

## Hybrid Solar Inverter & Remote Controller

# Service Mode Setup Manual

**This Service Mode Setup Manual was written exclusively for professional installers. Installers should retain this manual after installing and setting up the Hybrid Solar Inverter.**

- Retain this Service Mode Setup Manual. Incorrect settings may cause equipment to malfunction.
- Make sure equipment settings match commercial grid requirements established by the local power company. Setting changes made by users forfeit all warranty obligations from Tabuchi Electric.
- Data cannot be restored once it has been initialized.

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# Accessing the Service Mode

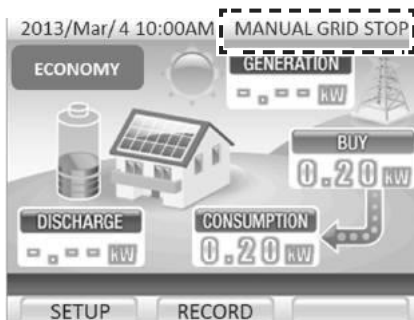
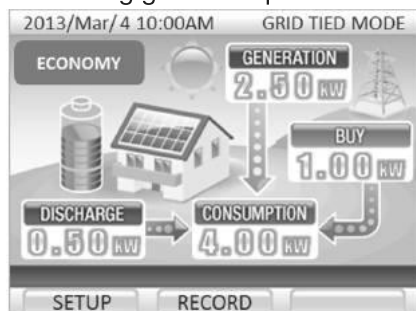
## <How to Display the Service Mode >

To display the Service Mode, the hybrid solar inverter status must be indicated as either “MANUAL GRID STOP” or “STAND-ALONE STOP”.

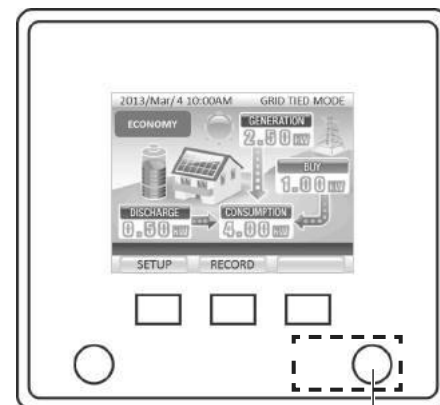
1

Press the RUN/STOP button while the home screen is displayed. The hybrid solar inverter status will switch to either “MANUAL GRID STOP” or “STAND-ALONE STOP”.

Ex.: During grid-tied operation



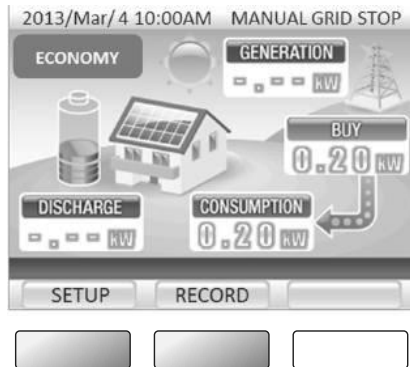
Home Screen



RUN/STOP Button

2

Press and hold both [SETUP] and [RECORD] for 5 seconds or longer.  
A confirmation message will appear.



After  
5 seconds

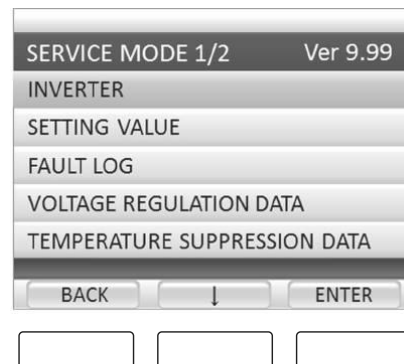


3

Press [ENTER].  
The SERVICE MODE 1/2 screen appears.



SERVICE MODE 1/2 Screen



**[NOTE]** Pressing [SETUP] and [RECORD] respectively opens the SETUP and RECORD (1/2) screens.  
When this occurs, press [BACK] to return to the home screen and repeat the procedure from step 2.

# Selecting from the Service Mode Menu

## <Selecting Setting Items>

1

Select a setting item by pressing [ ↓ ], and press [ENTER].

