USER'S MANUAL

Uninterruptible Power Supply
GX200 Series (1.5kVA, 3kVA)

Model M-UPS015AE2S
M-UPS015AE2R
M-UPS030AE2B
M-UPS030AE2R
M-UPS030AE2C

Fuji Electric Co., Ltd.

INR-HG5980

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

The products are based on the JIS C61000-3-2.

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- **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. High voltage parts inside UPS may cause electrical shock.

⚠ **CAUTION**	"CAUTION" indicates that slight or moderate injury may result, the UPS or user's property may be damaged.
Electric shock Injury	Do not insert fingers or sticks into a cooling fan or ventilation hole. Doing so may cause electric shock or injury.
Electric shock	Only maintenance personnel must perform the maintenance including the replacement of battery and cooling fan. Connect the AC input plug to a grounded power outlet, or connect the ground wire to the ground terminal. (class D grounding) Commercial power supplies usually have electrodes on the grounded and ungrounded sides, in addition to the grounding electrode (earth). Check before connecting. Connecting in reverse may cause malfunction by noise or electric shock.
Electric shock Failure	When inspecting or servicing the UPS, turn off the power to the connected device (equipment connected to the UPS) and the UPS. For M-UPS015AE2S, pull the AC input plug on the back of the UPS from the input power outlet. For M-UPS015AE2R and M-UPS030A2E□, turn off the input breaker on the rear of the UPS and disconnect the AC input terminals (R, S). Failure to do so may cause electric shock.

Injury	Do not step on or put an object on the UPS. Doing so may cause injury.
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-UPS015AE2S : 24 kg (12 kg without batteries) • M-UPS015AE2R : 26 kg (14 kg without batteries) • M-UPS030AE2B : 47 kg (23 kg without batteries) • M-UPS030AE2R : 42 kg (18 kg without batteries) • M-UPS030AE2C : 48 kg (24 kg without batteries)

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.

Replace the battery with a new one specified by Fuji.

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 input surge voltage withstand capability of this device is 2kVpeak (1.2 x 50µsec).
Applying a surge voltage exceeding 2kV peak may damage the filter circuit in the input section.

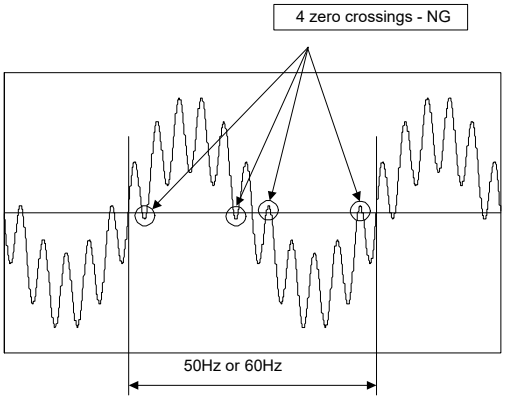
The input voltage of the UPS is 160VAC to 288VAC.
If the input voltage is different from the above, prepare a transformer for voltage conversion other than this product. If a voltage outside the input voltage range is applied, the UPS may be damaged.

The input voltage of the UPS should not exceed the input voltage range of connected equipment.
During bypass operation, the input voltage to the UPS is directly output as output voltage. If a voltage exceeding the input voltage range of the connected equipment is applied, the connected equipment may be damaged.

Avoid single wire grounding on the output side.
The UPS is not insulated between input and output. Doing so may cause malfunctions or failures due to noise.

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.
Connect the grounded phase of the three-phase power supply system to the grounded pole of the AC input of the device. Connection to an ungrounded power supply may cause malfunction.

- Voltage variation: from 160Vac to 288Vac
- Frequency variation: within ±5% of rated frequency (less than 1Hz per second)
- Voltage waveform distortion: 5% or less
- Voltage zero-cross condition: No more than one zero-crossing during one cycle



Contents

1 Unpacking

1.1 Opening the package

- **Opening the package**

⚠ CAUTION: Heavy Load
Take out the UPS in a level and flat place. Do not overturn or drop it. For the mass of the Product, refer to “Caution about Safety”.

- **Contents of the package**

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

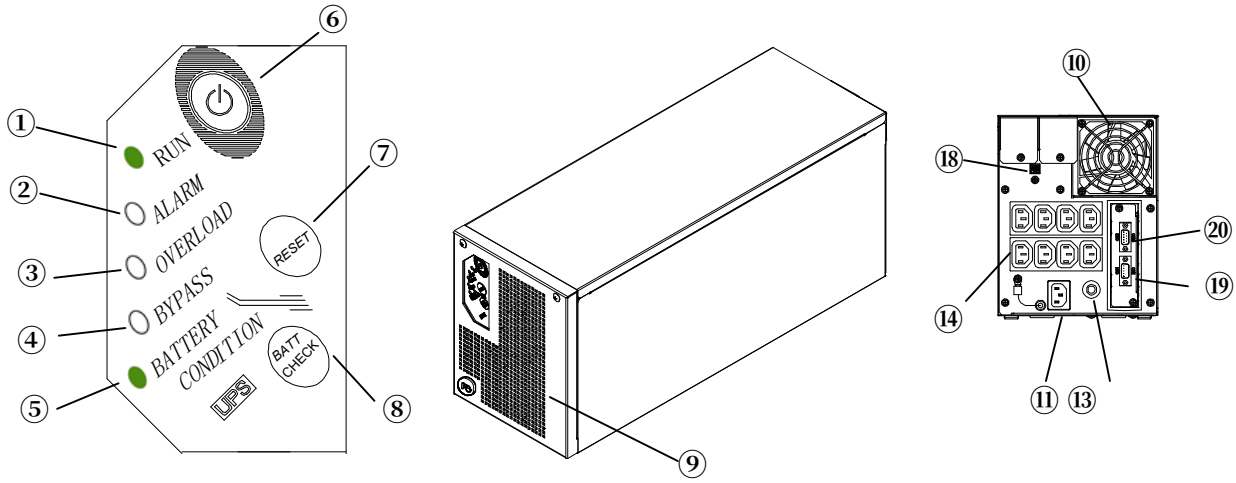
UPS Model	Accessory	Quantity
M-UPS015AE2S	• User’s manual • Warranty • Cord plug for Inlet • Cord plug for Outlet	1 copy 1 set 1 set
M-UPS015AE2R	• User’s manual • Warranty • Rack mount rails for right side and left side • Screws for rack mount rail fastening • Washers for rack mount rail fixing	1 copy 1 set 10 set 8 set
M-UPS030AE2B	• User’s manual • Warranty • Stabilizer (with 6 screws)	1 copy 1 set
M-UPS030AE2R	• User’s manual • Warranty • Rack mount rails for right and left sides • Screws for rack mount rail fastening • Washers for rack mount rail fixing	1 copy 1 set 10 set 8 set
M-UPS030AE2C	• User’s manual • Warranty • L-type Bracket (with 4 screws)	1 copy 1 set

