

# OMRON

## Uninterruptible Power Supply (UPS)

# POWLI BY50FW/BY75SW

## Instruction Manual



- This manual gives you important information to use the this unit safely and therefore be sure to read it before installation and use.
- Keep this manual handy at the place where you install the this unit so that you can read it whenever necessary.

# Introduction

## Introduction

Thank you for purchasing the POWLI BY50FW/BY75SW Uninterruptible Power Supply (UPS). This unit is a UPS designed specifically for personal computers.

- The UPS protects (backs up) personal computers, displays, peripherals, and so on up to a power consumption of 500VA/300W (BY50FW), 750VA/450W (BY75SW) from failures in the power supply, such as power failures and voltage variations.
- It protects connected devices from surge coming from power line.
- You can easily replace batteries by yourself.
- By using the UPS monitoring software, the system can be shut down automatically when a power failure occurs.

Read this manual thoroughly to make the most of the unit.

## Notes on the use of the Unit

- The unit 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 (essential 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 must be taken for operation, maintenance, and management, such as duplication of the system and emergency power generation facilities.
- Observe the contents of this manual such as the use conditions and environments.
- If you want to use the unit for an important system that requires very high reliability, contact us; \_\_\_\_\_
- Do not modify/alter the unit.
- This product is designed for use within Japan. When incorporating this product into equipment for export, please contact us.
  - The export of this product (including transport by an individual) may require the permission of the Ministry of Economy, Trade and Industry under the Foreign Exchange and Foreign Trade Law. Export of this product without the required permission is punishable under the law.
  - Injury or fire may result if the voltage or frequency is different.

## Disclaimers

We are not liable to all damage including malfunction and failure of equipment, connected devices, and software and other secondary damage even if it is caused by the use of our product.

- Make sure to read the safety precautions before using the unit.

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 instruction for Model BY50FW, BY75SW. That should be followed during instruction of 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 is Lead-acid type.

For BY50FW model, the internal battery voltage is 6V 7.2AH. Each UPS used 2pcs batteries. And the total battery voltage is 12Vdc.

For BY75SW model, the internal battery voltage is 12V 7AH or 7.2AH. The UPS used 2pcs batteries. And the total battery voltage is 24Vdc.

## 4.TEMPERATURE RATING

Maximum ambient temperature of UPS 40°C.

## 5.ENVIRONMENT

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

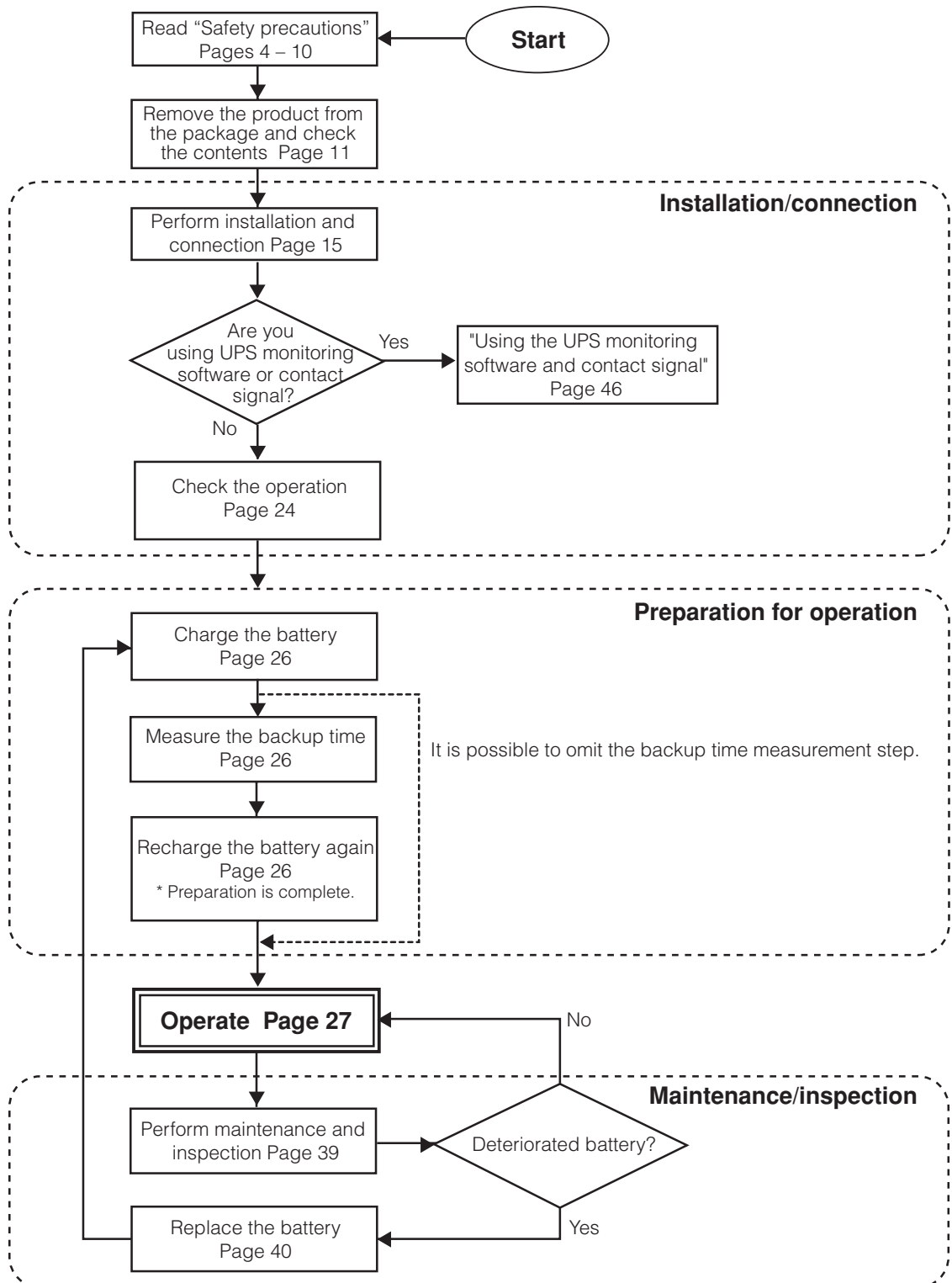
This pluggable type A equipment with battery already installed by the supplier is operator installable and may be operated by laymen.

During the installation of this equipment it should be assured that the sum of the leakage currents of the UPS and the connected loads does not exceed 3.5mA.

The mains socket outlet that supplies the UPS shall be installed near the UPS and shall be easily accessible.

For battery information, see users manual.

## 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.
- Not for use in a computer room as defined in the Standard for the Protection of Electronic Computer/Data Processing Equipment, ANSI/NFPA75.



### **Caution (for installation and connection)**

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

- Dropping or toppling the unit may cause injury.
- The weight of this unit is approximately: 6 kg (BY50FW)/ 9 kg (BY75SW).
- If you drop the unit, stop using it and have an inspection and repair be done.  
For repair, contact us; \_\_\_\_\_



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

- They may put their heads into it, and may be suffocated.



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

- 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)

**Do not connect devices such as dryers, which have a half-wave rectifier where only half-cycles of the AC power flows.**

- Overcurrent may damage the UPS.



**Connect the unit to a wall outlet (commercial power) with a current capacity of 12A or more.**

- Otherwise, the power cord may be heated.
- When equipment with the maximum output capacity is connected, a maximum current of 12A flows.



**Provide secure grounding.**

- For a 3P wall outlet, directly connect the AC input plug of the unit to it. Not doing so may cause an electric shock in the case of unit failure or electric leakage.
- When you use a 3P-2P conversion plug for AC input plug, be sure to perform grounding before connecting the AC input plug into a wall outlet (commercial power). Do not disconnect the grounding before disconnecting the AC input plug from a wall outlet (commercial power).
- Grounding is necessary to enable its surge protection function.



**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 put any object on the unit whenever installing it vertically or horizontally.**

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



**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 install or store the unit in the places listed below.**

- The humidity is lower than 25%. The humidity is higher than 85%. A closed place such as in a cabinet without clearance. There is flammable gas or corrosive gas. A place subject to vibration or shock. Outdoors.
- Installation or storing the unit in such a place may cause a fire.



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

- Doing so may cause abnormal heating or a fire.



**Do not connect equipment that exceeds the output capacity of the unit.**

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



**Do not use it in a condition listed below.**

- Blocking the ventilating hole
- Placing objects on the unit
- Stacking units (vertically or alongside)
- Doing so may cause abnormal heating, which may cause burns or damage the unit.





### Caution (for installation and connection)

#### 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 the cable must be 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.



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



### Caution (for use)

#### Do not wet or pour water onto the unit.

- Doing so may cause an electric shock or a fire.
- If you wet the unit, stop using it and the unit must be 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.

#### Wipe the 100-VAC input plug clean of dirt with a dry cloth occasionally.

- Settled dust may cause a fire.



**Caution (for use)**

**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.

**Caution (for maintenance)**

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

- The backup function continues to supply power from the power output receptacles while the UPS is operating, even when the AC input plug is disconnected.



**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.

**Caution (for battery replacement)**

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

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



**Risk of explosion if battery is replaced by an incorrect type. When replacing batteries, replace with the same type and number of batteries or battery packs.**

- Not doing so may cause a fire.
- Product model: BXB50F (battery pack for BY50FW)  
BXB75S (battery pack for BY75SW)



**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 open or mutilate batteries.**

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





### Caution (for battery replacement)

#### Do not drop the battery or do not give strong impact on it.

- Dilute sulfuric acid may leak.



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

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



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

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



### Replacement of batteries located in a SERVICE ACCESS AREA

- 1) Servicing of batteries should be performed or supervised by personnel knowledgeable about batteries and the required precautions.
- 2) A battery can present a risk of electrical shock and high short circuit current. The following precautions should be observed when working on batteries:
  - a. Remove watches, rings, or other metal objects.
  - b. Use tools with insulated handles.
  - c. Wear rubber gloves and boots.
  - d. Do not lay tools or metal parts on top of batteries.
  - e. Disconnect charging source prior to connecting or disconnecting battery terminals.
  - f. Determine if battery is inadvertently grounded. If inadvertently grounded, remove source from ground. Contact with any part of a grounded battery can result in electrical shock. The likelihood of such shock can be reduced if such grounds are removed during installation and maintenance (applicable to equipment and remote battery supplies not having a grounded supply circuit).



### 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 moved to a warmer place and the power is turned on soon, the unit failure may occur due to condensation to the unit.

#### Charge the battery for at least 12 hours soon after purchasing the unit.

- If you do not use the unit for a long time after the purchase, the property of 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 12 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 40°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 12 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 each other and the output lines to the ground.

- The unit may fail.

## Notes

**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 (laser printer, copy machine, etc.) to the unit.**

- The Commercial Power Mode and Battery Mode are repeated frequently, which may shorten the life of the battery.
- As the peak current of a page printer is large, an excess of the connection capacity or a power failure due to instantaneous voltage drop may be detected.

**This unit is a full-time commercial power supply method uninterruptible power supply (UPS). Do not use the unit with the types of devices described below.**

- Devices that experience problems in the event of a momentary power failure of 8 msec. (0.008 sec.) or less. Switching time of 8 msec. or less occurs, which has the potential to cause connected devices to stop.
- Devices that require a highly stable power supply.  
Instantaneous fluctuations in the output voltage have the potential to cause connected devices to stop.

**If the unit is used with an inductive device, check the operation beforehand.**

- With some types of devices, the effect of inrush current may cause this unit to stop operating properly.
- An inductive device is one that has transformers, coils, motors, etc. built into the input.

**Do not fail to confirm the system operation beforehand if the unit is used combined with devices which power supply frequency fluctuate widely, such as private electric generator.**

- This 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.)

**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 250 VDC range.

**Before stopping 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.

**Do not fail to confirm the system operation beforehand if the unit is used other than "Output 100V mode".**

- At the time of battery operation, the maximum voltage (peak voltage) of output (sine wave) may be lower than the maximum voltage at the time of usual operation (commercial power supply). For this reason, some connected devices may fail to operate normally.

## Battery recycling

- This unit uses lead acid batteries.  
The lead acid batteries are precious recyclable resources. Please cooperate recycling.  
For information on recycling, please contact our Electronic Systems & Equipments repair center



## Notes

**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 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.
- 

## 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. You can choose either of the operation methods for your convenience. We recommend turning off the power switch when you do not use connected devices for a long time.
- The battery is charged when the AC input plug of the unit is connected to a wall outlet (commercial power).

