USER'S MANUAL

Uninterruptible Power Supply
GX100 Series (5kVA, 7.5kVA, 10kVA)

Model M-UPS050AD1S/ M-UPS050AD2S
M-UPS075AD1S/ M-UPS075AD2S
M-UPS100AD1S/ M-UPS100AD2S

Fuji Electric Co., Ltd.

INR-HG5685

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 product conforms 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. High voltage parts inside UPS may cause electrical shock.

⚠ Caution	Caution indicates that slight or moderate injury may occur, the UPS or user's property may be damaged.
Electric shock injury	Do not insert fingers or sticks into the cooling fan or the ventilation. Doing so may cause electric shock or injury.
Electric shock	Maintenance including the 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 the UPS to the input power supply, connect the active wire to the AC input L/R terminal and the inactive wire to the N/S terminal. Also, connect the ground wire to the AC input protective ground terminal. Similarly, when connecting the output of the device, connect the active wire to the I1/U1 terminal and I3/V1 terminal for AC output (at 100 V). For AC output (at 200V), connect to I1/U2 and I2/V2, and connect the ground wire to the 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-UPS050AD1S/2S: 180 kg (without battery: 125 kg) • M-UPS075AD1S/2S: 235 kg (without battery: 160 kg) • M-UPS100AD1S/2S: 300 kg (without battery: 190 kg)
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. Replace the battery periodically.** Continued use of a UPS at the end of its battery life may result in battery leakage or smoking. **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 blinking 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).

Applying a surge voltage exceeding 5kV peak may damage the filter circuit in the input section.

The input voltage of the UPS is voltage ±15%.

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.

In bypass operation, the input voltage of the UPS is output directly to the connection device. Applying the voltage that exceeds the rated input voltage range of the connected device may damage the connected device.

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: within ±15% of rated voltage
- Frequency variation: within ±5% of rated frequency (1Hz per second)
- 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

- **Opening the package**

⚠ Caution : Heavy Load
Take out the UPS on a level and flat surface. The mass of the Product is as follows. • M-UPS050AD1S/2S: 180 kg (125 kg without batteries) • M-UPS075AD1S/2S: 235 kg (160 kg without batteries) • M-UPS100AD1S/2S: 300 kg (190 kg without batteries)

- **Contents of the package**

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

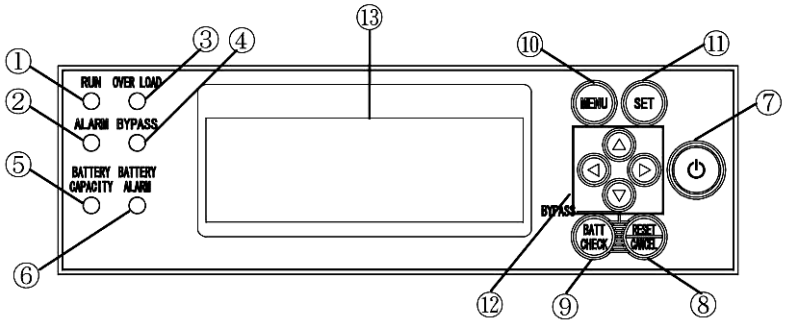
UPS Model	Accessories	Quantity
M-UPS050AD1S/2S (5 kVA)	• User's manual • Fixture (with 4 lock screws)	1 copy 1 set
M-UPS075AD1S/2S (7.5 kVA)	• User's manual • Fixture (with 4 lock screws)	1 copy 1 set
M-UPS100AD1S/2S (10 kVA)	• User's manual • Fixture (with 4 lock screws)	1 copy 1 set