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

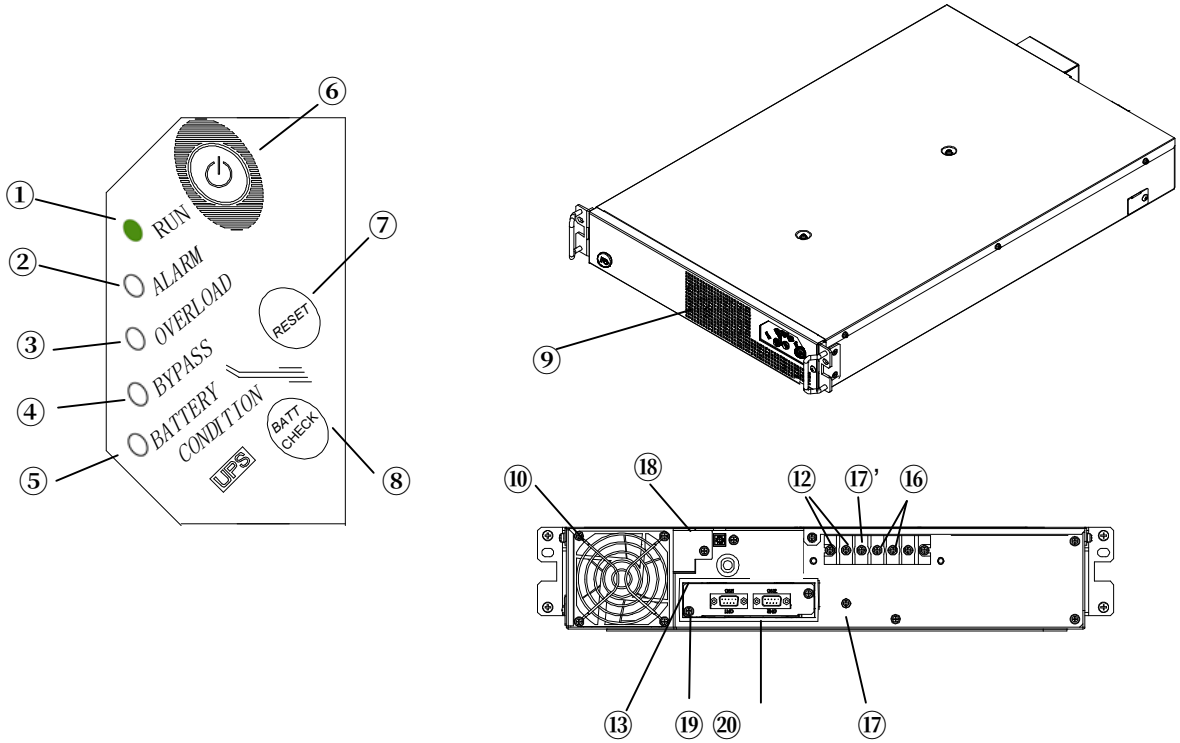
2 Overview

2.1 Name and Main Function of Each Part

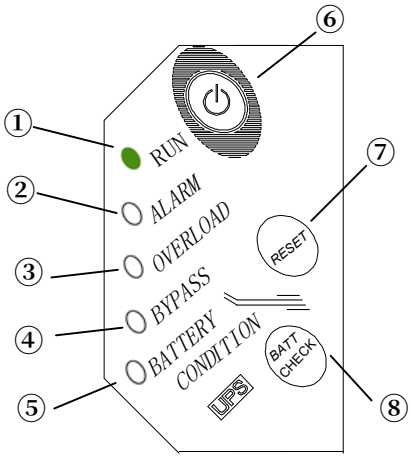
<M-UPS015AE2S>



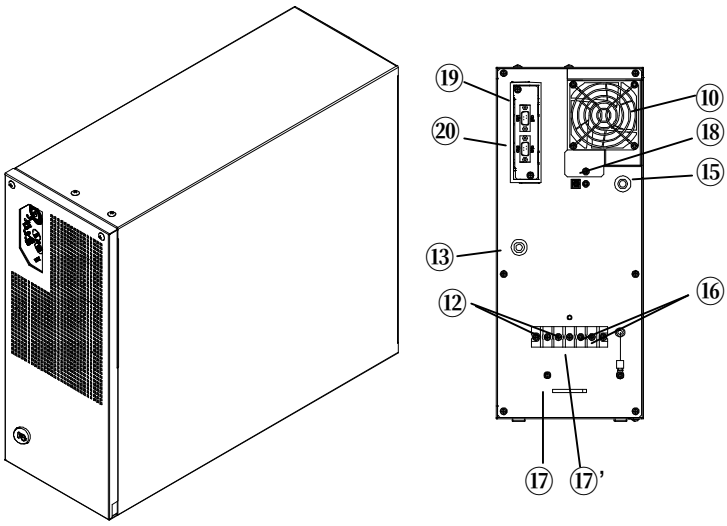
<M-UPS015AE2R, M-UPS030AE2R>



<M-UPS030AE2B, M-UPS030AE2C>



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

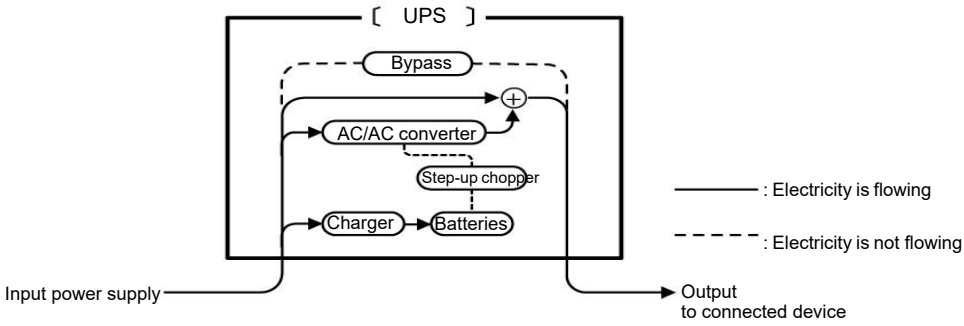


10 Cooling fan
12 Input terminal block
13 Input supplementary protector
16 Output terminal block
17 Ground terminal
18 Switch of voltage setting
19 Standard monitoring interface
20 PC interface

	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	This switch is used to manually check the battery. Press the switch for 2 seconds to perform the battery check.
		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	AC inlet (only M-UPS015AE2S)		Connects to input power supply (IEC60320-1 C14)
⑫	Input terminal block (except M-UPS015AE2S)		Connects to input power supply
⑬	Input supplementary protector		Breaker for protecting the input circuit.
⑭	AC outlet (only M-UPS015AE2S)		Connects the input plug of the connection device. (IEC60320-1 C13)
⑯	Output terminal block (except M-UPS015AE2S)		Connects to an output system
⑰	Ground terminal		P.E. (Protective Earth)
⑰	Ground terminal		F.G. (Functional ground)
⑱	Switch of voltage setting		Sets up the output voltage
⑲	Standard monitoring interface (CN1)		Outputs no-voltage contact signal
⑳	PC interface (CN2)		Computer interface

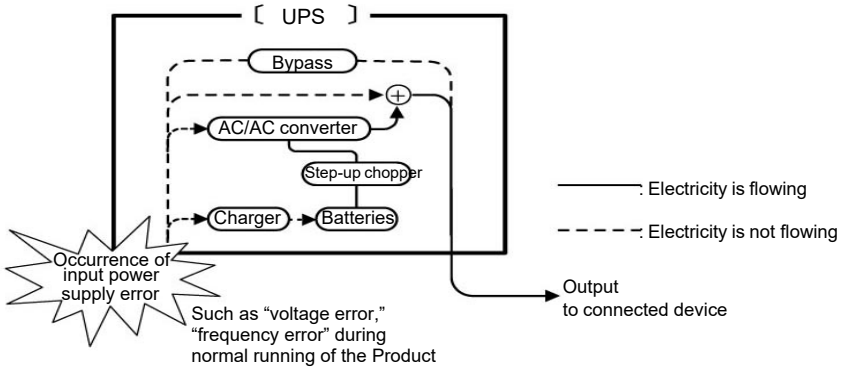
2.2 How the Product Works

- **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.

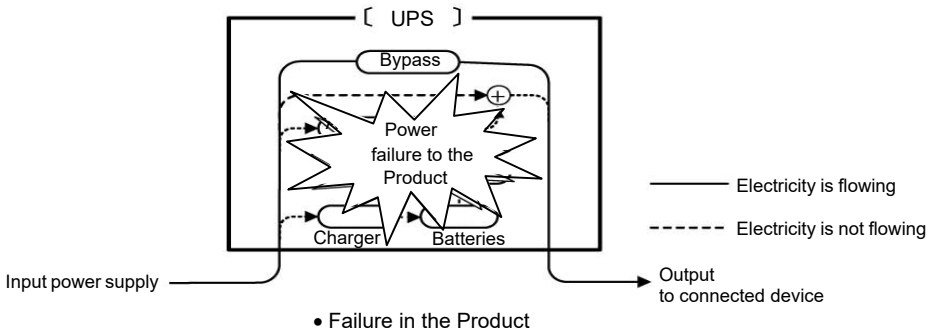


Electricity flow during battery operation

- **Automatic bypass operation**

  When an abnormality occurs in the UPS, the output switching circuit switches to the direct feed bypass circuit and the AC input power is supplied to the load from the direct feed bypass circuit.

  In case of M-UPS015AE2□, the circuit switching takes some time (10 ms or less). In case of M-UPS030AE2□, the switching can be done without momentary interruption. The same applies when switching to bypass operation manually using the front switch. During bypass operation, even if an input power failure occurs, the battery will not supply power to the connected device(battery operation).

