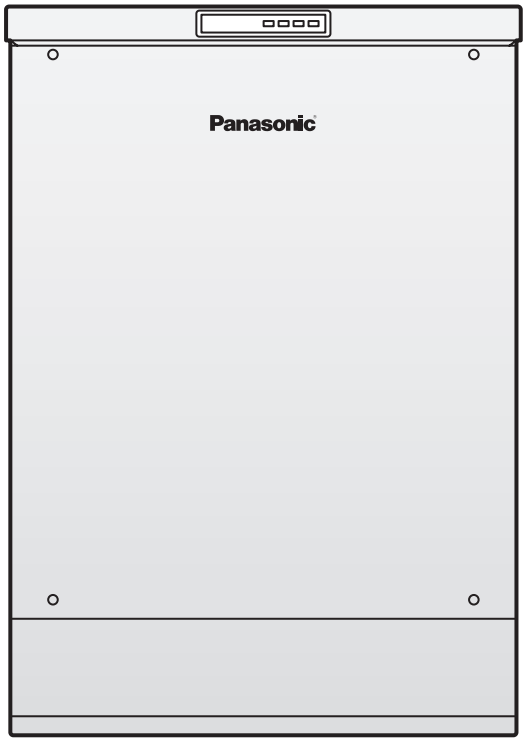
Panasonic®

User's Manual

Lithium-ion Storage Battery System
Model No. LJ-SK56A

Network Adaptor
Model No. LJ-NA02



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User's Manual

- Thank you for purchasing a Panasonic product.
  Please read this User's Manual thoroughly before operating the system.
  For future reference, please keep this manual in a safe place.
- For disposal, please contact your Household Hazardous waste depot.

Safety Precautions

- **To reduce the risk of personal injury, injury to others and property damage, always observe the safety precautions described below.**
- **This product is an important resource. Be sure to inspect it appropriately and observe the safety precautions set forth below.**
- **We shall not be in any way liable for any accidents or malfunctions resulting from failure to observe these precautions.**

■ The levels of danger and damage that may result when the product is installed incorrectly are classified and indicated as shown below.

⚠ WARNING	**This symbol denotes information that, if not observed correctly, can result in serious injuries to personnel.**
⚠ CAUTION	**This symbol denotes actions that may result in minor injury and/or property damage.**

■ Instructions that must be observed are indicated by the following graphical symbols.

⃠ **This symbol denotes an action that is prohibited.**	❗ **This symbol denotes actions that are mandatory.**

⚠ WARNING	
⃠ Prohibited	■ Do not modify or disassemble the product. Doing so may result in fire, electric shock, short-circuit or failure.
	■ Do not remove the front lid of the product. Doing so may result in electric shock, injury or failure.
	■ Do not climb on or hang from the product. Doing so may result in injury or failure.
	■ Do not touch the product in hazardous conditions such as flooding or lightning. Doing so may result in electric shock, injury or burns.
	■ Do not subject the product to impacts, shocks or vibrations caused by such as vehicle passing, machine operating, dropping, kicking or acts of vandalism. Doing so may result in fire or failure.
	■ If gas is produced from the product, do not approach it until the gas is removed. Doing so may result in burns or injury.
	■ If you have a pacemaker or other implanted medical device, do not touch or go within the reach of the product. Some implants (e.g. a pacemaker) may be affected by the product.
	■ Do not place hazardous solid substances near the product. Do not place or use flammable solvents such as gasoline and benzene near the product. Doing so may result in fire or failure.
	■ Do not use flammable gases such as insecticides near the product. Doing so may cause the gases to ignite, resulting in burns or fire.
	■ Do not insert your hands or foreign objects into the vent holes. Doing so may result in injury, electric shock or failure.
	■ Do not use devices that generate heat or steam near the product. Doing so may result in fire or failure.
	■ Do not pour water on the product or wash the product by hose. Doing so may result in failure.
	■ Do not bump vehicles against the product. Doing so may result in fire or failure.

Safety Precautions

⚠ WARNING	
Mandatory	■ In the event of the following, stop operating and switch OFF the protection devices for the product inside the distribution board. Continued use may result in failure, electric shock or fire. Contact the service/inquiry counter where you purchased/contracted this product. • Emergency situations such as a major earthquake or fire. • When the system is submerged in water • When the system is emitting smoke, strange odours or generating abnormal sounds • When the earth leakage breaker in the residential distribution board is activated frequently. • When the defective appearance caused by impact such as a vehicle collision.
	■ If the battery electrolyte is leaking, do not touch the liquid with bare hands. If the electrolyte comes into contact with your hands, wash them immediately with clean water. The electrolyte solution can cause damage to the skin or cause blindness in the eyes. Seek medical attention immediately.

⚠ CAUTION	
Prohibited	■ Unless required, refrain from touching the product while it is operating. Do not touch the product while it is operating since it may be hot. Doing so may result in burns. Use extra caution if you have small children and/or elderly family members.
	■ Do not place objects on top of the product. There is a risk of the objects catching fire from the heat generated during the operation.
	■ Do not put stickers on the product. Doing so may result in failure because of rising temperature of the product.
	■ Do not expose to excessive steam, oil vapour, smoke, dust, corrosive substances, explosive/ flammable gases, chemicals, fire or exhaust gas from vehicles. There is a possibility that the products of degradation progress.
Mandatory	■ Allow sufficient space (at least below lengths) around the product for heat dissipation. (Upper 200mm Right 50mm Left 200mm Front 800mm Back 50mm) Failing to do so may cause the inside temperature to rise excessively, resulting in fire, failure or shorter product life.

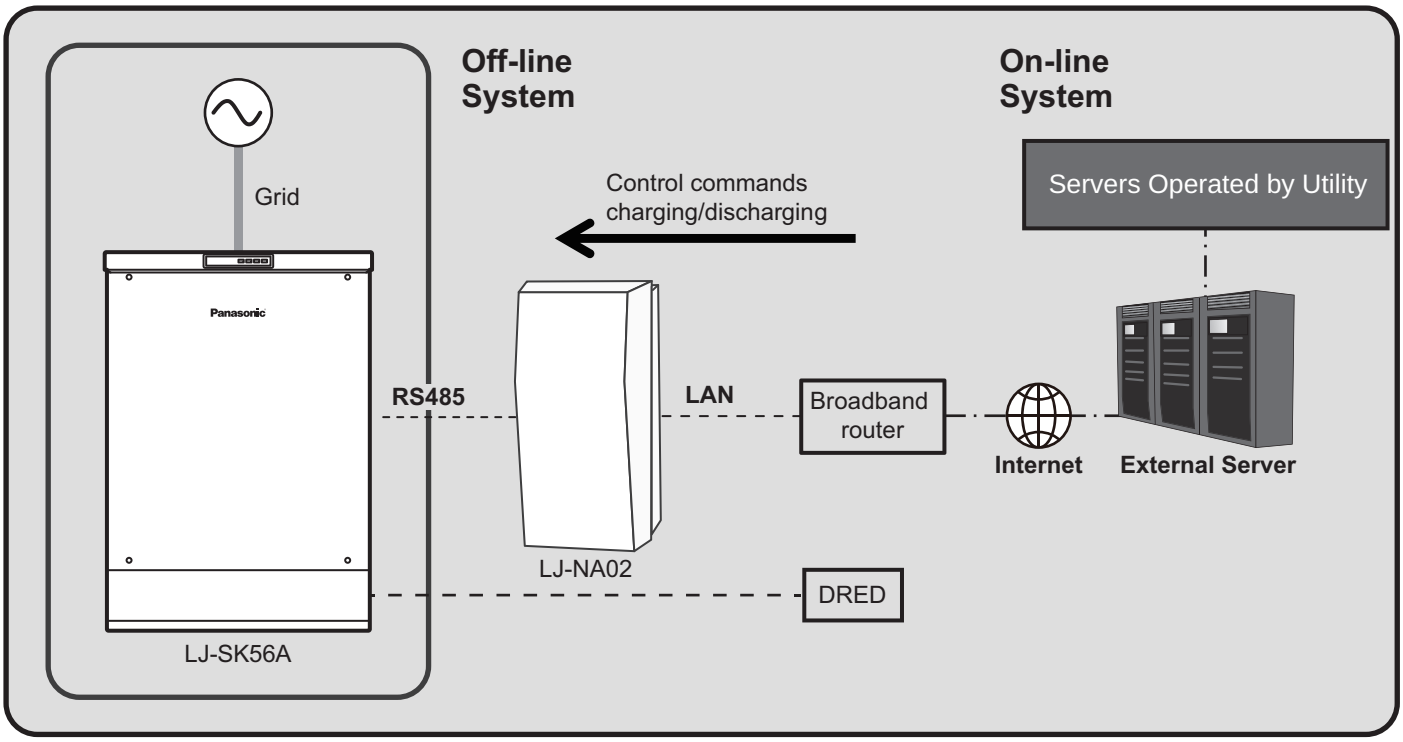
■Stand-alone operation

⚠ WARNING	
Prohibited	■ Do not plug the following electric equipment into the output connected to the stand-alone socket: • Any medical devices or security equipment • Equipments that might lose information during power failure such as desktop computer. • Kerosene heaters or any heating equipment that starts automatically when the power supply is restored. The product will stop operating when the power consumption of the electrical equipment plugged into the outlet connected to the stand-alone socket exceeds the maximum output power of the product. Never connect any electrical equipment that may pose a threat to human life or properties in the event of a power failure.

⚠ CAUTION	
Mandatory	■ Inspect the product as described in the User's Manual, and start the stand-alone operation after verifying that the product and the electrical equipment to be connected to the stand-alone socket are in a safe condition.
	■ Immediately stop operating if smoke, strange odours or abnormal sounds are produced from the product or the electrical equipment connected to the stand-alone socket after starting the stand-alone operation.

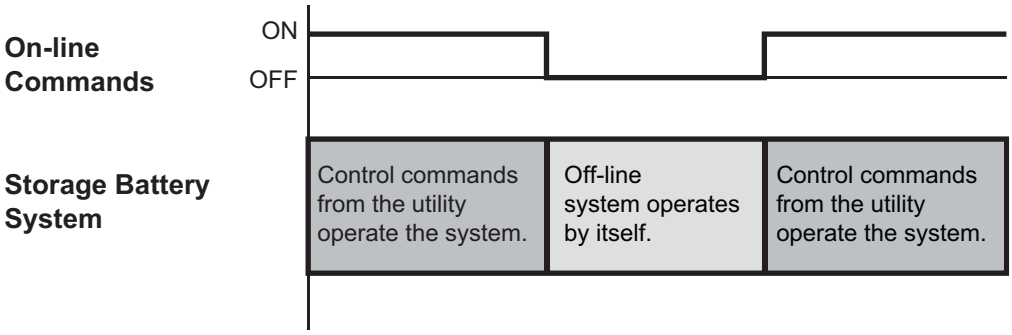
1. How the System Works

In this manual, "Lithium-ion Storage Battery System" is described as "storage battery system".
This product can be used as an on-line system (the utility power company controls charging/discharging) or an off-line system (the storage battery system operates by itself).



1-1 On-line System

In on-line system, the product controls the charging and discharging in accordance with the on-line commands which are determined by the programs in the utility power servers. The system operates identically to the off-line system during periods when there are not any control commands from the utility.



* Operating on-line system requires a network adaptor (LJ-NA02) and network environments to access the server of the utility power company.
* With the on-line system, the storage battery system operates giving priority to control commands from the utility.
* Select an operation mode when operating the off-line system. For details, see the explanation of 1-2 off-line system.
* As for the operations of the storage battery system via the programs of the server of the utility, contact the utility you are contracted with.

1-2 Off-line System

Off-line system has three operation modes determined by the way the storage battery is used, the maximum self-consumption mode, programmed charge/discharge time mode, and Back-up mode. Select an operation mode to use the storage battery system. See 8-2 to see how to select.

* If you are a user of the on-line system, the off-line system operates when the programs are not issuing control commands. The operation mode needs to be set.
* In order to correct the remaining battery level, charging and discharging operation are stopped once a day (From 3:00 to 3:30), except in the back-up mode operation.

■ Maximum Self-consumption Mode

- The product works in harmony with PV generation.
- By storing excess electricity in the product during the day, clean energy can be used around the clock even after the sun goes down. This allows not only for the maximum utilization of clean energy, but also reduces the user's electricity bills.
  * Energy is not sold to the utility while the product is discharging.

■ Programmed Charge/Discharge Time Mode

- The customer can set the charge or discharge time on the product directly. The battery will be charged or discharged only during this designated time. At other times it will not be charged or discharged.
  * Energy is not sold to the utility while the storage battery is discharging.
  * Set the charging/discharging duration. See 8-4 to see how to set it.

■ Back-up Mode

- Always charge the storage battery until it is fully charged, after it has been completely charged it is in standby in preparation for a power failure.

1-3 Stand-alone Operation

When power fails, the product can supply electrical power to the Stand-alone socket.

* Switch the operation mode manually to stand-alone operation when power fails. Switch the operation mode manually to grid operation when the power comes back on. For details, see Chapter 5.
* Stand-alone operating time is dependent on the "battery remaining" and "connected load". See Chapter 8-3.

