

For Installer Company Use

For Maintenance and Inspection Use

**TABUCHI
ELECTRIC**

Model

EOW-MBX03-US

Master Box for Three-phase Inverter

Installation Manual

Operation Manual

- The content of this Installation Manual is meant for installers.
- After installation/configuration, give this manual to the person responsible for maintenance and inspection and store it in a safe place.
- Also refer to Inverter Unit Installation Manual.


- This product must be properly installed in order for it to perform and function according to specifications, and to ensure safety.
- Read all instructions prior to installing the product. Be sure to read the section titled "Safety Requirements" on page 2.
- To ensure safety, have a qualified person install wiring in accordance with all laws and regulations.


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Safety Requirements





Electrical wiring work should be handled by a qualified person dispatched from the seller or installation company. Be sure to carry out work according to the following precautions. Failure to do so may result in electric shock.


 **DANGER** Improper handling may lead to serious injury or death of the installer or user.


 **WARNING** Improper work may lead to serious injury or death of the installer or user.

 **CAUTION** Improper work may result in minor injury or property damage.


The symbols used in this text have the following meanings:





| | | | |
|---|------------------------|---|--------------------------------------|
|  | Risk of electric shock |  | Be sure to connect the earth ground. |
|  | Do not touch |  | Prohibited |

 **DANGER**




- **Turn the Distribution Panel Breaker, Inverter Unit Output Breaker, and Power SW to "OFF" when installing the Master Box.**
Failing to do so may result in electric shock.



 **WARNING**

| | | | |
|--|---|--|--|
|  Prohibited | <ul style="list-style-type: none">• Do not operate when your hands or body are wet. Doing so may result in electric shock. |  Follow Instructions | <ul style="list-style-type: none">• Wear low voltage rubber gloves when working with electrical wiring. Not doing so may result in electric shock.• Use only the included parts or specified materials when installing and wiring the unit. Failing to do so may result in electric shock or cause a fire.• Leave the Inverter Unit Output Breaker and Power SW "OFF" when wiring or when the system is not being operated. Failing to do so may result in electric shock due to high voltage.• Use a dedicated crimp tool to crimp power cable terminals, and fasten to the specified torque. Failing to do so could result in electric shock or cause a fire. |
|  Disassembly Prohibited | <ul style="list-style-type: none">• Never install in a location that is not listed in the Installation Manual or Electric Wiring Work Manual. Never disassemble or modify the unit. Doing so may cause the unit to drop, or may result in electric shock or cause a fire. | | |
|  Connect to earth ground | <ul style="list-style-type: none">• Make sure the earth ground is connected. Not doing so may cause electric shock or cause a fire. | | |

! WARNING

| | |
|---|--|
|  Prohibited | <p>Do not install in the following locations:</p> <ul style="list-style-type: none"> • Do not install the Master Box in locations where it may be exposed to steam. Doing so may worsen insulation, resulting in fire or electric shock. • Do not install the Master Box in regions where it may be exposed to salty conditions. (Locations that are within 500 m of coastlines or that are directly exposed to salt winds.) • Do not install the Master Box in locations that may flood. Doing so may cause a fire or result in electric shock. • Do not install the Master Box in locations that are very humid or that are poorly ventilated. Installation in a location with high humidity may worsen insulation, resulting in fire or electric shock. • Do not install the Master Box in locations that may become very hot (40° or higher) or that remain shut (such as in attics, closets, storage rooms, or under floors). Doing so may cause the output suppression function to run, reducing performance. It may also degrade parts, resulting in smoke or fire. • Do not install the Master Box in locations in which oily smoke is emitted, such as in kitchens. Doing so may degrade electric circuits and parts, causing burnout or fire. • Do not install the Master Box in locations where it may be exposed to corrosive gas or liquids (such as in chicken coops, barns, or places where chemicals are handled). Doing so may degrade parts, causing smoke or burnout. • Do not install the Master Box in locations where it may be exposed to cold air. Doing so may cause frost to build up on the product, causing a short circuit or burnout. • Do not install the Master Box upside down, sideways, or horizontally. Do not install it at an angle. Doing so may reduce internal radiation, degrading parts and causing smoke or fire. |
|---|--|

! CAUTION

| | |
|--|---|
|  Follow Instructions | <ul style="list-style-type: none"> • Install the Master Box in a location that adheres to the measurements listed in this manual. Otherwise, the product may be unable to radiate properly. In addition to reducing performance, this may cause errors. |
|  Prohibited | <ul style="list-style-type: none"> • Do not paint the Master Box. Doing so may cause the temperature inside the enclosure to rise abnormally due to irradiance, resulting in errors. • Do not install the Master Box between broadcasting office transmission antennas and residential receiver antennas. Depending on the installation location, this may cause reception problems with devices such as radios and television receivers. • Do not install in locations with strict noise restrictions. • Do not install in locations with strict electrical noise restrictions. • Do not install near medical instruments. Doing so may cause medical instruments to malfunction. • Do not install in near amateur radio antennas. |

Safety Requirements (Continued)

<Installer Qualifications>

This Installation Manual assumes knowledge related to handling electrical equipment.

Mounting, operating, servicing, and inspecting this product should be performed by a qualified service person according to regulations. "Qualified person" refers to someone who fulfills the following conditions:






- Has read this Installation Manual thoroughly and understands the content.
- Skilled in mounting, operating, servicing, and inspecting this electrical equipment, and understands its inherent dangers.
- Has received training on operating, servicing, and inspecting this electrical equipment.

<Precautions>

- Before handling, touch a metallic object to discharge static electricity.
Static electricity may cause the product to malfunction.

Overview/Functions

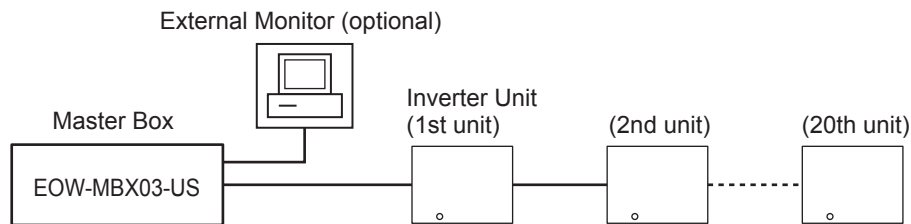
To provide following functions

- Starting/Stopping Operation of the entire system/individual inverter  Page 25
- Displays the status of power generation for the entire system/individual inverter  Page 27
- Displays System Status Information for the entire system/individual inverter  Page 29
- Displays System/Parameter Setting for the entire system/individual inverter  Page 35
- Outputs Data of the entire system to an External Monitor by using Tabuchi Original or Modbus protocol.  Page 20



<Master Box Connection Example>

(1) Controlling with a single Master Box

- A single Master Box can control up to 20 inverters.



<Master Box>

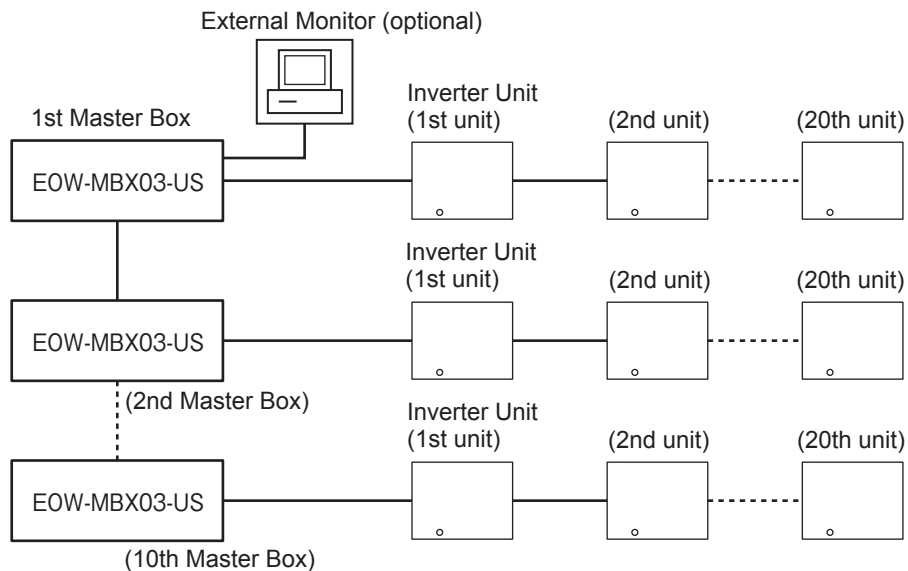
- Wiring and Setting the Master Box  Page 16
- Wiring the External Monitor (Optional)  Page 20

<Inverter Unit>




- Wiring and Setting the Inverter  Page 18

(2) Connecting Two or More Master Boxes

- A maximum of 10 Master Boxes can be connected.



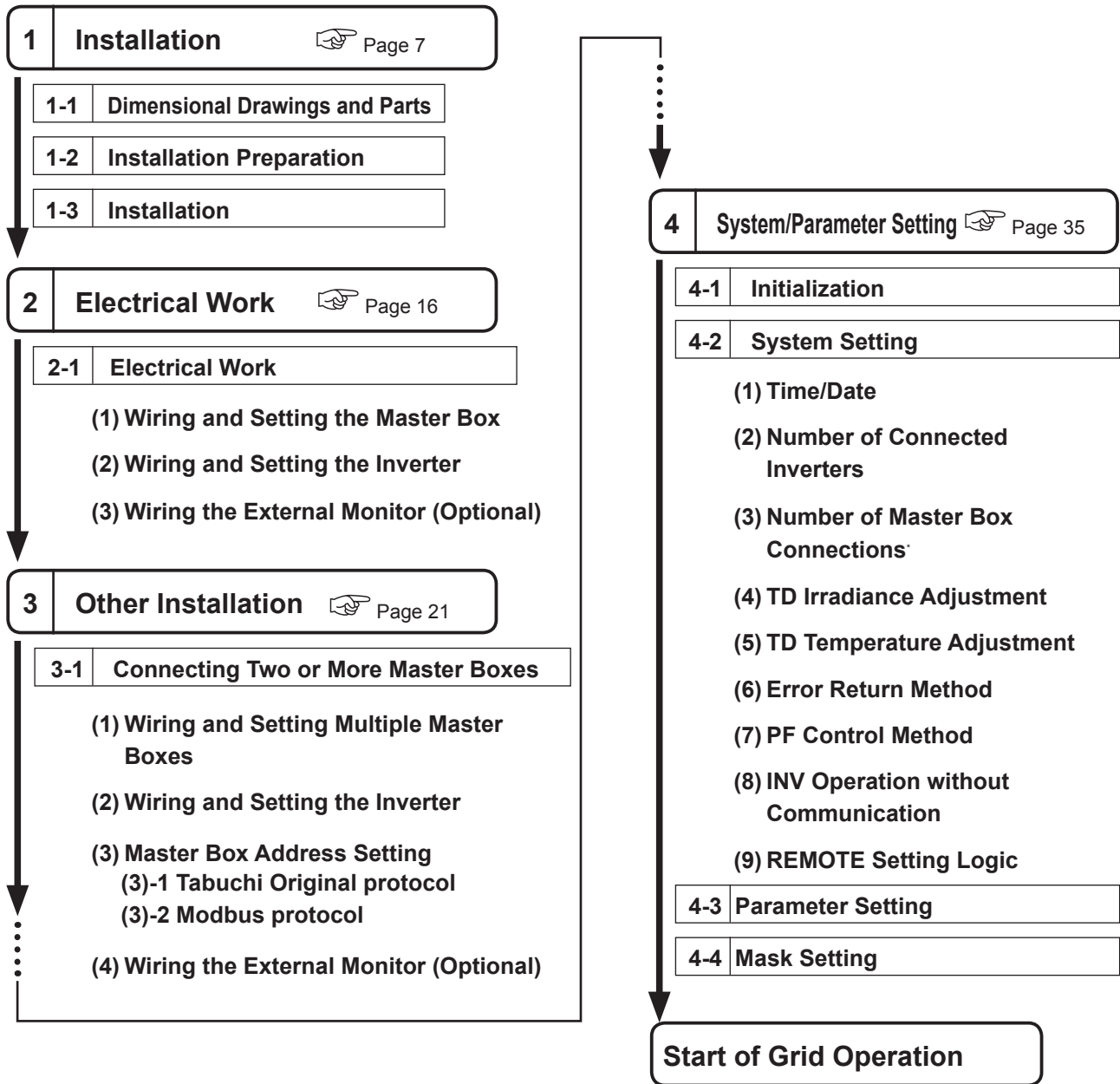
<Master Box>

- Wiring and Setting the Master Box  Page 16
- Connecting Two or More Master Boxes  Page 21
- Wiring the External Monitor (Optional)  Page 20