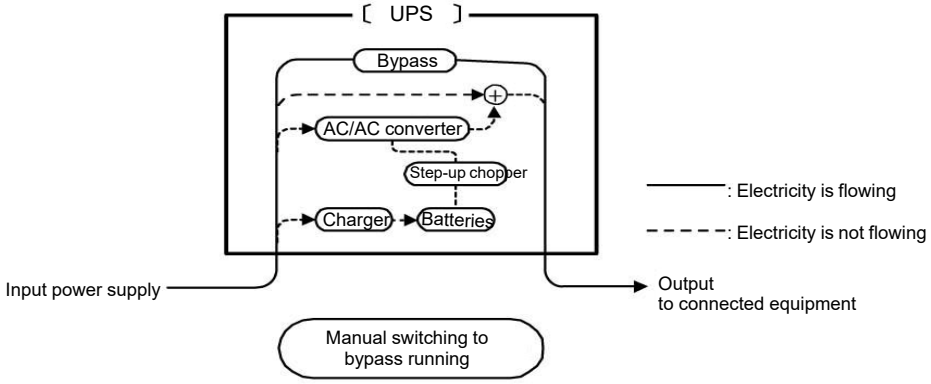


Electricity flow during automatic bypass operation

- **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 manual 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:

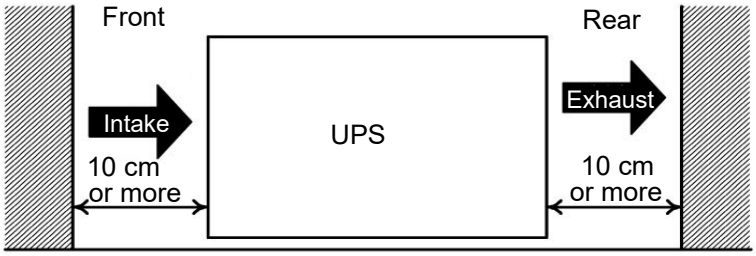
- Outdoor
- Exposed to the wind and rain
- Extremely humid place and a dusty place
- With corrosive gas or salinity
- Direct sunlight
- Near sparks or heating element
- Extremely hot or cold place or place where the temperature fluctuates greatly
- Where vibration and shocks occur

Do not use the UPS in or near residential areas.
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.
M-UPS015AE2R and M-UPS030AE2R can only be installed horizontally (rack mounted). Vertical installation is not possible.
Failure to do so may result in fire or equipment damage due to battery leakage.

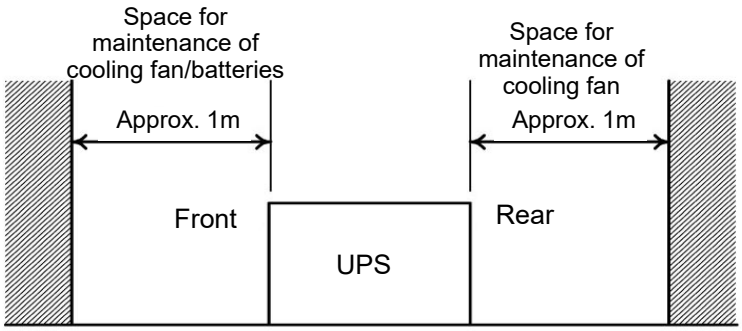
Do not block the vent hole and cooling fan, Do not use UPS where the air is not well ventilated.
The UPS is equipped with vents and cooling fans to cool the inside of the UPS; the internal and ambient temperatures of the UPS may deviate from the rated specifications.

The following spaces are required for an installation.

- 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.



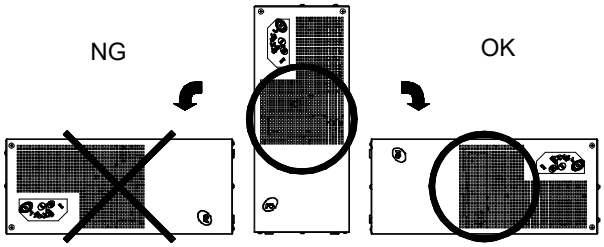
The recommended environment is as follows.

Item	Recommended environment
Temperature	15 to 25°C
Humidity	30 to 70% (No condensation)

● Installation Position

⚠ CAUTION	
Injury	This UPS can be installed lying down; it should only be tilted to the right (90 degree clockwise) when viewed from the front; do not tilt the UPS to the left (90 degree counter-clockwise).
Damage	Take out the UPS in a level and flat place. Pay enough attention to prevent an accident such as an overturn or a drop. The mass of the UPS refers to “Caution about Safety”.

M-UPS015AE2S and M-UPS030AE2B

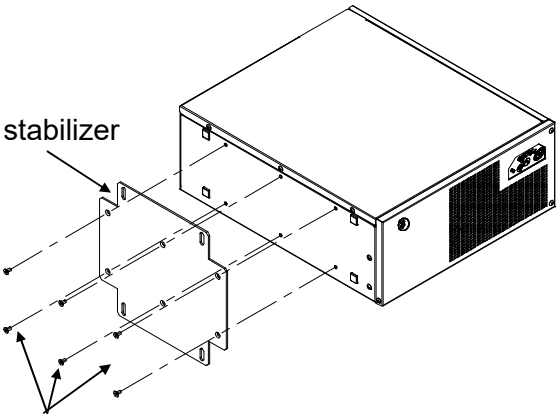


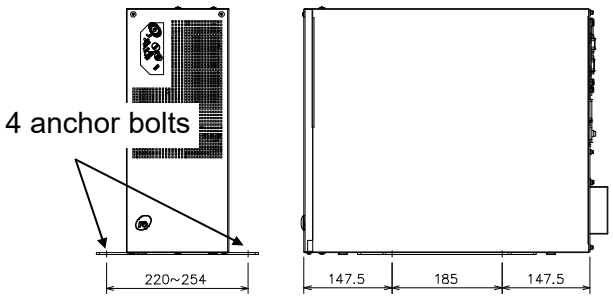
<M-UPS030AE2B>

For preventing an overturn of the UPS, the UPS fixes to a floor with an attached stabilizer and screws.

(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).

(2) After attaching the stabilizer to the UPS, screw the stabilizer to the floor



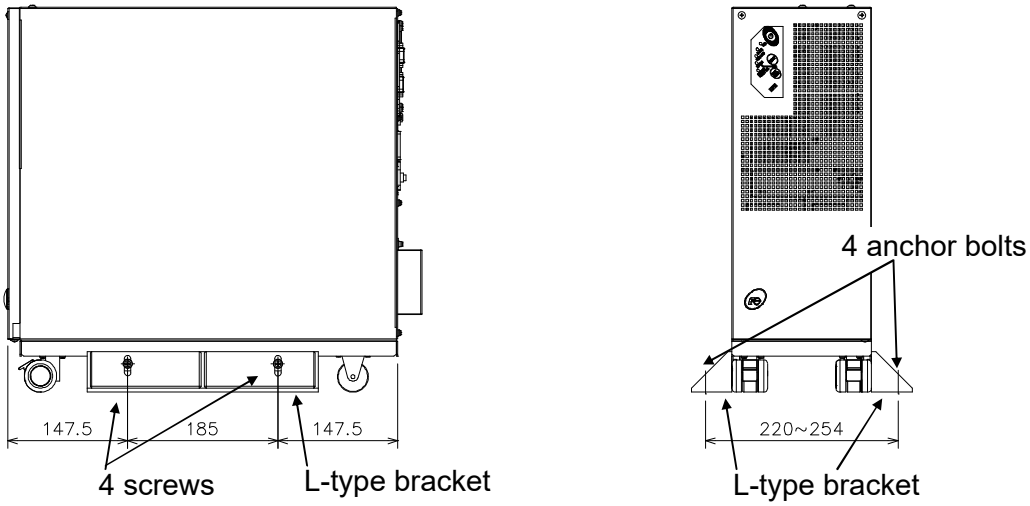


<M-UPS030AE2C>

For preventing an overturn of the UPS, the UPS fixes to a floor with an attached L-type bracket and screws.

