

## Installation Manual

Lithium-ion storage battery system

**Model No. LJ-SK84A**

Lithium-ion battery

**Model No. LJ-SBK01**

Network Adaptor

**Model No. LJ-NA02**

---

## Table of Contents

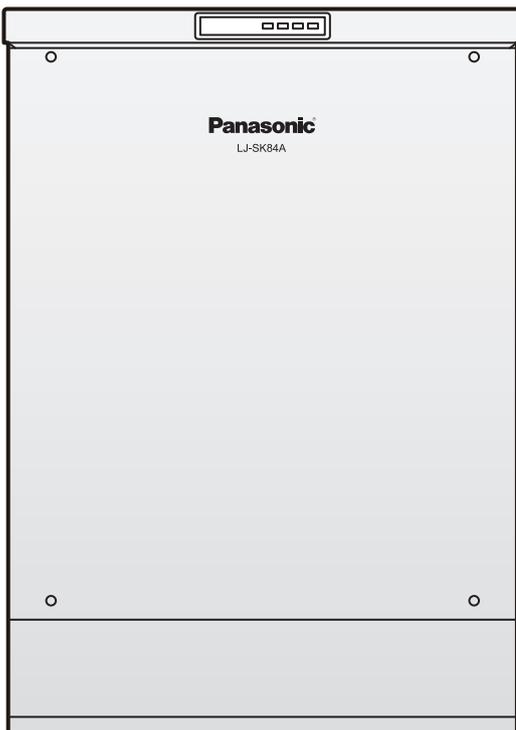
### Safety Precautions

### Installation

1	Typical System Configuration .....	1
2	Product Description .....	5
3	Confirming Product Number .....	10
4	Mounting of System and Battery.....	13
5	Electrical Connection of System and Battery..	22
6	Mounting of Network Adaptor .....	32
7	Electrical Connection of Network Adaptor ...	35

### Setup

1	Control Panel .....	42
2	List of Commands in Work Setting Mode ...	44
3	Setting Procedures .....	46
4	Checking Energization.....	47
5	Setting Date/Time .....	49
6	Setting Parameters for Installer .....	52
7	Setting Parameters for Grid Operator.....	60
8	Test Runs.....	66
9	Checking the Network Adaptor Connections ..	70
10	Complete Settings .....	72



- Thank you for purchasing the Panasonic Lithium-ion storage battery system.
- Before installing the product, please read this manual carefully and follow all safety precautions at all times.
- After the installation, keep this manual and the User's Manual for future reference.
- Only qualified persons with the appropriate skills are allowed to perform the tasks described in this manual.
- After the installation, use this manual to check that the product operates correctly. Also, use the User's Manual to explain how to use and perform day to day operation of the product to the customer.
- If the product fails, even within the warranty period, due to non-conformance with the Installation Manual, the User's Manual or the caution labels attached to the product, it will not be repaired free of charge.
- For disposal, please contact your Household hazardous waste depot.

# Safety Precautions

- All instructions should be read and understood before attempting to install, wire, operate, and maintain.
- The installation requires a great degree of skill and should only be performed by qualified licensed professionals, including, without limitation, licensed contractors and licensed electricians.
- We shall not be in any way liable for any accident or malfunction resulting from failure to observe these precautions.
- If abnormal conditions are encountered, discontinue the operation immediately and contact the product distributor.
- Always use the included accessories and specified components for the product installation and wiring.
- Never install or process the product in a way not described in the Installation Manual.

## ■ Incorrect installation due to failure to follow instructions below may cause harm or damage, the seriousness of which is classified as below:

 <b>DANGER</b>	Denotes a hazardous situation which, if not avoided, will result in death or serious injury.
 <b>WARNING</b>	Denotes information that, if not observed correctly, can result in serious injuries to personnel.
 <b>CAUTION</b>	Denotes information that, if not observed correctly, can result in minor injuries to personnel and/or property damage.

## ■ The instructions to be followed are classified by the following symbols:

 Denotes an action that must not be performed.	 Denotes an instruction that must be followed.
---	---

 <b>DANGER</b>	
<b>How to handle the Battery module.</b>	
Before operating this product, please read the User's Manual and Installation Manual carefully. To reduce the risk of generating heat, fire, rupture, performance degradation, failure or injury, carefully follow these instructions.	
 Prohibited	Do not touch the exposed electrodes in the front of the Battery module. Danger to life from electric shocks
	Do not disassemble or reconstruct the Battery module. Safety devices and protective functions are assembled in the Battery module. Excessive heat, smoke generation, explosion or fire may occur if these safety devices and/or protective functions are tampered with.
	Do not immerse the Battery module in liquids (water, sea water, oils, chemical waters etc.), or get it wet. Excessive heat, smoke generation, explosion or fire may occur if the built-in protective functions of the Battery module become damaged.
	Do not touch or short-circuit electrodes of Battery module with metal object such as electric wire, necklace etc. Doing so may cause the Battery module to short-circuit, resulting in excessive heat, smoke generation, explosion or fire as well as cause wires and other metals to become hot.
	Do not incinerate or heat the Battery module. Doing so may cause the insulator to melt, damage the safety devices and cause the electrolyte solution to catch fire, resulting in excessive heat, smoke generation, explosion or fire.

# Safety Precautions



**DANGER**



Prohibited

<p>Do not use or leave the Battery module near fires, stoves or heated places. Doing so may cause a short-circuit inside the Battery module, resulting in excessive heat, smoke generation, explosion or fire.</p>
<p>Do not use a Battery module that has been dropped. This may result in excessive heat, smoke generation, explosion or fire.</p>
<p>Do not put your hands, tools or foreign materials into the Battery module. Doing so may result in injury, electric shock or failure.</p>
<p>Do not store the unpacked Battery modules on top of each other. Doing so may result in an accident or failure due to failure.</p>
<p>Do not drive a nail into the Battery module, strike it with a hammer, or stand on it. Doing so may explode or deform the Battery module and cause an internal short-circuit, resulting in excessive heat, smoke generation, explosion or fire.</p>
<p>Do not subject the Battery module to impacts or throw it. Doing so may cause the Battery module to leak, generate excessive heat, smoke, explode or ignite. Excessive heat, smoke generation, explosion or fire may occur if the built-in protective functions of the Battery module become damaged.</p>
<p>Do not use a Battery module that is conspicuously damaged or deformed. This may result in excessive heat, smoke generation, explosion or fire.</p>
<p>Do not touch the Battery module with your bare hands if electrolyte has been leaking. The electrolyte solution can cause serious damage to your eyes. If the solution accidentally gets in your eyes, rinse with water and seek medical attention immediately. Never rub your eyes.</p>
<p>Do not put the Battery module on top of foreign materials, such as tools, electrical wires, and screws. This may result in excessive heat, smoke generation, explosion or fire. For traverse installations, handle the unit with care and make sure that there are no objects underneath.</p>
<p>Do not handle the Battery module without insulated gloves and shoes. Electric shock may result from the discharge of electricity from the Battery module.</p>

# Safety Precautions



## WARNING

 Prohibited	<ul style="list-style-type: none"> <li>Do not disassemble the product other than by the methods described in this manual or modify the product. Doing so may result in fire, electric shock, short-circuit or failure.</li> </ul>
	<ul style="list-style-type: none"> <li>Do not install the product in locations where there is high humidity, exposure to steam, vapour or cold air, or large amounts of greasy fumes or dust, fire or exhaust gas from vehicles. Doing so may result in fire, electric shock, short-circuit or failure.</li> </ul>
	<ul style="list-style-type: none"> <li>Do not connect a heating appliance. A Lithium-ion battery storage system may repetitively turn ON/OFF the power supply in short intervals in the events of power outage and recovery. Since heating appliances cannot shut down safely in such short periods of time, connecting them to a Lithium-ion battery storage system may result in fire or carbon monoxide poisoning.</li> </ul>
	<ul style="list-style-type: none"> <li>Do not place tools or other objects on the product. Doing so may result in injury or failure.</li> </ul>
	<ul style="list-style-type: none"> <li>Do not insert your hands or foreign objects into the vent holes or fan. Doing so may result in injury, electric shock or failure.</li> </ul>
 Mandatory	<ul style="list-style-type: none"> <li>All electrical wiring must comply with local electrical regulations. Fire, electric shock, or injury may otherwise result.</li> </ul>
	<ul style="list-style-type: none"> <li>Wear protective gloves and use insulated tools during the installation/wiring work. Heavy objects must be handled in accordance with local regulations. Failing to do so may result in electric shock, injury or failure.</li> </ul>
	<ul style="list-style-type: none"> <li>Make sure that the vent holes are not blocked when installing the product. Blocked vent holes will reduce heat dissipation and may result in fire.</li> </ul>
	<ul style="list-style-type: none"> <li>Observe the following when installing/wiring the product: Failure to do so may result in a fire, electric shock or failure.               <ul style="list-style-type: none"> <li>&gt; Protection device for the Lithium-ion storage battery, protection device for Network Adaptor, the Backup breaker and DC protector unit must be set to OFF until the wiring is completed.</li> <li>&gt; Prior to starting work, be sure to check that there is no voltage at all of the terminals.</li> <li>&gt; Do not allow water to enter the inside of the main body.</li> <li>&gt; Never perform any work when the scaffold and/or your hands/body are wet.</li> <li>&gt; Do not damage the insulation of any of the electrical conductors.</li> <li>&gt; Do not short-circuit the [+] and [-] cables of the Battery module.</li> </ul> </li> </ul>
	<ul style="list-style-type: none"> <li>Establish a proper ground connection in accordance with local regulations. Imperfect grounding may result in electric shock or failure.</li> </ul>
	<ul style="list-style-type: none"> <li>Carry the product using the specified method of transportation. Failing to do so may result in injury.</li> </ul>
	<ul style="list-style-type: none"> <li>The installation should be carried out by a suitably qualified installer in accordance with this document (Installation Manual). Failing to do so may result in electric shock, injury or fire.</li> </ul>
	<ul style="list-style-type: none"> <li>Install the product in an environment that meets the specified requirements. Failing to do so may result in injury or failure.</li> </ul>
	<ul style="list-style-type: none"> <li>Attach the battery only after the product installation. Failing to do so may result in electric shock or injury.</li> </ul>
	<ul style="list-style-type: none"> <li>Before attaching the battery, be sure to attach the lower panel and verify that the battery breaker is OFF. Failing to do so may result in electric shock.</li> <li>Attach the Battery module securely using the included screws. Failing to do so may result in fire or accident.</li> </ul>

# Safety Precautions

 <b>WARNING</b>	
 Mandatory	<ul style="list-style-type: none"> <li>■ Make sure to work in a natural posture when lifting the Battery module during installation. Back injury may otherwise result.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Use adequately insulated tools. Failing to do so may result in electric shock.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Electrical wires should be connected properly with the correct polarity/phase. Failing to do so may result in smoke generation, fire or failure.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Attach power cables and other cables securely so that no tension is applied to any of the terminals. Failing to do so may result in fire.</li> </ul>

 <b>CAUTION</b>	
 Prohibited	<ul style="list-style-type: none"> <li>■ Do not drill holes in the product or base using a hole saw or electric drill. Doing so may cause the shavings to stick to the substrate, resulting in ignition or failure.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Do not place objects on or around the product. There is a risk of the objects catching fire from the heat generated during the operation.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Do not leave the Battery module in high-temperature locations such as those exposed to direct sunlight or inside of a sun-heated car. Doing so may cause the Battery module to leak, generate excessive heat or smoke as well as reduce the performance and lifetime of the Battery module.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Do not install the product in locations that may become a habitat for small animals. Small animal may enter the interior of the product, resulting in smoke generation, fire or failure.</li> </ul>
 Mandatory	<ul style="list-style-type: none"> <li>■ Make sure that the wiring connections are correct. Incorrect wiring will result in product failure.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Install the product in a location that can sufficiently bear the product's weight. Reinforce the ground as necessary. The product may tip over if not fastened properly, resulting in failure or accident.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Use the proper cable thickness and colour for wiring in accordance with local regulations. Fire or failure may occur if instructions are not followed.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Fasten cable gland with the specified tightening torque. Failing to do so may result in fire or failure.</li> </ul>
	<ul style="list-style-type: none"> <li>■ Be sure to observe the installation requirements. Failing to do so may result in fire or accident.</li> </ul>

# Installation

# 1. Typical System Configuration

## 1-1. Power and Communication Line Configuration

This is a storage battery system designed for residential use.

The product is connected using 1-phase 2-wire or 1-phase 2-wire from 3-phase 4-wire. The connection design should be carried out based on this manual and the regulations.



### WARNING

- The specified protection devices must be installed on the power supply side of the storage battery system and the Network Adaptor.
- In an emergency, turn off these protection devices in the distribution board and DC protector in the product.
- Do not connect to an IT system.
- Ensure that the PE wire is grounded securely.



### CAUTION

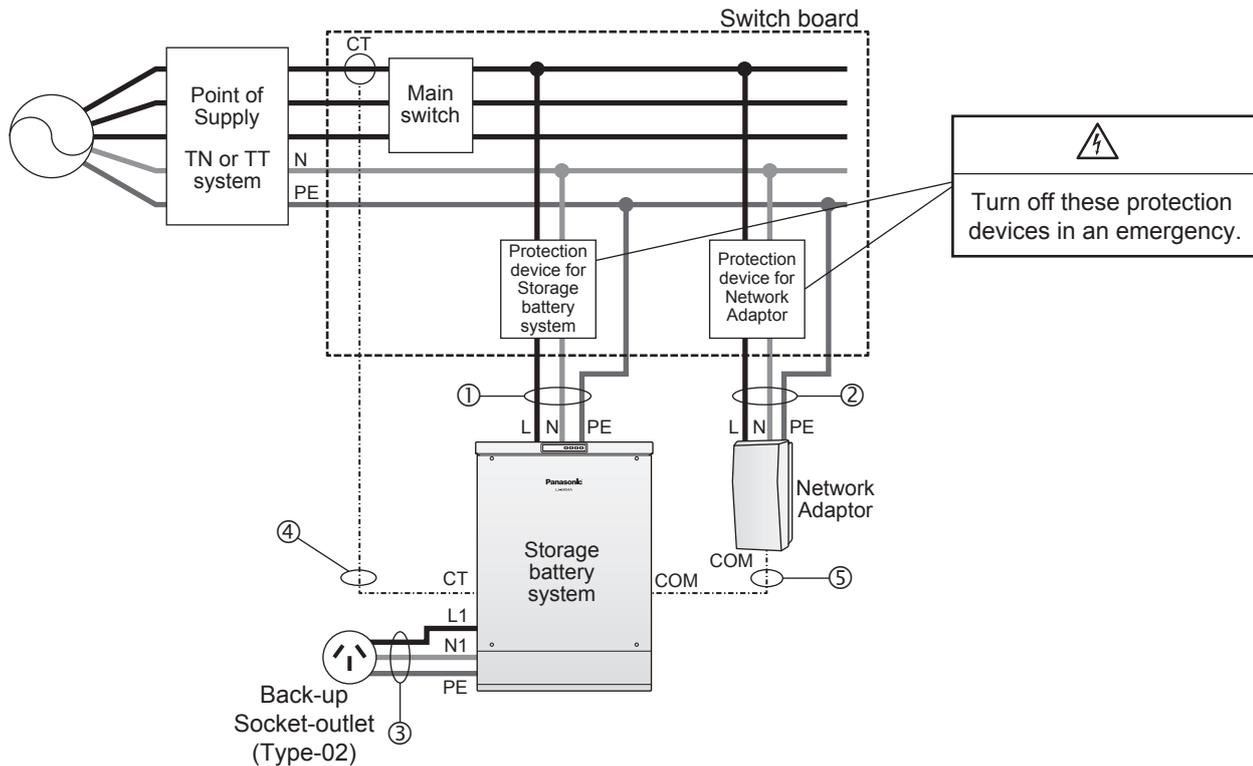
- Use specified types and sizes of wires in accordance with local regulations for the wiring.
- Make no mistake with the wiring and the polarities.

### NOTICE

- This system cannot be used for a circuit with a system power supply exceeding 100 A.
- The CT for reverse current should be connected to the phase line to which the product is connected (LINE side).
- Increase the separation if the communication/control lines and the power line that are using large currents are running in parallel.
- The cable wire types, sizes and colours must be properly selected and the wiring lengths must be within the specified range and in accordance with local regulations.
- This product is designed to install one product in one house. Please do not install two or more than two products in one house.

\* PE: Protective Earthing

## ■ System Configuration



- \* This wiring system chart is only a typical example and may be configured with different specifications. The wiring system can be designed as necessary in accordance with wiring rules.
- \* Network Adaptor is not installed on some systems depending on contractual coverage.
- \* CT/communication line is SELV circuit.

### ● Protection device

In compliance with the law and regulations, please select and install protection devices with reference to the following.

#### ◎ Circuit-breaker

- Select and install the circuit breaker for protection of AC over current.

For Storage battery system : AC230V 16A trip (TYPE C)

For Network Adaptor : AC230V 10A trip (TYPE C)

#### ◎ RCD

- In compliance with the law and regulations, select RCD "type" and "rated sensitive leakage current".

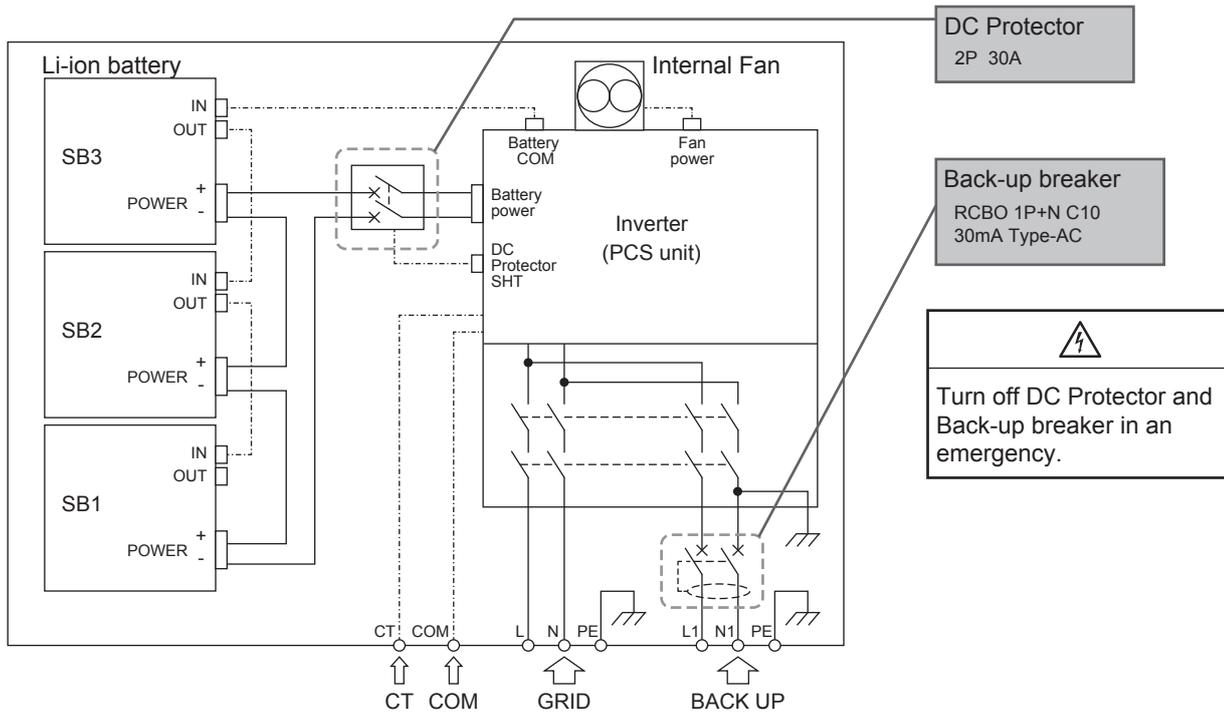
\* In this product, between the DC side of battery module and the AC side is insulated.

### ● Wiring

Conductors		Cable/Wire size	Cable/Wire Length
①	Power line	PVC Circular Cable 2C+E 2.5 mm <sup>2</sup>	max. 50 m
②	Power line	PVC Circular Cable 2C+E 1.5 mm <sup>2</sup>	max. 50 m
③	Back-up power line	PVC Circular Cable 2C+E 2.5 mm <sup>2</sup>	max. 50 m
④	CT Line	PVC Flexible Cable 2C 0.75 mm <sup>2</sup>	max. 50 m
⑤	COM Line	PVC Flexible Cable 2C 0.75 mm <sup>2</sup>	max. 50 m

\* Please use copper wire cables.

## Internal Configuration of Storage battery system



\* For Back-up circuit, the N phase and the ground in the storage battery system are connected. Therefore, do not connect the ground and the N phase on the load side of Back-up circuit.

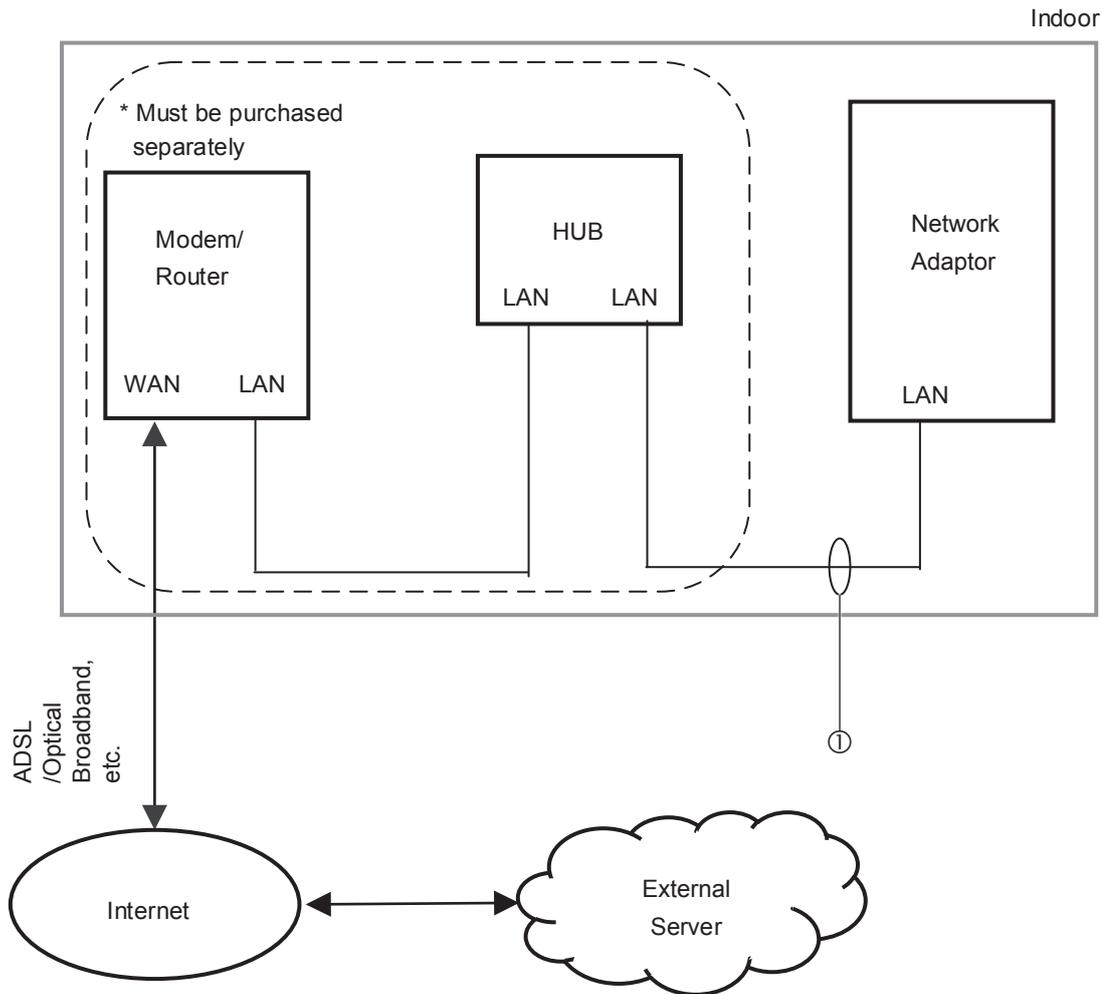
### ● Wiring Design Check

- The specified protection devices are installed on the power supply.
- The products are grounded.
- The phase line to which the CT for reverse current is attached and the phase line to which the storage battery system is connected are the same.
- The cable wire types and sizes are correct and the wiring lengths are within the specified value range and in accordance with local regulations.
- Cable colours are selected in accordance with the regulations.

## 1-2. Internet Line Configuration

The Network Adaptor connects to the Internet using 10BASE-T or 100BASE-T.

Develop a configuration by combining it with a network hub and other network devices as required.



### ● Wiring

Conductors		Cable/Wire size	Cable/Wire Length
①	Internet line	CAT5e (10BASE-T/100BASE-TX)	max. 50 m

### ● Wiring Design Check

- Correct network devices have been selected.
- Adequate LAN cables have been selected for the Network Adaptor.

## 2. Product Description



### WARNING

- Do not use products that show signs of deformation or impact damage.

### NOTICE

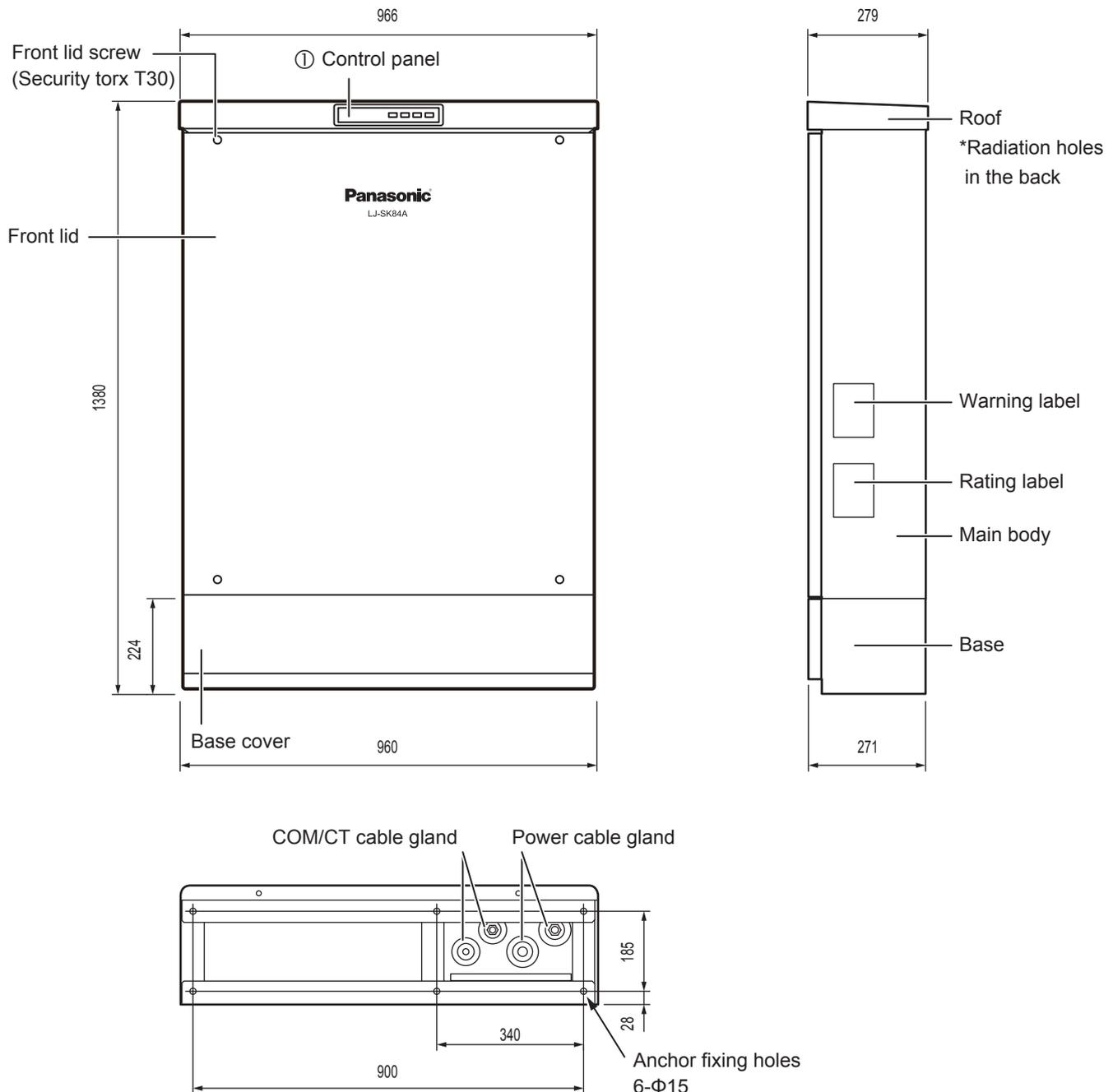
- When opening the package, check that all accessory parts are included in the correct quantities and store them so that they do not get lost prior to installation.