### End of Battery Mode

- If a power failure lasts long, the battery discharges and power output from the unit stops. Shut down your computer after performing appropriate procedure (for example, saving data) while the unit supplies power.
- 

### Reboot

- 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 while the power is out. It is also possible to deactivate the auto restart by turning ON the auto restart setting (setting switch ). (See page 33.)
-

# 1. Preparation

## 1-1 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; \_\_\_\_

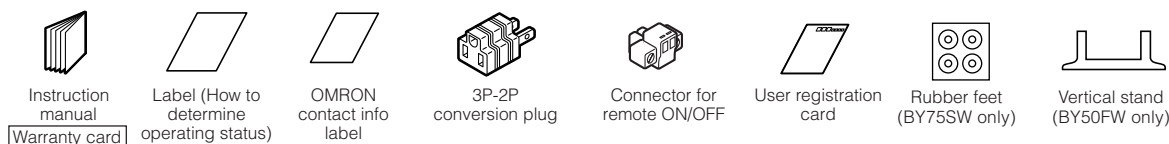
### (1) Accessories related to the main unit

	BY50FW	BY75SW
Instruction manual (Japanese and English versions)	1 each	1 each
Warranty card	1	1
User registration card	1	1
3P-2P conversion adaptor	1	1
Label (How to determine operating status)	1	1
Omron contact info label	1	1
Rubber feet	None	4
Vertical stand	1 set (2 pieces)	None
Remote ON/OFF connector	1	1

### (2) Auto shutdown software

	BX50FW/BX75SW
Quick Install Guide	1
CD-ROM	1
USB/communication cable (Approx. 2.2m)	1 (USB)
Serial communication cable (Approx. 2m)	1 (USB)

#### <Accessories related to the main unit>



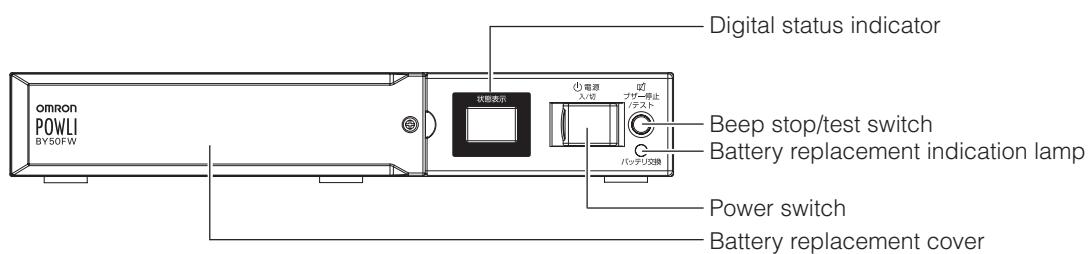
#### <Auto shutdown software>



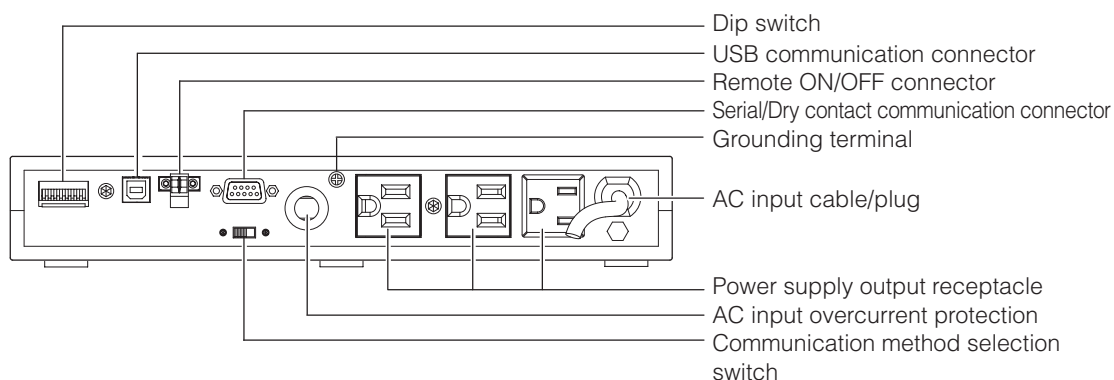
## 1-2 Part names

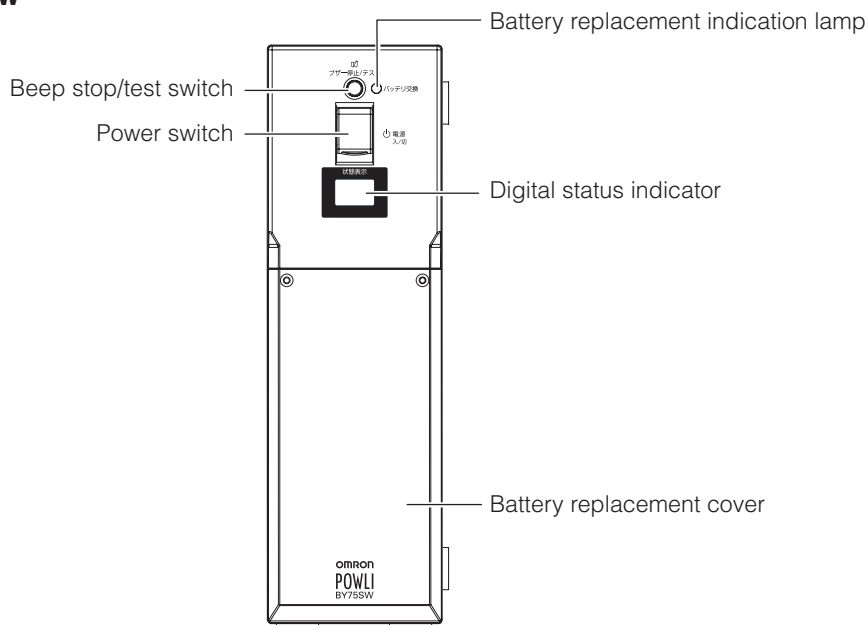
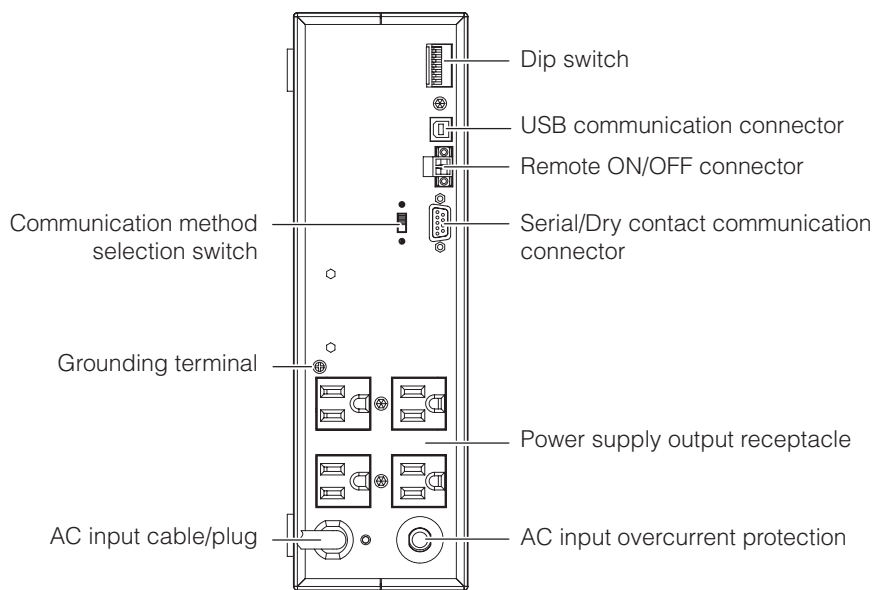
### BY50F

#### Front view






#### Rear view



**BY75SW****Front view****Rear view**

## 1-3 Explanation of symbol used on unit

Symbol	Description
	Start the UPS.
	Stop the UPS.
	Suspend a beep.

## 2. Installation and connection

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



#### **Caution** (for installation and connection)

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

- Dropping or toppling the unit may cause injury.
- The weight of this unit is approximately: 5.3 kg (BY50FW)/ 8.7 kg (BY75SW).
- If you drop the unit, stop using it and have an inspection and repair be done. For repair, contact us; \_\_\_\_\_



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

- They may put their heads into it, and may be suffocated.



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

- Connecting to a wall outlet (commercial power) of a different rated input voltage may result in fire.
- The unit may not operate properly when connected to a generator or to a power supply that passes through a transformer.
- The unit may fail.



**Do not connect devices such as dryers, which have a half-wave rectifier where only half-cycles of the AC power flows.**

- Overcurrent may damage the UPS.



**Connect the unit to a wall outlet (commercial power) with a current capacity of 12A or more.**

- Otherwise, the power cord may be heated.
- When equipment with the maximum output capacity is connected, a maximum current of 12A flows.



**Provide secure grounding.**

- For a 3P wall outlet, directly connect the AC input plug of the unit to it. Not doing so may cause an electric shock in the case of unit failure or electric leakage.
- When you use a 3P-2P conversion plug for AC input plug, be sure to perform grounding before connecting the AC input plug into a wall outlet (commercial power). Do not disconnect the grounding before disconnecting the AC input plug from a wall outlet (commercial power).
- Grounding is necessary to enable its surge protection function.



**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.





### Caution (for installation and connection)

**When installing the unit vertically, do not put any object on it.**

**When installing the unit horizontally, do not put any object heavier than 25kg.**

- Doing so may cause distortion of/damage to the case, which may cause a fire.
- When replacing the battery, remove objects that have been placed on the unit.



**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 install or store the product in the places listed below.



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

- The humidity is lower than 25%. The humidity is higher than 85%. A closed place such as in a cabinet without clearance. There is flammable gas or corrosive gas. A place subject to vibration or shock. Outdoors.
- Installation or storing the unit in such a place may cause a fire.



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

- Doing so may cause abnormal heating or a fire.



**Do not connect equipment that exceeds the output capacity of the unit.**

- 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 the cable must be 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.



### 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 moved to a warmer place and the power is turned on soon, the unit failure may occur due to condensation to the unit.

**Charge the battery for at least 12 hours soon after purchasing the unit.**

- If you do not use the unit for a long time after the purchase, the property of the battery may deteriorate and the battery may become unusable.
- To charge a battery, connect the 100 VAC input plug of the unit to a wall outlet (commercial power).

## Notes

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### **When storing the unit, charge the battery for at least 12 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 40°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 12 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 each other and 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 (laser printer, copy machine, etc.) to the unit.**

- The Commercial Power Mode and Battery Mode are repeated frequently, which may shorten the life of the battery.
  - As the peak current of a page printer is large, an excess of the connection capacity or a power failure due to instantaneous voltage drop may be detected.
- 

### **This unit is a full-time commercial power supply method uninterruptible power supply (UPS). Do not use the unit with the types of devices described below.**

- Devices that experience problems in the event of a momentary power failure of 8 msec. (0.008 sec.) or less.  
Switching time of 8 msec. or less occurs, which has the potential to cause connected devices to stop.
  - Devices that require a highly stable power supply.  
Instantaneous fluctuations in the output voltage have the potential to cause connected devices to stop.
- 

### **If the unit is used with an inductive device, check the operation beforehand.**

- With some types of devices, the effect of inrush current may cause this unit to stop operating properly.
  - An inductive device is one that has transformers, coils, motors, etc. built into the input.
- 

### **Do not fail to confirm the system operation beforehand if the unit is used combined with devices which power supply frequency fluctuate widely, such as private electric generator.**

- This 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.)
- 

### **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 250 VDC range.
- 

### **Before stopping 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.
- 

### **Do not fail to confirm the system operation beforehand if the unit is used other than "Output 100V mode".**

- At the time of battery operation, the maximum voltage (peak voltage) of output (sine wave) may be lower than the maximum voltage at the time of usual operation (commercial power supply). For this reason, some connected devices may fail to operate normally.
-

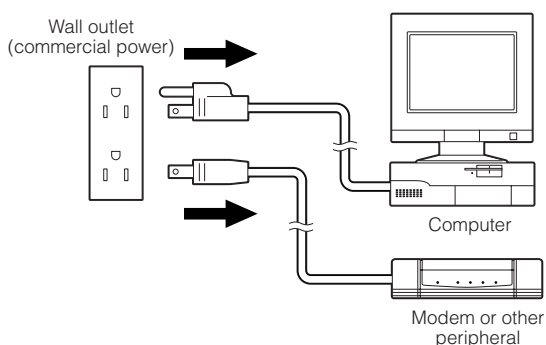
## 2-2 Installation and connection (BY50FW)

### Connection to back up your computer and peripherals

#### 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.**

- (1) Disconnect all AC input plugs of your computer and peripherals from a wall outlet (commercial power).



- (2) Install the unit.

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

- **Do not install the unit in any position other than those indicated below.**

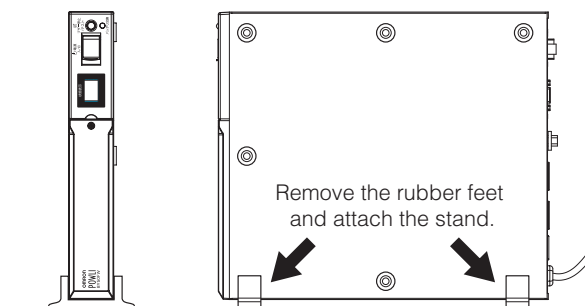
#### Horizontal BY50FW



- Detach the rubber feet from the bottom surface (both at the front and rear) when positioning vertically.
- Once the rubber feet are removed, protrusions on the bottom surface will become visible. Align the stand with these protrusions to attach it.

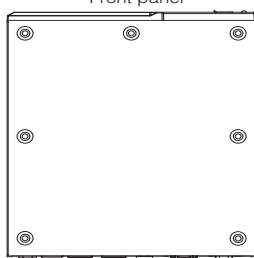
#### Vertical BY50FW

(Attach the included stand so that the left side is the bottom.)

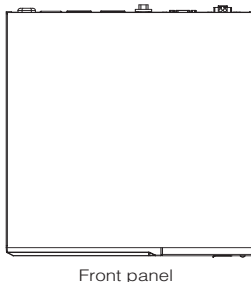


● Do not position the unit in the ways shown below.

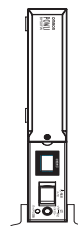
✗ Front panel facing upward



✗ Front panel facing downward



✗ Vertical  
(Right side at bottom)



✗

Do not use it in a condition listed below.

- Blocking the ventilating hole
- Placing objects on the unit
- Stacking units (vertically or alongside)

✗

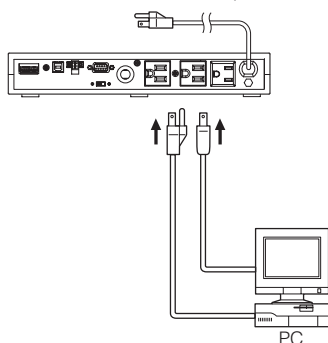
Upside down



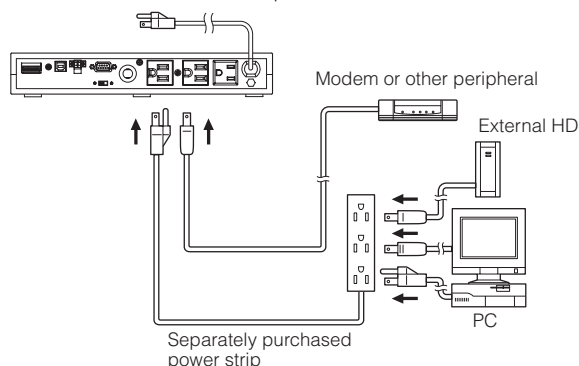
(3) Connect devices that require backup to the unit's power supply output receptacle.

When the unit's 3 output receptacles are insufficient, increase the number of output receptacles by attaching a separately purchased power strip.

