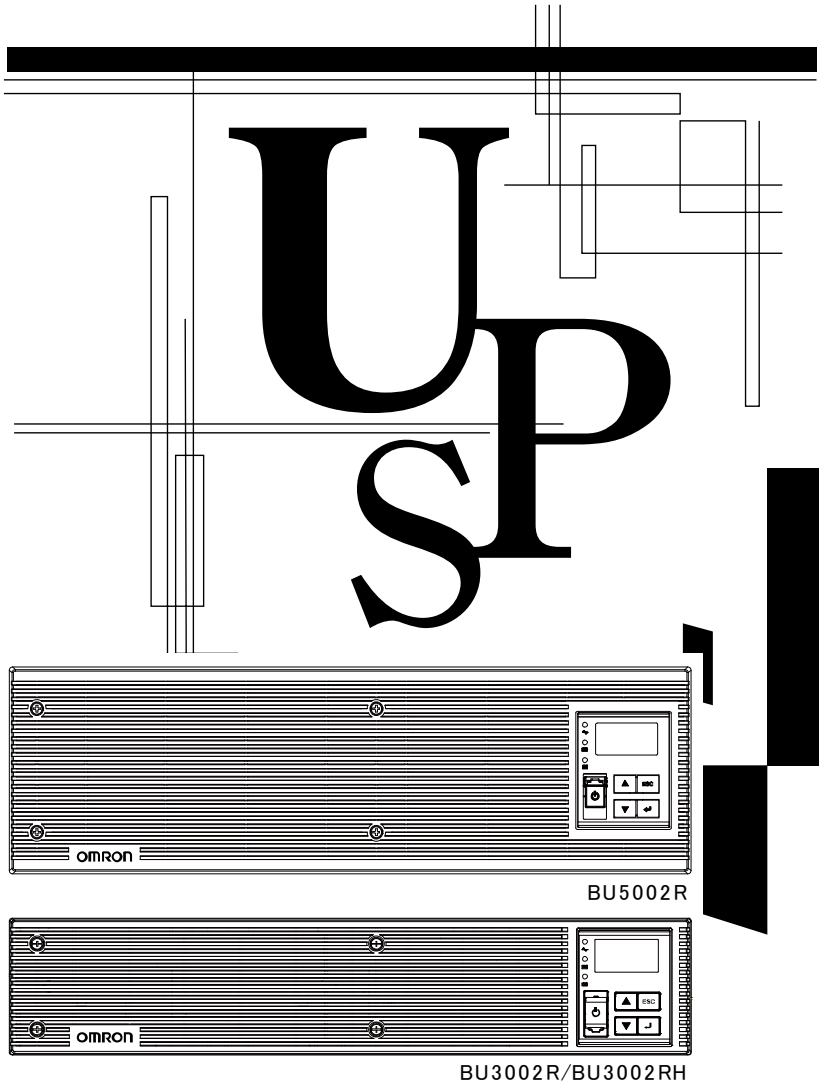
OMRON

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

BU5002R/BU3002R/BU3002RH

Instruction Manual



BU5002R

BU3002R/BU3002RH

The English translation is for reference purposes only.

- This instruction manual provides important safety-related information. Thoroughly read and understand this manual before installing and using the product.
- Keep this instruction manual in a convenient location so that you can refer to it whenever necessary. No part or whole of this instruction manual may be reproduced without permission.
- The contents of this instruction manual are subject to change without notice.
- The warranty certificate is included in the product package.

Introduction

Thank you for purchasing the Omron's Uninterruptible Power Supply (hereafter, “UPS”).
This instruction manual contains the necessary information for use of the Omron UPS.
Thoroughly read this instruction manual and sufficiently understand the functions and performance of the unit prior to use.
Also, after reading it, store this instruction manual carefully so that it is always available nearby for use.

Target readers

The following are the target readers for this instruction manual.

- Those having electrical knowledge (electrician or equivalent knowledge), that will be responsible for installation/operation of the UPS.

Features of this product

- A UPS protects computers and other devices from power outages, voltage variations, instantaneous voltage drops, and surge voltage such as that caused by lightning (a phenomenon in which extraordinary high voltage occurs instantaneously).
- The power supply input specification of the UPS is 200 to 240 VAC, and the power output is selectable from 100 VAC or 200 to 240 VAC.
- In regular state, the UPS converts a commercial power supply into direct current, reconverts it into a stable sine-wave alternative current, and then outputs the converted voltage. This product uses a full-time inverter supply method in which power is supplied from the battery when any abnormalities are detected in the commercial power supply such as power failure and voltage variations in order to continue sine-wave output. This product is suitable for use in locations with poor power supply environment, such as significant voltage fluctuation.
- The maximum output capacity is as follows: 5000 VA/4500 W for BU5002R, 3000 VA/2700 W for BU3002R, and 3000 VA/2700 W for BU3002RH.

Notes on the use of the UPS

- This product is designed and manufactured for use with FA or OA equipment such as computers.
  Do not use it when very high reliability and safety are required as listed below.
  - Usage on medical equipment that directly associated with human life
  - Usage on devices that may cause injury (such as those directly associated with operation or control of planes, ships, or railroads and so on.)
  - Environment with constant vibration, such as vehicles or marine vessels
  - Usage on devices whose failure may cause significant damage or effect on the society or 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 maintenance of public functions, special considerations related to operation, maintenance, and management must be taken such as duplicating the system or using an emergency power generator.
- Observe the conditions and environments for use described in this instruction manual.
- If you want to use this product for an important system that requires very high reliability, contact the shop of purchase.
- Do not modify/alter this product.
- This product is designed to be used only in Japan.
  - It does not support power supplies outside Japan so using it outside Japan may cause a failure or result in fire. This product is not compliant with laws and regulations outside Japan.
  - We assume no responsibility for exporting this product outside Japan or using it outside Japan at the customer's discretion and under their own responsibilities.
  - When exporting this product at the customer's discretion (including carrying it in personally), the permission of the Ministry of Economy, Trade and Industry may be required in accordance with the Foreign Exchange and Foreign Trade Act. Exporting this product without acquiring the required permissions will be punishable based on these laws.
- This UPS cannot be used in computer rooms complying with the standard ANSI/NFPA75 in order to protect electronic computers/data processing devices.

Voluntary Control Council for Interference by Information Technology Equipment (VCCI) Applicable Class

This unit is a class A product. In a residential environment, this unit may cause radio interference, in which case the user may be required to take additional measures.

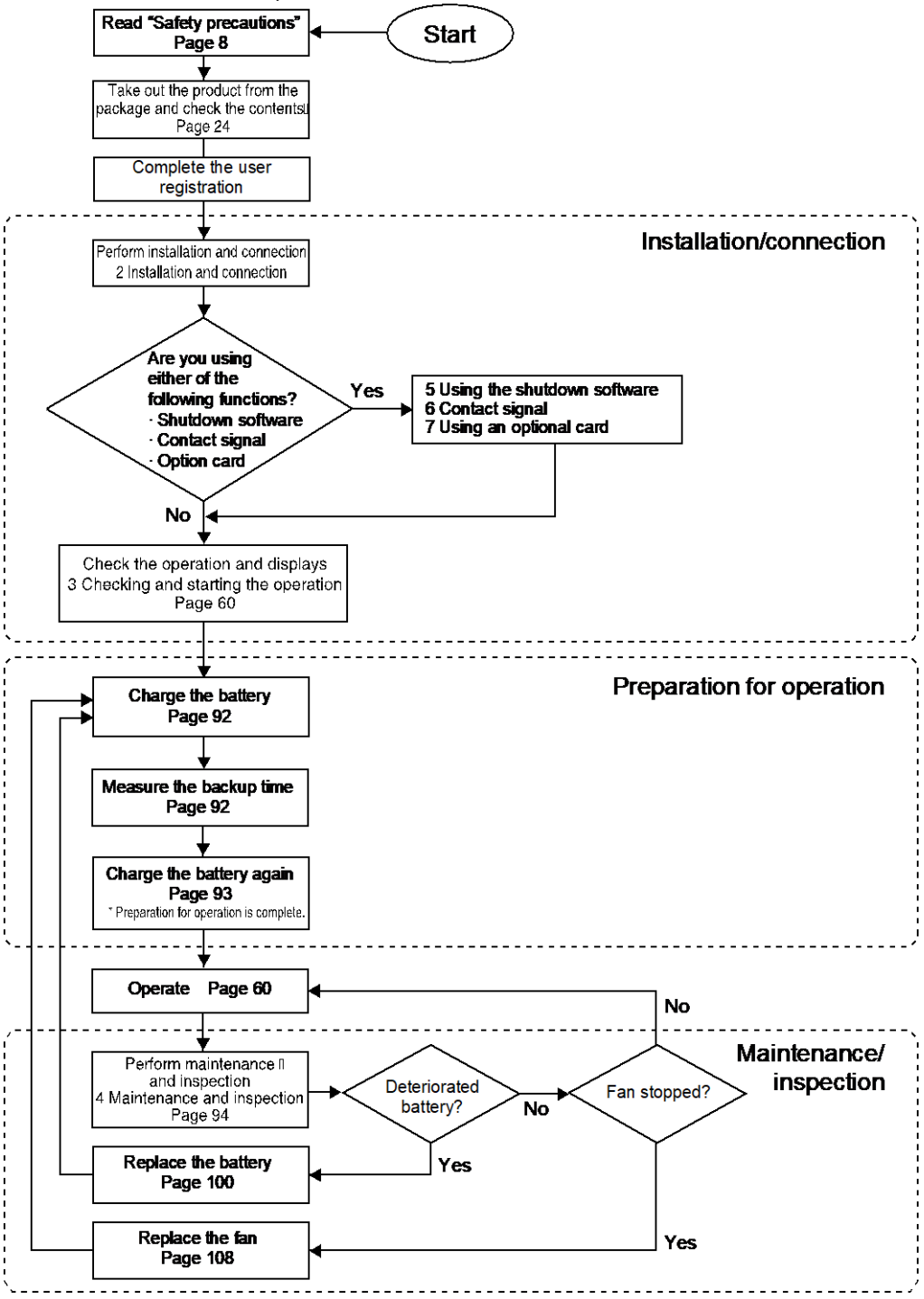
VCCI-A

Disclaimers
The company accepts no responsibility for damage, including all damage caused by non-compliance with the procedures from installation to operation including the safety precautions described later, and damage caused by a fault or breakdown of equipment, connected device, or software in the event of a breakdown caused by use of the product, and other secondary damage.

- 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.

Procedure from installation to operation

Procedure from installation to operation is as follows.



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Safety precautions

This Instruction Manual contains information important for safe use.
Be sure to read this manual before installation and use.

- The safety symbols in this Instruction Manual and their meanings are as follows.

Warning	Indicates that improper handling may result in death or serious injury.
Caution	Indicates that improper handling may cause injury or property damage.

* Property damage means damage to buildings and other property, as well as livestock and pets.

: Indicates a prohibition (what you must not do). For example,  means that disassembly is prohibited.

: Indicates a compulsory action (what you must do). For example,  means that a ground connection must be made.

Warning (product applications)

Do not use this unit where high reliability and safety are required as listed below.

*** The unit has been designed and manufactured with the aim of use with FA and OA equipment such as computers.**

- For medical equipment or systems that directly affect human life
- For any purpose directly related to human safety (Example: Operation, manipulation, or control of vehicles, etc.)
- For any purposes where a breakdown has possibility of causing serious social and/or public damage (Example: Main computer systems, main communication equipment, etc.)
- Any other usage with the same level of importance

⚠ Warning (for installation and connection)

Do not connect to half-wave rectified devices whose current flows only for half the cycle of the AC power supply, such as a blow dryer, some solenoid valves, etc.

- There is a risk of breakdown of the unit, smoke generation, or ignition.

When replacing an input/output cable of a terminal block model, fix the cable with a terminal block cover.

- If the cable connection is loosened, there is a risk of breakdown of the unit, smoke generation, or ignition.
- There is a risk of an electric shock.

Do not place the unit on other devices as it is heavy.

- Do not place an expansion battery unit on the unit, or place the unit on an expansion battery unit.
- There is a risk that an injury could be caused if it falls.

Do not connect any standalone inductive device such as a coil (transformer, electromagnet) or motor.

- There is a risk of breakdown of the unit, smoke generation, or ignition.

Do not block the ventilation inlet and outlet (front and rear surfaces).

- If the internal temperature increases, there is a risk of breakdown of the unit, battery degradation, smoke generation, or ignition.
- Install so that the distance from a wall to the front surface is 5 cm or more, and 10 cm or more to the rear surface.

When using support angles, be sure to use the ones provided with this product.

- If support angles other than the accessory items are used, there is a possibility that support angles break apart and the unit falls down, which may lead to an injury.

When installing onto a rack, be sure to use the provided support angles to support and fix this product.

- Support each unit individually with support angles.
- When installing onto a rack, be sure to use both the support angles and ear brackets provided with this product. The ear brackets alone cannot support this product without the support angles.
- The mass of each unit is about 57 kg for the BU5002R, about 31 kg for the BU3002R, and about 30 kg for the BU3002RH.
- There is a risk that an injury could be caused if the unit falls.

⚠ Warning (for installation and connection)

Do not carry out any works involving the connection to the terminal block of the unit while the input plug is connected to the commercial power supply.

- There is a risk of an electric shock.

Do not allow the environment of use or storage to fall outside the specified range.

Do not install or store in the following locations.

a. Storage in locations where the temperature is lower than -15°C / higher than 50°C, or the humidity is lower than 10% RH / higher than 90% RH

b. Use in locations where the temperature is lower than 0°C / higher than 40°C, or the humidity is lower than 25% RH / higher than 85% RH

c. Sealed places such as a cabinet without gaps, places where a flammable gas or corrosive gas is present, places with saline content or water droplets, places that are extremely dusty, places with conductive dust, places that are exposed to direct sunlight, places where vibrations or impacts may occur, outdoors, and others

- There is a risk of smoke generation and ignition.

Do not cram or bend the cables forcibly.

- There is a risk of electric shock or fire due to damage or heating of the cable.
- If the cable is damaged, immediately stop using the unit, and have it repaired.
- For repairs, contact the shop of purchase.

Do not disassemble, repair, or modify this unit.

- There is a risk of causing electric shock or fire.

Provide a reliable earth connection (grounding).

- In the case of an AC input plug connection, connect to the commercial power supply as it is, and in the case of a terminal block connection, provide a ground connection to the commercial power supply. If a ground connection is not provided, there is a possibility of electric shock in the event of a breakdown or electric leakage.

When fixing the wiring to the terminal block, use the prescribed round terminal, and after crimping with the prescribed amount of stripping, tighten with the prescribed torque.

- There is a risk of smoke generation and ignition due to defective contact if the prescribed round terminal or the amount of stripping are not used.
- There is a risk of smoke generation and ignition if a bare wire is used or a screw is loose.

⚠ Warnings (during use)

The unit is fitted with a switching circuit that enables electric power to be supplied to the connected devices directly from the commercial power supply, in the event that the product is stopped as a result of breakdown of the internal control circuit function or a malfunction.

Stop the output of the unit after safely stopping the connected devices.

- To stop the output, either stop the commercial electrical power supply, or remove the AC input plug.
- There is a possibility of electric shock if the output terminal is touched without stopping the output.
- The output continues even if all the front panel displays are off.
- The output cannot be turned ON/OFF using the front “Power” switch.

The unit has a limited service life. Replace the unit in a planned manner, and do not use it beyond its service life.

- If the product continues to be used beyond its lifespan, it may cause malfunction or breakdown, such as failing to perform backup normally or stopping operation suddenly. In addition, there is a risk of smoke generation and ignition, which may result in fire.
- The service life of the unit is 7 years when the ambient temperature is 25°C, and 5 years when the ambient temperature is 40°C. However, the lifespan varies depending on the ambient environment (temperature, dust), so these values are for guidance and are not guaranteed values.

When performing maintenance on the connected device, turn the “Power” switch of the unit off to stop the output, and stop the commercial power supply.

- During operation, power output of the unit does not stop even when the commercial power supply has stopped, so there is a possibility of electric shock.

When the black “INPUT PROTECTION” button (input overcurrent protection switch) on the rear of the BU3002R/BU3002RH is protruding, connected devices are too many, or a short circuit is occurring on a connected device. Do not press the black button repeatedly or continuously in such a situation.

- Press the black button after inspecting the connected devices. If the button protrudes again, stop using the unit, and contact the shop of purchase.
- There is a possibility of smoke generation or ignition if the black button is pressed repeatedly or continuously.

When using this unit, make sure to attach the output terminal block cover. In addition, do not turn on the “Power” switch when the cover is removed.

- If the “Power” switch is turned on, voltage is applied to the output terminal block, which may cause electric shock.
- When replacing a cable, make sure to fix the cable with a clamp.

⚠ Warning (when replacing the battery)

Only use the specified replacement batteries.

- If a battery other than the specified replacement battery is used, there is a risk of breakdown of the unit, or smoke generation and ignition.
- Replace with the same type and same number of battery packs.
- Model name: Replacement battery pack for BUM5002R:
  BUB5002R, 1 pack
  Replacement battery pack for BUM3002R / BU3002RH:
  BUB3002R, 1 pack

When replacing a battery pack, securely hold the battery pack so that it does not fall.

- When the red tape on the top surface of the battery pack or the red line on the rating label is visible, the battery pack is going to be detached with 10 cm of movement.
- There is a risk that an injury could be caused if it falls.

Do not disassemble or modify the battery.

- There is a risk of leakage of dilute sulfuric acid, causing blindness or injury if touched.

Do not insert metal parts into the battery connector.
Do not short-circuit the connector terminals.

- There is a risk of electric shock, fire, or injury.
- Electric energy remains inside used batteries.

⚠ Warnings (when replacing the fan)

Do not insert your hand or a metal object into the fan housing opening.

- There is a possibility of an electric shock or short circuit.

Do not insert your finger into the fan.

- The fan rotates when the AC input is connected.
- There is a possibility of an injury.

⚠ Caution (for installation and connection)

Transport the product paying attention to the weight and balance, and place and use it in a stable sturdy location.

Perform the installation operation in a stable flat place.

Operations should be carried out by two or more people.

Do not transport the product mounted on the 19 inch racks or the like.

- The center of gravity of this product is off-center. Be careful not to drop it while taking it out or transporting it.
- As the product is heavy, it should be carried by 2 or more people.
- You may be injured if the product is toppled or dropped.
- The support angles or other parts may be bent and become unusable.
- The mass of the unit is about 57 kg for the BU5002R, 31 kg for the BU3002R, and about 30 kg for the BU3002RH.
- Be careful not to catch your finger between the installation surface and the bottom surface of the unit.
- When moving, first remove the battery.
- If the unit is dropped, stop using it immediately, and have it inspected and repaired. For repairs, contact the shop of purchase.

Do not lift by holding the front panel.

- There is a possibility that the panel comes off, leading to drop of a battery pack and personal injury.

Place the packaging plastic bags in a location where children cannot reach.

- There is a risk of suffocation if a child put a plastic bag on their head.

Be sure to connect the AC input of the unit to the commercial power supply with the rated input voltage (200/208/220/230/240 VAC) and frequency 50/60 Hz.

- If connected to a commercial power supply with a different voltage or frequency, it could cause a fire.
- There is a risk of a breakdown of the unit.

If there is a fault (unusual noise or smell), disconnect the AC input from the unit.

BU5002R: Either disconnect the AC input plug from the power outlet, or turn off the input overcurrent protection switch “INPUT PROTECTION” on the rear. Arrange the AC input plug in a nearby position where it can be easily pulled out.

BU3002R: Unplug the AC input plug from the power outlet.

BU3002RH: Turn off the externally installed breaker installed on the input side.

- For your safety, carry out the above operations during maintenance of the connected devices, etc.

⚠ Caution (for installation and connection)

Connect the unit to a power supply outlet (commercial power supply) with the following current capacity.

BU5002R: 30 A or more
BU3002R/BU3002RH: 18 A or more

- The power supply cable may get hot.
- When devices are connected with the maximum output capacity, the following maximum current flows.

BU5002R: 30A
BU3002R/BU3002RH: 18A

When you change the input cable, be sure to connect it as prescribed. Do not carry out any works involving connection of the AC input terminal of the unit while it is connected to a commercial power supply.

- Cables connected to a terminal block shall satisfy the input current specification of the unit.
- There is a possibility of an electric shock or electric leakage.

Install this unit only in the specified orientation.

- You may be injured if the product is toppled or dropped.
- If installed in an orientation other than the specified orientation, it is not possible to protect against battery leakage.
- When installing vertically, be sure to use the stand for vertical layout provided with the product.

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

- The battery may degrade rapidly and cause a fire.
- There is a risk of a breakdown or malfunction of the unit.

Do not connect devices that exceeds the output capacity of the unit.

The connected devices can be expanded using a power outlet strip, etc., but in this case do not connect devices that exceeds the current capacity of the outlet strip.

- The unit will detect an overload and stop output.
- The wiring of the power outlet strip may generate heat and cause fire.

When installing this unit on a rack, install this unit on the lowermost shelf of the rack.

- You may be injured if the product is dropped.

Remove the battery when moving the unit.

- If not removed, because of the heavy object, there is a risk of injury by dropping the product, or by the sheer weight of the product.

⚠ Caution (for installation and connection)

When moving the unit, lift it by 2 or more people. Be careful not to fall down, or drop this unit while moving.

- You may be injured if the product is dropped.
- Remove the battery before moving this unit.

Be sure to use the mounting screws provided with this product.

- If long screws not provided with this product are used for installation of the case, there is a risk of internal damage.
- If screws not provided with this product are used, the structural strength may become insufficient, and it may lead to an accident such as falling of this unit.

When moving after installation in a stand for vertical layout, lay it down horizontally before moving.

- If it is moved upright, there is a risk of pinching fingers between the device and the floor, causing an injury.

During installation, secure the space in front of this unit for works such as battery replacement.

- You may be injured if the product is toppled or dropped.

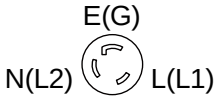
Connect the AC input terminal of the unit while the external breaker is turned off. Make sure to attach the input terminal block cover.

- There is a risk of an electric shock or electric leakage. Also, if the cable is not fixed with the cover, the terminal connection may be loosened by the cable's weight, which could cause a fire or smoke.

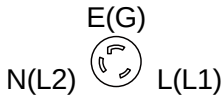
Be sure to insert the input plug into a grounded outlet.

- There is a risk of an electric shock.
- The AC input plug of the unit is wired as shown in the following figure.

BU5002R input plug (NEMA L6-30P)
(viewed from the pin direction)



BU3002R input plug (NEMA L6-20P)
(viewed from the pin direction)



⚠ Caution (for installation and connection)

For AC input terminal block models, connect the grounded phase of the AC input power supply to the G terminal (⏚) of the unit.
If either of the others are grounded apart from the grounded phase, connect the grounded phase to the L2 terminal of the unit.

- If connected differently, it may cause a breakdown of the connected device.

Do not connect devices with rated voltage other than 200/208/220/230/240/100 VAC.

- The rated output voltage of the unit is 200/208/220/230/240/100 VAC.
- There is a possibility of a breakdown of the connected device due to excess voltage.

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

- When the unit is set to “Eco mode” and a fault occurs on the device, operation is switched to direct commercial power, and the commercial power supply is provided to the connected device as it is.

Do not connect 4 or more expansion battery units to this unit.

- Up to 3 expansion battery units can be connected to the unit.
- There is a risk of smoke generation and ignition if 4 or more are connected.

Do not place objects onto this unit, or drop heavy objects onto it.

- There is a risk of not only a unit breakdown, but also personal injury in cases such as the unit tipples over.

If the input plug is pulled out while the unit is operating, do not touch the metal parts of the input plug under any circumstances.

- There is a risk of an electric shock.
- The leakage current of the unit on its own is equal to or less than the safety rating (leakage current: 3.5 mA), but the leakage current may increase depending on the connected devices, so do not touch the metal parts of the input plug.
- When the unit is operating, a voltage is generated on the metal parts of the input plug through the capacitor of the internal circuit, regardless of the elapsed time.

⚠ Caution (for installation and connection)

When using in 100 V output mode, check that the output voltage is set to 100 V before turning on the power switch.

- When 100 V device is connected during output in 200 V mode, there is a risk of breakdown of the device or fire.
- The output voltage can be set from the LCD menu by [3. Settings] - [In/Out Settings] - [O/P Voltage].
- The upper limit of capacity changes in 100 V output mode.
  BU5002R: 2500VA/2250W
  BU3002R/BU3002RH: 1500VA/1350W
- In 100 V output mode, it is not possible to switch to bypass operation.
- In 100 V output mode, it is not possible to operate in Eco mode (commercial direct output).

Do not wet this unit or splash water on it.

Stop using the product if it is dropped.

- There is a risk of electric shock or fire.
- If the unit gets wet or is dropped, immediately stop using it, turn the AC input off, and have it inspected and repaired.
- For repairs, contact the shop of purchase.

When service life of a battery has expired, immediately replace it, or stop using this unit.

- If such battery is used without replacing, there is a risk of fire or electric shock due to liquid leakage.

Ambient temperature	Anticipated life
40°C	1.7 years
25°C	5 years

* The table on the left shows the anticipated life under standard conditions of usage, but they are not guaranteed values.

Wipe off the dust on the plug, the receptacle, and the terminal block occasionally.

- It may cause a fire if the dust adheres for a long time.
- Stop all the connected devices and the unit and unplug the “AC input” plug from the power outlet (commercial power supply) before wiping off the dust.
- Use a dry cloth to wipe the unit without using any chemicals containing thinner, benzine, or alcohol as there is a risk of it catching fire.

Do not use this unit in a sealed location or cover it with a cover.

- There is a risk of abnormal heat generation and occurrence of a fire.
- Depending on the environment of use, hydrogen gas may be generated from the battery, which could cause a crack or an explosion. Ventilate the area around the unit.

⚠ Caution (during use)

If there is a strange noise or smell, if smoke is emitted, or if there is liquid leakage from the inside of this unit, turn the "Power" switch of the unit off to stop the output, and stop the commercial power supply.

- Using under such circumstances may lead to fire.
- If any of these situations occur, stop using this unit, and ask the shop of purchase to carry out inspection and repair.
- While using this product, install an external breaker and make sure that the breaker can be turned off immediately in the event of a fault.

Do not sit, stand, step, or lean on the top of the unit.

- There is a risk of a breakdown of the unit, and also an injury could be caused if the unit topples, etc.

If the main unit input overcurrent protection switch trips, shut off the input side, and set the input overcurrent protection switch back to "on".

- The breaker may generate smoke or catch fire.

Do not hold the connector or cable when pulling the unit out.

- There is a risk of smoke generation and ignition.

⚠ Caution (during maintenance)

If liquid (dilute sulfuric acid) leaks from the inside, do not touch the liquid.

- There is a risk of blindness or injury.
- If it comes in contact with the eyes or skin, immediately wash with a large quantity of clean water, and obtain treatment from a doctor.

Do not throw the unit into a fire.

- It contains a lead battery, so there is a possibility of battery explosion or dilute sulfuric acid leakage.

Do not insert any metal object in the power supply output receptacle of the unit or the terminal block.

- There is a risk of an electric shock.

⚠ Caution (when replacing the battery)

Perform the replacement work in a stable flat place.

- Secure the battery so that it does not fall.
- There is a risk of injury caused by dropping the battery or burns caused by liquid leakage (dilute sulfuric acid).
- Although a clack sound may be heard when inserting the battery connector, this does not indicate any problem.

Do not replace the battery in a location where there is combustible gas.

- There is a risk that spark comes off when connecting the battery, causing explosion or fire.

When there is liquid (dilute sulfuric acid) leakage from the battery, do not touch it.

- There is a risk of blindness or injury.
- If it comes in contact with the eyes or skin, immediately wash with a large quantity of clean water, and obtain treatment from a doctor.

Do not drop the battery or subject it to strong impact.

- Dilute sulfuric acid may leak.

Do not throw the battery in fire or destroy it.

