under Volt F Voltage level of battery pack is lower than the protection limitation.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B307</td>
<td>Over Charge Curr F Current level of charging is higher than the protection limitation.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B308</td>
<td>Over Dischar Curr F Current level of discharging is higher than the protection limitation.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B309</td>
<td>Over Temperature F The battery temperature is higher than the limitation.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B310</td>
<td>Under Temperature F The battery temperature is lower than the limitation.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B311</td>
<td>Temp Deviation F Temperature differences between the battery are over 10 degrees.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B312</td>
<td>Curr Sensor Offset Fault has been detected on the current sensor.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B313</td>
<td>PCS-RBMS LOC Communication error has been detected between the battery and the PCS.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B314</td>
<td>Ext 12V Power Error The power is not supplied to the battery from the PCS.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B315</td>
<td>RBMS-MBMS LOC Internal communication error has been detected.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>Code</td>
<td>Message Description</td>
<td>Recommended Action</td>
</tr>
<tr>
<td>-------</td>
<td>------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>B316</td>
<td>Current sensor line error</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B317</td>
<td>Temperature sensor error</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B318</td>
<td>Internal error has been detected.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B319</td>
<td>Voltage level of the battery management system is higher than the protection limitation.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B320</td>
<td>Voltage level of the battery management system is lower than the protection limitation.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B321</td>
<td>Cannot measure the cell voltage of battery management system.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B322</td>
<td>Internal memory error has been detected.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B323</td>
<td>Error has been detected on cell voltage sensing line.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B324</td>
<td>Voltage deviation of battery cells differ from the sum of the reference value.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B325</td>
<td>Internal communication error has been detected.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B326</td>
<td>An error has been detected on processing unit.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B327</td>
<td>An error has been detected on RAM.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B328</td>
<td>An error has been detected on ROM.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B329</td>
<td>An error has been detected when resetting the battery management system.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B330</td>
<td>OBD Fail Fault</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B331</td>
<td>Battery version error</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B332</td>
<td>An error has been detected on EEPROM.</td>
<td>Contact service center.</td>
</tr>
<tr>
<td>B101</td>
<td>Voltage level of battery cell is higher than the protection limitation.</td>
<td>Stop battery powering and Standby</td>
</tr>
<tr>
<td>B102</td>
<td>Voltage level of battery cell is lower than the protection limitation.</td>
<td>Stop battery powering and stand-by.</td>
</tr>
<tr>
<td>B103</td>
<td>Voltage differences between the battery cells are higher than 3.5 V.</td>
<td>Stop battery powering and stand-by.</td>
</tr>
<tr>
<td>B104</td>
<td>Voltage level of battery pack is higher than the protection limitation.</td>
<td>Stop battery powering and stand-by.</td>
</tr>
</tbody>
</table>
### Troubleshooting

<table>
<thead>
<tr>
<th>Code</th>
<th>Condition</th>
<th>Description</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>B105</td>
<td>Pack Under Volt W</td>
<td>Voltage level of battery pack is lower than the protection limitation.</td>
<td>Stop battery powering and stand-by.</td>
</tr>
<tr>
<td>B106</td>
<td>Over Charge Curr W</td>
<td>The SOC level of the battery is higher than the protection limitation.</td>
<td>Stop battery powering and stand-by.</td>
</tr>
<tr>
<td>B107</td>
<td>Over Disch Curr W</td>
<td>The SOC level of the battery is lower than the protection limitation.</td>
<td>Stop battery powering and stand-by.</td>
</tr>
<tr>
<td>B108</td>
<td>Over Temperature W</td>
<td>The battery temperature is higher than the limitation.</td>
<td>Stop battery powering and stand-by.</td>
</tr>
<tr>
<td>B109</td>
<td>Under Temperature W</td>
<td>The battery temperature is lower than the limitation.</td>
<td>Stop battery powering and stand-by.</td>
</tr>
<tr>
<td>B110</td>
<td>Temp Deviation W</td>
<td>Temperature differences between the batteries are over 5 degrees.</td>
<td>Stop battery powering and stand-by.</td>
</tr>
</tbody>
</table>

- Firmware version, Error codes and Fault conditions on the lists can be accessed on the display. And those can also be accessed from the server.

