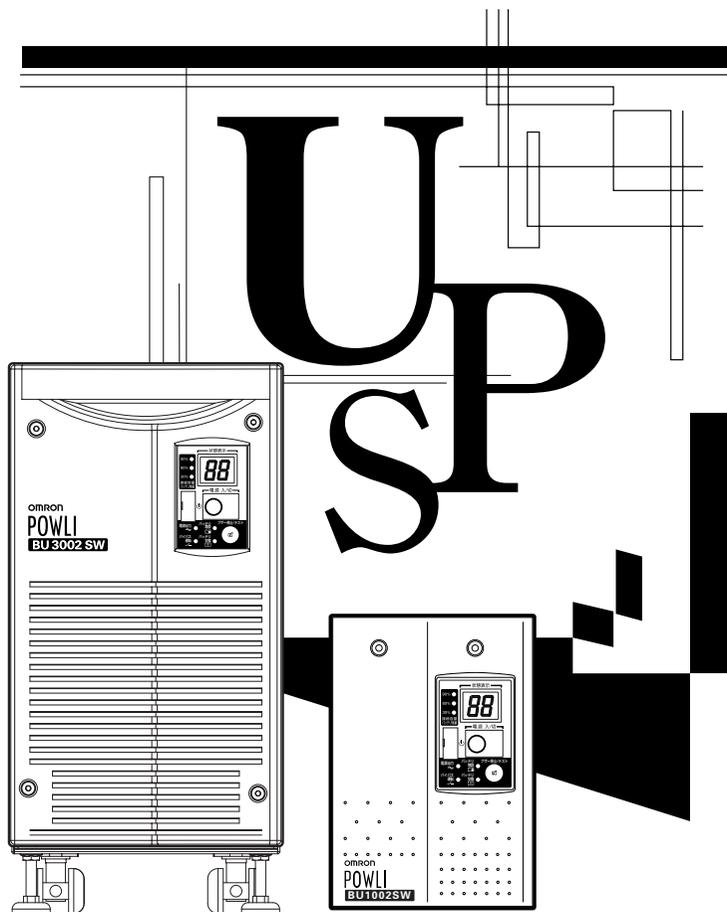


# OMRON

Uninterruptible Power Supply (UPS/200 to 240V specifications)

## POWLI BU1002SW/BU3002SW

### Instruction Manual



- 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.

# 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).
- This unit is an uninterruptible power supply (UPS) with power supply output of 200 to 240V AC.
- Under normal conditions, it converts the commercial power to a direct current once, reconverts it to a stable AC sine wave, and outputs it.

When a commercial power failure is detected, the unit switches to battery supply to provide continuous sine wave output. This is especially suitable for use where power supply conditions are poor (for example, when there are large variations in voltage).

- BU1002SW output capacity is 1000VA/700W, and BU3002SW output capacity is 3000VA/2100W.

## Notes on the use of the Backup Power Supply

- This product is designed and manufactured for use for 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 us; \_\_\_\_\_
- 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.

- Windows is the registered trademark of Microsoft Corporation in the United States and/or other countries.
- The names of other companies and products mentioned herein are the trademarks or registered trademarks of their respective owners.
- Note on user registration Please fill out the required items on the included user registration card and send it to our customer support center.

---

# IMPORTANT SAFETY INSTRUCTION

## 1. SAVE THESE INSTRUCTIONS.

This manual contains important instructions for BU1002SW that should be followed when using the UPS and batteries.

## 2. SYMBOL



This symbol indicates earth ground.



This symbol indicates turning on UPS.



This symbol indicates turning off UPS.

## 3. INTERNAL BATTERY

Internal battery voltage is 36V DC for BU1002SW and 72V DC for BU3002SW.

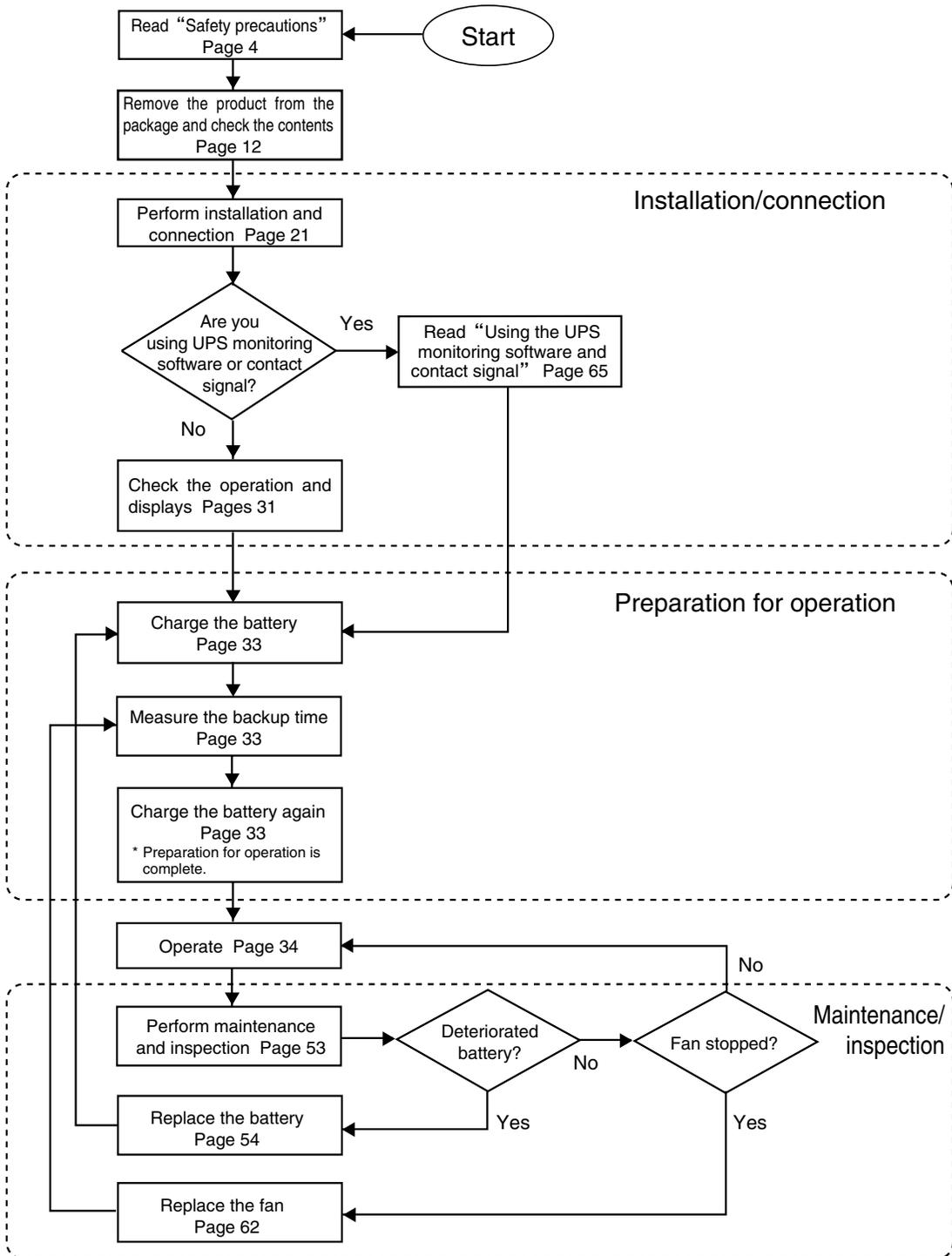
## 4. TEMPERATURE RATING

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



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# 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:

 <b>Warning</b>	Misuse may cause death or serious injury.
 <b>Caution</b>	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.

Note that events categorized as a caution required matter also may cause more serious results under certain conditions.

## **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 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)**

**Two or more people should work together to carry, unpack and install the BU3002SW.**

- Because the unit is heavy, you may injure yourself or drop the unit, or it may fall over.



**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.
- Approximate weight of the unit:  
15.5 kg (BU1002SW)  
35 kg (BU3002SW)
- If you drop the unit, stop using it and have it inspected and repaired.  
For repair, contact us; \_\_\_\_\_



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

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



**Make sure to connect the AC input plug of the unit into a wall outlet (commercial power) with rated input voltage (200 to 240V AC).**

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



**Caution (for installation and connection)**

**When an abnormality (unusual sound or smell) occurs, turn OFF the unit's power switch and disconnect the AC input plug from the wall outlet.**

**Install the unit soon after the AC input plug is disconnected from the wall outlet.**

- 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.



**Connect the BU1002SW to a wall outlet (commercial power) with a capacity of 7.4A or more, and connect the B3002SW to a wall outlet (commercial power) with a capacity of 16A or more.**

- Otherwise, the power cord may be heated.
- When equipment with the maximum output capacity is connected, a maximum current of 7.4A (BU1002SW) or 16A (BU3002SW) flows.



**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 becomes weak rapidly, which may cause a fire.
- Doing so may cause a failure or malfunction of the unit.



**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 20% or higher than 90%.
- Do not use in places where the humidity is lower than 25% or higher than 85%.
- Do not use in closed spaces such as cabinets without clearance, or in places where flammable or corrosive gases are present, places subject to vibration or shock, or outdoors.
- Installation or storing the unit in such a place may cause a fire.



**Do not connect equipment that exceeds the output capacity of the unit. You can use a 200V plug strip to connect additional devices, but do not connect devices that exceed the current capacity of the plug strip.**

- 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 tie the cable of the unit.**

- 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; \_\_\_\_\_



**Caution (for installation and connection)**

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



- Doing so may compromise the safety of devices.

- This UPS utilizes voltages that may be hazardous. Do not attempt to disassemble the unit. The unit contains no user serviceable parts. Only factory service personnel may perform repairs.



- Connection to any other type of receptacle other than a two-pole, three-wire grounded receptacle may result in shock hazard as well as violate local electrical codes.



- Do not allow liquids or any foreign object to enter the UPS. DO not place beverages or any other liquid-containing vessels on or near the unit.



- This unit intended for installation in a controlled environment (temperature controlled, indoor area free of conductive contaminants). Avoid installing the UPS in locations where there is standing or running water, or excessive humidity.



- Do not attach a power strip or surge suppressor to the UPS.



- Do not attach non-computer-related items, such as medical equipment, life-support equipment, microwave ovens, or vacuum cleaners to UPS.



- With the installation of the equipment it should be prevented, that the sum of the leakage current of the UPS and the connected consumer does not exceed 3.5mA.



**Do not block the air vents on the unit. The BU1002SW has air vents on the front, side and back, while the BU3002SW has air vents on the front and back.**



- 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 standalone transformer such as a voltage transformer or isolating transformer to the output side.**



- Overcurrent may damage the UPS.
- There is no problem in connecting a transformer to the input side.

**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.

**Do not connect devices with rated voltage of 200 to 240 VAC or higher.**



- The rated output voltage of this device is 200 to 240 VAC.
- Overcurrent may damage the connected devices.

**When in use, make sure the output terminal block cover is attached. Do not turn ON the power switch when it is detached.**



- Voltage is applied to the output terminal block when the power switch is ON, which can result in electric shock.

**For PLUGGABLE EQUIPMENT, the socket-outlet shall be installed near the equipment and shall be easily accessible.**



 **Caution (for use)**
**Never touch the metal part of the input plug if it is disconnected while the unit is operating.**

- Doing so may result in electric shock.
- The leak current of this product itself is less than the value of the safety standard (leak current: 1 mA). However, because connected equipment causes the leak current to increase, you must never touch the metal part of the input plug.
- When the unit is operating, voltage is generated in the metal parts of the input plug via capacitors in the internal circuit, regardless of the elapsed time.


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

- Doing so may cause an electric shock or a fire.
- If the unit becomes wet, stop using it and have it inspected and/or repaired.

For repair, contact us: \_\_\_\_\_


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

- Continuing the use of it may cause a fire.



Ambient temperature	Expected life
20°C	4 to 5 years
30°C	2 to 2.5 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, power supply output receptacles and output terminal block.**

- Accumulated dust may cause a fire.


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

- Doing so may cause abnormal heating or a fire.


**If you notice abnormal sound or smell, smoke, or leakage from the inside, immediately turn off the power switch and disconnect the AC input plug from a wall outlet (commercial power).**

- Using the unit under such conditions may cause a fire.
- If you notice such a condition, stop using the unit and contact us at \_\_\_\_\_ for inspection and repairs.
- Use the unit under the conditions in which you can immediately disconnect the AC input plug from a wall outlet (commercial power) in the case of an abnormal event.


**If fluid leaks from the unit, 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 on the unit that are 25 kg or heavier, and do not drop metal 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 maintenance)**

**When maintaining the connected equipment, turn OFF the power switch and disconnect the AC input plug.**

- Even if you disconnect the AC input plug while the UPS is operating, the power output of this unit does not stop and power is supplied from the outlet during a power failure.



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

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



**If fluid leaks from the unit, 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 or terminal block of the UPS.**

- Doing so may result in electric shock.



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

- 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.
- Not doing so could cause injury or burns due to liquid (acid) leakage.



**Use a specified battery for replacement.**

- Not doing so may cause a fire.
- Product model: BP100XS (Replacement battery pack for BU1002SW)  
BP150XS: Two required (Replacement battery pack for BU3002SW)



**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.



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

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



**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.



**Caution (for battery replacement)****Do not put the battery into fire and do not break it.**

- The battery may explode or leak dilute sulfuric acid.

**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:

- 1) Remove watches, rings, or other metal objects from the hands.
- 2) Use tools with insulated handles.
- 3) Wear rubber gloves and boots.
- 4) Do not lay tools or metal parts on top of batteries.
- 5) Disconnect charging source prior to connecting or disconnecting batteries terminals.



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

## Notes

### **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.

---

### **Charge the battery for at least 8 hours 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.
- To charge a battery, connect the AC input plug of the unit to a wall outlet (commercial power).

---

### **When storing the unit, charge the battery for at least 8 hours and turn OFF the power switch.**

- Even if the unit is not used, the battery gradually discharges, and if it is left for a long time, it goes into an over discharge state.  
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.  
Connect the unit's AC input plug to a wall outlet (commercial power) for at least 8 hours at the following intervals:
  - Every 6 months when storage temperature is 25°C or less
  - Every 2 months when storage temperature is 40°C or less
- Turn off the power switch of the unit during storage.

---

### **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.

---

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

- The unit may fail.

---

### **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.

---

### **Check system operation beforehand if the unit is used in combination with a device whose power supply frequency fluctuates widely, such as a personal electric generator.**

- The unit automatically recognizes the input power frequency when input power is supplied. If the unit is connected when the input power frequency is not stable at the rated level, the unit may misidentify the power supply frequency and may fail to operate normally. (If the unit is in operation, changing from commercial power supply to another power supply source, such as generating equipment, will cause no problem. Set the generator's frequency to the same level as that of the commercial power supply.)

---

### **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.

---

### **Do not perform a withstand voltage test.**

- The input circuit has a built-in surge absorption device. A withstand voltage test may break it.
- When performing an insulation resistance test, use the 400V DC range.

---

### **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.

## Notes

### Check the operation beforehand if the unit is used in any mode other than “Output 200V mode”.

- In Battery Mode, the maximum voltage (peak voltage) of output (rectangular wave) may be lower than the maximum voltage in Commercial Power Mode. For this reason, some connected devices may fail to operate normally.

### If this unit is used with an inductive device such as a coil or motor, check the operation beforehand.

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

### 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.

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

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

### This unit uses lead acid batteries,

- Which are a valuable recyclable resource. Please recycle.



## Explanation

### Usual operation

- 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 of the unit is connected to a wall outlet (commercial power).

### Quitting Battery Mode

- If a power failure lasts for an extended period of time, the battery discharges and power output from the unit stops. Shut down your computer after performing appropriate procedures (for example, saving data) while the unit is still supplying power.

### Rebooting

- If the battery discharges completely during a power failure, the unit stops. After recovery from the power failure, the unit automatically restarts and supplies power. If you do not want to restart the connected devices, turn OFF the power switch of either the unit or the connected devices.



Setting switch 2 can be used to select whether or not auto restart is performed. See Page 43

### 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 the instructions in “6-2 Replacing the battery” on page 54.

# 1. Preparation

## 1-1 Unpacking the product

### Caution

**Two or more people should work together to carry, unpack and install the BU3002SW.**

- Because the unit is heavy, you may injure yourself or drop the unit, or it may fall over.

**The weight of the product is 15.5 kg (BU1002SW) , 35 kg (BU3002SW).  
Unpack/transport this product considering this weight.**

- 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 us; \_\_\_\_

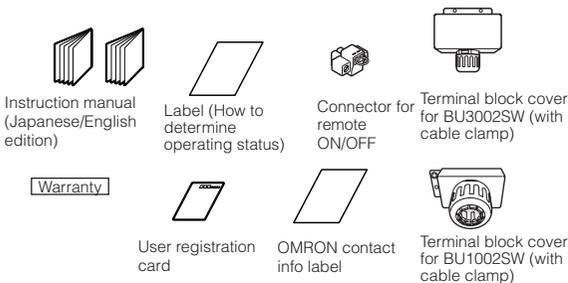
### (1) Accessories related to the main unit

	BU1002SW	BU3002SW
Instruction manual (Japanese and English versions)		1
Warranty		1
User registration card		1
Label (How to determine operating status)		1
Connector for remote ON/OFF		1
Terminal block cover for output (with cable clamp)		1
Omron contact info label		1

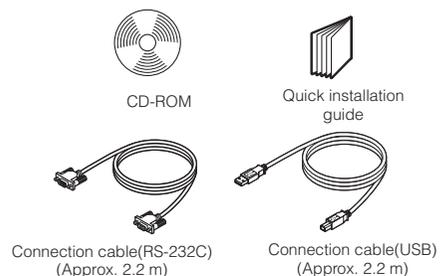
### (2) UPS monitoring software related items

	BU1002SW	BU3002SW
Quick installation guide		1
CD-ROM		1
Connection cable (RS-232C)		1
Connection cable (USB)		1

#### <Accessories related to main unit>



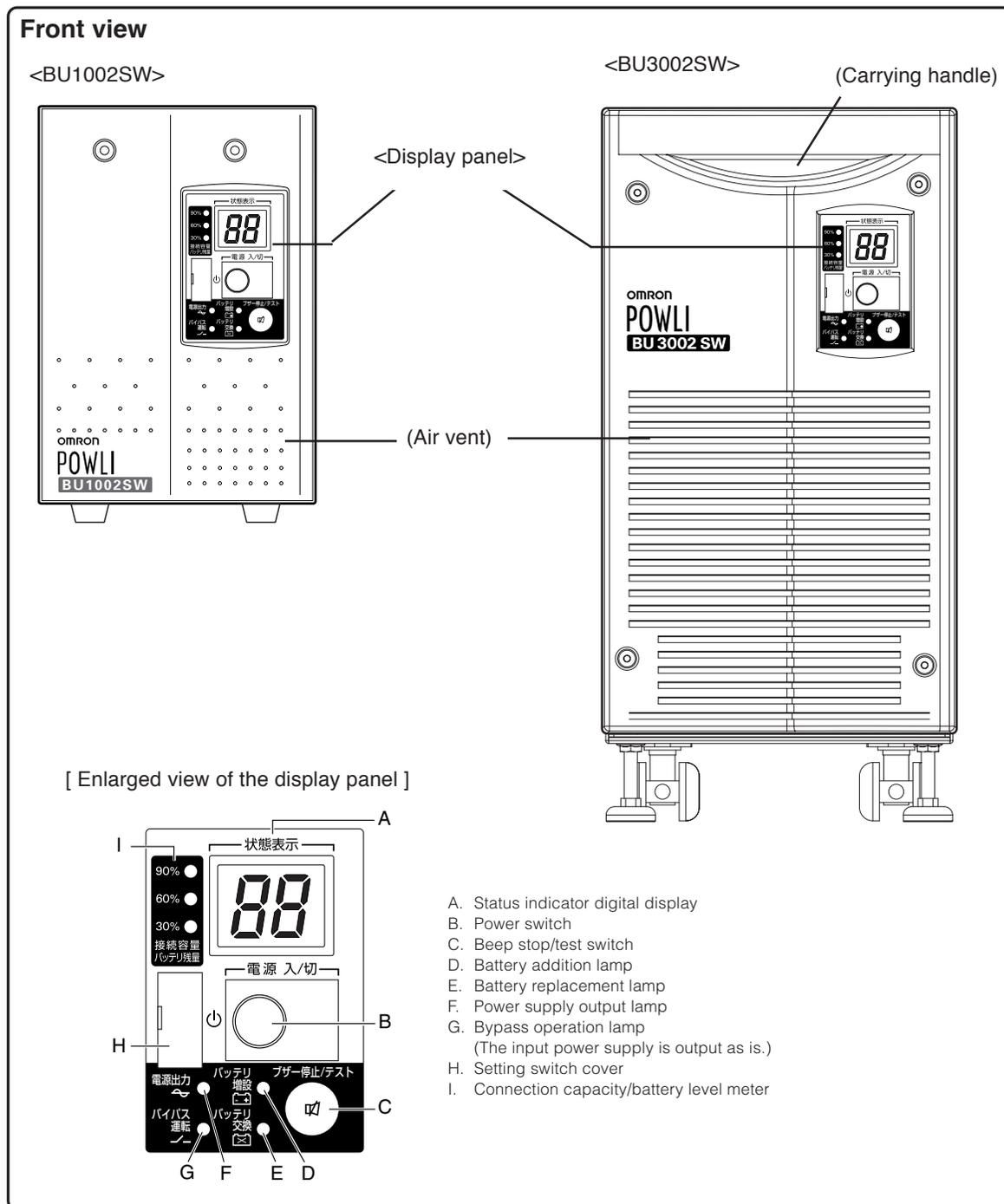
#### <UPS monitoring software>



## 1-3 Name of each part

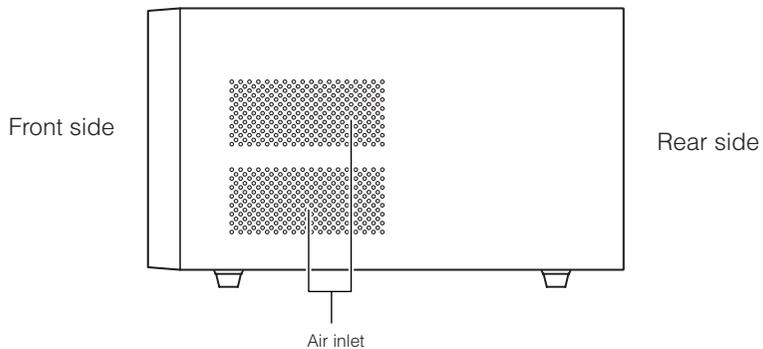
This section describes the name of each part of the UPS.

For information on the function of each part, refer to "2. Installation and connection" on page 17 and "3. Operation" on page 34 that provides the details.