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

2 Overview

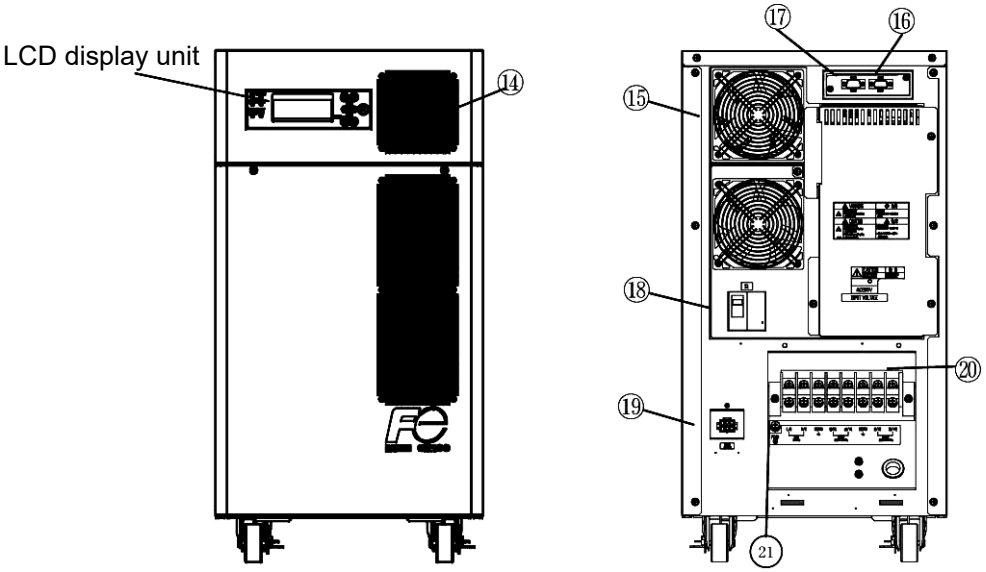
2.1 Name and Main Function of Each Part

<LCD display unit>



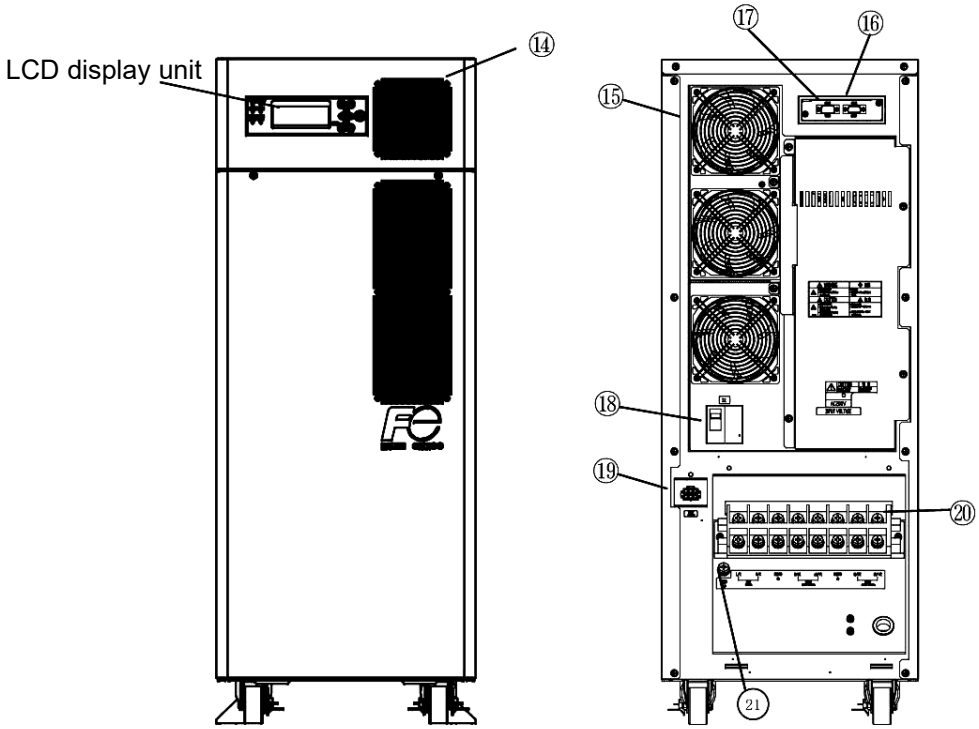
1 RUN
2 ALARM
3 OVER LOAD
4 BYPASS
5 BATTERY CAPACITY
6 BATTERY ALARM
7 ON/OFF
8 RESET/CANCEL
9 BATT CHECK
10 MENU
11 SET
12 Switch
13 LCD panel

