USER'S MANUAL

Uninterruptible Power Supply
GX200 Series (5kVA, 7.5kVA, 10kVA)

Model M-UPS050AD2B
M-UPS075AD2B
M-UPS100AD2B

Fuji Electric Co., Ltd.

INR-HG5687

For Safe Use

- Handling of this manual

This manual contains important information for safe use of the product. Please read this instruction manual carefully before using the product to ensure that you fully understand the product.

High-safety uses

This product is designed and manufactured for the general use, such as general office use and personal use, and is not designed and manufactured for uses (control of nuclear reactions at the nuclear facilities, aircraft flight control, air traffic control, mass transport control, medical life support systems, and missile launch control in weapon systems, etc.) that require a high degree of safety, and can cause death or serious injury if the required safety is not maintained. Do not use this product without carrying out measures to ensure the required safety for such a use. If using this product for such a use, consult with our sales representatives.

Prevention of radio interference

Important
This product is class A information technology device based on the standards of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). Use of this product in a residential area may cause radio interference. In this case, the user may be required to take appropriate action.

Prevention of Harmonic Current Interference

M-UPS050AD2B conforms to the Guideline of harmonic restraint measures for general-purpose UPS.

M-UPS075AD2B and M-UPS100AD2B conform to IEC61000-3-12.

Warning Signs

Following warning signs are included to prevent the user from damaging the UPS and the connected devices.

⚠Warning	Indicates high risk of death or serious injuries when the product is not used properly.
⚠ **Caution**	Improper use could cause mild injuries and damage the UPS and the connected device.
Important	"Important" indicates caution about the use of the UPS.

Symbols

	The condition of the UPS

LED Indications

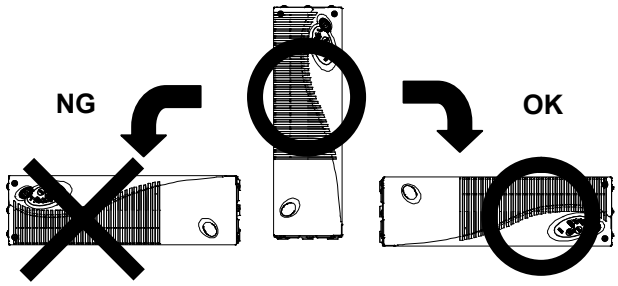
	Lit
	Flashing
	Out

Attention: Information in this manual is subject to change without notice.

- List of important warnings: Risks when UPS is not used correctly

⚠ **Warning**	"Warning" indicates that death or serious injury may occur.
Electric Shock	Do not remove the cover of the UPS.
Warning	High voltage parts inside UPS may cause electrical shock.

⚠ **Caution**	"Caution" indicates that slight or moderate injury may occur and the UPS or user's property may be damaged.
Electric Shock Injury	Do not insert fingers or sticks into the cooling fan or the vent hole. Doing so may cause electric shock or injury.
Electric shock	Maintenance including daily inspections (battery replacement, cooling fan replacement, etc.) should be performed by a professional technician. Failure to do so may cause electric shock. This UPS requires grounding (Class D grounding or higher). When connecting to the input power supply, connect a ground wire to the AC input protective grounding terminal. Failure to do so may cause electric shock.
Electric Shock Failure	When connecting this UPS to the input power supply, connect the active wire to the AC input 1/R and L2/S terminals and the inactive wire to the ground terminal. Also, connect the ground wire to the AC input protective ground terminal. Similarly, in the connection between the output of the UPS and the connecting device, connect the hot wire side wires to the AC output terminals I1/U and I2/V and the ground wire to the output ground terminal. Incorrect connection may cause noise, malfunction, failure, or electric shock. When maintaining the connected device, be sure to turn off the power supply to the connected device. Turn off the breaker on the distribution board and disconnect the AC input terminals. Failure to do so may cause electric shock.

Injury	Do not step on or put an object on the UPS.
Injury **Damage**	**The UPS is heavy. Caution in handling the UPS.** Take out the UPS in a level and flat place. The weight of the UPS is as follows: • M-UPS050AD2B: 63kg (without battery: 29kg) • M-UPS075AD2B: 127kg (without battery: 59kg) • M-UPS100AD2B: 127kg (without battery: 59kg)
Fire **Damage**	**This UPS can be installed laying down.** When installing the UPS lying down, it should only be tilted to the right side (clockwise) when viewed from the front. 

Damage

This UPS is not designed for medical equipment that comes in contact with the human body.

Do not place objects affected by magnetism near the UPS.

Have the voltage set within the range of the input connected device. Failure to do so may damage the connected device.

Do not operate the voltage setting switch while the UPS is operating.
The changed voltage will be output when the UPS is restarted, which may cause damage to the connected equipment. Also, the output voltage cannot be changed even if it is operated while the UPS is operating.

Replace the battery periodically.

Replace the battery with a new one specified by Fuji Electric. Using unspecified batteries or mixing old and new batteries may cause UPS failure or trouble.

When performing a rolling blackout, or when unplugging the AC input plug from the input power outlet, or when turning off the input breaker on the rear of the UPS, make sure that the RUN LED (green) is flashing slowly (1.6 second cycle).

When the distribution board breaker is turned off, the AC input plug is unplugged from the input power outlet, or the input breaker on the back of the UPS is turned off, the built-in battery is discharged because the condition is the same as a power failure when the RUN LED is lit. This may cause battery deterioration and shorten the battery replacement cycle.

● Warning label

Never remove the labels.

Caution for Use

Important

Do not install and store the UPS in the following places:

- Outdoor location
- Exposed to the wind and rain
- Extremely humid and dusty
- With corrosive gas or salt
- Direct sunlight
- Near sparks or heating element
- Extremely hot or cold, where the temperature fluctuates greatly
- With vibration and shock

Do not perform the battery check in succession.

When the battery check is performed, the internal battery actually discharges to check the voltage.
Consecutive battery checks may cause battery degradation and shorten the battery replacement cycle.

If the UPS is not used for a long time, charge the battery every two months. Charge the battery by operating the UPS for 12 hours or more every two months. After charging the battery, perform the battery check.
If the UPS is not used for a long period of time, the battery may become over discharged due to self-discharge, rendering the UPS unusable.

Disposal of used battery has legal restrictions
Please follow any local, county, regional or state guidelines for the disposal of batteries.

Do not block the vent hole and cooling fan, Do not use UPS where the air is not well ventilated.

The UPS is equipped with vents and cooling fans to cool the inside of the UPS; the internal and ambient temperatures of the UPS may deviate from the rated specifications.

Replace the cooling fan periodically.

Continued use after the fan has reached the end of its service life may cause the internal temperature of the UPS to exceed its rating.

The allowable voltage between the UPS input electrical cable and ground is 250VAC.
Applying a voltage of 250 VAC or higher may damage the filter circuit in the input section.

The allowable input surge voltage of this UPS is 5kV peak (1.2 x 50µs).
However, when the UPS model is "-UC" or "-C", it is 2kV peak (1.2 50µs).
Applying a surge voltage exceeding 5kV peak ("-UC" and "-C" are 2kV peak) may damage the filter circuit in the input section.

The input voltage range of the UPS is 160VAC to 288VAC.
When input voltage is different from the rated voltage, install a transformer outside the UPS to convert the voltage. Applying a voltage higher than the input voltage range may damage UPS.

Connect the UPS to the input power supply within the rated input voltage range of the connection device.
This UPS can operate up to 288 VAC. However, the input voltage of general equipment is 200 VAC ±10%. Therefore, if a voltage of 220 VAC is applied to the UPS and switched to bypass operation, a voltage exceeding the specification will be applied to the connected equipment. The input voltage should be in accordance with the specifications of the connected equipment.

Do not apply single-line grounding on the output side.
There is no insulation between the input and output of the UPS. Therefore, do not single wire ground the output side. Noise or malfunction may cause trouble to the connected device.

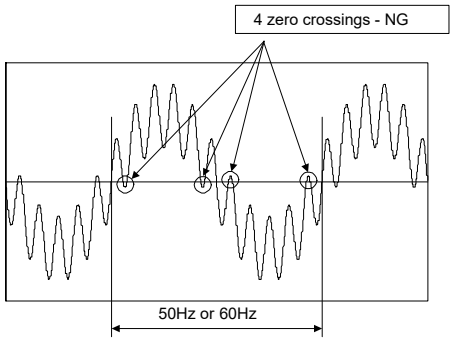
When connecting the UPS to a power supply unit with a leakage breaker, select a leakage breaker that takes into account the total leakage current of the UPS and the leakage current of the connected equipment.

When connecting the UPS to a 3-phase power supply, be sure to connect the grounding side of the 3-phase power supply to the grounding electrode on the AC input of the UPS.
Connecting to an ungrounded power supply may result in malfunction.

When using a generator temporarily during a planned power outage, use a generator that meets the following specifications.

Connecting a generator that does not meet the following specifications to the input section of the UPS may cause the UPS to malfunction or be damaged.

- Voltage regulation: depend on the input specification of the connected device
- Frequency variation: within 5% of rated frequency
- Voltage waveform distortion: within 5%
- Voltage zero-cross condition: No more than one zero-crossing during one cycle



Contents

1 Unpacking

1.1 Opening the Package

⚠ Caution: Heavy Load

Take out the UPS in a level and flat surface.
Do not overturn or drop it.

The mass of the Product is as follows

- M-UPS050AD2B: 63kg (without battery: 29kg)
- M-UPS075AD2B: 127kg (without battery: 59kg)
- M-UPS100AD2B: 127kg (without battery: 59kg)

Contents of the package

Check for any damages in the appearance of the UPS. Confirm that all accessories are contained.

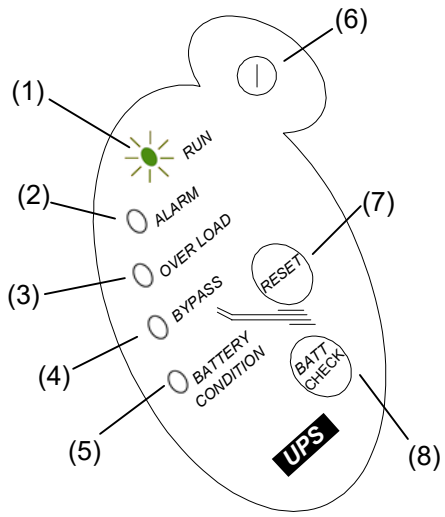
UPS Model	Accessories	No. of pcs
M-UPS050AD2B (5kVA)	User's manual Warranty Stabilizer (with 6 setscrews)	1 copy 1set
M-UPS075AD2B (7.5kVA)	User's manual Warranty Stabilizer (with 6 setscrews)	1 copy 1set
M-UPS100AD2B (10kVA)	User's manual Warranty Stabilizer (with 6 setscrews)	1 copy 1set

If the UPS has damages or any accessories are missing, contact the company who you purchased the UPS from.

