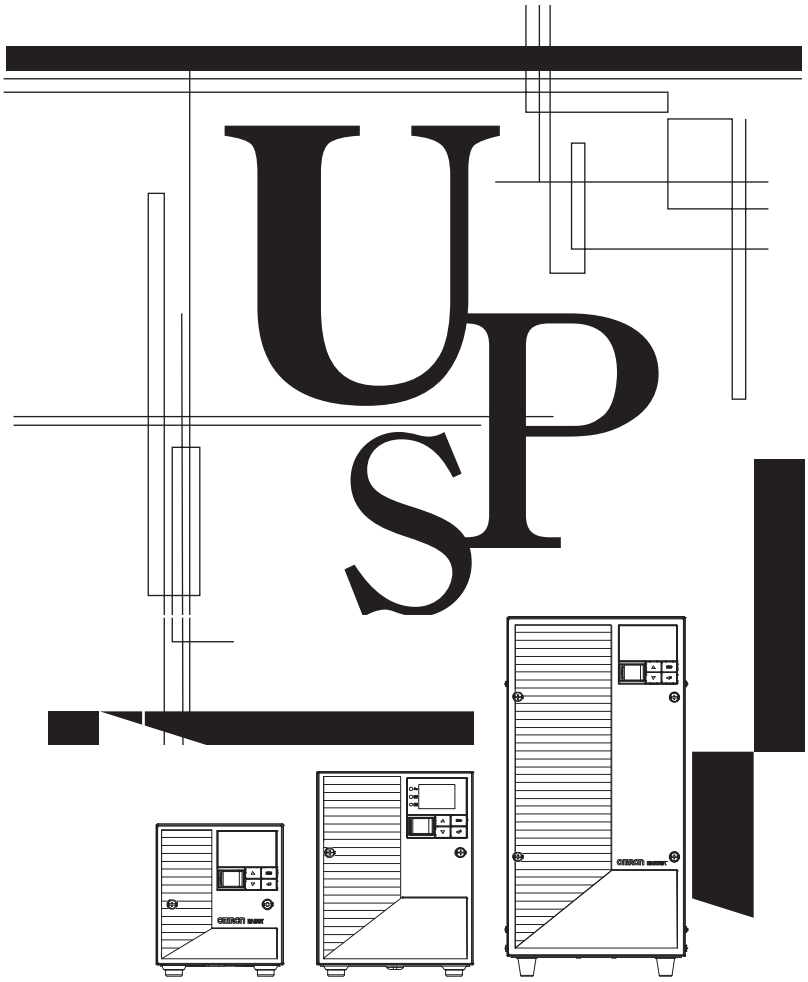
# Uninterruptible Power Supply

# BN50T/BN75T/BN100T/ BN150T/BN220T/BN300T

## Instruction Manual 使用说明书




BN50T/BN75T BN100T/BN150T BN220T/BN300T

- This manual provides important safety-related information. Thoroughly read and understand this manual before installing and using the product.
- Keep this manual in a convenient location so that you can refer to it whenever necessary.
- The contents of this manual are subject to change without notice.
- The warranty is at the end of this manual.

中文使用说明书请参照“9. Notes of Chinese”。

# Introduction

## Features of this product

Thank you for purchasing Omron's Uninterruptible Power Supply (UPS).

- The UPS protects computers and other devices from power failures, voltage variations, instantaneous voltage drops, and surge voltage such as that caused by lightning (a phenomenon in which extraordinary high voltage occurs instantaneously).
- BN50T/BN75T/BN100T/BN150T/BN220T/BN300T are line interactive UPS with simple output voltage adjustment functions. Under normal service conditions, commercial power input passes through the transformer and is output, and when the input voltage is low, the transformer raises the voltage, and when the input voltage becomes high, the transformer lowers the voltage. In addition, when abnormalities in commercial power are detected, such as in a power failure or when there are large changes in voltage, power supply is shifted to the battery within 10ms, and sine wave output is continued.
- Output capacity is 500VA/450W for BN50T, 750VA/680W for BN75T, 1kVA/900W for BN100T, 1.5kVA/1350W for BN150T, 2.2kVA/1980W for BN220T, 3kVA/2700W for BN300T.

## Notes on the use of the Backup Power Supply

- This product is designed and manufactured for use with FA or OA equipment such as personal computers.
  Do not use it when very high reliability and safety are required as listed below.
  - Medical equipment that may cause death directly
  - Applications that may cause injury (applications that directly affect the operation and control of planes, ships, railroads, elevators, and so on)
  - Applications that are always subjected to vibration such as cars and ships
  - Applications in which a failure of this product may cause significant damage or effect to the society and public (important computer systems, main communication equipment, public transportation systems, and so on)
  - Equipment with the same level of importance
- For equipment that greatly affects the safety of people and maintaining public functions, special considerations related to operation, maintenance, and management must be taken such as duplicating the system and emergency power generation facilities.
- Observe the contents of this manual such as the use conditions and environments.
- When you want to use this product for an important system that requires very high reliability, contact the shop of purchase.
- Do not modify/alter this product.

## Disclaimers

We are not liable for any damage or secondary damage resulting from the use of our product, including malfunction and failure of equipment, connected devices, or software.

- Make sure to read the safety precautions before using the unit.
- In the event you transfer or sell this unit to a third party, please include all of the documentation that came with this unit. This is to ensure that the unit is used in line with the conditions described in the included documentation.
  - This manual contains important safety-related information. Please read and understand the contents of the manual before beginning operation.
    If you discover any omissions or errors in the manual, please contact the shop of purchase.

## IMPORTANT SAFETY INSTRUCTION

### 1. SAVE THESE INSTRUCTIONS.

This manual contains important instructions for BN50T/BN75T/BN100T/BN150T/BN220T/BN300T that should be followed when using the UPS and batteries.

### 2. SYMBOL


This symbol indicates earth ground.


This symbol indicates turning on/off UPS.

### 3. INTERNAL BATTERY

Internal battery voltage is 24VDC for BN50T/BN75T,
48VDC for BN100T/BN150T, and 96VDC for BN220T/BN300T.

### 4. TEMPERATURE RATING

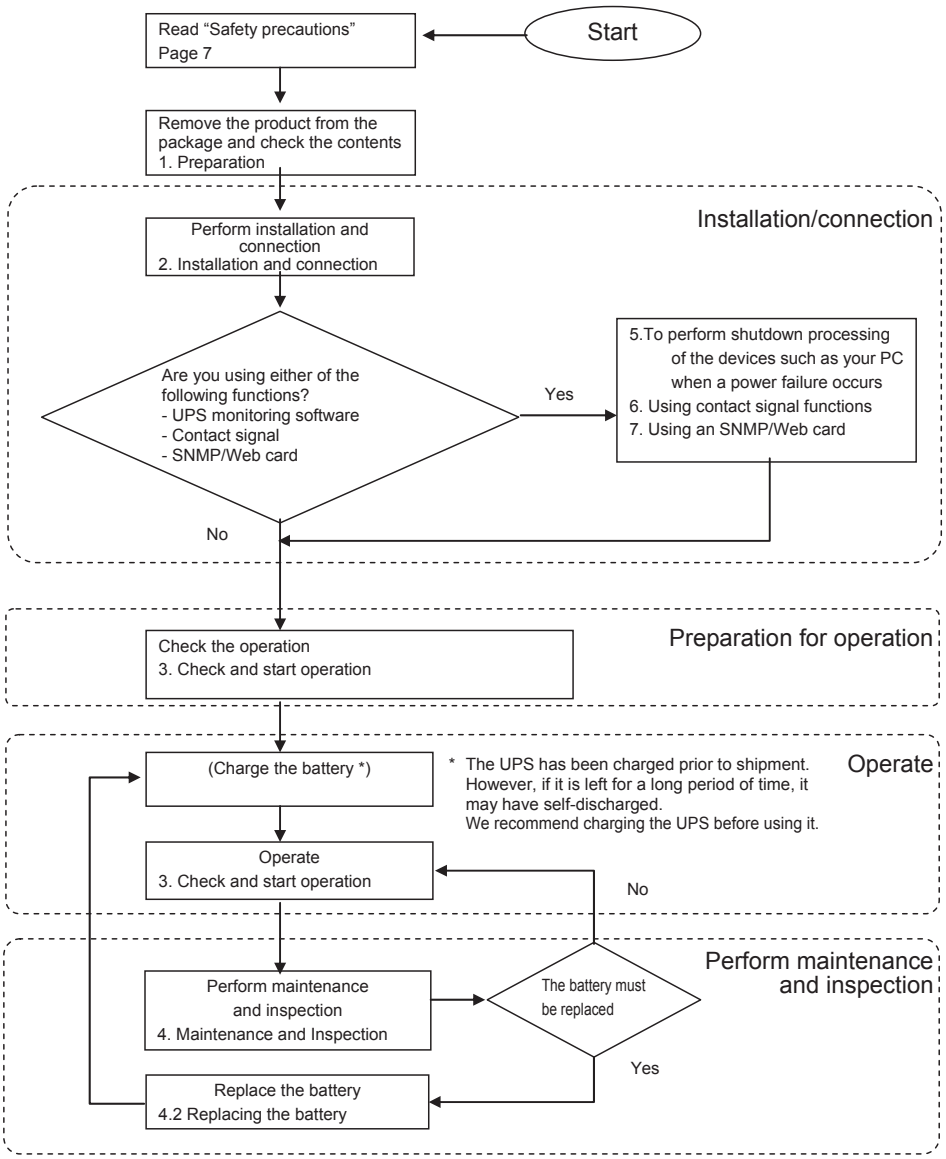
The maximum ambient temperature of the UPS is 40°C.

### 5. ENVIRONMENT

The unit is intended for installation in a temperature controlled, indoor area free of conductive contaminants.

# Procedure from installation to operation

The procedure from installation to operation is shown below.



# Table of Contents

# Safety Precautions

## Safety precautions

Important information for safe operation is described.
Be sure to read it before installation and start of use.

- The safety symbols and their meaning used in this manual are as follows:

| | |
|---|---|
| **Warning** | Misuse may cause death or serious injury. |
| **Caution** | Misuse may cause injury or property damage. |

* Property damage means damage to houses/household effects, livestock, and pets.

: Indicates prohibition. For example, indicates that disassembly is prohibited.

: Indicates obligation. For example, indicates that grounding is necessary.

## Warning

**Do not use this unit when very high reliability and safety are required as listed below. This unit is designed and manufactured for use with FA or OA equipment such as personal computers.**

- Medical equipment or system that may cause death directly.
- Applications that directly affect the safety of people (For example, the operation and control of cars and elevators).
- Applications in which a failure of the unit may cause significant damage to the society and public (For example, essential computer systems and main communication equipment.)
- Applications with the same level of importance.

## Caution (for installation and connection)

**Carry the unit considering its weight and balance, and place it on a stable and robust base.**

- Dropping or toppling the unit may cause injury.
- The approximate weight of the unit is 11 kg (BN50T/BN75T), 20 kg (BN100T/BN150T), 36 kg (BN220T), or 37 kg (BN300T).
- If you drop the unit, stop using it and have it inspected and repaired.
- For repair, contact the shop of purchase.

**Do not hold the front panel when lifting.**

- Injury may result if the panel comes off and falls.

**Keep plastic package bags out of reach of children.**

- Children may suffocate if they place their heads into plastic bags.

## ⚠ Caution (for installation and connection)

**Make sure to connect the unit's AC input plug to a commercial power source with rated input voltage (100 VAC) and 50/60 Hz frequency.**

- Connecting to a commercial power source with a different rated input voltage or frequency may result in a fire.
- The unit may fail.

**When an abnormality (unusual sound or smell) occurs, turn OFF the unit's power switch to stop the output, and stop the supply of commercial power. Disconnect the AC input plug from the wall outlet.**
**The socket-outlet shall be installed near the equipment and shall be easily accessible.**

- When performing maintenance on the connected devices, follow the above instructions to ensure safety.

**Do not connect devices such as dryers, some solenoid valves, etc., which have a half-wave rectifier that allows only half-cycle AC power to flow through.**

- Overcurrent may damage the UPS.

**Do not connect the maximum load when using the default AC plug with BN150T or BN300T. (The default plug of BN150T: 15A/NEMA5-15P, BN300T: 30A/NEMA L5-30P)**

- If the power consumption exceeds the limits shown in the table in "2-3 Connecting the AC input", overheating or fire may occur.
- If the maximum output capacity is being used, replace the plug as described in the table in "2-3 Connecting the AC input".

**When changing the input cable for the BN150T/BN220T/BN300T, perform connection as specified.**
**Make sure to properly match the AC input terminal with the appropriate wire color.**
**Do not perform work on the AC input terminal while the unit is connected to a commercial power source.**

- Use an input cable that complies with the input current specification of the UPS.
- Failure to do so may result in electric shock or ground fault.

**Provide secure grounding.**

- After checking the plug shape of the wall outlet, directly connect the AC input plug of the unit to it. A failure or leak that occurs when the unit is not properly grounded may result in electric shock.

**Do not disassemble, repair, or modify the unit.**

- Doing so may cause an electric shock or a fire.

**Do not install the unit in other than specified orientations.**

- Dropping or toppling the unit may cause injury.
- If you install the unit in an orientation other than specified, the unit cannot be protected from a battery fluid leakage.

**Do not use the unit where the maximum temperature exceeds 40°C.**

- The battery deteriorates rapidly.
- Doing so may cause a failure or malfunction of the unit

## ⚠ Caution (for installation and connection)

**Do not exceed the ranges specified for environmental conditions during use/storage.**

**Do not install or store the unit in the places listed below.**

- Do not store in places where the humidity is lower than 10% or higher than 90%.
- Do not use the unit in places where the ambient temperature is lower than 0°C or higher than 40°C. (With no condensation)
- Do not use in places where the humidity is lower than 25% or higher than85%
- Do not install/store the unit in closed places such as cabinets with no clearance, places where there is flammable or corrosive gas, places with large amounts of dust, places exposed to direct sunlight, places exposed to shock or vibration, salty or wet places, or outdoors.
- Installation or storing the unit in such a place may cause a fire.

---

**When you use plug strip and other plugs to connect additional devices, do not connect devices that exceed the current capacity of the available plugs.**

- The current protection of the unit may operate, which may stop the output.
- The wiring of the plug strip heats up, which may cause a fire.

---

**Do not pinch or sharply bend the cable.**

**Do not fold or knot the cable.**

- Doing so may cause the cable to be damaged or heated, which may cause an electric shock or a fire.
- If the cable is damaged, stop using the unit and have the cable repaired.
- For repair, contact us; ____

---

**All of the included accessories are designed to be used with the unit.**
**Do not use the accessories with other devices.**

- Doing so may compromise the safety of devices.

---

**Do not block the air vents (front, rear, and sides).**

- Doing so will cause the internal temperature to rise, which may cause the unit to fail and the battery to deteriorate.
- Leave at least 5 cm of space between the vent and the wall.

---

**Do not connect a transformer such as a voltage transformer or isolating transformer to the output side.**

- Overcurrent may damage the UPS or cause it to malfunction.
- Even when connected to the input side, the UPS may fail or malfunction. Make sure to check the operation before use.

---

**Do not connect devices that cannot be used with commercial power supply.**

- When the unit's power switch is turned ON and an error occurs with the connected device, bypass operation is performed and commercial power supply is supplied as is to the connected devices.

---

**An additional circuit breaker or fuse with breaking capacity 3kA shall be used between power source and input when installation this unit.**
**(for BN50T, BN75T, BN100T, BN159T)**
**An additional circuit breaker or fuse with breaking capacity 6kA shall be used between power source and input when installation this unit.**
**(for B N220T and BN300T)**

## ⚠ Caution (for use)

**Do not allow the unit to come in contact with water.**

**If you drop the unit, stop using it.**

- Doing so may cause an electric shock or a fire.
- If the unit becomes wet or is dropped, immediately stop using it, disconnect the AC input plug from the wall outlet (commercial power source) and have it inspected and repaired.
- For repair, contact the shop of purchase.

---

**When the battery is dead, replace it immediately or stop using the unit.**

- Continuing the use of it may cause fire or electric shock due to liquid leaks.

| Ambient temperature | Expected life |
|---|---|
| 40°C | 2 years |
| 30°C | 4 years |
| 25°C | 5 years |

* The values in the table are the expected life under standard use conditions and are not guaranteed.

---

**Using a dry cloth, periodically wipe the dust from the AC input plug, input terminal block and power supply output receptacles.**

- Accumulated dust may cause a fire.
- Before wiping off dust, stop all connected devices and the unit, and disconnect the AC input plug from the power socket (commercial power supply).

---

**Do not use the unit in a closed place and do not cover the unit.**

- Doing so may cause abnormal heating or a fire.
- Depending on the operating environment, hydrogen gas may be generated from the battery, resulting in a rupture or explosion. Ventilate the area around the unit.

---

**If you notice an abnormal sound or smell, smoke, or leaking fluid, immediately turn OFF the unit's power switch and stop the supply of commercial power. Disconnect the AC input plug from the wall outlet.**

- Using the unit under such conditions may cause a fire.
- If you notice such a condition, stop using the unit and contact the shop of purchase for inspection and repairs.
- Position the unit in such a way that you can immediately disconnect the AC input plug from the wall outlet (commercial power source) in the event a problem occurs.

---

**If fluid (dilute sulfuric acid) leaks from the interior, do not touch the fluid.**

- Doing so may cause blindness or burns.
- If the fluid contacts your eyes or skin, wash it out with lots of clean water and consult your doctor.

---

**Do not place objects heavier than 25 kg on the unit, and do not drop heavy objects onto the unit.**

- Doing so may cause distortion/damage to the case or a failure of the internal circuit, which may cause a fire.

---

## ⚠ Caution (for use)

**The unit is equipped with a bypass circuit which is able to supply electric power to connected devices even when the inner control circuit is broken down by defects or malfunctions.**

**If you want to stop the output, either stop the source of commercial power or disconnect the AC input plug from the wall outlet (commercial power source).**

- Output is continuing even when all indicators of the front panel are off.
- Output ON/OFF cannot be controlled with the power switch on the front panel.

**Do not sit or stand on top of the product, use it as a step ladder, or lean against it.**

- Doing so may cause the unit to fail or to fall over and result in injury.

## ⚠ Caution (for maintenance)

**When maintaining the connected equipment, turn OFF the unit's power switch to stop the output, and stop the supply of commercial power.**

- Even if commercial power to the UPS is stopped while it is in operation, the power output of his unit does not stop and power is supplied from the receptacle.

**Do not disassemble, repair, or modify the unit.**

- Doing so may cause an electric shock or a fire.

**If fluid (dilute sulfuric acid) leaks from the interior, do not touch the fluid.**

- Doing so may cause blindness or burns.
- If the fluid contacts your eyes or skin, wash it out with lots of clean water and consult your doctor.

**Do not throw the unit into fire.**

- The lead battery in the unit may explode, or leak dilute sulfuric acid.

**Do not insert metal objects into the power supply output receptacle of the UPS.**

- Doing so may result in electric shock.

**Do not insert metal objects into the battery connectors.**

**Do not short between the connector terminals.**

- Doing so may result in electric shock.

## ⚠ Caution (for battery replacement)

**Perform replacement on a stable and flat place.**

- Handle the battery carefully so that you do not drop it.
- Risk of injury due to falling, or burns due to fluid leakage (dilute sulfuric acid).

## ⚠ Caution (for battery replacement)

**Use a specified battery for replacement.**

- Not doing so may cause a fire.
- Replacement battery pack for:

Product model:

BNB75T: One required (Replacement battery pack for BN50T/BN75T)

BNB300T: One required (Replacement battery pack for BN100T/BN150T)

BNB300T: Two required (Replacement battery pack for BN220T/BN300T)

**Do not replace the battery in a place where there is flammable gas.**

- Spark may occur when connecting the battery, which may cause an explosion or fire.

**Do not open or mutilate batteries.**

- Released electrolyte is harmful to the skin and eyes. It may be toxic.

**Do not disassemble or modify the battery.**

- Doing so could cause dilute sulfuric acid leak, which could cause blindness and burns.

**Do not drop the battery and do not expose it to strong impact.**

- Dilute sulfuric acid may leak.

**Do not short the battery with metal objects.**

- Doing so could cause an electric shock, fire or burn.
- Some electrical energy still remains inside the spent battery.

**Do not dispose of batteries in a fire.**

- The batteries may explode.
- Dispose of used batteries according to the instructions.

**Do not use a new battery and an old battery at the same time.**

- Dilute sulfuric acid may leak.

- A battery can present a risk of electrical shock and high short circuit current.

The following precautions should be observed when working on batteries:

a. Remove watches, rings, or other metal objects.

b. Use tools with insulated handles.

c. Wear rubber gloves and boots.

d. Do not lay tools or metal parts on top of batteries.

e. Disconnect charging source prior to connecting or disconnecting battery terminals.

f. Determine if battery is inadvertently grounded.
   If inadvertently grounded, remove source from ground.
   Contact with any part of a grounded battery can result in electrical shock.
   The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).

- Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the required precautions.
  Keep unauthorized personnel away from batteries.

| ATTENTION |
| --- |
| Ne pas ouvrir ni deteriorer les batteries. |
| Les fuites d'electrolyte sont dangereuses pour la peau et les yeux. |
| Proteger les batteries du feu. Risque d'explosion des batteries. |
| Utilisez les batteries conformement aux instructions. |
| Les batteries peuvent presenter un risque de choc electrique avec un fort courant de court circuit. |
| Les precautions suivantes doivent etre suivie lors de l'intervention sur les batteries : |
| a: retirer les montres, bagues et autre objets en metal |
| b: Utilisez des outils a manche isole |
| c: Utilisez des gants et des chaussures isolant |
| d: Ne pas laisser des outils ou des objets metalliques proches des batteries |
| e: Deconnecter le chargeur avant de connecter ou de deconnecter les batteries |
| f: determiner si la pile est mise a la terre. Si elle est mise a la terre, effectuer la deconnection. Le contact avec une pile mise a la terre peut creer un choc electrique. Ceci sera reduit si cette mie a la terre est supprimee pendant installation et maintenance. |

## Notes

### Before using

**Charge the battery soon after purchasing the unit.**

- If you do not use the unit for a long time after the purchase, the battery may deteriorate and the battery may become unusable.
- The battery can be charged once the AC input plug is connected to commercial power.

**When moving the unit from a cold place to a warm place, leave it for several hours before using it.**

- If the unit is promptly turned ON after being moved to a warmer place, condensation may form inside the unit and cause it to fail.

**Take measures for handling unforeseen accidents, such as data backup and system redundancy.**

- The output may stop when there is failure in the UPS.

### Connecting

**Do not connect a page printer (such as a laser printer) to the unit.**

- The unit repeatedly and frequently switches between Commercial Power Mode and Battery Mode, which may shorten the life of the battery.
- The page printer has a large peak current, so an excess of the connection capacity or a power failure due to instantaneous voltage drop may be detected.

**Do not use the unit for an inductive device such as a coil or motor.**

- With some types of devices, the effect of inrush current may cause this unit to stop operating properly.

**Check system operation beforehand if the unit is used in combination with a device whose power supply voltage and frequency fluctuate widely, such as a generator.**

- If the generator's output voltage/frequency falls out of the unit's input voltage/frequency range, the unit will enter Battery Mode.

**Do not short the output lines of the unit to each other, and do not short the output lines to the ground.**

- The unit may fail.

**In the event you transfer or sell this unit to a third party, please include all of the documentation that came with the unit. This is to ensure that the unit is used in line with the conditions described in the included documentation.**

- This manual contains important safety-related information. Please read and understand the contents of the manual before beginning operation. If this manual is misplaced, contact your dealer or download the manual from our website.

## Using

**Before stopping the commercial power to the unit, turn OFF the power switch of the unit.**

- The unit enters Battery Mode when commercial power is stopped.

**Do not use for an application that frequently requires Battery Mode.**

- The battery will deteriorate and fail to maintain the specified backup time.

**Do not connect the AC input plug of the unit to its Power Supply Output Receptacle during the Battery Mode.**

- The unit may fail.

**This unit uses lead acid batteries.**

- Which are a valuable recyclable resource. Please recycle.

Pb

**Before performing a withstand voltage test or insulation resistance test, remove the input surge protection GND screw from the back of the unit.**
**When in use, make sure the input surge protection GND screw is securely fastened.**

- Performing the withstand voltage test with the ground wire connected may damage the surge absorption element built into the power supply input circuit.

## Storing

**Recharge the battery for at least 4 hours every 6 months when the storage temperature is 25°C or less, or every 2 months when the storage temperature is 40°C or less.**

- The battery self-discharges even when it not being used, and it goes into over-discharge state if it is left for a long period of time. The backup time may become shorter or the battery may become unusable.
- We recommend keeping the temperature 25°C or less when storing the unit for long periods of time.
- Turn OFF the unit's power switch when storing it.

**Do not install or store the unit in a place exposed to direct sunlight.**

- The rise of temperature may cause the built-in battery to deteriorate rapidly and become unusable.

# 1 Preparation

## 1-1 Unpacking the product

### ⚠ Caution (for installation and connection)

**The approximate weight of the unit is 11 kg (BN50T/BN75T), 20 kg (BN100T/BN150T), 36 kg (BN220T), or 37 kg (BN300T). Note the weight when unpacking and transporting the unit.**

- Dropping may cause injury.

Open the package box and take out the UPS and accessories.

## 1-2 Checking the contents

Check whether all the package contents are included and there is no damage found on their appearance.
If you should notice defects or anything wrong, contact the shop of purchase.