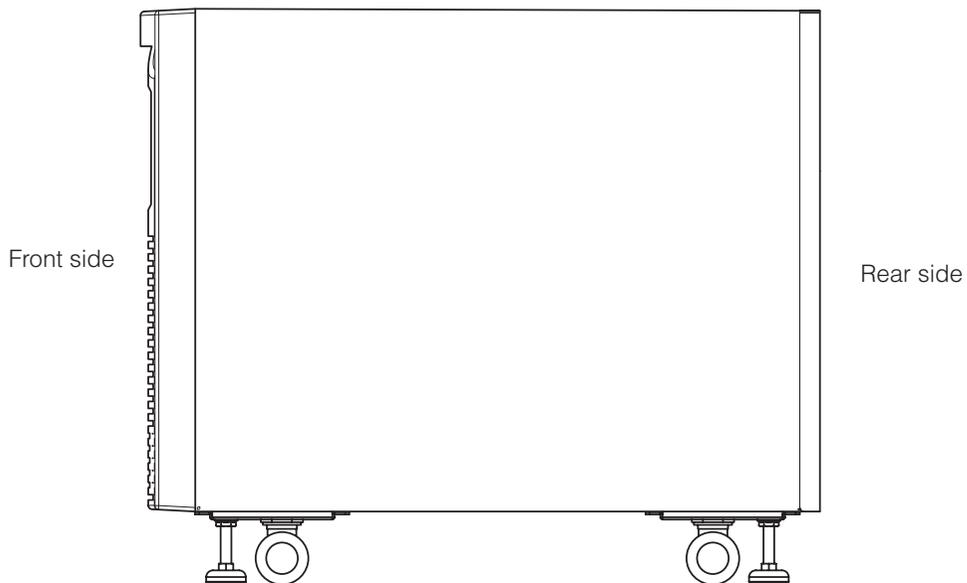


**Side view**

<BU1002SW>

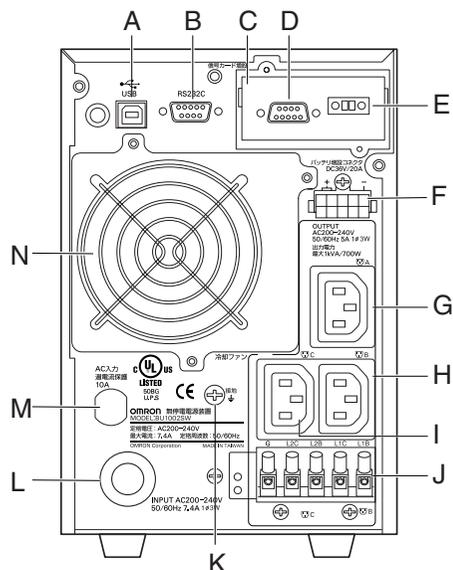


<BU3002SW>



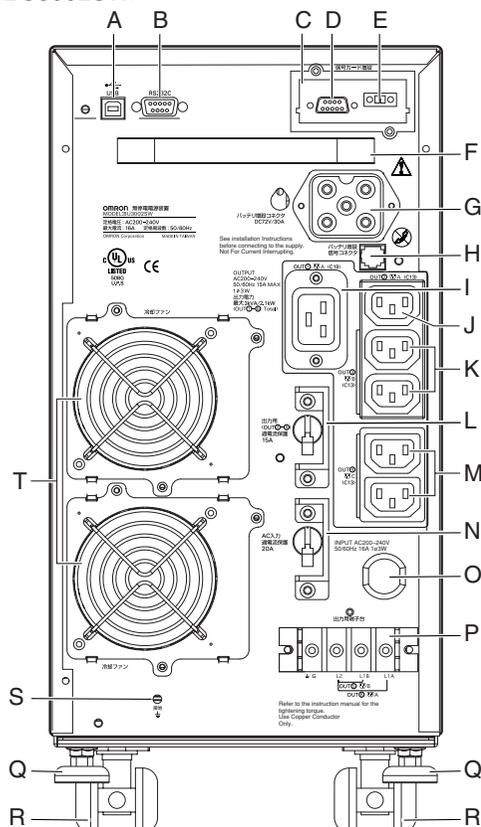
Rear view

<BU1002SW>



- A. USB connector
- B. RS-232C connector
- C. Contact signal card
- D. Contact signal connector
- E. Remote ON/OFF connector
- F. Additional battery connector
- G. Power supply output receptacle A (IEC60320 C13)
- H. Power supply output receptacle B (IEC60320 C13)
- I. Power supply output receptacle C (IEC60320 C13)
- J. Terminal block for output
- K. Grounding terminal
- L. AC input cable
- M. AC input overcurrent protection
- N. Cooling fan

<BU3002SW>



- A. USB connector
- B. RS-232C connector
- C. Contact signal card
- D. Contact signal connector
- E. Remote ON/OFF connector
- F. Handle
- G. Additional battery connector
- H. Additional battery signal connector
- I. Power supply output receptacle A (IEC60320 C19)
- J. Power supply output receptacle A (IEC60320 C13)
- K. Power supply output receptacle B (IEC60320 C13)
- L. Overcurrent protection switch for output 15A
- M. Power supply output receptacle C (IEC60320 C13)
- N. AC input overcurrent protection switch 20A
- O. AC input cable
- P. Terminal block for output
- Q. Fixed stand
- R. Casters
- S. Grounding terminal
- T. Cooling fan

## 1-4 Explanation of symbols used on unit

Symbol	Description
	Start the UPS.
	Stop the UPS.
	Suspend a beep.
	UPS output power enabled, supplied by operating on line mode, battery mode.
	UPS operating on battery mode.
	Additional battery unit connected to the UPS. (For BU100XS only.)
	Error occurred with UPS.
	Batteries at end of useful life, necessary to replace the batteries.

## 2. Installation and connection

### 2-1 Precautions and notes on installation and connection



#### Caution (for installation and connection)

**Two or more people should work together to carry, unpack and install the BU3002SW.**



- Because the unit is heavy, you may injure yourself or drop the unit, or it may fall over.

**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.
- Approximate weight of the unit:
  - 15.5 kg (BU1002SW)
  - 35 kg (BU3002SW)
- If you drop the unit, stop using it and have it inspected and repaired. For repair, contact us; \_\_\_\_\_



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

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



**Make sure to connect the AC input plug of the unit into a wall outlet (commercial power) with rated input voltage (200 to 240V AC).**

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



**When an abnormality (unusual sound or smell) occurs, turn OFF the unit's power switch and disconnect the AC input plug from the wall outlet. Install the unit soon after the AC input plug is disconnected from the wall outlet.**

- 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.



**Connect the BU1002SW to a wall outlet (commercial power) with a capacity of 7.4A or more, and connect the B3002SW to a wall outlet (commercial power) with a capacity of 16A or more.**

- Otherwise, the power cord may be heated.
- When equipment with the maximum output capacity is connected, a maximum current of 7.4A (BU1002SW) or 16A (BU3002SW) flows.



**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.



2. Installation and connection



**Caution (for installation and connection)**

**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 becomes weak rapidly, which may cause a fire.
- Doing so may cause a failure or malfunction of the unit.



**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 20% or higher than 90%.
- Do not use in places where the humidity is lower than 25% or higher than 85%.
- Do not use in closed spaces such as cabinets without clearance, or in places where flammable or corrosive gases are present, places subject to vibration or shock, or outdoors.
- Installation or storing the unit in such a place may cause a fire.



**Do not connect equipment that exceeds the output capacity of the unit. You can use a 200V plug strip to connect additional devices, but do not connect devices that exceed the current capacity of the plug strip.**

- 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 tie the cable of the unit.**

- 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 exclusively with the unit. Do not use the accessories with other devices.**

- Doing so may compromise the safety of devices.



- This UPS utilizes voltages that may be hazardous. Do not attempt to disassemble the unit. The unit contains no user serviceable parts. Only factory service personnel may perform repairs.



- Connection to any other type of receptacle other than a two-pole, three-wire grounded receptacle may result in shock hazard as well as violate local electrical codes.



- Do not allow liquids or any foreign object to enter the UPS. Do not place beverages or any other liquid-containing vessels on or near the unit.



- This unit intended for installation in a controlled environment (temperature controlled, indoor area free of conductive contaminants). Avoid installing the UPS in locations where there is standing or running water, or excessive humidity.



- Do not attach a power strip or surge suppressor to the UPS.



- Do not attach non-computer-related items, such as medical equipment, life-support equipment, microwave ovens, or vacuum cleaners to UPS.



- With the installation of the equipment it should be prevented, that the sum of the leakage current of the UPS and the connected consumer does not exceed 3.5mA.



**Caution (for installation and connection)**

**Do not block the air vents on the unit. The BU1002SW has air vents on the front, side and back, while the BU3002SW has air vents on the front and back.**

- 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 standalone transformer such as a voltage transformer or isolating transformer to the output side.**

- Overcurrent may damage the UPS.
- There is no problem in connecting a transformer to the input side.



**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.



**Do not connect devices with rated voltage of 200 to 240 VAC or higher.**

- The rated output voltage of this device is 200 to 240 VAC.
- Overcurrent may damage the connected devices.



**When in use, make sure the output terminal block cover is attached. Do not turn ON the power switch when it is detached.**

- Voltage is applied to the output terminal block when the power switch is ON, which can result in electric shock.



**For PLUGGABLE EQUIPMENT, the socket-outlet shall be installed near the equipment and shall be easily accessible.**

**Notes**

**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.

**Charge the battery for at least 8 hours 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.
- To charge a battery, connect the AC input plug of the unit to a wall outlet (commercial power).

**When storing the unit, charge the battery for at least 8 hours and turn OFF the power switch.**

- Even if the unit is not used, the battery gradually discharges, and if it is left for a long time, it goes into an over discharge state.  
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.  
Connect the unit's AC input plug to a wall outlet (commercial power) for at least 8 hours at the following intervals:
  - Every 6 months when storage temperature is 25°C or less
  - Every 2 months when storage temperature is 40°C or less
- Turn off the power switch of the unit during storage.

## Notes

**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.

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

- The unit may fail.

**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.

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

- The unit automatically recognizes the input power frequency when input power is supplied. If the unit is connected when the input power frequency is not stable at the rated level, the unit may misidentify the power supply frequency and may fail to operate normally. (If the unit is in operation, changing from commercial power supply to another power supply source, such as generating equipment, will cause no problem. Set the generator's frequency to the same level as that of the commercial power supply.)

**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.

**Do not perform a withstand voltage test.**

- The input circuit has a built-in surge absorption device. A withstand voltage test may break it.
- When performing an insulation resistance test, use the 400VDC range.

**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.

**Check the operation beforehand if the unit is used in any mode other than "Output 200V mode".**

- In Battery Mode, the maximum voltage (peak voltage) of output (rectangular wave) may be lower than the maximum voltage in Commercial Power Mode. For this reason, some connected devices may fail to operate normally.

**If this unit is used with an inductive device such as a coil or motor, check the operation beforehand.**

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

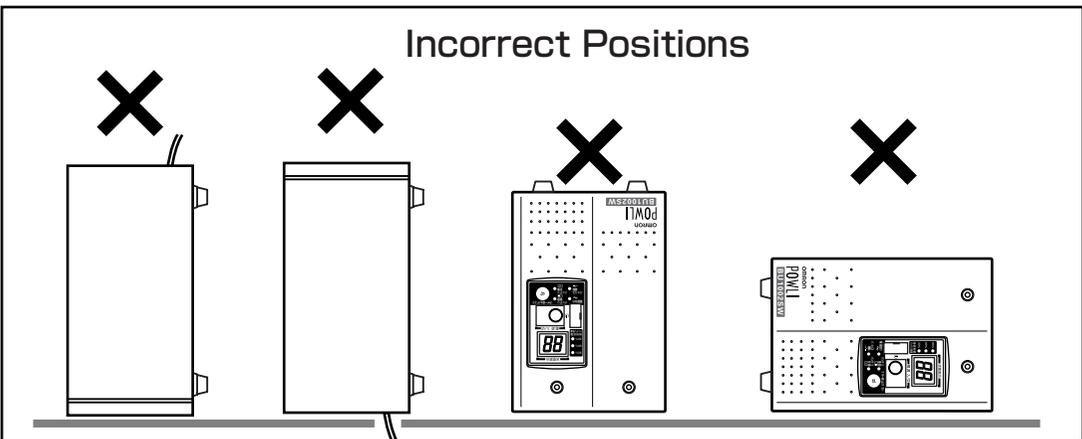
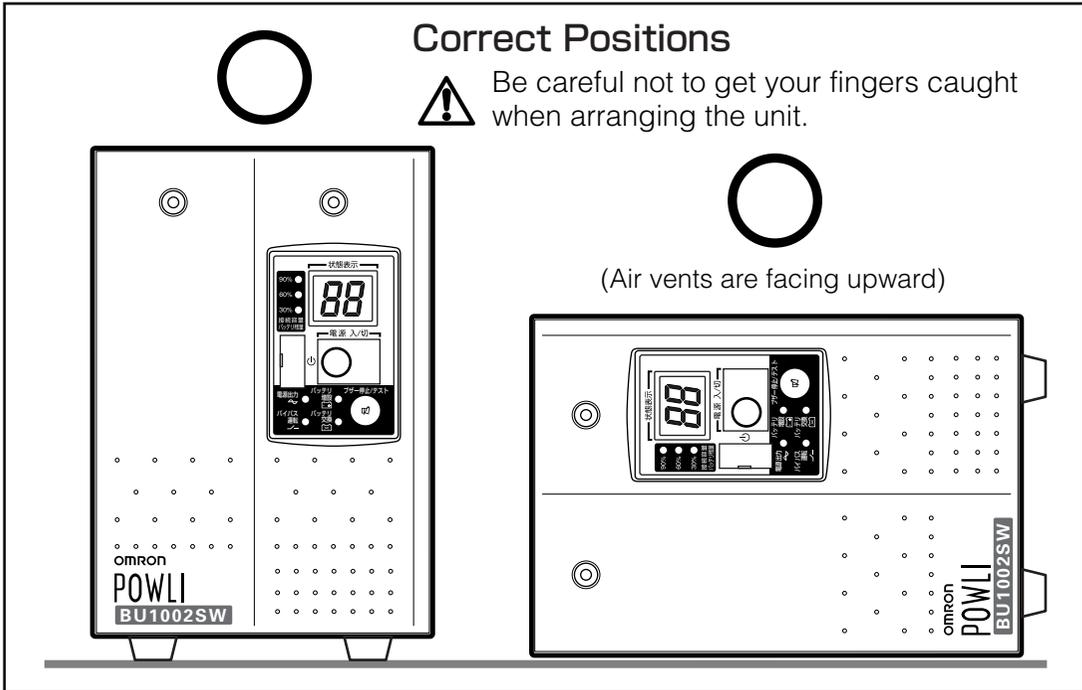
## 2-2 Installation and connection

This section describes how to install the UPS. Do not use this unit in any position other than the “correct positions” indicated in the illustration below.

### Note

**Before installing this device, make a record of the serial number of this device. The serial number is required when contacting us about the device. The serial number is written in the label on the unit's top side.**

< BU1002SW >



\* The feet can also be anchored to the floor with screws if you use BUP100S mounting brackets (sold separately). Refer to the BUP100S instruction manual for more details.

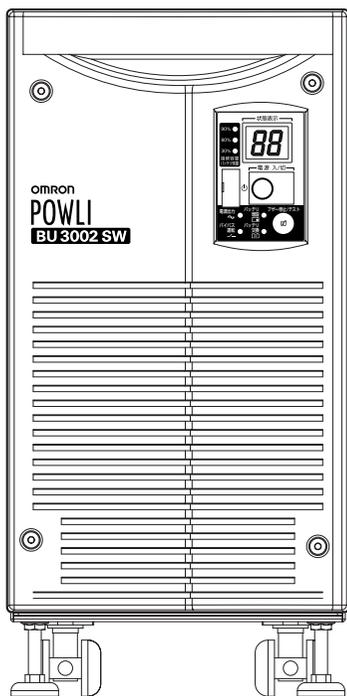
< BU3002SW >

### Correct Positions

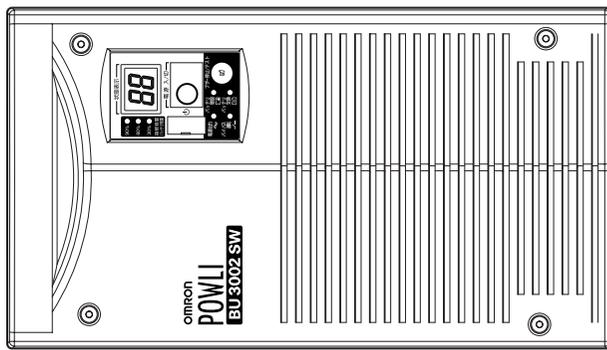


Be careful not to get your fingers caught when arranging the unit.

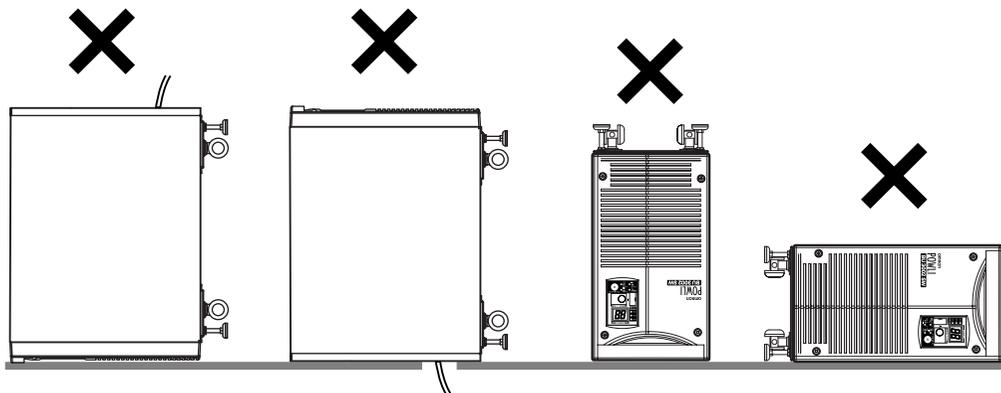
Caster at the bottom may be removed when sitting horizontally.



(Display panel are facing upward)

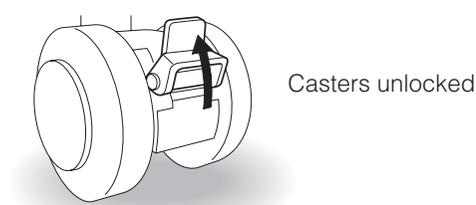


### Incorrect Positions



<Installing the BU3002SW vertically>

● Stabilize the casters

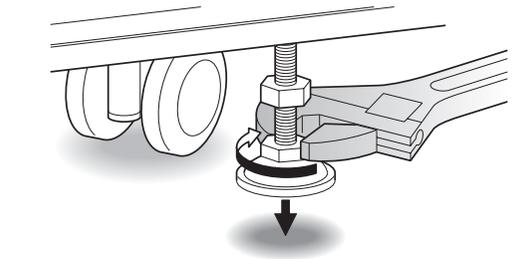


● How to stabilize the fixed stand

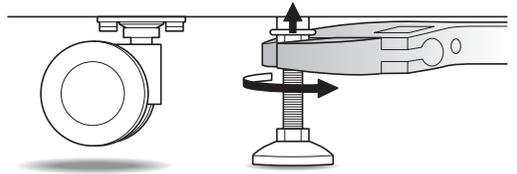
Use a monkey wrench or spanner to loosen the fixed stand nuts.

Unscrew the feet of the fixed stand until they reach the floor.

Continue to unscrew the feet of the fixed stand until the casters no longer touch the floor.



Once the fixed stand feet are firmly on the floor, turn the nuts counter-clockwise to tighten them and lock the feet in place.



\* The feet can be anchored to the floor with screws if you use BUP300S mounting brackets (sold separately).

Refer to the BUP300S instruction manual for more details.

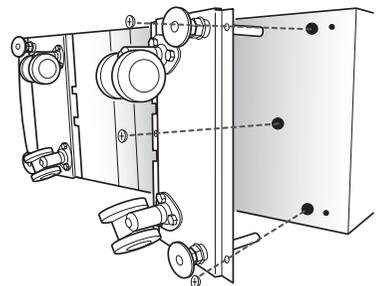
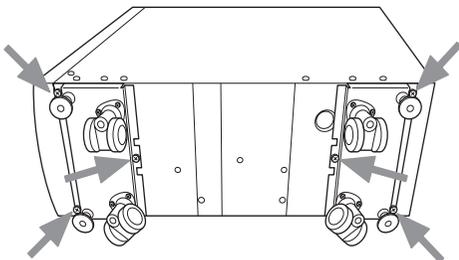
<Installing the BU3002SW horizontally>

● How to remove the bottom casters

Install the BU3002SW so that the control panel is facing upward.

Loosen the screws in the 6 locations shown in the diagram below.

Remove caster mounting plate.



\* BUP300S mounting brackets (sold separately) can be used for easy mounting on an EIA/JIS 19-inch rack. Refer to the BUP300S instruction manual for more details.

## 2-3 Connecting the equipment

**Caution**

**Do not connect devices with rated voltage of 200 to 240 VAC or higher.**

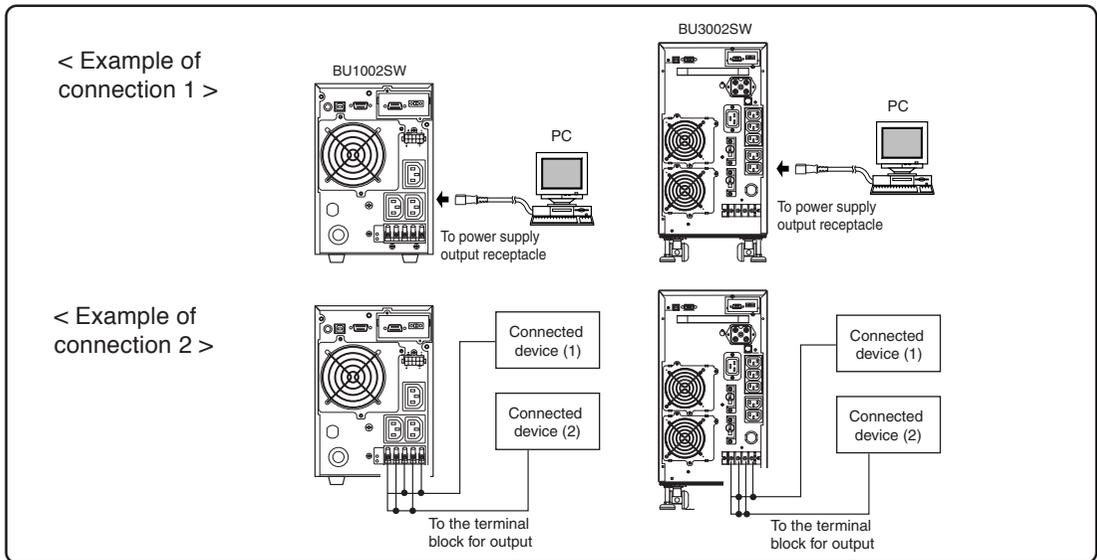
- The rated output voltage of this device is 200 to 240 VAC.
- Overcurrent may damage the connected devices.

---

**When in use, make sure the output terminal block cover is attached.**

**Do not turn ON the power switch when it is detached.**

- Voltage is applied to the output terminal block when the power switch is ON, which can result in electric shock.

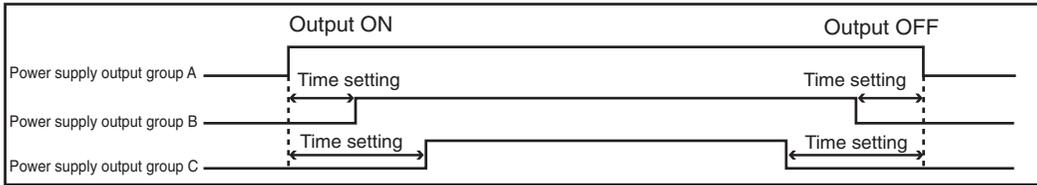


● **Group control of power supply output**

This function can be used with the UPS monitoring software included with the UPS. The output receptacles of the BU1002SW are separated into 3 groups: A, B, and C.

1. Power supply output group A
  - Output begins at the same time as startup.
2. Power supply output group B, 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 when using the included "PowerAct Pro" UPS monitoring software, "UPS Power Manager" or "SNMP/Web card".
  - Output ON/OFF can be controlled with the included UPS monitoring software while the BU1002SW 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.



### 2-3-1 Connecting a device to the power supply output (BU1002SW)

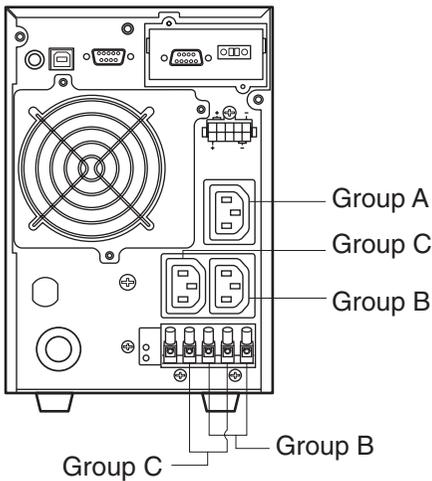
(1) Connect devices that require backup to the unit's power supply output receptacle or output terminal block.