NOTICE:

* This is not an UPS (Uninterruptible Power Supply).
* The degree of deterioration and the remaining amount of battery influence power supply time.
* Stand-alone socket can not be used during Grid Operation.
* The amount of electricity that can be used in stand-alone socket is the maximum 2kVA.
* If maximum power supply in stand-alone socket is more than 2kVA, power supply will stop.
* The low power factor and high output distortion ratio equipment will not work.
* Power supplied from this product is not completely same as the commercial power supply.
* When the battery remaining level reaches zero, the "Stand-alone" operation will automatically stop.
  The operating state of dimming lights may differ in the case of operating in grid mode and in the case of operating in stand-alone mode.

The following equipments are supposed to be connected to the Stand-alone socket.

* LED light bulb/Florescent desk lamp/Incandescent lamp
* Modem
* Router
* Cellular telephony/Smart phone/Tablet computer
* Portable TV/Radio
* Electric kettle

※When you connect one of the Electric kettle to Stand-alone Socket-outlet, the power consumption of the Electric kettle is less than or equal to 2kW. When connecting a plurality of load, the sum of the load is to use the power consumption of the Electric kettle of less than or equal to 2kW.
And the power output is stopped from the Stand-alone Socket-outlet because of a reduction of the remaining battery level, there is a possibility that can not boil water completely in the Electric kettle.

1-4 Operational Temperatures

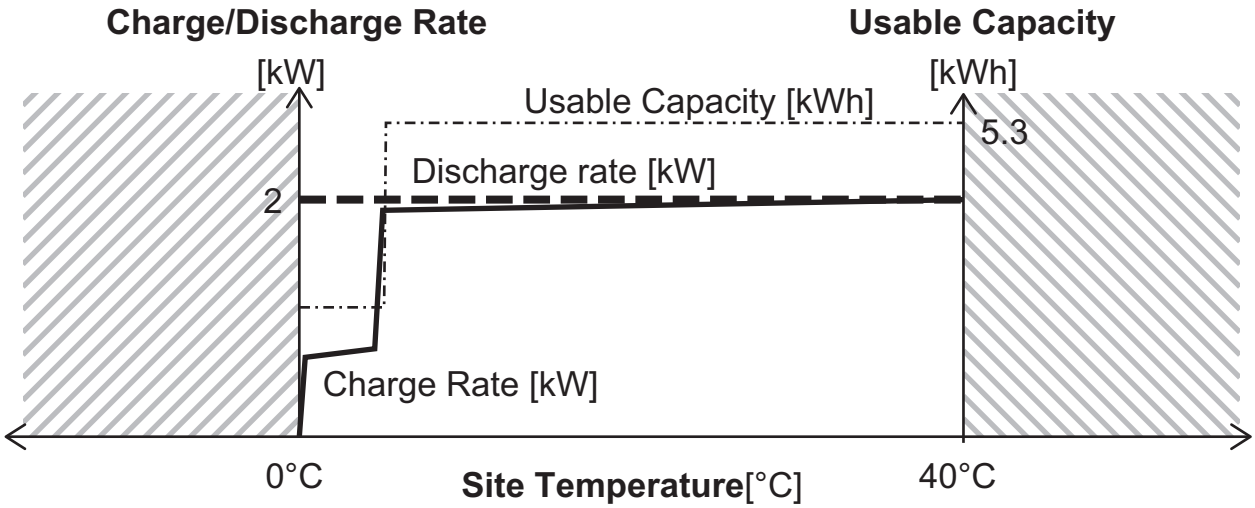
The Storage Battery System MUST be installed in a location NOT exposed to direct sunlight continuously in regions where the minimum/maximum monthly mean temperature is always less than +40°C and greater than 0°C.

Regions/site locations that do not meet both requirements are not suitable for the Storage Battery System.

On the odd occasions when the temperature exceeds +40°C or falls below -0°C, the battery storage system automatically gives high priority to preserving battery health by reducing battery output and extending the battery charging time.

When these temperatures are exceeded, the battery storage system automatically shuts down.

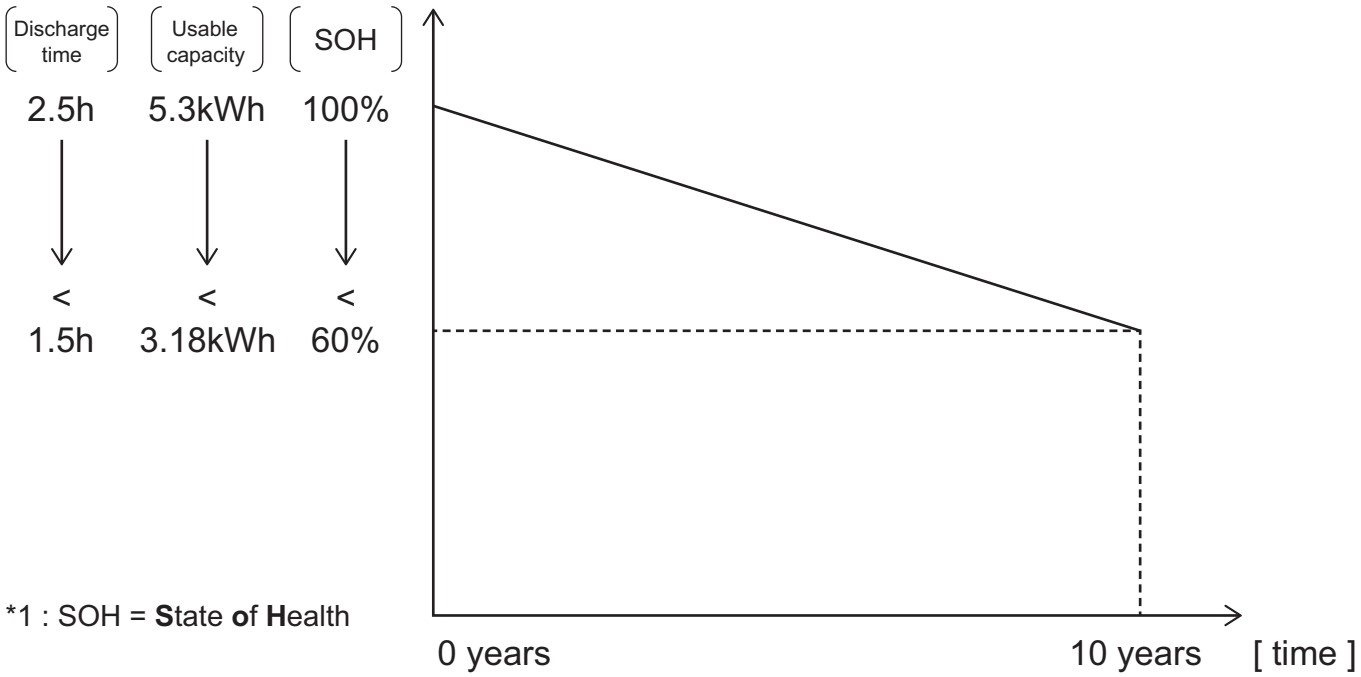
The Storage Battery System operation is automatically restarted when its safe to do so.



	Customer Site
Max Temp	+40°C
Min Temp	0°C

1-5 Battery Capacity

A battery capacity to maintain its charge 'State of Health' (SOH*1) slowly decreases over time due to the charging & discharging process.
The following chart shows typical SOH decrease at 25℃, 1 cycle/day.



*1 : SOH = **S**tate **o**f **H**ealth

1-6 Battery Charge and Discharge Cycles

A 'one charge/discharge cycle' definition is when the batteries over a 24 hour period are discharged to their minimum remaining battery level then re-charged to their maximum remaining battery level. This is the recommended and factory default known as 'Maximum Self consumption Mode'.

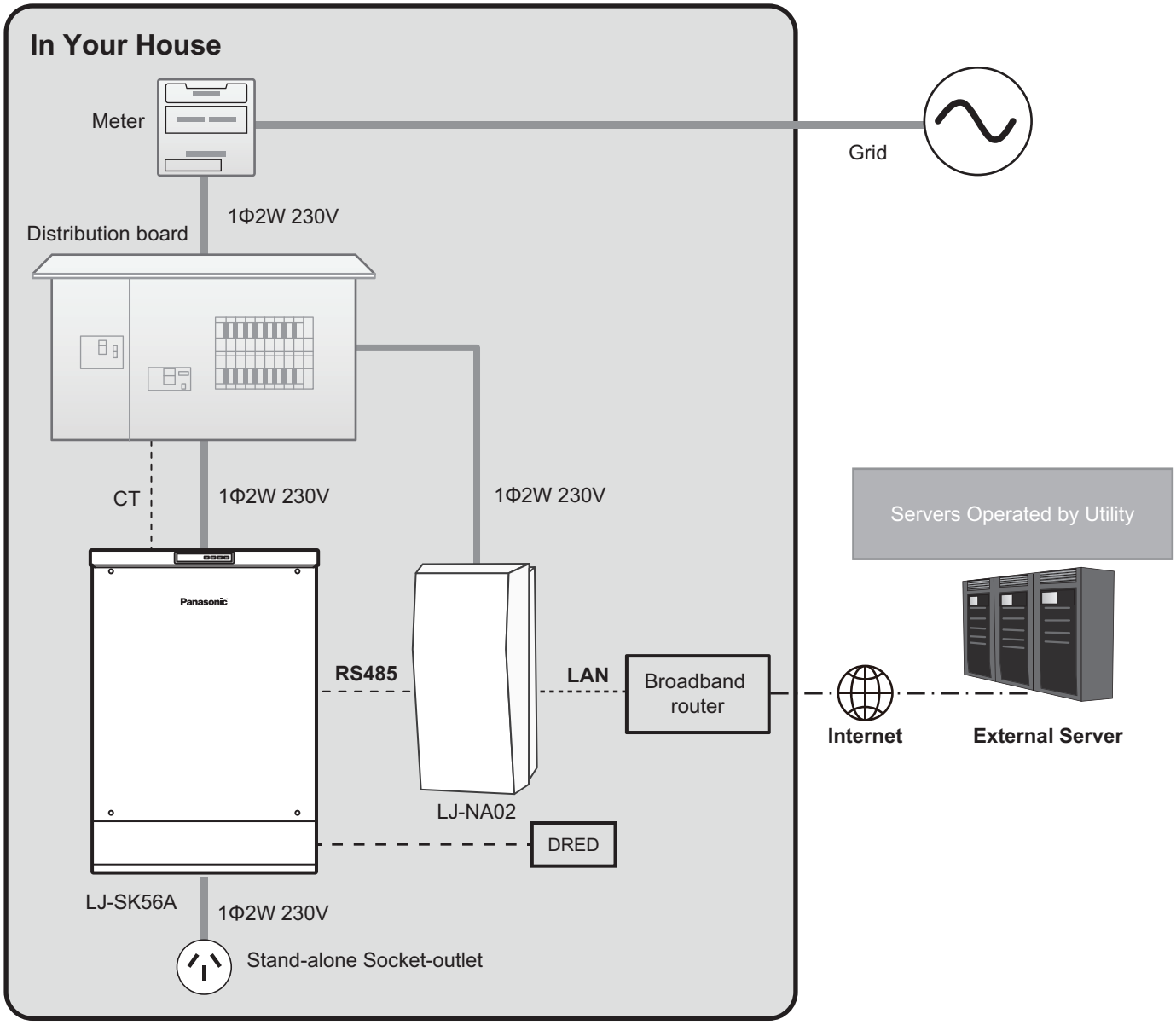
We do not recommend charge/discharge mode that exceed the one per day cycle (i.e multiple daily full charge/discharge) as the battery capacity will fall below 60% sooner than 10 years.

1-7 DRED Mode

DRED provides a method by which a controlling authority, most likely a power supply company, can limit the amount of power that the storage battery system can consume in comparison to its nominal full load power consumption.
The aim is to reduce overall power consumption to the supply network at critical peak load times.

* DR mode is given priority from other modes.

2. System Overview



■ LJ-SK56A: Lithium-ion Storage Battery System

This system is equipped with two battery modules. This product incorporates a network adaptor that is connected to the external server of the utility via the Internet.

This system automatically updates its charging/discharging schedule based on instructions from the utility.

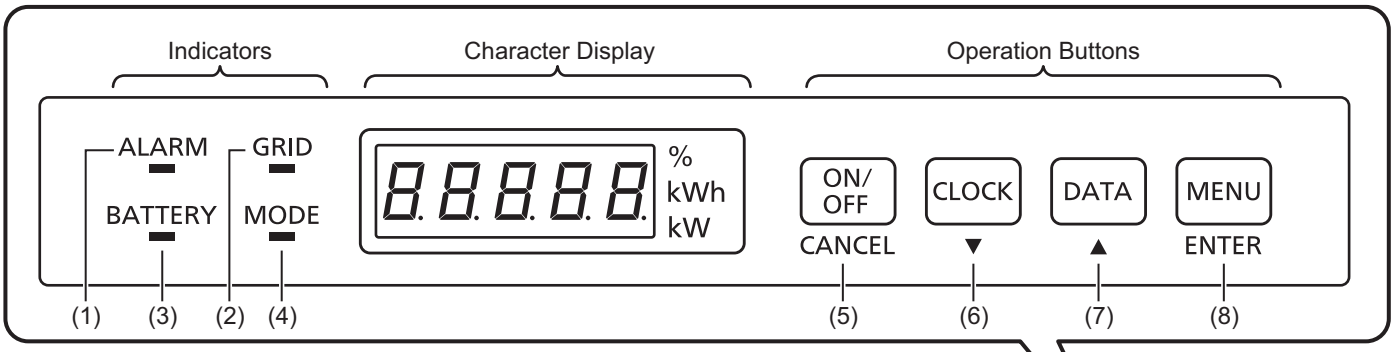
In the event of a power failure, you can use the stored electrical power via a Stand-alone Socket-outlet.

