

SANUPS

D11A

Type S

DC Input Small Capacity AC Power Supply

1 kVA

100 V Model

Instruction Manual

SANYODENKI

Introduction

Thank you for choosing the SANUPS (D11A Type S).

SAVE THESE INSTRUCTIONS

This manual contains important instructions that should be followed during operation, installation, and maintenance of the DC-AC Inverter to protect the safety of the service technician* and the customers. To use the DC-AC Inverter correctly and safely, read this manual before using the DC-AC Inverter. After reading, please keep it handy for convenient reference.

This DC-AC Inverter is intended for installation in a temperature-controlled indoor environment free of conductive contaminants.

- Operating temperature: 5 to 40°C (41 to 104°F)

Table of Contents

| | |
|---|----|
| §1. Safety Precautions | 1 |
| §2. For Proper Operation | 4 |
| §2.1 Input Power Supply | 4 |
| §2.2 Installation Precautions | 4 |
| §2.3 Usage Precautions | 5 |
| §2.4 Troubleshooting | 5 |
| §2.5 Rack Mounting Precautions | 5 |
| §3. Checking the Contents of the Package | 6 |
| §4. External Dimensions and Part Names | 7 |
| §4.1 Inverter Unit | 7 |
| §4.2 Transfer Signal Terminal Block | 9 |
| §5. Procedure Until Unit Operation | 10 |
| §6. Preparations Before Installing the Unit | 11 |
| §6.1 Checking the Unit | 11 |
| §6.2 Checking the DIP Switch | 11 |
| §7. Installing the Unit | 12 |
| §7.1 Checking the Installation Environment | 12 |
| §7.2 Checking the Input Power Supply | 12 |
| §7.3 Checking the Installation Space | 12 |
| §7.4 Transportation and Installation | 13 |
| §8. Wiring the Unit | 15 |
| §8.1 Wiring the Input and Output Terminal Block | 15 |
| §8.2 Wiring the Transfer Signal Terminal Block | 17 |
| §9. Operating Procedures | 18 |
| §9.1 D11A102B001SUS Operating Procedure | 18 |
| §9.2 D11A102B011SUS Operating Procedure | 19 |

* Service technician

This term is used to indicate service technicians from SANYO DENKI or entrusted from SANYO DENKI with knowledge of this DC-AC Inverter.
Maintenance work must not be performed by other than a qualified service technician.

Models

This instruction manual is intended to be used for the following models.
Check the model name of the DC-AC Inverter before use.

| DC-AC Inverter | Model Name | Bypass Circuit |
|---|----------------|----------------|
| Inverter Unit Single-Unit Operation Cabinet } set* | D11A102B001SUS | Unavailable |
| | D11A102B011SUS | Available |

* The set of an inverter unit and single-unit operation cabinet is referred to as the unit in this document.

| | |
|--|----|
| §10. Operation and Protective Functions..... | 20 |
| §10.1 D11A102B001SUS Basic Operation..... | 20 |
| §10.2 D11A102B011SUS Basic Operation..... | 21 |
| §10.3 Protective Function Table..... | 23 |
| §11. Inspection and Maintenance..... | 25 |
| §11.1 Routine Checks by the Customer..... | 25 |
| §11.2 Maintenance by Service Technician..... | 26 |
| §11.2.1 Procedure to Remove the Inverter Unit..... | 26 |
| §11.2.2 Resetting the Bypass Breaker..... | 27 |
| §12. Specifications..... | 28 |
| §13. Warranty..... | 29 |

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI-A

Translation:

This is a Class A product based on the standard of the VCCI Council. If this equipment is used in a domestic environment, radio interference may occur, in which case, the user may be required to take corrective actions.

VCCI-A



§1. Safety Precautions


PRECAUTIONS (IMPORTANT SAFETY INSTRUCTIONS)

This Manual contains important instructions for operating and maintaining the DC-AC Inverter to protect the safety of the service technician and the customers.









Before installing, operating, performing maintenance or inspecting the DC-AC Inverter, be sure to read this manual and accompanying documents carefully to obtain a clear understanding of the information related to its operation, safety and important precautions.

This manual described two warning levels, WARNING and CAUTION, as described below.

| Label | Explanation |
|--|--|
|  WARNING | Denotes immediate hazards which WILL probably cause severe bodily injury or death, as a result incorrect operation. |
|  CAUTION | Denotes hazards which COULD cause bodily injury and product or property damage, as a result incorrect operation. |

Additionally, even those hazards denoted by  **CAUTION** could lead to a serious accident, so the instructions should be strictly followed.

The following labels indicate particularly important instructions which must be carefully followed. The graphic symbols indicate prohibited and mandatory actions.

| Symbol | Explanation |
|---|---|
|  | Indicates actions that must not be allowed to occur (prohibited actions). |
|  | Indicates actions that must be taken (mandatory actions).  : This example signifies the mandatory actions.  : This example signifies that the equipment must be securely grounded. |
|  | Indicates CAUTION (including WARNING). Specific information appears within the graphic symbol or in an explanation nearby.  : This example signifies the general caution.  : This example signifies that there is danger of electric shock.  : This example signifies that there is danger of a fire or smoke generation. |

1. Relocation and Transportation Precautions



- Be careful to avoid falling or dropping the DC-AC Inverter during relocation or transportation, as bodily injury could result.

2. Installation Precautions



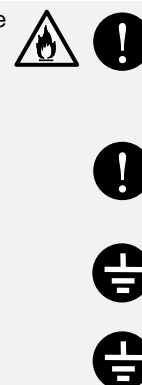
- The DC-AC Inverter should be installed only by a service technician. Furthermore, it should be installed in accordance with the instructions in the instruction manual. Improper installation can result in electric shock, bodily injury, and/ or fire.
- Never operate or store the DC-AC Inverter in the following environmental conditions. Doing so may cause the DC-AC Inverter to malfunction, sustain damage or deteriorate, which could result in a fire.
 - a. In ambient environmental conditions other than those specified in the product brochure and instruction manual (temperature 5 to 40°C (41 to 104° F), relative humidity 5 to 85%), such as in extremely high or low temperature and high humidity.
 - b. Where the DC-AC Inverter is exposed to direct sunlight.
 - c. Where the DC-AC Inverter is directly exposed to the heat from a heat source, such as a stove.
 - d. Where the DC-AC Inverter may be subject to vibration or physical shock.
 - e. Near a device that may emit sparks.
 - f. In the presence of dust, salt or corrosive or flammable gas.
 - g. Outdoors
- This DC-AC Inverter is for rack-mounted use only. Please consult our sale office or your distributor when the device needs to be removed from the rack.
- Be careful not to block the air intake and exhaust vents of the DC-AC Inverter. Mount the DC-AC Inverter in a rack that can be well ventilated, and keep the front and back of the DC-AC Inverter at least 20 cm (7.9 inches) away from the wall. Be careful not to block the air intake and exhaust vents of the rack and DC-AC Inverter. If the air intake or exhaust vent is blocked, the internal temperature of the DC-AC Inverter will rise, which may cause a fire. For maintenance, the DC-AC Inverter requires at least approximately 1 m (39.4 inches) of space at the front, and at least approximately 50 cm (20 inches) at the back.
- The space around the DC-AC Inverter must be ventilated.
- In accordance with the instructions in the manual, install the DC-AC Inverter on a stable surface capable of bearing the weight (approximately 10 kg (22 lbs)). If the DC-AC Inverter is installed incorrectly, it may fall or move inadvertently, resulting in bodily injury.



3. Wiring Precautions



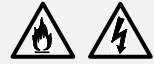
- Wiring should be performed only by technically qualified personnel. Furthermore, it should be performed in accordance with the instructions in the manual. Incorrect wiring can result in electric shock and/or fire.
- A readily accessible disconnect device shall be incorporated external to the equipment.
- Protection in primary circuits against over currents, short circuits and earth faults is not provided inside this DC-AC Inverter. Protection in primary circuit against over currents short circuits and earth faults shall be provided as part of the building installation.
- Connect the grounding cable securely in the manner specified. This DC-AC Inverter requires class D grounding work. (In the case of the D11A102B011SUS model) Failure to connect the grounding cable may result in electric shock.
- The grounding cables of all load devices connected to the output of the DC-AC Inverter must be securely connected to the grounding terminal. Failure to connect the grounding cables correctly may result in electric shock.
- Install the disconnect device whose contact gap is 2 mm (0.08 inches) or more in DC input.
- Install the disconnect device whose contact gap is 3 mm (0.12 inches) or more in AC input. (In the case of the D11A102B011SUS model.)



4. Operating Precautions

WARNING

- Immediately shut the DC-AC Inverter off if it malfunctions, or if an unusual odor or noise is observed. Failure to do so may result in a fire.
- Do not open the cover of the DC-AC Inverter. There is danger of electric shock and equipment damage.



PROHIBITED

- Never use the DC-AC Inverter for the following types of loads:
 - a. Medical instruments used for life support.
 - b. Control units for trains or elevators, failure of which could cause bodily injury.
 - c. Computer systems upon which social or public infrastructure depends.
 - d. Devices which serve applications related to the above.



Contact your sales representative if you need to use the DC-AC Inverter in an application like the above. Special equipment, such as redundant devices or an emergency generator must be incorporated when operating, maintaining and controlling systems in which a DC-AC Inverter is used with loads affecting life-support or public infrastructure-dependent applications.

- This DC-AC Inverter must be installed, operated and maintained by technically qualified personnel with expertise in an industrial environment. The unit should not be used in other areas, for example, in households where technically qualified personnel with expertise is not present.
- Do not smoke or use an open flame near the DC-AC Inverter, as it could cause the DC-AC Inverter to explode or rupture, resulting in injury or fire.
- Do not place containers of liquid, such as a flower vase, on the DC-AC Inverter. If the container was to spill, the liquid could cause a short circuit, resulting in sparks or fire inside the DC-AC Inverter.
- Do not sit, step or lean on the DC-AC Inverter, as bodily injury could result if the DC-AC Inverter was to fall.
- Do not operate the switches with wet hands. There is danger of electric shock.
- All repairs and modifications to the DC-AC Inverter are prohibited. The DC-AC Inverter contains high voltage and no user serviceable parts. Opening the cover, parts exchange, and repair can result in electric shock and damage to the DC-AC Inverter when performed by anyone other than qualified service personnel. All such repairs and modifications will void the warranty.



CAUTION

- Before starting the DC-AC Inverter, check the load-side safety, and operate the DC-AC Inverter in accordance with the instructions in the manual. If power is supplied incorrectly, an electric shock or bodily injury could result.
- Avoid inserting sharp objects or fingers into the fan. Doing so may result in bodily injury.
- Do not touch the DC-AC Inverter, including the cables, if you hear thunder nearby. There is danger of electric shock from a lightning strike.
- When disposing of this DC-AC Inverter, dispose of it as industrial waste.