**Make sure that the total capacity of the devices connected to the output receptacle does not exceed the output rated capacity of the BU1002SW. If the overload indication (OL) is displayed, reduce the number of connected devices.**

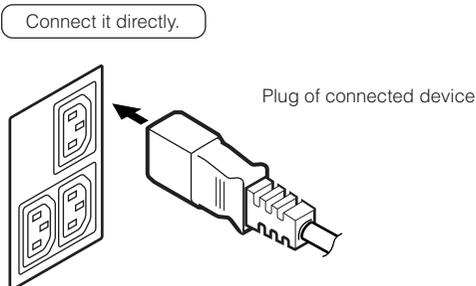
#### BU1002SW (Rated value of output capacity: Max. 1kVA/700W)

"Power supply output" group	Output receptacle	Output terminal block
Group A	C13: 1 (Rated capacity: 15A)	–
Group B	C13: 1 (Rated capacity: 15A)	1 line (Rated capacity: 20A)
Group C	C13: 1 (Rated capacity: 15A)	1 line (Rated capacity: 20A)



Group control of power supply output  
See Page 24

- Procedure for connection to power supply output receptacle (IEC60320 C13)



● Procedure for connection to BU1002SW output terminal block

**Caution**

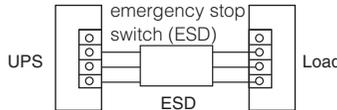
**When in use, make sure the output terminal block cover is attached. Do not turn ON the power switch when it is detached.**

- Voltage is applied to the output terminal block when the power switch is ON, which can result in electric shock.

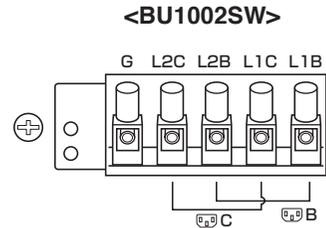


**When connecting a device to the output terminal block, make sure to include an emergency stop switch (ESD) between them.**

- In the event of an accident, the power supply to the device can be stopped by pressing the emergency stop switch.
- A disconnect switch shall be provided by others for ac output terminal block circuit.
- To reduce the risk of fire, connect only to a circuit provided with branch circuit overcurrent protection for 15 amperes rating in accordance with the National Electric Code, ANSI/NFPA 70.



- (1) Remove the terminal block cover on the lower right side of the unit's rear panel.
- (2) Connect the units that need to be backed up. Two types of connections can be made.
  - 1) To turn ON/OFF at the same timing as that of output receptacle B:
    - L1B terminal: Connect the line
    - L2B terminal: Connect the neutral line
  - 2) To turn ON/OFF at the same timing as that of output receptacle C:
    - L1C terminal: Connect the line
    - L2C terminal: Connect the neutral line



Run the wires to be connected through the hole in the included terminal block cover (with cable clamp and cable guard tube). (See Figure 1.)

If you have trouble running the wire through the hole, loosen the cable clamp dial by turning it counter-clockwise.

Connect the ground wire to the G terminal.

Use a flat head screwdriver to loosen the terminal block screws, insert the wire, and then retighten the screws. (See Figure 2.) Refer to Table 1 for wire sizes.

Figure 1

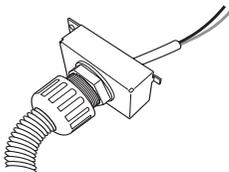


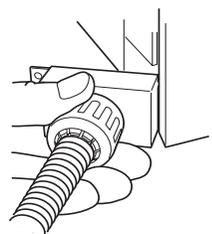
Figure 2



Table 1

Connectable wire size	1.0 to 2.5 mm <sup>2</sup>
Amount of stripped wire	5.5mm
Tightening torque	0.9Nm(8 lb-in)
Recommended cable size	2mm <sup>2</sup> (AWG14)

Figure 3



- (3) Insert the tab on the right side of the terminal block cover (with cable clamp) into the unit's body, and fasten the previously removed screws to the two locations on the left side of the cover.

Tighten the cable clamp dial to stabilize the wire. (See Figure 2.)

- (2) When using the included UPS monitoring software and the Windows standard UPS service, use a connection cable to connect the unit to the PC.

**See also "7. Using the UPS monitoring software and Contact Signal" on page 65**  
**\* If you do not use the UPS monitoring software and Contact Signal, this step is not required.**

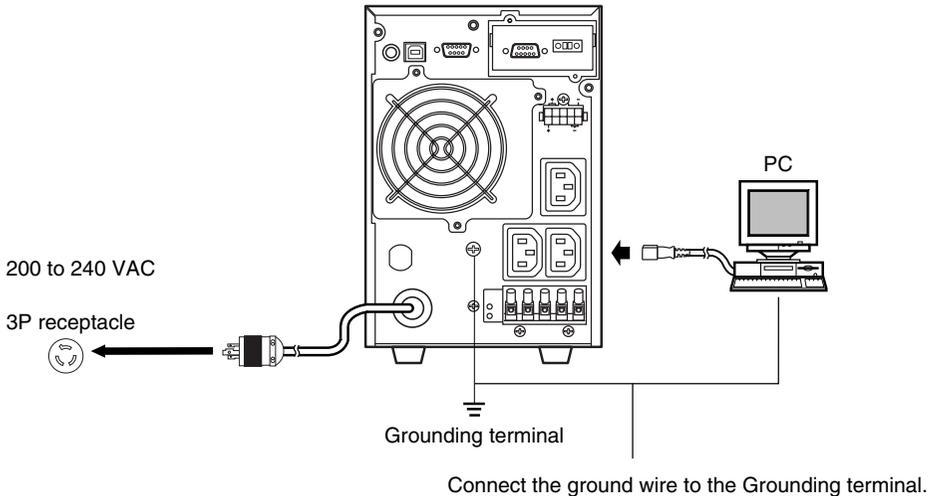
- (3) When the installation and connection is complete, connect the AC Input Plug of the UPS to a wall outlet (commercial power).

**Caution**

**Make sure to connect the AC input plug of the unit into a wall outlet (commercial power) with rated input voltage (200 to 240V AC).**

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

<BU1002SW>



- The UPS has been charged prior to shipment. However, the backup time becomes shorter when using it for the first time due to spontaneous discharge.  
 We recommend charging the UPS before using it.  
 When the AC input plug is connected to a wall outlet (commercial power), the battery automatically starts charging, taking up to 8 hours to complete (24 hours when an additional battery unit is connected).
- You can perform "2-4 Checking the operation" on page 31 also before charging the battery.

Input plug (L6-15P)  
 (Front view)



**Caution**

**When one wire is used to ground the AC input power supply, make sure to use this unit's N terminal (phase)**

**side as the ground.**

- A misconnection may result in malfunction.

### 2-3-2 Connecting a device to the power supply output (BU3002SW)

(1) Connect devices that require backup to the unit's power supply output receptacle or output terminal block.



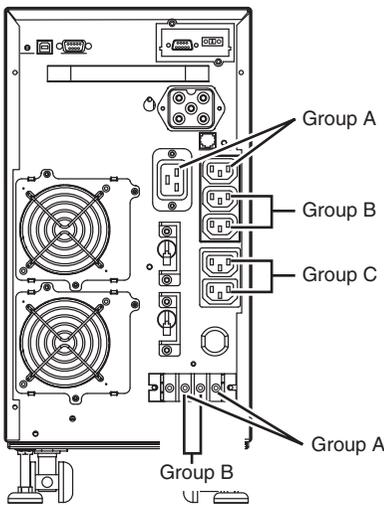
**Make sure that the total capacity of the devices connected to the output receptacle does not exceed the output rated capacity of the BU3002SW. If the overload indication (OL) is displayed, reduce the number of connected devices.**

#### BU3002SW (Rated value of output capacity: Max. 3kVA/2100W)

"Power supply output" group	Output receptacle	Output terminal block
Group A	C19: 1 (Rated capacity: 20A) C13: 1 (Rated capacity: 15A)	1 line (Rated capacity: 20A)
Group B	C13: 2 (Rated capacity: 15A)	1 line (Rated capacity: 20A)
Group C	C13: 2 (Rated capacity: 15A)	–

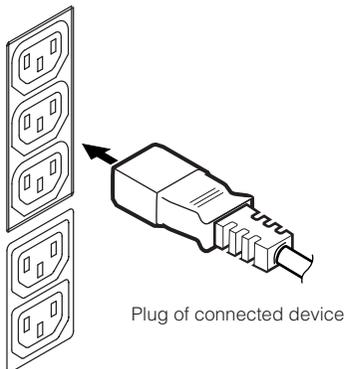


Group control of power supply output  
See Page 24



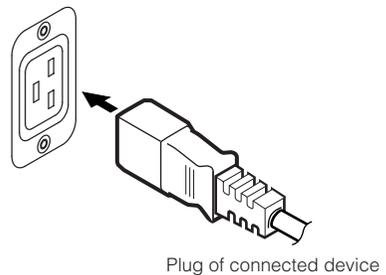
- Procedure for connection to power supply output receptacle (IEC60320 C13)

Connect it directly.



- Procedure for connection to power supply output receptacle (IEC60320 C19)

Connect it directly.



● Procedure for connection to BU3002SW output terminal block

**Caution**

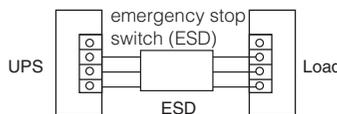
**When in use, make sure the output terminal block cover is attached. Do not turn ON the power switch when it is detached.**

- Voltage is applied to the output terminal block when the power switch is ON, which can result in electric shock.



**When connecting a device to the output terminal block, make sure to include an emergency stop switch (ESD) between them.**

- In the event of an accident, the power supply to the device can be stopped by pressing the emergency stop switch.
- A disconnect switch shall be provided by others for ac output terminal block circuit.
- To reduce the risk of fire, connect only to a circuit provided with branch circuit overcurrent protection for 20 amperes rating in accordance with the National Electric Code, ANSI/NFPA 70.



- (1) Remove the terminal block cover on the lower right side of the unit's rear panel.
- (2) Remove the transparent cover.
- (3) Connect the units that need to be backed up. Two-line connection can be made.

- 1) To turn ON/OFF at the same timing as that of output receptacle A:  
L1A terminal: Connect the line  
L2 terminal: Connect the neutral line
- 2) To turn ON/OFF at the same timing as that of output receptacle B:  
L1B terminal: Connect the line  
L2 terminal: Connect the neutral line

- (4) Run the wires to be connected through the hole in the included terminal block cover (with cable clamp and cable guard tube). (See Figure 1.)

Connect the ground wire to the G terminal.

Use a Phillips screwdriver to remove the terminal block screws, and connect the wire attached to the round pressure terminal. (See Figure 2.)

Refer to Table 1 for round pressure terminal sizes.

<BU3002SW>

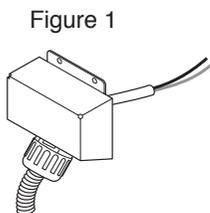
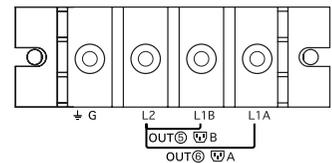


Figure 1

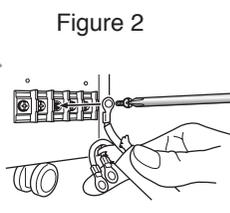


Figure 2

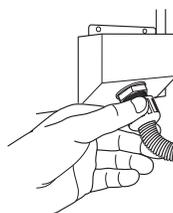


Figure 3

Table 1

Diameter of screw	M5 Screw
Tightening torque	2 Nm(17.7 lb-in)

- (5) Cover the terminal block with terminal block cover (with cable clamp) , and fasten the previously removed screws to the two locations on the upper side of the cover. Tighten the cable clamp dial to stabilize the wire.(See Figure 3.)

## 2. Installation and connection

- (2) When using the included UPS monitoring software and the Windows standard UPS service, use a connection cable to connect the unit to the PC.

**See also "7. Using the UPS monitoring software and Contact Signal" on page 65**  
**\* If you do not use the UPS monitoring software and Contact Signal, this step is not required.**

- (3) When the installation and connection is complete, connect the AC Input Plug of the UPS to a wall outlet (commercial power).

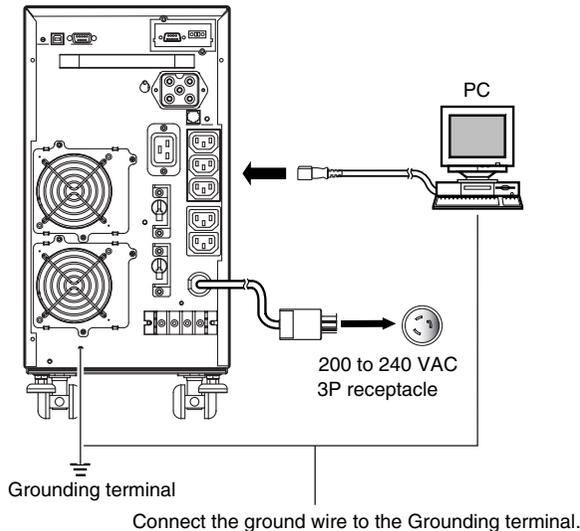
### **Caution**

**Make sure to connect the AC input plug of the unit into a wall outlet (commercial power) with rated input voltage (200 to 240V AC).**

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



<BU3002SW>



- The UPS has been charged prior to shipment. However, the backup time becomes shorter when using it for the first time due to spontaneous discharge.  
We recommend charging the UPS before using it.  
When the AC input plug is connected to a wall outlet (commercial power), the battery automatically starts charging, taking up to 8 hours to complete (24 hours when an additional battery unit is connected).
- You can perform "2-4 Checking the operation" on page 31 also before charging the battery.

Input plug (L6-20P)  
(Front view)



### **Caution**

**When one wire is used to ground the AC input power supply, make sure to use this unit's N terminal (phase) side as the ground.**

- A misconnection may result in malfunction.



## 2-4 Checking the operation

After you finish connecting devices to the unit, make sure the backup function operates properly.

Check that the Battery Mode is performed normally according to the following procedure.

(This operation check simulates a power failure by disconnecting the AC input plug from a wall outlet.)

### (1) Turn ON the unit's power switch.

The beeper sounds and the current settings are displayed on the LED.

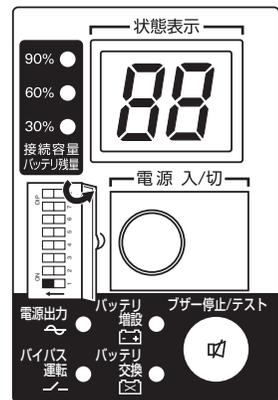
After 5 seconds, the self-diagnostic test is performed in Battery Mode for approximately 10 seconds.

When the self-diagnostic test finishes successfully, switching to AC output from commercial power is performed and the the display below is shown.

(If the battery voltage is low, the self-diagnostic test is not performed and the operation starts immediately, using output from commercial power.)

Status indicator	Description
	Power switch "ON" Operating normally

○ ON ● OFF ⊗ ON, OFF, or blinking depending on status



### (2) Bring all the connected devices into operation.

(Including devices connected to the AC outlet of your PC.)

Operate the devices in a way in which abrupt power stop does not damage the connected devices, data, etc.

### (3) Under this condition, check the the unit's LED display and beep sound.

Are they in the same status as shown below?

Status indicator	
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 (4).

If not the same as the one shown above: → The operation is abnormal. One of the cases described in "4. Display and beeps when there is an equipment failure" of "3-3 Interpreting a beep and displays" on page 39 must apply. Take necessary measures and then proceed to (4).

### (4) Disconnect the AC input plug of this unit from a wall outlet (commercial power).

The UPS enters Battery Mode.

2. Installation and connection

**(5) In Battery Mode, check the unit's LED display and beep sound.**

Does the status indicator appear as one of those shown below?

( ) ( ) indicates blinking

Status indicator	Beep	Output	Charging	Description
	Intermittent 4-second intervals	ON	OFF Discharging	Backup is operating due to power failure or AC input error. Output will stop if Battery Mode continues.
	Intermittent 1-second intervals	ON	OFF Discharging	(Same as above.) Battery level is low, so output will stop soon.
	None	OFF	OFF Discharging	Battery is dead, so output stopped. (This is displayed only for a few seconds.)

If not the same as one of those shown above: → Operation is abnormal. Check the status of lamps and beep and turn OFF the Power Switch.

- If the display is one of those shown in “4. Displays and beeps when there is an equipment failure” in “3-3 Interpreting beeps and displays” on page 39, take the necessary measures and then go back to (1) on page 31.
- 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) and waiting at least 8 hours for the battery to charge (24 hours when an additional battery unit is connected), go back to (4) on page 31.
- If the problem persists after checking the 2 points above, contact us; \_\_\_\_\_

Setting switch **1** can be used to turn the beeper ON/OFF. → Page 43

**(6) Connect the AC input plug to a wall outlet (commercial power) again.**

The status indicator returns to its normal state and the beeping sound stops.  
(The status is as shown below.)

Status indicator	Description
	Power switch “ON” Operating normally

Checking the operation is now complete.

Installation and connection is now complete.

## 2-5 Charging the battery

**When you connect the AC input plug of this unit to a wall outlet (commercial power), the battery charging automatically starts regardless of whether the power switch is ON or OFF, and it is fully charged within 8 hours. (When an additional battery unit is connected, the charging time is 24 hours.)**

- This unit has been charged prior to shipment. However, the backup time becomes shorter when using it for the first time due to spontaneous discharge. We recommend charging this unit before using it.
- If you do not perform the initial backup time measurement described below in "2-6 Measuring the initial value of backup time", proceed to "3. Operation". → Page 34

## 2-6 Measuring the initial value of backup time

- When you measure the backup time initial value of the unit in your environment, this value can be used as a guide when checking the battery and deciding the UPS monitoring software setting values.

 "5. Measuring the backup time" → Page 51

## 2-7 Recharging the battery

The battery is discharged completely when the backup time is measured, so you need to recharge it before using the UPS.

- You can use connected devices while recharging the battery, but the backup time when a power failure occurs is shorter until the battery is fully charged.  
(If a power failure occurs immediately after the start of charging, backup stops immediately.)

 Charge the battery as described in "2-5 Charging the battery."

Preparation for starting operation is now complete.

# 3. Operation

## 3-1 Precautions and notes for operation

 **Caution (for use)**

**Never touch the metal part of the input plug if it is disconnected while the unit is operating.**

- Doing so may result in electric shock.
- The leak current of this product itself is less than the value of the safety standard (leak current: 1 mA). However, because connected equipment causes the leak current to increase, you must never touch the metal part of the input plug.
- When the unit is operating, voltage is generated in the metal parts of the input plug via capacitors in the internal circuit, regardless of the elapsed time.



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

- Doing so may cause an electric shock or a fire.
- If the unit becomes wet, stop using it and have it inspected and/or repaired.  
For repair, contact us: \_\_\_\_\_



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

- Continuing the use of it may cause a fire.

Ambient temperature	Expected life
20°C	4 to 5 years
30°C	2 to 2.5 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, power supply output receptacles and output terminal block.**

- Accumulated dust may cause a fire.



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

- Doing so may cause abnormal heating or a fire.



**If you notice abnormal sound or smell, smoke, or leakage from the inside, immediately turn OFF the power switch and disconnect the AC input plug from a wall outlet (commercial power).**

- Using the unit under such conditions may cause a fire.
- If you notice such a condition, stop using the unit and contact us at \_\_\_\_\_ for inspection and repairs.
- Use the unit under the conditions in which you can immediately disconnect the AC input plug from a wall outlet (commercial power) in the case of an abnormal event.



**If fluid leaks from the unit, 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 on the unit that are 25 kg or heavier, and do not drop metal 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.



## Notes

**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.

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

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

## Explanation

### Usual operation

- 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 of the unit is connected to a wall outlet (commercial power).

### Quitting Battery Mode

- If a power failure lasts for an extended period of time, the battery discharges and power output from the unit stops. Shut down your computer after performing appropriate procedures (for example, saving data) while the unit is still supplying power.

### Rebooting

- If the battery discharges completely during a power failure, the unit stops. After recovery from the power failure, the unit automatically restarts and supplies power. If you do not want to restart the connected devices, turn OFF the power switch of either the unit or the connected devices.

 Setting switch 2 can be used to select whether or not auto restart is performed. See Page 43

### 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 the instructions in “6-2 Replacing the battery” on page 54.

## 3-2 Start and stop procedures and basic operation

### ● When the power switch is OFF and the AC input plug is connected to a commercial power supply:

- The details of the most recent error are displayed. (item 4 on page 40)
- The status indicator displays " **D-1**".
- Power output is stopped.
- The battery automatically starts recharging.

### ● Start procedure

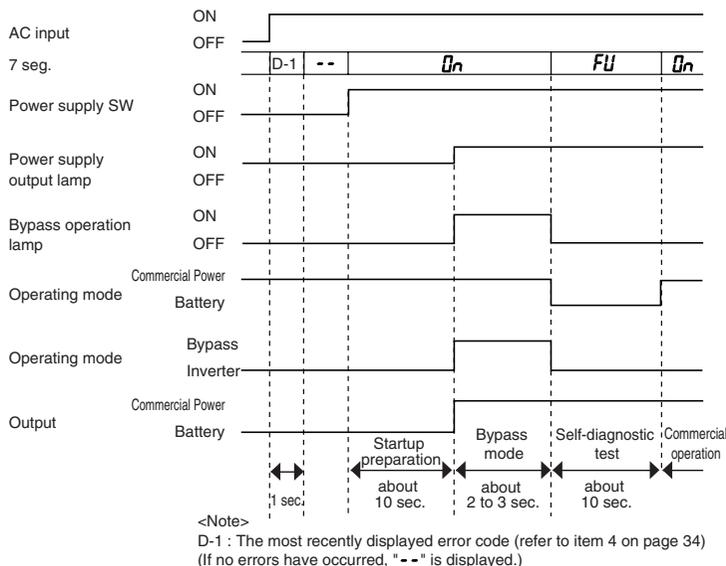
**Operation** Turn on the power switch of the UPS.

- Output begins in Bypass Mode about 10 seconds after the switch is activated. (Status indicator " **On** ") However, " **D-1** " is displayed at cold start, and output begins in Battery Mode.
- The status indicator displays " **FU** ", and the self-diagnostic test is performed in Battery Mode for about 10 seconds. (If the battery voltage is low, the self-diagnostic test is not performed. It is automatically executed after the battery is charged.)
  - \*1 When the self-diagnostic test finishes successfully, switching to AC output from commercial power is performed and normal operation starts.
  - \*2 Self-diagnostic test is not performed at cold start.
- If the self-diagnostic test is finished normally, It is replaced by the AC output from a commercial power supply and become a normal driving state through inverter mode.
- If the self-diagnostic test is not executed, the UPS immediately starts outputting AC from commercial power.

Status indicator	<b>On</b>
Beep	None
Power supply output receptacles	Outputs power (connected devices are powered)

**See also** Cold start ON/OFF setting → Page 49

- During operation, the battery is charged automatically.



### ● Operation after a power failure

- If a power failure or abnormal input power supply occurs, the UPS automatically switches to Battery Mode, continuing power output from the Power Supply Output Receptacles supplied from the battery.
- The status is displayed and the beeper sounds intermittently to alert the user.

 Setting switch **1** can be used to turn the beeper ON/OFF. → Page 43

( ) indicates blinking

Status indicator	Battery replacement	Beep	Output	Charging	Description	Solution
	○	Intermittent 4-second intervals	ON	OFF Discharging	In Battery Mode due to power failure or AC power error.	Perform shutdown operations for the connected devices and stop them.
	○	Intermittent 1-second intervals	ON	OFF Discharging	(Same as above.) Battery level is low, so output will stop soon.	(Same as above.)
	○	None	OFF	OFF Discharging	Battery is dead, so output stopped. (This is displayed only for a few seconds.)	Charge the battery.

### 3. Operation

#### ● Operation during recovery from a power failure

- If a power failure or abnormal power input is resolved while the UPS supplies power, it returns to the commercial power output status automatically. Charging the consumed battery starts.
- 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.

 Setting switch 2 can be used to select whether or not auto restart is performed. See Page 43

#### ● Stop procedure

 **Turn ON the power switch of the UPS.**

Status indicator	Battery replacement	Beep	Output	Charging	Description
- -	○	None	OFF	ON	There is AC input Power switch "OFF"

- The power output from the UPS stops.
- Even if you turn off the power switch, if AC is supplied from commercial power, the battery is automatically charged.