■ Accessories related to the main unit

| | BN50T | BN75T | BN100T | BN150T | BN220T | BN300T |
|---|---|---|---|---|---|---|
| Manual (Japanese/English) | One each | One each | One each | One each | One each | One each |
| Registration postcard/sheet | One each | One each | One each | One each | One each | One each |
| Remote ON/OFF connector | 1 | 1 | 1 | 1 | 1 | 1 |
| Battery replacement date label | 1 | 1 | 1 | 1 | 1 | 1 |
| 3P-2P conversion plug | 1 | 1 | 1 | 1 | - | - |
| 15A AC input plug for BN220T | - | - | - | - | 1 | - |
| Serial number label | 4 | 4 | 4 | 4 | 4 | 4 |
| Input terminal block cover | - | - | - | - | 1 set | 1 set |

## ■ UPS monitoring software related items

| | BN50T, BN75T, BN100T, BN150T, BN220T, BN300T |
|---|---|
| Quick Install Guide | 1 |
| CD-ROM<br>"PowerAct Pro" UPS monitoring software, “Simple Shutdown Software", and UPS service driver are included. | 1 |
| Connection cable (RS232C, USB)<br>cable length: 2.2m each | One each |

<Accessories related to main unit>


15A AC input plug
NEMA R5-15P


Manual
(Japanese/English)


Remote ON/OFF connector


Battery replacement date label


3P-2P conversion plug


Serial number label

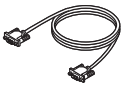

Registration postcard/sheet

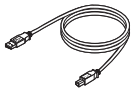

Input terminal block cover

<UPS monitoring software>


CD-ROM


Quick Installation Guide


Connection cable (RS-232C) L
(Approx. 2.2 m)


Connection cable (USB) L
(Approx. 2.2 m)

## ■ Related products

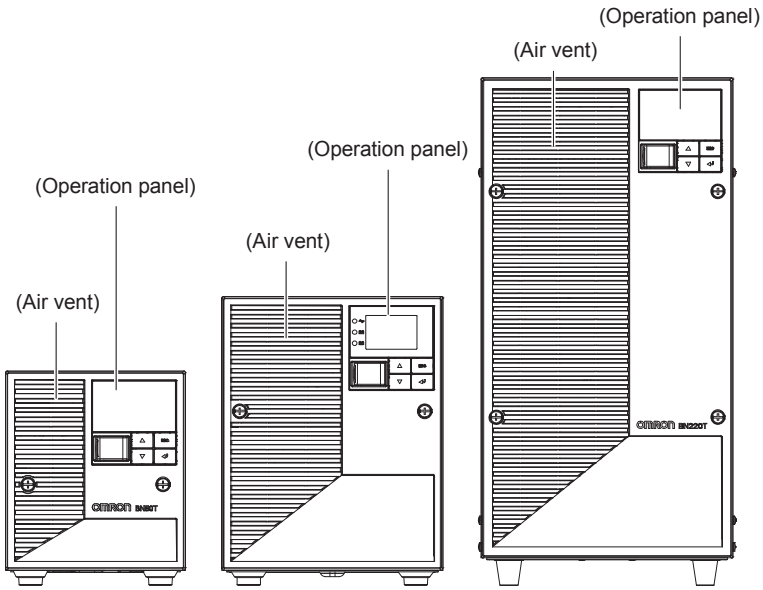
| | BN50T | BN75T | BN100T | BN150T | BN220T | BN300T |
|---|---|---|---|---|---|---|
| Replacement battery pack | BNB75T | | BNB300T | | BNB300T (two required) | |
| SNMP/Web card | SC20G, SC20G2 | | | | | |
| Contact signal card | SC07 | | | | | |
| Contact signal card (relay output type) | SC08 | | | | | |
| Connection cable for OS standard UPS service with contact signal card, cable length: 2.2 m | BUC26 | | | | | |
| Extension cable for RS-232C, cable length: 4.5 m | BUC17 | | | | | |

# 1-3 Name of each part

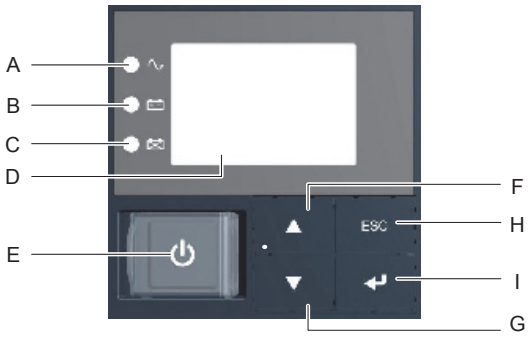
This section describes the name of each part of the UPS.
For information on the function of each part, refer to “2. Installation and connection” and “3. Check and start operation” that provides the details.

- **Front view**

<BN50T/BN75T> <BN100T/BN150T> <BN220T/BN300T>



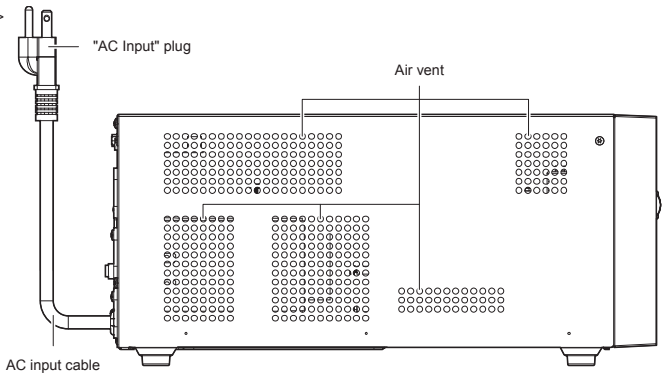

<Enlarged view of the operation panel>




A. “Power supply output” LED
B. “Battery mode” LED
C. “Battery replacement” LED
D. Liquid Cell Display
E. “Power” switch
F. “Up” switch
G. “Down” switch
H. “ESC” switch
I. “Enter” switch

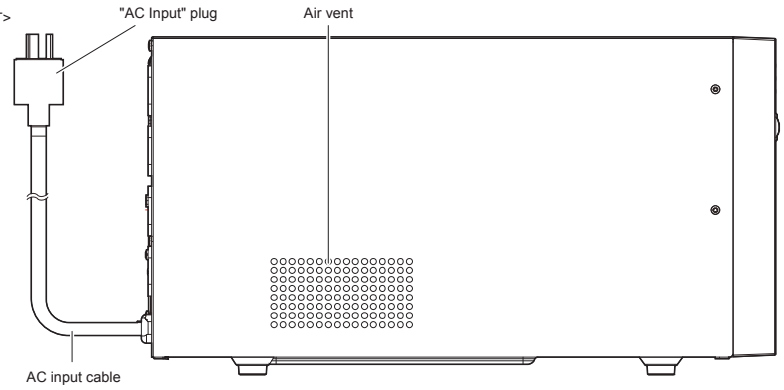
## Side view

<BN50T/BN75T>

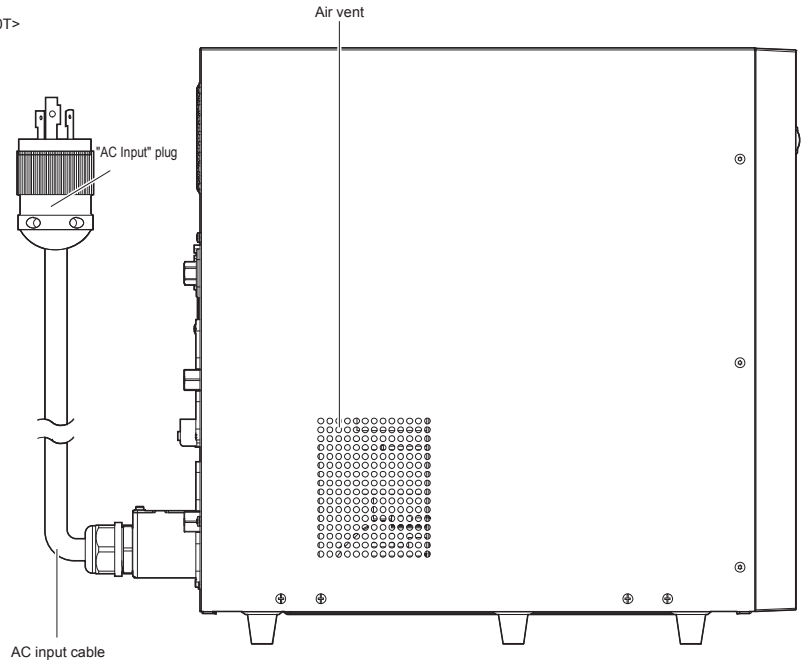



*The other side (right side as seen from the front) has a similar air vent.

<BN100T/BN150T>



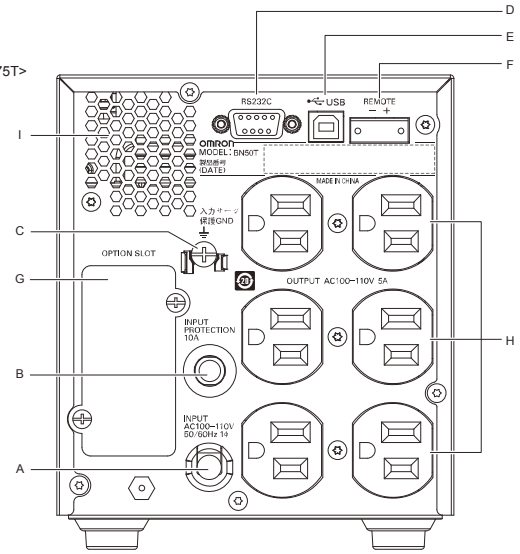

<BN220T/BN300T>




*The other side (right side as seen from the front) has a similar air vent.

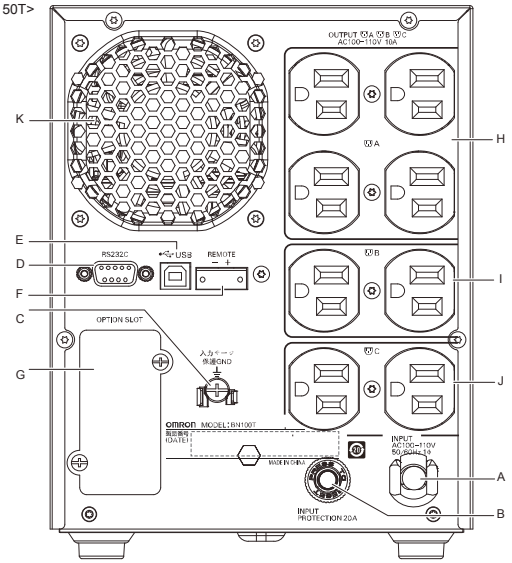
## Rear view

<BN50T/BN75T>




A. AC Input cable
B. AC Input overcurrent protection switch
C. Grounding terminal (M4 screw)
D. RS-232C port
E. USB port
F. Remote ON/OFF port
G. Option slot
H. Power supply output receptacle
I. Air vent

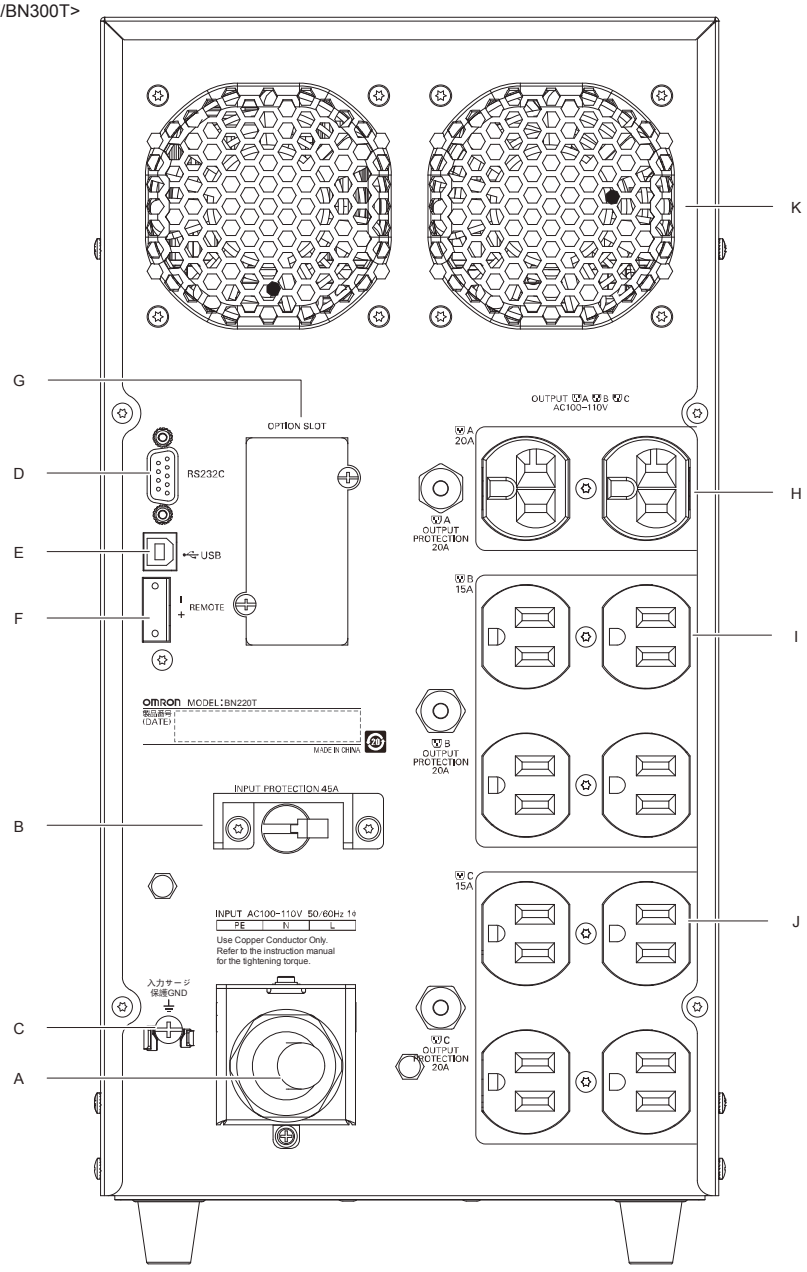
<BN100T/BN150T>




A. AC Input cable
B. AC Input overcurrent protection switch
C. Grounding terminal (M4 screw)
D. RS-232C port
E. USB port
F. Remote ON/OFF port
G. Option slot
H. Power supply output receptacle A
I. Power supply output receptacle B
J. Power supply output receptacle C
K. Cooling fan

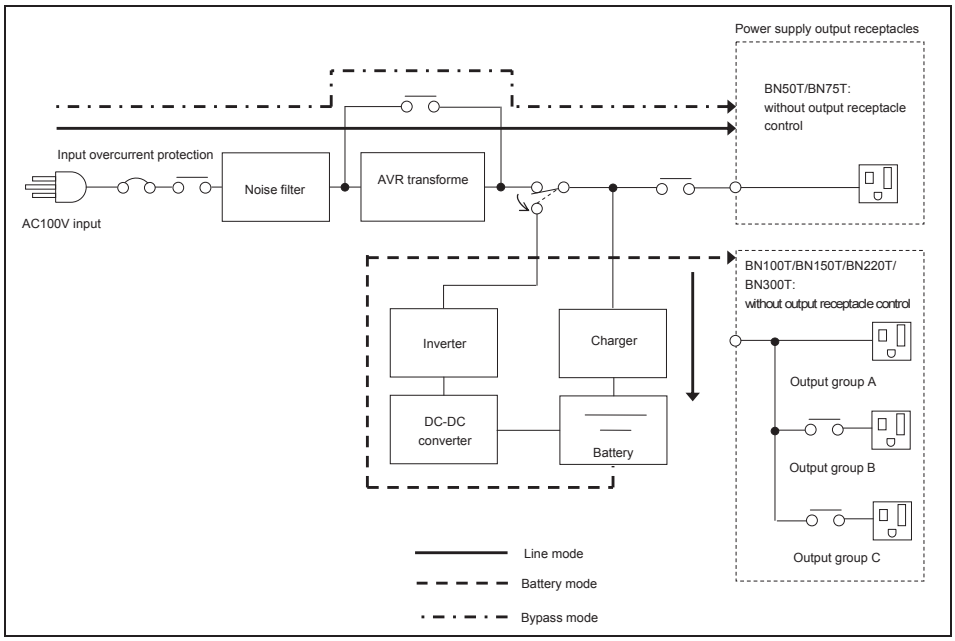
## 1-3 Name of each part

<BN220T/BN300T>




A. AC Input cable
B. AC Input overcurrent protection switch
Left side: ON, right side: OFF
C. Grounding terminal (M4 screw)
D. RS-232C port
E. USB port
F. Remote ON/OFF port
G. Option slot
H. Power supply output receptacle A
I. Power supply output receptacle B
J. Power supply output receptacle C
K. Cooling fan

# 1-4 Diagram of the Input/output circuit block



# 2 Installation and connection

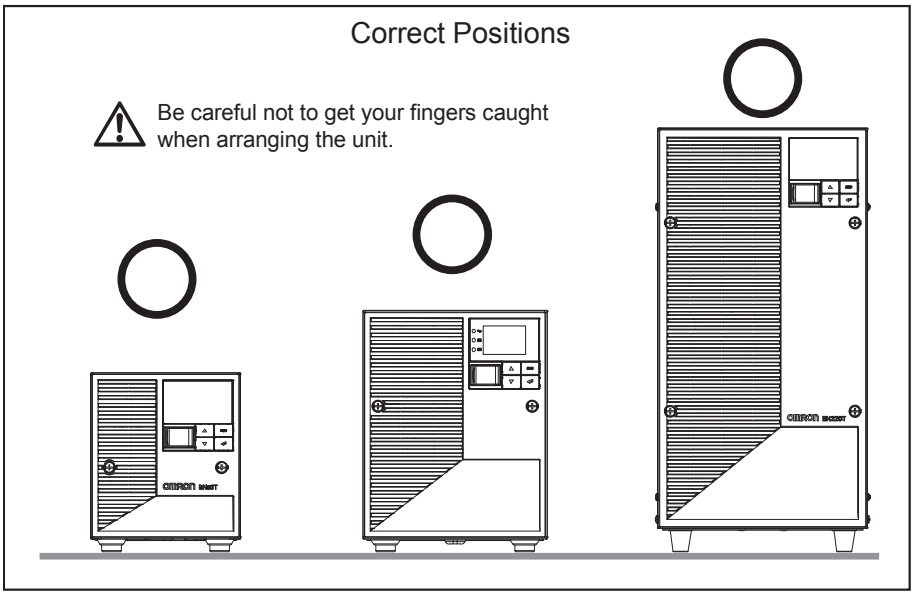
## 2-1 Installation



Install the UPS.
For cautions when installing the UPS, refer to “Caution (for installation and connection)” shown in the "Safety precautions" of the beginning of this manual.
The UPS permits the following installing methods. Choose the one best suited for the environment.

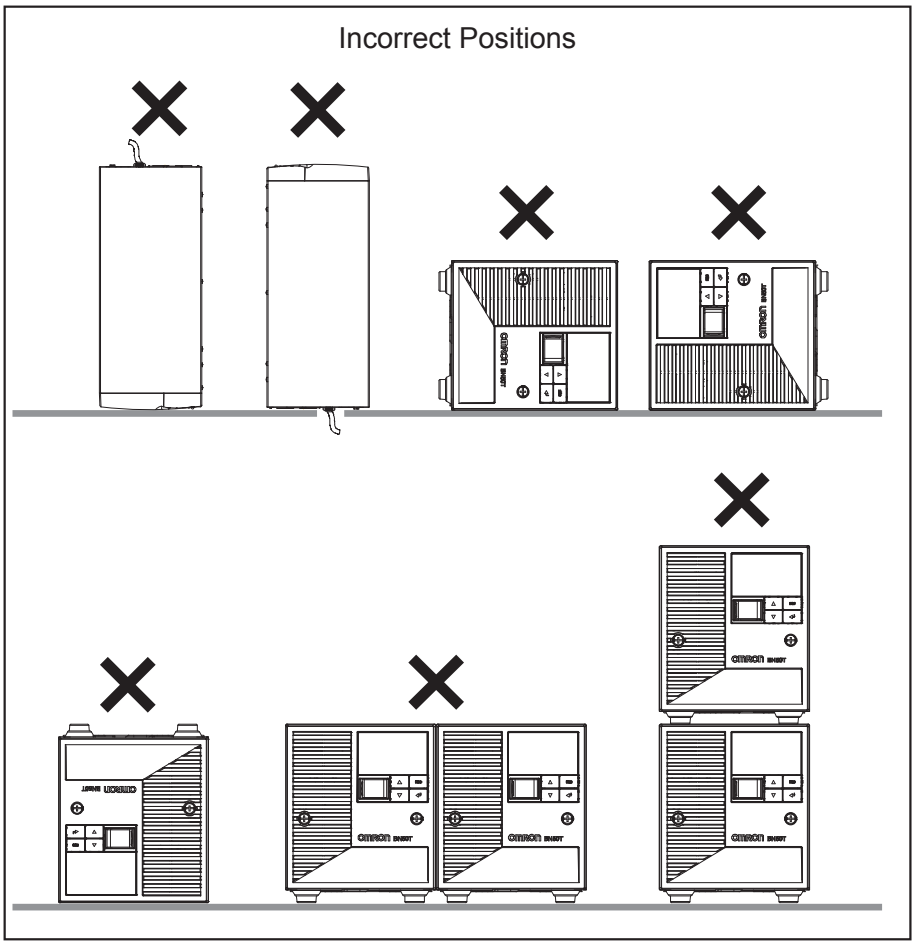
**Note**

Before installing this device, make a record of the serial number of this device.
The product serial number is required when contacting us about the device.
The serial number (S/N) is inscribed on the bottom left side of the rear panel.
The product serial number is inscribed on the bottom left side of the rear panel.
The product serial number label is also included.
Allow sufficient space at the back for the AC input cables of the UPS unit and connected devices.



# 2 Installation and connection

## 2-1 Installation



# 2-2 Connecting the equipment

## ⚠ Caution (for connection)

**Do not connect devices, rated voltage is not 100V AC.**

- The rated output voltage of this device is 100 VAC.
- Overcurrent may damage the connected devices.



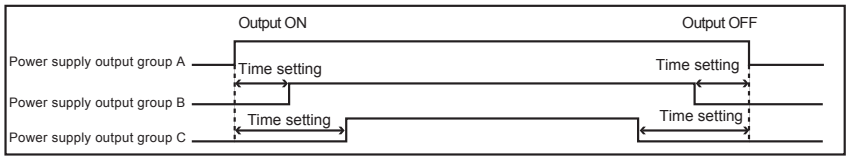
## 2-2-1 Connecting a device to the power supply output

For cautions when connecting the UPS, refer to “Caution (for installation and connection)” shown in the “Safety precautions” of the beginning of this manual.

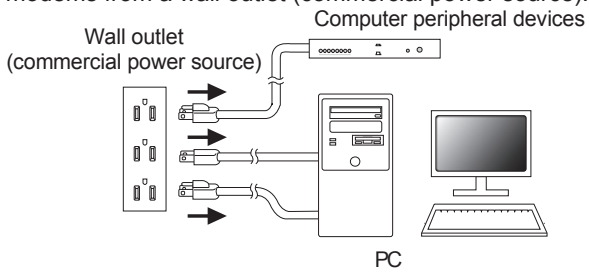
■ Control by group of “power supply output” (BN100T/BN150T/BN220T/BN300T only)

The output receptacles of the UPS (BN-T) are separated into 3 groups: A, B, and C.

- The output start times for power supply output group B and C are independent of power supply output group A, so they can be delayed or set to precede the output stop time.
- The output start/stop time control function is available with the setting on the LCD panel or when using the “PowerAct Pro” UPS monitoring software (included software) or “SNMP/Web card” (sold separately).
- Output ON/OFF can be controlled by operating the LCD panel or with the included “PowerAct Pro” UPS monitoring software while the UPS is operating.
- The delay settings and ON/OFF control described here can be performed independently for power supply output group B and power supply output group C. This function can be used to set the startup order of servers, peripheral devices, etc. The output receptacles can also be forcibly turned ON/OFF remotely.

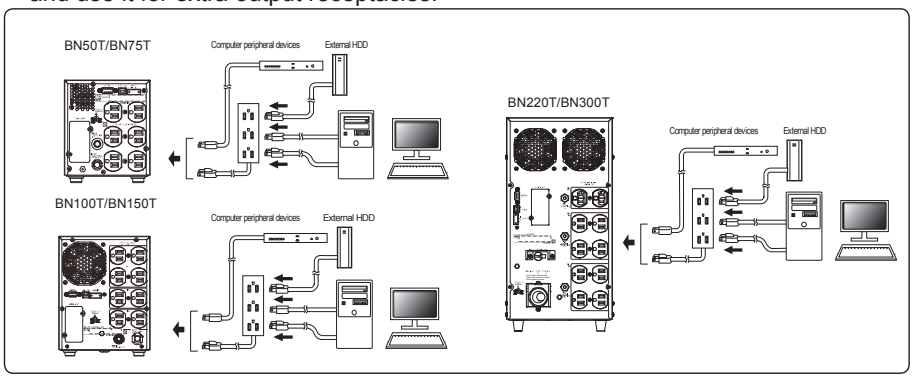



***1***. Disconnect the AC Input Plugs of all devices you want to back up such as your PC and modems from a wall outlet (commercial power source).

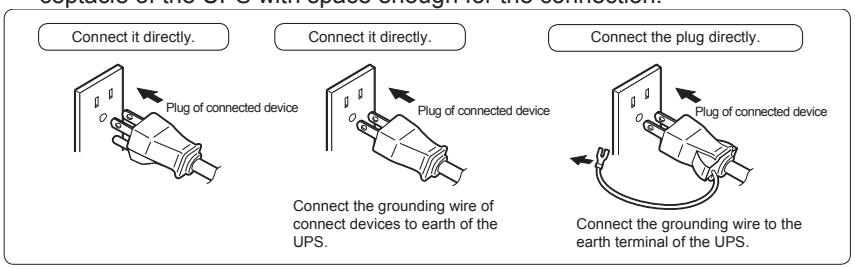


***2***. Connect devices you want to back up to the Power Supply Output Receptacles of the UPS.

- If you need more output receptacles than those of the UPS, purchase a plug strip and use it for extra output receptacles.




- When the connected device has a 2-pin AC input plug, it can be connected directly to the power supply output receptacle. When using a 2-pin input plug with a grounding wire, connect the grounding wire to earth in building.
- When you want to use an AC adaptor, connect it to a Power Supply Output Receptacle of the UPS with space enough for the connection.




***3***. When using the included UPS monitoring software, the Windows standard UPS service, or the contact signal, use the connection cable to connect the unit to the PC.

See also "5. To perform shutdown processing of the devices such as your PC when a power failure occurs", and "6. Using contact signal"

Note: If you do not use the UPS monitoring software and Contact Signal, this step is not required.

# 2-3 Connecting the AC input

When installation and connection are complete, connect the unit's AC input to a commercial power source.

## ⚠ Caution (for connection)

**Make sure to connect the AC input plug of the unit into a wall outlet (commercial power source) with rated input voltage of 100V AC.**

- Connecting to a wall outlet (commercial power source) of a different rated voltage may result in fire.
- The unit may fail.

- The BN50T/BN75T/BN100T AC input plug cannot be changed.
- The AC input plug for the BN150T/BN220T/BN300T can be changed according to the operating environment.
- The supported AC input plugs and the maximum connection capacities are as follows. Change to an appropriate AC input plug according to the connection capacity of the device.
- The changed plug must be UL list product, and the plug should be meet the UPS application, please refer to the plug installation instructions.

| Model | AC input plug | AC input plug Sensitivity setting | Maximum connection capacity |
|---|---|---|---|
| BN50T | **15A**(*) | Low | 500VA/450W |
| | | **Standard**(*)/High | **500VA/450W**(*) |
| BN75T | **15A**(*) | Low | 750VA/680W |
| | | **Standard**(*)/High | **750VA/680W**(*) |
| BN100T | **15A**(*) | Low | 1000VA/900W |
| | | **Standard**(*)/High | **1000VA/900W**(*) |
| BN150T | **15A**(*) | Low | 1050VA/1050W |
| | | **Standard**(*)/High | **1125VA/1125W**(*) |
| | 20A | Low | 1450VA/1350W |
| | | Standard/High | 1500VA/1350W |
| BN220T | 15A | Low | 1020VA/1020W |
| | | Standard/High | 1095VA/1095W |
| | 20A | Low | 1420VA/1420W |
| | | Standard/High | 1520VA/1520W |
| | **30A**(*) | Low | 2050VA/1980W |
| | | **Standard**(*)/High | **2200VA/1980W**(*) |
| | Terminal block | Low | 2200VA/1980W |
| | | Standard/High | 2200VA/1980W |
| BN300T | 20A | Low | 1420VA/1420W |
| | | Standard/High | 1520VA/1520W |
| | **30A**(*) | Low | 2220VA/2220W |
| | | **Standard**(*)/High | **2370VA/2370W**(*) |
| | Terminal block | Low | 3000VA/2700W |
| | | Standard/High | 3000VA/2700W |

* The bold font indicates factory settings.

## ⚠ Caution (for connection)

**When the maximum output capacity (1500VA/1350W) is connected to the BN150T, replace the AC input plug with a 20A plug. When the maximum output capacity (3000VA/2700W) is connected to the BN300T, change to terminal block connection.**

- Overheating or fire may occur if the power consumption exceeds the limits shown in "2-3 Maximum connection capacities".
- To reduce the risk of fire, unit input connect only to a circuit provided with branch circuit 40 A overcurrent protection for BN220T, BN300T in accordance with the National Electric Code, "ANSI/NFPA 70".
- If the maximum output capacity will be used, refer to "2-3 Maximum connection capacities" chart to change the AC input connection method.
- After changing the AC input plug, change the “Setting” - “In/Out Settings” - “Input Plug” setting in the menu on the LCD.