### 2-1. Lithium-ion storage battery system [LJ-SK84A]

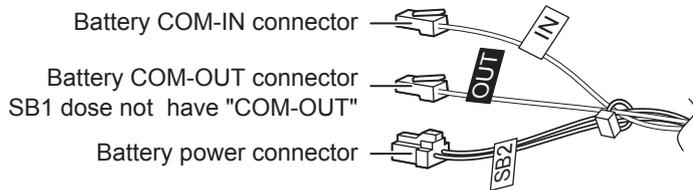
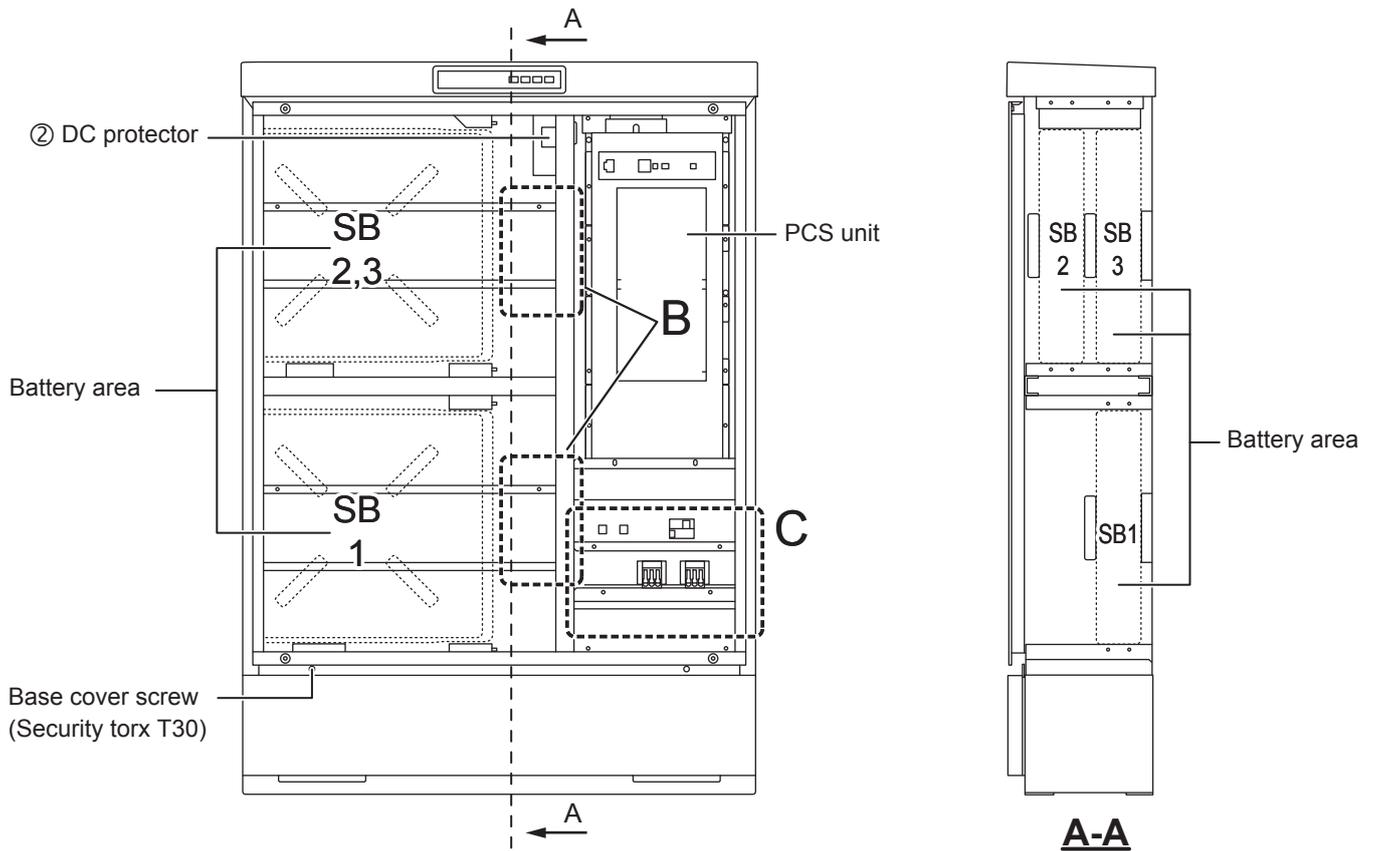
A slimline storage battery system which achieves financial benefits through GRID integration which takes advantage of PV power generation and time-of-use rates.

The batteries described in section 2-2 are installed in this product enclosure.

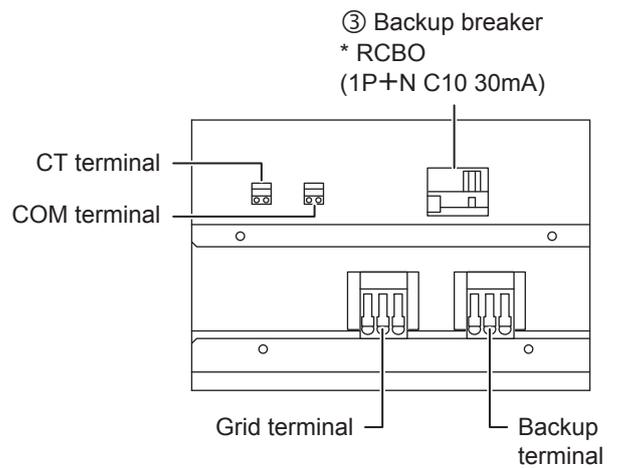
#### ■ Exterior dimensions and part names



<Inside of the product>



**B Details**

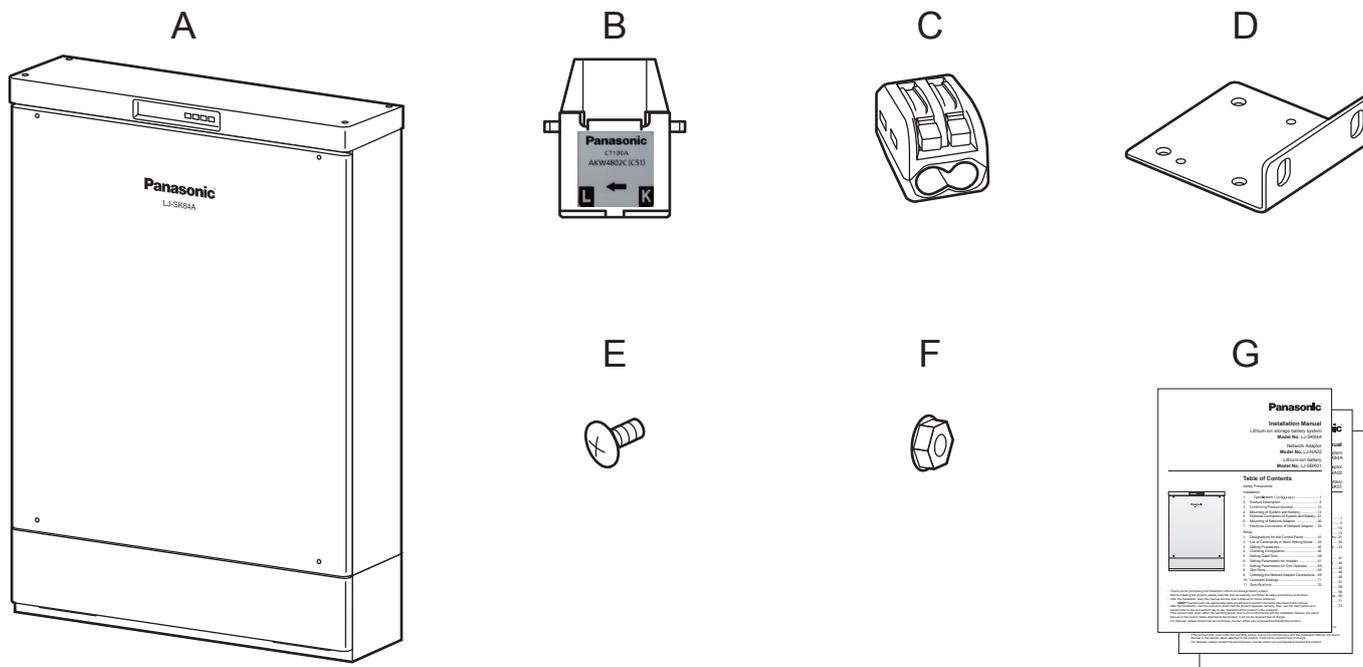


**C Details**

● Main parts

No.	Name	Purpose	Remarks
①	Control Panel	For display/settings and control	
②	DC Protector	Switch for powering on from the battery	
③	Backup Breaker	Circuit breaker for backup supply	

## ■ Accessories



Position	Designation	Quantity	Note	Check
A	Lithium-ion storage battery system	1		<input type="checkbox"/>
B	CT (Current Transformer)	1		<input type="checkbox"/>
C	One-touch CT connector	2		<input type="checkbox"/>
D	Battery fixing bracket	6		<input type="checkbox"/>
E	Bracket fixing screw (M3 x 8)	24		<input type="checkbox"/>
F	Battery fixing nut (M5 Hexagon nut)	12		<input type="checkbox"/>
G	User's Manual, Installation Manual and Warranty documents	1 each		<input type="checkbox"/>

### ● Unpacking Check

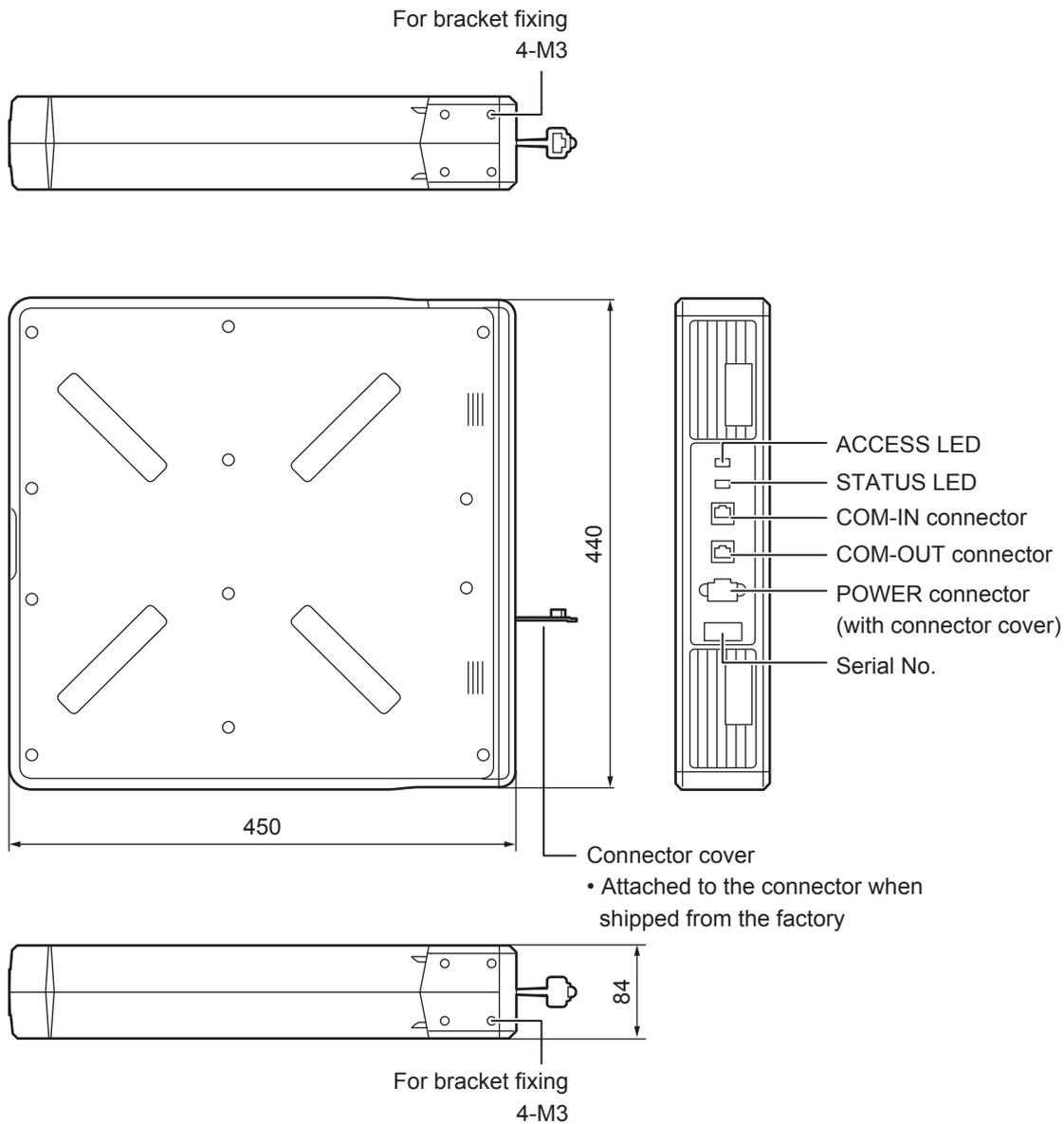
- No signs of deformation or impact damage on the product.
- All accessories are included in the package.

## 2-2. Lithium-ion battery [LJ-SBK01]

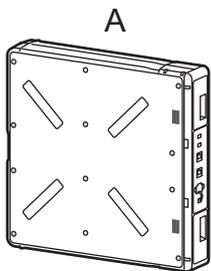
A compact and exchangeable Lithium-ion battery module designed for easy maintenance.

Charging and discharging capabilities can be achieved by mounting this battery into the system described in section 2-1.

### ■ Exterior dimensions and part names



### ■ Accessories



Position	Designation	Quantity	Note	Check
A	Lithium-ion storage battery	1		<input type="checkbox"/>

\* Three batteries need to be mounted into the system.

\* Manuals are not included.

See the instruction manual for the Lithium-ion storage battery system (this manual).

### ● Unpacking Check

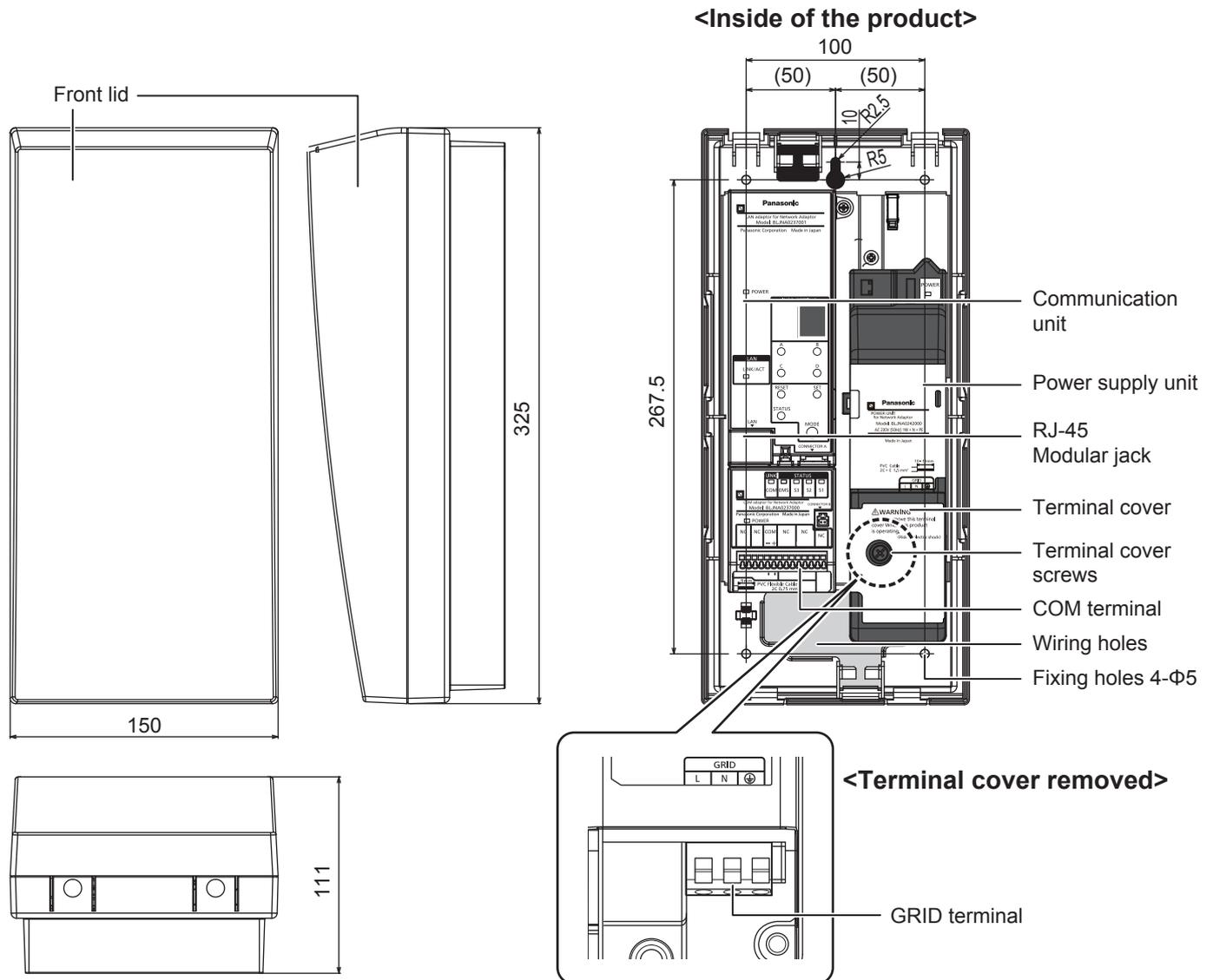
- No signs of deformation or impact damage on the product.
- All accessories are included in the package.

## 2-3. Network Adaptor [LJ-NA02]

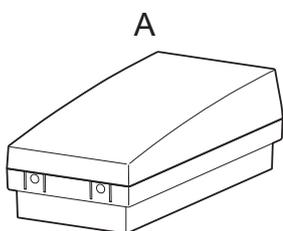
It is the Network Adaptor which maximizes economic efficiency via the optimal charge-discharge control that is integrated with the server.

\* Network Adaptor is not installed on some systems depending on contractual coverage.

### ■ Exterior dimensions and part names



### ■ Accessories



Position	Designation	Quantity	Note	Check
A	Network Adaptor	1		<input type="checkbox"/>
B	Setting Manual	1		<input type="checkbox"/>

\* Installation and instruction manuals are not included.  
See the instruction manual for the Lithium-ion storage battery system (this manual).

### ● Unpacking Check

- No signs of deformation or impact damage on the product.
- All accessories are included in the package.

### 3. Confirming Product Number

The serial number will be required for connecting to the server, maintenance, etc.

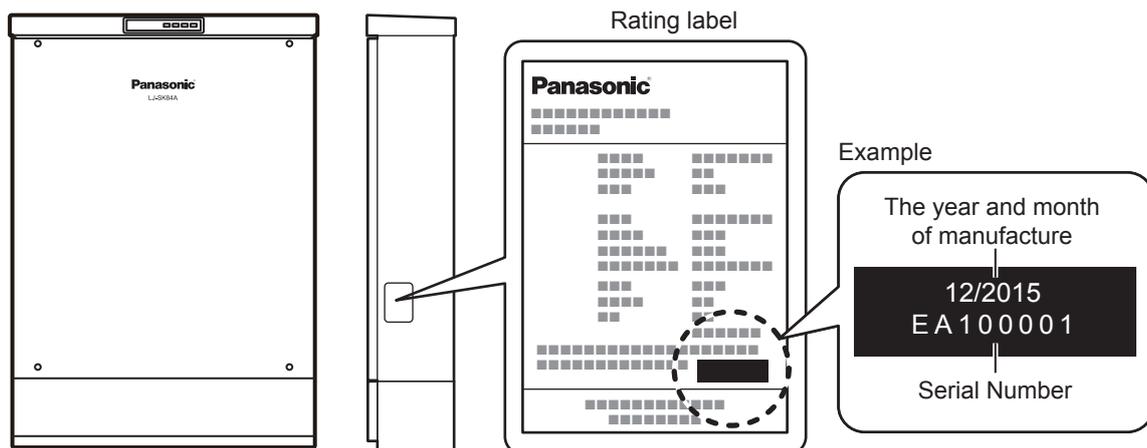
#### NOTICE

- Check the serial number and write it in this manual, and keep this manual.
- Check that the battery lot number match for all three units.

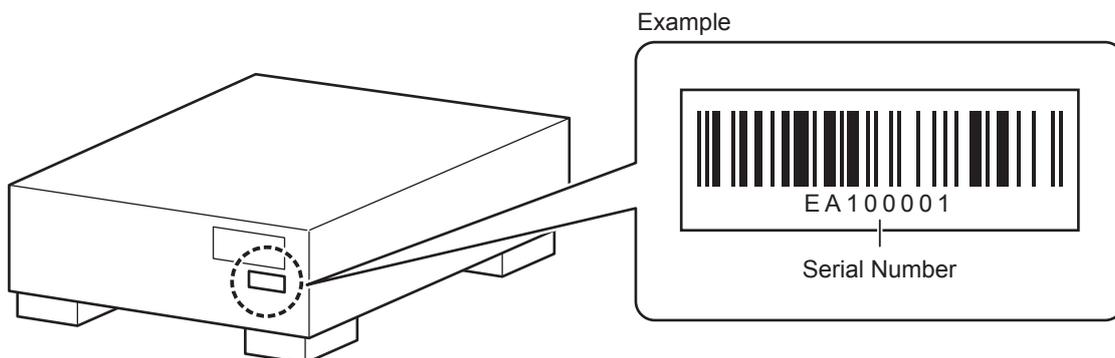
#### ■ Serial number location

- Lithium-ion storage battery system

<On product unit>

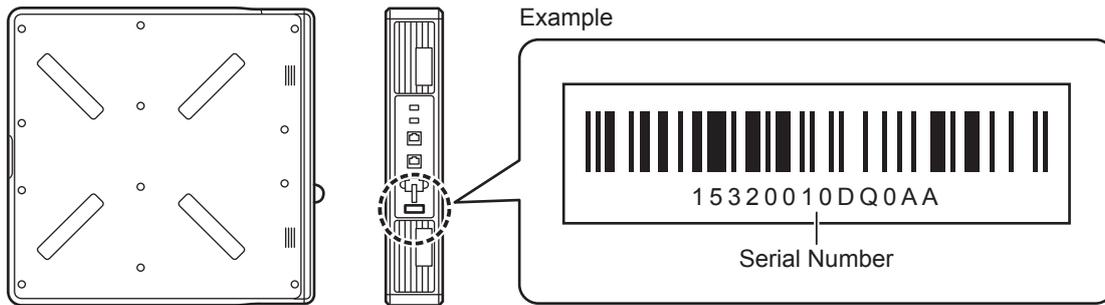


<On packaging>



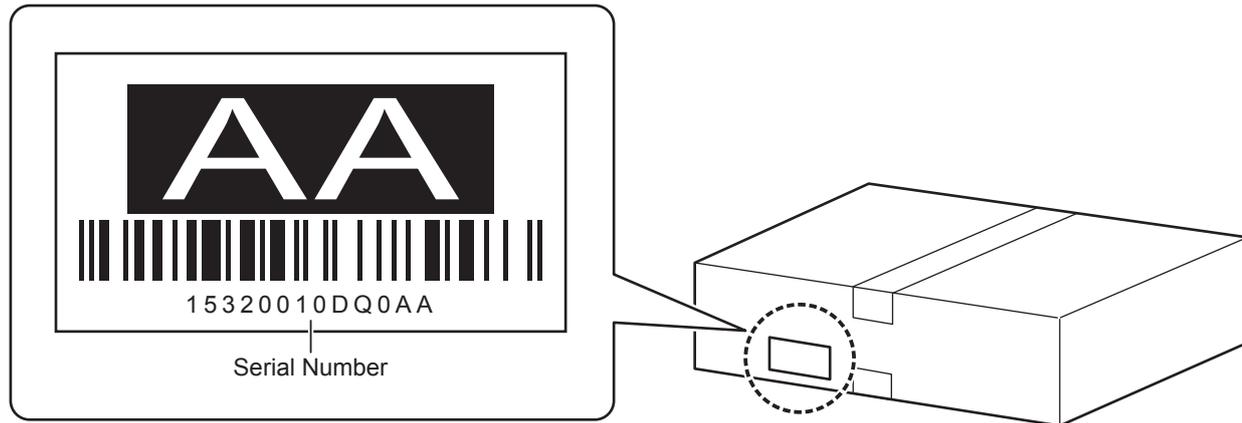
- **Lithium-ion Storage Battery Module**

<On product unit>



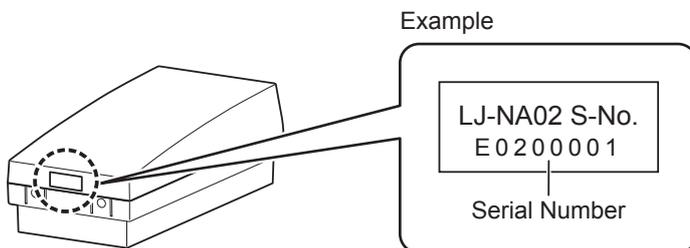
<On packaging>

Example

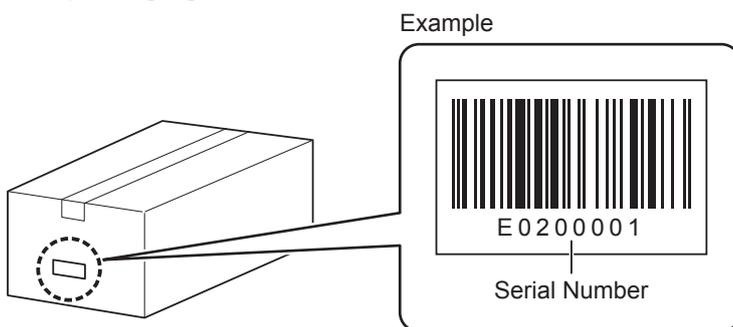


- **Network Adaptor**

<On product unit>



<On packaging>



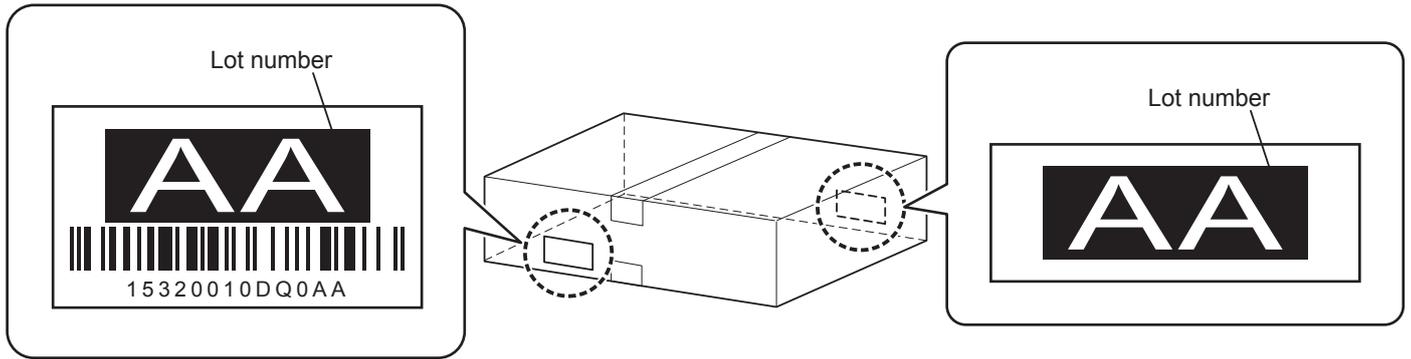
\* Network Adaptor is not installed on some systems depending on contractual coverage.

## ■ Checking the battery lot number

Check that the battery lot number matches for all three units.

If one of lot number is "AA", check that the other two batteries have the same "AA" lot number.

\* Please contact the distributor if the numbers do not match.



## ● Serial number and lot number

Model name	Model No.	Serial No.	Lot No.
Lithium-ion storage battery system	LJ-SK84A		
Lithium-ion storage battery	LJ-SBK01		
Network Adaptor	LJ-NA02		

\* The Network Adaptor may not be installed on some systems depending on contractual coverage.  
In such a case, write "None" in the Serial No. field.

## ● Number Check

- The serial numbers are written in this manual.
- The battery lot numbers are written in this manual.
- The battery lot numbers match for all three units.

## 4. Mounting of System and Battery

### 4-1. Location

The Lithium-ion storage battery system is a non-portable product suitable only for outdoor installation. Determine the installation location in accordance with the conditions outlined in this manual. The Battery module is only designed for installation inside the system enclosure. Do not use it in other locations.

#### **WARNING**

- Do not mount in a location that does not meet the criteria described below.
- Do not mount in places where there are high temperatures, or in the proximity of something that is burning.
- Do not mount in a location that cannot bear the weight of the product.
- Do not mount the product on a sloped surface.
- Do not install the battery anywhere else besides the inside of the product enclosure.

#### **NOTICE**

- The work must be performed by qualified personnel.
- Do not attempt to mount the product in special locations listed below.
- Install in a place whereas the Rating Label can be seen.

### ■ Standard installation location for Lithium-ion storage battery system

<b>Installation location</b>	Outdoor/Indoor*
<b>Storage temperature range [°C]</b>	-20 to +40°C
<b>Operating temperature range [°C]</b>	0 to +40°C (Discharging: -10 to 40°C)
<b>Operating humidity [% RH]</b>	0 to 90% RH (No dew condensation)
<b>Maximum atmospheric pressure/altitude</b>	Lower than 1000 m above sea level
<b>Sunlight</b>	Protected from exposing to continuous direct sunlight

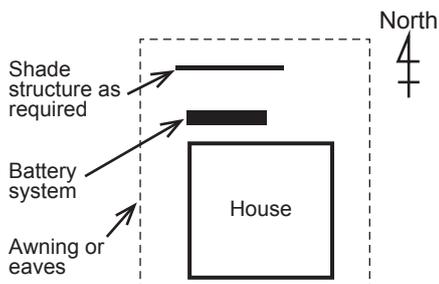
\* When the product is installed in the building or house, it is necessary to accord with local building and fire-prevention codes.