5. Maintenance and Inspection Precautions

CAUTION

- Maintenance and repair of the inside of the DC-AC Inverter should be performed only by technically qualified personnel. Electric shock, bodily injury and burns, fuming, or fire could otherwise result.
- Do not insert a metal object or fingers into the input and output terminal block of the DC-AC Inverter. There is danger of electric shock.
- Contact your supplier or Sanyo Denki to have the DC-AC Inverter repaired or to replace defective parts. Opening the cover carelessly can result in an electric shock or burn.



§2. For Proper Operation

§2.1 Input Power Supply

(1) DC Input Power Supply

The following table shows the DC input power supply for this unit. Use the unit according to its rated voltage.

| Model Name | Rated Voltage | Voltage Range |
|----------------------------------|---------------|------------------|
| D11A102B001SUS D11A102B011SUS | -48 V | -40.5 V to -57 V |

(2) AC Input Power Supply

The following table shows the AC input power supply for this unit. Adjust the output voltage of the unit to the AC input power supply in the place where you use the unit.

| Model Name | Output Voltage Setting | AC Input Voltage | AC Input Frequency |
|----------------|------------------------|------------------|--------------------|
| D11A102B011SUS | 100 V | 100 V (±15%) | 50 or 60 Hz (±5%) |
| | 120 V | 120 V (±15%) | 50 or 60 Hz (±5%) |

(3) Input Power Supply Capacity

The following table shows the input capacity for this unit. The input power supply capacity must be larger than the input capacity shown in the table below.

| Model Name | Max. Input Current | | Recommended capacity of breaker (UL or IEC standard) | |
|----------------|--------------------|--------------|--|--------------|
| | DC Input (A) | AC Input (A) | DC Input (A) | AC Input (A) |
| D11A102B001SUS | 30 or less | — | 40 | — |
| D11A102B011SUS | 30 or less | 12.5 | 40 | 20 |

Protect branch circuit by using the breaker (UL489 (For use in North America) or IEC 60947-2 (For Use Overseas) approval) of the specified capacity on distribution panels.

To meet the requirement of UL standards, always protect both polarities.

§2.2 Installation Precautions

- (1) Installation must be in accordance with National Electric Code, Articles 110-16, 110-17 and 110-18.
- (2) This DC-AC Inverter is designed to permit the connection of the earthed conductor of the DC supply circuit to the earthing conductor at the equipment only use by restricted access locations.^{*2}
- (3) When connecting the DC input power supply (unit terminal block: + (0V)/- (-48V)), check the polarity (+/-) and make sure you connect the cables to the correct terminals.
- (4) When the unit receives DC input power, an inrush current of approximately 28 A (approximately 100 msec) flows and the unit automatically enters the standby state.
When you perform a test using a fuse for the DC input to check the equipment, be sure to use a fuse capable of withstanding this inrush current.
- (5) When you install a leakage-current breaker for the power receiving circuit of the AC input terminal, be sure to use a breaker capable of protecting both the poles. Also, consider the leakage current. The maximum leakage current of the unit is 3.5 mA.^{*1}
- (6) Keep the unit at least 1 m (approximately 40 inches) away from CRT displays.
Other devices which may be sensitive to magnetic flux should be kept away from the unit.
- (7) The unit employs a fan for forced-air cooling. Provide the clearances specified in §7.3 "Checking the Installation Space" at the front and back of the unit to permit air to flow freely at the air intake and exhaust vents.
- (8) When the AC input power is single-wire grounded, always connect the ground phase to the S terminal side of the AC input terminal block.^{*1}
- (9) Connect the grounding cables of load devices to the G terminal (earth terminal) of the AC Output.
If you must make a single-wire grounded connection on the input side of a load device, always connect the ground phase to the V terminal side of the AC output terminal block to prevent a power supply short circuit caused by grounding.

Notes

*1: Apply only to the D11A102B011SUS model. They do not apply to the D11A102B001SUS model.

*2: RESTRICTED ACCESS LOCATION shows a location for equipment where both of the following paragraphs apply.

- Access can only be gained by service technician or by users who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.
- Access is through the use of a tool or lock and key, or other means of security, and is controlled by the authority responsible for the location.

§2.3 Usage Precautions

- (1) Never short-circuit the output terminals or connect a load with a short-circuit current.
Doing so will cause the protective functions to activate or the breaker to trip, preventing output.
- (2) Unsuitable load devices
Do not connect laser printers, plain paper fax machines, copy machines, overhead projectors, vacuum cleaners, construction drills, or dryers as load devices.
Such devices typically include heating elements that draw high current such as the starting current, so the unit may be overloaded.
As a result, the output voltage becomes unstable, which may adversely affect other connected devices.
- (3) Insulation testing
Before testing the indoor wiring insulation, shut down the unit and disconnect the input and output cables.
Conducting an insulation test with the unit connected may damage electronic components such as the built-in arrester.

§2.4 Troubleshooting

If any of the failures described below occurs, contact your supplier or Sanyo Denki.

- ① When the INVERTER LED (blue) on the front panel of the unit does not turn on*1.
- ② When the ALARM LED (red) on the front panel of the unit turns on.
- ③ When other events that are regarded as failures (unusual odor, noise, etc.) occur.
For details, see § 10.1 (3) or 10.2 (4) "When the unit fails."

Note

*1: If DC power is not received, or the DC input is insufficient, the LED does not turn on.

§2.5 Rack Mounting Precautions

Use the support rails to fix the unit to the 19-inch rack. You need to obtain support rails capable of bearing the weight of the unit (10 kg (22 lbs)). Contact your rack manufacturer for further information, as the dimensions of the support rails vary depending on the rack.

§3. Checking the Contents of the Package

After you open the package, check to make sure that it contains all of the following items.

Does it contain the unit and all accessories?

Is the exterior of the unit damaged or unusual?

Check and place a mark in .

If any item is missing or unusual, contact your supplier or Sanyo Denki.

| | |
|---|---|
| <input type="checkbox"/> Inverter unit (D11A102B001SUS or D11A102B011SUS) | 1 |
| <input type="checkbox"/> Instruction Manual (this manual) | 1 |
| <input type="checkbox"/> Rack mounting clamp (right) | 1 |
| <input type="checkbox"/> Rack mounting clamp (left) | 1 |

Note

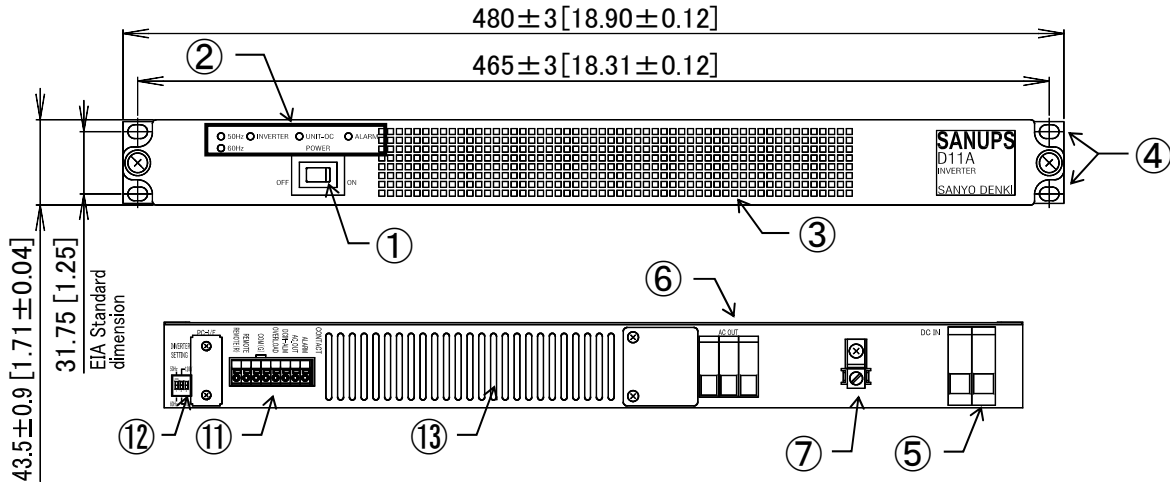
- Note on transferring or selling the unit
When you transfer or sell this unit to a third party, transfer or sell all the accessories supplied with the unit.

§4. External Dimensions and Part Names

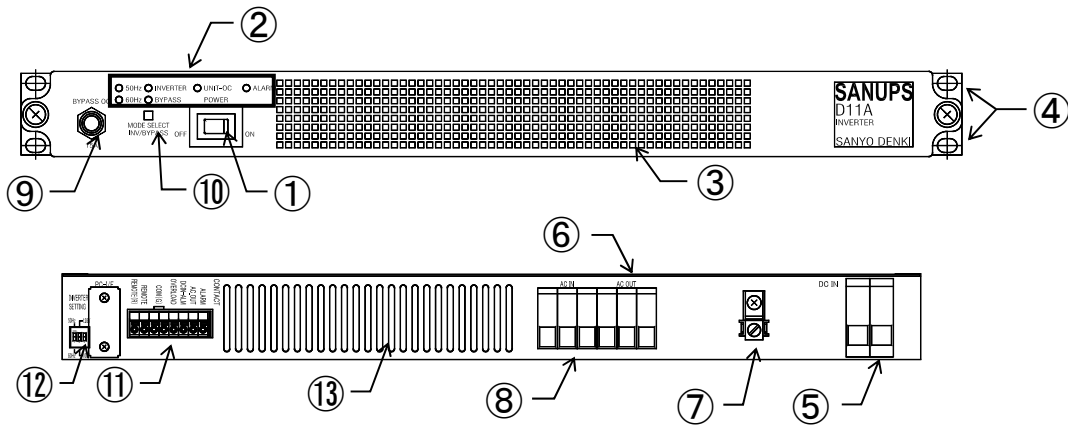
§4.1 Inverter Unit

D11A102B001SUS

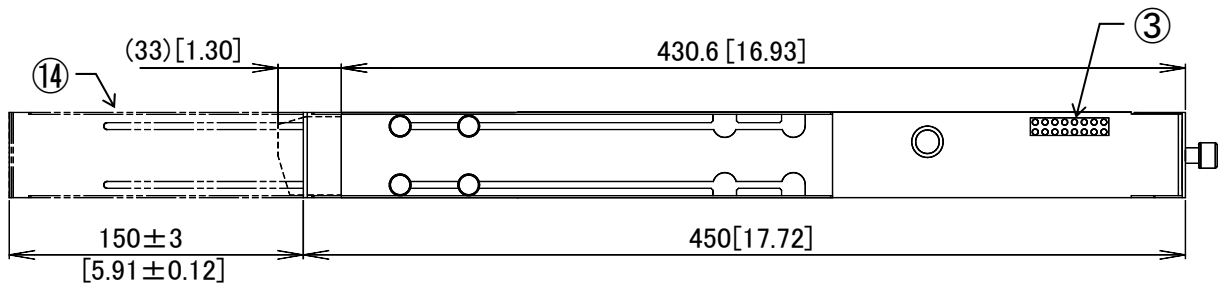
Unit: mm [inch]
Weight: Approx. 10 kg (22 lbs)