**If you have any technical problem or question, please contact the service center below.**

Address: LG Electronics Deutschland GmbH Berliner Straße 93
40880 Ratingen
Germany

Tel.: + 0049 18 06 807 020
E-Mail: b2b.service@lge.de
Maintenance

Cleaning the product
To clean this product, use a soft, dry cloth. If the surfaces are extremely dirty, use a soft cloth lightly moistened with a mild detergent solution. Do not use strong solvents such as alcohol, benzene, or thinner, as these might damage the surface of the product.
Do not use volatile liquids such as insecticide spray near this product. Wiping with strong pressure may damage the surface. Do not leave rubber or plastic products in contact with the product for a long period of time.
When cleaning the air duct, shut off all the systems including PCS, PV module, battery, AC circuit breaker. After that, open the lower cover of the PCS and remove dust on the air duct using a soft brush.

Inspecting regularly
It is recommended to check the operating status and connection status once a year. Contact authorized dealer or where you purchased.

Disposing the product
When the product reached to the end of its service life or defect beyond repair, dispose the product according to the disposal regulations for electronic waste in your area. Disposing the product must be carried out by qualified personnel only. Contact authorized dealer or where you purchased.

Disassemble the product
You may need to disassemble the product when you move or dispose the product. You must keep the procedure as described, otherwise there may have electric shock or serious burns due to the high voltages.

WARNING
- All work on the product disassembly must be carried out by qualified personnel only.
- There is high possibility of electric shock or serious burns due to the high voltages in power conditioning circuits.
- Wear rubber gloves and protective clothing (protective glasses and boots) when working on high voltage/high current systems such as PCS and battery systems.

1. Tab [ ] on the main screen and tab [Start].
   A notice appears on the screen.
   Tab [Accept] to stop operation.

2. Turn off the DC disconnect switch on the bottom of the product. And turn off the DC circuit breaker of the connected battery. Refer to battery manual for more information of turning off the DC circuit breaker.
3. Turn off the AC circuit breaker in the distribution box. And wait at least 10-minute standby period of time to complete discharging this product.

4. Disassemble the lower cover from the product.

5. Disconnect the Ethernet, smart meter, BMS cables from the product.

6. Disconnect the PV1 and PV2 connector from the product.

7. Disconnect the battery DC cables from the product. Use the appropriate size of a flat-head screwdriver when disconnecting.

8. Disconnect the AC and grounding cable from the product. Use the appropriate size of a screwdriver when disconnecting.

9. Assemble the lower cover to the product. And then fix the screws in numbering order.

10. Remove the screws from the lower wall bracket.

11. Remove the product from the wall. Make sure that at least two persons work together to move the product.
Checking the PCS setting information

Installer can see current PCS settings as below.

1. Tab [≡] on the main screen and tab [Installer Settings] option.

2. [Installer Log In] menu appears on the screen.
   Input 'pcs' and tab [space] for more than 2 seconds in [Installer Log In] menu.
   [PCS Settings Information] appears on the screen.

   **NOTE**
   - All the values on the [PCS Settings Information] list can not be edited by user or installer.

**NOTE**
- Viewable information names are listed below -
  Grid Normal Voltage, Grid Normal Frequency, Grid Over/Under Voltage, Grid Over/Under Frequency,
  Grid Over Current, DCLICK Over Voltage, Battery Over/Under Voltage, Battery Over Current,
  PV1 Over/Under Voltage, PV1 Over Current, PV2 Over/Under Voltage, PV2 Over Current,
  Heat-sink Over Temperature, PV Insulation Resistance, Operating Grid Maximum/Minimum Voltage,
  Relay on Grid Voltage, Operating Grid Maximum/Minimum Frequency, Operating BAT Maximum/Minimum
  Voltage, Residual Maximum/Minimum Current, RESTART TIME, TRIP TIME, Country Standard Set,
  PV1 Capacity, PV2 Capacity, PV Feed-in Limit, Battery SOC Maximum/Minimum, Battery SOC Minimum
  Alert
### General

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (W x H x D)</td>
<td>493 mm x 670 mm x 185 mm</td>
</tr>
<tr>
<td>Net weight (approx.)</td>
<td>34 kg</td>
</tr>
<tr>
<td>Operating temperature</td>
<td>0 °C to 40 °C</td>
</tr>
<tr>
<td>Operating humidity</td>
<td>60 %</td>
</tr>
<tr>
<td>Max. efficiency (PV to grid)</td>
<td>95.7 %</td>
</tr>
</tbody>
</table>