## ■ Locations where Lithium-ion storage battery cannot be installed

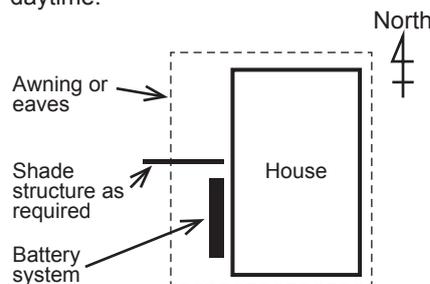
- x Locations where it will receive or be subject to the impact of continuous direct sunlight.
- x Locations that exceed the operating temperature range.
- x Locations where the sunlight hits directly in the north or west side of the buildings without roof (eaves).
  - \* See "■ Guidelines how to protect the product from direct sunlight" below explanation.
- x Rooms such as solariums and greenhouses.
- x Locations on moving objects such as trailer houses or cruisers.
- x Locations where strong reflected sunlight strikes during the day.
- x Enclosed locations with insufficient heat radiation. (Battery Storage Systems require free air to keep cool. Installation in confined/ enclosed spaces such as garden sheds or in close proximity to other appliances (i.e. air conditioner) that have the potential of impeding free air flow is not permitted.)
- x Locations where the product may potentially become buried in snow. (Install a roof or a fence if installing the product in snowbound regions.)
- x Locations where humidity, salinity, sulfur or nitrate concentration are constantly high.
- x Locations where the required installation space is not available.
  - \* See "■ Clearance space for the installation location" in the next page.
- x Locations exposed to or which potentially could be exposed to excessive steam, oil vapour, smoke, dust, corrosive substances, explosive/flammable gases, chemicals, fire or exhaust gas from vehicles.
- x Locations subject to extreme temperature fluctuations. (Where dew condensation occurs.)
- x Locations with strict noise requirements. (Operational noise of 40dB or lower.)
- x Locations subject to vibrations or shocks caused by vehicles or machinery.
- x Locations in the proximity of equipment/devices that are susceptible to radio interference, or locations that are emitting powerful radio waves.
- x Locations unable to bear the weight of the product.
- x Locations where concrete foundations or equivalent floor materials cannot be laid.
- x Regions where there is severe salt pollution.
- x Locations where above sea level is below 0 m.
- x On the upper floors or the roof of the building.

## ■ Guidelines how to protect the product from direct sunlight

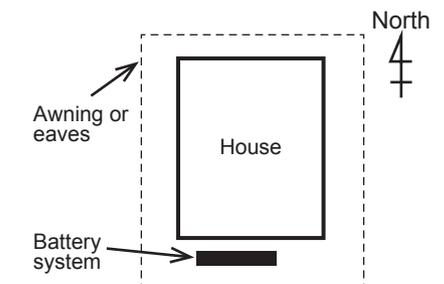
When installing the north, put awning, eaves or things to make shadow that not exposed to sunlight during the daytime.



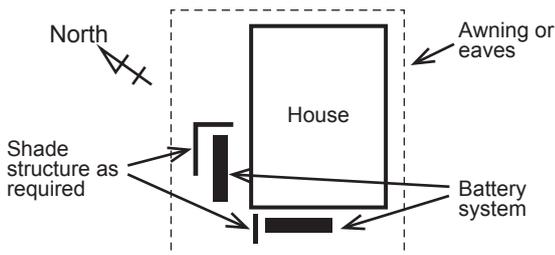
When installing the east or west, put awning, eaves or things to make shadow that not exposed to sunlight during the daytime.



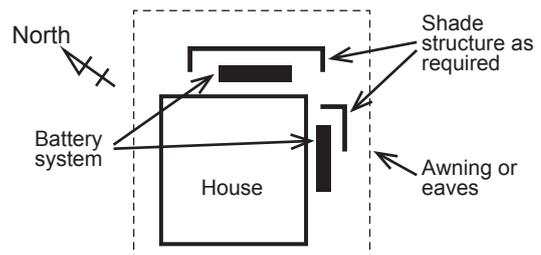
When installing the south, put awning or eaves above the product.



When installing the north-east or south-east, put awning, eaves or things to make shadow that not exposed to sunlight during the daytime.

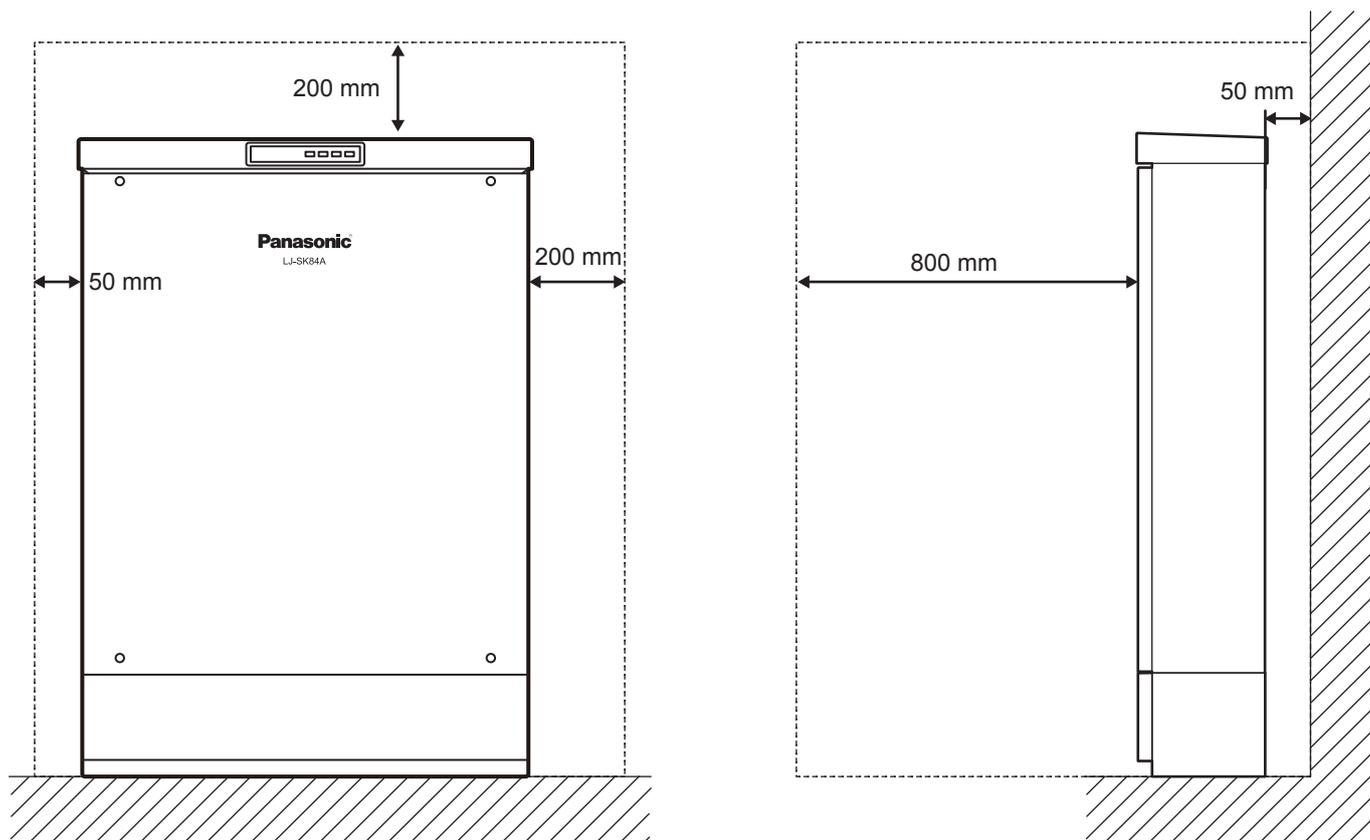


When installing the north-west or south-west, put awning, eaves or things to make shadow that not exposed to sunlight during the daytime.



## ■ Clearance space for the installation location

The mounting location must have the clearance space described below for installing, maintenance and heat radiation.



### ● Location Check

- The mounting position is as described in this manual.
- The mounting location does not belong to special locations where Lithium-ion storage battery system cannot be mounted.
- Sufficient mounting space has been allocated.
- The location can bear the product's weight, and the location is constructed with a foundation that possesses sufficient strength.
- The mounting surface is not inclined.

## 4-2. Mounting of Lithium-ion storage battery system

Since the Lithium-ion storage battery system is a heavyweight product, the mounting work must be performed with sufficient workers and working space.

### WARNING

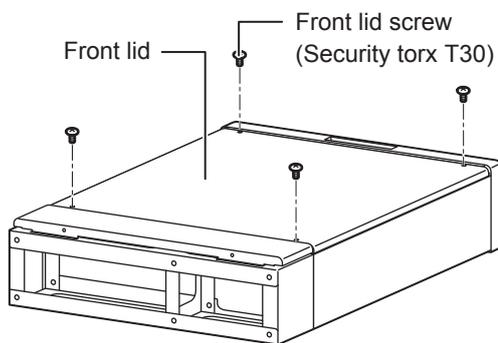
- Do not modify or disassemble.
- Do not allow water to enter the inside of the main body. Please pay special attention while it is raining or snowing.
- Do not perform work when the scaffolding and/or your hands are wet.
- Do not use a product that has been damaged due to dropping, etc.
- Heavy objects must be handled in accordance with the regulations.
- The correct anchor bolts are being used for secure fixing.
- Mount the product in a level and straight manner.
- Tighten the fixing screws of each part with adequate torque.
- When you put the Main body on the base, be careful to avoid pinching fingers.

### NOTICE

- The work must be performed by qualified personnel.
- Fix the screws using the appropriate tools.

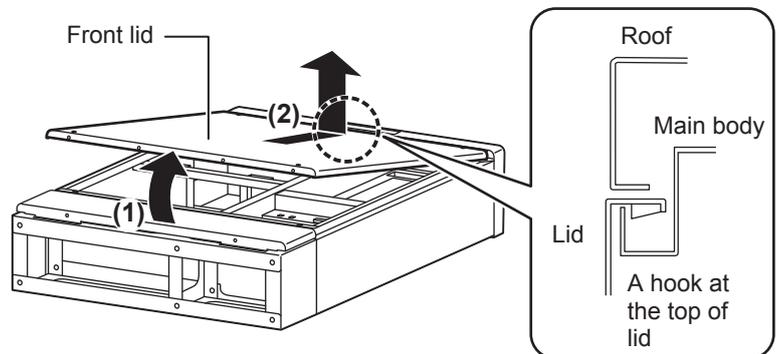
#### ■ Removing the panel base

##### 1) Removing the front lid screw

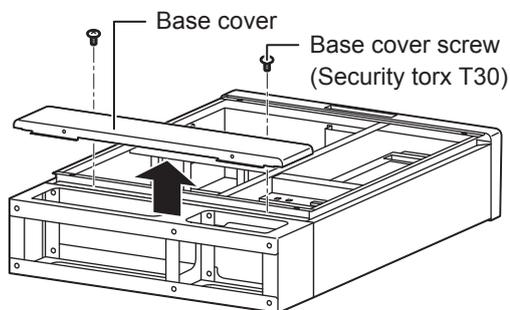


##### 2) Remove the front lid.

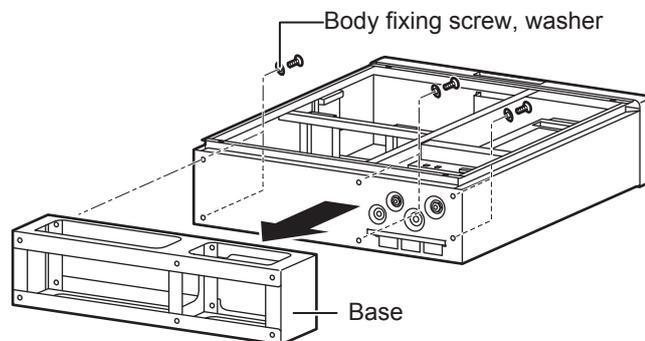
- (1) Lift the bottom of the front lid.
- (2) Lift up and remove the front lid.



##### 3) Remove the base cover.

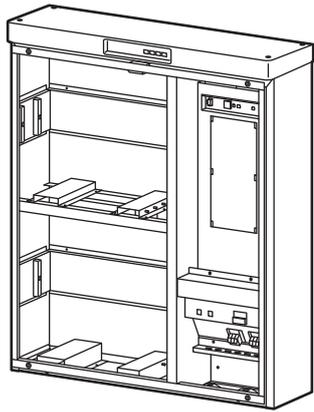


##### 4) Remove the base.

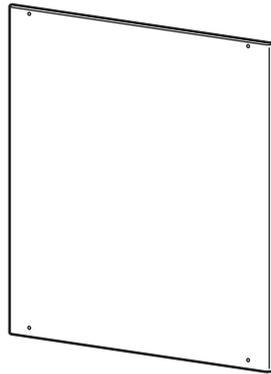


**<Parts details>**

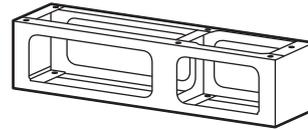
Main body x 1



Front lid x 1



Base x 1

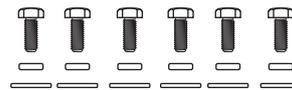


Base cover x 1



Front lid screw  
Base cover screws x6 (M5 x 15 Security torx T30)

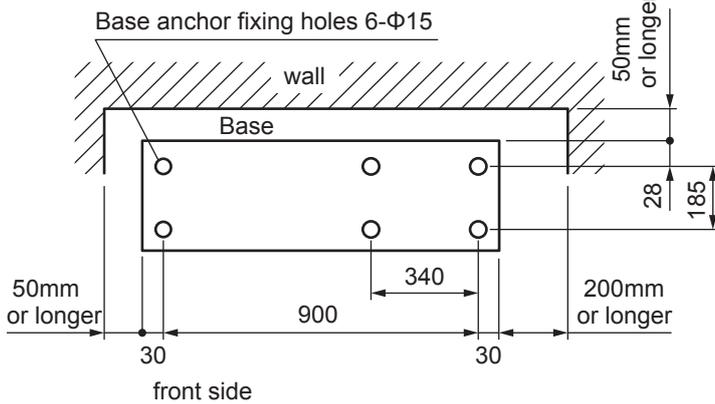
Body fixing screw (M10 x 20 Hexagon bolt)  
Spring washer x 6 sets  
Flat washer



**■ Securing the base**

**1) Selecting and attaching anchor bolts to the foundation**

Align with the fixing holes on the base and tighten all six M12 anchor bolts.



The anchor bolts should have an allowed pull-out force of over 1.59 kN ; and they must be attached in the correct manner.

\* For outdoor installation, select a material that can withstand corrosion.

Pull-out force per anchor bolt  
 $R_b = 2.82 \text{ kN}$

**2) Mount the base on the foundation.**

Mount the base by aligning with the anchor bolt positions of the foundation, adjust the levelness, and then tighten all six M12 anchor bolts.

Adjust the levelness of the mounting surface such that the base becomes horizontal.  
\* For both the horizontal and depth orientations

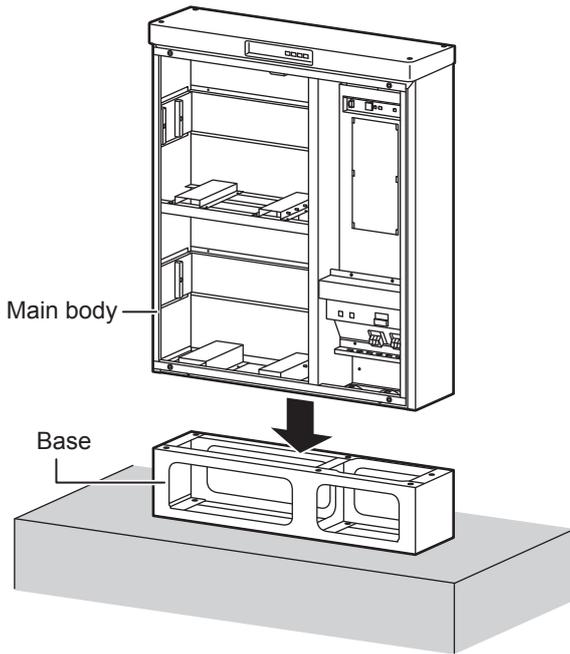
Tighten the anchor bolts with appropriate torque using appropriate tools.

**Reference: The size of the foundation**

## ■ Securing the main body

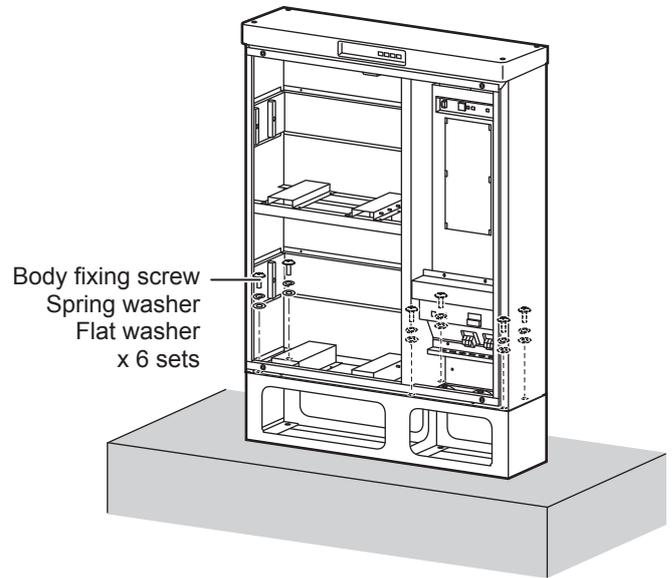
### 1) Attaching the main body to the base

Place the main body onto the base with at least two people.



### 2) Secure the main body to the base.

Secure it using six body fixing screws.  
[Tightening torque 23 - 26 N•m]

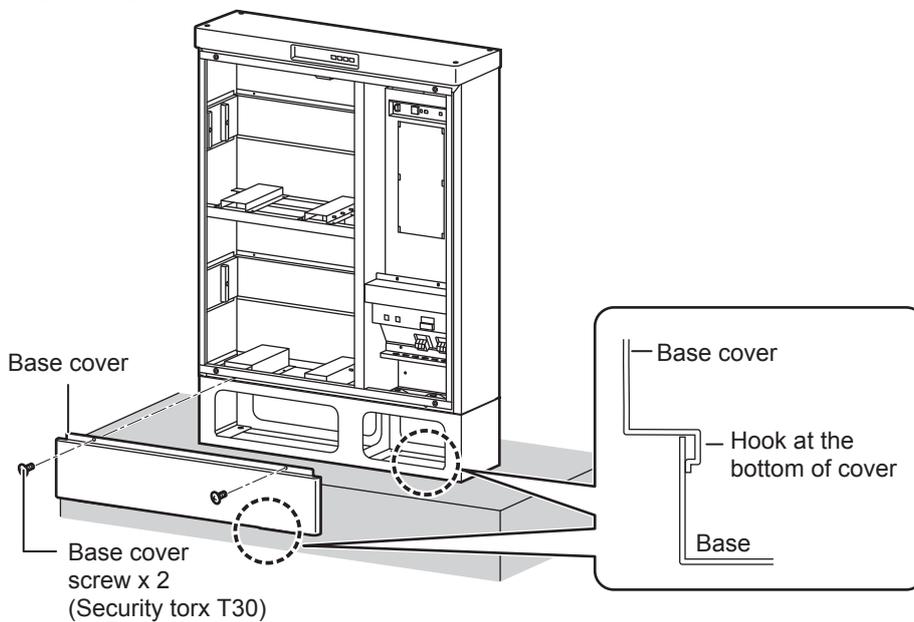


## ■ Mount the base cover and front lid

This operation may be performed after the battery module installation and wiring work are completed.

### 1) Mount the base cover.

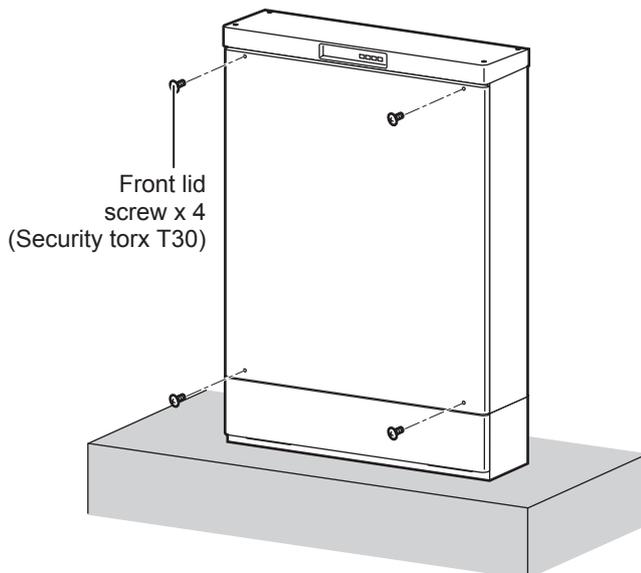
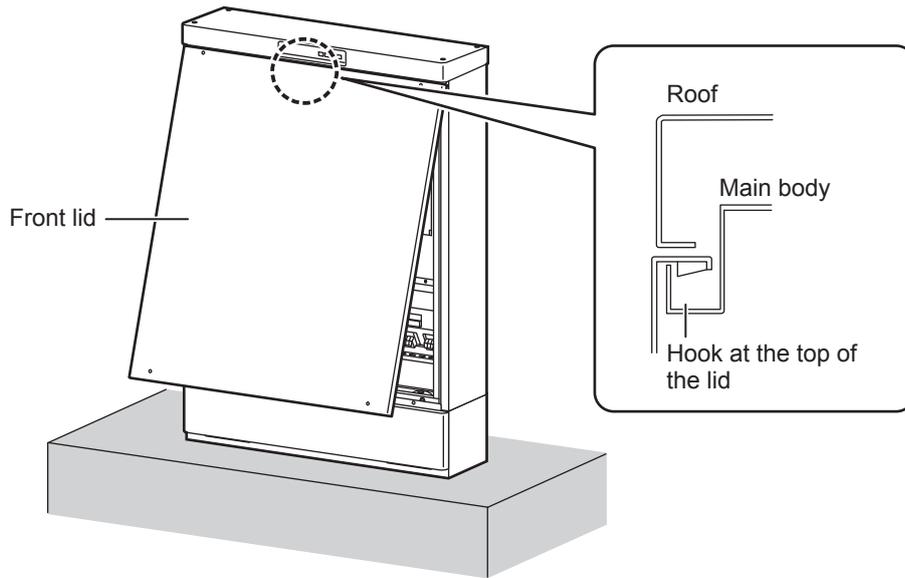
Hook the bottom part of the base cover onto the base, and secure the top part using the two base cover screws.  
[Tightening torque 2 - 2.5 N•m]



## 2) Mount the front lid to the main body.

Hook the upper part of the front lid on the main body, and secure it using the four front lid screws.

[Tightening torque 2 - 2.5 N•m]



### ● Mounting Check

- Do not modify or disassemble.
- There is no damage on the product.
- The mounting location can bear the product weight.
- The specified number of correct anchor bolts are being used for secure fixing.
- The product is mounted level in all directions.
- The fixing screws of each part are tightened with adequate torque.

## 4-3. Mounting of Lithium-ion storage battery

Since the Lithium-ion storage battery is a heavyweight device, furthermore since it is a rechargeable device, be extremely careful in handling it, and safely install it.

### DANGER

- Do not modify or disassemble.
- Do not allow water to enter the inside of the main body. Please pay special attention while it is raining or snowing.
- Do not perform work when the scaffolding and/or your hands are wet.
- Do not use a product that has been damaged due to dropping, etc.
- Do not touch or short-circuit the POWER electrodes.
- Do not stack batteries on top of each other that have been taken out of the packaging.
- Wear insulating gloves and insulated shoes while doing the wiring work.
- If the battery electrolytes are leaking, do not touch the liquid with your bare hands.
- Tighten the fixing screws for each part with adequate torque.
- Do not immerse the battery module in liquids (water, sea water, oils, chemical waters etc.), or get it wet.

### NOTICE

- The work must be performed by qualified personnel.
- Install the battery modules after the base and main body installation has been completed.
- Fix the screws using the appropriate tools.
- Do not remove the connector cover until the wiring is started.

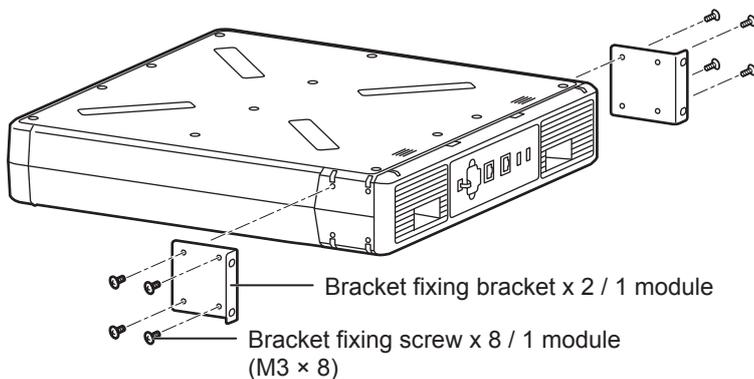
## ■ Battery installation

### 1) Mounting the battery fixing bracket

On each module, attach two battery fixing brackets that are included with the system.

For this purpose, use the bracket fixing screws (M3 x 8) included with the system.

[Tightening torque 0.65 - 0.85 N•m]



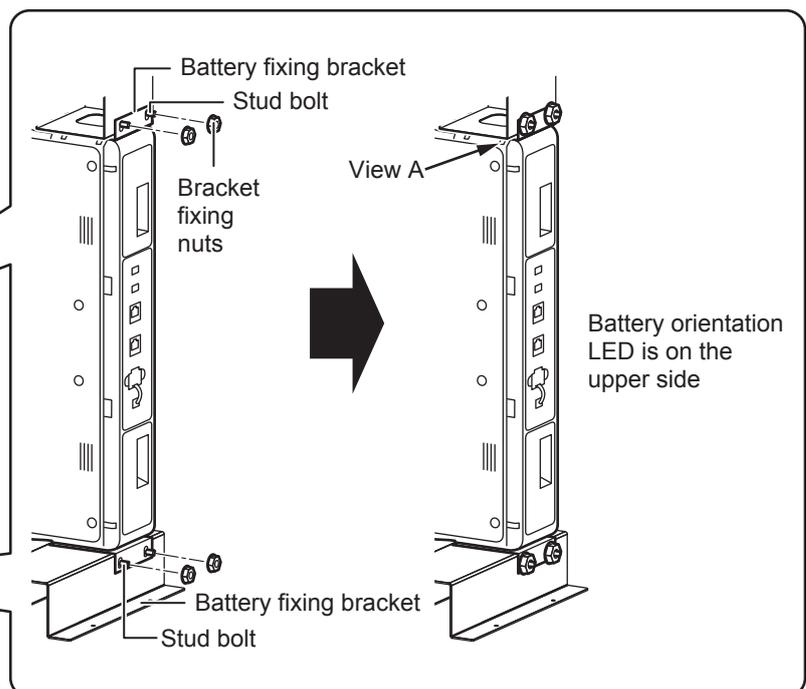
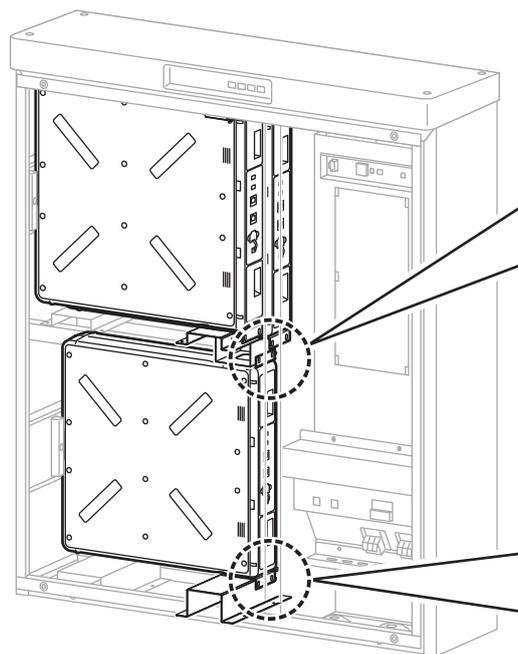
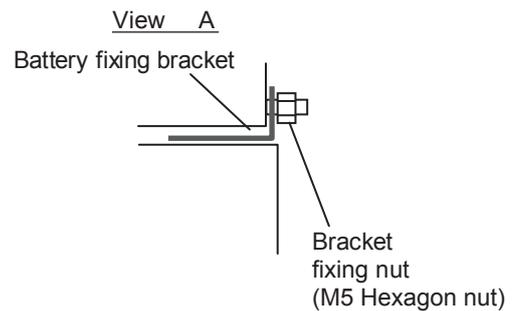
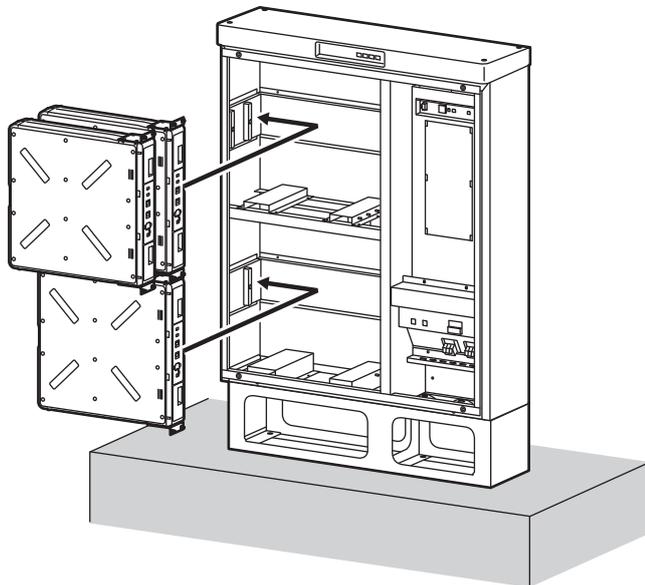
## 2) Mounting the battery on the main body

Insert the battery into the main body from the front, align the battery fixing bracket holes with the stud bolts on the main body and slide the battery horizontally.

Then secure each module using the four battery fixing nuts (M5) included with the product.

Following the same procedure, mount two of the battery modules on the upper level and one module on the lower level.

[Tightening torque 2 - 2.5 N•m]



\* Attach the cover and front lid if it will be some time before the test run after the wiring work has been completed.  
(Front Lid installation method See 4-2 3), 4))

### ● Mounting Check

- Do not modify or disassemble.
- There is no damage on the product.
- The battery modules are mounted in the correct orientation.
- The fixing screws of each part are tightened with adequate torque.

