

OMRON

Uninterruptible Power Supply

POWLI BY35S/BY50S BY80S/BY120S

Instruction Manual



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

Introduction

Features of this product

Thank you for purchasing the BY35S/BY50S/BY80S/BY120S 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 350VA/210W (BY35S), 500VA/300W (BY50S), 800VA/500W (BY80S), 1200VA/720W (BY120S) 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 Backup Power Supply

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

Voluntary Control Council for Interference (VCCI) by information technology equipment

This is VCCI Class B equipment. Though the equipment is designed to be used in residential environment, it may cause radio interference if used nearby the radio or TV receivers.

Operate it properly according to the instruction manual.

Disclaimers

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

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

- Windows is the registered trademark of Microsoft Corporation in the United States and/or other countries.
- The names of other companies and products mentioned herein are the trademarks or registered trademarks of their respective owners.

IMPORTANT SAFETY INSTRUCTION

1. SAVE THESE INSTRUCTIONS.

This manual contains important instructions for BY35S/BY50S/BY80S/BY120S that should be followed when using the UPS and batteries.

2. SYMBOL



Power output ON/OFF switch.

3. INTERNAL BATTERY

Internal battery voltage is 12V DC FOR BY35S/BY50S/BY80S/BY120S.

4. TEMPERATURE RATING

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

5. ENVIRONMENT

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

Procedure from installation to operation

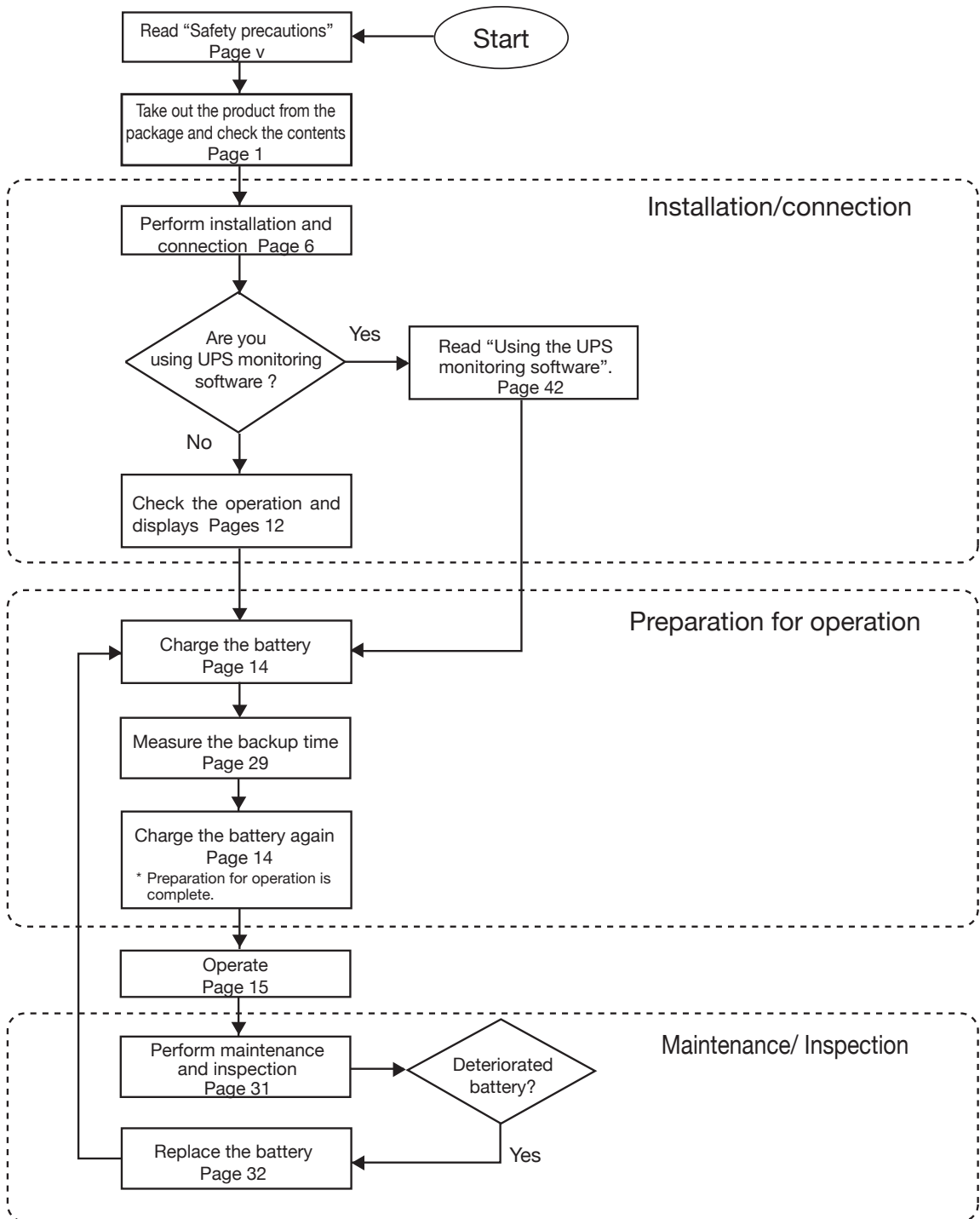




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Safety precautions

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

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

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

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

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

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

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 FA or OA equipment such as personal computers. 

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

Caution (for installation and connection)

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

- Dropping or toppling the unit may cause injury.
- Unit weight:
BY35S/50S: 4.5kg, BY80S: 6.4kg, BY120S: 8.5kg
- If you drop the unit, stop using it and have it inspected and repaired.
For repair, please contact the shop of purchase.

Keep plastic package bags out of reach of children. 

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

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

- Connecting to a wall outlet (commercial power) with a different voltage or frequency may result in a fire.
- The unit may fail.

Connect the unit to a wall outlet (commercial power) with a capacity of 4.8A or more for BY35S, 6.5 A or more for BY50S, 12.0 A or more for BY80S and 15.0 A or more for BY120S. 

- Otherwise, the power cord may be heated.
- When equipment with the maximum output capacity is connected, a maximum current of 4.8 A (BY35S), 6.5 A (BY50S), 12.0 A (BY80S) or 15.0 A (BY120S).

 **Caution (for installation and connection)**

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



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

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

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



- Overcurrent may damage the UPS.

Provide secure grounding.



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

Do not disassemble, repair, or modify the unit.



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

Do not install the unit in other than specified orientations.



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

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



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

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



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



- Do not store in places where the humidity is lower than 10% or higher than 90%.
- Do not use the unit in places where the ambient temperature is lower than 0°C or higher than 40°C.
- Do not use in places where the humidity is lower than 25% or higher than 85%.
- Do not install/store the unit in closed places such as cabinets with no clearance, places where there is flammable or corrosive gas, places exposed to direct sunlight, places with large amounts of dust, places exposed to shock or vibration, or outdoors.
- Installation or storing the unit in such a place may cause a fire.

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



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

Do not pinch or tie the cable of the unit.



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

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.

Caution (for installation and connection)

Do not block the air vents of the unit.

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



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

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



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



To reduce the risk of fire, connect only to a circuit provided with 20 amperes maximum branch circuit overcurrent protection in accordance with the National Electric Code, ANSI/NFPA 70.



Aux Etats Unis, pour réduire le risque de feu, connectez le produit à une source de tension protégée à 20A maximum conformément au code National Electrique ANSI/NFPA 70.



Caution (for use)

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

- Doing so may cause an electric shock or a fire.
 - If the unit becomes wet, immediately stop using it, unplug the AC input cable, and have the unit inspected and repaired.
- For repair, please contact the shop of purchase.



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

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



Ambient temperature	Expected life
20°C	4 to 5 years
30°C	2 to 2.5 years

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

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

- Accumulated dust may cause a fire.



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

- Doing so may cause abnormal heating or a fire.



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

- Using the unit under such conditions may cause a fire.
- Under such conditions, make sure to stop using the unit, unplug the AC input cable, and contact the shop of purchase for inspection and repairs.
- Use the unit under the conditions in which you can immediately disconnect the AC input plug from a wall outlet (commercial power) in the case of an abnormal event.



If fluid leaks from the unit, do not touch the fluid.

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



Do not place objects on the unit, and do not drop heavy objects onto the unit.

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



Caution (for maintenance)

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



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

Do not disassemble, repair, or modify the unit.



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

If fluid leaks from the unit, do not touch the fluid.



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

Do not throw the unit into fire.



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

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



- Doing so may result in electric shock.

Do not insert metal objects into the battery connectors.



- Doing so may result in electric shock.

Caution (for battery replacement)

Perform replacement on a stable and flat place.



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

Use a specified battery for replacement.



- Not doing so may cause a fire.
- Product model: BYB50S for BY35S/BY50S, BYB80S for BY80S and BYB120S for BY120S.

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



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

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



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

Do not disassemble or modify the battery.



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

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



- Dilute sulfuric acid may leak.

Do not short the battery with metal objects.



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

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



- The battery may explode or leak dilute sulfuric acid.

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



- Dilute sulfuric acid may leak.

Caution (for battery replacement)

Do not dispose of batteries in a fire. The batteries may explode.



Dispose of used batteries according to the instructions.

Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic.



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).

Attention (pour le remplacement de la batterie)

Protéger les batteries du feu. Risque d'explosion des batteries.



Utilisez les batteries conformément aux instructions.

Ne pas ouvrir ni détériorer les batteries. Les fuites d'électrolyte sont dangereuses pour la peau et les yeux.



Les batteries peuvent présenter un risque de choc électrique avec un fort courant de court circuit. Les précautions suivantes doivent être suivies lors de l'intervention sur les batteries :



- a: retirer les montres, bagues et autre objets en métal
- b: Utilisez des outils à manche isolé
- c: Utilisez des gants et des chaussures isolant
- d: Ne pas laisser des outils ou des objets métalliques proches des batteries
- e: Déconnecter le chargeur avant de connecter ou de déconnecter les batteries
- f: déterminer si la pile est mise à la terre. Si elle est mise à la terre, effectuer la déconnection. Le contact avec une pile mise à la terre peut créer un choc électrique. Ceci sera réduit si cette mise à la terre est supprimée pendant l'installation et la maintenance.

Notes

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

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

Charge the battery for at least 8 hours soon after purchasing the unit.

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

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

- Even if the unit is not used, the battery gradually discharges, and if it is left for a long time, it goes into an over discharge state.
The backup time may become shorter or the battery may become unusable.
- We recommend keeping the temperature 25°C or less when storing the unit for long periods of time.
- Connect the units 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 to each other, and do not short the output lines to the ground.

- The unit may fail.

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

- The unit may fail.

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

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

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

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

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

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

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.

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

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

This unit does not start up without connecting to the battery.

- This unit does not start up when an over-discharged or deteriorated battery is connected.

Notes

Do not conduct a dielectric strength test.

- The surge absorption element set in the power input line will be broken if a dielectric strength test is conducted.
- If the dielectric strength test must be made, conduct within the range of 250 VDC.

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

- This manual contains important safety-related information. Please read and understand the contents of the manual before beginning operation.

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

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

This unit uses lead acid batteries,

- Which are a valuable recyclable resource. Please recycle.



Explanation

Usual operation

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

Quitting Battery Mode

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

Rebooting

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

 Setting switch [2] can be used to select whether or not auto restart is performed. See Page 25

Scheduled operation using the UPS monitoring software

- When performing scheduled operation in which the UPS is stopped and a device such as a breaker is used to stop the UPS at the same time that commercial power stops, specify a period of no more than 3 months for the start of the next operation.

If you specify a period longer than 3 months, the internal timer is reset and the scheduled operation does not start. Note that this period reduces to approximately half when the battery is dead. If a period of 3 months is exceeded, you start operation by supplying commercial power and pressing the start switch. However, if the battery is dead, you may not be able to start operation.

In this case, replace the battery according to the instructions in "6-2 Replacing the battery" on page 32.

Operation of the cooling fan of BY120S

- The cooling fan operates during battery charge (Charging rate: 0 to 90%), backup operation or when the connected load exceeds 360 W.

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

- The output of the UPS may stop due to a failure of the internal circuit.