- There is a possibility of battery explosion or dilute sulfuric acid leakage.

The battery pack is heavy. Be careful not to drop it.

- There is a possibility of foot injury.

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

- Dilute sulfuric acid may leak.

When replacing the battery, take the following precautions.

a. Do not wear precious metal items such as watches and rings.
b. Use a screwdriver with an insulated handle.
c. Wear insulated gloves and shoes.
d. Do not place tools or metal items on the battery.
e. Turn off the power supply to the unit before inserting or removing the battery.
   Note: This only applies when using as a conforming product of UL standards.
f. Do not ground the battery.
   - There is a risk of an electric shock or a short circuit of the battery.
   - Contact with any part of a grounded battery induces a risk of electrical shock.
   - Battery replacement work must be carried out by a person who understands the hazardous properties of the battery and the issues requiring care, or the work must be carried out under their supervision.

⚠ Caution (when replacing the battery)

Do not pull out the battery pack by pulling the connector or cable.

- There is a risk of smoke generation and ignition.

When an expansion battery unit is connected to the unit, be sure to replace the battery packs of this unit and the expansion battery unit at the same time.

- Dilute sulfuric acid may leak.
- There is a risk of an electric shock or a short circuit of the battery.

When the unit is used as a conforming product of UL standards, do not replace the battery while operating (while power is being output).

The battery replacement function does not comply with UL standards while operating, so be sure to replace the battery after stopping operation of the unit.

- To perform replacement while stopped, stop the connection function, turn off the “Power” switch on the unit, and remove the “AC input” plug from the power outlet.
- When an input power error such as power outage occurs during battery replacement while the unit is operating, the backup process is disabled and output stops.
- Do not replace the battery during the backup operation. Doing so will stop the output.

⚠ Caution (when replacing the fan)

Remove the AC input plug from the power outlet (commercial power supply) after turning off the power supply.

- The fan rotates when the AC input is connected.
- Check that the fan has stopped.

Notes

After bringing the unit from a cold place to a warm place, leave it for several hours before starting use.

- Condensation may occur if the unit is brought into a warm place suddenly, and if the unit is used in such condition, there is a risk of breakdown.

After purchasing, charge the battery promptly.

- If the battery is not used for a long time after purchasing, the battery properties degrade, and in some cases it becomes unusable.
- The battery can be charged once the AC input is connected to commercial power.

Notes

When the unit is to be stored, charge it for 8 hours or more, and turn off the "Power" switch. Recharge within 6 months when stored at a storage temperature of 25°C or less, and within 2 months when the storage temperature is 40°C or less.

- Self-discharge occurs even when the battery is not used, and if left for a long period of time, the battery becomes over discharged. This causes the backup time to be shortened, or the battery to become unusable.
- For long-term storage, it is recommended that the environment is 25°C or lower.
- During storage, turn off the "Power" switch of the unit.

Take care not to cause short circuit between the output lines of this unit, or between an output line and a ground wire (ground fault).

- There is a risk of a breakdown of the unit.

Do not insert the AC input plug of the unit into the power output receptacle of the unit during backup operation.

- There is a risk of a breakdown of the unit.

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

- There is a possibility that the connection capacity is exceeded frequently and repeatedly, leading to the state that the input power supply is output directly (bypass operation).
- The peak current of a page printer is large, and exceeding of the connection capacity may be detected.

Do not install or store the unit in a place where it is subject to direct sunlight.

- The internal battery may be rapidly degraded by the temperature rise, and it may become unusable.

Do not conduct a withstanding voltage test.

- A surge absorber is provided on the power supply input cable, and if a withstanding voltage test is conducted, the surge absorber may be damaged.
- If conducting an insulation resistance test, perform it in the 250 VDC range.

Turn off the "Power" switch of the unit before turning off the commercial power supply.

- If the commercial power supply is stopped, operation is switched to backup operation. If backup operation is conducted too frequently, the battery life may be significantly shortened.

Do not use the unit for frequent backup operation.

- The battery will deteriorate and become unable to last for the specified backup time.

If using this unit in combination with a device with large variation in power supply voltage and frequency, such as generators, perform operation check beforehand.

- If the output voltage or frequency of the generator is outside the input voltage or frequency range of the unit, operation will switch to backup operation.
- Even when the input frequency is within the range, if there is a sudden change of 5 Hz/sec or more, operation will switch to backup operation.

Notes

When the unit is used as a conforming product of UL standards, 100 V output cannot be used.

When transferring or selling this unit to a third party, be sure to attach all documents provided with this unit. The unit shall be used in accordance with the conditions described in the attached documents.

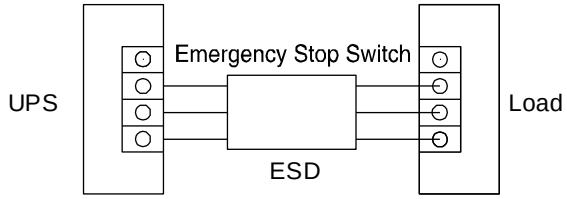
- This instruction manual contains information on safety, etc. Use the unit after understanding the information.

When connecting the AC input from a distribution board directly, consult with a specialist responsible for wiring.

Insert a breaker (double-cutting type) between the unit and the commercial power supply, and arrange the breaker in a location where it can be operated easily.

When connecting a device using an output terminal block, be sure to insert an emergency stop switch (ESD) between the output terminal block and the connected device.

- In case of an unforeseen fault, power supply to the connected device can be stopped by tripping the emergency stop switch.
- To prevent a fire, connect an emergency stop switch (ESD) rated 30 A or more to the BU5002R, and 20 A or more to the BU3002R/BU3002RH. (When the unit is used as a conforming product of UL standards, follow the National Electrical Code, and ANSI/NFPA 70)
- Arrange the emergency stop switch in a location that is easy to operate.



All of the accessory items packaged with the unit are only for use with the unit, and must not be used with the other device.

When the unit is used in compliance with UL standards, do not replace the fan.

- The fan replacement function does not comply with the UL standard.

Notes

Before installing the unit, take note of the serial number of the unit.

The serial number of the product is necessary when making inquiries to the shop of purchase.

The product serial number is indicated on the seal on the back of the unit (in the case of BU3002R, the seal on the top), and on the product serial number seal included in the packaging. It can be displayed on the LCD panel as well.

This product uses a lead battery (lead accumulator).

- Lead batteries are valuable resources that can be recycled. Please cooperate with recycling. For recycling the unit, contact the shop of purchase.

Take precautions against unforeseen circumstances, such as by providing data protection or system redundancy.

- Output from this unit may stop in case of a breakdown in the internal circuit.

The value of the total capacities of the devices connected to the output receptacles must not exceed the rated output capacity of the BU3002R. If the overload fault display (E9) appears, reduce the connected devices.

The lead battery used in the unit has a limited service life. The service life varies depending on your storage/operating environment and backup frequency.

- The nearer the end of service life is, the more rapidly deterioration proceeds.
- For details on the battery life, see the reference document “Battery life” at the end of this manual.
- The battery deteriorates even if it is stored. Note that as the temperature is increased the life rapidly shortens.

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

- After replacing the battery, select [2. Control] - [Reset B. life counter] from the LCD menu of the unit, and reset the battery life counter.

  If the battery life counter is not reset, the battery replacement alarm may be issued before the expected end of the battery life is reached.

After resetting the battery life counter, record the battery replacement date.

- Write the battery replacement date on the provided battery replacement date label and attach it to the main unit.
- The battery replacement date can be input from the LCD menu [3. Settings] - [Battery Settings] - [Battery Installation].

After replacing the battery, execute the self-diagnosis test.

- The self-diagnosis test can be performed manually from the LCD menu of the unit by selecting [2. Control]-[Start Function Test]. After the self-diagnosis test has been completed, the status automatically returns to the normal operational status.

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

1 Preparation

1-1 Unpacking the product

⚠ Caution

This unit is a heavy object with a mass of about 57 kg for BU5002R and about 31 kg for BU3002R. Lift or carry this unit by 2 or more people.

- You may be injured if the product is dropped.

Remove the battery when moving the unit.

- If not removed, because of the heavy object, there is a risk of injury by dropping the product, or by the sheer weight of 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, contact the shop of purchase.

Accessories	BU5002R	BU3002R/BU3002RH
Precautions	1	1
Product warranty	1	1
Guidance for replace service	1	1
User registration card	1	1
Guide for user registration	1	1
Battery replacement date label	1	1
Serial number label	2 per set	2 per set
For using a Shutdown Software guide	1	1
Rubber feet	6 per set	6 per set
Connection cable (RS232C)	1	1

Contents			BU5002R	BU3002R/BU3002RH
Packaged fittings			1 box	1 box
Details of packaged fittings	Fittings for support angle			
		Support angle (L)	1	1
		Support angle (R)	1	1
		Ear bracket	2	2
		Ear bracket mounting flat-head screws (M3)	8	8
		Fixing screws for EIA/JIS rack (M5)	12	12
		Mounting nuts for EIA rack (M5)	12	12
		Fixing flat-head screws for JIS rack (M5)	2	2
	Fittings for vertical layout			
		Stand for vertical layout	6	4
		Screws for stand for vertical layout (M4)	12	8
	Fittings for battery cover			
		Spare screws (M3)	---	2
		Spare screws (M4)	2	---

<Complete the user registration>
Fill in the necessary items on the user registration card within one month of the purchase date, and send it to us. Registration can also be carried out from the website (https://www.oss.omron.co.jp/ups/regist/regist.html).

1-3 Related products (options)

Product name	Model number		
	BU5002R	BU3002R	BU3002RH
Replacement battery pack	BUB5002R*1	BUB3002R*2	
Expansion battery unit	BUM5002R	BUM3002R	
Network card	SC21		
SNMP/Web card	SC20G2		
Contact signal I/O card	SC08		
Replacement fan	BUF5002R	BUF3002R	
Cable clamp	BUX5002RH	---	BUX3002RH
Retaining cable clamp	---	BUX3002RP	---

*1 Replacement battery pack information
a) Sealed lead battery (long life type) ×4 pcs ×3 units
b) Nominal voltage per cell: 12 VDC
c) Nominal capacity per cell: 8.5 Ah

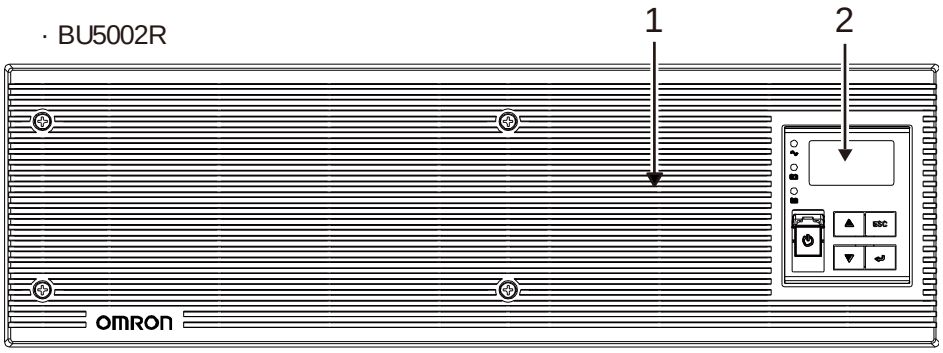
*2 Replacement battery pack information
a) Sealed lead battery (long life type) ×6 pcs
b) Nominal voltage of total battery string: 12 VDC
c) Nominal capacity of total battery string: 8.5 Ah

1-4 Names of each part

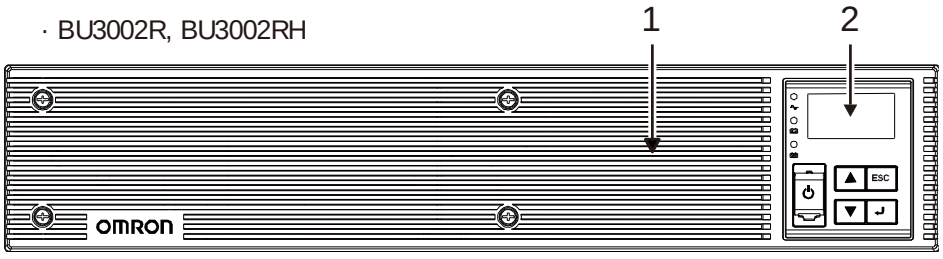
This section describes the name of each part of the UPS.
For information on the function of each part, refer to “2. Installation and connection” on page 30 and “3. Check and start the operation” on page 59 that provide the details.

● Front view

· BU5002R

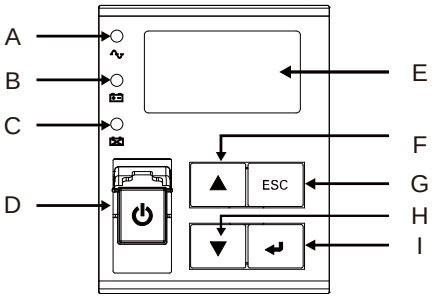


· BU3002R, BU3002RH



1. Air vent
2. Operation panel

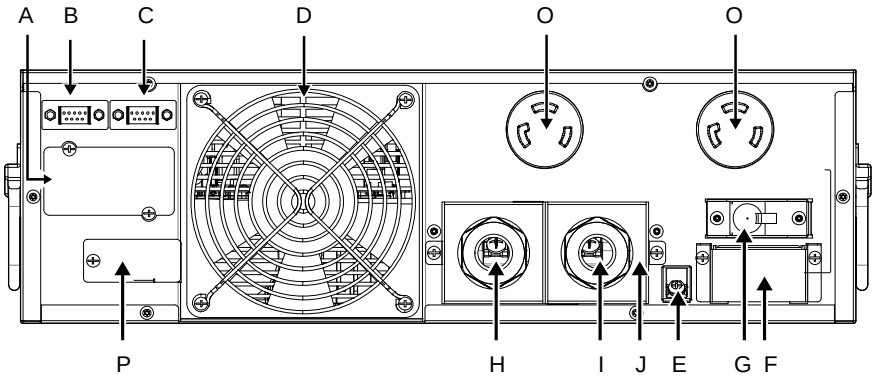
<Enlarged view of the operation panel>



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

● Rear view

<BU5002R>



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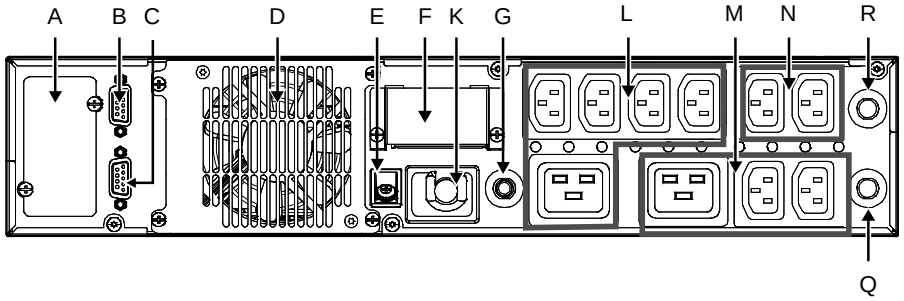
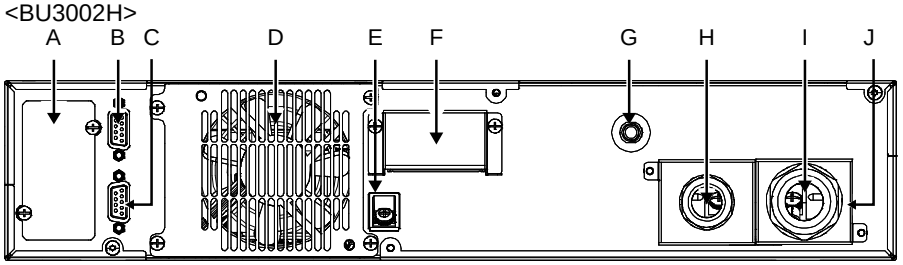
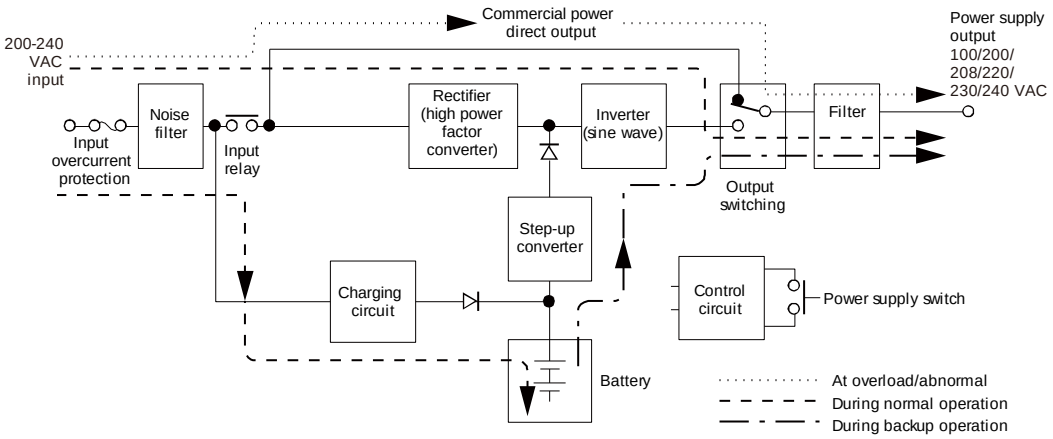


<BU3002H>



A: Option slot
B: Contact signal port
C: RS-232C port
D: Cooling fan
E: GND
F: Expansion battery connector
G: AC input overcurrent protection switch
H: AC input terminal block
I: AC output terminal block
J: Terminal block cover
K: AC Input cable
L: AC output receptacles A
M: AC output receptacles B
N: AC output receptacles C
O: AC output receptacles
P: Fan connector cover
Q: Overcurrent protection switch for output receptacles B
R: Overcurrent protection switch for output receptacles C

1-5 I/O circuit block diagram



2 Installation and connection

2-1 Precautions and notes on installation and connection

Notes and requests for installing and connecting the unit are listed below. Be sure to read them and use the unit correctly.

⚠ Warning

Do not place the unit on other devices as it is heavy.

- Do not place an expansion battery unit on the unit, or place the unit on an expansion battery unit.
- There is a risk that an injury could be caused if it falls.

⚠ Caution

Remove the battery when moving the unit.

- If not removed, because of the heavy object, there is a risk of injury by dropping the product, or by the sheer weight of the product.

Do not lift by holding the front panel.

- There is a possibility that the panel comes off, leading to drop of a battery pack and personal injury.

Notes

Do not connect the AC input plug of this unit into the power output receptacle or terminal block of this unit during backup operation.

- There is a risk of a breakdown of the unit.

Do not conduct a withstanding voltage test.

- A surge absorber is provided on the power supply input cable, and if a withstanding voltage test is conducted, the surge absorber may be damaged.
- If conducting an insulation resistance test, perform it in the 250 VDC range.

2-2 Installation

The UPS can be installed by the following methods. Choose the one best suited for the environment.

2-2-1 Rackmount installation

2-2-2 Stationary installation

- Horizontal installation
- Upright installation

Do not use this unit in any position other than the correct positions indicated in the illustration below.

When using the main unit with expansion battery units connected, the main unit and expansion battery unit cannot be installed horizontally.

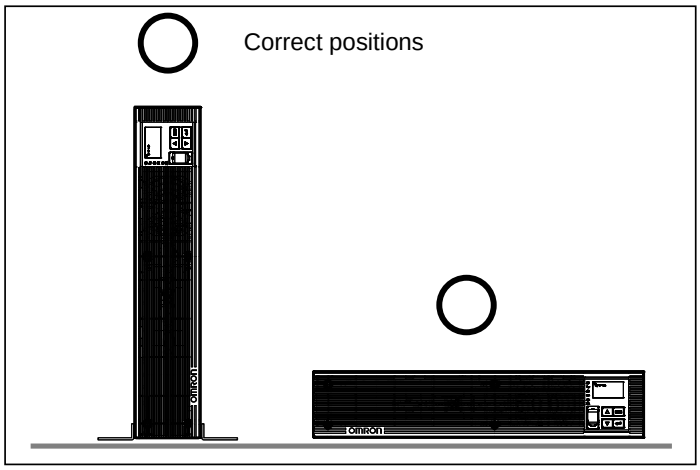
Do not place the main unit or batteries on top of each other, for example placing an expansion battery on top of the main unit or vice versa.

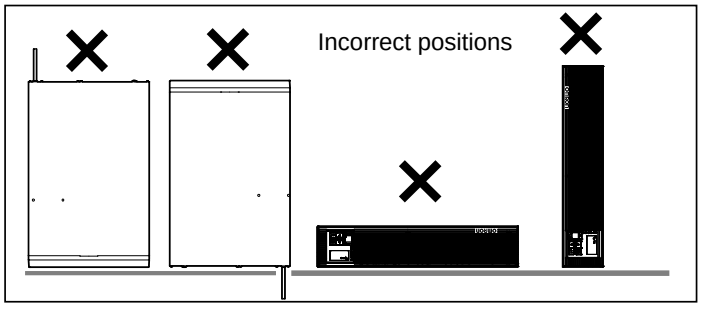
Notes

Before installing the unit, take note of the serial number of the unit.

The serial number of the product is necessary when making inquiries to the shop of purchase.

The product serial number is indicated on the seal on the back of the unit (in the case of BU3002R, the seal on the top), and on the product serial number seal included in the packaging. It can be displayed on the LCD panel as well.





2 2-1 Rackmount installation (EIA/JIS 19-inch rack, server rack)

⚠ Warning

When installing onto a rack, be sure to use the provided support angles to support and fix this product.

- Support each unit individually with support angles.
- When installing onto a rack, be sure to use both the support angles and ear brackets provided with this product. The ear brackets alone cannot support this product without the support angles.
- The mass of each unit is about 57 kg for the BU5002R, about 31 kg for the BU3002R, and about 30 kg for the BU3002RH.
- There is a risk that an injury could be caused if the unit falls.

⚠ Caution

When installing this unit on a rack, install this unit on the lowermost shelf of the rack. However, when installing an expansion battery unit, place it on the lower shelf instead.

- You may be injured if the product is dropped.

Be sure to use the mounting screws provided with this product.

- If long screws not provided with this product are used for installation of the case, there is a risk of internal damage.
- If screws not provided with this product are used, the structural strength may become insufficient, and it may lead to an accident such as falling of this unit.

■ Items in the package used when installing in a 19 inch rack

Support angle (L) 1
Support angle (R) 1
Ear bracket 2
Ear bracket mounting flat-head screws (M3) 8
Fixing screws for EIA/JIS rack (M5) 12
Fixing flat-head screws for JIS rack (M5) 2
Mounting nuts for EIA rack (M5) ... 12

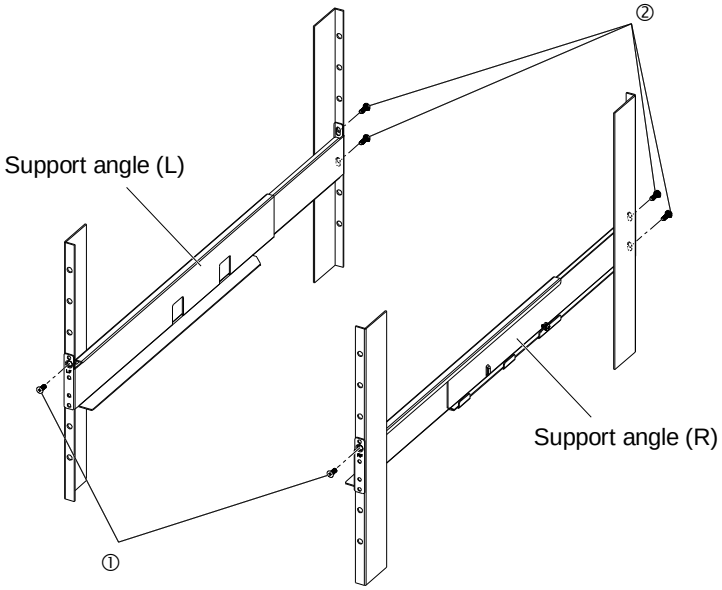
■ Rack mounting procedure

The method of installation onto a rack is common for the BU5002R, BU3002R, and the BU3002RH, so the explanation is given for the BU3002RH. When installing onto the rack, first remove the battery from the main unit. At the time of shipment of the BU5002R, the UPS main unit and the battery are packaged separately, so the battery is not in the main unit.

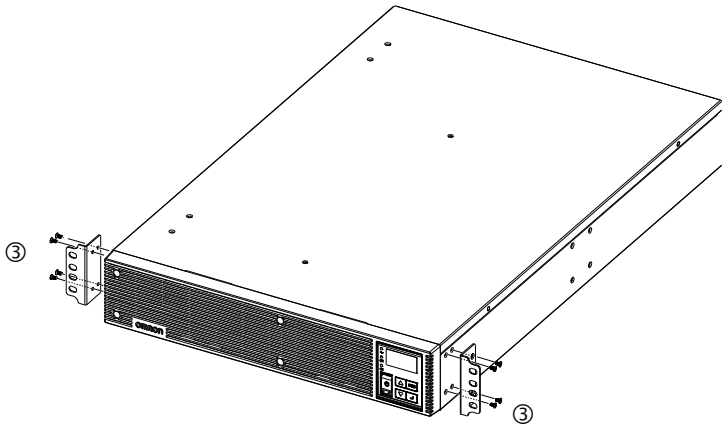
• For installation compliant with the JIS standard
The mounting nuts for EIA rack and the 6 fixing screws for EIA/JIS rack (M5) are not used.

1. Remove the battery. See “4-4 Replacing the battery” for the procedure for removing the battery.

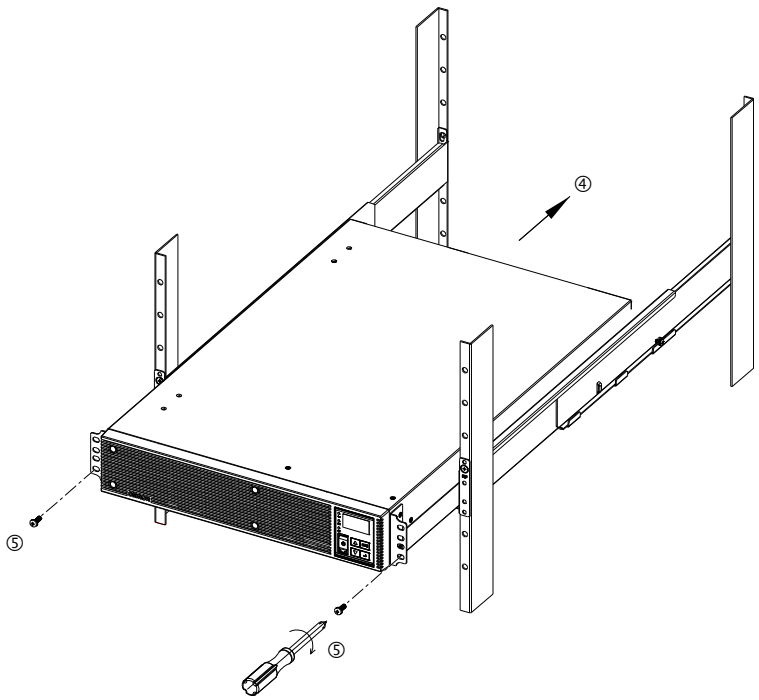
2. Fix the support angle (L) and support angle (R) onto the server rack using the provided 2 fixing flat-head screws for JIS rack (M5) (①) and 4 fixing screws for EIA/JIS rack (M5). (②)



3. Securely fix the ear brackets on the right and left side faces of the UPS using the provided 8 ear bracket mounting flat-head screws (4 pcs x 2). (③)



4. Place the UPS on the support angles, push it in all the way to the back (④), and securely fix the ear brackets onto the server rack using the provided 2 fixing screws for EIA/JIS rack (M5). (⑤)
The remaining 6 fixing screws for EIA/JIS rack (M5) are not used.

