TABUCHI ELECTRIC

User's Manual

Hybrid Solar Inverter (5.5 kW, Outdoor)

THE-S55P3BB-USW

THD-S55P3BB-US

THD-S55P3B-US

Thank you for purchasing this product from Tabuchi Electric.

- Read this User's Manual carefully to ensure safe use of this product.
- Completely familiarize yourself especially with the "Safety Precautions" (Pages 4 to 5) before using this product.
- Keep this User's Manual in a safe handy place for future reference.

Quick Reference Guide

Living of solar power 24 hours a day

This Hybrid Solar Inverter uses the electric power generated by the sun during the day. Surplus power is continuously stored in the lithium-ion storage batteries. (Charging differs according to the operating mode.) The power stored in the storage batteries is used to stabilize the daytime power supply as well as a nighttime power source at night.

Daily operation is not necessary.

Grid-tied Operation ▶ Page 18

After DC power from the PV panels is converted into AC power by the Hybrid Solar Inverter, it is connected to the commercial power grid and used to power electric appliances.
Moreover, DC power stored in the storage batteries is used to drive the modes below, so daily operation is not necessary.

Operating modes can be selected according to personal lifestyle.

■PEAK CUT Mode

PEAK CUT Mode cuts the peak during a specified time slot.
When purchasing power exceeds a set amount, the battery is discharged.

■MAX POWER EXPORT Mode

Storage batteries are charged by the commercial power grid at night. Power stored in the storage batteries is used during the daytime to cover any PV system generation shortages and avoid peak rate grid charges.

■ECONOMY Mode

Surplus power generated by the PV system is not only sold to the power company, but it is also stored in the storage batteries for use at night.

■HOME BACKUP Mode

Storage batteries are kept fully charged at all times as a safeguard against power outages on the commercial power grid.

Automatically switches to stand-alone operation in the event of a power outage.

Stand-alone Operation ▶ Page 24

As long as the solar panels are generating power or the storage batteries retain a charge, the inverter will keep running in the event of an outage on the commercial power grid by automatically switching to stand-alone operation (Page 26).
Carefully read the precautions on stand-alone operation (Page 24) before use.

Contents

Read before use!

Safety Precautions ■ Observe all safety precautions.

Please note the following items when the inverter is shutdown for an inspection or maintenance.

Observe the following precautions in addition to performing the required equipment checks.
- Tabuchi Electric assumes no responsibility for accidents or equipment failure if the equipment is used in any manner other than specified in this User's Manual or in disregard of the safety precautions.
- These precautions explain what must be observed to prevent personal injury and property damage.

The symbols below indicate the potential hazards of improper use of this product.

WARNING	May result in serious injury or death.
CAUTION	May result in minor injury or property damage.

The symbols below indicate prohibited use of this product and safety precautions.

	Prohibited use of this product.
	Mandatory safety precautions.

■Handling and Usage

WARNING

Do not detach the front panel, or disassemble or remodel the inverter.
This may result in fire, electric shock, burns, injury or equipment failure.

PROHIBITED

Do not climb on or hang from the inverter.
The inverter may topple over, resulting in injury, electric shock or equipment failure.

DO NOT TOUCH

Do not touch the inverter during disasters or if there is lightening.
This may result in electric shock, injury, or burns.

If the inverter emits strange odors, shut it off, and set the grid breaker in the Electrical Service Entrance to the OFF position.
If the inverter continues running in this state, it may result in equipment failure, electric shock, or fire. Contact the vendor for servicing.

MANDATORY

Keep persons with pacemakers away from the inverter.
The inverter may adversely affect pacemakers.

Before cleaning the inverter, shut it off and set the grid breaker in the Electrical Service Entrance to the OFF position.
Failure to shut off the inverter and grid breaker or shutting them off in the wrong order may result in electric shock or burns.

CAUTION

PROHIBITED

Do not cover the inverter vents.
Do not locate the inverter in poorly ventilated area where the vents are blocked. Do not cover the vents with tablecloths, sheets, or towels, etc. Internal temperature may rise, resulting in fire, equipment failure, or a shortened service-life.

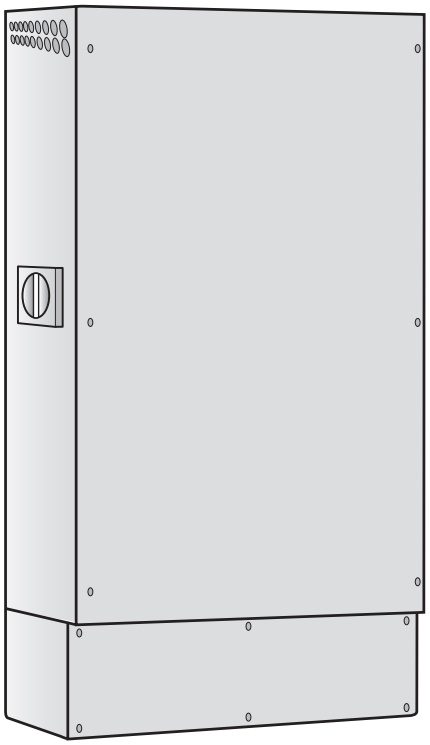
Keep objects off the inverter.
Objects may heat up and catch fire during operation.

PROHIBITED

Do not subject the inverter to any vibrations or impacts.
This may result in fire or equipment damage.

DO NOT TOUCH

Do not carelessly touch the inverter while it is running.
The inverter’ s temperature rises while running. Carelessly touching the inverter may result in burns. Especially keep an eye on children and elderly persons.



During Stand-alone Operation

WARNING

PROHIBITED

Do not connect the below electric appliances listed below to the stand-alone outlets.

The amount of electric power generated during stand-alone operation varies according to weather and storage battery charge. The inverter stops stand-alone operation if it generates less electric power than that consumed by the electric appliances connected to its stand-alone outlets. Do not use the appliances listed below with the inverter as personal injury or property damage may occur if the power shuts off.

- Any kind of medical or home security equipment
- Desktop computers and other information-related equipment and peripherals
- Other equipment that may cause personal injury or property damage if the power shuts off

CAUTION

MANDATORY

- **Confirm the Backup Load Panel, related wiring, and electrical fixtures are in good safe condition before commencing stand-alone operation.**
- **If strange odors or noises are detected after starting stand-alone operation, promptly stop stand-alone operation.**

Near the Equipment

CAUTION

Keep gasoline, benzene, or other flammable agents away from the inverter.

Do not place or use gasoline, benzene, or other flammable agents near the inverter. This may result in fire or equipment failure.

PROHIBITED **Do not use insecticides or other combustible products near the inverter.**

Do not expose the inverter to water or oil vapors.

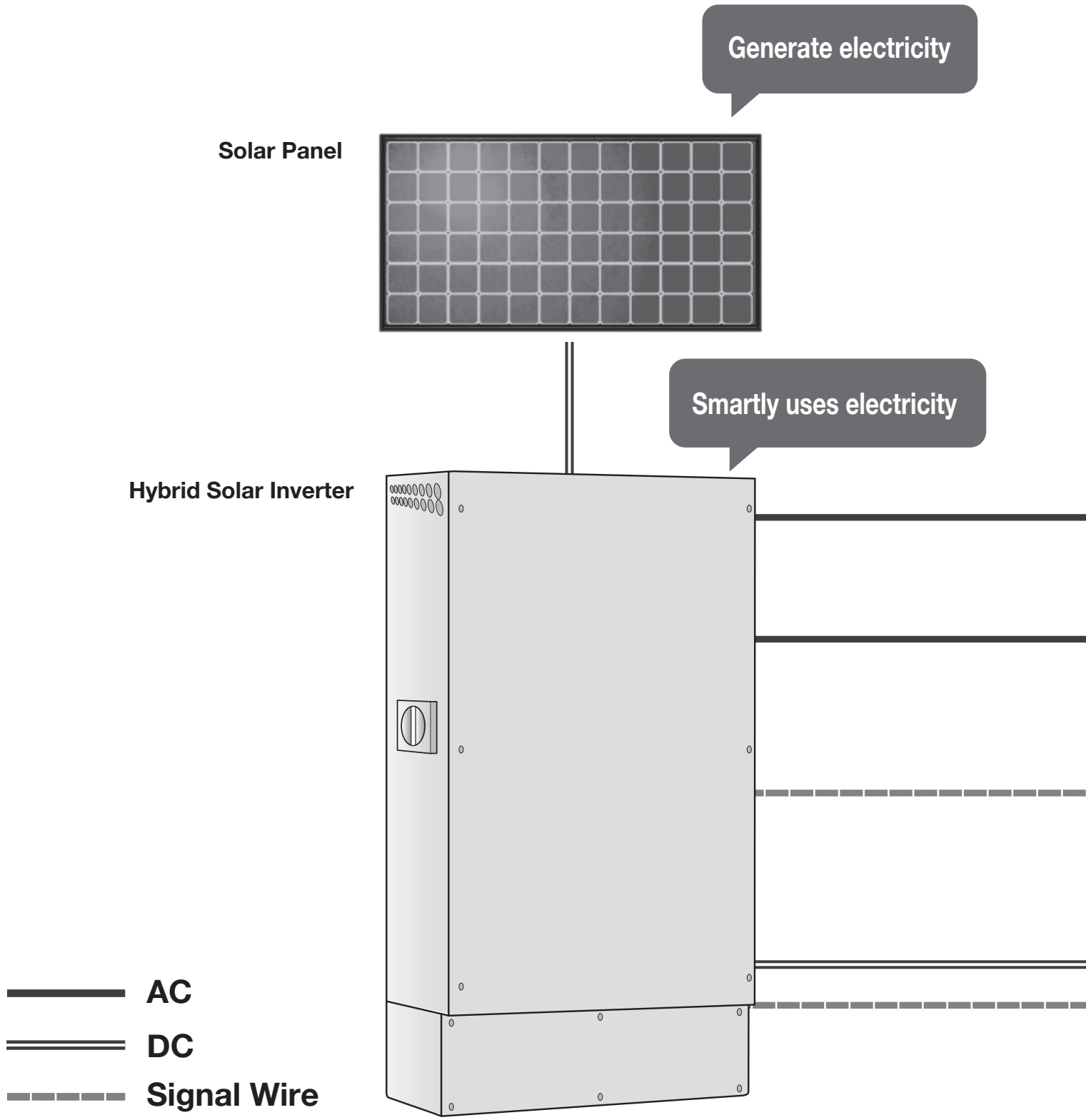
This may result in electric shock, current leaks or equipment failure.

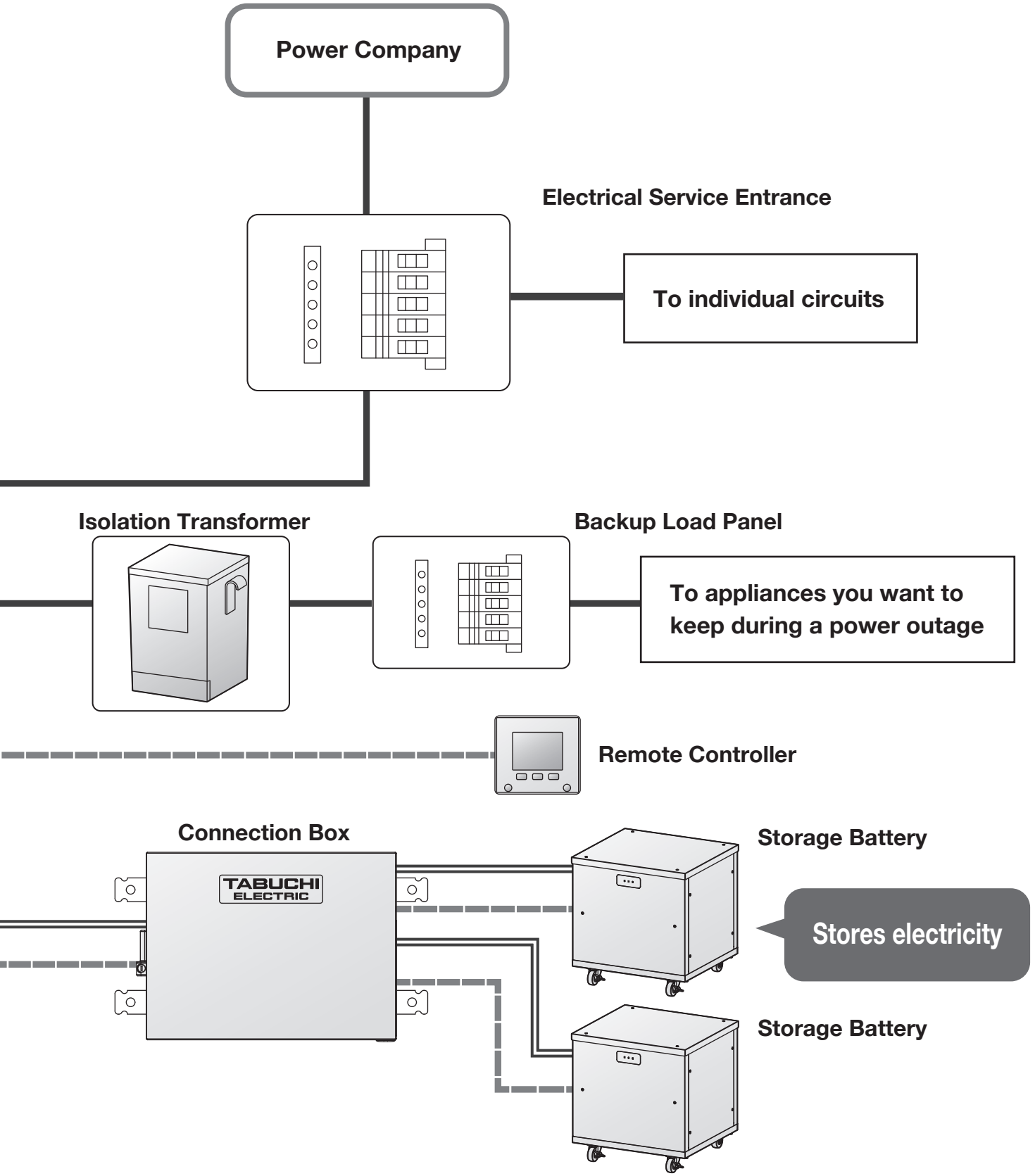
Do not use heaters or equipment that releases steam near the inverter.

Do not use heaters, rice cookers, humidifiers, or other equipment that releases steam near the inverter. This may result in fire or equipment failure.

System Diagram

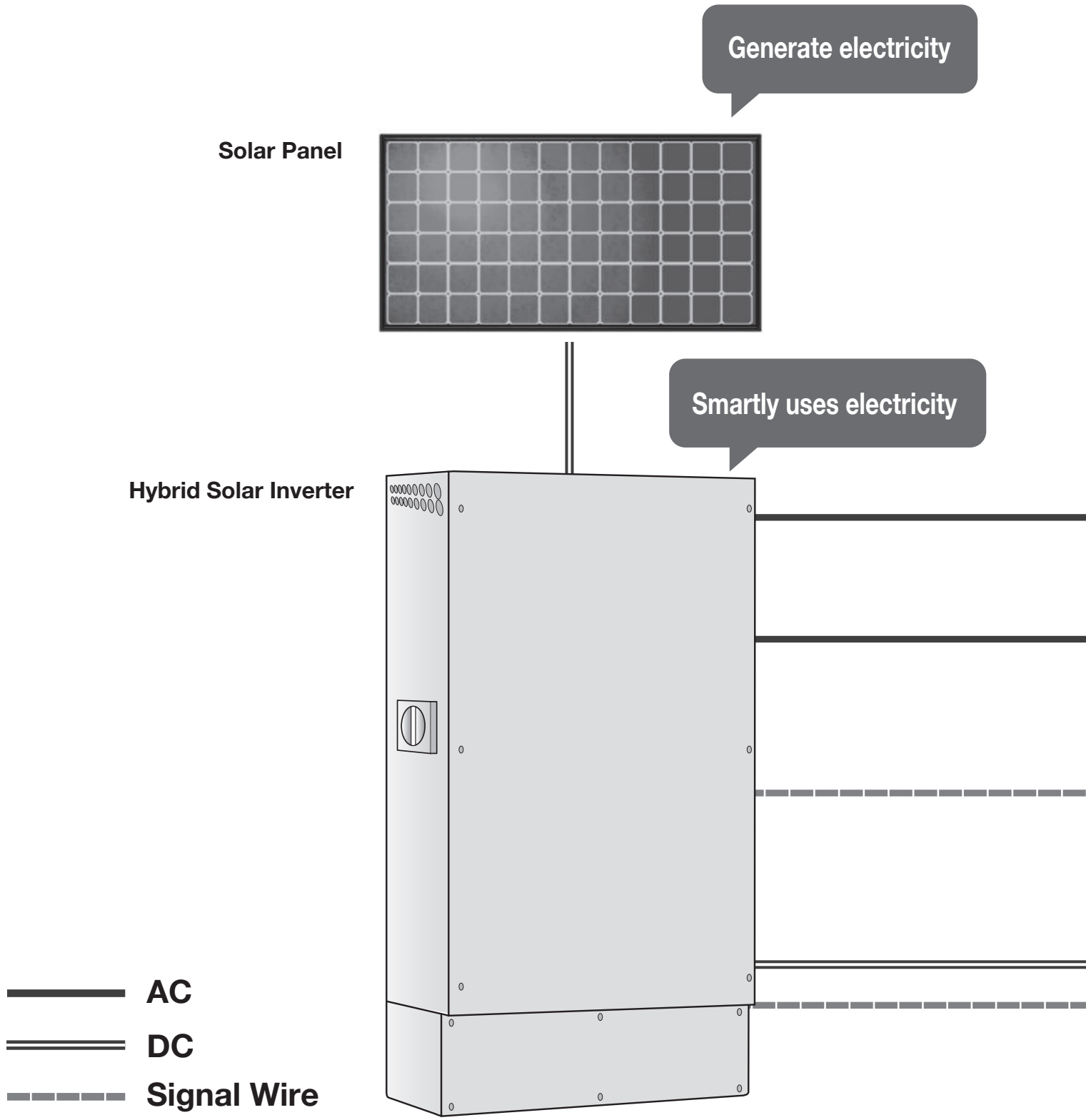
THE-S55P3BB-USW

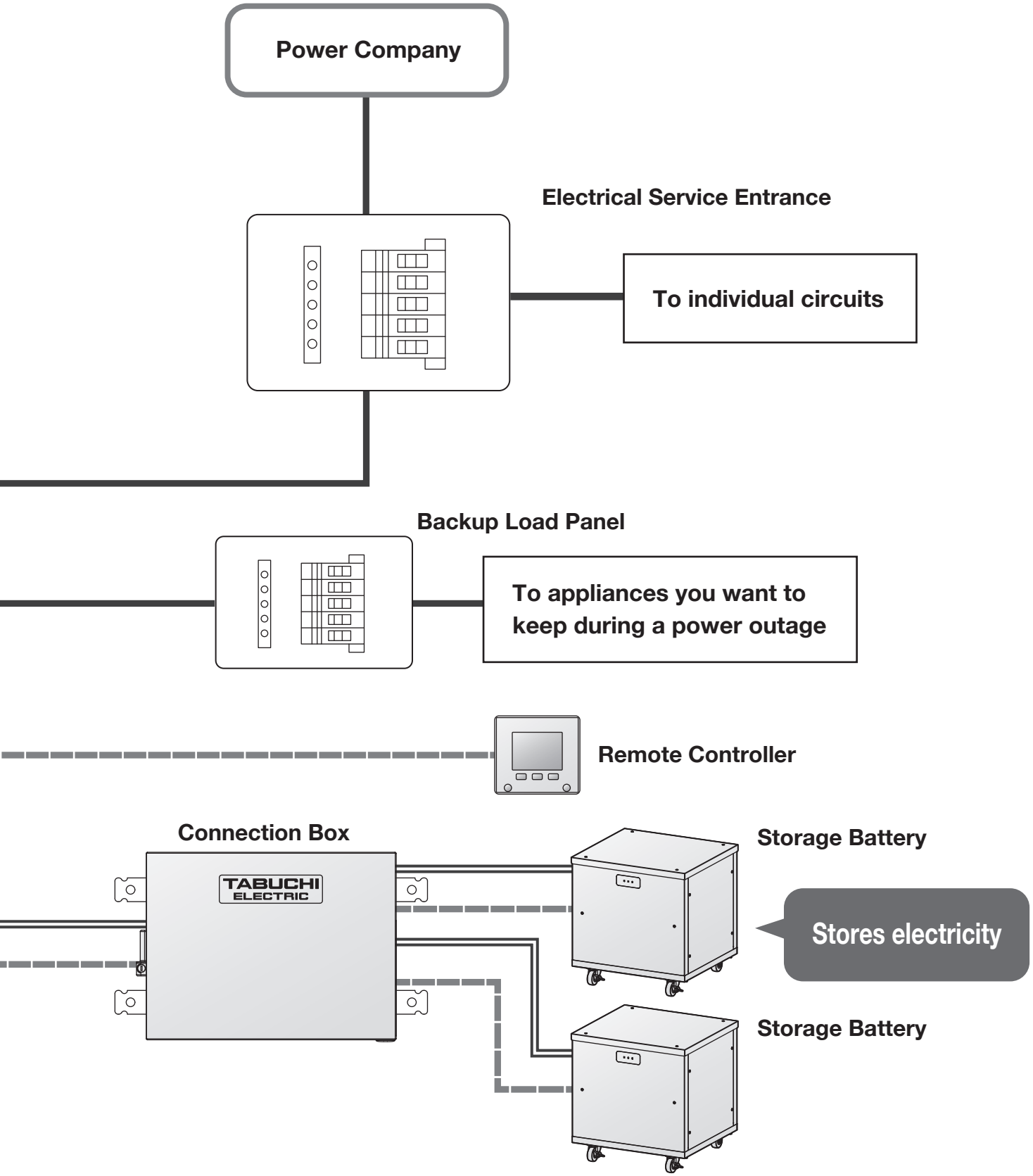



Power Company
Electrical Service Entrance
To individual circuits
Isolation Transformer
Backup Load Panel
To appliances you want to keep during a power outage
Remote Controller
Connection Box
TABUCHI ELECTRIC
Storage Battery
Stores electricity
Storage Battery