<M-UPS050AD1S/M-UPS050AD2S>

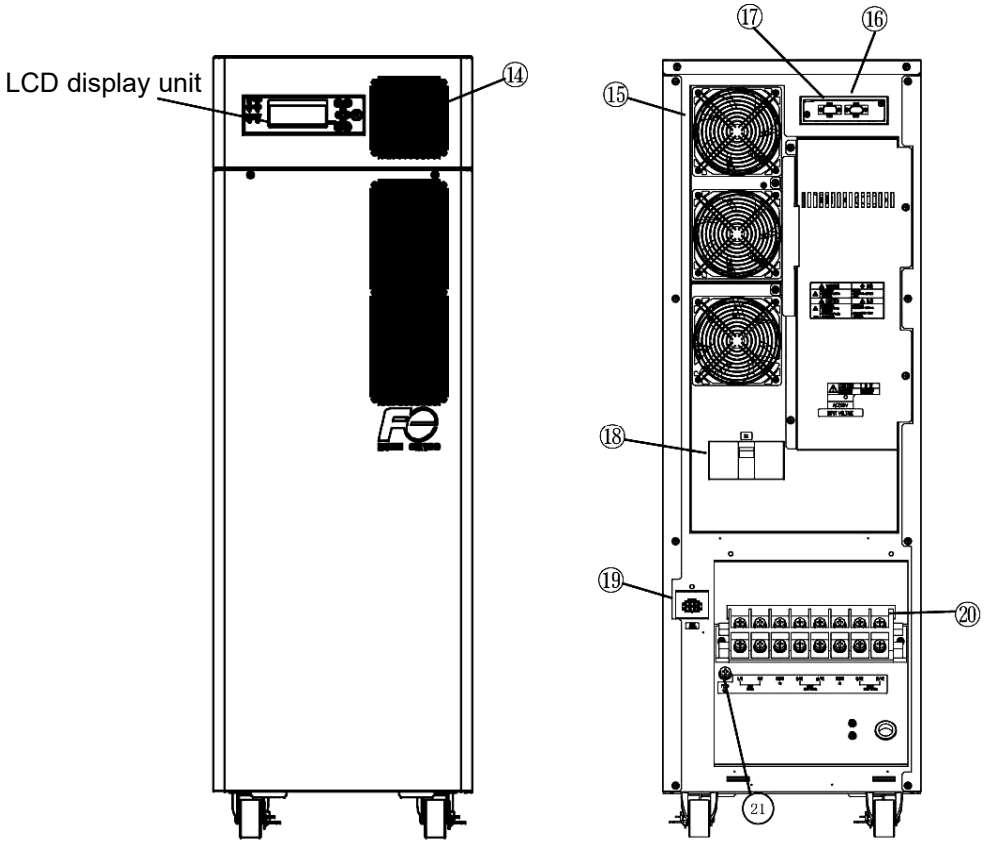


14 Vent hole
15 Cooling fan
16 Standard monitoring interface
17 PC interface
18 Input breaker
19 Connector for optional battery box
20 Input/output terminal block
21 AC input protective grounding terminal