## 5. Electrical Connection of System and battery

### 5-1. Electrical Connection of battery

The Lithium-ion storage battery is a rechargeable product and is therefore classified as an electrical instrument. Be extremely careful and wire it safely.

#### **DANGER**

- Do not allow water to enter the inside of the main body. Please pay special attention while it is raining or snowing.
- Do not perform work when the scaffolding and/or your hands are wet.
- Do not touch or short-circuit the POWER electrodes.
- Always wear insulating gloves and insulated shoes while doing wiring.  
If the battery electrolytes are leaking, do not touch the liquid with your bare hands.

#### **CAUTION**

- Discharge static electricity before working with the wires.

#### **NOTICE**

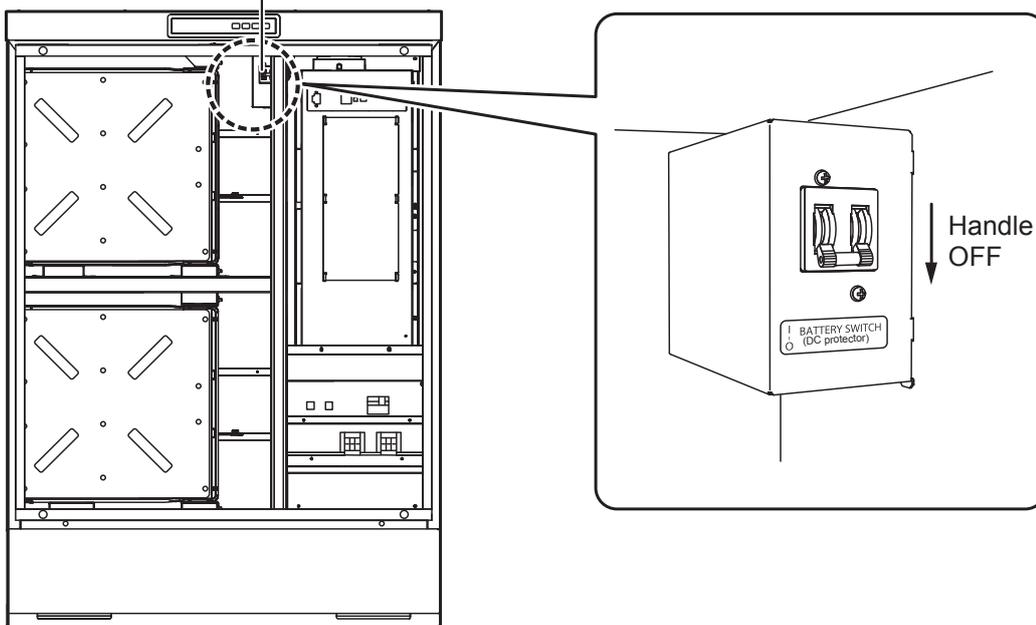
- The work must be performed by qualified personnel.
- Check that the battery connector is plugged in securely.
- Make sure that the battery is wired correctly.
- Check that the DC protector is OFF before wiring the batteries.
- Do not remove the connector cover until the wiring is started.

### ■ Battery wiring

#### 1) DC protector OFF check

Make sure that the DC protector is OFF before connecting the battery connector.

DC Protector

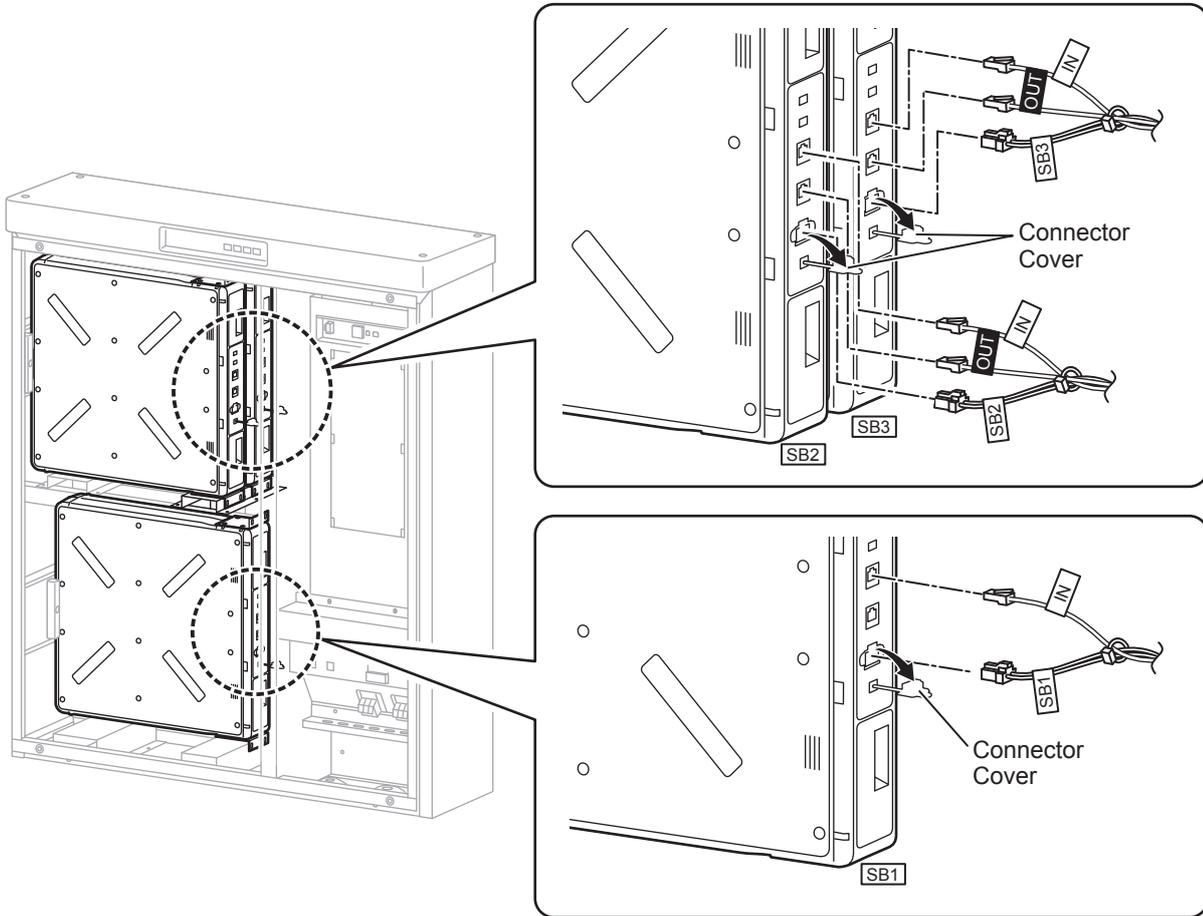


## 2) Battery wiring

Connect the harness for the battery COM-IN connector and battery COM-OUT connector which is blocked into the battery in the system, then remove the connector cover, and connect the battery power connector. Connect them to all three modules.

(SB1 does not have "COM-OUT")

- \* Match the battery number with the harness block number. (Connect an SB1 harness block to an SB1 battery.)
- \* Check connection by pulling gently, to make sure that it is securely connected.



### ● Connection Check

- The Battery module is not wet.
- No leakage of electrolytes from the Battery module.
- The DC protector is OFF.
- No mistakes in the wiring.
- The COM connectors (IN, OUT) are connected securely.
- The battery power connectors (SB1, SB2, SB3) are connected securely.

## 5-2. Electrical Connection of System

The Lithium-ion storage battery is classified as an electrical instrument. Please wire it safely following the applicable laws and regulations.

### **WARNING**

- Do not allow water to enter the inside of the main body. Please pay special attention while it is raining or snowing.
- Do not perform work when the scaffolding and/or your hands are wet.
- Always wear insulating gloves and insulated shoes while performing wiring work.
- Protection device for the Lithium-ion storage battery, the Backup breaker and DC protector must be set to OFF until the wiring is completed.
- Check that there is no voltage at all of the terminals.
- Ensure that the PE line is securely connected to the ground.
- Do not damage the covered sections of the wiring.
- Prevent the introduction of foreign objects such as scrap wires.

### **CAUTION**

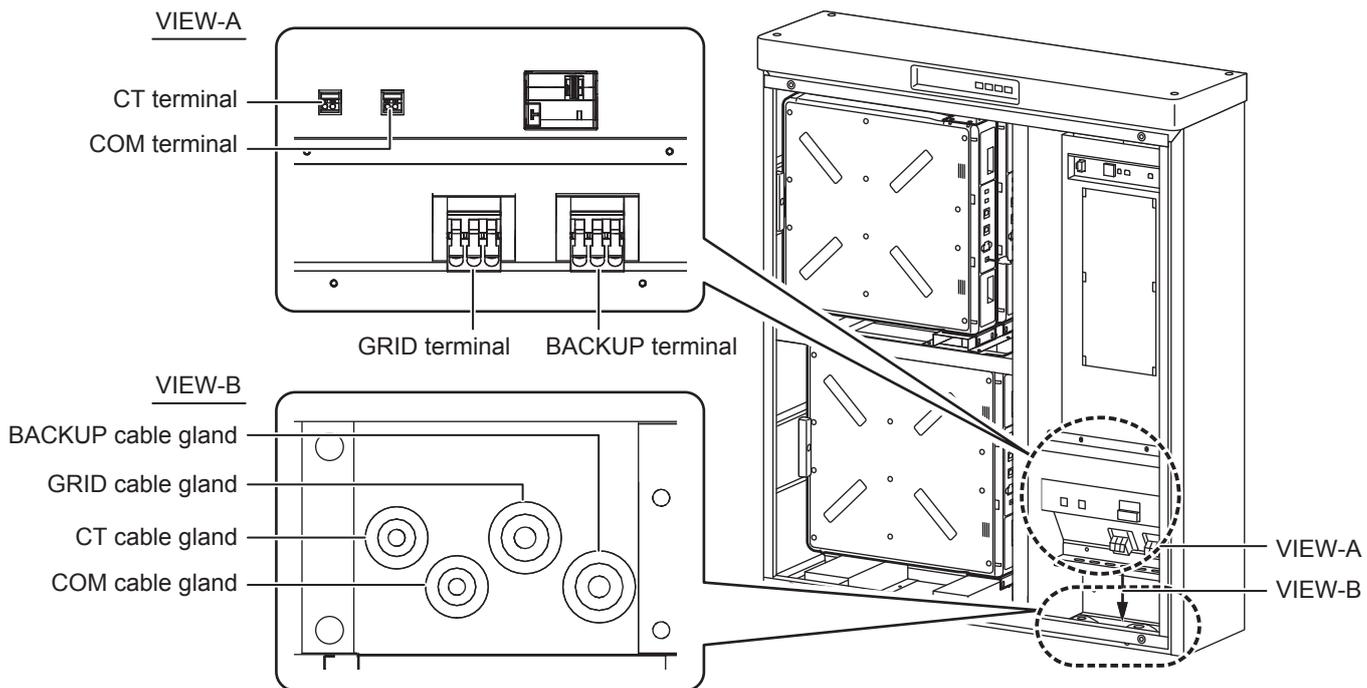
- Use the specified types and sizes of wires in accordance with local wiring regulations for the wiring.
- Do not mistake the wiring systems and the polarities.
- Process the wires as specified for secure connections.
- Discharge static electricity before working with wires.
- Be sure to tighten the cable gland securely. Do not over tighten it.

### **NOTICE**

- The work must be performed by qualified personnel.
- The outer diameter of the cables which pass through the cable glands must be within the range of a suitable size.
- Plug up the hole for the COM cable gland when the Network Adaptor is not connected.
- Do not use CT other than the designated CT.
- The end of conduit pipe for outside wiring installation should be put to near the joint of cable gland, then to seal with using putty.

## ■ Checking the Cable Retracting and Terminal Positions

After checking the cable retracting and terminal positions in advance, prepare the wiring connections to the system and retract the cables through the specified cable glands.



## ■ Preparation

Be sure to turn OFF the protection device for the Lithium-ion storage battery, the Backup breaker and DC protector.  
Be sure there is no voltage at all of the terminals.

## ■ Retracting the cable

Check the outer diameter of the cables and feed it through the specified cable glands.

### 1) Applicable cable sizes for the cable glands

Cable Gland	Applicable Cable Diameter (mm)	Specified Cable
CT	Φ6 - Φ10	PVC Flexible Cable 2C 0.75 mm <sup>2</sup>
COM		
GRID	Φ7 - Φ12	PVC Circular Cable 2C+E 2.5 mm <sup>2</sup>
BACK UP		

\* Please use copper wire cables.

\* See 1-1. Power and Communication Line Configuration for the cable details.

### 2) How to retract cables from the cable glands

(1) Remove the cable gland seal nut.

(2) Remove the seal nut and inner seal, retract the cable from the bottom of the enclosure, and then route the cable through the inner seal followed by the seal nut.

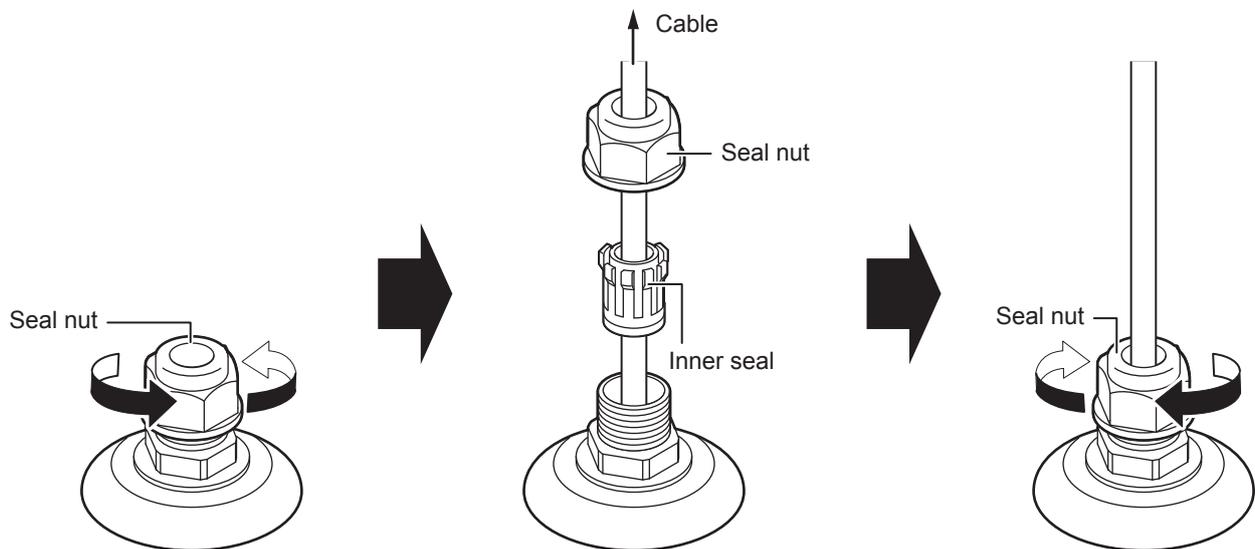
(3) Retract the cable to an adequate length and tighten it with a seal nut.

[Tightening torque]

- CT/COM Cable gland 1.2 - 1.5N•m
- GRID/Back-up cable gland 1.5 - 1.8N•m

\* Reference: The guideline of tightening torque

From the point of feeling resistance when tightening the seal nut with a tool, 90° (= a quarter turn) angle of additional tightening is suitable.



\* Use a sheathed cable when routing through the cable glands.

### 3) Cable termination

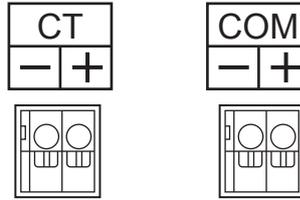
Strip off the sheath at adequate length for connecting to the terminal.

\* If the cable is shielded, protect the stripped end of the sheath with insulating tape, etc.

## ■ Connecting the CT/COM Terminal

### 1) Terminal layout and polarities

Make sure that the wires and polarities are correct.



### 2) Cable types and sizes

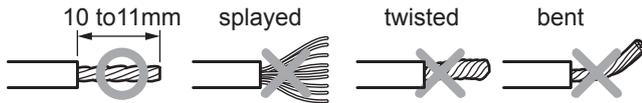
PVC Flexible Cable 2C 0.75 mm<sup>2</sup>

\* Please use copper wire cables.

\* See 1-1. Power and Communication Line Configuration for the cable details.

### 3) Stripping of wire

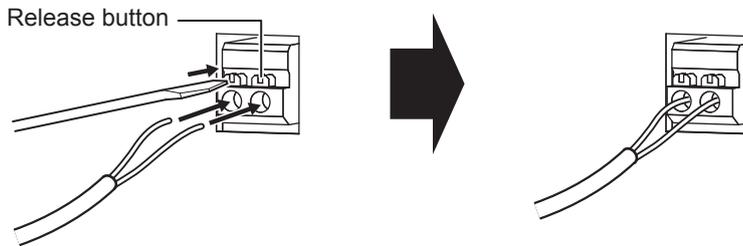
Please strip as conductor's stripped length related as drawing.



\* If the cable is shielded, protect the stripped end of the sheath with insulating tape, etc.

### 4) Connecting

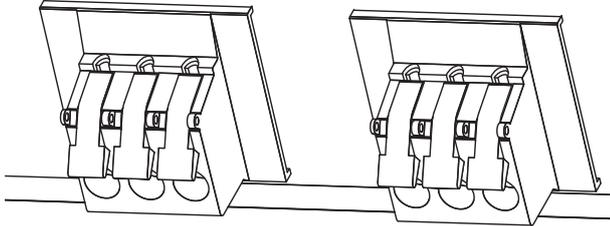
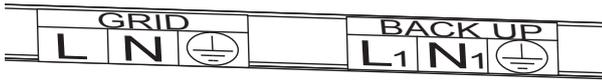
While pressing the release button on the terminal, insert the conductor of the wire all the way into the terminal.



## ■ Connecting the GRID/BACKUP Terminal

### 1) Terminal layout and polarities

Make sure that the wires and polarities are correct.



### ⚠ WARNING

- Do not connect the GRID wire with BACKUP terminal.



This symbol indicates a wiring terminal intended for connection of a PROTECTIVE EARTHING CONDUCTOR.

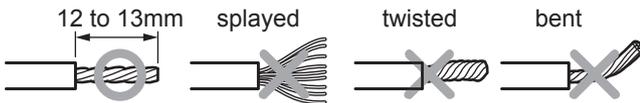
### 2) Cable types and sizes

PVC Circular Cable 2C+E 2.5 mm<sup>2</sup>

- \* Please use copper wire cables.
- \* See 1-1.Power and Communication Line Configuration for the cable details.

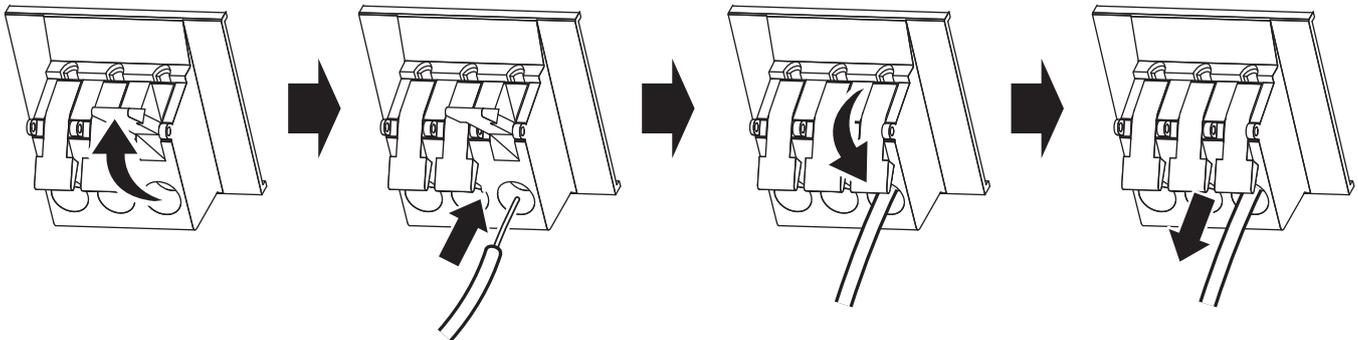
### 3) Stripping of wire

Please strip as conductor's stripped length related as drawing.



### 4) Connecting

- (1) Pull up an operating lever.
- (2) Insert a wire into a wire hole all the way.
- (3) Hold the wire and pull down the operating lever.
- (4) Pull the wire slightly to check if connecting has been done completely. (Don't pull strongly.)

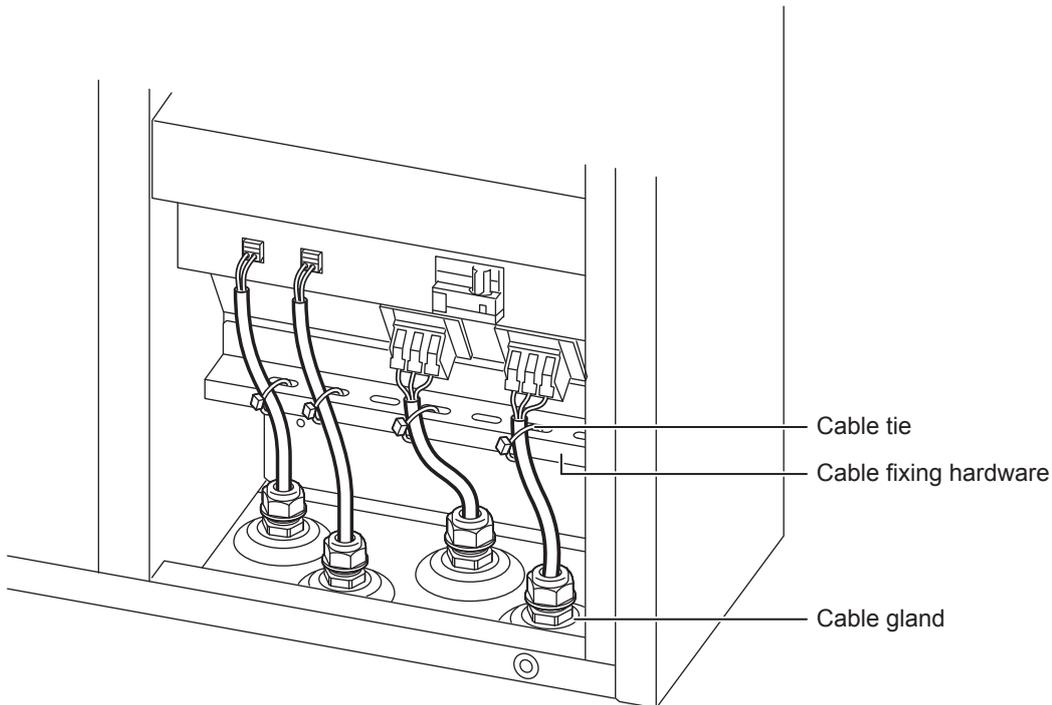


## ■ Operations after connection

### 1) Secure the cable to the cable fixing hardware with an insulating lock.

If any excess lengths of the cables are getting in the way, open the cable gland seal nuts on the base side and adjust them. Then retighten the seal nuts with the appropriate torque.

### 2) Completely remove foreign objects such as scrap wires.



\* Attach the cover and front lid if there is some length of time before the test run after the wiring work has been completed.  
(Front Lid installation method See 4-2 3), 4))

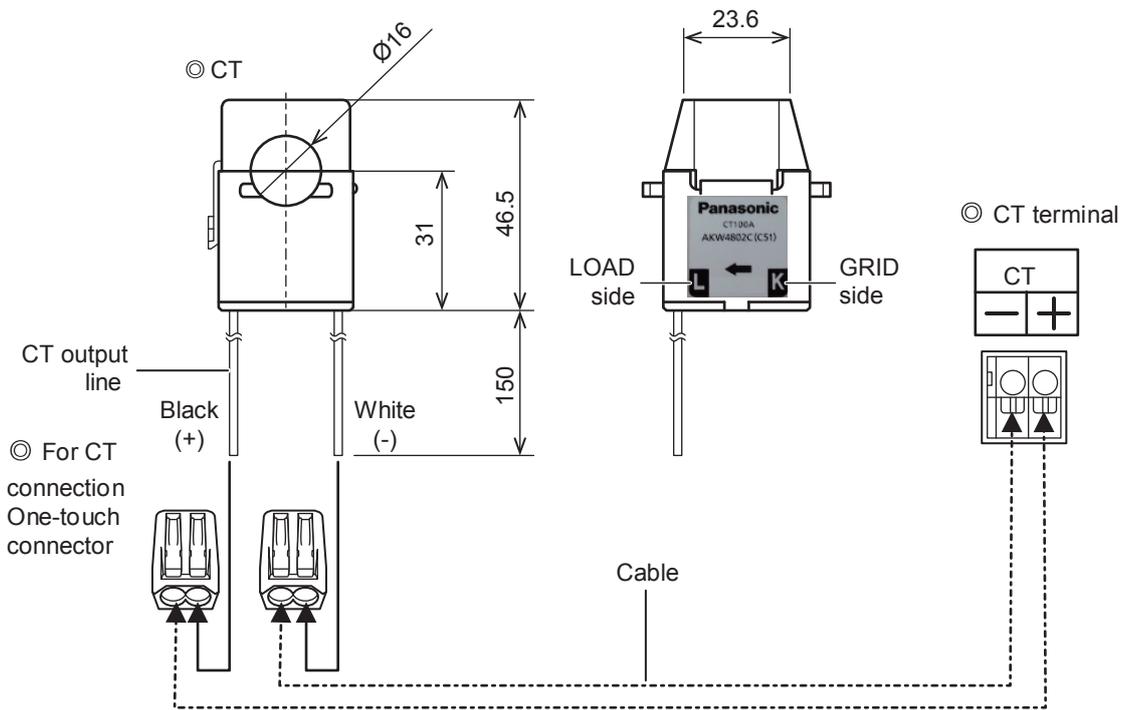
## ● Connection Check

- The interior of the main body is not wet.
- The power is turned OFF.
- The PE wire is connected and grounded securely.
- The cable wires are not damaged.
- The cable wire types and sizes are correct.
- The wires have been processed as specified and are connected securely.
- There are no mistakes in the wiring.
- The cable gland seal nuts are tightened securely.
- There are no foreign objects such as scrap wires.

## ■ Connecting the CT for reverse current

### 1) CT configuration and polarities

The CT should be wired such that the polarity of the CT terminal and the CT output lines are the same. Use the included one-touch CT connector for connecting the CT output line and the cable.



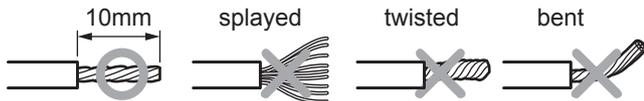
### 2) Cable types and sizes

PVC Flexible Cable 2C 0.75 mm<sup>2</sup>

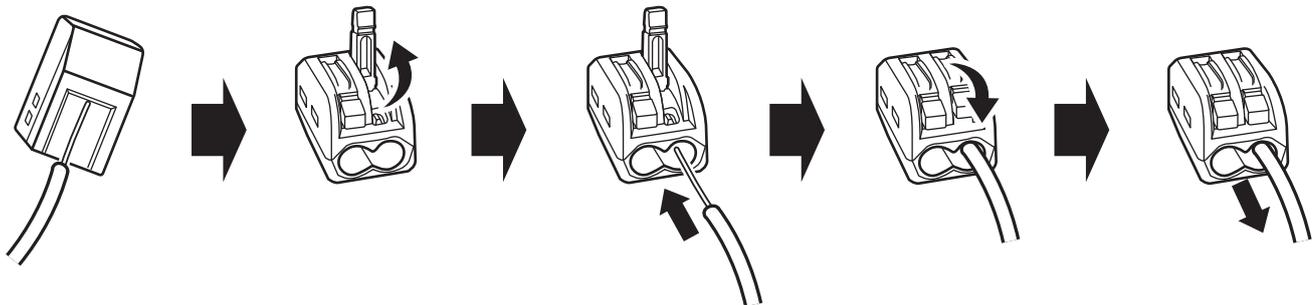
- \* Please use copper wire cables.
- \* See 1-1. Power and Communication Line Configuration for the cable details.

### 3) Stripping of wire

Please strip as conductor's stripped length related as drawing.



### 4) Connecting



(1) Checking using a strip gauge

(2) Push up the lever. Do not push up all of the levers at the same time.

(3) Insert the wire as deeply as possible.