#### ● Connection capacity/battery level meter

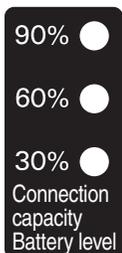
In Commercial Power Mode (normal operation), the power consumption of devices connected to the capacity/battery level meter is displayed as a percentage.

BU1002SW: Displayed in 3 levels, with 1000VA/700W as 100%.

BU3002SW: Displayed in 3 levels, with 3000VA/2100W as 100%.

**When the power consumption of connected devices is 30% or less, the level meter turns OFF.**

In Battery Mode, the battery level is displayed as a percentage.



	In Commercial Power Mode Connection capacity Indicator is ON	Indicator is ON In Battery Mode Battery level Indicator blinks
90% lamp	90% or more	60% or more
60% lamp	60% or more	30 to 60%
30% lamp	30% or more	0 to 30%
All OFF	30% or less	—

\* In Commercial Power Mode (normal operation), the battery level is displayed when the beeper stop/test switch is pressed.

(Please note that if the button is pressed and held for 5 seconds or more, the beeper begins to sound and the self-diagnostic test starts.)

## 3-3 Interpreting beeps and displays

○ indicates the display is OFF  
● indicates the display is ON  
⋮ indicates blinking

### 1. Displays and beeps in normal operation

No.	Status indicator	Power supply output lamp	Bypass operation lamp	Battery replacement lamp	Beep	Charging	Description	Solution
1		○	○	○	None	OFF	No AC input. Operation stopped.	—
2		○	○	○	None	ON	There is AC input. Power switch is OFF.	—
3		●	○	○	None	ON	Power switch is ON. Operating normally.	—

### 2. Displays and beeps while testing

4		●	○	○	None	OFF Discharging	Self-diagnostic test in progress.	—
5		●	○	○	None	OFF Discharging	Auto battery test in progress.	—

### 3. Displays and beeps during power failure or AC input error

6		●	○	○	Intermittent 4-second intervals	OFF Discharging	In Battery Mode due to power failure or AC input error. Output will stop if Battery Mode continues.	Perform shutdown operations for the connected devices and stop them.
7		●	○	○	Intermittent 1-second intervals	OFF Discharging	(Same as above.) Battery level is low, so output will soon stop.	(Same as above.)
8		○	○	○	None	OFF Discharging	Battery is dead, so output stopped. (This is displayed only for a few seconds.)	Charge the battery.
9		○	○	○	None	(ON)	AC input voltage is too high (over).	Use within the AC input voltage/frequency range described in the specifications. → See Page 88
	AC input frequency is too high (over).							
10		○	○	○	None	(ON)	AC input voltage is too low (under).	(Same as above.)
	AC input frequency is too low (under).							

### 4. Displays and beeps when there is an equipment failure

11		●	○	○	Intermittent 0.5-second intervals	ON or discharging	There are too many connected devices and the rated capacity is exceeded. If this state continues for as long as or longer than the times described below, commercial power continues to be supplied through bypass operation (Note 1). • When connection capacity is at 100% or higher: Bypass operation begins after 10 seconds • When connection capacity is at 120% or higher: Output stops after 1 minute (Go to No.12) • When connection capacity is at 140% or higher: Output stops after 10 seconds (Go to No.12)	Reduce the number of connected devices until the display appears as in status No. 3.
12		○	○	○	Continuous	ON or discharging	Output stopped due to exceeded connection capacity.	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.

### 3. Operation

(○ indicates the display is OFF)  
 (● indicates the display is ON)  
 (: : indicates blinking)

#### 4. Displays and beeps when there is an equipment failure (continued)

No.	Status indicator	Power supply output lamp	Bypass operation lamp	Battery replacement lamp	Beep	Charging	Description	Solution
13		○	○	○	Continuous	ON or discharging	Output stopped due to output short-circuit.	Check that the AC input of connected devices is not short-circuited.
14		●	●	○	Continuous	ON or discharging	Moved to bypass operation due to problem with the external cooling fan (Note 1).	Replace the external cooling fan.  [See also] "Replacing the fan" Page 62 The fan can be replaced via the rear panel without stopping this unit. Use replacement fan sold separately. (Note 2)
15		— (Note 3)	— (Note 3)	○	Continuous	—	Failure occurred. When the beep stop switch is pressed, the details of the error are displayed (Nos. 16 to 23).	Turn OFF this unit and all connected devices. Then, turn the power switch back ON for this unit only. If the display does not change, there is a problem with this unit. Contact the shop of purchase or our peripheral device customer support center at: _____
16		●	●	○	Continuous	—	Moved to bypass operation due to output voltage error (over) (Note 1).	Displays the details of the error that occurred only while pressing the beep stop switch while in state No. 15.
17		●	●	○	Continuous	—	Moved to bypass operation due to output voltage error (under) (Note 1).	(Same as above.)
18		●	○	○	Continuous	—	Moved to Battery Mode due to battery charge voltage error (over). Output will stop when the battery is dead.	(Same as above.)
19		○	○	○	Continuous	—	Output stopped because the output of the battery charge voltage short-circuited.	(Same as above.)
20		●	●	○	Continuous	—	Moved to bypass operation due to problem with the internal temperature (Note 1).	(Same as above.)
21		●	●	○	Continuous	—	Moved to bypass operation due to bypass bus voltage error (Note 1).	(Same as above.)
22		— (Note 3)	— (Note 3)	○	Continuous	—	(1) Output stopped due to system error. (2) Other error occurred.	(Same as above.)

Note 1: In bypass operation, commercial power is output directly. Output stops when a power failure (AC input OFF) occurs in bypass operation.

Note 2: Fan replacement performed by the user does not comply with UL, CE standards.

Note 3: The displays and operations vary according to the status.

#### 5. Display and beep for battery replacement

23		●	○		Intermittent 2-second intervals	ON	The battery test detected a weak battery (warning only, output continues).	Replace the battery. You can replace the weak battery with a separately purchased replacement battery as needed.
----	--	---	---	--	---------------------------------	----	--	--

## 4. UPS functions

### 4-1 Suspending a beep

When the beep is sounding, you can suspend it by pressing and holding the beep stop/test switch for 0.5 seconds or longer.



### 4-2 Self-diagnosis test

This test performs a failure diagnosis on the unit and performs a simple 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.

If the battery is not fully charged, the self-diagnostic test is not executed immediately. After charging is complete, it is automatically executed.

- (1) Connect your computer and other devices to the UPS and then turn ON the power switch of the UPS.
- (2) The Battery Mode starts for testing purpose automatically (Status indicator "**FU**"). (No beep sounds.) After about 10 seconds, when the test is complete the normal operation automatically starts.
- (3) If the status indicator/battery replacement lamp blinks and the beeper sounds:

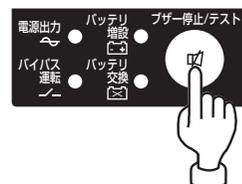
 "3-3 Interpreting beeps and displays" → Page 39

Follow the directions for the solutions described in "4. Displays and beeps when there is an equipment failure" and "5. Display and beep for battery replacement".

- \* This test can also be run from the included UPS monitoring software. For more details, refer to the online help for the UPS monitoring software.

This test can also be performed manually.

Press and hold the Beep Stop/Test Switch of the UPS for 5 second or longer. When the beeper begins to sound intermittently, release the Switch.



## 4-3 Description of the auto battery test function

This test performs a failure diagnosis on the unit and performs a test to check for battery deterioration. (This test is more accurate than the self-diagnostic test.)

This test is performed automatically. (You do not have to perform any special operations.)

The test is performed at intervals of 4 weeks after the AC Input Plug is connected to a wall outlet (commercial power).

The test is not performed if the power switch is OFF or if the battery is not fully charged.

- (1) When the auto battery test starts, the Battery Mode automatically starts (Status indicator “**bc**”). (No beep sounds.) After the auto battery test is complete, the normal operation automatically starts.
- (2) If the status indicator/battery replacement lamp blinks and the beeper sounds:

**See also** "3-3 Interpreting beeps and displays" → Page 39

Follow the directions for the solutions described in “4. Displays and beeps when there is an equipment failure” and “5. Display and beep for battery replacement”.

The setting switch on the Front of the UPS allows you to select the "disable the auto battery test" setting.

**See also** "4-4 Changing the setting of the functions" → Page 42  
See "Setting for whether or not to perform battery test"

This test can also be performed manually.

Press and hold the Beep Stop/Test Switch of the UPS for 10 second or longer.

When the beeper changes from intermittent beeps to a sustained beep, release the switch.

## 4-4 Changing the setting of the functions

### 1. Selecting functions with the DIP switch



### Caution

**After changing the setting switch, disconnect the AC input plug, wait until the status indicator is completely OFF, and then reinsert the AC input plug.**

- The setting switch changes do not become valid until the AC input plug is reinserted.

- Use a fine-pointed tool such as a small screwdriver to maneuver the switch's lever.



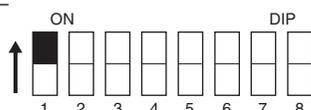
## Setting switch function list

No.	Function to set	OFF side	ON side
1	Setting for beeper sound in the event of power failure, etc.	Beeper sounds	Beeper does not sound
2	Auto startup setting after recovery from power failure	Perform auto startup	Do not perform auto startup
3	Setting for whether or not to perform battery test	Perform test	Do not perform test
4	Auto startup mode setting	Mode A	Mode B
5	---	---	---
6	---	---	---
7	BS signal valid range setting	Always valid	Valid only during Battery Mode
8	---	---	---

\* In the factory settings, everything is OFF.

### ● Setting for beeper sound in the event of power failure, etc. (setting switch **1**)

... **Factory setting: OFF**

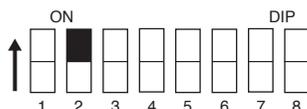


OFF: The beeper sounds when an alarm is necessary.

ON: The beeper does not sound for backup operation or battery replacement. The beeper sounds for other errors (connection capacity exceeded, operation error, etc.).

### ● Auto startup setting after recovery from power failure (setting switch **2**)

... **Factory setting: OFF**



OFF: Automatically starts when power is restored.

After a power failure occurs and the unit shuts down using the shutdown software or contact signal (BS signal), the unit automatically starts and begins to output when the commercial power is restored.

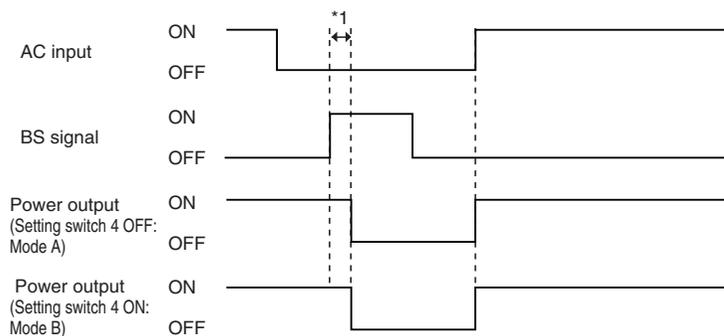
ON: Does not automatically start when power is restored.

After the unit is shut down with the UPS monitoring software or contact signal (BS signal), it does not start up when commercial power is restored. Startup is performed by turning the power switch OFF once, and then back ON again.

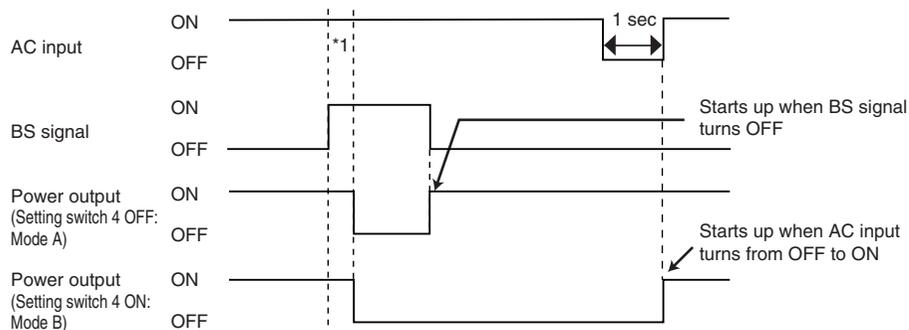


(1) When BS signal is used to stop the UPS after a power failure occurs

(1)-1.



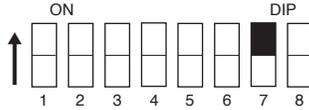
(2) When BS signal is used to shut down the UPS when AC input is ON



\* 1: BS signal reception time corresponds to the setting switch 7.

4. UPS functions

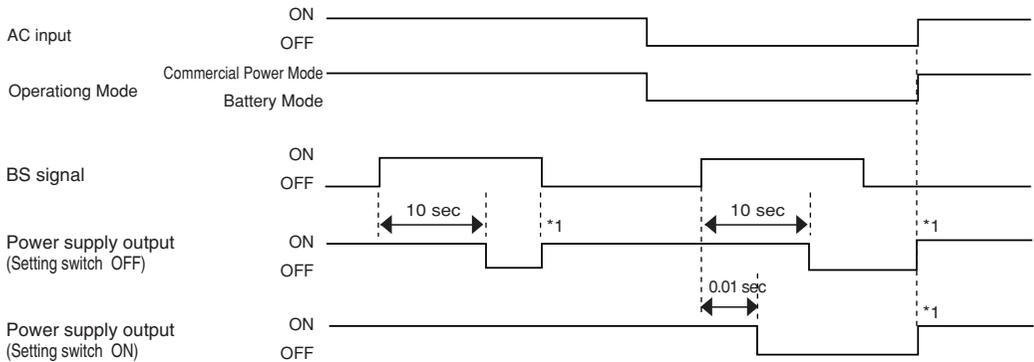
● **BS signal valid range setting (setting switch 7) ... Factory setting: OFF**



- OFF: The BS signal is always valid (receivable).  
The unit's "power output" can be stopped by inputting a "ON" backup power supply stop signal (BS) that continues for 10 seconds or more.
- ON: The BS signal is valid (receivable) only when in Battery Mode. (The signal is not received when in Commercial Power Mode.)  
The unit's "power output" can be stopped by inputting a "ON" backup power supply stop signal (BS) that continues for 0.01 (10 ms) seconds or more.  
Use this setting in commercial operation when you do not want to stop operations when a backup power supply stop signal (BS) is received.

- Auto startup operation when power is restored  
Auto startup when power is restored is associated with setting switch 2.  
However, the unit does not start up when the BS signal is ON.

● BS signal valid range setting (setting switch 7)



Note 1: Operation when setting switch 2 is OFF (auto startup is performed). When it is ON (auto startup is not performed) auto startup is not performed.

## 2. UPS operation mode settings

### 2-1 Settable items and explanations

There are 4 items to select.

- 1) Cold start ON/OFF setting
- 2) Output voltage setting
- 3) Power output stop delay time setting
- 4) Signal input/output test

**The settings available for this operation are shown below.**

#### 1) Cold start ON/OFF setting

- Cold start OFF mode  
The unit can start up only when there is AC input.
- Cold start ON mode

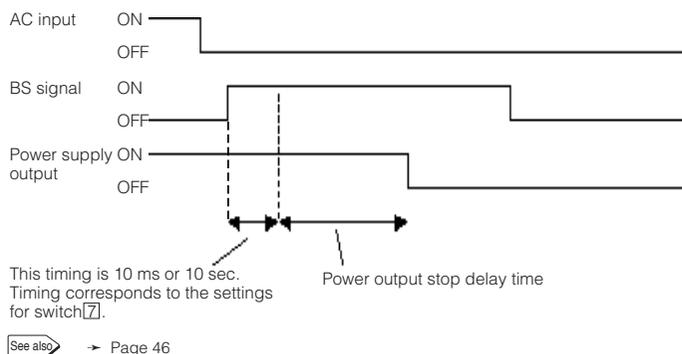
It is possible to start up the unit even when there is no AC input plug.  
(It is not possible, however, to start up the unit by the remote signals.)  
Normal operation occurs when AC input is ON. The output frequency is the same as the frequency the last time there was AC input.

#### 2) Output voltage setting (200V/220V/230V/240V)

Four types of output voltage can be set. (Setting range: 200V/220V/230V/240V)  
Output is performed at the set voltage, with no relation to the input voltage.

#### 3) Power output stop delay time setting

It is possible to set the delay time for stopping the power supply output after the BS signal is received. (Setting range: 0 to 10 minutes)



### <Note>

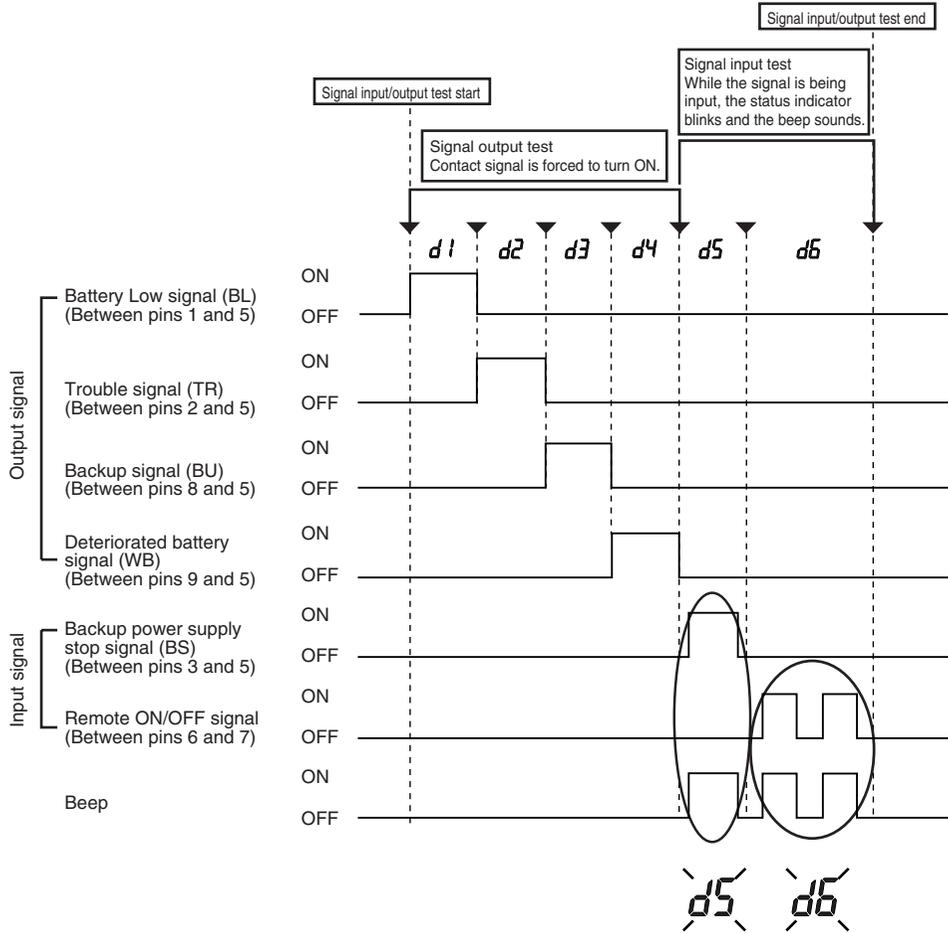
The remote ON/OFF signal is not related to this setting.

When the remote ON/OFF signal is "High", the UPS stops the output immediately.

#### 4. UPS functions

##### 4) Signal input/output test (BL/TR/BU/WB/BS/remote)

- Four types of output signal can be forcibly turned ON.
- The ON/OFF state of two types of input signal can be checked with the status indicator and the beeper.

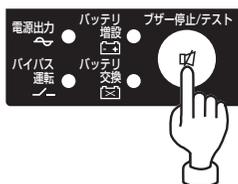


While the signal is being input, these status indications blink and the beeper sounds.

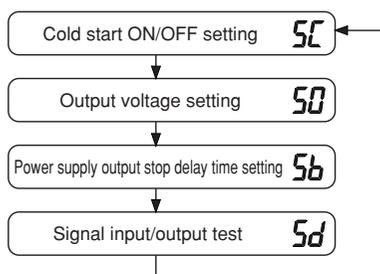
## 2-2 Settings

The UPS operation mode can be set if the power switch is turned ON while the beeper stop switch is pressed.

Note: While in setting mode, output from the power supply output is OFF even if the power switch is ON.



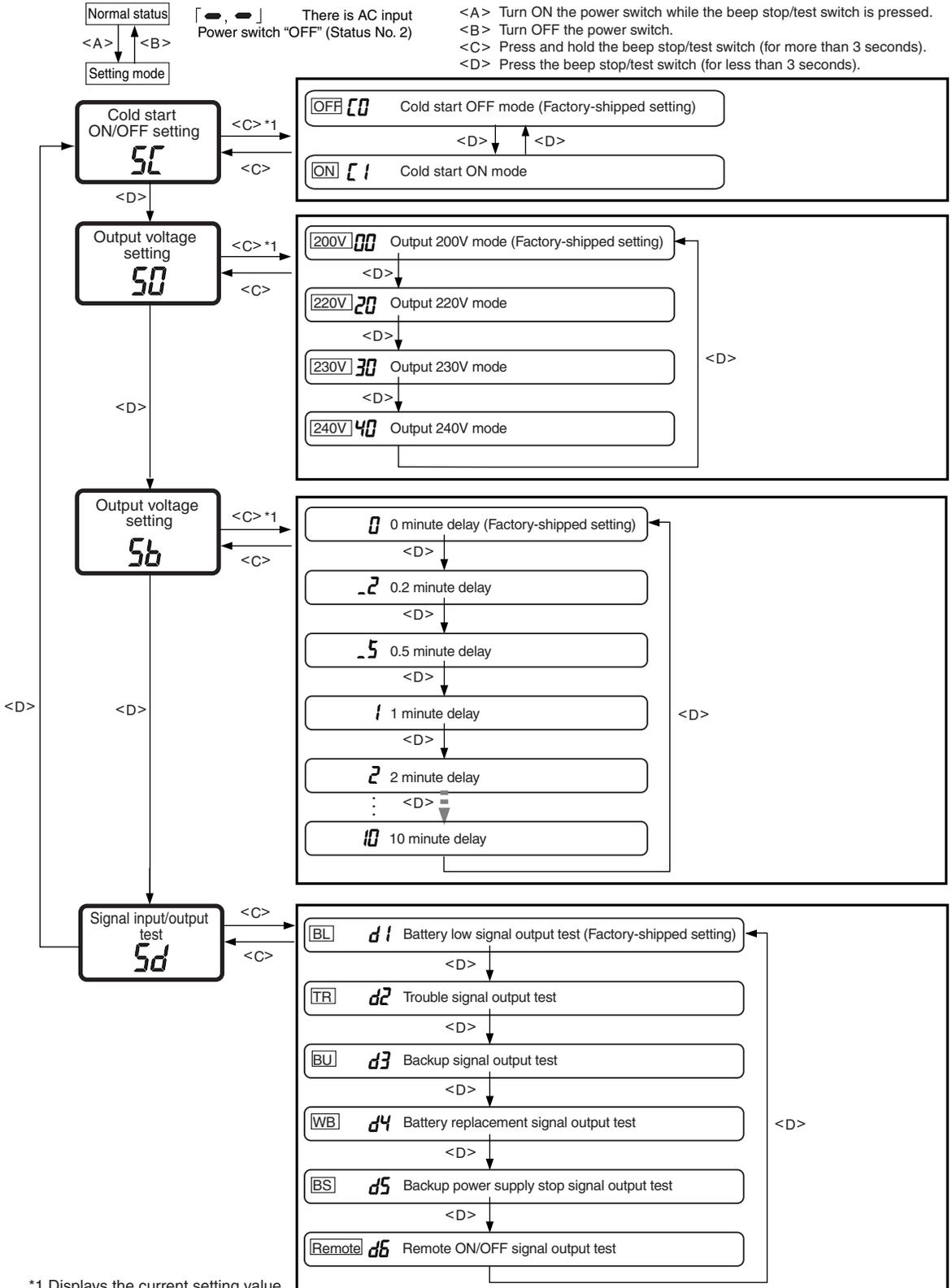
(1) When the beeper stop switch is briefly pressed (for less than 1 second), the next item is displayed.