1

Preparation

1-1 Unpacking the product

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

1-2 Checking the contents

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

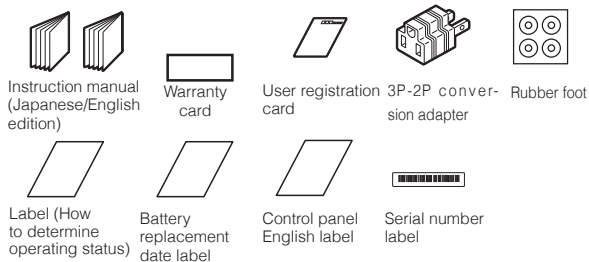
(1) Accessories related to the main unit

	BY35S/BY50S/BY80S/BY120S
Instruction manual (Japanese and English versions)	1 each
Warranty card	1
User registration card	1
3P-2P conversion adapter	1
Label (How to determine operating status)	1
Battery replacement date label	1
Control panel English label	1
Rubber foot for horizontal setting	4
Serial number label	4

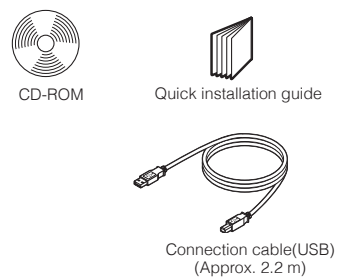
(2) UPS monitoring software related items

	BY35S/BY50S/BY80S/BY120S
Quick installation guide	1
CD-ROM	1
Connection cable (USB)	1

<Accessories related to main unit>



<UPS monitoring software>



*1: When the unit is used in compliance with UL standards, do not use a 3P-2P plug adapter.

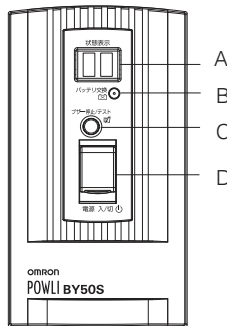
1-3 Name of each part

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

For information on the function of each part, refer to "2. Installation and connection" on page 6 and "3. Operation" on page 15 that provides the details.

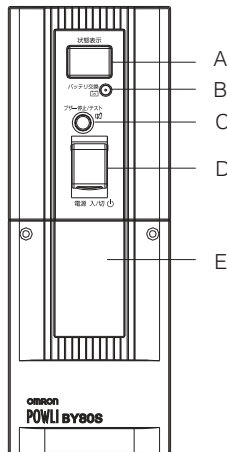
Front view

< BY35S/BY50S >



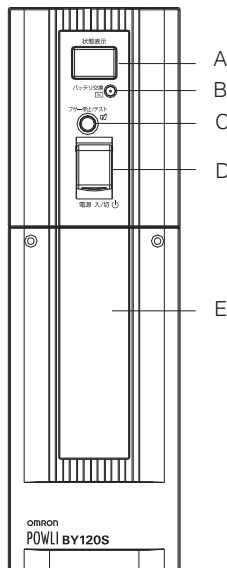
- A. Status indicator digital display
- B. Battery replacement lamp
- C. Beep stop/test switch
- D. Power switch

< BY80S >



- A. Status indicator digital display
- B. Battery replacement lamp
- C. Beep stop/test switch
- D. Power switch
- E. Battery replacement cover

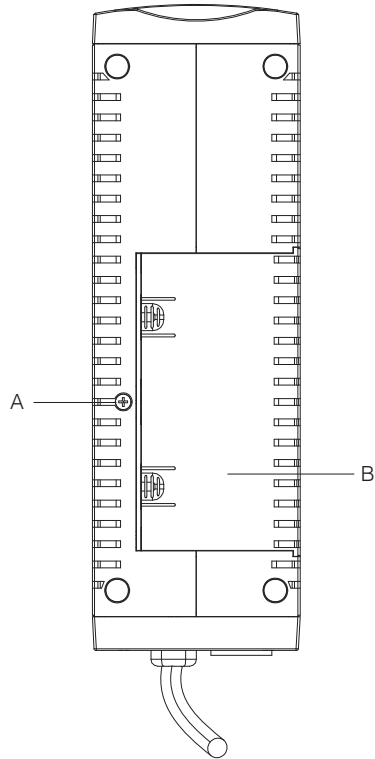
< BY120S >



- A. Status indicator digital display
- B. Battery replacement lamp
- C. Beep stop/test switch
- D. Power switch
- E. Battery replacement cover

Bottom view

< BY35S/BY50S >

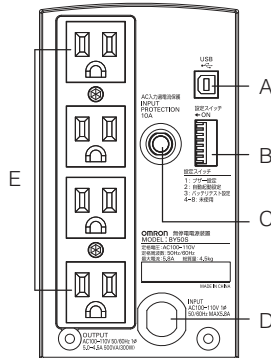


- A. Fixation screw for battery replacement cover
- B. Battery replacement cover

1.Preparation

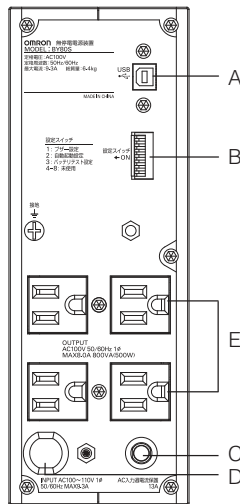
Rear view

< BY35S/BY50S >



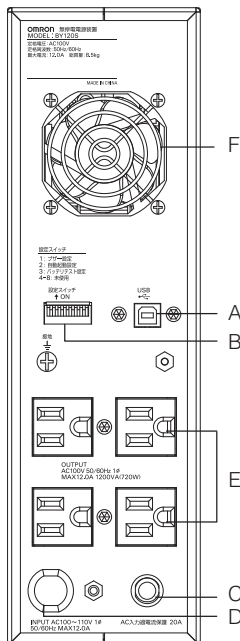
- A. USB connector
- B. Setting switch
- C. AC input overcurrent protection switch
- D. AC input cable
- E. Power supply output receptacles

< BY80S >



- A. USB connector
- B. Setting switch
- C. AC input overcurrent protection switch
- D. AC input cable
- E. Power supply output receptacles




< BY120S >



- A. USB connector
- B. Setting switch
- C. AC input overcurrent protection switch
- D. AC input cable
- E. Power supply output receptacles
- F. Cooling Fan

1-4

Explanation of symbols used on unit

Symbol	Description
	Power output ON/OFF switch.
	Suspend a beep.
	Batteries at end of useful life, necessary to replace the batteries.




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.
- Unit weight: BY35S/50S: 4.5kg, BY80S: 6.4kg, BY120S: 8.5kg
- If you drop the unit, stop using it and have it inspected and repaired.
For repair, please contact the shop of purchase.

Keep plastic package bags out of reach of children. 

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

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

- Connecting to a wall outlet (commercial power) with a different voltage or frequency may result in a fire.
- The unit may fail.

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

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

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

- Overcurrent may damage the UPS.

Connect the unit to a wall outlet (commercial power) with a capacity of 4.8A or more for BY35S, 6.5 A or more for BY50S, , 12.0 A or more for BY80S and 15.0 A or more for BY120S. 

- Otherwise, the power cord may be heated.
- When equipment with the maximum output capacity is connected, a maximum current of 4.8 A (BY35S) 6.5 A (BY50S), 12.0 A (BY80S) or 15.0 A (BY120S).

Provide secure grounding. 

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

Do not disassemble, repair, or modify the unit. 

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

Do not install the unit in other than specified orientations. 

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

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

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

Caution (for installation and connection)

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

- Do not store in places where the humidity is lower than 10% or higher than 90%.
- Do not use the unit in places where the ambient temperature is lower than 0°C or higher than 40°C.
- Do not use in places where the humidity is lower than 25% or higher than 85%.
- Do not install/store the unit in closed places such as cabinets with no clearance, places where there is flammable or corrosive gas, places exposed to direct sunlight, places with large amounts of dust, places exposed to shock or vibration, or outdoors.
- Installation or storing the unit in such a place may cause a fire.



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

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



Do not pinch or tie the cable of the unit.

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



Do not use any of the included accessories with other devices.

- The accessories are designed exclusively for use with this unit.
- Doing so may compromise the safety of devices.



Do not block the air vents.

- Doing so will cause the internal temperature to rise, which may cause the unit to fail and the battery to deteriorate.
- Leave at least 5 cm of space from the surrounding objects so that the air vent and the back will not be blocked.



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

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



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



Notes

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

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

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

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

When storing the unit, charge the battery for at least 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 25°C or less when storing the unit for long periods of time.
Connect the units 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 to each other, and do not short the output lines to the ground.

- The unit may fail.

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

- The unit may fail.

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

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

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

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

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

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

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.

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

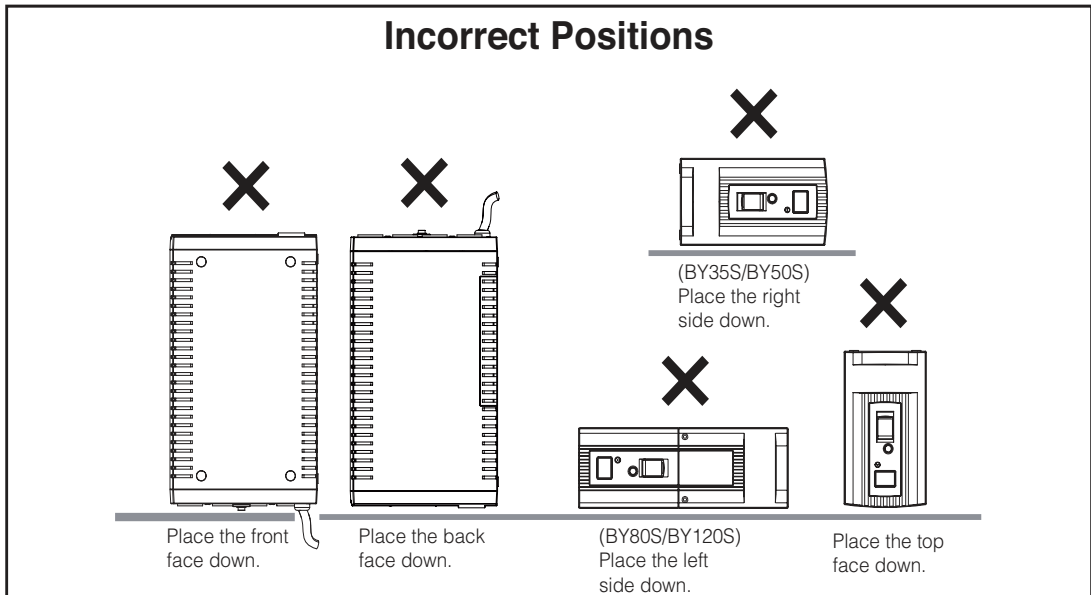
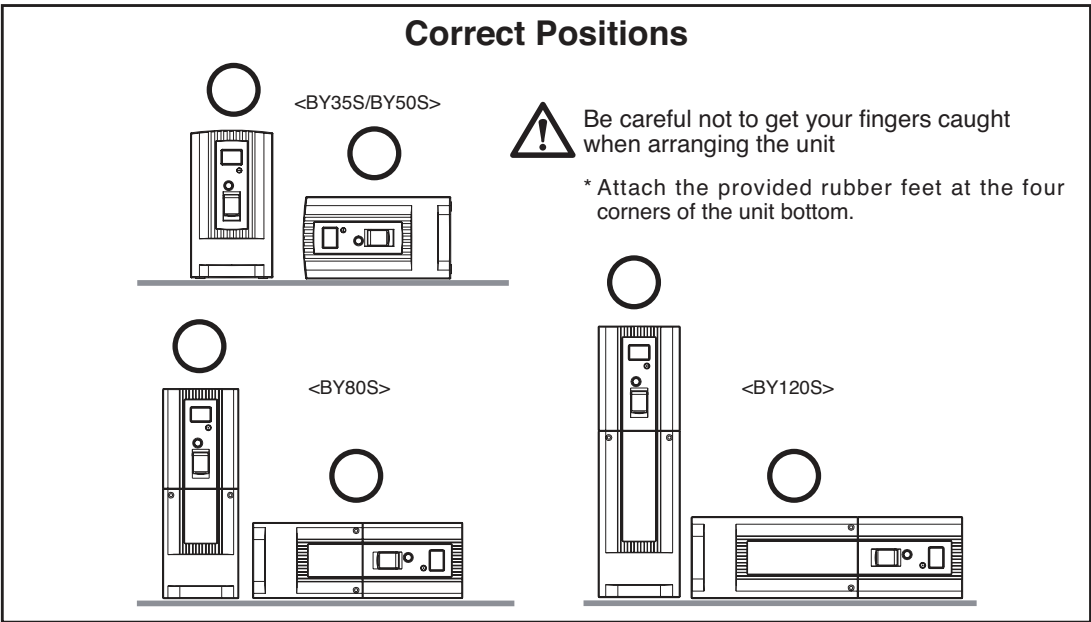
- With some types of devices, the effect of inrush current may cause this unit to stop operating properly.

2-2 Installation and connection

This section describes how to install the UPS. Do not use this unit in any position other than the “correct positions” indicated in the illustration below. (Place the UPS with the rubber feet side down or the side where the rubber feet can be attached down.)