■ LJ-NA02: Network Adaptor

The network adaptor facilitates the communications between the demand response server and the lithium-ion storage battery system (LJ-SK56A) to update the charging/discharging schedule and/or send information on the state of the stored electrical power.

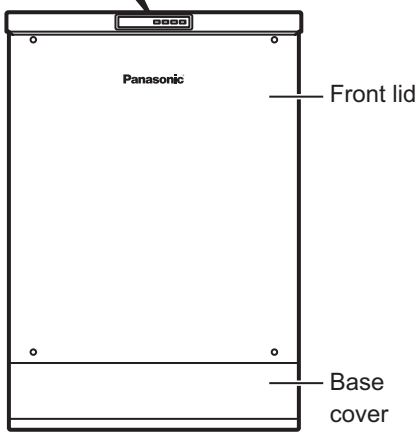
3. Control Panel

■ Control Panel



■ Indicators

Number	Name	State	LED	Description
(1)	ALARM	Blinking red		Error
		Blinking green		Date/time, Charging/Discharging Schedule/Destination 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		Stand-alone mode
		Blinking orange		Stand-alone (output restriction)
		Off		Stopped



LJ-SK56A

■ 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. (* [UXXX] error only)
(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.
(8)	MENU • ENTER	In operation	Press for one second to enter the user setting mode.
		During setting	Confirm the selected item or setting.

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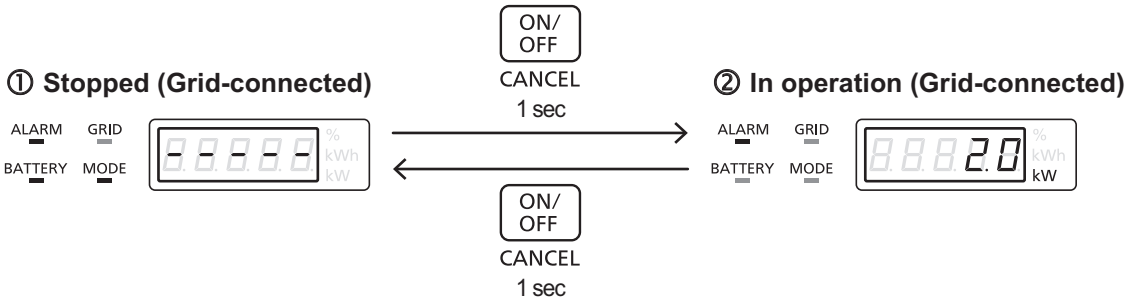
4. Start and Stop Operation

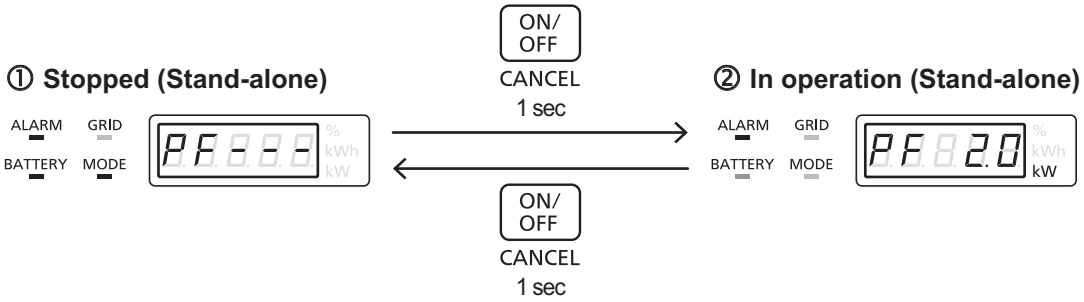
4-1 Stopping a Grid Operation

- When the product is stopped while the grid is in a normal state, the control panel display will change to ①.
- Pressing the "ON/OFF (CANCEL)" for one second in state ① will start the grid operation and display the charging/discharging power as in ②.
- While the battery is charging/discharging in state ②, pressing the "ON/OFF (CANCEL)" for one second will stop the charging/discharging; and ① will be displayed.



4-2 Stopping a Stand-alone Operation

- When the product is stopped during power failure, the control panel display will change to ①.
- Pressing the "ON/OFF (CANCEL)" for one second in state ① will start the stand-alone operation and display the charging/discharging power as in ②.
- While the battery is charging/discharging in state ②, pressing the "ON/OFF (CANCEL)" for one second will stop the charging/discharging; and ① will be displayed.



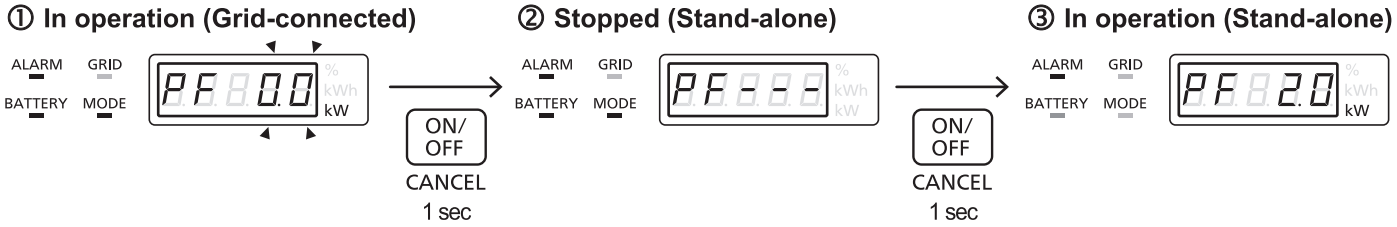
* If you enable the child lock function, the switching operations described above will change from pressing "ON/OFF (CANCEL)" for one second to pressing "ON/OFF (CANCEL)" + "MENU (ENTER)" together for one second.
See 8-6 Child Lock Setting for details.

5. Switching between Grid Operations and Stand-alone Operations

5-1 Switching from Grid Operation to Stand-alone Operation

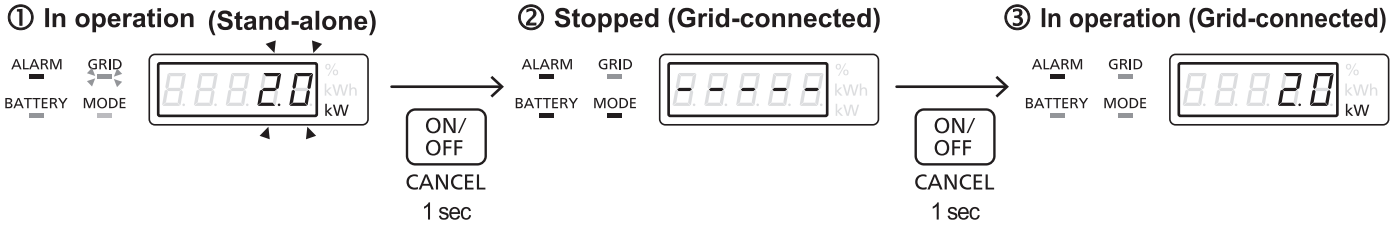
- When power fails during a grid operation, the control panel display will change to ①. The GRID Indicator will light up orange and [E020] (Low grid voltage) will appear, indicating power failing. (Other error codes may be displayed depending upon the system status.)
  A blinking power display indicates that the operation mode needs to be switched from grid to stand-alone.
- Pressing the "ON/OFF (CANCEL)" for one second will stop the operation; and the control panel display will change to ②.
- Pressing the "ON/OFF (CANCEL)" for one second in a stopped state ② will start the stand-alone operation; and the operation and the control panel display will change to ③.

※ If you select automatic start for the Stand-alone operation, the product will start the Stand-alone operation automatically without operating control panel when power failure.



5-2 Switching from Stand-alone Operation to Grid Operation

- When the grid becomes normal during stand-alone operation, the control panel display will change to ①. The GRID Indicator indicating the grid state will light or blink in green and [PF] will disappear.
  A blinking power display indicates that the operation mode needs to be switched from stand-alone to grid.
- Pressing the "ON/OFF (CANCEL)" for one second will stop the stand-alone operation; and the control panel display will change to ②.
- Pressing the "ON/OFF (CANCEL)" again for one second will start the grid operation; and the control panel display will change to ③.



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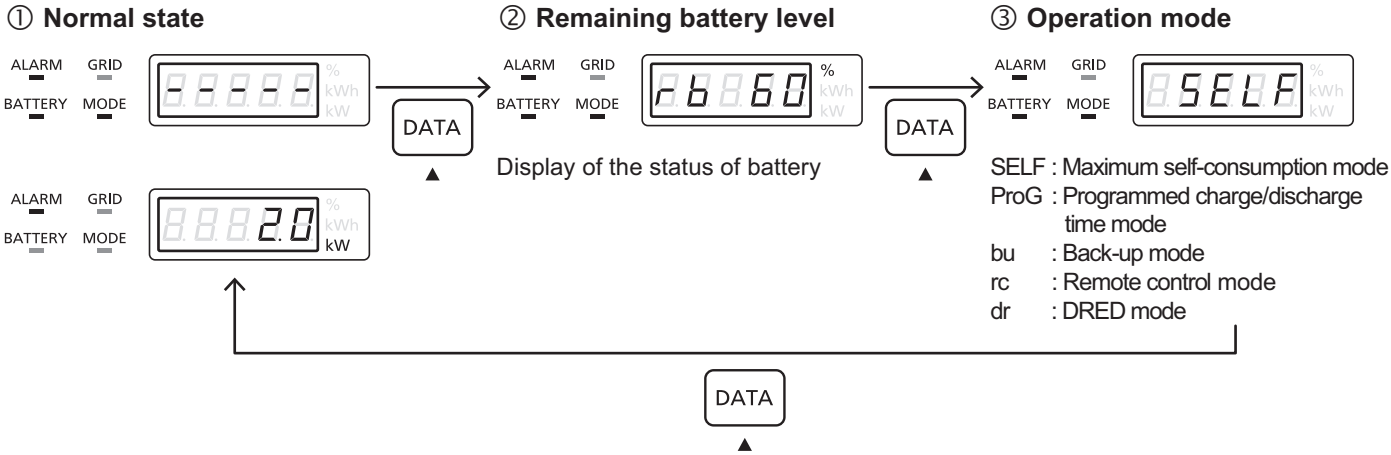
6. Display Modes

6-1 Normal State

- This product has the following three mode views: ① Normal state, ② Remaining battery level, and ③ Operation mode.
- The ① Normal state displays the operating status of the system (stopped, grid operation, Stand-alone operation, etc.) as well as error codes in the event of system problems.
- The ② Remaining battery level displays the current remaining capacity of the storage battery.
  - * Depending upon the battery's condition the battery might not be able to be discharged down to 0%.
  - * Order to carry out the re-calculation of the remaining amount of the battery, there is a case where the value of the remaining amount is not continuously changed.
- The ③ Operation mode view displays the currently selected operation mode (Maximum self-consumption mode / Programmed charge/discharge time mode / Stand-alone mode).
- Press "DATA (▲)" to switch between the display modes.
  - * ② Remaining battery level and ③ Operation mode views automatically return to the ① Normal state after five minutes of inactivity.
  - * The mode views can be switched while the system is operating or stopped.



The following information is displayed in the normal state:

Stopped (Grid-connected)	Stopped via User's command. If "ON/OFF (CANCEL)" is pressed for one second, the system will start the grid operation.	Inspection Notice	System shows the Inspection notice. Period until inspection added. (See 10-3)
Stopped (Stand-alone)	Stopped via User's command. "PF" will display. If "ON/OFF (CANCEL)" is pressed for one second, the system will start the stand-alone operation.	In Operation (Stand-alone)	The system in stand-alone operation, indicates output power and "PF". If "ON/OFF (CANCEL)" is pressed for one second, the system will stop.
In Operation (Grid-connected)	The system in grid operation display indicates charge or discharge power. If "ON/OFF (CANCEL)" is pressed for one second, the system will stop.	Error	The system has abnormally stopped and indicates error mode (F/H/U/P/E) and code.