SERVICE MODE 1/2Ver 9.99

① INVERTER

② SETTING VALUE

③ FAULT LOG

④ VOLTAGE REGULATION DATA

⑤ TEMPERATURE SUPPRESSION DATA

BACK ↓ ENTER

Returns the display to the home screen.

Switches the selected setting item each time it is pressed.

Displays the setting screen of the selected setting item.

SERVICE MODE 2/2Ver 9.99

⑥ INITIALIZE DATA

COPY DATA

⑦ CHARGE / DISCHARGE

⑧ CHARGE / DISCHARGE LEVEL

BATTERY MAINTENANCE INFO.

BACK ↓ ENTER

Returns the display to the home screen.

Switches the selected setting item each time it is pressed.

Displays the setting screen of the selected setting item.

No	Setting Item	Description	Ref.
①	INVERTER	For selecting the number (1 to 5) of solar inverters connected to the system and setting to enable REMOTE MONITOR.	P5
②	SETTING VALUE	For setting and changing solar inverter settings.	P8
③	FAULT LOG	For viewing a log of recorded solar inverter faults.	P10
④	VOLTAGE REGULATION DATA	For viewing logged dates and times when the solar inverter regulated output to prevent voltage from rising.	P11
⑤	TEMPERATURE SUPPRESSION DATA	For viewing logged dates and times when the solar inverter regulated output to prevent temperature from rising.	P12
⑥	INITIALIZE DATA	For clearing logs and initializing settings.	P13
⑦	CHARGE / DISCHARGE	For checking whether the battery is charging or discharging.	P14
⑧	CHARGE / DISCHARGE LEVEL	For viewing battery charging and discharging records.	P15

2

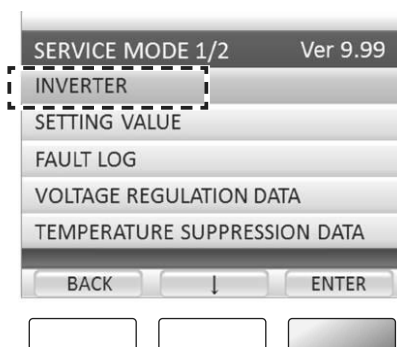
Once the settings are complete, press [BACK] on the SERVICE MODE screen. The service mode ends and the display returns to the home screen.

# Setting Connected Devices

**“INVERTER” is for selecting the number (1 to 5) of solar inverters connected to the system, and for setting to enable REMOTE MONITOR.**

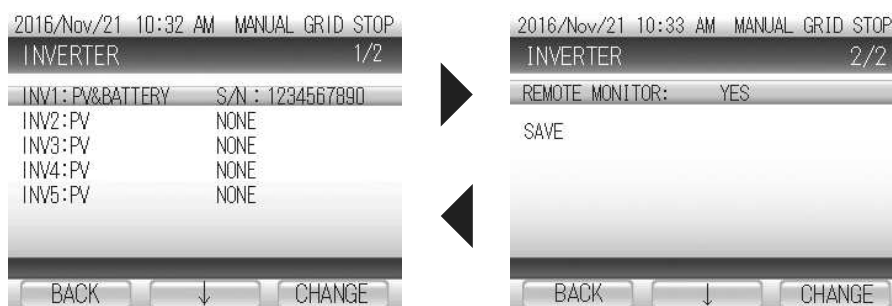
1

Select “INVERTER” from the SERVICE MODE I/2 screen, and press [ENTER].  
The INVERTER screen appears.



2

Select a setting item by pressing [↓], and press [CHANGE].



## 【NOTE】

- INV1 is already connected to the solar power system, therefore it cannot be selected.
- Change REMOTE MONITOR to YES to enable REMOTE MONITOR.

3

Select “SAVE” by pressing [↓], and press [ENTER].  
The serial numbers of connected devices appear.

- These settings are complete when the solar power system successfully establishes communications with the connected devices.
- Press [BACK] to return to the SERVICE MODE I/2 screen.