(2) The unit enters the “individual item setting mode” when the beeper stop switch is pressed and held (for more than 1 second).

(3) When the power switch is turned OFF, the setting mode quits and the unit enters power switch OFF status (status No.2).

## 4. UPS functions



## 5. Measuring the backup time

### 5-1 How to measure backup time

#### Caution

**Never touch the metal part of the input plug if it is disconnected while the unit is operating.**



- Doing so may cause an electric shock.
- The leak current of this product itself is less than the value of the safety standard (leak current: 1 mA). However, leak current increases due to connected equipment. Therefore, never touch the metal part of the input plug.
- When the product is operating, voltage is generated at the metal part of the input plug via capacitors in the internal circuit regardless of elapsed time.

- (1) When the AC input plug is connected to a wall outlet (commercial power), the battery automatically starts charging, taking up to 8 hours to complete (24 hours when an additional battery unit is connected).
- (2) Turn ON all devices connected to the power output to be "backed up during a power failure". (This includes devices connected to the AC outlet of your computer.)  
Operate the connected devices in a way that allows the power supply to be stopped at any time.

#### ● For Windows Server 2003/XP/Me/2000/Windows NT/Linux/Mac:

Perform measurement while the hard drive is stopped.

#### ● For Windows 98/95:

Choose "Shut Down" in Windows and follow the procedure below to shut down your OS.

Choose "Restart in MS-DOS mode" to exit from OS and display the MS-DOS mode screen.

- (3) Disconnect the AC Input Plug of the UPS and measure the backup time.  
Measure the time until the unit automatically stops and all displays disappear with the plug disconnected.

\* The backup time you measure for the first time after purchase is the "initial value of the backup time."

### 5-2 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) 200 VAC, 50/60Hz, 145 W

Example 2) 200 VAC, 50/60Hz, 1.8 A

Example 3) 200 VAC, 50/60Hz, 150 VA

Indication	Value
VA	× power factor = W
A	× power factor × 200 = 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.

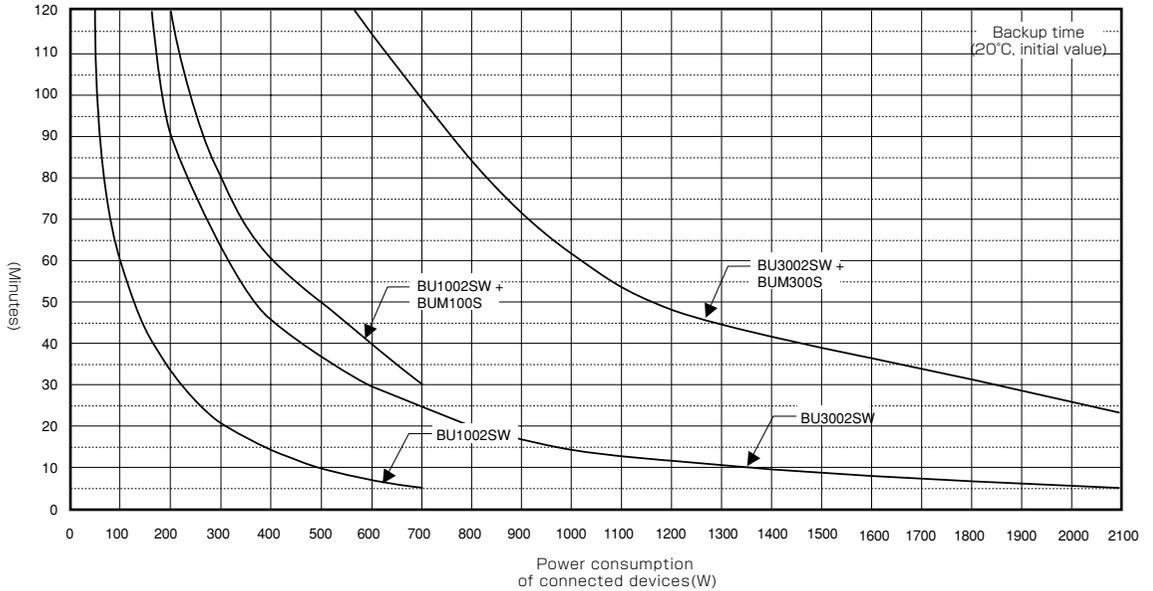
(When the power factor is unknown, enter "1". The power factor usually ranges between 0.6 and 1.)

- (2) Add the values converted into W to obtain the total capacity of the connected devices.

## 5. Measuring the backup time

(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)
- The smaller the capacity of connected devices becomes, the longer the backup time becomes.



Time unit: Minutes

Model	20W	50W	100W	200W	300W	400W	500W	700W	1000W	1400W
BU1002SW	180	120	60	35	20	15	10	5	-	-
BU1002SW+ BUM100S	720	420	240	120	80	60	50	30	-	-

Model	200W	400W	600W	800W	1000W	1200W	1400W	1600W	1800W	2000W	2100W
BU3002SW	92	46	30	20	15	12	10	8	7	5.5	5
BU3002SW + BUM300S	340	175	115	85	62	49	43	37	31	26	24

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

# 6. Maintenance and Inspection



## Caution (for maintenance)

**When maintaining the connected equipment, turn OFF the power switch and disconnect the AC input plug.**

- Even if you disconnect the AC input plug while the UPS is operating, the power output of this unit does not stop and power is supplied from the outlet during a power failure.



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

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



**If fluid leaks from the unit, 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 receptacles of the UPS.**

- Doing so may result in electric shock.



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

- Doing so may result in electric shock.



## 6-1 Checking the battery

The sealed lead battery used in the unit has a limited life.

(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.

### 1. Life of battery (estimated replacement timing)

Ambient temperature	Life of battery	Replacement estimation
20°C	4 to 5 years	4 to 5 years after starting use
30°C	2 to 2.5 years	2 years after starting use

### 2. Methods for checking the battery

There are 3 methods for checking the battery.

- Perform a self-diagnostic test. (See page 41.)
- Use the auto battery test function. (See page 42.)
- Measure the backup time. (See page 51.)

By measuring the backup time, the battery life can be determined more accurately.

**See also** Measure the backup time according to "5-1 How to measure backup time"  
→ Page 51

If the measured value is equal to the "initial value of the backup time" or less than half the value obtained from the graph of "Estimated backup time" on page 46, replace the battery.

- When you compare the "initial value of the backup time" you measured and the current backup time, make the capacity of devices connected to the UPS same as when you measured the initial value to make judgment accurately.

**3. Guidelines for how often to check the battery (measure the backup time)**

Ambient temperature	Check once every 6 months	Check once a month
20°C	For the first 3 years after purchase	When 3 or more years have passed since purchase
30°C	For the first 1.5 years after purchase	When 1.5 or more years have passed since purchase

**\* The battery deteriorates even if it is stored. The higher the temperature is, the shorter the life becomes.**

## 6-2 Replacing the battery

The battery can be replaced while the unit is stopped (power supply output stopped).



**Caution**

When the unit is used in compliance with UL standards or CE marking, do not replace the battery while in operation (while power is being output). Replacing the battery while in operation does not comply with UL standards or CE marking. Make sure to stop the operation of the unit before replacing the battery.

- \* When replacing the battery, stop the connected devices, turn OFF the power switch of the UPS, and disconnect the AC input plug from the wall.
- \* 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.



**Caution (for battery replacement)**

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

- Handle the battery carefully so that you do not drop it.
- Not doing so could cause injury or burns due to liquid (acid) leakage.



**Use a specified battery for replacement.**

- Not doing so may cause a fire.
- Product model: BP100XS (Replacement battery pack for BU1002SW)  
BP150XS: Two required (Replacement battery pack for BU3002SW)



**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.



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

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



**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.



## ⚠ Caution (for battery replacement)

### Do not put the battery into fire and do not break it.

- The battery may explode or leak dilute sulfuric acid.



### 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:

- 1) Remove watches, rings, or other metal objects from the hands.
- 2) Use tools with insulated handles.
- 3) Wear rubber gloves and boots.
- 4) Do not lay tools or metal parts on top of batteries.
- 5) Disconnect charging source prior to connecting or disconnecting batteries terminals.



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

## Notes

### Battery recycling

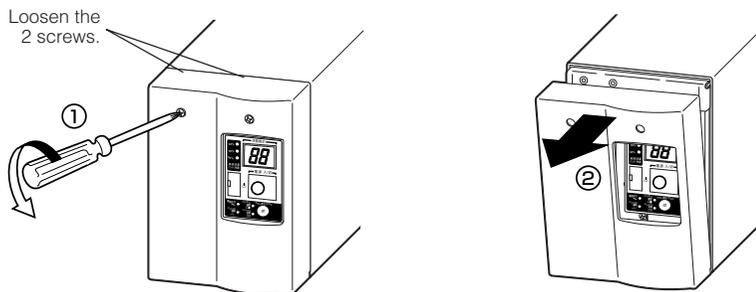
The unit uses lead acid batteries, which are a valuable recyclable resource. Please recycle. For information on recycling, please contact our peripheral device repair center.



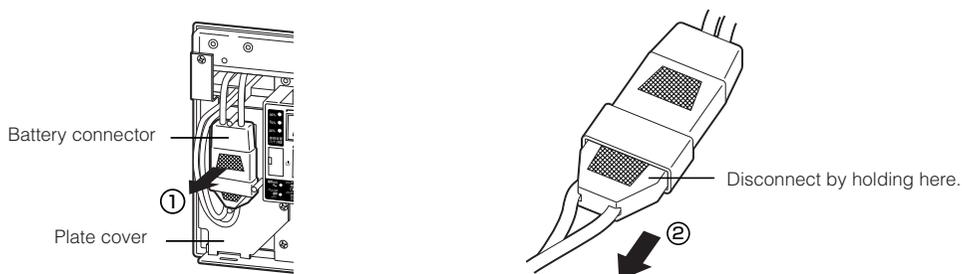
## ■ Procedure for recycling the battery

### <BU1002SW>

1. Use a screwdriver to loosen (turn 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  
Pull the front panel towards you to remove it. ②



2. Remove the battery connector from the plate cover ① and disconnect the connector. ②

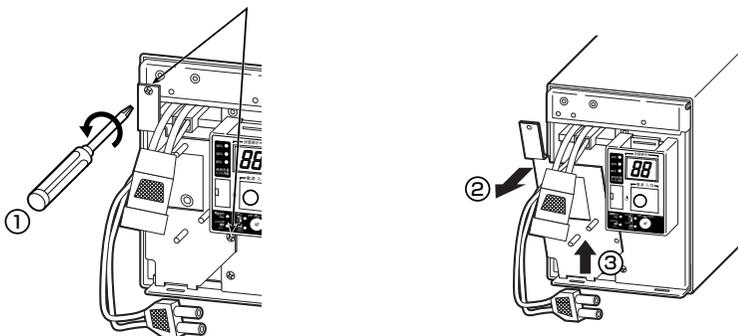


## 6. Maintenance and inspection

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3. Turn the 2 screws that fix the plate cover counterclockwise to remove them. ①  
Pull the plate cover towards you ② and lift it up to remove it. ③

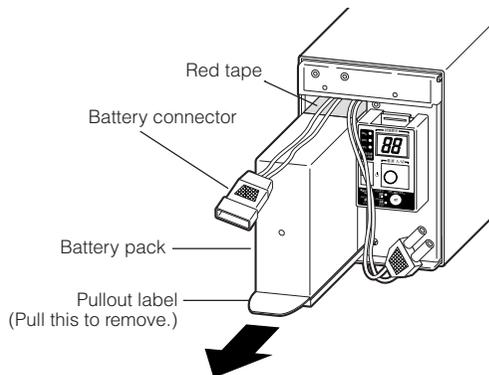
Remove the 2 screws.



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

**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

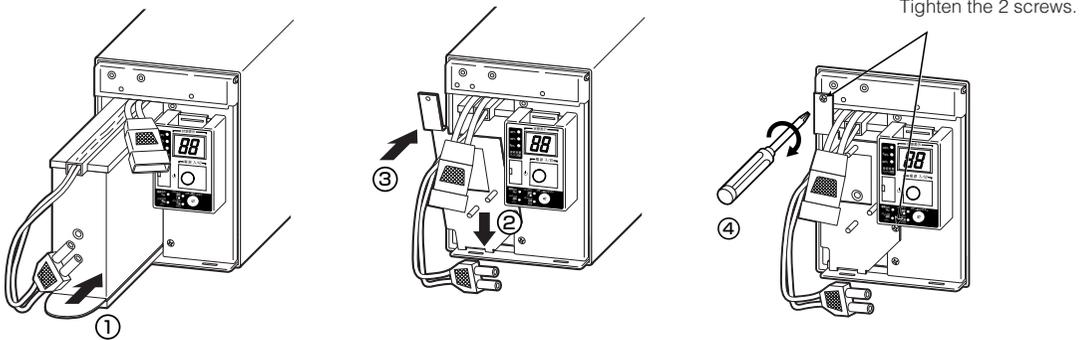
For BU1002SW: Model BP100XS

Attach the plate cover.

Insert the lug at the bottom of the cover into the hole in the main body ② and push it towards the main body. ③

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

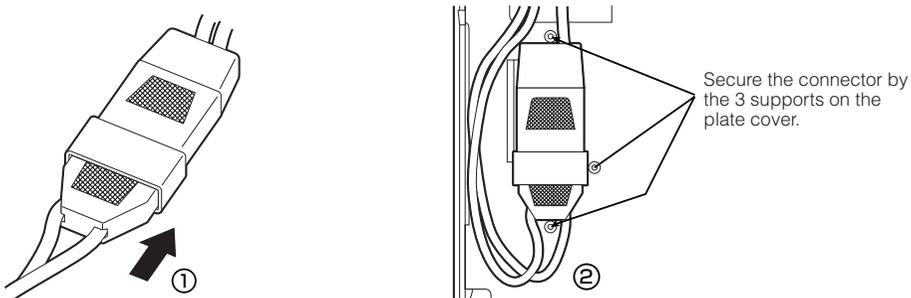
Do not pinch the cable with the plate cover.



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

Secure the connector to the plate cover. ②

**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.**



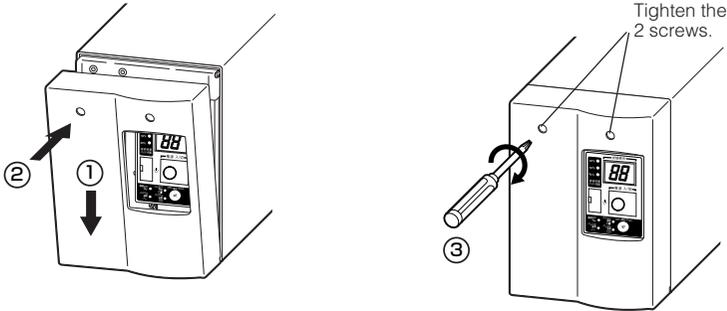
**If you cannot secure the connector to the plate cover, the connector is not inserted completely.  
Insert the connector again.**

## 6. Maintenance and inspection

### 7. Attach the front panel.

Insert the lug at the bottom of the front panel into the hole in the main body ① and push it towards the main body. ②

Use a screwdriver to securely tighten (clockwise) the 2 screws at the top of the front panel. ③

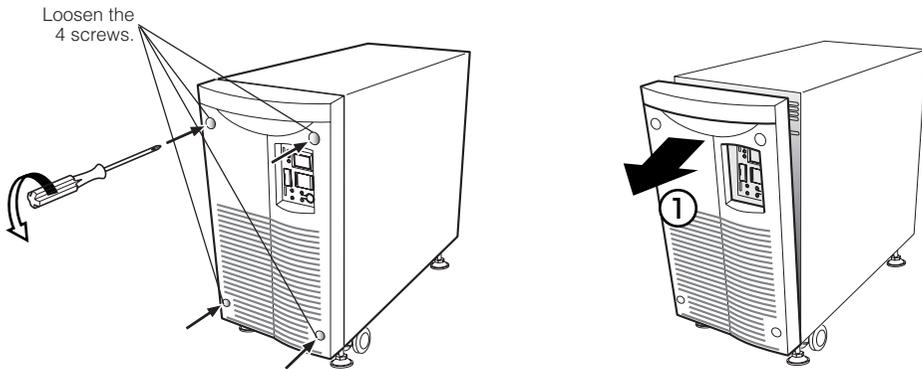


Battery replacement is now complete.

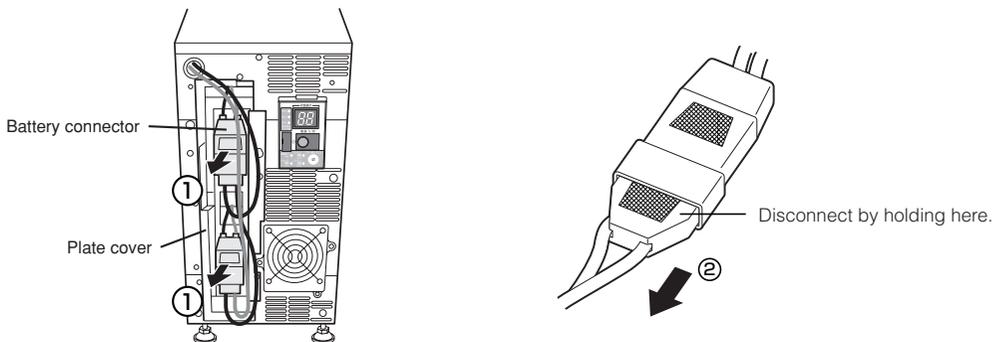
## ■ Procedure for recycling the battery

<BU3002SW>

1. Use a screwdriver to loosen (anti-clockwise rotation) the 4 screws on the front panel of the unit, until they turn freely. (The screws cannot be removed from the front panel.) Pull the front panel towards you to remove it. ①

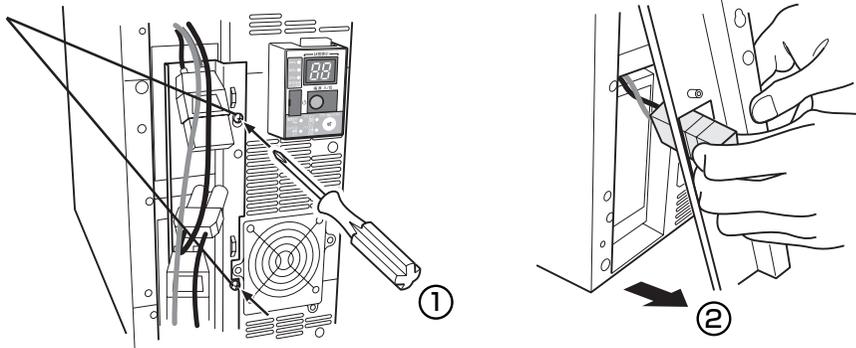


2. Remove the battery connectors from the lower plate cover ① and disconnect each of the connectors. ②



3. Turn the 2 screws that fix the plate cover anti-clockwise to remove them. ①  
While pulling the plate cover toward you ②, lift it up and remove the lower battery connector from the eyehole.

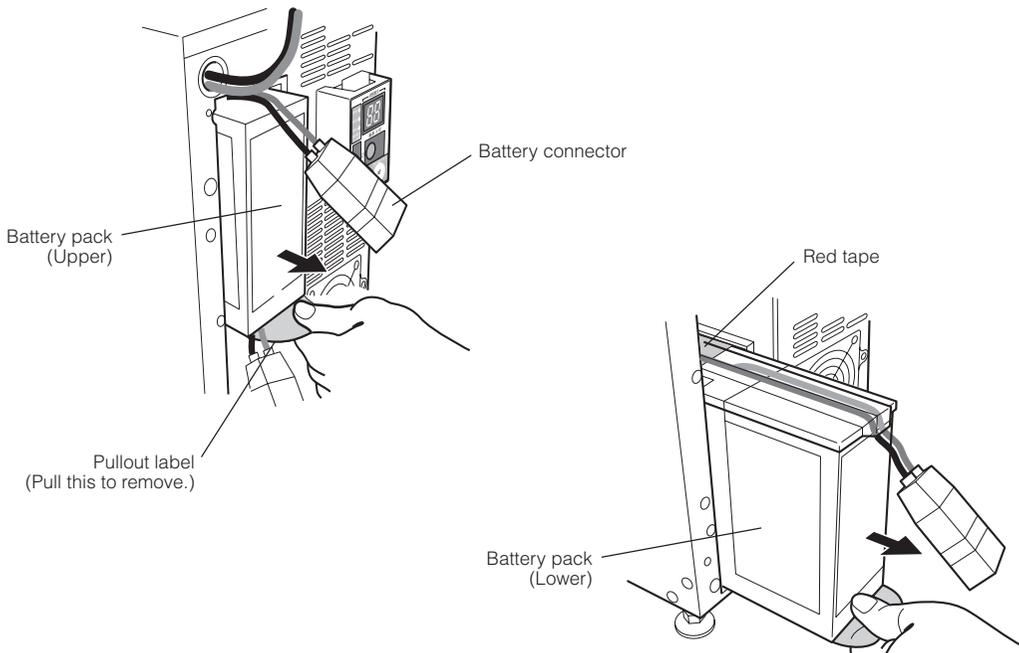
Remove the 2 screws.



4. Hold the pullout label at the bottom of the battery pack and remove the battery pack.  
Remove the upper and lower sections one by one.

**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.



## 6. Maintenance and inspection

### 5. Insert the new batteries into upper and lower sections as far as they will go. ①

#### ● Replacement battery pack

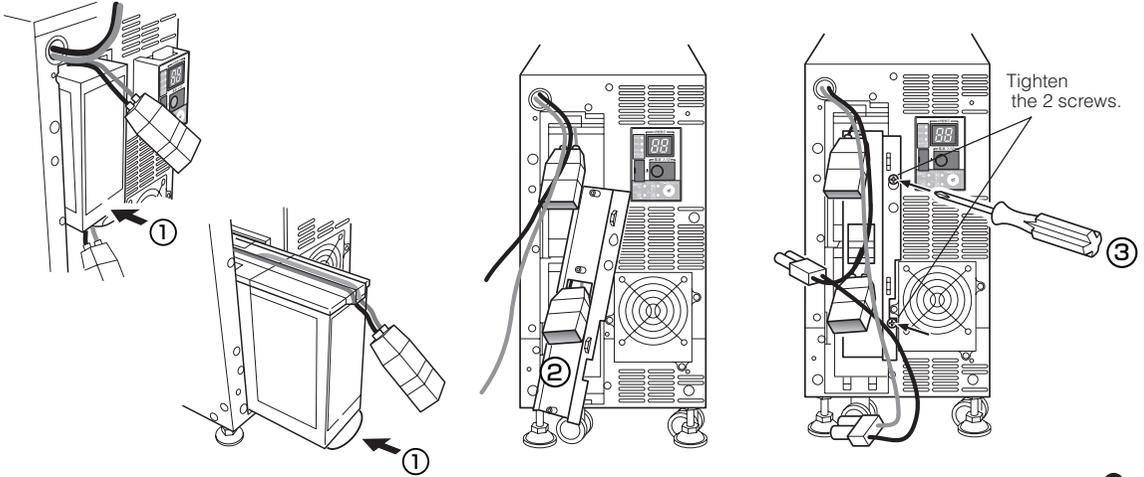
For BU3002SW: Model number BP150XS (two required)

Run the top portion of the lower battery connector through the square hole in the plate cover. ②

Insert the lug at the bottom of the cover into the hole in the main body and push it towards the main body.

Use a screwdriver to securely tighten (clockwise) the 2 screws you removed. ③

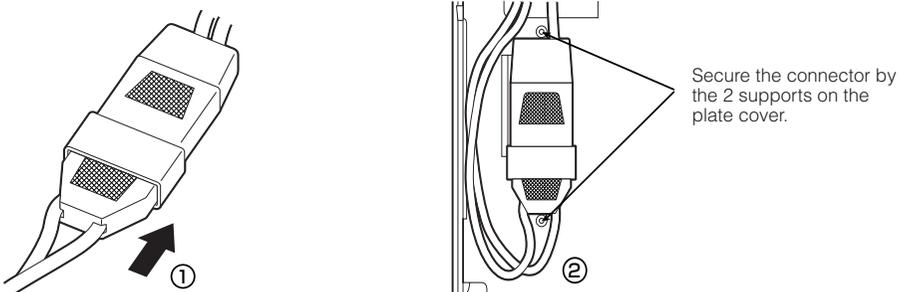
Do not pinch the cable with the plate cover.