<Inverter Unit>

- Wiring and Setting the Inverter  Page 18

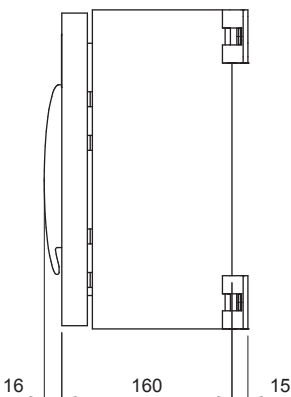
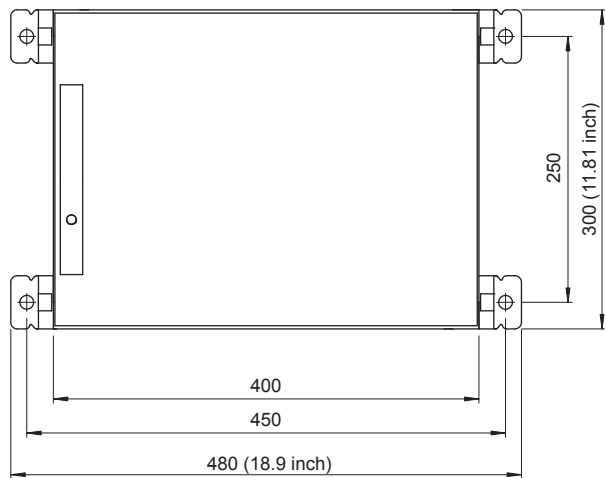
Prior to Starting Operation



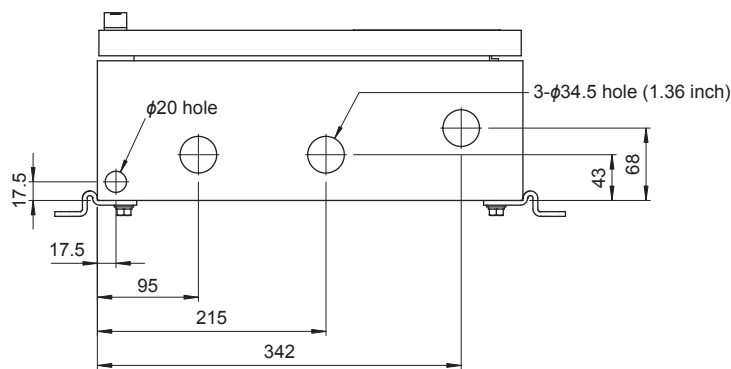
Dimensional Drawings and Parts

<Dimensional Outline Drawing>

Unit (mm)



Weight
Approx. 12 kg

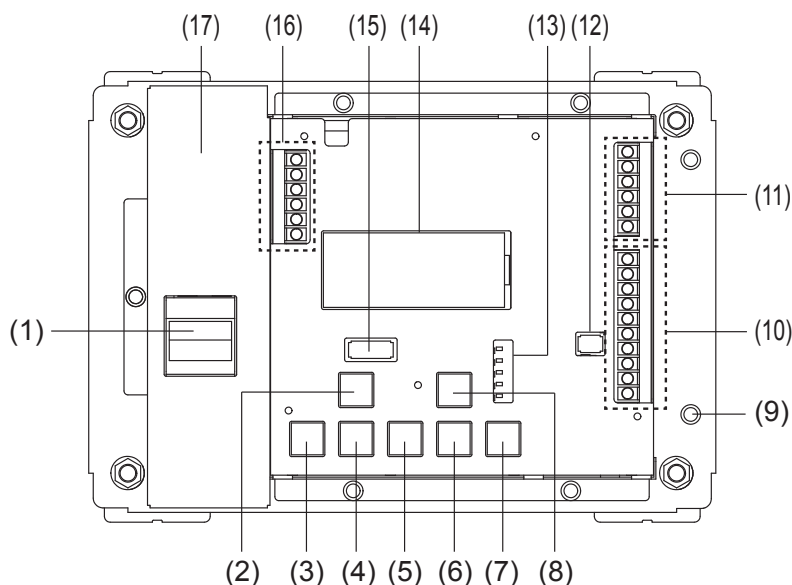


Accessories

| | |
|-----------------------------------|---|
| Installation and Operation Manual | 1 |
| Ferrite Ring Core | 1 |
| Key | 2 |

Dimensional Drawings and Parts (Continued)

<Internal View>



| Ref. No | Name | Description |
|---------|--------------------------|--|
| (1) | Power SW | Power switch to start the Master Box. |
| (2) | START/STOP Button | Starts/stops operation of connected inverters. |
| (3) | MODE Button | Switches between display and operation modes. |
| (4) | UP Button | Pressing this button changes the display for the power status, system information, and each setting. |
| (5) | DOWN Button | |
| (6) | BACK Button | |
| (7) | ENTER Button | |
| (8) | RE-START Button | Used to manually recover when a malfunction has occurred. |
| (9) | F.G | Frame GND |
| (10) | RS485 COM Terminal | Inverter Unit or Master Box are connected by a RS485 signal. |
| (11) | REMOTE Terminal | Not Used (Optional) |
| (12) | RS485 Termination SW | When the Master Box is placed at the end of RS485 line, this switch should be ON. |
| (13) | LED Display | Inverter status by setting, operation, stop, error, communication |
| (14) | LCD Display Panel | PV Power Status, System Information, Parameter Set |
| (15) | Master Box Address SW | Sets the address of each Master Box when two or more Master Boxes are connected. |
| (16) | TEMP Irradiance Terminal | Connected to cables running from the pyranometer and temperature meter. |
| (17) | Protective Cover | Only remove the protective safety cover when connecting to power. |

<Terminal Area>

Details regarding the terminal area are shown below.

(16) TEMP Irradiance Terminal
(TB1001)

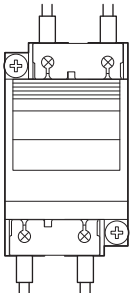
| | | |
|------------|-----|---|
| not used | +5V | 1 |
| not used | GND | 2 |
| TEMP | P | 3 |
| TEMP | N | 4 |
| IRRADIANCE | P | 5 |
| IRRADIANCE | N | 6 |

(10) RS485 COM Terminal
(TB1002)

| | | |
|---------------|--------|----|
| BOX RS485 COM | BOX-P2 | 10 |
| | BOX-N2 | 9 |
| | BOX-G2 | 8 |
| | BOX-P1 | 7 |
| | BOX-N1 | 6 |
| | BOX-G1 | 5 |
| | SG | 4 |
| INV-485 COM | INV-P | 3 |
| | INV-N | 2 |
| | INV-G | 1 |

(17) Inside of Protective Cover

(1) Power SW Terminal



Commercial power supply
AC115V
60Hz

⊕ Earth GND

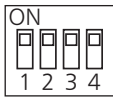


Dimensional Drawings and Parts (Continued)

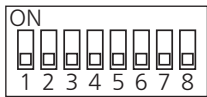
<Dip SW>

Used to set for the Master Box communicates. (👉 Page 17, Page 22)

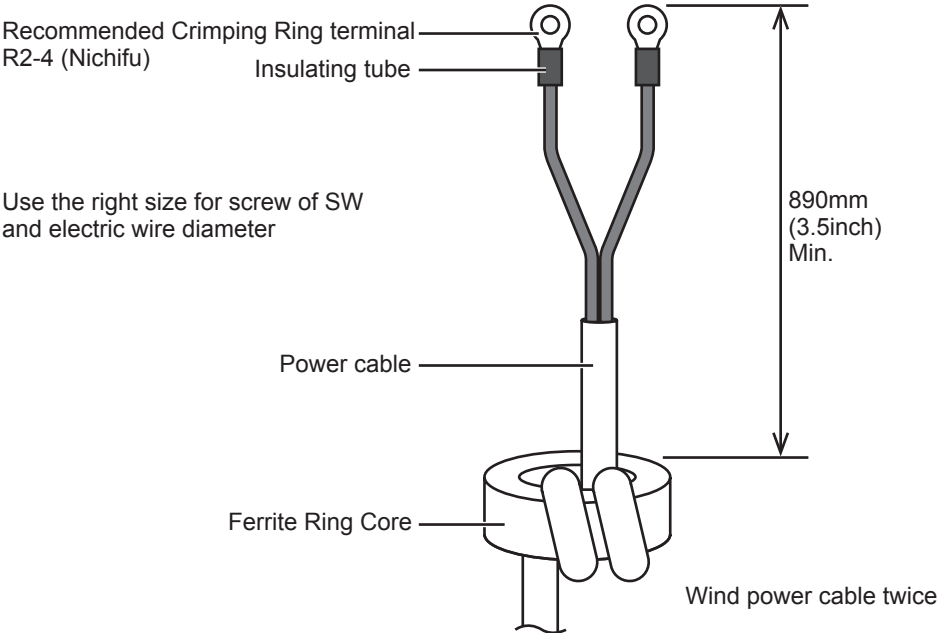
(12) RS485 Termination SW
(SW1012)



(15) Master Box Address SW
(SW1001)



<Using the Ferrite Ring Core attached Accessory>



Installation Preparation

Install the Master Box according to the location noted in the electrical diagram.

<Note>

- Be sure to follow the warnings and precautions on  pages 2 - 4.

This Master Box is for use outdoors. Be sure to follow the environmental conditions below:

<Usable Environmental Conditions> <Environmental conditions in which this product must not be used>

- Temperature:
-20 to +50°C
- Humidity: 90% or lower
(with no condensation)
- Elevation:
1,000 m or lower
- Locations exposed to direct sunlight.
- Locations exposed to direct heat from devices such as stoves.
- Locations subject to vibrations.
- Near devices that may emit sparks.
- Locations with dust, corrosive gas, salt, or combustible gas.
- Locations with noise restrictions such as places where people are and where sound may reverberate (such as classrooms or libraries).
- Residences (locations where people normally live).
- Locations where there is concern about the effect of high frequency noise from sources such as security cameras and radio guidance.
- Locations that cannot be easily inspected.

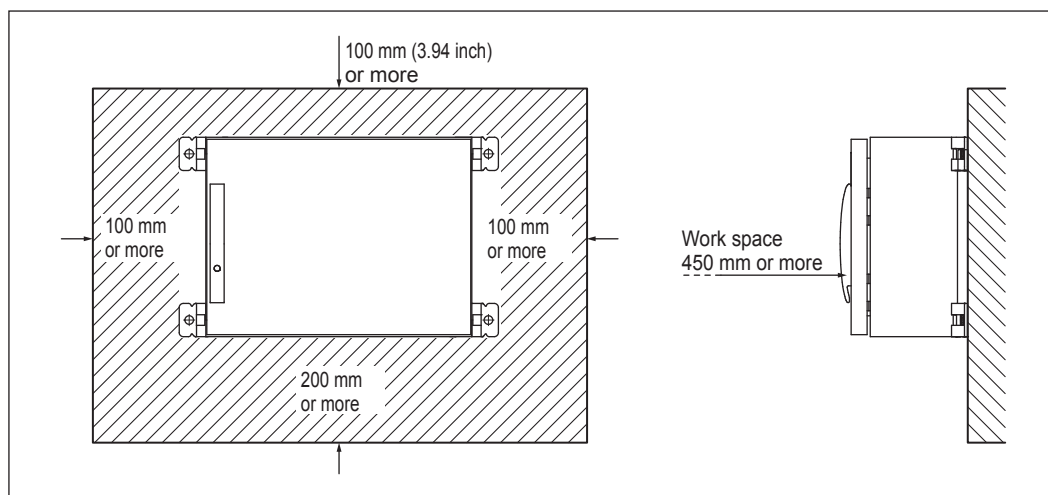
<Precautions>

- Confirm frames and walls used for installation can support the weight of the Master Box.

| Weight * |
|---------------|
| Approx. 12 kg |

* Weight does not include mounting brackets or frames.

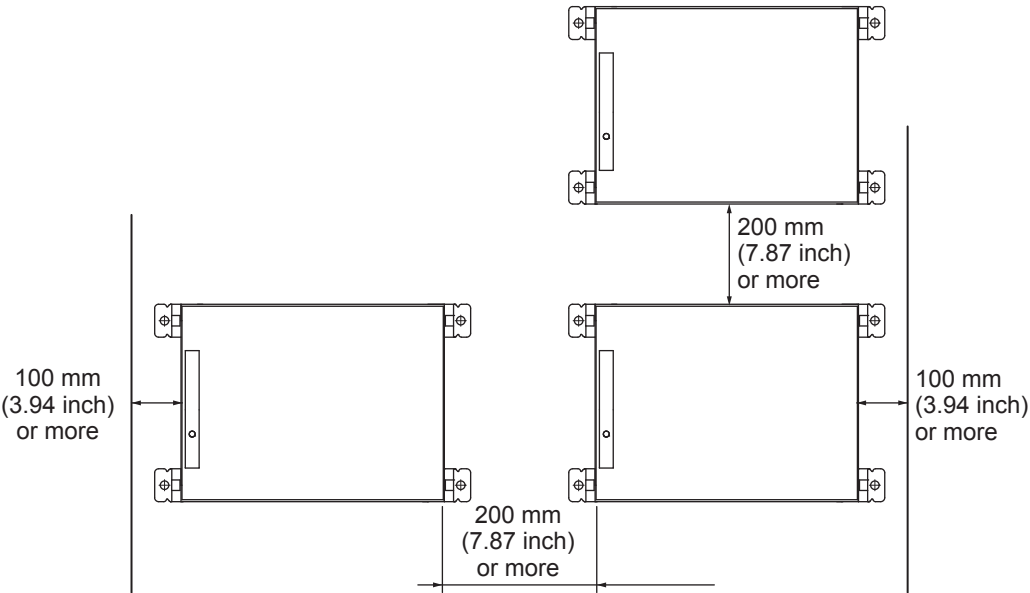
- Have the installer prepare a reinforced plate for the frame and the wall.
- Ensure the installation space as shown in the diagram below around the Master Box. (In order to provide space for ventilation, operation, and inspection, and to prevent being covered by snow or penetrated by water.)