**Make sure that the connecting work is performed by a qualified electrical engineer (with Type II certification or higher).**

## 2-3-1 Connecting the AC input plug

### ■ BN50T/75T connection procedure

- Provide a wall outlet (commercial power source) suitable for the shape of the 15A plug (NEMA 5-15R).
- It is possible to connect to a 2-pin outlet using the included 3P-2P adapter.

Note: In this case, provide grounding separately.

### ■ BN150T connection procedure

- When using the 15A plug (connected when shipped)
  - Provide a wall outlet (commercial power source) suitable for the shape of the 15A plug (NEMA 5-15R).
  - It is possible to connect to a 2-pin outlet using the included 3P-2P adapter.

  Note: In this case, provide grounding separately.
- When using the 20A plug

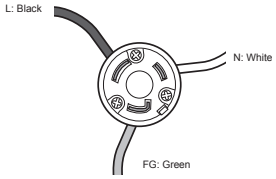
  You can use up to the rated capacity of the BN150T.
  - Provide a wall outlet (commercial power source) suitable for the shape of the 20A plug (NEMA 5-20R).
  - Replace the AC input plug with the NEMA L5-20P plug.

- Replacing the plug

***1***. Remove the 15A plug.

***2***. Connect the NEMA L5-20P plug as shown below.

Note: Fasten with screws as shown, taking care that the wire colors are correct.




## ■ BN220T/BN300T connection procedure

- Using the 30A plug (connected when shipped)

- For the commercial power socket, use a 30A type (NEMA L5-30R) socket.
- If this plug is used, make sure that the capacities of the connected devices remain below the capacities shown in the Maximum Connection Capacity Table.
- After connecting to commercial power, make sure that the "INPUT PROTECTION" AC input overcurrent protection switch is switched to the ON position on the back of the unit. For the ON and OFF positions, refer to the illustration of the rear view in "1-3 Name of each part".

| Switch | Settings | Function |
|---|---|---|
| AC Input overcurrent protection switch | OFF | The AC Input Overcurrent Protection function is disable. |
| | ON (factory setting) | The AC Input Overcurrent Protection function is enable. |

**Notes**

- Set the AC Input overcurrent protection switch to ON (factory setting) to enable the AC Input Overcurrent Protection function.
  When there are too many connected devices or there was a short-circuit with the connected devices, the AC Input Overcurrent Protection function works.
- When the AC Input Overcurrent Protection function works, the AC Input overcurrent protection switch automatically turns to OFF. In that event, disconnect all connected devices, switch the AC input overcurrent protection switch ON, and then switch the power switch on the unit back ON.

- Using the 15A plug (BN220T only)

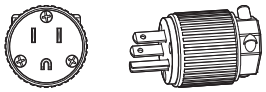
**⚠ Caution (for connection)**

**When using a plug for 15A in BN220T, make sure to change the setting of the input plug to 15A.**

- In case of wrong setting, overcurrent flows and wiring heats up, which may cause a fire.
- After changing the AC input plug, change the “Setting” - “In/Out Settings” - “Input Plug” setting in the menu on the LCD.

- For the commercial power socket, use a 15A type (NEMA 5-15R) socket.
- 3P-2P conversion plug can be used to insert into a 2P type socket.

Note: In this case, use a separate connection to ground.

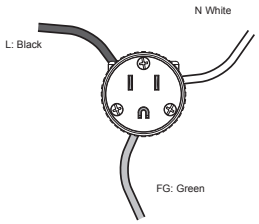


- Replacing the plug

***1***. Remove the 30A plug.

***2***. Connect the provided NEMA 5-15P plug as shown below.

Note: Fasten with screws as shown, taking care that the wire colors are correct.



## 2-3-2 Connecting to BN220T/BN300T input terminal block

**⚠ Caution (for connection)**

**When connecting the AC input directly from a power switchboard to the BN220T/BN300T, make sure that the wiring work is performed by a qualified electrical engineer (with Type II certification or higher).**

- To use the BN300T with up to 3000VA/2700W, please use No. 8 AWG, 75 deg C copper wire type THHN/THWN/THWN-2.

**⚠ Caution (for connection)**

**When changing the input cable for the BN220T/BN300T, make sure to perform the connection as specified.**

**Make sure to properly match the AC input terminal with the appropriate wire color.**

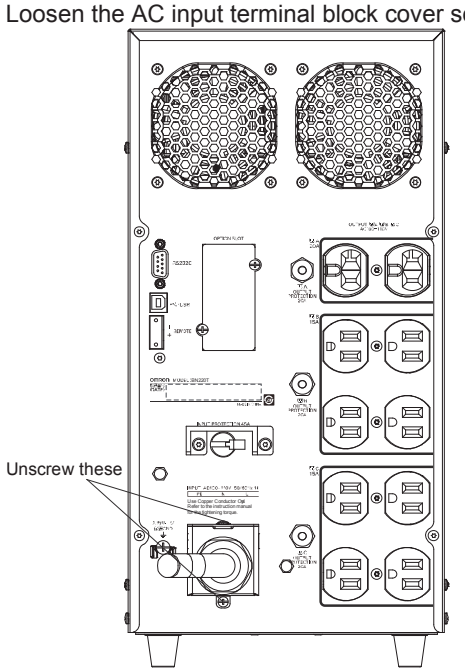
**Do not connect the unit's AC input terminal while it is connected to commercial power.**

**Do not re-install power supply cord to the unit after re-configured the unit to permanent AC connection.**

- Failure to do so may result in electric shock or ground fault.

### ■ Replacing the BN220T/BN300T AC input cable BN220T/BN300T

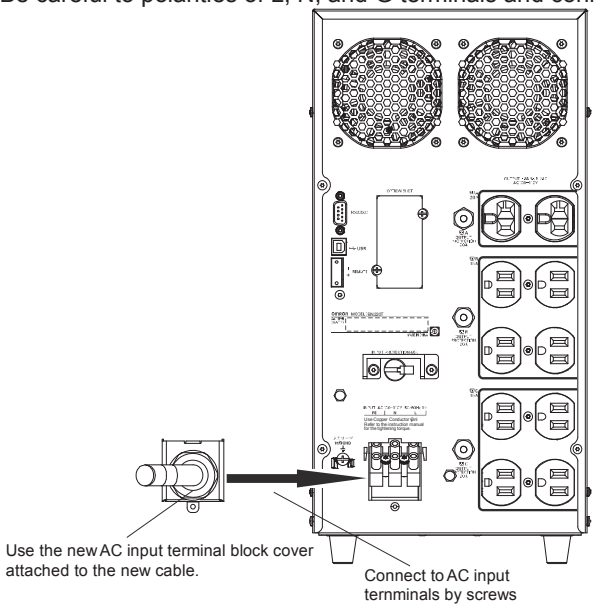
***1***. Loosen the AC input terminal block cover screws (2 screws) and remove the cover.

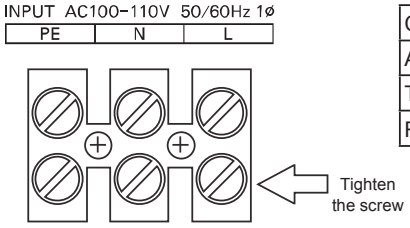



***2***. Remove screws at terminals (L, N, G (PE)) connecting the cable to the terminals and remove the old AC input cable.

***3***. Run the newly connected cable through the included AC input terminal block cover.

***4***. Connect the new AC input cable to AC input terminals by screws.
Be careful to polarities of L, N, and G terminals and connect correctly.

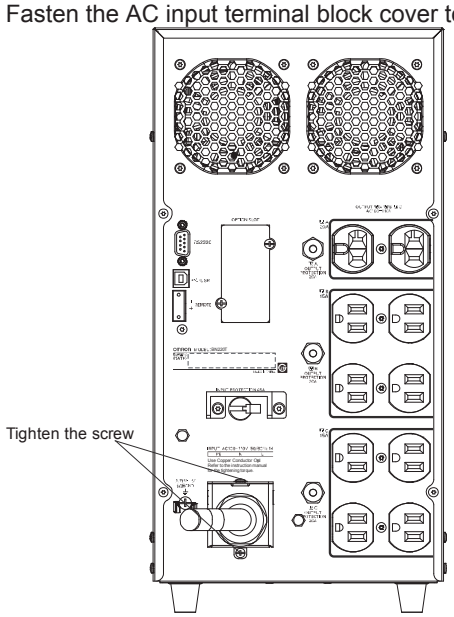



| | |
|---|---|
| Connectable wire size | 5.0 to 8.0mm$^2$ |
| Amount of stripped wire | 5.5mm |
| Tightening torque | 1.355Nm (12lb-in) |
| Recommended cable size | 8mm$^2$ (AWG8) |

- Securely fasten the screws with a tightening torque of 1.355Nm (12 lb-in) or more.

***5***. Fasten the AC input terminal block cover to the console with screws (2 screws).



**6.** After connecting to commercial power, make sure that the "INPUT PROTECTION" AC input overcurrent protection switch is switched to the ON position on the back of the unit. For the ON and OFF positions, refer to the illustration of the rear view in "1-3 Name of each part".

| Switch | Settings | Function |
|---|---|---|
| AC Input overcurrent protection switch | OFF | The AC Input Overcurrent Protection function is disable. |
| | ON (factory setting) | The AC Input Overcurrent Protection function is enable. |



## Notes

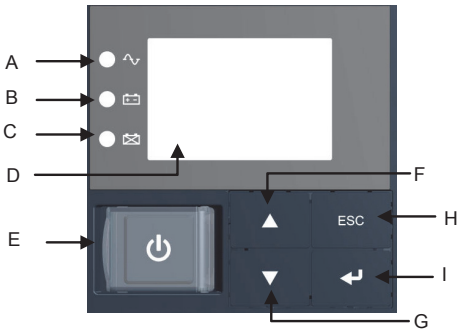
- Set the AC Input overcurrent protection switch to ON (factory setting) to enable the AC Input Overcurrent Protection function.
  When there are too many connected devices or there was a short-circuit with the connected devices, the AC Input Overcurrent Protection function works.
- When the AC Input Overcurrent Protection function works, the AC Input overcurrent protection switch automatically turns to OFF. In that event, disconnect all connected devices, switch the AC input overcurrent protection switch ON, and then switch the power switch on the unit back ON.

# 3 Check and start operation

## 3-1 The name and function for the operation and display

### 3-1-1 Name of each part

< Enlarged view of the operation panel>

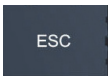



A: “Power supply output” LED
B: “Battery mode” LED
C: “Battery replacement” LED
D: Liquid Cell Display
E: “Power” switch
F: “Up” switch
G: “Down” switch
H: “ESC” switch
I: “Enter” switch

### 3-1-2 The meaning of each LED

| Sign of the figure | LED | Color | Name | Status | |
|---|---|---|---|---|---|
| | | | | Lit. | Not lit. |
| A |  | Green | “Power supply output” LED | The power supply output is ON. | The power supply output is OFF. |
| B |  | Orange | “Battery mode” LED | Backup is operating. This status is called “Battery Mode”. | Backup is not operating. |
| C |  | Red | “Battery replacement” LED | Battery replacement is necessary due to the battery deterioration, the end of battery life, or the end of UPS life. | Battery replacement is not necessary. |

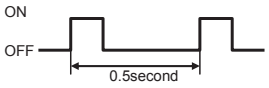
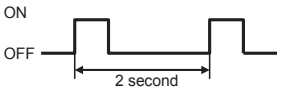
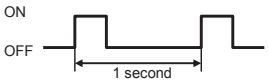
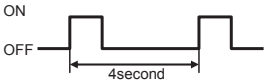
## 3-1-3 Switch

| Sign of the figure | Label | Name | Description |
|---|---|---|---|
| E |  | Power switch | ON: Press and hold the power switch of the UPS for 2 seconds or longer. After a few seconds, the power output from the UPS begins.<br>OFF: Press and hold the power switch of the UPS for 2 seconds or longer in ON state, then the power output from the UPS stops.<br>Additional Information:<br>• If the AC input plug is connected to the wall outlet (commercial power source), then the battery will be charged regardless of the power switch. |
| F |  | “Up” switch | Move cursor up or increase a value |
| G |  | “Down” switch | Move cursor down or decrease a value |
| H |  | “ESC” switch | Return to menu or cancel<br>Stop the beeper by pressing for 0.5 seconds or longer |
| I |  | “Enter” switch | Select the menu item or set the value |

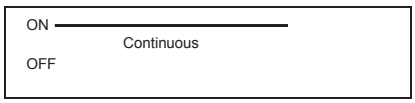
## 3-1-4 Beep sound

### ■ Type of beep sound.

- Intermittent

| | | | |
|---|---|---|---|
| 0.5-second intervals: |  | 2-second intervals: |  |
| 1-second intervals: |  | 4-second intervals: |  |

- Continuous

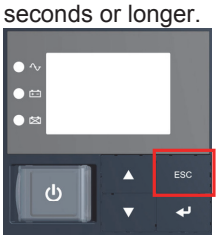



Additional Information

- You can set the conditions on which the beep sounds to ”OFF at Battery Mode” or “OFF at Anytime”, with “Setting” - “Local Setting” - “Audible Alarm” in the menu on the LCD.

### ■ Stopping the beep sound

When the beep is sounding, you can stop it by pressing and holding the “ESC” switch for 0.5 seconds or longer.



## 3-1-5 LCD status screen


### ■ Icon

The icon displays the UPS status.
For more details, refer to “3-1-7 Icons, LEDs, and beeps”.

### ■ Upper text

The Upper text displays the message that indicates the UPS status together with the icon.

### ■ Load level

The load level meter displays the power consumption of the connected devices as a percentage.
The maximum connection capacity is displayed as 100%. (The maximum connection capacity varies depending on the AC input plug setting.)


Refer to “2-3 A Connecting the AC input”.

[Example]

- BN75T: Displays 750VA/680W as 100%.
- BN150T: Displays 1500VA/1350W as 100%.
  (when the AC input plug setting is “20A” and the AC input plug Sensitivity setting is "Standard")
- BN300T: Displays 3000VA/2700W as 100%.
  (when the AC input plug setting is "Hard wire")

### ■ Battery level

The battery level meter displays the remaining battery level as a percentage.


### ■ Output receptacle status

When the output receptacle A, B, and C is ON, A, B, and C are expressed as a frame.

### ■ Backup time

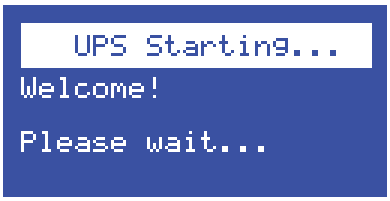
The backup time displays the time while the UPS can continue power output using power supplied from the battery in the unit of a minute.

### ■ Lower text

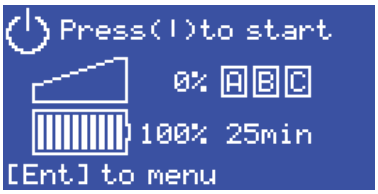
The lower text displays the message that urges the user to act.

## 3-1-6 Status screen example

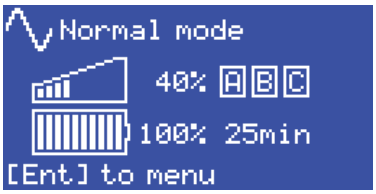
- Starting screen



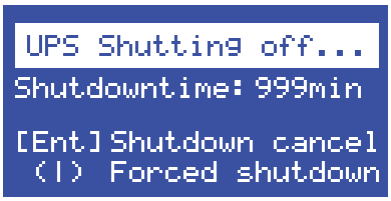

- Start screen




- Normal mode screen




- Shutdown. screen




## 3-1-7 Icons, LEDs, and beeps.

### ■ Normal operation

| UPS status | Icon | LED | | | Beep | Output | Charg-ing | Upper message | Description | Solution |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ∿ | ▭ | ✉ | | | | | | |
| Standby mode |  | Not lit. | Not lit. | Not lit. | None | OFF | ON | Standby mode | Power switch is OFF. The power output from the UPS stops. | --- |
| Normal mode |  | Lit. | Not lit. | Not lit. | None | ON | ON | Normal mode | Power switch is ON. Operating normally | --- |
| AVR mode |  | Lit. | Not lit. | Not lit. | None | ON | ON | AVR mode | Operating normally with AVR operation | --- |
| ECO mode |  | Lit. | Not lit. | Not lit. | None | ON | ON | ECO mode | Operating normally with ECO operation | --- |

### ■ Testing

| UPS status | Icon | LED | | | Beep | Output | Charg-ing | Upper message | Description | Solution |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ∿ | ▭ | ✉ | | | | | | |
| Test mode |  | Lit. | Lit. | Not lit. | None | ON | OFF or dis-charging | Test mode | Self-diagnostic test in progress | --- |

## ■ During the power failure

| UPS status | Icon | LED | | | Beep | Output | Charg-ing | Upper message | Description | Solution |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ~ | | ✉ | | | | | | |
| Battery mode |  (Fixed) | Lit. | Lit. | Not lit. | Inter-mittent 4s | ON | OFF or dis-charging | Battery mode | In Battery Mode due to power failure or AC input error Output will stop if Battery Mode continues. | Shut down the con-nected devices to stop them. |
| Battery low |  (Blinking) | Lit. | Lit. | Not lit. | Inter-mittent 1s | ON | OFF or dis-charging | Battery low (Note 1) | Battery level is low, so output will stop soon. | Shut down the con-nected devices to stop them. |
| Battery empty |  (Blinking) | Not lit. | Not lit. | Not lit. | None | OFF | OFF or dis-charging | Battery empty | Battery is empty, so output stopped. (This is displayed only for a few seconds) | Charge the battery. |

Note 1: the messages of the battery mode are displayed by turns.

## ■ Operation while using or AC power error

| UPS status | Icon | LED | | | Beep | Output | Charg-ing | Upper message | Description | Solution |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ~ | | ✉ | | | | | | |
| UPS event |  | Not lit. | Not lit. | Not lit. | None | OFF | (ON) | Standby by Schedule | Standby by Schedule | --- |
| | | | | | | | | Standby by BS signal | Standby by BS signal | --- |
| | | | | | | | | Standby by Remote OFF | Standby by Remote OFF | --- |
| | | | | | | | | Standby by Bat.level | Standby battery level | The unit does not start up because of an insufficient battery charge. |
| | | | | | | | | AC I/P abnormal-VH | AC input voltage abnormal-VH | Use within the AC input voltage/frequency range described in the speci-fications Note: You can check the input voltage with "Measurements" - "Input/Output Meter". |
| | | | | | | | | AC I/P abnormal-VL | AC input voltage abnormal-VL | |
| | | | | | | | | AC I/P abnormal-FH | AC input frequency abnormal-FH | |
| | | | | | | | | AC I/P abnormal-FL | AC input frequency abnormal-FL | |

## ■ Warning of the battery

| UPS status | Icon | LED | | | Beep | Output | Charg-ing | Upper message | Description | Solution |
|---|---|---|---|---|---|---|---|---|---|---|
| Battery weak | (Blinking) | Lit. | Not lit. | Lit. | Inter-mittent 2s | ON | ON | Battery weak | The self-diagnostic test determined that the battery was deteriorat-ed. | Replace the battery. |
| End of battery life | | (Note 1) | Not lit. | Lit. | | (Note 1) | | End of bat.life | The life of the battery has expired. | |
| Battery Over temp. (charge stop) | (Blinking) | (Note 1) | Not lit. | Not lit. | Inter-mittent 4s | (Note 1) | ON | Battery Over temp | Battery temperature is too high and charging stops. | Ambient temperature of the UPS may be too high. Check the ambient temperature of the UPS. If the temperature is over 40 degrees C, lower the ambient temperature. Turn off all power switches of this unit and connected devices, and turn on the power of this unit only again. If the temperature is 40 degrees C or lower, this unit might be out of order. Please contact the shop of purchase.. |
| No battery | (Blinking) | Lit. | Not lit. | Lit. | Inter-mittent 2s | OFF | OFF | No battery | The battery is not connected. Or, the battery has been remarkably degraded. | Connect the battery. If this message appears while the battery is being connected, replace the battery. |

Note 1: Not dependent on the state

## ■ Warning of those except the battery

| UPS status | Icon | LED | | | Beep | Output | Charg-ing | Upper message | Description | Solution |
|---|---|---|---|---|---|---|---|---|---|---|
| Overload | (Blinking) | Lit. | Not lit. | Not lit. | Inter-mittent 0.5s | ON | ON or dis-charg-ing | Overload (Note 1) | There are too many connected devices and the rated capacity is exceeded | Turn OFF the power switches of all devices connected to the unit, reduce the number of connected devices, and turn the power switch back ON again. Note: The connection capacity can be monitored with “Measure-ments”-“Load Meter”. |
| | | Lit. | Lit. | Not lit. | | | | | | |
| End of UPS life | (Blinking) | (Note 2) | Not lit. | Not lit. | Inter-mittent 2s | (Note 2) | ON | End of UPS life | Product life of UPS passes. | Replace the UPS. |
| UPS fault | (Blinking) | Not lit. | Not lit. | Not lit. | Con-tinuous | ON or OFF | --- | UPS fault (Note 3) | Failure of UPS oc-curred. | Select an item corresponding to "The contents of the UPS fault" among the displayed messages and follow the instructions. |
| Bypass mode | BYP | Lit. | Not lit. | Not lit. | Depends on UPS failure | ON | Depends on UPS failure | Bypass mode | Commercial power is being output directly in Bypass Mode. | |

Note 1: During normal operation the messages of the either normal mode, AVR mode, or ECO mode are displayed by turns. During battery mode the messages of the battery mode are displayed by turns.
If 100% of rated capacity is exceeded under commercial operations, the bypass operation starts in 5 minutes. If 115% is exceeded, the operation immediately stops.
If 105% of rated capacity is exceeded under backup operations, the output stops in 30 seconds. If 125% is exceeded, the output immediately stops.

Note 2: Not dependent on the state

Note 3: For details, see "■ The contents of the UPS fault".

## ■ The contents of the UPS fault

| Upper message | Contents of the UPS fault | Solution |
|---|---|---|
| Over load time out | Over load time out<br>Moved to bypass operation due to over load time out. The output stops.<br>(Note 1) | Turn OFF the power switches of all devices connected to the unit, reduce the number of connected devices, and turn the power switch back ON again. |
| Output short | Output short<br>Output stopped due to exceeded connection capacity or a shortcircuit with the connected devices. | Check that the AC input of connected devices is not short-circuited, or that the connection capacity does not exceed the rated capacity |
| Output over Voltage | Output over Voltage<br>Moved to bypass operation due to output voltage error (over). The output stops during the Battery Mode. (Note 1) | Turn off all power switches of this unit and connected devices, and turn on the power of this unit only again. If the indication does not change, this unit might be out of order. Please contact the shop of purchase for repair. If the indication changes, the connected device might have caused the failure. If you have any questions, contact the shop of purchase.<br>Note: Output voltage can be viewed by selecting [Measurement] menu - [Input/Output]. |
| Output under Voltage | Output under Voltage<br>Moved to bypass operation due to output voltage error (under). The output stops during the Battery Mode. (Note 1) | |
| Bat.over charge | Battery over charge<br>Moved to bypass operation due to battery charge voltage error (over). The output stops during the Battery Mode. (Note 1) | This unit might be out of order. Please contact the shop of purchase for repair.<br>Note: Battery voltage can be viewed by selecting [Measurement] menu - [Battery]. |
| Bat.under charge | Battery under charge<br>Moved to bypass operation due to battery charge voltage error (under). The output stops during the Battery Mode. (Note 1) | |
| Over temperature | Over temperature<br>Moved to bypass operation due to problem with the internal temperature. The output stops during the Battery Mode. (Note 1) | Ambient temperature of the UPS may be too high. Check the ambient temperature of the UPS. If the temperature is over 40 degrees C, lower the ambient temperature. Turn off all power switches of this unit and connected devices, and turn on the power of this unit only again. If the temperature is 40 degrees C or lower, this unit might be out of order. Please contact the shop of purchase for repair. |
| Fan fail | Fan fail<br>Moved to bypass operation due to problem with the internal cooling fan. The output stops during the Battery Mode. (Note 1) | Make sure that the fan rotation is not blocked. If blocked, remove what is blocking the rotation. If not blocked, the fan unit might be out of order. Please contact the shop of purchase for repair. |

Note 1: In bypass operation, commercial power is output directly.
Maximum 2-types message may be displayed, when the UPS cannot move to bypass operation or when a power failure (AC input OFF) occurs in bypass operation.
If 100% of rated capacity is exceeded under commercial operations, the bypass operation starts in 5 minutes. If 115% is exceeded, the operation immediately stops.
If 105% of rated capacity is exceeded under backup operations, the output stops in 30 seconds. If 125% is exceeded, the output immediately stops.

## 3-1-8 Lower message

The message is displayed on the lower text of LCD according to the state of UPS. The message can be reference of your operation.

# 3-2 Checking the operation

When you finish connecting the unit, check that the Battery Mode is performed normally according to the following procedure.

***1***. Press and hold the unit's power switch for 2 seconds or longer to turn ON the power. When the power turns on, the beeper sounds and self diagnosis starts automatically.

***2***. When the self-diagnosis test finishes normally, the unit's operation switches to commercial power and the status indication below is displayed.

| Icon | Description |
|---|---|
|  | Power switch "ON"<br>Operating normally<br>○: Lit., ●: Not lit., ⊗: depending on status<br>  |

Additional Information

When the battery voltage is low, the self-diagnostic test is not performed and output begins immediately via commercial power.

***3***. Bring all the connected devices into operation. (Including devices connected to the AC outlet of your PC.)
However, operate the connected devices in a way that allows the power supply to be stopped at any time.

**Note**

- The UPS has been charged prior to shipment. However, if it is left for a long period of time, it may have self-discharged.
  We recommend charging the UPS before using it.

***4***. Under this condition, check the unit's LCD and beep sound. Are they in the same status as shown below?

| Icon |  |
|---|---|
| Beep | None |
| Power supply output receptacles | Outputs power (connected devices are powered) |

If the same as the one shown above: → The operation is normal. Proceed to procedure 5.

If not the same as the one shown above: → The operation is abnormal. One of the cases described in "3-1-7 Icons, LEDs, and beeps." and "3-3 Start and stop procedures and basic operation" must apply.

Take necessary measures and then proceed to procedure 5

***5***. Disconnect the unit's AC input plug from the wall outlet (commercial power source).
The unit enters Battery Mode.

***6***. In Battery Mode, check the unit's LED display and beep sound.
Does the icon appear as one of those shown below?

| Icon | Beep | Output | Description |
|---|---|---|---|
|  | Intermittent<br>4-second intervals | ON | Backup is operating due to power failure or AC input error. Output will stop if Battery Mode continues. |
| | Intermittent<br>1-second intervals | ON | Backup is operating due to power failure or AC input error. Battery level is low, so output will stop soon. |
|  | None | OFF | Battery is dead, so output stopped. |

If not the same as one of those shown above: →

Operation is abnormal. Check the status of lamps and beep, and then press and hold the power switch for 2 seconds or longer to turn OFF the power.

- If the display is one of those shown in "3-1-7 Icons, LEDs, and beeps", take the necessary measures and then go back to procedure 1.
- If no Battery Mode is performed and the UPS and the devices connected to the UPS stop, this may be attributed to an insufficient battery charge.
  After connecting the AC input plug to a wall outlet (commercial power source) and charging the battery, go back to procedure 5 on previous page.
- If the problem persists after checking the 2 points above, contact the shop of purchase.

Additional Information

Beeper ON/OFF can be set with "Setting" - "Local Setting" - "Audible Alarm" in the menu on the LCD.