(1) Fix the L-type brackets (right side and left side) to the UPS with 4 screws

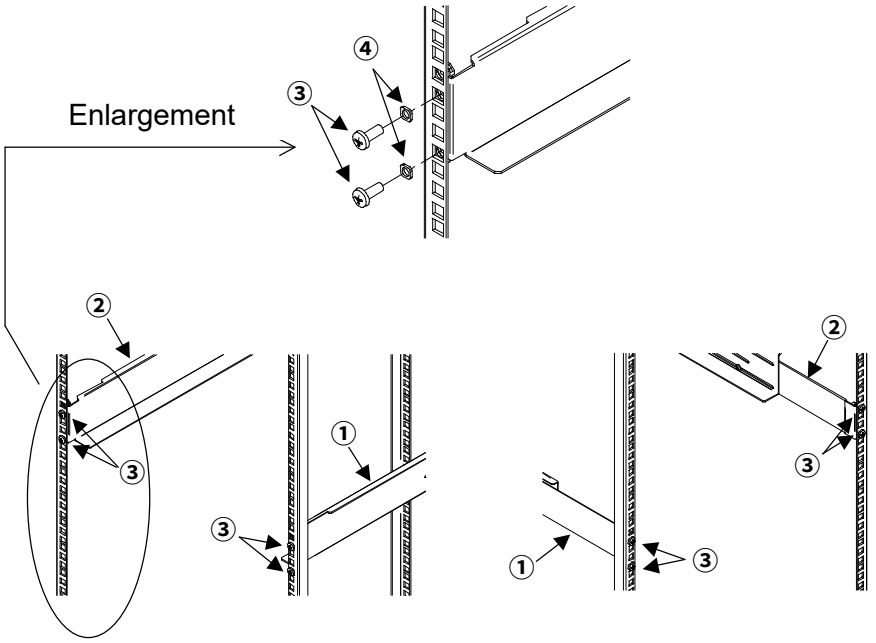
(2) Fixed the L-type brackets to a floor with an anchor bolt.
(Please prepare the anchor bolts by user.)



<M-UPS015AE2R / M-UPS030AE2R>

1. Loosen the screw of the right rail for rack mounting ① and the left rail for rack mounting ②, and adjust the length of each rail to the length of the rack. The length of the rail can be adjusted from 565 mm to 764 mm. Tighten the screw after adjusting the length of each rail.

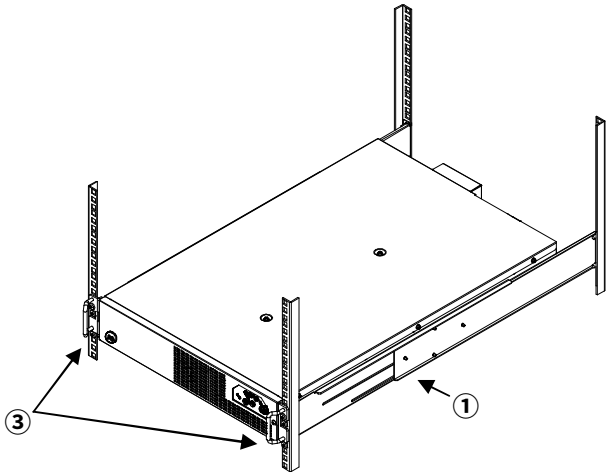
2. To match the position of each rail, set the washers for positioning ④ in the corner hole of the rack respectively (four places of each rail). Then, fix the rail with the screws for rack mounting ③ in the place of the corner hole with the washers. Set up the bending part in the rail to the lower side and inside. (The washers might become unnecessary by the kind of the rack.)



The figure which looked at the rack from the front

The figure which looked at the rack from the back

3. Put the system on the rail, and fix the right and left in the front side part with screws for rack mounting ③.



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. **A commercial power supplies usually have grounding and ungrounded electrodes. Be sure to check before connecting.** Reverse connection may cause malfunction due to noise or electric shock.

IMPORTANT

The allowable voltage between the UPS input cable and ground is 250V AC. 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 2kV peak (1.2 × 50 μsec). If a surge voltage of 2kV peak or more is applied, the filter circuit in the input section may be damaged.

The input voltage range of the UPS is from 160VAC to 288VAC. (tolerance)

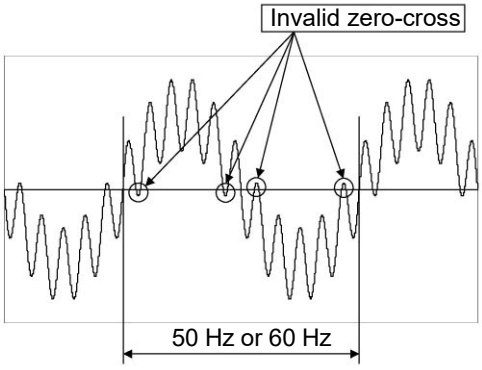
If the input voltage is different from the above, provide a transformer for voltage conversion outside of the Product. The UPS may be damaged, if a voltage outside of the input voltage range is impressed.

Connect the UPS to the input power supply within the rated input voltage range of the connected device. In bypass operation, the input voltage of the UPS is output directly to the connected equipment. Applying a voltage higher than the range of the input voltage rating of the connected device may damage the connected device.

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 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 range: from 160Vac to 288Vac • Frequency variation: within ±5% of rated frequency (less than 1Hz per second) • 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 phases
M-UPS015 AE2S	10 A or greater	1.5kVA or greater	160V to 288VAC	50/60 Hz ±5% (See note.)	Single phase, 2-wire system
M-UPS015 AE2R					
M-UPS030 AE2B	20 A or greater	3 kVA or greater			
M-UPS030 AE2R					
M-UPS030 AE2C					

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. Refer to the table below to select a compatible crimp terminal and input/output cable size.

<table>
<tr><th>UPS side</th><th colspan="3">Specification</th><th>Connect with</th></tr>
<tr><td rowspan="6">Input/output terminal block</td><td>Terminal symbol</td><td>Connection</td><td>Form</td><td rowspan="6">Input power supply and output system</td></tr>
<tr><td>L/R</td><td>AC input
(ungrounded side terminal)</td><td rowspan="5">5-pole screw terminal
(M4)</td></tr>
<tr><td>N/S</td><td>AC input
(Grounded side terminal)</td></tr>
<tr><td>GND
(FG)</td><td>Ground</td></tr>
<tr><td>I/U</td><td>AC output
(ungrounded side terminal)</td></tr>
<tr><td>n/V</td><td>AC output
(grounded side terminal)</td></tr>
<tr><td>Protective grounding terminal</td><td>PE (G)</td><td>Ground
(protective earth)</td><td>(M4)</td><td>Grounding conductor</td></tr>
</table>

3. The specifications of the AC input plug and AC outlet of M-UPS015AE2S is as follows. Prepare an input power receptacle and plug the connecting device.

UPS side	Specification	Connect with
AC input plug	IEC60320-C14 (the length of a cord : approximately 2m)	Input power receptacle
AC outlet	IEC60320-C13 x 8 (Rating capacity 250VAC, 10A)	Connecting device

If there is no ground in an input power receptacle:
Connect the grounding wire to the ground terminal of AC input plug.

- **Connecting the output cable**

1. For M-UPS015AE2S, the AC outlet is at the back of the UPS. Have the ground terminal securely grounded.

2. For M-UPS015AE2R and M-UPS030AE2, remove the AC input/output terminal block cover from the back side, and plug the AC output cable to the AC output terminal block. Have the ground terminal securely grounded.

- **Connecting the input cable**

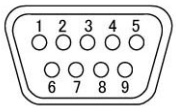
1. In the case of M-UPS015AE2S, plug the AC input on the back of the UPS to an input power receptacle. Have the ground terminal securely grounded.

2. For M-UPS015AE2R and M-UPS030AE2□, remove the AC input/output terminal block cover from the back side, and plug the AC input cable to the AC 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.