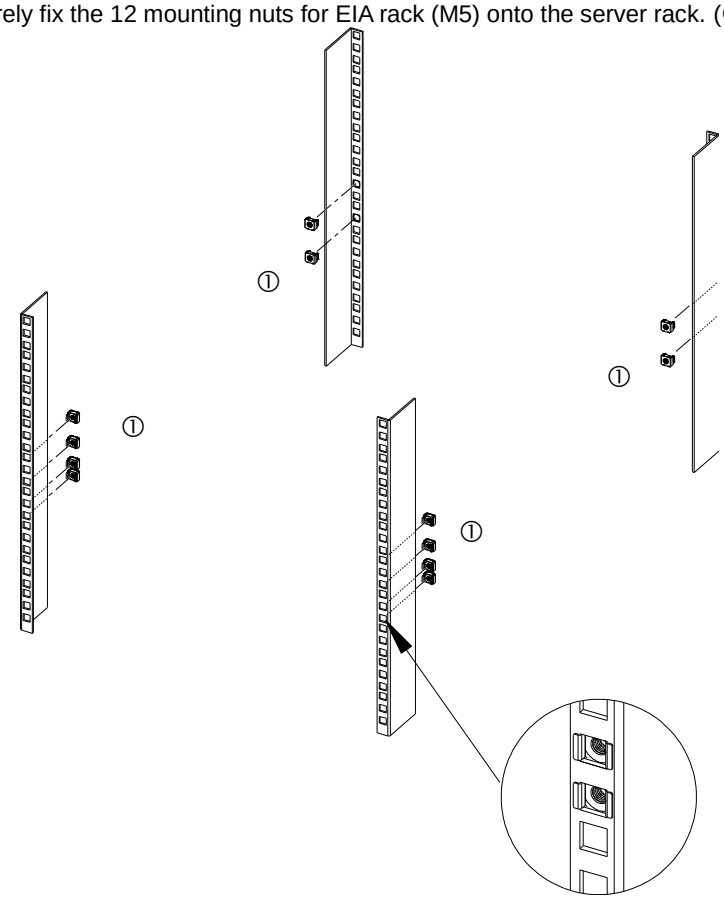


5. After fixing, install the battery.
See “4-4 Replacing the battery” for the installation procedure.

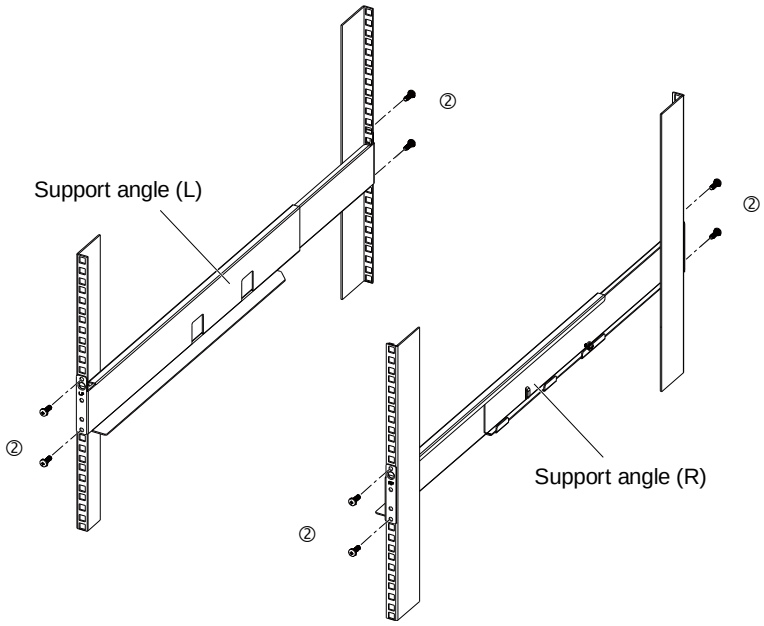
• For installation compliant with the EIA standard
The fixing flat-head screws for JIS rack (M5) are not used.

1. Remove the battery. See “4-4 Replacing the battery” for the procedure for removing the battery.

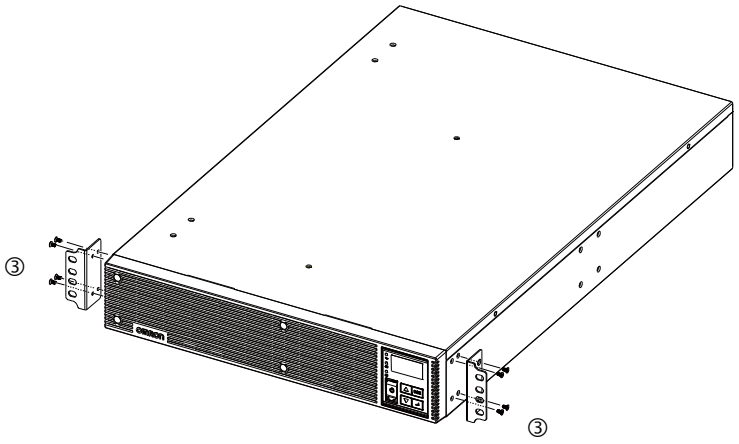
2. Securely fix the 12 mounting nuts for EIA rack (M5) onto the server rack. (①)



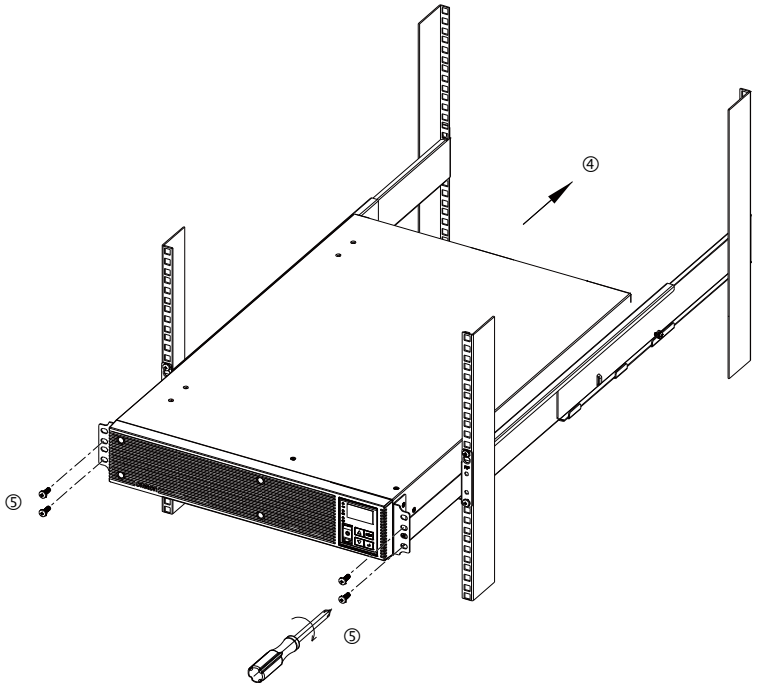
3. Fix the support angle (L) and support angle (R) onto the server rack using provided 8 fixing screws for EIA/JIS rack (M5). (②)



4. Securely fix the ear brackets on the right and left side faces of the UPS using the provided 8 ear bracket mounting flat-head screws (4 pcs x 2). (③)



5. Place the UPS on the support angles, push it in all the way to the back (④), and securely fix the ear brackets onto the server rack using the 4 provided EIA/JIS rack fixing screws (M5). (⑤)



6. After fixing, install the battery.
See “4-4 Replacing the battery” for the installation procedure.

2-2-2 Stationary installation

⚠ Caution

When moving the unit, lift it by 2 or more people. Be careful not to fall down, or drop this unit while moving.

- You may be injured if the product is dropped.

Install this unit only in the specified orientation.

- You may be injured if the product is toppled or dropped.
- If installed in an orientation other than the specified orientation, it is not possible to protect against battery leakage.
- When installing vertically, be sure to use the stand for vertical layout provided with the product.

Remove the battery when moving the unit.

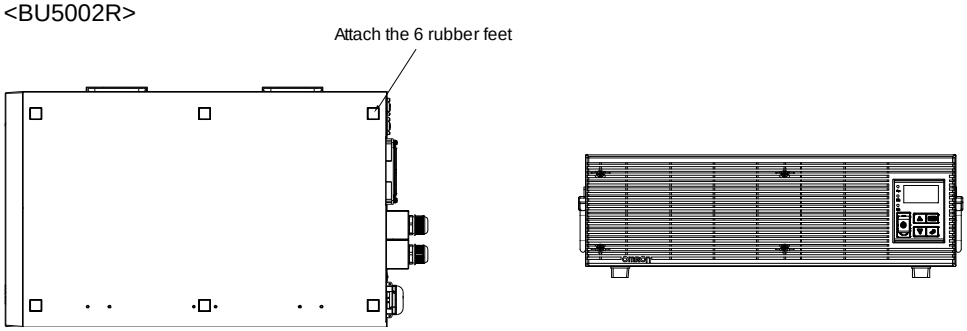
- If not removed, because of the heavy object, there is a risk of injury by dropping the product, or by the sheer weight of the product.

Perform installation only as shown in the figures below.

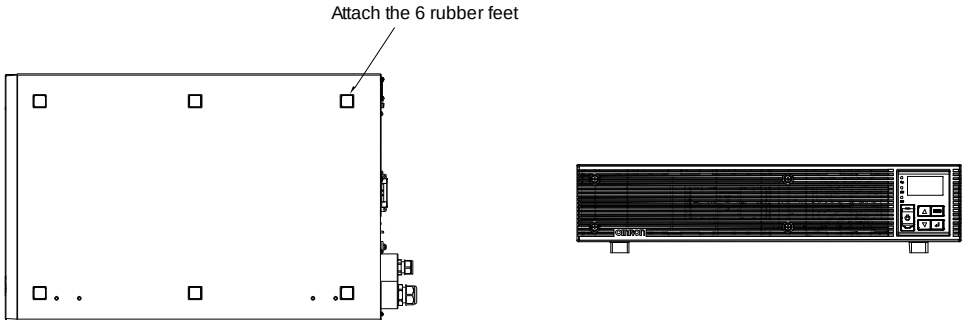
■ Horizontal installation

Attach the included rubber feet for horizontal installation to the specified positions at the bottom of the main unit, and install the unit horizontally. For stationary horizontal installation, make sure that this unit does not slide or fall.
When installing the rubber feet, first remove the battery from the main unit. At the time of shipment of the BU5002R, the UPS main unit and the battery are packaged separately, so the battery is not in the main unit.
See “4-4 Replacing the battery” for the procedure for removing and installing the battery.

<BU5002R>



<BU3002R/BU3002RH>



■ Vertical installation

Use the stands for vertical layout included with the product. If stands for vertical layout are not used, the UPS may fall down due to vibration, etc., which is dangerous.

● Items in the package used during vertical installation

Fittings for vertical layout	BU5002R	BU3002R BU3002RH
Stands for vertical layout	6	4
Screws for stand for vertical layout (M4)	12	8

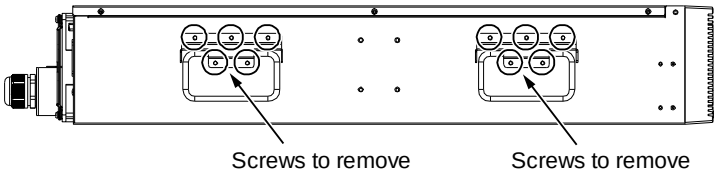
● Installation procedure

When installing in the vertical layout, first remove the battery from the main unit. At the time of shipment of the BU5002R, the UPS main unit and the battery are packaged separately, so the battery is not in the main unit.
See “4-4 Replacing the battery” for the procedure for removing and installing the battery.

<BU5002R>

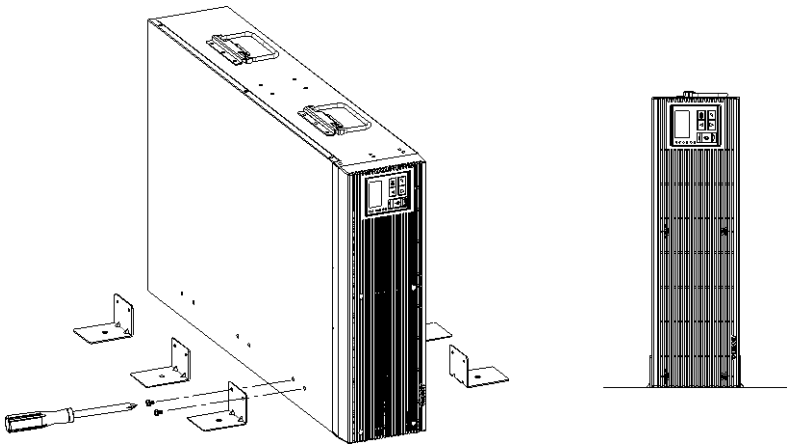
1. Remove the battery. See “4-4 Replacing the battery” for the procedure for removing the battery.
At the time of shipment, the UPS main unit and the battery are packaged separately, so the battery is not in the main unit.

2. Remove the 2 handles on the left side surface when viewed from the front using a screwdriver. Each handle is fastened by 5 screws.



3. Stand the UPS upright. See “2-2 Installation” for the installation orientation.
Be careful not to overturn the UPS without a battery because the center of gravity of the UPS is shifted upward.

4. Install the stands for vertical layout (6 in total) using the provided 12 screws at 3 positions on the right and left side faces. (See the figure below)
Also be sure to fix the stands for vertical layout to the floor surface with bolts. The hole diameter for fixing the stands for vertical layout to the floor surface is 8 mm. The bolts are to be provided by the customer.



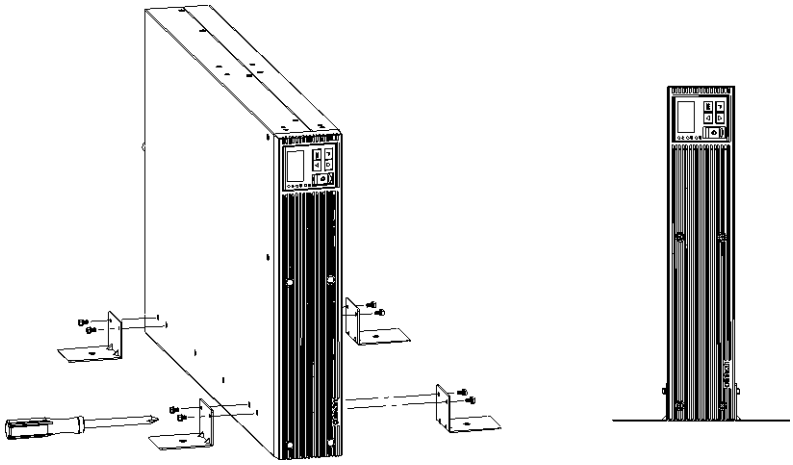
5. After fixing, install the battery. See “4-4 Replacing the battery” for the installation procedure.

<BU3002R/BU3002RH>

1. Remove the battery. See “4-4 Replacing the battery” for the procedure for removing the battery.

2. Stand the UPS upright. See “2-2 Installation” for the installation orientation.
Be careful not to overturn the UPS without a battery because the center of gravity of the UPS is shifted upward.

3. Install the stands for vertical layout (4 in total) using the provided 8 screws at 2 positions on the right and left side faces. (See the figure below)
Also be sure to fix the stands for vertical layout to the floor surface with bolts. The hole diameter for fixing the stands for vertical layout to the floor surface is 8 mm. The bolts are to be provided by the customer.



4. After fixing, install the battery. See “4-4 Replacing the battery” for the installation procedure.

2-3 Connecting the equipment

⚠ Caution

Do not connect devices with rated voltage other than 200/208/220/230/240/100 VAC.

- The rated output voltage of the unit is 200/208/220/230/240/100 VAC.
- There is a possibility of a breakdown of the connected device due to excess voltage.

When using in 100 V output mode, check that the output voltage is set to 100 V before turning on the power switch.

- When 100 V device is connected during output in 200 V mode, there is a risk of breakdown of the device or fire.
- The output voltage can be set from the LCD menu by [3. Settings] - [In/Out Settings] - [O/P Voltage].
- The upper limit of capacity changes in 100 V output mode.
  BU5002R: 2500VA/2250W
  BU3002R/BU3002RH: 1500VA/1350W
- In 100 V output mode, it is not possible to switch to bypass operation.
- In 100 V output mode, it is not possible to operate in Eco mode (commercial direct output).

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

- When the unit is set to “Eco mode” and a fault occurs on the device, operation is switched to direct commercial power, and the commercial power supply is provided to the connected device as it is.

Notes

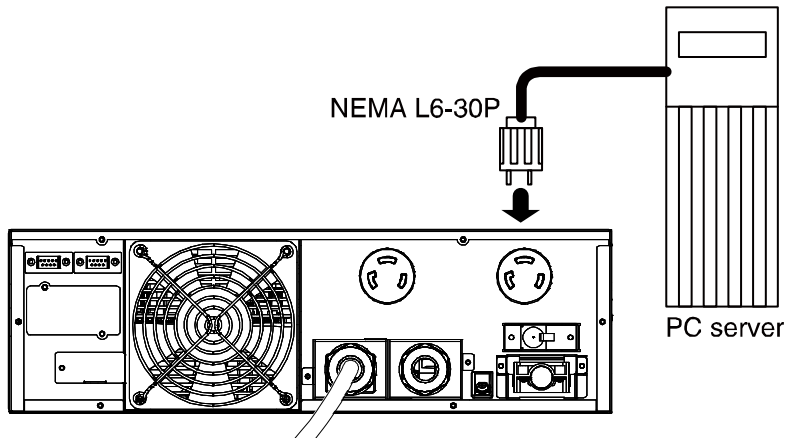
When the unit is used as a conforming product of UL standards, 100 V output cannot be used.

2-3-1 Connecting devices to the AC output (AC receptacle) (BU5002R only)

Connect devices you want to back up to the AC output receptacles of the UPS.

- If you need more output receptacles than those of the UPS, supply additional output receptacles.

<Example of connection for BU5002R>



2-3-2 Connecting a device to the AC output (AC receptacle) (BU3002R only)

Notes

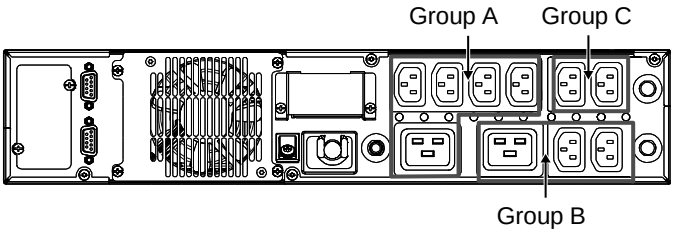
The value of the total capacities of the devices connected to the output receptacles must not exceed the rated output capacity of the BU3002R. If the overload fault display (E9) appears, reduce the connected devices.

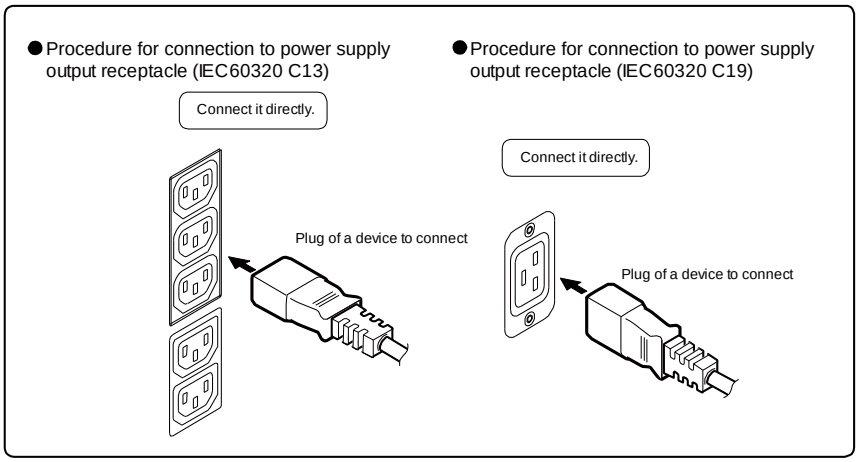
The BU3002R is equipped with multiple "C19" and "C13" outlets.
Use of the shutdown software enables the functions for individually controlling each “AC output” group.
Changes can also be made using the operation panel on the main unit.

1. Connect devices you want to back up to the AC output receptacles of the UPS.

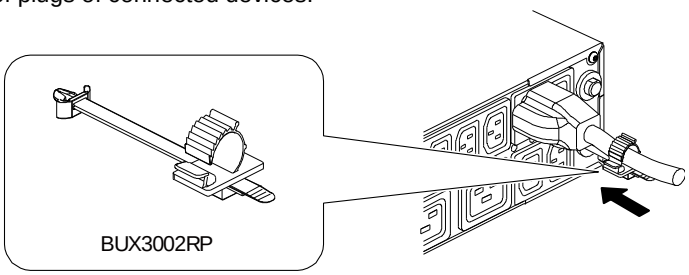
BU3002R (Rated value of output capacity: Max. 3000 VA/2700 W)

"AC output" group	Output receptacle
Group A	IEC60320 C-19: 1 IEC60320 C-13: 4
Group B	IEC60320 C-19: 1 IEC60320 C-13: 2
Group C	IEC60320 C-13: 2





The BUX3002RP (option) is available for the BU3002R as a clamp for preventing pullout of plugs of connected devices.

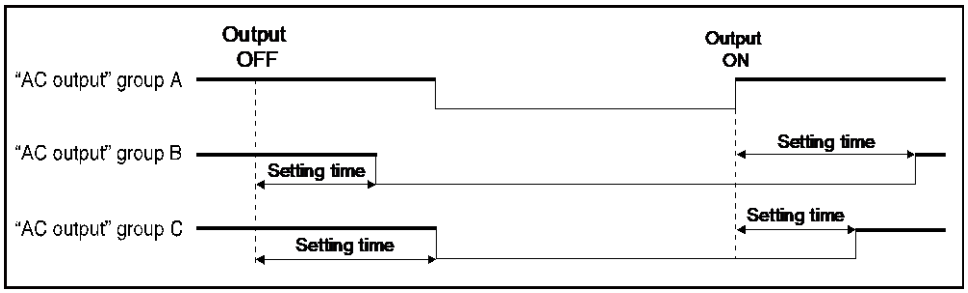


■ Group control of AC output

Use of the shutdown software enables this function.
The output receptacles of the UPS are divided into 3 groups: A, B, and C.

1. AC output group A
   Output starts simultaneously with start up.
2. AC output groups B and C
   - The output start times for AC output groups B and C are independent of AC output group A, so they can be delayed or set to precede the output stop time.
   - The output start/stop time control function is available when using “PowerAttendant Lite”, “PowerAct Pro”, “SimpleShutdownSoftware”, “Network Card”, or “SNMP/Web Card”.
   - Output ON/OFF can be controlled with the shutdown software while the UPS is operating.
   - The delay settings and ON/OFF control described here can be performed independently for AC output group B and AC output group C. Changes can also be made using the LCD settings on the main unit.

This function can be used to set the startup order of servers, peripheral devices, etc.
Also, the output receptacles can also be forcibly turned ON/OFF remotely



* At the time of shipment of the product, the setting time is set to 0 seconds.

The separate output overcurrent protection switches of group B and group C are activated to turn the switch off in the event of an excess current flowing. In this case, after removing the cause, press the switch that had tripped to cancel it.

2-3-3 Connecting a device to the AC output (terminal block) (BU5002R, BU3002R only)

Connect a device required for backup to the “AC output” terminal block of the UPS.

⚠ Warning

When fixing the wiring to the terminal block, use the prescribed round terminal, and after crimping with the prescribed amount of stripping, tighten with the prescribed torque.

- There is a risk of smoke generation and ignition due to defective contact if the prescribed round terminal or the amount of stripping are not used.
- There is a risk of smoke generation and ignition if a bare wire is used or a screw is loose.

⚠ Caution

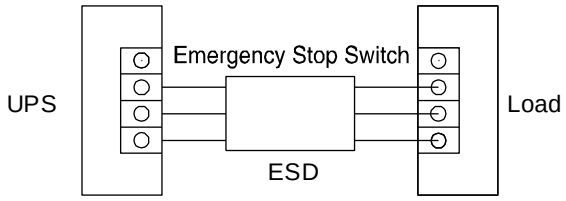
When using this unit, make sure to attach the output terminal block cover. In addition, do not turn on the “Power” switch when the cover is removed.

- If the “Power” switch is turned on, voltage is applied to the output terminal block, which may cause electric shock.
- When replacing a cable, make sure the to fix the cable with a clamp.

Notes

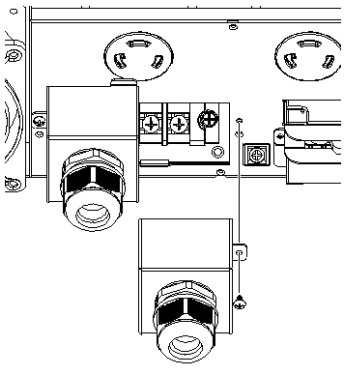
When connecting a device using an output terminal block, be sure to insert an emergency stop switch (ESD) between the output terminal block and the connected device.

- In case of an unforeseen fault, power supply to the connected device can be stopped by tripping the emergency stop switch.
- To prevent a fire, connect an emergency stop switch (ESD) rated 30 A or more to the BU5002R, and 20 A or more to the BU3002R/BU3002RH. (When this unit is used as a conforming product of UL standards, follow the National Electrical Code, and ANSI/NFPA 70)
- Arrange the emergency stop switch in a location that is easy to operate.

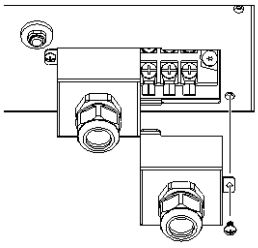


1. Remove 1 M3 screw and detach the terminal block cover.

<BU5002R>



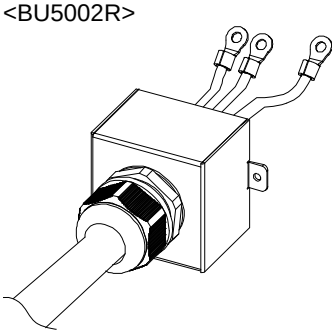
<BU3002RH>



2. There is a cap attached to the cable clamp of the terminal block cover, so remove the cap by pressing with a screwdriver or the like, to form a hole through which the wires can pass.
Pass the wires to be connected through the cable clamp hole on the terminal block cover. (See Figure 1)
If the wires are difficult to pass, turn the plastic part on the cable clamp counterclockwise to loosen it.
Crimp the specified round terminal onto each wire and tighten it using the screw on the terminal block. (See Figure 2)

Figure 1

<BU5002R>



<BU3002RH>

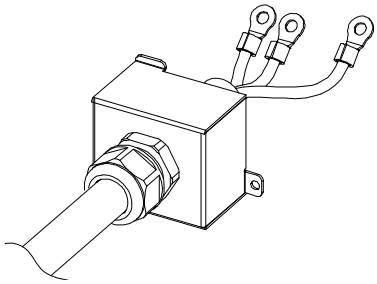
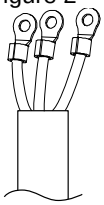


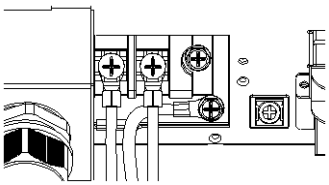
Figure 2



Crimp the round terminal onto the wire rod to be connected to the terminal block.
BU5002R: For M5 screw
BU3002RH: For M4 screw

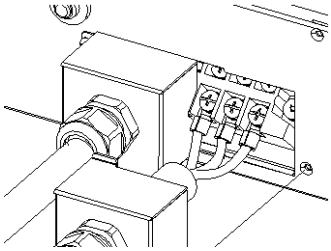
3. Loosen the screw on the terminal block using a screwdriver, insert the wire, and tighten the screw on the terminal block.
The wire to be connected to the G terminal should be longer than the wires to be connected to L1 and L2.
See Table 1 for the wire size to be used.

<BU5002R>



When installing the G terminal of the BU5002R, pass it below the L1 and L2 wires, and arrange the wiring horizontally.