***7***. Reconnect the AC input plug to the commercial power source.
The icon returns to its normal state and the beeping sound stops.
(The status is as shown below.)

| Icon | Description |
|---|---|
|  | Power switch "ON"<br>Operating normally |

Checking the operation is now complete.
Installation and connection is now complete.

# 3-3 Start and stop procedures and basic operation

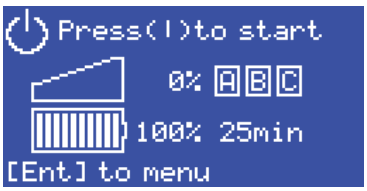
## 3-3-1 Start and stop procedures

### ■ Operation when starting

**1.** When the unit is connected to a commercial power source with the power switch OFF and commercial power is supplied to it. Then, the "⏻" icon appears.
Power output is stopped, and the battery automatically starts recharging.
The standby screen appears on the LCD.
The icon displays " ".

●TEST

• Standby mode screen:



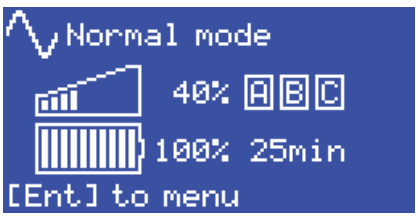

**2.** Press and hold the power switch of the UPS for 2 seconds or longer.
After a few seconds, output begins.
The "🔍" icon appears, and the self-diagnostic test is performed in Battery Mode for about 10 seconds.

Additional Information

If the battery voltage is low, the self-diagnostic test is not performed. It is automatically executed after the battery is charged.

**3.** When the self-diagnosis test finishes normally, the unit enters the normal operating state.
When the self-diagnostic test is not performed, the unit enters the normal operating state immediately.

• Normal operating state (Normal mode screen):



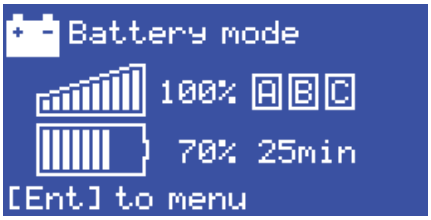

### ■ Operation when using

You may either leave the power switch of the unit ON (operation status) or turn it OFF each time when stopping the connected system. Choose whichever operation method is more convenient. We recommend turning OFF the power switch when you do not use connected devices for a long time.
The battery can be charged once the AC input plug is connected to a commercial power source.

## ■ Operation after a power failure

***1***. If a power failure or abnormal input power supply occurs, the UPS automatically switches to Battery Mode, continuing power output using power supplied from the battery. (This is called “Battery Mode”).
The following Battery mode screen will be displayed.

- Backup-operating state (Battery mode screen):




The icon and the beeper’s intermittent sounds alert the user as shown below.

| Icon | Beep | Output | Charging | Description | Solution |
|---|---|---|---|---|---|
|  | Intermittent 4-second intervals | ON | OFF Discharging | Backup is operating due to power failure or AC input error. If Battery Mode continues, output will stop when the battery is depleted | Shut down the connected devices to stop them. |
| | Intermittent 1-second intervals | ON | OFF Discharging | | |
|  | None | OFF | OFF Discharging | Battery is dead, so output stopped. | Charge the battery. |

Additional Information

Beeper ON/OFF can be set with “Setting” - “Local Setting” - “Audible Alarm” in the menu on the LCD.

## ■ Operation when a power failure is recovered

### ●When charge of the battery remains

***1***. If a power failure or abnormal input power supply occurs, the UPS automatically switches to Battery Mode, continuing power output using power supplied from the battery.

### ●When charge of the battery does not remain

***1***. If a power failure or abnormal power input is resolved after the battery is discharged completely and power output is stopped, the UPS restarts automatically and resumes power output. The expended battery begins to charge.

Additional Information

When the power is restored after a power failure, the UPS is set by default to automatically restart and supply power.
If you do not want to restart the connected devices, disable the “Settings” - “Boot Settings” - “Auto Reboot” setting in the menu on the unit's LCD, or turn OFF the power switch of the connected devices.

■ Operation when stopping

**Note**

**Before stopping the commercial power to the unit, turn OFF the power switch of the unit.**

- The unit enters Battery Mode when commercial power is stopped. If you frequently use the unit in Battery Mode, the battery life may be significantly shortened.

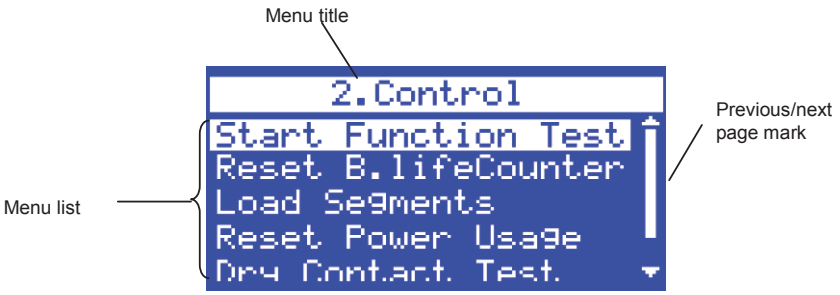
*1*. Press and hold the power switch of the UPS for 2 seconds or longer, and then the power switch turns OFF. At the same time the icon displays " ⏻ ", and the power output from the UPS stops.

Additional Information

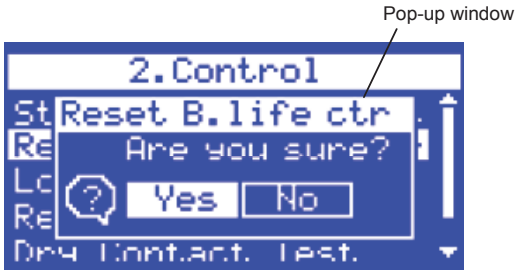
Even if you turn off the power switch, if AC is supplied from commercial power, the battery is automatically charged.

# 3-4 Operation from the LCD menu

## 3-4-1 The menu screen for the UPS settings



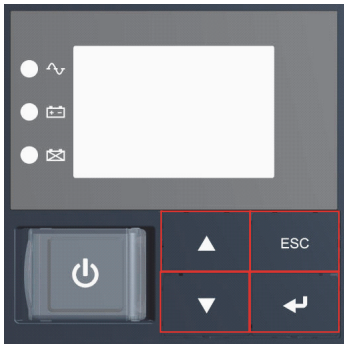

Selected item is highlighted.




Displayed for additional information or when confirmation is required.

## ■ Basic operations on the menu screen

| Switch | Description |
|---|---|
| [ ▲ ] [ ▼ ] | Move cursor up/down or increase/decrease values |
| [ ↵ ] | Select the menu item or set the value |
| [ESC] | Return to menu or cancel |



## 3-4-2 The menu list of LCD

- Display language can be selected from Japanese (default) or English.
- The menu displayed changes with menu type setup. There are a Standard type and an Advanced type. A Standard type (default) is for general purpose.
  An Advanced type is for administrators.

Additional Information

- If you want to display the LCD in English, set the “Settings” - “Local Setting” - “Language” setting in the menu on the unit’s LCD.
- If you want to display the LCD in Advanced menu type, set the “Setting” - “Local Setting” - “Menu Type” setting in the menu on the unit’s LCD.

*: Displayed only when the UPS is stopped. (Not displayed during operation.)

| | Menu | | Description | Contents | Menu type |
|---|---|---|---|---|---|
| Meas-urements | Load Meter | | Display the applied load in VA and W. | Load Meter:<br>0 to xxxx W<br>0 to xxxx VA | Standard |
| | Input/Output Meter | | Display the input/output voltage and frequency. | Input/Output Meter:<br>Input: 0 to xxx.x V, 0 to xx.x Hz<br>Output: 0 to xxx.x V, 0 to xx.x Hz | |
| | Battery Meter | | Display the status of the built-in battery. | Battery Meter:<br>Charge Rate: 0 to 100%<br>Voltage: 0.0 to xxx.xV<br>Runtime: 0.0 to xxx min | |
| | Longevity | | Display the estimated lifespan of the UPS in 5 levels. | Longevity:<br>UPS: display with a five-level indicator<br>Battery: display with a five-level indicator | |
| | Cumulat. Power Usage | | Display the amount of power used so far and the number of days elapsed. | Cumulat. Power Usage:<br>Total: 0 to xxxx kWh<br>Period: 0 to xxxx days | Advanced |
| | Average Power Usage | | Display the average amount of power used so far. | Average Power Usage:<br>0 to xxxx Wh | |
| Control | Start Function Test | | Perform a self-diagnosis and a test to check for battery deteri-oration, and then display the results. | Start Function Test<br>· Passed Battery OK<br>· Failed No Battery<br>· Failed Battery Weak<br>· Canceled UPS is on Battery mode<br>· Canceled B.capacity is not enough | Standard |
| | Reset B.life counter | | Reset the battery life counter. | Reset B.life ctr:<br>Are you sure? ⇒ Yes or No | |
| | Load Segments | | Control the ON/OFF of output receptacle group B and C. | Load Segments<br>Out B: ON/OFF<br>Out C: ON/OFF | Advanced |
| | Reset Power Usage | | Reset the values of cumulative power usage and average power usage. | Reset power usage<br>Are you sure? ⇒ Yes or No | |
| | Dry Contact Test * | | Perform a contact test when using a contact signal card (SC07/SC08). | Dry Contact Test<br>BU: ON/OFF<br>BL: ON/OFF<br>TR: ON/OFF<br>WB: ON/OFF | |
| | Initialization * | | Return each of the UPS set-tings to the factory settings. | Restore F.setting<br>Are you sure? ⇒ Yes or No | |
| | Maintenance Bypass | | Move to Bypass Mode forcibly. | Maintenance Byp.<br>Are you sure? ⇒ Yes or No | |
| Setting | Local Setting | Language | Set the language to be dis-played on the LCD. | Language:<br>Japanese (Default),<br>English | Standard |
| | | LCD Setting | Change the contrast of the LCD. | LCD Setting:<br>Contrast bar | |

*: Displayed only when the UPS is stopped. (Not displayed during operation.)

| Menu | | | Description | Contents | Menu type |
|---|---|---|---|---|---|
| Setting | Local Setting | LCD Auto OFF | Set the amount of time after which the LCD turns off automatically. | LCD Auto OFF:<br>· Always ON<br>· Auto OFF after 30sec. (Default)<br>· Auto OFF after 3min. | Standard |
| | | LCD Test | Check that the LCD and LEDs light up. | LCD Test:<br>Execute | |
| | | Audible Alarm | Set the beeper status. | Audible Alarm:<br>· ON (Default)<br>· OFF at Battery Mode<br>· OFF at Anytime | |
| | | Calendar Setting | Set the calendar information for the UPS. | Calendar Setting:<br>Year, Month, Day, Hour, Min | |
| | | UPS Installation | Set the date you started using the UPS. | UPS Installation:<br>Year, Month, Day<br>(Default: 2000/1/1) | |
| | | UPS Life Count | Set the UPS life counter status. | UPS Life Count:<br>· Enable (Default)<br>· Disable | |
| | | Menu Type | Select the menu to be displayed. "Standard" displays frequently used items only. | Menu Type:<br>· Standard (Default)<br>· Advanced | |
| | In/Out Settings | Output Voltage * | Check the output voltage. | Output Voltage:<br>100 V (Fixed) | Standard |
| | | AC I/P Sensitivity * | Set the input sensitivity.<br>(Note 1) | AC I/P Sensitivity:<br>· Normal (Default)<br>· Low,<br>· High | |
| | | Input Plug * | Set this when replacing the input plug. | Input Plug:<br>15A, 20A, 30A, Hard wire/50A<br>(dependent on the UPS model)<br>(Default: BN50T / BN75T / BN100T / BN150T: 15A,<br>BN220T / BN300T:30A | |
| | | ECO Mode * | Set whether to enable ECO Mode. | ECO mode:<br>· Disable (Default)<br>· Enable | Advanced |
| | | Frequency Range * | Switch the frequency range mode. | Frequency Range:<br>· Normal Range (Default)<br>· Wide Range | |
| | | Transfer Sensitivity * | Set the sensitivity at which to switch to Battery Mode. | Transfer Sensitivity:<br>· Normal (Default)<br>· High | |
| | Boot Settings | Auto Reboot | Set auto restart from power failure. | Auto Reboot:<br>· Enable (Default)<br>· Disable | Standard |
| | | Cold Start | Set whether to enable the cold start function that can start up the UPS even when there is no AC input. | Cold Start:<br>· Enable (Default)<br>· Disable | |
| | | Reboot Delay Time | Set the delay time for recovery from power failure. | Reboot Delay Time:<br>0 to 999sec.(Default: 9sec) | Advanced |
| | | Load Segments | Set this when you want the delay time for restarting receptacle group B and C to be longer than that for group A. | Load Segments:<br>ON delay Out B: 0 to 1800s<br>ON delay Out C: 0 to :0 to 1800s<br>OFF delay Out B: 0 to 1800s<br>OFF delay Out C: 0 to 1800s<br>(Default: above all 0s) | |
| | | Reboot Batt.level | Set the amount of battery charge for restarting the UPS. | Reboot Batt.level:<br>0 to 100%(Default: 0%) | |
| | | Auto Reboot Mode | Set the mode for rebooting. | Auto Reboot Mode:<br>· Mode A (Default)<br>· Mode B | |
| | | Power SW OFF Mode | Switch the operating mode of the power switch. | Power SW OFF Mode:<br>· UPS shutdown (Default),<br>· UPS+PC Shutdown | |

*: Displayed only when the UPS is stopped. (Not displayed during operation.)

| | Menu | | Description | Contents | Menu type |
|---|---|---|---|---|---|
| Setting | Battery Settings | Function Test | Set the timing at which to execute the self-diagnostic test. | Battery Test:<br>· Start up/Every 4 weeks (Default)<br>· Start up<br>· Every 4w<br>· Disable | Standard |
| | | Batt.life Counter | Set whether to be notified of the battery life. (Note 2) | Batt.life Counter:<br>· Enable (Default)<br>· Disable | |
| | | Battery Installation | Set the date you replaced the battery. | Battery Installation:<br>Year, Month, Day<br>(Default: 2000/1/1) | |
| | | Max.backup Time * | Set the output of the UPS to stop after a specified amount of time. | Max.backupTime:<br>Disable (Default)<br>Enable: 10 to 999 sec<br>Enable: 1 to 9999 min | Advanced |
| | | Low Battery Warning * | Set the level at which to detect low battery. | Low Battery Warning:<br>Default (Default),<br>Charge the level: 0 to 100% | |
| | Dry Contact | BSsignal ValidRange * | Set the status for receiving the BS signal. | BSsignal ValidRange:<br>· Always (Default)<br>· Only battery mode | Advanced |
| | | BSsignal Delay Time | Set the delay time for the BS signal. | BSsignal Delay Time:<br>0 to 9000 sec, or 9999 sec<br>(Default: 0sec) | |
| | | BUsignal Delay Time | Set the delay time for the BU signal. | BUsignal Delay Time:<br>0 to 180 sec<br>(Default: 0sec) | |
| | | Dry Contact Logic | Set the logic of each contact signal. | Dry Contact Logic:<br>BU, BL, TR, WB:<br>· Normal (Default)<br>· Reverse | |
| | | Remote ON/OFF Logic * | Set the logic of the remote signal.<br>This setting is common for the contact signal card and the remote ON/OFF connector. | Remote ON/OFF Logic:<br>· OFF at Close (Default)<br>· OFF at Open<br>· Disable | |
| Identifi-cation | Type | | Display the names of the UPS and battery pack. | Type:<br>UPS: Model number<br>Battery: Model number | Standard |
| | Serial Number | | Display the serial number of the UPS. | Serial Number:<br>S/N: xxxxxxxxxxxxxxG | |
| | Firmware Version | | Display the firmware version of the UPS. | Firmware Version:<br>UPS: M: x.xx, USB: S: x.xx | Advanced |
| | Memorandum | | You can record information of 20 alphanumeric characters. | --- | |
| Log | Fault Log | | Display up to 10 fault log records (time of occurrence and details of each failure). | Fault Log:<br>Year/Month/Day/Hour/ Min, Message | |
| | Shutdown Log | | Display up to 10 reasons for shutdown of the UPS. | Shutdown Log:<br>Year/Month/Day/Hour/ Min, Message | |
| | AC input Log | | Display up to 10 event log records | AC input Log:<br>Year/Month/Day/Hour/ Min, Message | |
| | Reset All Log Data | | Clear each log. | Reset All Log<br>Are you sure? ⇒ Yes or No | |

Note 1: Refer to “9-4 Checking and Setting the Output Voltage Range”.

Note 2: Refer to “9-3 Battery life”.

# 4 Maintenance and Inspection

For cautions when maintaining the UPS, refer to “Caution (for maintenance)” shown in the “Safety precautions” of the beginning of this manual.

## 4-1 Checking the battery

There are two kinds of check methods of the battery as follows.

- Check the five-step display on the estimated life expectancy of the battery (See “3-4-2 The menu list of LCD”)
- Perform the self-diagnosis test (See “4-1-2 Self-diagnosis test”).

### 4-1-1 Check the display on the estimated life expectancy of the battery

The current estimated life of the battery can be checked in “Measurements”-“Longevity” in the LCD menu by means of a five level display.

### 4-1-2 Self-diagnosis test

This test performs a failure diagnosis on the unit and performs a test to check for battery deterioration.

Use the procedure below to check whether a circuit failure has occurred inside the unit and whether battery replacement is required.

There are two, automatic testing and manual testing, in the self-diagnosis test as follows.

#### ■ Automatic testing

The self-diagnosis test is automatically performed at the factory settings, at the following timing in the state that the UPS is connected to a commercial power source and the charge of the battery has been completed. User’s operation to start the test is unnecessary.

- When the power switch is turned ON from OFF
- Performed with one time per four weeks on the condition that the power switch is ON

When charge of the battery is not completed, the self-diagnosis test is not performed immediately.

It is performed automatically after the completion of charge.

#### ■ Manual testing

The self-diagnosis test can be performed manually by selecting “Control”-“Start Function Test” in the LCD menu.

By performing the self-diagnosis test, backup operation is started automatically.
The beeper does not sound at this time.
After the test is completed, UPS automatically returns to the normal operation.
When the message of an error is displayed on the LCD screen, take measures in accordance with the solution shown in the above “3-1-7 Interpreting icons, LEDs, and beeps, and etc.”

Additional Information

- You can select the execution condition for the self-diagnosis test from the options below by means of “Setting” - “Battery Settings” - “Battery Settings” - “Function Test” in the LCD menu.
  “Start up/Every 4w (Default)”, “Start up”, “Every 4w”, or “Disable”
- The self-diagnosis test can be performed also from attached UPS monitoring software.

For more details, refer to the online help of UPS monitoring software.

## 4-1-3 Estimated backup time

The backup time varies depending on the capacity of connected devices.

After calculating the total capacity of connected devices, refer to the graph of the backup time to obtain an estimation of the initial value of the backup time. (This is also applied to checking the battery.)

***1***. Convert the total capacity (power consumption) of the connected devices to watts (W).
For the indication of connected devices, check your computer and the rear of the display. The indicator can show values in three different ways: volt-amperes (VA), amperes (A), and watts (W).

Example 1) 100 VAC, 50/60Hz, 145 W
Example 2) 100 VAC, 50/60Hz, 1.8 A
Example 3) 100 VAC, 50/60Hz, 150 VA

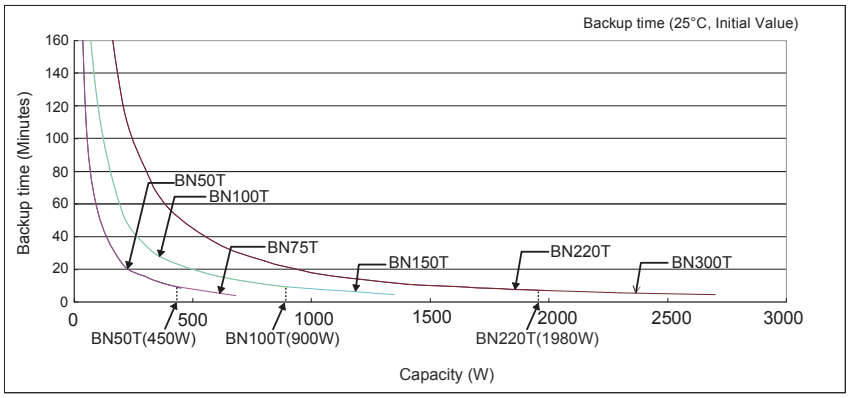
| Indication | Value |
|---|---|
| A | A × power factor × 100 = W |
| VA | VA × power factor × 100 = W |

For devices that use the VA or A indication, convert the capacity into W. Multiply the value indicated on devices by the value in the right table for conversion.
(When the power factor is unknown, enter “1”. The power factor usually ranges between 0.6 and 1.)

***2***. Add the values converted into W to obtain the total capacity of the connected devices.

***3***. Calculate the initial value of the backup time for the total capacity of the connected devices from the graph below.

- Graph of backup time (graph of initial values for products that have not been used at 25°C).
  The backup time becomes shorter than the graph (table) below when temperature is lower.
- The smaller the capacity of connected devices becomes, the longer the backup time becomes.



Backup time table

Time unit: (Minutes)

BN50T

| Connection capacity (W) | 20 | 50 | 100 | 200 | 300 | 400 | 450 |
|---|---|---|---|---|---|---|---|
| Backup time (Minutes) | 250 | 110 | 55 | 24 | 15.5 | 10.5 | 8.5 |

BN75T

| Connection capacity (W) | 20 | 50 | 100 | 200 | 300 | 400 | 600 | 680 |
|---|---|---|---|---|---|---|---|---|
| Backup time (Minutes) | 250 | 110 | 55 | 24 | 15.5 | 10.5 | 5.8 | 4 |

BN100T

| Connection capacity (W) | 20 | 50 | 100 | 200 | 300 | 400 | 600 | 800 | 900 |
|---|---|---|---|---|---|---|---|---|---|
| Backup time (Minutes) | 480 | 215 | 120 | 56 | 35 | 25 | 16 | 11 | 9 |

BN150T

| Connection capacity (W) | 20 | 50 | 100 | 200 | 300 | 400 | 600 | 800 | 1000 | 1200 | 1350 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Backup time (Minutes) | 480 | 215 | 120 | 56 | 35 | 25 | 16 | 11 | 8 | 6.2 | 4.5 |

BN220T

| Connection capacity (W) | 20 | 50 | 100 | 200 | 300 | 400 | 600 | 800 | 1000 | 1200 | 1400 | 1600 | 1800 | 1980 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Backup time (Minutes) | 900 | 460 | 250 | 125 | 81.5 | 57 | 36 | 25 | 18 | 14 | 11 | 9.5 | 8 | 7 |

BN300T

| Connection capacity (W) | 20 | 50 | 100 | 200 | 300 | 400 | 600 | 800 | 1000 | 1200 | 1400 | 1600 | 1800 | 2000 | 2300 | 2700 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Backup time (Minutes) | 900 | 460 | 250 | 125 | 81.5 | 57 | 36 | 25 | 18 | 14 | 11 | 9.5 | 8 | 7 | 5.8 | 4.5 |

Note: These backup times are for reference only. Times may vary according to battery life and external environmental conditions (temperature, etc.).

# 4-2 Replacing the battery

The battery can be replaced while the unit is stopped (power supply output stopped).
Refer to the below-shown reference data “life of the battery” for the details about the life of the battery.

**Notes**

- **Be sure to reset the battery life counter after replacing the battery.**
  After replacing the battery, reset the battery life counter from the “Control” - “Reset B.life counter” screen in the menu on the unit’s LCD.
  If you do not reset the battery life counter, a battery replacement alarm may occur earlier than the expected battery life.
- When the unit is used in compliance with UL standards, battery replacement should be performed or supervised by personnel familiar with the danger of batteries and the required precautions.
- If an input power supply error such as a power failure occurs when replacing the battery while in operation, backup cannot be performed and output stops.
- Do not replace the battery during backup operation. Output will stop.

 Additional Information

When the “battery replacement” LED lights up/blinks and beeper sounds, press the beep stop/test switch for 0.5 seconds to stop the beeper. (Lighting/blinking of “battery replacement” LED does not disappear.)

## 4-2-1 Notification that the battery needs to be replaced

This Battery life counter function notifies you with LED display and beep sound when the battery needs to be replaced.
The battery life is determined by the counter function. The battery life counter operates while commercial power is supplied after shipment. (When the ambient temperature of the battery is higher than 25°C, the value of the counter will be incremented at a faster pace.)

**Notes**

- **The lead battery used in the unit has a limited lifespan. The life varies depending on your storage/use environment and backup frequency.**
  The nearer the end of the life is, the more rapidly deterioration proceeds.
  Refer to the below-shown reference data “Battery life” for the details about the life of the battery.
- **The battery deteriorates even if it is stored. The higher the temperature is, the shorter the life becomes.**

■ Guidelines for how often to check the battery

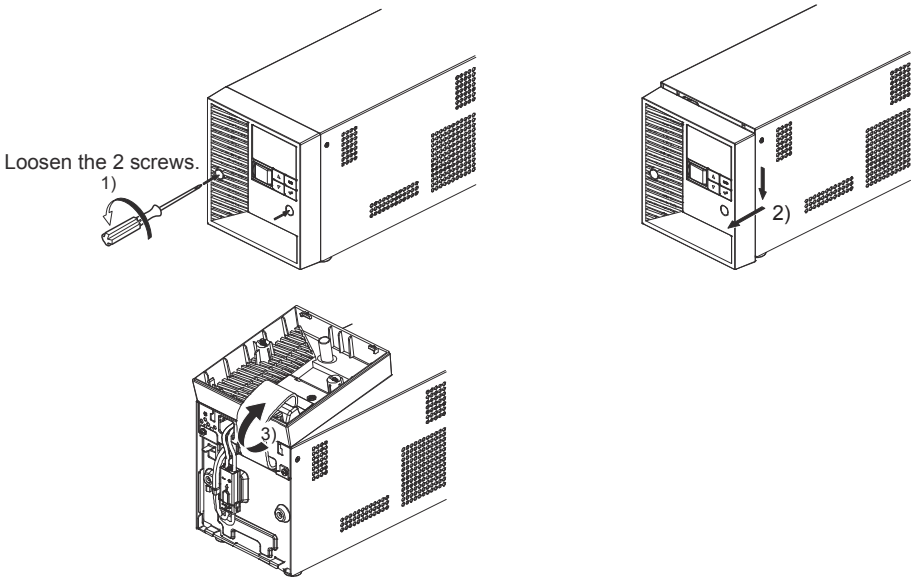
| Ambient temperature | 6-month check | Monthly check |
|---|---|---|
| 40°C | For the first 1 years after starting use | When 1 years or more have passed after starting use |
| 30°C | For the first 3 years after starting use | When 3 years or more have passed after starting use |
| 25°C | For the first 4 years after starting use | When 4 years or more have passed after starting use |

## 4-2-2 Procedure for recycling the battery

For cautions when replacing the battery of the UPS, refer to “Caution for battery replacement)” shown in the "Safety precautions" of the beginning of this manual.