<Connection example 1>



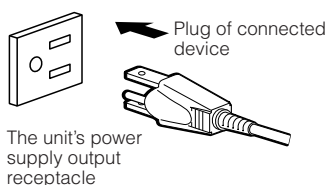
<Connection example 2>



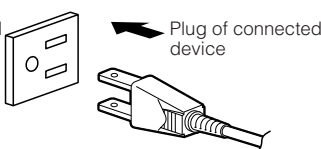
- Even when the connected device has a 2P AC input plug, it can be connected to the power supply output receptacle.

However, when a 2P AC input plug has a ground wire, attach the ground wire to the grounding terminal (⏏) on the back of the unit.

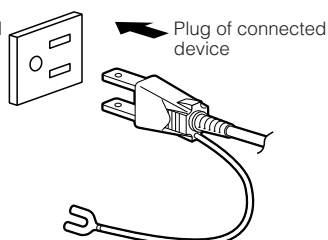
<When connected device has 3P plug>  
Connect directly



<When connected device has 2P plug>  
Connect directly



<When connected device has 2P plug + ground>  
Connect the plug directly



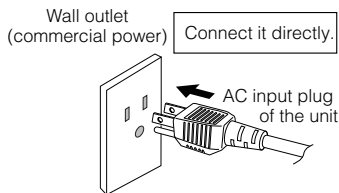
Connect the ground wire to the grounding terminal (⏏) on the unit

## 2. Installation and connection

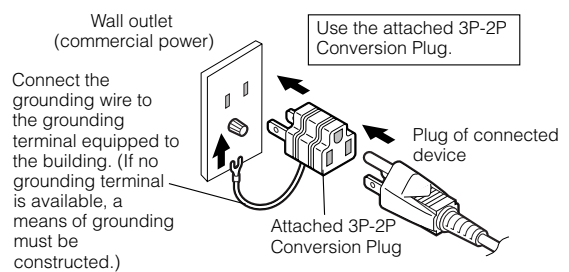
- (4) When the installation and connection are complete, connect the AC input plug of this unit to a wall outlet (commercial power).

When you connect the AC input plug of this unit to a wall outlet (commercial power), battery charging automatically starts regardless of the on/off state of the Power Switch and charging completes within 12 hours.

### < 3P wall outlet >



### < 2P wall outlet >

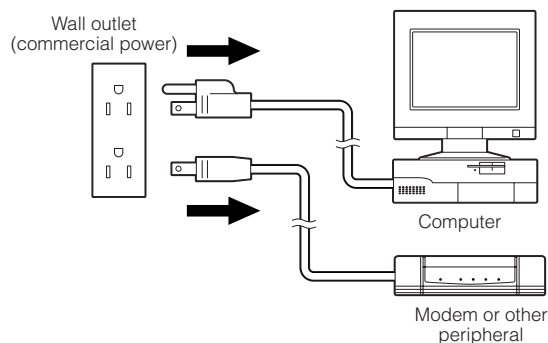


- This unit was charged before shipment, but if it is being used for the first time, the backup time may be reduced due to natural discharge. We recommend charging the unit before use.

## 2-3 Installation and connection (BY75SW)

### Connection to back up your computer and peripherals

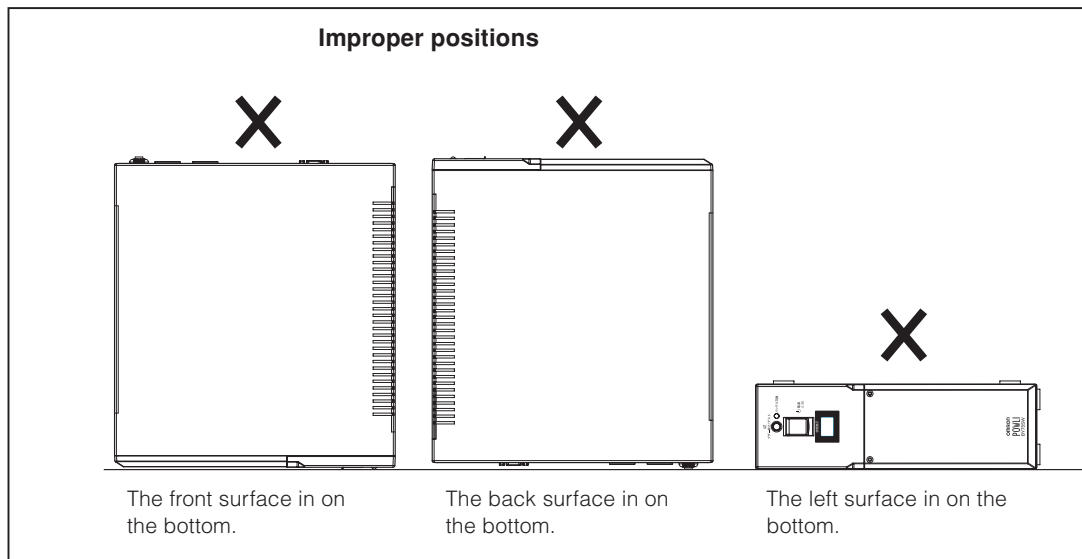
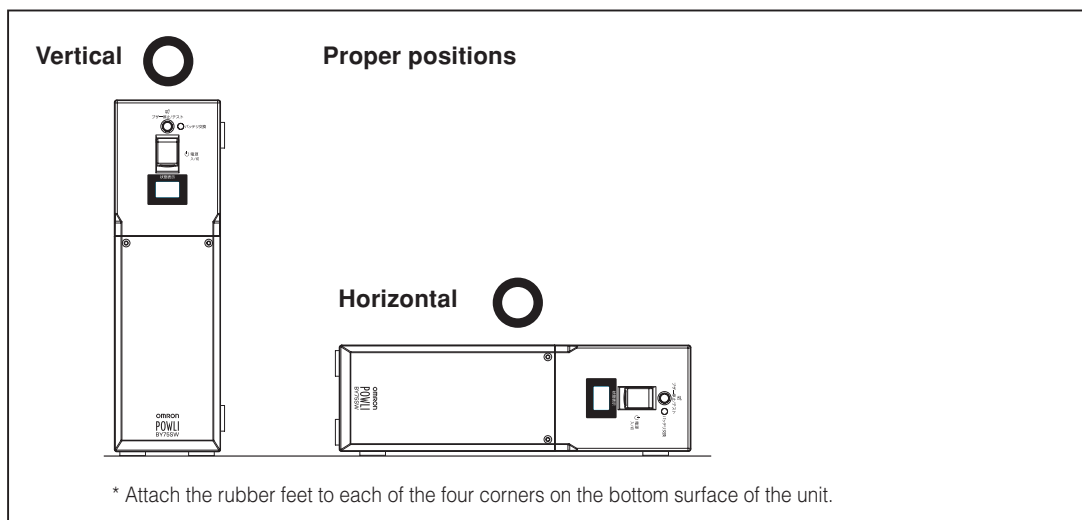
- (1) Disconnect all computer and peripheral AC input plugs from the wall outlet (commercial power).



(2) Install the unit.

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

- Do not use this unit in any position other than the “proper positions” indicated in the illustration below.



## 2. Installation and connection

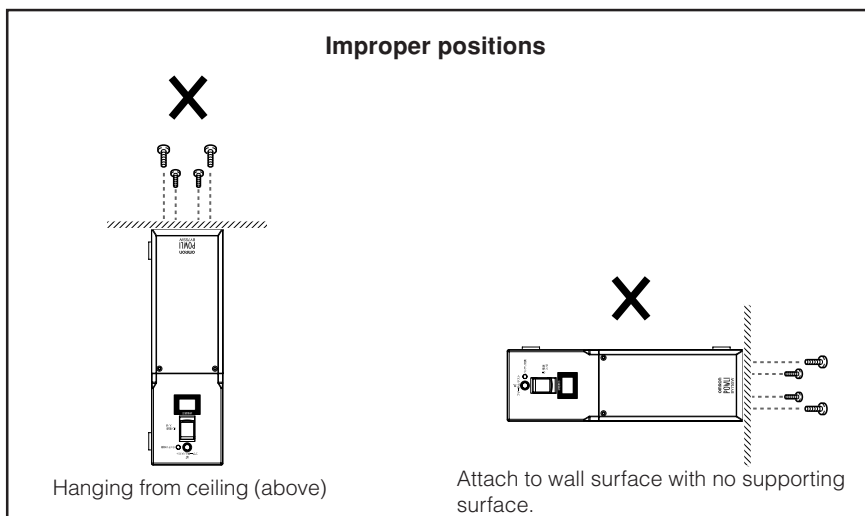
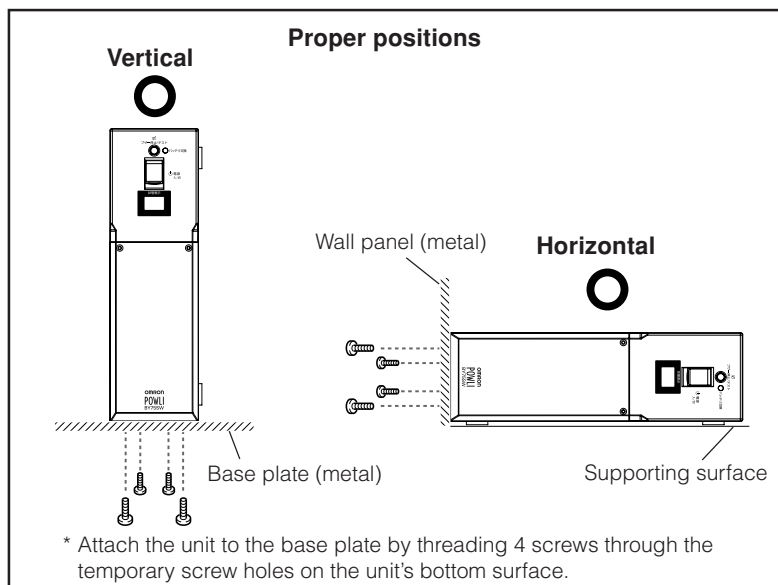
### ● Diagram showing BY75SW mounted with anchor screws

- When attaching the unit to a base plate, take the thickness of the plate cover into consideration when choosing the appropriate screws.

Screw diameter: M4

Maximum screw length: 12 mm

Maximum tightening torque: 1.57 N/m

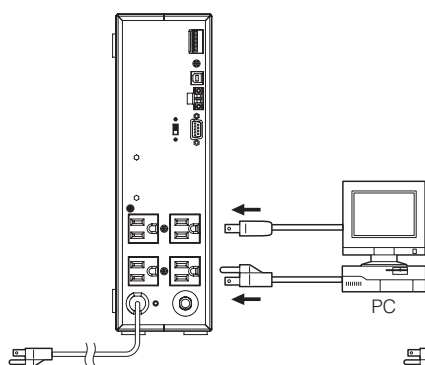


- (3) Connect devices that require backup to the unit's power supply output receptacle.

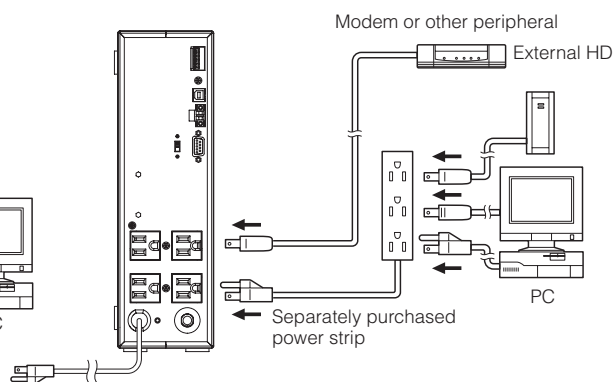
A total of up to 750VA (7.5A) or 450W can be connected.

If the unit has an insufficient number of power output receptacles, increase the number of output receptacles by attaching a separately purchased power strip.

<Connection example 1>



<Connection example 2>



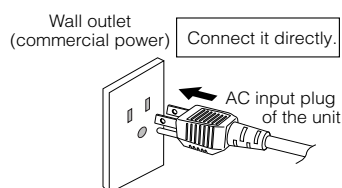
- Even when the connected device has a 2P AC input plug, it can be connected to the power supply output receptacle.

However, when a 2P AC input plug has a ground wire, attach the ground wire to the grounding terminal (⏏) on the back of the unit.

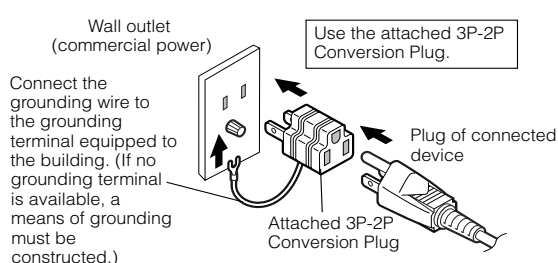
- (4) When installation and connection are complete, connect the unit's AC input plug to a wall outlet (commercial power).

When the AC input plug is connected to a wall outlet (commercial power), the battery automatically starts charging, taking up to 12 hours to complete.

< 3P wall outlet >



< 2P wall outlet >



- This unit was charged before shipment, but if it is being used for the first time, the backup time may be reduced due to natural discharge. We recommend charging the unit before use.

## 2-4 Checking the operation

When you are complete with connecting devices to the unit, the backup function must be confirmed.

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 Power Switch of this unit.**


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 following display is obtained.

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

\* Self-diagnostic test is not performed at cold start.

Status indicator	Description
	Power switch "ON" Operating normally


**(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 LED display and a beep of this unit.**

Are they in the same status as shown below?

Status indicator	
Beep	None
Power supply output receptacles	Outputs power (connected devices are powered)

Are the same as shown above.

→ The operation is normal. Proceed to (4).

Are not the same as shown above.

→ The operation is abnormal. One of the description in "4. Display and beeps when there is an equipment failure" of "4-3 Interpreting a beep and display" on page 30 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.

**(5) In Battery Mode, check the LED display and a beep of the unit.**

Are the LED display in the same status as A or B 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. The battery will be depleted if backup operation 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.)