<BU3002RH>



G terminal: Connect to earth wire
L1 terminal: Connect to line wire
L2 terminal: Connect to neutral wire

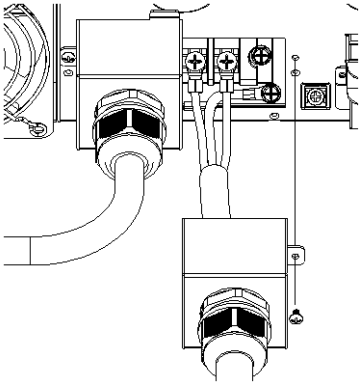
Table 1

	BU5002R	BU3002RH
Round terminal size	O.D.: Less than 12.7mm I.D.: M5	O.D.: Less than 9.6 mm I.D.: M4
Clamp recommended wiring external size	9 to 15 mm	7 to 12 mm
Tightening torque	2.0 N·m	1.2 N·m
Recommended cable size	3.5 mm^2 (AWG 12)	2 mm^2 (AWG 14)

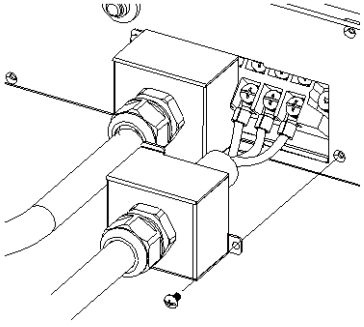
4. Attach the terminal block cover (with cable clamp) to the main unit.
Attach the cover after connecting the input cable.
For the procedure for attaching the input cable, see “2-4-2 Connecting to the AC input terminal block”.

Insert the tab on the left side of the terminal block cover into the slit of the input terminal block cover and tighten it into the hole on the right side of the terminal block cover using the M3 screw that has been removed.
Tighten the plastic part of the cable clamp and fix the wire.

<BU5002R>



<BU3002RH>



For the BU5002R, the BUX5002RH (option) that is compatible with wire diameters from 7 mm to 12 mm is available, and for the BU3002RH, the BUX3002RH (option) that is compatible with wire diameters from 9 mm to 15 mm is available.
See Table 2 for the recommended external wire size when using the optional products.

Table 2

	BUX5002RH	BUX3002RH
Recommended wiring outside diameter of clamp	7 to 12 mm	9 to 15 mm

2-3-4 Connecting to a computer

When using the shutdown software, or the Windows standard UPS service in serial communication via an RS232C port, use the connecting cable to connect the unit to the PC.

See also “5 Using the shutdown software” on page 114, “6 Contact signal” on page 115
* If you do not use the shutdown software and Contact Signal, this step is not required.

2-4 Connecting the AC input

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

⚠ Caution

Be sure to connect the AC input of the unit to the commercial power supply with the rated input voltage (200/208/220/230/240 VAC) and frequency 50/60 Hz.

- If connected to a commercial power supply with a different voltage or frequency, it could cause a fire.
- There is a risk of a breakdown of the unit.

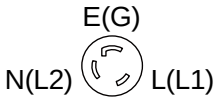
2-4-1 Connecting the AC input plug

⚠ Caution

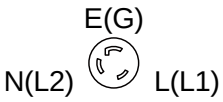
Be sure to insert the input plug into a grounded outlet.

- There is a risk of an electric shock.
- The AC input plug of the unit is wired as shown in the following figure.

BU5002R input plug (NEMA L6-30P)
(viewed from the pin direction)

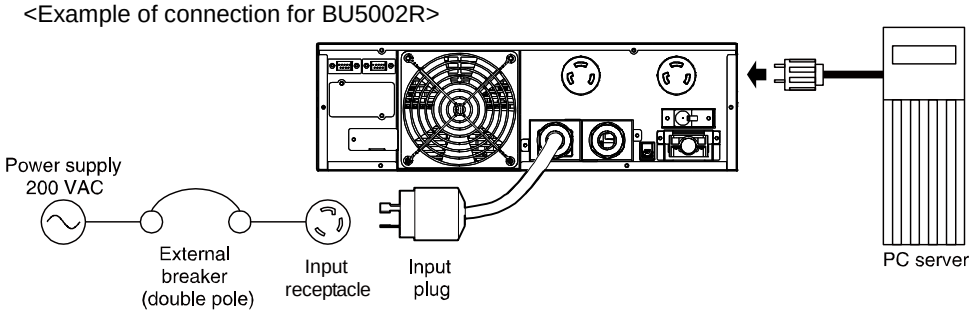


BU3002R input plug (NEMA L6-20P)
(viewed from the pin direction)

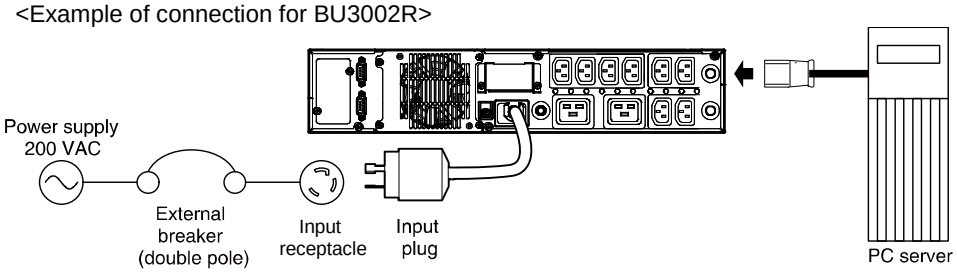


• For the input receptacle on the commercial power supply side, use the type for 30 A (NEMA L6-30R) or the type for 20 A (NEMA L6-20R).

<Example of connection for BU5002R>



<Example of connection for BU3002R>



- The unit was charged before shipment, but it may have self-discharged during shipment, resulting in a reduced backup time. We recommend charging the unit before use.
- You can perform "3-2 Checking the operation" on page 76 also before charging the battery.

2-4-2 Connecting to the AC input terminal block (BU5002R/BU3002RH)

⚠ Warning

Do not carry out any operations involving connection to the terminal block of the unit while the input plug is connected to the commercial power supply

- There is a risk of an electric shock.

When fixing the wiring to the terminal block, use the prescribed round terminal, and after crimping with the prescribed amount of stripping, tighten to the specified torque.

- There is a risk of smoke generation and ignition due to defective contact if the prescribed round terminal or the amount of stripping are not used.
- There is a risk of smoke generation and ignition if a bare wire is used or a screw is loose.

⚠ Caution

Connect the grounded phase of the AC input power supply to the G terminal (⏚) of the unit.

If either of the others are grounded apart from the grounded phase, connect the grounded phase to the L2 terminal of the unit.

- If connected differently, it may cause a breakdown of the connected device.

Connect the AC input terminal of the unit while the external breaker is turned off. Make sure to attach the input terminal block cover.

- There is a risk of an electric shock or electric leakage. Also, if the cable is not fixed with the cover, the terminal connection may be loosened by the cable's weight, which could cause a fire or smoke.

Notes

When connecting the AC input from a distribution board directly, consult with a specialist responsible for wiring.

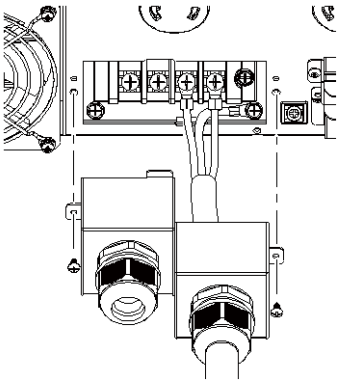
Insert a breaker (double-cutting type) between the unit and the commercial power supply, and arrange the breaker in a location where it can be operated easily.

When using BU5002R with the AC input plug that is connected at the time of shipment, use in 4660 VA/4200 W or less as the load of the connected devices. If using the unit with a higher capacity, prepare a cable which suit the capacity, and connect it to a terminal block.

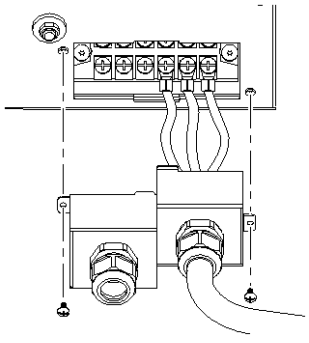
■ Connection procedure

1. Remove one M3 screw and detach the terminal block cover.

<BU5002R>



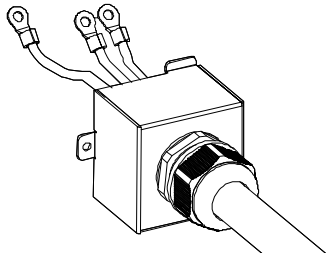
<BU3002RH>



2. There is a cap attached to the cable clamp of the terminal block cover, so remove the cap by pressing with a screwdriver or the like, to form a hole through which the wires can pass.
Pass the wires to be connected through the cable clamp hole on the terminal block cover. (See Figure 1)
If the wires are difficult to pass, turn the plastic part on the cable clamp counterclockwise to loosen it.
Crimp the specified round terminal onto each wire and tighten it using the screw on the terminal block. (See Figure 2)

Figure 1

<BU5002R>



<BU3002RH>

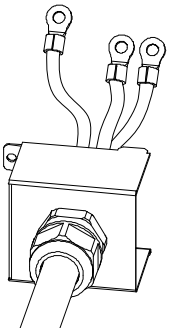
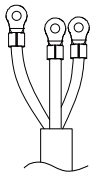


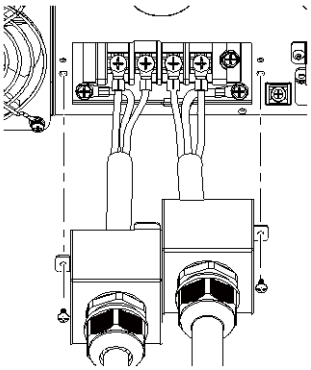
Figure 2



Crimp the round terminal onto the wire rod to be connected to the terminal block.
BU5002R: For M5 screw
BU3002RH: For M4 screw

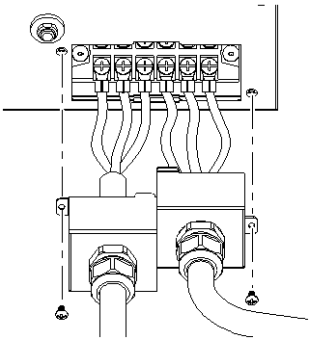
3. Loosen the screw on the terminal block using a screwdriver, insert the wire, and tighten the screw on the terminal block.
The wire to be connected to the G terminal should be longer than the wires to be connected to L1 and L2.
See Table 1 for the wire size to be used.

<BU5002R>



When installing the G terminal of the BU5002R, pass it below the L1 and L2 wires, and arrange the wiring horizontally.

<BU3002RH>



G terminal: Connect the ground wire
L1 terminal: Connect the line
L2 terminal: Connect the neutral line

Table 1

	BU5002R	BU3002RH
Round terminal size	O.D.: Less than 12.7mm I.D.: M5	O.D.: Less than 9.6 mm I.D.: M4
Recommended wiring outside diameter of clamp	9 to 15 mm	7 to 12 mm
Tightening torque	2.0 N·m	1.2 N·m
Recommended cable size	3.5 mm^2 (AWG 12)	2 mm^2 (AWG 14)

4. Tighten one of the removed M3 screws into the hole on the left side of the terminal block cover. Tighten the plastic part of the cable clamp and fix the wire. Then fasten the terminal block cover of the output cable to the main unit.

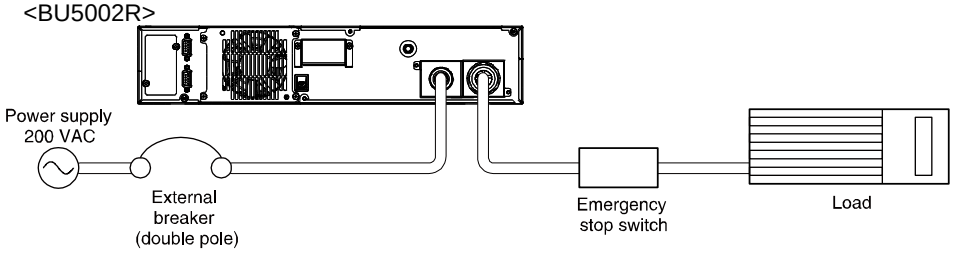
For the BU5002R, the BUX5002RH (option) that is compatible with wire diameters from 7 mm to 12 mm is available, and for the BU3002RH, the BUX3002RH (option) that is compatible with wire diameters from 9 mm to 15 mm is available. See Table 2 for the recommended external wire size when using the optional products.

Table 2

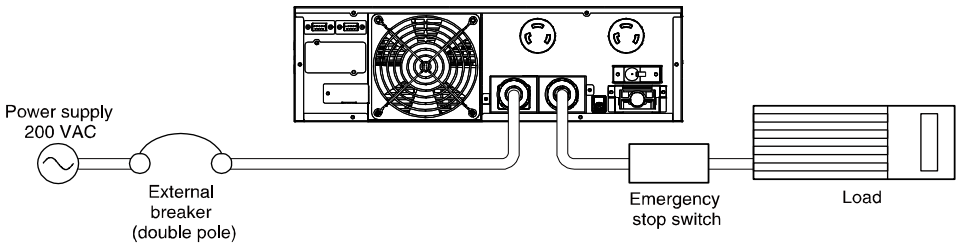
	BUX5002RH	BUX3002RH
Recommended wiring outside diameter of clamp	7 to 12 mm	9 to 15 mm

• Connection example

<BU5002R>



<BU3002RH>



- The unit was charged before shipment, but it may have self-discharged during shipment, resulting in a reduced backup time. We recommend charging the unit before use.
- The GND terminal in the rear of the UPS is connected to the G terminal (⏚).

2-5 Connecting the expansion battery unit

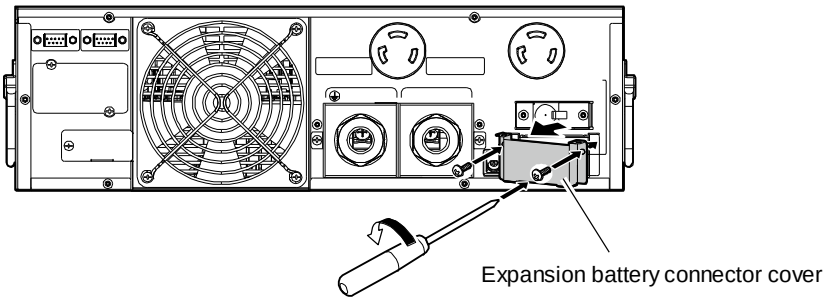
⚠ Caution

Do not connect 4 or more expansion battery units to the unit.

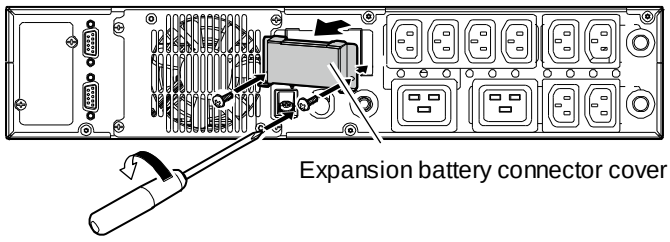
- Up to 3 expansion battery units can be connected to the unit.
- There is a risk of smoke generation and ignition if 4 or more are connected.

1. Detach the battery expansion connector cover on the back of the UPS unit.
Remove the 2 screws on the battery expansion connector cover when detaching.

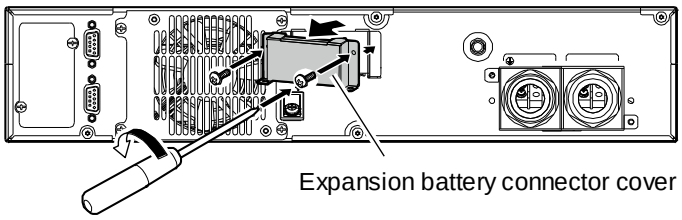
• BU5002R



• BU3002R

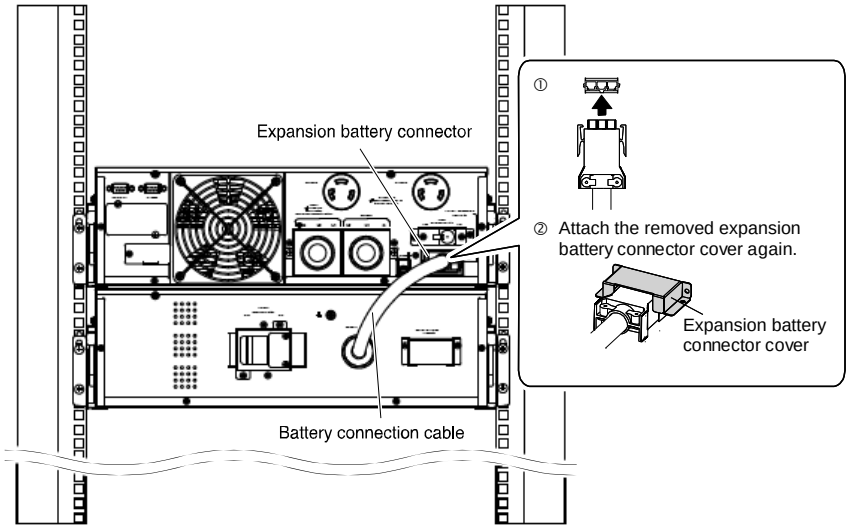


• BU3002RH

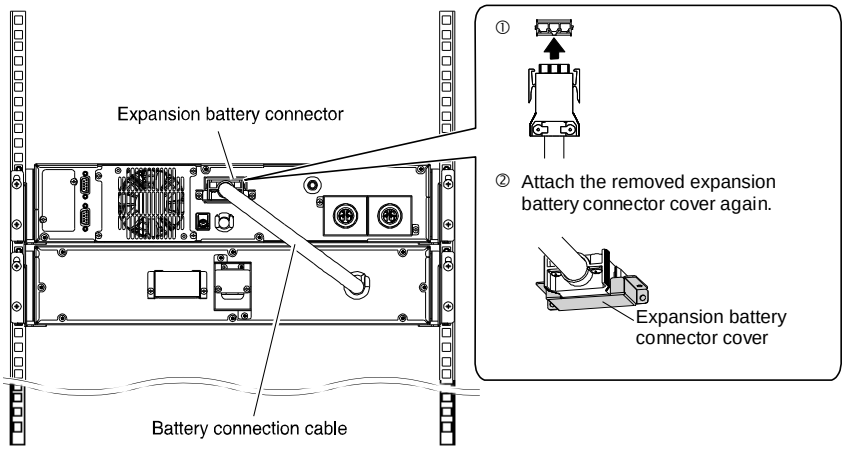


2. Connect the connecting cable of the expansion battery unit to the battery expansion connector on the back of the UPS unit (①). Then, fix the connector cover that has been removed (②).

• BU5002R
Expansion battery unit: BUM5002R



• BU3002R, BU3002RH
Expansion battery unit: BUM3002R

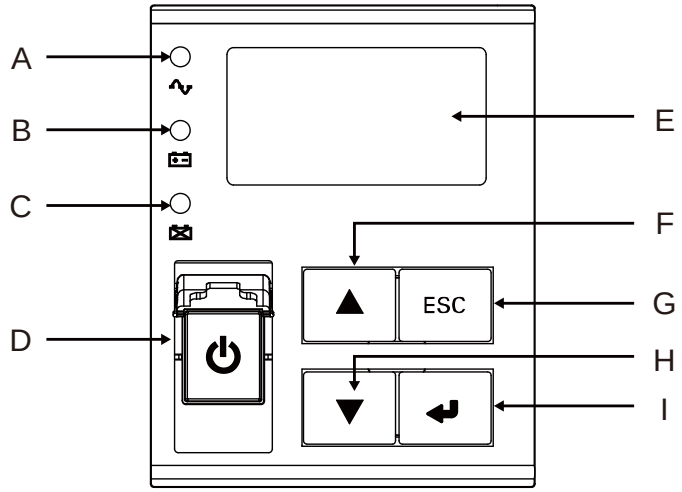


3. Turn the “Input overcurrent protection” switch on the back of the UPS unit and “Overcurrent protection” switch on the back of the expansion battery unit to the “ON” position. In factory default setting, the overcurrent protection switch has a cover.
It is necessary to remove the cover in order to turn the switch ON.
After turning the switch ON, either store the cover so that it is not lost, or install the cover on to the UPS again with the switch turned ON.

3 Checking and starting the operation

3-1 Names and functions of each part of the operation and display sections

3-1-1 Name of each part

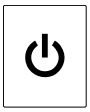
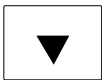


A: "Power supply output" LED
B: "Battery mode" LED
C: "Battery replacement" LED
D: "Power switch" cover/ "Power" switch
E: LCD
F: "UP" switch
G: "ESC" switch
H: "Down" switch
I: "Enter" switch

3-1-2 Meaning of each LED indicator

Ref.	Symbol	Color	Name	Status	
				ON	OFF
A		Green	Power supply output LED	The power supply output is ON	The power supply output is OFF
B		Orange	Battery mode LED	In backup operation with battery	Not in backup operation
C		Red	Battery replacement LED	Battery replacement required due to battery deterioration or end of life of the battery or UPS	Battery replacement not required

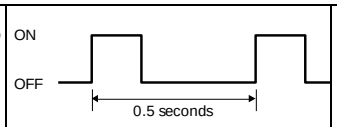
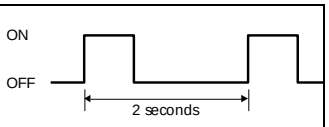
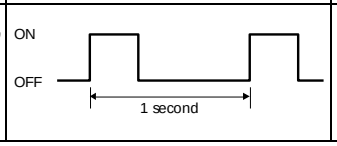
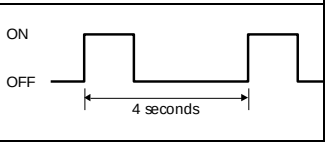
3-1-3 Switch

Ref.	Shape	Name	Description
D		Power switch	ON: Hold this switch down for 3 seconds or longer to start outputting power several seconds later. OFF: When the switch is turned on, hold it down for 3 seconds or longer to stop outputting power. Note: • As long as the AC input plug is connected to a commercial power supply, whether the power switch is turned ON or OFF, the battery is charged.
F		Up switch	Move the selected cursor upwards or increase the value.
H		Down switch	Move the selected cursor downward or decrease the value.
G		ESC switch	• Return to the menu • Cancel • Stop the buzzer sound (Hold down for 0.5 seconds or longer)
I		Enter switch	Select the menu item or determine the value.

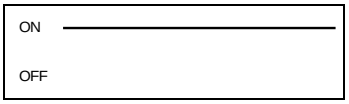
3-1-4 Buzzer sound

■ Buzzer sound type

• Intermittent

Intermittent, at intervals of 0.5 seconds		Intermittent, at intervals of 2 seconds	
Intermittent, at intervals of 1 seconds		Intermittent, at intervals of 4 seconds	

• Continuous

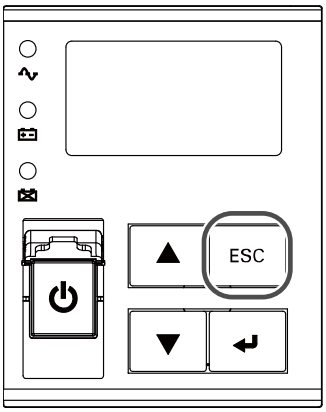


* For the operating condition of each buzzer sound, see “3-1-7 How to interpret icons, LED, and buzzer sounds” (page 66)

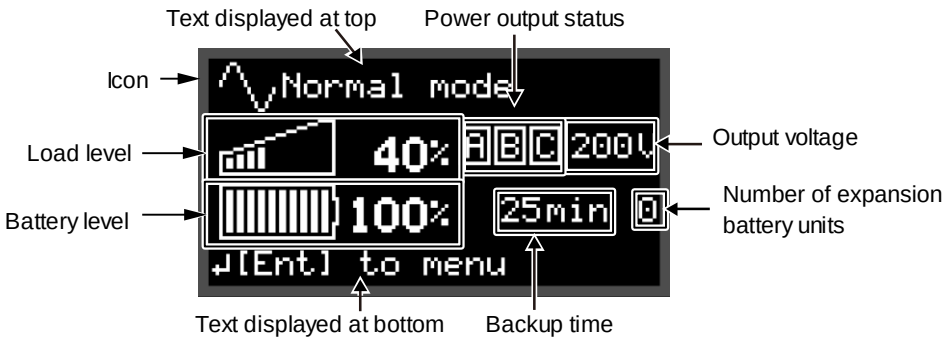
See also For the condition for sounding the buzzer, you can set to OFF during backup operation or Always OFF. In the LCD menu, set the condition by selecting [3:Settings] - [Local Settings] - [Audible Alarm].

■ To pause the buzzer sound

When the buzzer is sounding, hold down the “ESC” switch for 0.5 seconds or longer to pause the buzzer sound.



3-1-5 Status screen on the LCD



■ Icon

An icon representing the status of the UPS is displayed. See “3-1-7 How to interpret icons, LED, and buzzer sounds” (page 66).

■ Text displayed on top/bottom

Messages indicating the status or prompting user action are displayed in conjunction with the icons.

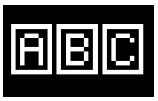
■ Load level

The load level gauge displays the connected capacity of the connected devices as a percentage.
The maximum connected capacity is shown as 100%.

BU5002R: 5000 VA/4500 W indicated as 100%
BU3002R: 3000 VA/2700 W indicated as 100%
BU3002RH: 3000 VA/2700 W indicated as 100%

■ Output group status (BU3002R only)

When the output group A, B, and C are ON, A, B, and C are displayed within boxes.



■ Output voltage

The set output voltage is displayed.

■ Battery level

The battery level gauge indicates the remaining battery capacity as a percentage.

■ Backup time

Displays the period of time for which the UPS can continue its output using power supplied from the battery in minutes.

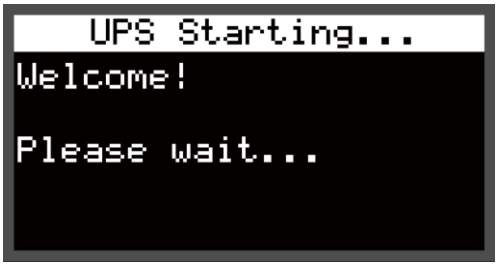
■ Number of expansion battery units

The number of expansion battery units connected to the UPS is displayed.

UPS	BU5002R	BU3002R	BU3002RH
Expansion battery unit	BUM5002R	BUM3002R	
Number that can be expanded	Up to 3 units		

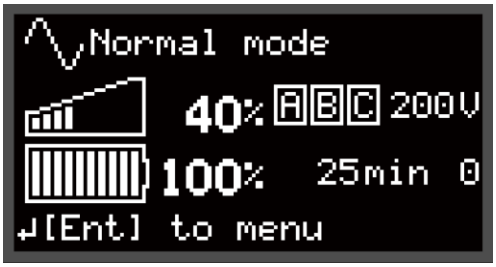
3-1-6 Status screen example

• UPS starting

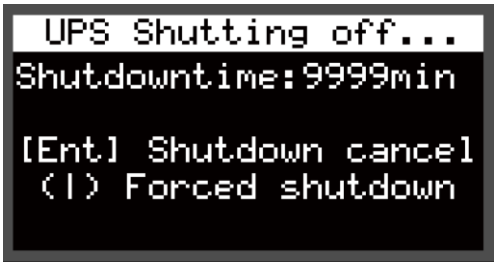


• Standby screen

• Normal operation screen



• Shutting down



3-1-7 How to interpret icons, LED, and buzzer sounds

■ In normal operation

○: ON, ●: OFF

UPS status	Icon	Symbol			Buzzer	Output	Charge	Text displayed on top	Description	Solution
Standby mode		●	●	●	None	OFF	ON	Standby mode	The “Power” switch is turned OFF. Power supply output is stopped.	-
Normal operation mode		○	●	●	None	ON	ON	Normal mode	The “Power” switch is turned ON. The UPS is in normal operation.	-
Eco mode		○	●	●	None	ON	ON	ECO mode	The UPS is operating normally in ECO mode.	-

■ In test operation

○: ON, ●: OFF

UPS status	Icon	Symbol			Buzzer	Output	Charge	Text displayed on top	Description	Solution
Test mode		○	○	●	None	ON	OFF/discharging	Test mode	A self-diagnostic test is in process.	-

■ During a power outage

○: ON, ●: OFF

UPS status	Icon	Symbol			Buzzer	Output	Charge	Text displayed on top	Description	Solution
		∿								
Battery mode		○	○	●	Intermittent, at intervals of 4 seconds	ON	OFF/ Discharging	Battery mode	The UPS is in backup operation due to a power outage or AC input error. Output stops if backup operation is continuously performed.	Stop the connected devices in use by shutting them down (end processing).
Battery low		○	○	●	Intermittent, at intervals of 1 seconds	ON	OFF/ Discharging	Battery low	The battery level is low. Output stops soon.	Stop the connected devices in use by shutting them down (end processing).
Battery empty		●	●	●	None	OFF	-	bE	Output stopped due to low battery (displayed for a few seconds).	Charge the battery.