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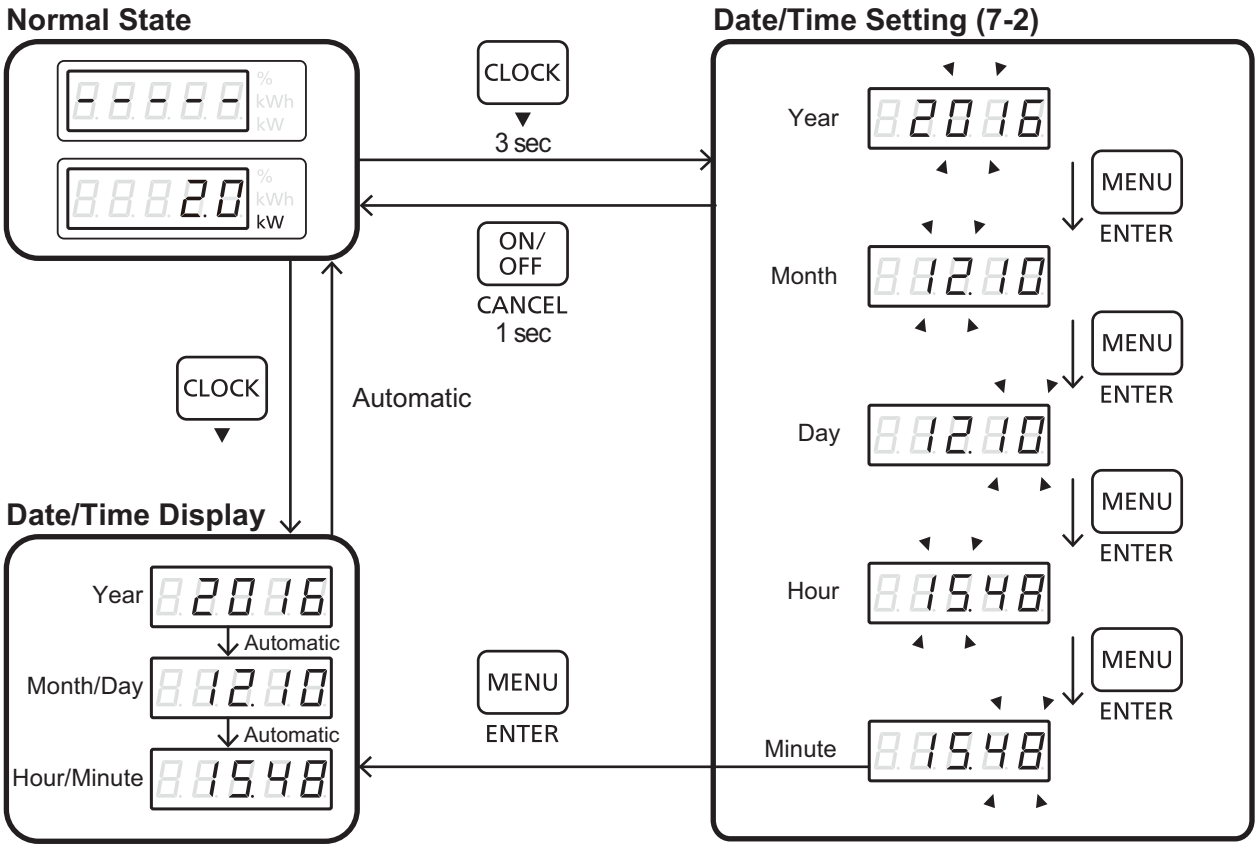
7. Date/Time Display and Setting

7-1 Date/Time Display

- Press "CLOCK (▼)" in the normal state to check the current date/time.
- The current year => month/day => hour/minute will each be displayed for two seconds.
- The control panel display will automatically return to the normal state after displaying the current hour/minute.
  - * This product uses the date/time data to control the charging/discharging and to fine-tune the storage battery. Abnormal operations may result if the date/time is incorrect. Be sure to check the date/time setting on a periodic basis.
  - * If there is an error between the date/time setting and the actual date/time, refer to 7-2 Date/Time Setting to set the date/time correctly.

7-2 Date/Time Setting

- Press "CLOCK (▼)" for three seconds in the normal state to switch to the date/time setting mode.
- Each time you press "Menu (ENTER)", the active item will change in the order of year => month => day => hour => minute.
  The active setting value blinks.
- Press "DATA (▲)" and "CLOCK (▼)" to change the value of the blinking digit.
- Set the minute and press "MENU (ENTER)" to complete the date/time setting.
- Once the date/time setting is complete, the set date/time data will be displayed in the order of year => month/day => hour/minute for two seconds each and then the normal display will be automatically returned to.
  - * This product uses the date/time data to control the charging/discharging and to fine-tune the storage battery. Abnormal operations may result if the date/time is incorrect. Be sure to set the date/time accurately.
  - * If not linked with the network adaptor, an error may occur in the date/time data depending on the precision of the internal clock of the storage battery system. Once a month, it is recommended that you confirm the time.
    To maintain normal operations of the battery system, you are advised to check the date/time setting on a periodic basis.
  - * When linked with the network adaptor, the date/time setting is automatically updated by a server via the network adaptor.
  - * The product's time might deviate about 60 seconds per month. If this builds up, it will affect the electric bills.
    Adjust the time in conjunction with checking the time once per month.



* Press "DATA (▲)" and "CLOCK (▼)" to change the value.

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8. User Setting

8-1 User Setting Mode

- You can set the following items in the user setting mode:

No. 1. Operation mode setting

Select the operation mode (Maximum self-consumption mode / Programmed charge/discharge time mode / Stand-alone mode) for the off-line system.

No. 2. Lower discharge limit setting

Set the lower battery discharge limit for the off-line system.

No. 3. Charging/discharging schedule setting

Set the charge start time/charge end time/discharge start time/discharge end time to be used in the Programmed charge/discharge time mode for the off-line system.

No. 4 Daylight-saving time setting

Set the daylight-saving time setting to ON/OFF. Manual switching is required for a off-line system

* When linked with the network adaptor, the date/time setting is automatically updated by a server via the network adaptor. The daylight-saving time setting will therefore be ignored.

No. 5 Child lock setting

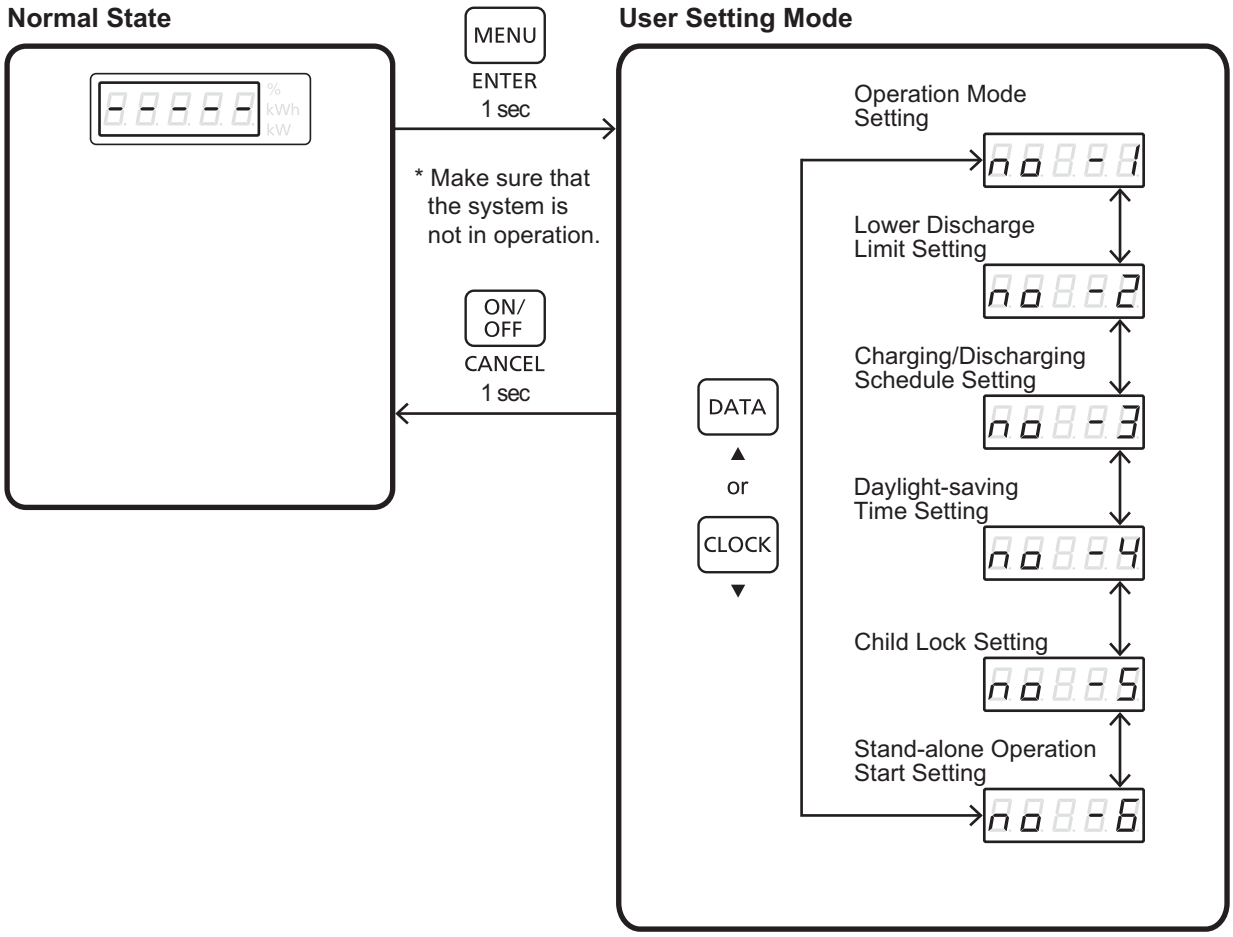
Set the child lock setting to ON/OFF. When this option is set to ON, more complex key commands will be required to start/stop the system operations in order to prevent failure caused by tampering.

No. 6 Stand-alone operation start setting

Set the Stand-alone operation start setting to manual/automatic.

■ Operation

- Press "MENU (ENTER)" for one second in the normal state to switch to the user setting mode.
- Press "CLOCK (▼)" or "DATA (▲)" to cycle through the setting items.
- Press "ON/OFF (CANCEL)" for one second to switch to the normal state.

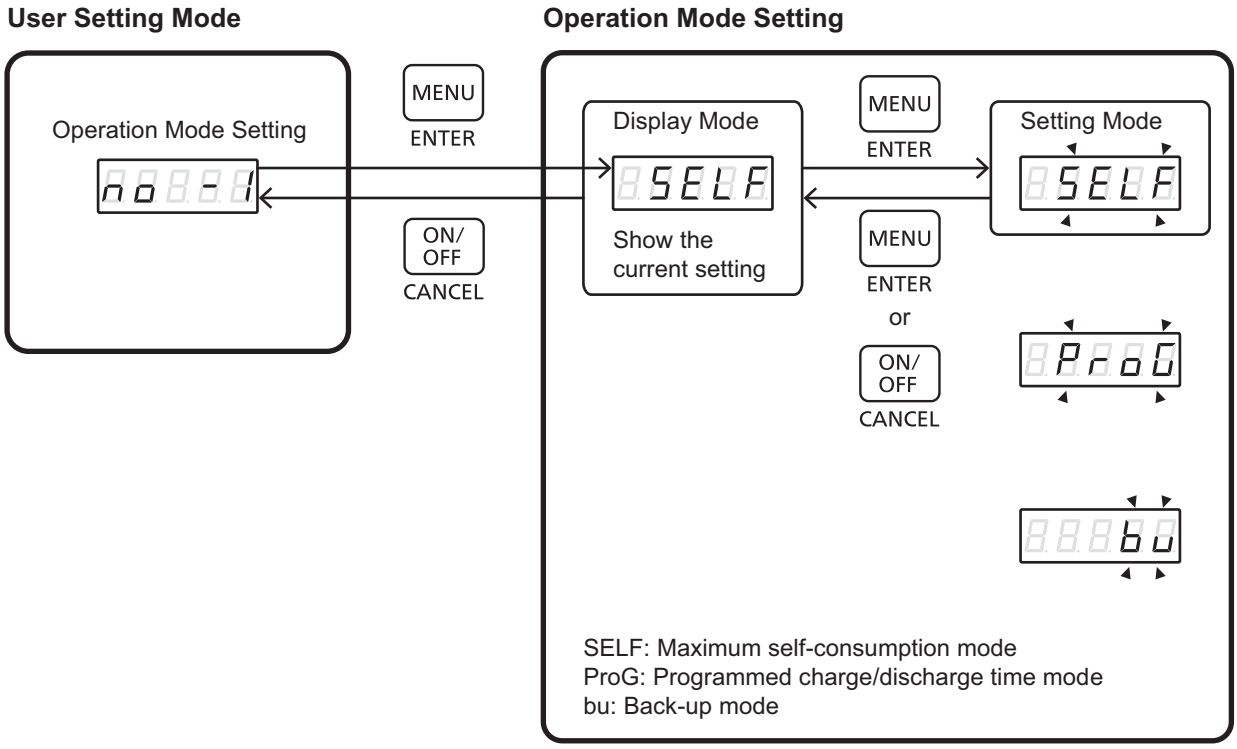


8-2 Operation Mode Setting

- In the operation mode setting, you can select the operation mode (Maximum self-consumption mode / Programmed charge/discharge time mode / Back-up mode) for the off-line system.
  * If you are using a on-line system, the specified operation mode will only take effect when the on-line is disabled.

■ Operation

- Refer to 8-1 to select the operation mode setting in the user setting mode [no- 1].
- Press "MENU (ENTER)" to switch to the display mode in the operation mode setting.
  The current operation mode of the system is displayed.
- Press "MENU (ENTER)" in the display mode to switch to the setting mode. The character display will blink.
- Press "DATA (▲)" and "CLOCK (▼)" while the character display is blinking to cycle through the setting items.
- Press "MENU (ENTER)" to complete the setting and switch to the display mode.
- Press "ON/OFF (CANCEL)" to cancel the setting and switch to the display mode. Press "ON/OFF (CANSEL)" to cansel the setting and switch to the display mode.
- Press "ON/OFF (CANCEL)" in the display mode to return to the User setting mode [no-1].