System Diagram

THD-S55P3BB-US




Power Company
Electrical Service Entrance
To individual circuits
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TABUCHI ELECTRIC
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Stores electricity
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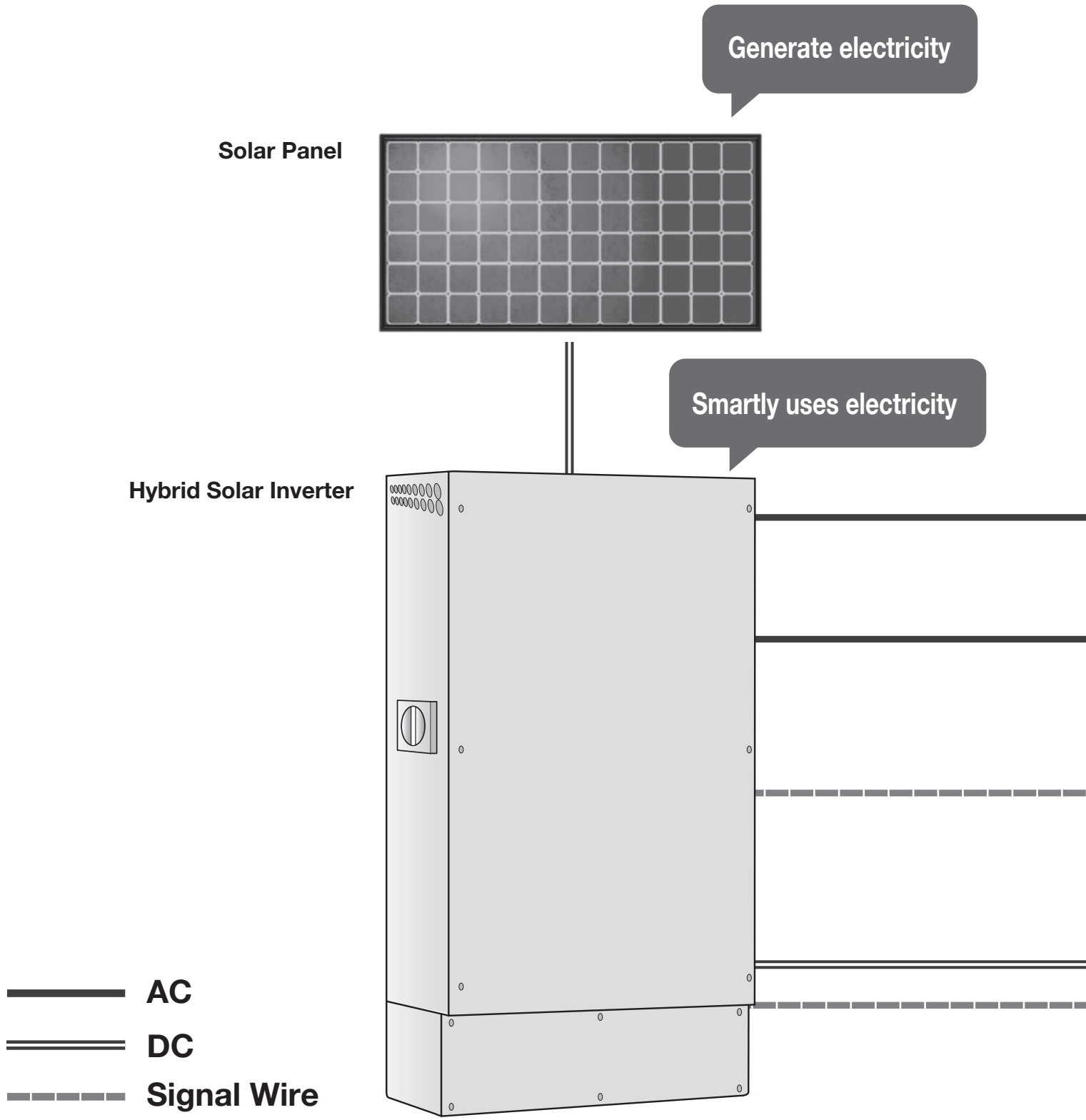
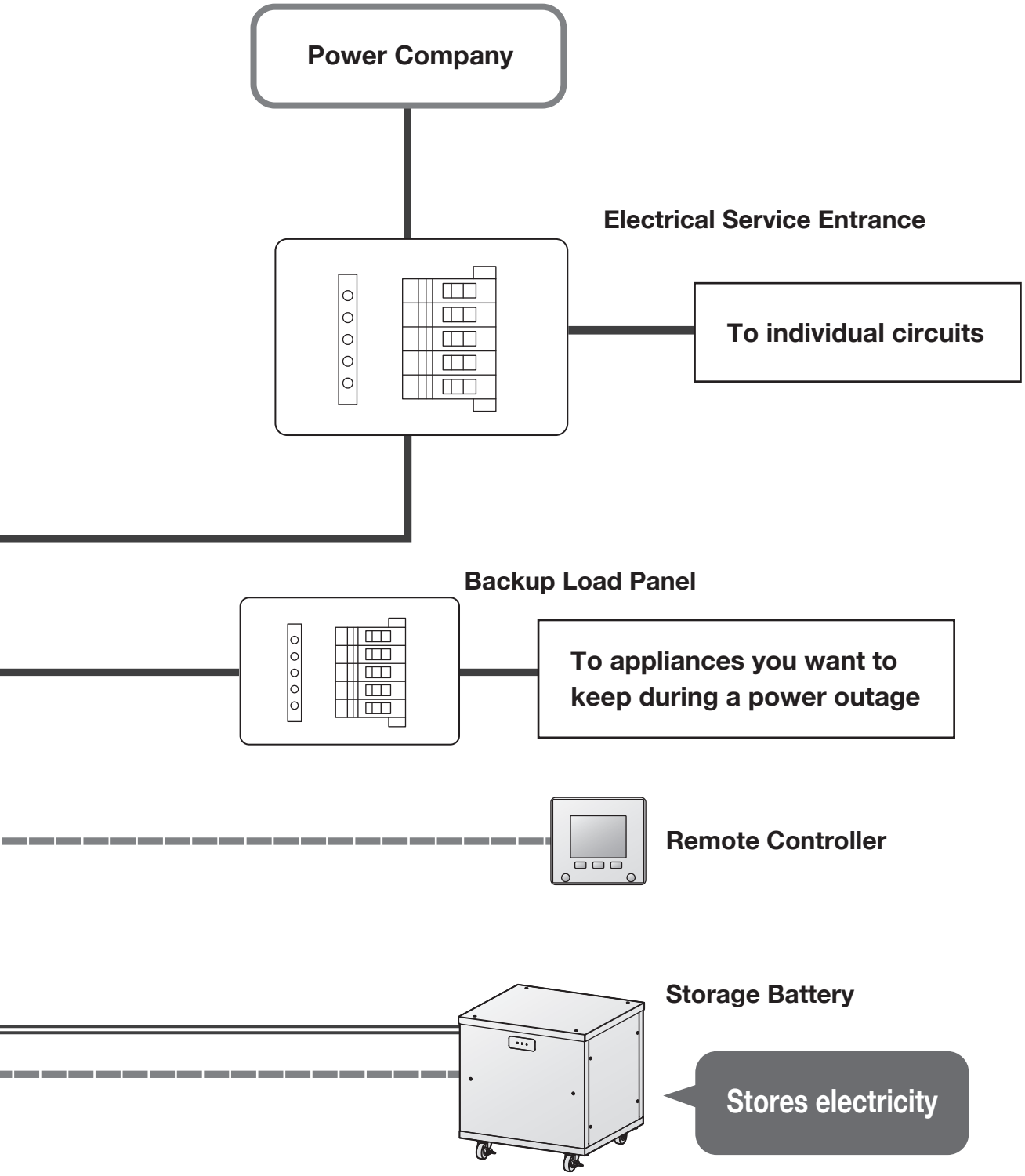
System Diagram

THD-S55P3B-US



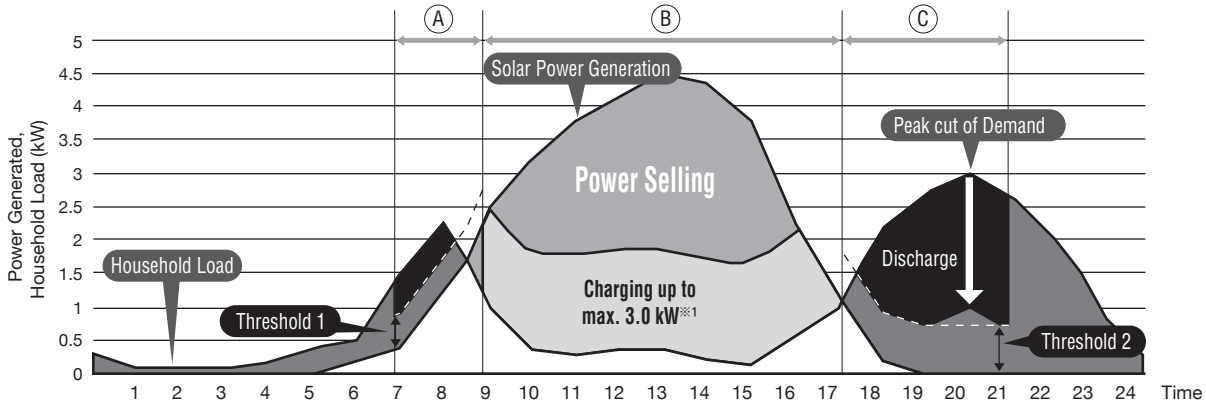

Power Company
Electrical Service Entrance
To individual circuits
Backup Load Panel
To appliances you want to keep during a power outage
Remote Controller
Storage Battery
Stores electricity

Modes and Mechanisms

The following four modes are available during grid-tied operation. To switch modes, see the "Remote Controller" section (Page 16) of the User's Manual.

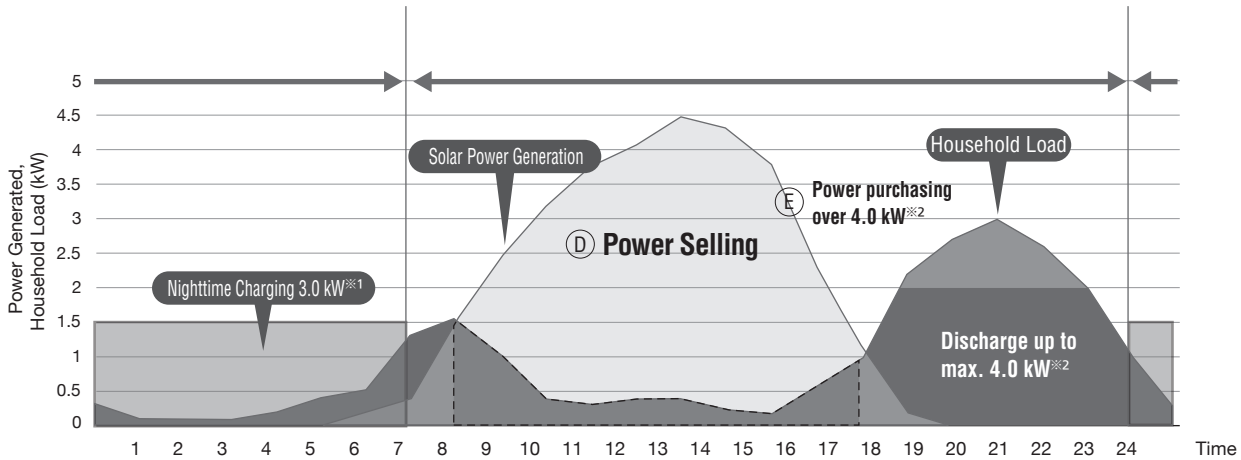
PEAK CUT Mode

PEAK CUT Mode cuts the peak during a specified time slot. When purchasing power exceeds a set amount, the battery is discharged.



MAX POWER EXPORT Mode

MAX POWER EXPORT Mode minimizes use of “peak electricity” and “purchased electricity” by charging the storage batteries at night when utility rates are low and discharging the stored power during the day and evening to run connected electric appliances.



- Two discharge time slots can be set per day.
- One charge time slot can be set per day.
- A purchasing power threshold can be set for each discharge time slot.
- The charging method can be selected during the charge time slot.

A, C : Discharge time slot

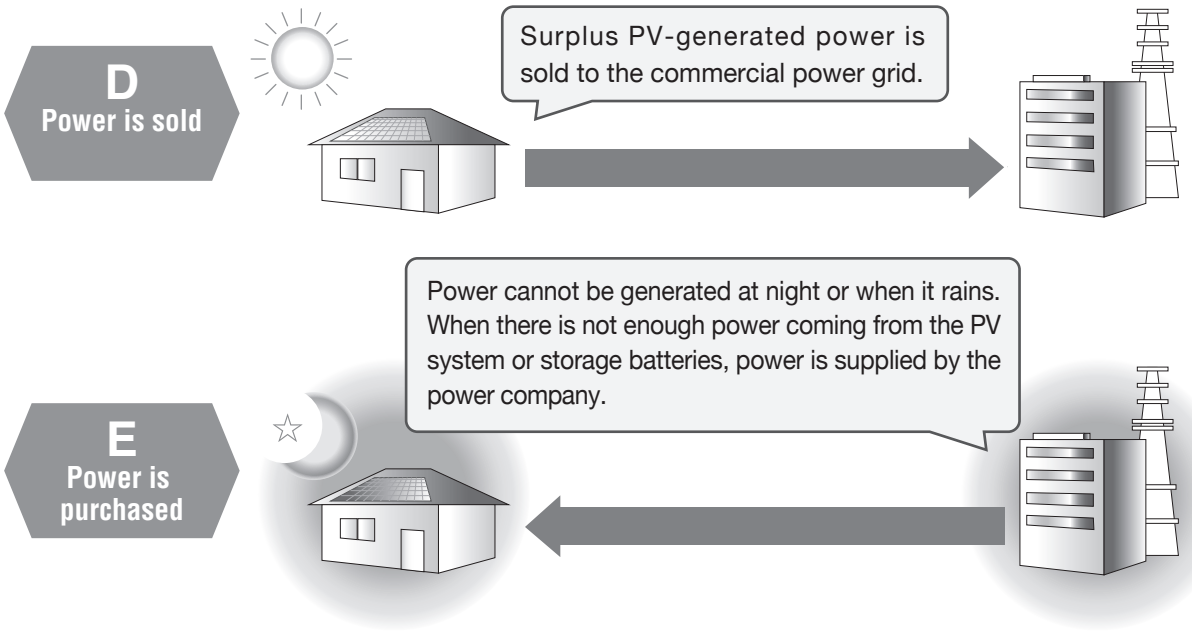
When purchasing power (Subtract Solar Power Generation from Household Load) exceeds purchasing power threshold, the battery is discharged.

B : Charge time slot

The system performs surplus or forced charging.

During surplus charging, the battery is charged if solar power generation exceeds demand power generation.

During forced charging, the battery is charged at 3.0 kW※1 from solar power generation and grid power generation.



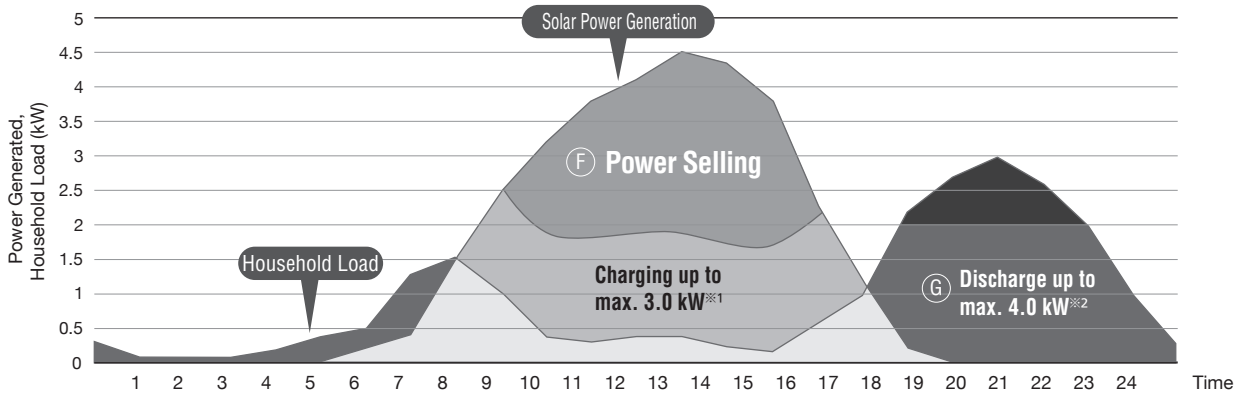
※1: THE-S55P3BB-USW 3.0kW
THD-S55P3BB-US 3.0kW
THD-S55P3B-US 1.5kW
※2: THE-S55P3BB-USW 4.0kW
THD-S55P3BB-US 4.0kW
THD-S55P3B-US 2.0kW

At extremely low SOC, the battery output power may be slightly decreased.