Are not the same as 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 “4-3 Interpreting beeps and displays” on page 30, take the necessary measures and then go back to (1) on page 24.
- If no Battery Mode is performed and the UPS and the connected devices stop, insufficient charging of the battery is suspected.  
Connect the AC input plug of the UPS to a wall outlet (commercial power), charge the battery for approximately 6 hours, and then go back to (4) on page 24.
- If the problem persists after checking the 2 points above, contact us; \_\_\_\_

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

The Status indicator stops blinking and turns on without intervals, and the beeper 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.

## 3. Preparation for operation

### 3-1 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 the on/off state of the Power Switch, and it is fully charged within 12 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 “3-2 Measuring the initial value of backup time”, proceed to “4. Operation”. → Page 27

### 3-2 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.

 "7. Measuring the backup time" → Page 60

### 3-3 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 "3-1 Charging the battery."

Preparation for starting operation is now complete.

## 4. Operation

### 4-1 Precautions and notes on operation



#### Caution (for use)

#### Do not wet or pour water onto the unit.

- Doing so may cause an electric shock or a fire.
- If you wet the unit, stop using it and the unit must be 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.
- For more on how to check the battery, see "5. Maintenance and inspection" on page 39.
- For more on how to replace the battery, see "5-2 Replacing the battery" on page 40.



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.

#### Wipe the AC input plug clean of dirt with a dry cloth occasionally.

- Settled dust may cause 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.



### 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.

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. You can choose either of the operation methods for your convenience. We recommend turning off the power switch when you do not use connected devices for a long time.
- The battery is charged when the AC input plug of the unit is connected to a wall outlet (commercial power).

End of Battery Mode

- If a power failure lasts long, the battery discharges and power output from the unit stops. Shut down your computer after performing appropriate procedure (for example, saving data) while the unit supplies power.

Reboot

- 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 while the power is out. It is also possible to deactivate the auto restart by turning ON the auto restart setting (setting switch 2). (See page 33.)


4-2 Start and stop procedures and basic operation

- **When the AC input plug is connected to a wall outlet and the power switch is in the OFF position:**
  - The status indicator displays " - - ".
  - Power output is stopped.
  - The battery is charged automatically.

● Start procedure

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

- The details of the most recent error are displayed. (item 4 on page 30)
- The beeper sounds and the current setting is displayed on the status indicator.  
Cold start ON/OFF setting → Output voltage setting.
- 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.)  
\* Self-diagnostic test is not performed at cold start.
- When the self-diagnostic test finishes successfully, switching to AC output from commercial power is performed and normal operation starts.
- If the self-diagnostic test is not executed, the UPS immediately starts outputting AC from commercial power.

Status indicator	
Beep	None
Power supply output receptacles	Outputs power (connected devices are powered)

- During operation, the battery is charged automatically.

## ● Operation during 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.

**See also** Setting switch **1** can be used to turn the beeper ON/OFF. ➔ Page 33

( ) indicates blinking

Status indicator	Battery replacement	Beep	Output	Charging	Description	Solution
		Intermittent 4-second intervals	ON	OFF Discharging	Backup is operating due to power failure or AC input error. The battery will be depleted if backup operation continues.	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.

## ● 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. Charging the consumed battery starts.

## ● Stop procedure

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

- The power output from the UPS stops.







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

- Even if you turn off the power switch, if 1AC is supplied from commercial power, the battery is automatically charged.





## 4-3 Interpreting beeps and displays

### 1. Displays and beeps during normal operation











 indicates blinking

No.	Status indicator	Battery replacement	Beep	Output	Charging	Description	Solution
1			None	OFF	OFF	No AC input Operation stopped	—
2			None	OFF	ON	There is AC input Power switch "OFF"	—
3			None	ON	ON	Power switch "ON" Operating normally	—





### 2. Displays and beeps while testing

4			None	ON	OFF Discharging	Self-diagnostic test in progress	—
5			None	ON	OFF Discharging	Auto battery test in progress	—













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

6			Intermittent 4-second intervals	ON	OFF Discharging	Backup is operating due to power failure or AC input error. The battery will be depleted if backup operation continues.	Perform shutdown operations for the connected devices and stop them.
7			Intermittent 1-second intervals	ON	OFF Discharging	(Same as above.) Battery level is low, so output will stop soon.	(Same as above.)
8			None	OFF	OFF Discharging	Battery is dead, so output stopped. (This is displayed only for a few seconds.)	Charge the battery.
9			None	OFF	(ON)	AC input voltage or frequency is too high (over) Power switch "OFF"	Use within the input voltage/frequency range described in the specifications.
10			None	OFF	(ON)	AC input voltage or frequency is too low (under) Power switch "OFF"	(Same as above.)



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

11			Intermittent 0.5-second intervals	ON	ON, or Discharging	There are too many connected devices and the rated capacity is exceeded. If this status continues for 5 minutes or more, the status No. 12 occurs and output stops.	Reduce the number of connected devices until the display appears as in status No. 3.
12			Continuous	OFF	ON, or OFF	Stopped due to excess connection capacity.	Turn OFF this unit and all connected devices. Reduce the number of connected devices, and then turn ON this unit and the connected devices.







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

No.	Status indicator	Battery replacement	Beep	Output	Charging	Description	Solution
13			Continuous	OFF	ON, or OFF	Output stopped due to exceeded connection capacity or a short-circuit with the connected devices.	Check that the AC input of connected devices is not short-circuited, or that the connection capacity does not exceed the rated capacity.
14			Continuous	OFF	—	Stopped because of failure.	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 the UPS. Contact the shop of purchase or our Electronic Systems & Equipments customer support center at: ____.
15			Continuous	OFF	—	Stopped because of output voltage error (over).	Details of error are displayed only when the "Beeper stop" switch is pressed while in status No. 14.
16			Continuous	OFF	—	Stopped because of output voltage error (under).	(Same as above.)
17			Continuous	OFF	—	Stopped because of battery charge voltage error (over).	(Same as above.)
18			Continuous	OFF	—	Stopped because of battery charge voltage error (under).	(Same as above.)
19			Continuous	OFF	—	Stopped because of abnormal internal temperature.	(Same as above.)

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

20			Intermittent 2-second intervals	ON	ON	The battery test detected a weak battery.	Charge the battery. You can replace the weak battery with a separately purchased replacement battery as needed.
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#### 6. UPS operation mode setting display

21		—	—	—	—	Cold start ON setting UPS can start up even when there is no AC input	—
22		—	—	—	—	Cold start OFF setting UPS can start up only when there is AC input	—
23		—	—	—	—	Output 100V mode Output voltage is 100V (effective value)	—
24		—	—	—	—	Output 110V mode Output voltage is 110V (effective value)	—
25		—	—	—	—	Output 115V mode Output voltage is 115V (effective value)	—
26		—	—	—	—	Output 120V mode Output voltage is 120V (effective value)	—

### 4-4 Suspending a beep

You can suspend a beep by pressing and holding the Beep Stop/Test Switch while a beep is sounding for 0.5 second or longer.

### 4-5 Description of the self-diagnostic test function

You can use the following procedure to check whether a failure occurs inside the unit and whether replacing the battery 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) Press and hold the Beep Stop/Test Switch of the UPS for 0.5 second or longer.  
Release the Beep Stop/Test Switch when a beep sounds. The Battery Mode starts for testing purpose. (No beep sounds.) When the test is complete, the normal operation automatically starts.
- (3) If the status indicator/battery replacement lamp blinks and the beeper sounds:  

See also

 "4-3 Interpreting a beep and display" → Page 30  
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".

### 4-6 Description of the auto battery test function

This UPS provides functions to automatically check whether replacing the battery is required and whether the internal circuit is at fault. (You do not have to perform any operation.)

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. (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

 "4-3 Interpreting a beep and display" → Page 30  
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 rear of the UPS allows you to select the "disable the auto battery test" setting.

See also

 "4-7 Changing the setting of the functions" → Page 33  
See "●Auto battery test ON/OFF setting."

## 4-7 Changing the setting of the functions

### 1. Selecting functions with the setting switches

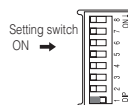
**Operation** After changing the setting switches, turn ON the power switch again while the AC input plug is connected to a wall outlet (commercial power).

- Otherwise, the change will not take effect.
- Use a fine-pointed tool such as a small screwdriver to maneuver the switch's lever.

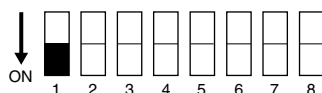
**BY50FW**  
(when positioned vertically)



**BY75SW**  
(when positioned vertically)



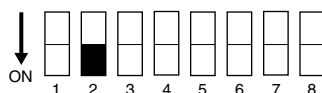
#### ● Power output stop delay time setting (setting switch **1**) ... Factory-shipped setting: OFF



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 restart setting (setting switch **2**) ... Factory-shipped setting: OFF



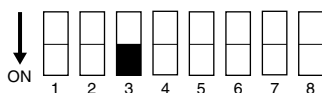
OFF: Automatically restarts when power is restored.

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

ON: Does not automatically restart when power is restored.

After the unit shuts down using the shutdown software or contact signal, it does not start up when commercial power is restored. Startup is performed manually by turning the power switch OFF once, and then back ON again.

#### ● Auto battery test ON/OFF setting (setting switch **3**) ... Factory-shipped setting: OFF

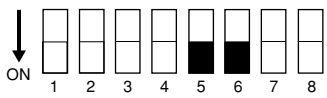


OFF: The battery test is automatically executed at intervals of 4 weeks.

ON: The auto battery test is disabled.

Use this setting to disable Battery Mode in for the regularly performed auto battery test.

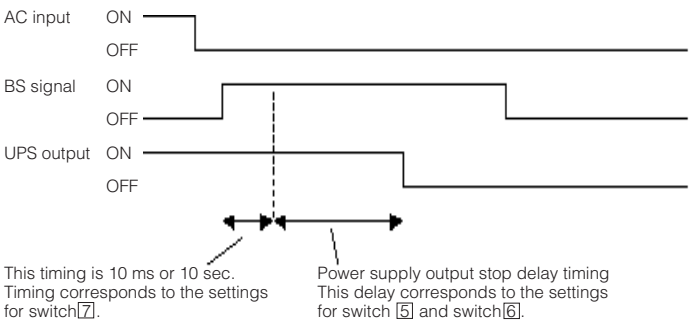
● **Power output stop delay time setting (setting switches **5** and **6**) ... Factory-shipped setting: OFF and OFF**



Setting switch 5	Setting switch 6	Power output stop delay time
OFF	OFF	0 second
ON	OFF	60 seconds
OFF	ON	120 seconds
ON	ON	Does not stop power output

**The UPS delays the power supply output stop timing.**

If the user sets “switch 5: ON, switch 6: ON”, the UPS does not stop the output, even if the backup stop (BS) is valid.

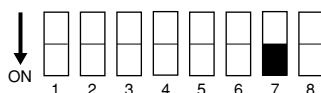


**<Note>**

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

When the remote ON/OFF signal is “closed”, the UPS stops the output immediately.

## ● UPS stop signal setting (setting switch **7**) ... Factory-shipped setting: OFF (Only for BX50FW, BX75SW)



OFF: The unit's power output can be stopped by inputting a "High" backup power supply stop signal (BS) that continues for 10 seconds or more. The power supply output is stopped with a voltage signal input, even in commercial operation.

After stopping power output, a "Low" backup power supply stop signal (BS) restarts the unit once the commercial power supply is normal. However, it does not restart if the automatic restart setting (setting switch **2**) is ON.

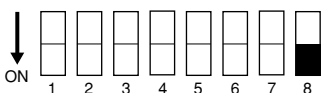
ON: The unit's power output can be stopped by inputting a "High" backup power supply stop signal (BS) that continues for 0.01 (10 ms) seconds or more. Power supply output can be stopped when the stop signal is received, only during backup operation (Battery Mode).

After stopping power output, a "Low" backup power supply stop signal (BS) restarts the unit once the error that caused the power failure is eliminated.

Use this setting in commercial operation when you do not want to stop operations when a backup power supply stop signal (BS) is received.

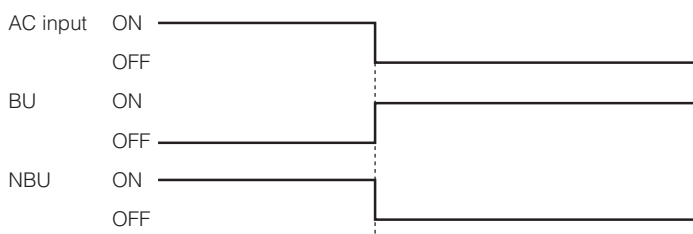
## ● Communication connector 8th-pin output signal switching setting (setting switch **8**) ... Factory-shipped setting: OFF

\* Valid only when using contact signal interface.



OFF: Outputs the BU signal

ON: Outputs the BU inversion signal



## 2. Switching switch



### Caution

- Before operating the switching switch, turn OFF the power switch of the main unit and unplug the AC input plug (turn OFF the AC input).
- If the switching switch is changed during operation, communication with peripherals (PC, etc.) will cease to perform normally.
- If the AC input plug is not disconnected, the switching switch setting changes will not become valid.

Contact  Serial

Use when switching the communication interface (serial communication, contact communication).

### 3. UPS operation mode settings

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

- Cold start ON/OFF setting  
When ON, 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.)
- Output voltage setting (100V/110V/115V/120V)  
Four types of output voltage can be set for the output voltage during Battery Mode.
- Signal input/output test (BL/TR/BU/WB/BS/remote)  
Test output can be made for four types of signals. The signal is output without causing an actual power failure or internal malfunction. It is also possible to detect two types of signal input. The signal input from the system can be checked on the LED display. (The unit does not actually stop, because it is in test mode.)

#### 3-1. The UPS operation mode can be set if the power switch is turned ON while the beeper stop switch is pressed.

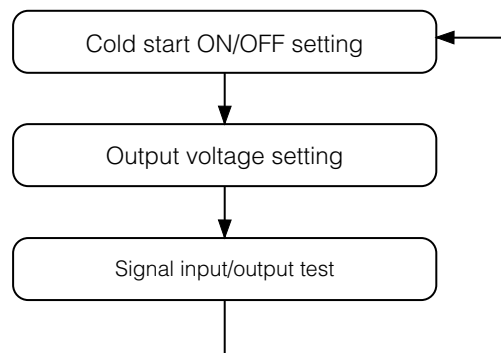
Note: While in setting mode, output from the output receptacles are OFF, even if the power switch is ON.