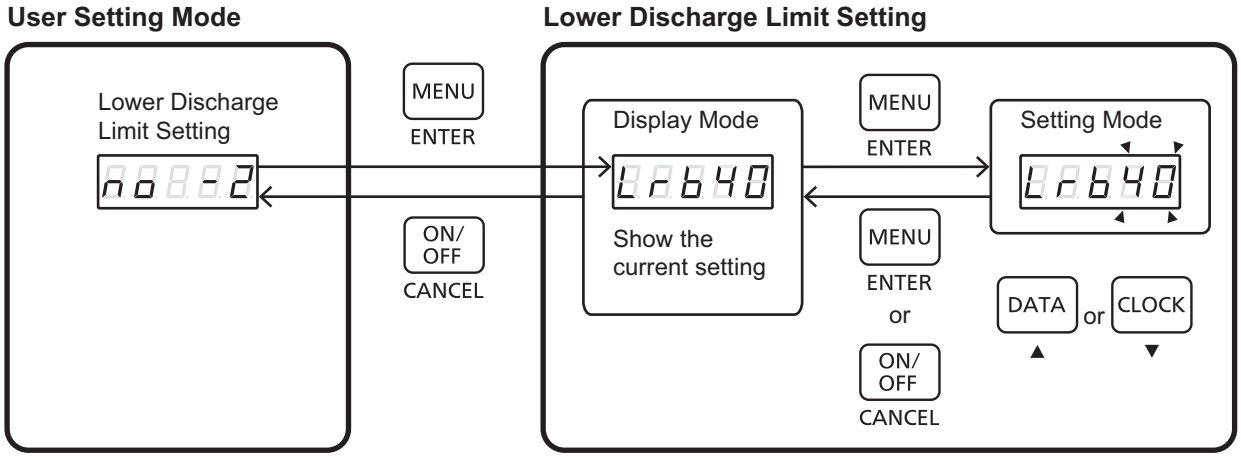
User's Manual

8-3 Lower Discharge Limit Setting

- In the lower discharge limit setting, you can set the lower discharge limit value for the off-line system for daily use.
  - * If you wish to use the battery system for a longer period during power failure, you are advised to set a higher value for the lower discharge limit.
  - * If you are using a on-line system, the specified lower discharge limit will only take effect when the on-line is disabled. If the on-line is enabled, the system will operate with the lower discharge limit command from the programs.

■ Operation

- Refer to 8-1 to select the lower discharge limit setting in the user setting mode [no- 2].
- Press "MENU (ENTER)" to switch to the display mode in the lower discharge limit setting.
  The current lower discharge limit setting of the system is displayed in the display mode.
- Press "MENU (ENTER)" in the display mode to switch to the setting mode. The character display will blink.
- Press "DATA (▲)" and "CLOCK (▼)" while the character display is blinking to change the setting value (0-40%).
- Press "MENU (ENTER)" to complete the setting and switch to the display mode. Or press "ON/OFF (CANCEL)" to cancel the setting and switch to the display mode.
- Press "ON/OFF (CANCEL)" in the display mode to return to the User setting mode [no-2].



Setting a small value for the lower discharge limit may shorten the storage battery discharge time during power failure. Furthermore, the discharge times may become shorter when the battery temperature is lower.
The discharge times change depending on the remaining battery level and the operation period of the system, when the device was installed.

Lower Discharge Limit Value [%]	Load Capability [KW]	Discharge Time
40	2.0*	Max. 1.5 hours
	1.0	Max. 3 hours
20	2.0*	Max. 0.75 hours
	1.0	Max. 1.5 hours

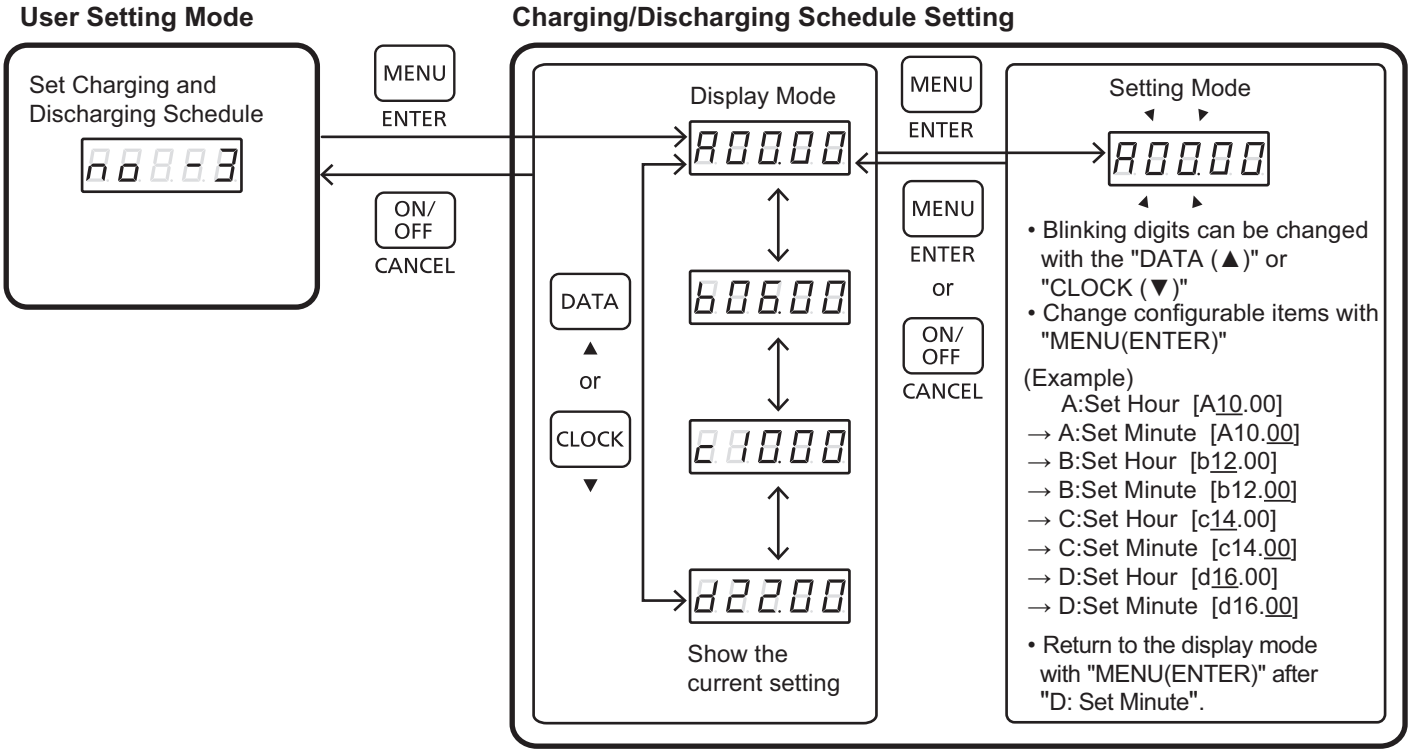
* When the remaining battery level is low, the storage battery system can not supply 2.0kW power.

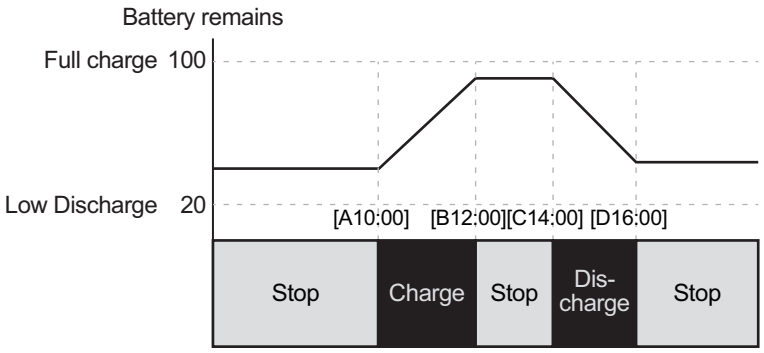
8-4 Charging/Discharging Schedule Setting

- Set the (A) charge start time/(B) charge end time/(C) discharge start time/(D) discharge end time to be used in the programmed charge/discharge time mode for the off-line system.
  - * This setting is only effective when the programmed charge/discharge time mode is selected for the off-line system. If you are using the on-line system, the specified date/time setting will only take effect when the on-line is disabled.
  - * Note that you cannot obtain the desired results if the date/time setting is incorrect.

■ Operation

- Refer to 8-1 to select the charging/discharging schedule setting in the user setting mode [no- 3].
- Press "MENU (ENTER)" to switch to the display mode in the charging/discharging schedule setting.
  Press "DATA (▲)" and "CLOCK (▼)" to switch the display item. The currently set schedule will be displayed.
- Press "MENU (ENTER)" in the display mode to switch to the setting mode.
- The date/time must be set in the order of (A: hour) => (A: minute) => (B: hour) => (B: minute) => (C: hour) => (C: minute) => (D: hour) => (D: minute).
  Use "DATA (▲)" and "CLOCK (▼)" to set/check the blinking value correctly and then press "MENU (ENTER)" to confirm the setting.
  Press "MENU (ENTER)" to move to the next item.
- Press "ON/OFF (CANCEL)" to cancel the setting and switch to the display mode.
- Press "MENU (ENTER)" after setting D: Minute to switch to the display mode.
- Press "DATA (▲)" and "CLOCK (▼)" in display mode and check that the setting value is correct.
- Press "ON/OFF (CANCEL)" in the display mode to return to the User setting mode [no-3].





Time chart of battery remains

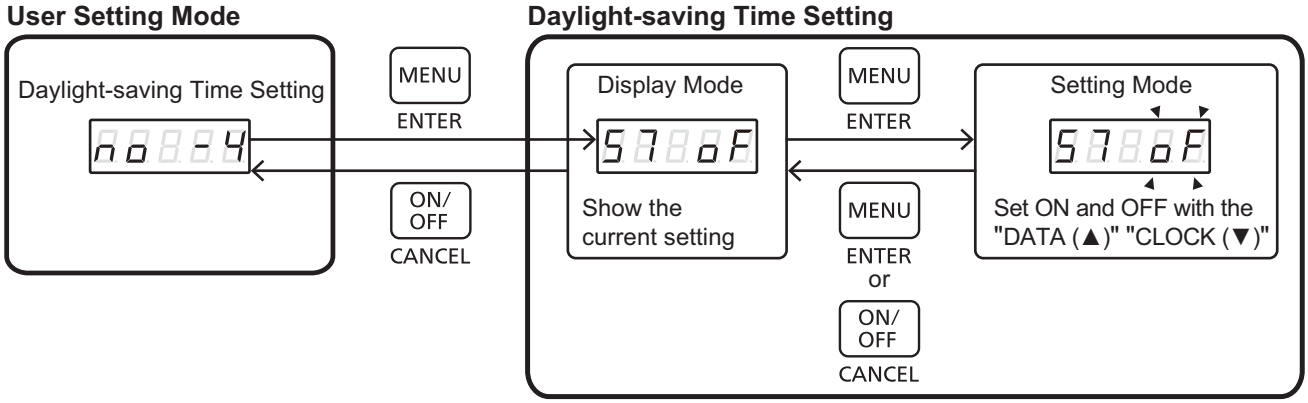
User's Manual

8-5 Daylight-saving Time Setting

- If the daylight-saving time setting is set to ON, the internal time is one hour earlier. Switch the setting OFF after daylight-saving time has ended. If it is switched OFF, the time will be one hour behind than when it is ON.
  * When linked with the network adaptor, the date/time data is obtained automatically from a server. The daylight-saving time setting will therefore be ignored.

■ Operation

- Refer to 8-1 to select the daylight-saving time setting in the user setting mode [no- 4].
- Pressing "MENU (ENTER)" will switch to the display mode. The current daylight-saving time setting will be displayed.
- Press "MENU (ENTER)" in the display mode to switch to the setting mode. The current setting will blink.
- Press "DATA (▲)" and "CLOCK (▼)" to enable/disable the daylight-saving time setting.
- Press "ON/OFF (CANCEL)" to cancel the setting and switch to the display mode.
- Press "MENU" to set the data and switch to the display mode. Or pressing "ON/OFF (CANCEL)" to cancel the setting and switch to the display mode.
- Press "ON/OFF (CANCEL)" in the display mode to return to the User setting mode [no-4].