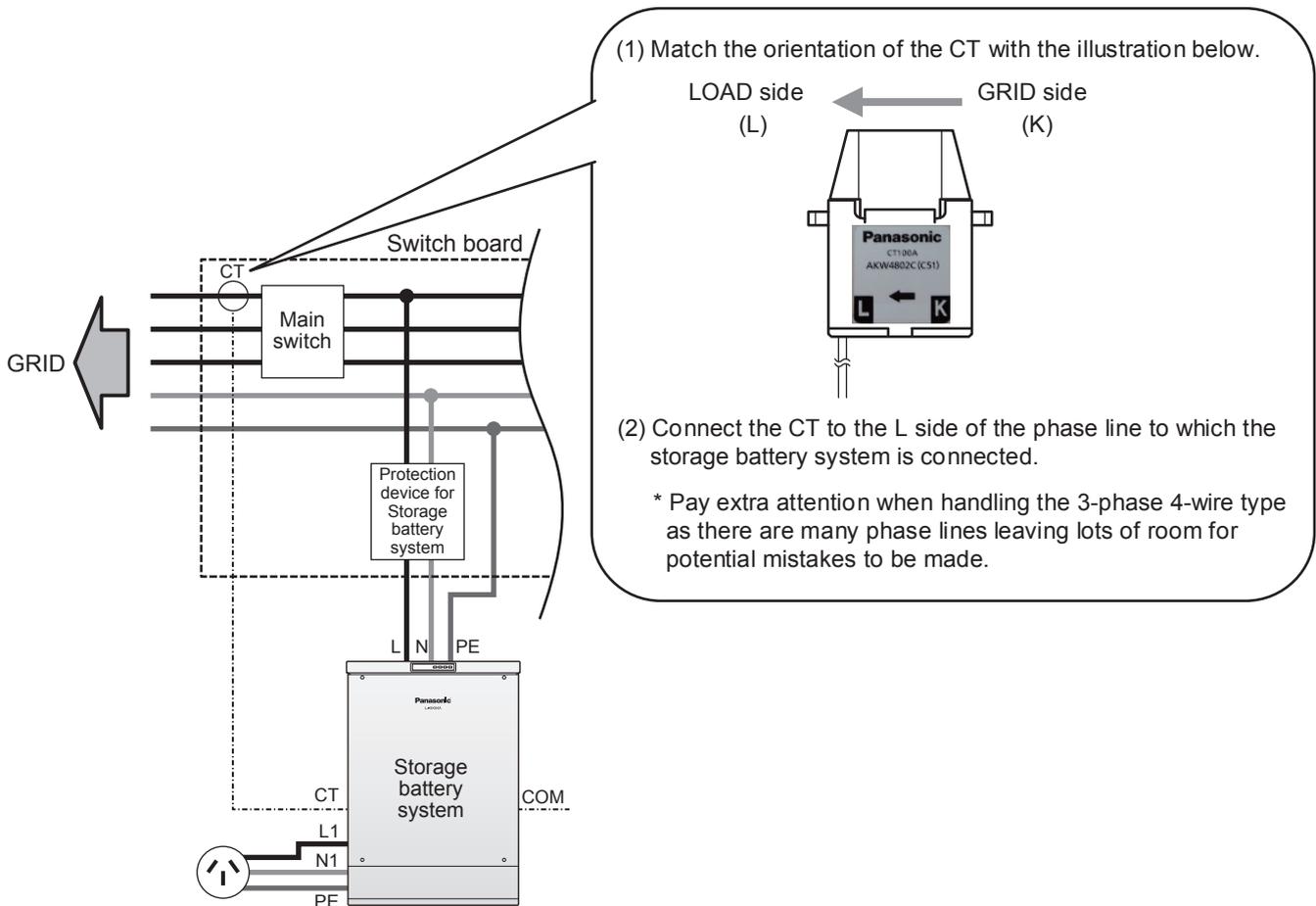
(4) Push down the lever to establish the wire connection.

(5) Gently pull on each of the wires to make sure that they do not come out. (Do not pull on them too hard.)

## 5) Attaching the CT for reverse current on the distribution board side

Connect the CT for reverse current to the phase line on the system side of the distribution board to which the storage battery system is connected.

Be sure to attach the CT in the correct orientation.



\* The CT has a diameter of  $\Phi 16$  and its maximum current is 100 A. The CT cannot be attached to a wire with a greater diameter or be located where it would subject to higher currents.

### ● Connection Check

- The power is turned OFF.
- The covered insulation of the wiring is not damaged.
- The cable wire types and sizes are correct.
- The wires have been processed as specified and are connected securely.
- There are no mistakes in the wiring.
- The CT is attached to the correct phase line in the correct orientation.
- There are no foreign objects such as scrap wires.

## 6. Mounting of Network Adaptor

### 6-1. Location

The Network Adaptor is a wall-mounted product for indoor use. Determine the installation location in accordance with the conditions outlined in this manual.

#### **WARNING**

- Do not install it in places where there is a lot of humidity such as outdoors or in bathrooms.

#### **NOTICE**

- The work must be performed by qualified personnel.
- Do not install the product in the special locations listed below.

### ■ Standard Mounting Location of the Network Adaptor

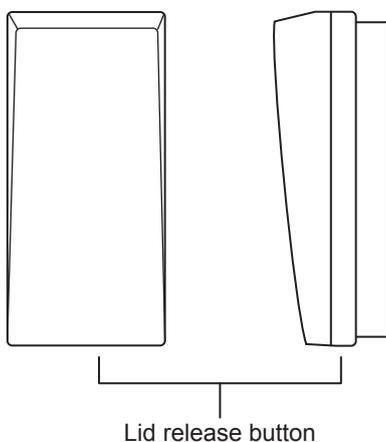
<b>Installation location</b>	Indoor
<b>Operating temperature range [°C]</b>	-10 to +40 °C
<b>Operating humidity [% RH]</b>	0 to 80% RH (No dew condensation)
<b>Maximum atmospheric pressure/altitude</b>	Lower than 1000 m above sea level

### ■ Special Locations where Network Adaptor cannot be Mounted

- x Locations exposed to direct sunlight.
- x Locations exposed to rain or drops of water.
- x Locations exposed to or potentially exposed to excessive steam, oil vapour, smoke, dust, corrosive substances, explosive/flammable gases, chemicals or fire.
- x Locations subject to vibrations or shocks.
- x Locations in the proximity of equipment/devices that are susceptible to radio interference, or locations that are emitting powerful radio waves.
- x Locations where wall mounting is not possible.

### ■ Mounting position

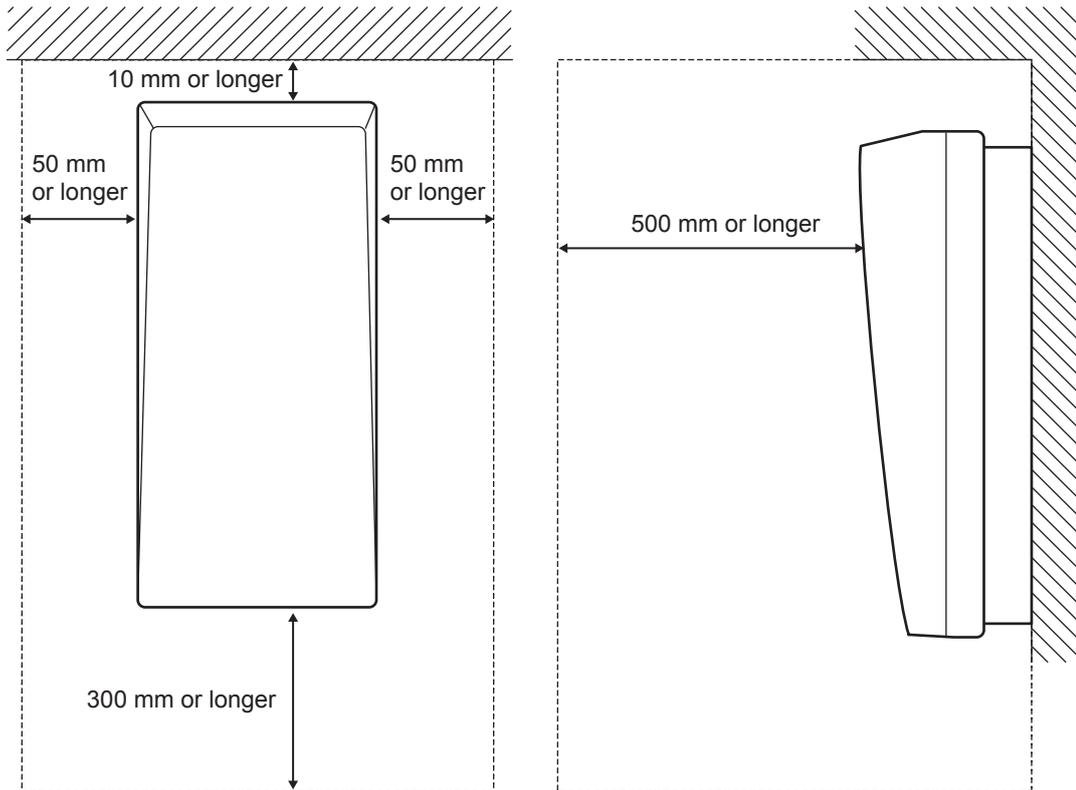
Mount the Network Adaptor so that it is not tilted, and position the Lid release button so that is at the bottom.



## ■ Clearance space for the installation location

The mounting location must have the clearance space described below for installation and maintenance.

\* If one side only has a minimal clearance space, make sure to allocate more space on the other side.



## ■ Preparation for the installation location

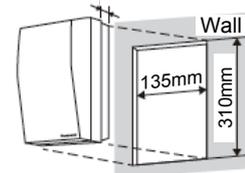
<Exposed installation> Drill holes into the wall and align them with the wiring holes on the main body.

<Semi-embedded installation> Drill holes into the wall for semi-embedded installation.

\* Provide adequate reinforcement if the fixing strength of the wall is insufficient.

Wall machining dimensions for semi-embedded installation

Semi-embedded depth 30 mm



## ● Location Check

- The mounting position is as described in this manual.
- The mounting location is not in the location listed "special locations."
- The Network Adaptor is mounted in the correct orientation.
- Sufficient mounting space has been allocated.
- The mounting surface is not inclined.
- The mounting location has undergone the pre-mounting preparatory processing.

## 6-2. Mounting

The Network Adaptor may be installed indoors in high and narrow areas. Be extremely careful in installing it, and turn OFF the protection device for the Lithium-ion storage battery, the Backup breaker and DC protector. Be sure there is no voltage at all of the terminals.

### WARNING

- Do not modify or disassemble.
- Do not perform work with wet hands.
- Do not use a product that has been damaged by dropping, etc.
- The correct screws are being used for secure fixing.

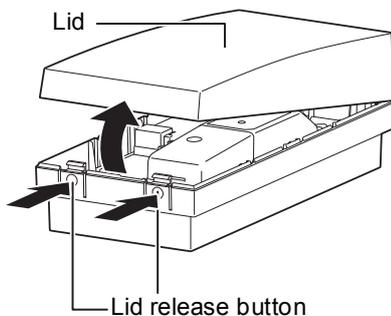
### NOTICE

- The work must be performed by qualified personnel.

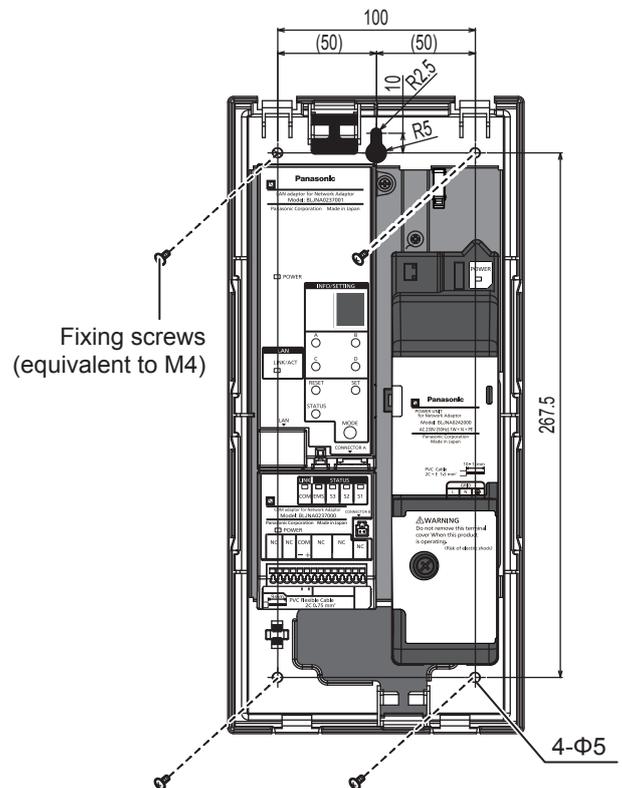
## ■ Securing the product

### 1) Removing the lid

Press the Lid release button at the bottom to open the lid.

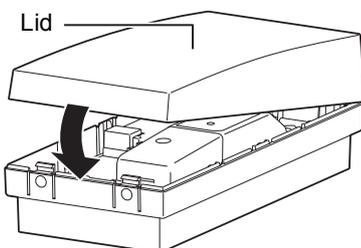


### 2) Secure the product in four spots using the appropriate screws.



### 3) Attaching the lid

Hook the top of the lid on the main body and close the lid.



\* This operation may be performed after the wiring work has been completed.

## ● Mounting Check

- Do not modify or disassemble.
- There is no damage on the product.
- The mounting location can bear the product's weight.
- The correct screws are being used for secure fixing.
- The product's mounting orientation is correct. Also, it is not tilted.

## 7. Electrical Connection of Network Adaptor

### 7-1. Electrical Connections

The Network Adaptor is classified as an electrical instrument. Please wire it safely following the applicable laws and regulations.

#### **WARNING**

- Always wear insulating gloves and insulated shoes while doing wiring.
- Protection device for the Network Adaptor must be set to OFF.
- Check that there is no voltage at all of the terminals.
- Ensure that the PE line is securely connected and grounded.
- Do not damage the covered insulation of the wiring.
- Prevent the introduction of foreign objects such as scrap wires.

#### **CAUTION**

- Use the specified types and sizes of wires in accordance with local regulations.
- Do not mistake the wiring systems and the polarities.
- Process the wires as specified for secure connections.
- Please explain how to discharge static electricity.

#### **NOTICE**

- The work must be performed by qualified personnel.
- The PE wire should be approximately 20 mm longer than the LINE wire.
- The wiring should be concealed in the walls.
- Increase the separation if the communication line and the power line carrying large currents are running in parallel.

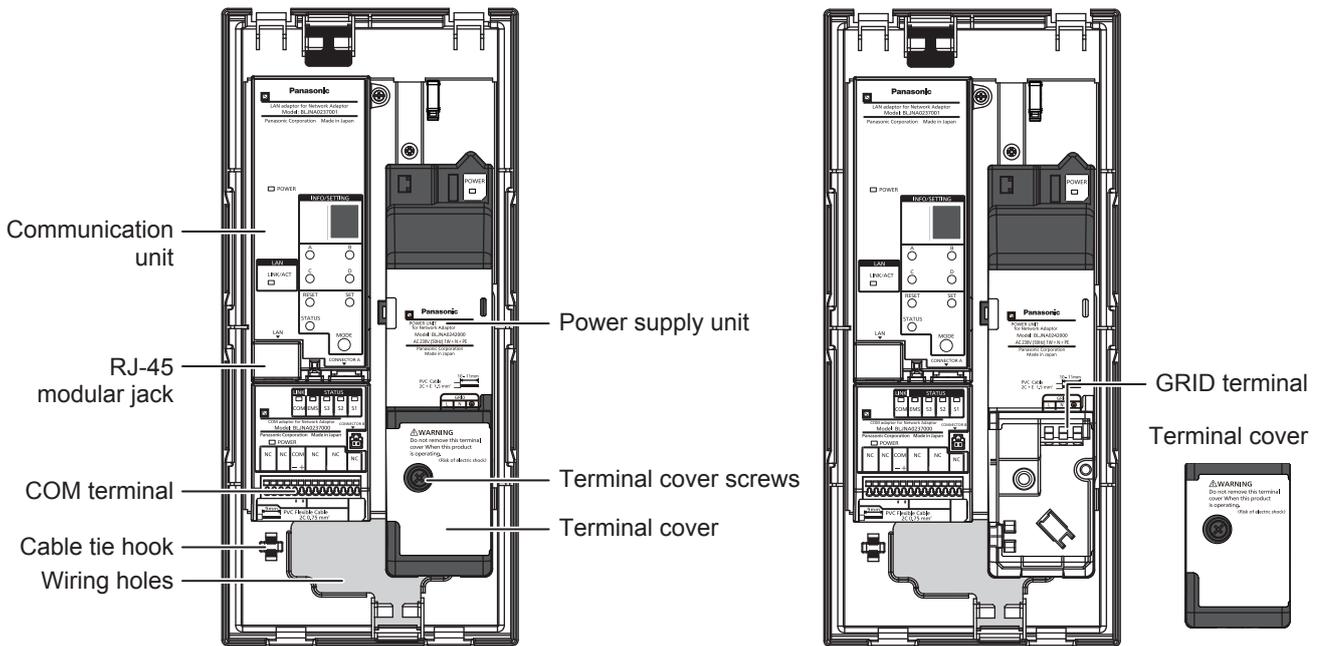
#### ■ **Preparation**

Be sure to turn OFF the protection device in the distribution board and check that there is no voltage.

## ■ Checking the cable retracting and terminal positions

When retracting the cable, remove the terminal cover of the power supply unit because the POWER line terminal is located inside the terminal cover.

The communication terminal for connecting with the storage battery system, and the modular jack for connecting with the router are located on the communication unit.



## ■ Retracting the cable

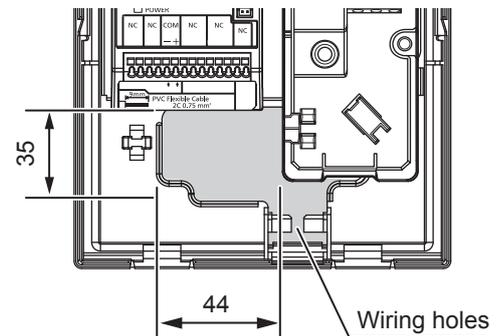
### 1) Retraction method

Retract the cable through the wiring hole as in the illustration on the right.

### 2) Cable termination

Strip the cable sheaths to appropriate lengths for connecting them to the terminal.

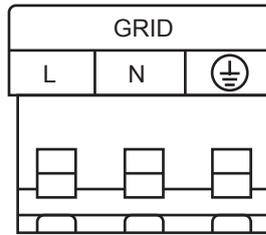
\* If the cable is shielded, protect the stripped end of the sheath with insulating tape, etc.



## ■ Connecting the GRID Terminal

### 1) Terminal layout and polarities

Make sure that the wires and polarities are correct.



This symbol indicates a wiring terminal intended for connection of a PROTECTIVE EARTHING CONDUCTOR.

### 2) Cable types and sizes

PVC PVC Circular Cable 2C+E 1.5 mm<sup>2</sup>

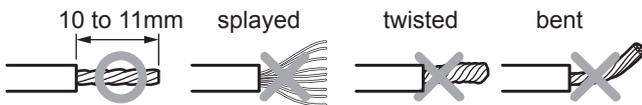
\* Please use copper wire cables.

\* See 1-1. Power and Communication Line Configuration for the cable details.

### 3) Stripping of wire and specifying the PE wire length

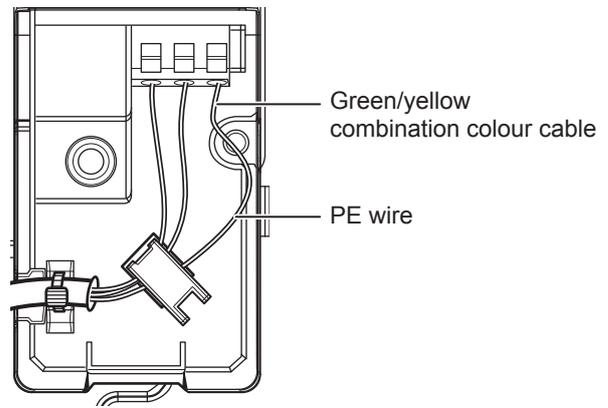
#### <Stripping of wire>

Please strip as conductor's stripped length related as drawing.

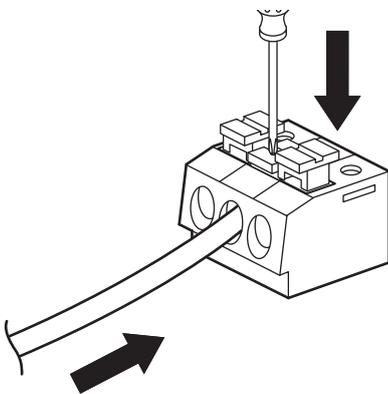


#### <Notes on the PE wire length>

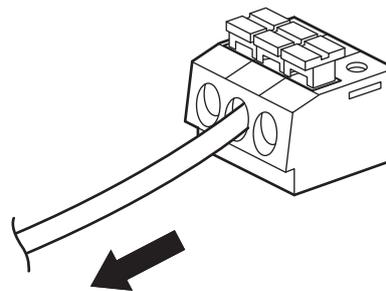
The PE wire should be approximately 20 mm longer than the LINE wire.



### 4) Connecting



Fully insert the wire while pressing down on the screwdriver.

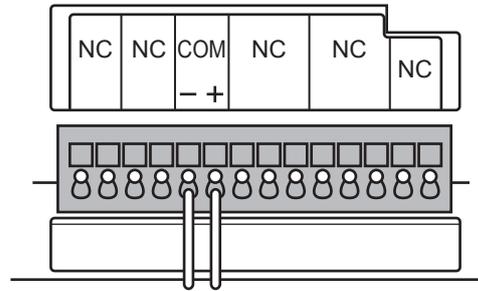


Release the screwdriver and pull gently on the wire to check that it has been fully inserted. (Do not pull on the wire too hard)

## ■ Connecting the COM Terminal

### 1) Terminal layout and polarities

Make sure that the wires and polarities are correct.



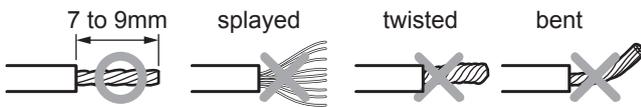
### 2) Cable types and sizes

PVC Flexible Cable 2C 0.75 mm<sup>2</sup>

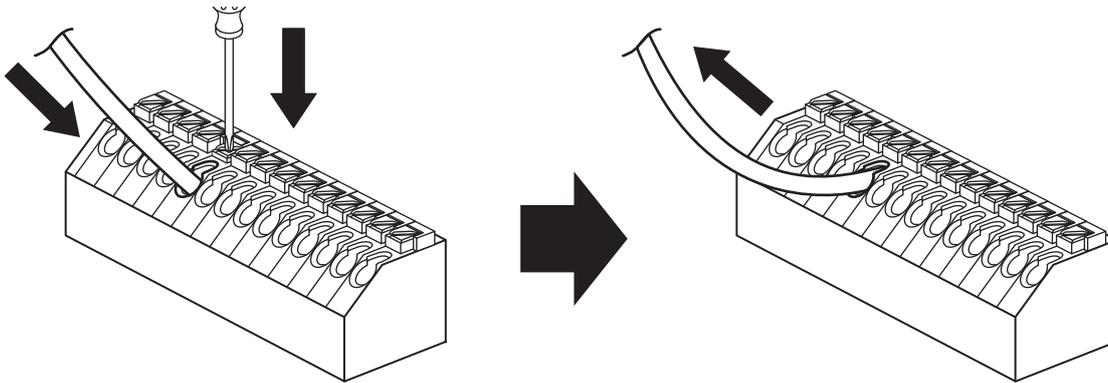
- \* Please use copper wire cables.
- \* See 1-1. Power and Communication Line Configuration for the cable details.

### 3) Stripping of wire

Please strip as conductor's stripped length related as drawing.



### 4) Connecting



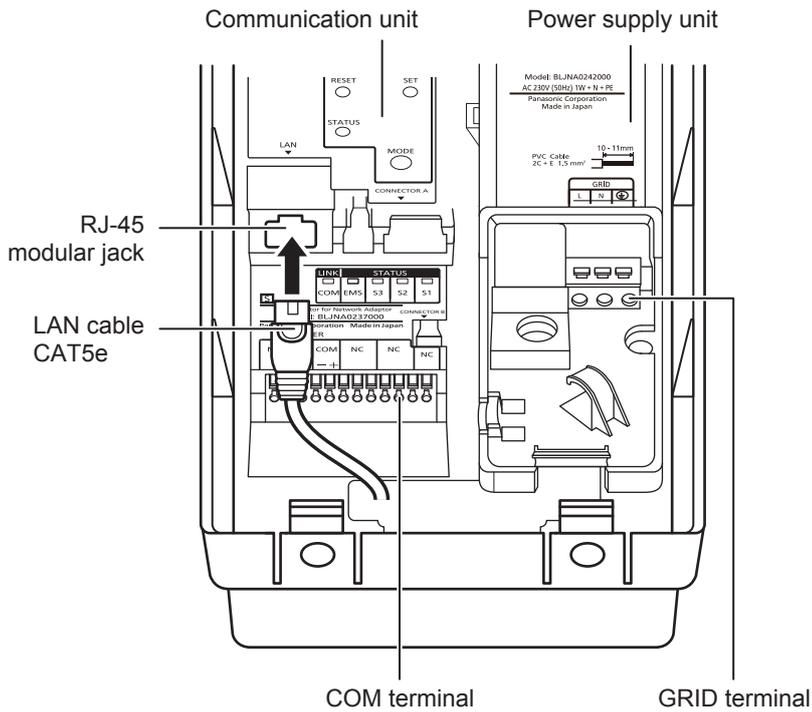
Fully insert the wire while pressing down on the screwdriver.

Release the screwdriver and pull gently on the wire to check that it has been fully inserted. (Do not pull on the wire too hard)

## ■ NETWORK connection

### 1) RJ-45 modular jack layout and connection

Insert the LAN cable into the modular jack as shown on the below and check that the cable is connected securely.



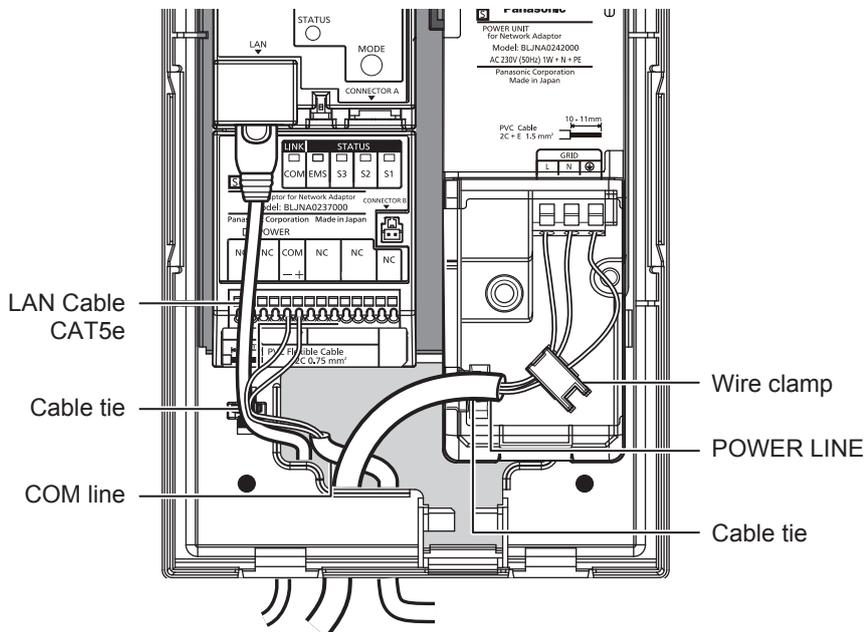
## NOTICE

- Connect the LAN cable when setting up the Network Adaptor.

## ■ Post connection processes

### 1) Securing the wires

Secure the POWER line and NETWORK/COM line wires with insulating locks as shown in the illustration below. The POWER line should be held by the wire clamp in the power supply unit.



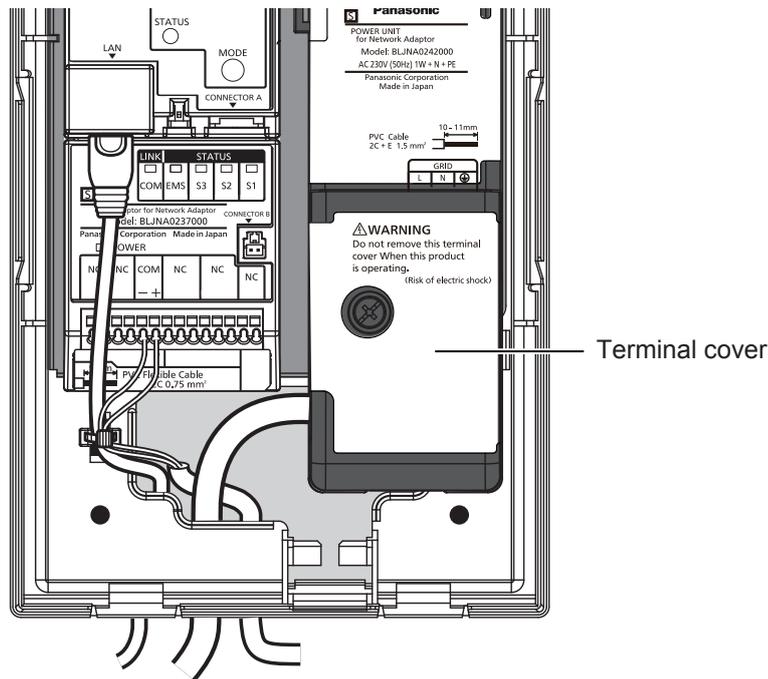
## 2) Cable types

CAT5e (10BASE-T/100BASE-TX)

## 3) Mounting the terminal cover

Hook the terminal cover at the bottom of the power supply unit and secure it with screws from the front.

[Tightening torque 1.2 N•m]



## 4) Completely remove foreign objects such as scrap wires.

\* Attach the lid if there is some length of time before the test run after the wiring has been completed.  
(How to install the front lid See 6-2 3))

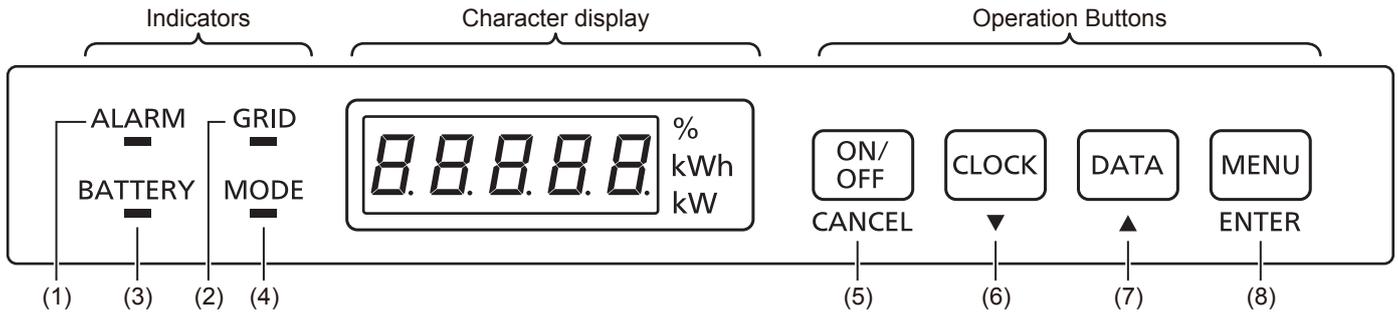
### ● Connection Check

- The power is turned OFF.
- The PE wire is connected and grounded securely.
- The covered insulation of the wiring are not damaged.
- The cable wire types and sizes are correct.
- The wires have been processed as specified and are connected securely.
- No mistakes in the wiring.
- The connecting length of the PE wire to the GRID terminal is longer than that of the LINE wire.
- The cable is secured with an insulating lock.
- The terminal cover is attached.
- No foreign objects such as scrap wires.