# Parameters List

## IEEE Parameters List

Display #	Description	Default	Range
OVDLY1	AC Overvoltage Detection Time 1	0.16 sec	0.10 / 0.13 / 0.16 sec
OVDLY2	AC Overvoltage Detection Time 2	1 sec	1 / 2 / 3 / 4 / 5 / 6 / 7 / 9 / 11 / 13 sec
UVDLY1	AC Undervoltage Detection Time 1	0.16 sec	0.10 / 0.13 / 0.16 sec
UVDLY2	AC Undervoltage Detection Time 2	1 sec	1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / 11 sec
UVDLY3	AC Undervoltage Detection Time 3	2 sec	2 / 4 / 6 / 8 / 10 / 12 / 14 / 16 / 18 / 21 sec
OFR1	AC Overfrequency Detection Level 1	+0.5 Hz	+0.0 / +0.5 / +1.0 / +1.5 / +2.0 / +2.5 / +3.0 / +3.5 / +4.0 Hz
OFDLY1	AC Overfrequency Detection Time 1	2 sec	2 / 5 / 10 / 20 / 50 / 100 / 150 / 200 / 250 / 300 sec
OFR2	AC Overfrequency Detection Level 2	+2.0 Hz	+0.0 / +0.5 / +1.0 / +1.5 / +2.0 / +2.5 / +3.0 / +3.5 / +4.0 Hz
OFDLY2	AC Overfrequency Detection Time 2	0.16 sec	0.16 / 0.5 / 1 / 1.5 / 2 / 2.5 / 4 / 6 / 8 / 10 sec
UFR1	AC Underfrequency Detection Time 1	-0.5 Hz	-0.0 / -0.5 / -1.0 / -1.5 / -2.0 / -2.5 / -3.0 / -3.5 / -4.0 Hz
UFDLY1	AC Underfrequency Detection Time 1	2 sec	2 / 5 / 10 / 20 / 50 / 100 / 150 / 200 / 250 / 300 sec
UFR2	AC Underfrequency Detection Level 2	-3.0 Hz	-0.0 / -0.5 / -1.0 / -1.5 / -2.0 / -2.5 / -3.0 / -3.5 / -4.0 Hz
UFDLY2	AC Underfrequency Detection Time 2	0.16 sec	0.16 / 0.5 / 1 / 1.5 / 2 / 2.5 / 4 / 6 / 8 / 10 sec
TIMER	Power Restoration to Generation Time	300 sec	1 / 10 / 150 / 180 / 240 / 300 sec
VOV	Voltage Increase Limit	129.0 V	OFF / 127.0 / 128.0 / 129.0 / 130.0 / 131.0 / 132.0 V
TDH	Passive Control Detection Level	1.8 Hz	0.8 / 1.0 / 1.2 / 1.4 / 1.6 / 1.8 / 2.0 / 3.0 / 4.0 / 5.0 Hz
VOVL	Voltage Increase Limit Level	0 %	0 / 50 %
PF	Power Factor	+1.00	+0.80 / +0.81 / +0.82 / +0.83 / +0.84 / +0.85 / +0.86 / +0.87 / +0.88 / +0.89 / +0.90 / +0.91 / +0.92 / +0.93 / +0.94 / +0.95 / +0.96 / +0.97 / +0.98 / +0.99 / +1.00 / -0.80 / -0.81 / -0.82 / -0.83 / -0.84 / -0.85 / -0.86 / -0.87 / -0.88 / -0.89 / -0.90 / -0.91 / -0.92 / -0.93 / -0.94 / -0.95 / -0.96 / -0.97 / -0.98 / -0.99
SAVOLT	Stand Alone Voltage	120 V	120 / 240 V

\* SAVOLT is fixed "120 V". SAVOLT is not used for all the models.