Note

The serial number is required when contacting us about the device. Check the unit’s serial number inscribed on the back of the unit or printed on the attached serial number label.



2. Installation and connection

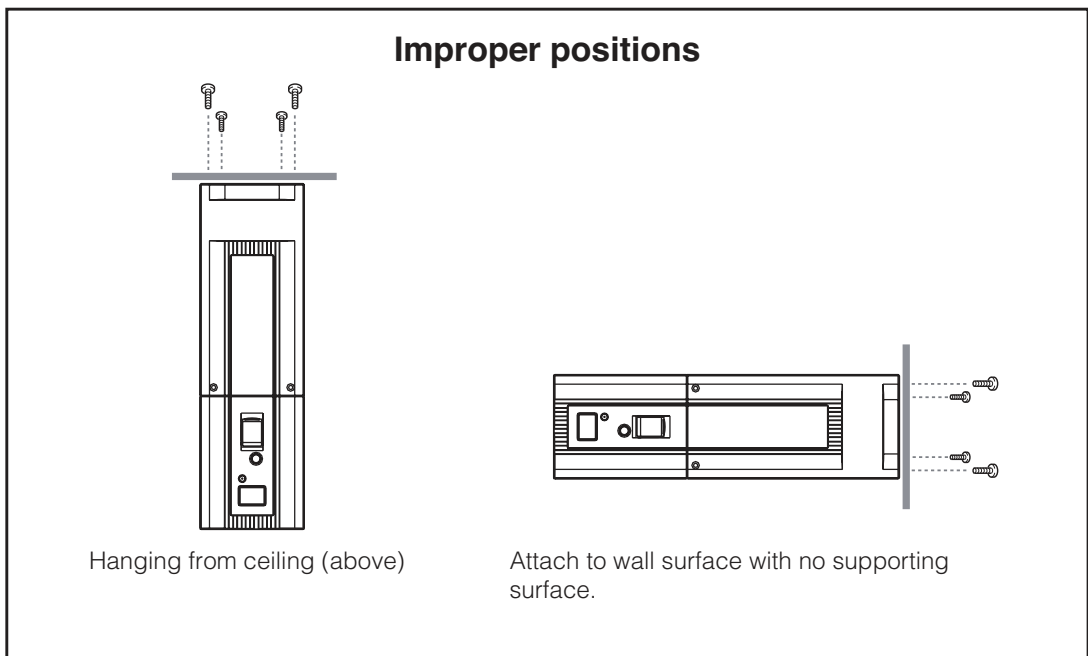
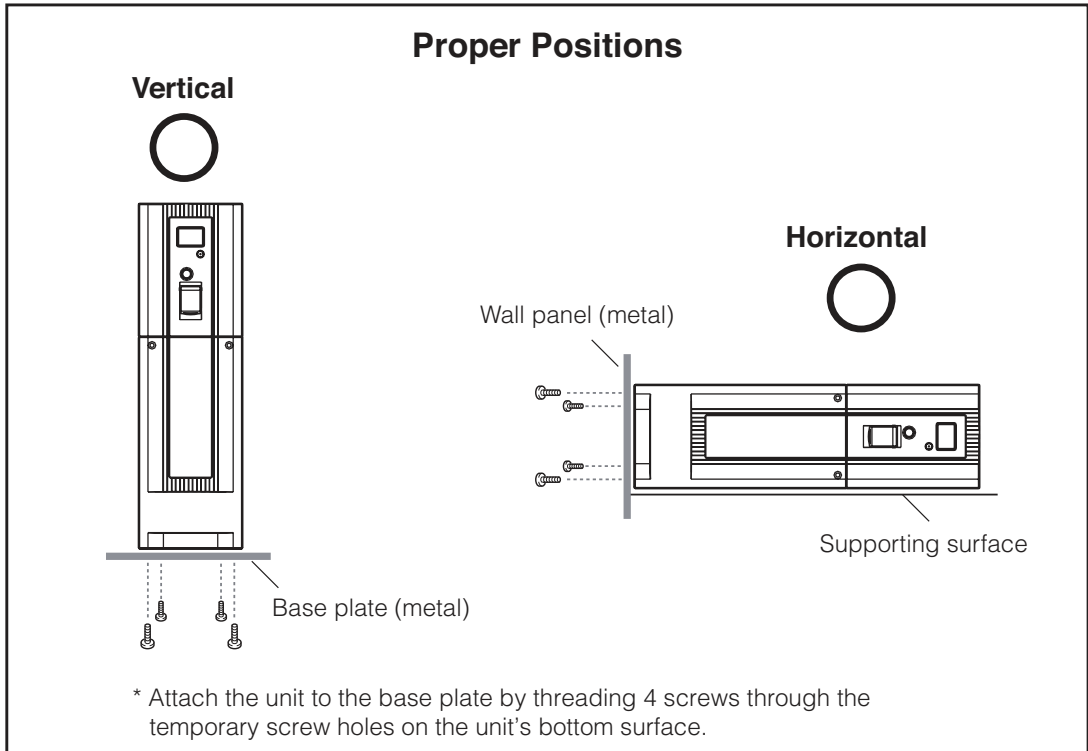
● Diagram showing BY120S mounted with anchor screws

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

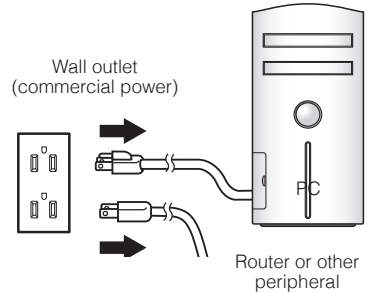


2-3

Connecting the equipment

Connecting a device to the power supply output

- (1) Disconnect the AC Input Plugs of all devices you want to back up such as your PC and modems from a wall outlet (commercial power).
- (2) Connect devices you want to back up to the Power Supply Output Receptacles of the UPS.
 - If you need more output receptacles than those of the UPS, purchase a plug strip and use it for extra output receptacles.



< Example of connection 1 >

BY35S/BY50S

< Example of connection 2 >

BY80S

- A 2-pin input plug of a connecting device can be connected to the power supply output receptacle without modification. (Note 1)

Note 1: This connection cannot be performed when the unit is used in compliance with UL standards.

- (3) If you use the included UPS monitoring software or the standard UPS service of Windows NT or Windows XP/2000 or if you use Contact Signal, connect the connecting cable between the UPS and your PC.

See also "7. Using the UPS monitoring software " Page 42.

* If you do not use the UPS monitoring software this step is not required.

2-4

Checking the operation

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

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

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

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

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

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

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

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

Status indicator	Description
	Power switch "ON" Operating normally

(2) Bring all the connected devices into operation.

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

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

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

Are they in the same status as shown below?

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

If the same as the one shown above: → The operation is normal. Proceed to (4).

If not the same as the one shown above: → The operation is abnormal. One of the cases described in "4. Display and beeps when there is an equipment failure" of "3-3 Interpreting a beep and displays" on page 20 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 unit's LED display and beep sound.

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

() (indicates blinking)

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

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

- If the display is one of those shown in “4. Displays and beeps when there is an equipment failure” in “3-3 Interpreting beeps and displays” on page 20, take the necessary measures and then go back to (1) on page 12.
- If no Battery Mode is performed and the UPS and the devices connected to the UPS stop, this may be attributed to an insufficient battery charge.

After connecting the AC input plug to a wall outlet (commercial power) and waiting at least 12 hours for the battery to charge, go back to (4) on page 12.

- If the problem persists after checking the 2 points above, please contact the shop of purchase.

Setting switch **1** can be used to turn the beeper ON/OFF. → Page 25

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

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

Status indicator	Description
	Power switch “ON” Operating normally

Checking the operation is now complete.

Installation and connection is now complete.

2-5 Charging the battery

When you connect the AC input plug of this unit to a wall outlet (commercial power), the battery charging automatically starts regardless of whether the power switch is ON or OFF, and it is fully charged within 12 hours.

(Charging is performed regardless of whether the power switch is ON or OFF.)

- This unit has been charged prior to shipment. However, the backup time becomes shorter when using it for the first time due to spontaneous discharge. We recommend charging this unit before using it.
- If you do not perform the initial backup time measurement described below in "2-6 Measuring the initial value of backup time", proceed to "3. Operation. → Page 15"


2-6 Measuring the initial value of backup time

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

 "5. Measuring the backup time" → Page 29

2-7 Recharging the battery

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

- You can use connected devices while recharging the battery, but the backup time when a power failure occurs is shorter until the battery is fully charged.
(If a power failure occurs immediately after the start of charging, backup stops immediately.)
 Charge the battery as described in "2-5 Charging the battery."

Preparation for starting operation is now complete.

3-1

Precautions and notes for operation

**Caution (for use)****Do not allow the unit to come in contact with water.**

- Doing so may cause an electric shock or a fire.
- If the unit becomes wet, immediately stop using it and unplug the AC input cable. For repair, contact the shop of purchase.

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

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



Ambient temperature	Expected life
20°C	4 to 5 years
30°C	2 to 2.5 years

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

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

- Accumulated dust may cause a fire.

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

- Doing so may cause abnormal heating or a fire.

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

- Using the unit under such conditions may cause a fire.
- If the unit becomes wet, immediately stop using it, unplug the AC input cable, and contact the shop of purchase for inspection and repairs.
- Use the unit under the conditions in which you can immediately disconnect the AC input plug from a wall outlet (commercial power) in the case of an abnormal event.

**If fluid leaks from the unit, do not touch the fluid.**

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

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

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



Notes

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

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

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

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

Explanation

Usual operation

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

Quitting Battery Mode

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

Rebooting

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

 Setting switch [2] can be used to select whether or not auto restart is performed. See Page 25.

Scheduled operation using the UPS monitoring software

- When performing scheduled operation in which the UPS is stopped and a device such as a breaker is used to stop the UPS at the same time that commercial power stops, specify a period of no more than 3 months for the start of the next operation.

If you specify a period longer than 3 months, the internal timer is reset and the scheduled operation does not start. Note that this period reduces to approximately half when the battery is dead. If a period of 3 months is exceeded, you start operation by supplying commercial power and pressing the start switch. However, if the battery is dead, you may not be able to start operation. In this case, replace the battery according to the instructions in “6-2 Replacing the battery” on page 32.

3-2

Start and stop procedures and basic operation

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

- The details of the most recent error are displayed. (item 4 on page 21)
- The status indicator displays " — —".
- Power output is stopped.
- The battery automatically starts recharging.

● **Start procedure**

Operation Turn on the power switch of the UPS.

- The beeper sounds and the current settings are displayed on the status indicator.
- " **LU** " is displayed at the factory default.
See also Cold start ON/OFF setting → Input power sensitivity setting (page 26)
- The status indicator displays " **FU** ", and the self-diagnostic test is performed in Battery Mode for about 10 seconds. (If the battery voltage is low, the self-diagnostic test is not performed. It is automatically executed after the battery is charged.)
 - *1 When the self-diagnostic test finishes successfully, switching to AC output from commercial power is performed and normal operation starts.
 - *2 Self-diagnostic test is not performed at cold start.
- If the self-diagnostic test is finished normally, It is replaced by the AC output from a commercial power supply and become a normal driving state.
- If the self-diagnostic test is not executed, the UPS immediately starts outputting AC from commercial power.

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

See also Cold start ON/OFF setting → Page 26

- During operation, the battery is charged automatically.

3.Operation

● Operation after a power failure

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





Setting switch [1] can be used to turn the beeper ON/OFF. → Page 24

() indicates blinking

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

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

25

● Stop procedure

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

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

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

3-3

Interpreting beeps and displays

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

1. Displays and beeps in normal operation

No.	Status indicator	Battery replacement lamp	Beep	Output	Charging	Description	Solution
1		○	None	OFF	OFF	No AC input Operation stopped	--
2	--	○	None	OFF	ON	There is AC input Power switch is OFF	--
3		○	None	ON	ON	Power switch is ON Operating normally	--
4		○	None	OFF	ON	Standby due to an insufficient battery charge	Automatically starts when the battery level exceeds the specified level.