Installation Preparation (Continued)

<When installing multiple units>

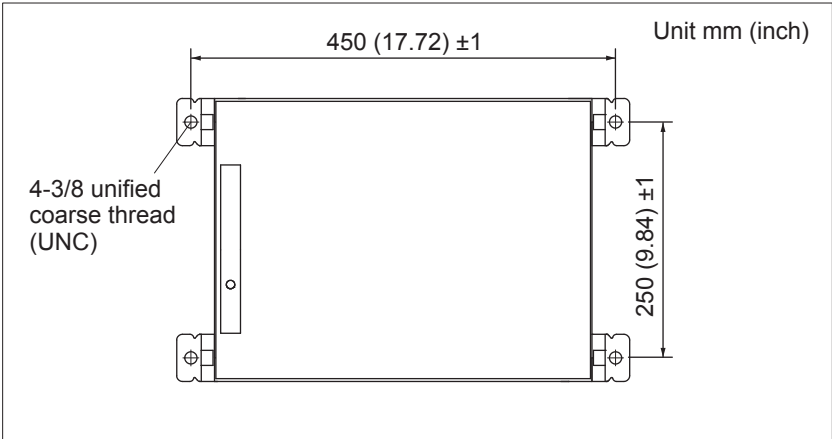
Refer to the following diagram when installing multiple Master Boxes:



<Installation hole positions>

Fixing bolt screw positions

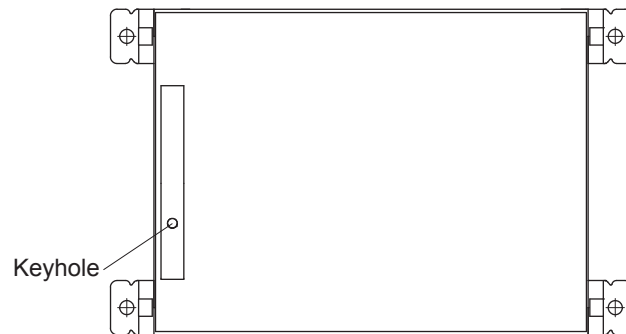
[When the mounting bracket is fixed in a lateral location]



Installation

1 Open the front panel.

(1) Unlock and open the front panel.

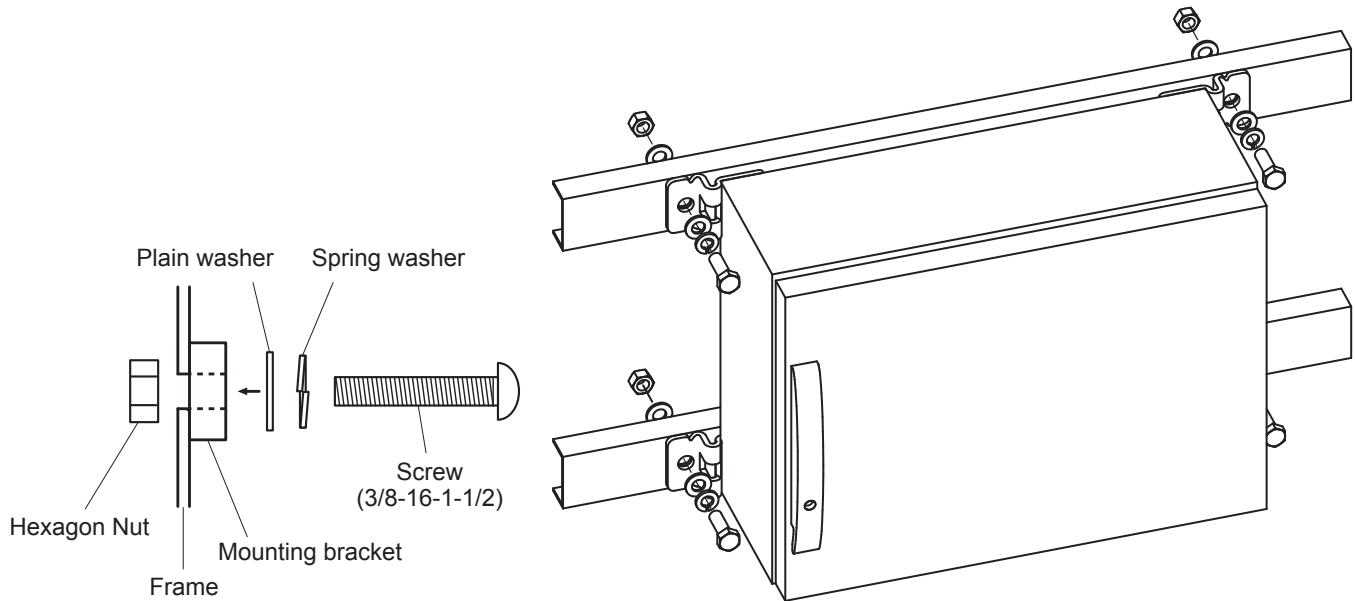


2 Fix the main unit to the frame.

- (1) Fix the main unit to the frame with the four bolts provided.

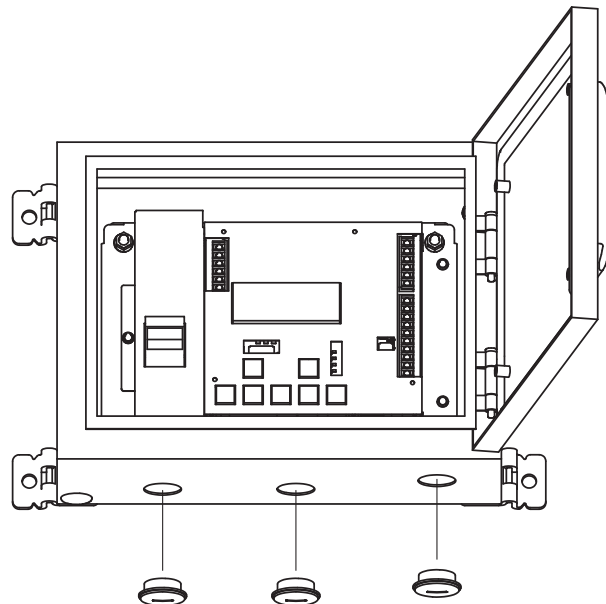
<Tightening torque: 11.1 to 13.5 N·m>

- Have the installer prepare the frame.



3 Pull the cables into the Master Box.

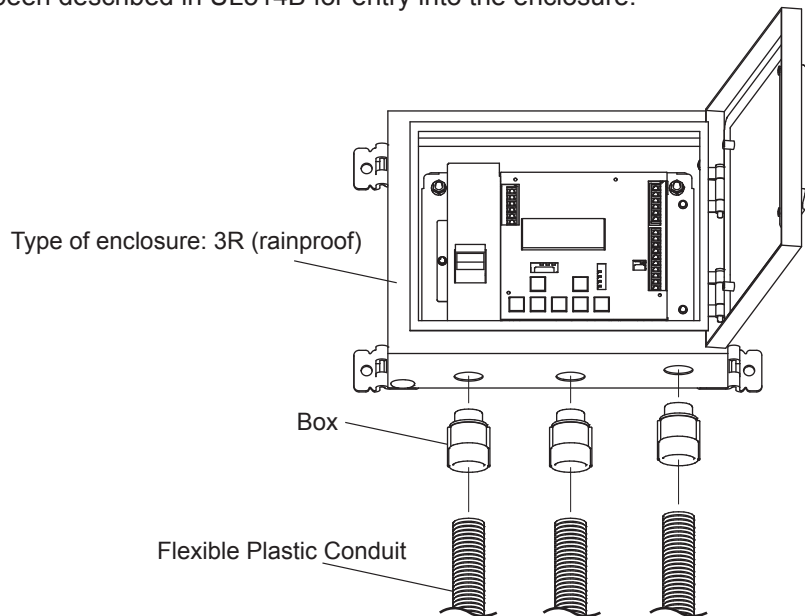
- (1) Remove the three wiring caps on the bottom side.



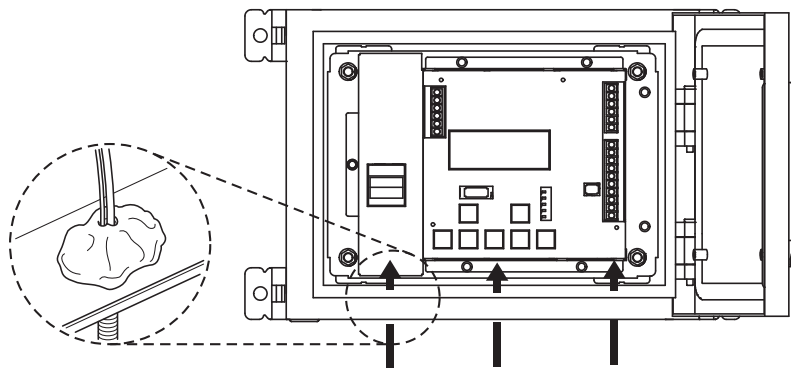
(2) Connect the flexible plastic conduit connectors to the wiring hole.

- Use rain-proof or wet location conduit that comply with the requirements in the Standard for Conduit, Tubing.

It has been described in UL514B for entry into the enclosure.





(3) Fill the inside of the wiring hole with putty.



5 Begin electrical work.

(1) Run wires to the Master Box and the Inverter. Configure both.

- Wiring and Setting the Master Box:  Page 16
- Wiring and Setting the Inverter:  Page 18

6 Close the front panel.

(1) Once electrical work is complete, close the front panel and lock it.

Electrical Work

Wiring and Setting the Master Box

1 Wire the power cable. (👉 Pages Page 9- 10)

- (1) Remove the protective cover and wire a commercial power supply cable to the power SW terminal.

Make sure the power SW is OFF when working.

- Use 115 VAC for power.

- (2) Return the protective cover to its original position once wiring is complete.