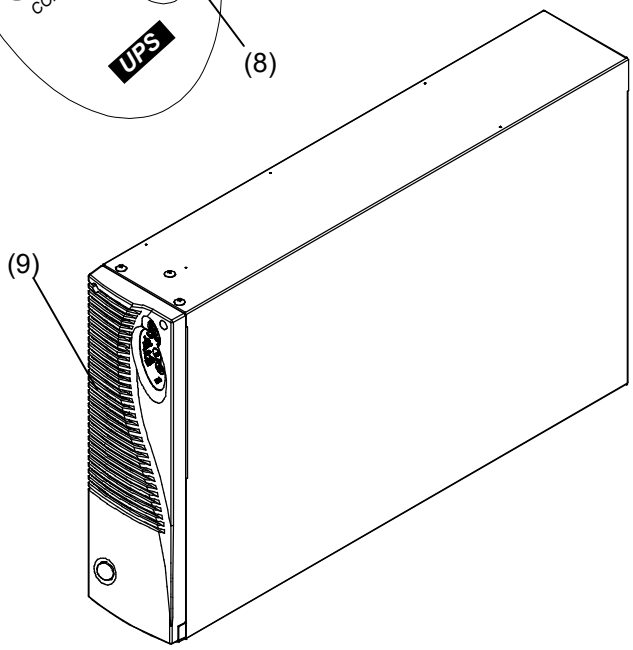
2 Overview

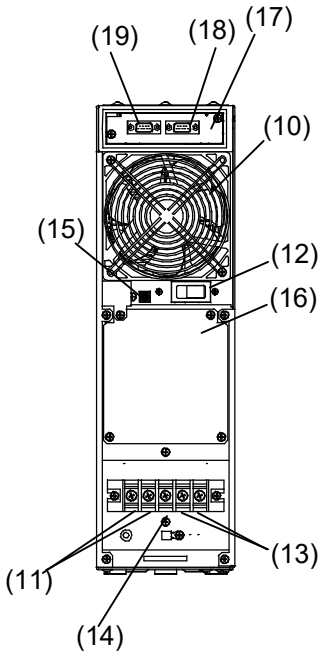
2.1 Name and Main Function of Each Part

〈M-UPS050AD2B〉

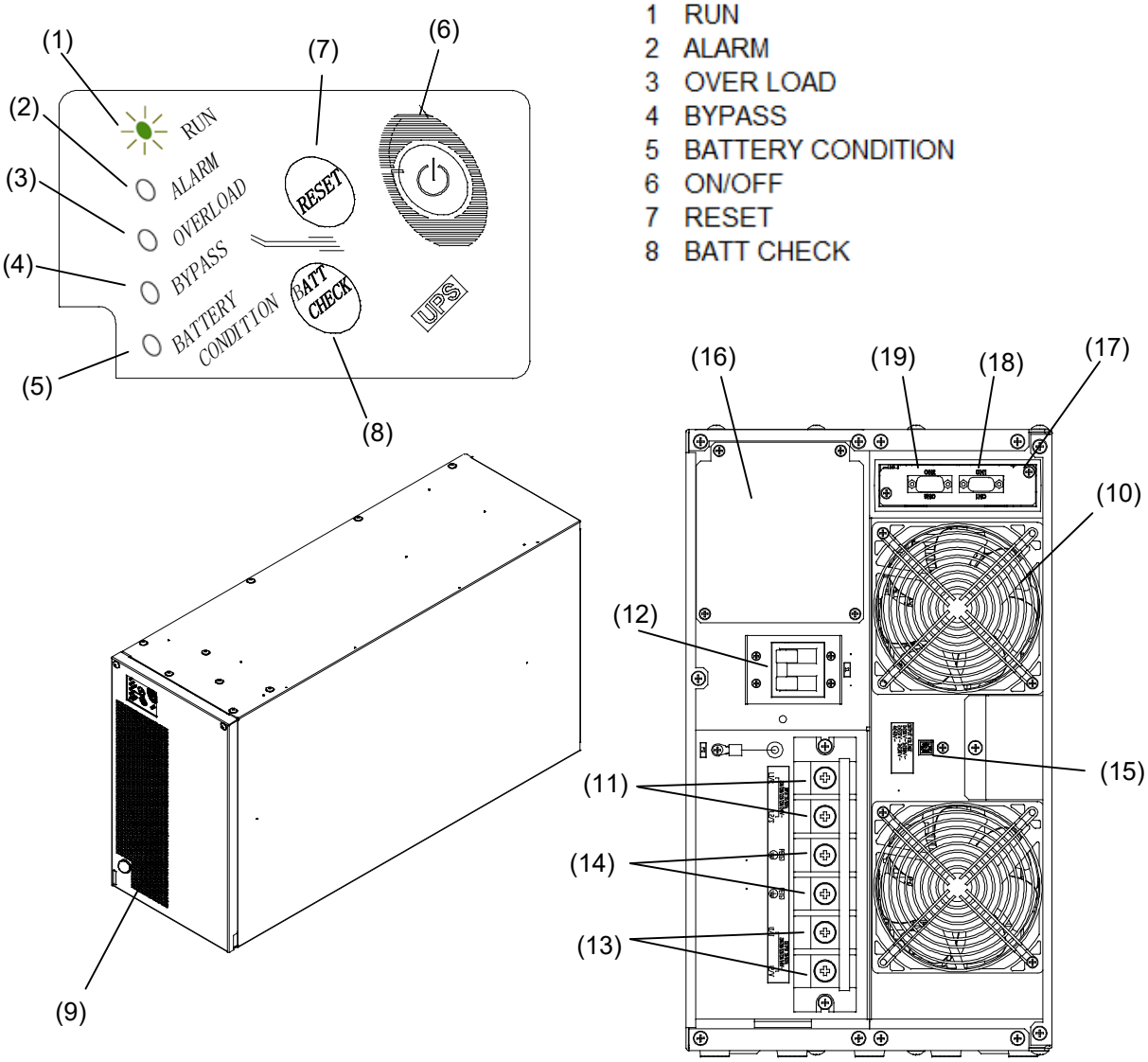


1 RUN
2 ALARM
3 OVER LOAD
4 BYPASS
5 BATTERY CONDITION
6 ON/OFF
7 RESET
8 BATT CHECK
9 Vent hole
10 Cooling fan
11 Input terminal block
12 Input breaker
13 Output terminal block
14 Ground terminal
15 Switch of voltage setting
16 Dummy board
17 Interface slot
18 Contact signal
19 RS-232C





〈M-UPS075AD2B, M-UPS100AD2B〉



1 RUN
2 ALARM
3 OVER LOAD
4 BYPASS
5 BATTERY CONDITION
6 ON/OFF
7 RESET
8 BATT CHECK

9 Vent hole
10 Cooling fan
11 Input terminal block
12 Input breaker
13 Output terminal block
14 Ground terminal

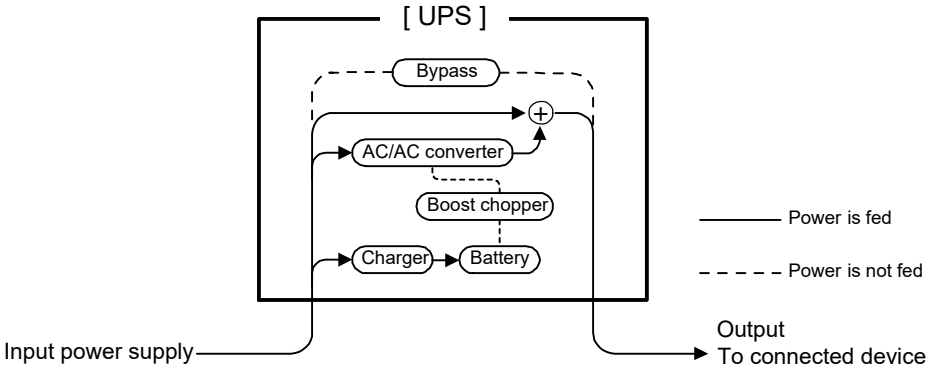
15 Switch of voltage setting
16 Dummy board
17 Interface slot
18 Contact signal
19 RS-232C

	Name		Main function
(1)	LED	RUN	Green light is on when the UPS is operating normally.
(2)		ALARM	Orange light is on for any failures in the UPS.
(3)		OVER LOAD	Orange light is on when the load capacity of the connected device exceeds the rated specification.
(4)		BYPASS	Orange light is on while the UPS is in bypass running.
(5)		BATTERY CONDITION	When the battery is normal, the amount of charge is indicated. Lit: 80 to 100% Flashing: 50 to 80% Out: 0 to 50% When the battery is abnormal, it lights up orange.
(6)	Switch	ON/OFF	Press for 1 second to switch between ON and OFF
(7)		RESET	Press RESET to stop the warning. After the fault has been recovered, press RESET for 3 seconds to turn off the ALARM LED.
(8)		BATT CHECK	Press BATT CHECK button for 2 seconds to check the battery manually.
		BYPASS	To forcibly (manually) switch to bypass operation while the UPS is in normal operation. Press switches RESET and BATT CHECK simultaneously for 3 seconds. Press the switches again simultaneously for 3 seconds to return the UPS to normal operation.
(9)	Vent hole		Allows ventilation inside the UPS. The air direction is intake
(10)	Cooling fan		Cools inside UPS. The air direction is exhaust
(11)	Input terminal block		Connect to an input power supply
(12)	Input breaker		Circuit breaker to protect the input circuit
(13)	Output terminal block		Connects to an output system
(14)	Ground terminal		Connects a grounding wire
(15)	Switch of voltage setting		To set up the output voltage
(16)	Dummy board		Mounts various optional outlets (-U, -UC types are N/A)
(17)	Interface slot		Mounts various interface cards
(18)	Contact signal (CN1)		Outputs a no-voltage contact signal
(19)	RS-232C (CN2)		IRS-232C interface

2.2 How the Product Works

- **During normal operation**

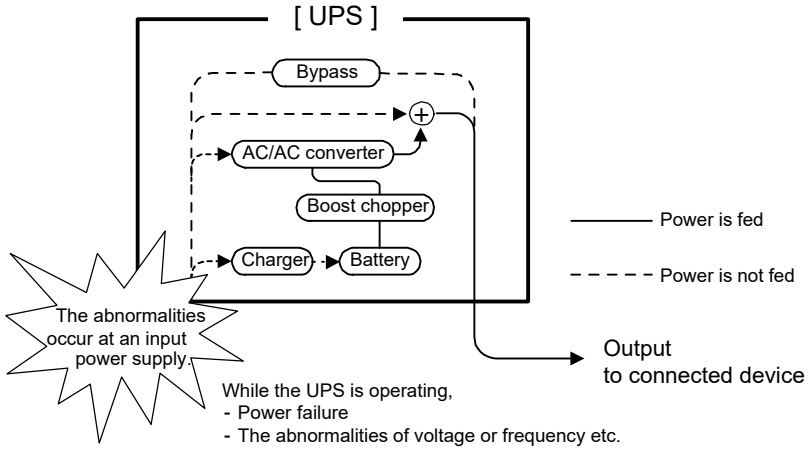
  This UPS operates with AC power as input and supplies constant voltage output to connected devices. At the same time, it charges the product's built-in battery to prepare for battery operation. The output frequency is synchronized with the input frequency.



Electricity flow during normal operation

- **Battery power failure**

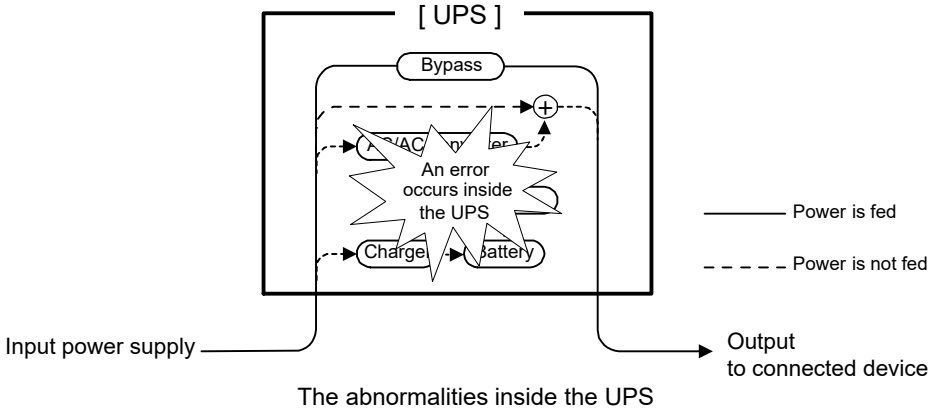
  If a power failure or input power voltage/frequency error occurs, the UPS starts discharging from the battery and continues to supply stable power to the connected device. The system switches to battery operation without interruption. When the input power is restored (when the voltage of the input power returns to within the rating), the UPS automatically returns to the normal operation described above.



Electricity flow during normal operation

Automatic bypass operation

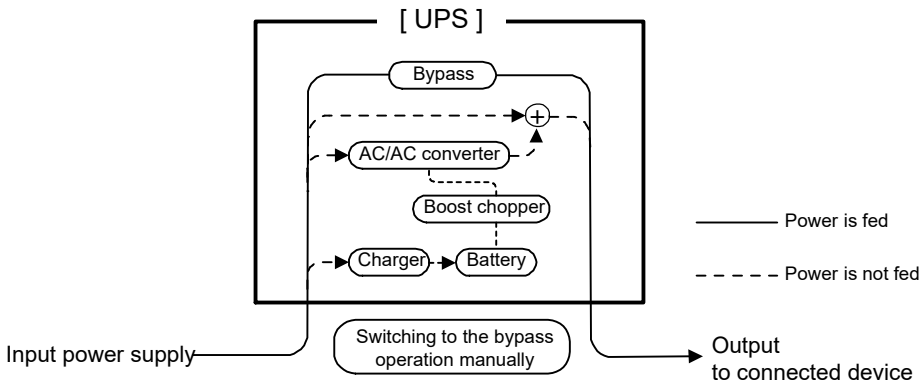
When the abnormalities occurred in the UPS during the normal operation, the UPS switches to the bypass operation automatically. During the bypass operation, the UPS sends the input voltage to the output directly and supplies the electric power to the connected device. In this case, even if the power failure occurs, the UPS becomes the power failure state without switching to the battery operation.



Electricity flow during automatic bypass operation

Manual bypass operation

Manual bypass operation can be switched to bypass operation during normal operation. Press the RESET and BYPASS switches simultaneously for 3 seconds.
Press again for 3 seconds to return to normal operation. In this case, even if the power failure occurs, the UPS becomes the power failure state without switching to the battery operation.



Electricity flow during automatic bypass operation

3 Installation

3.1 Installing the UPS

- **Caution about installation**

⚠ Caution	
Injury	Do not step on it or put an object on the UPS.
Damage	Do not place magnetically sensitive objects (monitors, hard drives, etc.) around the UPS. It may adversely affect the object.

- **Installation location**

Important

Do not install and store the UPS in the following places:

- Outdoor
- Exposed to the wind and rain
- Extremely humid and dusty
- With corrosive gas or salt
- Direct sunlight
- Near sparks or heating element
- Extremely hot or cold, where the temperature fluctuates greatly
- With vibration and shock

Do not use in a residential area or adjacent area.

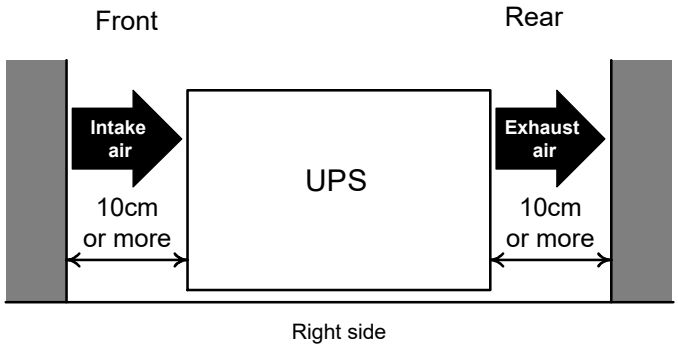
This UPS is a Class A information technology device according to VCCI (Voluntary Control Council for Interference by Information Technology Equipment) standards. Use of this UPS in a residential area may cause radio interference. In this case, the user may be required to take appropriate measures.

Do not block the vent hole and cooling fan, Do not use UPS where the air is not well ventilated.

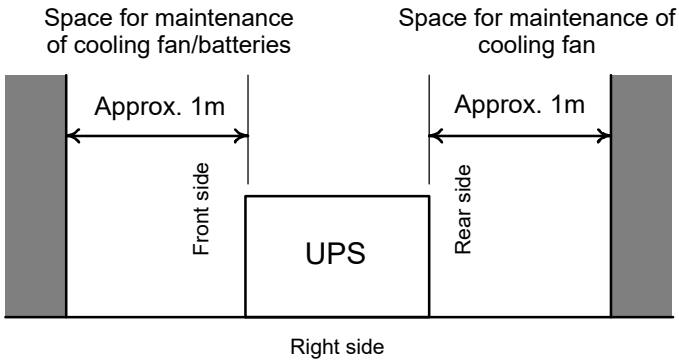
The UPS is equipped with vents and cooling fans to cool the inside of the UPS; the internal and ambient temperatures of the UPS may deviate from the rated specifications.