2. Displays and beeps while testing

5		○	None	ON	OFF Discharging	Self-diagnostic test in progress	--
6		○	None	ON	OFF Discharging	Auto battery test in progress	--

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

7		○	Intermittent 4-second intervals	ON	OFF Discharging	In Battery Mode due to power failure or AC input error Output will stop if Battery Mode continues	Perform shutdown operations for the connected devices and stop them
8		○	Intermittent 1-second intervals	ON	OFF Discharging	(Same as above) Battery level is low, so output will soon stop	(Same as above)
9		○	None	OFF	OFF Discharging	Battery is dead, so output stopped (This is displayed only for a few seconds)	Charge the battery
10		○	None	OFF	(ON)	AC input voltage and AC input frequency are too high	Use within the AC input voltage/frequency range described in the specifications → Page 49
11		○	None	OFF	(ON)	AC input frequency is too high	
12	LH"/>	○	None	OFF	(ON)	AC input voltage is too low and AC input frequency is too high	
13	H-"/>	○	None	OFF	(ON)	AC input voltage is too high	
14	L-"/>	○	None	OFF	(ON)	AC input voltage is too low	
15	HL"/>	○	None	OFF	(ON)	AC input voltage is too high and AC input frequency is too low	
16	-L"/>	○	None	OFF	(ON)	AC input frequency is too low	
17	LL"/>	○	None	OFF	(ON)	AC input voltage and AC input frequency are both too low	

4. Displays and beeps when there is an equipment failure



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


No.	Status indicator	Battery replacement lamp	Beep	Output	Charging	Description	Solution
18		○	Intermittent 0.5-second intervals	ON	ON or Discharging	There are too many connected devices and the rated capacity is exceeded. If this state continues for longer than a certain period of time, status No.19 is displayed and the output stops.	Reduce the number of connected devices until the display appears as in status No. 3
19		○	Continuous	OFF	ON or Discharging	Output stopped due to exceeded connection capacity. In commercial power mode, the unit will enter this status in one minute when the connection capacity is 115% or more and less than 125%, and in 10 seconds when the connection capacity is 125% or more. In battery mode, the unit will enter this status in 20 seconds when the connection capacity is 125% or more and less than 135%, and in one second when the connection capacity is 135% or more.	Turn OFF the power switches of all devices connected to the unit, reduce the number of connected devices, and turn the power switch back ON again
20		○	Continuous	OFF	ON or Discharging	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
21		○	Continuous	OFF	--	Output stopped due to a failure. When the beep stop switch is pressed, the details of the error are displayed. (No.22 to No.28)	Follow the corresponding solutions in boxes No. 22 to 28.
22		○	Continuous	OFF	--	Output stopped due to output voltage error (over) .	Turn OFF this unit and all connected devices. Then, turn the power switch back ON for this unit only. If the display does not change, there is a problem with this unit, so get it repaired. If the display does change, it is due to a combination with a connected device. If anything is unclear, contact the shop of purchase.
23		○	Continuous	OFF	--	Output stopped due to output voltage error (under).	
24		○	Continuous	OFF	--	Output stopped due to battery charge voltage error (over)	
25		○	Continuous	OFF	--	Output stopped due to battery charge voltage error (under)	There is a problem with this unit, so get it repaired.
26		○	Continuous	OFF	--	Output stopped due to problem with the internal temperature	The cause of this may be that the ambient temperature of the UPS has increased. Check the ambient temperature of the UPS. If it exceeds 40°C, lower the ambient temperature. Turn OFF this unit and all connected devices. Then, turn the power switch back ON for this unit only. If the temperature is lower than 40°C, there is a problem with this unit, so get it repaired.
27		○	Continuous	OFF	--	Output stopped due to an internal cooling fan error (BY120S only)	Turn OFF this unit and all connected devices. Then, turn the power switch back ON for this unit only. If the display does not change, there is a problem with this unit, so get it repaired.
28		○	Continuous	OFF	--	Internal communication error occurred	

3.Operation

5. Display and beep for battery replacement

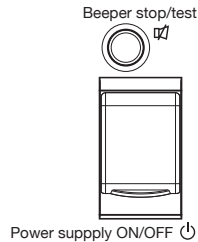
(○ indicates the display is OFF)
(● indicates the display is ON)
(: indicates blinking)

No.	Status indicator	Battery replacement lamp	Beep	Output	Charging	Description	Solution
29			Intermittent 2-second intervals	ON	ON	The battery test detected a weak battery (warning only, output continues)	Replace the battery You can replace the weak battery with a separately purchased replacement battery as needed

 "Replacing the battery" (p31)

4-1 Suspending a beep

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



4-2 Self-diagnosis test

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

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

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

- (1) Connect your computer and other devices to the UPS and then turn ON the power switch of the UPS.
- (2) The Battery Mode starts for testing purpose automatically (Status indicator "**FU**"). (No beep sounds.) After about 10 seconds, when the test is complete the normal operation automatically starts.
- (3) If the status indicator/battery replacement lamp blinks and the beeper sounds:
See also "3-3 Interpreting beeps and displays" → Page 20

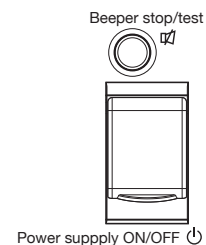
Follow the directions for the solutions described in "4. Displays and beeps when there is an equipment failure" and "5. Display and beep for battery replacement".

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

This test can also be performed manually.

Press and hold the Beep Stop/Test Switch of the UPS for 5 seconds to 9 seconds.

When the beeper begins to sound intermittently, release the Switch.



4. UPS functions

4-3 Description of the auto battery test function

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

(This test is more accurate than the self-diagnostic test.)

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

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


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

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

 "3-3 Interpreting beeps and displays" → Page 20

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

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

 "4-4 Changing the setting of the functions" → Page 24
See "Setting for whether or not to perform battery test."

This test can also be performed manually.

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

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

4-4 Changing the setting of the functions

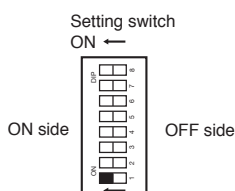
1. Selecting functions with the DIP switch

Caution

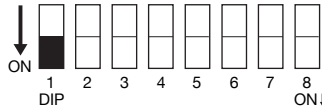
After changing the setting switch, disconnect the AC input plug, wait until the status indicator is completely OFF, and then reinsert the AC input plug.

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

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



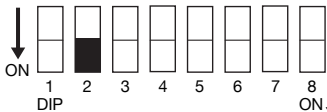
● **Setting for beeper sound in the event of power failure, etc. (setting switch 1)**
 ... **Factory setting: OFF**



OFF: The beeper sounds when an alarm is necessary.

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

● **Auto startup setting after recovery from power failure (setting switch 2)**
 ... **Factory setting: OFF**



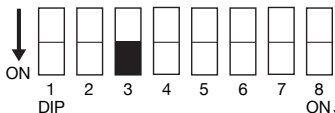
OFF: Automatically starts when power is restored.

After a power failure occurs and the unit shuts down with the UPS monitoring software, the unit automatically starts and begins to output when the commercial power is restored.

ON: Does not automatically start when power is restored.

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

● **Setting for whether or not to perform battery test (setting switch 3)**
 ... **Factory setting: OFF**



OFF: The battery test is automatically executed once every 4 weeks.

ON: Does not perform the auto battery test.

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

Setting switch 4 to 8 Factory-shipped setting: OFF

These switches are not used in BY35S/BY50S/BY80S/BY120S.

4. UPS functions

2. UPS operation mode settings

2-1 Settable items and explanations

There are 2 items to select.

- 1) Cold start ON/OFF setting
- 2) Input power sensitivity setting

The settings available for this operation are shown below.

1) Cold start ON/OFF setting

- Cold start OFF mode

The unit can start up only when there is AC input.

- Cold start ON mode

It is possible to start up the unit even when there is no AC input plug.

Normal operation occurs when AC input is ON. The output frequency is the same as the frequency the last time there was AC input.

- When using the cold start function

When performing operation with cold start a second time, turn OFF the power switch and wait at least 20 seconds before turning it back ON.

If the time is too short, UPS may not start up.

2) Input power sensitivity setting

Two types of input sensitivity can be set.

- Standard voltage sensitivity mode

The power failure detection voltage is set to the standard setting. (Factory setting)

- Low voltage sensitivity mode

Same as the standard voltage sensitivity setting.

- High voltage sensitivity

The power failure detection voltage range is narrower than that at the standard setting.

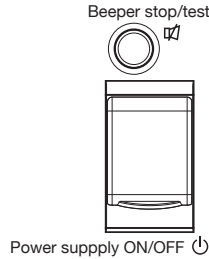
- The allowable voltage ranges for each setting are shown below.

Standard voltage sensitivity	86±3 to 114±3 VAC
High voltage sensitivity	95±3 to 108±3 VAC

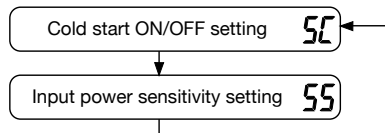
2-2 Settings

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

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

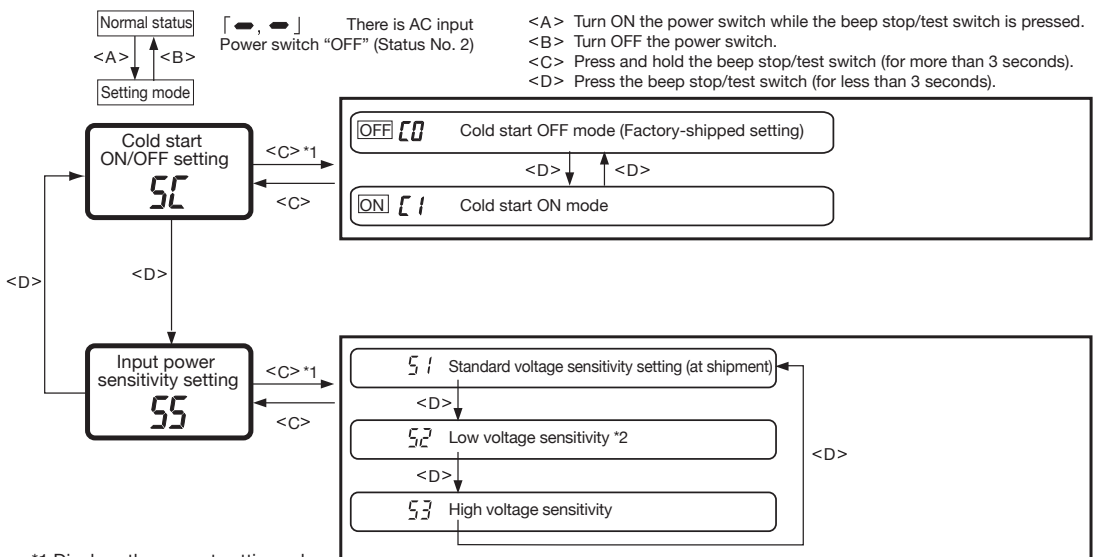


(1) When the beeper stop/test switch is briefly pressed (for less than 1 second), the next item is displayed.



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

(3) When the power switch is turned OFF, the setting mode quits and the unit enters power switch OFF status (status --).



4. UPS functions

4-5 UPS setting utility software

UPS setting utility software is software for various UPS settings. This software facilitates various UPS setting changes.

For example)

Set the “Maximum backup time setting.”

→ Possible to stop UPS without using monitoring software at the time of power failure

[Items available]

- (1) Complete beep stop
- (2) Voltage sensitivity mode setting
- (3) Cold start setting
- (4) Maximum backup time setting
- (5) Automatic self-diagnostic testing
- (6) Startup delay time setting
- (7) Startup battery charge capacity setting

For details, refer to the UPS utility software instruction manual.

UPS setting utility software and UPS setting utility software instruction manual can be downloaded from our website (<https://www.oss.omron.co.jp/>).

* UPS setting utility and UPS monitoring software cannot be used simultaneously.

5-1 How to measure backup time

- (1) 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.
- (2) Turn ON all devices connected to the power output to be "backed up during a power failure". (This includes devices connected to the AC outlet of your computer.)
Operate the connected devices in a way that allows the power supply to be stopped at any time.
- (3) Disconnect the AC Input Plug of the UPS and measure the backup time.
Measure the time until the unit automatically stops and all displays disappear with the plug disconnected.

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

5-2 Estimated backup time

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

- (1) Convert the total capacity (power consumption) of the connected devices to watts (W).

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

The indicator can show values in three different ways: volt-amperes (VA), amperes (A), and watts (W).