## HECO Parameters List (UL 1741 SA compliance is not required.)

Display #	Description	Default	Range
UVDLY2	AC Undervoltage Detection Time 2	16 sec	11 / 12 / 13 / 14 / 15 / 16 / 17 / 18 / 19 / 20 / 21 sec
TIMER	Power Restoration to Generation Time	300 sec	10 / 300 / 360 / 420 / 480 / 540 / 600 sec
VOV	Voltage Increase Limit	129.0 V	OFF / 127.0 / 128.0 / 129.0 / 130.0 / 131.0 / 132.0 V
TDH	Passive Control Detection Level	1.8 Hz	0.8 / 1.0 / 1.2 / 1.4 / 1.6 / 1.8 / 2.0 / 3.0 / 4.0 / 5.0 Hz
VOVL	Voltage Increase Limit Level	0 %	0 / 50 %
PF	Power Factor	+1.00	+0.80 / +0.81 / +0.82 / +0.83 / +0.84 / +0.85 / +0.86 / +0.87 / +0.88 / +0.89 / +0.90 / +0.91 / +0.92 / +0.93 / +0.94 / +0.95 / +0.96 / +0.97 / +0.98 / +0.99 / +1.00 / -0.80 / -0.81 / -0.82 / -0.83 / -0.84 / -0.85 / -0.86 / -0.87 / -0.88 / -0.89 / -0.90 / -0.91 / -0.92 / -0.93 / -0.94 / -0.95 / -0.96 / -0.97 / -0.98 / -0.99
SAVOLT	Stand Alone Voltage	120 V	120 / 240 V

\* SAVOLT is fixed "120 V". SAVOLT is not used for all the models.

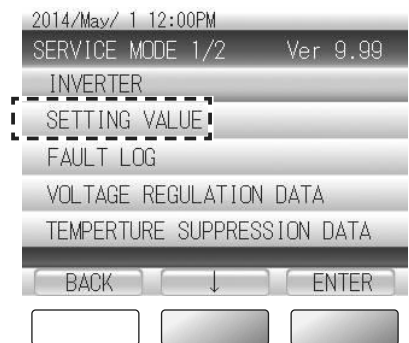
# Parameter Setting

When requesting UL 1741 SA compliance, the Parameter Setting is unnecessary.  
Use the tool prepared by Tabuchi Electric to set it.  
For details on the tool, contact the TABUCHI ELECTRIC Service Line.

“SETTING VALUE” is for setting and changing solar inverter settings.

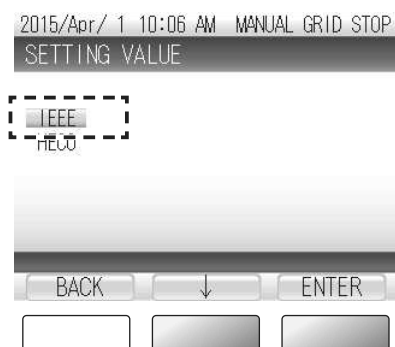
1

From the SERVICE MODE 1/2 screen, select “SETTING VALUE” and press [ENTER].

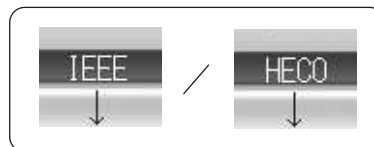


2

Press [↓], select “IEEE” or “HECO”, and then press [ENTER].

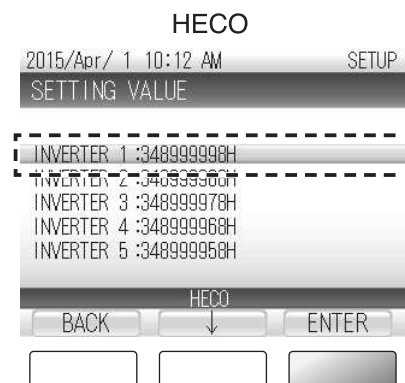
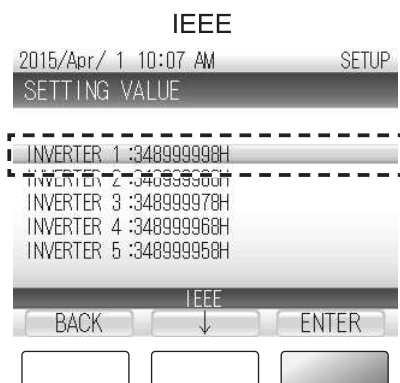


Press [ENTER] to display “IEEE” or “HECO” under subsequent settings screens.



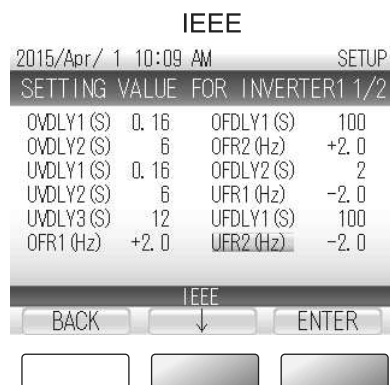
3

Confirm that “SETTING VALUE FOR INVERTER 1” is selected and press [ENTER].