Modes and Mechanisms

ECONOMY Mode

ECONOMY Mode minimizes the amount of purchased electricity purchased from the grid by utilizing PV-generated power during the day, in the evening, and at night.



HOME BACKUP Mode

(Initial mode)

HOME BACKUP Mode keeps the storage batteries fully charged at all times. Once charged, the system goes on standby as a safeguard against power outages on the commercial power grid.

The display may not show that the storage batteries are fully charged due to a margin of error.

F
Power is stored

Surplus PV-generated power is used to charge the storage batteries. Any power that cannot be stored in the storage batteries is sold.

G
Stored power is discharged

Power is discharged from the storage batteries. If there is not enough power coming from the PV system and storage batteries, power is purchased from the power company.

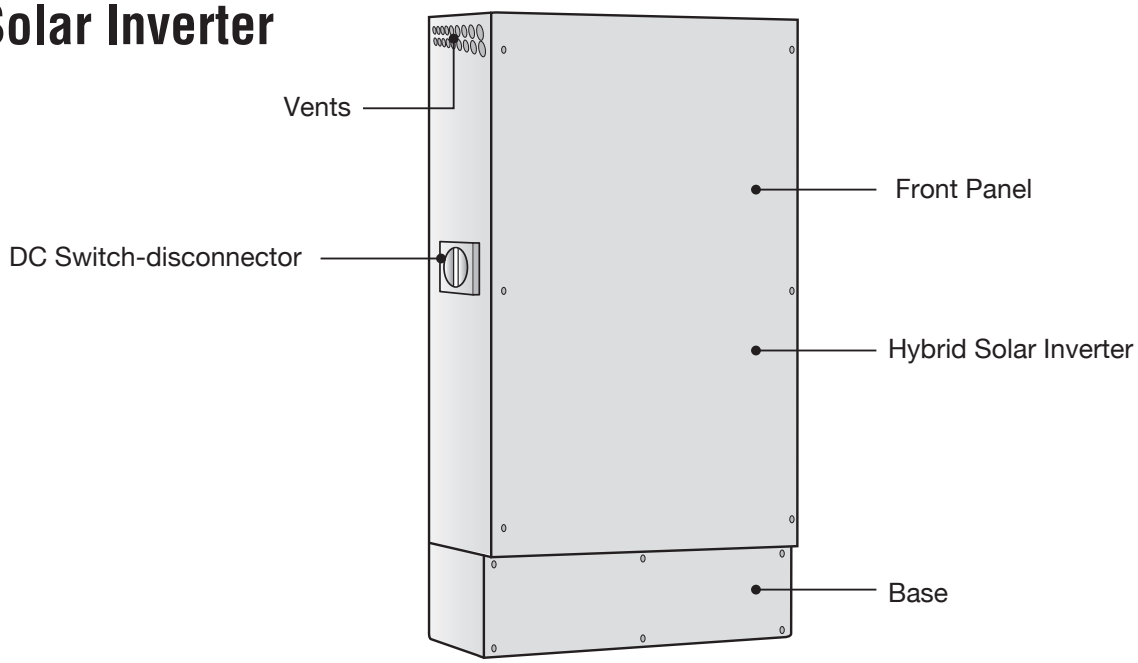
Use the inverter as an emergency power supply for instances such as rolling blackouts, etc. Use of the Storage Mode is recommended since it keeps the storage batteries fully charged at all times. If an outage is anticipated while using the inverter in another mode, you can switch to the Storage Mode ahead of time and minimize the impact of the outage by having the storage batteries fully charged.

※1: THE-S55P3BB-USW 3.0kW
THD-S55P3BB-US 3.0kW
THD-S55P3B-US 1.5kW
※2: THE-S55P3BB-USW 4.0kW
THD-S55P3BB-US 4.0kW
THD-S55P3B-US 2.0kW

At extremely low SOC, the battery output power may be slightly decreased.

Names of Parts

Hybrid Solar Inverter

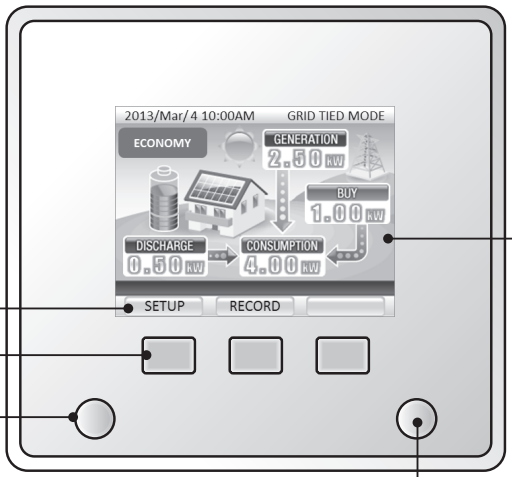


Remote Controller

Display Displays functions of thebuttons below. (Indications change according to the screen.)
Press the operating buttons below to execute the desired functions.
(The display is not a touch screen panel.)
To select [ENTER], press the operating button directly below it.

Operating Buttons Execute the functions that appear on the display. (If the display goes out, pressing any of the operating buttons to light up the display. The home screen will appear.)

How to read LED Indicators
Green : Running grid-tied operation
Red : Running stand-alone operation
Flashing red : Automatically stopped
Lights OFF : Grid-tied operation manually stopped
Stand-alone operation manually stopped
Grid-tied operation is on standby
Stand-alone operation is on standby



RUN/STOP Button

This button will not operate if there is a grid outage, no solar power available, and the battery is not charged (drained, disconnected, or stopped due to malfunction).

How to read RUN/STOP Button
GRID-TIED MODE : Green(SELL)
: Orange(BUY)
STAND-ALONE MODE:Green
Others : Lights OFF

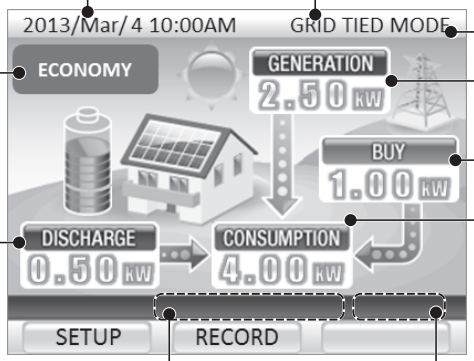
Display The home screen is the screen that is typically displayed while the Hybrid Solar Inverter is running.

NOTE The indicated amount of GENERATION, CHARGE/DISCHARGE, BUY/SELL, and CONSUMPTION are not completely accurate. Use them as a reference. (This product is not subjected to regulations under the Weights and Measures Law.)

Time/Date
Displays the current time, day, month and year.

Operating Status
Displays the current operating status of the inverter.

Operating Mode
Displays the current operating mode during grid-tied operation (MAX POWER EXPORT Mode, ECONOMY Mode, HOME BACKUP Mode and PEAK CUT Mode.)



Controlled Output Status Display
Displays the controlled output status of the inverter as a message: “VOLTAGE REGULATION,” “TEMPERATURE SUPPRESSION” or “TEMPERATURE · VOLTAGE SUPPRESSION”.
A message will not appear during normal operation.

Error Code
Displays an error code if an error occurs.
A code will not appear during normal operation.

A GENERATION 5.50 kW — Displays the amount of solar power the system is currently generating.

B
- CHARGE 1.50 kW
- DISCHARGE 1.50 kW
- STANDBY --.-- kW
- FAULT --.-- kW

Displays the amount of power charged in or discharged from the storage battery. When the battery is fully charged, “CHARGE” is displayed, when the battery is discharged, “DISCHARGE” is displayed and when the battery stops charging/discharging, “STANDBY” is displayed. In addition, if a fault occurs with the storage battery, “FAULT” is displayed.

C
- BUY 1.50 kW
- SELL 1.50 kW

Displays the amount of power that is sold to or purchased from the power company. When power is sold, “SELL” is displayed and when the power is purchased, “BUY” is displayed.

D CONSUMPTION 1.50 kW — Displays the amount of power that is currently consumed in the home.

Hybrid Solar Inverter Operating Status

GRID CONNECT→… Preparing to start grid-tied operation.
GRID TIED MODE … Running normally off the grid.
MANUAL GRID STOP … Grid-tied operation was manually stopped.
AUTOMATIC STOP … Operation was stopped due to an error, etc.
STAND-ALONE→ … Preparing to start stand-alone operation.
STAND-ALONE MODE … Solar power and battery power are being supplied to the Backup Load Panel for stand-alone operation.
STAND-ALONE STOP … Stand-alone operation was manually stopped.

Notes on Usage

The Hybrid Solar Inverter is for outdoor use.

■Secure a location for the inverter that meets the following requirements.

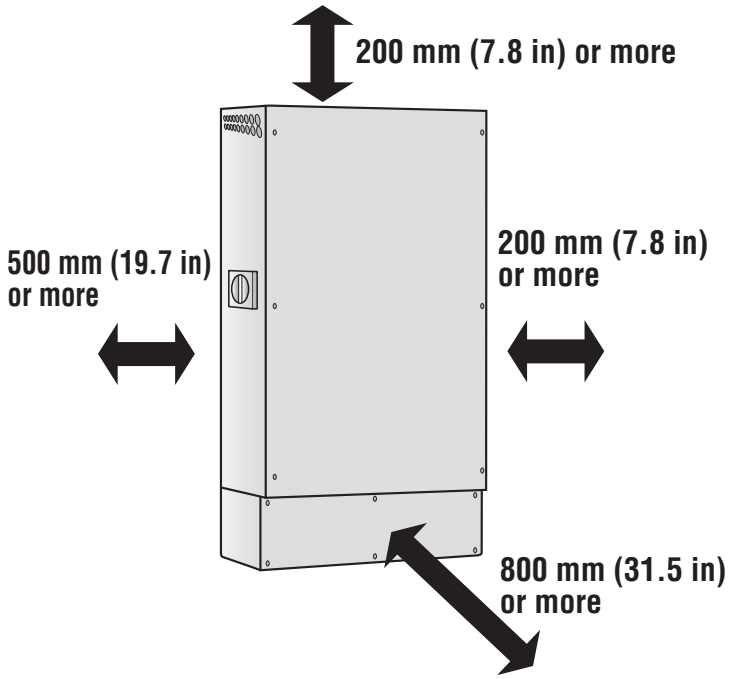
- Where there is a minimal amount of oily smoke and dust.
- Where not exposed to corrosive gases or liquids.

■Do not use electric products that are vulnerable to electrical noise near the inverter.

Those products may not work properly.

■Do not use radios, cellphones or receivers of any kind near the inverter so as to avoid signal reception interference.

■Ensure a minimum of 800 mm (31.5 in) in front, a minimum of 500 mm (19.7 in) on the left, and 200 mm (7.8 in) above and on the right of the inverter for equipment checks and maintenance.



IMPORTANT INFORMATION to KNOW

■Generated power

The rated output of solar panels is based on certain conditions. The actual amount of output will vary according to the intensity of sunlight, surrounding temperature and the direction and angle at which the panels are installed. Therefore, even on clear days, the rated output may not always be generated. On clear days, the generated power should be about 70 to 80% of the rated output.

■Daily operation is not necessary.

- The very first time the inverter is used, it can be started by pressing the [RUN/STOP] button.
- Once the inverter starts up, it runs automatically in the set operating mode according to the amount of sunlight, time of day, battery charge, etc.
- At night, when it is raining, or when inverter output is insufficient to run connected appliances because the battery charge is low, power is automatically supplied from the commercial power grid.

NOTE

- **The inverter stops during the daytime if an outage occurs on the commercial power grid.**
- **The inverter occasionally makes noise during operation. This is normal.**

■When a power outage occurs, the inverter automatically engages stand-alone operation.

Although the inverter is automatically supplied by stored battery power when a power outage occurs, the power supply is briefly interrupted when the inverter switches over to stand-alone operation.
Once the commercial power grid operation is restored after an outage, the inverter automatically resumes grid-tied operation.

Before Using the Inverter for the First Time

Before using the inverter for the first time, have the installer perform the operations described below in the "Preparations" and "System Startup" sections.

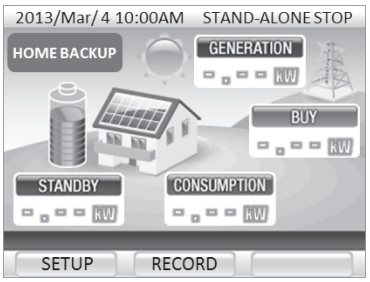
Preparations

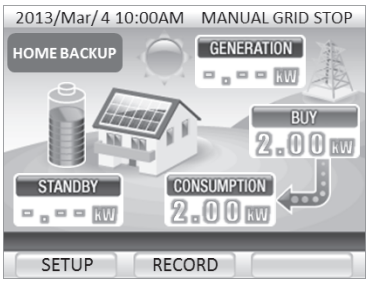
Set the grid-tied breaker in the Electrical Service Entrance to the ON position.

System Startup

1 Check the operating status of the inverter.

When the grid-tied breaker is set in the ON position, the display indicates that grid-tied operation has been manually stopped as shown in the image on the right.

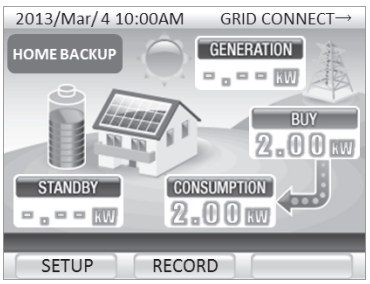


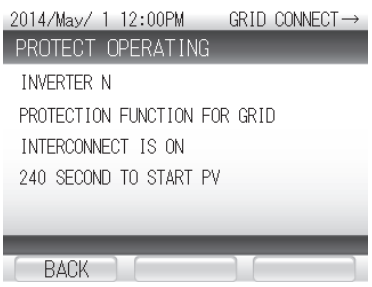


2 Start inverter operation.

Press the [RUN/STOP] button. "GRID CONNECT→" appears on the display for a few minutes before grid-tied operation starts.

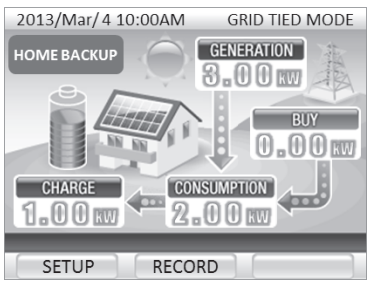
"GRID CONNECT→" appears on the display for a few minutes before grid-tied operation starts.





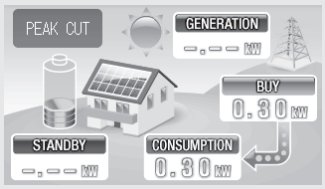
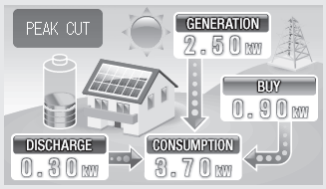
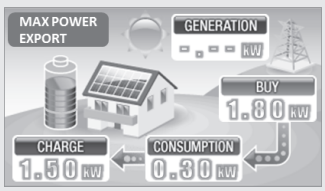
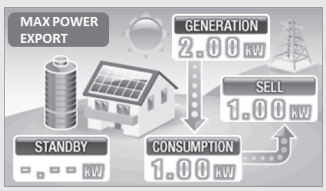
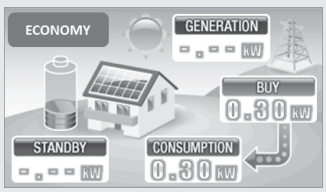
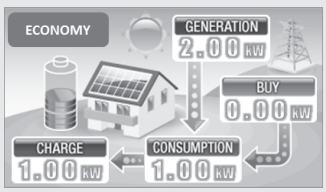
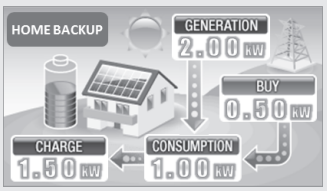
NOTE

When grid-tied operation resumes after the commercial power grid restores from an outage, "GRID CONNECT→" appears on the display for a few minutes.



Grid-tied Operation

Daily Operation

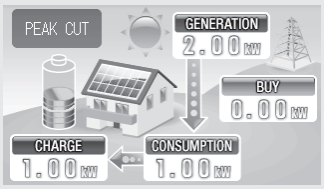
Time of Day	Night	Morning
PEAK CUT Mode	Remote Controller (Example)  If there is an insufficient amount of sunlight, charging/discharging is stopped. *2, 4	Remote Controller (Example)  The storage batteries are discharged to supplement power shortages (Discharges in order to cut peak). *2, 3, 4, 7
MAX POWER EXPORT Mode	Remote Controller (Example)  The storage batteries are fully charged during the nighttime hours. *1, 4	Remote Controller (Example)  Once the storage batteries are full, charging/discharging is stopped until the daytime hours. *1, 4
ECONOMY Mode	Remote Controller (Example)  If there is an insufficient amount of sunlight and the storage batteries are low, charging/discharging is stopped. *2, 4	Remote Controller (Example)  If the amount of sunlight increases, surplus solar power is used to charge the storage batteries. *4, 5, 6, 8
HOME BACKUP Mode (Initial mode)		Remote Controller (Example)  The storage batteries are charged until full regardless of the time of day or the amount of sunlight. *8

*1. Daytime and nighttime hours must be set when installing the inverter.
*2. The emergency backup charge is not discharged.
*3. Battery discharging stops when the amount of sunlight increases and power is sold to the power company.
*4. The storage batteries are charged whenever the emergency backup charge is low.

Daytime

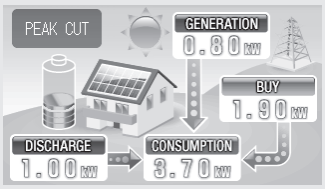
Evening

Remote Controller (Example)



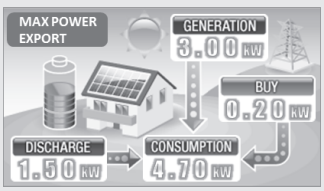
If the amount of sunlight increases, surplus solar power is used to charge the storage batteries. *4, 5, 6, 8

Remote Controller (Example)



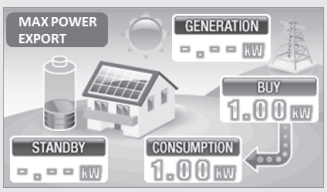
The storage batteries are discharged to supplement power shortages (Discharges in order to cut peak). *2, 3, 4, 7

Remote Controller (Example)



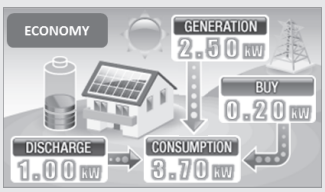
The storage batteries are discharged to supplement power shortages (when power is purchased from the power company) during the daytime hours up until the nighttime hours begin. *1, 2, 3, 4, 7

Remote Controller (Example)



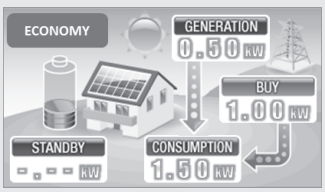
If the storage batteries run low, charging/discharging is stopped until the nighttime hours. *1, 2, 4

Remote Controller (Example)



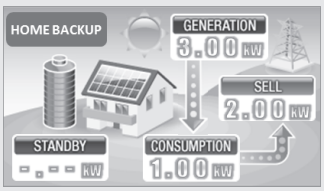
The storage batteries are discharged to supplement power shortages (when power is purchased from the power company). *2, 3, 4, 7

Remote Controller (Example)



If there is an insufficient amount of sunlight and the storage batteries are low, charging/discharging is stopped. *2, 4

Remote Controller (Example)



Though the storage batteries are full, charging/discharging is stopped as a safeguard against power outages on the commercial power grid.