**Setup**

# 1. Control Panel

## Control Panel



### 1.1 Indicators

Number	Name	State	Description
(1)	ALARM	Blinking red	Error
		Blinking green	Date/Time or Charging/Discharging Schedule not set
		Off	No error
(2)	GRID	Lit orange	Power failure
		Blinking green	Waiting for power restoration
		Lit green	Grid in the normal state
(3)	BATTERY	Lit green	Discharging
		Blinking green	Discharging (battery remaining is low)
		Lit orange	Charging
		Blinking orange	On standby due to out of range temperature
		Off	Charging/Discharging stopped
(4)	MODE	Lit green	Grid-connected
		Blinking green	Grid-connected (output restriction)
		Lit orange	Back-up mode
		Blinking orange	Back-up (output restriction)
		Off	Stopped

### 1.2 Operation Buttons

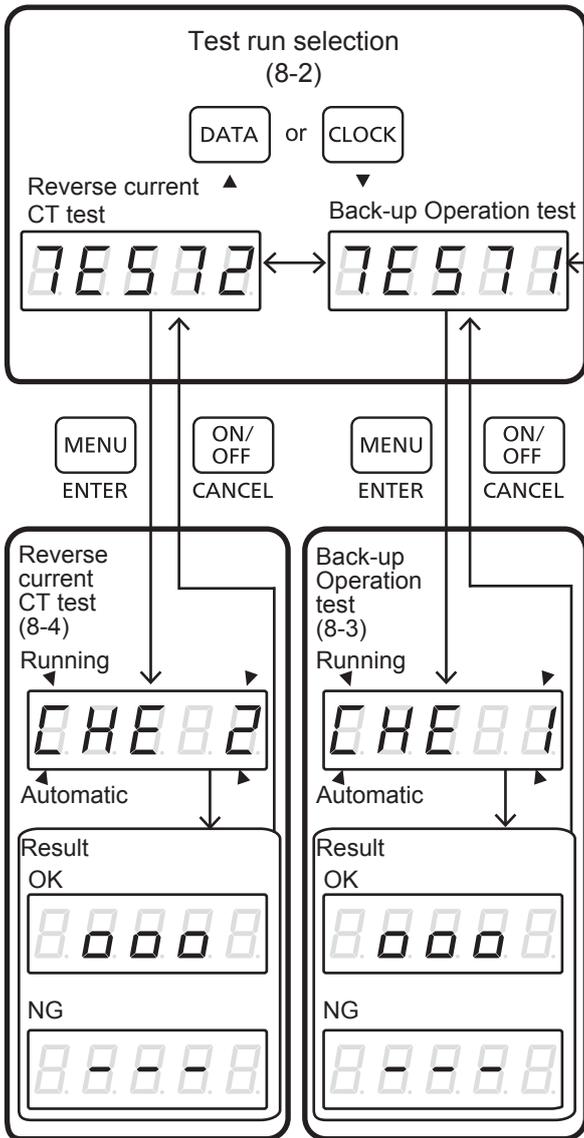
Number	Name	State	Description
(5)	ON/OFF • CANCEL	During operation	Press for one second to start/stop the operation.
		During setting	Cancel the setting and return to the previous state.
		During error	Press for three seconds to clear the error.
(6)	CLOCK • ▼	During operation	Display the current date/time. Press for three seconds to enter the date/time setting mode.
		During setting	Change the setting item and/or setting value.
(7)	DATA • ▲	During operation	The charging/discharging power, remaining battery level and operation mode are displayed in a cycle. The charging/discharging power is always displayed after five minutes of inactivity.
		During setting	Change the setting item and/or setting value.
		Other	Long-press simultaneously with the "MENU" to enter the work setting mode.
(8)	MENU • ENTER	During operation	Press for one second to enter the user setting mode.
		During setting	Confirm the selected item or setting.
		Other	Long-press simultaneously with the "DATA" to enter the work setting mode.

### 1.3 Character Display

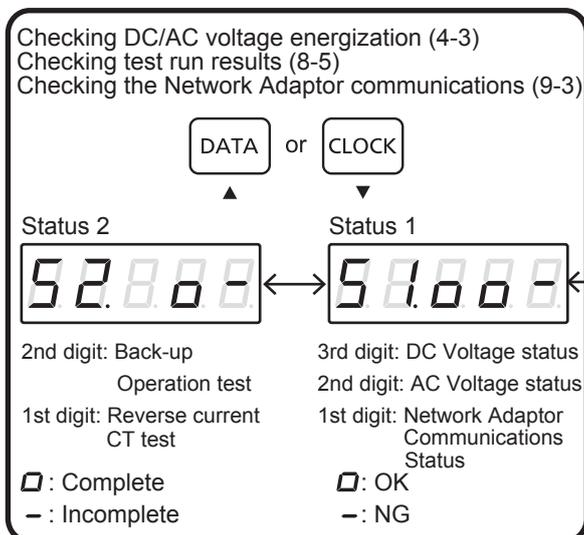
Name	Description
	Grid operations while operating
	Grid operations while stopped
	Back-up operations while operating
	Back-up operations while stopped
	Remaining battery level
  	Operation mode
	Remote control
  	Date/Time <ul style="list-style-type: none"> <li>• If the date/time is not set</li> <li>• Year (e.g. 2015)</li> <li>• Month/Day (e.g. 10 December)</li> <li>• Hour/Minute (e.g. 15:48)</li> </ul>
	Error
	User setting menu
	Work setting menu

## 2. List of Commands in Work Setting Mode

### Test run



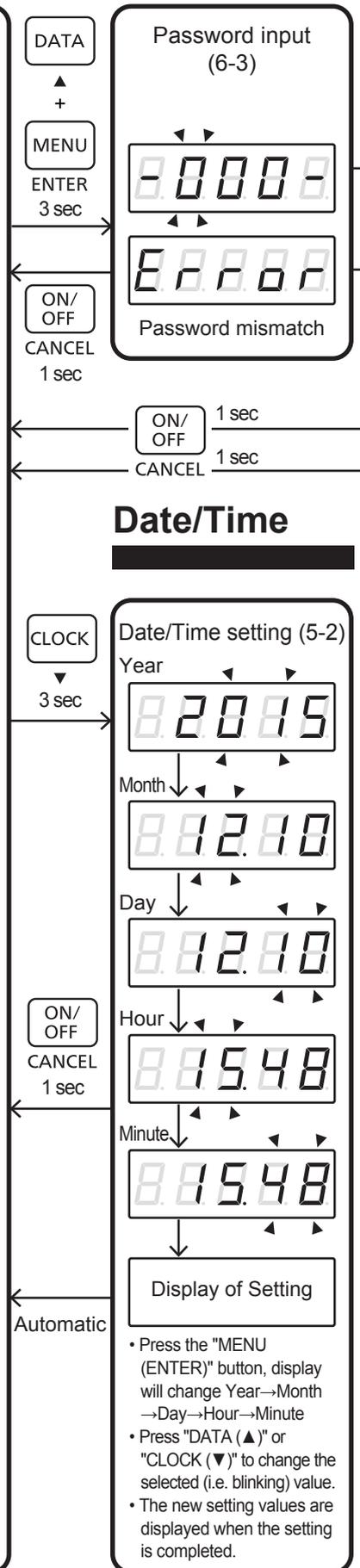
### Status



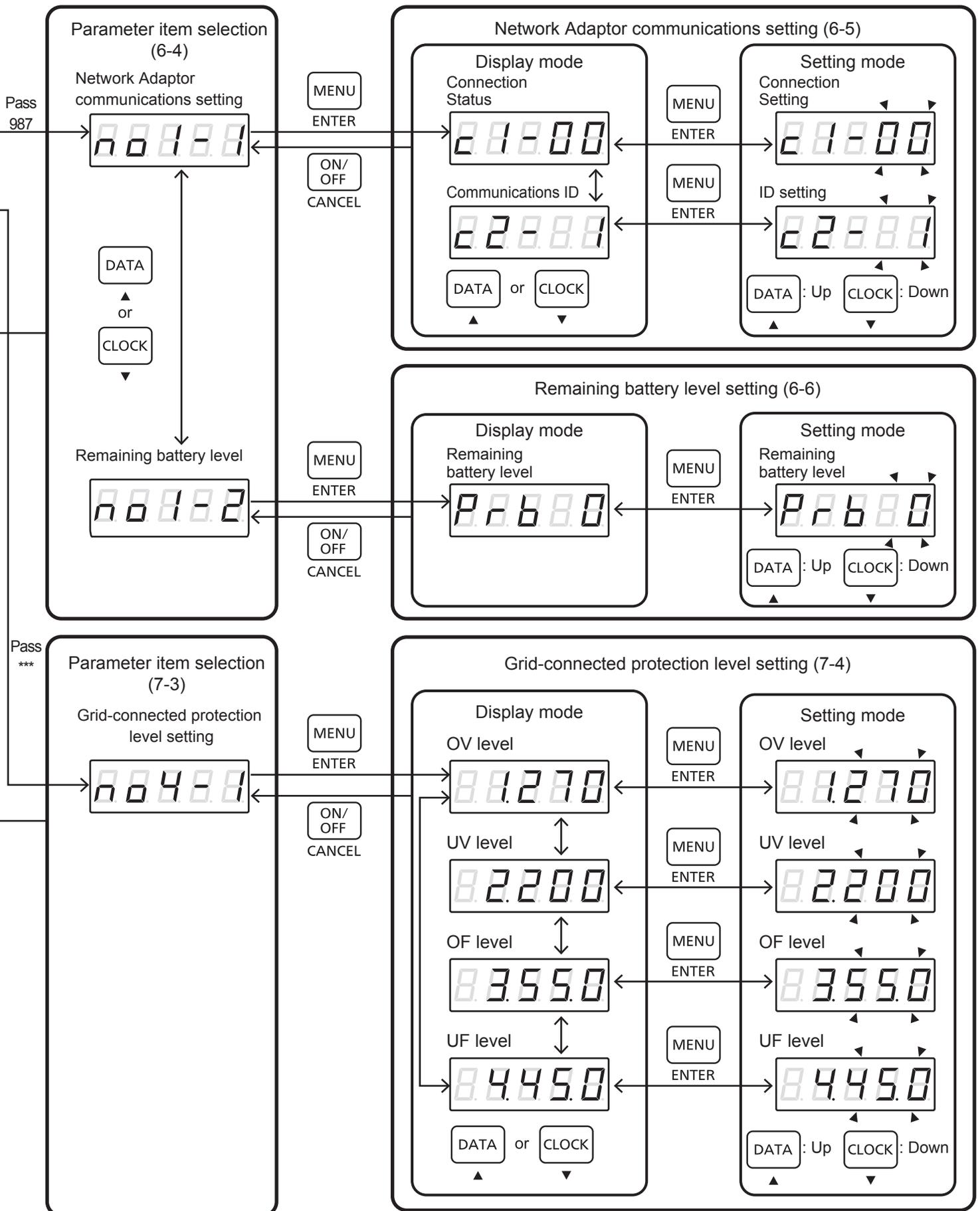
### Normal state



### Parameter setting



\* This only mentions basic operations. Check each chapter for details.



## 3. Setting Procedures

### 3-1. Setting Procedures

The following settings and test runs are required in order to start up this system normally;

#### NOTICE

- The actual operation cannot be performed until all the settings have been configured.
- Turn off the DC protector the protection device for the storage battery system, and the protection device for Network Adaptor.

#### [1] Checking Energization

- Turn ON the DC protector and the protection device and check that the power is supplied normally.  
(See chapter 4)

#### [2] Setting Date/Time

- Set the date/time in order to activate the clock function.  
(See chapter 5)

#### [3] Setting Parameters

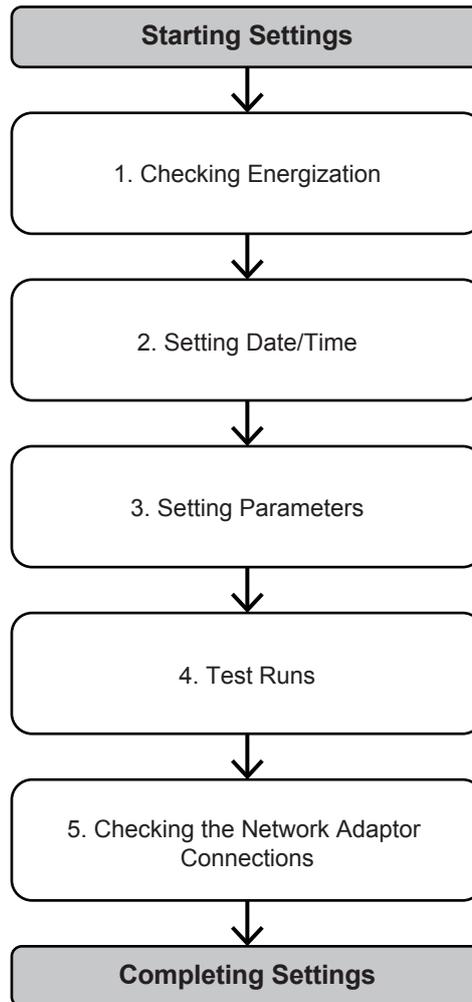
- Set the operation parameters.  
(See chapter 6 and 7)

#### [4] Test Runs

- Perform test runs such as the reverse current CT test and back-up operation test.  
(See chapter 8)

#### [5] Checking Network Adaptor Connections

- Turn ON and launch the Network Adaptor and check the communications between the Network Adaptor and the storage battery system.  
(See chapter 9)



## 4. Checking Energization

### 4-1. Checking Energization

After finishing the wiring, check that the battery system side wiring and the GRID connection were normally completed in accordance with installation instructions and local regulations.

#### NOTICE

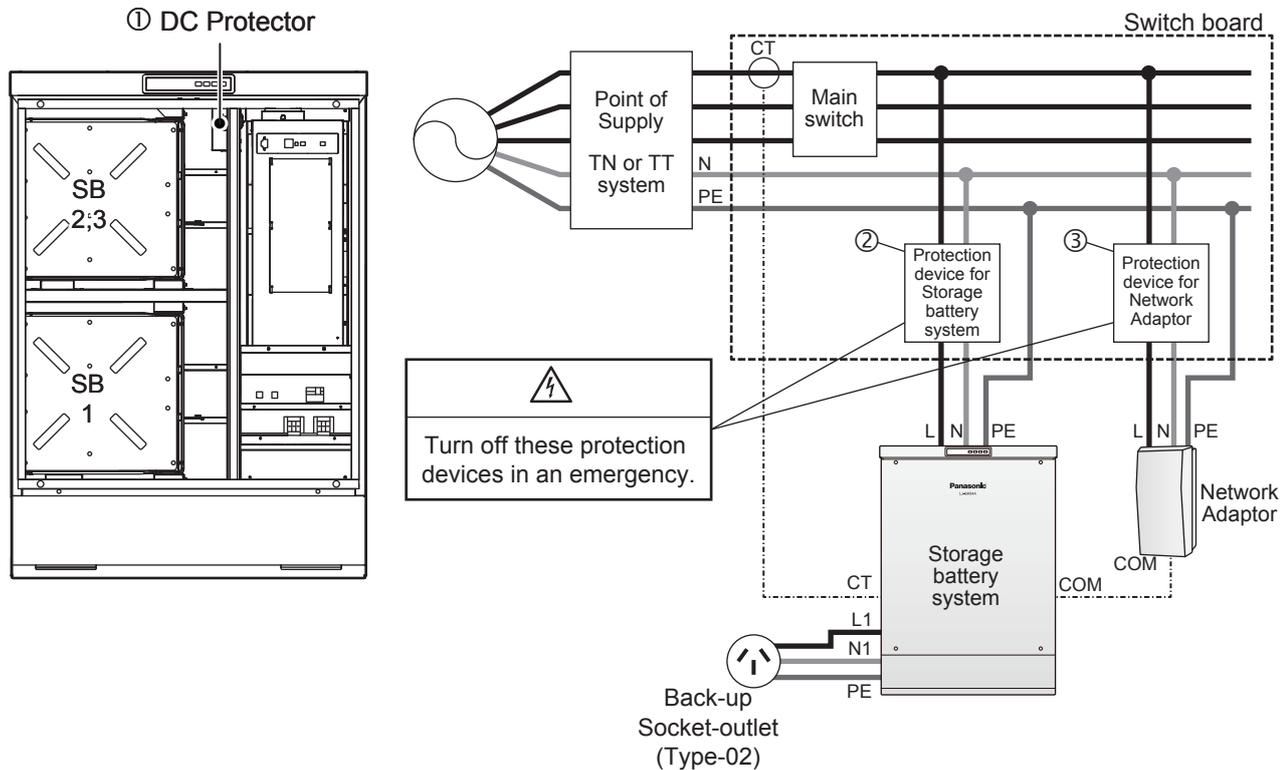
- Check that the wiring work has been completed in accordance with Chapter "Installation".  
The device may fail if the power is turned on with it incorrectly wired.
- The work must be performed by qualified personnel.

### 4-2 Powering ON the DC/AC

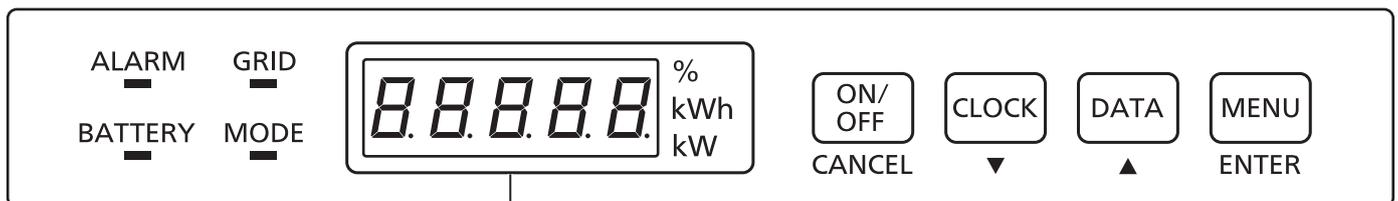
#### ■ Preparation

- Check that the wiring work has been completed in accordance with Chapter "Installation".
- Set the protection device for the Network Adaptor to OFF. (③)

#### ■ Operation procedure



- Turn ON the DC Protector. (①) Power is supplied from the battery to the system.  
All indicator LED lamps illuminate for five seconds and then return to normal state.

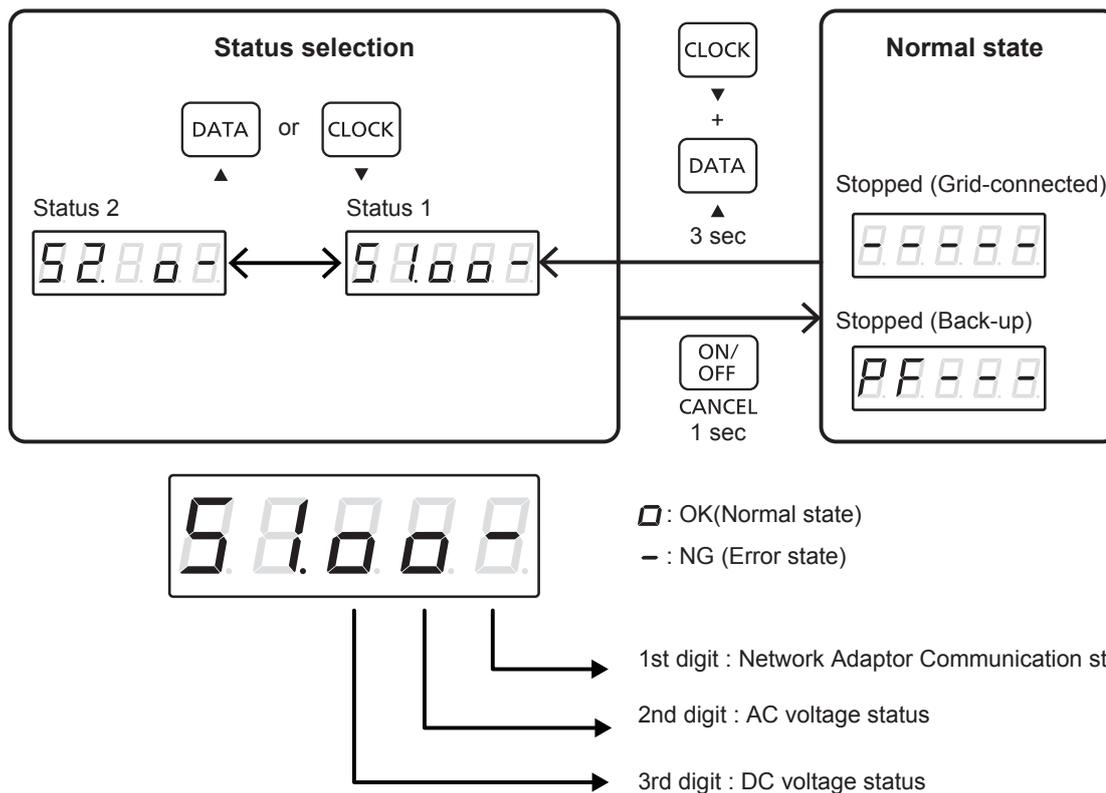


All LED lamps illuminate for five seconds and then return to normal state.

- Turn ON the protection device for the storage battery system. (②) Power is supplied from the AC side to the system.

## 4-3. Checking DC/AC Voltage Energization

### ■ Operation procedure



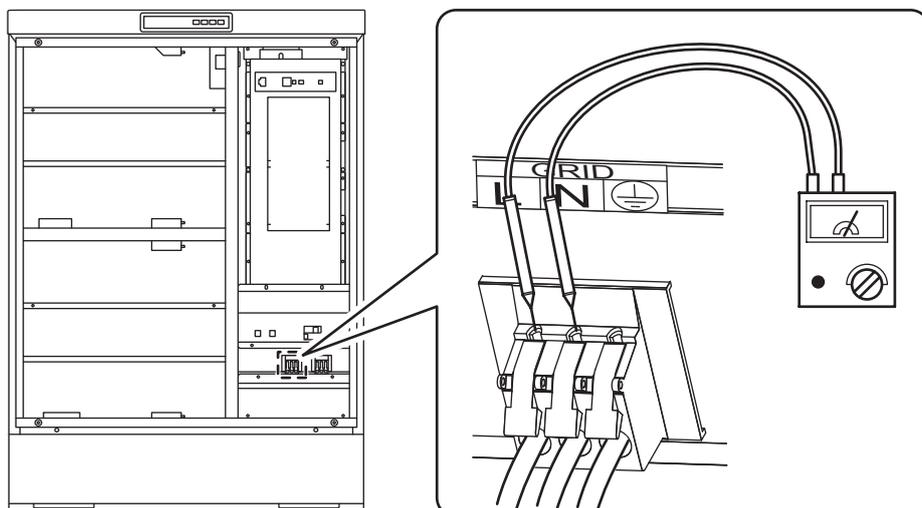
- Press "CLOCK (▼)"+"DATA (▲)" for three seconds in the normal state to open the status selection mode.
- Press "DATA (▲)" or "CLOCK (▼)" to display the system status [S1].
- The second digit indicates the AC voltage status, and the third digit indicates the DC voltage status.
- [ □ ] appears in the normal state, and [ - ] appears in the error state. Make sure that the displays for the 2nd and 3rd digits turn to [ □ ].

### ■ If the AC voltage status or DC voltage status are showing an error

- The DC protector or the AC protection device may be turned OFF.  
Check that the DC protector and the AC protection device are turned ON.
- Refer to Chapter "Installation", check that the battery module is wired correctly.
- Refer to Chapter "Installation", check that the wiring on the AC side is wired correctly.

### Reference: How to check the voltage with the Grid terminal

Terminal levers have holes for measurement in the upper part. Insert the test bar of a voltmeter into the hole to measure the voltage.



## 5. Date/Time

### 5-1. Date/Time

The date/time needs to be set for this system to operate normally. The Programmed charge/discharge time mode cannot work correctly if the date/time is not set correctly.

### NOTICE

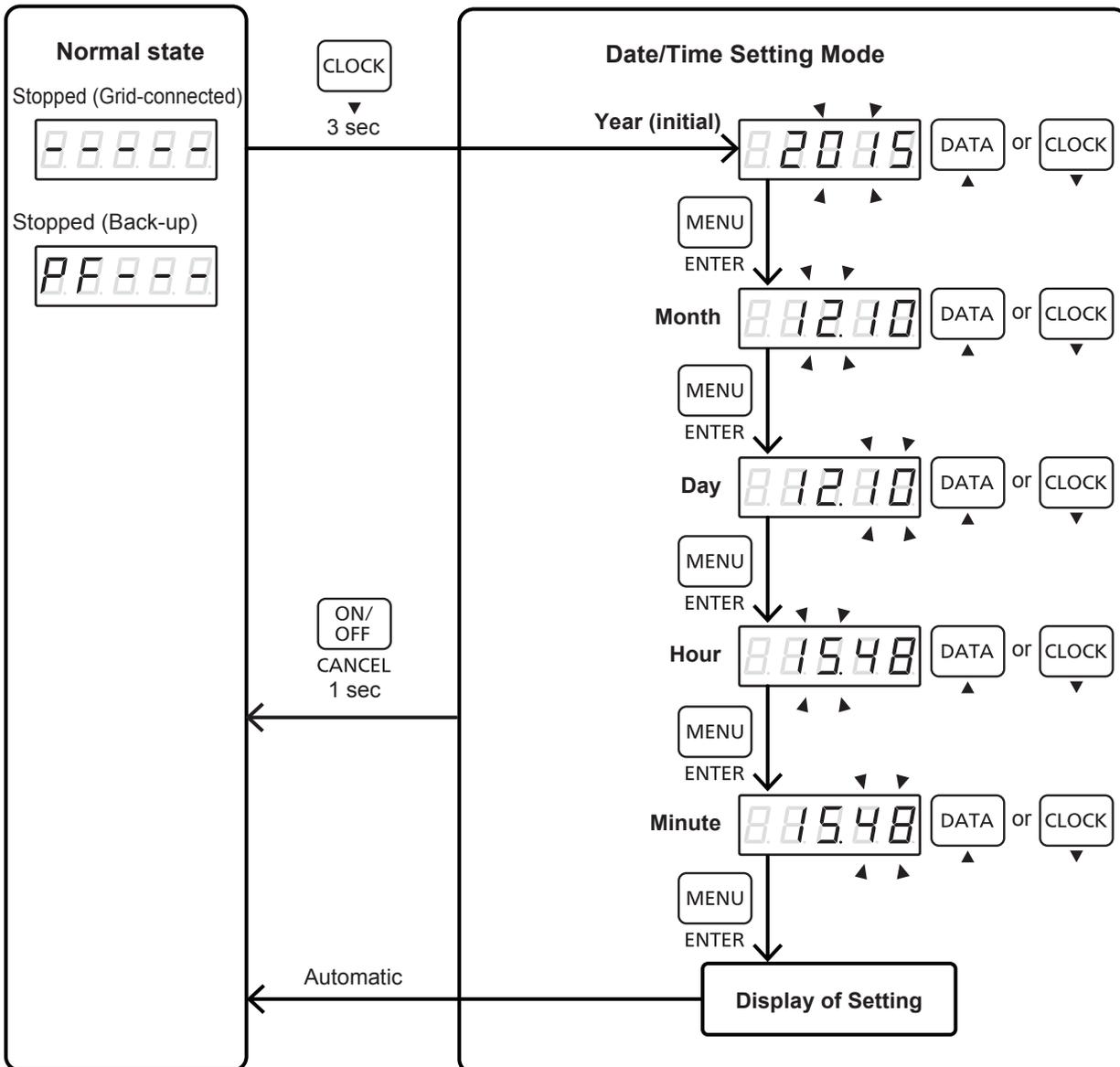
- If the ALARM LED is blinking in green, the date/time has not yet been set. Set the date/time.
- The date/time setting is required when not connecting to the Network Adaptor.  
The scheduled operation mode cannot work correctly if the date/time is not set.
- When connecting with the Network Adaptor, the date/time notified by the Network Adaptor is given higher priority.  
However, the date/time needs to be set manually as an initial setting.
- The work must be performed by qualified personnel.

### 5-2. Date/Time Setting

#### ■ Preparation

- See the list of commands in P.44 to switch to normal state conditions.