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

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

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

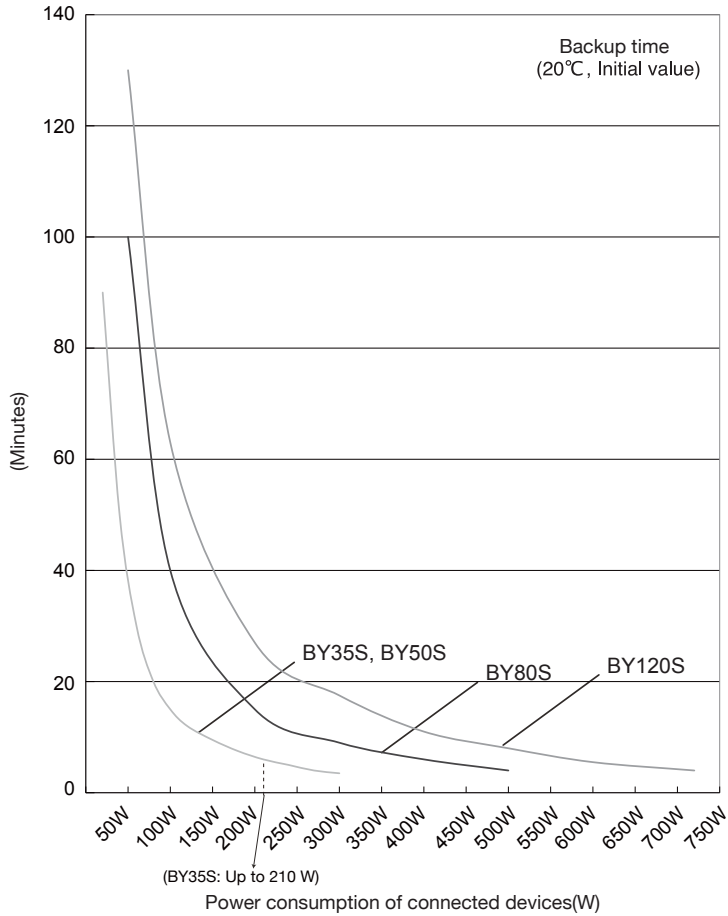
Indication	Value
VA	$\times \text{power factor} = W$
A	$\times \text{power factor} \times 100 = W$

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.)

5. Measuring the backup time

- (2) Add the values converted into W to obtain the total capacity of the connected devices.
- (3) Calculate the initial value of the backup time for the total capacity of the connected devices from the graph below.
 - Graph of backup time (graph of initial values for products that have not been used)
 - The smaller the capacity of connected devices becomes, the longer the backup time becomes.



Time unit : Minutes

Model	20W	40W	60W	80W	100W	120W	150W	180W	210W	240W	270W	300W
BY35 S	90	50	30	20	15	12	9.5	7.5	6	-	-	-
BY50 S	90	50	30		15	12	9.5	7.5	6	5	4	3.5

Model	20W	50W	100W	200W	300W	400W	500W	600W	720W
BY80 S	170	100	40	15	9	6	4	-	-
BY5120S	300	130	63	27	17.5	11	8	5.5	4

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



Caution (for maintenance)

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

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

Do not disassemble, repair, or modify the unit.

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



If fluid leaks from the unit, do not touch the fluid.

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



Do not throw the unit into fire.

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



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

- Doing so may result in electric shock.



Do not insert metal objects into the battery connectors.

- Doing so may result in electric shock.



6-1

Checking the battery

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

(The life varies depending on your storage/use environment and backup frequency.)

The nearer the end of the life is, the more rapidly deterioration proceeds.

1. Life of battery (estimated replacement timing)


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

2. Methods for checking the battery

There are 3 methods for checking the battery.

- Perform a self-diagnostic test. (See page 23.)
- Use the auto battery test function. (See page 24.)
- Measure the backup time. (See page 29.)

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

 Measure the backup time according to "5-1 How to measure backup time" -> Page 29

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 29, 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.

6. Maintenance and Inspection

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

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

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

6-2 Replacing the battery

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

Caution

When the unit is used in compliance with UL standards, 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 so that you do not drop it.
- Not doing so, could cause blindness or burns by the leaked fluid (dilute sulfuric acid).

Use a specified battery for replacement.

- Not doing so may cause a fire.
- Product model:
 - BYB50S for BY35S/BY50S
 - BYB80S for BY80S
 - BYB120S for BY120S

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

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

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

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

Do not disassemble or modify the battery.

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

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

- Dilute sulfuric acid may leak.

Do not short the battery with metal objects.

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

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

- The battery may explode or leak dilute sulfuric acid.

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

- Dilute sulfuric acid may leak.

⚠ Caution (for battery replacement)

**Do not dispose of batteries in a fire. The batteries may explode.
Dispose of used batteries according to the instructions.**



Do not open or mutilate batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic



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).

⚠ Attention (pour le remplacement de la batterie)

**Protéger les batteries du feu. Risque d'explosion des batteries.
Utilisez les batteries conformément aux instructions.**



Ne pas ouvrir ni détériorer les batteries. Les fuites d'électrolyte sont dangereuses pour la peau et les yeux.



Les batteries peuvent présenter un risque de choc électrique avec un fort courant de court circuit. Les précautions suivantes doivent être suivies lors de l'intervention sur les batteries :



- a: retirer les montres, bagues et autre objets en métal
- b: Utilisez des outils à manche isolé
- c: Utilisez des gants et des chaussures isolant
- d: Ne pas laisser des outils ou des objets métalliques proches des batteries
- e: Déconnecter le chargeur avant de connecter ou de déconnecter les batteries
- f. déterminer si la pile est mise à la terre. Si elle est mise à la terre, effectuer la déconnection. Le contact avec une pile mise à la terre peut créer un choc électrique. Ceci sera réduit si cette mise à la terre est supprimée pendant l'installation et la maintenance.

6. Maintenance and Inspection

Battery recycling

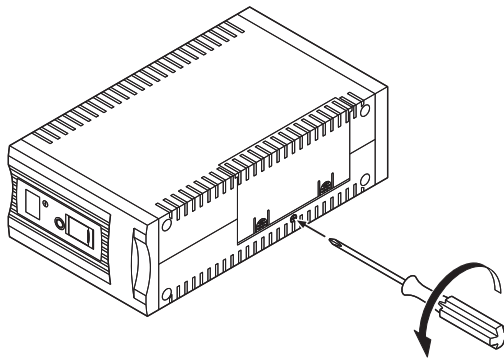
The unit uses lead acid batteries, which are a valuable recyclable resource. Please recycle. For information on recycling, please contact the shop of purchase.



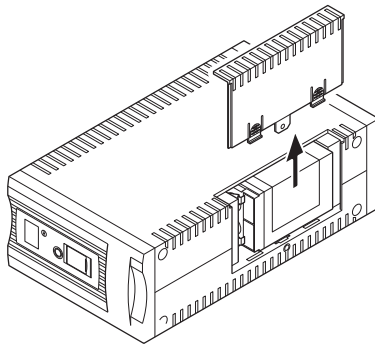
■ Procedure for recycling the battery

<BY35S/BY50S>

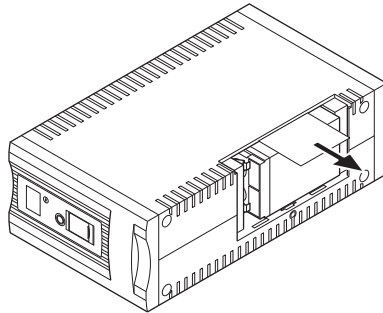
1. Viewing from the front of the unit, gently lay down the unit counter-clockwise so that the right side become the top.
Remove the one fixation screw (one) of the battery replacement cover using a screwdriver (turn counter-clockwise).



2. Slide the battery replacement cover upward to remove the cover.



3. Hold the label and pull the battery half way out.

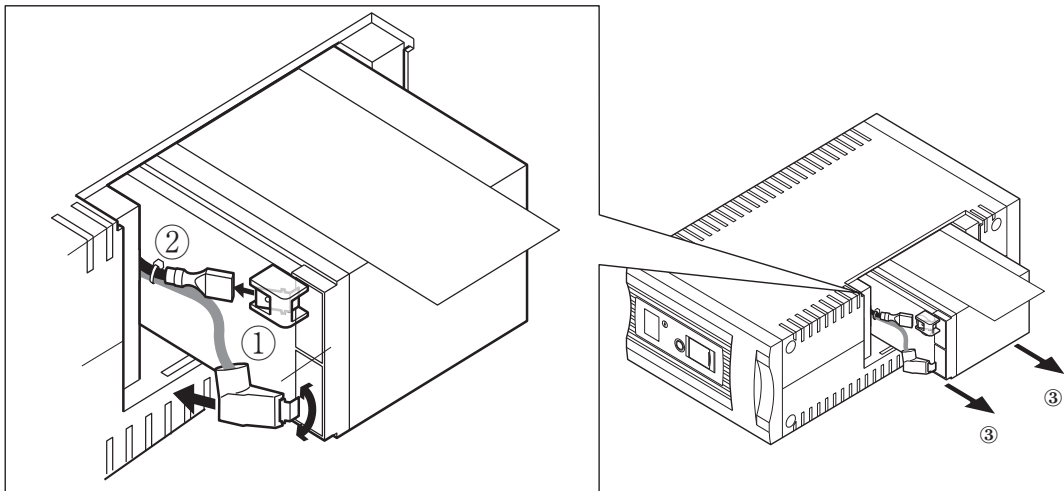


4. Pull out the battery cable (red) from the battery by the left hand holding the battery by the right hand ①

* If it is hard to remove, move the connector up and down with your fingers or long-nose pliers to pull out.

Pull out the battery cable (black) from the battery by the left hand holding the battery by the right hand. ②

Pull out the battery by both hands carefully not to drop it. ③



6. Maintenance and Inspection

5. Insert a new battery into the battery replacement slot half way, with the front label side up.

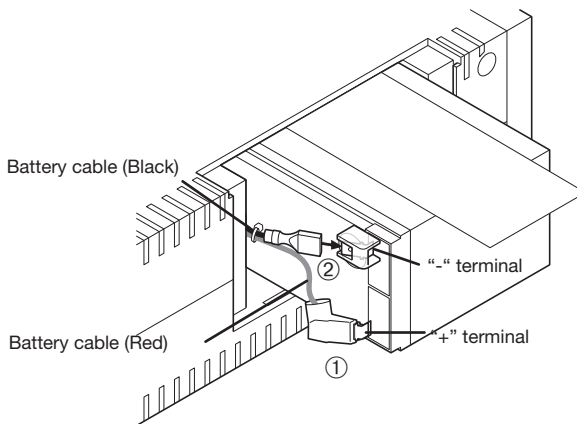
- Replacement battery pack for BY35S/BY50S: Model BYB50S

Insert the connectors of two battery cables into the following terminals until they click.

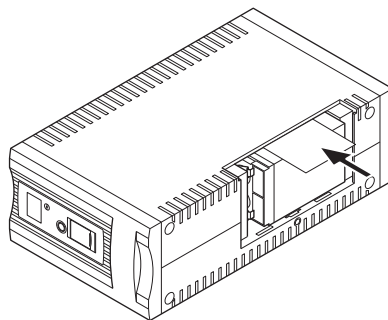
Hold the battery by the right hand and insert the connector of the battery cable (red) into the "+" terminal by the left hand. ①

Hold the battery by the right hand and insert the connector of the battery cable (black) into the "-" terminal by the left hand. ②

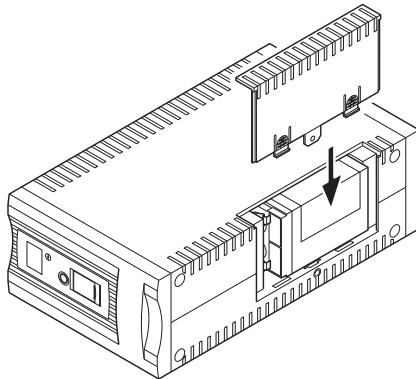
You may hear a "pop" sound when you connect the battery, but this sound is not abnormal.



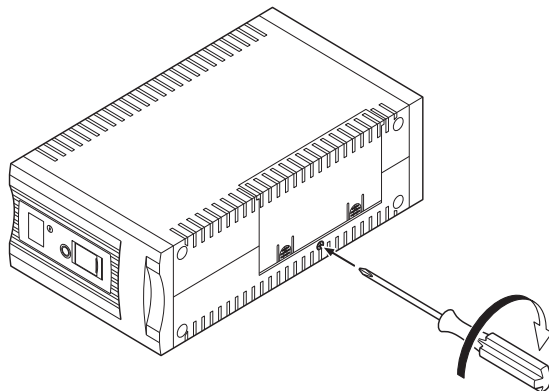
6. Insert the new battery into the unit as far as it will go.



7. Mount the battery replacement cover taking care of the hook at the bottom.



8. Tighten the fixation screw of the battery replacement cover using a screwdriver (turn clockwise). Do not tighten too much, which may damage the cover.



<After replacing the battery during operation...>

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

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

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



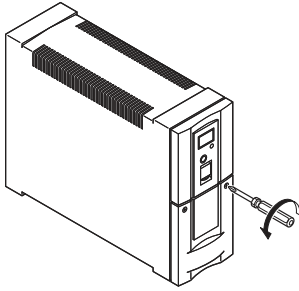
Write the date you started using the battery on the included battery replacement date label, and attach it to the front panel.