### 6. Securely connect the upper and lower connectors. ①

Secure the connector to the plate cover. ②

**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.**

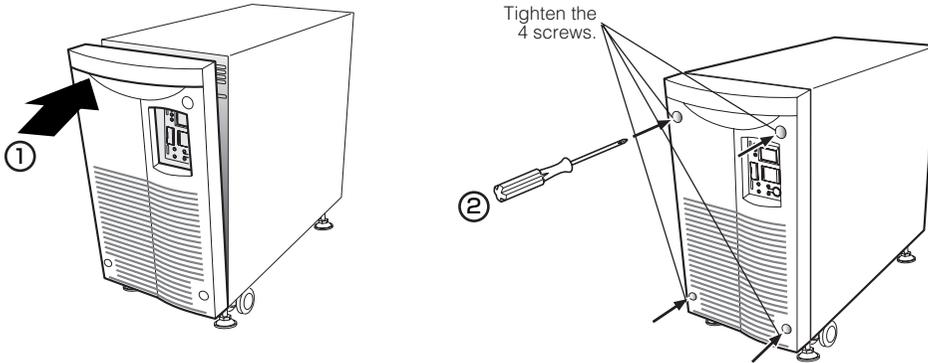


**If you cannot secure the connector to the plate cover, the connector is not inserted completely.  
Insert the connector again.**

**7.** Attach the front panel.

Push the front panel toward the main body. ①

Use a screwdriver to securely tighten (clockwise) the 4 screws on the front panel.②



Battery replacement is now complete.

**<After replacing the battery during operation...>**

If the battery replacement indicator is displayed and the beeper sounds before replacement, press the beeper stop/test button once to stop the beeper, and hold it for 5 sec. to perform a self-diagnostic test. The beeper stops and normal operation resumes after the 10-second test is complete.

**<After replacing the battery when operation was stopped...>**

Connect the AC input plug to a wall outlet (commercial power) and turn ON the power switch of the UPS. When operation starts, the self-diagnostic test is automatically performed. Normal operation resumes after the 10-second test.



**Write the usage start date on the label on the front. Also, by using the included UPS monitoring software, possible to keep a record of usage start date by the software.**

## 6-3 Replacing the fan

The fan in the unit has an expected lifespan of approximately 5 years. Replace it when the Error Lamp is lit and the fan is stopped.

### Caution

**When this product is used in compliance with UL standards or CE marking, do not replace the fan.**

- Fan replacement does not comply with UL, CE standards or CE marking.

**The fan can be replaced while the unit is in operation (power supply is being output) or while the unit is stopped (power supply output is stopped). Choose whichever replacement method is more convenient.**

- \* If the fan stops or is removed while the unit is in operation, the “EF” lamp blinks, the beep sounds continuously, and output is supplied through bypass operation. In this state, if an input power supply error occurs due to a power failure or other reason, the unit stops without entering Battery Mode.
- \* Do not replace the fan while in Battery Mode. The unit will stop.

### ■ Precautions when replacing the fan

#### Warning

**Do not insert your hand or metal objects into the fan recess.**

- Doing so may cause electric shock or short-circuit.



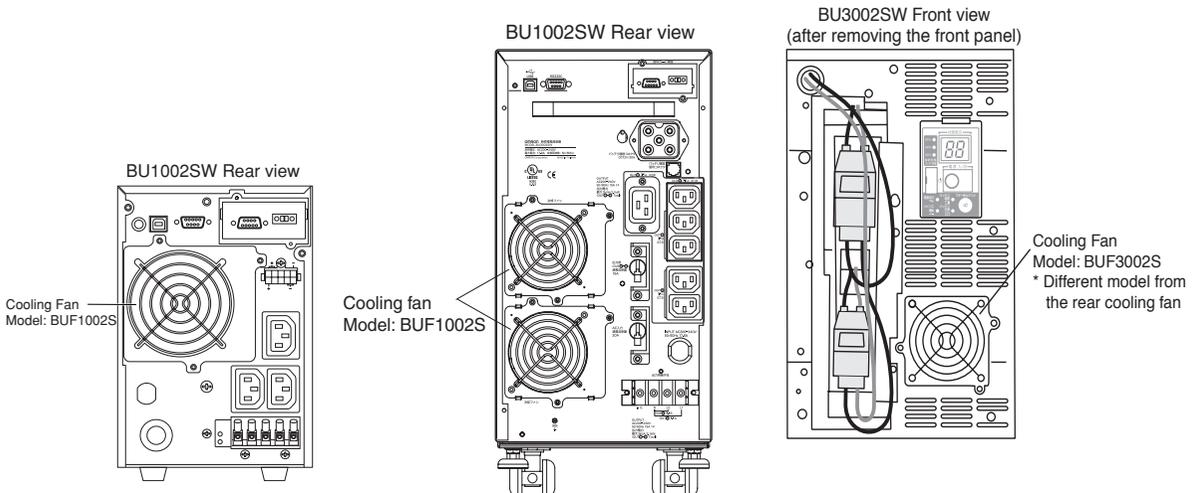
**Do not put your fingers into the fan.**

- The fan spins when the AC input plug is connected to a wall outlet (commercial power).
- Doing so may result in injury.



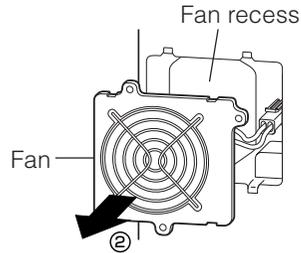
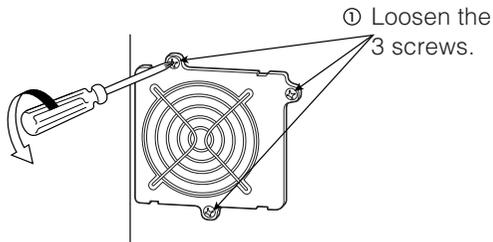
Detect abnormally working fans.

(Not rotating, abnormal noise, vibrating, the fan contacting the cover, etc)



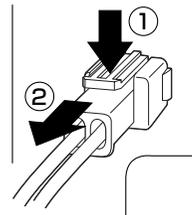
## ■ Fan replacement procedure

1. Use a screwdriver to loosen (turn counter-clockwise) and remove the 3 cooling fan screws. ①  
Pull the cooling fan toward you to remove it. ②



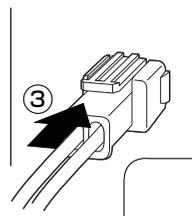
\* Different screw locations for BU3002SW front fan.

2. While pressing down on the tip of the fan connector ①, pull it toward you to disconnect it. ②  
The beep stops, and the error lamp turns OFF.

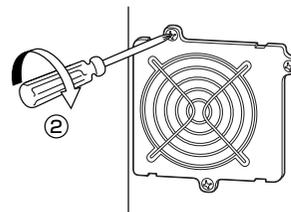
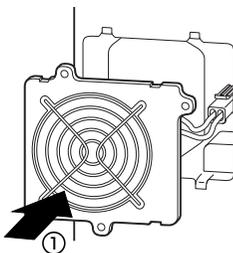


3. Insert the new fan connector until it clicks into place. ③  
The beep stops, and the "EF" status display lamp turns OFF.

- Replacement fan
  - For BU1002SW/ BU3002SW rear fan : Model BUF1002S
  - For BU3002SW front fan : Model BUF3002S



4. Insert the fan into the unit's fan recess. ①  
Use a screwdriver to securely tighten (turn clockwise) the 3 removed screws. ②  
When doing so, make sure the cable does not become pinned under the fan cover.



Fan replacement is complete.

## 6-4 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 and output terminal block of the UPS

Stop all the connected devices and the UPS and disconnect the AC input plug from a wall outlet (commercial power).

Then, remove dust with a dry cloth and make the connection again.

(For information on the connection procedure:)

 "2-3 Connecting the equipment" → Page 24

# 7. Using the UPS monitoring software and contact signal

\* If you do not use the UPS monitoring software and contact signal, this step is not required.

## ■ UPS monitoring software

“PowerAct Pro (for Windows/Linux)”, “UPS service driver” and “UPS Power Manager (Mac)” UPS monitoring software is included with this product. Refer to the table below for details about compatibility. Choose which one to use based on the application. Refer to the table below for details about compatibility. For further details about the software functions, refer to the separate “UPS Monitoring Software Quick Installation Guide.”

### • UPS monitoring software selection table

Model	OS	Communication method	UPS monitoring software	Required options (sold separately)	Reference
BU1002SW BU3002SW	Windows server2003 x64 Edition Windows XP/2000 x64 Edition	Serial (RS232C or USB 1.1)	PowerAct Pro (Note 1)	–	⇒See 7-1
			UPS service (OS standard) + UPS service driver (included software)	–	⇒See 7-2
		Contact signal (Note 2) (Note 4) LAN	UPS service (OS standard)	BUC26	⇒See 7-3
			Shutdown software for SNMP/web card	SC20G	⇒See 8-1
	Windows server2003 Windows XP/2000	Serial (RS232C or USB 1.1)	PowerAct Pro (Note 1)	–	⇒See 7-1
			UPS service (OS standard) + UPS service driver (included software)	–	⇒See 7-2
		Contact signal (Note 2) (Note 4) LAN	UPS service (OS standard)	BUC26	⇒See 7-3
			Shutdown software for SNMP/web card	SC20G	⇒See 8-1
	Windows NT 4.0	Contact signal (Note 2) (Note 3)	UPS service (OS standard)	BUC26	⇒See 7-3
		LAN	Shutdown software for SNMP/web card	SC20G	⇒See 8-1
	Windows Me/98	Serial (RS232C or USB 1.1)	PowerAct Pro (Note 1)	–	⇒See 7-1
			Shutdown software for SNMP/web card	SC20G	⇒See 8-1
LAN		UPS service (OS standard)	BUC26	⇒See 7-3	
		Shutdown software for SNMP/web card	SC20G	⇒See 8-1	
Linux (Note 2)	Serial (RS232C or USB 1.1)	PowerAct Pro (Note 1)	–	⇒See 7-1	
	LAN	Shutdown software for SNMP/web card	SC20G	⇒See 8-1	
Mac OS X (10.3, 10.4) Mac OS X Server (10.3, 10.4) (Note 5)	Serial (USB1.1)	UPS Power Manager	–	⇒See 7-1	
	LAN	Shutdown software for SNMP/web card	SC20G	⇒See 8-1	

Note 1: The most recent version can be downloaded from our homepage ([http://www.omron.co.jp/ped-j/download/ups\\_soft/](http://www.omron.co.jp/ped-j/download/ups_soft/)).

Note 2: Files cannot be automatically saved.

Note 3: To automatically stop the UPS, it may be necessary to change the PC's BIOS settings.

Change the PC's BIOS settings so that the PC's power supply is not cut after OS shutdown is performed.

Note 4: The UPS automatically stops once the battery is depleted.

Note 5: Compatible only with Macintosh computers equipped with PowerPC CPU.

## 7. Using the UPS monitoring software and contact signal

### • UPS monitoring software function list

● Standard ○ Option ▲ Limited

Software title		General applications (Simple functions, standalone)			Network management applications (Advanced functions, network support)	SNMP management applications (Advanced functions, network support)
		UPS service driver	OS standard UPS service	UPS Power Manager (Mac)	PowerAct Pro	SNMP/Web card
Function			Connection cable BUC26			SNMP/Web card SC20G
Required options						
Compatible OS	Windows Server 2003 x64 Edition	●	●	—	●	—
	Windows XP x64 Edition	●	●	—	●	●
	Windows Server 2003	●	●	—	●	●
	Windows XP/2000	—	●	—	—	●
	Windows NT4.0	—	—	—	●	●
	Windows Me/98	—	—	—	●	●
Compatible OS	Linux (Note 4)	—	—	—	●	●
	Mac OS X v10.4/Server v10.4	—	—	●	—	●
	Mac OS X v10.3/Server v10.3 (Note 5)	—	—	●	—	●
	Auto shutdown	●	▲ (Note 1)	●	●	●
	UPS monitoring (operating status)	●	●	●	●	●
	UPS monitoring (data)	▲ (Note 2)	—	●	●	●
Software function	Pop-up notification	●	●	●	●	●
	End when OS is inactive (Note 3)	●	—	—	●	—
	Auto file save (Note 3)	●	—	—	●	—
	Schedule operation	—	—	●	●	●
	UPS setting change	—	—	●	●	●
	External command execution	●	●	●	●	●
	Event log save	—	—	●	●	●
	Data log save	—	—	●	●	●
	Coordinated shutdown (shutdown of multiple units)	—	—	—	●	●
	Output receptacle control	—	—	●	●	●
	Redundant power supply support	—	—	—	●	—
	Remote UPS management	—	—	—	●	●
	Mail send	—	—	—	●	●
	SNMP management	—	—	—	—	●
	Telnet connection	—	—	—	—	●
	SYSLOG support	—	—	—	—	●

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

Note 2: Only the battery capacity can be monitored.

Note 3: This function can be used with Windows only. It cannot be used with Linux.

Note 4: For the latest information, check our website at: <http://www.omron.co.jp/pec-jj/product/soft/index.htm>

Note 5: Compatible only with Macintosh computers equipped with PowerPC CPU.

#### [Explanation of software functions]

- 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 Auto file save Files such as open Word and Excel documents are automatically saved at shutdown.
- 7 Schedule operation Schedule settings can be made for UPS stop/start.
- 8 UPS setting change UPS settings (beep ON/OFF, etc.) can be changed. (Items that can be set vary according to the UPS.)
- 9 External command execution By executing commands at shutdown, items such as application programs can be launched.
- 10 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.
- 11 Data log save Data of input/output voltage value, connection capacity, etc. is periodically saved as a log (the save frequency can be set).
- 12 Coordinated shutdown When a problem occurs with the power supply, multiple computers connected to the UPS can coordinate to perform auto shutdown.
- 13 Output receptacle control The UPS output receptacles can be individually set to ON/OFF.
- 14 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.
- 15 Remote UPS management The UPS can be managed remotely from a computer on the network.
- 16 Mail send When a problem such as a power failure occurs, a notification email describing the problem can be sent to the system administrator.
- 17 SNMP management UPS management information can be sent to the SNMP manager.
- 18 Telnet connection Settings such as shutdown parameters can be made via the Telnet connection.
- 19 SYSLOG support UPS management information can be recorded in SYSLOG.

## 7-1 When using the included UPS monitoring software to perform auto shutdown

### ● When using PowerAct Pro “UPS monitoring software for Windows/Linux”

#### "PowerAct Pro" UPS monitoring software

The included "PowerAct Pro" UPS monitoring software allows you to automatically save files and perform shutdown processing of your PC when a power failure occurs. (It is possible to shut down multiple computers on the network.)

Also, you can perform desired operation by setting the automatic start/stop of the UPS based on the schedule setting.

\* The time between the occurrence of a power failure and the shutdown of your PC must be within the backup time measured in "5-1 How to measure backup time" on page 51.

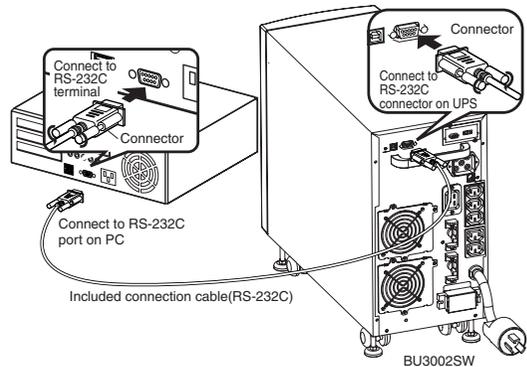
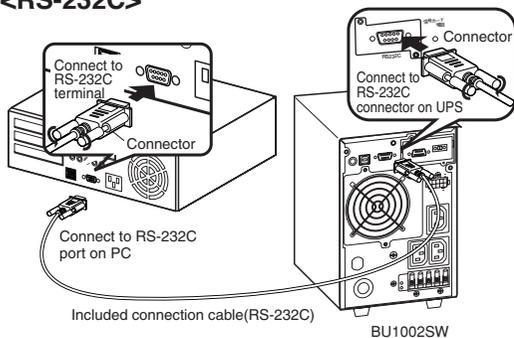
For more information, refer to the Instruction Manual and online help of the UPS monitoring software.

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

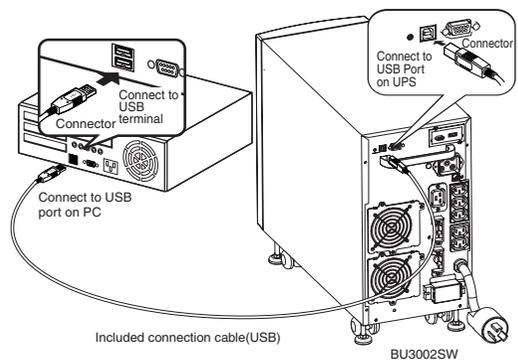
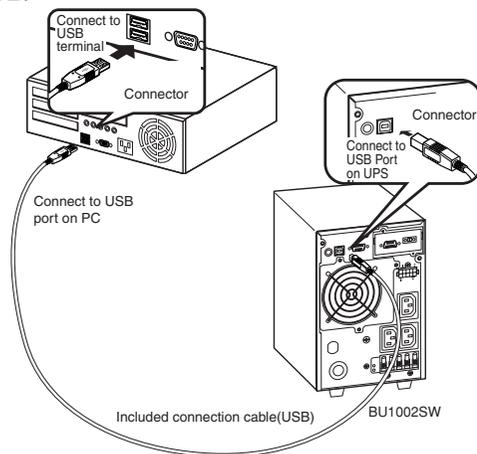
Cable: Included connection cable (RS-232C or USB)

\* The RS232C and USB cannot be used at the same time.

##### <RS-232C>

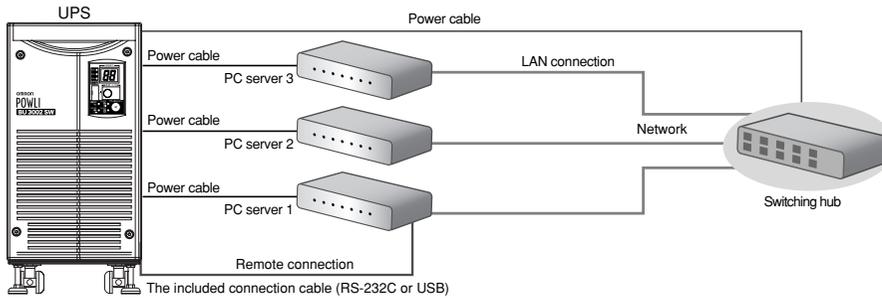


##### <USB>



## 7. Using the UPS monitoring software and contact signal

### \* When connecting 2 or more computers to the UPS



### 2. Install the included UPS monitoring software on each computers.

Software to install: PowerAct Pro

How to install: Refer to the separate "UPS monitoring software installation guide".

### ● When using UPS Power Manager "UPS monitoring software for Mac"

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

Cable: Included USB communication cable

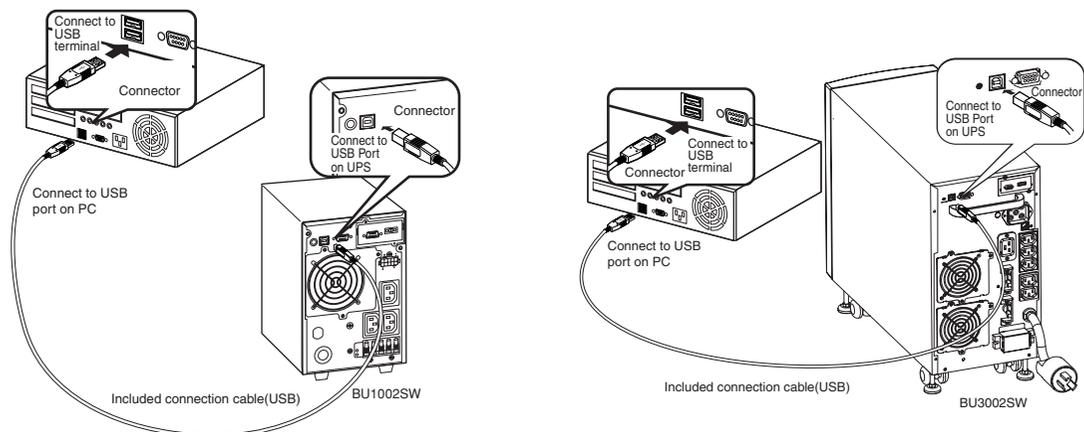
\* Only 1 computer can be connected to the UPS

#### 2. Install the included UPS monitoring software on the computer.

Software to install: UPS Power Manager

How to install: Refer to the separate "UPS monitoring software quick installation guide".

### <USB>



## Explanation

### 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 "6-2 Replacing the battery" on page 54.

### Start of operation in 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 a power failure occurs, certain PCs (\*1) automatically restart immediately after the OS is shut down by auto shutdown.

In this case, the UPS stops during or after the restart of the PC, which may damage files and the hard disk. You can avoid this phenomenon by disabling POWER MANAGEMENT in the BIOS settings of the PC.

\*1) Certain PC: It is known that this phenomenon occurs for MICRON's Millennia Mme.

### Precautions when "setting the UPS to stop automatically" after OS shutdown

- If, after a power failure occurs, the power is restored while auto shutdown processing is being performed, UPS output stops once after the set time elapses. After shutdown processing is complete, do not turn ON the computer until the UPS has finished restarting.

## 7-2 When performing auto-save functions using the UPS service in Windows Server 2003/XP/2000 + UPS service driver

When using the included "UPS service driver", the OS standard UPS service in Windows Server 2003/XP/2000 can be used. When there is a power failure, files can automatically be saved and the computer can be shut down.

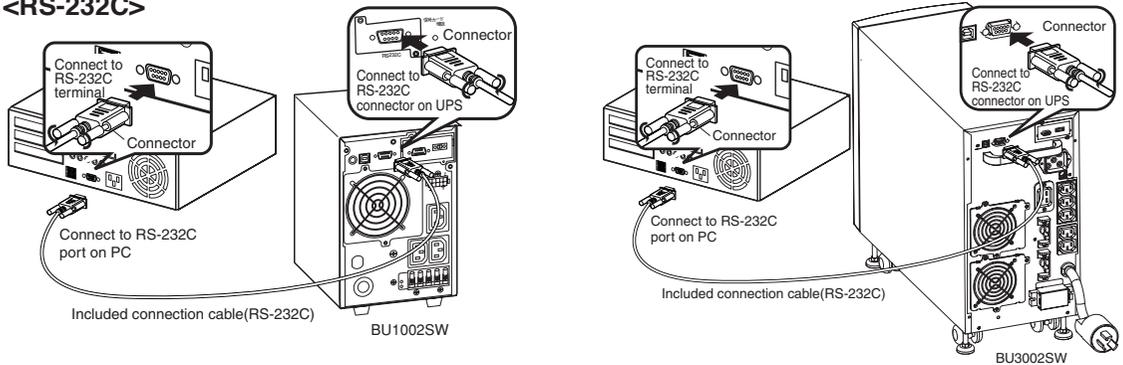
### 1. Connect the UPS to a computer.