D11A102B011SUS

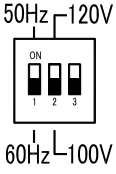


Rack clamp dimensions



Tip

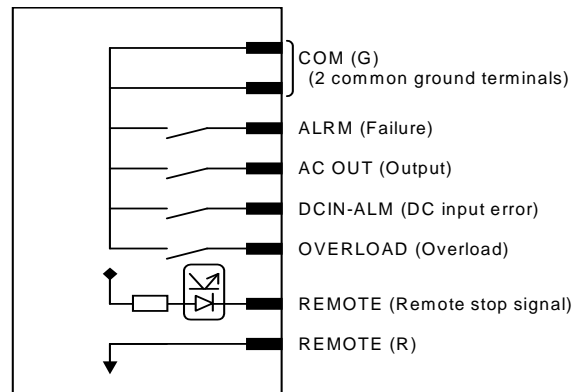
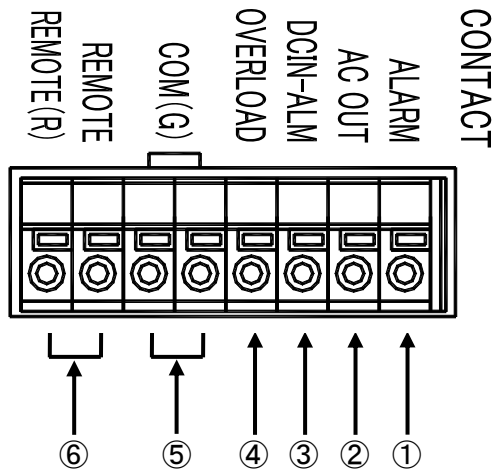
The position of the rack clamps on the left and right sides of the unit can be adjusted within the range of 450 mm (17.7 inches) to 600 mm (23.6 inches).

| No. | Name | Label | Function |
|---|--|----------------------------|---|
| ① | Start/Stop Switch | POWER ON/OFF | Switch for starting and stopping the unit (with a switch cover) |
| ② | LED Display | INVERTER | Lit (blue) during output by inverter power supply |
| | | BYPASS | Lit (yellow) during output by bypass power supply* ¹ |
| | | 50 Hz 60 Hz | Output frequency lit (green) |
| | | UNIT-OC | Lit (red) while the unit is overloaded |
| | | ALARM | Lit (red) when the unit fails |
| ③ | Air Intake Vent | — | For cooling. Secure enough space for ventilation. |
| ④ | Holes for Mounting to Rack | — | Holes for mounting to a 19-inch rack |
| ⑤ | DC Input Terminal Block | DC IN + (0V), - (-48 V) | DC input connection: One + (0V) positive and one - (-48 V) negative terminal |
| ⑥ | AC Output Terminal Block | AC OUT U (L), V (N), G | Load device connection: 1 terminal each |
| ⑦ | Ground Terminal | G | Ground cable connection |
| ⑧ | AC Input Terminal Block | AC IN R (L), S (N), G | AC input connection: 1 terminal* ¹ |
| ⑨ | Bypass Breaker | BYPASS OC 15A | Bypass circuit protection* ¹ |
| ⑩ | Mode Select Switch | MODE SELECT INV/BYPASS | For switching between inverter power supply and bypass power supply* ¹ |
| ⑪ | Transfer Signal Terminal Block | CONTACT | For contact signals. See §4.2 "Transfer Signal Terminal Block." |
| ⑫ | Inverter Setting DIP Switch  | 1 | Setting of output frequency ON: 50 Hz OFF: 60 Hz★ |
| | | 2 | Setting of output voltage ON: 120 V OFF: 100 V★ |
| | | 3 | No setting Note: Do not change this switch. |
| The factory default setting is the value indicated by the ★ mark. | | | |
| ⑬ | Cooling Fan Exhaust Vent | — | Exhaust vent of a fan for cooling the inside |
| ⑭ | Rack Mounting Clamp | — | For mounting to a 19-inch rack |

Function indicated with *1

This function is available only for the D11A102B011SUS model. It is not available for the D11A102B001SUS model.

§4.2 Transfer Signal Terminal Block



| No. | Signal Name | Label | Definition |
|-----|---|----------------------|--|
| ① | Failure | ALARM | When a unit failure occurs, ALARM and COM (G) COMMON SIGNAL GROUND become short-circuited. Normally open. (Only valid when the DC input is normal) |
| ② | AC Output | AC OUT | When the unit operates normally and supplies AC output power, AC OUT and COM (G) COMMON SIGNAL GROUND are short-circuited. Normally open. |
| ③ | DC Input Error | DCIN-ALM | When DC input power is not received, or DC input voltage is abnormal, DCIN-ALM and COM (G) COMMON SIGNAL GROUND become short-circuited. Normally open. |
| ④ | Overload | OVER LOAD | When the output current is overloaded, OVER LOAD and COM (G) COMMON SIGNAL GROUND become short-circuited. Normally open. |
| ⑤ | Common ground Terminal for External Transfer Signal | COM (G) | Common signal ground terminal. |
| ⑥ | REMOTE | REMOTE REMOTE (R) | Continuous open circuit and the inverter ON Continuous close circuit and the inverter OFF |

Notes

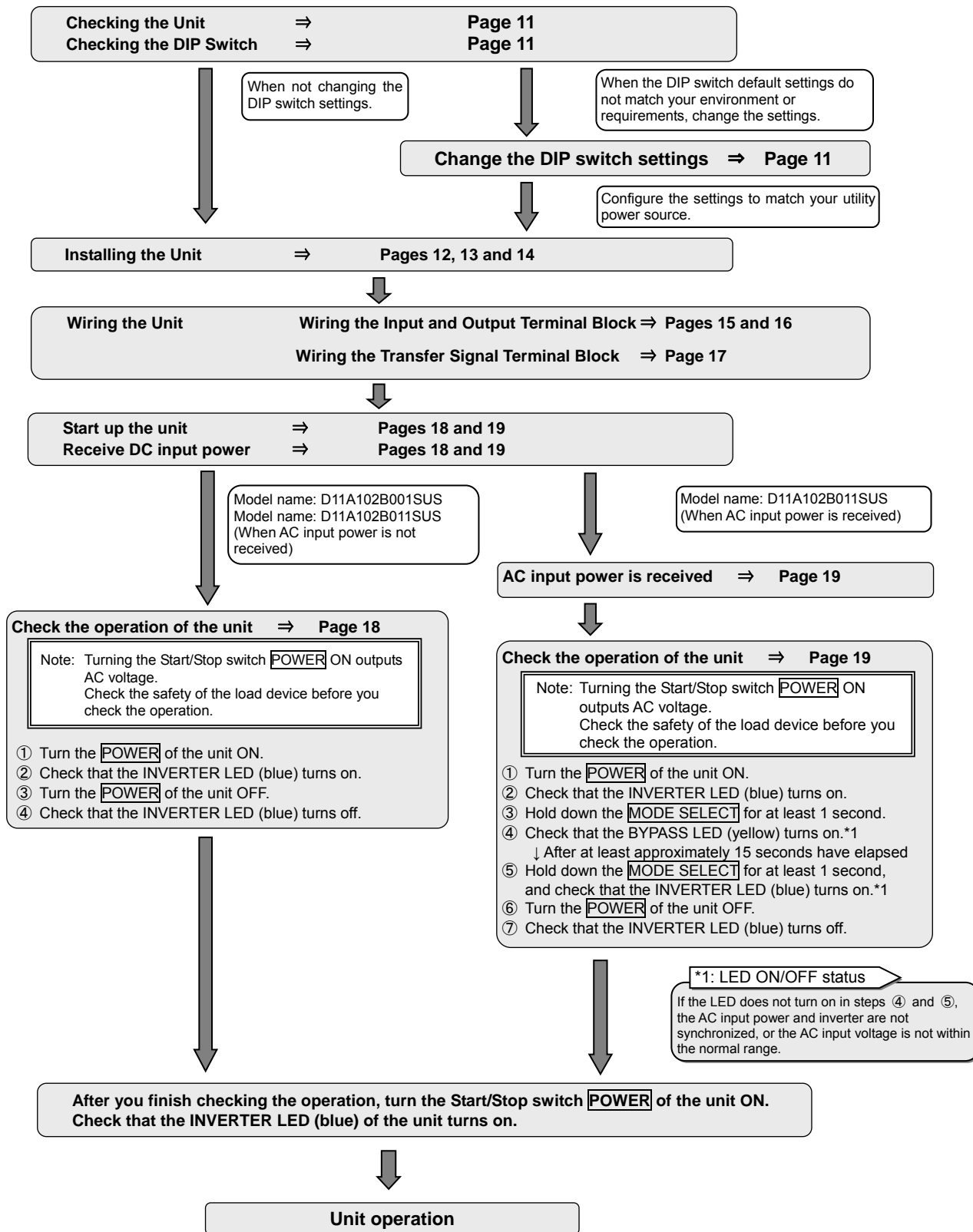
*1: Contact capacity is DC60 V/0.3 A.

*2: • Even though the inverter REMOTE signal is ON, the inverter stops when you turn the Start/Stop switch **POWER** OFF.

- The REMOTE signal is only valid when the DC input is normal.
- Do not apply voltage to the REMOTE terminal. Doing so may damage the unit.

§5. Procedure Until Unit Operation

The procedure until turning on the Unit is as follows. Be sure to perform the work in accordance with the procedure.



§6. Preparations Before Installing the Unit

§6.1 Checking the Unit

Check the following items.

| Item | Description | Place Check Mark |
|--------------------------------|---|--------------------------|
| Appearance | Is the exterior of the unit in any way damaged or deformed? | <input type="checkbox"/> |
| Start/Stop Switch POWER | Check that the POWER is OFF position. | <input type="checkbox"/> |

§6.2 Checking the DIP Switch

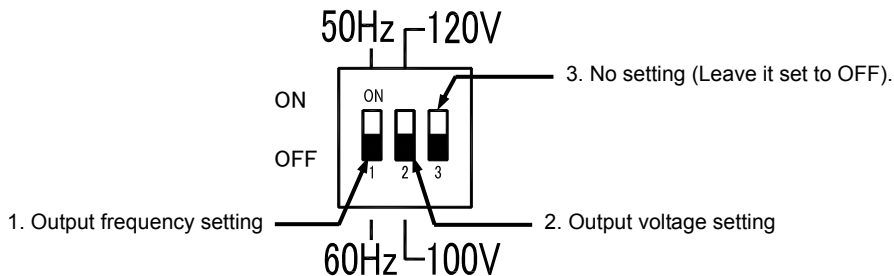
Check the DIP switch settings of the unit, and if they are not compatible with your utility power source, change the settings with ON/OFF of the DIP switch.

| Item | Description | | (*: Default) | Check (Current settings) |
|-------------------------------|-------------|--------------------------|--------------|--------------------------|
| Unit Setting DIP Switch | 1 | Output frequency setting | ON: 50 Hz | <input type="checkbox"/> |
| | | | OFF: 60 Hz★ | <input type="checkbox"/> |
| | 2 | Output voltage setting | ON: 120 V | <input type="checkbox"/> |
| | | | OFF: 100 V★ | <input type="checkbox"/> |
| | 3 | No setting | OFF★ | <input type="checkbox"/> |

Notes on DIP switch


1. The factory default setting is indicated by the ★ mark.
2. Set the voltage and frequency to match your utility power source.
3. When you change the setting, be sure to operate the switch while the unit power is completely shut down. If you change the status while DC input power is received, the change will not become effective. Turn the DC input power on the distribution board OFF, and then change the setting.