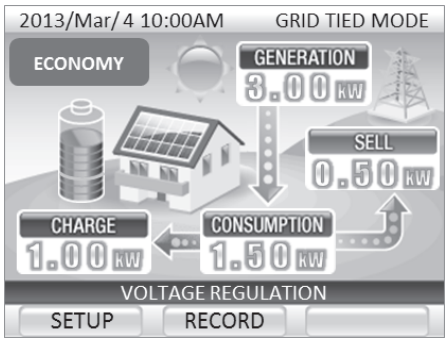
*5. The storage batteries do not charge further once full.
*6. Surplus solar power that cannot be stored in the power batteries is sold.
*7. Even while the storage batteries are discharging power, 0.2 kW or more power is purchased from the power company.
*8. Even while solar power is used to charge the storage batteries, power is sold and purchased according to power consumption in the home.

Grid-tied Operation

Controlled Output

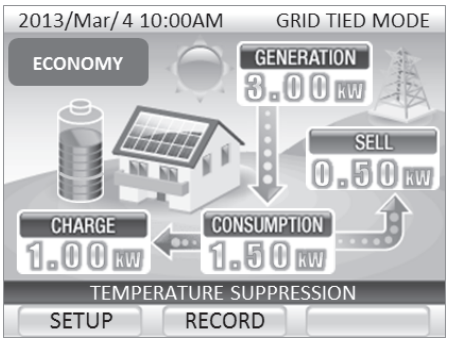
If “VOLTAGE REGULATION” appears on the Display

Excessively high voltage from the commercial power grid can harm electric appliances. If “VOLTAGE REGULATION” appears on the Remote Controller, the inverter is temporarily regulating output to prevent voltage from rising.
This message disappears once the voltage returns to normal.



If “TEMPERATURE SUPPRESSION” appears on the Display

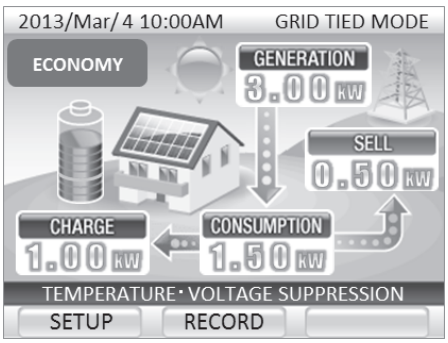
Excessively high temperatures inside the inverter can harm the equipment. If “TEMPERATURE SUPPRESSION” appears on the Remote Controller, the inverter is temporarily regulating output regardless of the surrounding temperature, to prevent temperature from rising.
This message disappears once the temperature returns to normal.



If “TEMPERATURE·VOLTAGE SUPPRESSION” appears on the Display

- Both “TEMPERATURE SUPPRESSION” and “VOLTAGE REGULATION” may be displayed at the same time. In that case, the display reads “TEMPERATURE·VOLTAGE SUPPRESSION”.

- If “TEMPERATURE SUPPRESSION,” “VOLTAGE REGULATION” OR “TEMPERATURE·VOLTAGE SUPPRESSION” often appear on the display or remain on the display for long periods of time, contact the service center.



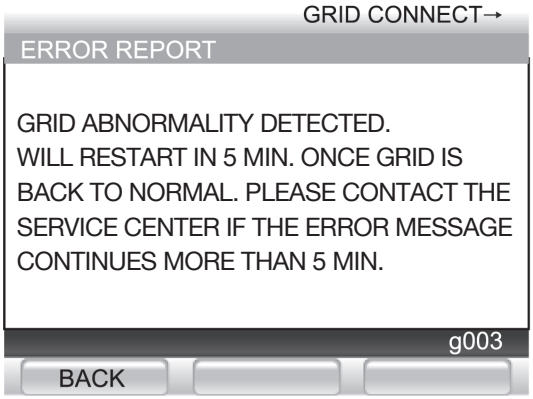
About Voltage Regulation

If a large number of households use their electricity at the same time, the power supply voltage may drop to a level set by the power company. Inversely, voltage can rise when electricity consumption decreases.
If the voltage on the commercial power grid exceeds the level set by the power company, the inverter regulates the amount of generated power in order counter the voltage rise on the grid, and displays “VOLTAGE REGULATION.”
Once voltage on the commercial power grid returns to normal, the “VOLTAGE REGULATION” message disappears and the inverter resumes normal operation.
If “VOLTAGE REGULATION” often appears on the display, contact the service center.

If an Outage Occurs on the Commercial Power Grid

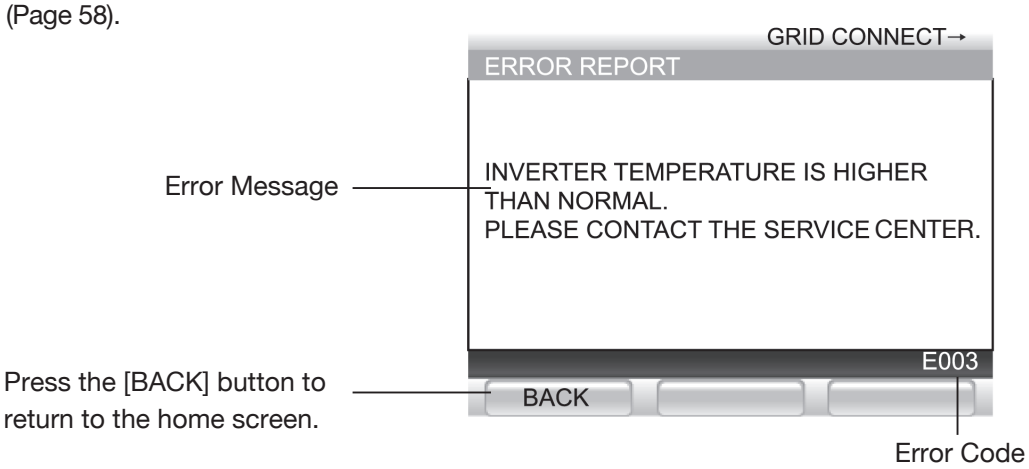
If an outage occurs on the commercial power grid, an error message and error code are displayed on the Remote Controller.

In an outage on the commercial power grid, the inverter temporarily stops operating. However, after about 10 seconds, it engages stand-alone operation and starts supplying power again. A few minutes after power from the commercial power grid is restored, the inverter automatically restarts grid-tied operation. (You do not need to press the [RUN/STOP] button.)



Equipment Troubleshooting

If there is an equipment failure and an error message and error code displayed are on the Remote Controller, resolve the issue as explained in “Troubleshooting” (Page 58).



If the Inverter Is Shutdown for Long Periods of Time

If the inverter does not run for a long period of time whether because grid-tied operation or stand-alone operation was manually stopped, an outage has occurred on the commercial power grid, or due to an issue with the equipment, the equipment, the storage batteries are not charged. If left in this condition, the switch inside the storage battery automatically shuts off to prevent over-discharging. Once this switch shuts off, servicing is required before the inverter can be used again.
If operation cannot be restored after trouble occurs, contact the service center.

Stand-alone Operation (In a Power Outage)

Stand-alone Operation Precautions

WARNING

PROHIBITED

Do not connect the electric appliances listed below to the stand-alone outlets.

The amount of electric power generated during stand-alone operation varies according to weather and storage battery charge. The inverter stops stand-alone operation if it generates less electric power than that consumed by the electric appliances connected to its stand-alone outlets. Do not use the appliances listed below with the inverter, as personal injury or property damage may occur if the power shuts off.

- Any kind of medical or home security equipment.
- Desktop computers and other information-related equipment and peripherals.
- Other equipment that may cause personal injury or property damage if the power shuts off.

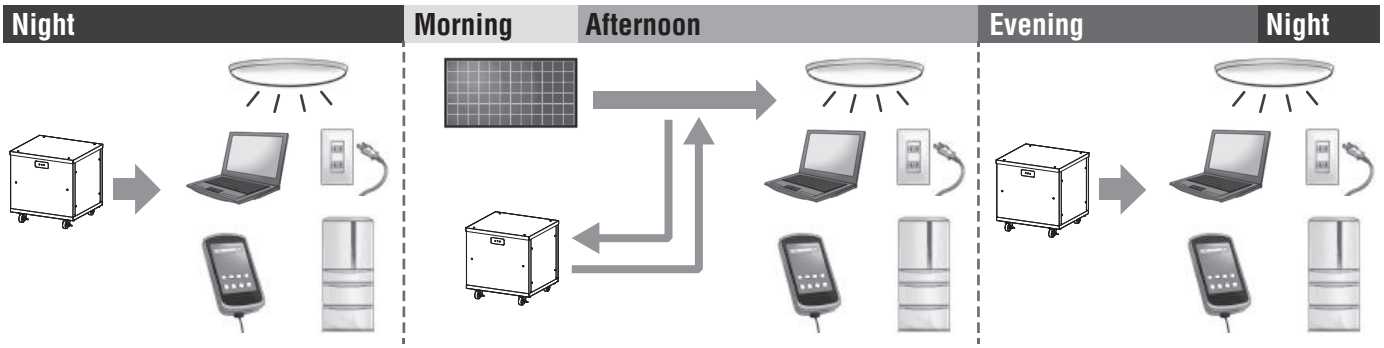
CAUTION

MANDATORY

- **Confirm the Backup Load Panel, related wiring, and electrical fixtures are in good safe condition before commencing stand-alone operation.**
- **If strange odors or noises are detected after starting stand-alone operation, promptly stop stand-alone operation.**

- **Use the stand-alone outlets.**
  During stand-alone operation, power is supplied only to the stand-alone outlets. During a power outage, other outlets cannot be used.
- **Stand-alone operation is automatically engaged if a power outage occurs.**
- **When power is supplied to electric appliances connected to the stand-alone outlets, inrush current may trip protective devices and prevent the appliances from running.**
  There are some cases where the motors or some products which require massive amounts of electricity cannot be used. For more details please contact the distributor.
- **There is a limit to the amount of power that can be drawn at one time.**
  The maximum amount of current that can be drawn during stand-alone operation is 16.7 A in THE-S55P3BB-USW, 27.5 A in THD-S55P3BB-US, 16.7 A in THD-S55P3B-US. Only connect electric appliances that consume less than the maximum amount.
  If the electric appliances connected to the stand-alone outlets consume more power than is generated by the PV system and supplied by the storage batteries, stand-alone operation shuts down.
  Many lighting fixtures and motor-driven appliances (e.g., vacuum cleaners. refrigerators, dryers, etc.) draw a large current when turned on, and consequently will not run. Using these appliances may also trip protective circuits and keep them from running.
- **Electric appliances running off stand-alone operation may shut off.**
  Power output from the PV system and storage batteries can be unstable due to weather conditions and charge. If output drops, stand-alone operation stops automatically.
- **If stand-alone operation automatically stops due to high power consumption, the electric appliances that were running stop temporarily. Although stand-alone operation resumes automatically when power consumption decreases, connected appliances that have protective circuits are prevented from resuming operation.**

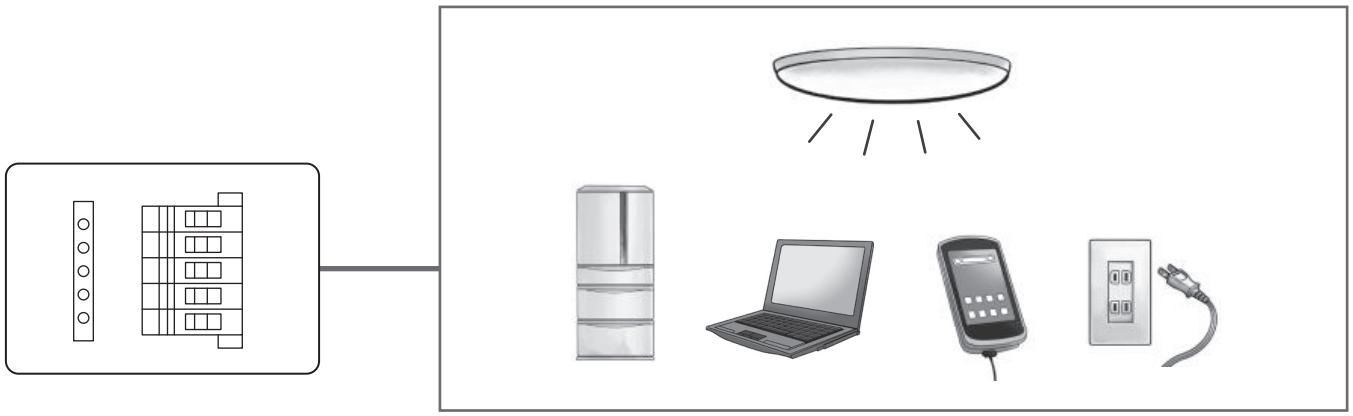
During the morning and daytime hours, the solar panels and storage batteries cooperatively supply the electric power necessary for household consumption. Surplus power is used to charge the storage batteries. During the evening and nighttime hours, power is supplied by the storage batteries.



Recharging the Storage Batteries using the Solar Panels

Electric power generated by the solar panels can be efficiently stored in the storage batteries. This is useful during extended power outages that last several days.

Electric Appliances Connected to Stand-alone Outlets during an Outage Can Be Used without Plugging Them Back in.



Circuitry has been designed to enable lighting fixtures, communication equipment and other electric appliances to be used in the event of a power outage without having to unplug and plug them back in again.

NOTE

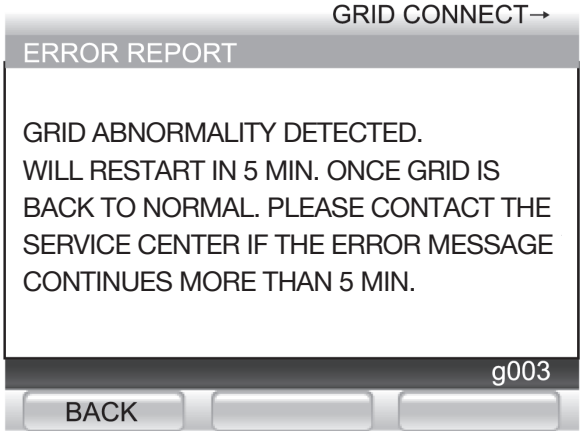
- **The desktop PC must be connected to the UPS as power will be temporarily disrupted when switching to stand-alone operation.**
- **At extremely low SOC, the battery output power may be slightly decreased.**

Stand-alone Operation (In a Power Outage)

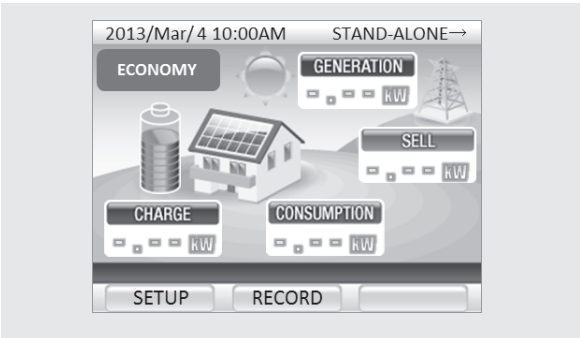
Stand-alone Operation Startup (Power Outage)

After a power outage occurs, an error message appears on the screen and the inverter automatically switches from grid-tied operation to stand-alone operation.

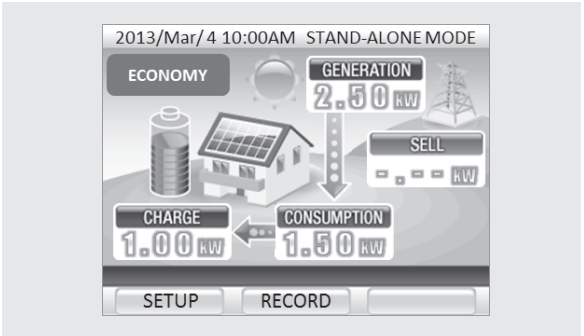
1 **After a power outage has been detected, error code "gxxx" appears on the Remote Controller.**



2 **After a power outage has been detected, the Remote Controller automatically changes the operating status message to "STAND-ALONE→ ".**



3 **After about 10 seconds, the Remote Controller automatically changes the operating status message to "STAND-ALONE MODE".**

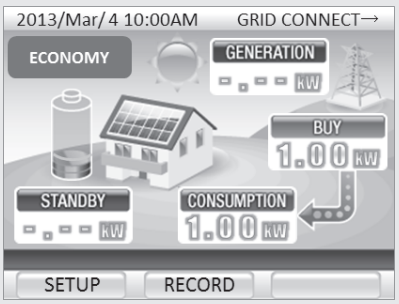


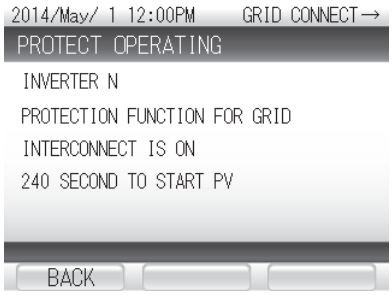
The status LED will light up red.
Then the electrical appliance which are connected to the back-up breaker box can be powered.

Restoration of Grid-tied Operation

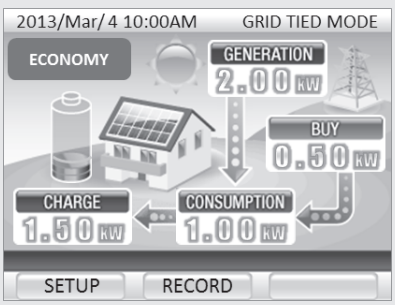
If power is restored on the commercial power grid during stand-alone operation, the inverter automatically reengages grid-tied operation.

1 **Once input from the commercial power grid is detected, "GRID CONNECT→" appears on the Remote Controller for a few minutes.**





2 **Grid-tied operation resumes a few minutes afterwards.**



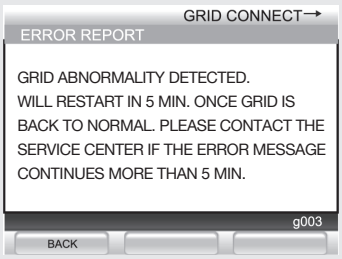
The status LED lights up green.

Stand-alone Operation (In a Power Outage)

Operation during a Power Outage

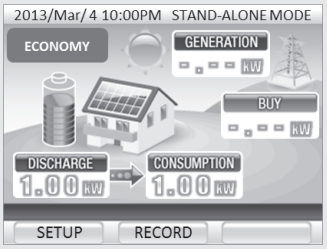
Power Outage Occurs

Remote Controller (Example)



If a power outage occurs, the inverter automatically stops operating then starts stand-alone operation.

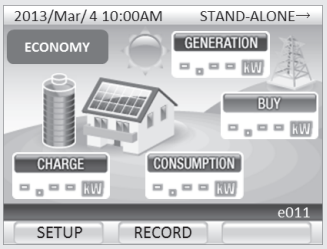
Remote Controller (Example)



When stand-alone operation starts, power is supplied to the stand-alone outlets starts.