\* Only 1 computer can be connected to the UPS

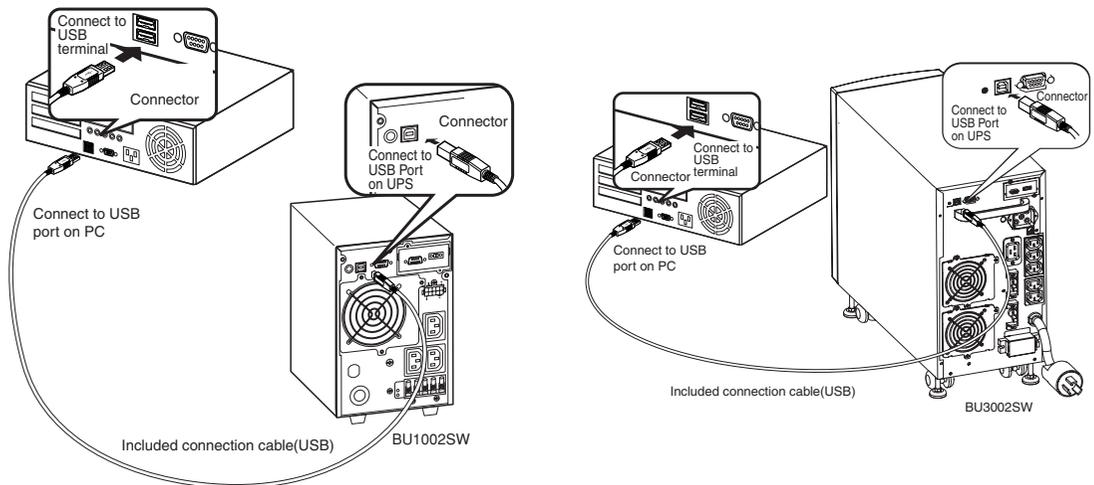
Cable: Included connection cable (RS-232C or USB)

\* The RS232C cable and USB cable cannot be used at the same time.

#### <RS-232C>



#### <USB>



### 2. Install the included "UPS service driver" on the computer.

Software to install: UPS service driver

How to install: Refer to the separate "UPS monitoring software installation guide".

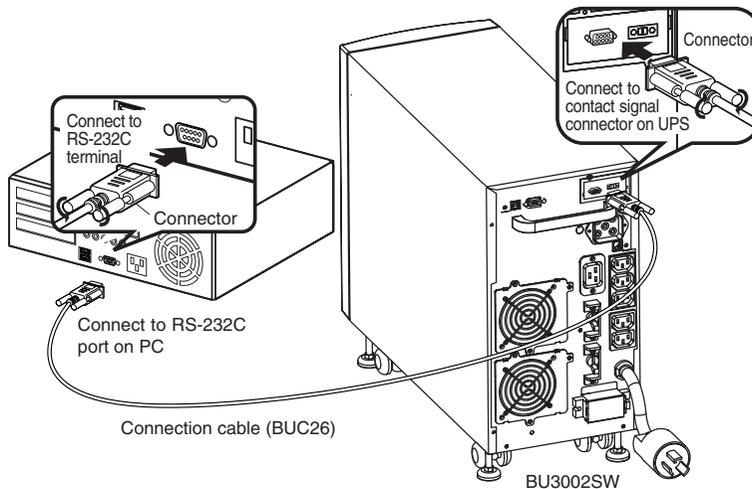
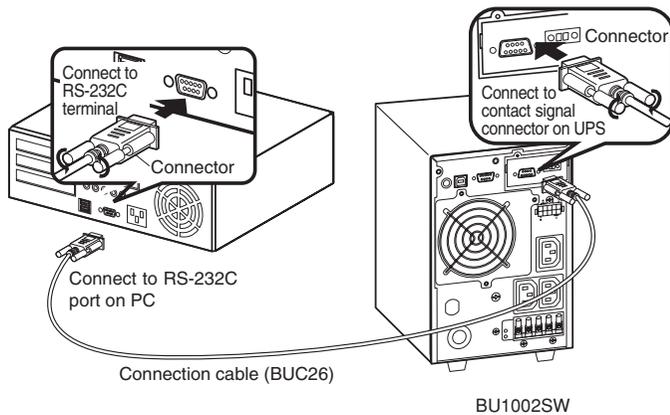
## 7-3 When performing auto-save functions using the standard UPS service in Windows Server 2003/XP/2000/NT

When using in combination with the BUC26 cable (sold separately), the OS standard UPS service in Windows Server 2003/XP/2000/NT can be used. When there is a power failure, the computer can be shut down.

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

Cable: Connection cable (BUC26), sold separately

\* Only 1 computer can be connected to the UPS



## 7. Using the UPS monitoring software and contact signal

### 2. Perform UPS service setup.

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

#### <When using the Windows Server 2003/XP/2000 standard UPS service>

Start up the computer after connecting it with the UPS.

Perform "Log on to Windows" as the Administrator.

After logging on, follow the instructions below to set up the UPS service.

#### ● How to set up UPS service (shut down Windows when low battery level is detected)

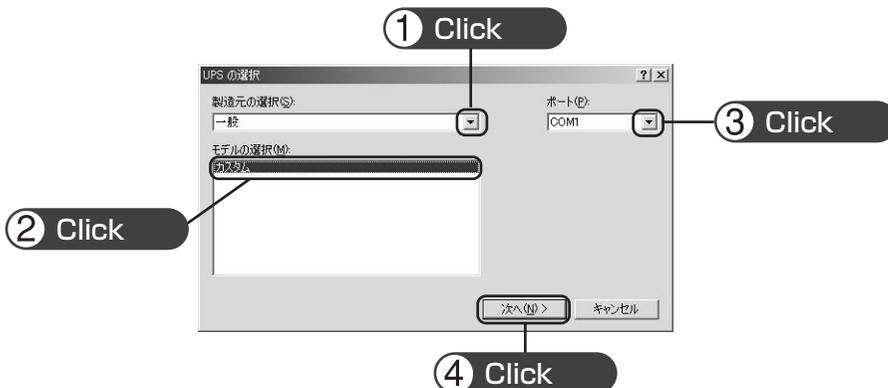
- 1) Double-click the "Power supply options" icon in "Control Panels".
- 2) Click the "UPS" tab in the "Power supply options" window.  
Click the "Select (S)" button.



- 3) Click the button on the right of the "Select manufacturer (S)" window, and select "General" from the list.  
Click on "Custom" in the "Select model (M)" window.

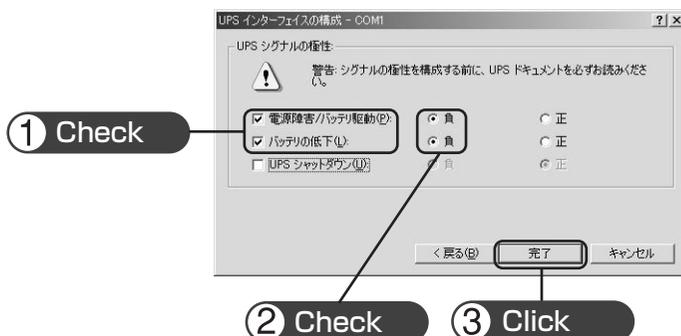
Click the button on the right of the "Port (P)" window, and select from the list the port that the UPS is connected to. (In the example screen below, the UPS is connected to COM1.)

Click the "Next (N)" button.



- 4) In the "UPS signal polarity" box, click on the boxes to the right of "Power supply failure/battery drive (P)" and "Low battery (L)" signals to insert check marks.

Set the polarity for each signal to "Negative". Click the "End" button.



- 5) Click the "OK" button in the "Power supply options" window.

Setup is complete.



When a power failure occurs, Windows shutdown starts once the Low battery level signal is detected.

If the power is restored before the Low battery level signal is detected, Windows shutdown does not start and the normal monitoring state is restored.

## Stopping the UPS

### Recycling and Discarding the Battery

In the Windows Server 2003/XP/2000 UPS service, there is no function to stop the UPS. After Windows is shut down, manually turn OFF the unit's power switch.

## 7. Using the UPS monitoring software and contact signal

### ● How to set up UPS service (set the time to shut down Windows)

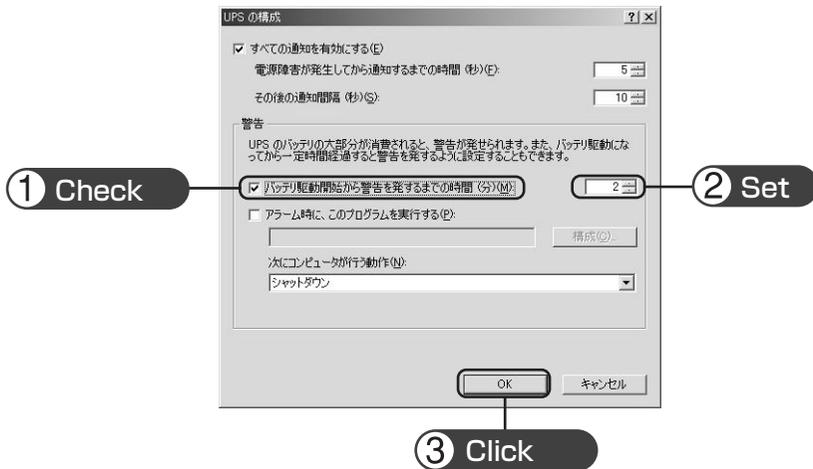
- 1) After performing the setup described in the previous section, click the "Configure (C)" button in the "Power supply options" window.



- 2) In the "Warning" box, place a check mark in the box to the left of "Time from when battery drive starts until warning is issued (M)" by clicking on it.

In the window to the right, set the amount of time to wait before starting Windows shutdown after a power failure occurs. (Setting range: 2 to 720 minutes)

Click the "OK" button.



- 3) Click the "OK" button in the "Power supply options" window.

Setup is complete.



When a power failure occurs, Windows shutdown starts once the set time is exceeded or the low battery voltage signal is detected.

If the power is restored before the set time is exceeded, Windows shutdown does not start and the normal monitoring state is restored.

#### <When using the Windows NT standard UPS service>

##### ● How to set up UPS service

- 1) Double-click the "UPS" icon in "Control Panels".
- 2) Insert a check mark in the checkbox to the right of "Port where UPS is installed (U)..." by clicking on it. In the setting field, select the number of the serial port (COM1 to 4) the unit is connected to.
- 3) To shut down Windows when a low battery is detected, click on the checkboxes to the left of "Power failure signal (P)", "Low battery level signal (L)" and "Remote uninterruptible power source shutdown signal (R)" to insert check marks.

<Setting to detect low battery signal and shut down Windows>



Set each signal interface voltage setting as shown below.

- Power failure signal (P) ... Negative
- Low battery signal (L) ... Negative
- Remote uninterruptible power source shutdown ... Positive

## 7. Using the UPS monitoring software and contact signal

- 4) To set the time to shut down Windows, click on the checkboxes to the left of "Power failure signal (P)" and "Remote uninterruptible power source shutdown signal (R)" to insert check marks.

<Setting to detect low battery signal and shut down Windows after the set delay period>



Set each signal interface voltage setting as shown below.

- Power failure signal (P) ... Negative
- Remote uninterruptible power source shutdown ... Positive

Set the attributes for the uninterruptible power source and the time for each UPS service item.

### Note

Please note that in the case of incorrect interface voltage signal settings, Windows NT will not receive the signal from the UPS and the UPS will not stop when there is a power failure.

Failure to put check marks in the boxes will lead to the same result.

- 5) After the settings are made, double-click the "Service" icon in "Control Panels".  
6) Select the UPS service and click the "Start" button.



By starting the alerter service, messenger service, and event log service in advance, the UPS service sends warning messages to the user and records a history of events such as power failures when they occur.

When a power failure occurs, Windows shutdown is performed once the Low battery level signal is detected. If the power is restored before the Low battery level signal is detected, Windows shutdown is not performed and the normal monitoring state is restored.

## 7-4 Contact signal

### Contact Signal

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.

#### 1. Signal output

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).

- **Backup Signal output: BU**

BU stays ON during a power failure.

BU-COM	ON when a power failure occurs
--------	--------------------------------

- **Low battery level signal output: BL**

Goes ON when the battery becomes weak during the Battery Mode.

BL-COM	ON when the battery is low
--------	----------------------------

- **Trouble Signal output: TR**

Goes ON when an internal failure of the UPS occurs.

TR-COM	ON when a power failure occurs
--------	--------------------------------

- **Battery Replacement Signal output (WB)**

Goes ON when the test determines that battery replacement is necessary due to deterioration.

WB-COM	ON when battery deterioration is detected
--------	---

#### 2. Signal input

- **Input of the UPS Stop Signal (BS)**

Stops the output of the UPS after the time period specified by the "power output stop delay time setting" has elapsed.

(1) When the "BS signal valid range setting" (setting switch ) is set to OFF:

You can stop the output of the UPS by inputting the voltage signal (HIGH) that lasts at least 10 seconds from the outside.

(2) When the "BS signal valid range setting" (setting switch ) is set to ON:

You can stop power output by inputting the voltage signal (HIGH) that lasts at least 0.01 second (10 ms) from the outside that is accepted only during backup.

BS-COM	UPS stops
--------	-----------

 "4-4 Changing the setting of the functions" "2. UPS operation mode settings" → Page 42, 47

## 7. Using the UPS monitoring software and contact signal

### ● 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. To use this function, turn on the Power Switch of the UPS. (Note: 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.)

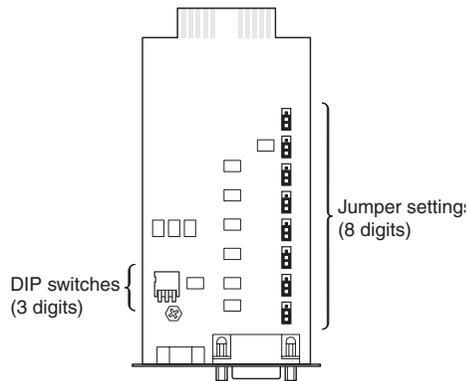
Connection terminals are at contact signal connector pins 6, 7 and the remote ON/OFF connector.

External contact	Operate
Open	Start
Close	Stop

### 3. Items that can be set using the contact signal card

Please make a cable to connect to the system by yourself.

See also "8. Example of the use of the Contact Signal circuit" → Page 81



### ■ Setting the switches



#### Caution

**After changing the setting switch, disconnect the AC input plug, wait until the status indicator is completely OFF, and then reinsert the AC input plug.**

- The setting switch changes do not become valid until the AC input plug is reinserted.

By using the switches of contact signal card, set the item below.

● **Output delay time setting for backup signal output (BU)**

BU-COM	ON when there is a power failure
--------	----------------------------------

Continues during a power failure, and turns ON (OFF).

By setting the contact signal card's setting switch as shown in the table on the right, the length of time from when the power failure occurs until the power failure signal is output can be delayed between 0 and 3 minutes.

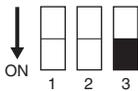


Setting switch 1	Setting switch 2	Delay time setting
OFF	OFF	0 second (factory setting)
ON	OFF	Signal output after 30 seconds
OFF	ON	Signal output after 60 seconds
ON	ON	Signal output after 180 seconds

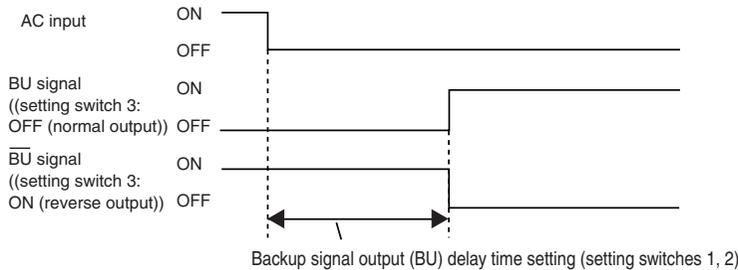
The power failure signal is not output if the power supply error is resolved within the set delay time.

● **BU/BL signal reverse output setting**

BU and BL signals are output in reverse.

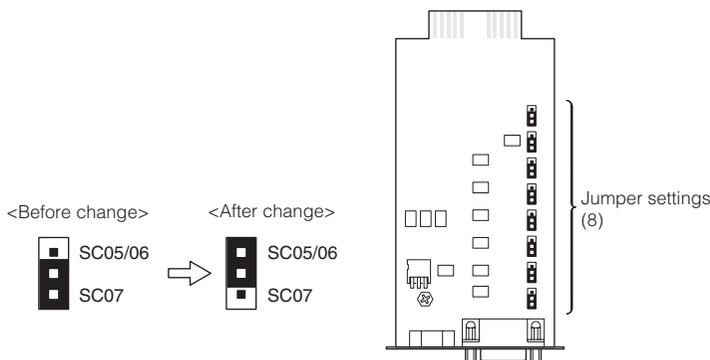


Setting switch 3	Backup signal output (BU)
OFF	Normal output (factory setting)
ON	Reverse output



■ **Jumper settings**

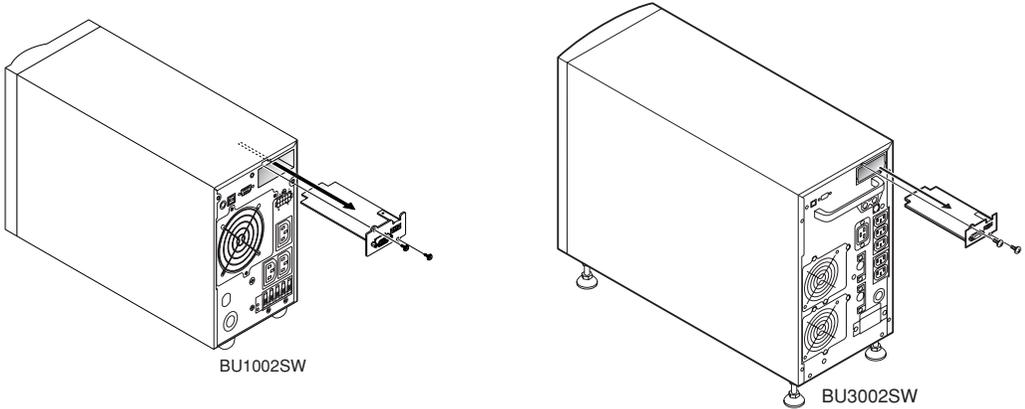
By making jumper settings, the contact signal card SC05/06 connector pin assignments can be changed. Turn over the contact signal card, and change all (8) of the jumper settings to "SC05/06".



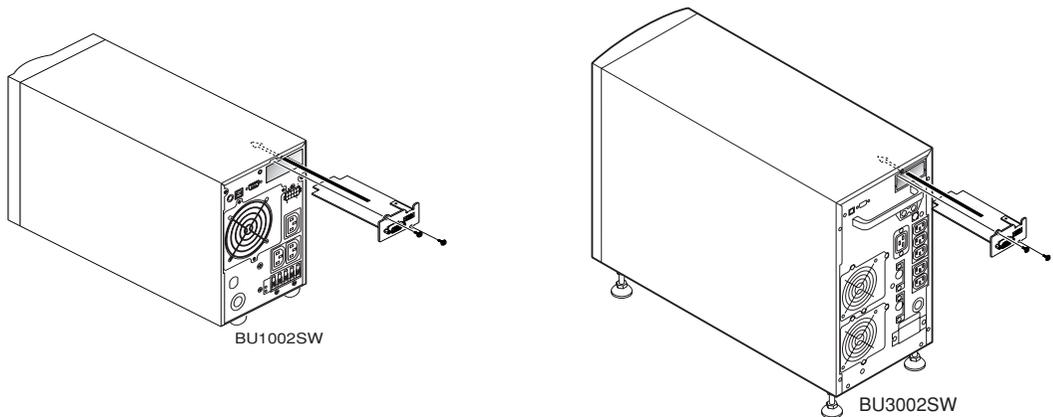
## 7. Using the UPS monitoring software and contact signal

### ■ Insert/ removal method of contact signal card

- (1) Turn OFF the power switch, remove the top and bottom screws (2 screws) of the contact signal connector on the back of the unit, and carefully remove the contact signal card.



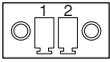
- (2) After changing the settings, carefully reinsert the contact signal card and securely tighten the 2 screws.

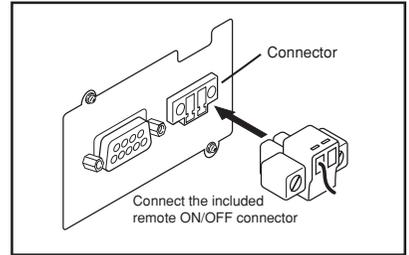


### 4. Contact Signal Connector (female DSUB9P)

Pin assignment	Pin number	For jumper setting "SC07" * Factory settings	For jumper setting "SC05/06"
<p>Front view Screw size: inch screw #4-40 UNC</p>	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 (BU)
	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	Deteriorated battery signal output (WB)	Remote ON/OFF input (+)

### 5. Remote ON/OFF connector

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



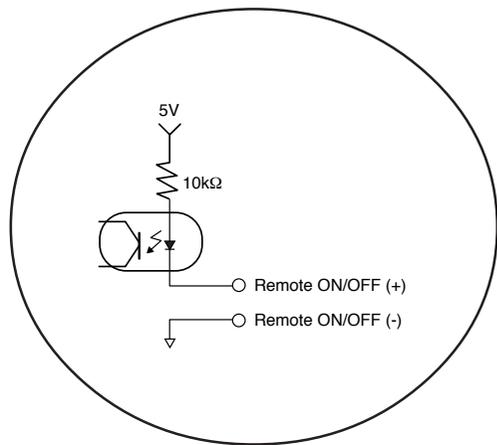
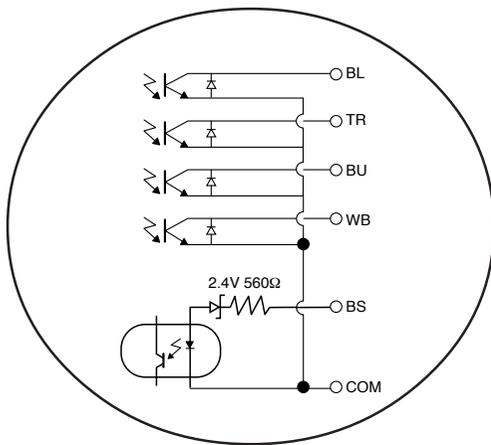
### 6. Contact Signal ratings

- Signal output (BL, TR, BU, WB,  $\overline{BU}$ )  
 Photo coupler ratings  
 Applicable voltage: 35 VDC or less  
 Maximum current: 20 mA

- UPS Stop Signal input (BS)  
 Input voltage HIGH(ON) 5 to 12 VDC  
 LOW(OFF) 0.7 VDC or less

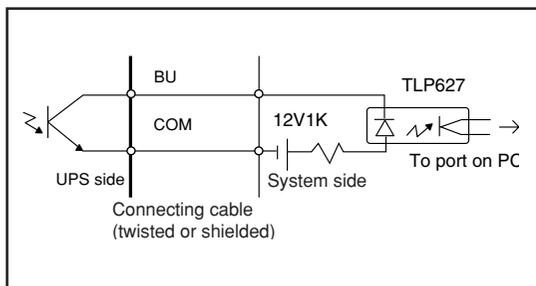
- Remote ON/OFF  
 Voltage between terminals: 5 VDC  
 Current when closed: max.10 mA

### 7. Contact Signal circuit inside the UPS

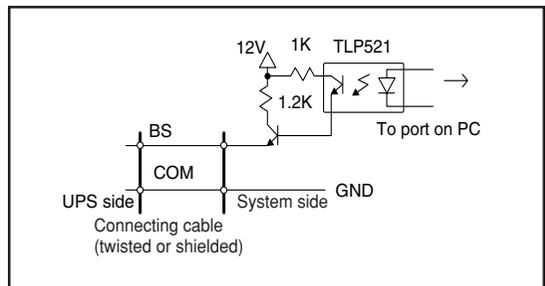


### 8. Example of the use of the Contact Signal circuit

- Example of BU signal output circuit and the connected circuit



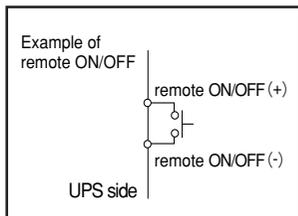
- Example of BS signal input circuit and the connected circuit



## 7. Using the UPS monitoring software and contact signal

---

### ● Remote ON/OFF circuit



## 9. Precautions and notes for the use of the Contact Signal

### Notes

- 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.

### Explanation

- When power is restored after the unit stopped automatically during a power failure, the unit automatically restarts and supplies power. If you do not want to start the connected devices, turn OFF their switches or set the auto startup setting after recovery from power failure (setting switch 2) to ON (Auto startup is not performed). (See page 43.)