4

The parameter menu will appear. (See Page 6 or 7 for a description of the parameters in the parameter menu.) Scroll through the parameter menu using the [↓] button. To select a parameter, press the [ENTER] button.



Press [↓] (See the next page)





5

Press [CHANGE] to change the value to the desired value.

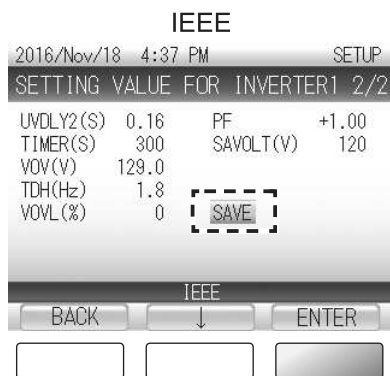


6

Press [ENTER] to return to the parameter menu. Repeat Steps ③ to ⑤ to change other parameters.

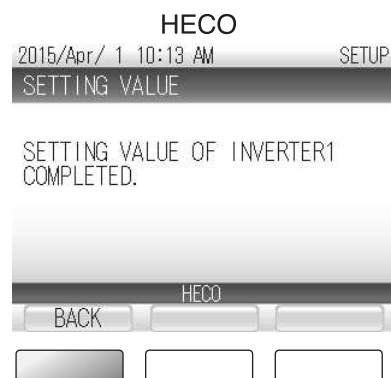
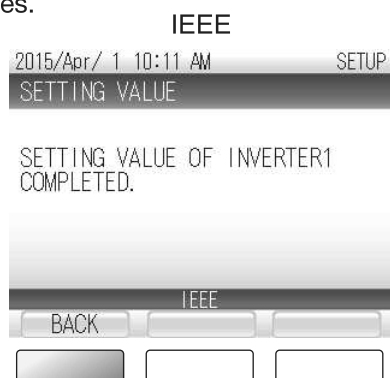
7

When all parameters changes are complete, select "SAVE" and press [ENTER].



8

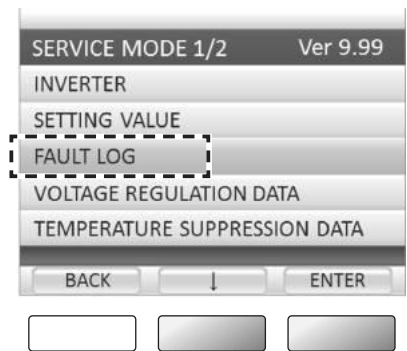
Settings are entered and a confirmation screen will appear. To return to the Home Screen, press [BACK] three times.



# Viewing the Fault Log

**“FAULT LOG” is for viewing a log of recorded hybrid solar inverter faults.**  
The fault log can hold up to 30 events (10 screens worth). When the number of events exceeds 30, the oldest record (by date and time) is overwritten.

- 1
- Select “FAULT LOG” from the SERVICE MODE I/2 screen,  
and press [ENTER].  
The FAULT LOG screen appears.



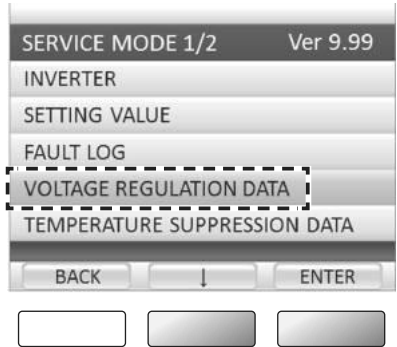
- 2
- Scroll through the fault log by pressing [↶] and [↷].  
• Press [BACK] to return to the SERVICE MODE I/2 screen.



# Viewing the Voltage Regulation Log

**“VOLTAGE REGULATION DATA” is for viewing logged dates and times when the hybrid solar inverter regulated output to prevent voltage from rising. The voltage regulation log can hold up to 30 events (10 screens worth). When the number of events exceeds 30, the oldest record (by date and time) is overwritten.**

- 1
- Select “VOLTAGE REGULATION DATA” from the SERVICE MODE I/2 screen, and press [ENTER].  
The VOLTAGE REGULATION DATA screen appears.