Unit Setting DIP Switch (on the back panel of the unit)



The figure above shows an example in which the switches 1, 2, and 3 are all set to OFF.

§7. Installing the Unit



CAUTION

- When installing the unit, carefully follow the instructions in the instruction manual. Improper installation may result in electric shock, bodily injury, and/or fire.
- In accordance with the instruction manual, install the unit on a stable surface capable of bearing the weight of the unit (approximately 10 kg (22 lbs)) that is flat so that the unit cannot fall, and subject to minimal vibration and shock. Failure to do so may cause the unit to fall, resulting in bodily injury.
- For safety, put on protective shoes. All work that involves lifting the unit, such as mounting it in a rack, should be carried out by at least 2 persons. Failure to do so may cause the unit to fall, resulting in bodily injury.
- There is a danger that the unit may fall or be dropped during relocation or installation. Always hold the bottom of a unit firmly with both hands. Failure to do so may result in bodily injury or damage to the unit.

§7.1 Checking the Installation Environment

Suitable installation environment: Ambient temperature of 5 to 40°C (41 to 104°F) and relative humidity of 5 to 85%

Do not install the unit in the following locations: Doing so may result in a failure.

- Where grounding is not possible.
- Where the ambient temperature exceeds 40°C (104°F).
- Where high humidity may occur.
- Where corrosive gas or salt spray may be present.
- Where it may be subject to vibration and shock.
- Where dust may accumulate.
- In a poorly ventilated rack.

§7.2 Checking the Input Power Supply

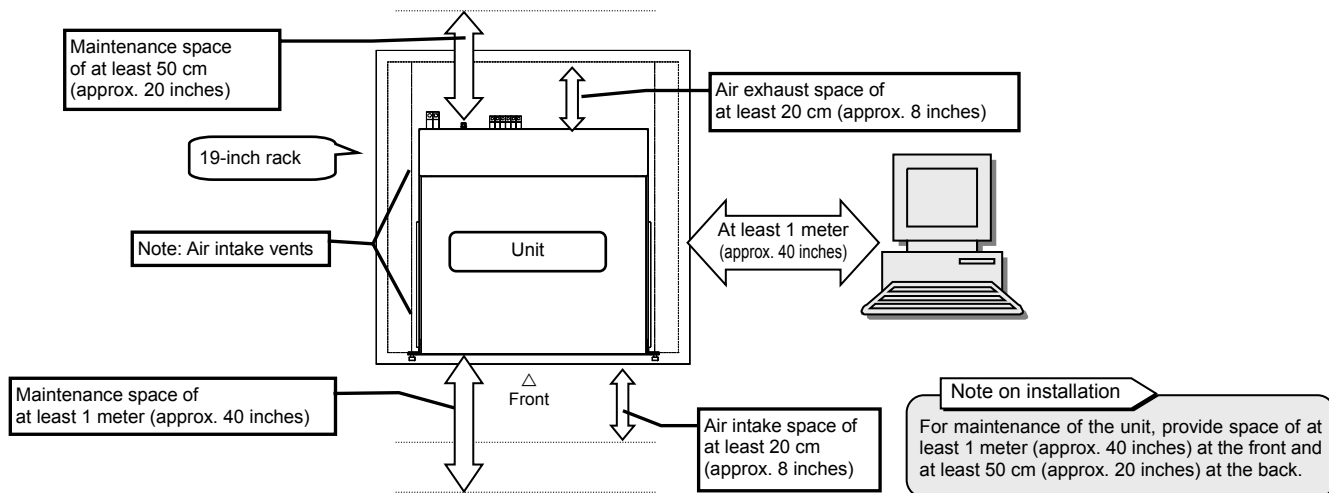
Check the input power supply in the place where the unit is to be installed.

| Power Supply | Voltage | Frequency | Notes |
|--------------|---|-----------|---|
| DC Input | DC power supply DC-48 V | — | |
| AC Input | When the output voltage is set to 100 V: AC power supply AC 100 V ±15% | 50/60 Hz | Only when installing the D11A102B011SUS model |
| | When the output voltage is set to 120 V: AC power supply AC 120 V ±15% | 50/60 Hz | |

§7.3 Checking the Installation Space

During installation, provide the following space around the unit.

- At least 20 cm (approximately 8 inches) at the front and back: As air intake or exhaust space for the cooling fan
- At least 1 meter (approximately 40 inches) from CRT displays: To allow for slight leakage of magnetic flux. Allow some space from devices which might be affected by magnetic flux.



§7.4 Transportation and Installation



- In accordance with this instruction manual, install the unit on a stable surface capable of bearing the weight of the unit (approximately 10 kg (22 lbs)) that is flat so that the unit cannot fall, and subject to minimal vibration and shock. Failure to do so may cause the unit to fall, resulting in bodily injury.
- There is a danger that the unit may fall or be dropped during relocation or installation. Always hold the bottom of a unit firmly with both hands. Failure to do so may result in bodily injury or damage to the unit.
- Be careful not to get your hands caught when mounting the unit to the rack.

- (1) Transportation of the unit should be performed only by a service technician.
- (2) The unit should be transported while it is in the package.
- (3) Open the package near the installation location of the unit.

Follow the procedure below to mount the unit to the 19-inch rack.

Note

- **This unit complies with the EIA standard.** It does not comply with the JIS standard.
- Hold the bottom of the unit firmly until it is securely fixed in place with the left and right rack clamps.

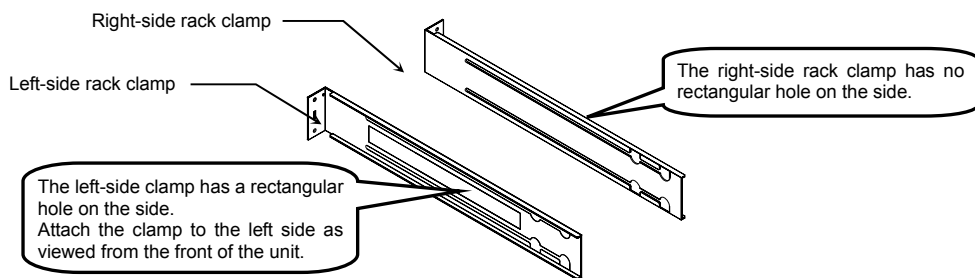
When using the supplied rack clamps

The supplied rack clamps can be used for a rack up to 600 mm (23.6 inches) deep. (Adjustment range: 450 mm (17.7 inches) to 600 mm (23.6 inches))

When the supplied rack clamps can be used for your rack, follow the procedure below to mount the unit to the rack.

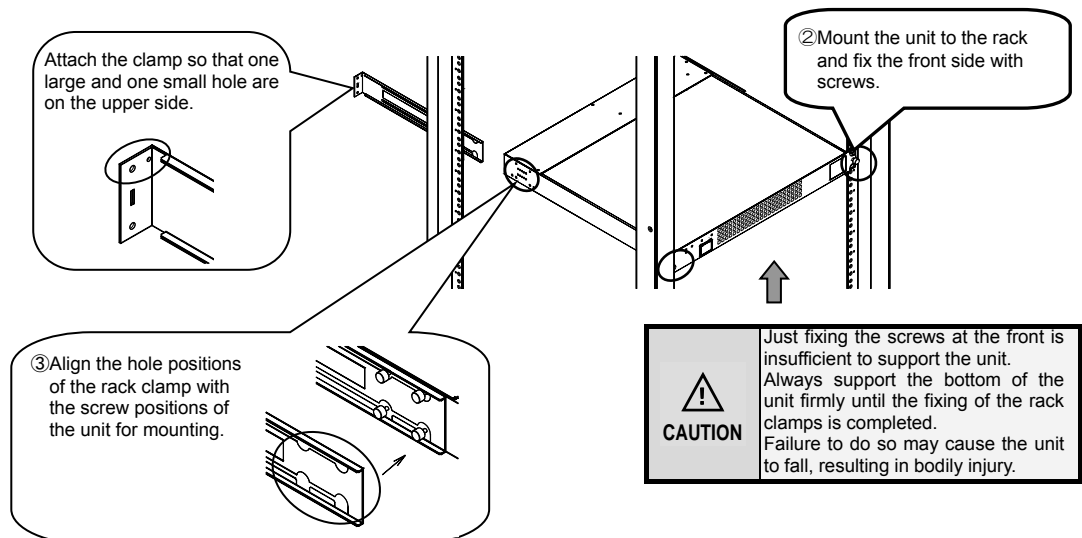
- ① Take the left and right rack clamps out of the package.

The rack clamps are not provided with labels indicating left and right. Identify the left and right from the shape of the rack clamps.

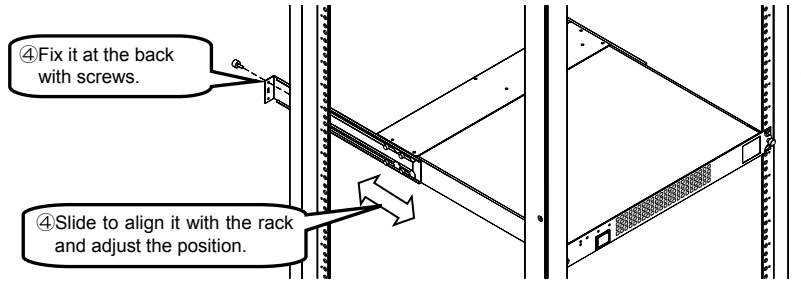


- ② Tighten the 4 screws on each of the left and right on the front of the unit to fix the unit to the rack. Always hold the bottom of the unit firmly.

- ③ Insert the rack clamp from the back side of the unit, and attach it to the unit.



- ④ Adjust the position of the rack clamp, temporarily secure it, and then fix it to the rack at the back.
- ⑤ Tighten the temporarily secured rack clamp screws on the side of the rack firmly.