The following spaces are required for an installation location.

- The UPS draws air in through the vents on the front of the UPS and exhausts it through the cooling fan on the back of the UPS. A minimum of 10 cm of space is required on the front and back of the UPS.



When performing maintenance on the UPS, a space of approximately 1 m is required in front of and behind the UPS.

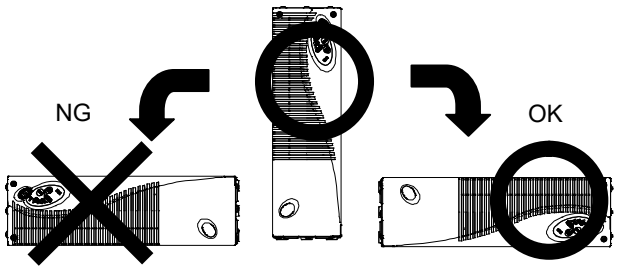


The recommended environment is as follows.

Item	Recommended environment
Temperature	15 to 25 degrees C
Humidity	30 to 70% (no condensation)

Installation Position

⚠ Caution	
Fire Damage	This UPS can be installed lying down; it should only be tilted 90 degrees clockwise when viewed from the front; do not tilt the UPS to the left (90 degree counter-clockwise).

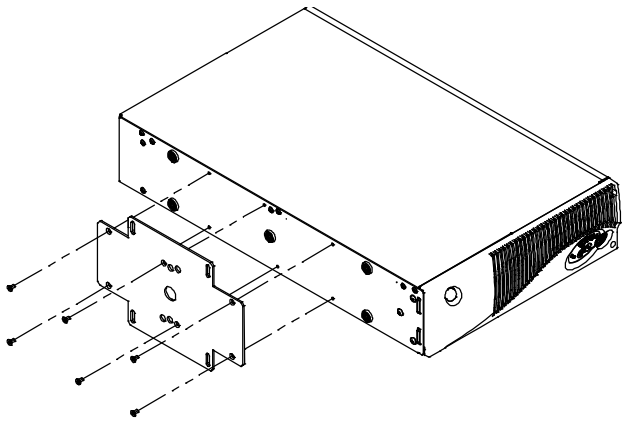


This UPS can be installed in a 19-inch rack with optional rack attachment.

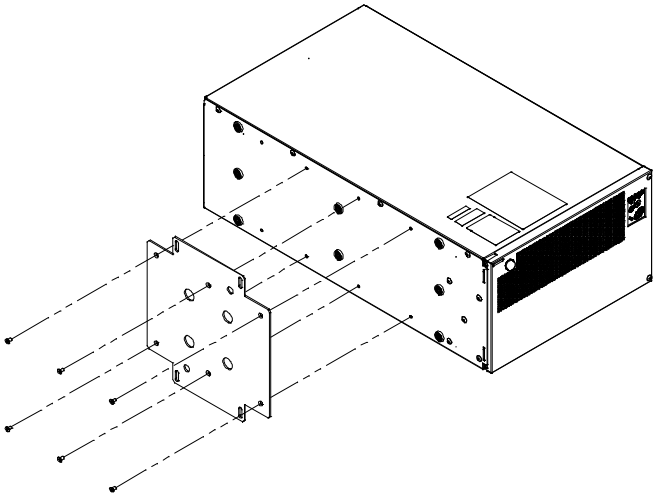
⚠ Caution	
Injury **Damage**	Take out the UPS in a level and flat place. The weight of the UPS is as follows: . M-UPS050AD2B: 63kg (without battery: 29kg) • M-UPS075AD2B: 127kg (without battery: 59kg) • M-UPS100AD2B: 127kg (without battery: 59kg)

1. When using the self-standing type, tilt the UPS gently to the right and attach the stabilizer to the bottom of the UPS with six screws. (See figures below).

〈M-UPS050AD2B〉

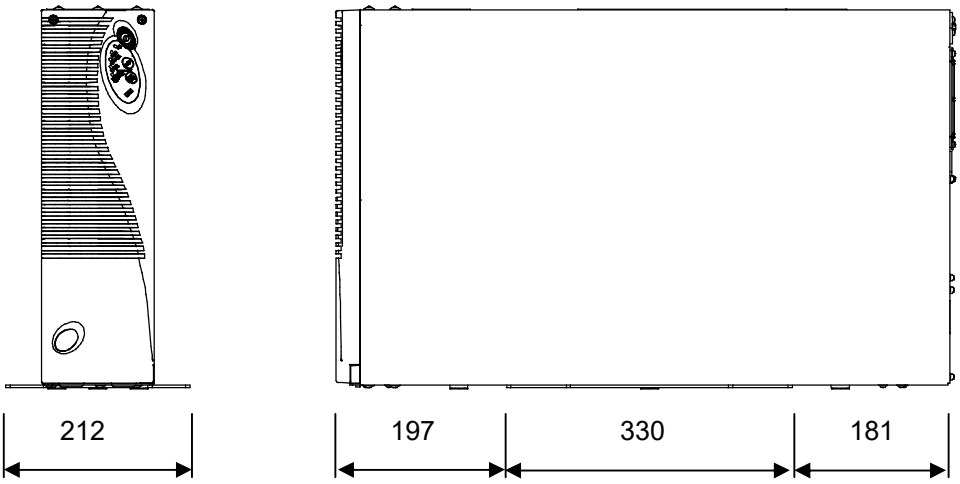


〈M-UPS075AD2B, M-UPS100AD2B〉

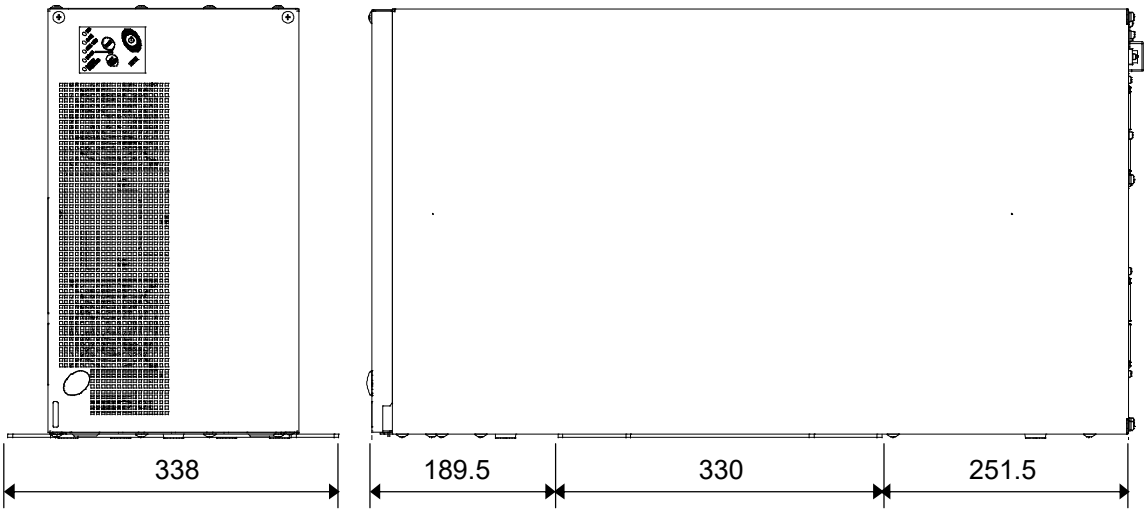


2. After attaching the stabilizer to the UPS, screw the stabilizer to the floor.

〈M-UPS050AD2B〉



〈M-UPS075AD2B, M-UPS100AD2B〉



3.2 Connecting the Cable

- **Caution about connecting the cable**

⚠ Caution	
Electric shock	Connect an AC input plug to a grounded power outlet, or connect the ground wire to the ground terminal. (class D grounding) Risk of an electric shock.

Important

The allowable voltage between the UPS input cable and ground is 250VAC. Applying a voltage of 250VAC or more may damage the filter circuit in the input section.

The allowable input surge voltage of the UPS is 5kVpeak (1.2 50µs). However, if the UPS model is "-UC" or "-C", it is 2kVpeak (1.2 50µs).
If a surge voltage of 5kV peak (2kV peak for "-UC" and "-C") or more is applied, the filter circuit in the input section may be damaged.

The input voltage of the UPS is 160 to 288VAC.

When input voltage is different from the rated specification (400VAC etc.), install a transformer at the outside of the UPS to convert voltage. If the voltage more than the range of the input voltage is applied, the UPS may be damaged.

This UPS can operate up to 288VAC.
However, the input voltage for general equipment is 200VAC ±10%. Therefore, switching to bypass operation when applying a voltage of 220VAC to the UPS will cause a voltage exceeding the specifications to be applied to the connected device. The input voltage should match the specifications of the device to be connected.

Do not apply single-line grounding on the output side.
There is no insulation between the input and output of the UPS. Do not apply single-line grounding on the output side. Noise and malfunctions may cause problems.

Preparation before connection

Important

When connecting the UPS to the electrical power equipment with the earth leakage breaker, select the earth leakage breaker not to trip due to current leakage.

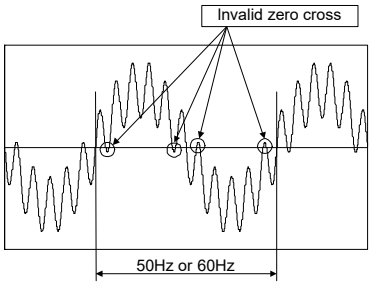
When connecting the UPS to a 3-phase power supply, be sure to connect the grounding side of the 3-phase power supply to the grounding electrode of the AC input of the UPS.

Connecting to an ungrounded power supply may cause malfunction.

When using a generator temporarily for planned power outages, use a generator that satisfies the following specifications.

Connecting a generator that does not meet the following specifications to the input of this product may cause malfunction or damage to the product.

- Voltage regulation: depend on the input specification of the connected device
- Frequency variation: within 5% of rated frequency
- Voltage waveform distortion: within 5%
- Voltage zero-cross condition: No multiple zero-cross



1. Check the input power supply. The input power supply which can connect with this UPS is as follows.

UPS model	Breaker capacity	Input capacity	Input voltage	Input frequency	Number of phase
M-UPS 050AD2B (5kVA)	40A or more	5kVA or more	160 to 288V AC	50/60Hz ± 5% (Note)	Single-phase two-wire
M-UPS 075AD2B (7.5kVA)	50A or more	7.5kVA or more			
M-UPS 100AD2B (10kVA)	75A or more	10kVA or more			

Note: If the input voltage and the frequency are out of this range, the UPS may experience the following conditions or be damaged.

When the UPS is turned on, the UPS will have a “startup input error”. In this case, the UPS cannot be started.

While the UPS is operating,“Abnormal input voltage” is detected and the battery operation is performed. If the UPS is connected to an input power supply that is frequently out of this range, repeated charging and discharging of the battery can cause the battery to run empty or deteriorate.

The input frequency is automatically selected according to the region where the UPS will be used.

2. The specifications of the terminal block are as follows. Select crimp contacts that meet the specifications.

〈M-UPS050AD2B〉

UPS side	Specification			Connect with
Input and output terminal block	Terminal marking	Connection	Form	Input power supply and output system
	L1/R	AC input (ungrounded side)	5-pole screw terminal (M5)	
	L2/S	AC input (ungrounded side)		
	PE(G)	Ground (protective grounded)		
	I1/U	AC output (ungrounded side)		
	I2/V	AC output (ungrounded side)		

〈M-UPS075AD2B, M-UPS100AD2B〉

UPS side	Specification			Connect with
Input and output terminal block	Terminal marking	Connection	Form	Input power supply and output system
	L1/R	AC input (ungrounded side)	6-pole screw terminal (M8)	
	L2/S	AC input (ungrounded side)		
	PE(G)	Ground (protective grounded)		
	PE(G)	Ground (protective grounded)		
	I1/U	AC output (ungrounded side)		
	I2/V	AC output (ungrounded side)		

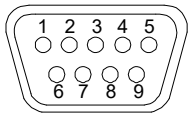
- **Connecting the output cable**
  Remove the AC input/output terminal block cover from the back side, and connect the AC output cable to the AC output terminal block. Have the ground terminal securely grounded.

- **Connecting the input cable**
  Remove the input and output terminal block cover from the back side, and connect the AC input cable to the input terminal block. Have the ground terminal securely grounded.

3.3 Interface Port

An interface port (9-pin D-sub) is provided on the rear of the UPS to take out the following signals. Use as needed.

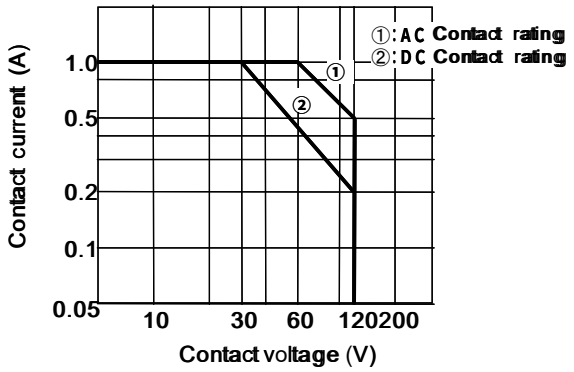
- **CN1 (No-voltage contact signal interface)**



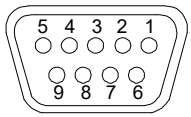
D-sub 9 pins, male
(3 mm screw)

Pin No.	Classification of signal	Name of signal	Content
1-4	"Open" at operation	UPS failure signal	No-voltage contact signal due to a failure in the UPS, a battery malfunction, or it is time for battery replacement.
1-6	"Close" at operation		
2-5	"Open" at operation	Input power supply abnormal signal	No-voltage contact signal due to a voltage error in the power supply (If the power failure lasts up to 1.5 seconds, there is no operation).
2-7	"Close" at operation		
3-9	"Open" at operation	Battery voltage drop signal	No-voltage contact signal at approximately 2 minutes before the end of battery discharge (at rated load) during battery operation.
3-8	"Close" at operation		

Use the contact output within the voltage and current ranges shown below.