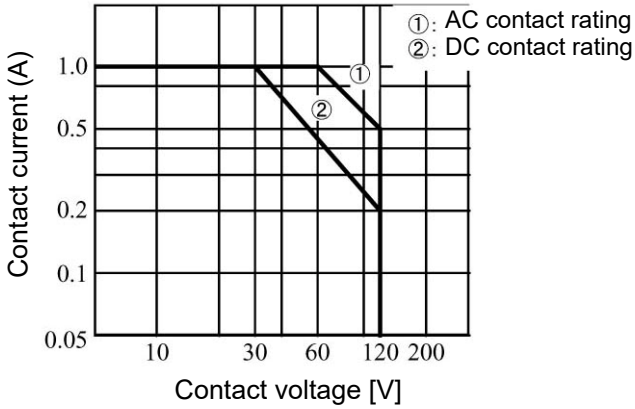
- **CN1 (standard monitoring interface)**



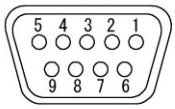
D-sub 9-pin male
port (3 mm threads)

Pin No.	Signal type	Signal name	Description
1-4	"Opens" on action	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	"Closes" on action		
2-5	"Opens" on action	Input power supply error 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	"Closes" on action		
3-9	"Opens" on action	Low battery voltage signal	No-voltage contact signal at approximately 2 minutes before the end of battery discharge (at rated load) during battery operation.
3-8	"Closes" on action		

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



● CN2 (PC interface)



D-sub 9-pin female port
(#4-40 inch threads)

Pin No.	Signal type	Signal name	Description
2-3	"Closes" on action	Input power supply error signal (See Note 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	"Closes" on action	Low battery voltage signal (See Note 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 stops upon receipt of "H" signal	UPS automatic shutdown signal (See Note 2.)	Signal input to the device when the AC output of the device 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 (See Note 3.)	Serial data input (RX)	<Communication method> • Baud rate: 2400 bps • Data length: 8 bits • Stop bit: 1 bit • Parity: non • Character type: ASCII type
9-7		Serial data output (TX)	
7		Signal ground (SG)	

Note 1: Refer to the graph on 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 RS-232C communication cable)

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 ~ 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. The buzzer will sound if the switch is received.
3. An output stops. The RUN LED (green) on the front of the UPS blinks slowly (in the cycles of 1.6 sec.).
4. In the case of M-UPS015AE2S, pull out the AC input plug on the back of the UPS from an input power receptacle.
5. In the case of M-UPS015AE2R and M-UPS030AE2□, turn off the breaker of the distribution board.
6. 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	200 VAC
1	208 VAC
2	220 VAC
3	230 VAC
4	240 VAC
5-9	Not Applicable

7. For M-UPS015AE2S, connect the AC input plug on the back of the UPS to an input power receptacle.
   For M-UPS015AE2R and M-UPS030AD2□, turn on the breaker on the distribution board.
   For M-UPS030AE2□, turn on the input breaker on the back of the UPS. The RUN LED (green) on the front of the UPS blinks slowly (in the cycles of 1.6 sec).

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

9. 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.

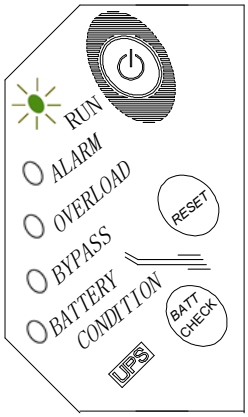
10. When normal operation starts normally at the set rated voltage, turn on the connected device.

4 Running

4.1 Turning on the UPS

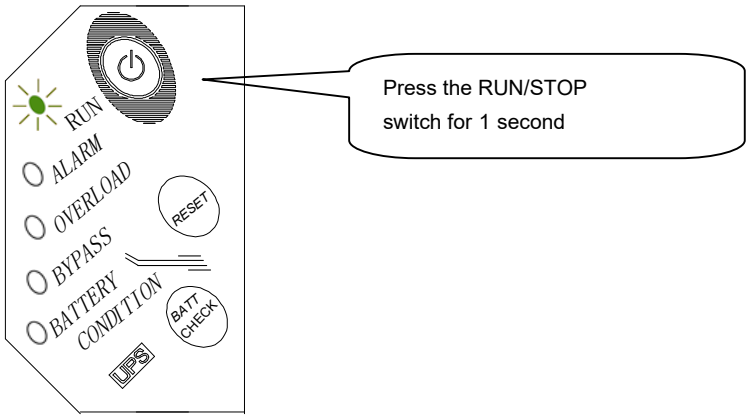
⚠ Caution	
Damage	Check the voltage set by the voltage setting switch is within the input voltage range of the connected device. Failure to do so may damage the connected device.

1. Check cable connections. 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 (in the cycles of 1.6 sec.).

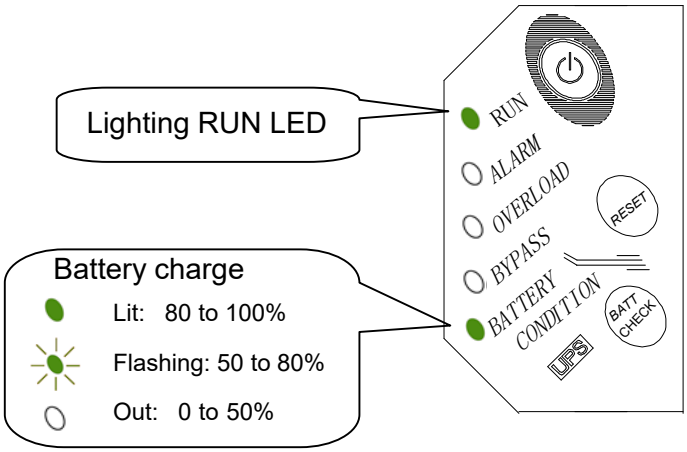


Refer to Chapter 3.2 “Connecting the Cables”

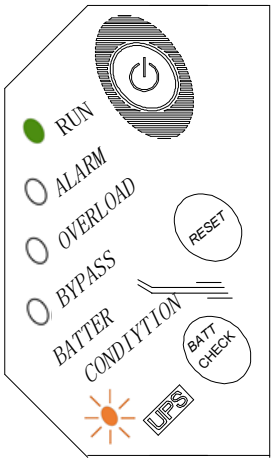
2. Turning on the UPS. Press the RUN/STOP switch on the front of the UPS for 1 second. The buzzer will sound when the power is on.



3. AC voltage is output from the AC outlet or 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.



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).



5. The battery check takes 5 seconds. After that, if the battery is normal, the BATTERY CONDITION LED (green) on the front of the UPS will again indicate the battery charge level, and the UPS will return to the normal operation.

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

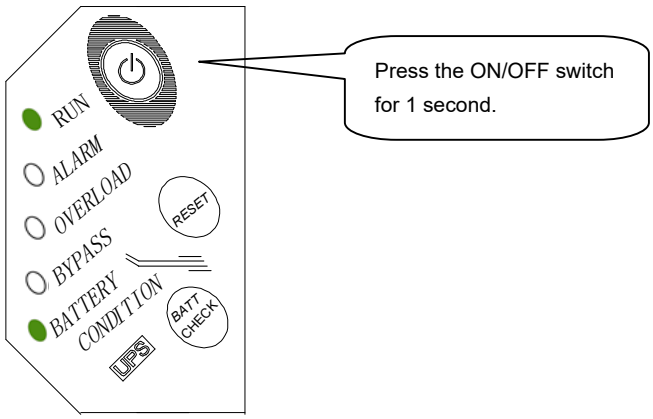
6. After normal operation starts, turn on the power of the connected device.

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")

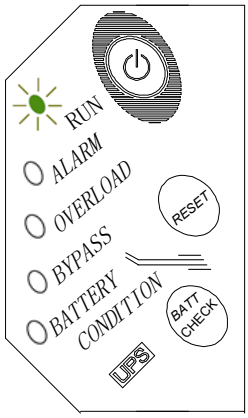
⚠ CAUTION
Damage Refer to "4.2 Turning off the UPS" when: a) Performing planned power outage or, b) Turning off the input breaker on the back of the UPS See that the RUN LED (green) is blinking slowly (1.6 second cycle). Do not unplug the AC input plug from the power outlet or turn off the input breaker 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.



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

   If the output fails to stop normally: See “Chapter 6 Troubleshooting”.



4. Turn off the input breaker on the distribution board.

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. For M-UPS015AE2S, unplug the AC input plug from the input power receptacle on the rear of the UPS. For M-UPS015AE2R and M-UPS030AE2□, turn off the input power and disconnect the connection to the AC input terminals (R, S). 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 power, check that the RUN LED (green) is blinking slowly (1.6 second cycles). 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.