##### How to make settings:

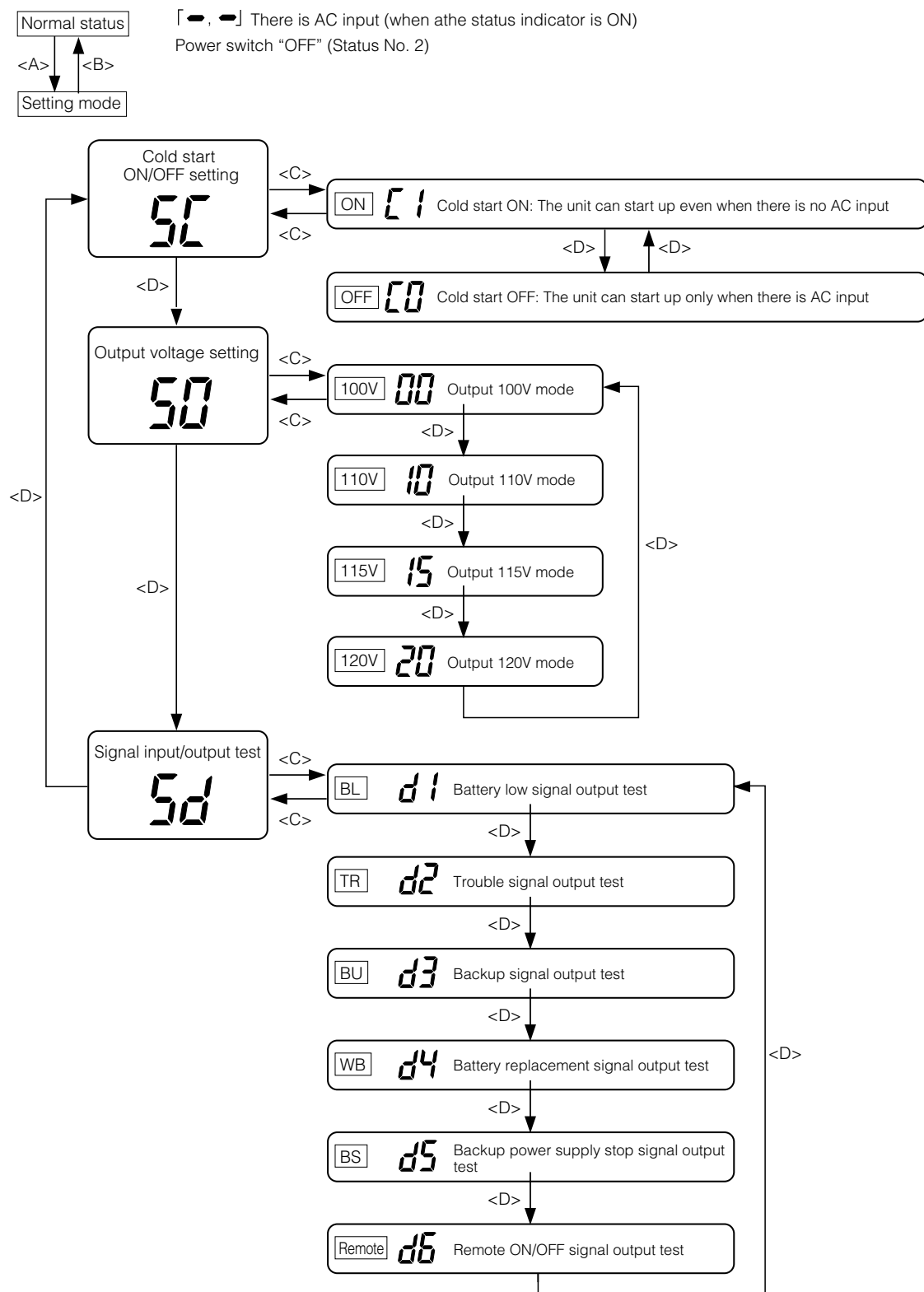
There are 3 items to select.

- 1) Cold start ON/OFF setting
- 2) Output voltage setting)
- 3) Signal input/output test

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



- (2) When the beeper stop switch is pressed and held (for more than 1 second), the unit enters the "individual item setting mode".
- (3) When the power switch is turned OFF, setting mode quits and it returns to normal status (Status No.2).



#### 4. Operation

---

- (A) Turn ON the power switch while the beeper stop switch is pressed.
- (B) Turn OFF the power switch.
- (C) Press and hold the beeper stop switch (for more than 1 second).
- (D) Press the beeper stop switch (for less than 1 second).

# 5. Maintenance and Inspection



## Caution (maintenance)

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

- The backup function continues to supply power from the power output receptacles while the UPS is operating, even when the AC input plug is disconnected.



**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.



## 5-1 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. Method to check the battery

There are 3 methods for checking the battery.

- Perform a self-diagnostic test. (See page 32.)
- Use the auto battery test function. (See page 32.)
- Measure the backup time. (See page 46.)

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

**See also** Measure the backup time according to "7-1 Measuring method of the backup time."

→ Page 60

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 60, 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. Guideline on the frequency of checking the battery (measuring the backup time)

Ambient temperature	Check at intervals of 6 months	Check at intervals of 1 month
20°C	Until 3 years from purchase	From after 3 years
30°C	Until 1.5 years from purchase	From after 1.5 years

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

## 5-2 Replacing the battery

The battery can be replaced either while the unit is stopped (power supply output stopped) or while it is in operation (outputting power supply).



### Caution

When the unit is used in compliance with UL standards, 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. 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 not to 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: BXB50F (battery pack for BY50FW)  
BXB75S (battery pack for BY75SW)



#### 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 or do not give strong impact on it.

- Dilute sulfuric acid may leak.



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

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



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

- The battery may explode or leak dilute sulfuric acid.





## Caution (for battery replacement)

- 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

This unit uses lead acid batteries.

The lead acid batteries are precious recyclable resources. Please cooperate recycling. For information on recycling, please contact our Electronic Systems & Equipments repair center.



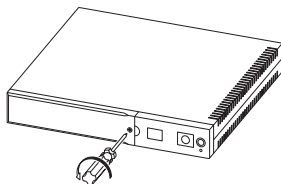
## 5-2-1 Battery replacement procedure (BY50FW)

### ● Preparation

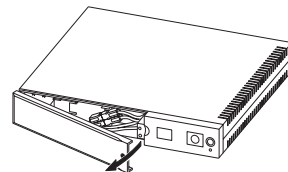
- (1) Purchase a BXB50F spare battery pack (sold separately).
- (2) If you place the UPS horizontally and put a heavy object such as CRT on it, put it down until you finish replacement.

### ● Replacing the battery (BY50FW)

- (1) Open the front panel.

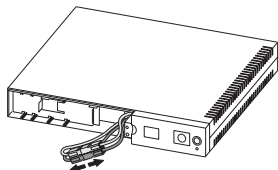


Use a screwdriver to remove the screw (1).

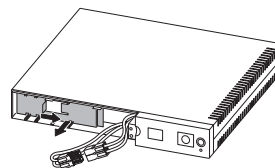


Detach the front panel.

- (2) Disconnect the battery connector and remove the metal cover.



(Disconnect the red and black connectors. Hold one connector in each hand and pull them apart.)



- (1) Slide the front metal cover to the right, and
- (2) Pull it toward you to remove it.

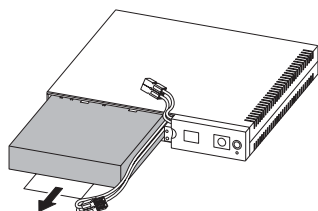
## 5. Maintenance and inspection

- (3) Remove the old battery, and insert the new battery.



### Caution

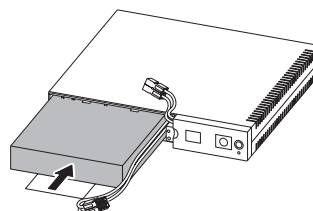
- Do not remove the battery by holding the cables.



Pull on the white label attached to the battery, and then hold the battery with your hands to remove it.



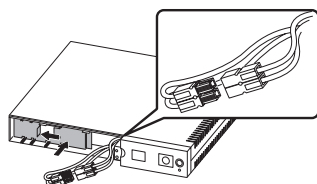
Be careful not to drop the battery.



Insert the new battery.

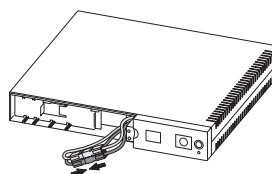
- (4) Reattach the metal cover and connect the connectors.

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



Fit the metal cover into the grooves and slide it to the left to secure it.

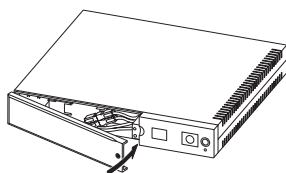
(The battery is secured inside the case.)



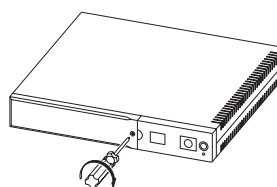
Connect the red and black connectors.

(Make sure that the connectors are securely connected.)

- (5) Reattach the front panel.



Fit the left side of the panel on the case, and then attach it.



Tighten the screw with a screwdriver to secure the front panel.

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

Press the beeper stop/test button for 0.5 sec. to perform a self-diagnostic test. Normal operation resumes after the 10-second test. If the beeper is sounding, it will stop the first time the switch is pressed. Press the switch again to start the test. If the battery replacement display and beeper were activated before replacing the battery, the display and beeper stop after the test is complete, and normal operation resumes.

**<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.

Battery replacement is complete.



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

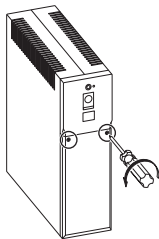
## 5-2-2 Replacing the battery (BY75SW)

### ● Preparation

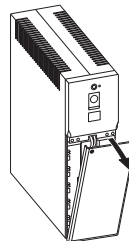
- (1) Purchase a BXB75S spare battery pack (sold separately).
- (2) If you normally position the UPS horizontally and place a heavy object such as a CRT on top of it, remove the object until you finish replacing the battery.

### ● Replacing the battery (BY75SW)

- (1) Open the front panel.

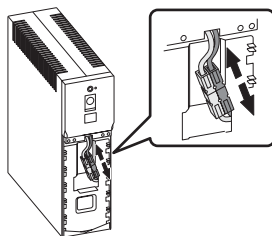


Loosen and remove the 2 screws.

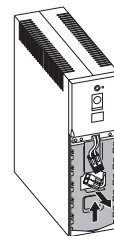


Detach the front panel.  
Pull the front panel upward a little if the front panel is hard to detach.

- (2) Disconnect the battery connector and remove the metal cover.



(Hold one connector in each hand and pull them apart.)



- (1) Slide the front metal cover upward, and
- (2) Pull it toward you to remove it.

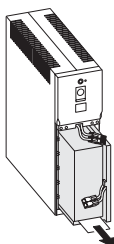
## 5. Maintenance and inspection

- (3) Hold the label stuck to the battery pack and remove it.  
Insert the new battery pack.



### Caution

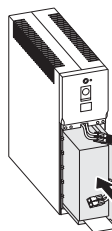
- Do not remove the battery by holding the cables.



Pull on the white label attached to the battery, and then hold the battery with your hands to remove it.



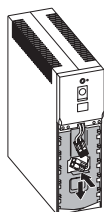
Be careful not to drop the battery.



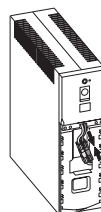
Insert the new battery pack.

- (4) Reattach the metal cover and connect the connectors.

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



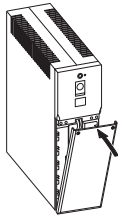
Fit the metal cover into the grooves and slide it downward to secure it.  
(The battery is secured inside the case.)



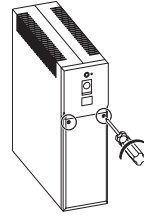
Connect the red and black connectors.  
(Make sure that the connectors are securely connected.)

## (5) Fit the front panel.

Turn the 2 screws to secure the front panel clockwise with a screwdriver.



Fit the front panel.



Tighten the 2 screws.

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

Press the beeper stop/test button for 0.5 sec. to perform a self-diagnostic test. Normal operation resumes after the 10-second test. If the beeper is sounding, it will stop the first time the switch is pressed. Press the switch again to start the test. If the battery replacement display and beeper were activated before replacing the battery, the display and beeper stop after the test is complete, and normal operation resumes.

**<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.

Battery replacement is now completed.



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

## 5-3 Cleaning

### ● Cleaning the UPS

Wipe the UPS lightly by tight squeezed soft cloth soaked with water or detergent

Do not use chemicals such as thinner and benzene. (They cause deformation or discoloration.)

### ● Removing dust from the unit's AC input plug

- Turn off connected devices and the Power Switch of the UPS.
- Disconnect the AC Input Plug from a wall outlet (commercial power) and remove dust around the plug with a dry cloth.
- Disconnect the AC Input plugs of the connected devices from the UPS and clean them also.
- Connect the AC Input plugs of the connected devices to the UPS again, and connect the AC Input Plug of the UPS to a wall outlet (commercial power).

(For information on the connection procedure:)

**See also** "2-2 Installation and connection" → Page 18

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

\* If you do not use the UPS monitoring software or contact signal, you can disregard this section.

### 6-1 Selecting the UPS monitoring software

The following UPS monitoring software is included with the BY50FW/BY75SW: PowerAct Pro (for Windows/Linux), UPS service driver, and UPS Power Manager (for Mac). Choose which one to use based on the application. Refer to the table below for details about compatibility.

#### UPS monitoring software function list

● Standard ○ Option ▲ Limited

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

Note 1: Compatible with Macintosh computers equipped with PowerPC CPU.

Note 2: The UPS stops automatically only when the battery is depleted. (Battery Mode continues until the battery is depleted.)

Note 3: Only the battery capacity can be monitored.