### ■ BN50T/BN75T

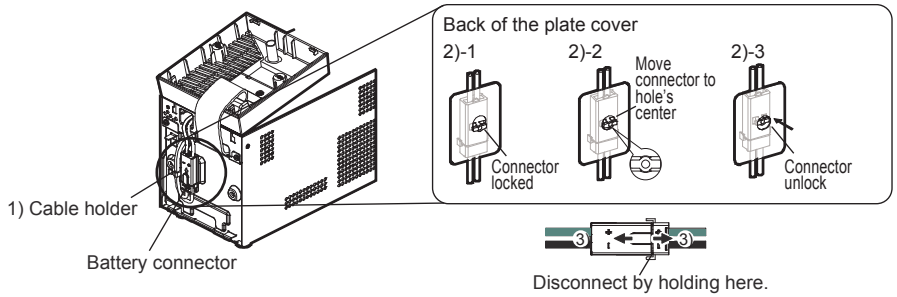
***1***. Use a screwdriver to loosen (turn counter-clockwise) the 2 screws at the top of the front panel of the unit, until they turn freely. (The screws cannot be removed from the front panel.) 1) Lower the front panel and pull toward you to remove. 2) Place the removed front panel on the unit. 3)



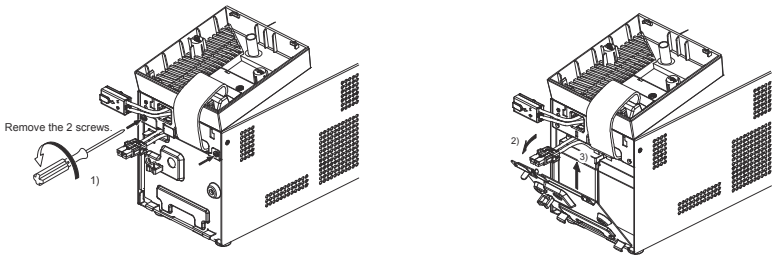

**⚠ Caution (for maintenance)**

**Do not pull the cables of the LCD or disconnect the connectors.**

***2***. Remove the battery cable from the cable holder. 1)
The battery connector is locked in the fastening hole in the plate. Lift the connector (2)-1), move to the center of the hole (2)-2), and pull the connector to the back to unlock (2)-3). Hold the battery connector, and pull the connectors apart. 3)



***3***. Turn the 2 screws that fix the plate cover counter-clockwise to remove them. 1) Pull the plate cover towards you 2) and lift it up to remove it.3)

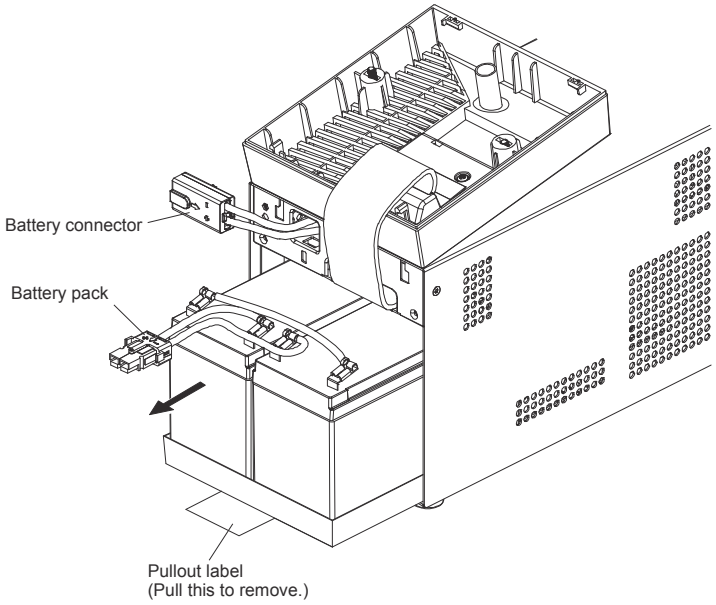



***4***. Hold the pullout label at the bottom of the battery pack and remove the battery pack.

## ⚠ Caution (for maintenance)

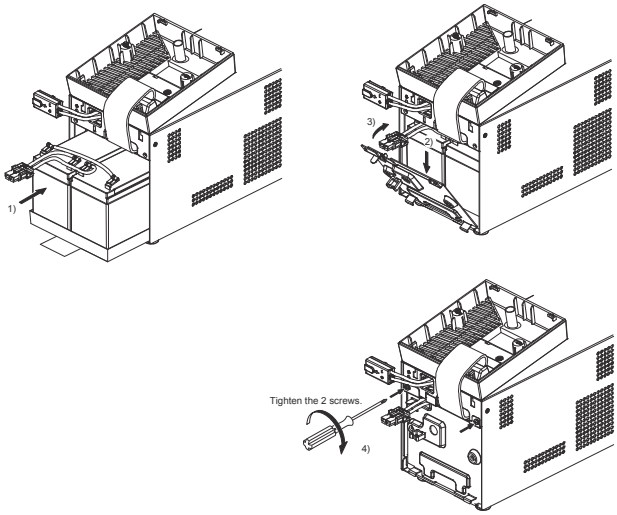
**Do not hold the connector or cable of the battery pack.**

Use the red tape on the top of the battery pack, which is 10 cm from the inner edge of the battery, to gauge how much further you need to pull the battery to remove it. Hold the battery securely with both hands so as not to drop it.



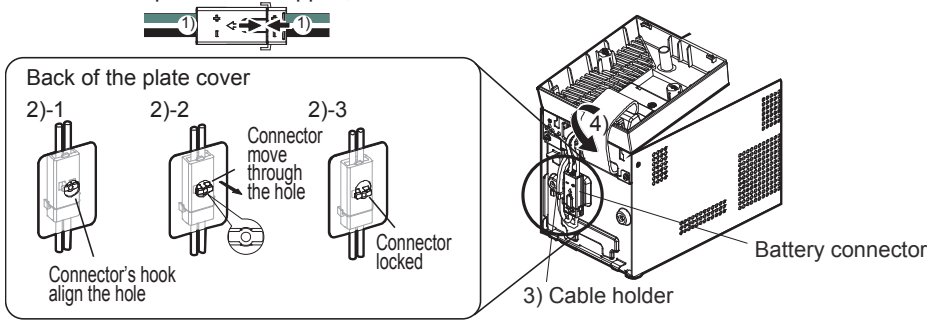
***5***. Insert a new battery into the UPS as far as it will go. 1)

・ Replacement battery pack
BN50T/BN75T: Model BNB75T
Attach the plate cover in order of 2) to 3).
Use a screwdriver to securely tighten (clockwise) the 2 screws you removed. 4)
Do not pinch the cable with the plate cover.




***6***. Insert the battery connector until it is locked. 1)
Hold the battery connector, move the connector hook to the center of the fastening hole in the plate (2)-1), insert through the hole (2)-2), and lower the connector to lock in the hole (2)-3).
Install the battery cable in the cable holder. 3)
Lower the front panel 4).

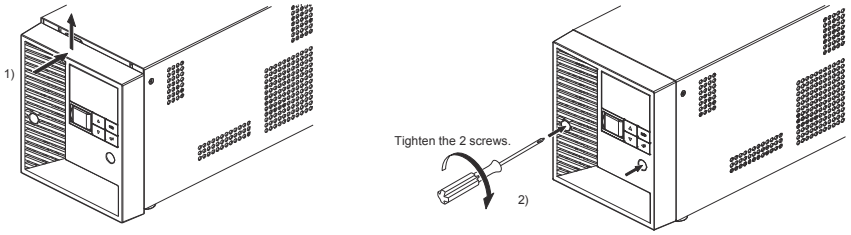
Note: You may hear a “pop” sound when you connect the battery if it is replaced after the unit’s operation is stopped, but this sound is not abnormal.



**7**. Attach the front panel.

Attach the front panel to the unit. 1)

Use a screwdriver to securely tighten (clockwise) the 2 screws at the top of the front panel. 2)




Battery replacement is now complete.

## Notes

**Be sure to reset the battery life counter after replacing the battery.**

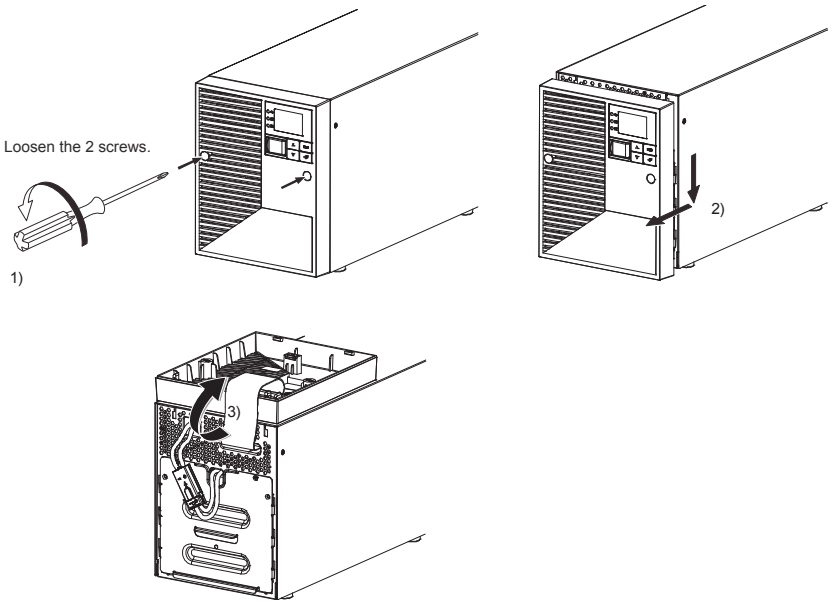
- After replacing the battery, reset the battery life counter from the “Control” - “Reset B.life counter” screen in the menu on the unit’s LCD.
  If you do not reset the battery life counter, a battery replacement alarm may occur earlier than the expected battery life.

**Write the battery replacement date on the included battery replacement date label, and attach the label to the unit.**

Or, enter the battery replacement date from the “Setting” - “Battery Settings” - “Battery Installation” screen in the menu on the LCD.

## ■ BN100T/BN150T

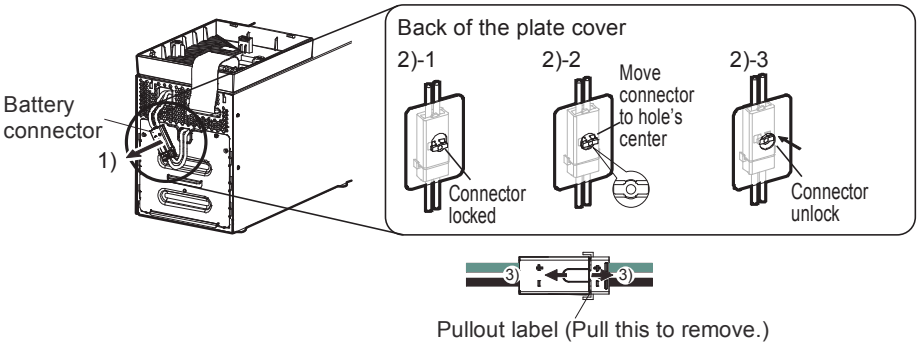
***1***. Use a screwdriver to loosen (turn counter-clockwise) the 2 screws at the top of the front panel of the unit, until they turn freely. (The screws cannot be removed from the front panel.) 1)
Lower the front panel and pull toward you to remove. 2)
Place the removed front panel on the unit. 3)



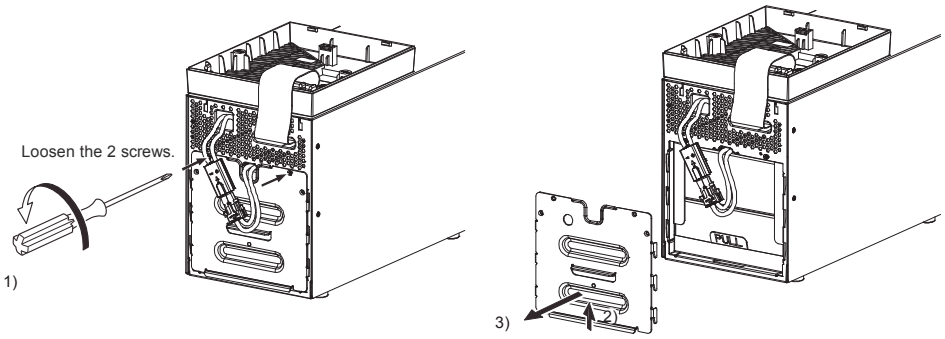

**⚠ Caution (for maintenance)**

**Do not pull the cables of the LCD or disconnect the connectors.**

***2***. Remove the battery connector from the plate cover. 1)
The battery connector is locked in the fastening hole in the plate. Lift the connector (2)-1), move to the center of the hole (2)-2), and pull the connector to the back to unlock (2)-3).
Hold the battery connector, and pull the connectors apart. 3)



***3***. Turn the 2 screws that fix the plate cover counter-clockwise to remove them. 1) Pull the plate cover towards you 2) and lift it up to remove it. 3)

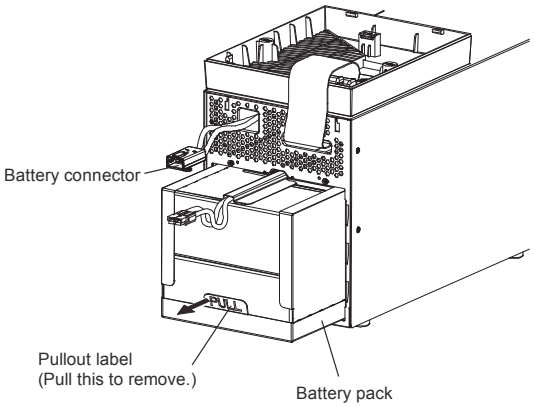



***4***. Hold the pullout label at the bottom of the battery pack and remove the battery pack.

## ⚠ Caution (for maintenance)

**Do not hold the connector or cable of the battery pack.**

Use the red tape on the top of the battery pack, which is 10 cm from the inner edge of the battery, to gauge how much further you need to pull the battery to remove it. Hold the battery securely with both hands so as not to drop it.

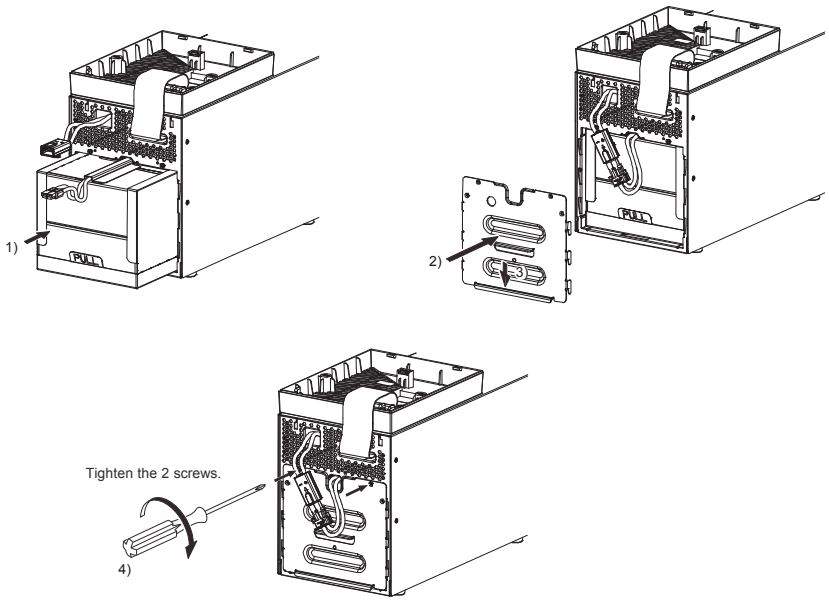


***5***. Insert a new battery into the UPS as far as it will go. 1)

・ Replacement battery pack

BN100T/BN150T: Model BNB300T

Attach the plate cover in order of 2) to 3).
Use a screwdriver to securely tighten (clockwise) the 2 screws you removed. 4)
Do not pinch the cable with the plate cover.

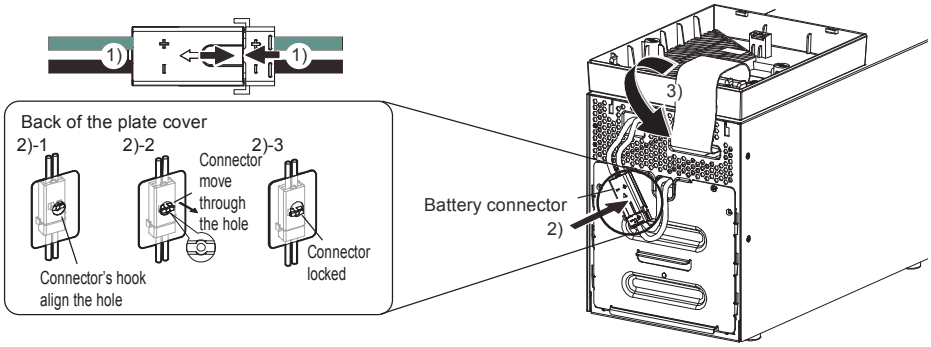



***6***. Insert the connector until it is locked. 1)

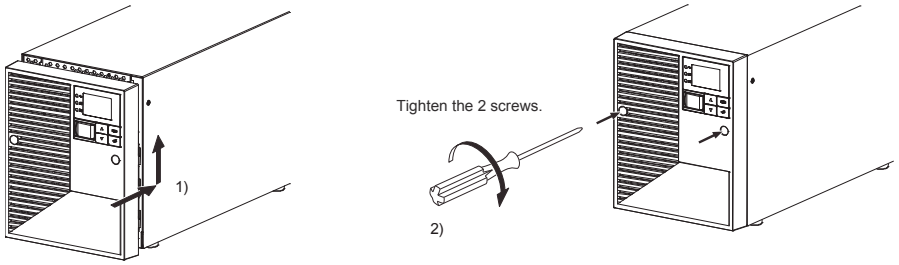
Hold the battery connector, move the connector hook to the center of the fastening hole in the plate (2)-1), insert through the hole (2)-2), and lower the connector to lock in the hole (2)-3).

Lower the front panel (3)).

Note: You may hear a “pop” sound when you connect the battery if it is replaced after the unit's operation is stopped, but this sound is not abnormal.



**7**. Attach the front panel.
Attach the front panel to the unit. 1)
Use a screwdriver to securely tighten (clockwise) the 2 screws at the top of the front panel. 2)




Battery replacement is now complete.

## Notes

**Be sure to reset the battery life counter after replacing the battery.**

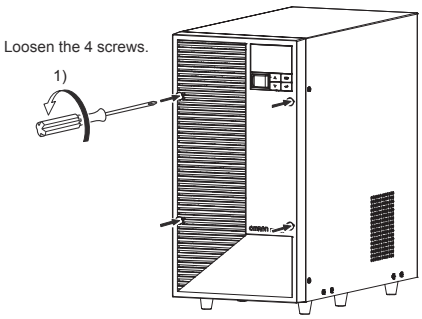
- After replacing the battery, reset the battery life counter from the “Control” - “Reset B.life counter” screen in the menu on the unit’s LCD.
  If you do not reset the battery life counter, a battery replacement alarm may occur earlier than the expected battery life.

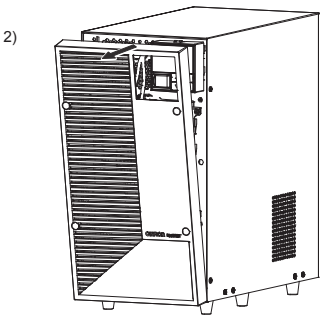
**Write the battery replacement date on the included battery replacement date label, and attach the label to the unit.**
Or, enter the battery replacement date from the “Setting” - “Battery Settings” - “Battery Installation” screen in the menu on the LCD.

## ■ BN220T/BN300T

***1***. Use a screwdriver to loosen (turn counter-clockwise) the 4 screws at the top of the front panel of the unit, until they turn freely. (The screws cannot be removed from the front panel.) 1)

Pull the front panel toward you to remove. 2)



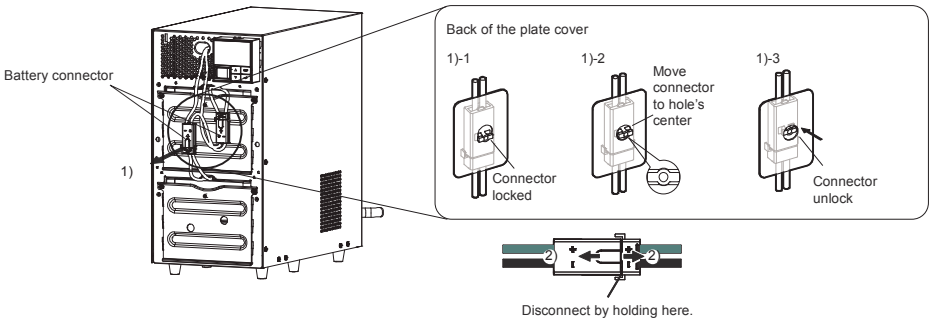




***2***. Remove the battery connector from the plate cover. 1)

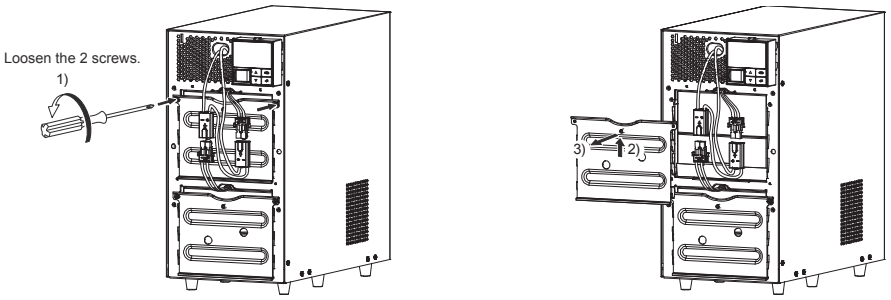
The battery connector is locked in the fastening hole in the plate. Lift the connector (1)-1), move to the center of the hole (1)-2), and pull the connector to the back to unlock (1)-3).

Hold the battery connector, and pull the connectors apart. 2)

Do this for both battery connectors.



***3***. Turn the 2 screws that fix the plate cover over the upper battery counter-clockwise to remove them. 1)
Pull the plate cover towards you 2) and lift it up to remove it. 3)

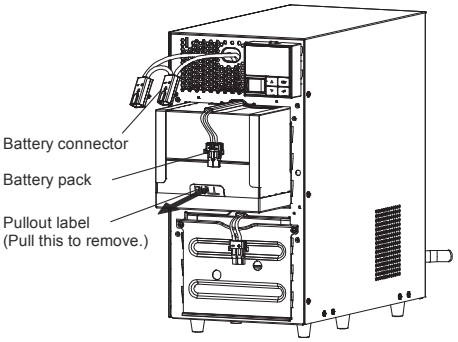



***4***. Hold the pullout label at the bottom of the upper battery pack and remove the battery pack.

**⚠ Caution (for maintenance)**

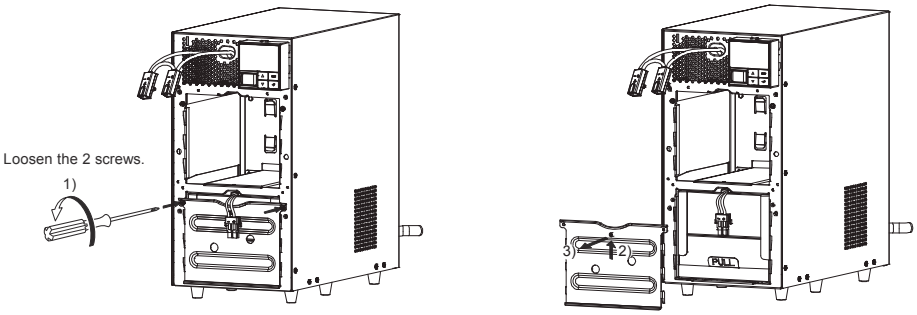
**Do not hold the connector or cable of the battery pack.**

Use the red tape on the top of the battery pack, which is 10 cm from the inner edge of the battery, to gauge how much further you need to pull the battery to remove it. Hold the battery securely with both hands so as not to drop it.



***5***. Turn the 2 screws that fix the plate cover over the lower battery counter-clockwise to remove them. 1)

Pull the plate cover towards you 2) and lift it up to remove it. 3)

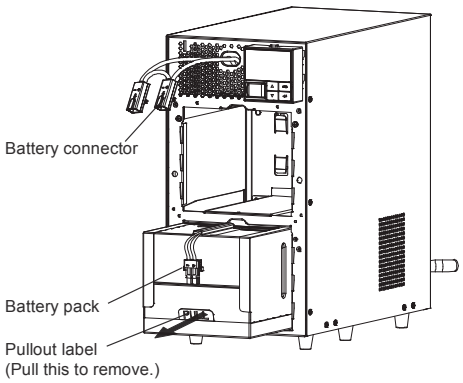



***6***. Hold the pullout label at the bottom of the lower battery pack and remove the battery pack.

## ⚠ Caution (for maintenance)

**Do not hold the connector or cable of the battery pack.**

Use the red tape on the top of the battery pack, which is 10 cm from the inner edge of the battery, to gauge how much further you need to pull the battery to remove it. Hold the battery securely with both hands so as not to drop it.



***7***. Insert a new battery into the UPS as far as it will go. 1)

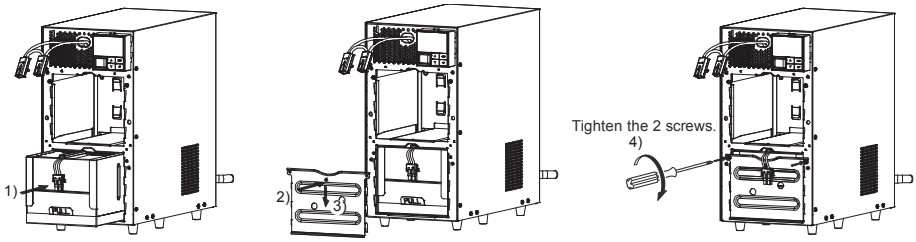
・ Replacement battery pack

For BN220T/BN300T: Model BNB300T

Attach the plate cover in order of 2) to 3).

Use a screwdriver to securely tighten (clockwise) the 2 screws you removed. 4)

Do not pinch the cable with the plate cover.




***8***. Insert a new battery into the UPS as far as it will go. 1)

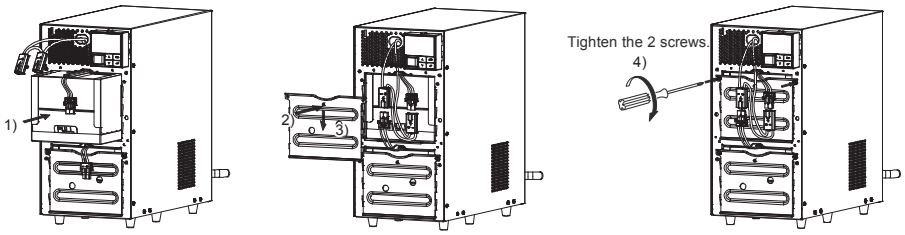
・ Replacement battery pack

For BN220T/BN300T: Model BNB300S

Attach the plate cover in order of 2) to 3).

Use a screwdriver to securely tighten (clockwise) the 2 screws you removed. 4)

Do not pinch the cable with the plate cover.

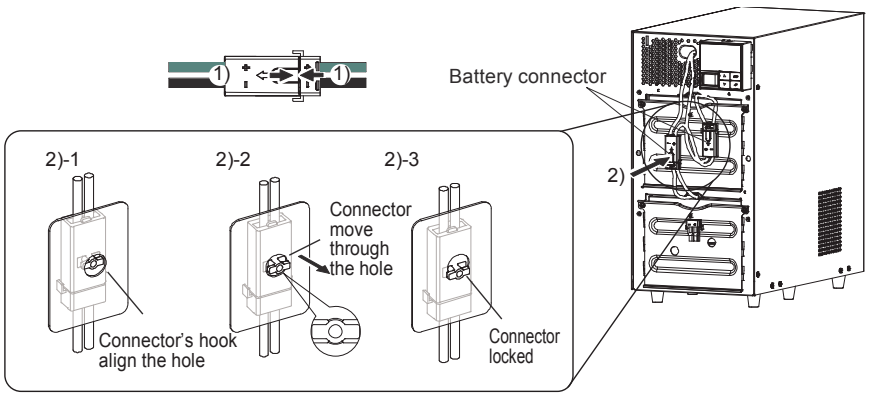



***9***. Insert the connector until it is locked. 1)

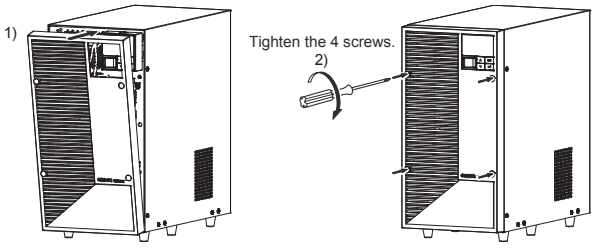
Hold the battery connector, move the connector hook to the center of the fastening hole in the plate (2)-1), insert through the hole (2)-2), and lower the connector to lock in the hole (2)-3).