### AC input/output

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated grid voltage</td>
<td>3-NPE 400 V / 230 V</td>
</tr>
<tr>
<td>Power factor range</td>
<td>-0.95 — +0.95</td>
</tr>
<tr>
<td>AC voltage range (L-N)</td>
<td>184 — 264.5 V</td>
</tr>
<tr>
<td>AC voltage range (L-L)</td>
<td>319 — 458 V</td>
</tr>
<tr>
<td>Short circuit current (Isc)</td>
<td>12 A</td>
</tr>
<tr>
<td>Current Inrush</td>
<td>73 Aac-peak / 0.05 ms</td>
</tr>
<tr>
<td>Max. fault current</td>
<td>83 Aac-peak / 20 ms</td>
</tr>
<tr>
<td>Max. output overcurrent protection</td>
<td>12 A</td>
</tr>
<tr>
<td>Frequency (frequency range)</td>
<td>50 Hz (47.5 - 51.5 Hz)</td>
</tr>
<tr>
<td>Max. AC power (from PV)</td>
<td>5,000 W</td>
</tr>
<tr>
<td>Max. AC power (from battery)</td>
<td>3,000 W</td>
</tr>
<tr>
<td>Max. output current</td>
<td>8.5 A</td>
</tr>
<tr>
<td>Total harmonic distortion</td>
<td>5%</td>
</tr>
<tr>
<td>Phases</td>
<td>3</td>
</tr>
</tbody>
</table>

### DC input/output

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. input voltage</td>
<td>800 V</td>
</tr>
<tr>
<td>Min. input voltage</td>
<td>210 V</td>
</tr>
<tr>
<td>Max. DC power</td>
<td>6,600 W (3,300 W per MPPT)</td>
</tr>
<tr>
<td>Input voltage range MPPT</td>
<td>210-680 V</td>
</tr>
<tr>
<td>Number of MPPT</td>
<td>2</td>
</tr>
<tr>
<td>Number of string per MPPT</td>
<td>1</td>
</tr>
<tr>
<td>Max. input current per MPPT</td>
<td>12 A</td>
</tr>
<tr>
<td>Backfeed current</td>
<td>0 A</td>
</tr>
<tr>
<td>Short circuit current (Isc) per MPPT</td>
<td>13 A</td>
</tr>
</tbody>
</table>
## Battery input / output

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery manufacturer</td>
<td>LG Chem</td>
</tr>
<tr>
<td>Battery model name</td>
<td>ED00064CN00.ADG3TUH</td>
</tr>
<tr>
<td>Battery capacity</td>
<td>6.4 kWh</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>207.2 V</td>
</tr>
<tr>
<td>Operating voltage range</td>
<td>168 V to 232.4 V</td>
</tr>
<tr>
<td>Standard charging condition</td>
<td>Constant current / constant voltage</td>
</tr>
<tr>
<td></td>
<td>0.3 C (9.45 A) current, charging voltage</td>
</tr>
<tr>
<td></td>
<td>232.4 V (at 25 °C)</td>
</tr>
<tr>
<td>Max. charging/discharging current</td>
<td>19 A</td>
</tr>
</tbody>
</table>

### Standard charging conditions (CC-CV)

<table>
<thead>
<tr>
<th>Charging current</th>
<th>Condition for termination</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3C (9.45A)</td>
<td>232.4 V</td>
</tr>
</tbody>
</table>

### Standard discharging conditions (CC)

<table>
<thead>
<tr>
<th>Discharging current</th>
<th>Condition for termination</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3C (9.45A)</td>
<td>168 V</td>
</tr>
</tbody>
</table>

## Feature & function

<table>
<thead>
<tr>
<th>Feature</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise emission</td>
<td>40 dB</td>
</tr>
<tr>
<td>Cooling</td>
<td>Forced convection</td>
</tr>
<tr>
<td>Topology</td>
<td>Transformerless</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP21</td>
</tr>
<tr>
<td>Max. permissible value of relative humidity (non-condensing)</td>
<td>85 % (Climate class 3K5)</td>
</tr>
<tr>
<td>Display</td>
<td>7&quot; Touch LCD</td>
</tr>
<tr>
<td>Certification</td>
<td>IEC/EN 62109-1/-2, VDE-AR-N 4105, VDE 0126-1-1</td>
</tr>
<tr>
<td>Web monitoring service</td>
<td>Available</td>
</tr>
</tbody>
</table>

- Design and specifications are subject to change without notice.