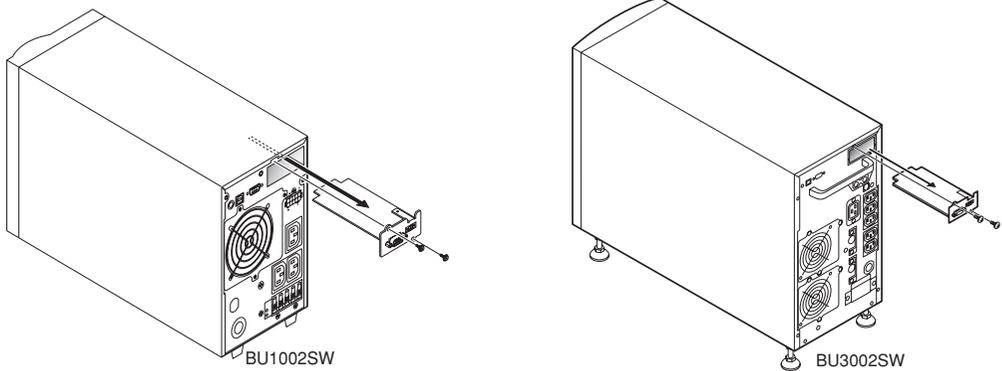
# 8. Using an SNMP/Web card

## 8-1 Adding an SNMP/Web card

An SNMP/Web card can be loaded into the card slot on the back of the unit. Remove the contact signal card that the unit came equipped with, and plug the SNMP/Web card in its place. Store the removed contact signal card in a safe place.

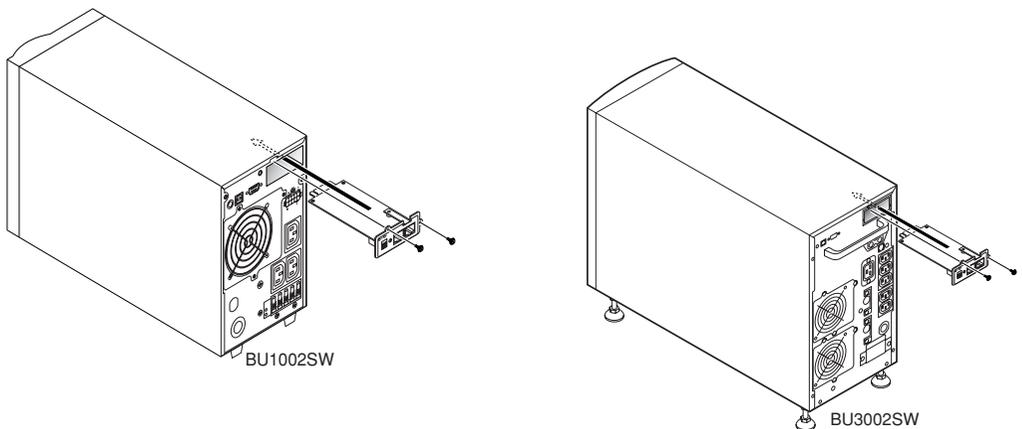
- SNMP/Web card (model number: SC20G), sold separately

(1) Remove the 2 screws, and carefully pull out the contact signal card.



(2) Carefully insert the SNMP/Web card (model number: SC20G), and securely tighten the 2 screws.

\* Replace with BU50SW/BU75SW/BU100SW/BU150SW/BU1002SW/BU3002SW brackets.



## 8-2 SNMP/Web card outline

### ■ Description (features)

- Direct connection between UPS and network  
Inserting an SNMP/Web card (SC20G) 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 (SC20G) 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.
  - \* Compatible with 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.

### ■ Specifications

LAN port	10/100 Mbit
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) OMRON MIB
Other	Equipped with real-time lock
Shutdown software-compatible OS	Windows NT 4.0, Windows 2000, Windows XP, Windows Server 2003 Red Hat Linux 7.2/7.3/8.0 Red Hat Enterprise Linux AS/ES/WS (Red Hat Linux Advanced Server 2.1) Max OS X v10.3*/Server 10.39 (*1) Max OS X v10.4*/Server 10.4 (*1) (*1) Compatible only with Macintosh computers equipped with PowerPC CPU.

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

The most recent firmware can be downloaded from our homepage(<http://www.omron.co.jp/ped-j/download/sc20/sc20.htm>).

# 9. Extending the backup time

## 9-1 Connecting an additional battery unit

You can extend the backup time by connecting an additional optional battery unit to the UPS.

**You can connect only one additional battery unit.**

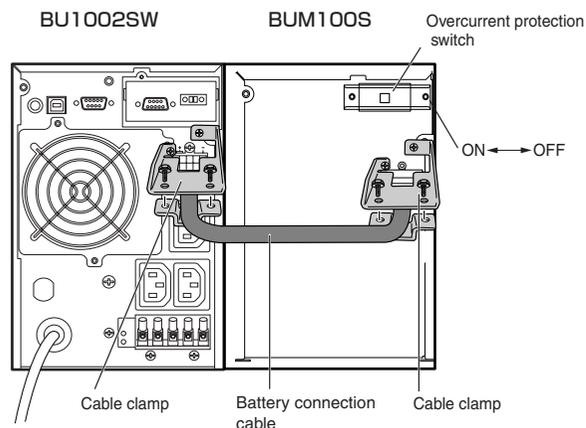
UPS	Additional battery unit
BU1002SW	BUM100S
BU3002SW	BUM300S

**When an additional battery unit is connected, the charging time is 24 hours.**

### Adding BUM100S to the BU1002SW

For the BUM100S, the included battery connection cable is provided with cable clamps attached. Connect the battery connection cable according to the instructions below.

- (1) Loosen the screws and remove the battery connector covers on the rear side of the unit and battery unit. Use the removed screws to attach the cable clamps.
- (2) Connect the battery connection cable to the battery connectors on the rear side of the unit and the battery unit. To simplify the operation, do not yet tighten the screws that hold the battery connection cable on the cable clamp.
- (3) Use screws to attach the cable clamps to the rear side of the unit and the battery unit (2 screws each).
- (4) Tighten the screws that hold the battery connection cable on the cable clamps.
- (5) Turn ON the overcurrent protection switch on the back of the battery unit.
- (6) Connect the AC input plug of the unit to a wall outlet. The additional battery lamp on the unit's operation panel turns ON.



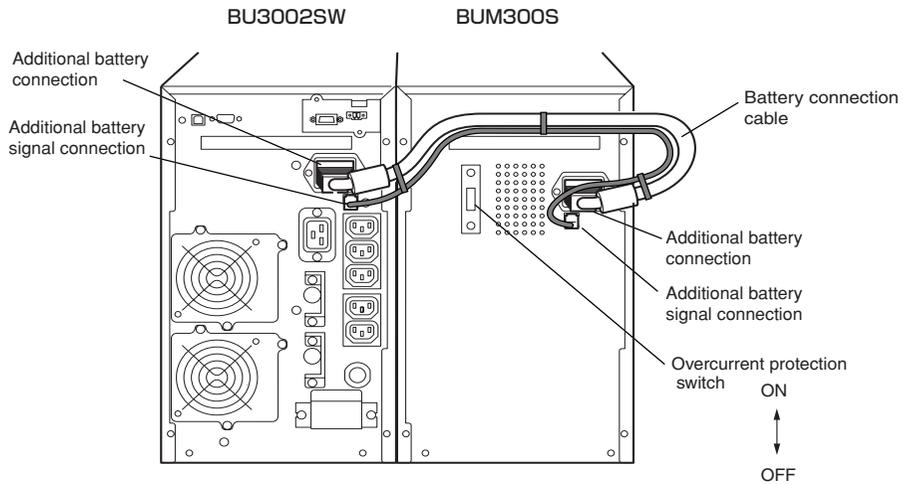
**See also** For information on backup time, see the backup time table in "5-2 Estimated backup time".

→ Page 51

## 9. Extending the backup time

### Adding BUM300S to the BU3002SW

- (1) Loosen the screws and remove the battery connector covers on the rear side of the unit and battery unit.
- (2) Connect the battery connection cable to the battery connectors on the rear side of the unit and the battery unit. Connect the battery connection cable to the additional battery signal connector also.
- (3) Turn ON the overcurrent protection switch on the back of the battery unit. Connect the AC input plug of the unit to a wall outlet. The additional battery lamp on the unit's operation panel turns ON.



# 10. Troubleshooting

Perform the checks shown below if the unit is operating abnormally.

If the unit continues to operate abnormally, please contact our peripheral device customer support center at \_\_\_\_\_.

Problem	Check and remedy
UPS does not operate. The LED display does not light up, even though the AC input plug is connected to a wall outlet (commercial power) and the power switch is ON.	<ol style="list-style-type: none"> <li>1. Check that the AC Input Plug is connected to the commercial power securely.</li> <li>2. The AC Input Overcurrent Protection is working.                (If the black button has popped up, there are probably too many connected devices or there is a short in the connected devices.) Disconnect all of the connected devices, push in the the black AC input overcurrent protection button and turn ON the Power Switch of the UPS again. If the status indicator does not display normally, there is a problem with the UPS. (See "Interpreting beeps and displays" on page 39.)</li> </ol>
Backup is not possible. The computer stops when a power failure occurs.	Is charging insufficient? Perform the test after charging the battery for at least 8 hours. (When an additional battery is connected, the charging time is 24 hours.) (You can charge the battery by connecting the AC input plug of the UPS to a wall outlet (commercial power).)
Backup is performed too frequently. Frequent switching is performed although a power failure does not occur. You hear the sound of switching.	Variations (decrease) in the input power occur frequently. Or, noise is included that significantly distorts the voltage waveform of the input power. <ul style="list-style-type: none"> <li>● Change the wall outlet (commercial power) to which you connect the UPS. Try connecting to a wall outlet (commercial power) away from equipment that consumes large power.</li> <li>● This problem may occur also when you connect many devices to a plug strip or extension cord connected to the UPS if it is a long or thin cable.</li> </ul>
Does not turn ON when power switch is pressed.	The unit does not start up when the input power supply voltage/frequency is abnormal. (The status indicator displays "H-", "-H", "L-" or "-L-") Check the voltage and frequency of the input power supply. <small>See also</small> A. Specifications Input Allowable voltage range, frequency see Page 88
The display is abnormal. <ul style="list-style-type: none"> <li>● The display is unstable.</li> <li>● White lines occur.</li> <li>● Noise increases.</li> </ul>	The probable cause is noise that occurs inside the UPS. <ul style="list-style-type: none"> <li>● Ground all devices connected to the UPS. Connect them to a wall outlet (commercial power) for 3-pin plugs or connect their Grounding Terminal to the Grounding Terminal of a wall outlet.</li> <li>● This problem may occur when power cords are long or placed closely or when the UPS and devices to be backed up are placed closely. Rearrange them.</li> <li>● If the UPS or devices connected to the UPS are contained in a metal rack, attempt to ground the rack itself.</li> </ul>
The battery replacement lamp blinks and the beeper sounds at 2-second intervals.	<ol style="list-style-type: none"> <li>1) The auto battery test or self-diagnostic test determined that the battery is dead.</li> <li>2) Did the overcurrent protection switch on the rear panel of the additional battery unit get turned OFF when connecting an additional battery unit?                If it is not ON, the auto battery test may falsely detect a deteriorated battery.</li> </ol>
The status indicator shows "OL", and the beeper sounds at 0.5-second intervals.	There are too many connected devices. Reduce the number of connected devices until "On" is displayed on the status indicator.
The status indicator blinks "EQ", and the beeper sounds continuously.	The UPS stopped because too many devices were connected for 3 minutes or more, or because 120% was exceeded. Turn OFF all power to the unit and connected devices, and reduce the number of connected devices. Then, turn the power to the unit and connected devices back ON and check whether "On" is displayed on the status indicator.

# References

## A. Specifications

Type		BU1002SW	BU3002SW
Method	Operation method	Full-time inverter supply method	
	Connectable devices	PC, display, and peripherals	
Input	Rated input voltage	200 to 240V ± 10%	
	Allowable voltage range	AC145±4 to 276±4V (with 85% or less connection load) AC170±4 to 276±4V (with 85% or more connection load)	
	Frequency	50/60Hz ± 4Hz	
	Maximum current	7.4A	16A
	Phase	Single-phase, two-wire	
	Input plug shape	NEMAL6-15P	NEMAL6-20P
	Input protection	Reset-type overcurrent protection device	
	Input protection capacity	10A	20A
Output	Allowable connection capacity *1	1000VA/700W	3000VA/2100W
	Voltage (effective value) *2	200V mode AC200V ± 3% 220V mode AC220V ± 3% 230V mode AC230V ± 3% 240V mode AC240V ± 3%	
	Peak voltage value (In Commercial Power Mode)	200V mode: AC282V ± 6% 220V mode: AC310V ± 6% 230V mode : AC324V±6% 240V mode : AC338V±6%	
	Peak voltage value (In Battery Mode)	200V mode : AC282V±6% 220V mode : AC310V+6%/-10% 230V mode : AC324V+6%/-10% 240V mode : AC338V+6%/-12%	
	Frequency	50/60Hz ± 1Hz	
	Phase	Single-phase, two-wire	
	Output waveform	Sine wave	
	Waveform distortion rate (Rectified load, at rated output)	200V mode: 6% max. 220V mode: 10% max. 230V mode: 10% max. 240V mode: 12% max.	
	Number of output receptacles	IEC60320 C13 : 3 pcs. Terminal block: 2 lines	IEC60320 C19 : 1 pcs. C13 : 5 pcs. Terminal block: 2 lines
	Power failure switching time	Uninterrupted	
	Commercial direct shipment (switching time)	4msec. max.	
	Backup time *3	Minimum 5 minutes	
	Battery	Type	Compact sealed lead battery
Sealed lead battery life expectancy		4 to 5 years (long operating life) *At ambient temperature of 20°C	
Battery capacity (V/Ah) (x Quantity)		12V DC/ 7.2 Ah (x 3)	12V DC/ 9 Ah (x 6)
Charging time		8 hours *4	
Environment	Operating ambient temperature	0 to 40°C (during operation)/ -15 to 50°C (during storage)	
	Operating ambient humidity	25 to 85%RH (during use)/10 to 90%RH (during storage)	
Dimensions	145 x 395 x 224 (±1) mm *5	213 x 537 x 432 (±1) mm *6	
Weight of unit	Approx. 15.5 kg		Approx. 35 kg
Internal power consumption (max.)	50W (100W max.)		55W (155W max.) *7
Noise regulation (compliance standard)	VCCI Class A		
Safety standard compliance	UL/CE		
Noise	50 dB max.		55 dB max.

\*1: Make sure that both the VA value and the W value of the load capacity connected to the UPS are within the range specified here.

\*2: Check the operation beforehand if the unit is used in any mode other than "200V AC mode". In some cases, the maximum voltage of output in Battery Mode may be lower than the maximum voltage in usual operation (commercial power supply).

\*3: The backup times shown here are for when rated load is connected, at 20°C, and for initial characteristics.

\*4: When an additional battery unit is connected, the charging time is 24 hours.

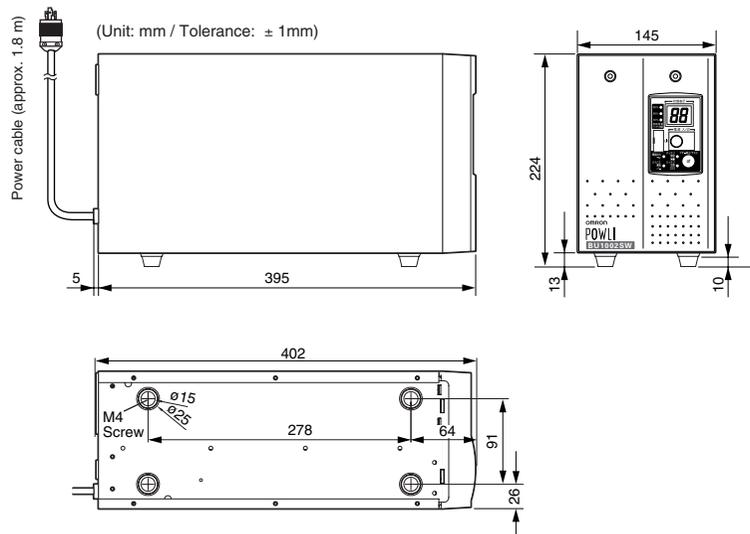
\*5: The height includes the 13-mm height of the rubber feet.

\*6: The height includes the 56mm height of the casters.

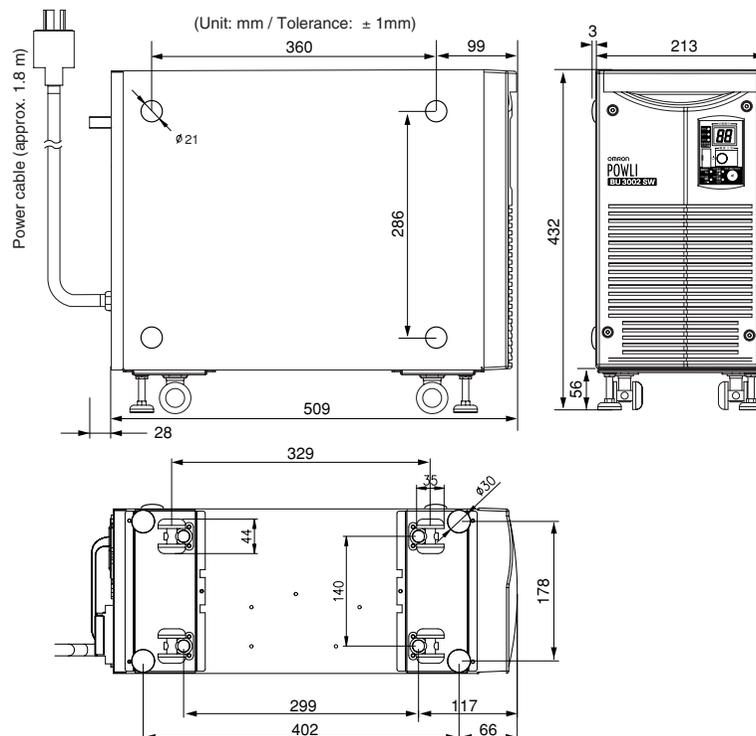
\*7: 170W max when and additional battery unit is connected.

## B. Dimensions

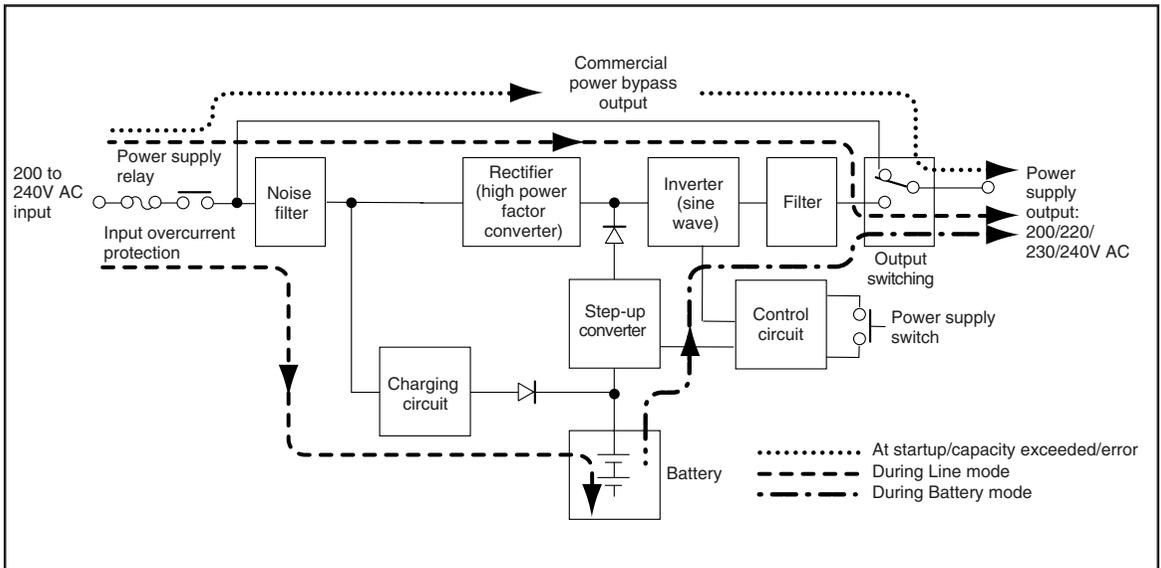
### •BU1002SW



### •BU3002SW

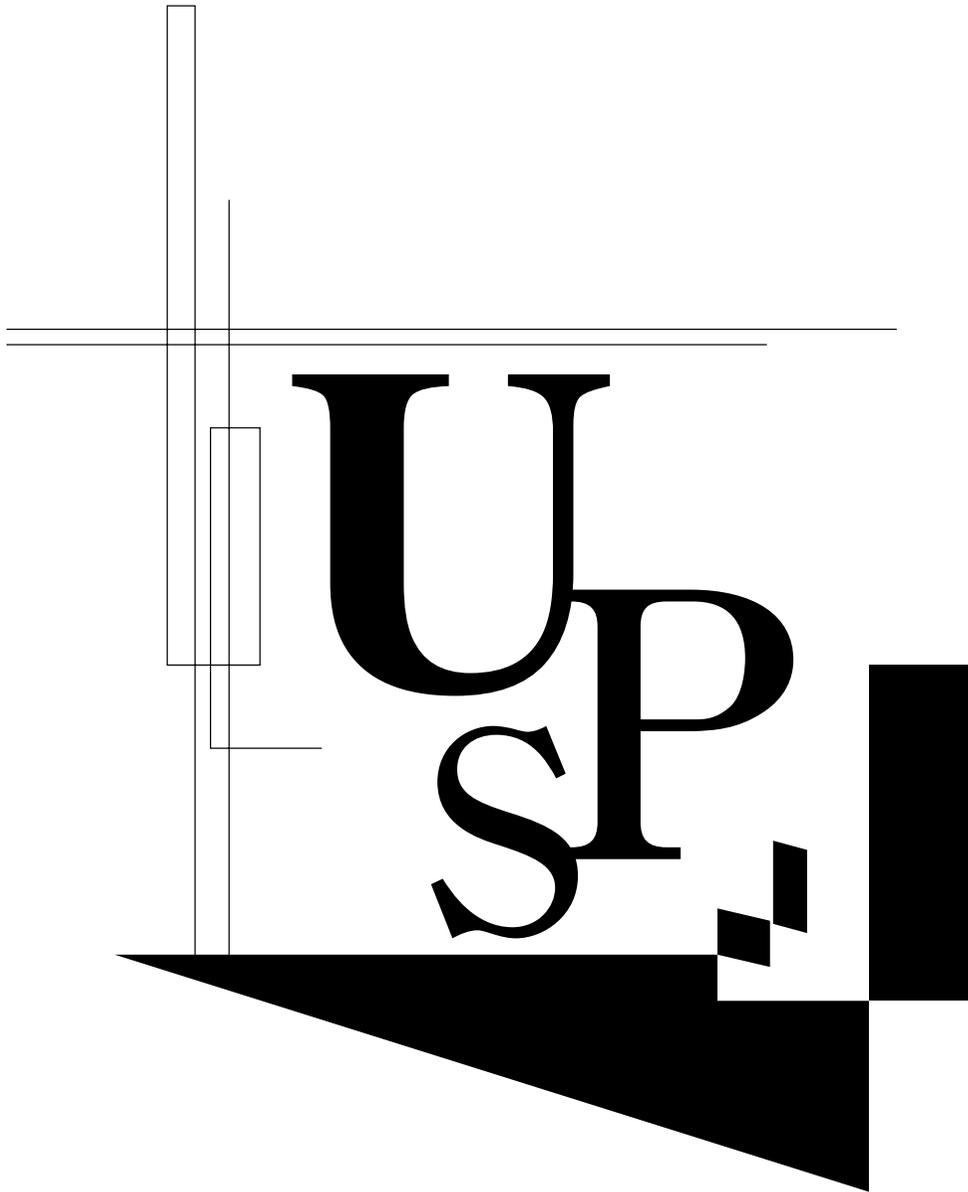


## C. Circuit block diagram



## D. Related products

Description	BU1002SW	BU3002SW
Replacement battery pack	BP100XS	BP150XS (two required)
Additional battery unit	BUM100S	BUM300S
Replacement fan	BUF1002S for rear fan	BUF1002S for rear fan BUF3002S for front fan
Mounting bracket	BUP100S	BUP300S
SNMP/Web card	SC20G	
Connection cable for Windows UPS service	BUC26	



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