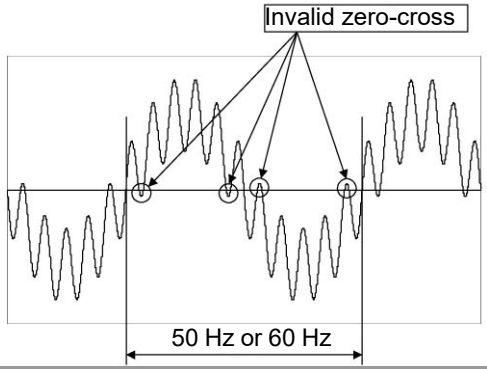
- **Daily maintenance**

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: from 160 to 288Vac • Frequency variation: within rated frequency ± 5% (1Hz/sec.) • 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 connection 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

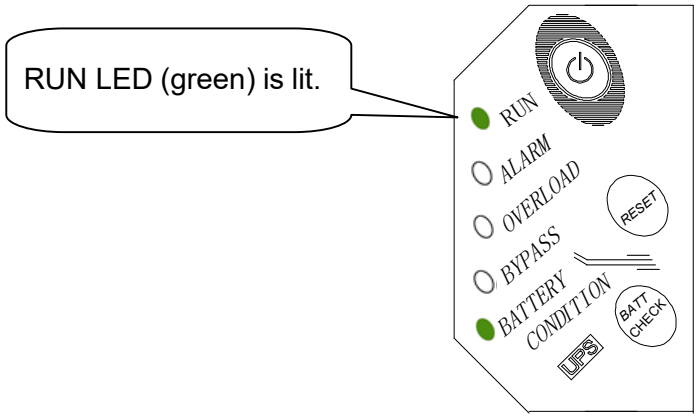
Manual checks are performed in the following cases:

- 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.

● **Checking UPS status**

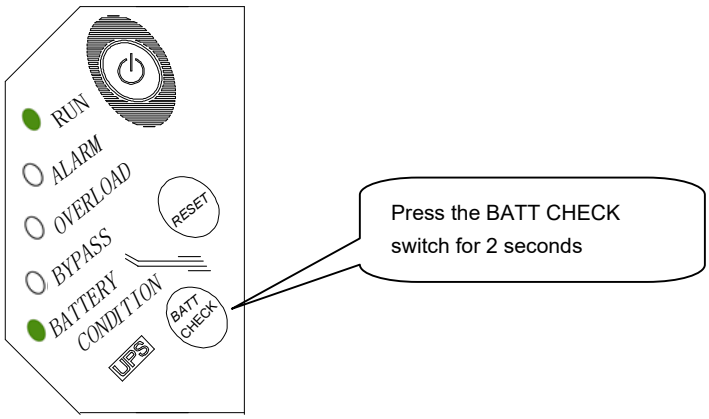
1. Check if the UPS is operating properly.



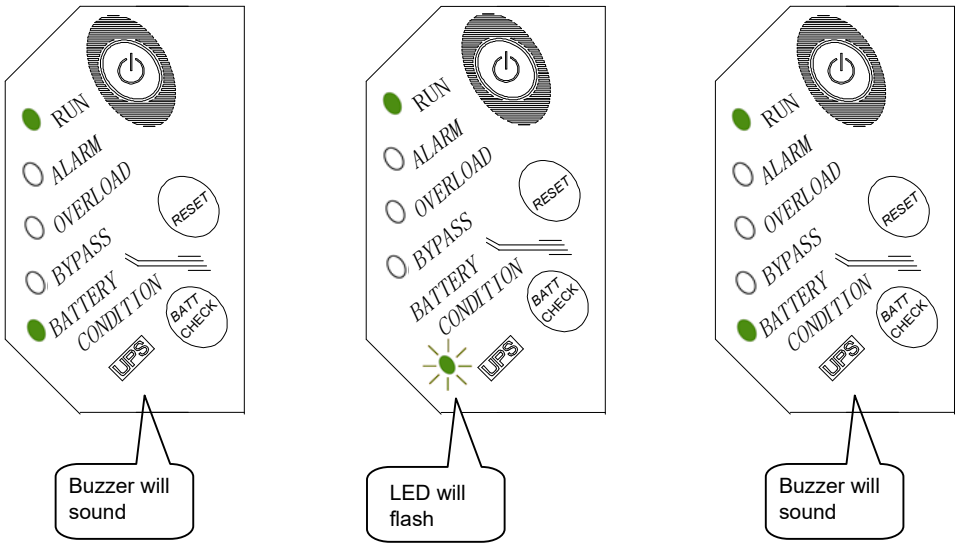
When all the LEDs on the front of the UPS are off, turn on the UPS and proceed to step 2. For details, refer to Chapter 4.1 “Turning on the UPS”. Also refer to Chapter 6 "Troubleshooting”.

- **Using the manual check function**

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



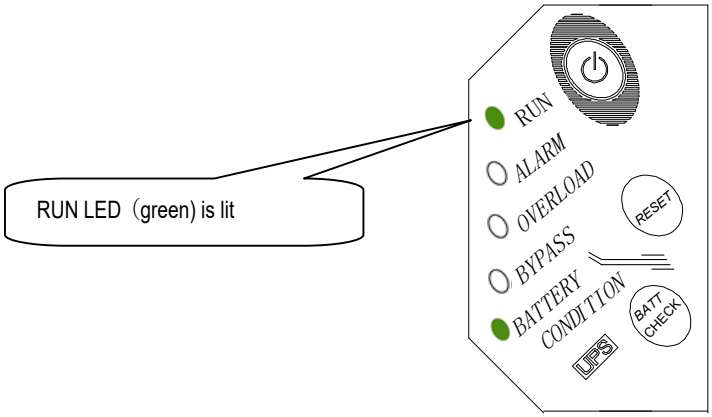
A buzzer will sound and the BATTERY CONDITION LED (orange) will flash (1.6 second cycle). After 5 seconds, the buzzer will sound again to complete the battery check.



3. After the battery check,

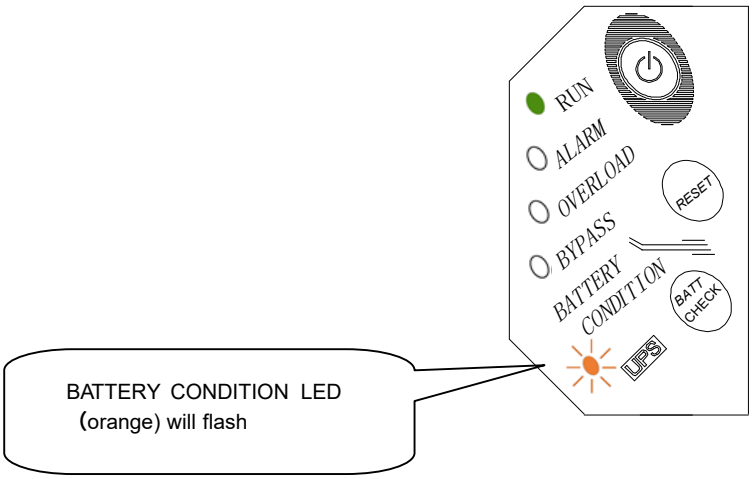
   If the battery is fully charged:

   The RUN LED (green) on the front of the UPS will light up and the UPS will return to the normal operation.



If the battery is not fully charged:

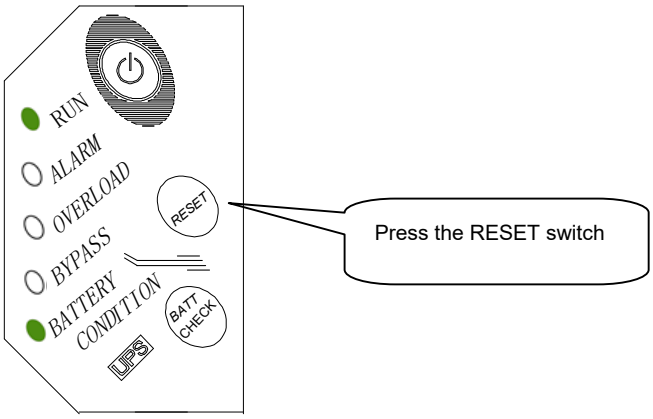
- A warning beep will sound and the BATTERY CONDITION LED (orange) on the front of the UPS will flash. Go to step 4.



- **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.



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.

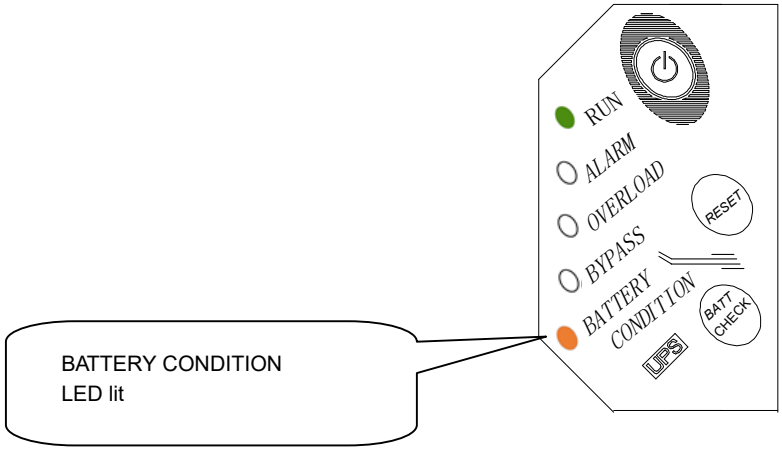
5.4 Replacing the Battery

Timing of battery replacement

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

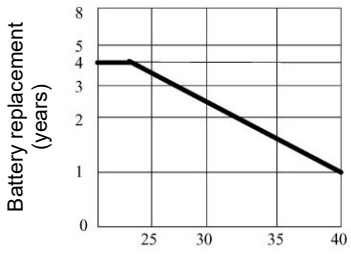
The battery has reached the end of its useful life in the following cases.