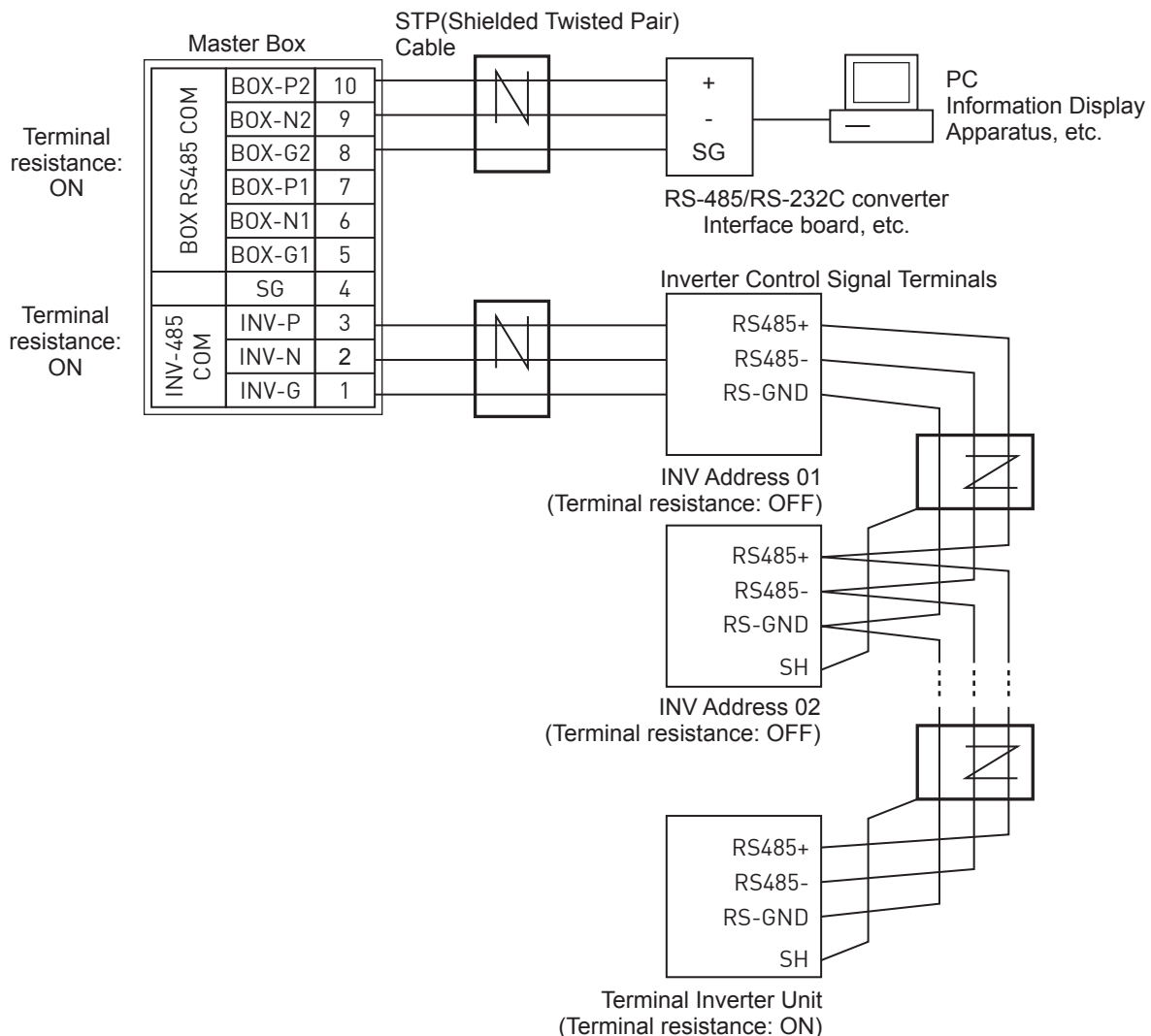
<Connecting a single Master Box>

2 Wire the control signal, etc.

- (1) Wire signal cables to Signal Line Terminals 1 through 3. (TB1002).

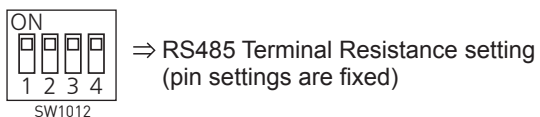
<Tightening torque: 0.88 to 1.08 N·m>

| No | Terminal name | Signal |
|----|---------------|--------|
| 1 | INV-G | RS-GND |
| 2 | INV-N | RS485- |
| 3 | INV-P | RS485+ |



3 Confirm the RS485 Terminal Resistance setting

- (1) Terminal resistance is applied to the Master Box for RS485 communication between the Master Box and the inverter. Therefore, use an RS485 connection terminal for the Master Box.
- (2) Confirm that the RS485 Termination Switch (SW1012) is configured as shown below:

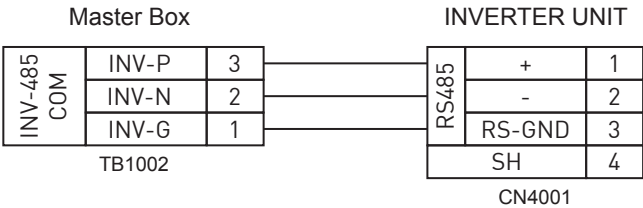


- Connecting Two or More Master Boxes  Page 21

Wiring and Setting the Inverter

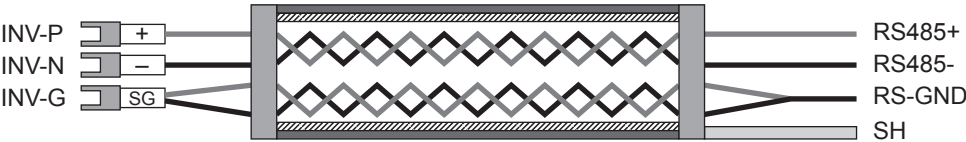
1 Wire the signal cable.

- (1) Stop inverter operation, and turn OFF the Power SW of Master Box and all output breakers.
 - Settings are not applied when current is flowing.
 - For information on how to stop the Inverter Unit from operating, refer to “DC Switch-disconnector” for an individual inverter in the “Inverter Unit Installation Manual” on page 10.
- (2) Wire the communication cable between the Master Box and the inverter.
 - <Tightening torque: 0.3 to 0.5 N·m>
 - For information on wiring to the Inverter Unit, refer to “6.6 Communication Connection” in the Inverter Unit Installation Manual.



<RS485 Cable>
RS485 Cable (Required cable)
STP (Shielded Twisted Pair) , 2pair , AWG20 or AWG22

Diagram



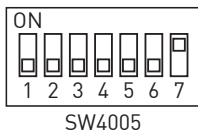
The shield must be tied to ground at only one point on the line

2 Configure communication.

(1) Use Dip SW4005 on the inverter to configure the “Address Setting.”

- For information on the “Address Setting,” refer to “Dip SW Setting” in the Inverter Unit Installation Manual. Refer to 6.6.1 Connecting the Inverter to the Master BOX Procedure

(Example)
Address 1



<Relationship between addresses and Dip SW>

| Address | Pin #3 | Pin #4 | Pin #5 | Pin #6 | Pin #7 |
|---------|--------|--------|--------|--------|--------|
| 1 | OFF | OFF | OFF | OFF | ON |
| 2 | OFF | OFF | OFF | ON | OFF |
| 3 | OFF | OFF | OFF | ON | ON |
| 4 | OFF | OFF | ON | OFF | OFF |
| 5 | OFF | OFF | ON | OFF | ON |
| 6 | OFF | OFF | ON | ON | OFF |
| 7 | OFF | OFF | ON | ON | ON |
| 8 | OFF | ON | OFF | OFF | OFF |
| 9 | OFF | ON | OFF | OFF | ON |
| 10 | OFF | ON | OFF | ON | OFF |
| 11 | OFF | ON | OFF | ON | ON |
| 12 | OFF | ON | ON | OFF | OFF |
| 13 | OFF | ON | ON | OFF | ON |
| 14 | OFF | ON | ON | ON | OFF |
| 15 | OFF | ON | ON | ON | ON |
| 16 | ON | OFF | OFF | OFF | OFF |
| 17 | ON | OFF | OFF | OFF | ON |
| 18 | ON | OFF | OFF | ON | OFF |
| 19 | ON | OFF | OFF | ON | ON |
| 20 | ON | OFF | ON | OFF | OFF |

Set Pin#1 and Pin2 OFF

(2) Use Dip SW4001 on the Inverter to configure the “RS485 Terminal Resistance Setting.”

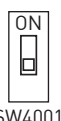
- For information on the “RS485 Terminal Resistance Setting,” refer to “6.6.1 Connecting the Inverter to the Master BOX” in the Inverter Unit Installation Manual.

Dip SW “ON”



⇒ RS485 Terminal
Resistance setting

Dip SW “OFF”



⇒ RS485 relay setting

If multiple units are connected in sequence, configure the last Inverter as the terminal, and all other units as relays.

Wiring the External Monitor (Optional)

Wire as shown below if outputting signals from the entire system/individual inverters to an External Monitor, such as a PC or Information Display Apparatus.

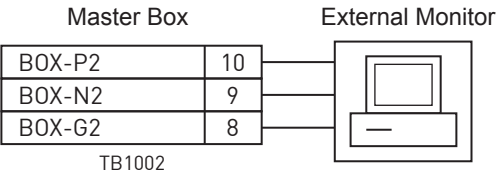
1 Wire the connection cable for the external monitor.

(1) Wire Signal Line Terminals 8 through 10 (TB1002).

<Tightening torque: 0.88 to 1.08 N·m>

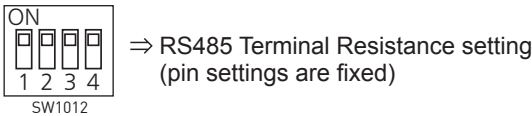
- If two or more Master Boxes are connected, wire the connection cable for terminals 8 through 10 of the 1st Master Box.

| No | Terminal Name | Signal |
|----|---------------|--------|
| 10 | BOX-P2 | RS485+ |
| 9 | BOX-N2 | RS485- |
| 8 | BOX-G2 | RS-GND |



2 Confirm the RS485 Terminal Resistance setting.

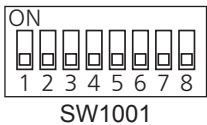
(1) Confirm the RS485 Termination Switch (SW1012) connected to the External Monitor is configured as shown below:



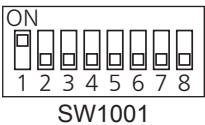
Wiring the External Monitor (Optional) Using Modbus protocol

- At Power-on, when SW 1001 pin 1 is OFF, Master Box communication is enabled (Modbus protocol is disabled), when SW1001 pin 1 is ON, Modbus protocol is enabled (Master Box original protocol is disabled).
- Reading of this DipSw is done only at Power-on, communication protocol is not changed even if DipSw is changed after Master Box Power-on.

Tabuchi Original protocol



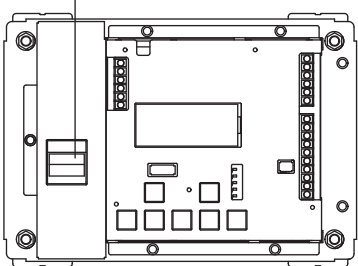
Modbus protocol



<Power-on reset>

Turn off the Power SW and turn it on again.

Power SW



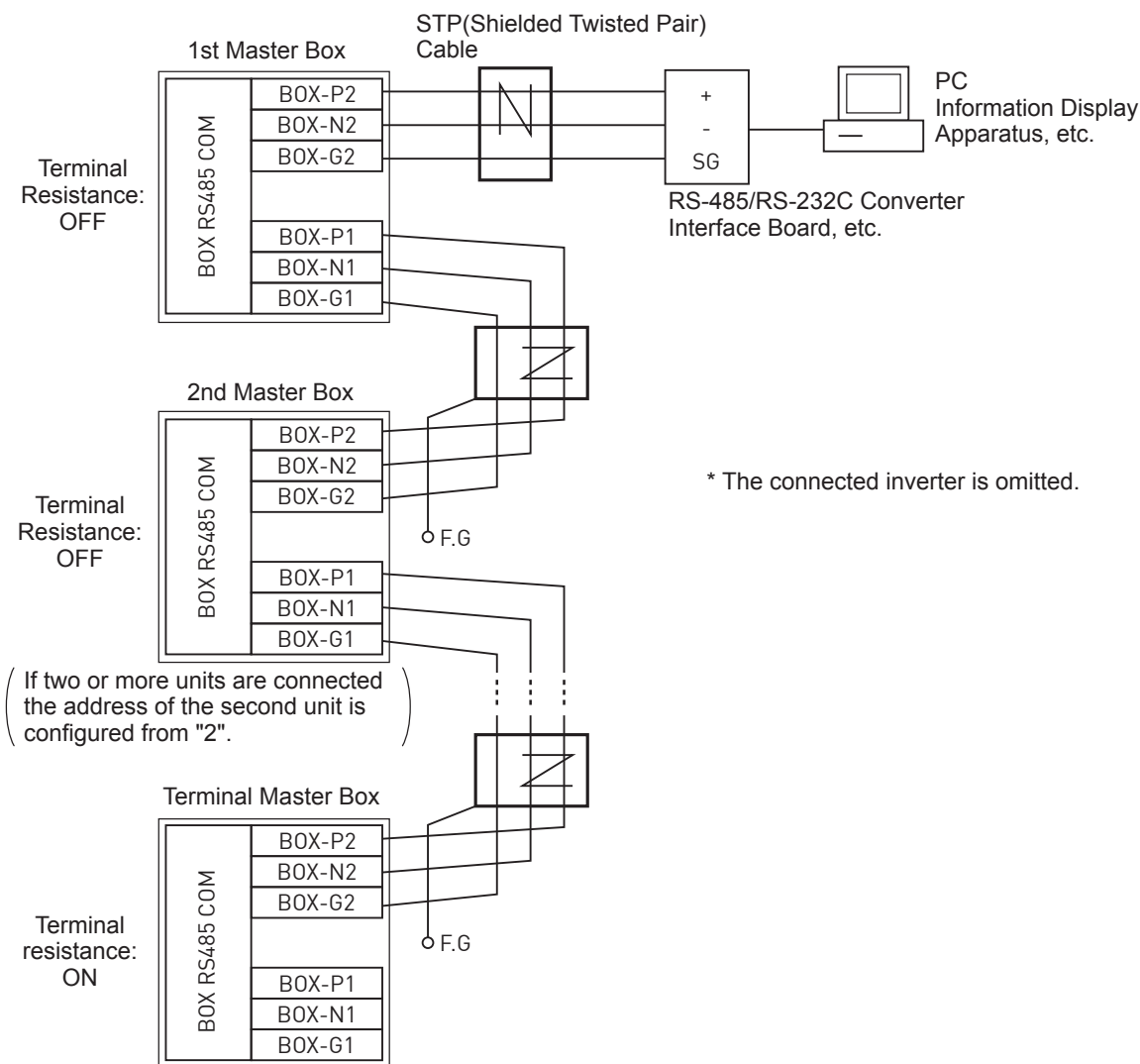
Connecting Two or More Master Boxes

Interwiring and Setting Master Boxes

1 Wire the Signal Line Terminal (TB1002) for each Master Box using a communication cable.

- (1) Wire the 1st Master Box and 2nd Master Box together (terminals 5 through 7) using a signal cable.
 - (2) From the 2nd Master Box on, input to terminals 5 through 7, and output from terminals 8 through 10.
- To connect an External Monitor, wire the communication cable for the external monitor to terminals 8 through 10 of the 1st Master Box.