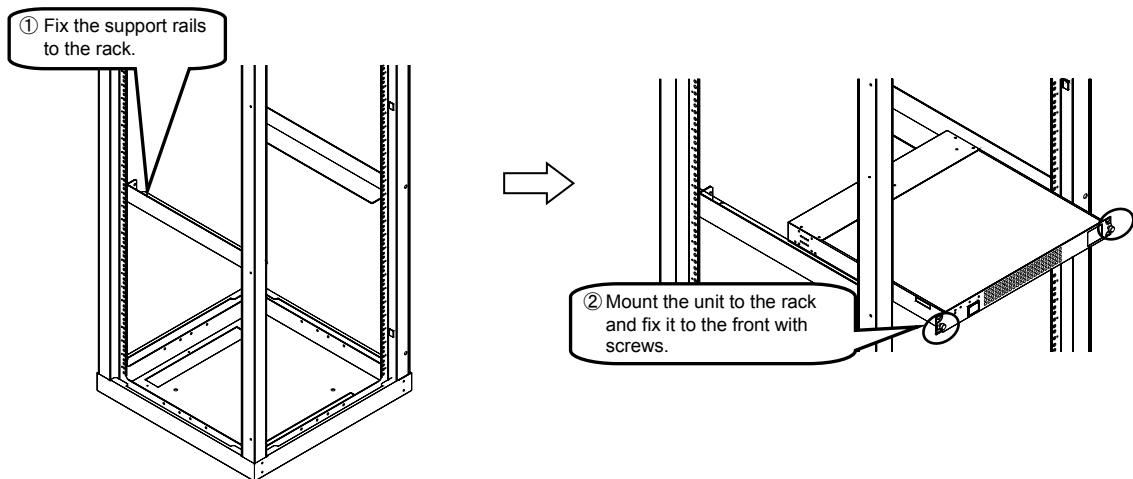
- ⑥ Check that the screws are not loose.

When using support rails*

* Support rails
Support rails are not supplied.
Contact your rack manufacturer for further information.

When the supplied rack clamps cannot be used for your rack, use support rails and follow the procedure below to mount the unit to the rack.

- ① Fix the support rails to the rack.
- ② Mount the unit to the rack, and fix it to the front with 4 screws.




- ③ Check that the screws are not loose.

This completes the transportation and installation work.






§8. Wiring the Unit

§8.1 Wiring the Input and Output Terminal Block



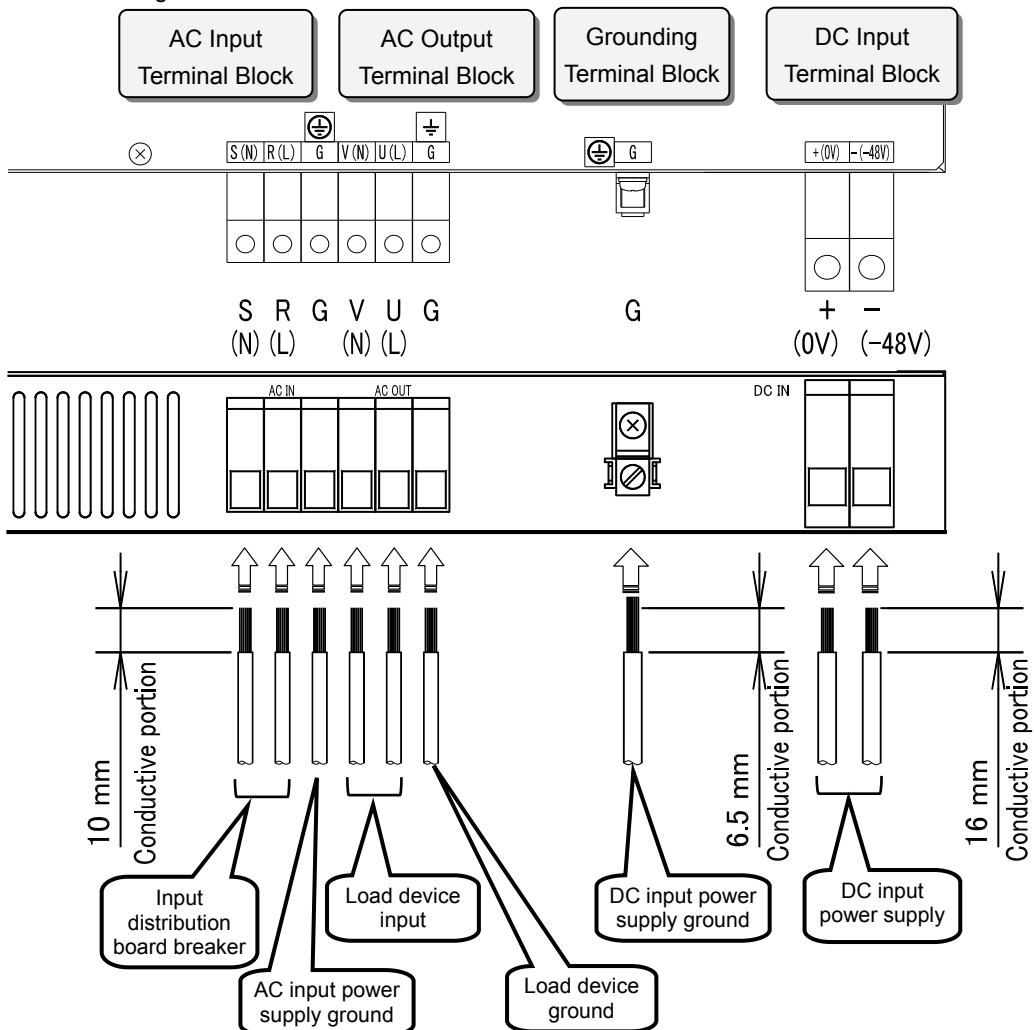
CAUTION

- Wiring should be performed only by technically qualified personnel. Incorrect wiring may result in electric shock and/or fire.
- A readily accessible disconnect device shall be incorporated external to the equipment.
- Make sure that the polarity is correct when wiring the DC input terminal block. Failure to do so may cause damage to the unit.
- Make sure that the connections to the terminal block are not loose. Failure to do so may result in a failure or cause electric shock.
- This unit requires class D grounding work. Failure to connect the grounding cable in accordance with the specified grounding class may result in electric shock.
- The grounding cables of all load devices connected to the output of the unit must be securely connected to the G terminal (Grounding terminal). Failure to connect the grounding cables of the load devices correctly may result in electric shock.
- Do not allow the unit to receive power before all wiring work is completed. Failure to do so may result in an electric shock.
- Install the disconnect device whose contact gap is 2 mm (0.08 inches) or more in DC input.
- Install the disconnect device whose contact gap is 3 mm (0.12 inches) or more in AC input. (In the case of the D11A102B011SUS model.)
- Install the back-feed protection device in AC input. (In the case of the D11A102B011SUS model.)

- ① Wire the terminal block.
 - Securely connect the input plug of a load device to the Grounding terminal block.
 - Securely connect the input plug of a load device to the AC output terminal block.
 - Securely connect the input distribution board breaker to the AC input terminal block.
 - Securely connect the DC input power supply plug to the DC input terminal block.

- ② Check that wiring is correct and connections are not loose.



| Terminal | Connectable Cable (solid and stranded) AWG (Cross section) Ratings temperature of conductor: 60°C(140° F), 75°C(167° F), 90°C(194° F) | Exposed cable length | Screwdriver blade size |
|-----------|---|----------------------|------------------------|
| DC Input | AWG8 (5.5 mm ²) — AWG4 (22 mm ²) | 16 mm (0.63 inches) | 1.0 X 4.0 (Flat-head) |
| Earthing | AWG8 (5.5 mm ²) — AWG6 (13 mm ²) | 6.5 mm (0.26 inches) | |
| AC Input | AWG12 (3.5 mm ²) — AWG6 (13 mm ²) | 10 mm (0.39 inches) | |
| AC Output | AWG14 (2 mm ²) — AWG6 (13 mm ²) | | |

Wire conductor: Copper only

Notes

1. Notes on wiring

- The AC input terminal block is not available for the D11A102B001SUS model.
- When the AC input power is single-wire grounded, connect the ground phase to the S (N) terminal side.
- When the load device input needs to be single-wire grounded, connect the ground phase to the V (N) terminal side.




2. Notes on DC grounding

This equipment is designed to permit the connection of the earthed conductor of the DC supply circuit to the grounding conductor at the equipment. If this connection is made, all of the following conditions must be met:

- This equipment shall be connected directly to the DC supply system grounding electrode conductor or to a bonding jumper from a grounding terminal bar or bus to which the DC supply system grounding electrode conductor is connected.
- This equipment shall be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the grounding conductor, and also the point of grounding of the DC system. The DC system shall not be earthed elsewhere.
- The DC supply source shall be located within the same premises as this equipment.
- Switching or disconnecting devices shall not be in the earthed circuit conductor between the DC source and the point of connection of the grounding electrode conductor.

The total output from all output terminals **must not exceed 1kVA.**

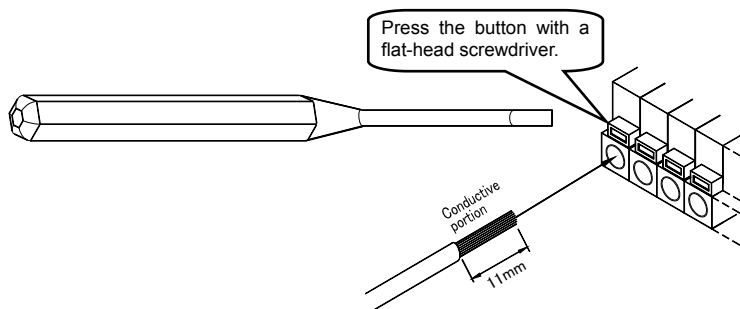
§8.2 Wiring the Transfer Signal Terminal Block

| | | |
|---|--|--|
|  CAUTION | <ul style="list-style-type: none"> • Wiring should be performed only by a service technician. Incorrect wiring may result in electric shock and/or fire. • Make sure that the connections to the terminal block are not loose. Failure to do so may result in a failure or cause electric shock. |   |
|---|--|--|

- ① Use the following cables and tool to wire the transfer signal terminal block.

| | |
|-------------------------------------|--|
| Applicable Cable | Single cable: Ø1.2 (AWG16) Twisted cable: Ø1.25 mm ² (AWG16) Conductor: Copper only |
| Usable Cable Range | Single cable: Ø0.4 to Ø1.2 (AWG26 to AWG16) Twisted cable: 0.3 mm ² to 1.25 mm ² (AWG22 to AWG16) |
| Exposed Cable Length | 11 mm (0.43 inches) |
| Applicable Tool for Pressing Button | Flat-head screwdriver (Axis diameter Ø3, blade width 2.6) |

- ② Insert the cable while pressing the button on the terminal block with a flat-head screwdriver as shown in the figure.



This completes the wiring work.

§9. Operating Procedures

§9.1 D11A102B001SUS Operating Procedure

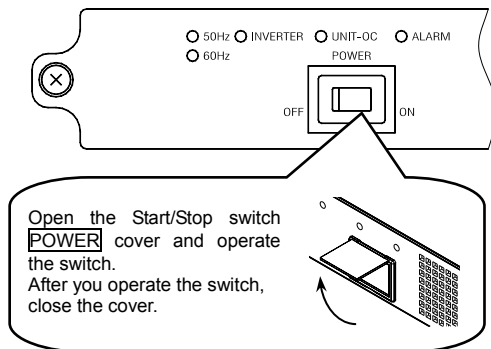
Start Procedure

Follow the procedure below to start the unit.