● CN2 (RS-232C interface)



D-sub 9 pins, female
(#4-40 inch screw)

Pin No.	Classification of signal	Name of signal	Content
2-3	"Close" at operation	Input power supply abnormal signal (*1)	No-voltage contact signal that is output when a voltage error occurs in the input power supply due to a power failure, etc. (It does not operate in the event of a power failure of 1.5 seconds or less)
1-3	"Close" at operation	Battery voltage drop signal (*1)	No-voltage contact signal that is output when the battery is about 2 minutes before the end of battery discharge (at rated load) during battery operation.
8-7	AC output stop at 'H' signal reception	UPS automatic shutdown signal (*2)	Signal input to the UPS when the AC output of the UPS is stopped. (1) The AC output can be stopped only during battery operation. (2) This signal (5 to 25 VDC) must be input for at least 0.6 seconds.
6-7	RS-232C serial signal (*3)	Serial data input (RX)	[Communication system] Baud rate : 2400 bps Data length : 8 bits Stop bit Parity : 1 bit Character type : non : ASCII
9-7		Serial data output (TX)	
7		Signal ground (SG)	

Note 1: Refer to the graph of the previous page for contact capacity.

When using the UPS monitoring function (using the above contact signal) pre installed in the following OS, contact your maintenance staff, since the dedicated cable for contact signal which corresponds to each OS is needed separately. For more detail on the UPS monitoring function pre installed in each OS, refer to an instructions manual, an on-line manual, etc. of each OS.

- Windows NT/2000/XP: FiFH/WS9 (dedicated contact signal cable)

Note 2: For Windows 2000 and XP, OS shutdown is possible in the event of a power failure, but subsequent automatic shutdown of the UPS is not possible.

Note 3: To perform RS-232C serial communication, a special cable for RS-232C communication is required separately, so please contact your maintenance representative.

- FiFA/WS9 (dedicated cable for RS-232C communication)

3.4 Setting up the Output Voltage

The rated output voltage of this UPS can be changed with the voltage setting switch on the rear panel.

⚠ Caution

Damage

Verify that the voltage set by the voltage setting switch is within the input voltage range of the connected equipment.
Do not operate the voltage setting switches while the UPS is operating.
Failure to do so may damage the connected device.

Important

Do not use switches 5 through 9 of the voltage setting; UPS will not start properly.

- **The setup procedures of the rated output voltage**

1. Turn off the connection device.
2. Press the RUN/STOP switch on the front of the UPS for 1 second. A buzzer sounds when the power is on.
3. An output stops.
   The RUN LED (green) on the front of the UPS blinks slowly (in the cycles of 1.6 sec.).
4. Turn off the input breaker on the back of the UPS.
5. After confirming that all LEDs on the front of the UPS have gone out, operate the switch of voltage setting on the back of the UPS. The rated output voltage corresponding to a setup of the switch of voltage setting is shown below.

Voltage switch setting	Rated output voltage
0	200V AC
1	208V AC
2	220V AC
3	230V AC
4	240V AC
5-9	Not Applicable

6. Turn on the input breaker on the back of the UPS.
   The RUN LED (green) on the front of the UPS will flash slowly (in cycles of 1.6 seconds).

7. Press the RUN/STOP switch on the front of the UPS for 1 second. A buzzer sounds when the power is on.

8. The set AC voltage is output from the AC outlet or output terminal block. The RUN LED (green) on the front of the UPS will flash slowly.

9. When normal operation starts normally at the set rated voltage, turn on the connected device.

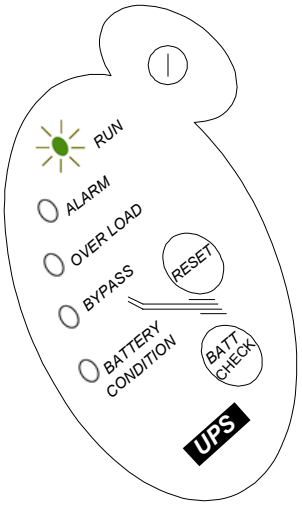
4 Running

4.1 Turning on the UPS

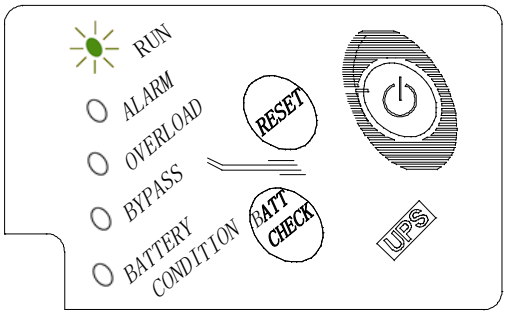
Caution	
Damage	Check the voltage set by the voltage setting switch is within the input voltage range of the connected device. Failure to do so may damage the connected device.

1. Have the UPS connected to an input power supply and the connected device. The RUN LED (green) on the front of the UPS will flash slowly (cycles of 1.6 sec).

〈M-UPS050AD2B〉

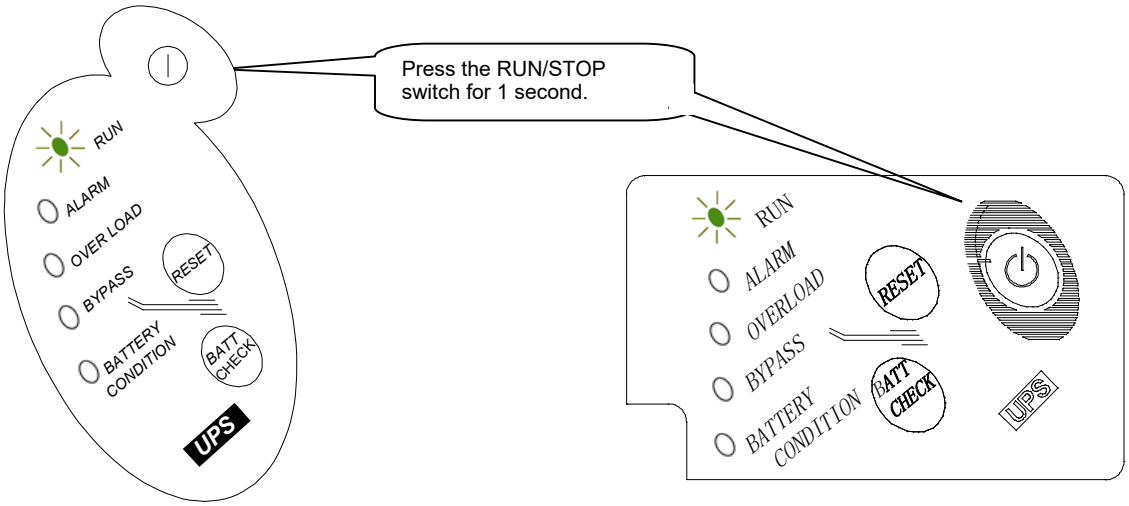


〈M-UPS075AD2B, M-UPS100AD2B〉



2. Turning on the UPS. Press the RUN/STOP switch on the front of the UPS for 1 second. The buzzer will sound when the power is on.

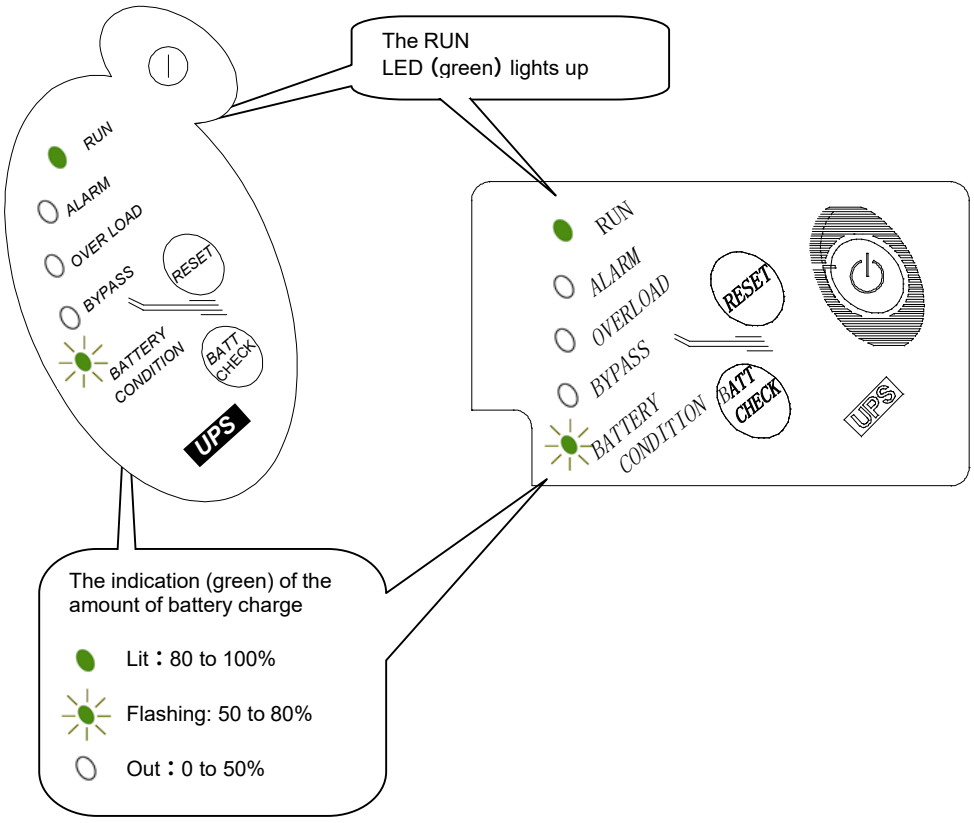
〈M-UPS050AD2B〉 〈M-UPS075AD2B, M-UPS100AD2B〉



3. AC voltage is output from the output terminal block.

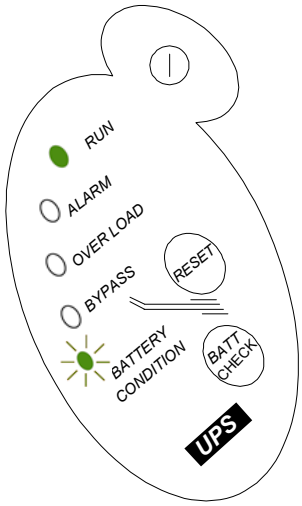
The RUN LED (green) on the front of the UPS lights up.
The BATTERY CONDITION LED (green) on the front of the UPS indicates the battery charge level by the lighting type.

〈M-UPS075AD2B, M-UPS100AD2B〉

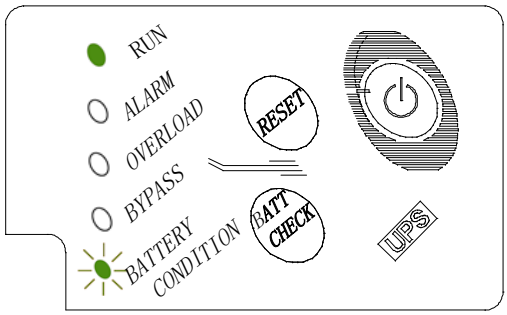


4. The battery check is performed automatically.
The BATTERY CONDITION LED (orange) on the front of the UPS flashes (in the cycles of 1.6 seconds).

〈M-UPS050AD2B〉



〈M-UPS075AD2B, M-UPS100AD2B〉



5. The battery check is performed for 5 seconds. Then, if the battery is normal, the BATTERY CONDITION LED (green) on the front of the UPS indicates the amount of battery charge again, and the UPS returns to the normal operation.

If normal running does not start, refer to Chapter 6“Troubleshooting”.

6. After normal operation starts, turn on the power of the connected device

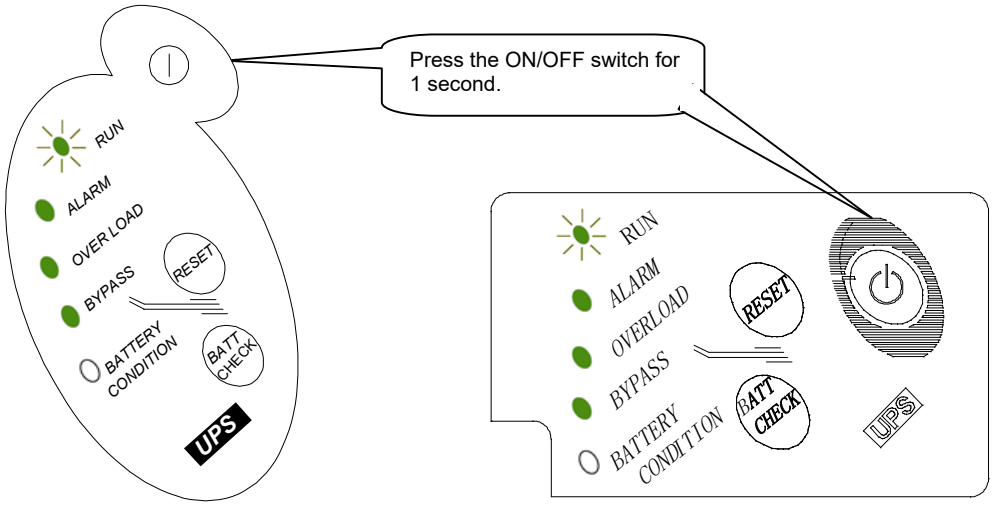
4.2 Turning off the UPS

Please be sure to perform the following operations even during planned power outages. (For details, see "5.2 Precautions and Countermeasures for Planned Power Outages")

⚠ CAUTION	
Damage	Refer to "4.2 Turning off the UPS" when: a) Performing planned power outage or, b) Turning off the input breaker on the back of the UPS See that the RUN LED (green) is blinking slowly (1.6 second cycle). Do not unplug the AC input plug from the power outlet or turn off the input breaker on the back of the UPS without turning off the UPS. Otherwise it will cause a power failure, which will discharge the internal battery. This may cause the battery to deteriorate and shorten the battery replacement cycle.