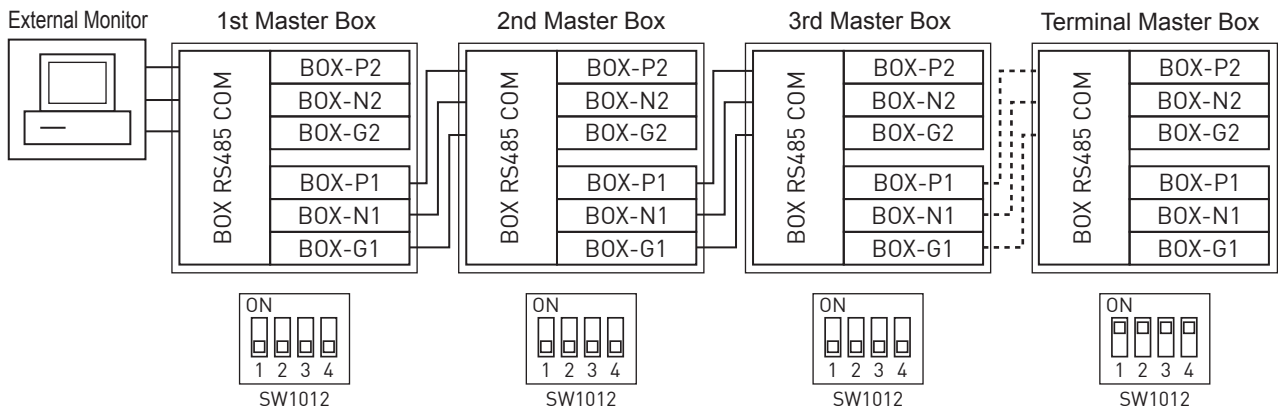
| No | Terminal name | Signal |
|----|---------------|--------|
| 10 | BOX RS485 COM | BOX-P2 |
| 9 | | BOX-N2 |
| 8 | | BOX-G2 |
| 7 | | BOX-P1 |
| 6 | | BOX-N1 |
| 5 | | BOX-G1 |



Connecting Two or More Master Boxes (Continued)

2 Use the RS485 Termination Switch (SW1012) to configure the RS485 Terminal Resistance Setting between Master Boxes.

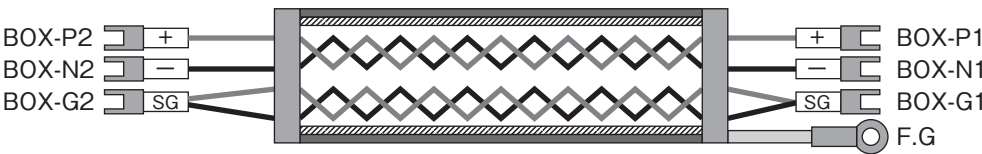
- (1) Set the all pins of the Master Boxes to “OFF”.
- (2) On the Terminal Box, set all pins to “ON”.



<RS485 Cable>

Required RS485 Cable

STP (Shielded Twisted Pair) , 2pair , AWG20 or AWG22



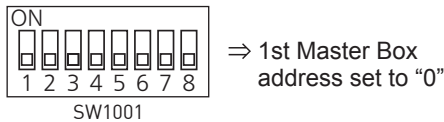
The shield must be tied to ground at only one point on the line

Address Setting to Connect Master Boxes to 1st Master Box

■ Tabuchi Original protocol

1 Configure using the Address Setting Switch (SW1001).

- (1) Set pin #1 through #8 on the 1st Master Box to "OFF".
- (2) Set the address for the 2nd Master Box and any subsequent units to 2 through 10.
 - If two or more Master Boxes are connected, configure the address of the 1st Master Box to "0".
 - Set the address of the 2nd Master Box and any subsequent units from "2".
 - Refer to <Relationship between Addresses and Dip SW> for pin settings.



<Relationship between Addresses and Dip SW>

| Address | Pin #3 | Pin #4 | Pin #5 | Pin #6 | Pin #7 | Pin #8 |
|---------|--------|--------|--------|--------|--------|--------|
| 0 | OFF | OFF | OFF | OFF | OFF | OFF |
| 1 | OFF | OFF | OFF | OFF | OFF | ON |
| 2 | OFF | OFF | OFF | OFF | ON | OFF |
| 3 | OFF | OFF | OFF | OFF | ON | ON |
| 4 | OFF | OFF | OFF | ON | OFF | OFF |
| 5 | OFF | OFF | OFF | ON | OFF | ON |
| 6 | OFF | OFF | OFF | ON | ON | OFF |
| 7 | OFF | OFF | OFF | ON | ON | ON |
| 8 | OFF | OFF | ON | OFF | OFF | OFF |
| 9 | OFF | OFF | ON | OFF | OFF | ON |
| 10 | OFF | OFF | ON | OFF | ON | OFF |

Connecting Two or More Master Boxes (Continued)

■ Modbus protocol

1 Configure using the Address Setting Switch (SW1001).

- (1) Set pin #1 through #8 on the 1st Master Box to “OFF”.
- (2) Set pin #1 on the Master Box to “ON”.
- (3) Set the address for the 1st Master Box and any subsequent units to 1 through 10.
 - If two or more Boxes are connected, configure the address of the 1st Master Box to “1”.
 - Set the address of the 2nd Master Box and any subsequent units from “2”.
 - Refer to <Relationship between Addresses and Dip SW> for pin settings.

<Relationship between Addresses and Dip SW>

| Address | Pin #3 | Pin #4 | Pin #5 | Pin #6 | Pin #7 | Pin #8 |
|---------|--------|--------|-----------|-----------|-----------|-----------|
| 0 | OFF | OFF | OFF | OFF | OFF | OFF |
| 1 | OFF | OFF | OFF | OFF | OFF | ON |
| 2 | OFF | OFF | OFF | OFF | ON | OFF |
| 3 | OFF | OFF | OFF | OFF | ON | ON |
| 4 | OFF | OFF | OFF | ON | OFF | OFF |
| 5 | OFF | OFF | OFF | ON | OFF | ON |
| 6 | OFF | OFF | OFF | ON | ON | OFF |
| 7 | OFF | OFF | OFF | ON | ON | ON |
| 8 | OFF | OFF | ON | OFF | OFF | OFF |
| 9 | OFF | OFF | ON | OFF | OFF | ON |
| 10 | OFF | OFF | ON | OFF | ON | OFF |

* Invalid Master Box (Modbus protocol)

- If “Invalid Box Address!” is displayed, Master Box address is other than 1 to 10.

The Master Box does not work at this status.

Please change Master Box address to correct setting on Master Box Address SW (SW1001) and turn off the Power SW and turn it on again.

System state display
(Valid Master Box Address)

Oct01-12:00:00 BOX01
Status:
Power:
Stop INV:

System state display
(Invalid Master Box Address)

Invalid BOX Address!

Starting/Stopping Operation

Multiple inverters connected in a series can be started as an entire system or individually.

- A maximum of 20 inverters can be connected to a single Master Box.
- In addition to starting and stopping operation, the PV power status of the entire system and each inverter can be displayed. (👉 Page 27)

Entire System

1 Supply power to the Master Box.

Page 7: Turn the POWER SW ON.

The Time/Date Setting Screen is only shown during initial startup.

- Be sure to set the time and date during startup. (👉 Page 36)

| |
|------------------------|
| [System Setup] |
| Time/Date ? |
| Nov/01/2015 - 12:00:00 |
| ^^^ |

Time/Date Setting Screen

2 Press to show the PV Power Status Screen for the entire system.

| | |
|------------------|---------|
| Nov 1 - 12:00:00 | BOX 00 |
| Status: | Conn |
| Power: | 150.3kW |
| Stop INV: | Yes |

PV Power Status Screen
(Entire system)

3 Press .

Start/stop operation of all connected inverters.

| | |
|------------------|---------|
| Nov 1 - 12:00:00 | BOX 00 |
| Status: | Disconn |
| Power: | 0.0kW |
| Stop INV: | Yes |

Stop Operation Screen
(Entire system)



Individual Inverter

1 Press to show the PV Power Status Screen for the entire system.

| | |
|------------------|---------|
| Nov 1 - 12:00:00 | BOX 00 |
| Status: | Conn |
| Power: | 150.3kW |
| Stop INV: | Yes |

PV Power Status Screen
(Entire system)

2 Press or to show the inverter as start or stop.

- The PV Power Status Screen of the connected inverter changes each time  or  is pressed.

| | |
|------------------|---------|
| Nov 1 - 12:00:00 | INV 01 |
| Status: | Ope |
| Power: | 15.00kW |
| Bus Voltage: | 880.0V |

PV Power Status Screen
(Individual Inverter)

3 Press .

Start/stop operation of the displayed inverter.

- Operation is not changed for inverters that are not displayed.



| | |
|------------------|--------|
| Nov 1 - 12:00:00 | INV 01 |
| Status: | Stop |
| Power: | 0.00kW |
| Bus Voltage: | 880.0V |

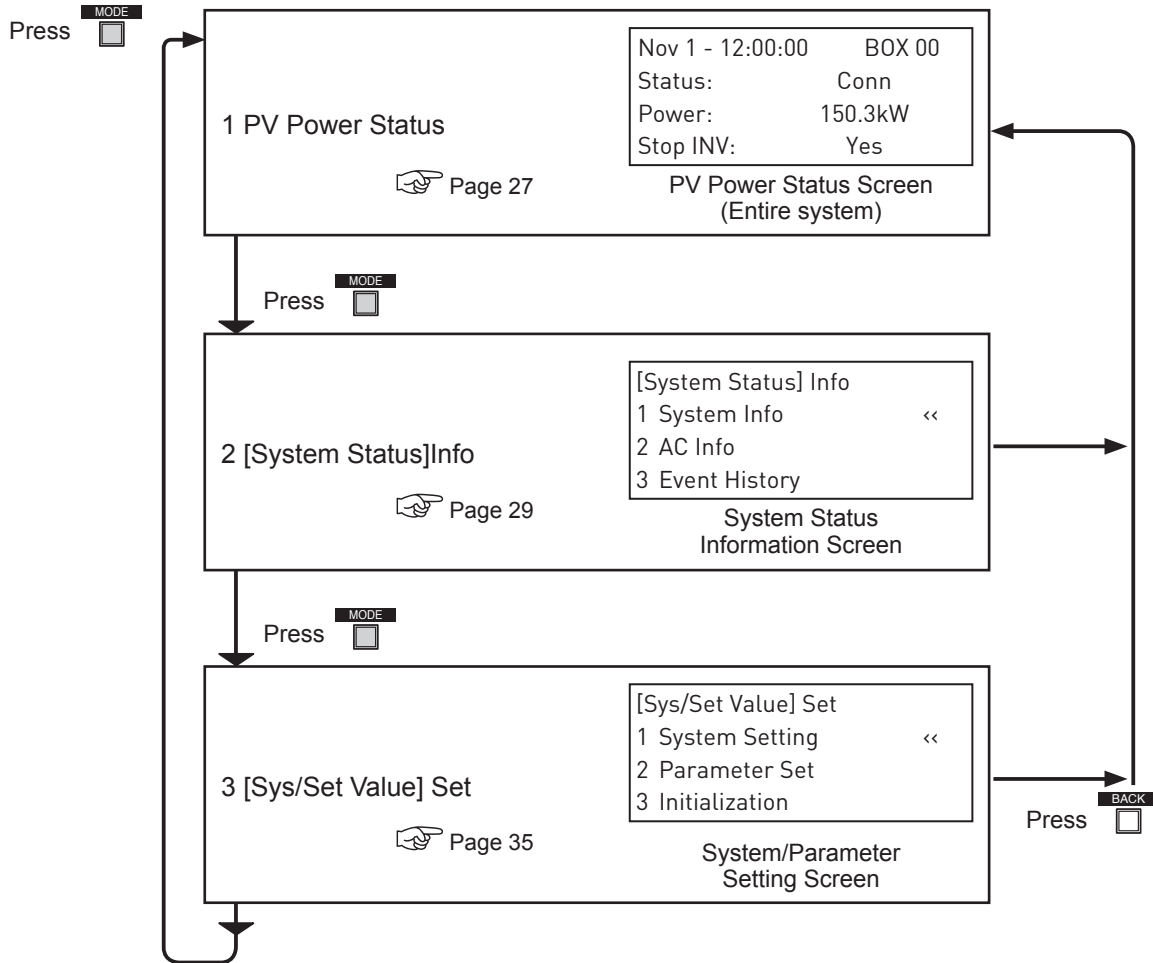
Stop Operation Screen
(Individual Inverter)

Mode Selection

The display switches between “PV Power Status,” “[System Status] Info,” and “[Sys/Set Value] Set”.