Notes on before operating

- See §2.2 (4) "Installation Precautions." When you perform a test using a fuse for the DC input before operating.
- After the unit is installed, be sure to check the start and stop operations.

| | Operating Procedure | Unit Status | Unit LED Display |
|---|---|---|---|
| 1 | Turn the DC input distribution board breaker ON. | Cooling fan starts Output stops | 50 Hz or 60 Hz (green) turns on*1 |
| 2 | Turn the Start/Stop switch POWER of the unit ON. | Output power is supplied (Inverter starts) | INVERTER LED (blue) turns on 50 Hz or 60 Hz (green) continues to be lit *1 |



Notes

- *1: LED ON/OFF status
The LED turns on according to the output frequency setting of the unit.
- Note on before output power is supplied to load device.
Check the frequency in region where equipment is used is suitable for the 50Hz 60Hz LED (green) on the unit before output power is supplied to load device.
Change the DIP switch settings on the back panel of the unit seeing §6.2 "Checking the DIP Switch." After checking the output power is not supplied to the load device when they are not suitable.



After confirming that the INVERTER LED (blue) of the unit is lit, turn the load device power ON.

Stop Procedure

Follow the procedure below to stop the unit.

Notes on stop procedure

- Before you stop the unit, be sure to turn the load device power OFF.
- For safety sake, be sure to turn the distribution board breaker OFF.

| | Operating Procedure | Unit Status | Unit LED Display |
|---|--|---|--|
| 1 | Turn the load device OFF. | Output power continues to be supplied | INVERTER LED (blue) turns on 50 Hz or 60 Hz (green) continues to be lit |
| 2 | Turn the Start/Stop switch POWER of the unit OFF. | Output stops Fan continues to be run | 50 Hz or 60 Hz (green) continues to be lit |
| 3 | Turn the DC input distribution board breaker OFF. | Fan stops | All LEDs turn off |

§9.2 D11A102B011SUS Operating Procedure

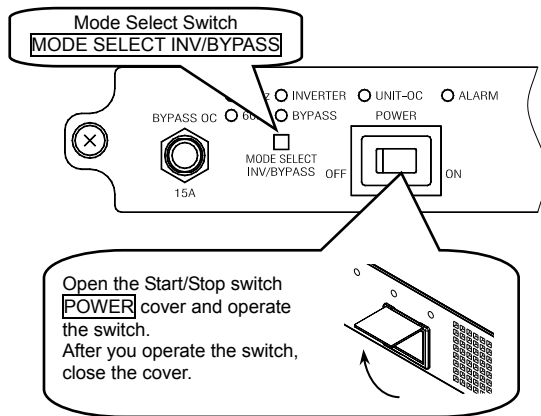
Start Procedure

Notes

- After installation, be sure to check the start and stop operations.
- See §2.2 (4) "Installation Precautions." When you perform a test using a fuse for the DC input before operating.
- Check the bypass breaker of unit is not tripped. See §11.2.2 "Resetting the Bypass Breaker." If the bypass breaker is tripped.

Follow the procedure below to start the unit.

| | Operating Procedure | Unit Status | Unit LED Display |
|---|---|--|--|
| 1 | Turn the DC input distribution board breaker ON. | ① Cooling fan starts running ② Output stops | 50 Hz or 60 Hz (green) turns on ^{*1} |
| 2 | Turn the AC input distribution board breaker ON. | ① Cooling fan continues to run ② Output continues to be stopped | 50 Hz or 60 Hz (green) continues to be lit ^{*1} |
| 3 | Turn the Start/Stop switch POWER of the unit ON. | Output power is supplied (Inverter starts running) | INVERTER LED (blue) turns on 50 Hz or 60 Hz (green) continues to be lit ^{*1} |
| 4 | Check that the INVERTER LED (blue) turns on, and after at least approximately 15 seconds elapse ^{*3} , hold down the MODE SELECT INV/BYPASS switch for at least 1 second. | Inverter operation ↓ Bypass operation | BYPASS LED (yellow) turns on ^{*2} 50 Hz or 60 Hz (green) continues to be lit ^{*1} |
| 5 | Check that the BYPASS LED (yellow) turns on, and after at least approximately 15 seconds elapse ^{*3} , hold down the MODE SELECT INV/BYPASS switch for at least 1 second. | Bypass operation ↓ Inverter operation | INVERTER LED (blue) turns on ^{*2} 50 Hz or 60 Hz (green) continues to be lit ^{*1} |



Notes

- *1: The LED turns on according to the AC input frequency. When AC input power is not received, the LED turns on according to the output frequency setting of the unit.
 - *2: If the LED does not turn on in steps 4 and 5, the AC input power and inverter output are not synchronized, or the AC input voltage is not within the normal range. When that happens, the inverter operation and bypass operation cannot be switched.
 - *3: Do not operate the MODE SELECT switch for approximately 15 seconds.
- Note on before output power is supplied to load device. Check the frequency in region where equipment is used is suitable for the 50Hz 60Hz LED (green) on the unit before output power is supplied to load device. Change the DIP switch settings on the back panel of the unit seeing §6.2 "Checking the DIP Switch." After checking the output power is not supplied to the load device when they are not suitable.

After confirming that the INVERTER LED (blue) of the unit is lit, turn the load device power ON.

Stop Procedure

Notes on stop procedure

- Before you stop the unit, be sure to turn the load device power OFF.
- For safety sake, be sure to turn the distribution board breaker OFF.

Follow the procedure below to stop the unit.

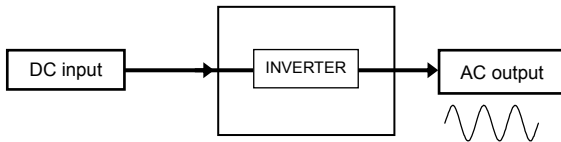
| | Operating Procedure | Unit Status | Unit LED Display |
|---|--|---|--|
| 1 | Turn the load device power OFF. | Output power continues to be supplied | INVERTER LED (blue) turns on 50 Hz or 60 Hz (green) continues to be lit |
| 2 | Turn the Start/Stop switch POWER of the unit OFF. | Output stops Fan continues to be run | 50 Hz or 60 Hz (green) continues to be lit |
| 3 | Turn the AC input distribution board breaker OFF. | Output continues to be stopped Fan continues to be run | 50 Hz or 60 Hz (green) continues to be lit |
| 4 | Turn the DC input distribution board breaker OFF. | Fan stops | All LEDs turn off |

§10. Operation and Protective Functions

§10.1 D11A102B001SUS Basic Operation

(1) Normal operation

During normal operation, the DC input power is received and the AC power converted by the inverter is supplied to the load device.

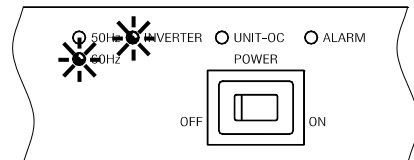


Power supply route during normal operation [→]

LED display

The frequency display LED or the AC input frequency is set to 60 Hz in the example.

☀ : Indicates that the LED is lit.



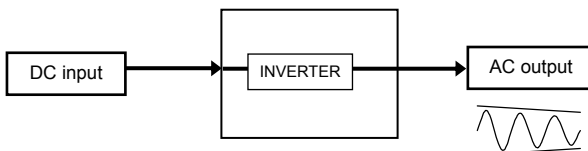
LED status during normal operation

(2) When overloaded

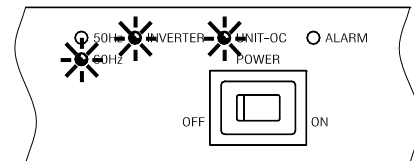
If the load current exceeds the capacity of the unit, and the unit becomes overloaded, the **UNIT-OC LED** (red) display turns on.

Reduce the load to make sure the unit can be used safely.

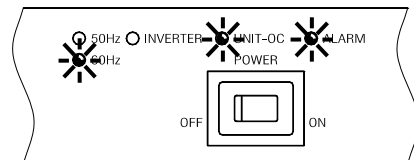
If the overload state continues, a droop circuit is activated to protect the unit, and eventually a drop in the output voltage may cause the unit to shut it down for protection, shutting off the output.



Power supply route when overloaded [→]



LED status when overloaded

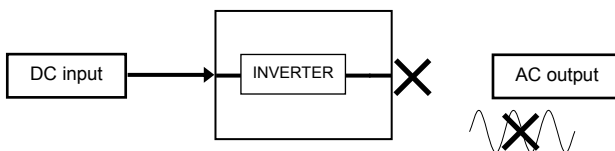


LED status when output is shut off because overload continues

The UNIT-OC (red) and ALARM (red) of the unit turns on when overload continues, and output is shut off. This case is reset by turning ON after the Start/Stop switch **POWER** is turned OFF. Reset the Start/Stop switch **POWER** after reducing the load. So first start the unit and then turn the load device power ON.

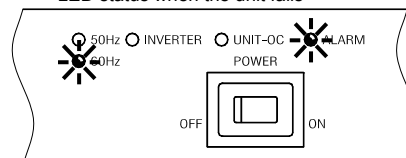
(3) When the unit fails

When the unit fails, the ALARM LED (red) turns on, and the unit fails to supply output power.



Power supply route when the unit fails [→]

LED status when the unit fails



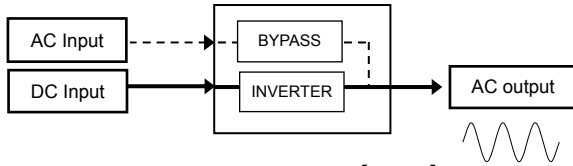
Notes

1. When the unit fails, contact your supplier or Sanyo Denki as soon as possible.
2. When you remove the unit, be sure to read §11.2.1 "Procedure to Remove the Inverter Unit" and follow the instructions.

§10.2 D11A102B011SUS Basic Operation

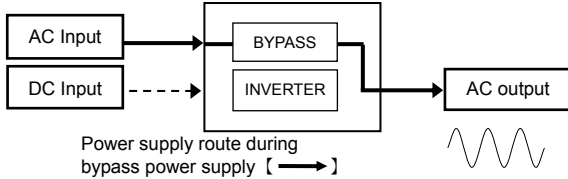
(1) Normal operation

During normal operation, the DC input power is received and the AC power converted by the inverter is supplied to the load device.



Power supply route during normal operation [→]


(2) Unit output switching operation



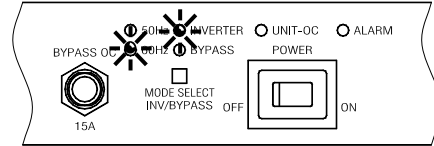
Power supply route during bypass power supply [→]

LED display

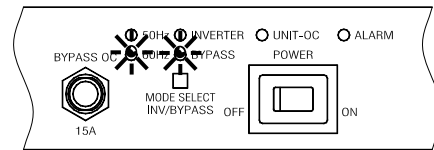
The frequency display LED or the AC input frequency is set to 60 Hz in the example.