#### ■ Operation procedure

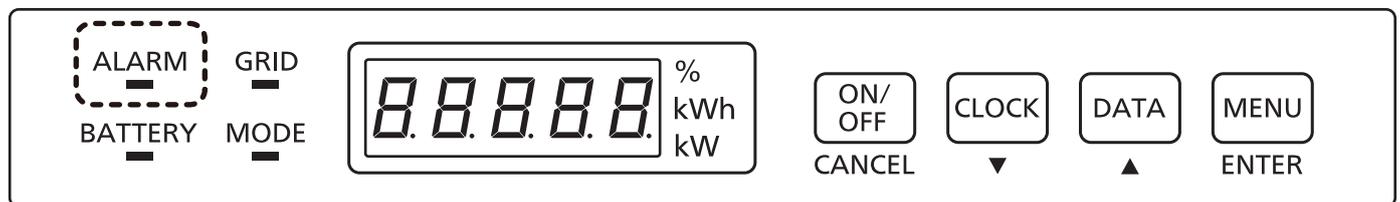


- Press "CLOCK (▼)" for three seconds in the normal state to switch to the date/time setting mode.  
The year digit is selected (i.e. blinks) initially.  
Press "CLOCK (▼)" or "DATA (▲)" to change the selected (i.e. blinking) value.  
Set the year data.
- Set the year data and press "MENU (ENTER)" to fix the year data and proceed to the month setting.  
The month data starts blinking.  
Press "CLOCK (▼)" or "DATA (▲)" to change the selected (i.e. blinking) value.  
Set the month data.
- Set the month data and press "MENU (ENTER)" to fix the month data and proceed to the day setting.  
The day data starts blinking.  
Press "CLOCK (▼)" or "DATA (▲)" to change the selected (i.e. blinking) value.  
Set the day data.
- Set the day data and press "MENU (ENTER)" to fix the day data and proceed to the hour setting.  
The hour data starts blinking.  
Press "CLOCK (▼)" or "DATA (▲)" to change the selected (i.e. blinking) value.  
Set the hour data.
- Set the hour data and press "MENU (ENTER)" to fix the hour data and proceed to the minute setting.  
The minute data starts blinking.  
Press "CLOCK (▼)" or "DATA (▲)" to change the selected (i.e. blinking) value.  
Set the minute data.

Set the minute and press "MENU (ENTER)" to complete the date/time setting.

The set date/time data are displayed in a cycle in the order of (Year) => (Month/Day) => (Hour/Minute) and then return automatically to the normal display.

- Check that the ALARM Indicator is not blinking in green.  
\* If the ALARM Indicator is blinking in green, the date/time setting is not set.  
Set the date/time correctly.



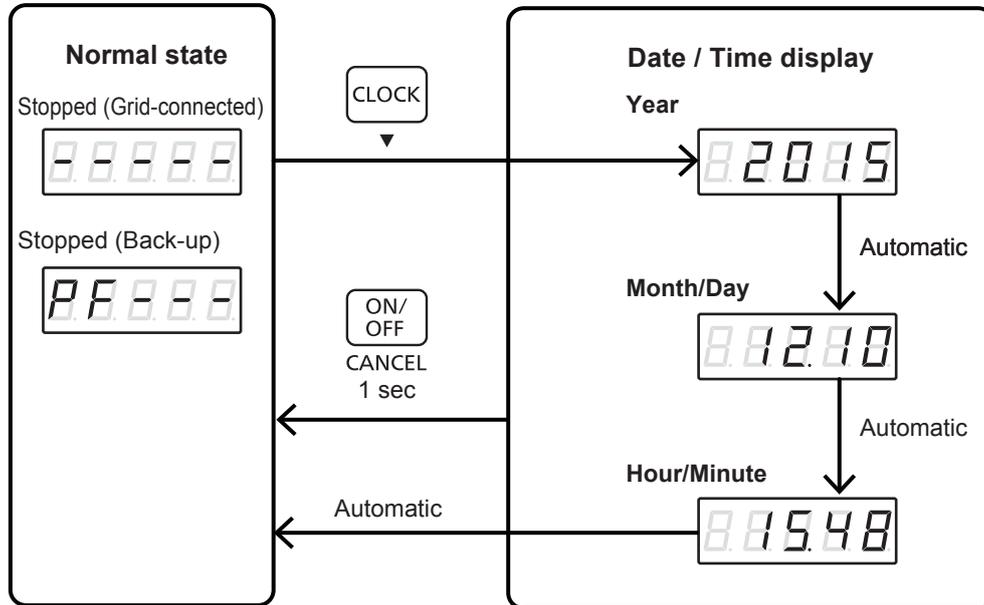
### 5-3. How to Check the Set Date/Time

Follow the procedure below to check the current date/time setting.

#### ■ Preparation

- See the list of commands in P.44 to switch to normal state conditions.

#### ■ Operation procedure



- Press "CLOCK (▼)" in normal state to check the current date/time setting.
- The set date/time data are displayed in a cycle in the order of (Year) => (Month/Day) => (Hour/Minute) (The data are displayed for two seconds) and then normal state is automatically returned to.

## 6. Setting Parameters for Installer

### 6-1. Setting Parameters

To operate this system normally, it is necessary to set the operation parameters as per the below. Note that the system may fail to operate normally if these parameters are not properly set.

- Network Adaptor Communications Setting
- Remaining Battery Level Setting

### NOTICE

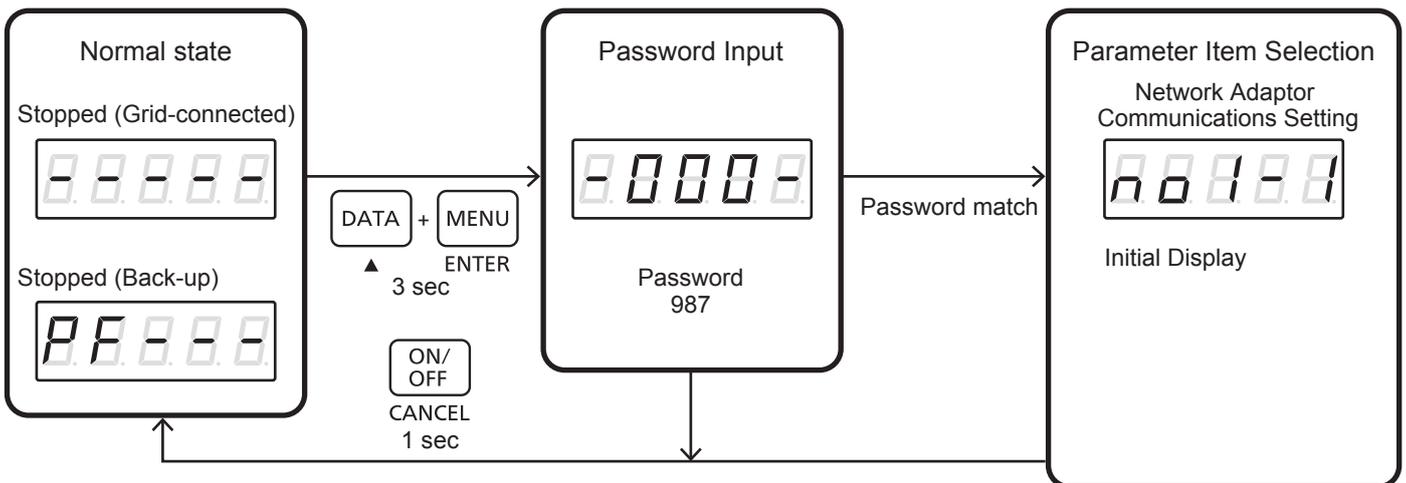
- The system cannot operate normally if the parameters have not been set correctly.
- The system must be operated by a qualified personnel. Password authentication is required for switching to the parameter setting mode.

### 6-2. Switching to the Parameter Item Selection Mode

#### ■ Preparation

- Set the storage battery system to the stopped state in the normal state. The system can only be switched to the parameter setting mode while it is in a stopped state.

#### ■ Operation procedure

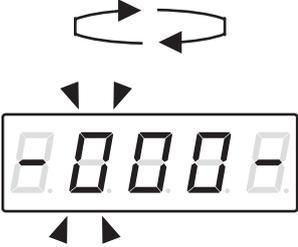


- Press "DATA (▲)" + "MENU (ENTER)" simultaneously for three seconds to switch to the password input mode.
- Enter the password when prompted. The system switches to the parameter selection mode if the entered password is correct.  
(See 6-3 Password Input for details on the password input mode)
- The initial display [no 1-1] of the parameter item selection mode appears if the mode switch is successful.
- To return to the normal state, press "ON/OFF (CANCEL)" for one second while in the password input mode or parameter item selection mode.
- If the password is unsuccessfully entered three times, or the operation buttons are not operated for a span of ten minutes, it reverts to the normal state.

## 6-3. Password Input

Password authentication is required for changing the parameter values in the parameter setting mode. The following illustration demonstrates how to enter the password.

### ■ Operation procedure

 <p>Press this button to change the configurable digit. The currently configurable digit blinks.</p>	 <p>Press this button after all the digits have been set. When this switch is pressed, the system will start matching the entered value against the correct password. The system switches to the parameter setting mode if the password is correct. If the password is wrong, [Error] appears for one second followed by the password prompt again.</p>
	
 <p>Press this button to change the value of the blinking digit.</p>	 <p>Press this button for one second to abort the password input mode. The system will return to normal state.</p>

- The currently configurable digit blinks. The configurable digit changes each time "CLOCK (▼)" is pressed. (3rd digit => 2nd digit => 1st digit => 3rd digit)
- The value of the selected digit changes each time "DATA (▲)" is pressed. (0 => 1 => 2 => ... => 9 => 0)
- Once all the digits have been set, press "MENU (ENTER)". The system then matches the entered value against the correct password.  
The system switches to the parameter selection mode if the password is correct. If the password is wrong, [Error] appears for one second followed by the password prompt again.
- To abort the password input, press "ON/OFF (CANCEL)" for one second.

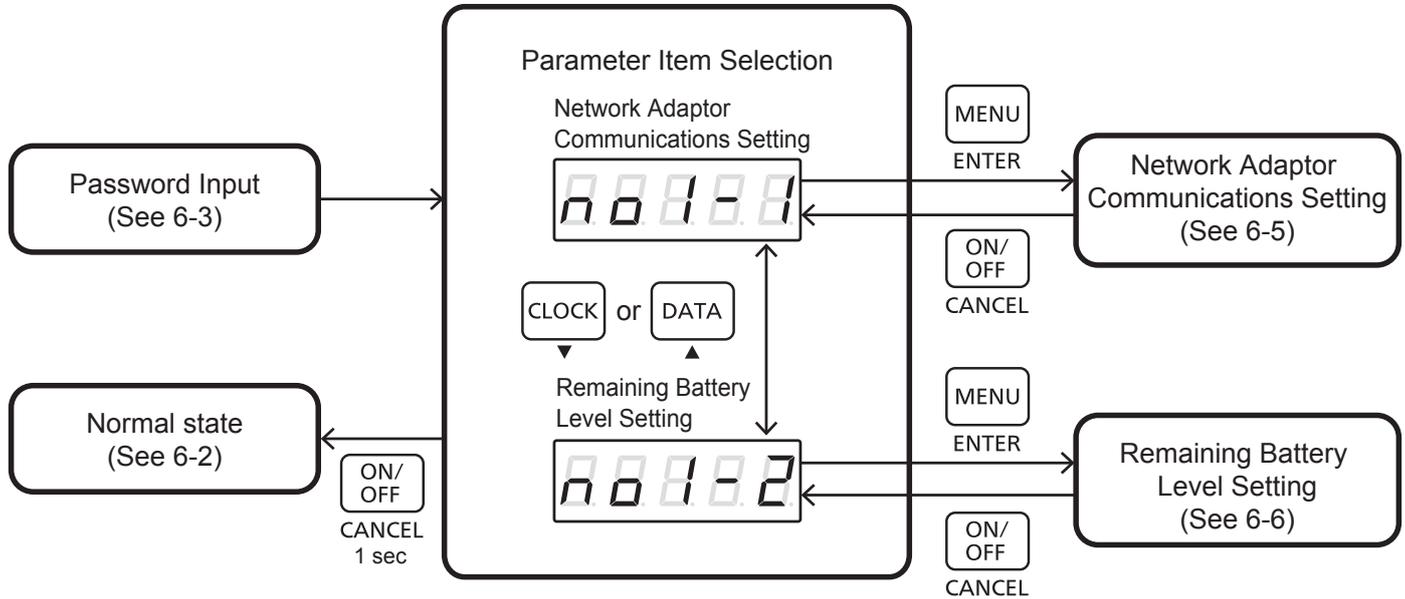
## 6-4. Parameter Item Selection

Select the parameter to be edited from the following: Network Adaptor communications setting/Remaining battery level setting.

### ■ Preparation

See 6-2 to 6-3 and switch to the parameter item selection mode showing the initial display [no 1-1].

### ■ Operation procedure



- Select the parameter to be edited: Network Adaptor Communications Setting, or Remaining Battery Level Setting.
- Press "CLOCK (▼)" or "DATA (▲)" to change the selected item.  
The displayed items and their corresponding settings are as described below.  
[no 1-1] : Network Adaptor Communications Setting  
[no 1-2] : Remaining Battery Level Setting
- Press "MENU (ENTER)" to switch to the setting mode.
- Press "ON/OFF (CANCEL)" for one second to restore to the normal state.

## 6-5. Network Adaptor Communications Setting

This system features a function for performing remote control and data communications via communications with the Network Adaptor.

The Network Adaptor communications setting is configured in this section.

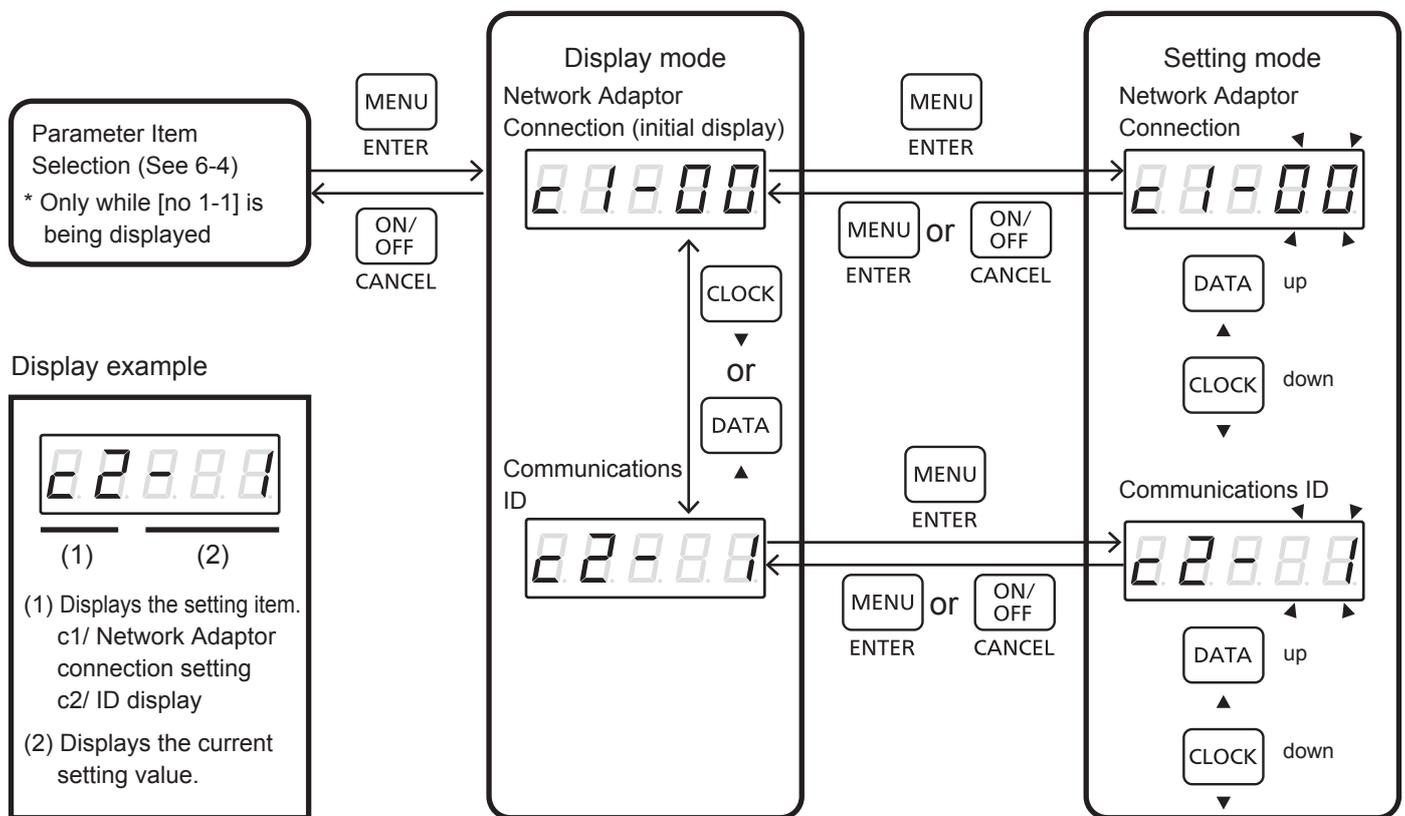
### NOTICE

- The work must be performed by qualified personnel.
- The Network Adaptor communications setting is not required for Stand-alone System, as the system is not connected to the Network Adaptor.

### ■ Preparation

See 6-2 to 6-4 and switch to the parameter item selection mode showing the initial display [no 1-1]. Then select [no 1-1] and press "MENU(ENTER)" to switch "Network Adaptor Connection [c1-00]".

### ■ Operation procedure



## [Display mode]

- In the display mode, change the level setting to be edited (Network Adaptor connection setting/Communications ID setting). Press "CLOCK (▼)" or "DATA (▲)" in the display mode to cycle through items. (c1. Network Adaptor connection display / c2. Communications ID display)
- The item number and the current parameter are displayed.
- Select the desired item to change its parameter and press "MENU (ENTER)" to switch from the display mode to the parameter setting mode.

## [Setting mode]

### ■ c1: Network Adaptor connection setting

- In the display mode, set the focus to the Network Adaptor connection and press "MENU (ENTER)" to switch to the Network Adaptor connection setting mode.  
The setting value blinks.
- Press "CLOCK (▼)" or "DATA (▲)" to change the selected (i.e. blinking) value.  
Set the value by referring to Table below.
- After editing the setting, press "MENU (ENTER)" to apply the new parameter value and return to the Network Adaptor connection display mode.
- Press "ON/OFF (CANCEL)" to abort the setting. Note that the changed values are discarded if you abort the setting.

No	Setting item	Setting	Description	Factory Default setting
c1	Network Adaptor connection setting	0	Not connected	0
		1	Connected	

### ■ c2: Communications ID setting

- In the display mode, set the focus to the Communications ID and press "MENU (ENTER)" to switch to the Communications ID setting mode.  
The setting value blinks.
- Press "CLOCK (▼)" or "DATA (▲)" in the Communications ID setting mode to change the selected (i.e. blinking) value.  
Set the value by referring to Table below.
- After editing the setting, press "MENU (ENTER)" to apply the new parameter value and return to the Communications ID display mode.
- Press "ON/OFF (CANCEL)" to abort the setting. Note that the changed values are discarded if you abort the setting.
- Set to 1 when connecting the Network Adaptor.  
If it is set to anything other than 1, then the Network Adaptor cannot be connected to.

No	Setting item	Setting	Description	Factory Default setting
c2	Communications ID setting	1 to 30	ID value for Network Adaptor communications	1

## [Settings Complete]

- Press "ON/OFF (CANCEL)" in the display mode to return to the parameter item selection mode.

## 6-6. Remaining Battery Level Setting

This setting can be used to set the remaining battery level to be reserved for the event of a prolonged power outage. No discharging is performed when the remaining battery is lower than the value specified in this setting, regardless of the operation mode (i.e. grid or back-up).

- During remote-control system mode, discharging is stopped at the level of remaining battery level adding 2 for blackout.

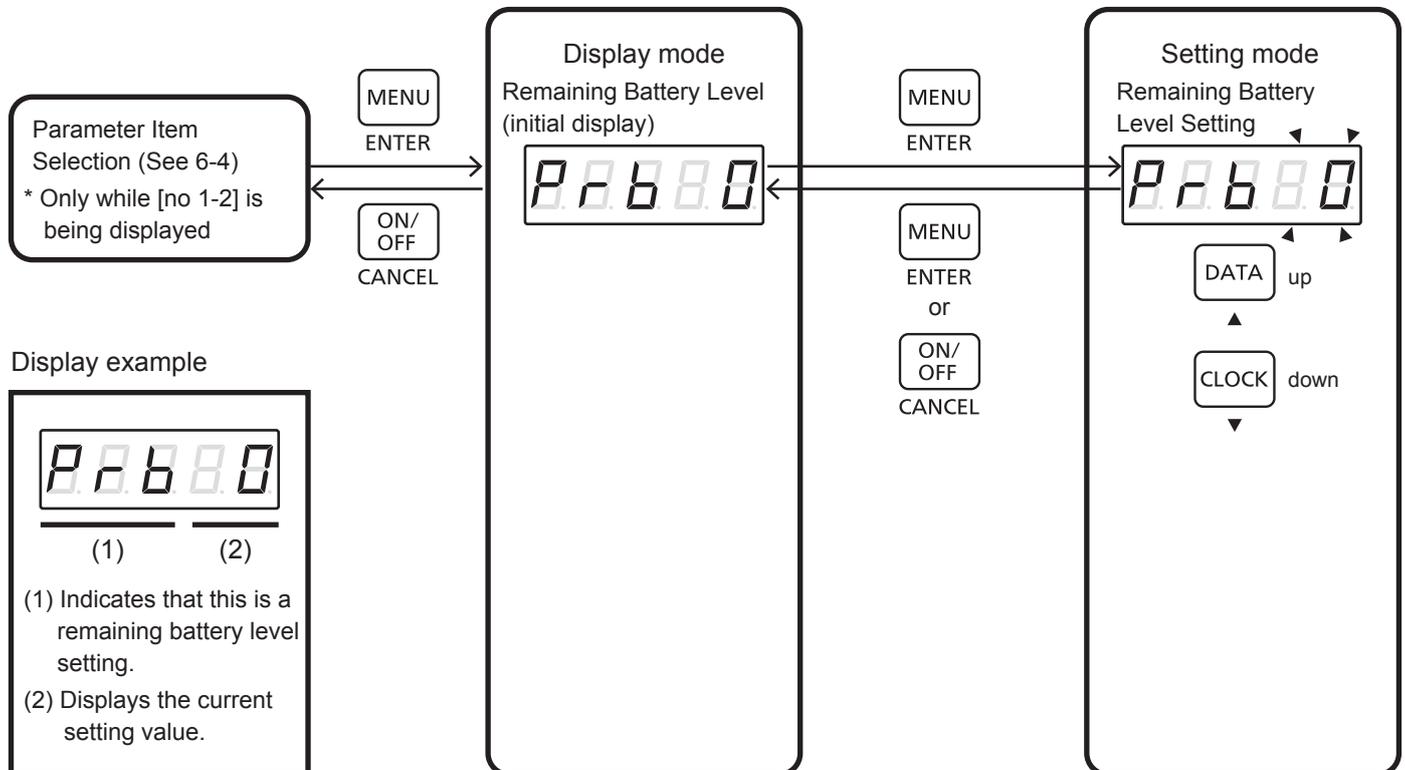
### NOTICE

- Since normal operations will no longer be operable when the set value is lower than the set remaining battery if the remaining battery is set via the remaining battery level setting, be careful in setting this.
- The work must be performed by qualified personnel.

### ■ Preparation

See 6-2 to 6-4 and switch to the parameter item selection mode showing the initial display [no1-1]. Then select [no1-2] and press "MENU(ENTER)" to switch "Remaining Battery Level [Prb \*\*]".

### ■ Operation procedure



## [Display mode]

- The current remaining battery level setting is displayed in the display mode. It is displayed in the form of [Prb] (which indicates the remaining battery level setting) followed by the current parameter.
- Press "MENU (ENTER)" to switch from the display mode to the setting mode.

## [Setting mode]

- Press "MENU (ENTER)" in the display mode to switch to the remaining battery level setting mode. The setting value blinks.
- Press "CLOCK (▼)" or "DATA (▲)" in the remaining battery level setting mode to change the selected (i.e. blinking) value.  
Set the value by referring to Table below.
- After editing the setting, press "MENU (ENTER)" to apply the new parameter value and return to the remaining battery level display mode.
- Press "ON/OFF (CANCEL)" to abort the setting. Note that the changed values are discarded if you abort the setting.

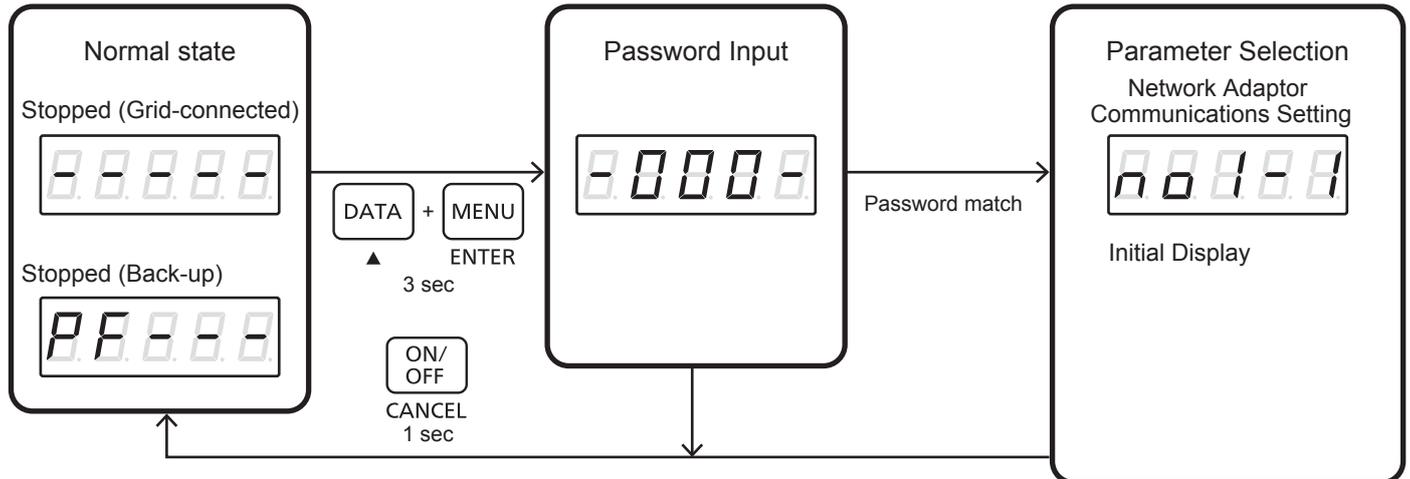
No	Setting item	Setting	Description	Factory Default setting
Prb	Remaining Battery Level Setting	0 to 40 [%]	Remaining battery level setting	0 [%]

## [Settings Complete]

- Press "ON/OFF (CANCEL)" in the display mode to return to the parameter item selection mode.

## 6-7. Terminating the Parameter Setting Mode

### ■ Operation procedure



Once all the parameters have been set, close the parameter setting and return to the normal state.

- To return to the normal state, press "ON/OFF (CANCEL)" for one second while in the parameter item selection mode.

## 7. Setting Parameters for Grid Operator

### 7-1. Setting Parameters

To operate this system normally, it is necessary to set the operation parameters as per the below. Note that the system may fail to operate normally if these parameters are not properly set.

- Grid Protection Level Setting

#### **NOTICE**

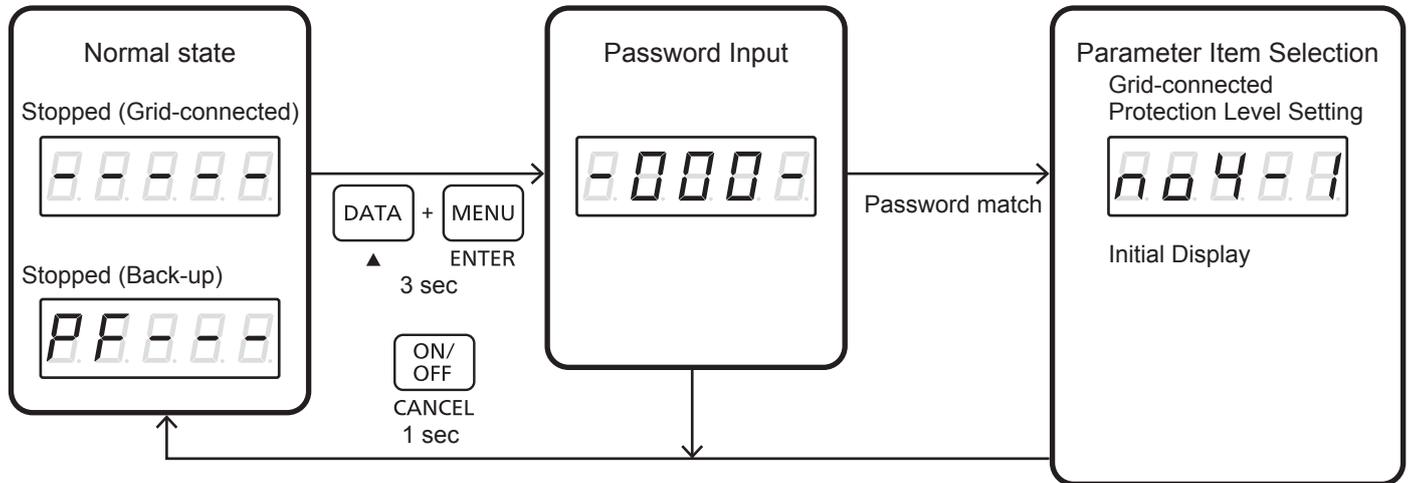
- The system cannot operate normally if the operation data have not been set correctly.
- Only the grid operator can set up and operate this parameter. The password is not in this installation manual.

## 7-2. Switching to the Parameter Item Selection Mode

### ■ Preparation

- Set the storage battery system to the stopped state in the normal state. The system can only be switched to the parameter setting mode while it is in a stopped state.

### ■ Operation procedure



- Press "DATA (▲)" + "MENU (ENTER)" simultaneously for three seconds to switch to the password input mode.
- Enter the password when prompted. The system switches to the parameter selection mode if the entered password is correct.  
(See 6-3 Password Input for details on the password input mode)
- The initial display [no4-1] of the parameter item selection mode appears if the mode switch is successful.
- To return to the normal state, press "ON/OFF" for one second while in the password input mode or parameter item selection mode.