1 Repeatedly press to switch modes.

- The mode switches each time  is pressed, as shown below. Pressing  when in [System Status] Info MODE or [Sys/Set Value] Set MODE switches back to PV Power Status MODE.



1. PV Power Status MODE

The PV power status is displayed for the entire system or an individual inverter.

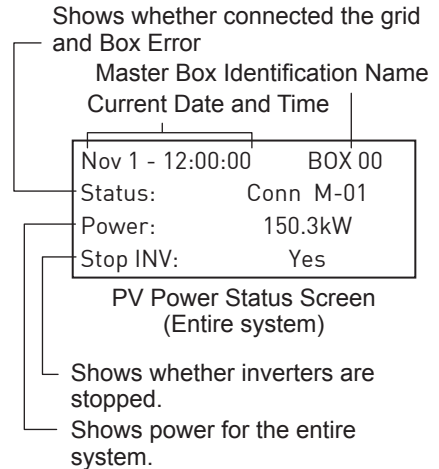
- The PV power status screen for each inverter can show the amount of power for each connected string.

PV Power Status Screen for the Entire System

- 1 Press **MODE**  to show the PV Power Status Screen for the entire system.

- The operation of the entire system can be started or stopped from the PV Power Status Screen.

( Page 25)





PV Power Status Screen for Individual Inverters

- 1 Press **MODE**  to show the PV Power Status Screen for the entire system.

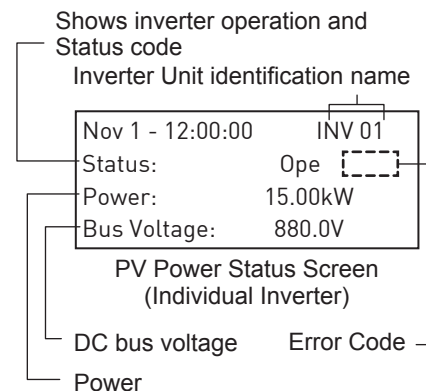
| | |
|------------------|---------|
| Nov 1 - 12:00:00 | BOX 00 |
| Status: | Conn |
| Power: | 150.3kW |
| Stop INV: | Yes |

PV Power Status Screen (Entire system)

- 2 Press **UP**  or **DOWN**  to select an inverter.


- The PV Power Status Screen of each connected inverter switches each time **UP**  or **DOWN**  is pressed.
- The operation of each inverter can be started or stopped from the PV Power Status Screen.

( Page 25)



- 3 Press **ENTER** .

The String PV Power Status Screen appears for the selected inverter.

- The power status of each DC input circuit is displayed (PV 1 through PV 6).
- Pressing **BACK**  will return the display to the PV Power Status Screen of the selected inverter.

| | |
|------------------|-----------|
| Nov 1 - 12:00:00 | INV 01 |
| PV1: 3000W | PV2:3000W |
| PV3: 3000W | PV4:3000W |
| PV5: 3000W | PV6:3000W |

String PV Power Status Screen (PV1 through PV6)

1. PV Power Status MODE (Continued)

<Status Display>

■ Status display for the entire system

- “Conn” (connect to the grid): At least one inverter in the system is operating.
- “Disconn” (disconnect to the grid): All inverters in the system are stopped.

■ Status display for individual inverter

- Four statuses are displayed:
“Ope” (operation state), “Error” (error state) “Stop” (stop state) and “Stand-by” (stand-by state).

■ Status Code are displayed: Box Error Code, Inverter Controlled Code AND Error Code

Box Error Code

 Page 32)

Inverter Controlled Code

<Code list>

| | |
|------|-------------------------|
| N-01 | Voltage Regulation |
| N-02 | Temperature Suppression |
| N-03 | N-01 and N-02 |
| N-04 | Output Power Control |
| N-05 | N-01 and N-04 |
| N-06 | N-02 and N-04 |
| N-07 | N-01, N-02 and N-04 |

Error Code

 Page 32)

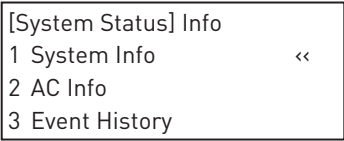
2. [System Status] Info MODE

Displays “System Information,” “AC Information,” “Event History,” and “Total Power”.

- The history can be cleared from the “Event History” screen.

System Status Information

1 Repeatedly press  to display the System Status Information Screen.







System Status Information Screen

2 Press  or  , select an item, and press  .

Information for the selected item is displayed.



<System Information items>

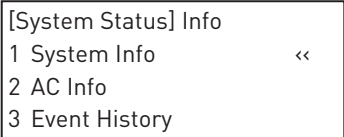
| No. | Item | Display | Reference |
|-----|--------------------|-----------------|---|
| 1 | System Information | 1 System Info |  Page 30 |
| 2 | AC Information | 2 AC Info |  Page 30 |
| 3 | Event History | 3 Event History |  Page 31 |
| 4 | Total Power | 4 Total Power |  Page 34 |

- Press  to return to the System Status Information Screen.

2. [System Status] Info MODE (Continued)

1. System Information


1 Press  or  on the System Status Information Screen, and select “1 System Info”.

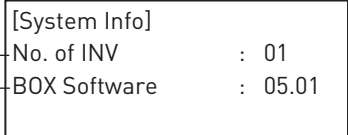


System Status Information Screen

2 Press  .

The System Information Screen appears.

- Press  to return to the System Status Information Screen.





System Information Screen

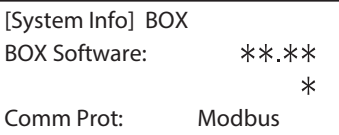
Applied Software Version (Current)

The number of connected inverters



■ Communication protocol indicator

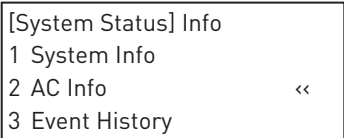
When Modbus protocol is enabled,

- Press  displays a valid communication protocol on the system status information screen.
- Press  backs to the previous screen.



2. AC Information


1 Press  or  in the System Status Information Screen, and select “2 AC Info”.

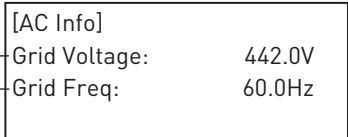


System Status Information Screen

2 Press  .

The AC Information Screen appears.

- Press  to return to the System Status Information Screen.





AC Information Screen

AC frequency

AC voltage

3. Event History

- 1 Press  or  on the System Status Information Screen, and select “3 Event History”.

[System Status] Info
 1 System Info
 2 AC Info
 3 Event History <<

System Status
 Information Screen




- 2 Press .

The Event History Screen appears.

- 3 Press  or , select an event history item, and press .



Information for the selected event is shown.

<Event History Display Items>

| No. | Item | Display | Reference |
|-----|---------------------------------|--------------------|--|
| 1 | Error History | 1 Error Hstry |  Page 31 |
| 2 | Voltage Regulation History | 2 V Reg Hstry |  Page 33 |
| 3 | Temperature Suppression History | 3 Temp Spprs Hstry |  Page 34 |

- Press  to return to the System Status Information Screen.

1. Error History



- (1) Press  or  on the Event History Screen, and select “1 Error Hstry”.

- (2) Press .


The display appears.

- Information for the stopped inverter is displayed in order of the latest error event. (Date and time of occurrence, Inverter Unit Identification Name, Error Code, and Error Details)

Refer to <Error Code list> ( Page 32)

- Pressing  or  switches the display of the Error History for scroll.
- The Error History retains a maximum of 512 events. A four-digit Error Code is shown using alphanumeric characters depending on the details of the error.

* For details, ask your service person.

- Press  to return to the System Status Information Screen.

[Event History]
 1 Error Hstry <<
 2 V Reg Hstry
 3 Temp Spprs Hstry

Event History Screen

Date and time of occurrence

Inverter Unit identification name

[Error] 001

Nov/01/2015-13:00:00

INV01-DC/DC1

D-12 Over V

Error History Screen

Error Code, Error Details

Inverter Unit, DC/DC
 Identification Name

2. [System Status] Info MODE (Continued)

<Error Code list>

| Error Code | Display | Error Description |
|------------|---------------|---------------------------------------|
| G-01 | AC Over V1 | AC Over Voltage1 |
| G-02 | AC Under V1 | AC Under Voltage1 |
| G-03 | AC Over F1 | AC Over Frequency1 |
| G-04 | AC Under F1 | AC Under Frequency1 |
| G-05 | Passive | Islanding Operation (Passive) |
| G-06 | Active | Islanding Operation (Active) |
| G-08 | Inst Over V | Instantaneous Over Voltage |
| G-10 | DC Compo | DC Component Current |
| G-11 | Inst Over C S | Instantaneous Over Current (Software) |
| G-13 | AC Phase | AC Phase |
| G-20 | AC Over V2 | AC Over Voltage2 |
| G-21 | AC Over V3 | AC Over Voltage3 |
| G-22 | AC Under V2 | AC Under Voltage2 |
| G-23 | AC Under V3 | AC Under Voltage3 |
| G-24 | AC Over F2 | AC Over Frequency2 |
| G-25 | AC Under F2 | AC Under Frequency2 |
| G-26 | Inst Over C H | Instantaneous Over Current (Hardware) |






| Error Code | Display | Error Description |
|------------|----------------|--------------------------------------|
| E-01 | DC Over V S | DC Over Voltage (Software) |
| E-02 | DC Under V | DC Under Voltage |
| E-03 | IPM | IPM |
| E-05 | Middle Point V | Middle Point Voltage |
| E-06 | Leak Crnt1 | Leakage Current1 |
| E-07 | Leak Crnt2 | Leakage Current2 |
| E-08 | Leak Crnt3 | Leakage Current3 |
| E-09 | Leak Crnt4 | Leakage Current4 |
| E-10 | Leak Self Test | Leakage Current Self Test |
| E-11 | Riso Self Test | Insulation Resistance Self Test Fail |
| E-12 | Riso Low | Low Insulation Resistance |
| E-13 | Ground Fault | Ground Fault |
| E-21 | REDY | REDY Signal |
| E-22 | ISO5V | ISO5V |
| E-24 | DC Over V H | DC Over Voltage (Hardware) |
| E-25 | Fan Lock | Fan Lock |
| E-41 | Remote Off | Remote Off |
| E-61 | DCC Under V | DC/DC Under Voltage |
| E-86 | BOX-INV Comm | BOX-INV Communication |
| E-90 | EEPROM Comm | EEPROM Communication |
| E-91 | Over Temp | Over Temperature |
| E-92 | Under Temp | Under Temperature |
| E-93 | EEPROM Sum | EEPROM Sum |
| E-94 | Temp Loss | Inverter Temperature Data Loss |
| E-95 | Minor Issue | Minor Issue1 |
| E-96 | Minor Issue | Minor Issue2 |
| E-97 | Minor Issue | Minor Issue3 |
| E-98 | Major Issue | Major Issue1 |
| E-99 | Major Issue | Major Issue2 |

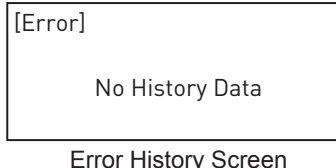
| Error Code | Display | Error Description |
|------------|---------------|----------------------------|
| D-x2 | Over V | DC/DC x Over Voltage |
| D-x3 | DC Relay | DC/DC x DC Relay |
| D-x4 | Over Temp | DC/DC x Over Temperature |
| D-x5 | Temp Loss | DC/DC x Temperature Loss |
| D-x6 | Over C | DC/DC x Over Current |
| D-x8 | Arc Self Test | DC/DC x Arc Self Test Fail |
| D-x9 | Arc Fault | DC/DC x Arc Fault |

<BOX Error Code list>

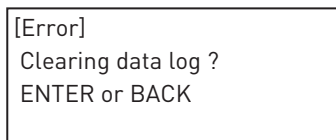
| Error Code | Display | Error Description |
|------------|---------------|--------------------------|
| M-01 | RTC Comm | BOX RTC Communication |
| M-02 | RTC Data | BOX RTC Data |
| M-03 | EEPROM Comm | BOX EEPROM Communication |
| M-04 | EEPROM Sum | BOX EEPROM Sum |
| M-05 | I2C Access OF | BOX I2C Access Overflow |

Clear Error History

- (1) Press  or  and select “No History Data” page of [Error] menu.
- (2) Press  .
The Clear History Screen appears.
- (3) Press  .
All events in the Error History are cleared, and the system returns to the System Status Information Screen.
 - Pressing  returns to the Error History Screen without clearing the error history.