■ Operation while the UPS is in use or AC input error

○: ON, ●: OFF

UPS status	Icon	Symbol			Buzzer	Output	Charge	Text displayed on top	Description	Solution
UPS event		●	●	●	None	OFF	ON	Stand by Schedule	The UPS is standing by for scheduled startup.	-
								Stand by BS signal	The UPS is stopped by BS signal, and standing by for startup.	-
								Stand by RemoteOFF	The UPS is stopped by remote signal, and standing by for startup.	-
								Stand by Bat.level	The UPS cannot start because the battery level is insufficient.	-
								AC I/P abnormal -VH	The AC input voltage is high.	Use the UPS within the range of AC input voltage and frequency written in the specifications. Note: You can check the input voltage by selecting "1. Measurements" - "Input/Output Meter" in the LCD menu.
								AC I/P abnormal -VL	The AC input voltage is low.	
								AC I/P abnormal -FH	The AC input frequency is high.	
								AC I/P abnormal -FL	The AC input frequency is low.	

■ Battery error

○: ON, ●: OFF

UPS status	Icon	Symbol			Buzzer	Output	Charge	Text displayed on top	Description	Solution
Battery deterioration		○ (Note 1)	●	○	Intermittent, at intervals of 2 seconds	ON	ON or discharging	Fault-E10	The self-diagnostic test result indicates battery deterioration.	Replace the battery.
Battery end of life		○ (Note 1)	○ (Note 1)	○	Intermittent, at intervals of 2 seconds	ON (Note 1)		Fault-E10	The battery reached end of life.	
Battery temperature error		○ (Note 1)	●	●	Intermittent, at intervals of 4 seconds	ON (Note 1)	Charging is stopped	Fault-E12	Charging is stopped because the battery temperature is high.	Check that the ambient temperature of the UPS is 40°C or less.
Battery disconnection		○ (Note 1)	○ (Note 1)	○ (Note 1)	Intermittent, at intervals of 2 seconds	ON (Note 1)	Charging is stopped	Fault-E10	The battery is not connected.	Check the battery cable connection.

Note 1: Varies depending on the operational status.

■ Errors other than the battery errors

○: ON, ●: OFF

UPS status	Icon	Symbol			Buzzer	Output	Charge	Text displayed on top	Description	Solution
Over load		○ (Note 1)	○ (Note 1)	●	Intermittent, at intervals of 0.5 seconds	ON or OFF	ON or OFF	Fault-E9	The load of the connected devices exceeds the rated capacity. If the operation of UPS is continued, it is switched to bypass operation in the case of normal operation, and output stops in the case of backup operation.	Turn off the power switches of all the devices connected to the UPS, and after reducing the connected devices, turn on the “Power” switches of the UPS and the connected devices. Note: The load amount can be checked from the LCD Menu by “1. Measurements”-“Load Meter”
		●	●	●	Continuous	OFF	OFF	Fault-EO	There is a fault due to overload, so output has stopped.	
Output short circuit		○ (Note 1)	○ (Note 1)	●	Continuous	OFF	ON	Fault-ES	Output has stopped due to a short circuit on the connected device side or a major connection capacity overload.	Check whether a short circuit is occurring on the AC input of the connected device, or the connected capacity is exceeding the rated capacity.
Output voltage high		○ (Note 1)	○ (Note 1)	●	Continuous	ON or OFF	ON or Discharging	Fault-E1	The output voltage is high, and thus if the operation of UPS is continued, it is switched to bypass operation in the case of normal operation, and output stops in the case of backup operation.	Turn off the power switches of all the devices connected to the UPS, and turn on the power switch of the UPS only. If the displayed content does not change, the UPS is faulty. Contact the shop of purchase. Note: The output voltage can be checked from the LCD Menu by “1. Measurements”-“Input/Output Meter”. The battery voltage can be checked by “1. Measurements” - “Battery Meter”.
Output voltage low		○ (Note 1)	○ (Note 1)	●	Continuous	ON or OFF	ON or Discharging	Fault-E2	The output voltage is low, so if continued in normal operation, it will change to bypass operation, and if in backup operation output will stop.	
Battery voltage high		○ (Note 1)	○ (Note 1)	●	Continuous	ON or OFF	ON or Discharging	Fault-E3	The battery charging voltage is high, and thus if the operation of UPS is continued, it is switched to bypass operation in the case of normal operation, and output stops in the case of backup operation.	
Battery voltage low		○ (Note 1)	○ (Note 1)	●	Continuous	ON or OFF	ON or Discharging	Fault-E4	The battery charging voltage is low, so if continued in normal operation, it will change to bypass operation, and if in backup operation output will stop.	

○: ON, ●: OFF

UPS status	Icon	Symbol			Buzzer	Output	Charge	Text displayed on top	Description	Solution
Internal temperature fault		○ (Note 1)	○ (Note 1)	●	Continuous	ON or OFF	ON or Discharging	Fault-E6	The internal temperature is abnormal, and thus if the operation of UPS is continued, it is switched to bypass operation in the case of normal operation, and output stops in the case of backup operation.	Check that the ambient temperature of the UPS is 40°C or less.
Breakdown of the UPS		●	●	●	Continuous	ON or OFF	ON or Discharging	Fault-E7	A breakdown of the UPS has occurred.	Turn ON only the power switch again. If the displayed content does not change, the UPS is faulty. Contact the shop of purchase.
Fan fault		○ (Note 1)	○ (Note 1)	●	Intermittent, at intervals of 0.5 seconds	ON or OFF	ON or Discharging	Fault-E8	There is a fault in the front suction fan or rear cooling fan, and thus if the operation of UPS is continued, it is switched to bypass operation in the case of normal operation, and output stops in the case of backup operation.	Check that there is nothing obstructing rotation of the fan. If the rear fan is not rotating, replace the fan. If the front fan is not rotating, the UPS is faulty. Contact the shop of purchase.
UPS life		○ (Note 1)	○ (Note 1)	●	Intermittent, at intervals of 0.2 seconds	ON or OFF	ON or Discharging	Fault-E13	The life of the UPS has expired.	Replace the UPS.

○: ON, ●: OFF

UPS status	Icon	Symbol			Buzzer	Output	Charge	Text displayed on top	Description	Solution
		∿	🔋	⊠						
Charging system failure	⚠	○ (Note 1)	●	●	Continuous	ON	Charge stop	Fault-E17	A failure occurred on the battery charging system.	Turn ON only the power switch again. If the displayed content does not change, the UPS is faulty. Contact the shop of purchase.
Control circuit fault	⚠	○ (Note 1)	○ (Note 1)	●	Intermittent, at intervals of 0.5 seconds	ON or OFF	ON or discharging	Fault-E20	A fault in the internal circuit of the UPS has been detected.	Operation continues but the UPS is faulty. Contact the shop of purchase.
Bypass mode	BYP	○	●	●	Depending on the failure conditions	ON	OFF	Bypass mode	Commercial power is being output as-is in bypass mode.	Refer to the message displayed at the bottom.

Note 1: Varies depending on the operational status.

■ UPS failure details

Text displayed on top	Failure details	Solution
Fault-EO	Overload stop There is a fault due to an overload. If the UPS is in normal operation, it is switched to bypass operation, and if the load increases further, the output stops. If the UPS is in backup operation, the output stops.	Turn off the power switches of all the devices connected to the UPS, and after reducing the connected devices, turn on the power switches of the UPS and the connected devices.
Fault-ES	Output short circuit Output has stopped due to an output short circuit on the connected device side or a major connection capacity overload.	Check whether a short circuit is occurring on the AC input of the connected device, or the connected capacity is exceeding the rated capacity.
Fault-E1	Output overvoltage Due to an error in the output voltage (overvoltage), the UPS shifts to bypass operation when in normal operation, and stops outputting power when in backup operation. (Note 1)	Turn off the power switches of all the devices connected to the UPS, and turn on the power switch of the UPS only. If the displayed content does not change, the UPS is faulty. Contact the shop of purchase. Note: The output voltage can be checked from the LCD Menu by “1. Measurements”-“Input/Output Meter”. The battery voltage can be checked by “1. Measurements” - “Battery Meter”.
Fault-E2	Output undervoltage Due to an error in the output voltage (undervoltage), the UPS shifts to bypass operation when in normal operation, and stops outputting power when in backup operation. (Note 1)	
Fault-E3	Battery overvoltage Due to an error in the battery charging voltage (overvoltage), the UPS shifts to bypass operation when in normal operation, and stops outputting power when in backup operation. (Note 1)	
Fault-E4	Battery undervoltage Due to an error in the battery charging voltage (undervoltage), the UPS shifts to bypass operation when in normal operation, and stops outputting power when in backup operation. (Note 1)	

Text displayed on top	Failure details	Solution
Fault-E6	Abnormal internal temperature Due to an abnormal internal temperature, the UPS shifts to bypass operation when in normal operation, and stops outputting power when in backup operation. (Note 1)	Check that the ambient temperature of the UPS is 40°C or less. If it is not used in a high temperature environment, the UPS is faulty. Contact the shop of purchase.
Fault-E7	Bus capacitor fault A breakdown of an internal component or internal circuit has been detected. The UPS shifts to bypass operation when in normal operation, and stops outputting power when in backup operation. If in backup operation, output will stop.	The UPS is faulty, so contact the shop of purchase.
Fault-E8	FAN fault Due to a fault in the front suction fan or rear cooling fan, the UPS shifts to bypass operation when in normal operation, and stops outputting power when in backup operation. (Note 1)	Check that there is nothing obstructing rotation of the fan. If the rear fan is not rotating, replace the fan. If the front fan is not rotating, the UPS is faulty. Contact the shop of purchase.
Fault-E9	Overload fault The load of the connected device is exceeding the rated capacity. The UPS shifts to bypass operation when this status continues for 5 seconds while the UPS is in normal operation. The UPS stops outputting power when this status continues for 30 seconds while the UPS is in backup operation.	Turn off the power switches of the UPS and all the devices connected to the UPS, and after reducing the connected devices, turn on the power switches of the UPS and the connected devices.
Fault-E10	Battery fault Either battery deterioration, end of battery life, or battery disconnection have been detected.	If “Connect Battery” is displayed at the bottom of the LCD, check whether the battery is properly connected. If the displayed message is different, or if the battery is properly connected, replace the battery.
Fault-E12	Battery temperature fault An abnormal battery temperature was detected. The UPS shifts to bypass operation when in normal operation, and stops outputting power when in backup operation.	Wait until the battery temperature drops. When it returns to the normal temperature, the UPS will return to the normal operation state. If the status does not recover, the UPS is faulty, so contact the shop of purchase.
Fault-E13	UPS life The life of the product has expired.	Replace the UPS.
Fault-E17	Charging system failure A failure occurred on the battery charging system. The UPS shifts to bypass operation when in normal operation. (This fault is not detected during backup operation.)	Turn ON only the power switch again. If the displayed content does not change, the UPS is faulty. Contact the shop of purchase.
Fault-E20	Internal circuit fault A breakdown of an internal component or internal circuit has been detected. The symptoms when this fault occurs vary depending on the cause, so check the methods of resolution on the right.	Operation continues but the UPS is faulty. Contact the shop of purchase.
Bypass mode	Outputting in bypass mode Indicates that the UPS is in commercial power bypass operation to continue the output after failure or overload has occurred.	Messages about the occurring fault and about the bypass mode are displayed alternately. Since messages vary depending on which condition caused the UPS to switch to bypass mode, refer to the solution of the indicated fault.

Note 1: Commercial power is directly supplied during bypass mode.
If the UPS cannot switch to the bypass mode, or if a power outage has occurred while in bypass operation (AC input OFF), the LCD may display 2 types of message at maximum.

3-1-8 Text displayed at bottom

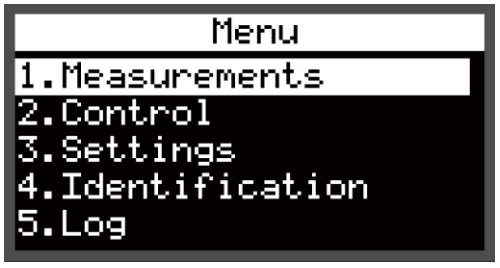
Refer to the messages which are displayed on the bottom of the LCD in accordance with the status of the UPS.

3-1-9 Changing the language setting

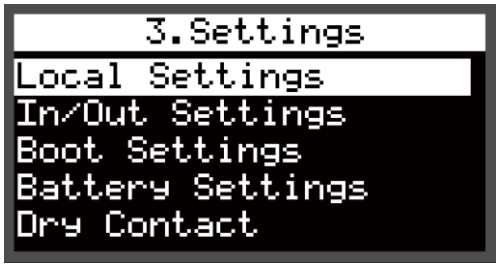
To change the language setting from Japanese to English with the "Standard" menu type, for example, follow the procedure below.

1. Connect the AC input cable to the power outlet, and press the ↵ switch.

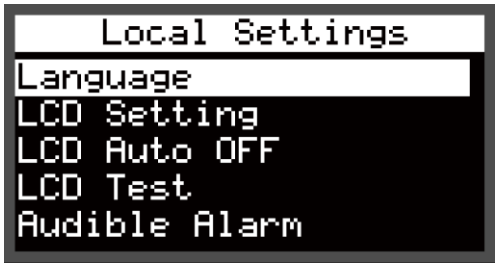
2. Select [3.Settings], and press the ↵ switch.



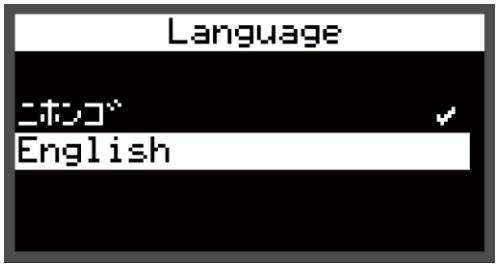
3. Select [Local Settings], and press the ↵ switch.



4. Select [Language], and press the ↵ switch.



5. Select [English], and press the ↵ switch.



6. Press the [ESC] switch, and check that the language has changed.

3-1-10 Calendar settings

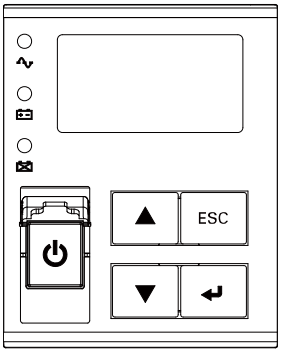
At the time of shipment of the BU5002R, the main unit and the battery were packaged separately, so the internal clock is not set.
Also with the BU5002R/BU3002R/BU3002RH, when the battery is replaced with no AC input, likewise it becomes unset. Set the internal clock date and time from the LCD menu by [3.Settings] - [Local Settings] - [Calendar Setting].
Set the items at which the cursor is blinking using the ▲ switch or the ▼ switch, and confirm with the ↵ switch. When an item is confirmed the cursor changes from blinking to lit, so go to another setting item using the ▲ switch and the ▼ switch, and make the cursor blink at the setting item using the ↵ switch.
After completion of the settings for all the items in the same way, press the “ESC” switch to return to the menu.

3-2 Checking the operation

After connection of the UPS has been completed, check that backup operation is being carried out normally using the following procedure.

1. Hold down the “Power” switch of the UPS for 3 seconds or more to turn on the power.
The buzzer sounds, and a self-diagnosis test start automatically.

2. When the self-diagnosis test has been completed, operation is switched to commercial power supply, and the display status changes as follows.

Icon	Description	
	The “Power” switch is in “ON” status. The UPS is operating normally.	

See also When the battery voltage is low, the self-diagnosis test is not carried out, and output immediately starts with commercial electrical power.

3. Activate all connected devices (including the devices connected to the service outlet of the PC).
However, conduct measurement under a condition in which no problem occurs even if the power supply of the connected device stops during the process.

See also The UPS is shipped fully charged, but the backup time may be shortened due to self-discharge as a result of long-term storage, so it is recommended to charge the UPS before use.

4. Check if the status of the LCD display and buzzer is same as follows.

Icon	
Buzzer sound	None
“Power output” receptacle	Electrical power is output (connected device is being supplied with electricity)

If the status is same → Operation is normal. Proceed to the procedure (5).
If the status is different → Operation is abnormal. Take an appropriate measure according to “3-1-7 How to interpret icons, LED, and buzzer sounds” (page 65) before proceeding to the next step.

5. Unplug the “AC input” plug of the UPS from the power outlet (commercial power supply).
Operation switches to the backup operation status.

6. Check the status of the LCD display and buzzer while in the backup operation status.
Is the status same as one of the following?

Icon	Buzzer	Output	Description
	Intermittent, 4 second intervals	ON	In backup mode due to a power outage or an AC input fault. Output stops if backup operation is continued.
	Intermittent, 1 second intervals	ON	In backup mode due to a power outage or an AC input fault. The residual battery capacity is low, so output will stop soon.
	None	OFF	The residual capacity of the battery has been depleted, so output has stopped.

The status does not match anything shown in (6)

→ There is a fault. Check the status of the display and buzzer, and hold down the "Power" switch of the UPS for 3 seconds or more to turn off the power.

- After applying the measures in accordance with "3-1-7 How to interpret icons, LED, and buzzer sounds" (page 65), perform the operation again from the step (1).
- If the UPS and the connected devices are stopped with no backup, the battery may be insufficiently charged. Connect the "AC input" plug to the commercial power supply, charge the battery sufficiently, and repeat the operation again from the step (5).
- If the problem still persists even after trying those 2 solutions above, contact the shop of purchase.

See also The buzzer ON/OFF can be set from the LCD menu by [3.Settings] - [Local Settings] - [Audible Alarm].

7. Connect the "AC input" plug again into the commercial power supply.
The status display returns to the original status, and the buzzer sound stops (the status becomes as follows).

Icon	Description
	The "Power" switch is in ON status. The UPS is operating normally.

This completes the operation checks.

This completes all of the installation and connection.

3-3 Basic operations including running and stopping the UPS

3-3-1 How to start/stop the UPS operation

See “Warnings (during use)” and “Cautions (during use)” in “Safety precautions” at the beginning of this instruction manual for precautions when using the UPS, including when starting or stopping the UPS operation.

■ Action when starting operation

1. Connect the UPS to the commercial power supply while the “Power” switch is in “OFF” status.

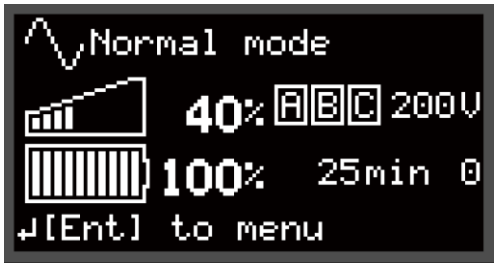
When the commercial power is supplied to the UPS, the icon becomes “⏻”.
Power supply output stops, and the battery charge starts automatically.
The following standby screen is displayed on the LCD screen.
Standby screen

2. Hold down the “Power” switch of the UPS for 3 seconds or more.
Power supply output starts after several seconds.

The icon becomes “<🔍>”, the operation mode changes to backup operation and the self-diagnosis test is automatically executed for 10 seconds.

See also When the battery voltage is low, the self-diagnosis test is not carried out. The self-diagnosis test starts automatically after the battery is charged.

3. If the self-diagnosis test is completed, the operation status becomes normal as shown below.
If the self-diagnosis test has not been executed, the operation status immediately becomes normal as shown below.
Normal operation status (normal mode window)



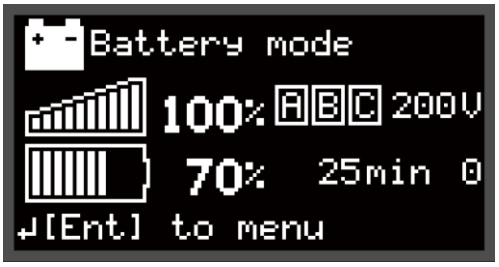
■ Actions during operation

There is no problem if the “Power” switch of the UPS remains on (operating status), or if it is turned off every time the connected systems are stopped. Operation can be performed in whichever way.
It is recommended to turn off the power switches of the connected devices which are not used for a long time.
The battery can be charged by connecting the “AC input” plug of the UPS to the commercial power.

■ Actions when power outage has occurred

When a power outage or an input power fault occurs, operation is automatically switched to back up operation, and power output continues using electrical power from the battery (this is referred to as “backup operation”).
During backup operation, the screen becomes the battery mode as follows.

Backup operation state (battery mode screen)



Backup operation is notified with the following status display and intermittent buzzer sound.

Icon	Buzzer	Output	Charge	Description	Solution
	Intermittent, 4 second intervals	ON	OFF Discharging	The UPS is in backup operation due to a power outage or AC input error. If this backup operation is continued, the output stops when the battery residual capacity has been depleted.	Shut down and stop the connected devices that are in use (carry out the termination process). Charge the battery.
	Intermittent, 1 second intervals	ON	OFF Discharging		
	None	OFF	OFF Discharging	The residual capacity of the battery has been depleted, so output has stopped.	Charge the battery.

See also The buzzer ON/OFF can be set from the LCD menu by [3.Settings] - [Local Settings] - [Audible Alarm].

■ Actions after recovery from the power outage

- If the battery power still remains
  When power outage or input power fault is solved while power is being output from the UPS, the output automatically returns to the commercial power supply. Recharging of the depleted battery starts.

- If the battery has run out
  When power outage or input power fault is solved after the battery is depleted and power output is stopped, the UPS automatically restarts and power output commences again. Recharging of the depleted battery starts.

See also When recovery from a power outage is made, by factory default, the UPS automatically restarts and supplies power. If you do not want to activate the connected devices, either turn off their switches or disable the automatic start setting for recovery from a power outage ([3. Settings] - [Boot Settings] - [Auto Reboot]).

■ Stopping the UPS operation

Notes

Turn off the "Power" switch of the unit before turning off the commercial power supply.

- If the commercial power supply is stopped, operation is switched to backup operation. If backup operation is conducted too frequently, the battery life may be significantly shortened.

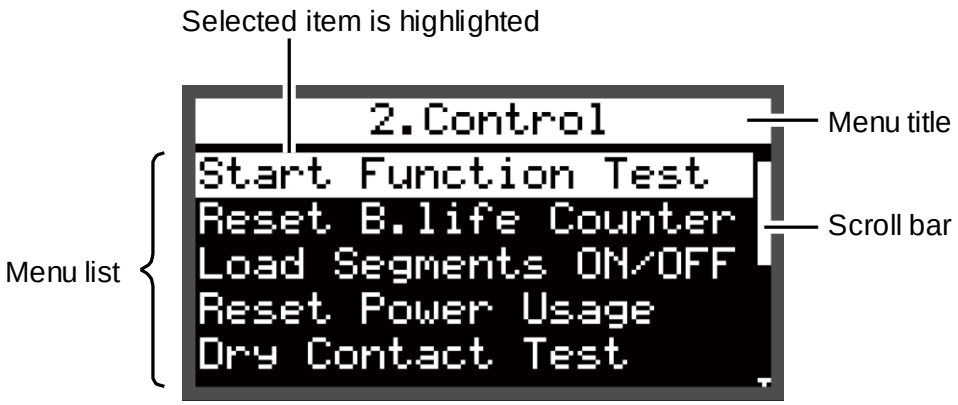
When the "Power" switch on the UPS is held down for 3 seconds or longer, the power switch is turned off.

At the same time, the icon changes to "⏻". In addition, the power output from the UPS stops.

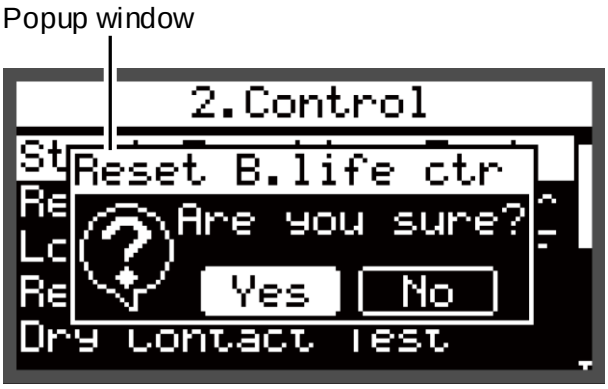
See also Even if the "Power" switch is turned off, as long as AC power is supplied from the commercial power supply, the battery is charged automatically.

3-4 Operations using the LCD menu

3-4-1 UPS setting menu



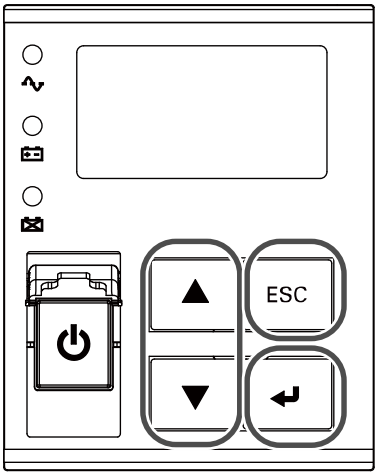
The selected item is highlighted.



This dialog box is displayed when additional information or confirmation is required.

■ Basic operations on the menu screen

Switch	Description
[▲] [▼]	Move the cursor up/down, increase/decrease the selected value
[↵]	Select the menu item or determine the value
[ESC]	Return to the menu, cancel



3-4-2 LCD menu item list

- The display language can be selected from Japanese (factory default) and English.
- The displayed items differ depending on the menu type setting. There are 2 types available: standard type and advanced type. The standard type (factory default) is intended for general users. The advanced type is intended for administrators.

See also To set English for the display language, select [3.Settings] - [Local Settings] - [Language]. To display the advanced type menu, select [3.Settings] - [Local Settings] - [Menu Type].

☆: Displayed only when the UPS is stopped. Not displayed while the UPS is running.

	Menu item	Description	Value	Menu type
Measurements	Load Meter	Displays the load amount in VA and W.	Load amount: 0 to xxxx W 0 to xxxx VA	Standard
	Input/Output Meter	Displays the input and output voltages/frequencies of the UPS.	Input/output: Input: 0 to xxx.x V, 0 to xx.x Hz Output: 0 to xxx.x V, 0 to xx.x Hz	
	Battery Meter	Displays the status of the built-in battery.	Battery: Charge Rate: 0 to 100% Voltage: 0.0 to xxx.x V Runtime (backup time): 0.0 to xxx min	
	Longevity	Displays the expected longevity of the UPS in 5 levels.	Life: UPS: Displayed as level □ in 5 levels Battery: Displayed as level □ in 5 levels	
	Cumulat. Power Usage	Displays the amount of electric power used so far and the number of elapsed days.	Cumulative power usage: Total: 0 to xxxx kWh Period: 0 to xxxx days	Advanced
	Average Power Usage	Displays the average of the amounts of electric power used so far.	Average power usage: 0 to xxxx Wh	

☆: Displayed only when the UPS is stopped. Not displayed while the UPS is running.