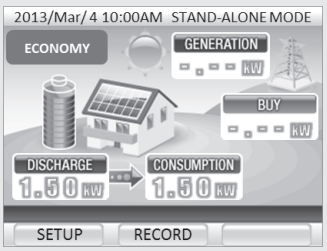
Daytime

Remote Controller (Example)



If power consumption exceeds power output, stand-alone operation temporarily stops. *2

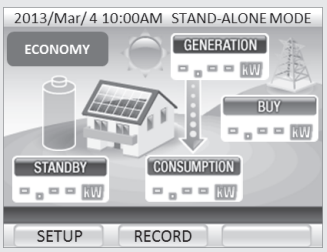
Remote Controller (Example)



If there is an insufficient amount of sunlight, power is supplied entirely from the storage batteries. *3

Morning

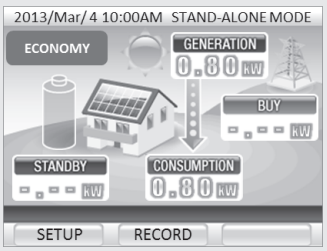
Remote Controller (Example)



Once there is a sufficient amount of sunlight, the power supply can be restored.

Morning - Afternoon

Remote Controller (Example)

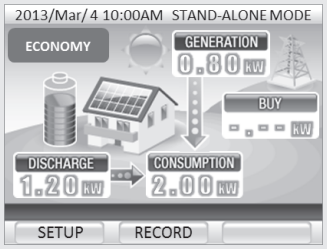


When the storage battery charge is low, power is supplied entirely from the solar panels.

*1. The storage batteries do not charge further once full.
*2. About 1 min after power consumption decreases, stand-alone operation resumes.
*3. Output is more unstable than usual when the storage batteries have no charge.

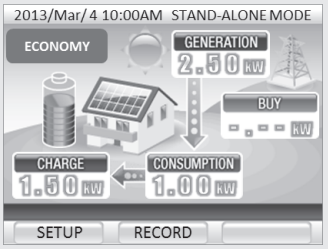
Morning - Afternoon

Remote Controller (Example)



The storage batteries are discharged to supplement power shortages when there is an insufficient amount of sunlight.

Remote Controller (Example)



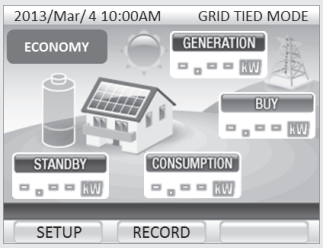
If the amount of sunlight increases, surplus solar power is used to charge the storage batteries. *1

Evening - Nighttime

Remote Controller (Example)

If the storage batteries have no charge and the inverter is unable to supply power, the Remote Controller shuts off.

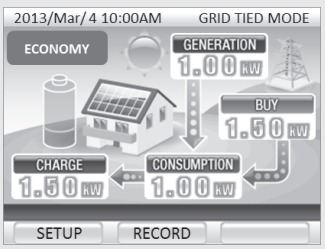
If power is restored on the commercial power grid …



If power is restored on the commercial power grid while the Remote Controller is out, the Remote Controller indicates “GRID TIED MODE” as the operating status.

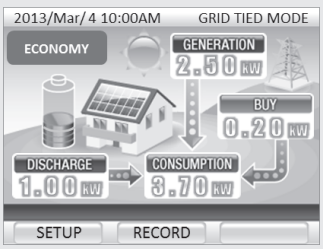
Commercial Power Grid Restoration

Remote Controller (Example)



Once power is restored on the commercial power grid and the inverter engages grid-tied operation, the amount of power used during the power outage is recharged to the storage battery.

Remote Controller (Example)

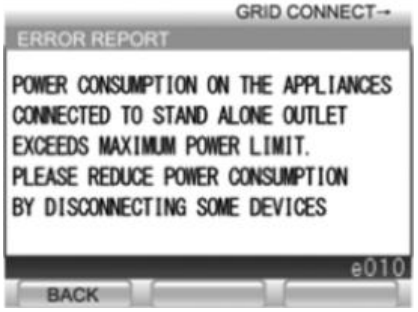


Once the storage batteries are fully charged, grid-tied operation starts from the set operating mode.

Stand-alone Operation (In a Power Outage)

In case of stand-alone over current error (e010)

- Some appliances draw too much inrush current at starting, which exceeds output capacity of the inverter. This may cause of an e010 error.
- In case of this error, the inverter might be recovered by disconnecting appliances and/or turning off the switch on Backup Load Panel.
- If this error message appears repeatedly, please consider to select the backup appliances again.
  (Please be sure to confirm switching operation at installation.)



In case of stand-alone overload error (e009)

- An e009 error means the total power consumption (VA) on the appliances connected to stand-alone outlet exceeds maximum power limit.
- In case of this error, the inverter might be recovered by reducing power consumption by disconnecting some devices.
- Please confirm the maximum power consumption (VA) of connected appliances will keep within maximum power limit* at all time. Especially the consumption of a refrigerator, furnace or heater, is fluctuating.
- The inverter cannot keep maximum power limit* when the less charging or the degradation of battery.

* VA: Corrected power consumption (W) by considering power factor.

THE-S55P3BB-USW	4.0 kVA
THD-S55P3BB-US	3.3 kVA
THD-S55P3B-US	2 kVA

The inverter may stop at night time.

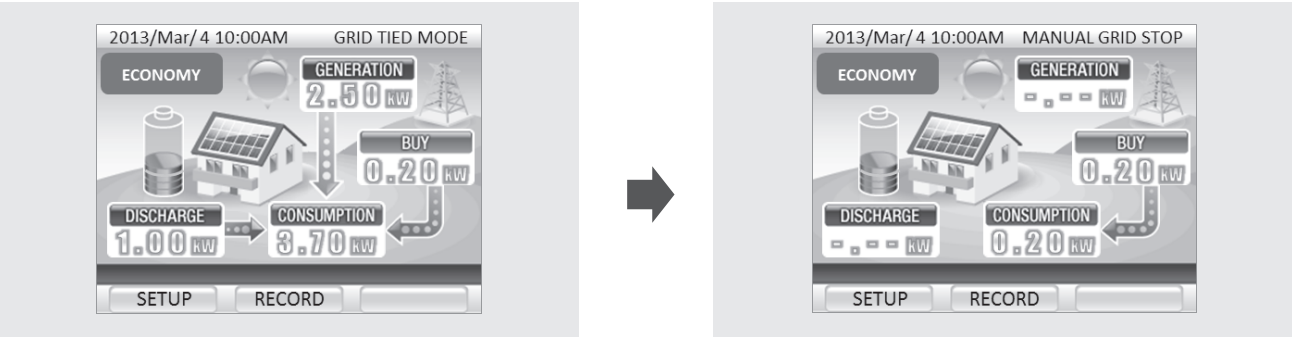
When the battery is fully discharged during no PV generation period such as night time, the inverter will stop in order to avoid self-consumption and turn to manual stop status.

In case that the inverter is on manual stop status,the battery can be charged automatically from PV generation, but the inverter can not restart AC output automatically. So it is necessary to push [RUN/STOP] button of remote controller to start AC output after battery is charged or grid recovers.

How to Stop Inverter Operation

To Stop the Hybrid Solar Inverter

Press and hold the [RUN/STOP] button on the Remote Controller for 5 seconds or more.



NOTE

•Standby power is consumed even while the inverter is stopped.
•Do not leave the grid-tied breaker in the Electrical Service Entrance in the OFF position for long periods of time.

If the storage batteries have no charge and are not able to be recharged for two or more consecutive days, the switch inside the storage battery automatically shuts off to prevent over-discharging. Once the switch shuts off, servicing is required before the storage battery can be used again.
If the inverter needs to be shutdown for a long period of time or if the grid-tied breaker in the Electrical Service Entrance is in the OFF position for a long period of time, contact the vendor, an electrician, or the customer service center.

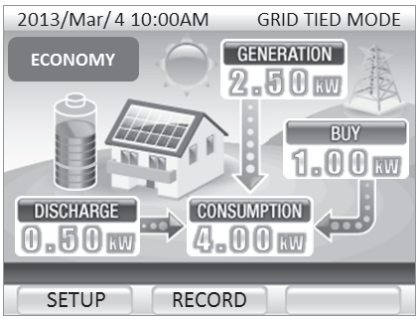
To Shutdown the System

To shut down the system before long absences or moves, servicing is required to turn OFF the switches inside the inverter that control the PV system and storage battery. Contact the vendor, an electrician, or the customer service center.

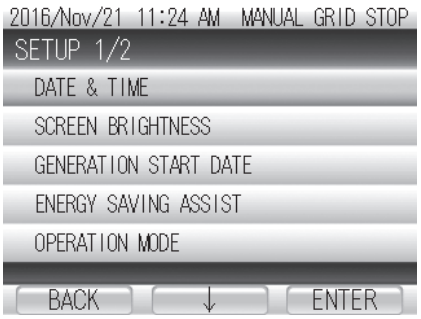
Settings

[1]Setting the Date and Time

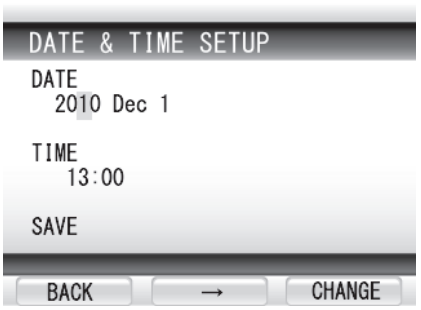
1 **Press [SETUP] on the home screen.**



2 **Select "DATE & TIME" using [↓] and press [ENTER].**

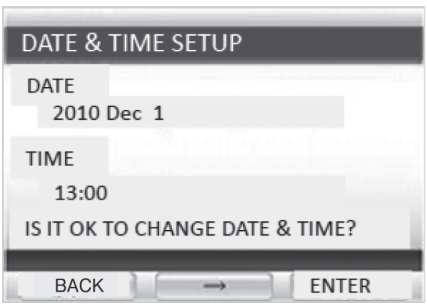


3 **Set the DATE and TIME.**
- Press [CHANGE] to change numeric values.
- Press [→] to move to the next digit.



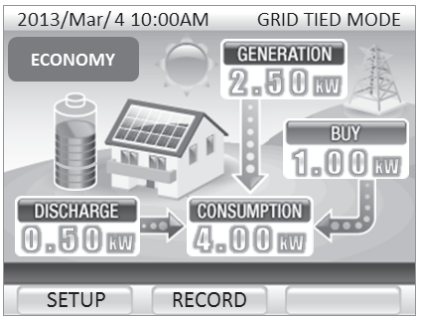
4 **After entering the DATE and TIME, select "SAVE" using [→] and press [ENTER].**

5 **Check the settings on the display and press [ENTER].**
- The newly set date and time are entered and the display returns to the SETUP screen.



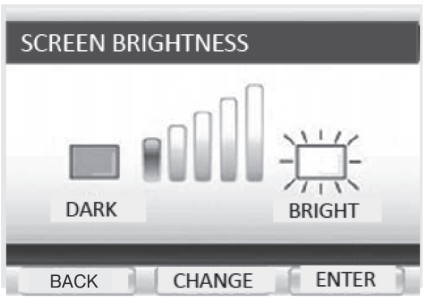
[2]Setting the Screen Brightness and Lighting Time

1 **Press [SETUP] on the home screen.**

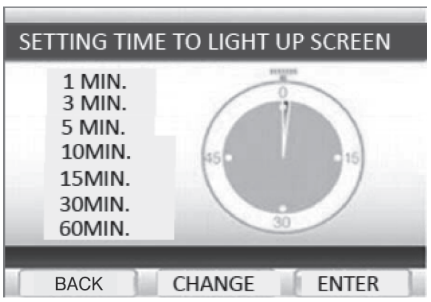


2 **Select "SCREEN BRIGHTNESS" using [↓] and press [ENTER].**

3 **Select the screen brightness using [CHANGE] and press [ENTER].**

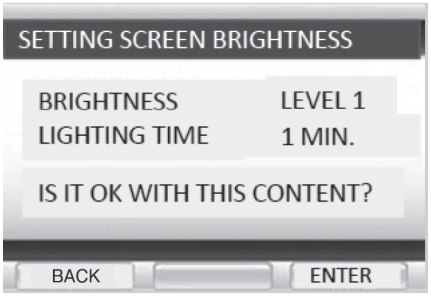


4 **Select the lighting time using [CHANGE] and press [ENTER].**



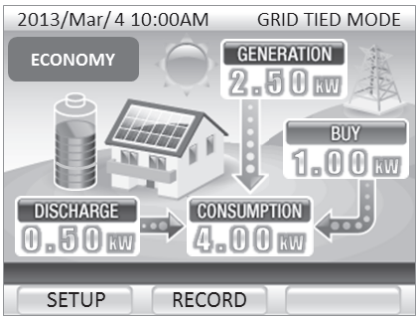
5 **Check the settings on the display and press [ENTER].**

- The newly set screen brightness and lighting time are entered and the display returns to the SETUP screen.

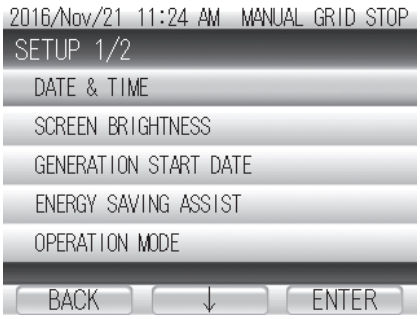


[3]Setting the Generation Start Date

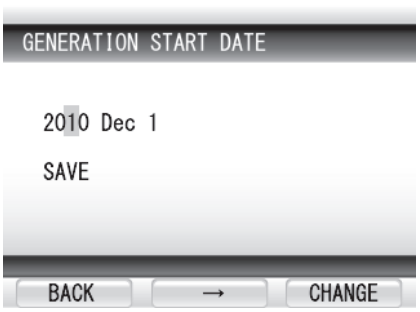
1 **Press [SETUP] on the home screen.**



2 **Select "GENERTION START DATE" using [↓] and press [ENTER].**



3 **Input the "GENERATION START DATE."**
- Press [CHANGE] to change numeric values.
- Press [→] to move to the next digit.

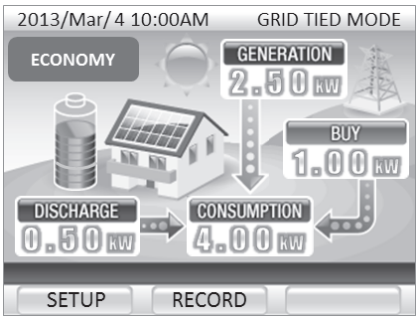


4 **After entering the GENERATION START DATE, select "SAVE" using [→] and press [ENTER].**

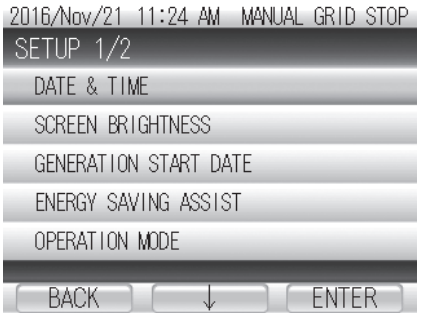
5 **Check the setting on the display and press [ENTER].**
- The newly set generation start date is entered and the display returns to the SETUP screen.

[4]Setting the Energy Saving Assist Target

1 **Press [SETUP] on the home screen.**



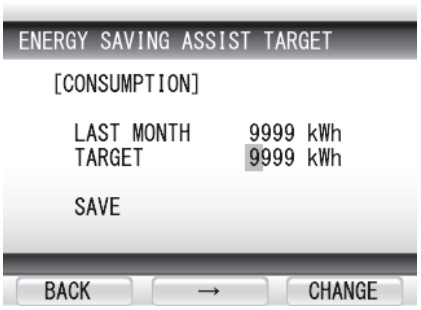
2 **Select "ENERGY SAVING ASSIST" using [↓] and press [ENTER].**



3 **Select the numeric value next to "TARGET" using [→].**

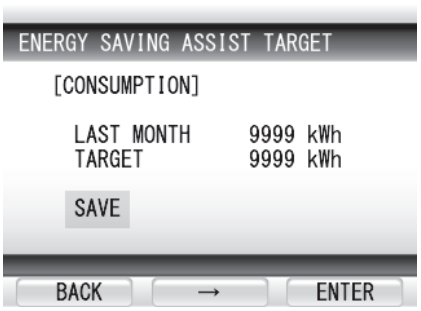
The cursor moves in the order of the 4th (highest) digit → 3rd digit → 2nd digit → 1st (lowest) digit → SAVE → 4th digit.

- Press [CHANGE] to change the numeric value at the cursor point.
- Press [BACK] to return to the SETUP screen without applying any setting changes.



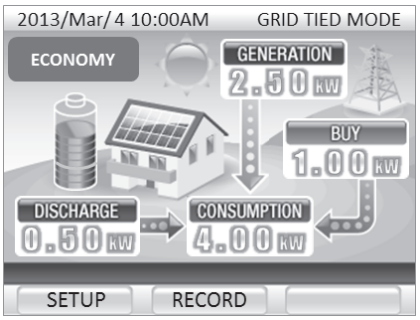
4 **Select "SAVE" using [→] and press [ENTER].**

- The newly set consumption target is entered and the display returns to the SETUP screen.

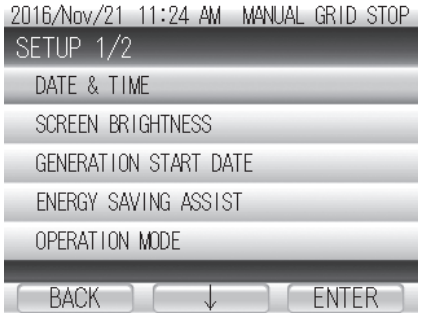


[5]Changing Operation Mode

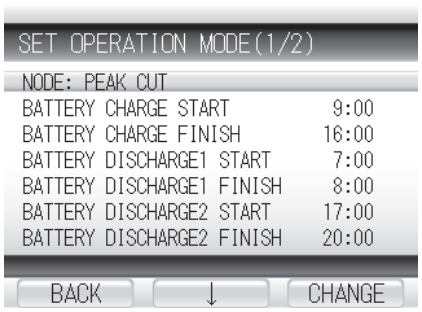
1 **Press [SETUP] on the home screen.**



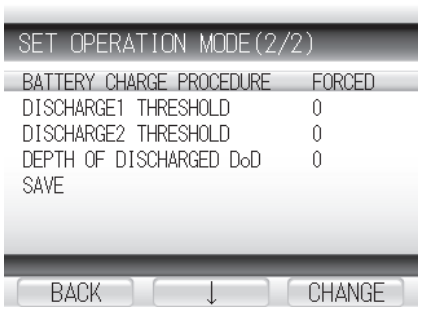
2 **Select "OPERATION MODE" using [↓] and press [ENTER].**



3 The operating mode changes in the following order of MAX POWER EXPORT Mode, ECONOMY Mode, HOME BACKUP Mode and PEAK CUT Mode by pressing [CHANGE] from the OPERATION MODE menu.*
The parameter changes between 0:00 and 23:00 by pressing [CHANGE] while BATTERY CHARGE START/FINISH or BATTERY DISCHARGE1 START/FINISH or BATTERY DISCHARGE2 START/FINISH is selected.



[EXCESS] or [FORCED] charging can be selected for the charging process.
Select a value between 0 to 10 for DISCHARGE1 THRESHOLD and DISCHARGE2 THRESHOLD.
The setting value is the target level.
The target level is for the purchasing power kW.
The Remote Control Panel shows different kW because it is set less than the target level.