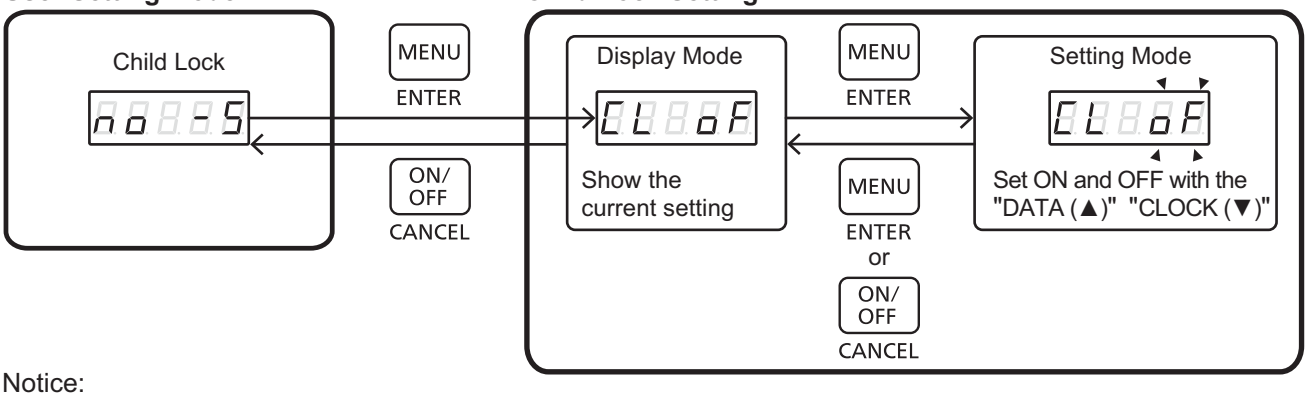
8-6 Child Lock Setting

- This setting allows you to make the key commands for starting/stopping the operation more complex, in order to prevent failure caused by tampering. If the child lock setting is set to ON, the key commands required to start/stop the operation will change as described below.

■ Operation

	Child Lock OFF	Child Lock ON
Start/Stop	"ON/OFF (CANCEL)" Press for one second	"ON/OFF (CANCEL)" + "MENU (ENTER)" Press for one second

- Refer to 8-1 to select the child lock setting in the user setting mode [no- 5].
- Pressing "MENU (ENTER)" will switch to the display mode. The current child lock setting will be displayed.
- Press "MENU (ENTER)" in the display mode to switch to the setting mode. The current setting will blink.
- Press "DATA (▲)" and "CLOCK (▼)" in the setting mode to enable/disable the child lock setting.
- Press "MENU" to set the data and switch to the display mode. Or pressing "ON/OFF (CANCEL)" to cancel the setting and switch to the display mode.
- Press "ON/OFF (CANCEL)" in the display mode to return to the User setting mode [no-5].



Notice:
* When "Child lock" is on, it is necessary to take time to operate changing mode.

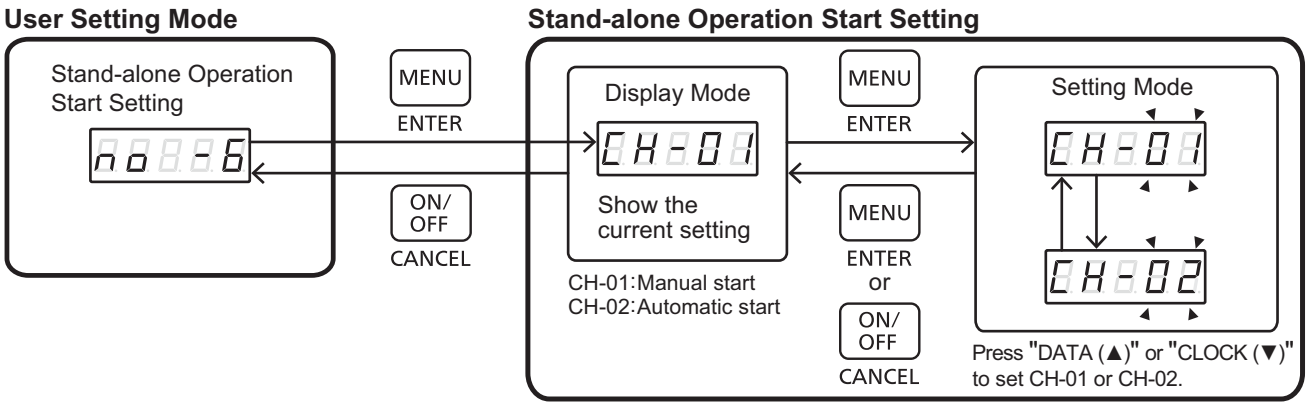
8-7 Stand-alone Operation Start Setting

⚠ WARNING	
Prohibited	■ Do not plug the following electric equipment into the output connected to the Stand-alone Socket-outlet: • Any medical devices or security equipment • Equipments that might lose information during power failure such as desktop computer. • Kerosene heaters or any heating equipment that starts automatically when the power supply is restored. The product will stop operating when the power consumption of the electrical equipment plugged into the outlet connected to the back-up socket exceeds the maximum output power of the product. Never connect any electrical equipment that may pose a threat to human life or properties in the event of a power failure.

- In this setting, Stand-alone operation can be selected from manual start or automatic start when grid power stopped. Default set is "manual start".
- The manual start (CH-01) is the mode to be manually switched to Stand-alone operation from the grid operation. Please see the Chapter 5
- The automatic start (CH-02) is the mode to be automatically switched to Stand-alone operation from the grid operation.

■ Operation

- Refer to 8-1 to Stand-alone operation start setting in the user setting mode [no- 6].
- Pressing "MENU (ENTER)" will switch to the display mode. The Stand-alone operation start setting will be displayed.
- Press "MENU (ENTER)" in the display mode to switch to the setting mode. The current setting will blink.
- Press "DATA (▲)" and "CLOCK (▼)" to select from manual start (CH-01) or automatic start (CH-02) when grid power stopped.
- Press "MENU" to set the data and switch to the display mode. Or pressing "ON/OFF (CANCEL)" to cancel the setting and switch to the display mode.
- Press "ON/OFF (CANCEL)" in the display mode to return to the User setting mode [no -6].



Notice:
* If there is a switch for the Stand-alone Socket-output, please set "OFF" normally.
* When the grid power recovers the system does not connect the grid automatically. The system will continue to output the power using the battery energy. See chapter 5 and switch to the grid operation.

9. Settings Overview

Date/Time

Date/Time Display (7-1)

Year

2016

Automatic

Month/Day

12.10

Automatic

Hour/Minute

15.48

- Year→Month/Day→Hour/Minute Each displayed for two seconds.
- Returns to normal state automatically after the display.

CLOCK ▼

Automatic

Date/Time Setting (7-2)

CLOCK ▼ 3 sec

Year

2016

MENU ENTER

Month

12.10

MENU ENTER

Day

12.10

MENU ENTER

Hour

15.48

MENU ENTER

Minute

15.48

MENU ENTER

Display of Setting

Automatic

- Press the "MENU (ENTER)" to change the display: Year→Month→Day→Hour→Minute
- Press "DATA (▲)" or "CLOCK (▼)" to change the selected (i.e. blinking) value.
- The new setting values are displayed when the setting is completed.

Normal Display

Normal State (6-1)

- There are three modes of view: Normal state, Remaining battery level, and Operation mode.
- Press the "DATA (▲)" to change the display mode.
- The remaining battery level and operation mode views automatically return to the normal state after five minutes of inactivity.

Normal state

Displays the current status

1.8

DATA ▲

Remaining Battery Level

Displays the Status of Battery

rb 60

DATA ▲

Operation Mode

Displays the current mode

[SELF]: Maximum self-consumption mode

[ProG]: Programmed charge/discharge time mode

[bu]: Back up mode

[rc]: Remote control mode

[dr]: DRED mode

e.g. Operation mode

SELF

- In the normal state, you can view the operating status as follows.

Stopped (Grid-connected)

- - - - -

Stopped via User's command. If "ON/OFF (CANCEL)" is pressed for one second, the system will start the grid operation.

Stopped (Stand-alone)

PF - - -

Stopped via User's command. "PF" will display. If "ON/OFF (CANCEL)" is pressed for one second, the system will start the stand-alone operation.

In Operation (Grid-connected)

2.0

The system in grid operation display indicates charge or discharge power. If "ON/OFF (CANCEL)" is pressed for one second, the system will stop.

Inspection Notice

6. 2.0

System shows the Inspection notice. Period until inspection added. (See 10-3)

In Operation (Stand-alone)

PF 2.0

The system in stand-alone operation, indicates output power and "PF". If "ON/OFF (CANCEL)" is pressed for one second, the system will stop.

Error

H 120

The system has abnormally stopped and indicates error mode (F/H/U/P/E) and code.

MENU ENTER 1 sec

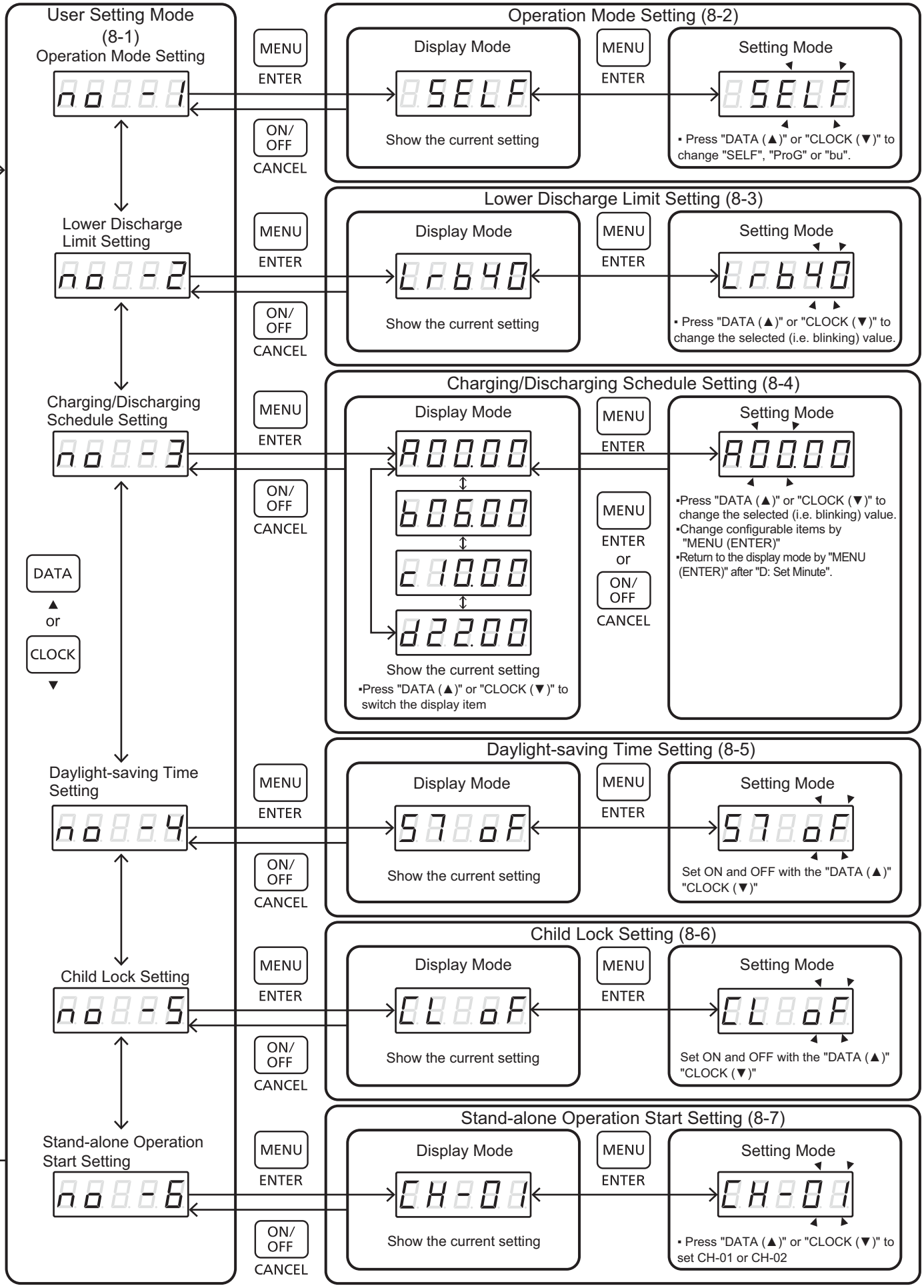
* Make sure that the system is not in operation.

ON/OFF CANCEL 1 sec

User's Manual

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

User Setting



10. Inspection and Maintenance

10-1 Inspection

- Check the exterior of the product for damage, rust and dents. Contact the installer if a large dent and/or deformation is found.
- Consult the installer for information on regular maintenance/inspection of the product.

10-2 Maintenance

Use a soft cloth to gently wipe off any dirt or fingerprints on the surface of the front lid and base cover.

For stubborn dirt:

(1) Remove dust/debris from the surface first.
(2) Dampen a soft cloth with clean water or neutral detergent (diluted to a ratio of 1:100).
(3) Wring the cloth tightly.
(4) Finally, wipe off all moisture from the surface.

Notice:

* Stop operating the product before cleaning it. The surface temperature may become hot while the product is in operation.
* Do not clean the product by sprinkling water over it (never use a high-pressure water hose).
* Do not use a hard cloth and/or rub the surface strongly. Doing so may cause scratches on the surface.
* Keep the surface away from volatile substances such as insect repellents, solvents and thinners.
  Failing to do so may result in degradation of the paint surface quality and/or peeling of the paint coating.
* The surface of the display panel has been treated with special processing and is prone to damages. Exercise caution not to hit or damage the surface with fingernails or other hard objects.
* Do not allow rubber or PVC materials to come in contact with the cabinet for an extended period of time. This may result in degradation of the surface quality.