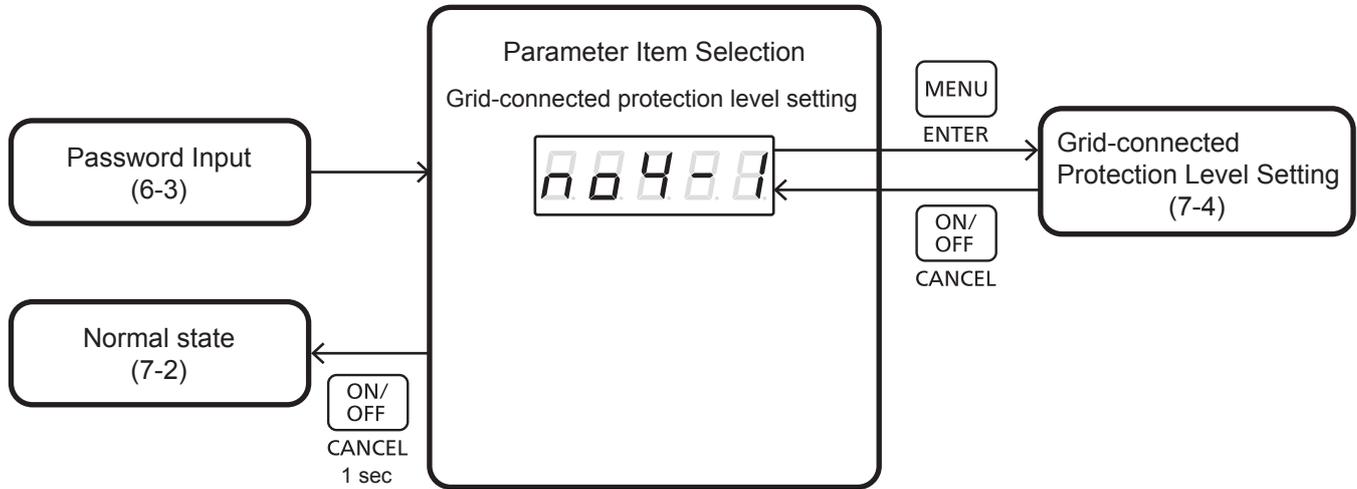
## 7-3. Parameter Item Selection

Select the parameter to be edited from the following: Grid protection level setting.

### ■ Preparation

See 7-2 and switch to the parameter item selection mode showing the initial display [no4-1].

### ■ Operation procedure



- Check that grid protection level [no4-1] is displayed.
- While the display is as above, press "MENU (ENTER)" to switch to the parameter editing mode.
- Press "ON/OFF (CANCEL)" for one second to restore to the normal state.

\* The parameter item selectable on this product is grid protection level setting only.

## 7-4. Grid-connected Protection Level Setting

This system is compliant with AS4777.2005. It is therefore necessary to set the OV/UV/OF/UF detection levels that are required for AS4777.2005.

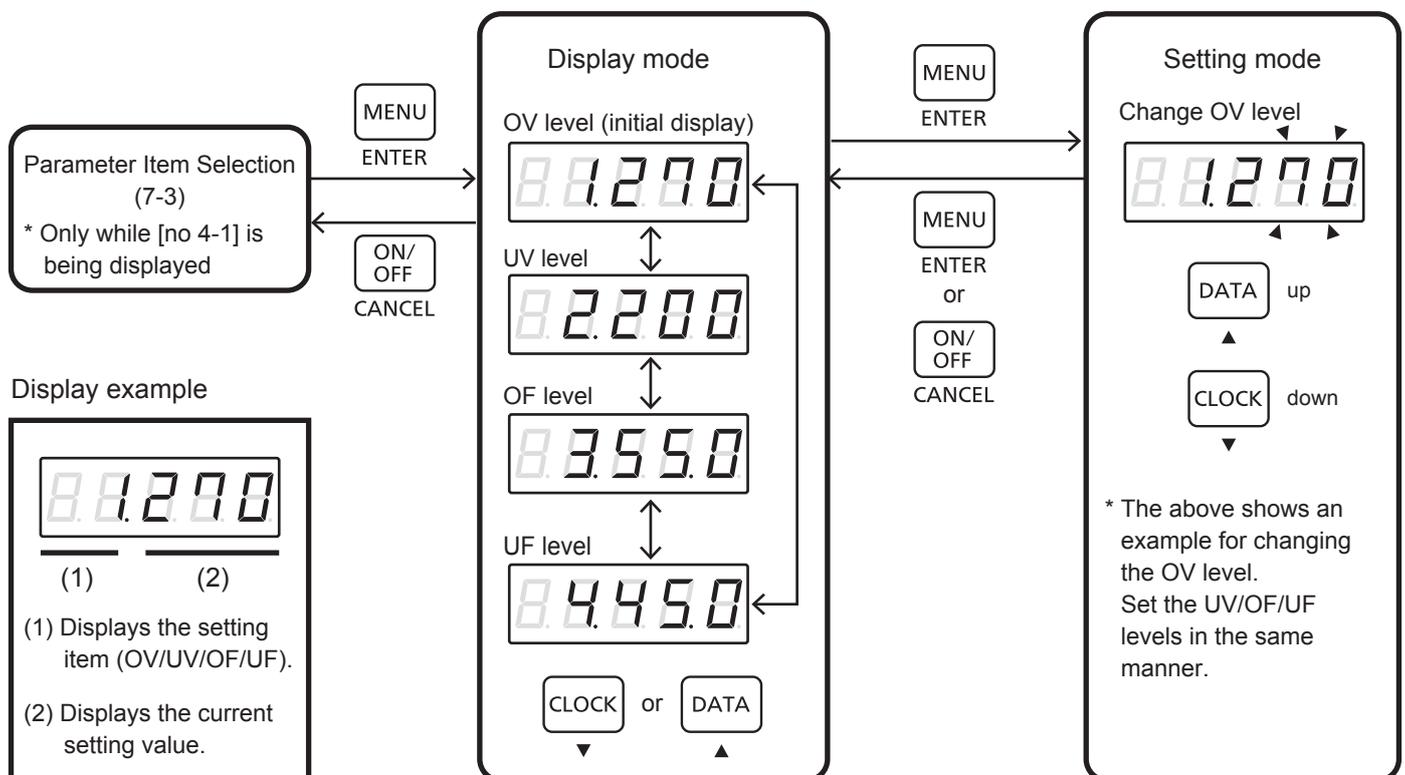
**Table Grid-connected Protection Level List**

No	Setting item	Setting range	Factory default setting	Setting increment
1	OV (OverVoltage)	230 [V] to 270 [V]	270 [V]	1 [V]
2	UV (UnderVoltage)	200 [V] to 230 [V]	200 [V]	1 [V]
3	OF (OverFrequency)	50.0 [Hz] to 55.0 [Hz]	55.0 [Hz]	0.1 [Hz]
4	UF (UnderFrequency)	45.0 [Hz] to 50.0 [Hz]	45.0 [Hz]	0.1 [Hz]

### ■ Preparation

See 7-2 to 7-3 and switch the OV level display mode (i.e. the initial display of the grid protection level setting).

### ■ Operation procedure



## [Display mode]

- In the display mode, change the level setting to be edited (OV level, UV level, OF level, or UF level).  
Press "CLOCK (▼)" or "DATA (▲)" to select an item.  
(1. OV level setting / 2. UV level setting / 3. OF level setting / 4. UF level setting)
- The item number and the current setting value are displayed.
- Select the desired item to change its parameter and press "MENU (ENTER)" to switch from the display mode to the parameter setting mode.

## [Setting mode]

### ■ 1. OV (OverVoltage) setting

- Select the OV level (1. \*\*\*) in the display mode and press "MENU (ENTER)" to open the parameter setting mode and change its parameters.  
The setting value blinks.
- Press "CLOCK (▼)" or "DATA (▲)" to change the selected (i.e. blinking) value.  
Refer to Table "Grid-connected Protection Level List", change the value to the required detection value.
- After editing the setting, press "MENU (ENTER)" to apply the new parameter value and return to the display mode.
- Press "ON/OFF (CANCEL)" to abort the setting. Note that the changed values are discarded if you abort the setting.

### ■ 2. UV (UnderVoltage) setting

- Select UV level (2. \*\*\*) in the display mode and press "MENU (ENTER)" to enable editing of parameters.  
Subsequently, follow the above-described steps for the OV setting as they are identical for all level settings.

### ■ 3. OF (OverFrequency) setting

- Select OF level (3. \*\*\*) in the display mode and press "MENU (ENTER)" to enable editing of parameters.  
Subsequently, follow the above-described steps for the OV setting as they are identical for all level settings.

### ■ 4. UF (UnderFrequency) setting

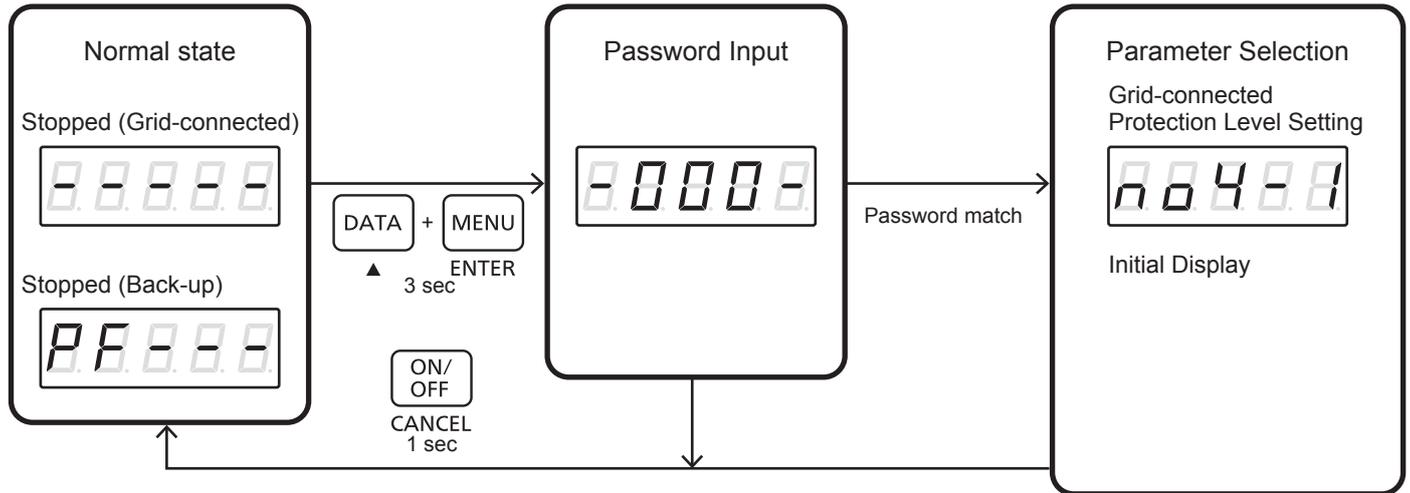
- Select UF level (4. \*\*\*) in the display mode and press "MENU (ENTER)" to enable editing of parameters.  
Subsequently, follow the above-described steps for the OV setting as they are identical for all level settings.

## [Settings Complete]

- Press "ON/OFF (CANCEL)" in the display mode to return to the parameter item selection mode.

## 7-5. Terminating the Parameter Setting Mode

### ■ Operation procedure



Once all the parameters have been set, close the parameter setting and return to the normal state.

- To return to the normal state, press "ON/OFF (CANCEL)" for one second while in the parameter item selection mode.

## 8. Test Run

### 8-1. Test Run

The following test runs are required before operating this system: the actual operation cannot be performed until test runs have been completed.

- Back-up Operation Test
- Reverse Current CT Test

### NOTICE

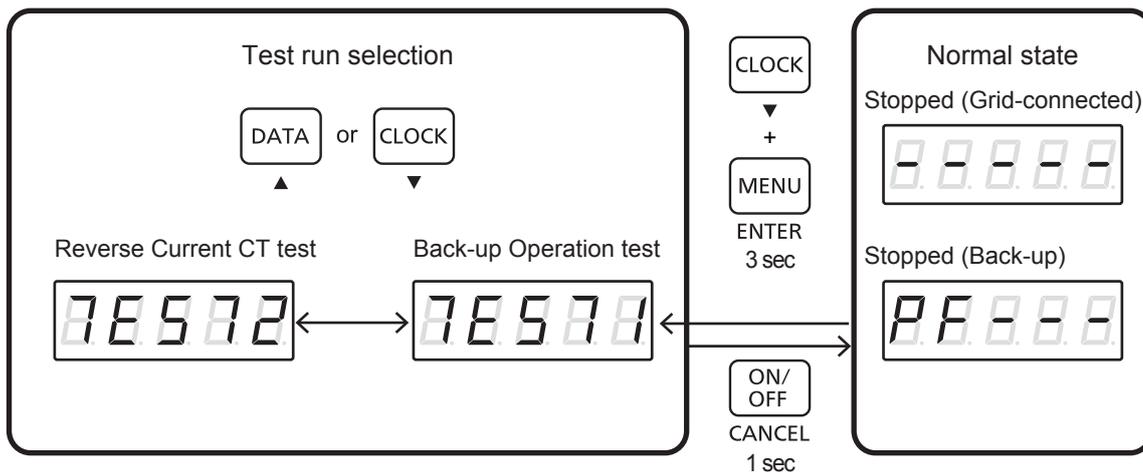
- Test runs are required before the actual operation of the system. Actual operations cannot be performed until test runs have been completed.
- The work must be performed by qualified personnel.

### 8-2. Test run Selection

#### ■ Preparation

- Set the storage battery system to the stopped state in the normal state. The system can only be switched to the parameter setting mode while it is in a stopped state.

#### ■ Operation procedure



- Press "CLOCK(▼)"+"MENU(ENTER)" simultaneously for three seconds in the normal state to switch to the test run selection prompt in the test run mode. Back-up Operation test [TEST1] is displayed initially.
- Press "ON/OFF (CANCEL)" for one second in the test run selection prompt to return to the normal state.
- Press "CLOCK (▼)" or "DATA (▲)" in the test run selection prompt to switch between the Back-up Operation test [TEST1] and Reverse Current CT test [TEST2].

## 8-3. Back-up Operation Test

Perform test runs of the back-up operations.

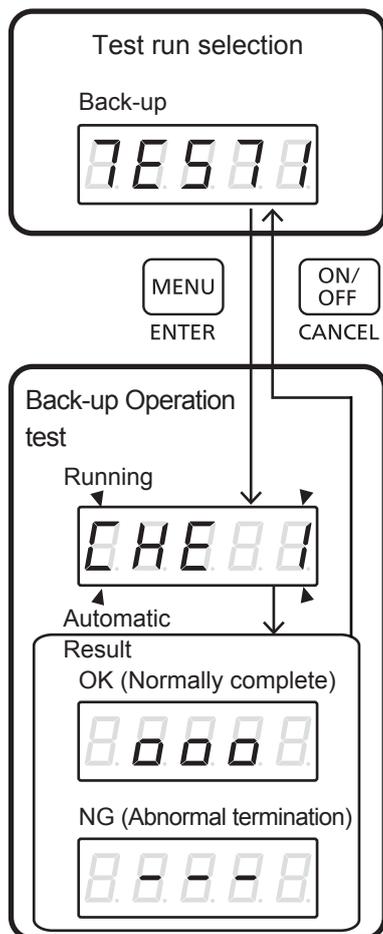
### NOTICE

- Be sure to turn OFF the backup breaker during a test run. Otherwise, it may result in the failure of the connected load device.
- Be sure to turn the backup breaker back ON after the test runs have been completed. Otherwise, no power will be supplied to the load during the actual back-up operations.

### ■ Preparation

- Be sure to turn the backup breaker to OFF.
- See the list of commands in P.66 or 8-2 and select the Back-up Operation test [TEST1].

### ■ Operation procedure



- Select the back-up test [TEST1] in the test run selection prompt.
- With the Back-up Operation test 1 selected, press "MENU (ENTER)" to start the test run.
- [CHE 1] is displayed during the test run. The test run takes several minutes to complete.
- When the test is complete, the test run finishes automatically and the test result is displayed.
- [000] appears if the test run is normally completed, but if it does not normally complete, the abnormal termination appears as [---].
- Press "ON/OFF(CANCEL)" after the results display, and switch to the test run selection.

### ■ Abnormal termination

- The DC protector may be turned OFF. Check that the DC protector is turned ON.
- The setting value for the Remaining Battery Level Setting may exceed the remaining battery level. Change the setting value.

### ■ Switch the backup breaker back ON.

- When the Back-up Operation test completes normally, be sure to turn the backup breaker ON again.

### NOTICE

- Be sure to turn the backup breaker back ON after the test run has completed. Otherwise no power will be supplied to the load connected to the backup circuit during a power cut.
  - \* Reference 4-3: How to check the voltage with the Grid terminal.

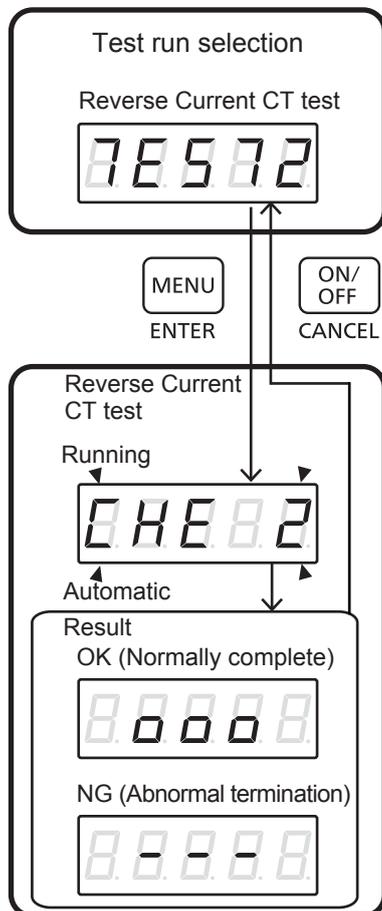
## 8-4. Reverse Current CT Test

Test the installation of the reverse current control CT.

### ■ Preparation

- See the list of commands in P.66 or 4-2 and select the Reverse Current CT test [TEST2].

### ■ Operation procedure



- Select the Reverse Current CT test [TEST2] in the test run selection prompt.
- With the Reverse Current CT test selected, press "MENU (ENTER)" to start the test run.
- [CHE 2] is displayed during the test run. The test run takes several minutes to complete.
- When the test is completed, the test run finishes automatically and the test result is displayed.
- [000] appears if the test run is normally completed, but if it does not normally complete, the abnormal termination appears as [----].
- Press "ON/OFF(CANCEL)" after the results display, and switch to the test run selection.

### ■ Abnormal termination

- The mounting position and direction of the CT may be incorrect. Check the mounting position and direction of the CT again.
- The DC protector and the protection device for storage battery system may not be ON. Check that the DC protector and the protection device for storage battery system are both ON.
- When the remaining battery level is over 90%, discharge it until it becomes 80%, then retry. Discharging can be performed via Back-up Operations.
- Check that the storage battery system's operating temperature range (0 - 40°C) is within range. It cannot be charged if the temperature drops below 0°C.

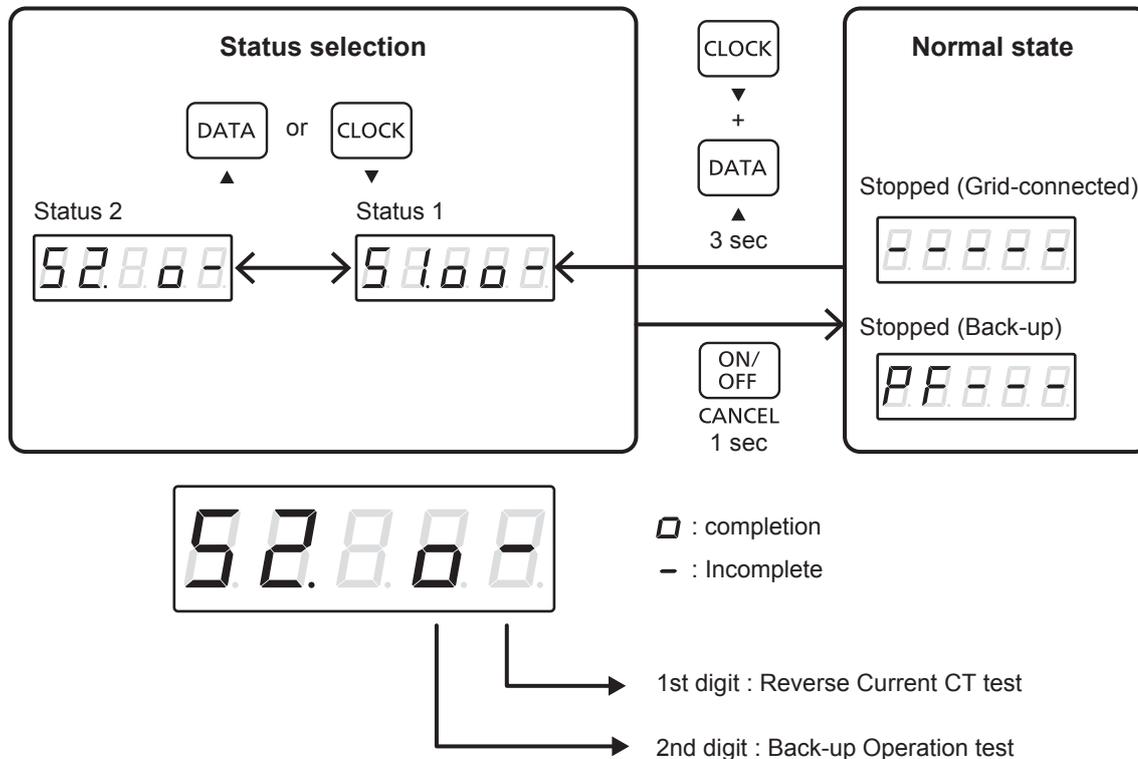
## 8-5. Checking Test Run Results

Check whether the test run was completed normally.

### ■ Preparation

- Set the storage battery system to the stopped state in the normal state. The system can only be switched to the parameter setting mode while it is in a stopped state.

### ■ Operation procedure



- Press "CLOCK (▼)"+"DATA (▲)" for three seconds in the normal state to open the status selection mode.
- Press "DATA (▲)" or "CLOCK (▼)" to display the test run status (S2).
- The first and second digits indicate the results of the Reverse Current CT test and back-up test, respectively.
- The results would be [ □ ] for completion and [ - ] if incomplete.
- The actual operations cannot be performed unless the Reverse Current CT test and back-up test results were both completed normally [ □ ].  
Complete both of the test runs.
- The test run is complete if the Reverse Current CT test and back-up test results were both completed normally [ □ ].

## 9. Checking the Network Adaptor Connections

### 9-1. Checking the Network Adaptor Connections

In order to connect this system to the server via the Network Adaptor to perform remote controls, etc., the communications with the Network Adaptor must be operating normally. Otherwise, the remote control instructions, etc. from the server cannot be accepted.

#### NOTICE

- The DR control instructions, etc. from the server cannot be accepted if the communications with the Network Adaptor are not properly configured.
- The work must be performed by qualified personnel.

### 9-2. Starting Up the Network Adaptor

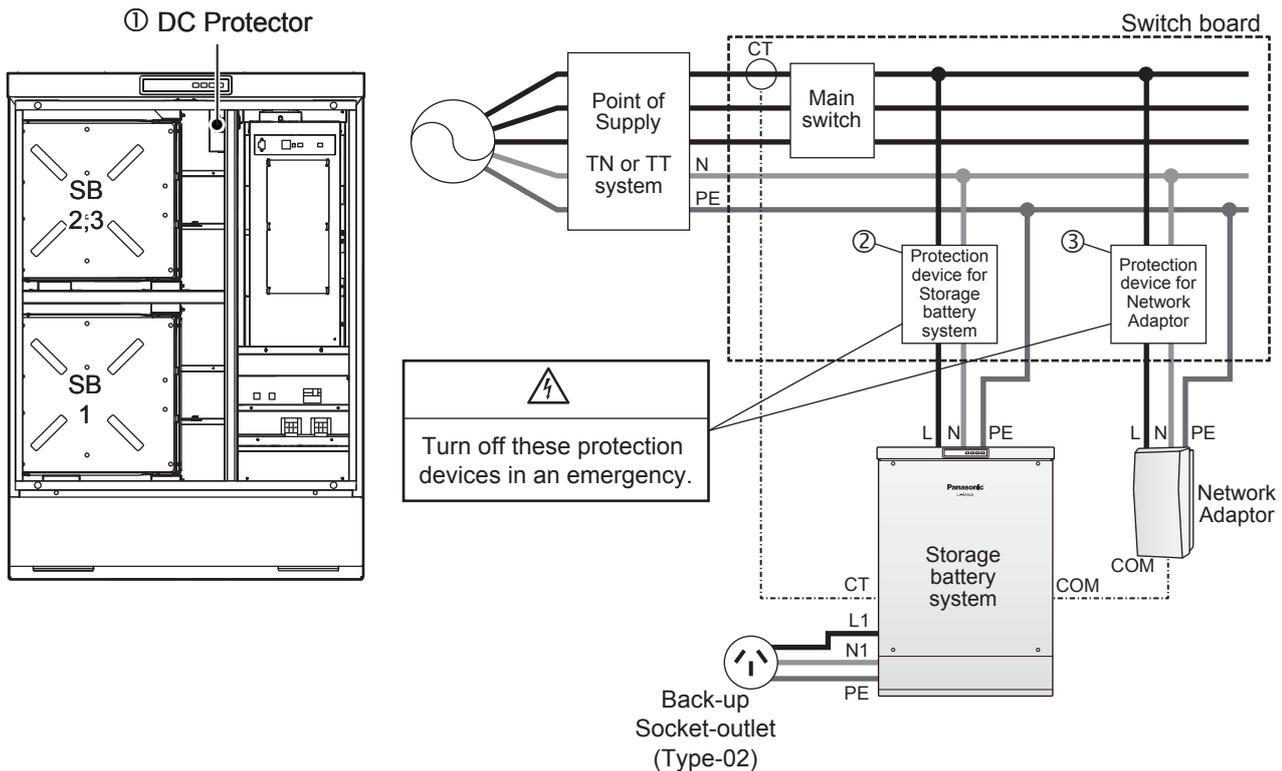
#### ■ Preparation

- Switch the DC Protector (①) and protection device for the storage battery system to ON.(②)

#### ■ Operation procedure

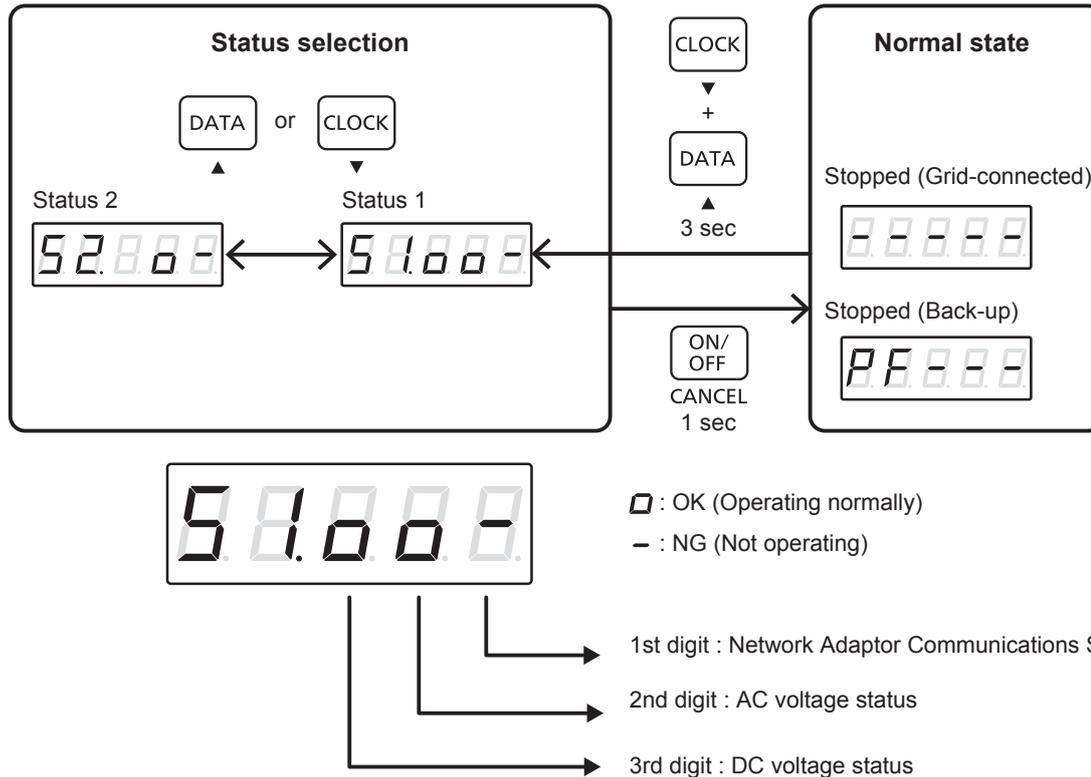
- Switch ON the protection device for Network Adaptor.(③)

The Network Adaptor launches and starts communicating with the storage battery system.



## 9-3. Checking the Network Adaptor Communications

### ■ Operation procedure



- Press "CLOCK (▼)"+"DATA (▲)" for three seconds in the normal state to open the status selection mode.
- Press "DATA (▲)" or "CLOCK (▼)" to display the system status (S1).
- The first digit indicates the communications status with the Network Adaptor.
- [ □ ] indicates that the communications with the Network Adaptor is operating normally; and [ - ] appears if it is not in operation. Make sure that the display for the 1st digit turns to [ □ ].

### ■ If the communications with the Network Adaptor are not functioning

- The Network Adaptor may not be running. Check whether the protection device for Network Adaptor is turned ON.
- The communications line may be connected incorrectly. Check chapter 6-1 in the "Installation" section again and verify that the communications line is connected correctly to both the Network Adaptor and the storage battery system.

## 10. Complete Settings

The settings are now complete. Attach the front lid by referring to P.19.

When connecting the Network Adaptor, refer to the Setting Manual which is included with the Network Adaptor, then perform the settings.



---

**Panasonic Corporation Eco Solutions Company**

Web Site: <http://panasonic.net/>