Do this for both battery connectors.

Note: You may hear a “pop” sound when you connect the battery if it is replaced after the unit’s operation is stopped, but this sound is not abnormal.



***10***. Attach the front panel.
Attach the front panel to the unit. 1)
Use a screwdriver to securely tighten (clockwise) the 4 screws at the top of the front panel. 2)




Battery replacement is now complete.



**Notes**

**Be sure to reset the battery life counter after replacing the battery.**

- After replacing the battery, reset the battery life counter from the “Control” - “Reset B.life counter” screen in the menu on the unit’s LCD.
  If you do not reset the battery life counter, a battery replacement alarm may occur earlier than the expected battery life.

**Write the battery replacement date on the included battery replacement date label, and attach the label to the unit.**
Or, enter the battery replacement date from the “Setting” - “Battery Settings” - “Battery Installation” screen in the menu on the LCD.

# 4-3 Cleaning

***1***. Cleaning the UPS
Moisten a soft cloth with water or detergent, squeeze it tightly, and wipe the product lightly.
Do not use chemicals such as thinner and benzene. (They cause deformation or discoloration.)

***2***. Removing dust from the AC input plug, power supply output receptacles of the UPS
Stop all the connected devices and the UPS and disconnect the AC input plug from a wall outlet (commercial power source).
Then, remove dust with a dry cloth and make the connection again. (For information on the connection procedure:)
See also "2-2 Connecting the equipment"

# 5 To perform shutdown processing of the devices when a power failure occurs

## 5-1 The outline on the UPS monitoring software

"PowerAct Pro", "Simple Shutdown Software" and "UPS service driver" UPS monitoring software is included with this product.
Choose which one to use based on the application.

### 5-1-1 UPS monitoring software function list

---: Unsupported

| Functions \ Software title | | | General applications (Simple functions, standalone) | | Network management applications (Advanced functions, network support) | SNMP management applications (Advanced functions, network support) |
|---|---|---|---|---|---|---|
| | | | OS standard UPS service | Simple Shutdown Software (attached standardly) | PowerAct Pro (attached standardly) | SNMP/Web card |
| Required options (sold separately) | | | Contact signal card (SC07), Connection cable (BUC26) | --- | --- | SNMP/Web card (SC20G, SC20G2) |
| Refer to the section number | | | Section 5-3, 6 | Section 5-2 | Section 5-2 | Section 7 |
| Software functions (Refer to the reference below.) | 1. | Auto shutdown | Supported (Note 1) | Supported | Supported | Supported |
| | 2. | UPS monitoring (operating status) | Supported | --- | Supported | Supported |
| | 3. | UPS monitoring (data) | --- | --- | Supported | Supported |
| | 4. | Pop-up notification | Supported | --- | Supported | Supported |
| | 5. | Shutdown when OS is inactive (Note 2) | --- | --- | Supported | Supported |
| | 6. | Schedule operation | --- | --- | Supported | Supported |
| | 7. | UPS setting change | --- | --- | Supported | Supported |
| | 8. | External command execution | Supported | Supported | Supported | Supported |
| | 9. | Event log save | --- | --- | Supported | Supported |
| | 10. | Data log save | --- | --- | Supported | Supported |
| | 11. | Coordinated shutdown | --- | --- | Supported | Supported |
| | 12. | Output receptacle control | --- | --- | Supported | Supported |
| | 13. | Redundant power supply support | --- | --- | Supported | Supported |
| | 14. | Remote UPS management | --- | --- | Supported | Supported |
| | 15. | Mail send | --- | --- | Supported | Supported |
| | 16. | SNMP management | --- | --- | Supported | Supported |
| | 17. | Telnet connection | --- | --- | --- | Supported |
| | 18. | SYSLOG support | --- | --- | Supported | Supported |

Note 1: The UPS automatically stops only when the battery is depleted. (Battery Mode continues until the battery is depleted.)

Note 2: This function is available only for Windows, not for Linux.

# 5 To perform shutdown processing of the devices when a power failure occurs

## 5-1 The outline on the UPS monitoring software

### Additional Information

Explanation of software functions

| | Function name | Description |
|---|---|---|
| 1. | Auto shutdown | The computer can be shut down automatically when a problem occurs with the power supply. |
| 2. | UPS monitoring (operating status) | The operating status of the UPS can be monitored (in Commercial Power Mode/Battery Mode). |
| 3. | UPS monitoring (data) | Monitoring can be performed for input voltage value, connection capacity, battery capacity, etc. |
| 4. | Pop-up notification | When a problem such as a power failure occurs, a pop-up window that shows the details of the problem can be displayed. |
| 5. | Shutdown when OS is inactive | Shutdown can be performed when the computer is in an inactive state. The operating status is retained at shutdown in inactive state, so operation details are not lost. |
| 6. | Schedule operation | Schedule settings can be made for UPS stop/start. |
| 7. | UPS setting change | UPS settings (beep ON/OFF, etc.) can be changed. (Items that can be set vary according to the UPS.) |
| 8. | External command execution | By executing commands at shutdown, items such as application programs can be launched. |
| 9. | Event log save | Information of events that occur on the UPS (power supply problems, setting changes, occurrences of failure, etc.) are saved as a log. |
| 10. | Data log save | Data of input/output voltage value, connection capacity, etc. is periodically saved as a log (the save frequency can be set). |
| 11. | Coordinated shutdown | When a problem occurs with the power supply, multiple computers connected to the UPS can coordinate to perform auto shutdown. |
| 12. | Output receptacle control | The UPS output receptacles can be individually set to ON/OFF. |
| 13. | Redundant power supply support | Two or more UPS can be connected to computers equipped with redundant power supply. Shutdown is not performed when a power supply problem affects only one of the units. Shutdown is performed only when a power supply problem occurs with both UPS, so the system's operating rate is improved. |
| 14. | Remote UPS management | The UPS can be managed remotely from a computer on the network. |
| 15. | Mail send | When a problem such as a power failure occurs, a notification email describing the problem can be sent to the system administrator. |
| 16. | SNMP management | UPS management information can be sent to the SNMP manager. |
| 17. | Telnet connection | Settings such as shutdown parameters can be made via the Telnet connection. |
| 18. | SYSLOG support | UPS management information can be recorded in SYSLOG. |

## 5-1-2 The supported OS of the UPS monitoring software

For the latest support, please visit our site.

Support for OS
https://www.oss.omron.co.jp/ups/support/download/ups.html

You can download the latest software at:
https://www.oss.omron.co.jp/ups/support/download/download.html

# 5-2 When using the included UPS monitoring software

## 5-2-1 What is the PowerAct Pro

The included “PowerAct Pro” UPS monitoring software allows you to perform shutdown processing of your PC when a power failure occurs.

- It is possible to shut down multiple computers on the network.
- You can perform desired operation by setting the automatic start/stop of the UPS based on the schedule setting.

Note: Ensure that your PC completes shutdown within the backup time after a power failure occurs. For the backup time, refer to “4-1-3 Backup Time Guidelines”.

For more information, refer to the manual in the CD-ROM.

## 5-2-2 What is the Simple Shutdown Software

The included “Simple Shutdown Software” allows you to automatically shut down the PC when a power failure occurs.

For more information, refer to the manual in the CD-ROM.

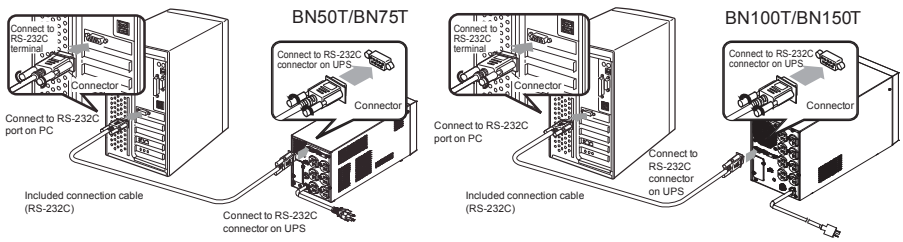
## 5-2-3 How to connect

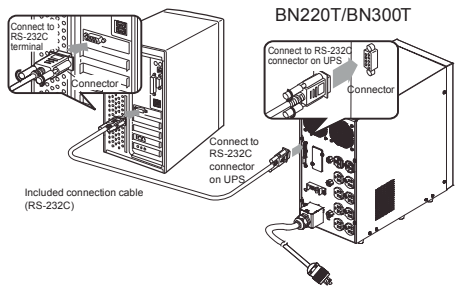
***1***. Connect the UPS to a computer.

Cable: Included connection cable (RS-232C or USB)

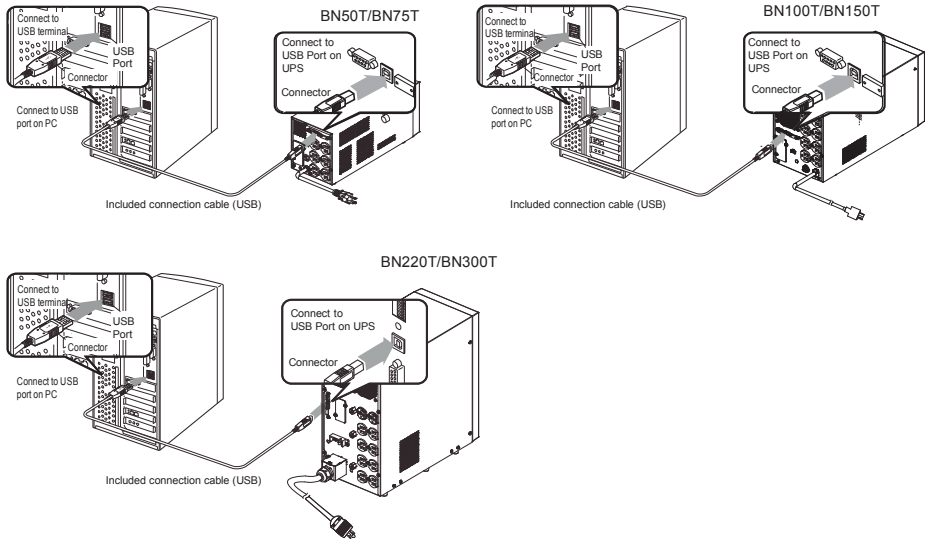
Note: The RS-232C and USB cannot be used at the same time.

<RS-232C>

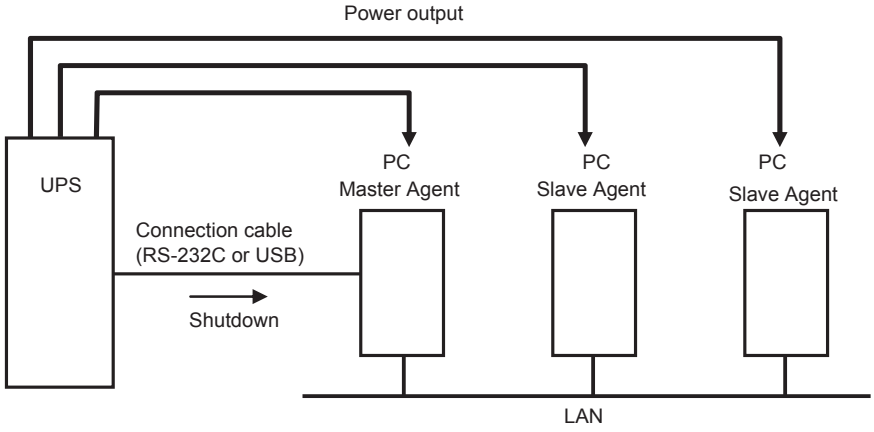


<USB>




When connecting 2 or more computers to the UPS (Only when using PowerAct Pro)




5

**2**. Install the included “PowerAct Pro” or “Simple Shutdown Software” to the PC you want to shut down.

Note: Installation method:

For “PowerAct Pro”, refer to the installation guide (for Windows) on the CD-ROM.

Refer to the manual on the CD-ROM for “Simple Shutdown Software”.

## Notes

**The limitation on the commercial power stopped period when scheduled operation using the UPS monitoring software**

- When performing scheduled operation in which the UPS is stopped and a device such as a breaker is used to stop the UPS at the same time that commercial power stops, specify a period of no more than 3 months for the start of the next operation. If you specify a period longer than 3 months, the internal timer is reset and the scheduled operation does not start.
  Note that this period reduces to approximately half when the battery is dead.
  If a period of 3 months is exceeded, you start operation by supplying commercial power and pressing the Start Switch. However, if the battery is dead, you may not be able to start operation.
  In this case, replace the battery according to "4-2 Replacing the battery".

**When manually starting during the scheduled operation using the UPS monitoring software**

- To manually start up this unit after it has been stopped by a scheduled operation, turn OFF the power switch and turn it back ON again.
  To stop the unit when it is in operation, turn OFF the power switch.
  Auto restart after OS closing processing using the UPS monitoring software

**When the power is restored while auto shutdown processing is being performed**

- If a power failure occurs and then the power is restored while auto shutdown is still in progress, UPS output will stop temporarily after the set time elapses. After shutdown is finished, do not turn on the computer until the UPS has finished restarting.

Additional Information

When the power is restored after the UPS automatically stops during a power failure, the UPS automatically restarts and supplies power.
If you do not want connected devices to operate, turn off the switch of the connected devices or disable the auto reboot after power restoration setting (LCD menu - [Setting] - [Boot Setting] - [Auto Reboot]).

# 5-3 When performing auto-save functions using the standard UPS service and the contact signal card (SC07)

When using the product with the optional contact signal card (SC07) and optional connection cable (BUC26), the OS standard UPS service in Windows Server 2003/XP can be used. When there is a power failure, the computer can be shut down.

***1***. Connect the UPS to a computer.

Note: Only one computer can be connected to the UPS.

Contact signal card (SC07), sold separately Connection cable (BUC26), and sold separately

For the contact signal card loading procedure, refer to “6-2-7 Insert method of contact signal card”.

***2***. Perform UPS service setup.

You need to make Windows settings in order to perform auto shutdown. There is no need to install software.

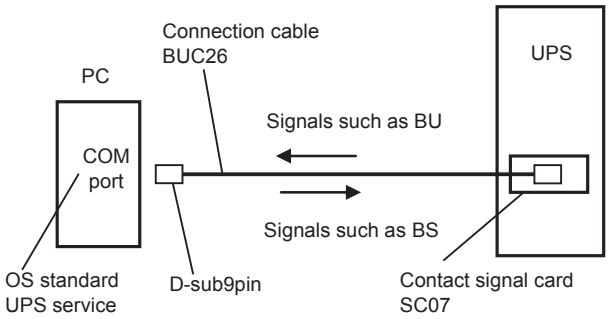
## 5 To perform shutdown processing of the devices when a power failure occurs

# 6 Using the contact signal functions

## 6-1 Contact signal functions

You can develop your unique system based on the following specifications to automate the process at a power failure.

You can perform power-failure processing by allowing the system to detect the backup signal and also perform system shutdown processing by allowing the system to detect the Low battery level signal.
Also, by inputting the backup stop signal from the system, you can stop the UPS with a sufficient battery level to prepare for the next occurrence of a power failure.




## 6-2 SC07 Contact signal card specifications

An additional contact signal card can be installed in the contact signal input/output slot on the back of the UPS.

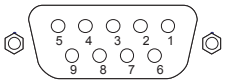
- Contact signal card (model number: SC07), sold separately

Note: Only remote ON/OFF signal can be at the remote ON/OFF connector without the contact signal card.

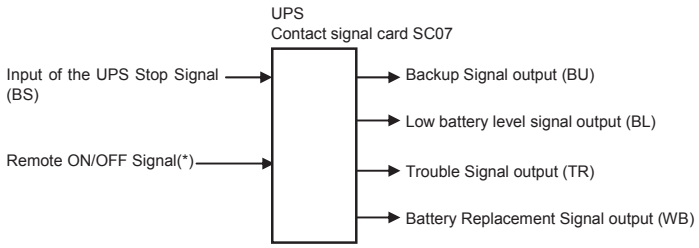
Additional Information

A relay output type contact signal card (model number: SC08) is available for separate purchase.
It can be loaded into the option slot on the back of the UPS.
Visit our website for more details.
(URL: https://www.oss.omron.co.jp/)

## 6-2-1 Contact signal connector (female D-SUB 9pin)

| Pin assignment | Pin number | For jumper setting “SC07” * Factory settings | For jumper setting “SC05/06” |
|---|---|---|---|
|   Front view Screw size: inch screw #4-40 UNC | 1 | Battery LOW signal output (BL) | NC |
| | 2 | Trouble signal output (TR) | Backup signal output (BU) |
| | 3 | Backup stop signal input (BS) | Backup reverse signal output (NBU) |
| | 4 | NC | COMMON(COM) |
| | 5 | COMMON(COM) | Battery Low Signal output (BL) |
| | 6 | Remote ON/OFF input (-) | Backup stop signal input (BS) |
| | 7 | Remote ON/OFF input (+) | Remote ON/OFF input (-) |
| | 8 | Backup signal output (BU) | Trouble Signal output (TR) |
| | 9 | Battery Replacement Signal output (WB) | Remote ON/OFF input (+) |

## 6-2-2 Type of Input/Output signals




*: The remote ON/OFF connector can be used.

### ■ Type of Output signals

The UPS has 4 kinds of output signals. The output circuit consists of an open collector circuit using a photo coupler (a kind of electronic switch).

| Signals | Descriptions |
|---|---|
| Backup Signal output (BU) | Stays ON during backup operation at a power failure. |
| Low battery level signal output (BL) | Goes ON when the battery becomes weak during backup operation at a power failure. |
| Trouble Signal output (TR) | Goes ON when an internal failure of the UPS occurs or when the battery life counter expires. |
| Battery Replacement Signal output (WB) | Goes ON when the test determines that battery replacement is necessary due to deterioration or when the battery life counter goes off-scale. |

## ■ Type of Input signal

The UPS has 2 kinds of input signals.

| Signals | Descriptions |
|---|---|
| Input of the UPS Stop Signal (BS) | When the BS signal is ON (High), the output of the UPS is stopped after the time period specified in advance has elapsed. The following settings are available on the LCD (Note1). |
| Remote ON/OFF Signal | Remote ON/OFF signals can be used to start and stop the UPS, by using either an externally connected contact or the ON/OFF status of the open collector circuit.<br>When signal is OFF, the UPS will be turned on. When signal is ON, the UPS will be turned off.<br>In the factory settings, the UPS stops operation when this is short-circuited. (Note 2)<br>In addition, it is necessary to turn on the power supply switch of UPS to use this function. (Note 3) |

Note 1: The following functions related to BS signal can be setup at LCD.

1) BS Valid Range:

"Setting" - "Dry Contact" - "BSsignal ValidRange"

- Always enabled: The BS signal is received either in Commercial Power Mode or Battery Mode.
- Enabled during Battery Mode: The BS signal is received only in Battery Mode.

2) BS Delay Time:

"Setting" - "Dry Contact" - "BSsignal Delay Time"

You can set the amount of time between when the BS signal is received and when the output of the UPS is stopped.

Note 2: If you want the UPS to stop operation when this is open, or if you want to disable this function, specify OFF or disable in "Setting" – "Dry Contact" – "Remote ON/OFF Logic".

Note 3: When there is no AC power supply, it is not possible to start up UPS by the remote ON/OFF signals even though cold start is set ON.

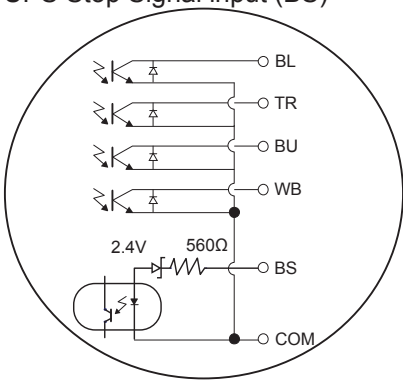
# 6-2-3 Contact Signal ratings

| Signals | Ratings |
|---|---|
| Signal output (BL, TR, BU, WB, NBU) | Photo coupler ratings<br>-Applicable voltage: 35 VDC or less<br>-Maximum current: 20 mA |
| UPS Stop Signal input (BS) | Input voltage<br>-HIGH(ON) 5 to 12 VDC<br>-LOW(OFF) 0.7 VDC or less |
| Remote ON/OFF Signal | Voltage between terminals: 10 VDC<br>Current when closed: max.10 mA |

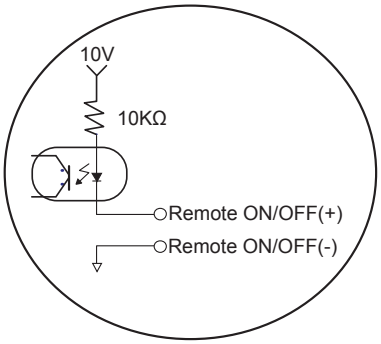
## 6-2-4 Contact Signal circuit

Signal output (BL, TR, BU, WB)

UPS Stop Signal input (BS)

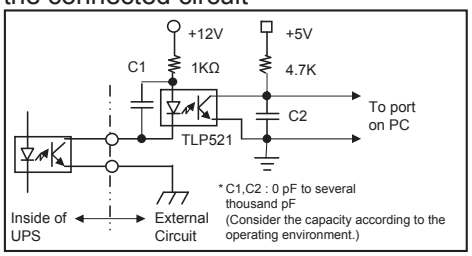



Remote ON/OFF

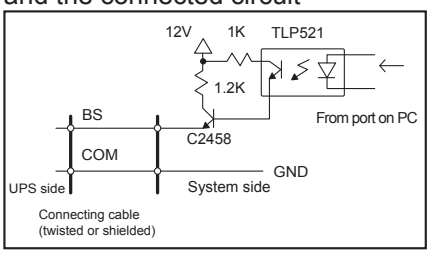



## 6-2-5 Example of the use of the Contact Signal circuit

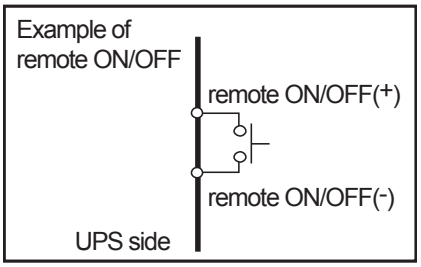
Example of BU signal output circuit and the connected circuit




Example of BS signal input circuit and the connected circuit




Remote ON/OFF circuit



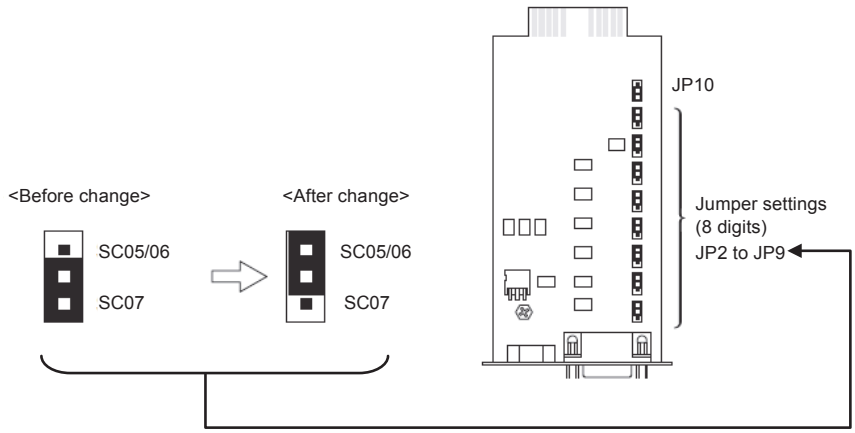
## 6-2-6 Items that can be set using the contact signal card

### ■ Setting up when using the unit in the SC05 compatible mode

● Jumper settings

By making jumper settings, the contact signal card SC05/06 connector pin assignments can be changed.

Turn over the contact signal card, and change the contact signal card's JP2 to JP9 jumper settings (8 settings) to "SC05/06".

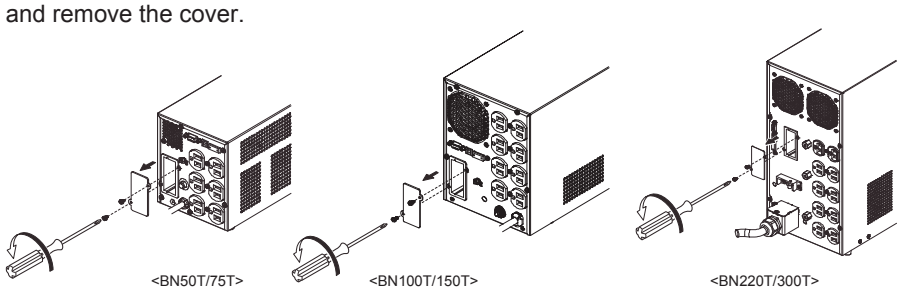



Note 1: Use the [SC05/06/07] side for JP10

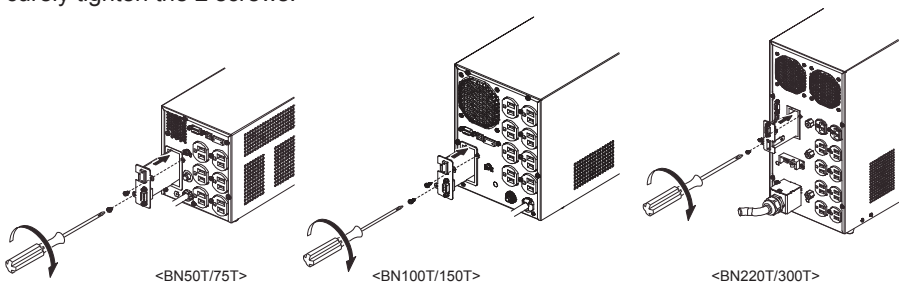
Note 2: Factory settings: SC07 side for JP2 to JP9, SC05/06/07 side for JP10

## 6-2-7 Insert method of contact signal card

***1***. Remove the screws above and below the option slot (2 screws) on the back of the unit, and remove the cover.



**2**. Carefully insert the contact signal card whose settings have been changed, and securely tighten the 2 screws.




**Note**

When connecting a device such as a relay that generates counter electromotive force to the signal output circuit, connect diodes that prevent counter electromotive force to both ends of the relay.

# 6-3 Remote ON/OFF connector

Additional Information

Connection terminals are at contact signal connector pins 6,7 and the remote ON/OFF connector. Either can be used according to the system.

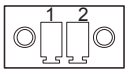
## 6-3-1 Type of Input signal

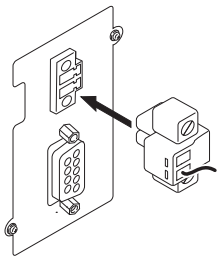
| Signals | Ratings |
|---|---|
| Remote ON/OFF Signal | Remote ON/OFF signals can be used to start and stop the UPS, by using either an externally connected contact or the ON/OFF status of the open collector circuit.<br>When signal is OFF, the UPS will be turned on. When signal is ON, the UPS will be turned off.<br>This is OFF when short-circuit at the factory settings (Note 1).<br>In addition, it is necessary to turn on the power supply switch of UPS to use this function (Note 2). |

Note 1: If you want the UPS to stop operation when this is open, or if you want to disable this function, specify OFF or disable in “Setting” - “Dry Contact” - “Remote ON/OFF Logic”.