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



- 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.



Ambient temperature of the UPS (°C).

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	Type of battery unit	Number of units (per UPS)	Battery unit	
			Mass (per unit)	Battery capacity
M-UPS015AE2S	RRABU-G2A	1 unit	Approximately 12kg	12V, 9Ah x 4
M-UPS015AE2R				
M-UPS030AE2B	RRABU-G2A	2 units	Approximately 12kg	12V, 9Ah x 8
M-UPS030AE2R	RRABU-G4A		Approximately 12kg	
M-UPS030AE2C	RRABU-G2A		Approximately 12kg	

Disposal and storage of battery

- Please use caution when disposing of or storing batteries.
  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 case.

- 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:

M-UPS015AE2S: RRAF-G1×1
M-UPS015AE2R: RRAF-G1×1
M-UPS030AE2B: RRAF-G2×1
M-UPS030AE2R: RRAF-G2×1
M-UPS030AE2C: RRAF-G2×1

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.

UPS stored longer than two months

IMPORTANT
Charge the battery every two 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) For M-UPS015AE2S, pull out the AC input plug from the input power receptacle on the back of the UPS.

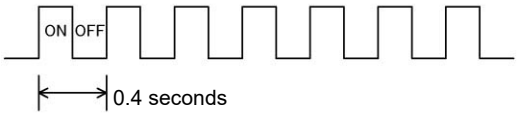
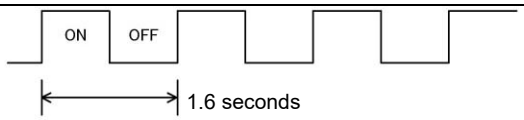
(5) In the case of M-UPS015AE2R and M-UPS030AE2□, turn off the input breaker on the back of the UPS.

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

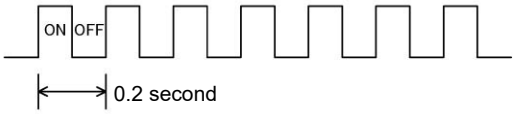
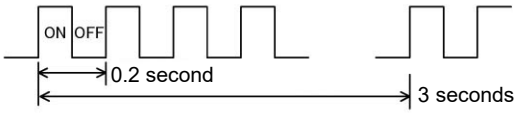
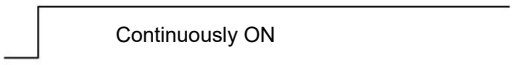
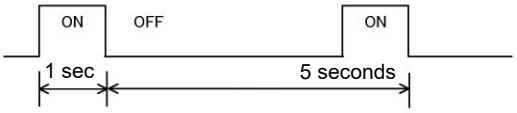
6.2 Operation Mode List

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-second period)	

- Warning Sound Type

Symbol	Warning sound	
(i)	Beep beep beep beep	
(ii)	Beep beep (stops for 2 seconds) Beep beep (four times every 3 seconds)	
(iii)	Beep (continuous sound)	
(iv)	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 Beep	Operation Status
	RUN (green)	ALARM (orange)	OVER LOAD (orange)	BYPASS (orange)	BATTERY CAPACITY (green)		
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.
Check the ambient temperature and wait for 10 minutes.
Press the RESET button for 3 seconds.
It'll be back to Normal Operation (No 1) if there is no problem.
If the ALARM LED is still on or blinking, 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	○	Charged amount	(1)	Output overload during the normal operation (M-UPS015AE2)

Remarks: Overload. Reduce the capacity of the connected device less than the rated value.
Output Voltage Control has reduced the output voltage.
In case this state lasts for 100 seconds, the UPS will stop operating due to Output Overload (No 12).
Unable to operate battery mode when input power failure occurs.
Output short circuit will stop the UPS from operating immediately.

9	Lit	○	Lit	Lit	○	(1)	Bypass running due to output overload (M-UPS030AD2)

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.

10	○	○	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)		
11	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.

12	○	Lit	Lit	○	○	(1)	Stopped operating due to an output overload (M-UPS015AE2)

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.

13	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)		
14	Lit	○	○	○	Charged amount	(1)	Battery voltage drop due to continuing the battery operation

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.

15	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).

16	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.

No.	LED					Warning Sound	Operation Status
	RUN (green)	ALARM (orange)	OVER LOAD (orange)	BYPASS (orange)	BATTERY CAPACITY (green/orange)		
17	Lit	○	○	○	Lit	(1)	End of battery life

Remarks: 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.

18	(b) Slow flashing	(a) Fast flashing	○	○	○	(1)	Setting error of rated output voltage

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.

19	(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 alsrestart the UPS by pressing the [On/Off] button.

7 Appendix

7.1 Rated specification

Model		M-UPS015AE2S		M-UPS015AE2R
AC output	Rating capacity	1500 VA / 1200 W		
	Voltage	200/208/220/230/240V ±2%		
	Frequency	50 Hz or 60 Hz (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, 2-wire (with a ground terminal)		
	Load condition	Linear load or rectifying load with a crest factor of up to 3 times		
	Voltage waveform distortion factor	Under load resistance: 4% or less Under rectified load: 6% or less		
	Overcurrent protection	RMS value: 100% or more Peak value: 300% or more of rated RMS value (bearing the load of the crest factor of 3)		
	Grounding system	Un-grounding		
	Bypass circuit	Relay system (changeover time: 10 ms or less) Switching is not possible in the event of a power failure or overload.		
AC input	Voltage	200/208/220/230/240V (Tolerance 160 ~ 288V)		
	Frequency	50 Hz or 60 Hz ±5%		
	Number of phase	Single phase, 2-wire (with a ground terminal)		
	Capacity	1500 VA or less		
	Grounding system	Single-line grounding		
	Power factor	0.97 or more (at the rated operation)		
	Input harmonics current	Based on IEC61000-3-2.		
Storage battery	Type	Small sealed lead storage battery (long-life battery)		
	Backup time *1 [initial value]	Approximately 5 minutes [1200 W]		
	Nominal voltage	48 V		
Others	Ambient temperature	0 to 40°C		
	Relative humidity	20 to 95% (no condensation)		
	Noise	50 dB (A) max (at 1 m from on the front of the UPS)		
	Cooling method	Forced air cooling		
External dimensions (W × D × H)		170 × 480 × 213 mm		437 x520 x87 mm
Mass		24 kg (without batteries: 12 kg)		26 kg (without batteries: 14 kg)
Applicable standard		Based on VCCI CLASS A, UL1778-4th, IEC62040-2		
External connection	Input	Parallel 2 pole with grounding inlet (IEC60320-1 C14)		Input/output terminal block (L/R, N/S: M4 screw)
	Grounding terminal			Input/output terminal block (PE (G): M4 screw)
	Output	Parallel 2 pole with grounding outlet (IEC60320-1 C13) x 8		Input/output terminal block (l/U, n/V: M4 screw)