10-3 Installation Check List for the Storage Battery System

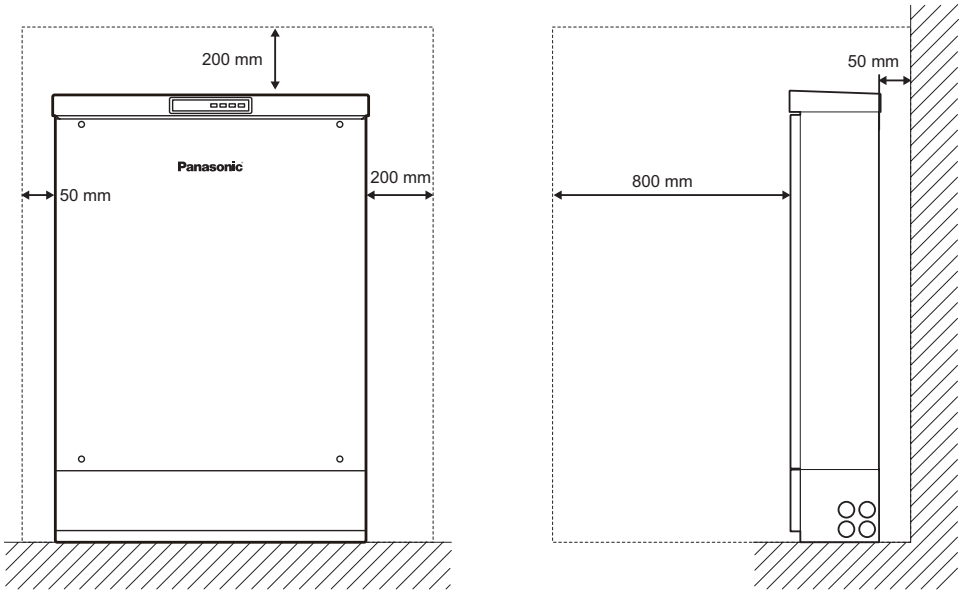
■ Standard Installation Location

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

* When the product is installed in the building or house, it is necessary to ensure all local building and fire regulations are complied with.

■ Locations Where the Storage Battery System 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" in the installation manual.
- 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. (Storage Battery 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 Lithium-ion Storage Battery System" below explanation.
- 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 impacts, shocks or vibrations caused by such as vehicle passing, machine operating, dropping, kicking or acting of vandalism.
- 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.



Clearance space for Lithium-ion Storage Battery System

10-4 Check the Installation Conditions for the Network Adaptor

Please ensure that the installation location is suitable as per the below conditions.

Please refer any concerns to the company that installed the product.

■ Standard Installation Location

Installation location	Indoor
Operating temperature range [°C]	0 to 40°C
Operating humidity [% RH]	0 to 80% RH (No dew condensation)

■ Special Locations Where Network Adaptor Cannot be Mounted

x Locations exposed to direct sunlight.

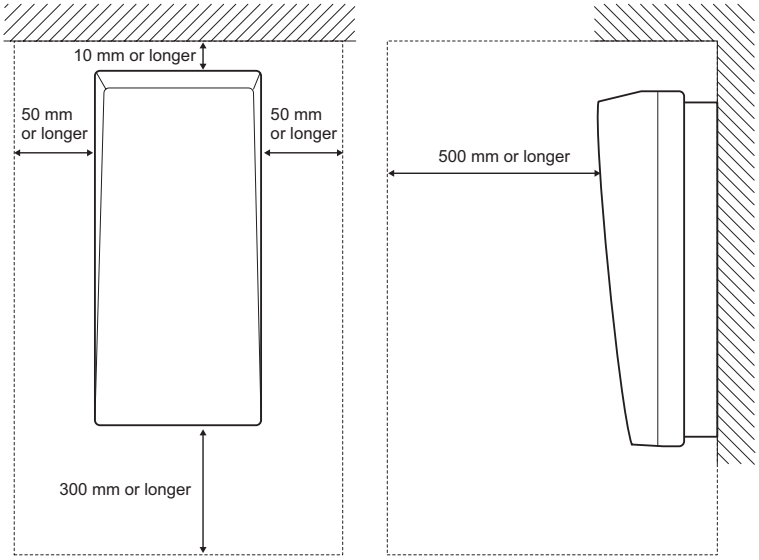
x Locations exposed to rain or drops of water.

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 the required installation space (Upper 10mm Right 50mm Left 50mm Front 500mm Under 300mm) is not available.



Clearance space for Network Adaptor

10-5 "Maintenance Reminder" Function

As a high powered battery device that is charged and discharged on a daily basis, the product requires a safety / maintenance check to ensure the Battery Storage System is working as intended.

Also, when used for many years, a lithium ion battery will not be able to demonstrate original performance.

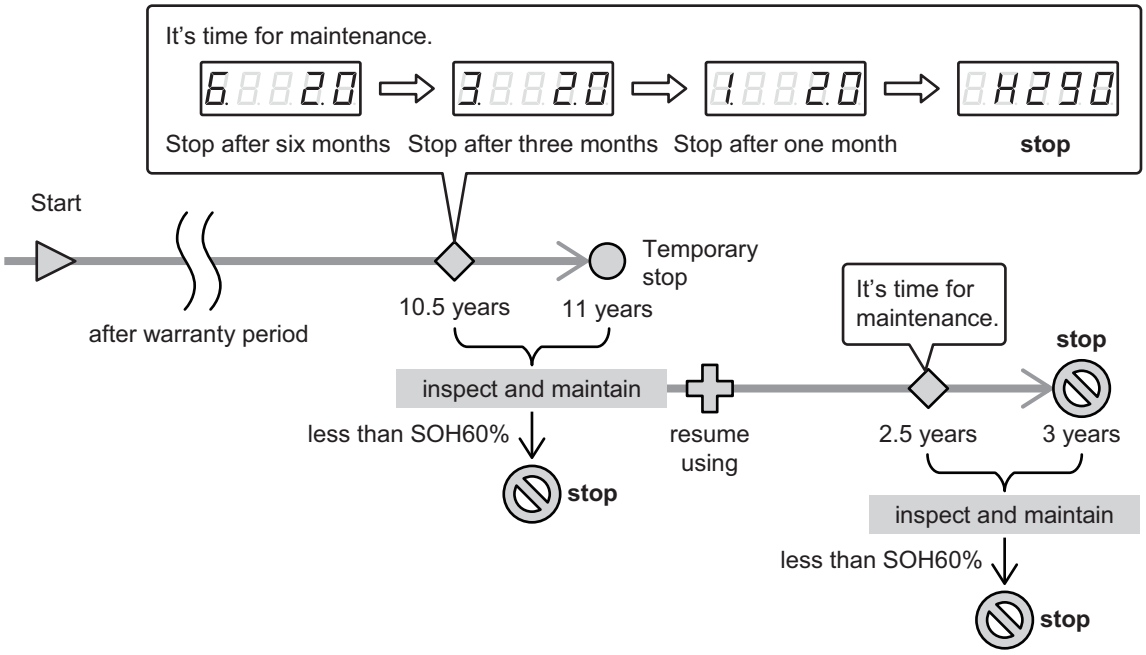
This product includes a "Maintenance remainder" function.

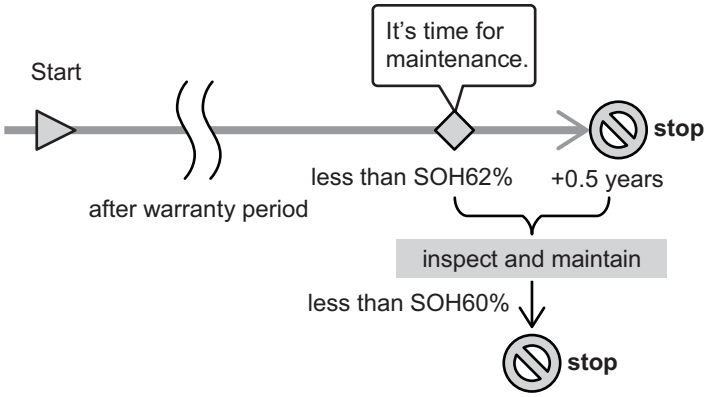
After 10 years and 6 months usage or when storage capacity is reduced to a specified value (=<60% State of Heath), the server and Battery Storage System front panel will display a "Maintenance Reminder" massage.

When the "Maintenance reminder" has been informed, please contact the service / enquiry contact where you purchased this product.

In the inspection of the product, the deterioration state of the battery will be checked. If the battery is significantly degraded, the three batteries or whole system are necessary to replace .

If the battery is not deteriorated, the product can be used the next two years after the inspection. The next "Maintenance reminder" is after 2.5 years. After the six months, a replacement of the entire system is required.





User's Manual

11. Troubleshooting

Please check the following before contacting the repair service:

Case	Description / where to check
The system does not work.	• Check if the protection device is turned off. • Check if timers have been set. • Check the remaining battery level. • During On-line mode or DRED mode, the system does not work according with user setting mode.
During the stand-alone operation, operation of the load becomes unstable.	Power supplied from this product is not completely same as the commercial power supply. For example, in the case of dimming equipment, it might flicker occurs by dimming level. At that time, please use it to adjust the dimming level.
Charging stops	The batteries are full. (Battery indicator on the Control panel turns off from orange.)
Charging stops nevertheless battery is not full.	When battery temperature is low, the maximum amount of charged power is limited for battery protection.
	When battery temperature is too high, charging is limited for battery protection.
	Power failure or the protection device for storage battery system may have been turned off. Check the protection device in the distribution board.
Discharging stops	The batteries are empty. (Battery indicator on the Control panel turns off from green.)
Discharging stops nevertheless battery is empty.	When battery temperature is too high or low, discharging is limited for battery protection.
	During on-line system mode, discharging stops before reaching 0% of remaining battery level for blackout.
	Depending on the batteries condition, the battery might not be able to be discharged down to 0%.
There is a time period that is not charging and discharging.	In order to correct the remaining battery level, charging and discharging operation is stopped once a day (From 3:00 to 3:30).
Stand-alone socket does not supply the power.	Stand-alone socket can not be used during Grid operation.
	Stand-alone breaker in this product may have turned off by electric leakage in the load. Please contact installer or shop you bought this product.
	The switch near the Stand-alone Socket-outlet is off. Output power from the Stand-alone Socket-outlet does not is not.

The list of error codes is shown below.

Check the error code in the display panel and address the issue by referencing the information below.

Error code	Description/where to check	
E010	Abnormal in grid (High grid voltage)	The system operation will resume automatically as soon as the commercial power supply is normal.
E020	Abnormal in grid (Low grid voltage) → Especially when power fails.	
E030	Abnormal in grid (AC over frequency)	
E040	Abnormal in grid (AC under frequency)	
E060	Abnormal in grid (Islanding)	
E070	Abnormal in grid (Instant over voltage)	
E080	Abnormal in grid (Decrease in instantaneous voltage)	
E100	Multiple inverter combinations error	The storage battery systems up to three can be operated in cooperation. One of them stops because of grid-side problem, other inverters stops. If grid problems is resolved, this error will be canceled automatically.
P170	Under voltage	Please check the load which is connected to an electrical outlet for stand-alone. Its operation will resume automatically after an abnormal eliminated.
P300	Overload	
U030	Overload ("P300" 10 times in a row)	
U060	Under voltage ("P170" 10 times in a row)	
U100	Communications anomaly between the control panel and PCS unit	Please contact the repair service.
U110	Communications anomaly among the storage battery systems in the multiple inverter mode	Please contact the repair service.
P620, P690	Battery module is over discharged.	After the battery is charged by a grid power, starts the normal operation.
P660, P700	Battery module is high temperature.	If the temperature of the built-in battery falls within the operating temperature range, this product will resume operation automatically.
P140, U050	Internal DC protector is off.	Please contact the repair service.
P350	There is a problem with the storage battery system. Or internal DC protector is off. Or the lines are disconnected.	
P430, U020	Communications anomaly	Please contact the repair service.
H010-H490	There is a problem with the battery module.	Please contact the repair service.
H500-H990	There is a problem with the storage battery system.	
F010-F490	There is a problem with the battery module.	
F500-F990	There is a problem with the storage battery system.	
The PXXX other than those above	There is a problem with the storage battery system.	After an abnormality is eliminated, this product will resume operation automatically. When operations do not resume, please contact the repair service.
The UXXX other than those above	There is a problem with the storage battery system.	Please restart the operation. Press the "ON/OFF (CANCEL)" for three seconds to clear the error.
H290	Battery lifespan	Please contact the repair service.