Error History Screen

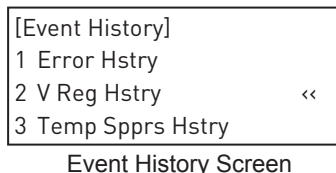


Clear History Screen

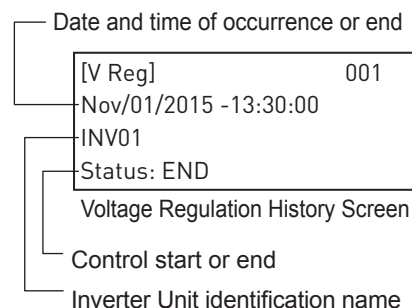
2. Voltage Regulation History

- (1) Press  or  on the Event History Screen, and select “2 V Reg Hstry”.
- (2) Press  .

- The Voltage Regulation History Screen appears.
- Information on the inverter that initiated voltage control is displayed in order of latest control event.
(Date and time of occurrence or end, Inverter Unit Identification Name, control start or end)
 - Pressing  or  switches the Voltage Regulation History display for scroll.
 - Voltage Control History retains a maximum of 512 events.
 - Press  to return to the System Status Information Screen.








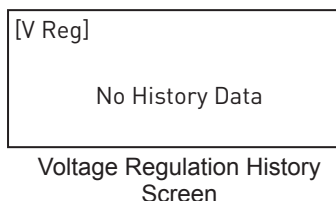
Event History Screen



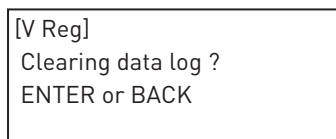
Voltage Regulation History Screen

Clear Voltage Control History

- (1) Press  or  on the Voltage Regulation History Screen, and select “No History Data” page of [Error] menu.
- (2) Press  .
The Voltage Regulation History Clear Screen appears.
- (3) Press  .
All events in the Voltage Regulation History are cleared, and the system returns to the System Status Information Screen.
 - Pressing  returns to the Voltage Regulation History Screen without clearing the Voltage Regulation History.





Voltage Regulation History Screen



Clear Voltage Regulation History Screen




2. [System Status] Info MODE (Continued)

3. Temperature Suppression History

(1) Press  or  on the Event History Screen, and select “3 Temp Spprs Hstry”.

(2) Press .

The Temperature Suppression History Screen appears.

- Information on the inverter that caused temperature control is displayed in order of latest control event.
(Date and time of occurrence or end, Inverter Unit Identification Name, control start or end)
- Pressing  or  switches the display of the Temperature Suppression History for scroll.
- Temperature Suppression History retains a maximum of 512 events.
- Press  to return to the System Status Information Screen.

[Event History]
1 Error Hstry
2 V Reg Hstry
3 Temp Spprs Hstry <<
Event History Screen

Date and time of occurrence or end
[Temp Spprs] 001
Nov/01/2015 -13:30:00
INV01
Status: END
Temperature Suppression History Screen
Control start or end
Inverter Unit Identification Name

Clear Temperature Control History


(1) Press  or  on the Temperature Suppression History Display, and select “No History Data” page of [Error] menu.

(2) Press .

The Temperature Suppression History Clear Screen appears.

(3) Press .

All events in the Temperature Suppression History are cleared, and the system returns to the System Status Information Screen.

- Pressing  returns to the Temperature Suppression Screen without clearing the Temperature Suppression History.

[Temp Spprs]
No History Data
Temperature Suppression History Screen

[Temp Spprs]
Clearing data log ?
ENTER or BACK
Clear Temperature Suppression History Screen




4. Total Power

1 Press  or  on the System Status Information Screen, and select “4 Total Power”.

[System Status] Info
2 AC Info
3 Event History
4 Total Power <<
System Status Information Screen

2 Press .

The Total Power Screen appears.

- Pressing  or  switches the display of the Total Power between the entire system and individual inverters.
- Press  to return to the System Status Information Screen.

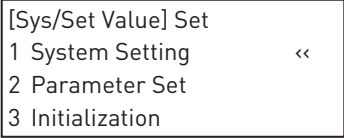
Total Power for entire system
[Total Power]
TOTAL: 532030kWh <<
INV01: 10010kWh
INV02: 10310kWh
Total Power Screen
Total Power for Individual Inverter Units

3. [Sys/Set Value] Set MODE

Performs “System Setting,” “Parameter Setting,” “Mask Setting,” and “Setting Initialization”.

System/Parameter Setting

1 Repeatedly press  to display the System/Parameter Setting Screen.






System/Parameter Setting Screen

2 Press  or , select an item, and press .

Selection items are shown below.

<System/Parameter Setting Items>

| No. | Item | Display | Reference |
|-----|----------------|------------------|---|
| 1 | System Setting | 1 System Setting |  Page 36 |
| 2 | Parameter Set | 2 Parameter Set |  Page 43 |
| 3 | Initialization | 3 Initialization |  Page 45 |

- Press  to return to the System/Parameter Setting Screen.

3. [Sys/Set Value] Set MODE (Continued)

1. System Setting

- 1 Press  or  on the System/Parameter Setting Screen, and select "1 System Setting".

[Sys/Set Value] Set

```
1 System Setting      <<
2 Parameter Set
3 Initialization
```

System/Parameter Setting Screen

- 2 Press  .

The System Setting Screen is shown.

[System Setting]

```
1 Time/Date:      00:00  <<
2 No. of INV      : 01
3 No. of BOX      : 01
```

System Setting Screen

- 3 Press  or  to select a System Setting item, and press  .









Items listed on the Setting Screen are shown below.

[System Setting]


```
Time/Date ?
Nov/01/2015 -12:00:00
^^^
```

Setting Screen (example: date/time setting)



<System Setting Items>

| No. | Item | Display | Reference |
|-----|----------------------------------|----------------|---|
| 1 | Time/Date | Time/Date |  Page 37 |
| 2 | Number of Inverter Connections | No. of INV |  Page 37 |
| 3 | Number of Master Box Connections | No. of BOX |  Page 38 |
| 4 | TD Irradiance Adjustment | Irradiance Adj |  Page 39 |
| 5 | TD Temperature Adjustment | Temp Adj |  Page 40 |
| 6 | Inverter Operation at Arc Fault | Arc Fault |  Page 41 |
| 7 | Fail Recovery Method | Fail Recov |  Page 41 |
| 8 | Remote Logic | Remote Logic |  Page 42 |

* Set on 1st Master Box of a system with multiple Master Boxes connected.



- Press  to return to the System Setting Screen.
- If the system is not operated for 30 minutes when changing settings, it automatically returns to the PV Power Status Screen for the entire system.


1. Time/Date


(1) Press  or  on the System Setting Screen, and select "1 Time/Date".

(2) Press .


The Time/Date Setting Screen appears.


(3) Press  or  to change the value at the cursor point.

(4) Press  to move the cursor to next item.

Press  to move the cursor to previous item.

- If the system is not operated for 30 minutes when changing settings, it automatically returns to the PV Power Status Screen for the entire system.

(5) To save the changed date and time, move the cursor to seconds item, and press . The screen returns to the System Setting Screen.

(6) To return to the System Setting Screen, move the cursor to month item, and press . The date and time is NOT set.

| | | |
|------------------|-------|----|
| [System Setting] | | |
| 1 Time/Date: | 00:00 | << |
| 2 No. of INV | : 01 | |
| 3 No. of BOX | : 01 | |

System Setting Screen



Cursor

| | | |
|-----------------------|--|--|
| [System Setting] | | |
| Time/Date ? | | |
| Nov/01/2015 -12:00:00 | | |
| ^ ^ ^ | | |
| ^ ^ ^ | | |

Time/Date Setting Screen

2. Number of Inverter Connections

- Up to 20 inverters can be connected to a single Master Box.

(1) Press  or  on the System Setting Screen, and select "2 No. of INV".

(2) Press .

The number of connected inverters appears.

(3) Press  or  to change the value.

- If the system is not operated for 30 minutes when changing settings, it automatically returns to the PV Power Status Screen for the entire system.

(4) Press .

The changed values are set, and the system returns to the System Setting Screen.

- Press  to return to the System Setting Screen without changing settings.

| | | |
|------------------|-------|----|
| [System Setting] | | |
| 1 Time/Date: | 00:00 | << |
| 2 No. of INV | :01 | << |
| 3 No. of BOX | :01 | |

System Setting Screen

| | | |
|----------------|--|----|
| [System Setup] | | |
| No. of INV ? | | |
| 01 | | << |

Number of Inverter Connections Screen



3. [Sys/Set Value] Set MODE (Continued)

3. Number of Master Box Connections

- The number of Master Boxes connected to the 1st Master Box is set on the 1st Master Box.
- Up to 9 Master Boxes can be connected to the 1st Master Box.

| | | | |
|------------------|------------|-------|----|
| [System Setting] | | | |
| 1 | Time/Date: | 00:00 | |
| 2 | No. of INV | :01 | |
| 3 | No. of BOX | :01 | << |

System Setting Screen

(1) Press  or  on the System Setting Screen, and select “3 No. of BOX”.

(2) Press  .

The Number of Connected Inverters Screen appears.

(3) Press  or  to change the value.

- If the system is not operated for 30 minutes when changing settings, it automatically returns to the PV Power Status Screen for the entire system.

(4) Press  .

The changed values are set, and the system returns to the System Setting Screen.

- Press  to return to the System Setting Screen without changing settings.

| | | | |
|----------------|--|----|----|
| [System Setup] | | | |
| No. of BOX ? | | | |
| | | 01 | << |



Number of Master Box Connections Screen

4. TD Irradiance Adjustment

- If connecting a transducer (TD), set the “Irradiance Adjustment Value”.
- The factory default setting is “2”.



| | | |
|------------------|---|------|
| [System Setting] | | |
| 2 No. of INV | : | 01 |
| 3 No. of BOX | : | 01 |
| 4 Irradiance Adj | : | 2 << |

System Setting Screen

(1) Press  or  on the System Setting Screen, and select “4 Irradiance Adj”.

(2) Press .

The TD Irradiance Adjustment Screen appears.

(3) Press  or  to change the irradiance adjustment value.

- If the system is not operated for 30 minutes when changing settings, it automatically returns to the PV Power Status Screen for the entire system.

(4) Press .

The changed content is set, and the system returns to the System Setting Screen.

| | | |
|-----------------|----------------------------|----|
| [System Setup] | | |
| Irradiance Adj? | | |
| | 2: 7μV/(W/m ²) | << |
| Level: | 0W/m ² | |

TD Irradiance Adjustment Screen

<Irradiance Adjustment Value>

| Parameter | Details |
|-----------|--|
| 0 | 0/0.8 V ~ 2000 W/m ² /4 V <Pyranometer 5μV/ (W/m ²)> |
| 1 | 0/0.8 V ~ 1667 W/m ² /4 V <Pyranometer 6μV/ (W/m ²)> |
| 2 | 0/0.8 V ~ 1429 W/m ² /4 V <Pyranometer 7μV/ (W/m ²)> |
| 3 | 0/0.8 V ~ 1250 W/m ² /4 V <Pyranometer 8μV/ (W/m ²)> |
| 4 | 0/0.8 V ~ 1111 W/m ² /4 V <Pyranometer 9μV/ (W/m ²)> |
| 5 | 0/0.8 V ~ 1000 W/m ² /4 V <Pyranometer 10μV/ (W/m ²)> |
| 6 | 0/0.8 V ~ 909 W/m ² /4 V <Pyranometer 11μV/ (W/m ²)> |
| 7 | 0/0.8 V ~ 833 W/m ² /4 V <Pyranometer 12μV/ (W/m ²)> |
| 8 | 0/0.8 V ~ 769 W/m ² /4 V <Pyranometer 13μV/ (W/m ²)> |
| 9 | 0/0.8 V ~ 714 W/m ² /4 V <Pyranometer 14μV/ (W/m ²)> |

<<200Ω>> 4-20 mA conversion fixed, transducer unit: 0-10 mV input fixed

- Press  to return to the System Setting Screen without changing settings.



3. [Sys/Set Value] Set MODE (Continued)

5. TD Temperature Adjustment

- If connecting a transducer (TD), set the “Ambient Temperature Adjustment Value”.
- The factory default setting is “0”.

| | | | |
|------------------|---|----|----|
| [System Setting] | | | |
| 3 No. of BOX | : | 01 | |
| 4 Irradiance Adj | : | 2 | |
| 5 Temp Adj | : | 0 | << |

System Setting Screen

(1) Press  or  on the System Setting Screen, and select “5 Temp Adj”.