 : Indicates that the LED is lit.

LED status during normal operation



LED status during bypass power supply



① Operation for manual switching

When you hold down the **MODE SELECT** on the front panel of the unit for at least 1 second while the DC input and AC input power supplies are normal, the output of the unit can be switched manually from inverter power supply to bypass power supply. When you hold down the **MODE SELECT** again for at least 1 second, the unit output can be switched from bypass power supply to inverter power supply. The switching is possible only when the AC input power and inverter output are synchronized.

The following table shows the switching time at this point.

| Status | Switching Time | LED Display |
|---|----------------|------------------------------|
| Switching from inverter power supply to bypass power supply | 0 ms | BYPASS LED (yellow) turns on |
| Switching from bypass power supply to inverter power supply | 0 ms | INVERTER LED (blue) turns on |

② Operation for automatic switching

If a power failure or other failures occur with the DC or AC input power supply, the output of the unit automatically switches to the normal power supply.

Tip

Once the AC input power is restored to normal, the unit synchronizes the inverter output with the AC input power and then automatically switches to inverter power supply.

- If a power failure or other failures occur with the DC input power supply during inverter operation, the inverter stops and the power switches automatically to bypass power supply. Once the failure is recovered, the power is automatically restored to bypass power supply.

| MODE SELECT Setting | Power Status | Unit Output Status | Switching Time |
|---------------------|-----------------------------|---|----------------|
| INV | DC input error occurrence | Inverter power supply → Bypass power supply | 10 ms |
| | DC input recovery to normal | Inverter power supply ← Bypass power supply | 0 ms |

- If a power failure or other failures occur with the AC input power supply during bypass operation, the power switches automatically to inverter power supply. Once the failure is recovered, the power is automatically restored to the original bypass power supply.

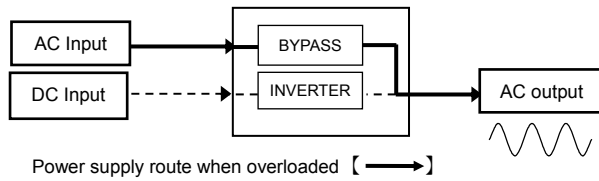
Tip

Once the AC input power is restored to normal, the unit synchronizes the inverter output with the AC input power and then automatically switches to bypass power supply.

| MODE SELECT Setting | Power Status | Unit Output Status | Switching Time |
|---------------------|-----------------------------|---|----------------|
| BYPASS | AC input failure occurrence | Bypass power supply → Inverter power supply | 10 ms |
| | AC input recovery to normal | Bypass power supply ← Inverter power supply | 0 ms |

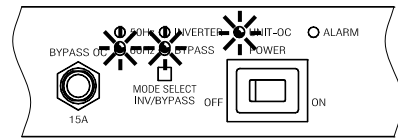
(3) When overloaded

When the load current exceeds the output capacity of the unit and the unit becomes overloaded during inverter power supply, the UNIT-OC LED (red) of the unit turns on, and the power switches automatically to bypass power supply when the AC input power supply is normal. Reduce the load to make sure the unit can be used safely. Once the load state is resolved, the unit establishes synchronization operation with the AC input, and then switches automatically to inverter power supply. When the overload state continues, the bypass breaker (BYBASS OC 15A) of the unit is tripped to protect the unit. Note that when the bypass breaker is tripped, the output is shut off.

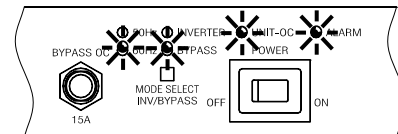


Power supply route when overloaded [—→]

LED status when overloaded



LED status when output is shut off because overload continues



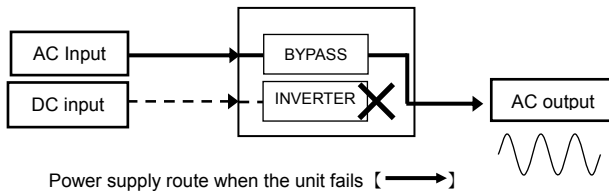
The UNIT-OC (red) and ALARM (red) of the unit turns on when overload continues, and output is shut off. This case is reset by turning ON after the Start/Stop switch **POWER** is turned OFF. Reset the Start/Stop switch **POWER** after reducing the load and check on bypass breaker. If the bypass breaker is tripped, see §13.2.5 "Resetting the Bypass Breaker." So first start the unit and then turn the load device power ON.

Note
When the bypass breaker is tripped by a DC input failure, the LED display of the unit turns off.

(4) When the unit fails

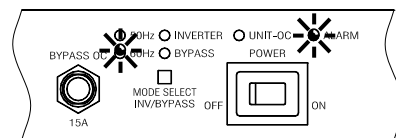
When the unit fails, the ALARM LED (red) turns on.

When the AC input power supply is normal, automatic switching to bypass power supply occurs, and power is supplied to the output.



Power supply route when the unit fails [—→]

LED status when the unit fails



Note

1. When a unit fails, contact your supplier or Sanyo as soon as possible.
2. When you remove the unit, be sure to read §11.2.1 "Procedure to Remove the Inverter Unit" and follow the instructions.

§10.3 Protective Function Table

There are protective operations and functions as listed below to protect the unit.

(1) In the case of the D11A102B001SUS model

○ : Indicates that the LED turns on and transfer signal is sent out.

| Item | Front Panel LED Display | | | External Transfer Signal | | | Function Protective Operation | Notes |
|---|-------------------------|---------------|-------------|--------------------------|--------------------|-------------------------|-------------------------------|--|
| | INVERTER (blue) | UNIT-OC (red) | ALARM (red) | ALARM (failure) | AC OUT (AC Output) | DCIN-ALM DC Input Error | | |
| 00 Power Reception | — | — | — | — | — | — | — | When the unit receives a normal DC input voltage, the DC input error is resolved. |
| 01 Normal | ○ | — | — | — | ○ | — | — | Dependent on the Start/Stop switch (POWER). DC power reception → POWER ON → Inverter power supply |
| 02 Unit Failure Note 1 | — | — | ○ | ○ | — | — | — | |
| 03 Overload 100 V setting (approx. 10.5 A) 120 V setting (approx. 8.75 A) | ○ | ○ | — | — | ○ | — | ○ | |
| | — | ○ | ○ | ○ | — | — | ○ | When a heavy overload occurs, the unit fails, the overload LED turns on, an overload signal is sent out, and the unit stops. |
| 04 Overload restoration (Within 20 seconds) | ○ | — | — | — | ○ | — | — | When the load is restored to normal within 20 seconds, normal operation continues. |
| 05 DC Input Error | — | — | — | — | — | ○ | — | Once the DC input voltage is restored to normal, the inverter starts automatically. |

Note 1: In the case of the following unit failures:

- Inverter output voltage failure [Undervoltage (LV)/overvoltage (HV)]
- Converter voltage failure [Undervoltage (LV)/overvoltage (HV)]
- Semiconductor temperature error

(2) In the case of the D11A102B011SUS model



○ : Indicates that the LED turns on and transfer signal is sent out.

| Item | Front Panel LED Display | | | | External Transfer Signal | | | Function Protective Operation | Notes |
|---|-------------------------|-----------------|---------------|-------------|--------------------------|--------------------|---------------------------|-------------------------------|---|
| | INVERTER (blue) | BYPASS (yellow) | UNIT-OC (red) | ALARM (red) | ALARM (Failure) | AC OUT (AC output) | DCIN-ALM (DC input error) | | |
| 00 Power Reception | — | — | — | — | — | — | — | — | When the unit receives a normal DC input voltage, the DC input error is resolved. |
| 01 Normal (when DC input power is received for the first time) | ○ | — | — | — | — | ○ | — | — | Dependent on the Start/Stop switch (POWER). DC power reception → POWER ON → Inverter power supply |
| 02 Normal (when AC input power is received for the first time) | ○ | — | — | — | — | ○ | — | — | Dependent on the Start/Stop switch (POWER). AC power reception → POWER ON → DC power reception |
| 03 MODE SELECT BYPASS | — | ○ | — | — | — | ○ | — | — | When AC input power is not received, the switching does not occur. When the inverter and bypass are not synchronized, the switching does not occur. Inverter power supply is continued. |
| 04 MODE SELECT INV | ○ | — | — | — | — | ○ | — | — | When the inverter and bypass are not synchronized, the switching does not occur. |
| 05 Unit Failure Note 1 | — | ○ | — | ○ | ○ | ○ | — | — | When the AC input power is not received, output stops. |
| 06 Overload. 100V setting (approx. 10.5 A) 120 V setting (approx. 8.75 A) | — | ○ | ○ | — | — | ○ | — | ○ | When the AC input power is not received, the switching does not occur. When the inverter and bypass are not synchronized, the switching does not occur. The inverter power supply is continued. |
| | — | — | ○ | ○ | ○ | — | — | ○ | When a heavy overload continues, the bypass breaker is tripped. |
| | — | — | ○ | ○ | ○ | — | — | ○ | When a heavy overload occurs, the unit fails, the overload LED turns on, an overload signal is sent out, and the unit stops. |
| 07 Overload restoration (Within 20 seconds) | ○ | — | — | — | — | ○ | — | — | When the load is restored to normal within 20 seconds, normal operation continues. |
| 08 DC Input Error during inverter power supply | ○→— | — | — | — | — | — | ○ | — | Once the DC input voltage is restored to normal, the power automatically switches to inverter power supply. |
| | —→○ | ○→— | — | — | — | — | — | — | Once the AC input voltage is restored to normal, the power automatically switches to bypass power supply. |
| 09 AC Input Error during bypass power supply | —→○ | ○→— | — | — | — | ○ | — | — | Once the AC input voltage is restored to normal, the power automatically switches to bypass power supply. |


Note 1: In the case of the following unit failures:

- Inverter output voltage failure [Undervoltage (LV)/overvoltage (HV)]
- Converter voltage failure [Undervoltage (LV)/overvoltage (HV)]
- Semiconductor temperature failure



§11. Inspection and Maintenance

| | | |
|---|--|---|
|  CAUTION | <ul style="list-style-type: none"> • Inspection and maintenance of the inside of the unit should be performed only by a service technician. Electric shock, bodily injury, burns, smoke, or fire may otherwise result. • Inspection should be performed after shutting down the unit completely and turning off the distribution board breakers for the DC and AC power supplies. There is danger of electric shock. |  |
|---|--|---|

The projected service life of this unit is 15 years. This unit requires no special daily care, however, the following components need to be replaced over time (a fee will be charged).

| | | | |
|---------------------|--|---|--|
| Cooling Fan Fuse | Once every 8 years Once every 8 years | }  | Submit a request for maintenance work when the replacement time comes. |
|---------------------|--|---|--|

§11.1 Routine Checks by the Customer

| | | |
|--|--|---|
|  CAUTION | <ul style="list-style-type: none"> • Be sure not to inspect the inside of the unit. Doing so may result in an electric shock, burn, injury, smoke, or fire. • Do not touch the fan on the back panel of the unit when cleaning the unit or anywhere around the unit. Doing so may result in an injury. • Do not use a wet cloth for cleaning. Doing so may result in an electric shock. • When cleaning, do not connect a vacuum cleaner to the output terminal of the unit. Doing so may result in smoke or fire. |  |
|--|--|---|

Routinely check the following items.