- 2
- Scroll through the Voltage Regulation Log by pressing [↶] and [↷].

  - Press [BACK] to return to the SERVICE MODE I/2 screen.

VOLTAGE REGULATION DATA Screen

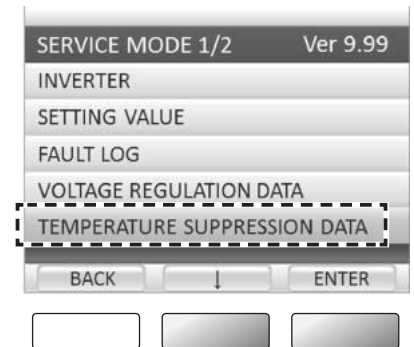


# Viewing the Temperature Suppression Log

**“TEMPERATURE SUPPRESSION DATA” is for viewing logged dates and times when the hybrid solar inverter regulated output to prevent temperature from rising. The voltage regulation log can hold up to 30 events (10 screens worth). When the number of events exceeds 30, the oldest record (by date and time) is overwritten.**

1

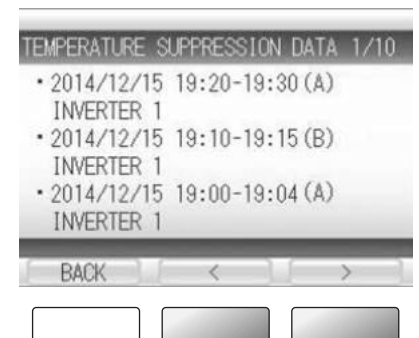
Select “TEMPERATURE SUPPRESSION DATA” from the SERVICE MODE I/2 screen, and press [ENTER].  
The TEMPERATURE SUPPRESSION DATA screen appears.



2

Scroll through the Temperature Suppression Log by pressing [↵] and [⏮].  
• Press [BACK] to return to the SERVICE MODE I/2 screen.

TEMPERATURE SUPPRESSION DATA Screen



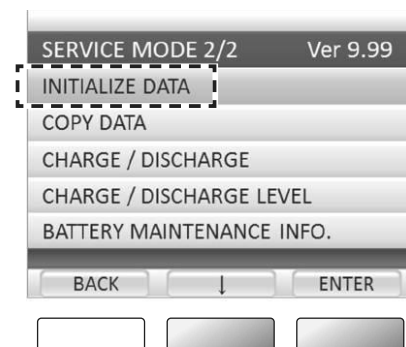
# Initializing Settings

**“INITIALIZE DATA” is for clearing logs and initializing settings.**

**【NOTE】** Data cannot be restored once it has been initialized.

1

Select “INITIALIZE DATA” from the SERVICE MODE 2/2 screen, and press [ENTER].  
The INITIALIZE DATA screen appears.



2

Press [ENTER].  
A confirmation message appears.



3

Press [ENTER].  
The "DATE & TIME SETUP" screen appears.  
Information is displayed in the state found when the hybrid solar inverter is powered up for the first time after being delivered.

- For procedures on how to operate the hybrid solar inverter after startup, see the User's Manual.
- Make initial settings as instructed by the on-screen prompts.



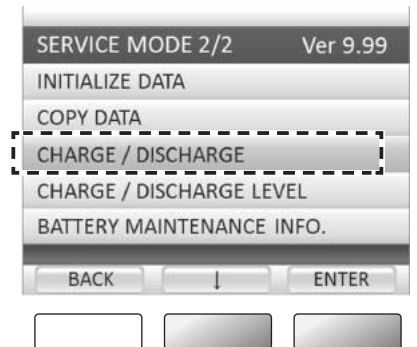
# Charge/Discharge Test

**“CHARGE/DISCHARGE” is for manually starting and stopping storage battery charging/discharging.**

**【NOTE】** This test can be performed when the inverter installed with battery is connected to the grid.

1

Select “CHARGE/DISCHARGE” on the SERVICE MODE 2/2 screen, and press [ENTER].