Note 4: This function can be used with Windows only. It cannot be used with Linux.

**[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. (This is function is available only for BN100XR/BN150XR/BN240XR/BH60PCW/BH100PCW.)
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 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.

**UPS monitoring software selection table**

Model	OS	Communication method	UPS monitoring software	Required options (sold separately)
BY50FW BY75SW	Windows Server2003 Windows XP/2000	Serial (RS232C) USB 1.1	PowerAct Pro (included software)	—
		Serial (RS232C) USB 1.1	UPS service (OS standard) + UPS driver (included software)	—
		Contact signal (Note 1) (Note 3)	UPS service (OS standard)	BUC26 (optional cable)
	Windows NT4.0	Contact signal (Note 1) (Note 2)	UPS service (OS standard)	BUC26 (optional cable)
	Windows ME/98	Serial (RS232C)	PowerAct Pro (included software)	—
	Linux (Note 1) (Note 4)	Serial (RS232C) USB 1.1 (Note 1)	PowerAct Pro (included software)	—
	Mac OS X (10.3, 10.4) Mac OS X Server (10.3, 10.4)	USB 1.1 (Note 1)	UPS Power Manager (included software)	—

Note 1: Files cannot be automatically saved.

Note 2: 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 automatically cut after OS shutdown is performed.

Note 3: Even if the UPS does not stop when the OS is shut down, it stops automatically when the battery is depleted.

Note 4: For the latest information, check our website at <http://www.omron.co.jp/ese/>

Note 5: Compatible CPUs: Power PC G4, Power PC G5

## 6-2 When using the included UPS monitoring software

### PowerAct Pro™ UPS monitoring software

Using the included “PowerAct Pro” UPS monitoring software allows you to automatically save files and shut down your computer when a power failure occurs.

The schedule settings also allow you to perform your required operations, such as the UPS auto startup, auto stop, etc.

\* However, make settings so that the amount of time from the occurrence of the power failure until computer shutdown is complete is less than the backup time measured in “7-1. Measuring the backup time” on page 60.

For more details, refer to the instruction manual and online help for the the UPS monitoring software.

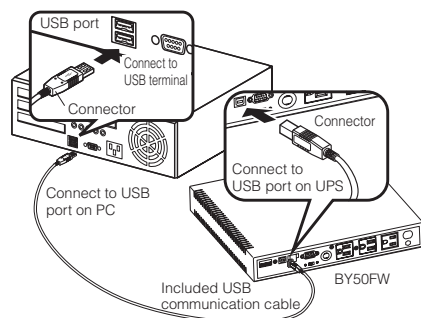
### ● When using PowerAct Pro

1. Connect the UPS to a computer.

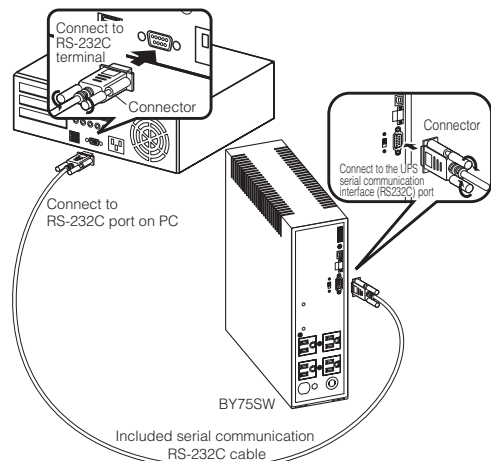
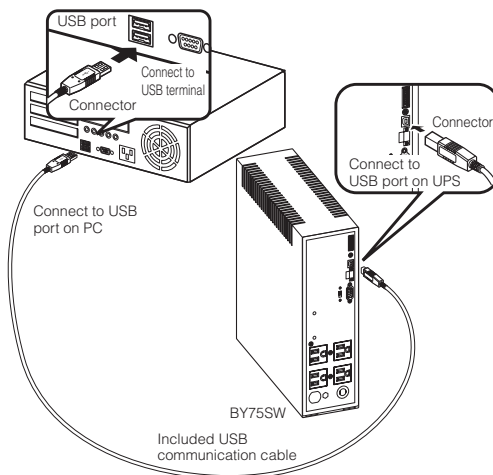
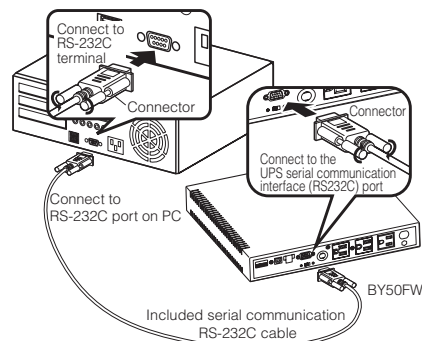
Cable: The included serial communication (RS-232C) cable or USB communication cable

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

#### (1) USB connection



#### (2) RS232C connection



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

Software to install: PowerAct Pro

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

## Explanation

### Operation start using the UPS monitoring software during scheduled stop

- If the unit starts operation during a scheduled stop period, the next set scheduled ON operation is cancelled after the power switch is turned OFF.

### Auto restart after OS shutdown by UPS monitoring software

- In the event of a power failure, some PC models (see Note 1 below) automatically restart immediately after the completion of the OS shutdown processing by the UPS monitoring software.  
In this case, the unit stops during restart or after startup, possibly damaging files and/or the hard disk. This problem can be avoided by disabling POWER MANAGEMENT in the BIOS settings.

\*1) PC models: This problem has been reported with MICRON Millennia Mme.

- When the PC does not start up automatically, select the "System startup at power restoration" setting (example: "Restore On AC/Power Loss) in the BIOS settings of your PC, and change to a "System startup after power restoration" setting (example: Power On). Individual BIOS setting methods and/or displays may differ depending on the PC. For more information, refer to your PC instruction manual or the technical support center for your PC.
- When considering a system with automatic startup at power restoration, choose a PC that satisfies the condition shown below. For more information on PC operation when input power is supplied, consult your PC instruction manual or contact the PC technical support center.

<Condition>

Without pressing the power switch, the PC starts up when input power is supplied.

- After shutdown processing in the event of a power failure, the unit restarts automatically and supplies power once power is restored. If you do not want the devices connected to start up, turn OFF their switches while the power is out.
- The automatic restart setting can also be disabled in the included UPS monitoring software.

### **“UPS Power Manager” UPS monitoring software for Mac**

When using Macintosh computers such as Xserve, the included “UPS Power Manager” UPS monitoring software enables you to automatically shut down the system when power failures or other input power supply problems occur.

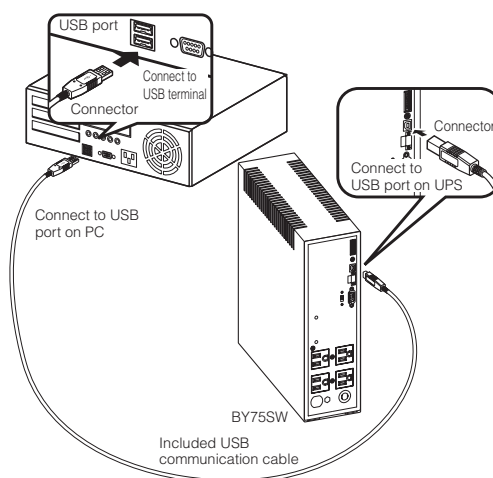
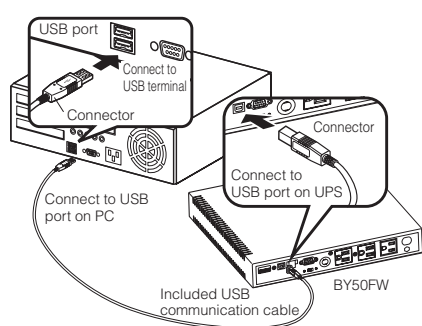
\* Compatible with Macintosh computers equipped with PowerPC CPU only.

## **● When using UPS Power Manager “UPS monitoring software for Mac”**

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

Cable: Included USB communication cable

#### **(1) USB connection**



### **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”.

## 6-3 When performing auto-save functions using the UPS service in Windows Server 2003/XP/2000 + included UPS service driver

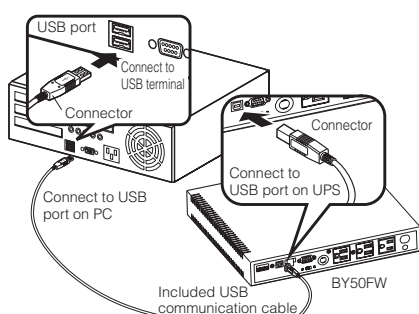
When using the included “UPS service driver”, the OS standard UPS service in Windows Server 2003/XP/2000 can be used. When there is a power failure, files can automatically be saved and the computer can be shut down.

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

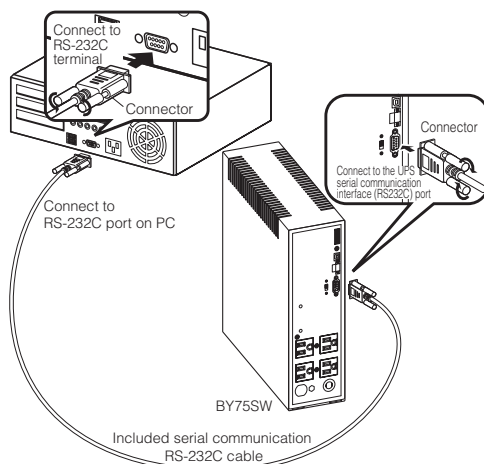
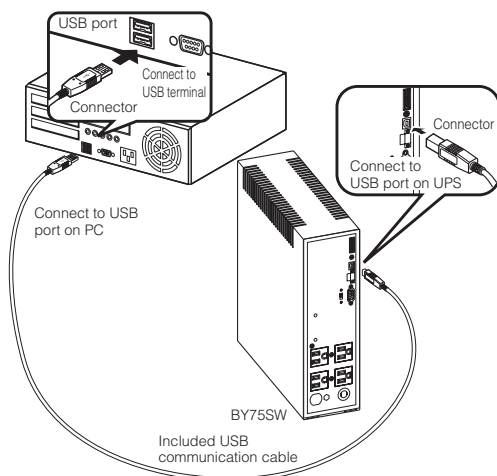
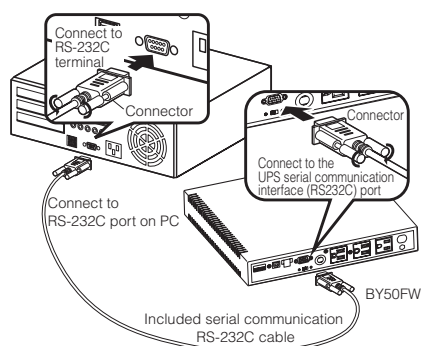
Cable: Included connection cable (serial communication or USB)

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

#### (1) USB connection



#### (2) RS232C connection



### 2. Install the included “UPS service driver” on the computer.

Software to install: UPS service driver

How to install: Refer to the “UPS monitoring software quick installation guide” and the “UPS driver Ver. 3.3 instruction manual” on the CD-ROM.

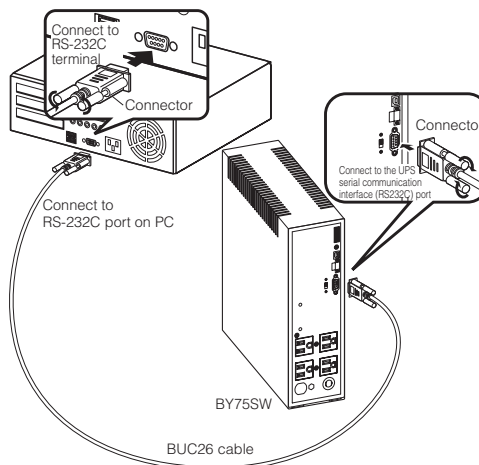
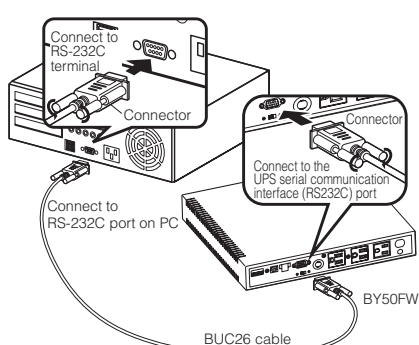
## 6-4 When performing auto-save functions using the standard UPS service in Windows Server 2003/XP/2000/NT

When using in combination with the optional BUC26 cable, 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

\* Set the switching switch on the back of the unit to "contact".



### 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>

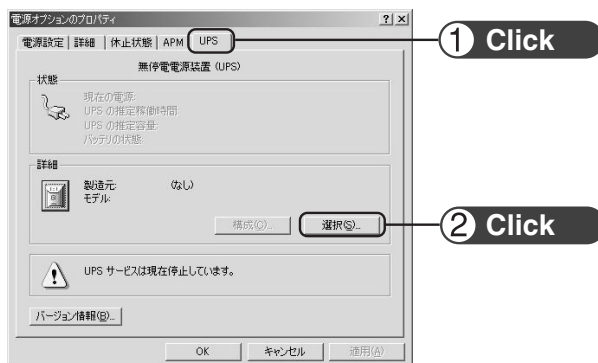
Start up the computer after connecting it with the UPS.

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)

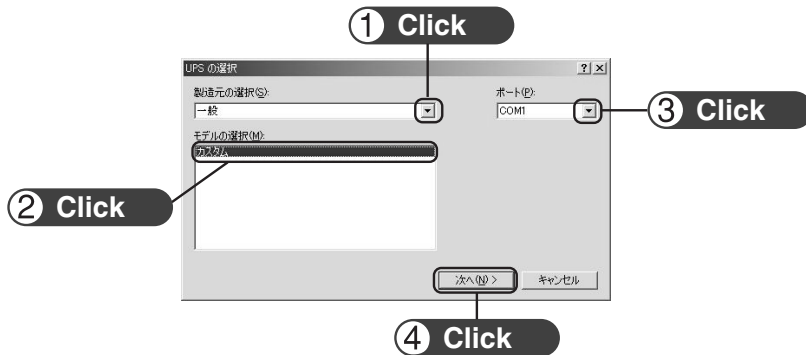
- 1) Double-click the "Power supply options" icon in "Control Panels".
- 2) Click the "UPS" tab in the "Power supply options" window.  
Click the "Select (S)" button.