1. Turn off the connected device
2. Press the [ON/OFF] switch for 1 second. The buzzer will sound when it is off.

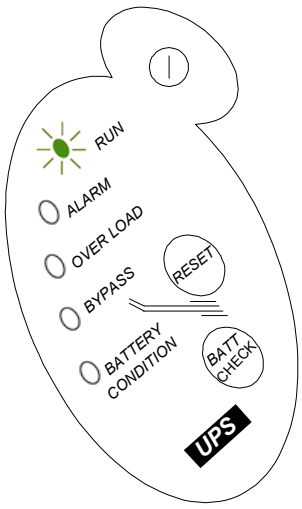
〈M-UPS050AD2B〉 〈M-UPS075AD2B, M-UPS100AD2B〉



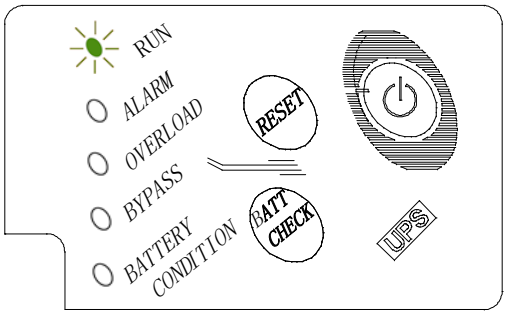
3. Output stops

   The [RUN] LED (green) on the front of the UPS flashes slowly (cycles of 1.6 seconds).

〈M-UPS050AD2B〉



〈M-UPS075AD2B, M-UPS100AD2B〉



If an output does not stop normally, refer to Chapter 6 "Troubleshooting".

4. Turn off the input breaker on the back of the UPS.

5 Maintenance

5.1 Inspection

The following inspection is essential for long-term safe use of the UPS.

⚠ WARNING	
Electric shock	**Do not remove the cover of the UPS.** Doing so may cause electric shock due to high-voltage parts inside the UPS.

⚠ CAUTION	
Electric shock	Turn off the power to the connected device and the UPS at maintenance. Also, turn off the input breaker on the rear, and disconnect the cables from the AC input terminals Only authorized maintenance personnel should perform maintenance other than daily inspections, such as replacing batteries and cooling fans.
Damage	When unplugging the AC input plug from the input power outlet or turning off the input breaker on the back of the UPS, make sure that the RUN LED (green) is flashing slowly (1.6 second cycle). The RUN LED will flash if: a) The breaker of the distribution board is turned off b) The AC input plug is unplugged from the input power outlet without performing the operations described in "4.2 Turning off the power". The batteries may deteriorate and the battery replacement cycle may be shortened.

- **Daily maintenance**

1. Cleaning
Remove any dust from the UPS ventilation and cooling fan with a vacuum cleaner. Wipe the surface of the UPS with a soft, dry cloth.

2. Abnormality
Contact the distributor or maintenance company where you purchased the UPS if you observe;

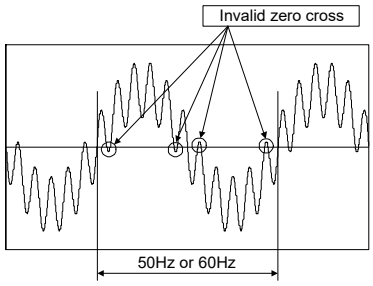
- Abnormally heated surface of the UPS, wires, and outlets
- Loud noises
- Unusual smell

5.2 Operation for Planned Power Outages

IMPORTANT

When using a generator temporarily during a planned power outage, use a generator that meets the following specifications.
Connecting a generator that does not meet the following specifications to the input section of the UPS may cause the UPS to malfunction or be damaged.

- Voltage variation depends on the input specification of the connected device
- Frequency variation: within rated frequency ± 5% (frequency does not change rapidly)
- Voltage waveform distortion: within 5%
- Voltage zero-cross condition: Zero-cross should not occur twice or more in 1 cycle.



- **Operation before planned power outage**
  Turn off the connected device and the UPS before performing the planned power outage.
  1. Turn off the power to the connected device.
  2. Press the RUN/STOP switch on the front of the UPS for 1 second. A buzzer will sound when the switch is on.
  3. The output will stop.
     The RUN LED (green) on the front of the UPS will flash slowly (1.6 second cycle).

If the planned power outage is implemented without turning off the UPS, the UPS will be in the same state as a normal power outage. Until the planned power outage is completed, power is supplied to the connected equipment from the UPS's internal battery. After the discharge is completed, power will not be supplied to the connected equipment until the input power is restored.

- ## Operation after planned power outage

1. Check that the UPS is connected to the input power source and the connected device.
   The RUN LED (green) on the front of the UPS will flash slowly (1.6 second cycle).
2. Press the RUN/STOP switch on the front of the UPS for 1 second. When the power is on, a warning beep will sound.
3. AC voltage is output from the AC outlet or the output terminal block, and the RUN LED (green) on the front of the UPS lights up.
4. When normal operation has started, turn on the connected device.

For details, refer to Chapter 4.1 “Turning on the UPS”.
When a warning beep sounds: Refer to Chapter 6.1 Warning Beep Sound

5.3 Inspecting the Battery

There are two types of battery check functions: automatic checks and manual checks. Automatic checks are performed while the UPS is running, so manual checks are not usually required.

Automatic checks are performed in the following cases:

- At the start of UPS operation
- Every two weeks in continuous operation
- When switching from bypass operation to normal operation

Manual checks are performed in the following cases:

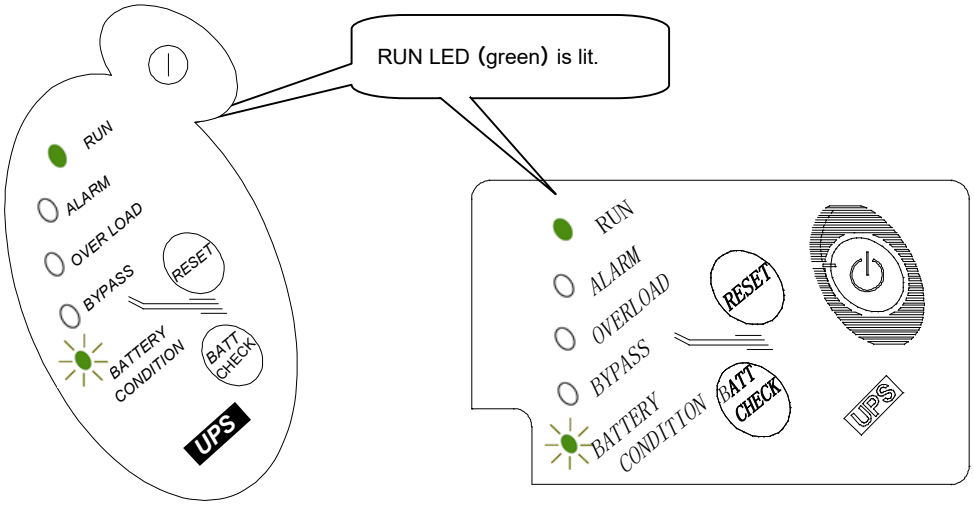
- When a warning beep sounds due to a battery malfunction
- When performing a battery check other than the automatic check

Important

Do not perform the battery checks continuously.
When performing battery checks, the internal battery actually gets discharged to check the voltage.
Consecutive battery checks may degrade the battery and shorten the battery replacement cycle.

1. Check if the UPS is operating properly.

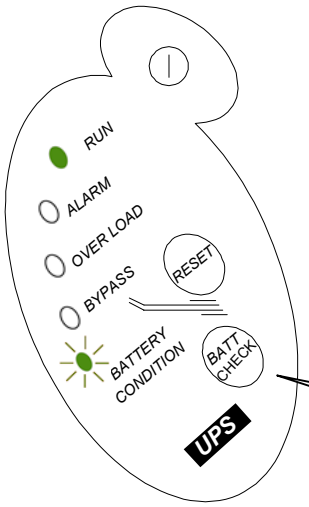
〈M-UPS050AD2B〉 〈M-UPS075AD2B, M-UPS100AD2B〉



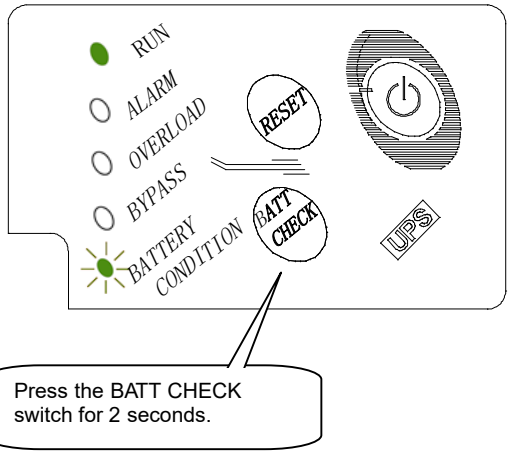
When all the LEDs on the front of the UPS are off, turn on the UPS and proceed to step 2.
For details, refer to Chapter 4.1 “Turning on the UPS”. Also refer to Chapter 6 "Troubleshooting”.

2. Press the BATT CHECK switch on the front of the UPS for 2 seconds

〈M-UPS050AD2B〉

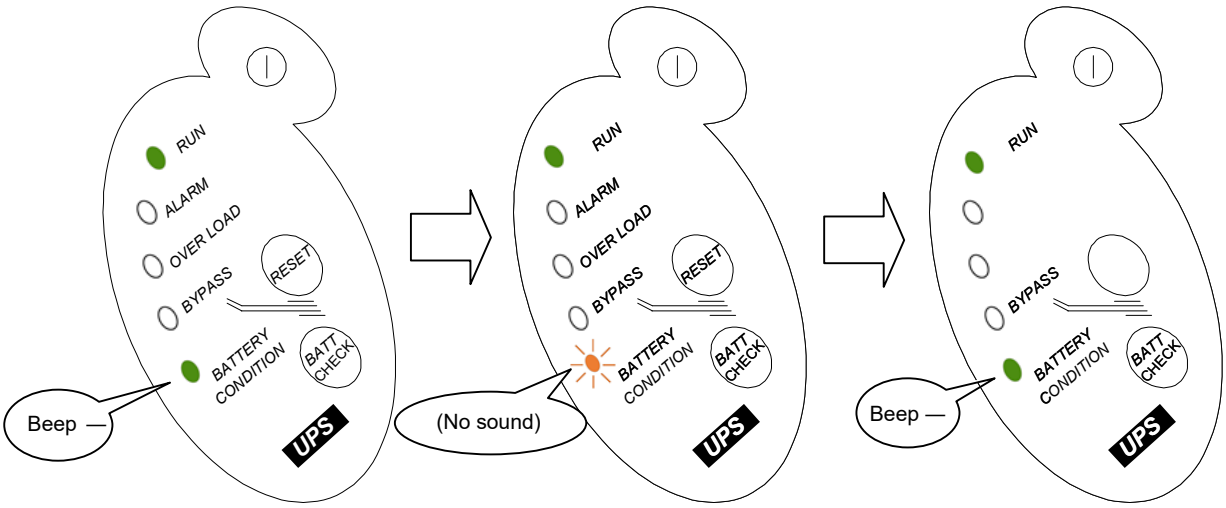


〈M-UPS075AD2B, M-UPS100AD2B〉



A buzzer will sound and the BATTERY CONDITION LED (orange) will flash (1.6 second cycle).
After 5 seconds, the buzzer will sound again to complete the battery check.