(2) Press .

The TD Temperature Adjustment Screen appears.

(3) Press  or  to change the setting.

- If the system is not operated for 30 minutes when changing settings, it automatically returns to the PV Power Status Screen for the entire system.

(4) Press .

The changed content is set, and the system returns to the System Setting Screen.

| | | | |
|------------------|-----------|--|----|
| [System Setting] | | | |
| Temp Adj? | | | |
| 0: | -20~100°C | | << |
| Level: | -20.0°C | | |

TD Temperature Adjustment Screen

<Ambient Temperature Adjustment Value>

| Parameter | Details |
|-----------|-----------------------|
| 0 | -20°C/0.8V ~ 100°C/4V |
| 1 | -20°C/0.8V ~ 80°C/4V |
| 2 | -20°C/0.8V ~ 50°C/4V |
| 3 | -50°C/0.8V ~ 100°C/4V |
| 4 | -50°C/0.8V ~ 80°C/4V |
| 5 | -50°C/0.8V ~ 50°C/4V |
| 6 | 0°C/0.8V ~ 100°C/4V |
| 7 | 0°C/0.8V ~ 80°C/4V |
| 8 | 0°C/0.8V ~ 50°C/4V |

<Conversion table>

| °C | °F | °C | °F |
|-----|----|----|-----|
| -20 | -4 | 20 | 68 |
| -15 | 5 | 25 | 77 |
| -10 | 14 | 30 | 86 |
| -5 | 23 | 35 | 95 |
| 0 | 32 | 40 | 104 |
| 5 | 41 | 45 | 113 |
| 10 | 50 | 50 | 122 |
| 15 | 59 | 55 | 131 |

$$[^{\circ}\text{F}] = [^{\circ}\text{C}] \times 1.8 + 32$$

<<200Ω>> 4-20 mA conversion fixed, transducer unit: 0-10 mV input fixed



- Press  to return to the System Setting Screen without changing settings.

6. Inverter Operation at Arc Fault

- Operation to the inverter model without arc protection is ignored.
- Sets inverter operation when an ARC fault is detected.
- The factory default is "Stop".

[System Setting]
4 Irradiance Adj: 2
5 Temp Adj: 0
6 Arc Fault: Stop <<

System Setting Screen



(1) Press  or  on the System Setting Screen, and select "6 Arc Fault".

(2) Press .

The Arc Protect Screen appears.

[System Setting]
Arc Fault?
Stop <<

Inverter Operation at Arc Fault Screen

(3) Press  or  to change the Inverter Operation at Arc Fault.

- If the system is not operated for 30 minutes when changing settings, it automatically returns to the PV Power Status Screen for the entire system.

(4) Press .

The changed content is set, and the system returns to the System Setting Screen.

<Settings>

| Display | Content |
|-----------|--------------------------------------|
| Stop | Stops operation of the inverter. |
| Operation | Continues operation of the inverter. |



- Press  to return to the System Setting Screen without changing settings.

7. Fail Recovery Method

- Operation to the inverter model that can not change the fail recovery method is ignored.
- Switches between automatic/manual operation for error return.
- The factory default is "Manual".

[System Setting]
5 Temp Adj: 0
6 Arc Fault: Stop
7 Fail Recov: Manu <<

System Setting Screen

(1) Press  or  on the System Setting Screen, and select "7 Fail Recov".

(2) Press .

The Error Return Method Screen appears.

[System Setting]
Fail Recov ?
Manual <<

Fail Recovery Method Screen

(3) Press  or  to change the Fail Recovery Method.

- If the system is not operated for 30 minutes when changing settings, it automatically returns to the PV Power Status Screen for the entire system.

(4) Press .

The changed content is set, and the system returns to the System Setting Screen.

<Settings>



| Display | Content |
|---------|---------------------------------------|
| Manual | Manual operation for error return. |
| Auto | Automatic operation for error return. |

- Press  to return to the System Setting Screen without changing settings.

3. [Sys/Set Value] Set MODE (Continued)



8. Remote Logic

- Switches the contact point logic value for remote connection.
- The factory default setting is “a” (contact point a).

(1) Press  or  on the System Setting Screen, and select “8 Remote Logic”.

(2) Press .

The Remote Logic Setting Screen appears.

(3) Press  or  to change the Remote Logic.

- If the system is not operated for 30 minutes when changing settings, it automatically returns to the PV Power Status Screen for the entire system.

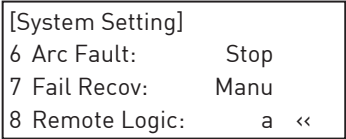
(4) Press .

The changed content is set, and the system returns to the System Setting Screen.

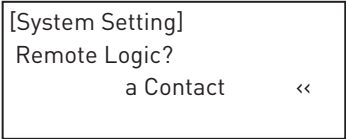
<Remote Logic Value>

| Display | Content |
|-----------|---|
| a Contact | Sets the Remote Logic value to “Contact Point a”. |
| b Contact | Sets the Remote Logic value to “Contact Point b”. |

- Press  to return to the System Setting Screen without changing settings.





System Setting Screen



Remote Logic Setting Screen

2. Parameter Setting

- 1** Press  or  on the System/Parameter Setting Screen, and select “2 Parameter Set”.





[Sys/Set Value] Set

| | |
|------------------|----|
| 1 System Setting | |
| 2 Parameter Set | << |
| 3 Initialization | |

System/Parameter Setting Screen

- 2** Press .

The Parameter Setting Screen appears.

- Pressing  or  to switch the parameter item.
- Press  to return to the System/Parameter Setting Screen.
- Refer to <Parameter Setting Items> ( Page 44)

[Parameter Set]

| | |
|----------------|----|
| 1 Over V1 | << |
| 2 Over V1 Time | |
| 3 Over V2 | |

Parameter Setting Screen

- 3** Press  or  to select the parameter item, and press .

The Change Parameter Screen of the selected parameter item is shown here.


[Parameter Set]

| | |
|-----------|----|
| 1 Over V1 | |
| 333.0V | << |

Change Parameter Screen
(Example: Over voltage level)

- 4** Press  or  to change the parameter, and press .

The changed parameters are set, and the system returns to the Parameter Setting Screen.

- If the system is not operated for 30 minutes when changing settings, it automatically returns to the PV Power Status Screen for the entire system.
- Press  to return to the Parameter Setting Screen.

3. [Sys/Set Value] Set MODE (Continued)

<Parameter Setting Items>

| No. | Item | Display | Numerical Range | Initial Value | Step Width |
|-----|--------------------------------|-----------------|-----------------|---------------|------------|
| 1 | Over voltage 1 level | Over V1 | 277 ~ 333[V] | 333[V] | 1 |
| 2 | Over voltage 1 trip Time | Over V1 Time | 0.10 ~ 0.16[s] | 0.16[s] | 0.01 |
| 3 | Over voltage 2 level | Over V2 | 277 ~ 333[V] | 305[V] | 1 |
| 4 | Over voltage 2 trip Time | Over V2 Time | 1 ~ 13[s] | 1[s] | 1 |
| 5 | Under voltage 1 level | Under V1 | 125 ~ 277[V] | 125[V] | 1 |
| 6 | Under voltage 1 trip Time | Under V1 Time | 0.10 ~ 0.16[s] | 0.16[s] | 0.01 |
| 7 | Under voltage 2 level | Under V2 | 125 ~ 277[V] | 166[V] | 1 |
| 8 | Under voltage 2 trip Time | Under V2 Time | 1 ~ 11[s] | 1[s] | 1 |
| 9 | Under voltage 3 level | Under V3 | 125 ~ 277[V] | 244[V] | 1 |
| 10 | Under voltage 3 trip Time | Under V3 Time | 1 ~ 21[s] | 2[s] | 1 |
| 11 | Over frequency 1 | Over F1 | 0.5 ~ 4.0[Hz] | 0.5[Hz] | 0.1 |
| 12 | Over frequency 1 trip Time | Over F1 Time | 1 ~ 300[s] | 2[s] | 1 |
| 13 | Over frequency 2 | Over F2 | 0.5 ~ 4.0[Hz] | 2.0[Hz] | 0.1 |
| 14 | Over frequency 2 trip Time | Over F2 Time | 0.10 ~ 10.00[s] | 0.16[s] | 0.01 |
| 15 | Under frequency 1 | Under F1 | 0.5 ~ 4.0[Hz] | 0.5[Hz] | 0.1 |
| 16 | Under frequency 1 trip Time | Under F1 Time | 1 ~ 300[s] | 2[s] | 1 |
| 17 | Under frequency 2 | Under F2 | 0.5 ~ 4.0[Hz] | 3.0[Hz] | 0.1 |
| 18 | Under frequency 2 trip Time | Under F2 Time | 0.10 ~ 10.00[s] | 0.16[s] | 0.01 |
| 19 | Auto Recover Time | Auto Recov Time | 2 ~ 300[s] | 300[s] | 2 |
| 20 | Regulation voltage level | Reg V | 304 ~ 332[V] | 318[V] | 2 |
| 21 | Regulation voltage rate | Reg V Rate | 0/50 | 50[%] | 0/50 |
| 22 | PF control rate | PF Ctrl Rate | -0.20 ~ +0.20 | 0.00 | 0.01 |
| 23 | DC component current | DC Compo | 100 ~ 999[mA] | 150[mA] | 50 |
| 24 | DC component current trip Time | DC Compo Time | 0.1 ~ 9.9[s] | 0.5[s] | 0.1 |
| 25 | Grid connection Time | Grid Conn Time | 5 ~ 300[s] | 30[s] | 5 |
| 26 | Start PV level | PV Start V | 200 ~ 500[V] | 200[V] | 10 |
| 27 | Stop PV level trip time | PV Stop V Time | 5 ~ 360[s] | 60[s] | 5 |

3. Initialization

- 1** Press  or  on the System/Parameter Setting Screen, and select “3 Initialization”.


[Sys/Set Value] Set

1 System Setting
2 Parameter Set
3 Initialization <<

System/Parameter Setting Screen

- 2** Press  .

The Parameter/Mask Reset Screen appears.

- If the system is not operated for 30 minutes, it automatically returns to the PV Power Status Screen for the entire system.
- Press  to return to the System/Parameter Setting Screen.

[System Initialize]

Parameter Setting:
Initialize?
ENTER or BACK

Parameter/Mask Reset Screen

- 3** Press  .

The parameters and mask values are initialized, and the system returns to the System/Parameter Setting Screen.

<List of Initial Values>

| Item | | Initial Value |
|----------------|----------------------------------|----------------------|
| System Setting | | |
| | Time/Date | Jan/01/2015-00:00:00 |
| | Number of Inverter Connections | 1 |
| | Number of Master Box Connections | 1 |
| | TD Irradiance Adjustment | 2 |
| | TD Temperature Adjustment | 0 |
| | Inverter Operation at Arc Fault | Stop |
| | Fail Recovery Method | Manual |
| | Remote Logic | a |

FCC Compliance

Note:

This equipment has been tested and found to comply with the limits for a Class A 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 commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in 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.

Specifications

| Item | | Specification |
|-----------------------------------|---------------------------------------|---|
| Product name | | Master Box |
| Model number | | EOW-MBX03-US |
| Display | LCD: 20 characters, 4 rows | F-STN liquid crystal, monochrome, 5x8 dots/character |
| | 5 LED | SET, OPE, STOP, ERROR, COM |
| Operation SW | "START/STOP" | All inverters can be started or stopped together (Individual inverters can also be started or stopped) |
| | "RE-START" | A batch return (error clear) instruction can be given during an error stop |
| | "MODE," "UP," "DOWN," "BACK," "ENTER" | AC Information, Total Information, and Error Log Information can be confirmed |
| | | Parameters and System Settings can be set together |
| Setting SW | Address SW | Master Box Address 0 ~ 10 |
| | RS485 Termination SW | Termination ON/OFF |
| Measurement | Temperature | Attaching externally 4-20mA Transducer |
| | Irradiance (Pyranometer) | Attaching externally 4-20mA Transducer |
| Interface | Connected Master Box with RS485 | max 10 sets |
| | Controlled Inverter Unit with RS485 | max 20 sets |
| Enclosure type rating | | UL50 Type 3R (In door / Out door IP65) |
| Operating Surrounding Temperature | | -20 to +50°C (-4 to 122°F) |
| Storage temperature | | -20 to +60°C (-4 to 140°F) |
| Weight | | Approx. 12kg |
| Dimensions | | 480 mm W × 300 mm H × 191 mm D |
| Input Rating Current | | Max 0.03A |
| Input Rating Voltage | | 115VAC |
| Rated power frequency | | 60Hz |