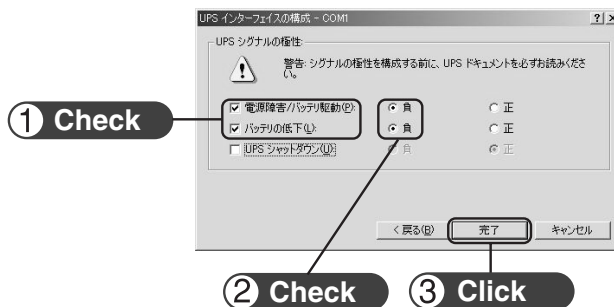
- 3) Click the button on the right of the "Select manufacturer (S)" window, and select "General" from the list. Click on "Custom" in the "Select model (M)" window.

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.



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

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.

#### <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.



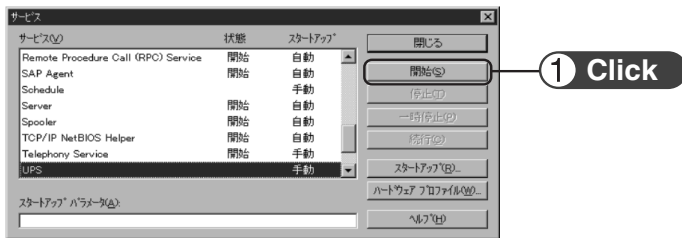
- 2) In the "Warning" box, place a check mark in the box to the left of "Time from when battery drive starts until warning is issued (M)" by clicking on it.

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.



- Click the "OK" button in the "Power supply options" window.  
Setup is complete.

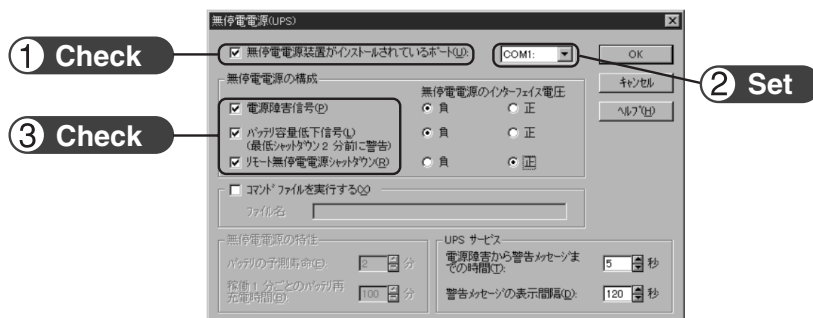


When a power failure occurs, Windows shutdown starts once the set time is exceeded or the low battery level signal is detected.

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>

- Double-click the "UPS" icon in "Control Panels".
- 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.
- Insert check marks in each of the checkboxes to the left of "Power failure signal", "Low battery level signal" and "Remote uninterruptible power source shutdown signal" by clicking on the boxes.



Set each signal interface voltage setting as shown below.

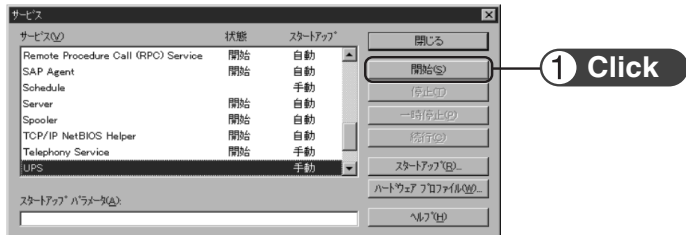
- Power failure signal (P) ... Negative
- Low battery signal (L) ... Negative
- Remote uninterruptible power source shutdown (R) ... Positive

### 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.

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

- 4) After the settings are made, double-click the "Service" icon in "Control Panels".
- 5) 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.

## 6-5 Using the Contact Signal

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

You can perform power failure and shutdown processing by allowing the system to detect the backup signal and low battery level signal, or you can use the trouble signal to perform failure notification.

You can stop the UPS by inputting the UPS Stop Signal from the system, and remote control start and stop of the UPS by using the Remote ON/OFF Signal.

Also, this function is valid only when "connection communication" is selected for the "switching switch". (See item 2 on page 35.)

### 1. Signal output

The UPS has 5 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-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 low battery level is detected
--------	---------------------------------------

#### ● Trouble Signal output: TR

Goes ON when an internal failure of the UPS occurs.

TR-COM	ON when an internal failure occurs
--------	------------------------------------

#### ● Battery Replacement Signal output (WB)

Turns ON when battery deterioration is detected.

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

## 2. Input of the UPS Stop Signal (BS)

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

Stops the output of the UPS after the time period specified by the "power output stop delay time setting" (setting switches **5** and **6**) has elapsed.

- (1) When the "UPS Stop Signal setting" (setting switch **7**) 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 "UPS Stop Signal setting" (setting switch **7**) 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.

**See also** "4-7 Changing the setting of the functions" → Pages 33

## 3. Remote ON/OFF Signal

You can start and stop the UPS by the remote ON/OFF signals, by the contact connected to the outside, or the ON/OFF status of the open collector circuit. To use this function, turn on the Power Switch of the UPS.

(Note: It is not possible to start up the UPS with the remote ON/OFF signal when there is no AC power supply, even when cold start is set to ON.)

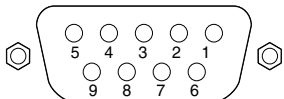
External contact	Operate
Open	Start
Close	Stop

## 4. Connection to the system

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

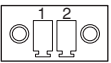
**See also** "9. Example of the use of the Contact Signal circuit" → Page 59

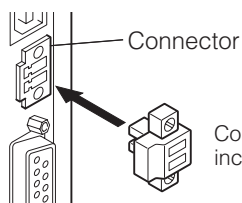
## 5. Contact Signal Connector (female DSUB9P)

Pin assignment	Pin number	Signal name
 <p>Front view Screw size: inch screw #4-40 UNC</p>	1	BL
	2	TR
	3	BS
	4	—
	5	COM
	6	Remote ON/OFF (-)
	7	Remote ON/OFF (+)
	8	BU/NBU
	9	WB

## 6. Remote ON/OFF connector (female)

- (1) Connect the connector: FUPS Shutdown  
Disconnect the connector: FUPS Start-up
- (2) The corresponding warning

Pin assignment	Pin number	Signal name
 <p>Front view Screw size: Inch screw #4-40 U N C</p>	1	Remote ON/OFF (+)
	2	Remote ON/OFF (-)



Connect the remote ON/OFF connector included with the product.

## 7. Contact Signal ratings

- Signal output (BL, TR, BU/NBU, WB)

Photo coupler ratings

Applicable voltage: 35 VDC or less

Maximum current: 10 mA

- Remote ON/OFF

Voltage between terminals: 10 VDC

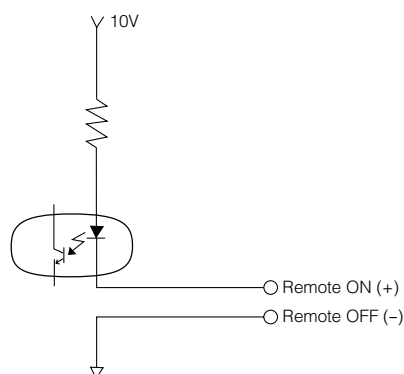
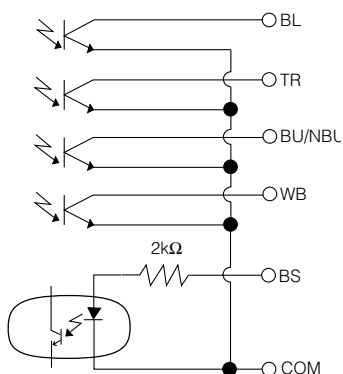
Current when closed: max.10 mA

- UPS Stop Signal input (BS)

Input voltage HIGH 5 to 15 VDC

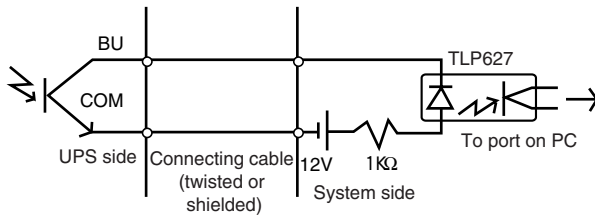
LOW 0.7 VDC or less

## 8. Contact Signal circuit inside the UPS

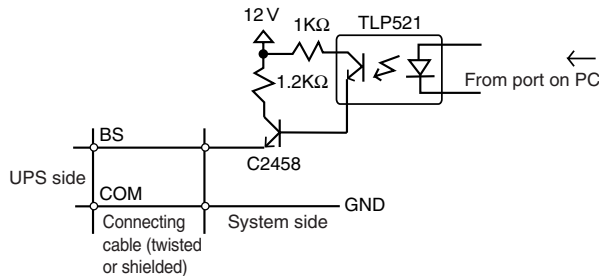


## 9. Example of the use of the Contact Signal circuit

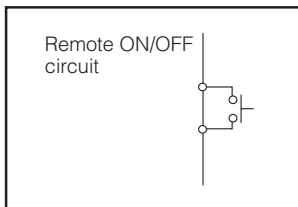
### ● Example of the use of the BU signal



### ● Example of the use of the BS signal



### ● Example of remote ON/OFF




## 10. Precautions and notes on the use of the Contact Signal

### Notes

- When connecting a device that generates counter electromotive force to the signal output circuit such as a relay, connect diodes to prevent counter electromotive force at the both end 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 restart setting (setting switch ) to ON while the power is out. (See page 33.)

# 7. Measuring the backup time

## (Checking the discharge time of the battery)

### 7-1 Measuring method of the backup time

- (1) Connect the AC Input Plug of the UPS to a wall outlet (commercial power) and charge it for approximately 12 hours.

If you operate the UPS for 12 hours or more, it is charged. If a power failure occurred during this period, charge it again.

- (2) Turn ON all devices connected to the power output to be "backed up during a power failure".  
(Including devices connected to the AC outlet of your computer.)

Operate them in a way in which it is allowable that power supply to the connected devices stops.

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

To be performed in case of hard drive stops.

● **For Windows 98/95:**

Choose Shut Down of 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."

### 7-2 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) Unify the total capacity (power consumption) of connected devices to W (Watt).

For the indication of connected devices, check your computer and the rear of the display.

There are 3 types of indication: VA (Volt-Ampere) indication, A (Ampere) indication, and W indication.

Example 1) 100 VAC, 50/60Hz, 145 W

Example 2) 100 VAC, 50/60Hz, 1.8 A

Example 3) 100 VAC, 50/60Hz, 150 VA

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

For devices that use the VA or A indication, convert the capacity into W. Multiply the value indicated on devices by the value in the right table for conversion.

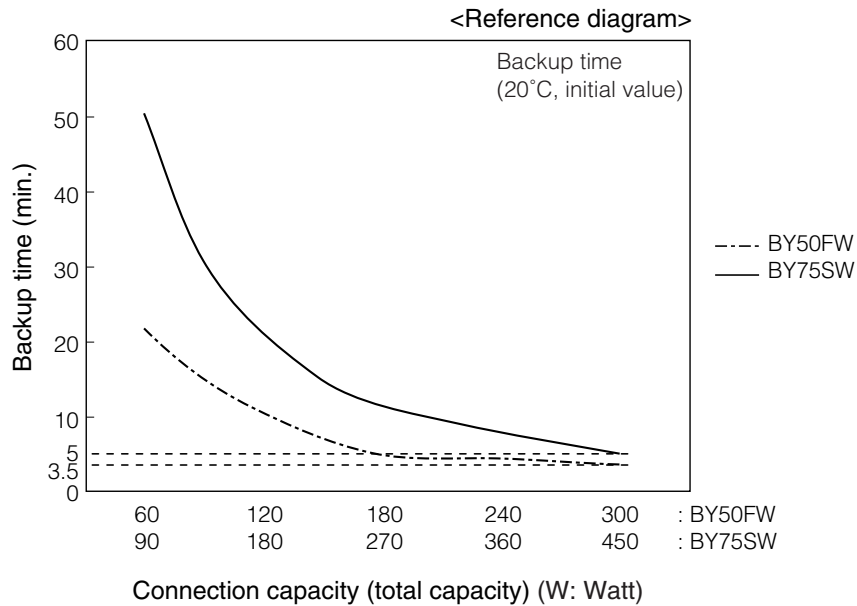
(When the power factor is unknown, enter "1". The power factor usually ranges between 0.6 and 1.)

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

## 7. Measuring the backup time (checking the discharge time of the battery)

(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 (initial value for product that has not been used)
- The smaller the capacity of connected devices becomes, the longer the backup time becomes.