〈M-UPS050AD2B〉

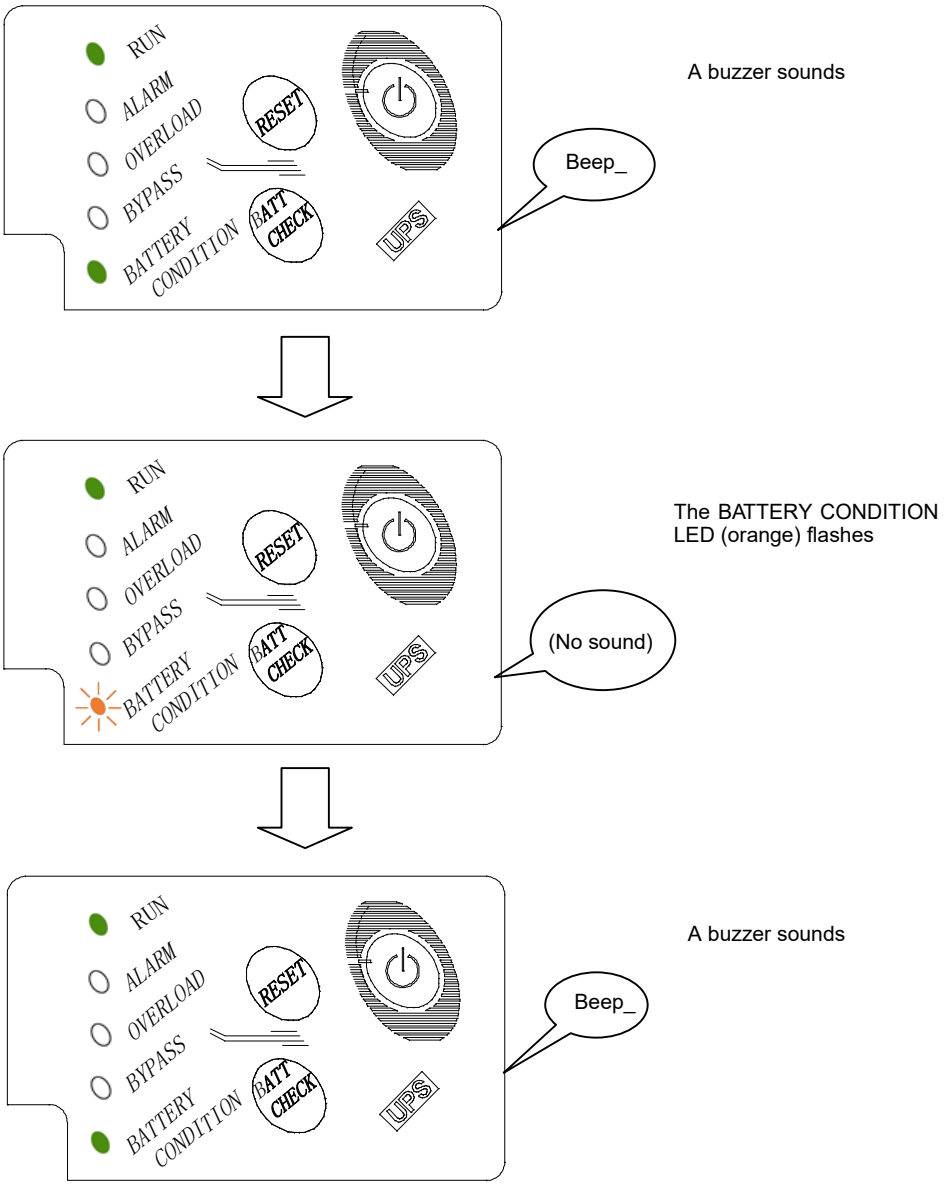


A buzzer sounds

BATTERY CONDITION LED flashes

A buzzer sounds

〈M-UPS075AD2B, M-UPS100AD2B〉

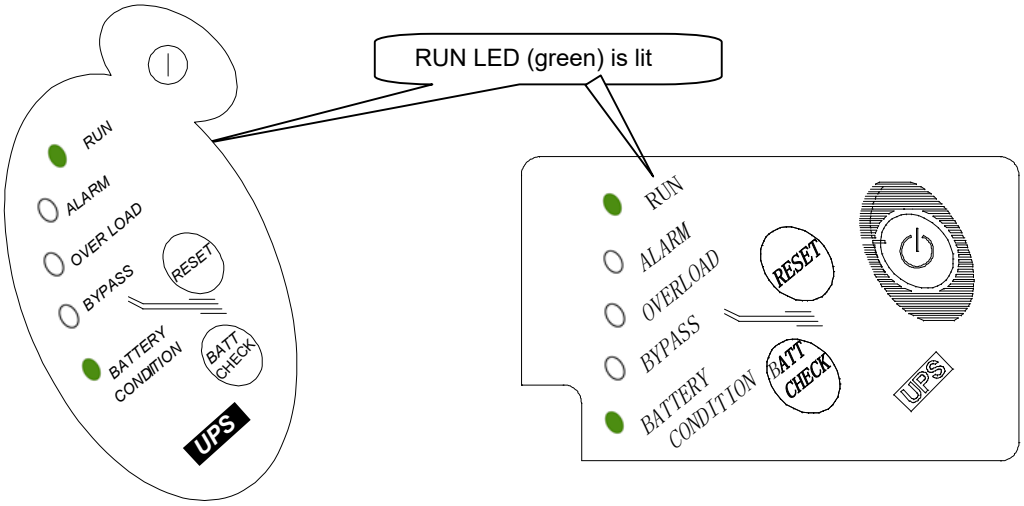


3. After the battery check,

If the battery is fully charged:

The RUN LED (green) on the front of the UPS lights up, and the UPS returns to the normal operation.

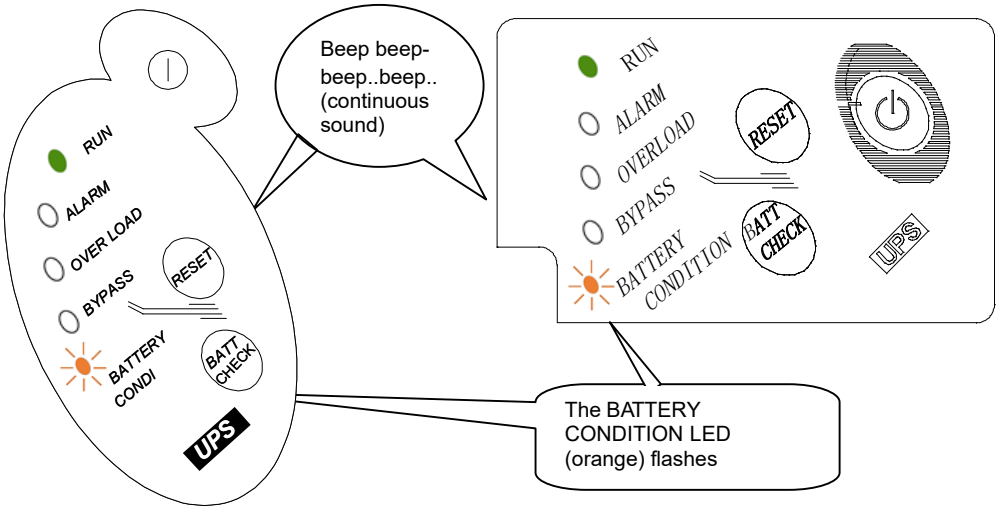
〈M-UPS050AD2B〉 〈M-UPS075AD2B, M-UPS100AD2B〉



If the battery is not fully charged:

A warning beep sounds and the BATTERY CONDITION LED (orange) on the front of the UPS flashes.
Go to step 4.

〈M-UPS050AD2B〉 〈M-UPS075AD2B, M-UPS100AD2B〉

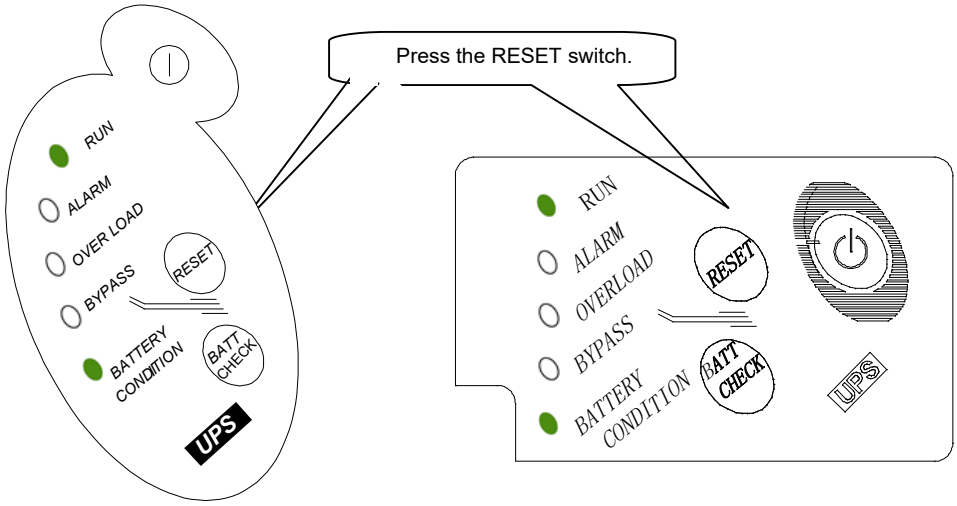


Charging the battery

4. Press the RESET switch on the front of the UPS for 3 seconds to turn off the BATTERY CONDITION LED (orange) and charge the UPS for at least 12 hours.

   When the RESET switch is pressed, the BATTERY CONDITION LED (orange) will turn off and the battery charge level indicator (green) will display.

〈M-UPS050AD2B〉 〈M-UPS075AD2B, M-UPS100AD2B〉



Note: Battery operation will not be performed in the event of a power failure.

5. Return to step 2 and perform the battery check manually.

   If the UPS enters the "battery not fully charged" condition again, it is possible that the battery life has ended.

   See Chapter 5.4 for "Replacing the Battery" information.

5.4 Replacing the Battery

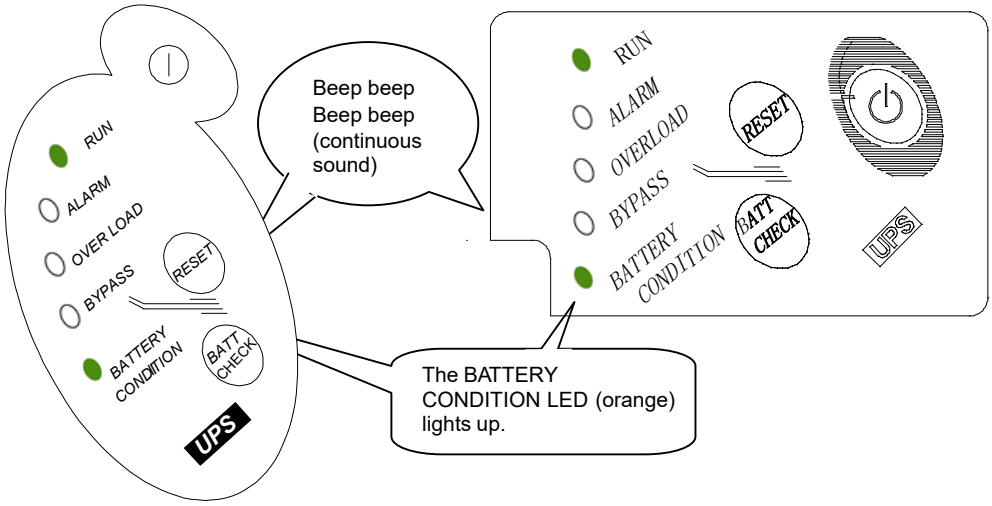
- **Timing of battery replacement**

⚠ CAUTIONN	
Damage	**Replace the battery periodically.** Continued use of a UPS at the end of its battery life may result in battery leakage or smoking.

The battery has reached the end of its useful life in the following cases.

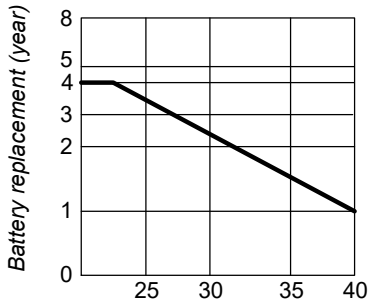
When the BATTERY CONDITION LED (orange) on the front of the UPS lights up and a warning sounds.

〈M-UPS050AD2B〉 〈M-UPS075AD2B, M-UPS100AD2B〉



When the backup time of the battery has been lowered to 3 minutes or less (at the rated load)

Battery life is greatly affected by ambient temperature and connected device conditions; if the UPS is used under standard environmental conditions (ambient temperature 25°C, rated load), the battery should be replaced after approximately three years.



Relation between the ambient temperature and the cycle of battery replacement

● Method of battery replacement

⚠Caution	
Electric Shock	Only maintenance personnel must perform the battery replacement.
Damage	Replace with new genuine Fuji batteries Using batteries other than the specified ones or mixing with old batteries may cause UPS failure or troubles.

Important
The disposal of used battery has legal restrictions. Please follow any local, county, regional or state guidelines for the disposal of batteries.

The batteries in this UPS can be replaced (hot swapped) without turning off the UPS and connected device. For details, contact the distributor or maintenance company from whom you purchased the UPS.

Note: The UPS performs a bypass operation when hot-swapped.
In the bypass operation state, battery operation cannot be performed even if a power failure or other abnormality occurs in the input power supply.

Use the batteries listed below.
For information on purchasing battery units, consult the distributor from whom you purchased the UPS or the maintenance company.

UPS model	UPS model	Type of battery unit	Number of units (Note) (per UPS)	Battery unit	
				Mass (a unit)	Battery capacity
M-UPS 050AD2B (5kVA)	Battery for M-UPS 050AD2B	RRABU-GX31	2 units	Approximately 17kg	12V, 5Ah × 8
M-UPS 075AD2B (7.5kVA)	Battery for M-UPS 075AD2B		4 units		
M-UPS 100AD2B (10kVA)	Battery for M-UPS 100AD2B				

Note: Batteries must be replaced in the main unit.

● Disposal and storage of battery

- When disposing of used batteries, apply insulation tape to the battery terminals to prevent short circuits, and dispose of them separately from dry cell batteries, etc.
- This unit uses small sealed lead-acid batteries which are expensive and used scarce resources. This valuable resource can be recycled.

This mark is a recycling mark for small sealed lead-acid batteries.

5.5 Replacing the Cooling Fan

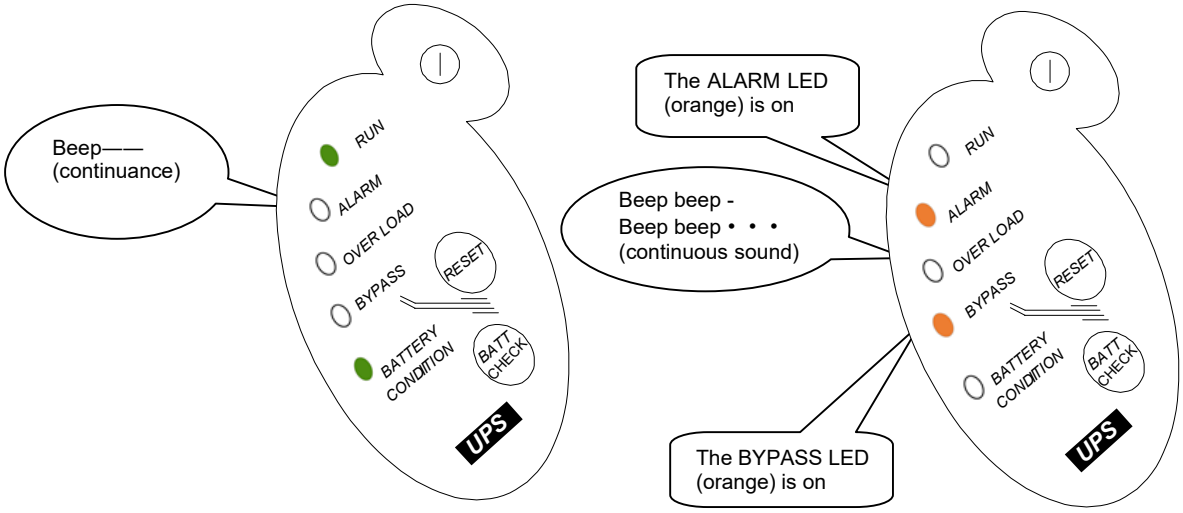
● Timing of cooling fan replacement

Important
Replace the cooling fans periodically. Continued use of a UPS at the end of its fan life may cause the internal temperature of the UPS to exceed its rating.