Also, by using the included UPS monitoring software, possible to keep a record of usage start date by the software.

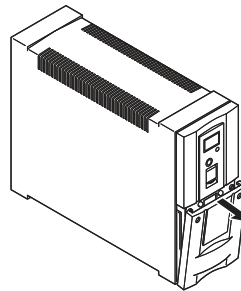
6. Maintenance and Inspection

<BY35S/BY50S>

1. Open the front panel.

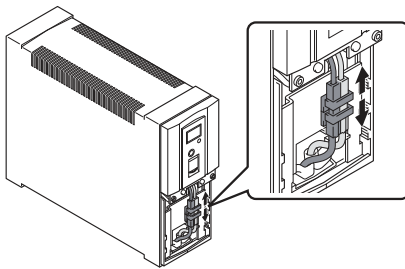


Loosen and remove the 2 screws.



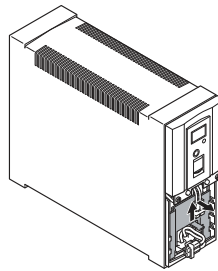
Detach the front panel.
Pull the front panel upward a little if the front panel is hard to detach.

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

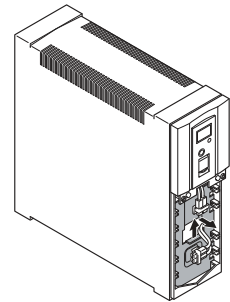


Remove the red and black connectors by holding them with both hands and pulling apart.

<BY80S>



<BY120S>

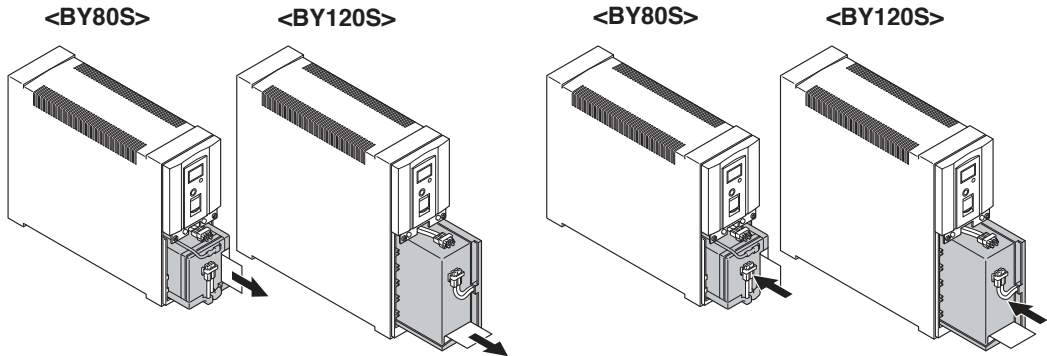


3. Hold the label stuck to the battery pack and remove it. Insert the new battery pack.

⚠ 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.

Insert the new battery pack.

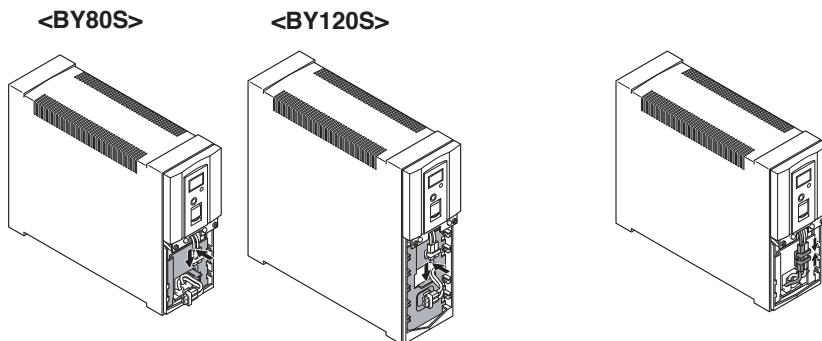
⚠ Be careful not to drop the battery.

Specified battery for replacement :

BYB80S for BY80S and BYB120S for BY120S

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.

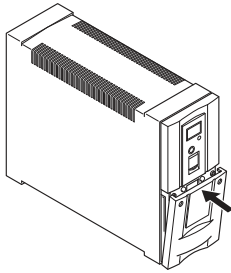


Fit the metal cover into the grooves and slide it downward to secure it. (The battery is secured inside the case.)

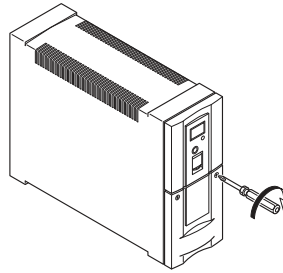
Connect the red and black connectors. (Make sure that the connectors are securely connected.)

6. Maintenance and Inspection

5. Fit the front panel.
Turn the 2 screws to secure the front panel clockwise with a screwdriver.
Do not tighten too much, which may damage the cover.



Fit the front panel.



Tighten the 2 screws.

<After replacing the battery during operation...>

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

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

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

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.

6-3**Cleaning****1. Cleaning the UPS**

Moisten a soft cloth with water or detergent, squeeze it tightly, and wipe the product lightly.

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

2. Removing dust from the AC input plug, power supply output receptacles of the UPS

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

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

(For information on the connection procedure:)

 "2-3 Connecting the equipment" -> Page 11

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

■ UPS monitoring software

“PowerAct Pro (4.x) (for Windows/Linux)” , “UPS service driver (or Windows)” and “UPS Power Manager (for Mac)” UPS monitoring software is included with this product. Refer to the table below for details about compatibility. Choose which one to use based on the application. Refer to the table below for details about compatibility. For further details about the software functions, refer to the separate “UPS Monitoring Software Quick Installation Guide.”

• UPS monitoring software selection table

Model	OS	Communication method	UPS monitoring software	Reference
BY35S/ BY50S/ BY80S/ BY120S	Windows 7	Serial (USB 1.1)	PowerAct Pro 4.x (Note 1)	➔ See 7-1
	Windows Vista		Simple Shutdown software (Note 1)	
	Windows Server 2008 (including R2)	Serial (USB 1.1)	PowerAct Pro 4.x (Note 1)	➔ See 7-1
	Windows Server 2003 (including R2) x64 Edition Windows XP x64 Edition		Simple Shutdown software (Note 1) (Note 4)	
	Windows Server 2003 (including R2) Windows XP/2000		UPS service (OS standard) + UPS service driver (included software)	➔ See 7-2
	Linux (Note 2)	Serial (USB 1.1)	PowerAct Pro (Note 1)	➔ See 7-1
	Mac OS (v10.6/v10.5) Mac OS Server (v10.6/v10.5)	Serial (USB 1.1)	PowerAct Pro 4.x (Note 1) (Note 3)	➔ See 7-1

*1: Visit our website to download the latest version: <https://www.oss.omron.co.jp/>

*2: Files cannot be automatically saved.

*3: Supported from Ver4.1. PowerPC version is not supported.

*4: Windows 2000 is not supported.

• UPS monitoring software function list

● Standard ○ Option ▲ Limited

Function		General applications (Simple functions, stadmalone)		Network management applications (Advanced functions, network support)
		UPS service driver	Simple Shutdown Software	PowerAct Pro 4.x
Compatible OS	Windows 7	—	●	●
	Windows Vista	—	●	●
	Windows Server 2008 (including R2)	—	●	●
	Windows Server 2003 (including R2) x64 Edition	●	●	●
	Windows XP x64 Edition	●	●	●
	Windows Server 2003 (including R2) Windows XP/2000	●	●	●
	Windows Server 2003 Windows XP/2000	●	●(*4)	●
	Linux	—	●	●
Software function	Mac OS (v10.6/v10.5)	—	—	●(*3)
	Mac OS Server (v10.6/v10.5)	—	—	●(*3)
	Auto shutdown	●	●	●
	UPS monitoring (operating status)	●(*2)	—	●
	UPS monitoring (data)	▲(*1)	—	●
	Pop-up notification	●	—	●
	End when OS is inactive (*2)	●	—	●
	Auto file safe (*2)	●	—	●
	Schedule operation	—	—	●
	UPS setting change	—	—	●
	External command execution	●	●	●
	Event log save	—	—	●
	Data log save	—	—	●
	Coordinated shutdown	—	—	●
	Redundant power supply support	—	—	●
	Remote UPS management	—	—	●
	Mail send	—	—	●
	Telnet connection	—	—	●
SYSLOG support	—	—	●	

*1: Only the battery capacity can be monitored.
 *2: This function is available in Windows OS only. It is unavailable in Mac or Linux.
 *3: Supported from PowerAct Pro Ver4.1. PowerPC version is not supported.
 *4: Windows 2000 is not supported.



7. Using the UPS monitoring software

[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	Redundant power supply support	Two or more UPS can be connected to computers equipped with redundant power supply. Shutdown is not performed when a power supply problem affects only one of the units. Shutdown is performed only when a power supply problem occurs with both UPS, so the system's operating rate is improved.
14	Remote UPS management	The UPS can be managed remotely from a computer on the network.
15	Mail send	When a problem such as a power failure occurs, a notification email describing the problem can be sent to the system administrator.
16	Telnet connection	Settings such as shutdown parameters can be made via the Telnet connection.
17	SYSLOG support	UPS management information can be recorded in SYSLOG.

7-1

When using the included UPS monitoring software to perform auto shutdown

7

●When using PowerAct Pro (4.x) software

The included “PowerAct Pro (4.x)” software allows you to automatically save files and perform shutdown processing of your PC when a power failure occurs. (It is possible to shut down multiple computers on the network.)

Also, you can perform desired operation by setting the automatic start/stop of the battery mode operation based on the scheduled setting.

* The time between the occurrence of a power failure and the shutdown of your PC must be within the backup time measured in “5-1 How to measure backup time” on Page 29.

For more information and operation, refer to the “Quick Installation Guide for UPS Monitoring Software” and the online help in the included CD-ROM.

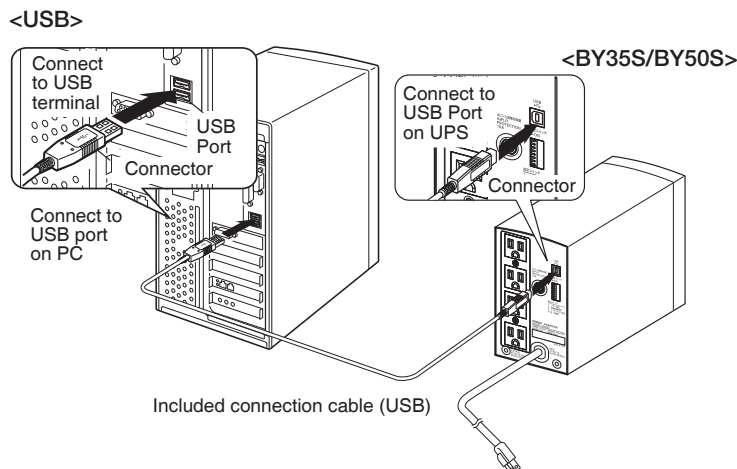
●When using Simple Shutdown Software

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

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

1. Connect the UPS to a computer.

Cable: Included connection cable (USB)



2. Install the included “PowerAct Pro 4.x” or “Simple Shutdown Software” to the PC you want to shutdown.

Installation method:

Refer to the “Quick Installation Guide for UPS Monitoring Software” for “PowerAct Pro 4.x”.

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

7. Using the UPS monitoring software

Explanation
<p>Scheduled operation using the UPS monitoring software</p> <ul style="list-style-type: none">● When performing scheduled operation in which the UPS is stopped and a device such as a breaker is used to stop the UPS at the same time that commercial power stops, specify a period of no more than 3 months for the start of the next operation. If you specify a period longer than 3 months, the internal timer is reset and the scheduled operation does not start. Note that this period reduces to approximately half when the battery is dead. If a period of 3 months is exceeded, you start operation by supplying commercial power and pressing the Start Switch. However, if the battery is dead, you may not be able to start operation. In this case, replace the battery according to "6-2 Replacing the battery" on page 32.
<p>Start of operation in scheduled operation using the UPS monitoring software</p> <ul style="list-style-type: none">● To manually start up this unit after it has been stopped by a scheduled operation, turn OFF the power switch and turn it back ON again. To stop the unit when it is in operation, turn OFF the power switch.
<p>Auto restart after OS closing processing using the UPS monitoring software</p> <ul style="list-style-type: none">● When a power failure occurs, certain PCs (*1) automatically restart immediately after the OS is shut down by auto shutdown. In this case, the UPS stops during or after the restart of the PC, which may damage files and the hard disk. You can avoid this phenomenon by disabling POWER MANAGEMENT in the BIOS settings of the PC. *1) Certain PC: It is known that this phenomenon occurs for MICRON's Millennia Mme.
<p>Precautions when “setting the UPS to stop automatically” after OS shutdown</p> <ul style="list-style-type: none">● If, after a power failure occurs, the power is restored while auto shutdown processing is being performed, UPS output stops once after the set time elapses. After shutdown processing is complete, do not turn ON the computer until the UPS has finished restarting.