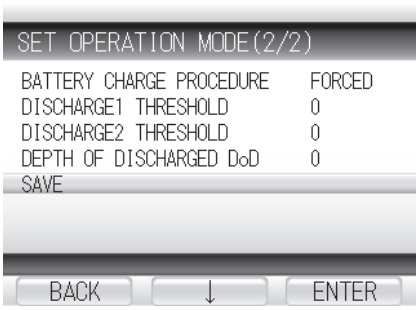


The DEPTH OF DISCHARGE (DOD) value changes between 0 and 5 by pressing [CHANGE].

* EXT-CTL Mode may be displayed depending on the setting at the installation, do not set EXT-CTL Mode.

4

Select "SAVE" and press [ENTER].



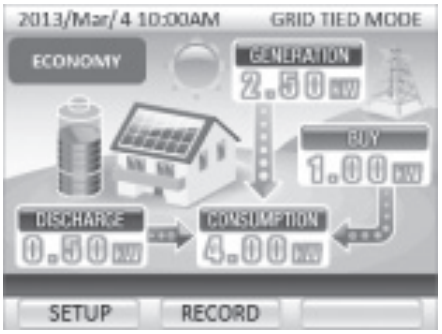
Propriety of setting in each mode are as follows.

MODE	CHARGE TIME	DISCHARGE1 TIME	DISCHARGE2 TIME	CHARGE PROCEDURE	DISCHARGE1 THRESHOLD	DISCHARGE2 THRESHOLD	DEPTH OF DISCHARGE
MAX POWER EXPORT	○	○	×	×	×	×	○
ECONOMY	×	×	×	×	×	×	○
HOME BACKUP	×	×	×	×	×	×	×
PEAK CUT	○	○	○	○	○	○	○

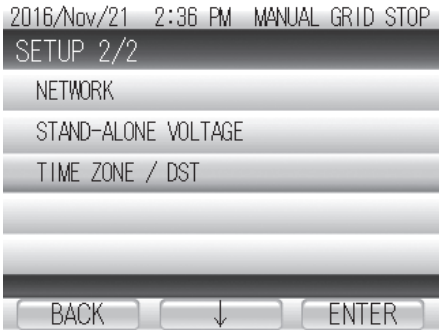
Settings

[6] Setting the Time Zone/DST

1 **Press [SETUP] on the home screen.**

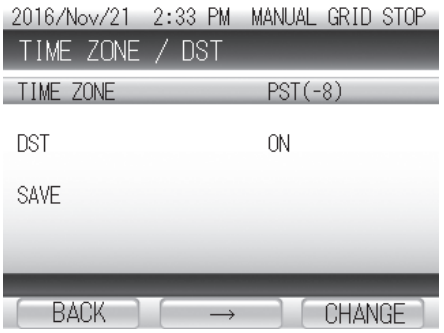


2 **Select “TIME ZONE/DST” using [↓] and press [ENTER].**

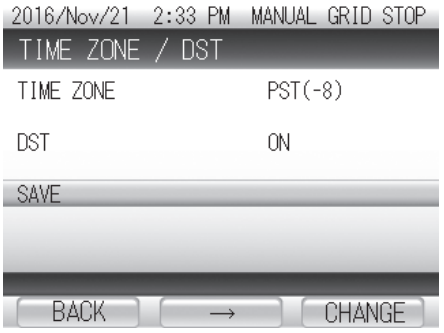


3 **Change the time zone using [CHANGE].**

- Select “DST” using [↓].
- Change the DST using [CHANGE].



4 **Select “SAVE” using [↓] and press [ENTER].**



Configuring the Connection to the Internet

Enabling the connection to the Internet allows remote controller software to be constantly updated to the most current state.

- Connect the remote controller to the Internet to perform the required update.
- You can check for the availability of updates by using [INFO] on the remote controller.

Connect to the Internet to enable REMOTE MONITOR.

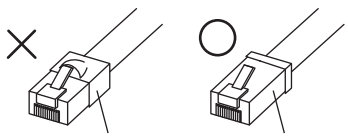
Internet Connection Procedure

■ Procedural sequence to enable the Internet connection

Preparation	Make sure you have the necessary equipment and proper environment. (Page 39)
Connection with the Internet service	Use LAN cables to connect to your Internet service equipment. (Page 40)
Network settings configuration	Configure the necessary settings to establish the Internet connection. (Page 41)
Setting REMOTE MONITOR, Communication test	Enable REMOTE MONITOR. Test the connection to confirm proper communication. (Page 46)
Internet connection is available for use	

1. Customer preparation

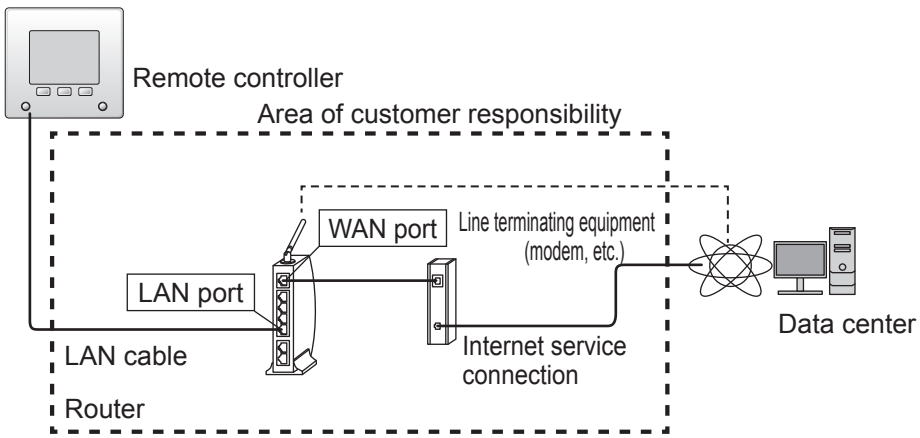
- **Broadband Internet connection**
  An always-on broadband connection such as a fiber optic connection, ADSL, or cable modem connection is required.
- **Broadband router**
  A broadband router is required.
- **LAN cable**
  Purchase generic LAN cables that satisfy the following requirements: Straight cables, no longer than 15 m (49.2 ft), category 5, 5e, or 6e.
  * Use LAN cables without boots.
    Cables with boots cannot be used because the boot makes contact with the mounting bracket.



Configuring the Connection to the Internet

2. Connecting devices

■ Network configuration schematic diagram

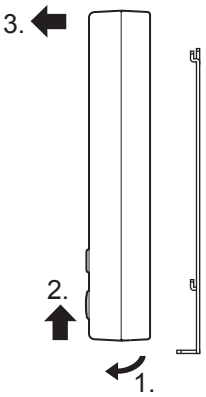


■ Connecting LAN cables (Connecting LAN cables between the remote controller and router)

1

Remove the remote controller.

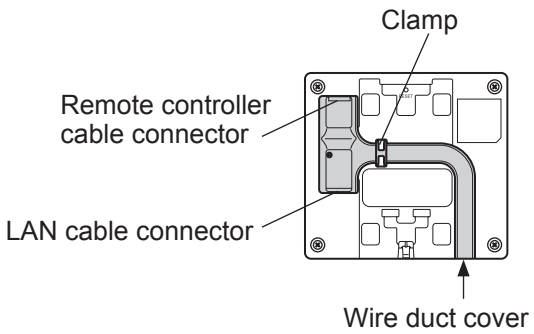
1. Pull the clips at the bottom of the remote controller toward you to separate the remote controller from the mounting bracket.
2. Once the clips have become detached, slide the remote controller upward.
3. Pull the remote controller toward you.



2

Install the LAN cable.

1. Connect the LAN cable with the LAN cable connector.
2. Close the clamp around the cable.
3. If running the cable along a wall, remove the wire duct cover.



3. Network settings

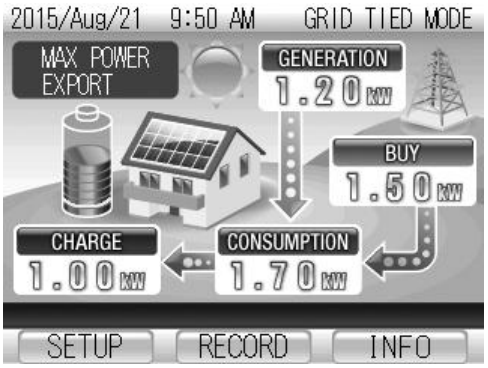
Use the remote controller to configure the settings necessary to connect to the Internet.
You have two options available to configure the settings.
1. Automatic configuration of network settings (enabling DHCP)
2. Manual configuration of network settings (disabling DHCP)

[1] Automatic configuration of network settings (enabling DHCP)

1

Press [SETUP] at the home screen.

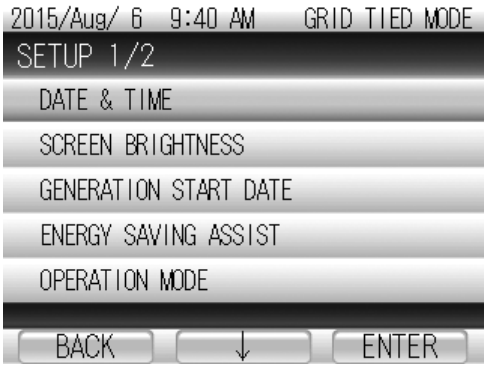
- This displays the settings menu screen.

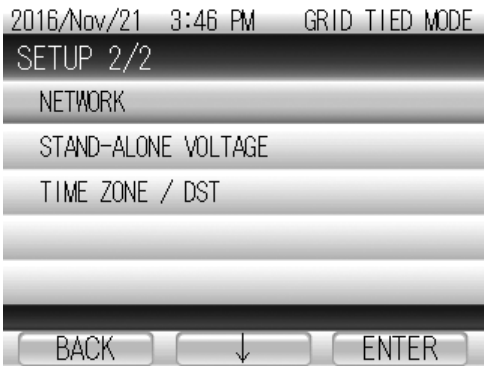


2

Press [↓] to select "NETWORK" and press [ENTER].

- This displays the network settings screen.

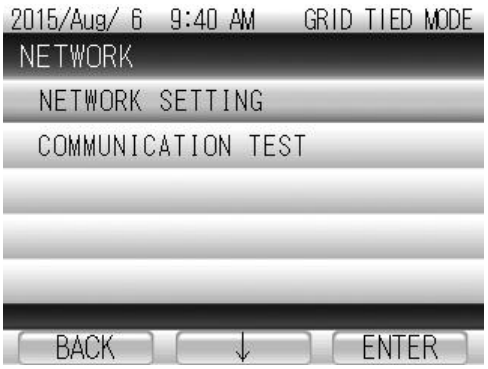




Configuring the Connection to the Internet

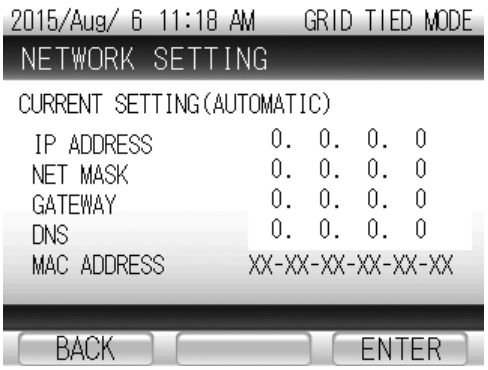
3 Press [↓] to select “NETWORK SETTING” and press [ENTER].

- This displays a screen of the current settings.



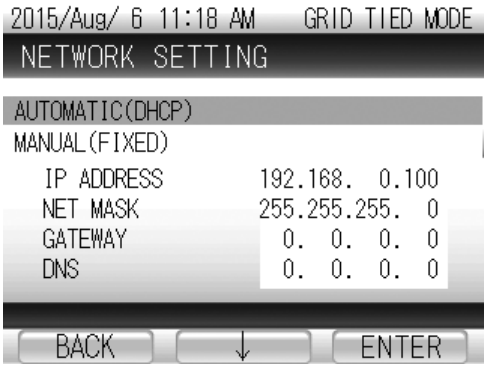
4 Press [ENTER] on the screen displaying the current settings.

- If your are configuring network settings for the first time, press [ENTER] to acquire network settings (address information).
  If all address information already appears on the screen, press [BACK] to return to the network settings screen.



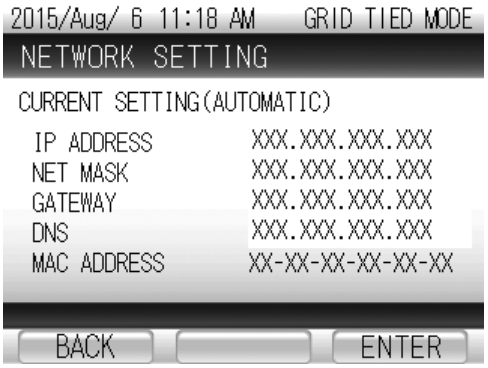
5 Press [↓] to select “AUTOMATIC (DHCP)” and press [ENTER].

- IP address and other information necessary for network communication is configured automatically.
- The acquired IP address and other settings information appears on the screen.



6 Check the acquired settings.

- Check the IP address and other information acquired automatically from the DHCP.
- The gateway and DNS information does not appear (was not acquired) if there is a wiring issue between the remote controller and the router or due to a communication failure. Refer to the next page for more information.
- Press [BACK] to return to the “NETWORK SETTING” screen.



This completes the procedure to perform automatic configuration of network settings.
Follow the procedure described in “4. Setting REMOTE MONITOR, Performing the communication test” (Page 46) to test the connection.

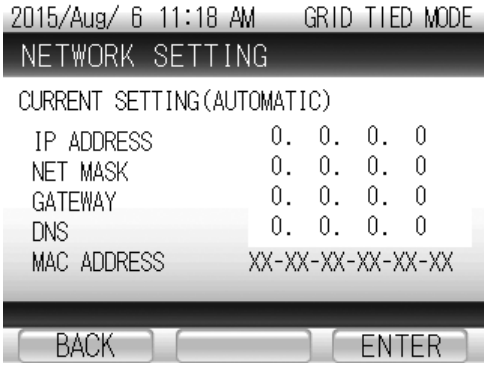
Displayed IP address, net mask, gateway, and DNS information is not correct

- All values on the screen are zeros

  This is likely due to a wiring issue between the remote controller and the router. Recheck the following items.

  Check Items

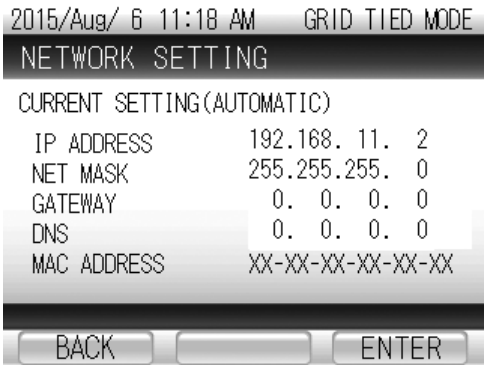
  - Make sure the LAN cable is securely connected to the connector in the remote controller.
  - Make sure the LAN cables are connected to the proper ports.



- The IP address and net mask appear but the gateway and DNS information does not appear

  This is likely due to a wiring issue between the remote controller and the router. Recheck the following items.

1. Check the configuration of your network settings.
2. Manually enter the gateway and DNS information used in your network environment.
   - You can choose to keep the address and other information automatically populated or you can manually enter the IP address, net mask, and other necessary network information applicable to your network environment configuration.
   - To manually configure these settings, refer to "Manual configuration of network settings" (Page 44).



Troubleshooting r-10 errors

- LAN cable is connected

  This is likely due to a wiring issue between the remote controller and the router. Recheck the following items.

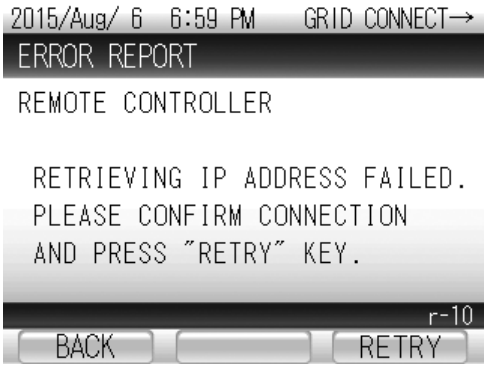
  Check Items

  - Make sure the LAN cable is securely connected to the connector in the remote controller.
  - Make sure the LAN cables are connected to the proper ports.

  Press [RETRY] to reattempt automatic configuration of network settings.

- LAN cable is not connected

  Press [BACK] to cancel the reattempt of automatic network settings configuration.

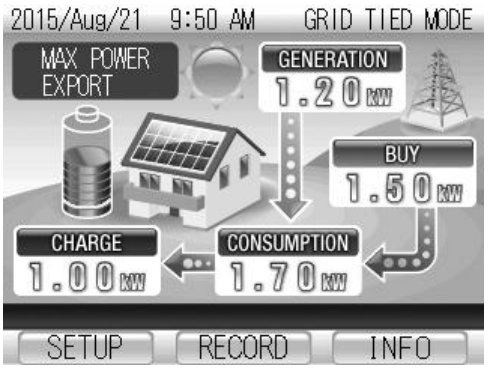


[2] Manual configuration of network settings (disabling DHCP)

Manually configure the network settings when you have configured your network yourself or when the router address is manually configured. Enter an IP address and other network information applicable to your network environment configuration.

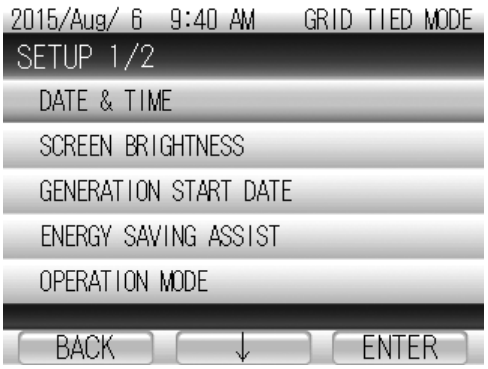
1 **Press [SETUP] at the home screen.**

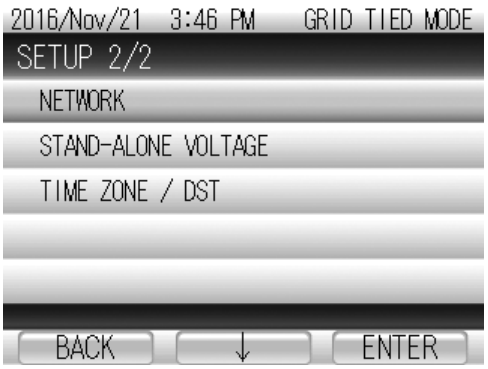
- This displays the settings menu screen.



2 **Press [↓] to select "NETWORK" and press [ENTER].**

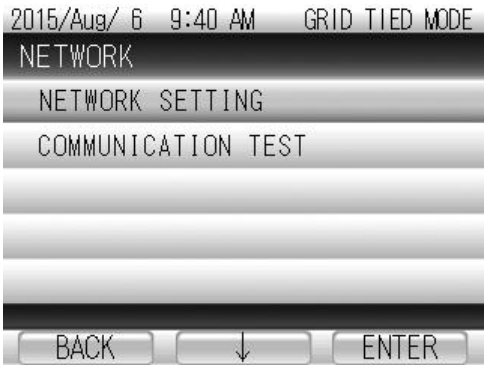
- This displays the network settings screen.