Note 2: When there is no AC power supply, it is not possible to start up UPS by the remote ON/OFF signals even though cold start is set ON.

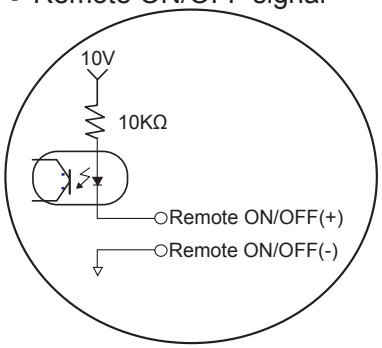
## 6-3-2 Remote ON/OFF connector

| Pin assignment | Pin number | Signal name |
|---|---|---|
|  <br>Front view<br>Screw size: Inch screw #4-40 UNC | 1 | Remote ON/OFF (+) |
| | 2 | Remote ON/OFF (-) |
| | | |



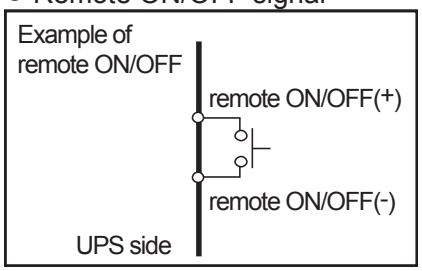
## 6-3-3 Signal input circuit

● Remote ON/OFF signal




## 6-3-4 Remote ON/OFF circuit

● Remote ON/OFF signal



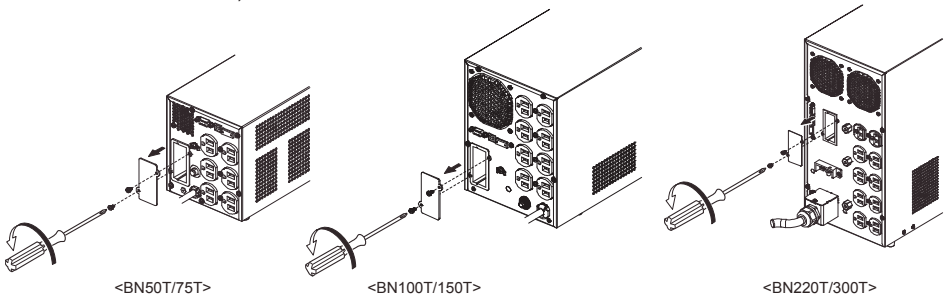
# 7 Using an SNMP/Web card

## 7-1 Adding an SNMP/Web card

An SNMP/Web card can be loaded into the option slot on the back of the unit.

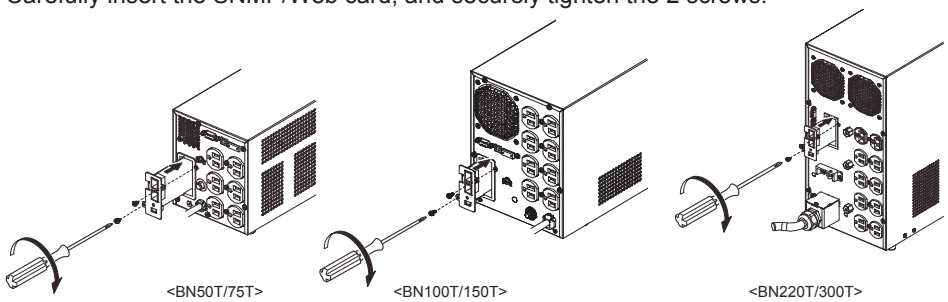
- SNMP/Web card (model number: SC20G, SC20G2), sold separately

***1***. Remove the 2 screws, and remove the cover.



<BN50T/75T> <BN100T/150T> <BN220T/300T>

***2***. Carefully insert the SNMP/Web card, and securely tighten the 2 screws.



<BN50T/75T> <BN100T/150T> <BN220T/300T>



## 7-2 SNMP/Web card outline

### 7-2-1 Description (features)

- Direct connection between UPS and network

  Inserting an SNMP/Web card into the UPS enables a LAN connection, allowing the UPS to be controlled via computers with no serial port.

- Remote UPS management

  Using a commercially available SNMP manager or web browser, you can control the UPS via a computer connected to the network.

- Possible to make function settings for the UPS and SNMP/Web card via a computer on the network

  UPS and SNMP/Web card parameter settings can be made via any SNMP management station or internet browser. (Functions that act as an SNMP agent can make settings via Telnet and serial connection.)

- Enhanced security functions
  For HTTP and SNMP connections, access can be controlled for each IP.
- Coordinated shutdown
  Multiple UPS can coordinate with each other to perform shutdown.
- Log function
  The UPS power status, battery status, etc. can be stored in the built-in flash memory. The log function supports SYSLOG.
- Auto shutdown function
  Shutdown is automatically performed when there is a power supply error or when a shutdown has been scheduled. Scheduled operations (auto startup and auto shutdown) can be performed over the network.
- Equipped with UPS standard MIB (RFC1628) and proprietary MIB (swc mib)
- Using JAVA applet to monitor the power supply status
  The power supply status can be visually checked on a graph display.

## 7-2-2 Specifications

| Item | Contents |
|---|---|
| LAN port | 10/100 Mbps |
| Network protocol | SNMP, HTTP, APR, RARP, TFTP, ICMP |
| Other communication route | Serial connection: asynchronous method (setting only) |
| Number of controllable computers | 32 max. (including slave UPS when coordinated shutdown is enabled) |
| Support MIB | UPSMIB (RFC1628)<br>OMRON MIB |
| Operating temperature/humidity | 0 to 40°C/25 to 85%<br>* Note that the range of the operating temperature/humidity differs from that of BN-T. |
| Other | Equipped with real-time lock |

For more details, refer to the instruction manual included with the SNMP/Web card.

The most recent firmware can be downloaded from our homepage (https://www.oss.omron.co.jp/).

# 8 Troubleshooting

Perform the checks shown below if the unit is operating abnormally.
If the unit continues to operate abnormally, please contact the shop of purchase.

| Problem | Beep | Output | Charging | Message on LCD Display (Note 2) | Cause | Solution |
|---|---|---|---|---|---|---|
| · The beeper sounds by intermittence | Intermittence of 4 s | ON | OFF/ discharging | Battery mode | In Battery Mode due to power failure or AC input error. Output will stop if Battery Mode continues. | Hold down the [ESC] switch at least 0.5 seconds until the beeper stops. Shut down the connected devices to stop them. |
| | Intermittence of 2 s | ON | ON | Battery weak (“Battery replacement” LED is lit.) Battery life | The battery test detected a weak battery. | Hold down the [ESC] switch at least 0.5 seconds until the beeper stops. Replace the battery. By separately purchasing a replacement battery, you (the customer) can replace the battery yourself. Reset the battery life counter after replacing the battery. |
| | Intermittence of 1 s | ON | OFF/ discharging | Battery low | (Same as above) Battery level is low, so output will soon stop. | (Same as above) |
| | Intermittence of 0.5 s | ON | ON/ discharging | Overload | Too many devices are connected and the rated capacity is exceeded. If this state continues, the output may stop (Note 1). | Hold down the [ESC] switch at least 0.5 seconds until the beeper stops. Reduce the number of connected devices until the warning disappears. |
| · The beeper sounds continuously | Continuous | OFF | --- | Output short | Output stopped due to exceeded connection capacity or a shortcircuit with the connected devices. | Hold down the [ESC] switch at least 0.5 seconds until the beeper stops. Check that the AC input of connected devices is not short-circuited, or that the connection capacity does not exceed the rated capacity. |
| | Continuous | ON | --- | Over load time out | Output stops due to overload (Note 1) | Hold down the [ESC] switch at least 0.5 seconds until the beeper stops. Turn OFF the power switches of all devices connected to the unit, reduce the number of connected devices, and turn the power switch back ON again |
| | Continuous | ON | --- | Output over Voltage | Moved to bypass operation due to output voltage error (over) (Note 1). | Hold down the [ESC] switch at least 0.5 seconds until the beeper stops. Turn off all power switches of this unit and connected devices, and turn on the power of this unit only again. If the indication does not change, this unit might be out of order. Please contact the shop of purchase for repair. If the indication changes, the connected device might have caused the failure. If you have any questions, contact the shop of purchase. Note: Output voltage can be viewed by selecting [Measurement] menu - [Input/ Output]. |
| | Continuous | ON | --- | Output under Voltage | Moved to bypass operation due to output voltage error (under) (Note 1). | |

# 8 Troubleshooting

| Problem | Beep | Output | Charging | Message on LCD Display (Note 2) | Cause | Solution |
|---|---|---|---|---|---|---|
| · The beeper sounds continuously | Continuous | ON | --- | Bat.over charge | Moved to bypass operation due to battery charge voltage error (over) (Note 1). | Hold down the [ESC] switch at least 0.5 seconds until the beeper stops. This unit might be out of order. Please contact the shop of purchase for repair.<br>Note: Battery voltage can be viewed by selecting [Measurement] menu - [Battery]. |
| | Continuous | ON | --- | Bat.under charge | Moved to bypass operation due to battery charge voltage error (under) (Note 1). | |
| | Continuous | ON | --- | Over temperature | Moved to bypass operation due to problem with the internal temperature (Note 1). | Hold down the [ESC] switch at least 0.5 seconds until the beeper stops. Ambient temperature of the UPS may be too high. Check the ambient temperature of the UPS. If the temperature is over 40 degrees C, lower the ambient temperature. Turn off all power switches of this unit and connected devices, and turn on the power of this unit only again. If the temperature is 40 degrees C or lower, this unit might be out of order. Please contact the shop of purchase for repair. |
| | Continuous | ON | --- | Fan fail | Moved to bypass operation due to problem with the internal cooling fan (Note 1). | Hold down the [ESC] switch at least 0.5 seconds until the beeper stops. Make sure that the fan rotation is not blocked. If blocked, remove what is blocking the rotation. If not blocked, the fan unit might be out of order. Please contact the shop of purchase for repair. |
| · The UPS power does not turn on<br>· The UPS does not output power to the secondary (connected devices) side<br>· Power switch does not work | None | OFF | OFF/ discharging | OFF | There is no AC input. | Check if there is any problem with the power supply, connected to the AC input cable. |
| | None | OFF | OFF/ discharging | OFF | If the AC Input Overcurrent Protection is working, there are too many connected devices or there was a short-circuit with the connected devices. | Disconnect all the connected devices, set the "AC Input Overcurrent Protection" to the factory setting (*), and turn on the power switch.<br>If the icon does not display properly after you perform the above operation, there is a problem with the unit.<br>*:For BN50T/75T/100T/150T, press the black button.<br>For BN220T/300T, press the AC Input overcurrent protection switch. |
| | None | OFF | ON | Standby by Bat.level | The UPS does not start up due to the insufficient battery charge. | Set the value of the Standby battery level lower with "Setting"-"Boot Settings"-" Reboot Batt. If it is set to 0%, it does not include the amount of charge of the battery in starting conditions, and so that the UPS will start immediately. |

| Problem | Beep | Output | Charging | Message on LCD Display (Note 2) | Cause | Solution |
|---|---|---|---|---|---|---|
| · The UPS power does not turn on<br>· The UPS does not output power to the secondary (connected devices) side<br>· Power switch does not work | None | OFF | ON | AC I/P abnormal-VH<br>AC I/P abnormal-VL<br>AC I/P abnormal-FH<br>AC I/P abnormal-FL | AC input voltage or AC input frequency are too low or too high. | Check the voltage and frequency of the input power supply. |
| | None | OFF | ON | Standby by Remote OFF | Remote ON/OFF Signal is ON, or the "Remote ON/ OFF Logic" is set to "OFF at Open" in the menu on the LCD. | Refer to "6. Using the contact signal functions". |
| ·Backup is not possible<br>·Connected devices stop when a power failure occurs | None | ON | ON | Battery empty | The battery charge is insufficient. | Connect the UPS to a commercial power and charge the battery for at least 4 hours. |
| | Intermittence of 2 s | ON | ON | Battery weak (“Battery replacement” LED is lit.) Battery life | The battery test detected a weak battery. | Hold down the [ESC] switch at least 0.5 seconds until the beeper stops. Replace the battery. You can replace the weak battery with a separately purchased replacement battery as needed.<br>Reset the battery life counter after replacing the battery. |
| The fan makes loud noises (The fan rotates faster) | None | --- | --- | --- | The fan operates in High-speed Mode under the following conditions:<br>1) during the Battery Mode<br>2) during AVR (automatic voltage regulation) operation<br>3) during charging the battery (when the battery level is 0 to 95%) | Wait until all the High-speed Mode conditions be non-effective. |
| ·The UPS makes click noises<br>·The UPS makes click noises even though there is no power failure | None | ON | ON | AVR mode | Variations (decrease) in the input power occur frequent-ly. Or, noise may be included that significantly distorts the voltage waveform of the input power. | Check the installation conditions of the UPS with the following points:<br>·if the UPS is connected to the thin extension cables,<br>·if the UPS is connected to the same commercial power supply with a large power-consuming device, and other points. |

Note 1: In bypass operation, commercial power is output directly.
Output stops when a power failure (AC input OFF) occurs in bypass operation.
If 100% of rated capacity is exceeded under commercial operations, the bypass operation starts in 5 minutes. If 115% is exceeded, the operation immediately stops. If 105% of rated capacity is exceeded under backup operations, the output stops in 30 seconds. If 125% is exceeded, the output immediately stops.

Note 2: Maximum 2-types message may be displayed by turns on the LCD.

# 9 Note of Chinese

## 不间断电源（UPS） 使用注意事项 OMRON

承蒙惠购本公司的不间断电源（ 以下简称 UPS），谨致谢意。
使用前，请务必仔细阅读本文的“使用注意事项”。

### 1. 前言

#### UPS 的用途

- 本装置的设计和生产目的是为了用于计算机等FA、OA 设备。
  请勿用于要求高度可靠性或安全性的下述用途。
  - 直接关系到人类生命安全的医疗设备
  - 可能导致人体受伤的用途。（直接影响飞机、船舶、铁路、电梯等运行、运转、控制等用途）
  - 车载、船舶等可能随时发生振动的用途。
  - 发生故障后可能对社会、公共财物造成重大损失或影响的用途。
    （主要的电子计算机系统、中枢通信设备、公共交通系统等）
  - 相当于上述用途的设备
- 关系到人类生命安全、可能对维护公共职能带来重大影响的装置等在实现系统多元化、紧急备用发电设备等的应用维护及管理方面尤其需要慎重。
- 使用时请务必严守使用说明书中所记载的使用条件、环境要求等。
- 尤其在要求高度可靠性的重要系统等上使用时，请务必向 欧姆龙自动化（中国）有限公司进行咨询。
- 请勿对装置进行改造或加工。

#### 免责事项

即使是因使用本公司产品而发生的事故，本公司对于包括装置・连接设备・软件的异常、故障所造成的损失及其他次生损失的所有损失赔偿概不负责。

#### 其他

- 我们在首页记述了安全注意事项，请务必在仔细阅读后正确使用。
- 将本装置转让、转卖于第三方时，请务必连同本装置附带的所有资料等一并转让。
  本装置符合附件资料等所记载的条件标准。
  - 说明书中记载了相关安全事项等。请务必确认相关内容后再开始使用。

  此外，万一使用说明书遗失，请联系 欧姆龙自动化（中国）有限公司。

- Windows 是美国微软公司在美国及其他国家的注册商标。
- 同时，所记载的各公司名称、各公司产品名称均为各公司的商标或注册商标。

## 2. 安全注意事项

为了确保安全使用，以下将就相关重要事项进行说明。
设置或开始使用前请务必仔细阅读。

● 本使用说明书中的相关安全符号及其含义如下所述。

| | |
|---|---|
| 危险 | 表示操作失误可能会导致人员伤亡的内容。 |
| 注意 | 表示操作失误可能会致残、导致物质损失的内容。 |

※ 所谓物质损失，是指房屋、家产以及家畜、宠物相关的连带损失。

：表示禁止（不可发生的行为）。例如表示禁止擅自拆卸。

：表示强制（必须的行为）。例如表示必须进行接地连接。

此外，即使是注意事项中所记载的内容，也可能根据不同的状况而导致严重后果。
这里记述的均为重要内容，请务必严守。

### 危险（产品用途）

不得将本装置用于下述要求高度可靠性或安全性的用途。

※ 本装置的设计和生产目的是为了用于计算机等FA、OA 设备。

- 直接关系到人类生命安全的医疗设备或系统。
- 直接关系到人身安全的相关用途。（例如：车辆、电梯等的运行、运转、控制等）
- 发生故障后可能对社会、公共财物造成重大损失的用途。（例如：主要的电子计算机系统、中枢通信设备等）
- 相当于上述用途的设备

### 注意（设置・连接时）

以下机种的搬运、取出、设置作业需2 人以上执行。

● 有受伤、掉落、翻倒等危险。

搬运时应注意重量分配平衡，并放置于安全稳定的场所使用。

● 一旦翻倒或掉落可能导致受伤。
● 万一掉落时，请立即停止本装置的使用，并委托相关单位进行检查和维修。
主机重量请参照使用说明书。
维修事宜请向 欧姆龙自动化（中国）有限公司 客户服务中心维修部 咨询。

包装用塑料袋请放置于幼儿无法触及的场所。

● 万一幼儿蒙住头部则可能导致呼吸困难的危险。

本装置的“AC 输入”插头必须连接至符合产品规格的额定输入电压、频率50/60Hz 的电源插座。

● 如果连接至不同电压、频率的电源插座，则可能引起火灾。
● 可能导致本装置发生故障。

发现异常（异常声响、异味）时，应关闭“电源”开关停止输出，然后从电源插座上拔掉“AC 输入”插头。
“AC 输入”插头应设置为可从电源插座上随时拔去的状态。

● 为了确保安全，连接设备维修保养时等也应按上述标准执行。

# ⚠ 注意（设置・连接时）

不得连接烘干机、部分电磁阀等电流只在交流电源半周期内流动的半波整流设备。
- 可能因过电流而导致不间断电源发生故障。

应连接至电流容量在产品规格的最大电流以上的电源插座。
- 电源配线可能会发热。
- 连接了最大输出容量的设备时所流动的电流值请参照使用说明书。

应正确进行接地连接（接地）。
- 请在确认电源插座的插头形状后，再将本装置的“AC 输入”插头直接插入插座。
  若未执行接地连接，则可能因故障或漏电而导致触电事故的发生。
- 在“AC 输入”插头上使用3P-2P 转接头时，请务必在将“AC 输入”插头插入电源插座前进行接地连接（接地）。
- 需要拆除接地连接（接地）时，请务必将“AC 输入”插头从电源插座上拔掉后再执行。

不得擅自拆卸、维修、改造。
- 可能有导致触电、火灾的危险。

不得设置于指定范围以外的方向。
- 一旦翻倒或掉落可能导致受伤。
- 若设置于指定范围以外的方向，电池发生漏液时则无法发挥保护作用。

不得在超出产品标准运转环境温度的场所使用。
- 电池快速老化。
- 可能导致本装置发生故障、操作失误。

使用保管环境不得超出规格范围。
不得在以下场所执行设置或保管。
- 不得在超出产品标准保管温度、湿度的状态下保管。
- 不得在超出产品标准运转环境温度、湿度的状态下使用。
- 无缝隙的橱柜等封闭性场所 / 存在易燃性气体或腐蚀性气体的场所、阳光直射的场所、灰尘极多的场所、产生振动或施加冲击力的场所、室外等。
- 可能导致火灾等的发生。

不得连接超出本装置输出容量的设备。
可通过电源板等增设连接设备，但这种情况下不得连接超出电源板等电流容量的设备。
- 本装置检测到过载（超负荷），停止输出。
- 电源板的配线发热，可能导致火灾。

不得在夹住或捆住电缆的状态下使用。
- 可能因电缆损伤或发热而发生触电、火灾的危险。
- 若电缆上发现伤痕，请立即停止本装置的使用，并委托相关单位进行维修。

维修事宜请向 欧姆龙自动化（中国）有限公司 客户服务中心维修部 咨询。
同一捆包的所有附件仅限本装置使用。请勿在其他设备上使用。
- 为了确保设备的安全使用，请务必遵守。

吸排气口不得堵塞。
- 内部温度上升可能导致本装置发生故障、电池老化。
- 请设置于距离墙面5cm 以上的场所。

不得将变压器、绝缘变压器等连接至输出侧。
- 可能因过电流而导致不间断电源（UPS）发生故障、或运转异常。
- 即使连接至输入侧，也依然可能导致不间断电源（UPS）发生故障、或运转异常。请务必事先检查运转状态后再开始使用。

不得连接无法通过商用电源运转的设备。

## ⚠ 注意（设置・连接时）

AC 输入插头和电缆的颜色不得搞混。
不得在连接商用电源的状态下执行本装置的AC 输入插头连接作业。
● 更换作业详细内容请参照产品的使用说明书。

设置于机架上使用时，应将本产品设置于机架的最下层。
● 一旦掉落可能导致受伤。
● 安装时应使用附带的螺钉。

不得连接额定电压超出AC200V ～ 240V 以上的设备。
● 本装置的额定输出电压为AC200 ～ 240V。
● 可能因过电压而导致连接设备发生故障。
● 使用时应安装输出用接线排的外盖。此外，已取下外盖的状态下不得开启“电源”开关。开启“电源”开关后，可能会因输出用接线排施加了电压而导致触电。

## ⚠ 注意（使用时）

不得沾湿、浇水。
● 可能会导致触电、火灾。
● 万一沾水时，请立即停止本装置的使用、拔掉AC 输入电缆，并委托相关单位进行检查和维修。
维修事宜请向 欧姆龙自动化（中国）有限公司 客户服务中心维修部 咨询。

已达到使用寿命的电池应立即更换、或停止本装置的使用。
● 继续使用可能会因漏液而导致火灾、触电事故的发生。

| 环境温度 | 平均寿命 |
|---|---|
| 25℃ | 5 年 |
| 30℃ | 4 年 |

※以上为标准使用条件下的平均寿命，非确定值

“AC 输入”插头、电源输出插座上的灰尘应及时用干布擦去。
● 灰尘长期附着可能会导致火灾的发生。

不得在封闭性场所、或盖上外盖的状态下使用。
● 可能会导致异常发热或火灾。

发现异常声响或异味、冒烟、内部溢出液体现象时，应立即切断本装置的“电源”开关，并从电源插座上拔去“AC 输入”插头。
● 若在这种状态下继续使用，则会导致火灾的发生。
● 若发生这种状况，请立即停止使用，并拔去AC 输入插头，然后委托购买产品的店铺、或 欧姆龙自动化（中国）有限公司 客户服务中心维修部 进行检查和维修。
● 使用中发生异常时，请从电源插座上拔去“AC 输入“插头后待机。

不得触摸从内部溢出的液体。
● 有导致失明、烧伤的危险。
● 若接触到眼睛或皮肤，请立即用水充分冲洗，并接受医生的诊治。

机箱上面不得放置其他物品、也不得有重物落下。
● 可能因机箱的歪斜或损坏、内部电路故障而导致火灾的发生。

即使因内部控制电路功能发生故障或操作错误而停止，依然可以提供向连接设备供电的旁路输出电路。
● 即使前面板显示全部消失，输出依然会继续。
● 前面的输出电源开关将无法执行ON/OFF 切换。
想要停止输出时，请切断商用电源的供给源、或从电源插座上拔去AC 输入插头，则请关闭本装置背面的输入过电流保护开关“INPUT PROTECTION”

# ⚠ 注意（使用时）

若输入插头在运转状态下脱落，绝对不得触摸输入插头的金属部位。
- 有触电的危险。
- 本装置单机漏电在安全标准（漏电：1mA）以下，但连接设备的漏电增加，故请绝对不要触摸输入插头的金属部位。
- 本装置在运转状态时，无论运转时间长短，均会通过内部电路在输入插头的金属部位产生电压。

进行连接设备保养时，必须在关闭本装置的“电源”开关、并拔掉“AC 输入”插头的状态下执行。
- 本装置的电源输出在不间断电源（UPS）为运转状态时，即使拔掉“AC 输入”插头也不会停止输出，将会以插座作为供电源进行供电。

不得擅自拆卸、维修、改造。
- 可能有导致触电、火灾的危险。

不得触摸从内部溢出的液体。
- 有导致失明、烧伤的危险。
- 若接触到眼睛或皮肤，请立即用水充分冲洗，并接受医生的诊治。

不得将本装置扔至火中。
- 本装置内置铅酸蓄电池，故可能会发生电池爆炸、稀硫酸泄漏。

不得将金属物体插入不间断电源（UPS）的“电源输出”插座。
- 可能会导致触电

不得将金属物体插入电池连接口。
- 可能会导致触电。

更换作业应在稳定且平坦的场所执行。
- 请小心托住以防电池掉落。
- 可能因掉落而导致受伤、或因漏液（酸）而导致烧伤等危险。

不得使用指定范围以外的更换电池。
- 可能导致火灾的发生。

不得在有易燃性气体的场所更换电池。
- 连接电池时会产生火花飞溅现象，可能会导致爆炸或火灾。

电池发生漏液时不得触摸泄漏的液体（稀硫酸）。
- 有导致失明、烧伤的危险。
- 若接触到眼睛或皮肤，请立即用水充分冲洗，并接受医生的诊治。

不得擅自对电池进行拆卸、改造。
- 不得触摸泄漏的稀硫酸，否则可能会导致失明、烧伤等。

小心电池掉落、不得对其施加强大冲击力。
- 可能会发生稀硫酸泄漏。

不得通过金属物体使电池短路。
- 可能会导致触电、起火、烧伤等。
- 即使是使用后的电池，其内部依然会残存电能。

不得将电池扔至火中、或将其毁坏。
- 电池可能会发生爆炸，稀硫酸可能会发生泄漏。

不得将新旧电池混合使用。
- 可能会发生稀硫酸泄漏。

## 注 意 事 项

由低温场所移动至温暖场所后，请搁置数小时后再开始使用。

● 突然移动至温暖场所后会有水分附着（结露），若直接通电则可能导致故障发生。

购买后请尽快充电（应达到产品标准充电时间以上）。

● 购买后若长时间搁置，则可能导致电池性能退化以致无法使用。

● 将本装置的“AC 输入”插头插入电源插座即可对电池进行充电。
本装置的“AC 输入”插头请务必连接至符合产品规格的额定输入电压、频率 50/60Hz 的电源插座。

保管本装置时，请对电池进行产品标准充电时间以上的充电后再关闭“电源”开关。

● 电池即使不使用也会在内部自然放电，长时间搁置后会呈现过放电状态。由此导致后备时间缩短、以致无法使用。

● 需长期保管时，推荐环境温度为 25℃以下。

保管温度在 25℃以下时请在 6 个月以内、40℃以下时请在 2 个月以内将本装置的“AC 输入”插头连接至达到产品标准充电时间以上的电源插座。

● 保管期间请关闭本装置的“电源”开关。

请注意避免本装置输出电路之间、以及输出电路接地上发生短路。

● 可能导致本装置发生故障。

请勿在后备式运转状态下将“AC 输入”插头插入本装置的“电源输出”插座。

● 可能导致本装置发生故障。

请勿将页式打印机（激光打印机等）连接至本装置。

● 页式打印机的峰值电流较大，可能会被检测到连接容量过载。

将本装置与自备电源等电源频率较大变动的设备配套使用时，请务必事先检查运转状态后再开始使用。

● 本装置在接收输入电源时会自动识别输入电源频率。若在输入电源频率非规定值的状态下连接本装置，则可能导致电源频率的错误识别、以致无法正常运转。（在本装置已启动的状态下从商用电源切换为发电装置的电源时不会发生异常。但是，请确保发电机和商用电源的频率达到一致。）