	Menu		Description	Value	Menu type
Control	Start Function Test		Conducts a simple self-diagnostic test on battery deterioration and shows its result.	Start self-diagnostic test • Battery test: Pass • Battery test: Fail (Battery not connected, battery deteriorated) • Battery test: Cancel (Operating in battery mode, not charged adequately)	Standard
	Reset B.life counter		Resets the battery life counter.	Execute battery life counter reset	
	Load Segments ON/OFF		The output receptacle of the UPS can be turned ON/OFF for each power supply output group (BU3002R only).	OUT B: ON (factory default)/OFF OUT C: ON (factory default)/OFF	Advanced
	Reset Power Usage		Resets the values for the cumulative power usage and average power usage.	Execute cumulative power usage reset	
	Dry Contact Test		Conducts a contact test when using a contact signal or I/O card (SC08).	Execute a contact signal test BU: ON/OFF BL: ON/OFF TR: ON/OFF WB: ON/OFF	
	Initialization ☆		Restores the factory default settings of the UPS.	Execute settings initialization	
	Maintenance Bypass		Forcibly shifts to the bypass mode.	Execute maintenance bypass	
Settings	Local Settings	Language	Selects the language displayed on the LCD.	Display language: Japanese (factory default), English	Standard
		LCD Setting	Changes the contrast and brightness of the LCD.	Set the LCD (contrast bar and brightness bar)	
		LCD Auto OFF	Sets the time until the LCD automatically turns off.	LCD Auto OFF: Always ON (factory default), Auto OFF 30 seconds, Auto OFF 3 minutes	
		LCD Test ☆	Checks if the LCD and LEDs turn on.	Execute LCD test	
		Audible Alarm	Sets the conditions for the buzzer to sound.	Buzzer setting: ON (factory default), OFF during backup operation, Always OFF	

☆: Displayed only when the UPS is stopped. Not displayed while the UPS is running.

Menu			Description	Value	Menu type
Settings	Local Settings	Calendar Setting	Sets the calendar information for the UPS.	Calendar settings: Year, month, day, hour, minute	Standard
		UPS Installation	Sets the date when the use of the UPS started.	UPS usage start date: Year, month, day (factory default: January 1.2020)	
		UPS Life Counter	Sets the operation of the UPS life counter.	UPS life counter: Enabled (factory default), Disabled	
		Menu Type	Selects the menu to be displayed. When “Standard” is selected, only items that are frequently used are displayed.	Menu type: Standard (factory default), Advanced	
	In/Out Settings	O/P Voltage ☆	Sets the output voltage.	Output voltage: 200 V (factory default), 208 V, 220 V, 230 V, 240 V, 100 V	Standard
		Frequency Range ☆	Switches the frequency range mode.	Frequency range: Normal range (factory default), Wide range (Note 1)	Advanced
		ECO Mode ☆	Switches to the Eco mode. (Note 2)	Enable, Disable (factory default)	

☆: Displayed only when the UPS is stopped. Not displayed while the UPS is running.

Menu			Description	Value	Menu type
Settings	Boot Settings	Auto Reboot	Selects whether to perform automatic reboot from power outage.	Automatic restart: Enabled (factory default), Disabled	Standard
		Cold Start	Selects whether to enable the “Cold Start” function, which can start up the UPS without “AC input”.	Enable, Disable (factory default)	Advanced
		Reboot Delay Time	Sets the delay time for recovery from a power outage.	Reboot delay time: 0 to 999 seconds (Factory default: 9 seconds)	
		Load Segments(B) ON	The time to start the output of "power supply output" group B can be delayed.	ON delay: 0 to 9 seconds ON delay: 0.0 to 0.9 minutes ON delay: 0 to 30 minutes (Factory default: 0 seconds) (Note 3)	
		Load Segments(B) OFF	The time to stop the output of "power supply output" group B can be accelerated.	OFF delay: 0 to 9 seconds OFF delay: 0.0 to 0.9 minutes OFF delay: 0 to 30 minutes (Factory default: 0 seconds) (Note 3)	
		Load Segments(C) ON	The time to start the output of "power supply output" group C can be delayed.	ON delay: 0 to 9 seconds ON delay: 0.0 to 0.9 minutes ON delay: 0 to 30 minutes (Factory default: 0 seconds) (Note 3)	
		Load Segments(C) OFF	The time to stop the output of "power supply output" group C can be accelerated.	OFF delay: 0 to 9 seconds OFF delay: 0.0 to 0.9 minutes OFF delay: 0 to 30 minutes (Factory default: 0 seconds) (Note 3)	

☆: Displayed only when the UPS is stopped. Not displayed while the UPS is running.

	Menu		Description	Value	Menu type
Settings	Boot Settings	Reboot Batt.level	Sets the battery level for reboot.	Reboot battery level: 0 to 100% (Factory default: 0%)	Advanced
		Auto Reboot Mode	Selects a mode for reboot. (Note 4)	Auto reboot mode: Mode A (factory default) Mode B	
		Power SW Off Mode	Switches the operation mode of the power switch.	Power switch off mode: UPS shutdown (factory default), UPS + PC shutdown	
	Battery Settings	Battery Test	Sets the interval of self-diagnostic test execution.	Battery test: Start up/Every 4week (factory default), Start up, Every 4 week, Disable	Standard
		Batt.life Counter	Selects whether to notify the user about the battery's end of life.	Battery life counter: Enabled (factory default), Disabled	
		Battery Installation	Set the date when the battery was replaced.	Battery installation date: Year, month, day (Factory default: 1/1/2020)	
		Max.backupTime ☆	Sets the time to stop the output of the UPS.	Maximum backup time: Disabled (factory default), Enabled: 10 to 999 seconds, Enabled: 1 to 9999 minutes	Advanced
		Low Battery Warning ☆	Sets the level at which a low battery warning can be detected.	Low battery warning: 30% (factory default), Change the level: 0 to 100%	
	Dry Contact	BSsignal ValidRange ☆	Sets the condition for BS signal reception.	BS signal valid range: Always enabled (factory default), Only for backup operation	

☆: Displayed only when the UPS is stopped. Not displayed while the UPS is running.

Menu			Description	Value	Menu type
Settings	Dry Contact	BSsignal Delay Time	Sets the delay time for a BS signal.	BS signal delay time: 0 to 9000 seconds, or 9999 seconds (factory default: 0 seconds) (Note 5)	Advanced
		BUsignal Delay Time	Sets the delay time for a BU signal.	BU signal delay time: 0 to 900 milliseconds, or 0 to 180 seconds (factory default: 0 seconds) (Note 3)	
		Dry Contact Logic	Sets the dry contact logic.	Dry Contact logic: BU, BL, TR, WB: Normal (factory default)/ Reverse	
		Remote ON/OFF Logic ☆	Sets the remote signal logic.	Remote ON/OFF logic: OFF when short-circuited (factory default), OFF when opened, Disabled	
Identification	Type		Displays the names of the UPS and battery pack.	Type name: UPS: Model, Battery: Model	Standard
	Serial Number		Displays the serial number of the UPS.	Serial number: S/N:xxxxxxxxxxxxxxxG	
	Firmware Version		Displays the firmware version of the UPS.	Firmware version: UPS:M:x.xx USB : S:-.-- (The UPS does not support USB)	Advanced
	Memorandum		Information up to 20 alphanumeric characters can be viewed.	-	
Log	Fault Log		Displays up to 10 logs of faults that occurred in the past (time of occurrence and fault details).	Fault log: Year/month/day/hour/minute, message	Advanced
	Shutdown Log		Display up to 10 reasons for UPS shutdown.	Shutdown log: Year/month/day/hour/minute, message	
	AC input Log		Displays up to 10 logs of events that occurred in the past.	AC input log: Year/month/day/hour/minute, message	
	Reset All Log Data		Clears each piece of log data.	Executes Reset All Log Data	

Note 1: In wide range, if the input frequency suddenly changes from 50 Hz to 60 Hz, for example, the UPS switches to battery mode to maintain the output frequency at 50 Hz. If the input continues at the frequency of 60 Hz for 100 cycles or more, the UPS provisionally increases the frequency of the output from the battery from 50 Hz to 60 Hz, and once the output wave form and input wave form are synchronized, the output mode is switched to line output. On the other hand, in normal range, if the input frequency suddenly changes, the UPS switches to battery mode and the battery output continues with an output frequency of 50 Hz.

Note 2: Eco mode is a mode in which during normal operation, the input voltage is output as it is in order to directly output the commercial power. (The commercial power is directly output so power consumption is low).

Because during normal operation the commercial power is directly output, the output frequency is the same as the input frequency.

* During Eco mode operation, when the “AC input” voltage is within ±10% of the set output voltage, the commercial power is directly output.
* This mode is not compatible with 100 V output mode.

Note 3: Only 1 item can be set.

Note 4: The reboot mode has the following 2 modes.

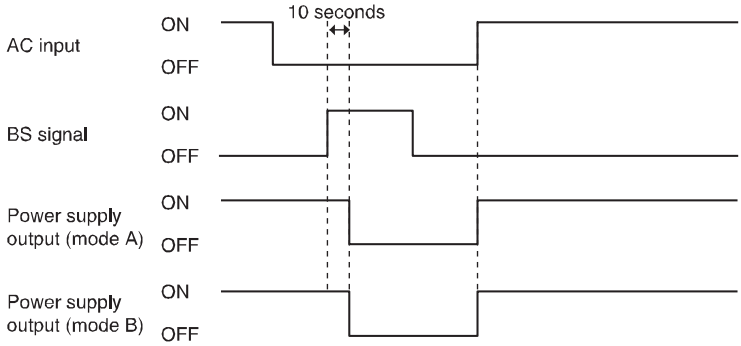
Mode A: After the UPS has stopped, when the AC input is detected as ON, the UPS is immediately started up.

Mode B: After the UPS has stopped, when the AC input is detected as “OFF”→”ON”, the UPS is automatically started up.

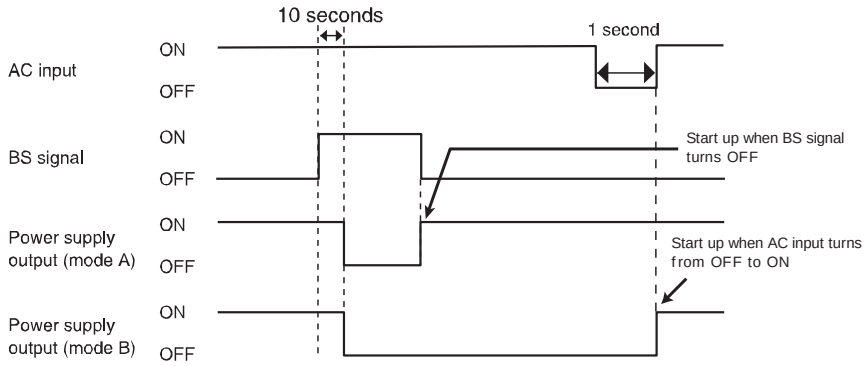
(Definition of AC input OFF: When the AC input is OFF for 1 second or more).

* These modes are enabled when automatic restart is enabled in the boot settings.
* This setting mode is enabled only after the UPS has been stopped by the backup stop signal (BS) of the contact signal.
* When the shutdown software is used with the RS-232C connector connected to the cable, mode A operates regardless of the settings.

(1) When the UPS is stopped by BS signal after occurrence of a power outage



(2) When the UPS is shut down by BS signal while the AC input is ON



Note 5: When set to 9999 seconds, the BS signal is disabled.

3-5 Charging the battery

The battery automatically starts charging when the unit is connected to a commercial power source.
(This occurs regardless of whether the power switch is ON or OFF.)
The charging takes 8 hours to complete. And every time an expansion battery unit is connected, the charging time is increased by 16 hours for each unit.

- The unit was charged before shipment, but it may have self-discharged during shipment, resulting in a reduced backup time. We recommend charging the unit before use.

3-6 Measuring the initial value of backup time

- The initial backup time value measured in your environment of use can be used as a guide when checking the battery and deciding the shutdown software setting values.

See also "4-3. Measuring the backup time" → Page 96

3-7 Recharging the battery

The battery is discharged completely after measuring the backup time, so recharge is required before using the UPS.

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

See also Charge the battery as described in “3-5 Charging the battery”.

Preparation for starting operation is now complete.

4 Maintenance and inspection

4-1 Self-diagnosis test

This test performs a failure diagnosis on the unit and performs a test to check for battery deterioration.
Use the procedure below to check whether a circuit failure has occurred inside the unit and whether battery replacement is required.
The self-diagnosis test can be performed either automatically or manually as follows.

■ Self-diagnosis test performed automatically

With the factory default, the self-diagnosis test is automatically executed at the following times, when the commercial electrical power is turned on and charging of the battery is completed. No special action is required by the customer.

- When the power switch is turned from OFF to ON
- When the power switch is ON, the test is performed once every 4 weeks that the power is on

When battery charging for 8 hours has not been completed, the self-diagnosis test once every 4 weeks is not immediately executed. After charging for 8 hours has been completed, the test is automatically executed.

■ Self-diagnosis test performed manually

The self-diagnosis test can be performed manually from the LCD menu by selecting [2.Control] - [Start Function Test].

By executing the self-diagnosis test, backup operation starts automatically. At this time the buzzer does not sound.
After the test has been completed, the status returns to the normal operational status automatically.
If an error message is displayed on the LCD window, apply the measures in accordance with the method of resolution indicated in “3-1-7 How to interpret icons, LED, and buzzer sounds” (page 66).

The conditions for executing the self-diagnosis test can be selected from the LCD menu by [3. Settings] - [Battery Settings] - [Battery Test]. At startup/every 4 weeks (factory default), At startup/every 4 weeks, Disable

* This test can also be performed from the shutdown software.
Refer to the instruction manual of the shutdown software for a detailed explanation.
The instruction manual can be downloaded from the following website.
URL:https://www.oss.omron.co.jp/ups/support/download/ups.html

4-2 Checking the battery

⚠ Warning

Do not disassemble or modify the battery.

- There is a risk of leakage of dilute sulfuric acid, causing blindness or injury if touched.

The lead battery used in the UPS has a limited lifespan.
(The life varies depending on your storage/use environment and backup frequency.)
The nearer the end of the life is, the more rapidly deterioration proceeds.

4-2-1 Battery life expectancy (* Not guaranteed performance)

Ambient temperature	Expected battery life
25°C	5 years
30°C	3.5 years
35°C	2.5 years
40°C	1.7 years

4-2-2 Methods for checking the battery

There are 2 types of battery inspection method.
- Perform the self-diagnosis test. (See page 94)
- Measure the backup time. (See page 96)

By measuring the backup time, the battery life can be determined more accurately.
Change the battery when the measured value reaches the “initial value of the backup time” or when half or less of the value calculated using the graph in “Estimated backup time” on page 97.

- When comparing the initial value of backup time measured by the customer and the current backup time, it is not possible to make an accurate judgment unless the capacity of the devices connected to the UPS is the same as that when the initial value was measured.

■ Battery inspection (measurement of backup time) guidelines and frequency

Ambient temperature	Every 6-months check	Monthly check
40°C	For 1 year after purchase	1 year or more after commencement of use
30°C	For 3 years after purchase	3 years or more after commencement of use
25°C	For 4 years after purchase	4 years or more after commencement of use

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

4-3 Measuring the backup time

4-3-1 How to measure backup time

The backup time you measure for the first time after purchase is the “initial value of the backup time”. Thereafter when battery inspection is performed, the battery degradation status can be more accurately judged when the “initial value of backup time” has been measured.

(1) Connect to commercial power and charge the battery for 8 hours or more.
(2) Turn ON all devices connected to the unit.
(3) Turn off the commercial power and measure the backup time.
In Battery Mode, measure the time until the unit automatically stops and all displays disappear.

The power supply output of the unit will stop when the battery discharges. Conduct measurement under a condition in which no problem occurs even if the power supply of the connected device stops during the process. Do not conduct measurement if there is a possibility of a failure when the power supply stops.

Every time an expansion battery unit is connected, the charging time is increased by 16 hours for each unit.

4-3-2 Estimated backup time

The backup time varies depending on the capacity of the connected device.
Calculate the total capacity of the connected device and refer to the backup time graph to use it as a guide of the backup time initial value. (This is the same for inspecting the battery.)

(1) Convert the total capacity (power consumption) of the connected devices to W (watts).
For the indication of connected devices, check your computer body and the rear of the display.
There are 3 types of display method: VA (volt-ampere), A (ampere), and W (watt).

Example 1) AC200V, 50/60Hz ,145W
Example 2) AC200V, 50/60Hz, 1.8A
Example 3) AC200V, 50/60Hz, 150VA

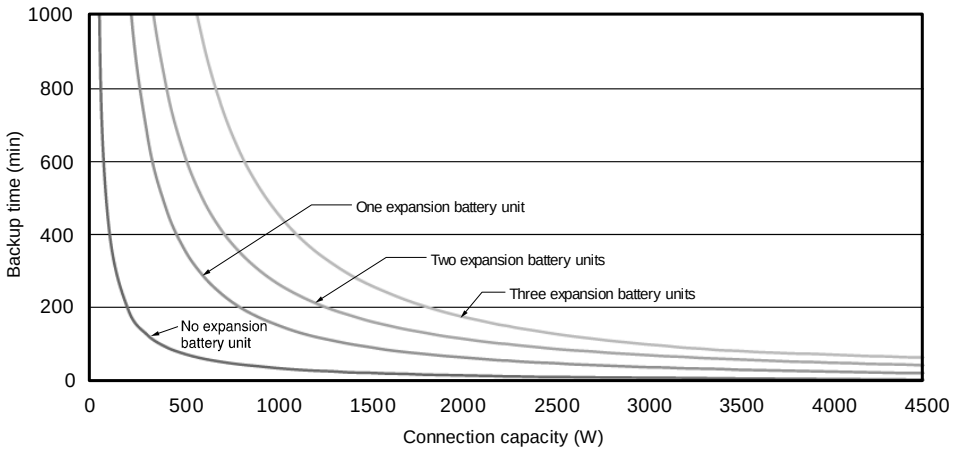
Indication	Value
VA	W = VA × power factor
A	W = A × power supply voltage × power factor

For devices that use VA and A indication, convert the capacity into W. Multiply the value indicated on devices in the right table for conversion.
(If the power factor is not clear, use “1”. The value of power factor is normally between 0.6 and 1.)

(2) Add the values converted into W to obtain the total capacity of the connected devices.
(3) Calculate the initial value of the backup time for the total capacity of the connected devices from the graph.
- Backup time graph (this is a graph for the initial value of a new product, with properties at 25°C.)
  If the temperature is lower then the backup time is shorter than the value on the graph (table) below.
- If the capacity of the connected devices is smaller then the backup time becomes longer.

BU5002R

Backup time graph (initial value for a new product. Graph with properties at 25°C)



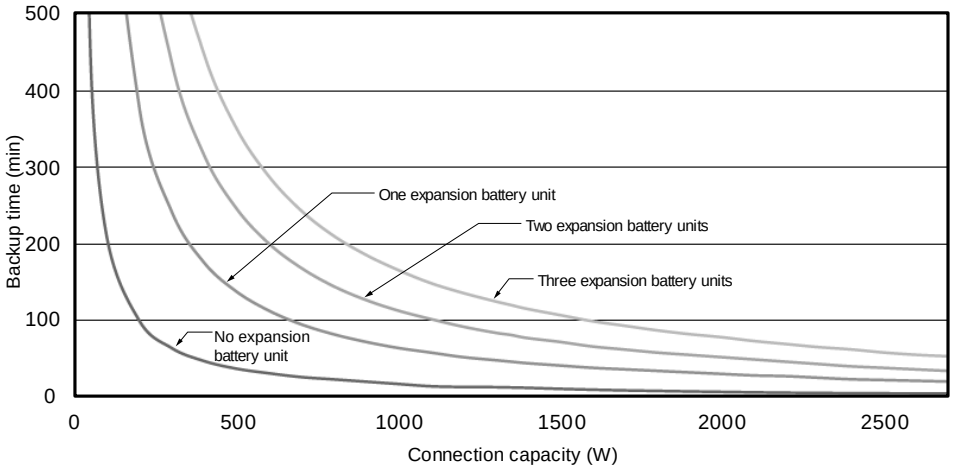
Backup time table Time unit: (min)

Connected capacity (W)		100	300	500	700	900	1000	1500	2000	2250	2500	3000	3500	4000	4200	4500
Backup time (min)	No expansion battery unit	394	128	76	54	42	37	24	17	14	12.8	10.4	8.3	6.6	5.9	5
	1 expansion battery unit	2592	678	363	241	177	156	95	67	58	51	40	33	28	26	24
	2 expansion battery units	4334	1150	621	413	305	268	164	116	101	88	71	59	50	47	43
	3 expansion battery units	10902	2415	1198	755	535	463	265	178	152	131	102	84	74	70	66

* The maximum connection capacity when set to 100 V output is 2,250 W.
The maximum connected capacity of the UPS when using the standard AC input plug is 4,200 W.

BU3002R, BU3002RH

Backup time graph (initial value for a new product. Graph with properties at 25°C)



Backup time table Time unit: (min)

Connected capacity (W)		100	300	500	700	900	1000	1350	1500	2000	2500	2700
Backup time (min)	No expansion battery unit	209	64	37	26	20	17	12.4	10.6	6.6	4.7	4.5
	1 expansion battery unit	820	242	137	94	71	63	45	40	29	21	19
	2 expansion battery units	1509	439	247	169	127	113	81	72	52	38	34
	3 expansion battery units	2023	614	352	244	186	166	120	107	78	58	53

* The maximum connection capacity when set to 100 V output is 1,350W.

4-4 Replacing the battery

The battery can be replaced when the power of the unit is OFF (power output is stopped) or ON (power is being output).

⚠ Warning

Only use the specified replacement batteries.

- If a battery other than the specified replacement battery is used, there is a risk of breakdown of the unit, or smoke generation and ignition.
- Replace with the same type and same number of battery packs.
- Model name: Replacement battery pack for BUM5002R:
  BUB5002R, 1 pack
  Replacement battery pack for BUM3002R / BU3002RH:
  BUB3002R, 1 pack

When replacing a battery pack, securely hold the battery pack so that it does not fall.

- When the red tape on the top surface of the battery pack or the red line on the rating label is visible, the battery pack is going to be detached with 10 cm of movement.
- There is a risk that an injury could be caused if it falls.

Do not insert metal parts into the battery connector.
Do not short-circuit the connector terminals.

- There is a risk of electric shock, fire, or injury.
- Electric energy remains inside used batteries.

⚠ Caution

Do not pull out the battery pack by pulling the connector or cable.

- There is a risk of smoke generation and ignition.

When an expansion battery unit is connected to the unit, be sure to replace the battery packs of this unit and the expansion battery unit at the same time.

- Dilute sulfuric acid may leak.
- There is a risk of an electric shock or a short circuit of the battery.

When the unit is used as a conforming product of the UL standards, do not replace the battery while operating (while power is being output).
The battery replacement function does not comply with UL standards while operating, so be sure to replace the battery after stopping operation of the unit.

- To perform replacement while stopped, stop the connection function, turn off the “Power” switch on the unit, and remove the “AC input” plug from the power outlet.
- When an input power error such as power outage occurs during battery replacement while the unit is operating, the backup process is disabled and output stops.
- Do not replace the battery during the backup operation. Doing so will stop the output.

* When a beep sound is heard with the “Battery replacement” LED lit or flashing, the beep sound can be stopped by pressing the “ESC” switch for 0.5 seconds. (The "Battery replacement" LED remains lit or flashing.)
* When an input power error such as power outage occurs during battery replacement while the unit is operating, the backup process is disabled and output stops.
* Do not replace the battery during the backup operation. It will stop the output.

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

When it is time for the battery to be replaced, the battery replacement LED is lit and the buzzer sounds.
The battery life is detected from the battery life counter. The battery life counter operates while commercial power is supplied after shipment. (When the ambient temperature of the battery is higher than 25°C, the value of the counter will be incremented at a faster pace.)

Notes

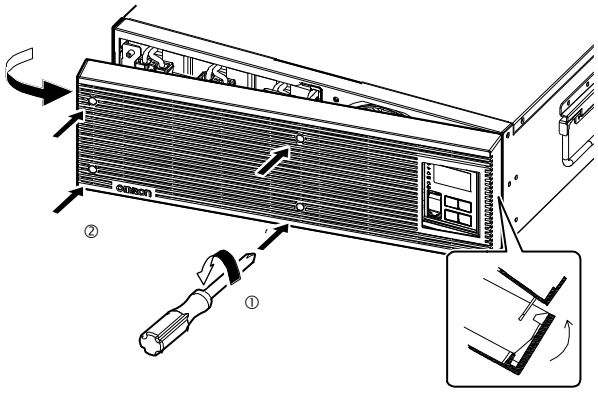
The lead battery used in the unit has a limited service life. The service life varies depending on your storage/operating environment and backup frequency.

- The nearer the end of service life is, the more rapidly deterioration proceeds.
- For details on the battery life, see the reference document “Battery life” at the end of this manual.
- The battery deteriorates even if it is stored. Note that as the temperature is increased the life rapidly shortens.

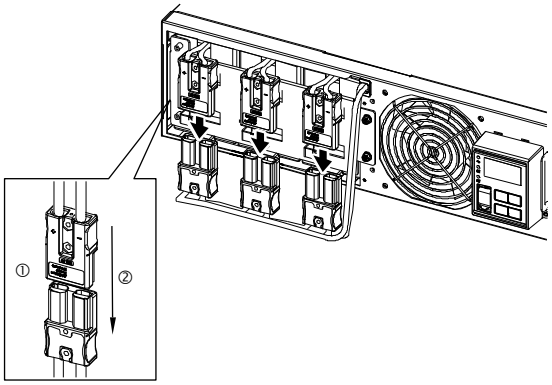
4-4-2 Battery replacement method

BU5002R

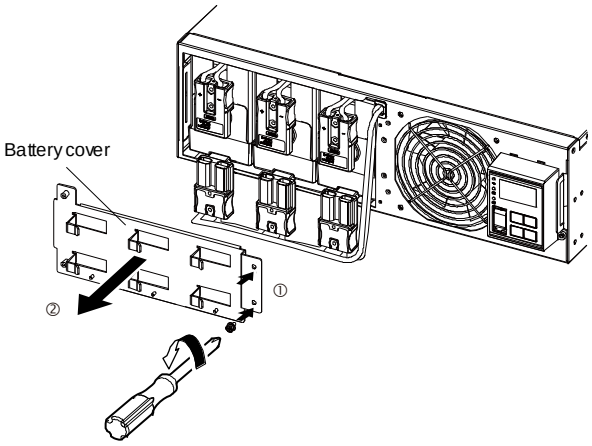
1. Loosen the 4 screws (①) on the front panel of the UPS, and remove the front panel (②).



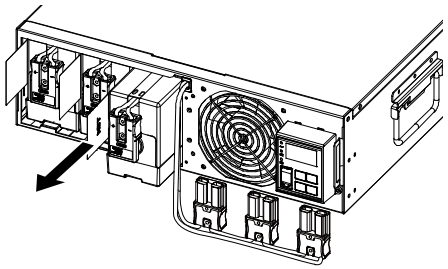
2. Press the clip that locks the battery connector (①), and pull off the connector while holding the battery connector (②).



3. Remove the 2 screws that are fastening the battery cover (①).
Press the battery cover gently to the right side, then pull forward to remove the cover (②).



4. Grip the handle on the front of the battery pack, and pull out the battery pack. Do not pull the cable of the battery pack.



5. Insert the new battery pack in as long as it will go, so that it is housed.
Replacement battery pack: Model name BUB5002R

6. Insert the right side of the battery cover onto the main unit, press its left side in and then slide it to the left to install it.

7. Attach the battery cover with the 2 screws.

8. Connect the battery connectors, then fix the connectors to the battery cover in the sequence from right to left.
* If replacing while the operation is stopped, a “clicking” sound is heard when the connector is connected, but there is no problem.