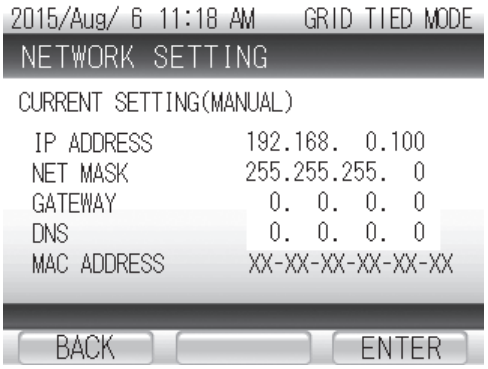
3 **Press [↓] to select "NETWORK SETTING" and press [ENTER].**

- This displays a screen of the current settings.



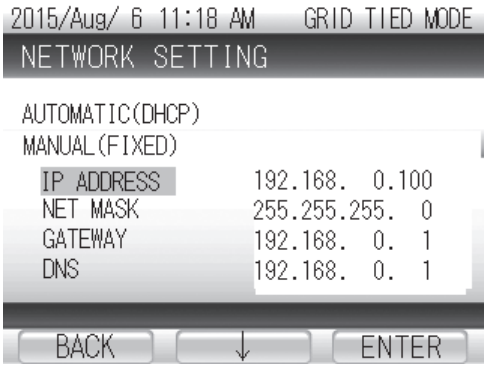
4 **Press [ENTER] on the screen displaying the current settings.**

- This displays the current network settings.



5 **Press [↓] to select the desired parameter and press [ENTER].**

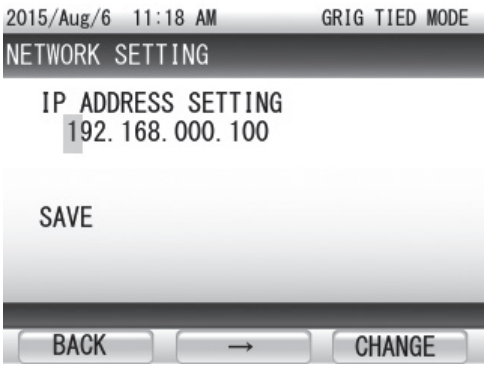
- This displays the screen to configure the selected parameter.
  * Net mask refers to the subnet mask and gateway refers to the default gateway.
  * When configuring network settings manually, the default values for the IP address and net mask appear on-screen. This IP address is not valid. Enter an IP address applicable to your network environment configuration.



6 **Configure the value of the selected parameter.**

- [CHANGE]: Changes the number highlighted by the cursor. (0-9)
- [→]: Moves the cursor to the next digit or parameter.

* Note that if the entered IP address is invalid, the cursor will not move to “SAVE” on the screen.

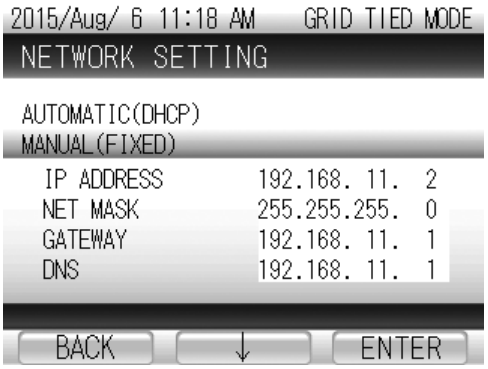


7 **After you have entered all values, move the cursor to “SAVE” and press [ENTER].**

- This changes the settings and returns to the network settings screen.
- Repeat steps 5 through 7 to configure other parameters as necessary.

8 **After all parameters have been configured, select "MANUAL (FIXED)" and press [ENTER].**

- This enables the entered settings and returns to the network settings screen.
  Move the cursor to "MANUAL" to change the button in the lower-right from [CHANGE] to [ENTER]. Press [ENTER] and confirm that the settings have been updated.



9 **Press [BACK] at the screen displaying the current settings.**

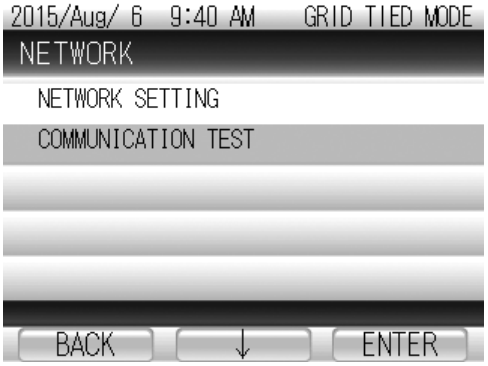
- This returns to the network settings screen.

This completes the procedure to perform manual configuration of network settings.
Follow the procedure described in "4. Setting REMOTE MONITOR, Performing the communication test" (Page 46) to test the connection.

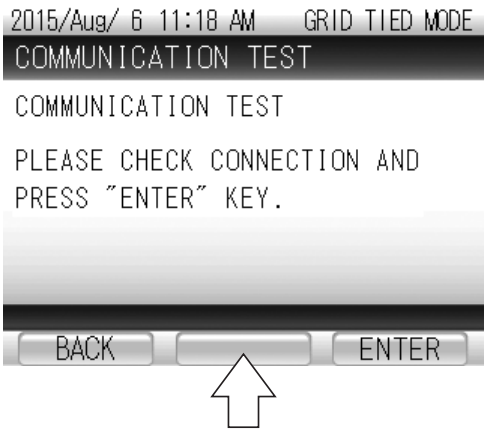
4. Setting REMOTE MONITOR, Performing the communication test

1 **Press [↓] to select "COMMUNICATION TEST" and press [ENTER].**

- This displays the communication test screen.

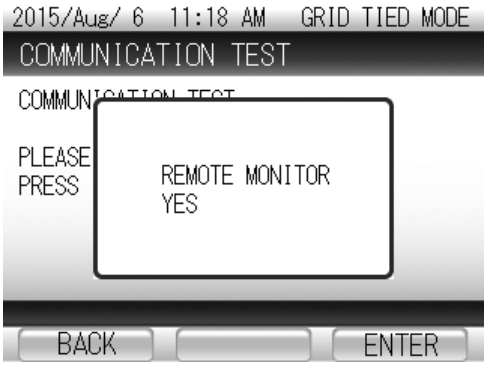


2 **Press and hold Operating Button in a center for 5 seconds or more.**



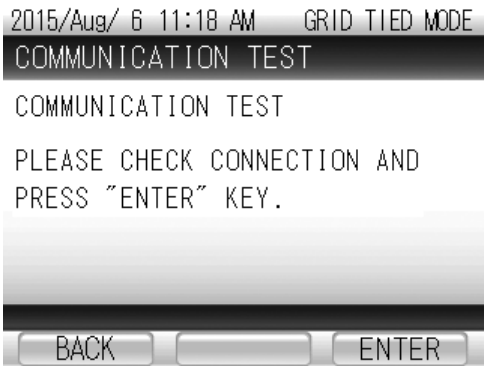
3 **Check the message “REMOTE MONITOR YES”.**

* Note If the message is “REMOTE MONITOR NONE”, operate again.



4 **Check the content on the screen and press [ENTER].**

● This starts the automatic communication test.

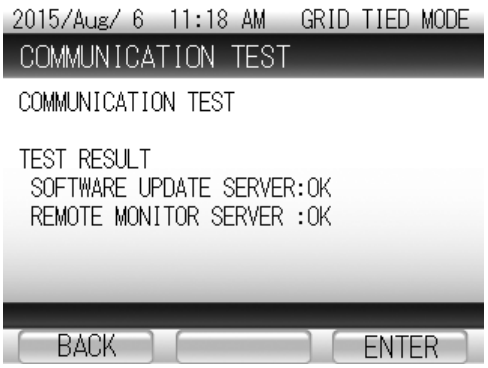


5 **Check the result of the communication test.**

■ Display of “OK”
Press [BACK] to return to the home screen.

■ Display of “FAILED”

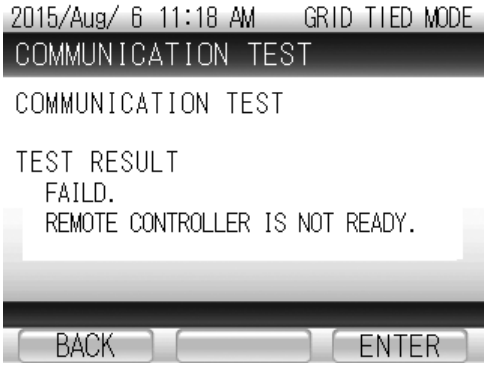
- “FAILED” appears as the result when the communication test fails.
- Check the details that appears under “TEST RESULT” and refer to “Troubleshooting communication test failures” (Page 48).



Configuring the Connection to the Internet

■ Troubleshooting communication test failures

1. Make sure power to the router in your home network is turned on. Check for any indicators of trouble such as glowing warning lamps.
   - The remote controller must be connected to the router to enable communication over the Internet. If you do not have a router, consult with your Internet service provider and purchase one if necessary.
   - If your router is experiencing a malfunction, refer to the operation manual of the router and contact the manufacturer or your Internet service provider.
2. Confirm Internet connectivity by accessing a website or checking email on a PC.
   - Perform the following checks if the communication test fails despite that your router is functioning and that you have Internet connectivity.



Display	Cause and Troubleshooting Procedure
REMOTE CONTROLLER IS NOT READY	Make sure the LAN cable is connected.
ROUTER CONNECTION ERROR	Wait a few moments and then try the communication test again. Communication may not be possible due to the router type or configuration. Contact the manufacturer of your router.
SOFTWARE UPDATE SERVER: NG REMOTE MONITOR SERVER: NG	Wait a few moments and then try the communication test again. Communication may not be possible due to contract restrictions with your Internet service provider. Contact your Internet service provider to confirm any such restrictions and configuration.

Communication test still fails after performing all troubleshooting procedures

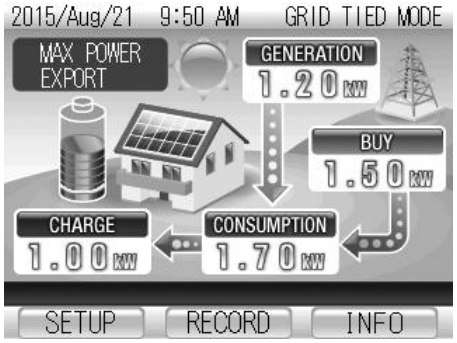
- Communication restrictions may be configured in your router or by your Internet service provider.
- Contact your Internet service provider for more information on Internet restrictions, configuration, and details of your service contract.
- Refer to the operation manual of your router for more information on configuring the router.

Confirming software updates

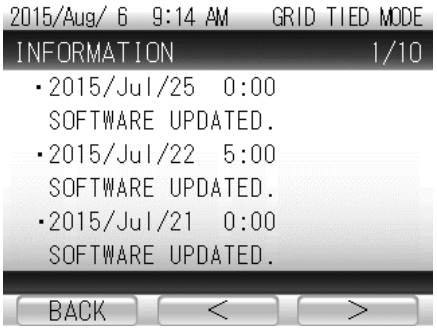
1

Press [INFO] at the home screen.

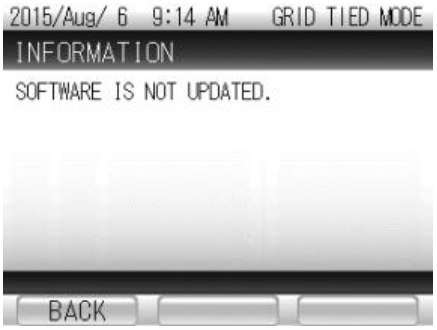
- This displays the update confirmation screen and information about the update.



Updates available



No updates available



- Customers must procure and configure their Internet service. If you need assistance or have questions, consult with your dealer.
- The customer is responsible for all costs associated with procuring an Internet service connection such as the necessary devices, installation fees, service fees, and so on.
- The [STATUS] and [RUN/STOP] buttons may glow during the software update process. This is normal and does indicate any kind of malfunction.
- Remote controller operation is disabled during the update process.
- Perform updates during periods when power is not generated such as at night.

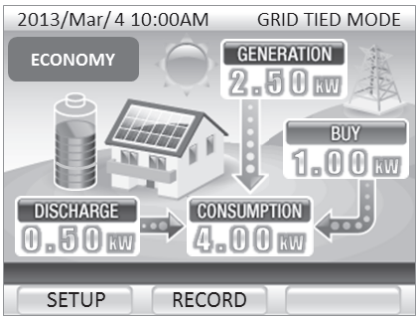
Viewing System Records

[1]Viewing Power Generation and Consumption Records

1

Press [RECORD] on the home screen.

- A screen appears where you can select the type of record to view.



2

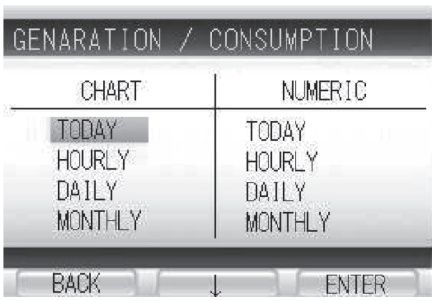
Select "GENERATION/CONSUMPTION" using [↓] and press [ENTER].

- A screen appears where you can select a time interval for displaying your power generation and consumption.

3

Select a time interval using [↓] and press [ENTER].

- The power generation and consumption recorded for your system is displayed at the selected time interval.
- The period of time that is available for display varies according to the selected time interval.
  TODAY: Most recent 35 days
  HOURLY: Most recent 35 days
  (Records from 36 days ago and earlier are overwritten by DAILY data.)
  DAILY: Most recent 13 months
  (Records from 14 months ago and earlier are overwritten by MONTHLY data.)
  MONTHLY: Most recent 10 years
  (Records from 11 years ago and earlier are erased.)

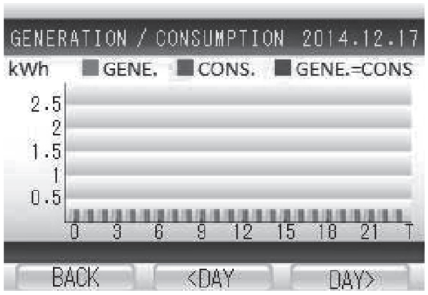


4

The power generation and consumption recorded for your system is displayed.

- The below displays are examples of what appears when TODAY is selected. HOURLY, DAILY and MONTHLY displays are operated in the same way.

[CHART]



How to read the graph

Power graph

Power generation and consumption are displayed on a bar chart. The bar is purple when the same amount of power has been consumed as has been generated.

Operating buttons

[BACK]: Returns the display to the screen where you select a time interval for displayed information.

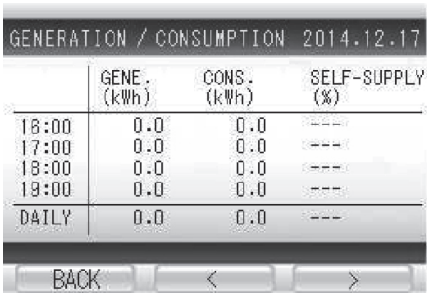
[<DAY]: Switches the display to the previous day's (period's) information.

[<DAY] appears when hourly information is displayed.
[<MONTH] appears when daily information is displayed.
[<YEAR] appears when monthly information is displayed.

[DAY>]: Switches the display to the next day's (period's) information.

[DAY>] appears when hourly information is displayed.
[MONTH>] appears when daily information is displayed.
[YEAR>] appears when monthly information is displayed.

[NUMERIC]



How to read the table

GENE.

Displays the amount of power generated during the displayed period of time.

CONS.

Displays the amount of power consumed during the displayed period of time.

SELF-SUPPLY

Displays your self-sufficiency rate from the beginning of the displayed period of time.
Generated Power ÷ Consumed Power x 100

Operating buttons

[BACK]: Returns the display to the screen where you select a time interval for displayed formation.

[<]: Swches the display to the previous day's (period's) information.

[>]: Switches the display to the next day's (period's) information.

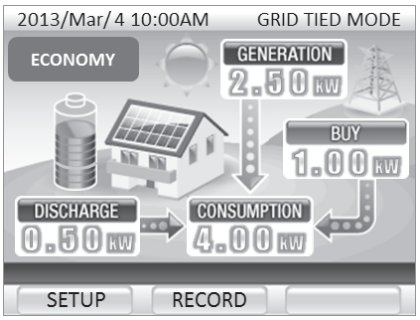
Viewing System Records

[2]Viewing Power Selling and Buying

1

Press [RECORD] on the home screen.

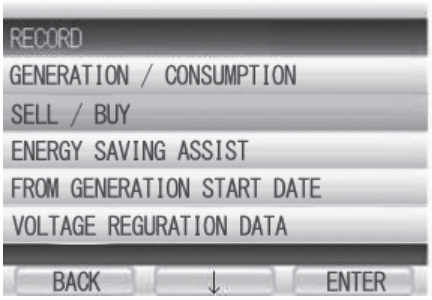
- A screen appears where you can select the type of record to view.



2

Select "SELL/BUY" using [↓] and press [ENTER].

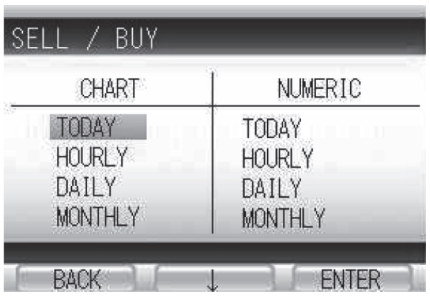
- A screen appears where you can select a time interval for displaying your power selling and buying.



3

Select a time interval using [↓] and press [ENTER].

- The power generation and consumption recorded for your system is displayed at the selected time interval.
- The period of time that is available for display varies according to the selected time interval.
  TODAY: Most recent 35 days
  HOURLY: Most recent 35 days
  (Records from 36 days ago and earlier are overwritten by DAILY data.)
  DAILY: Most recent 13 months
  (Records from 14 months ago and earlier are overwritten by MONTHLY data.)
  MONTHLY: Most recent 10 years
  (Records from 11 years ago and earlier are erased.)

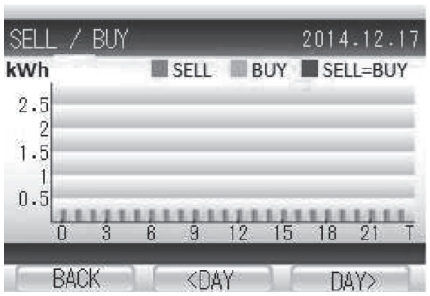


4

The power generation and consumption recorded for your system is displayed.

- The below displays are examples of what appears when TODAY is selected. HOURLY, DAILY and MONTHLY displays are operated in the same way.

[CHART]



How to read the graph

Power graphs

Power selling and buying are displayed on a bar chart. The bar is orange when the same amount of power has been sold as has been bought.

Operating buttons

[BACK]: Returns the display to the screen where you select a time interval for displayed information.

[<DAY]: Switches the display to the previous day's (period's) information.

[<DAY] appears when hourly information is displayed.

[<MONTH] appears when daily information is displayed.

[<YEAR] appears when monthly information is displayed.

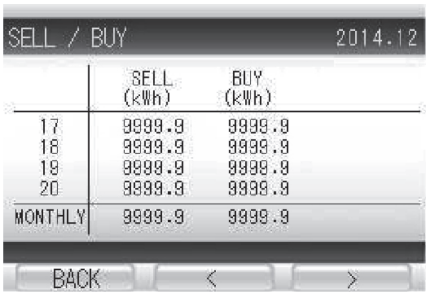
[DAY>]: Switches the display to the next day's (period's) information.

[DAY>] appears when hourly information is displayed.

[[MONTH>] appears when daily information is displayed.

[[YEAR>] appears when monthly information is displayed.

[NUMERIC]



How to read the table

SELL

Displays the amount of power sold during the displayed period of time.