Model		M-UPS030AE2B or C		M-UPS030AE2R
AC output	Rating capacity	3000 VA / 2400 W		
	Voltage	200/208/220/230/240V ±2%		
	Frequency	50 Hz or 60 Hz (automatic changeover inside the UPS)		
	Frequency accuracy	Normal operation	Depend on input frequency	
		Battery operation	Within ±0.1%	
	Number of phase	Single phase, 2-wire (with a ground terminal)		
	Load condition	Linear load or rectifying load with a crest factor of up to 3 times		
	Voltage waveform distortion factor	Under load resistance: 4% or less Under rectified load: 6% or less		
	Overcurrent protection	RMS value: 100% or greater Peak value: 300% or greater of rated RMS value (bearing the load of the crest factor of 3)		
	Grounding system	Un-grounding		
	Bypass circuit	Thyristor method (Switchover time: No instantaneous power failure) Switching is not possible during power failure.		
AC input	Voltage	200/208/220/230/240V (Tolerance 160 ~ 288V)		
	Frequency	50 Hz or 60 Hz ±5%		
	Number of phases	Single phase, 2-wire (with a ground terminal)		
	Capacity	3000 VA or less		
	Grounding method	Single-line grounding		
	Power factor	0.97 or more (at the rated operation)		
	Input higher harmonics current	Based on IEC61000-3-2.		
Battery	Type	Compact sealed lead-acid batteries (long-life battery)		
	Backup time *1 [initial value]	Approximately 5 minutes [2400 W]		
	Nominal voltage	96 V		
Others	Ambient temperature	0 to 40°C		
	Relative humidity	20 to 95% (no condensation)		
	Noise	59 dB (A) max (at 1 m from front of UPS)		
	Cooling method	Forced air cooling		
Outside dimensions (W × D × H)		172 × 410 × 480mm (AE2B) 172 × 474 × 480mm (AE2C)		437 x 680 x 87
Mass		47 kg (without batteries 23 kg): AE2B 48 kg (without batteries 24 kg): AE2C		42 kg (without batteries: 18 kg)
Applicable standard		Based on VCCI CLASS A, UL1778-4th, IEC62040-2		
External connection	Input	Input/output terminal block (L/R, N/S: M4 screw)		
	Ground	Input/output terminal block (PE (G): M4 screw)		
	Output	Input/output terminal block (l/U, n/V: M4 screw)		

*1 The back up 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.

Internal battery voltage is xx Vdc, where xx stands as follows.

Models M-UPS015AE2S-U with suffix: xx is 48Vdc
Models M-UPS015AE2R-U with suffix: xx is 48Vdc
Models M-UPS030AE2B-U with suffix: xx is 96Vdc
Models M-UPS030AE2R-U with suffix: xx is 96Vdc
Models M-UPS030AE2C-U with suffix: xx is 96Vdc

This unit intended for installation in a controlled environment and maximum ambient temperature is 25℃ (temperature controlled, indoor area free of conductive contaminants).
If ambient temperature is higher than 25℃, the output current decrease as follows.

Ambient	Output rating
to 25℃	100%
to 35℃	90%
to 40℃	80%

This UPS must be secured to the floor with the provided brackets.

For all models without M-UPS015AE2S, need to provide external disconnect and over current protection devices for AC input and AC output. A properly rated UL listed branch circuit breaker can provide both functions.

Since the input side of the UPS is not equipped with a circuit breaker (UL listed circuit breaker for backflow protection), this circuit breaker must be used when shipped. All models not using the M-UPS015AE2S must have a circuit breaker connected for use with the UPS. The trip current ratings of the circuit breakers (2-pole type) are listed in Table 1 and Table 2.

Wiring shall use UL and CSA approved closed loop terminal connectors that are compatible with the wire size and fully insulated to the terminals. Connectors shall be secured with a crimp tool specified by the connector manufacturer

Use 75°C copper wire for conductors.

Wire sizes and tightening torques are shown in Tables 1 and Table 2.

Circuit diagrams are shown in figure 1 or 2.

The UPS must be installed with flexible conduit, except for M-UPS015AE2S.

For pluggable devices, outlets should be located close to the UPS and easily accessible.

For M-UPS015AE2S-U

For permanently connected UPS, an easily accessible disconnect device shall be incorporated into the building installation wiring.

Except for M-UPS015AE2S-U

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-UPS015AE2R-Ux	200/208 220/230 240	7.5	14	R2-4	2.0	AC240	10
M-UPS030AE2B-Ux-y		15	10	R5.5-4	2.0		20
M-UPS030AE2R-Ux-y							
M-UPS030AE2C-Ux-y							

x: Any letters
y: Any letters

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

MODEL	OUTPUT				TIGHTENING TORQUE (N・m)	2POLE CIRCUIT BREAKER	
	Vo(V)	Io(A)	WIRE SIZE AWG	Type of Closed-loop Terminal		V	A
M-UPS015AE2R-Ux	200/208 220/230 240	7.5/7.2 6.8/6.5 6.3	14	R2-4	2.0	AC240	10
M-UPS030AE2B-Ux-y		15/14.4 13.6/13 12.5	10	R5.5-4	2.0		20
M-UPS030AE2R-Ux-y							
M-UPS030AE2C-Ux-y							

x: Any letters
y: Any letters

Fig 1. M-UPS015AE2 circuit diagram

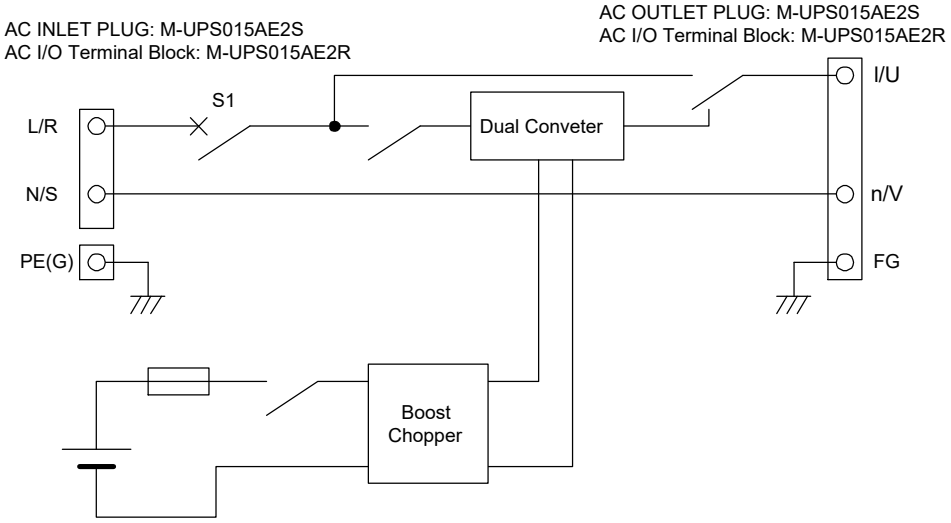
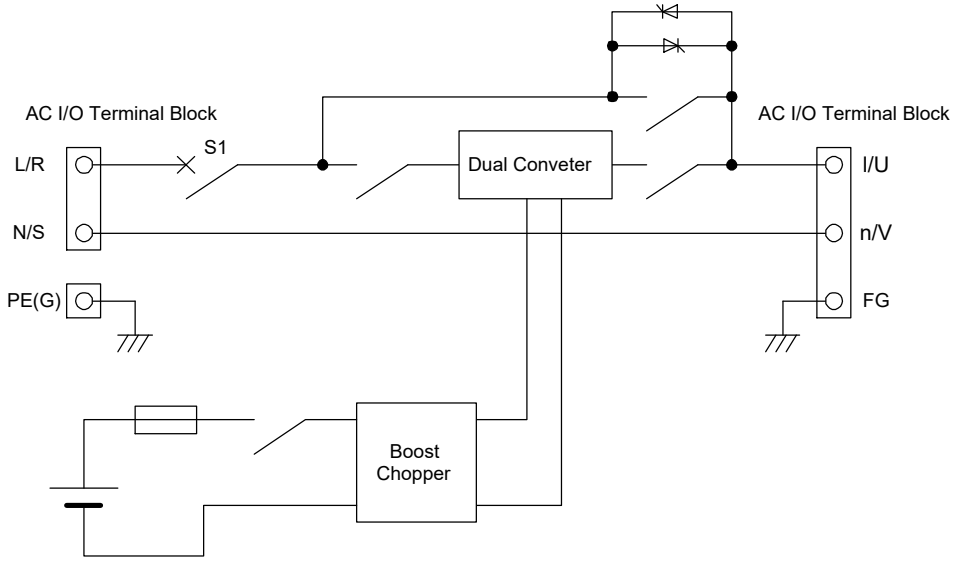


Fig 2. M-UPS030AE2 circuit diagram



Refer to “Preparation before connection item 2 in 3.2 Connection of cables”
(N/S and n/V are neutral terminals.)

⚠ 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.

High leakage current - Earth connection essential before connecting supply.

⚠ CAUTION

■ Do not use this device in any life support application where its failure could reasonably be expected to cause the failure of the life support system or to materially affect its safety or effectiveness.

■ There is a risk of explosion if the battery is replaced with an incorrect type. Dispose of used batteries according to the instructions

■ When replacing batteries, use only those specified by the company

■ 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.

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

■ Do not open or mutilate batteries. Released electrolyte is harmful to the 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.