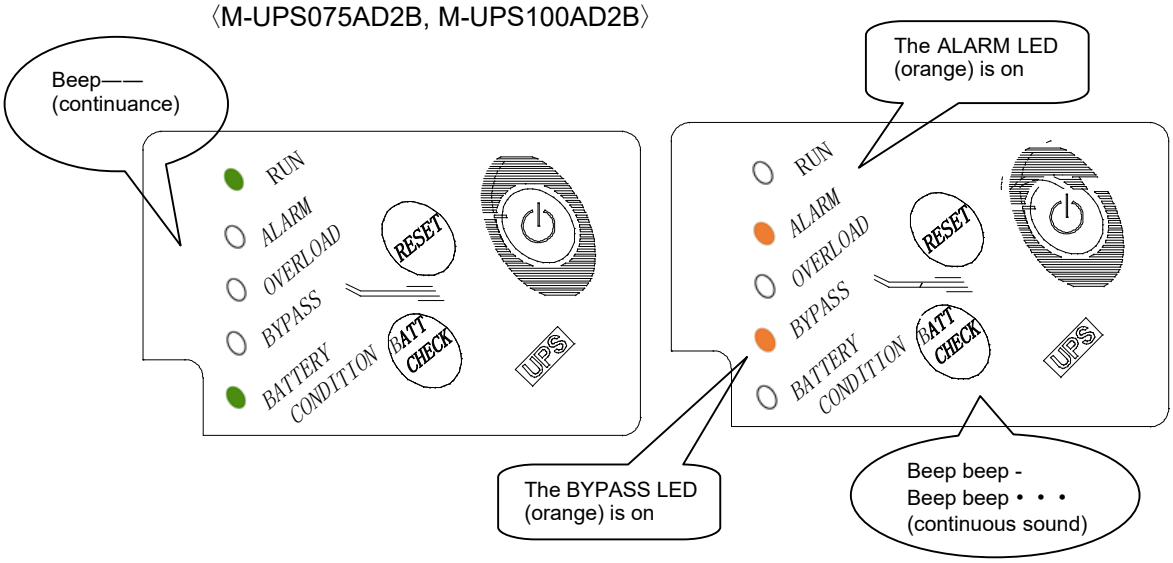
The cooling fan has reached the end of its service life in the following cases.

- When the ALARM LED (orange) and the BYPASS LED (orange) light up, after a warning beep sounded for 120 seconds

〈M-UPS050AD2B〉



〈M-UPS075AD2B, M-UPS100AD2B〉



• At the second battery replacement

Cooling fans should be replaced periodically with new one due to bearing wear. Depending on the operating environment, the life of the cooling fan may also be shortened

● Method of cooling fan replacement

⚠ Caution	
Electric shock Injury	Do not insert sticks or fingers into the cooling fan or ventilation. Doing so may cause electric shock or injury.
Electric shock	Only maintenance personnel must perform the cooling fan replacement.

The cooling fans in this UPS can be replaced (hot swapped) without turning off the UPS and connected device. For details, contact the distributor or maintenance company from whom you purchased the UPS.

Note: Replace the cooling fan in a short period of time during live operation. This product is in bypass operation when the cooling fan is replaced during live operation. During bypass operation, the product does not switch to battery operation even if an input power failure such as power failure occurs.

Use the cooling fans listed below. For information on purchasing cooling fans, contact the distributor from whom you purchased the UPS or the maintenance company.

Type of cooling fans: Fan for M-UPS050AD2B (RRAF-GX11×1 / RRAF-GX12×1)
Fan for M-UPS075AD2B (RRAF-R1×2 / RRAF-GX12×2)
Fan for M-UPS100AD2B (RRAF-R1×2 / RRAF-GX12×2)

5.6 Storing UPS

Pre-Storage Operations

Important
Do not store the UPS in the following places: • Outdoor location • Exposed to the elements places • Extremely humid places or dusty places • Locations with corrosive gases or salt • Places exposed to direct sunlight • Near sparks or heating elements • Extremely hot or cold places or places with extreme temperature changes • Places subject to vibration or shock

1. Run the UPS for at least 12 hours to charge the battery and perform a battery check using the Manual Battery Check function. Refer to Chapter 5.3, “Inspecting the Battery (Battery Check)" for details. The battery used in this UPS can be stored for approximately two months from fully charged.
2. Unplug the connected device, turn OFF the power for the UPS, and turn off the input breaker on the back of the UPS. See “4.2 Power OFF” for details.
3. Place the UPS in the original box and store it.

If a storage period exceeds 2 months

Important
Charge the battery every 2 months if the UPS will not be used for a long period of time. Run the UPS for at least 12 hours to charge the battery and check the battery. If the UPS is not used for a long period of time, the battery may become over-discharged due to self-discharge, rendering the UPS unusable.

Perform the battery check using the manual battery check function after operating the UPS for at least 12 hours every two months to charge the battery. For details, refer to Chapter 5.3 “Inspecting the Battery (Battery Check)”.
Even when the UPS is not in use, the battery will discharge naturally; if the UPS is left unattended for more than two months, the battery may become over-discharged, rendering the UPS unusable.

6 Troubleshooting

6.1 Warning Beep Sound

1. Check the LED status and warning sound on the front of the UPS
2. Refer to the "List of Operation Modes" and follow the instructions. Check that the input power supply is connected to the UPS, see chapter 3.2 "Connecting the Cable". **How to stop the warning sound:**

   Press the RESET switch on the front of the UPS for 1 second.

   If the beep does not stop, follow these steps. (refer to Chapter 4.2, "Turning Off the UPS")

   (1) Turn OFF the connected device.

   (2) Press the ON/OFF switch on the front of the UPS for 1 second.

   (3) The output stops.
   The RUN LED (green) on the front of the UPS will flash slowly (in 1.6 second cycles).

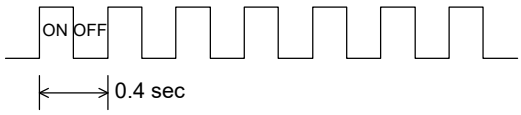
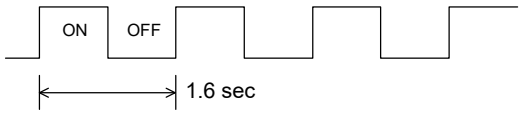
   (4) Turn off the input breaker on the back of the UPS.

   Note: If the sound does not stop when the RESET button is pressed, reduce the capacity of the connected device to the UPS

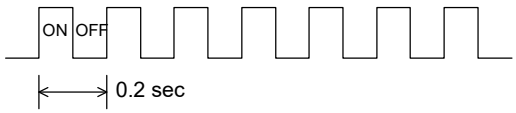
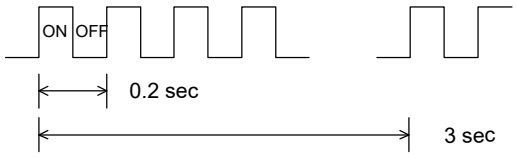
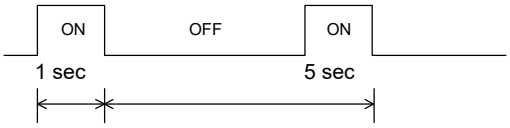
6.2 Operation Mode List

If you suspect an abnormality inside the UPS or if a connected device stops, check the LEDs and warning sounds on the front panel of the device. See the below "Operation Mode List".

● LED Flashing Type

Symbol	Flash pattern	
(a)	Fast flashing (0.4-second period)	
(b)	Slow flashing (1.6-seconds period)	

● Warning Sound Type

Symbol	Warning sound	
(1)	Beep beep beep beep	
(2)	Beep beep (stops for 2 seconds) Beep beep (four times every 3 seconds)	
(3)	Beep (continuous sound)	
(4)	Beep (Stops for 4 seconds)	

- **Operation mode list**
  - Symbols of LED:  Lit  Out  Flashing
  - The BATTERY CONDITION LED (green) indicates the amount of battery charge according to the sort of lighting as follows:

 (Lit) ····· 80 to 100% The battery is almost fully charged and sufficient for a backup.

 (Flashing) ···· 50 to 80% The battery is charged to some extent. However, an adequate backup time cannot be assured.

 (Out) ····· 0 to 50% The battery is not fully charged and may not be able to back up when power is interrupted.

No.	LED					Warning Sound	Operation Status
	RUN (green)	ALARM (orange)	OVER LOAD (orange)	BYPASS (orange)	BATTERY CAPACITY (green/orange)		
1	Lit 				Charged amount	-	Normal operation

Remarks: The UPS is operating normally.

2						-	Stopped operating (No input power)

Remarks: The output of this device is stopped.
When the input power is restored, the device will have Slow flashing in №3.
Device is not in №3 and input breaker is tripped --> reset it
No №3 status --> contact your distributor or maintenance company
Input power failure continues and the machine is stopped because the battery has been discharged
--> it will automatically return to normal operation (№1) when power is restored.

3	(b) Slow flashing 					-	Stopped operating (with input power)

Remarks: The output of the device is stopped.
Press the Run/Stop switch for 1 second to return to normal operation (№1).

4		Lit 		Lit 		(1)	Bypass running due to UPS failure

Remarks: This device had a power failure and switched to the bypass running.
Disconnect the connected device from UPS.
In this status the battery mode will not operate even if the input failure occurs.
DO NOT RESET the UPS.
Contact Fuji.

No.	LED					Warning Sound	Operation Status
	RUN (green)	ALARM (orange)	OVER LOAD (orange)	BYPASS (orange)	BATTERY CAPACITY (green/orange)		
5	Lit	○	○	○	Charged amount	(3)	Abnormality in cooling fan

Remarks: Cooling Fan Abnormality
If this state lasts for 2 minutes or the inside temperature rises, it'll lead to the failure in No 4.

6	○	○	○	(b) Slow flashing	○	-	Manual bypass operation

Remarks: Switched to By-pass running manually.
Unable to perform Battery operation even if an input power failure occurs.

7	(b) Slow flashing	(a) Fast flashing	○	○	○	(1)	Input error at startup

Remarks: Input power supply failure; Unable to start the UPS.
Turn off the UPS and restart it under the conditions of the input power supply as:
Input Voltage: AC85V - 115V 170V - 230V
Input Frequency: 47.5Hz - 52.5Hz or 57Hz - 63Hz

No.	LED					Warning Sound	Operation Status
	RUN (green)	ALARM (orange)	OVER LOAD (orange)	BYPASS (orange)	BATTERY CAPACITY (green/orange)		
8	Lit	○	Lit	Lit	Charged amount	(1)	Output overload during the normal operation

Remarks: Overload: the UPS automatically switched to bypass running.
Reduce the capacity of the connected device less than the rated value.
Then the UPS will operate normally (No 1).
In the state of continuous Overload, pressing RESET/CANCEL switch does not stop a buzzer.
When the load is turned on, the inrush current may cause a temporary overload.
It'll reset automatically.

9	○	○	Lit	(b) Slow flashing	○	(1)	Output overload during the bypass operation

Remarks: The capacity of the connected device exceeds the rated value during bypass running.
Reduce the capacity of the connected device to less than the rated value.
In this state, even if the bypass switch is turned on(Press the RESET/ CANCEL switch and
BATT CHECK switch simultaneously for 3 seconds), the UPS will not return to normal operation (No 1).

No.	LED					Warning Sound	Operation Status
	RUN (green)	ALARM (orange)	OVER LOAD (orange)	BYPASS (orange)	BATTERY CAPACITY (green/orange)		
10	Lit	○	Lit	○	Charged amount	(1)	Output overload during the battery operation

Remarks: The capacity of the connected device exceeds the rated value while the battery is operating.
Reduce the capacity of the connected device to less than the rated value of the UPS.
If this condition continues for 100 seconds or longer, operation will stop.
Disconnect the important connected device from the UPS.

11	○	Lit	Lit	○	○	(1)	Stopped operating due to an output overload

Remarks: Shutdown due to output overload
UPS shut down as the capacity of the connected device greatly exceeded the rated value.
Reduce the capacity of the connected device to less than the UPS' rated value and restart the UPS.

12	Lit	○	○	○	Charged amount	(2)	Battery operation

Remarks: Battery Operation
Input Power Supply Error: Battery started supplying power.
No additional actions are required.
The UPS will operate normally (No. 1) as soon as the input power supply recovers.

No.	LED					Warning Sound	Operation Status
	RUN (green)	ALARM (orange)	OVER LOAD (orange)	BYPASS (orange)	BATTERY CAPACITY (green/orange)		
13	Lit	○	○	○	Charged amount	(1)	Battery voltage drop due to continuing the battery operation

Remarks: Battery Operation Battery Voltage Drop
Battery running continues and the battery voltage drops.
With the rated load, battery operation will stop in 2 minutes.
Disconnect the connected device.

14	Lit	○	○	○	(b) Slow flashing	(4) at the manual check	Battery check

Remarks: Battery Check in progress
A warning tone will sound at the start and end of the manual battery check. After the battery check is performed for 5 seconds, the unit will return to normal running (No 1).

No.	LED					Warning Sound	Operation Status
	RUN (green)	ALARM (orange)	OVER LOAD (orange)	BYPASS (orange)	BATTERY CAPACITY (green/orange)		
15	Lit	○	○	○	(a) Fast flashing 	(1)	Battery check error

Remarks: Battery Check Error
The battery may not be fully charged. Run the UPS for more than 12 hours to recharge the battery.
Then perform a battery check in the manual mode.
Disconnect the critical connected device as the UPS can not assure sufficient backup time.
In case this condition persists, please replace the battery.

16	Lit	○	○	○	Lit	(1)	End of battery life

Remarks: Battery Life
It's time to replace the battery. Contact Fuji.
Pressing the RESET switch for 3 seconds will turn off the alarm (Display & Sound), but after 24 hours or restart, the alarm sound will go off.
Pressing the RESET switch for longer than 1 second will pause the warning alarm.
The warning alarm will go off every 2 weeks at the automatic battery check.