BUY

Displays the amount of power bought during the displayed period of time.

Operating buttons

[BACK]: Returns the display to the screen where you select a time interval for displayed information.

[<]: Switches the display to the previous day's (period's) information.

[>]: Switches the display to the next day's (period's) information.

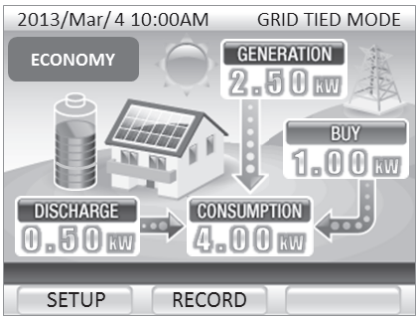
Viewing System Records

[3]Viewing Cumulative Records from the Power Generation Start Date

1

Press [RECORD] on the home screen.

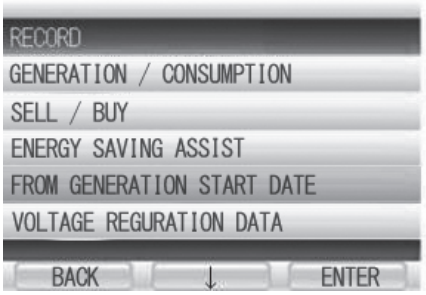
- A screen appears where you can select the type of record to view.



2

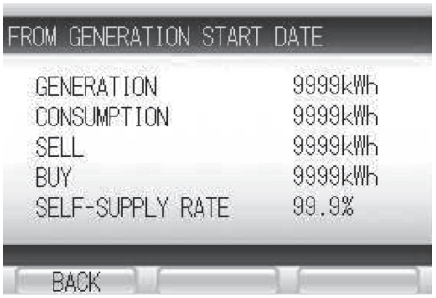
Select "FROM GENERATION START DATE" using [↓] and press [ENTER].

- A screen appears where you can select cumulative records from the power generation start date.



3

The cumulative records for your system are displayed.



How to read the information

<GENERATION>

Displays the total amount of power generated since the system started generating power.
When the inverter is detached, the display will not correctly show information.

<CONSUMPTION>

Displays the total amount of power consumed since the system started generating power.

<SELL>

Displays the total amount of power sold since the system started generating power.

<BUY>

Displays the total amount of power bought since the system started generating power.

<SELF-SUPPLY RATE>

Displays your self-sufficiency rate since the system started generating power.
Generated Power ÷ Consumed Power x 100

Operating button

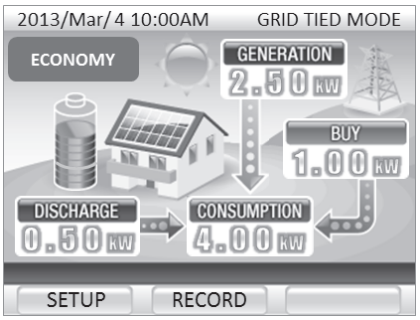
[BACK]: Returns the display to the screen where you select a time interval for displayed information.

Energy Saving Assistance

[1]Setting the Energy Saving Assist Target

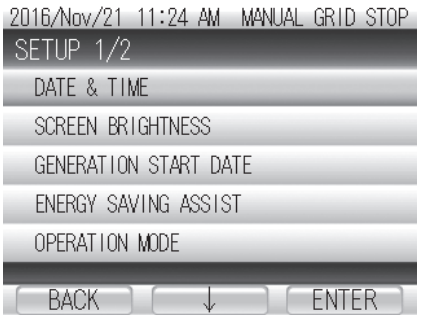
1

Press [SETUP] on the home screen.
• A screen appears where you can select setting items.



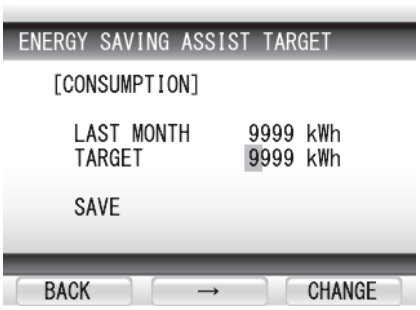
2

Select "ENERGY SAVING ASSIST" using [↓] and press [ENTER].
• A screen appears where you can input a consumption target.



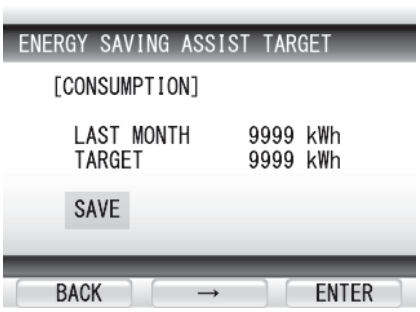
3

Input a consumption target.
[CHANGE]: Changes the numeric value at the cursor point. (0 - 9)
[→]: Moves the cursor to the next digit or setting item.



4

Select "SAVE" using [→].



5

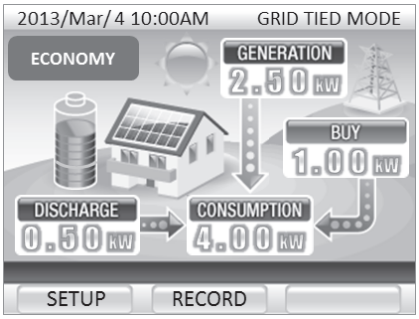
Confirm the displayed setting and press [ENTER].
• The newly set consumption target is entered and the display returns to the SETUP screen.
• To change the consumption target, press [BACK] to return to the screen where you can input the consumption target.

[2]Viewing Energy Saving Assist Records

1

Press [RECORD] on the home screen.

- A screen appears where you can select the type of record to view.



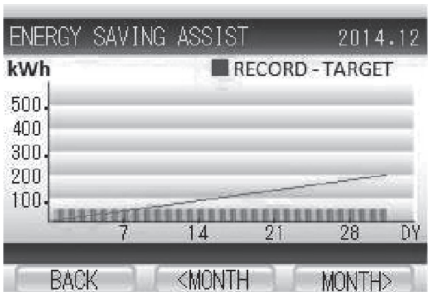
2

Select "ENERGY SAVING ASSIST" using [↓] and press [ENTER].

- The ENERGY SAVING ASSIST screen appears.

3

The Energy Saving Assist records of your system are displayed.



How to read the graph

Power graph

The consumption target is displayed as a dotted line and the actual consumption as a bar chart.

TARGET

Displays the set consumption target (see page 53).
The defaullt is same as the record shown on the display last month.

RECORD

Display the amount of power consumed for the displayed month.

Operating buttons

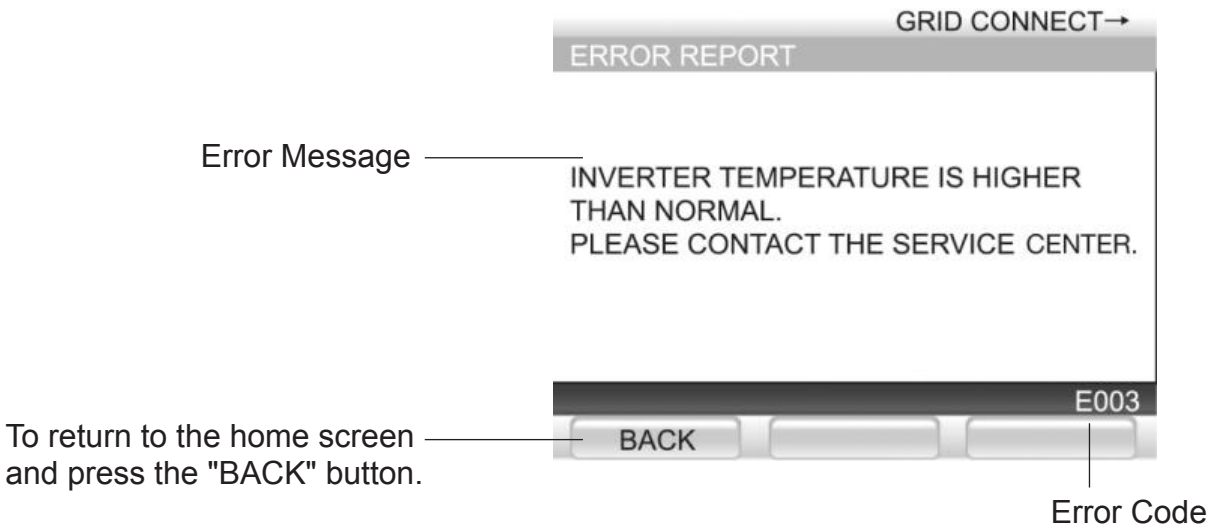
[BACK]: Returns the display to the screen where you select a time interval for displayed information.
[<MONTH]: Switches the display to the previous month's information.
[MONTH>]: Switches the display to the next month's information.

Troubleshooting

Troubleshoot problems as shown below. If it is determined that servicing is necessary, contact the service center.

1. Check the error code on the Remote Controller.
2. Look up the error code on the following page.
3. Follow the directions as given in the error message.

Error Report Screen on the Remote Controller



- If the Remote Controller indicates there is an issue with the storage battery and the operating status LED on the Hybrid Solar Inverter is flashing a red color, the unit must be checked and serviced. Contact the service center.
- Confirmation messages that appear on the Remote Controller clear when the inverter is restarted. For the inverter stopping procedure, see page 28.

Error Message (Troubleshooting)	Error Code
DETECTED ABNORMALITY INSIDE INVERTER. PLEASE CONTACT THE SERVICE CENTER.	D015, D025, D035, B103 - B104, B106, T001, T003, T004, T006
DETECTED ABNORMALITY INSIDE INVERTER. PLEASE CONTACT THE SERVICE CENTER IF THE ERROR MESSAGE CONTINUES MORE THAN 5 MINUTES.	b101, b109 - b110, E001, E012, E014, E016, E019, E020, e001, e012, e014, e016 - e020, e024, e025
POWER CONSUMPTION ON THE APPLIANCES CONNECTED TO STAND ALONE OUTLET EXCEEDS MAXIMUM POWER LIMIT. PLEASE REDUCE POWER CONSUMPTION BY DISCONNECTING SOME DEVICES.	e009 - e011
INVERTER TEMPERATURE IS OUT OF RANGE. PLEASE CHECK ITS SURROUNDING. PLEASE CONTACT THE SERVICE CENTER IF THE ERROR MESSAGE STAYS ON.	d013, d023, d033, E003, e003
GRID ABNORMALITY DETECTED. WILL RESTART IN 5 MIN. ONCE GRID IS BACK NORMAL. PLEASE CONTACT THE SERVICE CENTER IF THE ERROR MESSAGE CONTINUES MORE THAN 5 MIN.	g001 - g005, g008 - g009
INSUFFICIENT SUNLIGHT OR LOW BATTERY VOLTAGES.	n001, n004
OVER CURRENT IS DETECTED DUE TO THE BACKUP LOAD CURRENT. PLEASE REDUCE THE BACKUP LOAD.	n009
PV VOLTAGE IS HIGH. PLEASE CONTACT THE SERVICE CENTER IF THE ERROR MESSAGE CONTINUES.	d011, d021, d031
PLEASE CONTACT THE SERVICE CENTER IF THIS ERROR MESSAGE CONTINUES.	b103, D011, D013, D021, D023, D031, D033, e008, e026, U026, M055, t006, t007, T007
BATTERY ABNORMALITY DETECTED. PLEASE CONTACT THE SERVICE CENTER.	M034, M037, M039, M041, M043, M044, M046, M047, M049 - M054, M057, M065 - M068, M071, M099, M129 - M132, M137, M138
GRID ABNORMALITY DETECTED. PLEASE CONTACT THE SERVICE CENTER IF THE ERROR MESSAGE CONTINUES MORE THAN 5 MINUTES.	E004, E006, E007, e004, e006, e007
INVERTER FAULT DETECTED. PLEASE CONTACT THE SERVICE CENTER IF THE ERROR MESSAGE CONTINUES MORE THAN 5 MIN.	r-04
INVERTER CANNOT START. RESTART INVERTER WHEN SUNLIGHT RETURNS TO NORMAL. PLEASE CONTACT THE SERVICE CENTER IF INVERTER CANNOT START DURING NORMAL SUNLIGHT.	r-16, r-18
PETRIEVING IP ADDRESS FAILED. PLEASE CONFIRM CONNECTION AND PRESS “RETRY” KEY.	r-10

Troubleshooting

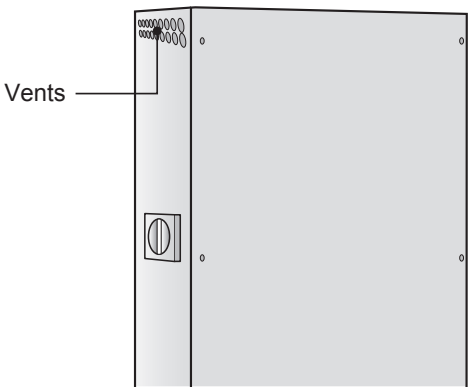
Error Message (Troubleshooting)	Error Code
STORAGE BATTERY FAULT DETECTED. PLEASE CONTACT THE SERVICE CENTER IF THE ERROR MESSAGE DOESN'T DISAPPEAR AFTER 5 MIN.	m033, m036, m038, m040, m042, m045, m097, m098
REMOTE CONTROLLER IS NOT WORKING PROPERLY. PLEASE CONTACT THE SERVICE CENTER.	R-02, R-03
THE NTP IS OUT OF SYNCHRONIZATION.	r-11
IF OPERATION MODE CANNOT BE SYNCHRONIZED AFTER REST ARTING BY RUN/STOP BUTTON MANUALLY, PLEASE CONTACT THE SERVICE CENTER.	r-14
DATA COPY FAILED.	r-15
INSULATION/GROUND FAULT DETECTED. CONTACT THE SERVICE CENTER.	T008*
INSULATION TEST FAILED. PLEASE CONTACT THE SERVICE CENTER.	T009
ARC TEST FAILED. PLEASE CONTACT THE SERVICE CENTER.	T010
ELECTRIC SHOCK HAZARD ARC FAULT DETECTED. CONTACT THE SERVICE CETER.	U023
ISOLATION TEST NOW PLEASE WAIT A MOMENT.	u030
THE BATTERY STOPPED DUE TO ITS END OF LIFE. PLEASE CONTACT THE SERVICE CENTER.	M058
THE BATTERY WILL SOON REACH ITS END OF LIFE. PLEASE CONTACT THE SERVICE CENTER.	m145
ISOLATION FAULT DETECTED. PLEASE CONTACT THE CENTER.	e027, e028, e029, e030

* WARNING: WHEN A GROUND FAULT IS INDICATED, NORMALLY UNGROUNDED CONDUCTORS MAY BE GROUNDED.
BATTERY TERMINALS AND CONNECTED CIRCUITS MIGHT BE UNGROUNDED AND HAZARDOUS.

Equipment Checks and Maintenance

Routine Equipment Checks

• Check the following items once a week to prevent equipment issues. (Check interval: Once weekly)

Check item	Troubleshooting
Are vents covered in dust or by objects?  	Stop inverter operation and wait for the inverter to cool down completely. Remove the dust or objects as explained in “How to Clean” on the next page.
Do error codes appear often on the Remote Controller?	Deal with error codes on the Remote Controller as explained on Pages 58 – 60.

* At startup and when generating a large amount of power, operational noise may become loud. This is normal. There is nothing wrong with the equipment.

Periodic Checks

Periodic checks serve to ensure safe, long-lasting use of the product. Perform the checks in the chart below once a month.

Periodic Checks (Make copies of this table as needed.)			Check Date / Result (O / X)					
Scope	Item	What to look for	／	／	／	／	／	／
Surrounding Environment	Dust, Gas	Are there any combustible gases or flammable agents near the equipment?						
	Temperature, Humidity	Are conditions within -20 to +40 °C (-4 to +104 °F) and 90%RH or less (Non-condensating)?						
		Is there sufficient space around the Hybrid Solar Inverter for dissipating heat?						
	Installation condition	Is there sufficient space around the Hybrid Solar Inverter for inspection?						
Equipment Condition	Appearance	Is the equipment scratched, dented, rusted, etc?						
	Strange sounds	Is the equipment making odd noises?						
	Odors	Does the equipment smell like it is burning or emitting other odors?						
Remote Controller Display	Error indications	Is the error report displayed? (See page 56.)						

Equipment Checks and Maintenance

Maintenance Schedule

Maintenance Schedule	5 Years	10 Years	15 Years	20 Years
Periodic checks (Once a month)	Perform monthly checks. * Monthly checks are performed by the user.			
Inverter Replacement (Every 10 years)	Replacement			Replacement

* Equipment tends to degrade over time, therefore users should consider replacing the equipment every 10 years.

How to Clean

Hybrid Solar Inverter

Remove dust from vents and clean the front and back of the Hybrid Solar Inverter.

Remote Controller

Wipe the frame and panel with a soft piece of cloth.

NOTE **The screen is not a touch screen panel. Do not push on panel with excessive force, it damage the panel.**

For stubborn dirt

1 **Moisten a soft piece of cloth with water, wring well and wipe surfaces.**

2 **Remove moisture from the panel by blotting the surface with a dry, soft piece of cloth.**

NOTE **Do not use benzene, thinner or petroleum solvents to clean the Remote Controller. Also, do not splash water on the Remote Controller.**

Specifications

Model	THD-S55P3B-US	THD-S55P3BB-US	THE-S55P3B-USW
PV input	3 inputs		
Range of input operating voltage	DC 80-550 V		
Max. input voltage	DC 600 V		
Max. input current	DC 12 A		
Max. photovoltaic input short-circuit current under any condition	DC 15 A		
Intended array configuration(s)	Ungrounded		
For AC grid:			
Output power factor	> 0.95		
Operating voltage range	AC 211.2-264.0 V		
Operating frequency range	58-62 Hz		
Nominal output voltage	AC 240 V		
Nominal output frequency	60 Hz		
Max.continuous output current	AC 22.9 A rms.		
Max.continuous output power	AC 5500 W		
For stand alone:			
Output power factor	0.6-1.0		
Operating voltage range	AC 114-126 V	AC 228-252 V	
Operating frequency range	59.4-60.6 Hz		
Nominal output voltage	AC 120 V		AC 240 V
Nominal output frequency	60 Hz		
Max.continuous output current	AC 16.7 A rms.	AC 27.5 A rms.	AC 16.7 A rms.
Max.continuous output power	AC 2000 W	AC 3300 W	AC 4000 W
Max.continuous apparent power	AC 2000 VA	AC 3300 VA	AC 4000 VA
For charge/discharge controller:			
Nominal charging/discharging voltage	DC 86.4 V		DC 172.8 V
Charging/discharging voltage operation range	DC 60-100 V		DC 120-200 V
Max.continuous charging current	DC 16.5 A		
Max.continuous charging power	1500 W	3000 W	
Max.continuous discharging current	DC 26.0 A		
Max.continuous discharging power	2200 W	4400 W	
Operating ambient temperature	-20ºC to 40ºC		
Type of enclosure	NEMA 3		
Noise Emission	≤ 41 dB		
Operating Humidity	≤ 90% (Non-condensing)		
Weight (including base)	Approx. 68 kg (149.9 lb)		
Dimensions (including base)	W 680 × H 1200 × D 250 mm (26.8 × 47.2 × 9.8 in)		

Arc Fault Circuit Protection

The inverter is certified to UL1699B Type 1.
It has protection circuit for arc fault caused by photovoltaics.

FCC Compliance

Notes

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and usedin accordance with the instruction manual, may cause harmful interference to radio communications.Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.