12. Specifications

■ Lithium-ion Storage Battery System

Model number		LJ-SK56A
Width x Height x Depth [mm]		966×1380×279
Weight		86kg * 136kg with the batteries included
Colour		Ivory (3Y7.8/1.1)
Operating temperature		0°C to 40°C
Storage temperature		-20°C to 40°C
Humidity		0% to 90% RH (no dew condensation)
Maximum altitude		1000m
Noise emission		less than 40dB
Maximum inverter conversion efficiency		91.5%
Energy storage port	Voltage(nominal)	d.c.93.6V
	Voltage(range)	d.c.88V to 107V
	Rated current(max continuous)	d.c.26A
	Storage type	Lithium-ion battery *Adaptation battery:LJ-SBK01×2pcs
a.c. input ratings (grid-interactive)	Voltage(nominal)	a.c.230V 1W+N+PE
	Rated current	a.c.8.7A
	Frequency(nominal)	50Hz
	Rated active power	2000W
	Rated apparent power	2000VA
	Power factor	1.0
	Total current harmonic distortion	<5%
a.c.output ratings (grid-interactive)	Voltage(nominal)	a.c.230V 1W+N+PE
	Rated current	a.c.8.7A
	Current(inrush)	a.c.28A
	Frequency(nominal)	50Hz
	Rated active power	2000W
	Rated apparent power	2200VA
	Power factor range	0.8 to 1.0
	Maximum output fault current	a.c.10A
	Maximum output over current protection	a.c.19.6A
	Total current harmonic distortion	<5%
a.c.output ratings (stand-alone)	Voltage(nominal)	a.c.230V 1W+N+PE
	Rated current	a.c.8.7A
	Current(inrush)	a.c.28A
	Frequency(nominal)	50Hz
	Rated active power	2000W
	Rated apparent power	2000VA
	Power factor	1.0 (resistive load)
	Maximum output fault current	a.c.10A
	Maximum output over current protection	a.c.19.6A

Inverter topology		High-frequency insulation
Active anti-islanding method		Frequency shift
Protective class		I
Over voltage category		OVC Ⅲ
Ingress protection (IP) rating		IP54 (Main body) IP44 (Control panel/Display)
Standard	Safety	IEC62109-1/-2 IEC62040-1 AS3100:2014
	Grid	AS/NZS 4777.2:2015
	EMC	IEC61000-3/-6
Initial usable Battery capacity		5.3kWh

■ Lithium-ion Battery

Model number	LJ-SBK01
Rated battery capacity	2817Wh/1pc.
Rated voltage	DC46.8V/1pc.
Weight	25kg/1pc.
Storage temperature	-20°C to 40°C (if stored more than 3 months, keep temperature below 30°C)

■ Network Adaptor

Model number		LJ-NA02
Width x Height x Depth [mm]		150×325×111
Weight		1.4kg
Colour		White (10Y9/0.5)
Operating temperature		0°C to 40°C
Humidity		0% to 80% RH (no dew condensation)
Maximum altitude		1000m
Rated voltage		AC230V 1W+N+PE
Rated current		0.03A
Rated frequency		50Hz
Network interface [LAN port]	Ethernet	100BASE-TX/10BASE-T
	Number of port	1
	Type of connector	RJ-45
	Communication protocol	HTTP over IPv4
Serial interface [RS-485]	Communication method	2-wire
	Transfer rate	9600bps
	Communication protocol	Modbus RTU

13. Warranty

Panasonic Warranty

Lithium-ion Battery Storage System Warranty (LJ-SK56A, LJ-SBK01, LJ-NA02)

1. Subject to the conditions of this warranty, Panasonic or its Authorised Service Centre will perform the necessary repairs on the Lithium-ion battery storage system comprising the Lithium-ion batteries, the Battery Storage Cabinet and a Network Adaptor (the "Product") without charge for parts or labour, if in the opinion of Panasonic, the product is found to be faulty within the specified warranty period.
2. The Product is supplied with the following warranty conditions from the date of the installation:
   a) Product warranty : Ten (10) years (120 months) parts and labour in respect to the battery cabinet enclosure, its internal control devices and the Network Adaptor.
   b) Performance warranty: Ten (10) years (120 months) or at least sixty percent (60%) 'State of Health' (SOH) of the initial battery's charge capacity, whichever comes first in respect to the Lithium-ion batteries when used in the factory default 'Maximum Self Consumption Mode' where every 24 hours, one full discharge cycle (100% to 1%) is followed by one full charge cycle (1% to 100%). When used in this mode, the battery will maintain at least 60% of its charge capacity during the 10 year warranty period if operated in accordance with the operating conditions specified. When other charge/discharge modes are employed which exceed one per day (i.e. multiple daily full charge/discharge), the battery charge capacity will fall below 60% sooner than 10 years.
3. The Product operation life, with scheduled maintenance, may be up to a maximum of 14 years after which time the product will permanently shut-down and cease to operate. The product warranty provided by Panasonic is limited to the warranty period specified above from the date of installation.
4. The Product must not be installed in a place or location where it will receive or be subject to the impact of continuous direct sunlight.
5. The Purchaser must provide evidence of the date of installation in order to claim the warranty. Where the Purchaser is unable to provide evidence to the satisfaction of Panasonic of the date of installation, Panasonic will calculate the Product warranty from the date of purchase or the date of manufacture.
6. This warranty only applies to the Panasonic product when:
   - Purchased in Australia and sold by Panasonic Australia, it's Authorised Distributors, or Dealers, and only where the products are used and serviced within Australia or its territories.
   - Warranty service is carried out by a Panasonic Authorised Service Centre, and only if valid proof of installation is presented when warranty service is requested.
   - Installed for normal domestic or small business use.
   - The product is installed and used in accordance with the manufacturer's recommendations.
   - Installed in regions where the min/max monthly average temperatures are always less than +40 degrees C and greater than 0 degrees C. On the occasions when the temperature exceeds +40 Celsius degrees or falls below 0 Celsius degrees - the product automatically functions to give high priority to preserving battery health by reducing the battery output and extending the battery charging time.
   - The product is installed with compliance to the relevant Australian Wiring Standards, including, but not limited to AS/NZS 3000, AS/NZS 3008.1.1, and AS4777.1.
7. The warranty on this product does not cover the following items:
   - Damage, misuse, neglect, or abuse.
   - Malfunction or failure resulting from the use of incorrect voltages, or mains supply problems.
   - Incorrect installation, tampering or repair by unauthorised persons (including unauthorised alterations and or modifications).
   - Build-up of dirt or dust.
   - Mal-adjustment/incorrect settings of customer accessible controls.
   - Failure due to thunderstorm/lightning activity or exposure to abnormally corrosive environmental conditions.
   - Infestation by insects or vermin.
   - Any foreign objects or matter having entered the product.
   - Product operational or vibration noises that are considered normal.
   - Damage to cabinet parts (unless notified at the time of purchase).
   - Installation corrections (e.g. fixing to the ground, correction to wiring, correction to network connections/set-up).
8. To claim warranty service, when required, you should contact Panasonic's Customer Care Centre on 132600, or your point of purchase.
9. The warranty hereby conferred does not extend to, and excludes, any costs associated with the installation, de-installation or re-installation of a product, including costs related to the mounting, de-mounting or remounting of any hardware, (and any other ancillary activities), delivery, handling, freighting, transportation or insurance of the product or any part thereof or replacement of and do not extend to, and exclude, any damage or loss occurring by reason of, during, associated with, or related to such installation, de-installation, re-installation or transit.

Panasonic Authorised Service Centres are located in major metropolitan areas and most regional centres of Australia, however, coverage will vary dependant on product within remote locations. For advice on exact Authorised Service Centre locations for your product, please telephone our Customer Care Centre on 132 600.

In addition to your rights under this warranty, Panasonic products come with consumer guarantees that cannot be excluded under the Australian Consumer Law. If there is a major failure with the product, you can reject the product and elect to have a refund or to have the product replaced or if you wish you may elect to keep the product and be compensated for the drop in value of the product. You are also entitled to have the product repaired or replaced if the product fails to be of acceptable quality and the failure does not amount to a major failure.

If there is a major failure in regard to the product which cannot be remedied then you must notify us within a reasonable period of time by contacting the Panasonic Customer Care Centre. If the failure in the product is not a major failure then Panasonic may choose to repair or replace the product and will do so in a reasonable period of time from receiving notice from you.

If you require assistance regarding warranty conditions or any other enquiries, please visit the **Panasonic Australia** website **www.panasonic.com.au** or contact by phone on **132 600**

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Panasonic Warranty

Lithium-ion Battery Storage System Warranty (LJ-SK56A, LJ-SBK01, LJ-NA02)

1. Subject to the conditions of this warranty, Panasonic or its Authorised Service Centre will perform the necessary repairs on the Lithium-ion battery storage system comprising the Lithium-ion batteries, the Battery Storage Cabinet and a Network Adaptor (the "Product") without charge for parts or labour, if in the opinion of Panasonic, the product is found to be faulty within the specified warranty period.

2. The Product is supplied with the following warranty conditions from the date of the installation:
   a) Product warranty: Ten (10) years (120 months) parts and labour in respect to the battery cabinet enclosure, its internal control devices and the Network Adaptor.
   b) Performance warranty: Ten (10) years (120 months) or at least sixty percent (60%) 'State of Health' (SOH) of the initial battery's charge capacity, whichever comes first in respect to the Lithium-ion batteries when used in the factory default 'Maximum Self Consumption Mode' where every 24 hours, one full discharge cycle (100% to 1%) is followed by one full charge cycle (1% to 100%). When used in this mode, the battery will maintain at least 60% of its charge capacity during the 10 year warranty period if operated in accordance with the operating conditions specified. When other charge/discharge modes are employed which exceed one per day (i.e. multiple daily full charge/discharge), the battery charge capacity will fall below 60% sooner than 10 years.

3. The Product operation life, with scheduled maintenance, may be up to a maximum of 14 years after which time the product will permanently shut-down and cease to operate. The product warranty provided by Panasonic is limited to the warranty period specified above from the date of installation.

4. The Product must not be installed in a place or location where it will receive or be subject to the impact of continuous direct sunlight.

5. The Purchaser must provide evidence of the date of installation in order to claim the warranty. Where the Purchaser is unable to provide evidence to the satisfaction of Panasonic of the date of installation, Panasonic will calculate the Product warranty from the date of purchase or the date of manufacture.

6. This warranty only applies to the Panasonic product when:
   - Purchased in New Zealand and sold by Panasonic New Zealand, it's Authorised Distributors, or Dealers, and only where the products are used and serviced within New Zealand or its territories.
   - Warranty service is carried out by a Panasonic Authorised Service Centre, and only if valid proof of installation is presented when warranty service is requested.
   - Installed for normal domestic and small business use, and under reasonable operation (as noted in the installation and user's manual).
   - The product is installed and used in accordance with the manufacturer's recommendations.
   - Installed in regions where the min/max monthly average temperatures are always less than +40 degrees C and greater than 0 degrees C. On the occasions when the temperature exceeds +40 Celsius degrees or falls below 0 Celsius degrees - the product automatically functions to give high priority to preserving battery health by reducing the battery output and extending the battery charging time.
   - The product is installed with compliance to the relevant AS/NZ Wiring Standards, including, but not limited to AS/NZS 3000, AS/NZS 3008.1.1, and AS4777.1.

7. The warranty on this product does not cover the following items:
   - Damage, misuse, neglect, or abuse.
   - Malfunction or failure resulting from the use of incorrect voltages, or mains supply problems.
   - Incorrect installation, tampering or repair by unauthorised persons (including unauthorised alterations and or modifications).
   - Build-up of dirt or dust.
   - Mal-adjustment/incorrect settings of customer accessible controls.
   - Failure due to thunderstorm/lightning activity or exposure to abnormally corrosive environmental conditions.
   - Infestation by insects or vermin.
   - Any foreign objects or matter having entered the product.
   - Product operational or vibration noises that are considered normal.
   - Damage to cabinet parts (unless notified at the time of purchase).
   - Installation corrections (e.g. fixing to the ground, correction to wiring, correction to network connections/set-up).

8. To claim warranty service, when required, you should contact Panasonic's Customer Care Centre on 09 2720178, or your point of purchase.

9. The warranty hereby conferred does not extend to, and excludes, any costs associated with the installation, de-installation or re-installation of a product, including costs related to the mounting, de-mounting or remounting of any hardware, (and any other ancillary activities), delivery, handling, freighting, transportation or insurance of the product or any part thereof or replacement of and do not extend to, and exclude, any damage or loss occurring by reason of, during, associated with, or related to such installation, de-installation, re-installation or transit.

Panasonic Authorised Service Centres are located in major metropolitan areas and most regional centres of New Zealand, however, coverage will vary dependant on product within remote locations. For advice on exact Authorised Service Centre locations for your product, please telephone our Customer Care Centre on 09 2720178 or visit our website referred to below and use the Service Centre Locator.

Unless otherwise specified to the consumer the benefits conferred by this express warranty are additional to all other conditions, warranties, guarantees, rights and remedies expressed or implied by the Consumer Guarantees Act of New Zealand and all other obligations and liabilities on the part of the manufacturer or supplier. Nothing herein shall restrict or modify such rights, remedies, obligations and liabilities.

If there is a major failure in regard to the product which cannot be remedied then you must notify us within a reasonable period of time by contacting the Panasonic Customer Care Centre. If the failure in the product is not a major failure then Panasonic may choose to repair or replace the product and will do so in a reasonable period of time from receiving notice from you.

If you require assistance regarding warranty conditions or any other enquiries, please visit the **Panasonic New Zealand** website **www.panasonic.co.nz** or contact by phone on **09 2720178**

Panasonic New Zealand Customer Care Centre

Phone: 09 2720178
Fax: 09 2720129
Email: customerservice@nz.panasonic.com

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If you need to repair, please contact distributor or the installer you purchased.

* To who has confirmed the installation.
Please write down serial number, lot number, installation completion date, installation company name, signature in the following in the column below.

Model No.		Serial No.	Lot No.
LJ-SK56A			
LJ-SBK01	**1**		
	2		
LJ-NA02			
Installation date			
Installation Company			
Signature			

Panasonic Corporation Eco Solutions Company
Web Site: http://panasonic.net/

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