9. Attach the front panel of the UPS with the 4 screws.

Notes

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

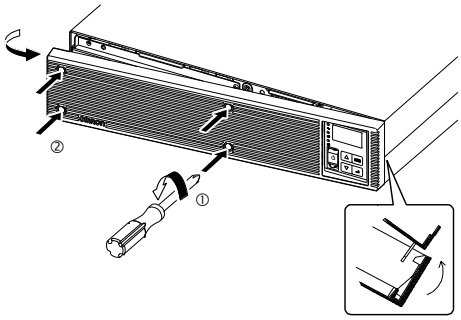
- After replacing the battery, select [2. Control] - [Reset B. life counter] from the LCD menu of the unit, and reset the battery life counter.
- If the battery life counter is not reset, the battery replacement alarm may be issued before the expected battery life is reached.

Write the battery replacement date on the provided battery replacement date label and attach it to the main unit. Alternatively, the battery replacement date can be input from the LCD menu [3. Settings] - [Battery Settings] - [Battery Installation].

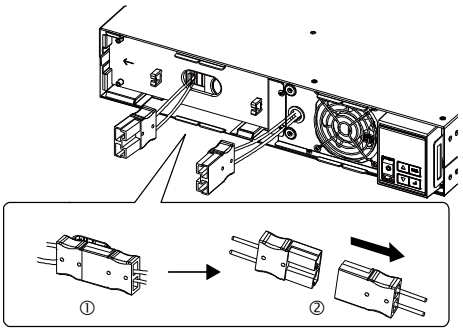
After replacing the battery, execute the self-diagnosis test. The self-diagnosis test can be performed automatically from the LCD menu of the unit by selecting [2. Control] - [Start Function Test]. After the self-diagnosis test has been completed, the status automatically returns to the normal operational status.

BU3002R, BU3002RH

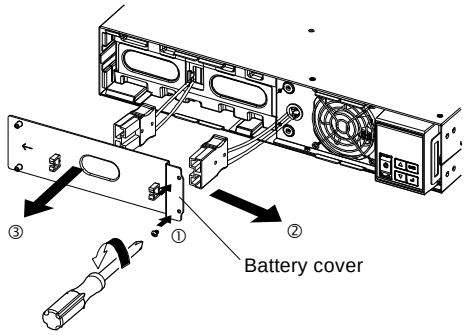
1. Loosen the 4 screws (①) on the front panel of the UPS, and remove the front panel (②).



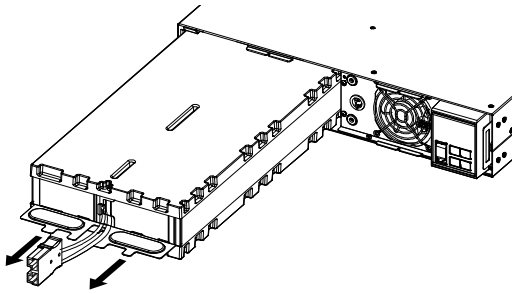
2. Press the clip that locks the battery connector (①), and pull off the connector while holding the battery connector (②).



3. Remove the 2 screws that are fastening the battery cover (①).
Press the battery cover gently to the right side (②), then pull forward to remove the cover (③).



4. When you pull out the transparent cover on the front of the battery pack, a handle appears to pull out the battery pack.
Grip the handle on the front of the battery pack, and pull out the battery pack.
Do not pull the cable of the battery pack to avoid cutting the cable.



5. Insert the new battery pack in as far as it will go, so that it is housed.
Replacement battery pack: Model name BUB3002R

6. Insert the right side of the battery cover onto the main unit, press its left side in and then slide it to the left to install it.

7. Connect the battery connectors.
* If replacing while the operation is stopped, a “clicking” sound is heard when the connector is connected, but there is no problem.

8. Attach the battery cover with the 2 screws.

9. Attach the front panel of the UPS with the 4 screws.

Notes

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

- After replacing the battery, select [2. Control] - [Reset B. life counter] from the LCD menu of the unit, and reset the battery life counter.
- If the battery life counter is not reset, the battery replacement alarm may be issued before the expected battery life is reached.

Write the battery replacement date on the provided battery replacement date label and attach it to the main unit. Alternatively, the battery replacement date can be input from the LCD menu [3. Settings] - [Battery Settings] - [Battery Installation].

After replacing the battery, execute the self-diagnosis test. The self-diagnosis test can be performed automatically from the LCD menu of the unit by selecting [2. Control] - [Start Function Test]. After the self-diagnosis test has been completed, the status automatically returns to the normal operational status.

4-5 Replacing the fan

The fan used in the UPS has a limited life. The fan's expected lifespan is approximately 7 years when the ambient temperature is 25°C and approximately 5 years when the ambient temperature is 40°C.
When the status indicator "Fault-E8" flashes with the rear fan stopped, replace the fan.
If the front fan is not rotating, the UPS is faulty. Contact the shop of purchase.

⚠ Warning

Do not insert your hand or a metal object into the fan housing opening.

- There is a possibility of an electric shock or short circuit.

Do not insert your finger into the fan.

- The fan rotates when the AC input is connected.
- There is a possibility of an injury.

⚠ Caution

Remove the AC input plug from the power outlet (commercial power supply) after turning off the power supply.

- The fan rotates when the AC input is connected.
- Check that the fan has stopped.

Notes

When the unit is used as a conforming product of UL standards, do not replace the fan.

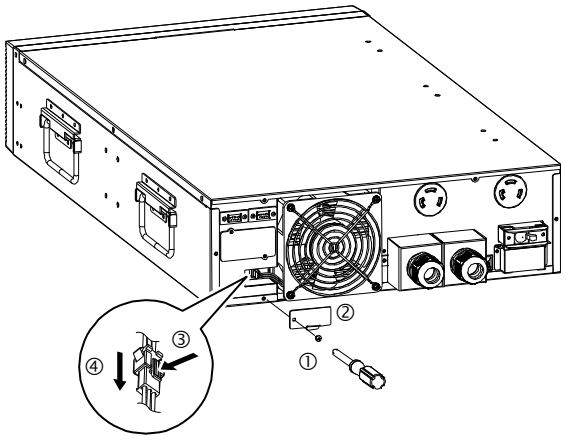
- The fan replacement function does not comply with the UL standard.

4-5-1 Fan replacement procedure

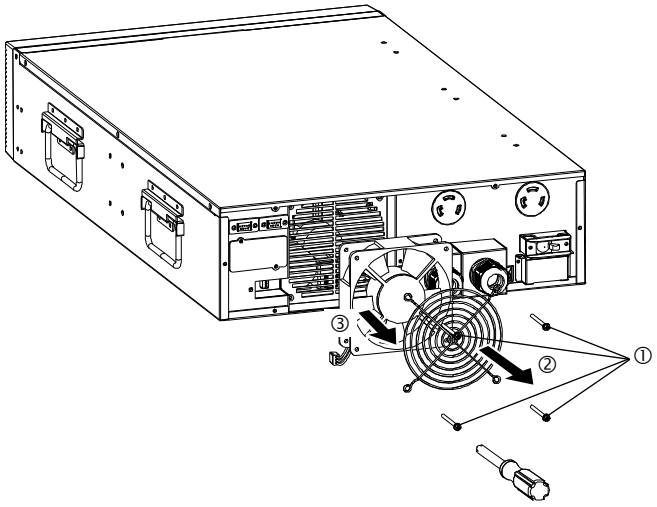
* Do not start the replacement operation until you have checked that the power to the UPS is OFF, and that the fan has stopped.

<BU5002R>
Replacement fan: BUF5002R

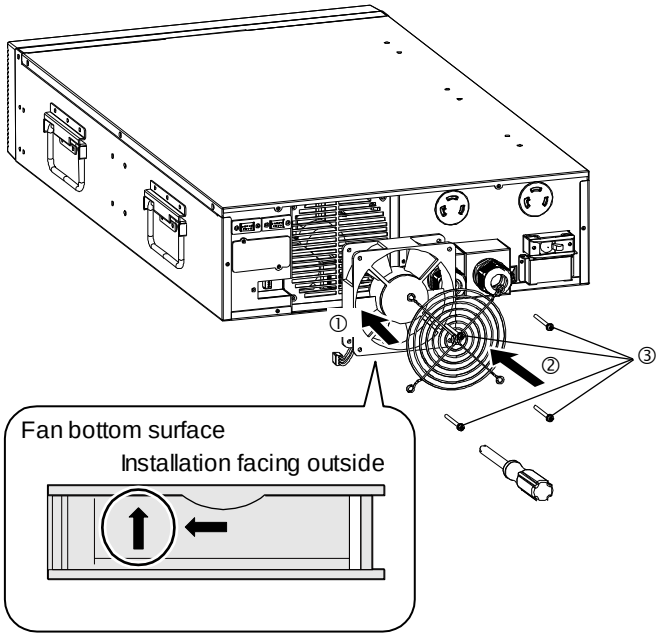
1. Remove the screw fixing the cover of the fan connector using a Phillips screwdriver (①) and remove the cover of the fan connector. (②)
While pressing the tab of the fan connector (③), pull out the connector. (④)



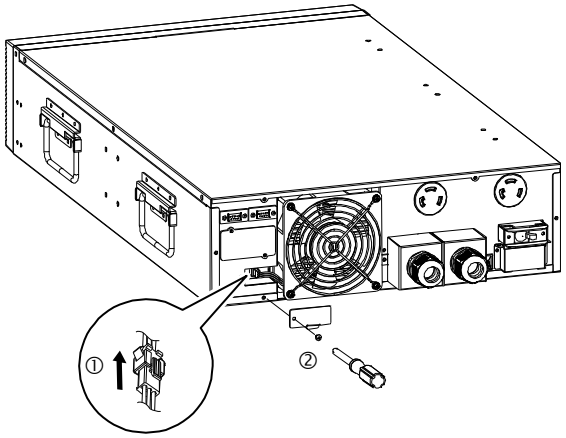
2. Remove the 4 screws fixing the fan using a Phillips screwdriver. (①)
Remove the fan guard (②)and pull out the fan. (③)



3. Insert the new fan into the main unit. (①)
The fan has a correct orientation, so install it so that the arrow symbols are pointing towards the outside as shown in the following diagram.
Place the fan guard (②) and fix the fan guard and the fan with 4 screws. (③)

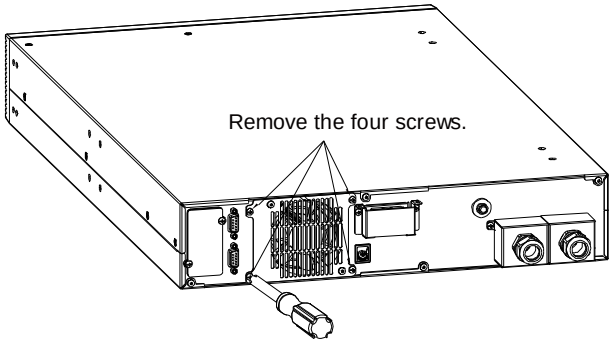


4. Insert the fan connector until a “clicking” sound is heard. (①)
The pin of the connector is easily bent, so take care.
Fix the cover of the fan connector with 1 screw. (②)

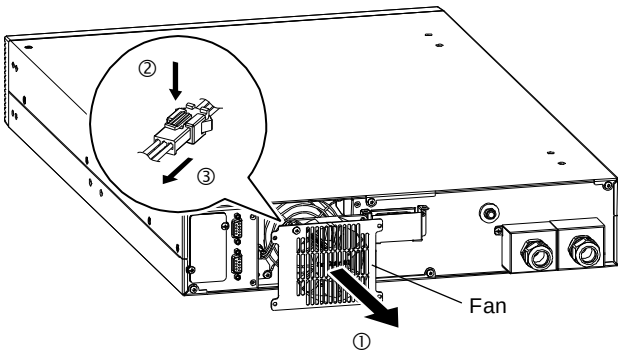


<BU3002R/BU3002RH>
Replacement fan: BUF3002R

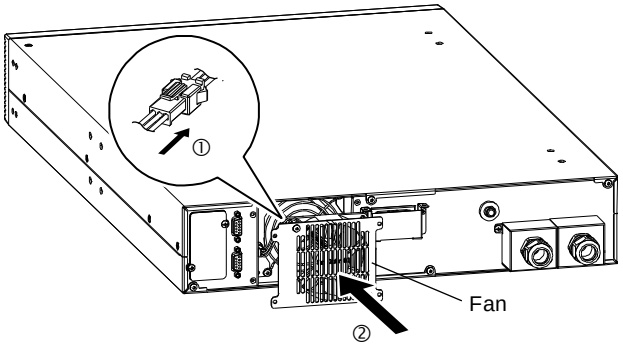
1. Remove the 4 screws fixing the fan onto the back of the UPS unit using a Phillips screwdriver.



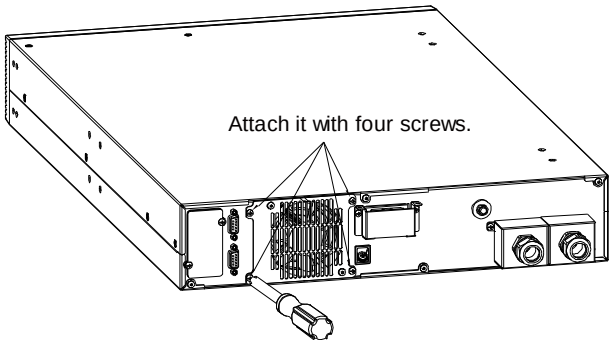
2. Pull the fan to the front in order to take it out (①).
While pressing the tab of the connector to which the fan is connected (②), pull out the connector. (③)



3. Fully insert the connector of the new fan until a “clicking” sound is heard. (①)
Insert the fan into the main unit (②).



4. Fix the fan on the back of the UPS unit with 4 screws using a Phillips screwdriver.



4-6 Cleaning the unit

1. Remove dirt from the UPS

Moisten a soft cloth with water or detergent, squeeze it tightly, and wipe the UPS lightly.
Do not use chemicals such as thinners, benzene, etc. (They cause deformation or color change)

2. Wipe dust from the UPS “AC input” plug, “power output” receptacle, and input output terminal block.

Stop all the connected devices and the UPS and unplug the “AC input” plug from the power outlet (commercial power supply) before wiping off the dust.
Wipe off the dust with a dry cloth, and then connect again.
(For information on the connection procedure:)

See also “2-3 Connecting the equipment” → page 43

5 Using the shutdown software

* If you do not use the shutdown software, this step is not required.

■ Shutdown software

The shutdown software “Power Attendant Lite”, “PowerAct Pro”, and “Simple Shutdown Software” are available. Choose which one to download and use according to your preference of usage. Refer to the following website for details about compatibility.
URL:https://www.oss.omron.co.jp/ups/product/soft/soft.html

If downloading Power Act Pro, refer to the document for download which comes with the UPS.

6 Contact signal

6-1 Contact signal

Contact signals are provided as standard for the UPS.

6-1-1 Contact signal

You can develop your unique system based on the following specifications to automate the process at a power outage.
You can perform power-failure processing by allowing the system to detect the backup signal and also perform system shutdown processing by allowing the system to detect the low battery level signal. Also, by inputting the backup stop signal from the system, you can stop the UPS with a sufficient battery level to prepare for the next occurrence of a power outage.

On this UPS, the standard contact signal I/O port and the optional relay output type contact I/O card (SC08) contact signal input output can be used.

6-1-2 Signal output

The UPS has 4 types of signal output. The output circuit is an open collector circuit (a type of electronic switch) using a photocoupler.

- Backup signal output (BU)
  It becomes ON continuously during a power outage.

BU-COM	ON during a power outage

- Low battery level signal output (BL)
  It goes ON when the battery becomes weak during backup operation.

BL-COM	ON when the battery is low

- Trouble signal output (TR)
  It goes ON when a problem occurs with the UPS.

TR-COM	ON during a fault

- Battery replacement signal output (WB)
  It goes ON when the test determines that battery replacement is necessary due to deterioration or when the battery life counter reaches the end of count value.

WB-COM	ON when battery replacement is required

6-1-3 Signal input

- Input of the UPS stop signal (BS)

BS-COM	UPS stops

When the BS signal is ON (High), the output of the UPS is stopped after a period of time set in advance has passed. The following settings are available on the LCD.

(1) BS valid range: [3.Settings] - [Dry Contact] - [BSsignal ValidRange]
- Always enabled: The BS signal is received either in normal mode or backup mode.
- Enabled during backup mode: The BS signal can be received only in backup operation.

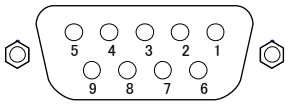
(Note) Input the 'BS signal' after a change of backup signal (BU) or low battery level signal (BL) has been received.

(2) BS signal delay time [3.Settings] - [Dry Contact] - [BSsignal Delay Time]
An interval between receive of the BS signal and stop of the UPS output can be set.

- Backup signal output (BU)
  The UPS can be operated or stopped in accordance with an externally connected contact point or the ON/OFF status of an open contact circuit.
  The connection terminal has contact signal input output connector pin numbers 6-7.

External contact point	Operation
Open	Operates
Closed	Stops

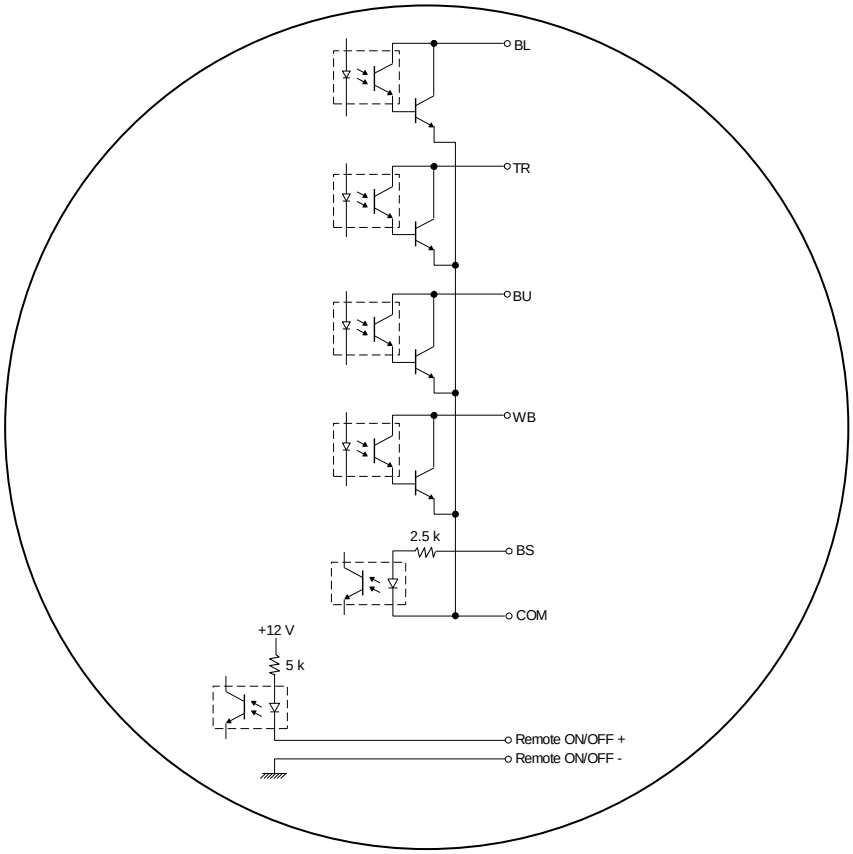
6-1-4 Contact signal I/O connector (DSUB9P female)

Pin assignment	Pin number	Signal name
 Front view Screw size: Inch screw threads #4-40 U N C	1	Battery low signal output (BL)
	2	Trouble signal output (TR)
	3	Backup stop signal input (BS)
	4	NC
	5	COMMON (COM)
	6	Remote ON/OFF input (-)
	7	Remote ON/OFF input (+)
	8	Backup signal output (BU)
	9	Battery degradation signal output (WB)

6-1-5 Contact signal ratings

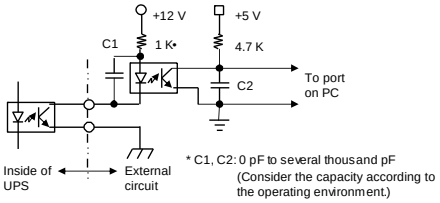
- Signal output (BL, TR, BU, WB)
  - Photocoupler rating
  - Voltage that can be applied: DC 35 V or less
  - Maximum current: 50 mA
- Remote ON/OFF
  - Voltage between terminals: DC 8 to 16 V
  - Current when closed: max. 15 mA
- Backup power supply stop signal input (BS)
  - Input voltage
    - High (ON) DC 5 to 24 V
    - Low (OFF) DC 0.5 V or less

6-1-6 Contact signal circuit inside the UPS

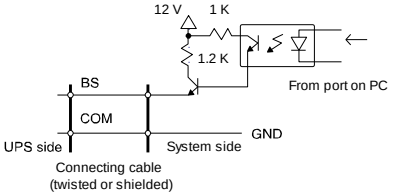


6-1-7 Examples of use of contact signal circuits

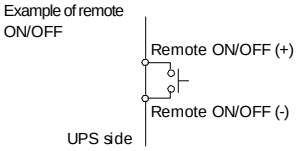
- Example of BU signal output circuit and the connected circuit



- Example of BS signal input circuit and the connected circuit



- Example of remote ON/OFF



6-1-8 Precautions and notes for the use of the contact signal

Notes
When connecting a device that generates a back electromotive force such as a relay to the signal output circuit, connect a diode to prevent the back electromotive force on both ends of the relay.

Explanation
When power is restored after the unit stopped automatically during a power outage, the unit automatically restarts and supplies power. If you do not want to start the connected devices, turn OFF their switches or set the auto startup setting after recovery from power outage ([3. Settings] - [Boot Settings] - [Auto Reboot] on the LCD) to "Disable". (See page 80)

A relay output type contact signal card is available for separate purchase.
It can be loaded into the option slot on the back of the UPS.
For details refer to our website. (https://www.oss.omron.co.jp/ups/)

• Contact signal card (relay output type) Model number: SC08 (sold separately)

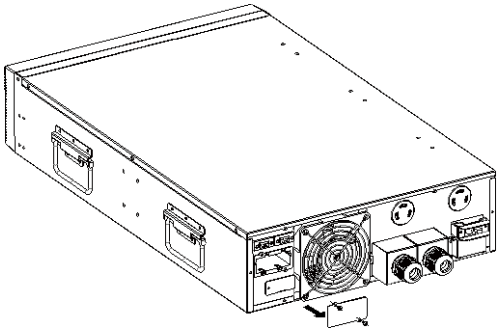
7 Using an optional card

For this unit, a contact I/O card, a network card, and an SNMP/Web card are available as options for controlling external devices.

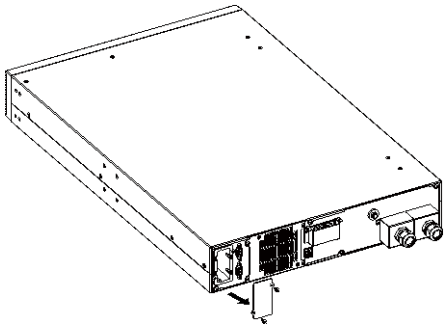
7-1 Mounting an optional card

An optional card can be loaded into the option slot on the back of the unit.
This section explains the attachment procedure using SNMP/Web card as an example. The procedure for the contact I/O card is the same.

1. Turn OFF the “Power” switch and turn off the commercial power supply. Remove the 2 screws, and remove the cover.

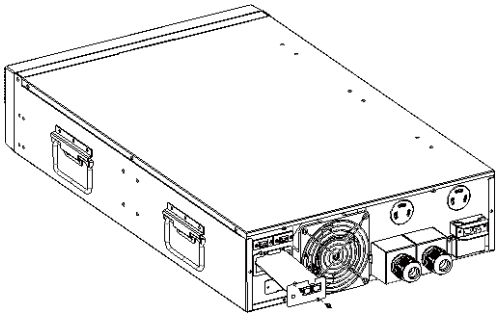


<BU5002R>

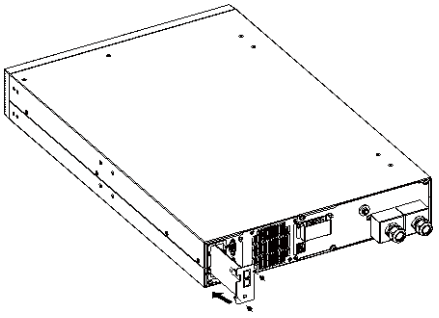


<BU3002R/BU3002RH>

2. Carefully insert the optional card and securely tighten the 2 screws.



<BU5002R>



<BU3002R/BU3002RH>

7-2 Optional card

7-2-1 Contact signal I/O card (SC08)

The customer can automate processing in the event of a power outage by developing a system on their own with contact signal inputs and outputs. It is possible to perform processing for a power outage by detecting a backup signal and perform system shutdown processing by detecting a low battery level signal.
In addition, by inputting a backup stop signal from the system, it is possible to stop the UPS while the battery still remains, and become ready for the next occurrence of power outage.
On this UPS, the standard contact signal I/O port and the optional relay output type contact I/O card (SC08) contact signal input/output can be used.

7-2-2 Overview of network card (SC21) and SNMP/Web card (SC20G2)

○ Direct connection between UPS and network
Enables a LAN connection, allowing the UPS to be controlled via computers with no serial port.

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

○ Possible to make function settings for the UPS, network card, and SNMP/Web card via a computer on the network
UPS, network card, and SNMP/Web card parameter settings can be made via any SNMP management station, Internet browser, or console (Telnet, etc.) (functions that act as an SNMP agent can make settings via Telnet and serial connection).

○ Enhanced security functions
Email communication and access control can be performed by HTTPS or SMTPS.

○ Log functions
The UPS power status, battery status, etc., can be stored in the built-in flash memory on the card.

○ Auto shutdown function
Shutdown is automatically executed when there is a power supply fault or at a time set in advance. Schedules (automatic start-up, automatic stop) can be operated via a network.

○ Equipped with a standard MIB (RFC1628) and a proprietary MIB (swc mib)

○ Using JAVA applet to monitor the power supply status

○ UPS error notification function

For details, refer to the instruction manual of the network card or the SNMP/Web card.
They can be downloaded from our website
(https://www.oss.omron.co.jp/ups/support/download/ups.html).

8 Troubleshooting

Perform the checks shown below if the unit is operating abnormally.
If the issue is still not resolved, contact the shop of purchase.
To stop the buzzer sound, press “ESC” for 0.5 seconds or longer.

Problem	Buzzer	Output	Charge	Message displayed on LCD (Note 2)	Cause	Action
Buzzer sounds intermittently	4-second intermittent sound	ON	OFF/Discharging	Battery mode	The UPS is in backup operation due to a power outage or AC input error. Output stops if backup operation is continued.	Stop the connected devices in use by shutting them down (end processing).
	4-second intermittent sound	ON	ON	Fault-E12 Battery OverTemp	An abnormal battery temperature was detected during normal operation. The UPS switches to bypass operation.	Wait until the battery temperature drops. When it returns to the normal temperature, the UPS will return to the normal operation state. If it does not recover, the UPS is faulty, so contact the shop of purchase.
	2-second intermittent sound	ON	ON	Fault-E10 Battery weak End of bat.life No battery	Either battery degradation, end of battery life, or battery disconnection have been detected.	If “Connect Battery” is displayed at the bottom of the LCD, check whether the battery is properly connected. If the displayed message is different, replace the battery. If an optional replacement battery is purchased, the customer can carry out the replacement operation.
	2-second intermittent sound	ON	ON	Fault-E13 End of UPS life	It has been detected that the life of the product has expired.	Replace the UPS.
	1-second intermittent sound	ON	OFF/Discharging	Battery low	The UPS is in backup operation due to a power outage or AC input error. The residual battery capacity is low, so output will stop soon.	Stop the connected devices in use by shutting them down (end processing).
	0.5-second intermittent sound	ON	Undefined (note 3)	Fault-E8 Internal fan fail	There is a fault on the internal cooling fan, so the UPS switches to bypass operation. (note 1)	If the rear fan is not rotating, replace the fan. If the front fan is not rotating, the UPS is faulty. Contact the shop of purchase.
	0.5-second intermittent sound	ON	ON/Discharging	Fault-E9 Reduce output load	The load of the connected devices is too high and is exceeding the rated capacity. If this status continues, the UPS switches to bypass operation (Note 1)	Reduce connected devices until the alarm stops.
	0.5-second intermittent sound	ON	ON/Discharging	Fault-E17 Charger fail	A failure occurred on the battery charging system.	Turn ON only the power switch again. If the displayed content does not change, the UPS is faulty. Contact the shop of purchase.
	0.5-second intermittent sound	ON	ON/Discharging	Fault-E20	A breakdown of an internal component or internal circuit has been detected.	Operation continues but the UPS is faulty. Contact the shop of purchase.