请勿将本装置放置于阳光直射的场所进行保管。

● 可能会因温度上升而导致内置电池快速老化以致无法使用。

切断商用电源前，请先关闭本装置的“电源”开关。

● 切断商用电源后，即会进入后备式运转。后备式运转的频率越高，表示电池使用寿命可能越来越短。

将本装置用于线圈、马达等感应性设备上时，请务必事先检查运转状态后再开始使用。

● 有些种类的设备可能会因冲击电流等影响而导致本装置无法正常运转。

请勿执行耐压试验。

● 电源输入线中装有浪涌吸收器，若执行耐压试验则会导致浪涌吸收器受损。

● 执行绝缘电阻试验时，请在 DC250V 范围内执行。

将本装置转让、转卖于第三方时，请务必连同本装置附带的所有资料等一并转让。本装置符合附件资料等所记载的条件标准。

● 本说明书中记载了相关安全事项等。请务必确认相关内容后再开始使用。
此外，万一使用说明书遗失，请联系购买产品的店铺。

请勿使用会因产品标准切换时间内的瞬间停电而发生异常的设备。

● 后备式、在线互动式不间断电源（UPS）在停电时进入后备式运转需要切换时间。在要求具有 ..... 高度电源稳定性的设备上使用时，可能会因输出电压的瞬间变动而导致连接设备停止运转。切换时间相关内容请参照使用说明书。

若在“ 输出 200V 模式”范围以外 使用本装置，则请务必事先检查运转状态后再开始使用。

- 后备式运转时，输出（正弦波）的最大电压值（峰值电压）有时会低于商用电源下运转时的数值。因此，根据不同的连接设备，有时可能无法正常运转。

本产品中使用了铅酸蓄电池(铅蓄电池)。

- 铅酸蓄电池需要进行回收。使用后的电池请寄至以下地址。

欧姆龙自动化（中国）有限公司
http://www.fa.omron.com.cn/


## 讲 解

关于日常运转方法

- 本装置的“电源”开关既可始终为开启状态（运转状态）、也可在每次停止连接系统运转时切换为关闭状态。请用户采用便于使用的方法即可。长期不使用连接设备时，建议关闭“电源”开关。
- 将本装置的“AC 输入”插头插入电源插座即可对电池进行充电。
  本装置的“AC 输入”插头请务必连接至符合产品规格的额定输入电压、频率 50/60Hz 的电源插座。

关于后备式运转的退出

- 长时间停电后，电池会发生放电现象，来自本装置的电源输出将会停止。请在本装置尚处于供电状态下正常退出计算机系统（保存数据等操作）。

关于重启

- 若电池在停电中发生放电现象，本装置将会停止运转。之后若停电等电源异常恢复正常，本装置将会自动重启并重新开始供电。无需运转连接设备时，请关闭本装置的“电源”开关、或连接设备的开关。

关于自动关机软件的排程运转

- 若想在停止本装置运转的同时、执行通过断路器等停止商用电源供电的排程运转，请将开始下次运转的间隔时间设定为 3 个月以内。超出 3 个月时，内部定时器将会被复位，故不会按排程设定开始运转。
  同时，该期间若电池寿命缩短则会减半。
  超出 3 个月后，通过供电和开启“运转”开关即可开始运转，但若电池已达到使用寿命时，则可能无法开始运转。这种情况下，请按使用说明书所记述的方式更换电池。

请采取对策，以防数据保护或系统冗余化等无法预测的事态发生。

- 不间断电源（UPS）有时会因内部电路的故障而停止输出。

**关于自动关机软件的排程运转**

- 采用排程运转时，若在排程停止期间停止商用电源的输入，那么开始下次运转的间隔时间最多请设定为 1 个月。
  停止商用电源输入期间，定时器通过内置电池执行操作。
  定时器停止时，则不会按排程设定开始运转。

**关于通过自动关机软件使停止中的排程开始运转**

- 在排程停止期间开始运转不间断电源时，请关闭电源开关一次，然后再重新开启电源开关。
  通过手动方式启动不间断电源。

关于通过关机软件退出 OS 后的自动重启

- 在特定计算机*1 上，停电时会发生通过自动关机软件退出 OS、然后计算机立即重启的现象。这种情况可能会导致不间断电源在计算机重启中或启动后停止运转，以致文件或硬盘受损。将计算机 BIOS 设定内的 POWER MANAGEMENT 改为 Disable（无效）即可防止此现象的发生。
  *1） 特定计算机：此现象已在 MICRON 生产的 Millennia Mme 上得到确认。
- 计算机无法自动重启时，请在计算机的 BIOS 设定中选择“输入电源恢复后的系统启动”设定项目（例：Restore on AC/Power Loss）、并将其设定修改为“输入电源恢复后启动系统”（例：Power On）。另外，根据所使用的计算机的不同，BIOS 的设定方法或显示项目有所差异。请查看所使用的计算机使用说明书、或联系计算机支持中心。
- 若您正在探讨输入电源恢复后使计算机自动重启的系统课题，则请选择满足以下条件的计算机。关于通过输入电源进行供电时的计算机运转状况，请查看计算机使用说明书、或联系计算机支持中心。

  【条件】

  通过输入电源供电时，计算机无需开启自身的电源开关即可启动。
- 停电时，若刚退出即恢复供电，不间断电源则会自动启动并开始供电。无需运转连接设备时，请关闭设备的电源开关。
- 使用附带的自动关机软件后，还可设定为无需自动重启。

# 10 References

## 10-1 Specifications

| Model | | | BN50T | BN75T | BN100T | BN150T | BN220T | BN300T |
|---|---|---|---|---|---|---|---|---|
| Method | Operation method | | Line-interactive method | | | | | |
| | Cooling method | | Natural air cooling | | Forced air cooling | | | |
| Input | Rated input voltage | | 100 V AC | | | | | |
| | Input voltage range | Standard sensitivity setting | 89±2 to 118±2 V AC | | | | | |
| | | Sensitivity setting: Low | 84±2 to 118±2 V AC | | | | | |
| | | Sensitivity setting: High | 89±2 to 113±2 V AC | | | | | |
| | Frequency | | 50/60Hz±4Hz | | | | | |
| | Input Maximum current | | 7.5 A | 12 A | 15 A | 20 A | 30 A | 40 A |
| | Phase | | Single-phase, two-wire (grounded) | | | | | |
| | Input protection | | NFB (10A) | NFB (13A) | NFB (20A) | NFB (25A) | NFB (45A) | NFB (45A) |
| | AC input plug | | 3P (NEMA 5-15P) *1 | | | | 3P (NEMA L5-30P) *2 | |
| Output | Rated output capacity | | 500 VA/450 W | 750 VA/680 W | 1000 VA/900 W | 1500 VA/1350 W*1 | 2200 VA/1980 W | 3000 VA/2700 W*2 |
| | Voltage | Commercial operation | 90±3 to 114V±3 V AC (AC input plug Sensitivity setting: Normal) | | | | | |
| | | | 84±3 to 114V±3 V AC (AC input plug Sensitivity setting: Low) | | | | | |
| | | | 90±3 to 110V±3 V AC (AC input plug Sensitivity setting: High) | | | | | |
| | | Backup operation | 100 V AC±6% | | | | | |
| | Frequency | Commercial operation | Synchronized with input frequency | | | | | |
| | | Backup operation | 50/60Hz±0.1Hz | | | | | |
| | Waveform | Commercial operation | Sine wave | | | | | |
| | | Backup operation | Sine wave | | | | | |
| | | Distortion rate *3 | 20% max. (Rectified load, at rated output) | | | | | |
| | | | 15% max. (Rectified load, at rated output) | | | | | |
| | Phase | | Single-phase, two-wire (grounded) | | | | | |
| | Output receptacle | | NEMA 5-15R x 6 | | NEMA 5-15R x 8 | | NEMA 5-15R x 8<br>NEMA 5-20R x 2 | |
| Battery | Type | | Sealed lead battery | | | | | |
| | Voltage / Capacity x Quantity | | 12 V / 9 Ah x 2 | | 12 V / 7.8 Ah x 4 | | 12 V / 7.8 Ah x 8 | |
| | Backup time (25°C, initial characteristics) | | 8.5 min. or more | 4 min. or more | 9 min. or more | 4.5 min. or more | 7 min. or more | 4.5 min. or more |
| | Charging time | | 4 hours 90% | | | | | |
| | Battery life | Ambient temperature 25°C | Expected life: 5 years | | | | | |
| Environment | Operating environment temperature/ humidity | | 0˚C to 40˚C, 25 to 85%RH with no condensation | | | | | |
| | Storage temperature | | -15˚C to 50˚C, 0 to 90%RH with no condensation | | | | | |
| | Safety standard | | UL1778 | | | | | |
| | Disturbance voltage / Radiated interference field strength | | VCCI Class A | | | | | |
| | Internal power consumption (normal/maximum) | | 15W (*4) / 50W (*5) | | 24W(*4) / 100W (*5) | | 30W (*4) / 200 W (*5) | |
| | Noise | | 45dB | | 50dB | | | |
| Dimensions (W x D x H) | | | 140 mm x 359 mm x 167 mm | | 172 mm x 415 mm x 225 mm | | 200 mm x 403 mm x 403 mm | |
| Weight of unit | | | Approx. 11 kg | | Approx. 20 kg | | Approx. 36 kg (BN220T)<br>Approx. 37 kg (BN300T) | |

*1: For BN150T, the maximum output (1.5 kVA/1.35 kW) cannot be used with the standard input plug (NEMA 5-15P). To use with maximum output, replace with a 20A plug. (purchased separately)

*2: For BN300T, the maximum output (3.0 kVA/2.7 kW) cannot be used with the standard input plug (NEMA L5-30P). To use with maximum output, connect to the terminal block (purchased separately). The standard equipment input plug (NEMA L5-30P) cannot be connected to a household receptacle.

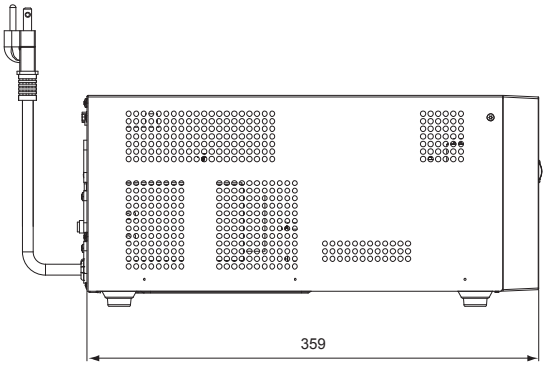
*3: Rectified load, rated load, in Battery Mode (except in BL state)

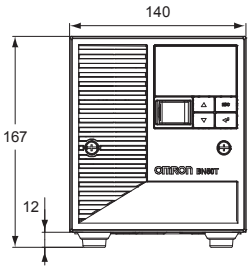
*4: Rated load/ Rated input voltage/ When fully charged

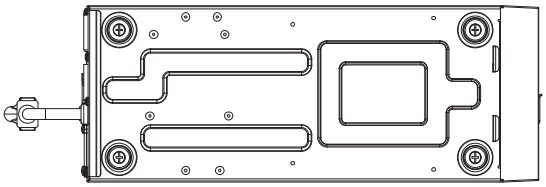
*5: Rated load/ Rated input voltage/ When battery charge current is at maximum

# 10-2 Dimensions

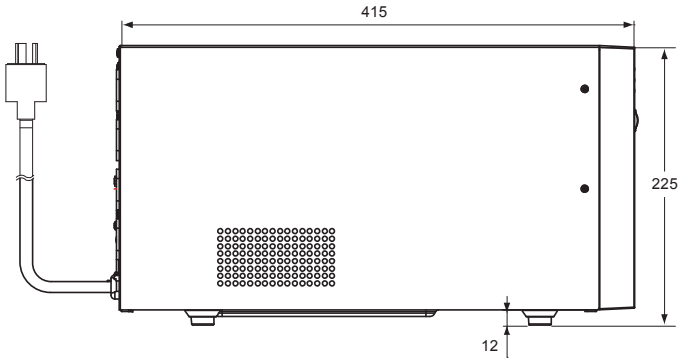
- BN50T/BN75T

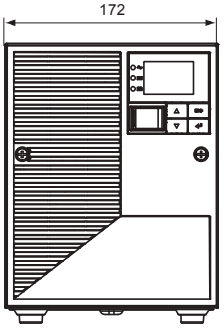


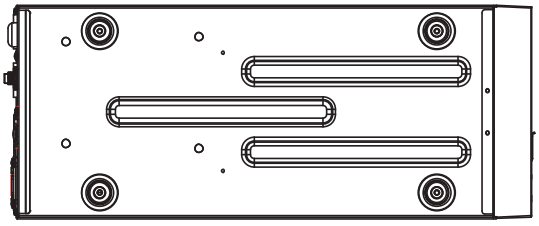



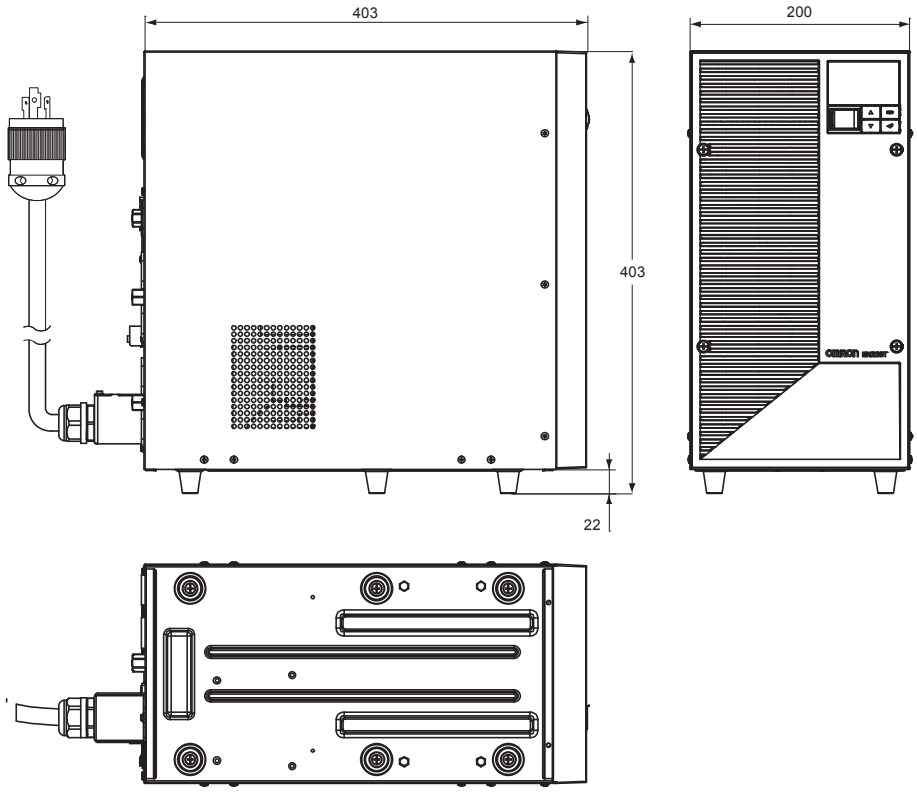
- BN100T/BN150T



- BN220T/BN300T



# 10-3 Battery life

## ■ Battery has a limited life span.

Periodic checks of the lead battery used in the battery unit are required due to the battery limited lifespan. For the battery checking method, refer to "4-1 Checking the battery".
Battery replacement is recommended before the battery is expired.

Battery life

(The following is expressed based on the battery's trickle life, the service life of a battery under the condition where low-frequent (once or twice a month) re-chargings and dischargings are performed.)

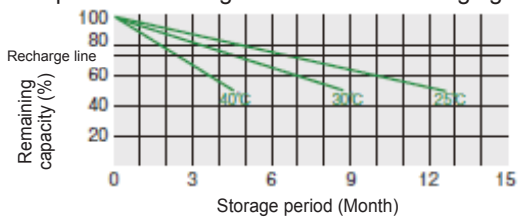
| Battery type | Expected battery life (Ambient temperature 40°C) | Expected battery life (Ambient temperature 30°C) | Expected battery life (Ambient temperature 25°C) | UPS Series |
|---|---|---|---|---|
| Long-life battery | 2 years | 4 years | 5 years | BN-T |

Basically, the ambient temperature have a high influence on the battery life.

## ■ The periodic recharges are required even if the battery is stored.

The battery self-discharges even if the UPS is not used (i.e., leaving the battery not charged), and it deteriorates the battery. In the worst case, the battery may become un-usable.

• Example of the storing condition and recharging frequencies




<Description>

When the battery is stored at the storage temperature of 25°C, the battery self-discharges (and the battery level lowers) to approximately 80% over half a year, and to approximately 50% over a year.

Higher the storage temperature is, faster the battery will self-discharge.

| Storage temperature | Auxiliary charging interval |
|---|---|
| 40°C or less | 2 months |
| 30°C or less | 4 months |
| 25°C or less | 6 months |

# 10-4 Input voltage sensitivity settings

The input voltage sensitivity settings and input/output voltages of the Uninterruptible Power Supply (UPS) are related as shown in the table below.
Select an input voltage sensitivity setting that matches the specified input voltage range of the connected device.

| Input voltage sensitivity | UPS input voltage range | UPS output voltage range | Input voltage sensitivity selection method |
|---|---|---|---|
| High | 89 to 113 VAC | 90 to 110 VAC | When you want to narrow the output voltage range |
| Standard | 89 to 118 VAC | 90 to 114 VAC | When using in a regular environment |
| Low | 84 to 118 VAC | 84 to 114 VAC | When you want to reduce the frequency of operation in Battery Mode. |

# 10-5 China RoHS Information

| | 产品中有害物质的名称及含量<br>Name and content of hazardous substances in products | | | | | |
|---|---|---|---|---|---|---|
| 部件名称<br>Component Name | 铅<br>(Pb) | 汞<br>(Hg) | 镉<br>(Cd) | 六价铬<br>(Cr(VI)) | 多溴联苯<br>(PBB) | 多溴二苯醚<br>(PBDE) |
| 机械组件<br>Mechanical Assemblies | × | ○ | ○ | ○ | ○ | ○ |
| 电线组件<br>Wire Assemblies | ○ | ○ | ○ | ○ | ○ | ○ |
| 印刷电路板<br>Printed Circuit Boards | × | ○ | × | ○ | ○ | ○ |
| 焊料<br>Solder | ○ | ○ | ○ | ○ | ○ | ○ |
| 紧固件<br>Fasteners | × | ○ | ○ | ○ | ○ | ○ |
| 电池模块<br>Battery Pack | × | ○ | ○ | ○ | ○ | ○ |
| 其他机械部件<br>Other Mechanical Items | × | ○ | ○ | ○ | ○ | ○ |

本表格依据 SJ/T11364 的规定编制。
This table was developed according to the provisions of SJ/T 11364.

○: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。
The content of such hazardous substance in all homogeneous materials of such component is below the limit required by GB/T 26572.

×: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。
The content of such hazardous substance in a certain homogeneous materials of such component is beyond the limit required by GB/T 26572.

| 有毒有害材料<br>Hazardous Substance | 最高浓度值（MCV）<br>MCV |
|---|---|
| Pb, Hg, $Cr^{6+}$, PBB, PBDE | 1,000 PPM |
| Cd | 100 PPM |

依照中国《电子信息产品污染管制管理办法》（第 39 号），现标明 OMRON 相关产品中可能含有的有毒、有害物质或元素的名称与含量。

In accordance with China's Administrative Measures on the Control of Pollution Caused by Electronic Information Products (EIP) # 39, also known as China RoHS, the information is provided regarding the names and concentration levels of Toxic Substances (TS) or Hazardous Substances (HS) which may be contained in OMRON products relative to the EIP standards set by China's Ministry of Information Industry (MII).

# 保 修 单

OMRON

| 型号 | 不间断电源 |
| --- | --- |
| 保修期限 3年 | 购买日期 年 月 日 |

| 用户 | 地址 | 邮编 | 电话 |
| --- | --- | --- | --- |
| | 姓名 | | 先生/女士 |

本保修单是承诺基于文中所记载内容执行免费维修的凭证。
＊本保修单仅在中华人民共和国境内使用时有效（不包括港澳台地区）。
This warranty is valid only when the device is used in China (except for Hong Kong, Macau and Taiwan).

| 销售店 | 地址・店名 | 电话 |
| --- | --- | --- |
| | | |

注：未填写购买日期、用户姓名、销售店名时保修单无效，
请务必检查有无填写完整。
若未填写销售店名时，请立即联系购买产品的销售店。
本保修单不可补发，故请务必妥善保管以防遗失。


欧姆龙自动化（中国）有限公司
地址：中国上海市浦东新区银城中路200号中银大厦2211室
网址：http://www.fa.omron.com.cn


Cut here

# 保修协议条款

前言

本保修协议条款（以下简称“本条款”）是承诺在本条款所规定的时间和条件下为用户提供“免费维修”服务的凭证，凡是按使用说明书规定正确使用却依然在“保修单”所记载的保修期限内发生产品（附件等除外）故障时均可享受此服务。用户若对本条款各项内容持有异议，则请用户将产品原封不动退还销售店。同时，用户若要求或主张本公司履行关于产品的保修义务（无关内容），则视为用户已接受本条款各项内容。

第1条　定义

本条款中所使用的用语定义如下所述。

① 所谓“保修单”，是指事先已填写了产品名称（商品名称）或保修期限本公司承诺提供免费维修的凭证。
② 所谓“产品”，是指由本公司生产、已被打包的主机部分，附件除外。
③ 所谓“故障”，是指用户按使用说明书、粘贴于主机上的标签等记载事项正确使用，产品却依然无法发挥正常性能的状态。
④ 所谓“免费维修”，是指产品在保修期限内发生故障时，本公司免费对故障部位提供的维修服务。
⑤ 所谓“收费维修”，是指产品在保修期限外发生故障时，本公司对故障部位提供的、维修费由用户承担的维修服务。

第2条　保修期限

保修期限为，自购买日起至与产品同包装的保险单上所记载的日期为止。
但前提条件是，保险单上必须注明购买日期以及销售店署名或盖章等。

第3条　保修范围

3-1 保修范围仅限于本产品的维修、更换、或与同等性能产品的更换。
3-2 本公司的保修范围均以前项（3-1）的记载内容为准，对于因故障而对用户所造成的损失（包括营业利润损失、营业中断、信息损失或其他经济损失，但不仅限于此），无论基于法律上的任何索赔理由，本公司概不负责。

第4条　维修

4-1 发生产品故障时，由用户将该产品寄往本公司指定的维修受理窗口后，本公司进行维修，并在维修后负责将该产品寄回用户指定的地点（寄至日本维修受理窗口时仅限日本国内、寄至中国维修窗口时仅限中国国内（香港、澳门及台湾地区除外））。同时，无论免费还是收费维修，由用户寄出时的邮费均由用户自行承担（发货人预付）。维修后的寄回邮费由本公司承担。
4-2 本公司可根据自行判断，将本产品更换为相同型号、或具有同等性能的产品来代替本产品的维修。
4-3 本公司在对本产品执行维修时，可在维修中进行零配件更换（包括机板、模块），换下的旧零配件归本公司所有，新零配件归用户所有。同时，更换为相同型号或具有同等性能的产品来替代零配件更换时，更换对象产品同样归本公司所有，而替代产品归用户所有。

第5条　非保修范围

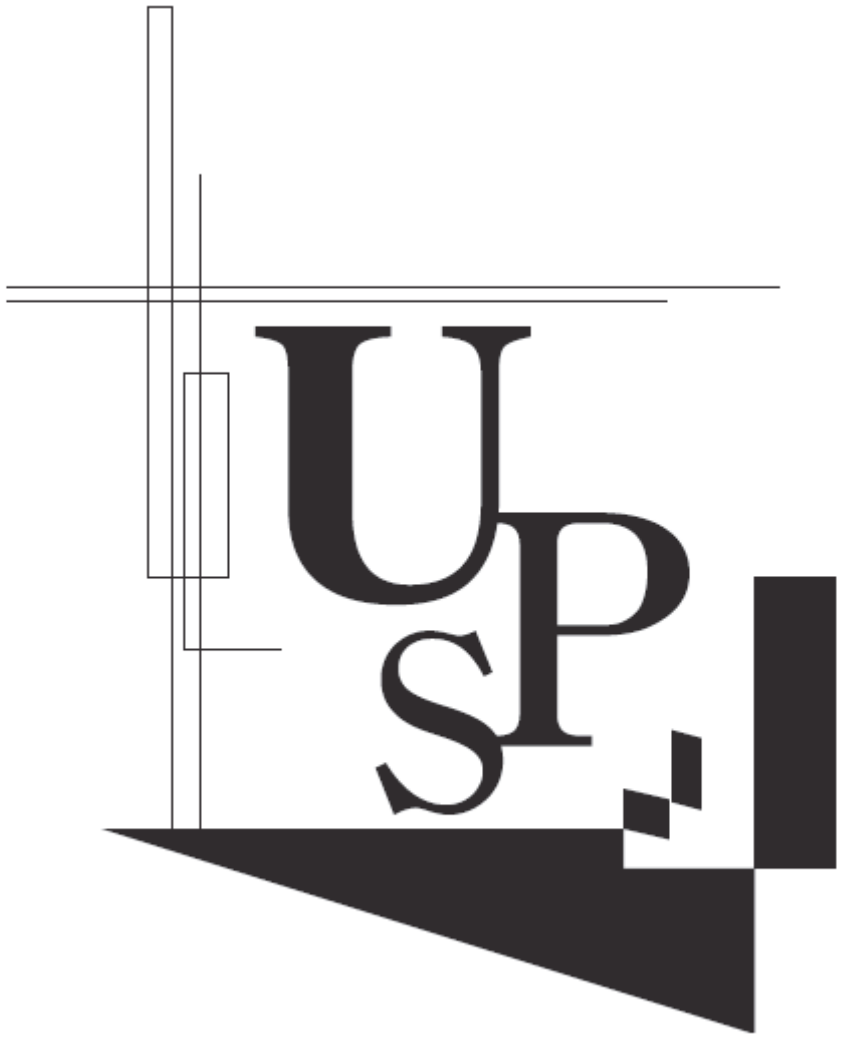
即使在保修期限内，以下状况均非免费维修范围。
5-1 因错误使用、以及未事先征得本公司同意即进行维修・改造或增设所导致的故障及损伤。
5-2 购买后因掉落、使用上的不规范等所导致的故障及损伤。
5-3 因火灾、地震、台风洪水灾害、雷击以及其他天灾地祸、公害、盐害、施加了超出正常基准的异常物理或电子负荷所导致的故障及损伤。
5-4 委托维修、但无法提交保修单时。以及符合以下各项条件时。
① 已超出保修单的有效期限时。
② 保修对象产品的型号、生产编号与维修产品的该些内容不一致时。
③ 被视为明显修改过保修单内容时。
④ 保修单上未填写规定事项（购买日期、用户姓名、销售店名）、或字句被非法篡改时。
5-5 耗材、自然老化所导致的故障产品。但是，若有单独签订的保修协议、或单独指定的保修范围时，则按单项协议或规定执行。
5-6 故障原因非源自本产品时。
5-7 在中国国内以外地区发生故障时。

第6条　适用法律

本条款的说明均依据中华人民共和国法律规定。

第7条　纠纷解决办法

对于所有因此等销售条件或基于此等销售条件的协议引起或与之相关的争议，须提交合同签约地上海市有管辖权的法院管辖，且该法院对该等争议具有排他性的管辖权。





**OMRON SOCIAL SOLUTIONS CO.,LTD.**

K1L-D-13062H