## 8. Troubleshooting

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

If the unit continues to operate abnormally, please contact our Electronic Systems & Equipments 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 worked and opened. (If the black button is popped up, it is suspected that there are too many connected devices or there is a short in connected devices.) Disconnect all of the connected devices, push in the AC Input Overcurrent Protection Black 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 a beep and display" on page 30.)</li> <li>3. Isn't the voltage of the wall outlet (commercial power) too low? Stop devices that consume a lot of power such as an air conditioner. Check the UPS, for example, by connect it to a wall outlet (commercial power) in another room or house. (It does not operate when the voltage is less than 90V.)</li> </ol>
Backup is not possible. The computer stops when a power failure occurs.	<p>Isn't charging insufficient? Perform the test after charging the battery for at least 12 hours. You can charge the battery by connecting the AC input plug of the UPS to a wall outlet (commercial power).)</p>
Backup is performed too frequently. Frequent switching is performed although a power failure does not occur. You hear the sound of switching.	<ol style="list-style-type: none"> <li>1. The input power supply may be at fault. Connect the UPS to a wall outlet (commercial power) in another room or, if possible, another house and check it. Or, stop large devices such as a cooler.</li> <li>2. Is a page printer (laser printer, etc.) connected? Because large current flows instantaneously in printers, normal backup is not possible.</li> </ol>
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>	<ol style="list-style-type: none"> <li>1. The UPS generates some noise when performing backup. For displays susceptible to noise, distortion or white lines may occur, but the UPS is not at fault.</li> <li>2. Grounding the UPS, computer, and display may improve this problem.</li> </ol>
The battery replacement lamp blinks and the beeper sounds at 2-second intervals.	<p>The battery is judged to be dead in the auto battery test or the self-diagnostic test. Battery Mode cannot be performed and therefore replace the battery pack.</p>
The status indicator shows "OL", and the beeper sounds at 0.5-second intervals.	<p>There are too many connected devices. There are too many connected devices. Reduce the number of connected devices until "On" is displayed on the status indicator.</p>
The status indicator blinks "EOL", and the beeper sounds continuously.	<p>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.</p>

# References

## A. Specifications

		BY50FW	BY75SW
Method	Operation method	Full-time commercial power supply method	
	Connectable devices	PC, display, and peripherals	
Input	Nominal input voltage	100 / 110 / 115 120 VAC	
	Input voltage range	100V mode $86 \pm 4$ to $114 \pm 4$ VAC 110V mode $96 \pm 4$ to $124 \pm 4$ VAC 115V mode $101 \pm 4$ to $129 \pm 4$ VAC 120V mode $106 \pm 4$ to $134 \pm 4$ VAC	100V mode $86 \pm 4$ to $114 \pm 4$ VAC 110V mode $96 \pm 4$ to $124 \pm 4$ VAC 115V mode $101 \pm 4$ to $129 \pm 4$ VAC 120V mode $106 \pm 4$ to $134 \pm 4$ VAC
	Frequency	50/60Hz $\pm$ 4Hz	
	Maximum current	7.5 A	11 A
Output	Nominal output voltage	100 to 120 VAC	100 to 120 VAC
	Nominal output current	5 to 4.2 A	7.5 to 6.25 A
	Waveform (In Commercial Power Mode/Battery Mode)	Sine wave / Shine wave	
	Output capacity *1	500VA/300W	750VA/450W
	Voltage (effective value)*2	100V mode $100V \pm 5\%$ 110V mode $110V \pm 5\%$ 115V mode $115V \pm 5\%$ 120V mode $120V \pm 5\%$ (During backup operation)	100V mode $100V \pm 5\%$ 110V mode $110V \pm 5\%$ 115V mode $115V \pm 5\%$ 120V mode $120V \pm 5\%$ (During backup operation)
	Nominal output frequency	50/60Hz $\pm$ 1Hz	50/60Hz $\pm$ 1Hz
	Switching time	8 msec. or less	
	Backup time*3	3.5 minutes or more	5 minutes or more
Battery	Type	Compact sealed lead battery	
	Expected lifespan	4 to 5 years (at ambient temperature of 20°C)	
	Charging time	12 hours	
Environment	Operating ambient temperature	0 to 40°C (during operation)/ -15 to 40°C (during storage) battery fully charged and with no condensation	
	Operating ambient humidity	25 to 85%RH (during operation)/10 to 90%RH (during storage)	
External dimensions (W x D x Hmm)		287 x 330 x 45	90 x 322 x 298
Weight of UPS		approx. 6kg	approx. 9kg
Internal power consumption (Normal, Max.)		20W	40W

Note 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.

Note 2: The power supply abnormality detection voltage can be changed in the UPS operating mode settings.

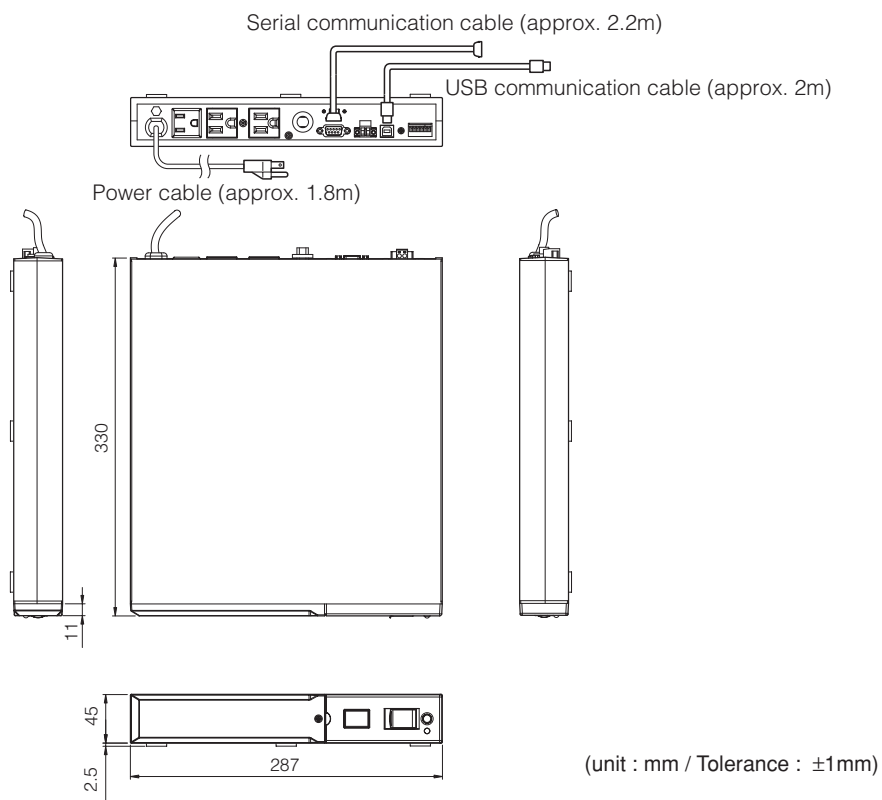
Note 3: When rated load is connected, at 20°C, and for initial characteristics.

## B. Related products

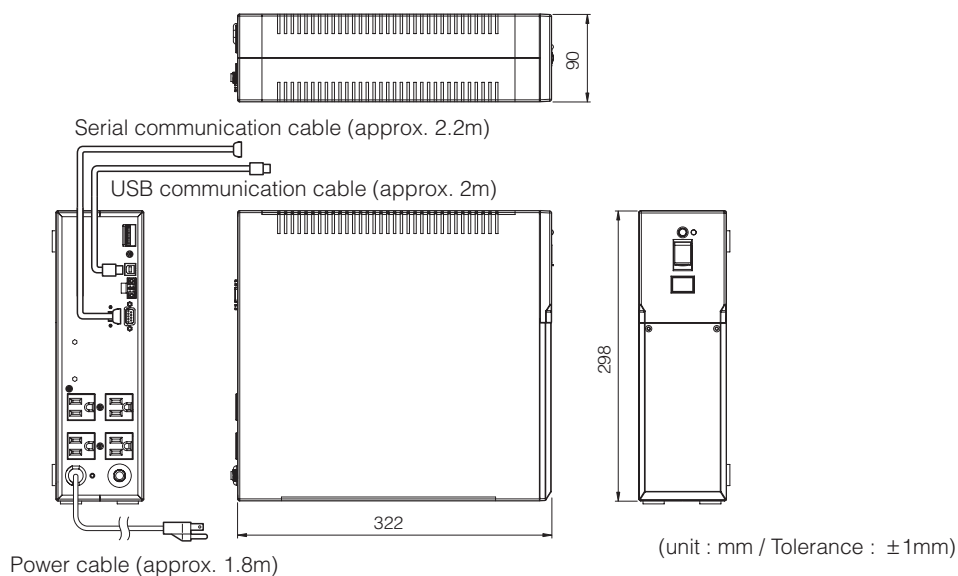
	BY50FW	BY75SW
Spare battery pack	BXB50F	BXB75S
Attachment fittings	BXP50F	—
Rack mounting brackets	BYP50F	—

## C. Dimensional outline drawing

### BY50FW

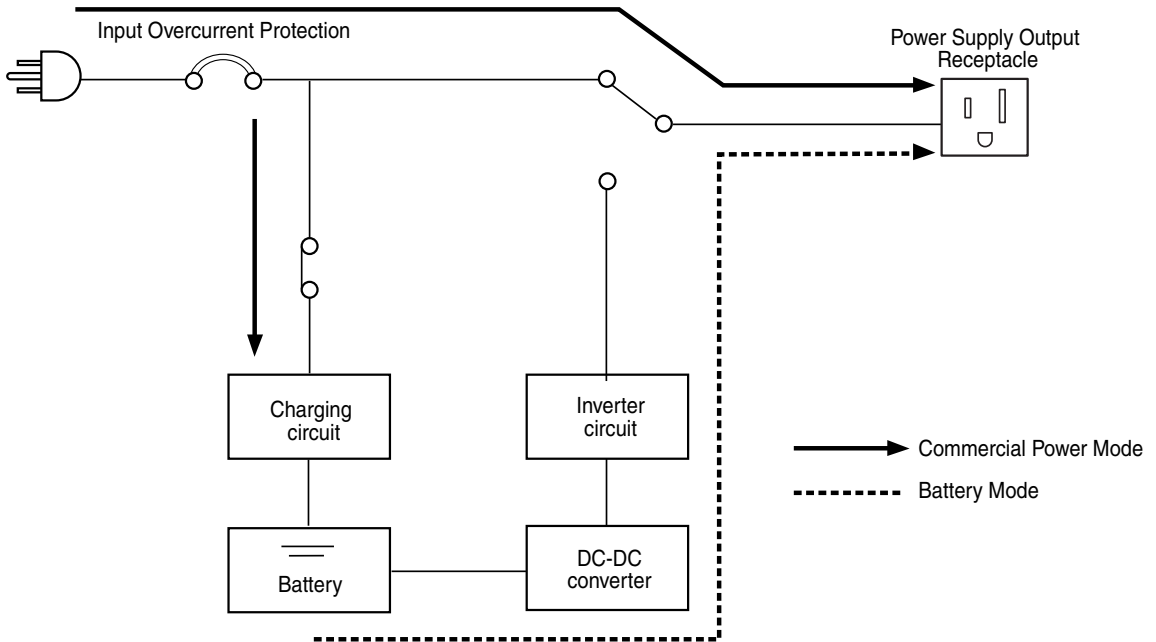


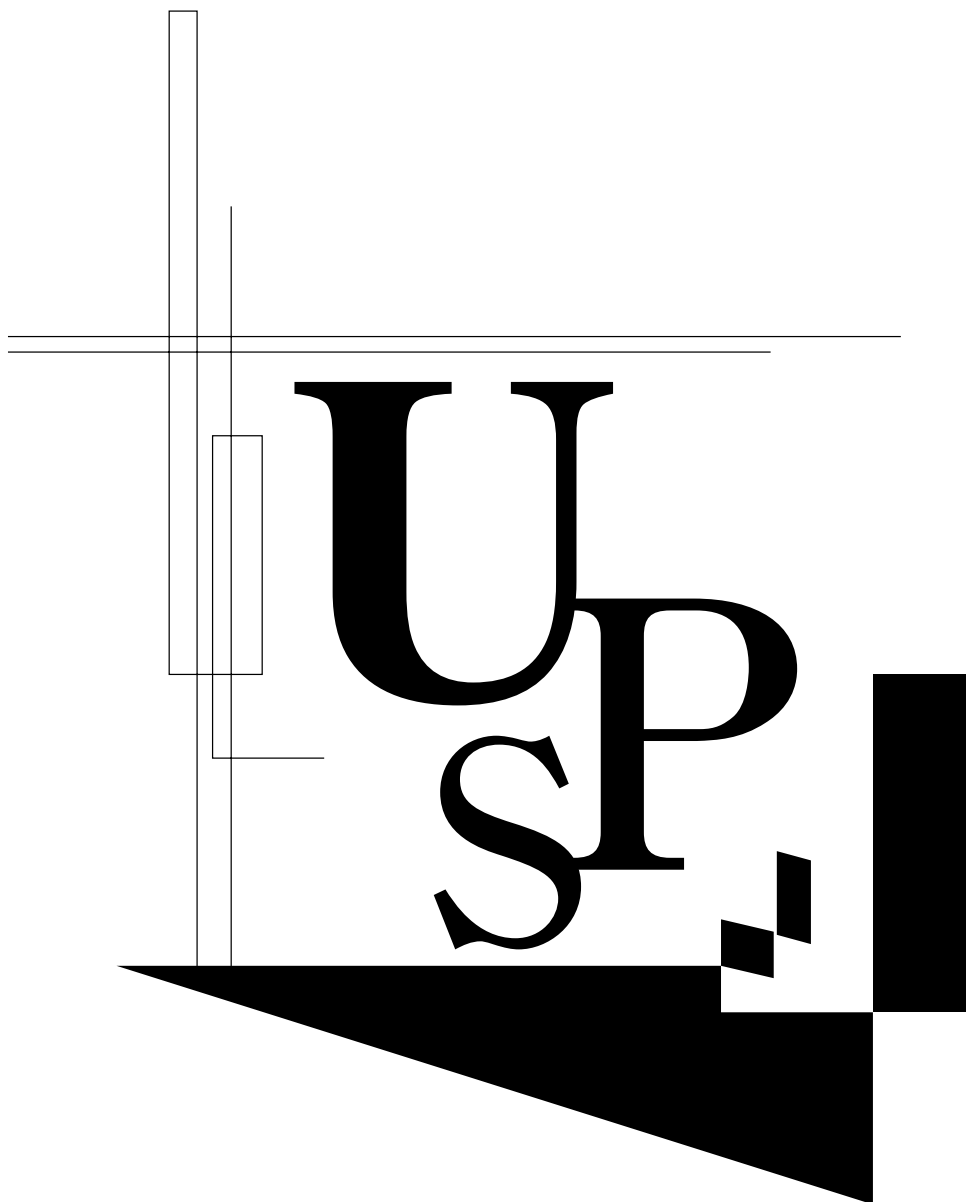
### BY75SW



## D. Circuit block diagram

This UPS outputs power input from commercial power as it is and charges the battery at the same time. If a power failure or voltage variation occurs, the UPS automatically switches to operation using the battery and continues power output. At this time, the beeper sounds intermittently. When the power is recovered, normal operation using commercial power is automatically recovered. (The beeper stops.) You do not have to perform any operation.





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