7-2

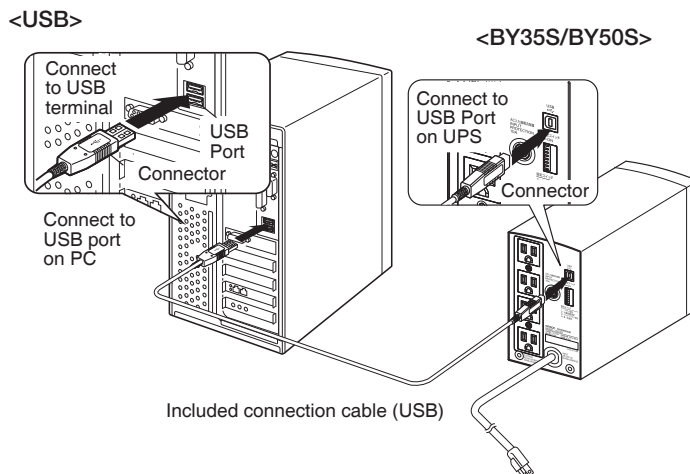
When performing auto-save functions using the UPS service in Windows 2000/XP/ Server2003/XP

When using the included "UPS service driver", the OS standard UPS service in Windows 2000/XP/ Server2003/XP can be used. When there is a power failure, files can automatically be saved and the computer can be shut down.

1. Connect the UPS to a computer.

* Only 1 computer can be connected to the UPS

Cable: Included connection cable (USB)




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

Software to install: UPS service driver

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

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

Problem	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"> 1. Check that the AC Input Plug is connected to the commercial power securely. 2. The AC Input Overcurrent Protection is working. (If the black button has popped up, there are probably too many connected devices or there is a short in the connected devices.) Disconnect all of the connected devices, push in the the black AC input overcurrent protection button and turn ON the Power Switch of the UPS again. If the status indicator does not display normally, there is a problem with the UPS. (See "Interpreting beeps and displays" on page 20.)
Backup is not possible. The computer stops when a power failure occurs.	<p>Is 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.	<p>Variations (decrease) in the input power occur frequently. Or, noise is included that significantly distorts the voltage waveform of the input power.</p> <ul style="list-style-type: none"> ● Change the wall outlet (commercial power) to which you connect the UPS. Try connecting to a wall outlet (commercial power) away from equipment that consumes large power. ● This problem may occur also when you connect many devices to a plug strip or extension cord connected to the UPS if it is a long or thin cable.
Does not turn ON when power switch is pressed.	<p>The unit does not start up when the input power supply voltage/frequency is abnormal. (The status indicator displays "H-", "-H", "L-" "L" "HH" or "LL".) Check the voltage and frequency of the input power supply.  A. Specifications "Input, Input voltage range, frequency" see Page 49</p>
The display is abnormal. <ul style="list-style-type: none"> ● The display is unstable. ● White lines occur. ● Noise increases. 	<p>The probable cause is noise that occurs inside the UPS.</p> <ul style="list-style-type: none"> ● Ground all devices connected to the UPS. Connect them to a wall outlet (commercial power) for 3-pin plugs or connect their Grounding Terminal to the Grounding Terminal of a wall outlet. ● This problem may occur when power cords are long or placed closely or when the UPS and devices to be backed up are placed closely. Rearrange them. ● If the UPS or devices connected to the UPS are contained in a metal rack, attempt to ground the rack itself.
The battery replacement lamp blinks and the beeper sounds at 2-second intervals.	<p>1) The auto battery test or self-diagnostic test determined that the battery is dead. Battery Mode cannot be performed properly, so the battery needs to be replaced.</p>
The status indicator shows "OL", and the beeper sounds at 0.5-second intervals.	<p>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 "EQ", and the beeper sounds continuously.	<p>Output stopped due to exceeded connection capacity. 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

Model		BY35S	BY50S	BY80S	BY120S	
Method	Operation method	Full-time commercial power supply method				
	Cooling method	Natural air cooling			Forced-air cooling	
	Connectable devices	PC, display, and peripherals				
Input	Rated input voltage	100 VAC				
	Startup voltage range and input voltage range	Standard sensitivity setting 86±3 to 114±3 VAC		High voltage sensitivity setting 95±3 to 108±3 VAC		
	Input frequency	50/60Hz±4Hz				
	Maximum current	4.8A	6.5A	12.0A	15.0A	
	Phase	Single-phase, two-wire (grounded)				
	Input plug	NEMA 5-15P				
	Input protection	Reset-type over current protection				
	Input protection capacity	10A		13A	20A	
Output	Output capacity (shared maximum) *1	350 VA/210 W	500 VA/300 W	800 VA/500 W	1200 VA/720 W	
	Output voltage (In Commercial Power Mode)	Through output				
	Output voltage (In Battery Mode)	100 VAC±6%				
	Output frequency (In Commercial Power Mode)	Input frequency through output				
	Output frequency (In Battery Mode)	50/60Hz±0.1Hz				
	Phase	Single-phase, two-wire (grounded)				
	Output waveform (In Battery Mode)	Sine wave				
	Output waveform (In Commercial Power Mode/ Battery Mode)	Sine wave/sine wave				
	Waveform distortion rate (In Battery Mode)	25% or less				
	Output receptacle	NEMA 5-15R x 4 receptacles				
	Switching time	10 msec. max				
Battery	Backup time (*2)	6 min. or more	3.5 min. or more	4 min. or more	4 min. or more	
	Type	Compact sealed lead battery				
	Battery life expectancy	4 to 5 years (long operating life) *At ambient temperature of 20				
	Battery capacity (V/Ah/quantity)	12 VDC / 7.2Ah / 1		12 VDC / 5.0 Ah / 2	12 VDC / 9.0 Ah / 2	
	Charging time	12 hours				
Environment	Operating environment temperature/humidity	0 to 40°C / 25 to 85% RH (with no condensation)				
	Storage environment temperature/ humidity	-15 to 40°C / 10 to 90% RH (Store with battery fully charged and with no condensation)				
Lightening surge protection function	Available					
Dimensions (W x D x H) *3	92 x 285 x 165 mm		85 x 315 x 235 mm		90 x 328.5 x 298	
Weight of unit	Approx. 4.5 kg		Approx. 6.4 kg		Approx. 8.5 kg	
Internal power consumption	Normal: 12 W, Max.: 25 W				Normal: 15 W, Max.: 35 W	
Noise regulation	VCCI Class B					
Safety standard compliance	UL1778					
Noise	40 dB max.			45 dB max.		

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

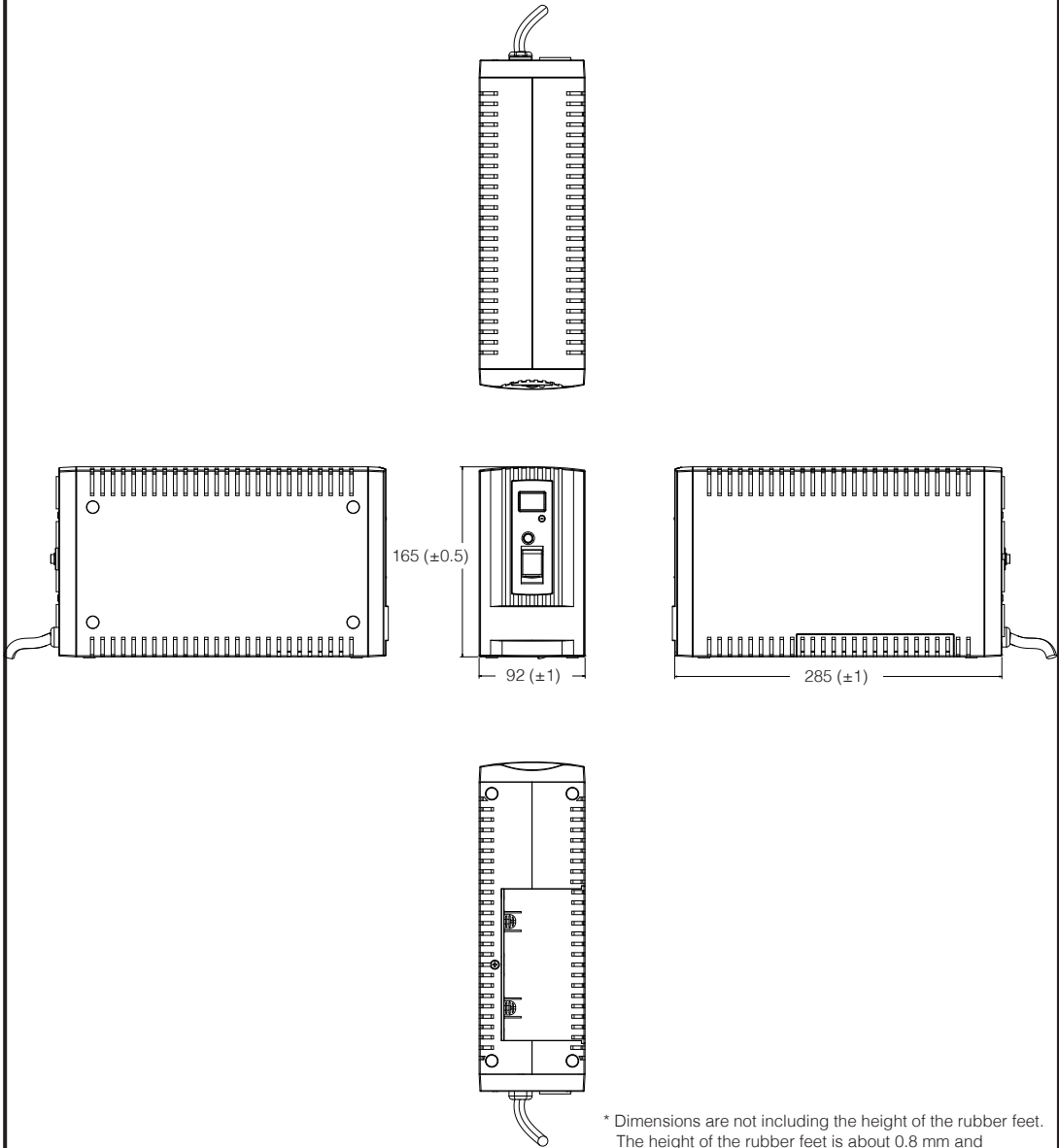
*2: At ambient temperature of 20°C and with battery in initial state.

*3: The height does not include the height of rubber feet (BY35S/BY50S: 0.8 mm, BY80S/BY120S: 1.6 mm).