- ① **Is the control panel LED lighting state abnormal?**
- ② **Is the exterior of the unit in any way damaged or deformed?**
- ③ **Is an unusual sound or odor emitted from the unit?**
- ④ **Is the installation environment of the unit suitable?
Are the humidity and temperature within the specified ranges?**
⇒ See §7.1 "Checking the Installation Environment."
- ⑤ **Has the specified amount of space been provided at the front and back of the unit?**
If the air intake or exhaust vent is blocked, the internal temperature of the unit rises, which could result in a damage to the unit.
⇒ See §7.3 "Checking the Installation Space."
- ⑥ **Remove any dust or dirt adhering to the intake and exhaust vents.**
Dust or dirt adhering to parts inside the unit may cause it to malfunction.

§11.2 Maintenance by Service Technician

The user must not perform the maintenance described in this section. Be sure to contact your service technician for maintenance.



| | | |
|--------------------|---|----------|
| CAUTION | <ul style="list-style-type: none"> Internal maintenance and inspection should be performed only by a service technician. Electric shock, bodily injury, burn, smoke, or fire may otherwise result. Do not touch the rotating fan during inspection and maintenance. Doing so may result in bodily injury. Never use a wet cloth to clean the unit. Doing so may result in an electric shock. When cleaning, do not connect a vacuum cleaner to the output terminal of the unit. Doing so may result in smoke or fire. | |
|--------------------|---|----------|

- (1) Periodic inspection
 Periodic inspection should be performed by a service technician about once every 6 months.

§11.2.1 Procedure to Remove the Inverter Unit

Step ① Check
 Turn the load device OFF.



Step ② Check
 Open the cover for the Start/Stop switch **POWER** on the front panel of the unit and turn the switch OFF. After you operate the switch, close the cover.



Step ③ Check
 Turn the AC input distribution board breaker OFF.*1
 Turn the DC input distribution board breaker OFF.



Note

- *1: This is not required for the D11A102B001SUS model.
- For safety sake, wrap an insulation tape around the exposed conductor of the removed cable.

Step ④ Check
 Disconnect the input and output cables on the back panel of the unit. When you use transfer signals, disconnect all the cables from the terminal block. Disconnect the earthing cables at the end.



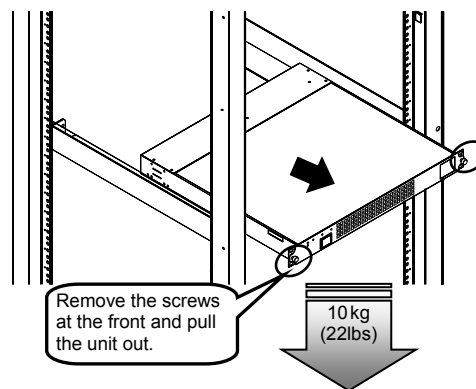
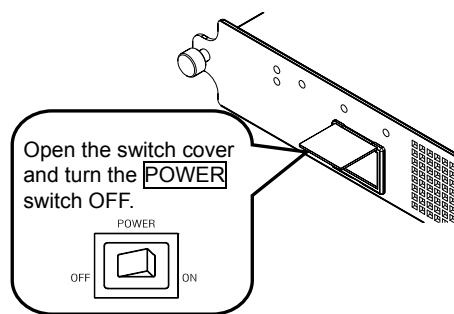
CAUTION

When removing the rack-fixing screws, hold the bottom of the unit securely and pull the rack gently out. The weight of the unit is approximately 10 kg (22 lbs). Be careful not to drop the unit on your foot. Doing so may result in an injury.

Step ⑤ Check
 Remove the screws fixed to the rack at the front of the unit. When using rack clamps, remove the left and right clamps, and then pull the unit out of the rack.

Note

For details on the rack clamps or how to mount the unit to the rack, see §7 "Installing the Unit"



§11.2.2 Resetting the Bypass Breaker



- Resetting of the bypass breaker should be performed only by a service technician. Failure to do so may result in an electric shock.
- Be sure to reset the bypass breaker after the unit is shut down. Failure to do so may result in an electric shock.

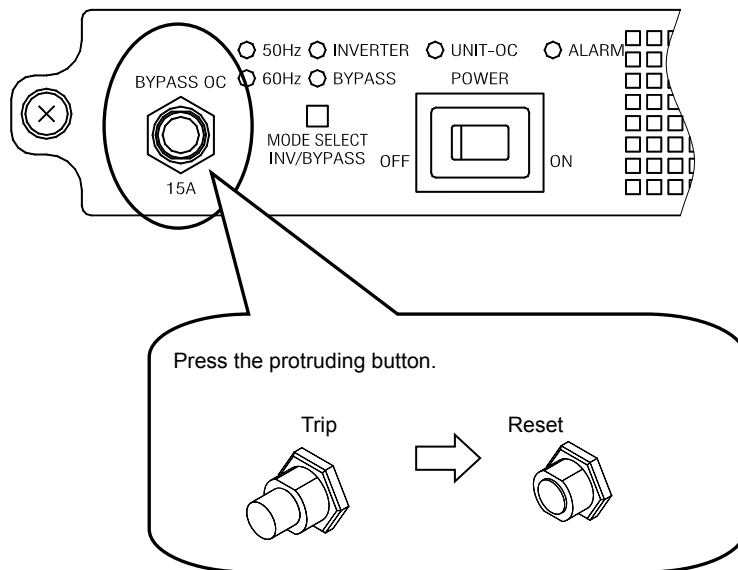
Notes

- The bypass breaker is available only for the D11A102B011SUS model. The breaker is not available for the D11A102B001SUS model.
- Before resetting the bypass breaker, be sure to check that there is no failure with the load device.

Follow the procedure below to reset the bypass breaker.

- ① Turn the Start/Stop switch **POWER** OFF to shut down the unit.
- ② Check to make sure that there is no failure with the connected load device.
- ③ Press the **BYPASS OC 15A** on the front panel.
- ④ Turn the Start/Stop switch **POWER** ON to start the unit.

For details, see §9.2 “D11A102B011SUS Operating Procedure”



§12. Specifications

| Item | Standard or Performance | | Notes | |
|------------------------|---|---|---|---|
| Model Name | D11A102B001SUS | D11A102B011SUS | | |
| Output Capacity | 1 kVA/1 kW | | Apparent power and active power | |
| Cooling System | Forced air cooling | | | |
| DC Input | Rated Voltage | -48 V | | |
| | Variation Range | -40.5 V to -57 V | | |
| | Max. Input Current | 30 A | | During rated output |
| | Input Feedback Noise | 2 mV or less | | Evaluated value (at rated input and output with a resistance load) |
| AC Input | Number of Phase | — | Single-phase, 2-wire | |
| | Voltage | — | 100 V or 120 V | Dependent on the DIP switch setting ^{*1} (Rated voltage same as output voltage) |
| | Frequency | — | 50 Hz or 60 Hz | |
| | Frequency Variation Range | — | ±5% | Synchronization range |
| AC Output | Number of Phase | Single-phase, 2-wire | | |
| | Voltage | 100 V or 120 V | | Dependent on the DIP switch setting ^{*1} |
| | Voltage Regulation | Rated voltage ±2% | | |
| | Frequency | 50 Hz or 60 Hz | | Dependent on the DIP switch setting ^{*1} |
| | Frequency Regulation | Rated frequency ±1% ^{*2} | | |
| | Voltage Waveform | Sine wave | | |
| | Distortion factor of voltage waveform | 8% or less | | During rated output |
| | Transit Voltage Variation | Rated voltage ±10% | | 0⇒100% load variation |
| | Response Time | 100 ms or less | | |
| | Load Power Factor | 1.0 | | Variation range 0.7 (lag) to 1.0 ^{*3} |
| Overcurrent Protection | Output voltage droops at 105% or more | Automatic switching to bypass circuit when exceeding 105% | | |
| Emission Standard | VCCI Class-A compliant IEC62040-2:2005 (EN62040-2:2006) and CISPR22:2005 Class-A compliant FCC Part15 SubB Class-A compliant | | | |
| Immunity Standard | IEC62040-2:2005 (EN62040-2:2006), CISPR24:1997/A1:2001/A2:2002 compliant | | | |
| Safety Standard | UL60950 | | File No. E203489 | |
| Acoustic Noise | 45 dB or less | | 1 meter in height at the front of the unit, A characteristic | |

*1: When you change the DIP switch settings, be sure to do so before the DC power is received.
Even if you change the setting after DC power is received, the change will not become effective.

*2: When the AC input power is received, the inverter output performs synchronization operation in the frequency variation range of ±5% of the AC input so the frequency regulation is ±5% of the rated frequency.

*3: The output capacity should not exceed 1 kVA.

§13. Warranty

Warranty for use: 1 year

1. The product is warranted for the specified periods against electrical failures due to materials or workmanship.
2. Free repair or replacement by a product with equivalent functions will be made when it is determined that failure has occurred because of defects in materials or workmanship.
3. This warranty is void in the event of any modification or change to the product supplied by Sanyo Denki.
4. This warranty is void in the event of any improper use of the product supplied by Sanyo Denki, or failure to use the product as specified in this Instruction Manual.
5. This warranty does not apply when the product is used aboard a ship or in another area subject to vibrations.
6. This warranty is void in the event that the product supplied by Sanyo Denki is installed in an inappropriate location.
7. This warranty does not apply to failures due to accidents, improper use, or use for other than the product's intended use.
8. This warranty does not apply to defects or damages arising from fire, earthquake, storm or flood disaster, lightning or other natural disasters including pollution, salt disaster, gas disaster (chloride gas), non-standard voltage or incorrect power sources other than those specified.
9. This warranty does not apply to defects or damages arising from mishandling, such as during transportation, relocation or dropping of the DC-AC Inverter by the customer after purchase.
10. Sanyo Denki reserves the right to determine whether damage to a load device connected to this product is due to the faulty operation by this product.
(In the event of any such claim, the affected load device must be sent to Sanyo Denki for inspection.)
11. Warranties for devices other than the product supplied by Sanyo Denki shall be the warranties provided by the manufacturers of those devices.
12. Sanyo Denki provides no warranty for products made by other manufacturers used or incorporated in the products manufactured by Sanyo Denki.
13. This warranty applies to the product specified by Sanyo Denki. It does not apply to any other device.
14. Sanyo Denki disclaims all responsibility for damage to load device software, loss of data, lost profits, and lost opportunities.
15. This warranty does not apply to medical or industrial devices connected to this product.