Problem	Buzzer	Output	Charge	Message displayed on LCD (Note 2)	Cause	Action
Buzzer sounds continuously	Continuous sound	OFF	Undefined (note 3)	Fault-ES Output short-circuit	Output has stopped due to a short circuit on the connected devices side or a major connection capacity overload.	Check whether there is a short circuit on the AC input of the connected devices, or whether the connected capacity is exceeding the rated capacity.
	Continuous sound	ON	Undefined (note 3)	Fault-EO Overload stop	The UPS switches to bypass operation because of overload (note 1).	Turn off the power switches of all the devices connected to the UPS, and after reducing the connected devices, turn on the power switches of the UPS and the connected devices.
	Continuous sound	ON	Undefined (note 3)	Fault-E1 Output over vol.	The output voltage is abnormal (high), so the UPS switches to bypass operation (note 1).	Turn off the power switches of all the devices connected to the UPS, and turn on the power switch of the UPS only. If the displayed content does not change, the UPS is faulty. Contact the shop of purchase. Note: The output voltage can be checked from the LCD Menu by “1.Measurements”-“Input/Output Meter”. The battery voltage can be checked by “1.Measurements” - “Battery Meter”.
	Continuous sound	ON	Undefined (note 3)	Fault-E2 Output under vol.	The output voltage is abnormal (low), so the UPS switches to bypass operation (note 1).	
	Continuous sound	ON	Undefined (note 3)	Fault-E3 Batt.Over Charge	The charging voltage is abnormal (high), so the UPS switches to bypass operation (note 1).	
	Continuous sound	ON	Undefined (note 3)	Fault-E4 Batt.Under Charge	The charging voltage is abnormal (low), so the UPS switches to bypass operation (note 1).	
	Continuous sound	ON	Undefined (note 3)	Fault-E6 Over temperature	The internal temperature is abnormal, so the UPS switches to bypass operation (note 1).	Check that the ambient temperature of the UPS is 40°C or less. If the UPS is not used in a high temperature environment, the UPS is faulty. Contact the shop of purchase.
	Continuous sound	ON	Undefined (note 3)	Fault-E7	A breakdown of an internal component or internal circuit has been detected, so the UPS switches to bypass operation. (note 1).	The UPS is faulty, so contact the shop of purchase.
	Continuous sound	OFF	OFF/discharging	Fault-E12 Battery Over temp	An abnormal battery temperature was detected during backup operation. Output will stop.	The UPS is faulty, so contact the shop of purchase.

Problem	Buzzer	Output	Charge	Message displayed on LCD (Note 2)	Cause	Action
• The UPS power does not turn ON. • There is no power output to the secondary side (connected devices side) • There is no response when the power switch is pressed	None	OFF	OFF/Discharging	OFF	The AC power supply is not input to the UPS.	Check if there is any problem on the power supply to which the AC input cable is connected.
	None	OFF	OFF/Discharging	OFF	When the “AC input overcurrent protection” is activated, the connected devices may be too many, or a short circuit is occurring on the connected devices side.	Disconnect all the connected devices, separate the input power supply, turn ON the circuit breaker, reconnect the input power supply, and turn ON the power switch of the UPS again. If the normal "status display" does not appear even if doing the above, it is judged as a failure. If the unit is in the normal state, check the connected devices.
	None	OFF	ON	Stand by Bat.level	Charging is insufficient, so it is not possible to start up.	Lower the value in [3.Settings] - [Boot Settings] - [Reboot Batt.level]. When set to 0%, the battery charging level is not included in the boot conditions, and booting is immediate.
	None	OFF	ON	AC I/P abnormal-VH	The input voltage or frequency is low or high.	Check the voltage and frequency of the input power from [1.Measurements] - [Input/Output Meter].
				AC I/P abnormal-VL		
				AC I/P abnormal-FH		
				AC I/P abnormal-FL		
	None	OFF	ON	Stand by RemoteOFF	There is a short circuit on the remote ON/OFF terminal, or the LCD menu “Remote ON/OFF Logic” has been changed to “OFF when opened”.	See “6 Contact signal”.
Backup is not possible	None	ON	ON	bE Battery Empty	Charging is insufficient.	Connect the UPS to the commercial power supply, and charge the batteries for 8 hours or more. If expansion battery units are connected, more charging time is required. (24 hours when 1 expansion unit is connected, 40 hours when 2 are connected, and 56 hours when 3 are connected)

Problem	Buzzer	Output	Charge	Message displayed on LCD (note 2)	Cause	Action
The connected devices stop during a power outage	2-second intermittent sound	ON	ON	Fault-E10 (battery replacement LED lit)	Battery degradation was detected.	Replace the battery. If an optional replacement battery is purchased, the customer can carry out the replacement operation.
An error occurs during power recovery after a power outage	4-second intermittent sound	ON	OFF	Fault-E12 Battery OverTemp	A battery temperature fault is detected.	Wait until the battery temperature drops.
The sound of the fan has become noisy (rotation speed has increased)	None	Undefined (note 3)	Undefined (note 3)	Undefined (note 3)	The fan operates in high-speed mode under the following circumstances. 1) During backup mode 2) When the connected load is large during normal operation	Check if rotation of the fan is obstructed. Wait until the conditions for high-speed mode have resolved.

Note 1: In bypass operation, the commercial power supply is directly output. If it is not possible to change to bypass operation, or if a power outage has occurred in bypass operation (AC input OFF), output will stop.

Note 2: A maximum of 2 types of message may be displayed alternately on the LCD.

Note 3: The output varies depending on the circumstances (charging, LCD display message).

Reference documents

A. Specifications

Model number		BU5002R	BU3002R	BU3002RH
Operation method		Full-time inverter power supply method		
AC input	Rated input voltage.	AC 200 V/208 V/220 V/230 V/240 V		
	Start-up voltage range *1	AC 166 V to 288 V±3 V (at rated load) *2		
	Input voltage range *3	AC 176 V to 278 V±3 V (at rated load) *4		
	Input frequency	50/60 Hz ±5 Hz		
	Maximum current (at rated input voltage/at minimum input voltage) *5	25 A/30 A	15 A/18 A	
	Number of phases	Single phase 2 wires (with earth)		
	Input plug shape	NEMA L6-30P/terminal block	NEMA L6-20P	Terminal block
	Input protection	Non-fuse breaker		
	Input protection capacity	45 A	25 A	
AC output	Output capacity (upper limits in each case)	4660 VA/4200 W (factory default) 5000 VA/4500 W (for terminal block input) (for 100 V mode 2500 VA/2250 W) *6	3000 VA/2700 W (for 100 V mode 1500 VA/1350 W)	
	Rated current (at the output rated voltage)	25 A	15 A	
	Switching time	Uninterrupted		
	Bypass function/switching time	● /Within 4 ms	● /Within 4 ms	
	Output voltage (during normal operation)	200 V mode: AC 200 V±2% 208 V mode: AC 208 V±2% 220 V mode: AC 220 V±2% 230 V mode: AC 230 V±2% 240 V mode: AC 240 V±2% 100 V mode: AC 100 V±4%		
	Output voltage (during backup operation)	200 V mode: AC 200 V±2% 208 V mode: AC 208 V±2% 220 V mode: AC 220 V±2% 230 V mode: AC 230 V±2% 240 V mode: AC 240 V±2% 100 V mode: AC 100 V±4%		
	Output frequency (during normal operation)	Synchronized with input frequency (50/60 Hz)		
	Output frequency (during backup operation)	50/60 Hz±0.5%		
	Output waveform (during normal/backup operation)	Sine wave/sine wave		
	Wave distortion	200 V mode/208 V mode/220 V mode/230 V mode/240 V mode: 6% or less (during rectified load, rated output), 3% or less (during resistance load, rated output), 100 V mode: 7% or less (during rectified load, rated input and output), 5% or less (during resistance load, rated input and output)		

A. Specifications

Model number		BU5002R	BU3002R	BU3002RH
AC output	Number of phases	Single phase 2 wires		
	Output receptacle (backup)	NEMA L6-30R × 2/terminal block	C19 (female) × 2, C13 (female) × 8	Terminal block
Battery	Expected life of sealed lead battery	5 years (long life) *7		
	Battery capacity (V/Ah)/number	12 VDC/8.5 Ah/12 pcs	12 VDC/8.5 Ah/6 pcs	
	Expansion	○ (BUM5002R) Up to 3 units	○ (BUM3002R) Up to 3 units	
	Charging time	90% charge without any expansion battery units: 8 hours max., full charge without any expansion battery units: 12 hours max.		
	Charging time with battery expansion	1 expansion battery unit: 24 hours/90%, 32 hours/full charge 2 expansion battery units: 40 hours/90%, 52 hours/ full charge 3 expansion battery units: 56 hours/90%, 72 hours/full charge		
Backup time		5 min (4500 W) *8	4.5 min (2700 W) *8	
External dimensions (W × D × H mm)		430×700×130.5 (3U)	430×660×86 (2U)	
Mass of the main unit		About 57 kg	About 31 kg	About 30 kg
Operating environmental temperature/humidity		0 to 40°C/25 to 85% RH (no condensation)		
Storage environmental temperature/humidity		-15 to 50°C/10 to 90% RH (battery fully charged, storage under no condensation)		
Noise regulations		Complies with VCCI class A		
Safety standard		UL 1778 certified		
Internal power consumption *9 Without load normal/maximum		55 W/225 W	35 W/120 W	35 W/120 W
With rated load normal/maximum		345 W/520 W	225 W/310 W	225 W/310 W
Noise		50 dB or less (during normal operation), 55 dB or less (during backup operation)		
Cooling method (with/without fan)		Forced cooling (with fan)		
Serial communication (RS-232C) (interface shape)		● (D-sub 9pin)		

*1 Input voltage range that can start the UPS by turning the power switch ON.

*2 The value is changed as follows depending on the load capacity.
100V+1.0857x(load capacity%-40%)V to 288 V±3 V (with 40% or more connection load)
100V to 288 V±3 V (with smaller than 40% connection load)

*3 Input voltage range in which normal operation is enabled.

*4 The value is changed as follows depending on the start-up voltage.
(Minimum start-up voltage)+10V to 278 V±3 V

*5 When the rated load is connected.

*6 When using BU5002R with the AC input plug that is connected at the time of shipment, use in 4660 VA/4200 W or less as the load of the connected devices. If using the unit with a higher capacity, prepare a cable which suit the capacity, and connect it to a terminal block.

*7 When the ambient temperature is 25°C.

*8 When the ambient temperature is 25°C and the battery is in its initial state.

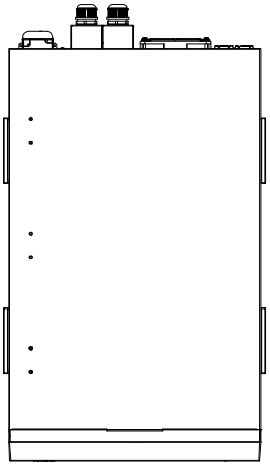
*9 At the rated input voltage. To convert into heat value (kJ/h), calculate using the following formula: Internal power consumption (W) x 3.6.

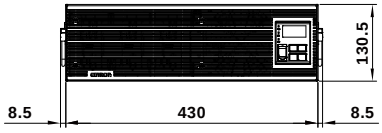
● Indicates a standard feature

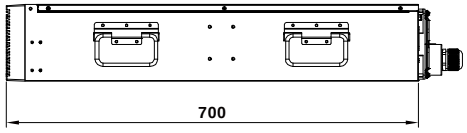
○ Indicates an optional feature

B. External dimens Units: mm, tolerances: ±2 mm

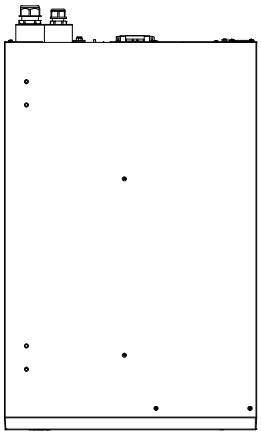
■BU5002R

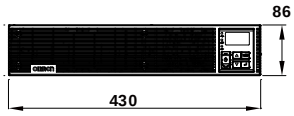


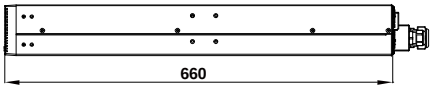




■BU3002R/BU3002RH







■ Stands for vertical layout

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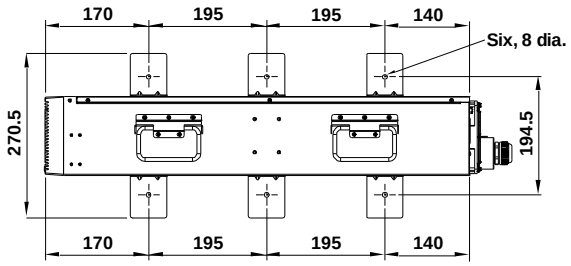

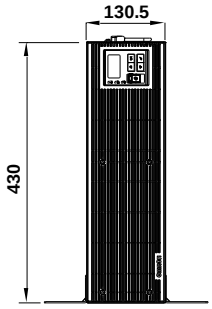

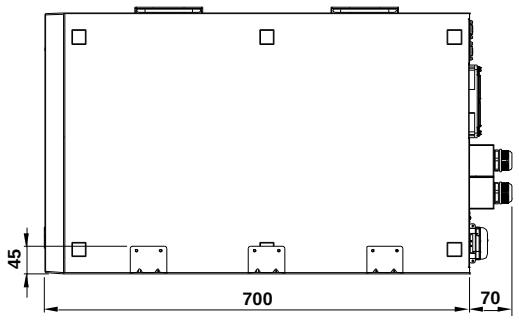

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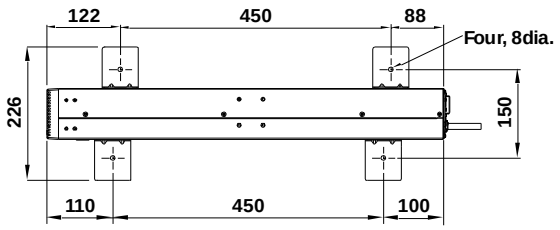

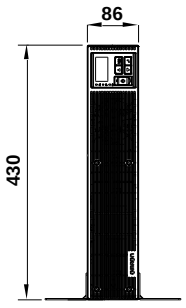

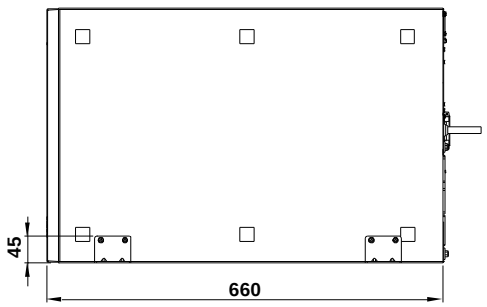

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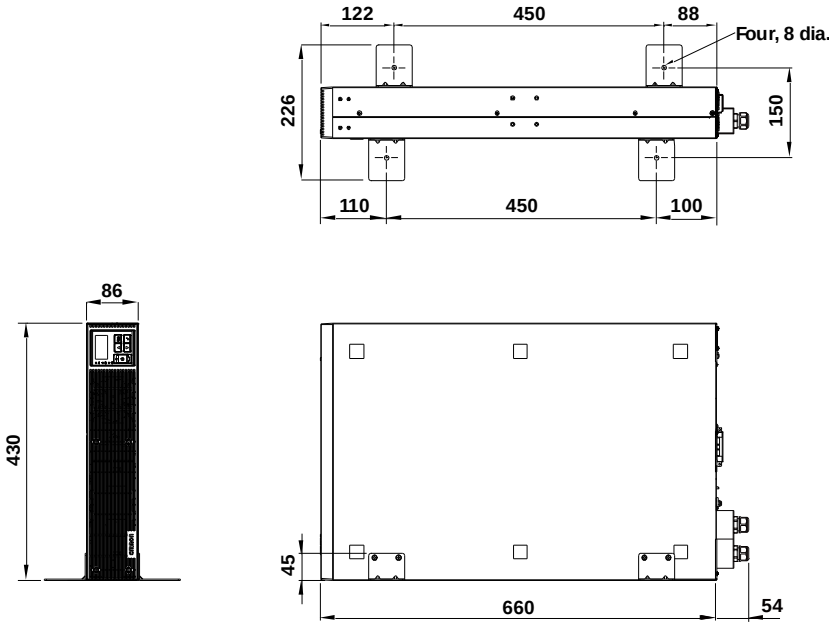

■ Rubber feet

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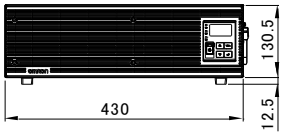

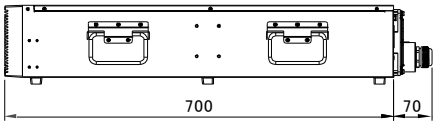

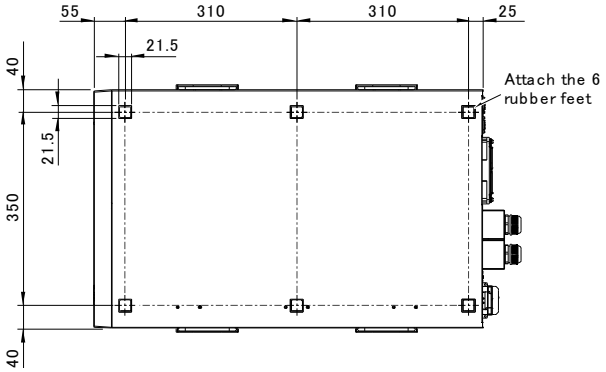

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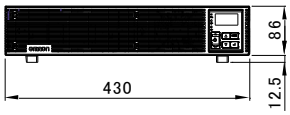
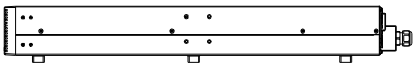
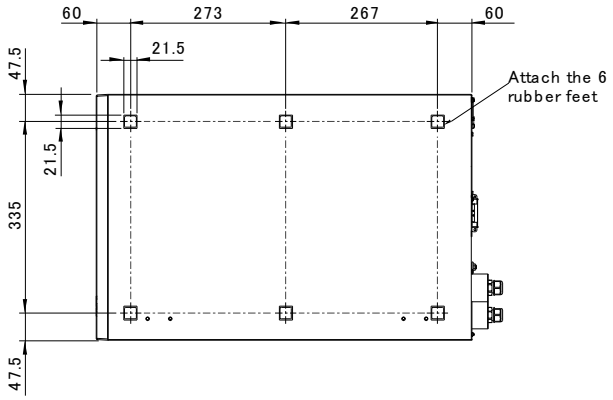
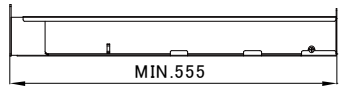
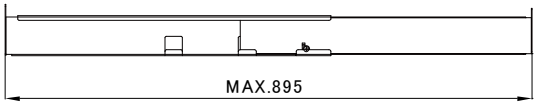




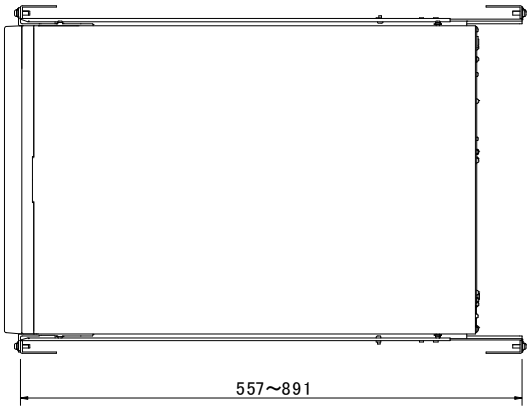


■ Support angle





Rack installation



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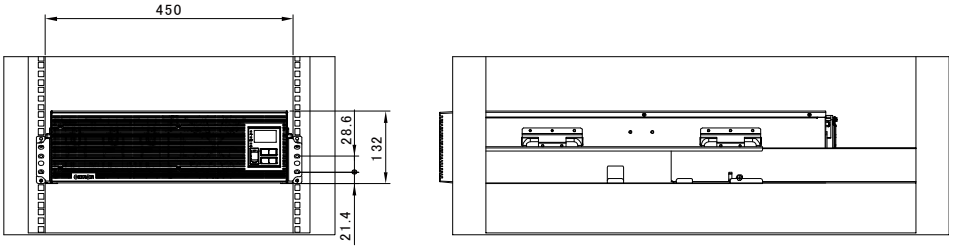

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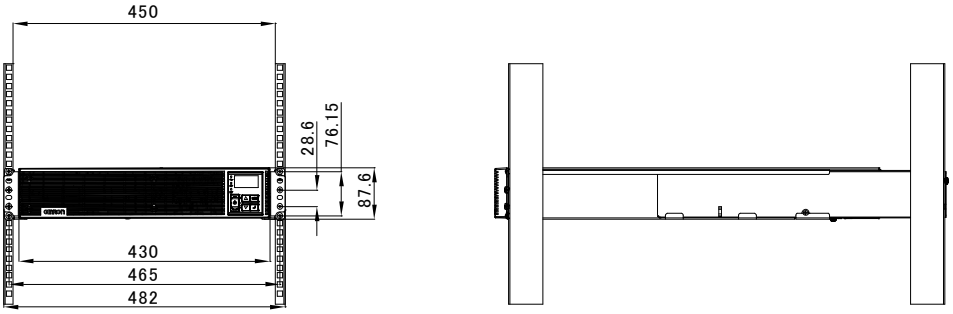


C. Battery life

■ Battery life

The sealed lead battery used in the battery units has a limited life. Inspection should be performed periodically. See “4-2 Checking the battery” (page 95) for the inspection procedure.
It is recommended that the battery is replaced before its life expires.

Battery life
(Trickle life = life when the battery is discharged once or twice per month with infrequent charging and discharging)

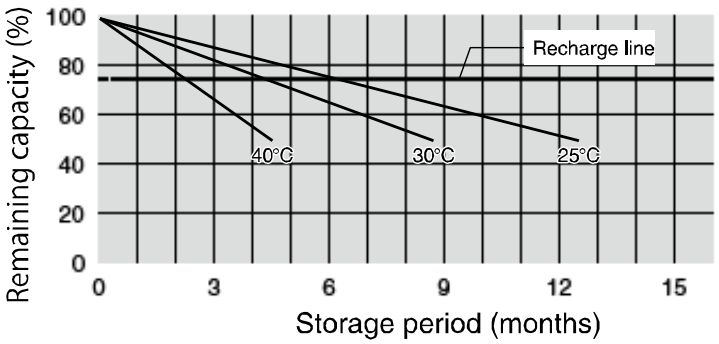
Battery types	Expected battery life (ambient temperature 40°C)	Expected battery life (ambient temperature 30°C)	Expected battery life (ambient temperature 25°C)
Long life battery	1.7 years	3.5 years	5 years

* Basically the ambient temperature has a great effect on the life.

■ Periodic recharging during battery storage

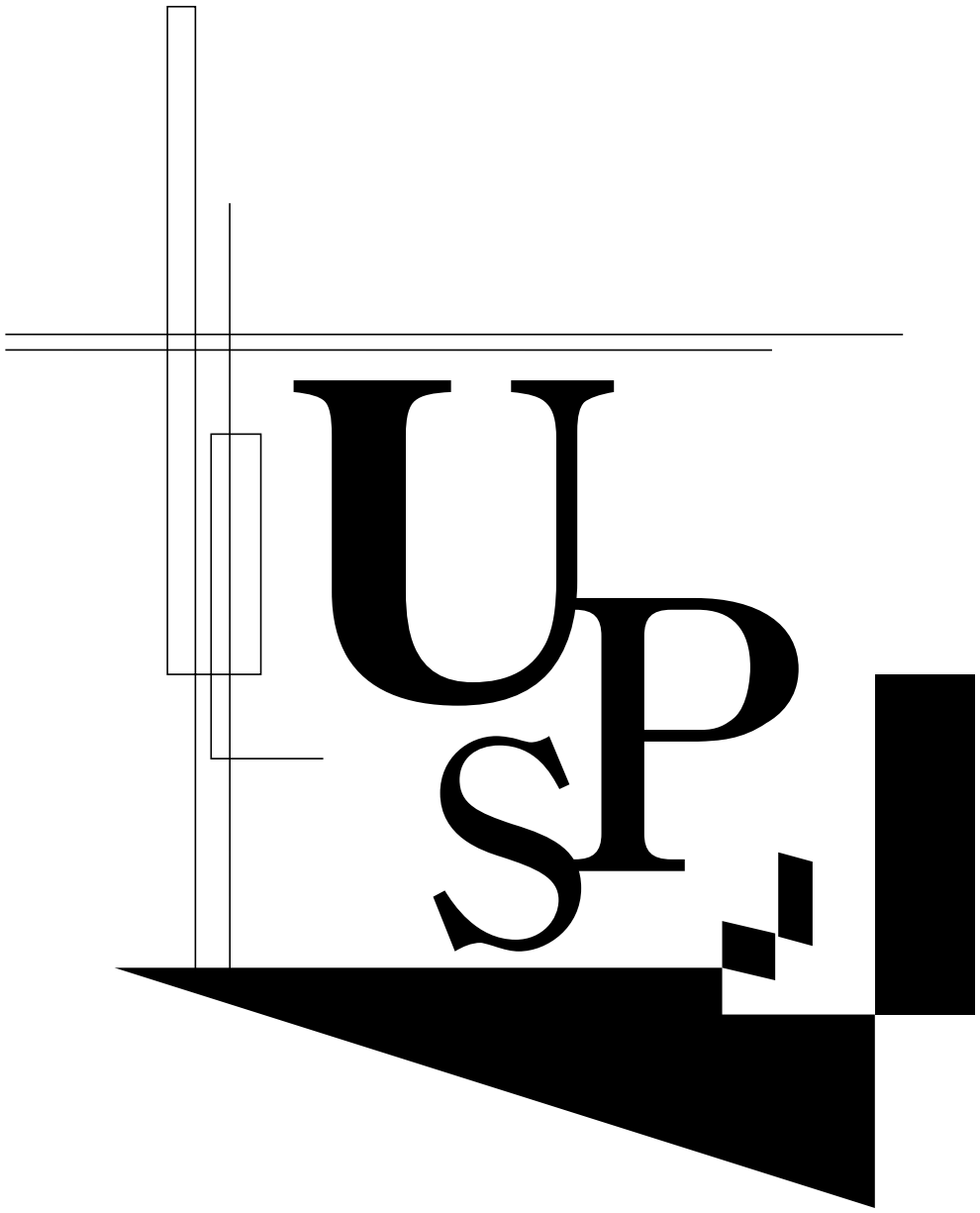
When in storage without using the UPS (without charging the battery), the battery self-discharges, and if this discharging continues, degradation of the battery will progress, and in the worst case it will become unusable. Therefore it is necessary that it is recharged periodically.

Examples of storage



Under storage at 25°C, a battery will self-discharge down to 80% after 6 months, and down to 50% after 1 year (the battery capacity becomes smaller). The higher the storage temperature, the faster the speed of self-discharge.

Storage temperature	Auxiliary charging interval
40°C or lower	2 months
30°C or lower	4 months
25°C or lower	6 months



The English translation is for reference purposes only.
In the event a difference arises regarding the meaning herein, the original Japanese version shall prevail as the official authoritative version.

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