17	(b) Slow flashing 	(a) Fast flashing 	○	○	○	(1)	Input error at startup

Remarks: Setting Error of the Rated Output Voltage
Wrong setting of the output voltage at the rear of the UPS.
Choose 0 - 4.
Refer to 3.4 Setting up the Output Voltage.

No.	LED					Warning Sound	Operation Status
	RUN (green)	ALARM (orange)	OVER LOAD (orange)	BYPASS (orange)	BATTERY CAPACITY (green/orange)		
18	(b) Slow flashing 	○	○	○	(b) Slow flashing 	-	Waiting for a restart

Remarks: About to Restart
The output of the UPS is stopped with the RS-232C communication by the connector on the rear of the UPS.
As the set time passes, the UPS will automatically restart and return to the normal operation (No 1).
You can also restart the UPS by pressing the [On/Off] button.

7 Appendix

7.1 Rated Specification

Model		M-UPS050AD2B	
AC output	Rating capacity	5000VA/4000W	
	Voltage	200/208/220/230/240V ± 2%	
	Frequency	50/60Hz (automatic changeover inside the UPS)	
	Frequency accuracy	At the normal operation	Depend on input frequency
		At the battery operation	Within ±0.1%
	Number of phase	Single-phase two-wire (with a ground terminal)	
	Load condition	Linear load or rectified load with a crest factor of up to 3 times	
	Voltage waveform distortion factor	At the resistance load: 4% or less At the rectified load: 6% or less	
	Overcurrent protection	Effective value: 100% or more Peak value: 300% or more of rated effective value (bearing the load of the crest factor of three)	
	Grounding system	Un-grounding	
	Straightforward bypass circuit	Thyristor system (changeover time: without instantaneous power interruption) Changeover is impossible at the time of a power failure.	
AC input	Voltage *1 *2	160 to 288V	
	Frequency	50/60Hz ±5%	
	Number of phase	Single-phase two-wire (with a ground terminal)	
	Capacity	5000VA or less	
	Grounding system	Un-grounding or Line to line on a center-earthed	
	Power factor	0.97 or more (at the rated operation)	
	Input harmonic current	Based on the Guideline of harmonic restraint measures for general-purpose UPS	
Battery	Type	Small sealed lead storage battery (long-life battery)	
	Backup time *3 (initial value)	Approximately 5 minutes (4000W)	
	Nominal voltage	192V	
Others	Ambient temperature	0 to +40. C	
	Relative humidity	20 to 95% (no condensation)	
	Noise	50dB(A) max. (at 1m from the front of the UPS)	
	Cooling method	Forced air cooling	
Outside dimension W × D × H		130 × 718 × 434mm	
Mass		63 kg (without battery: 29 kg)	
Standard		UL1778 (-U, -UC type)	
Applicable standard		VCCI CLASS A, Comply with IEC62040	
External connection	Input	Terminal block (L1/R, L2/S : M5 screws)	
	Ground	Terminal block (PE(G) : M5 screw)	
	Output	Terminal block (l1/U, l2/V : M5 screws)	

Model		M-UPS075AD2B	M-UPS100AD2B
AC output	Rating capacity	7500VA/6000W	10000VA/8000W
	Voltage	200/208/220/230/240V ± 2%	
	Frequency	50/60Hz (automatic changeover inside the UPS)	
	Frequency accuracy	At the normal operation: Depend on input frequency	
		At the battery operation: Within ±0.1%	
	Number of phase	Single-phase two-wire (with a ground terminal)	
	Load condition	Linear load or rectified load with a crest factor of up to three times	
	Voltage waveform distortion factor	At the resistance load: 4% or less At the rectified load: 6% or less	
	Overcurrent protection	Effective value: 100% or more Peak value: 300% or more of rated effective value (bearing the load of the crest factor of three)	
	Grounding system	Un-grounding	
	Straightforward bypass circuit	Thyristor system (changeover time : without instantaneous power interruption) Changeover is impossible at the time of a power failure.	
AC input	Voltage *1 *2	160 to 288V	
	Frequency	50/60Hz ±5%	
	Number of phase	Single-phase two-wire (with a ground terminal)	
	Capacity	7500VA or less	10000VA or less
	Grounding system	Un-grounding or Line to line on a center-earthed	
	Power factor	0.97 or more (at the rated operation)	
	Input harmonic current	Based on IEC61000-3-12	
Battery	Type	Small sealed lead storage battery (long-life battery)	
	Backup time *3 (initial value)	Approximately 8 minutes (6000W)	Approximately 5 minutes (8000W)
	Nominal voltage	192V	
Others	Ambient temperature	0 to +40°C	
	Relative humidity	20 to 95% (no condensation)	
	Noise	55dB(A) max. (at 1m from the front of the UPS)	
	Cooling method	Forced air cooling	
Outside dimension W × D × H		130 × 718 × 434mm	
Mass		127 kg (without battery: 59 kg)	
Standard		UL1778 (-U, -UC type)	
Applicable standard		VCCI CLASS A, Comply with IEC62040	
External connection	Input	Terminal block (L1/R, L2/S : M8 screws)	
	Ground	Terminal block (PE(G) : M8 screw)	
	Output	Terminal block (l1/U, l2/V : M8 screws)	

*1 Operation of UPS according to an input voltage

Low voltage	detection:144V	return : 154V
Overvoltage	detection: 300V	return : 290V

*2 Rated voltage of UL standard product is 200, 208, 220, 230, or 240V.

*3 The backup time is the test result and is not a guaranteed value.

7.2 Additional Description for UL Type

IMPORTANT SAFETY INSTRUCTIONS

These important instructions relate to the installation and maintenance of the UPS GX200 series.

- The internal battery voltage is 192 Vdc.
- This unit is intended for installation in a controlled environment and has a maximum temperature of 40℃.
  (indoors in a temperature-controlled, conductive contaminant-free environment)
- Servicing of batteries should be performed or supervised by personnel knowledgeable of batteries and the necessary precautions. Keep unauthorized personnel away from batteries.
- This UPS is intended for use in Japan-domestic.
- For All Models, field wiring connection must be made by a UL and CSA Listed closed-loop terminal connector sized for the wire gauge involved and fully insulated up to terminals. Connector must be fixed using the crimp tool specified by the connector manufacturer. Closed-loop terminal is shown in table 1 and table 2 (made by Japan Solderless Terminal).
- Use 75°C copper wire for conductors..
- Wire sizes and tightening torques are shown in tables 1 and 2.
- Circuit diagrams are shown in figures 1 and 2.
- The UPS is not supplied with a circuit breaker (UL-approved backflow prevention device). All models require a circuit breaker to be connected for use with the UPS. The circuit breaker (2-pole type) is rated for the following trip currents.

Table 1. Input rating, wire size, torque, external input circuit breaker size

MODEL	INPUT & GROUND				TIGHTENING TORQUE (N・m)	2POLE CIRCUIT BREAKER	
	Vin(V)	Iin(A)	WIRE SIZE AWG	Type of Closed-loop Terminal		V	A
M-UPS050AD2B-U	200,208 220,230, 240	25	10	R5.5-5	2.0	AC240	40
M-UPS075AD2B-U		37.5	8	R8-8	5.5	AC240	60
M-UPS100AD2B-U		50	6	R14-8	5.5	AC240	75

Table 2. Output rating, wire size, torque, external output circuit breaker size

MODEL	OUTPUT				TIGHTENING TORQUE (N・m)	2POLE CIRCUIT BREAKER	
	Vout(V)	Iout(A)	WIRE SIZE AWG	Type of Closed-loop Terminal		V	A
M-UPS050AD2B-U	200,208, 220,230, 240	25	10	R5.5-5	2.0	AC240	40
M-UPS075AD2B-U		37.5	8	R8-8	5.5	AC240	60
M-UPS100AD2B-U		50	6	R14-8	5.5	AC240	75

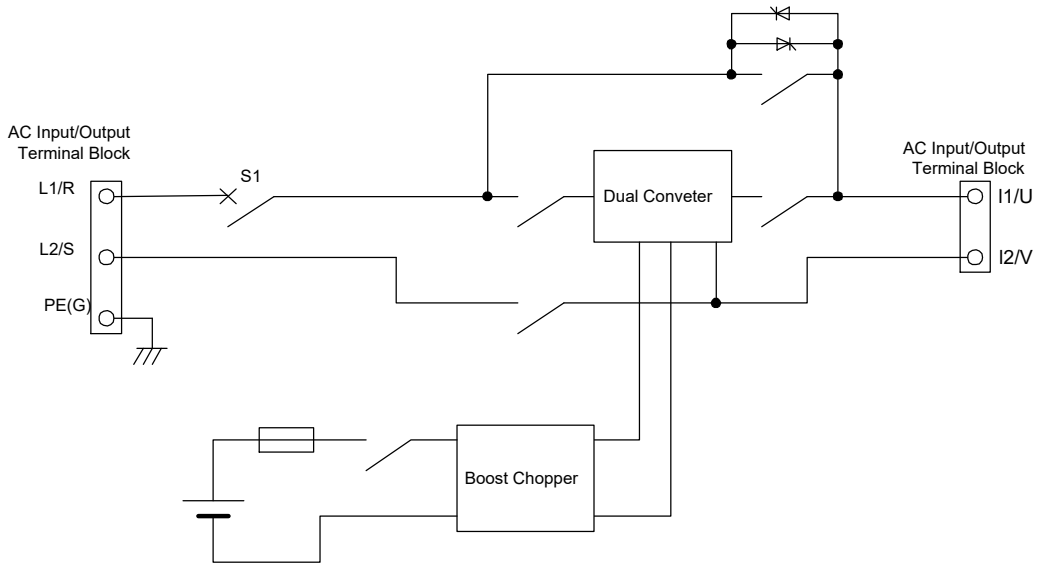


Figure 1 - Circuit diagram of Model M-UPS050AD2B-U

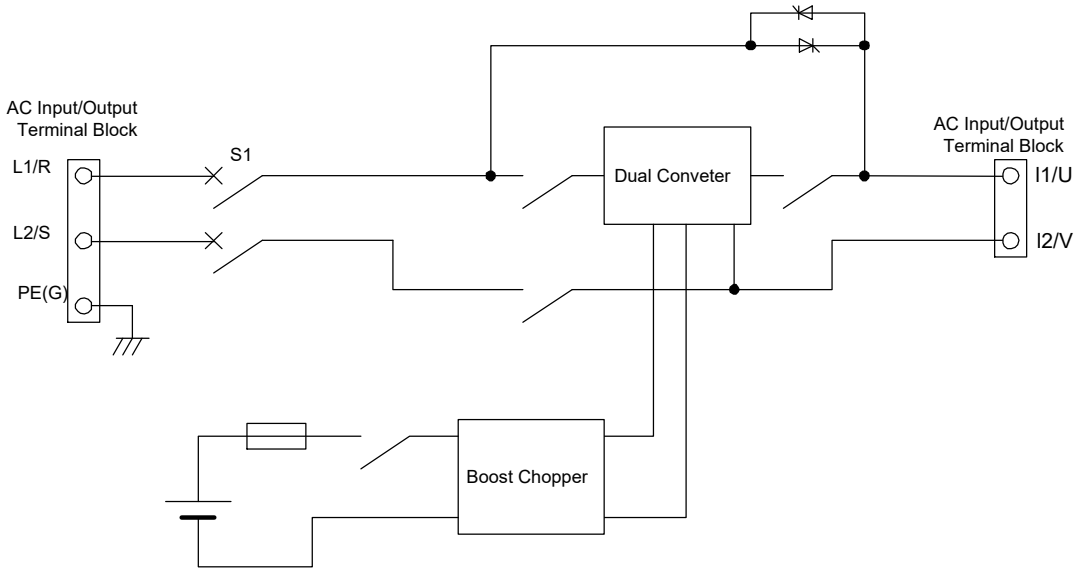


Figure 2 - Circuit diagram of Models M-UPS075AD2B-U and M-UPS100AD2B-U

⚠ DANGER

■ Risk of electric shock
Do not touch uninsulated battery terminal.

⚠ WARNING

■ Risk of electric shock
There are no user serviceable parts inside the UPS. Refer all repairs to qualified service personnel.

⚠ CAUTION

■ Don't use this equipment in life support applications where failure of this equipment can reasonably be expected to cause the failure of the life support equipment or to significantly effect its safety or effectiveness.

■ Risk of electric shock
- Battery and cooling fan servicing should be performed by technically qualified service personnel.
- The UPS has an internal energy source (battery) and the outputs are energized even when not connected to AC power.
- The terminal labeled "PE(G)" is for connecting the protective earth (ground) conductor. This grounding connection must be made before connecting the power conductor. Also, ensure the reliability of this connection during maintenance and inspection, including the connection of the protective grounding conductor to the output (load).
- Capacitors store dangerous energy. Do not remove the cover for 7 minutes after all power is turned off.
- The M-UPS050AD2B is not equipped with a 2-pole circuit breaker. When installing, removing, or servicing this UPS, turn off the external input circuit breaker to disconnect all sources of supply.

■ For ALL Models, to reduce the risk of fire,
- External disconnect/overcurrent protection devices should be provided for the AC input and AC output. -For example, a properly rated UL listed branch circuit breaker can provide both functions (disconnect and overcurrent protection).
- Tables 1 and 2 list circuit breakers with appropriate input and output ratings.

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

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

■ Using batteries may cause electric shock or high short-circuit current hazards. Observe the following precautions when working with batteries

a) Remove watches, rings, and other metal objects.
b) Use tools with insulated handles.
c) Wear rubber gloves and boots.
d) Do not place tools or metal parts on the battery.
e) Disconnect the charging source before connecting or disconnecting the battery terminals.
f) If the battery is inadvertently grounded, remove the grounded source. Contact with any part of a grounded battery could result in electric shock. This potential for electric shock can be reduced if grounding is removed during installation and maintenance. This applies to equipment or remote battery equipment whose power circuits are not grounded.