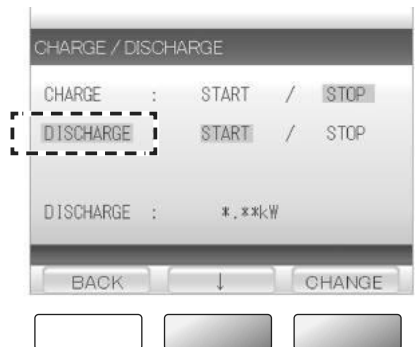
2

Select “CHARGE” or “DISCHARGE” by pressing [↓], and press [CHANGE]. (“CHARGE” and “DISCHARGE” can only be selected when the cursor is on “STOP”.)

The battery starts charging when “CHARGE” - “START” is selected. It starts discharging when “DISCHARGE” - “START” is selected.

The current discharge level of the battery is indicated at the bottom of the screen.

- Press [BACK] to return to the SERVICE MODE 2/2 screen. To return to the SERVICE MODE 2/2 screen, the cursor must be at “STOP” for both the “CHARGE” and “DISCHARGE” modes.

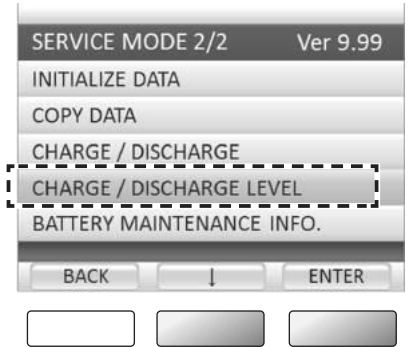


# Viewing Battery Charging/Discharging Records

“CHARGE/DISCHARGE LEVEL” is for viewing storage battery charging/discharging records.

1

- Select “CHARGE/DISCHARGE LEVEL” on the SERVICE MODE 2/2 screen, and press [ENTER].
- A screen for selecting the time interval appears.

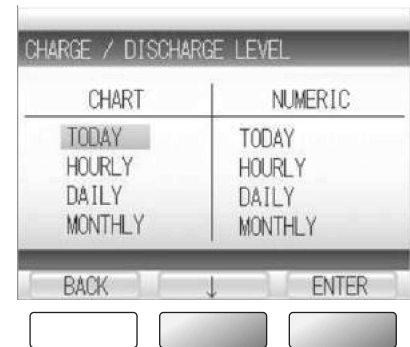


2

- Select a time interval by pressing [ ↓ ], and press [ENTER].
- The battery charging/discharging records for the selected time interval appears.
  - The period of time that is available for display varies according to the selected time interval.

TODAY: Last 35 days  
HOURLY: Last 35 days  
(Records from 36 days ago and earlier are overwritten by DAILY data.)  
DAILY: Last 13 months  
(Records from 14 months ago and earlier are overwritten by MONTHLY data.)  
MONTHLY: Last 10 years  
(Records from 11 years ago and earlier are erased.)

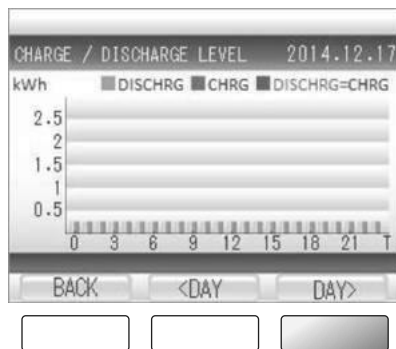
- Press [BACK] to return to the SERVICE MODE 2/2 screen.



### 3

View the battery charging/discharging records.

[CHART]



#### How to read the graph

Power Graph

Both battery charging/discharging are displayed on the same bar chart.

The bars are purple where the battery has been charged the same amount as it was discharged.

#### Operating Buttons

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

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

[<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 information for the next day (period) .

[DAY>] appears when hourly information is displayed.

[MONTH>] appears when daily information is displayed.

[YEAR>] appears when monthly information is displayed.

[NUMERIC]

CHARGE / DISCHARGE LEVEL 2014.12.17		
	DISCHRG. (kWh)	CHRG. (kWh)
16:00	9999.9	9999.9
17:00	9999.9	9999.9
18:00	9999.9	9999.9
19:00	9999.9	9999.9
DAILY	9999.9	9999.9

#### How to read the table

DISCHRG.

Indicates how much the battery was discharged during the time interval shown.

CHRG.

Indicates how much the battery was charged during the time interval shown.

#### Operating Buttons

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

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

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