B. Dimensions

- BY35S/BY50S

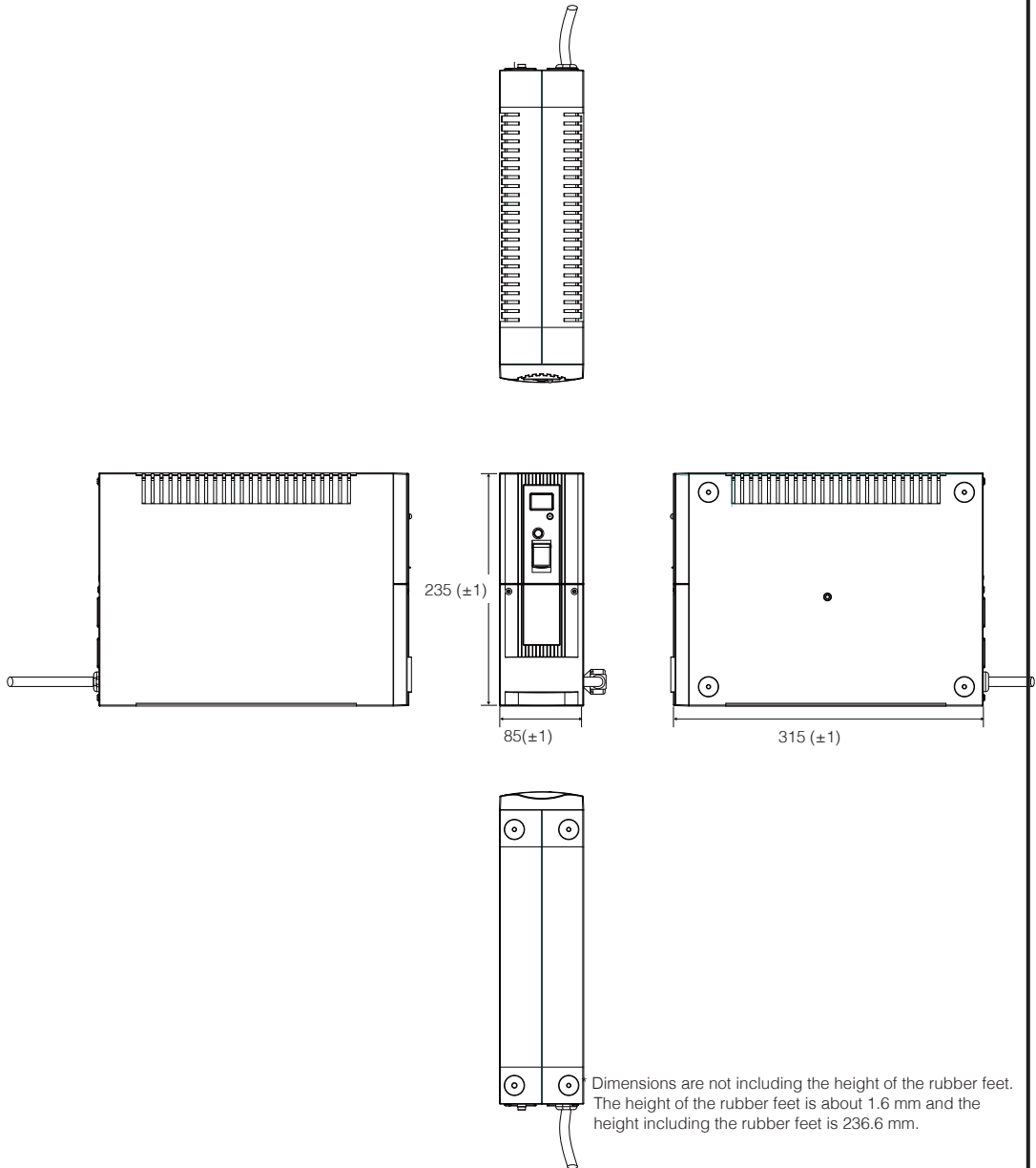
<Unit: mm>



* Dimensions are not including the height of the rubber feet.
The height of the rubber feet is about 0.8 mm and
the height including the rubber feet is 165.8 mm.

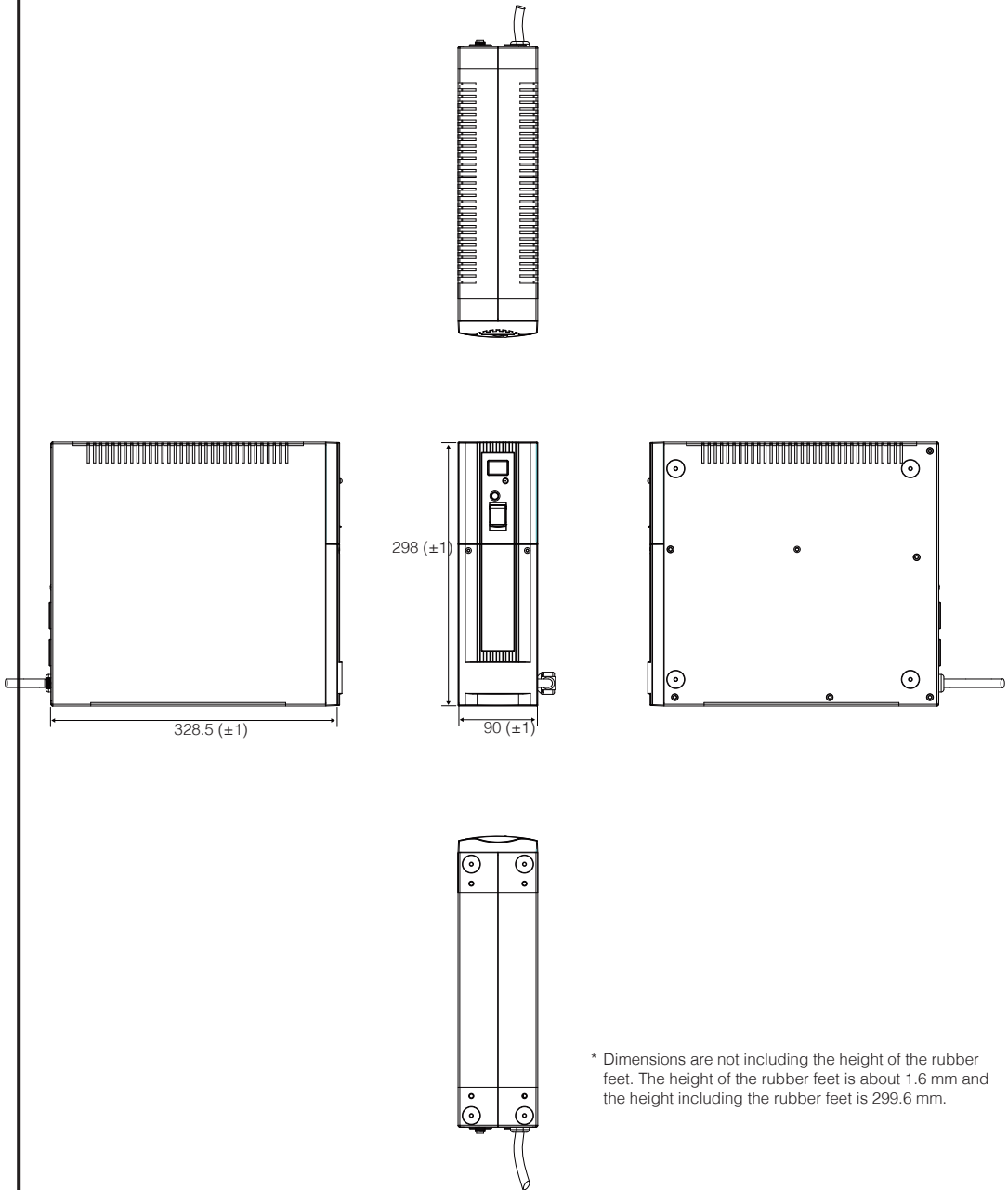
• BY80S

<Unit: mm>



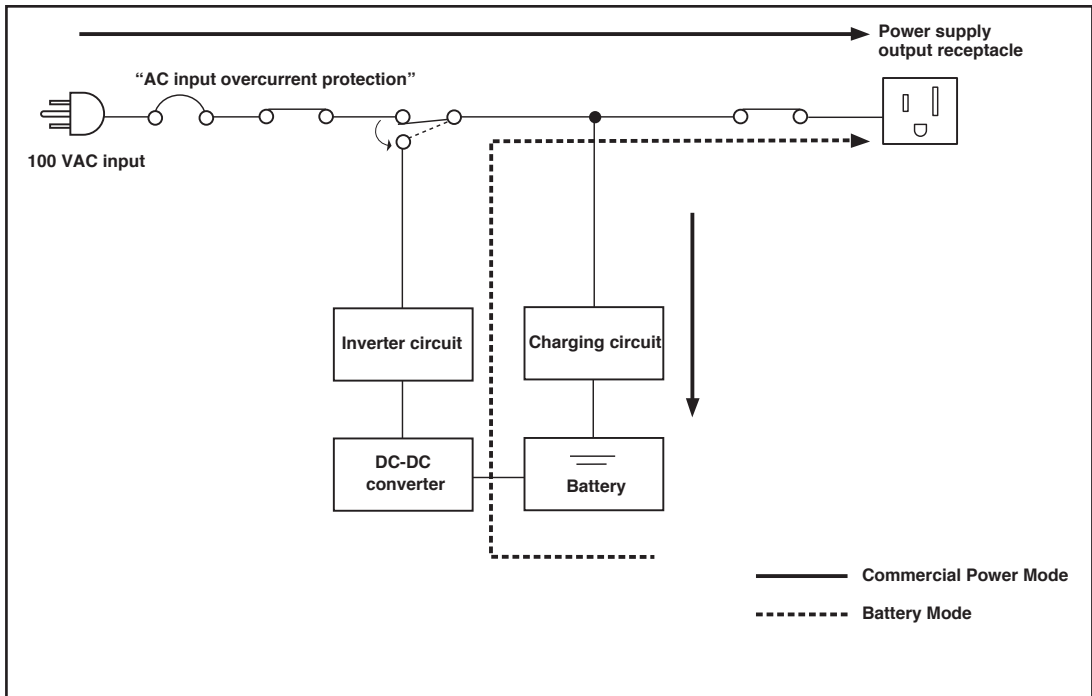
• BY80S

<Unit: mm>



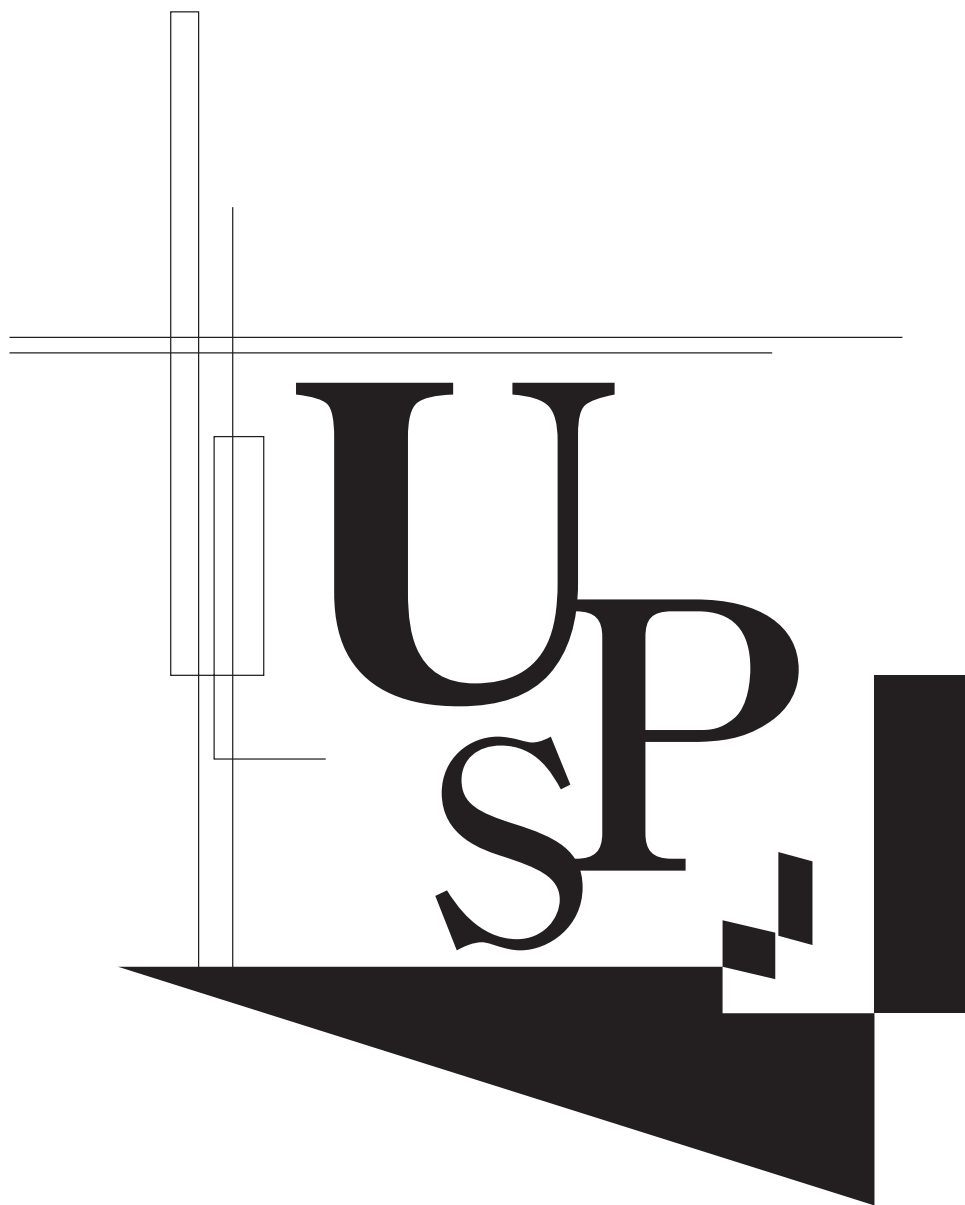
* Dimensions are not including the height of the rubber feet. The height of the rubber feet is about 1.6 mm and the height including the rubber feet is 299.6 mm.

C. Circuit block diagram



D. Related products

Product	Models	BY35S/BY50S	BY80S	BY120S
Replacement battery pack		BYB50S	BYB80S	BYB120S
Bracket		BYP50S	BYP80S	-



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