<M-UPS075AD1S/M-UPS075AD2S>



<M-UPS100AD1S/M-UPS100AD2S>

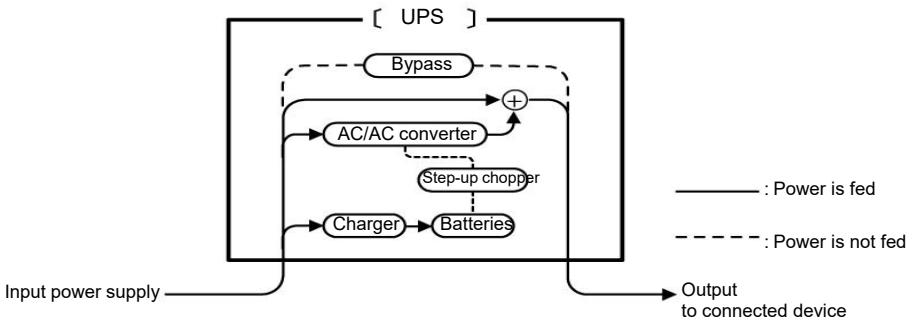


	Name		Functions
①	LED	RUN	Green light is on when the UPS is operating normally.
②		ALARM	Orange light is on for any failures in the UPS.
③		OVER LOAD	Orange light is on when the load capacity of the connected device exceeds the rated specification.
④		BYPASS	Orange light is on while the UPS is in bypass running.
⑤		BATTERY CAPACITY	When the battery is normal, the amount of charge is indicated. Lit: 80 to 100% Flashing: 50 to 80% Out: 0 to 50%
⑥		BATTERY ALARM	When the battery is abnormal, it lights up orange.
⑦	Switch	ON/OFF	Press for 1 second to switch between ON and OFF
⑧		RESET/CANCEL	This button has 2 functions: 1) Reset the warning Press this switch to stop the warning tone. After the fault has been recovered, press RESET for 3 seconds to turn off the ALARM LED. 2) Cancel the selected item on the LCD screen Press this switch to show another item on the LCD screen.
⑨		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.
⑩		MENU	Press for LCD menu
⑪		SET	To finalize the item selected on the LCD and go to the sub menu.
⑫		▲ Switch	Moves the cursor upward
		▼ Switch	Moves the cursor downward
		▶ Switch	Moves the cursor rightward
		◀ Switch	Moves the cursor leftward
⑬	LCD panel		To display various operations
⑭	Vent hole		Allows ventilation inside the UPS. The air direction is intake.
⑮	Cooling fan		Cools inside UPS. The air direction is exhaust.
⑯	Standard monitoring interface (CN1)		Outputs a no-voltage contact signal
⑰	PC interface (CN2)		Interface for a PC
⑱	Input breaker		Circuit breaker to protect the input circuit

	Name	Principal function
⑲	Connector for the optional battery box	Connects a long-time backup battery.
⑳	Input/output terminal block	Connect this terminal block to the input power supply. L/R: Ungrounded pole N/S: Grounding side pole Connect to load equipment. I1/U1 – I3/V1: 100V AC is output. I1/U2 – I2/V2: 200V AC is output. GND (FG): Grounding terminal
㉑	AC input protective grounding terminal	Connect a grounding conductor to this terminal

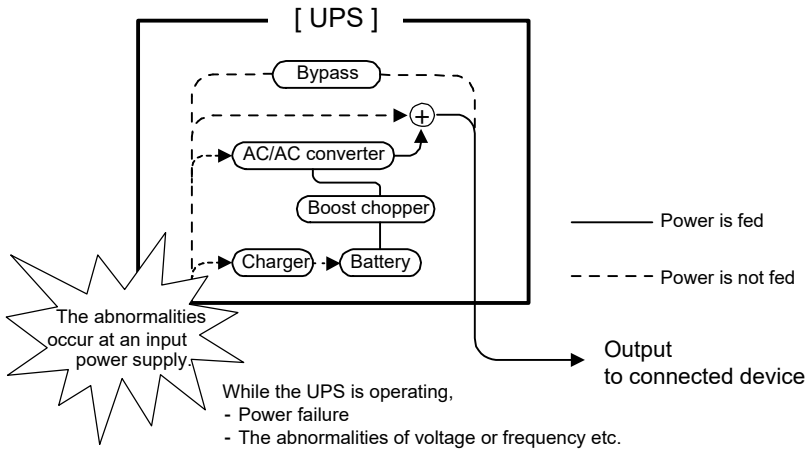
2.2 How the Product Works

- **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

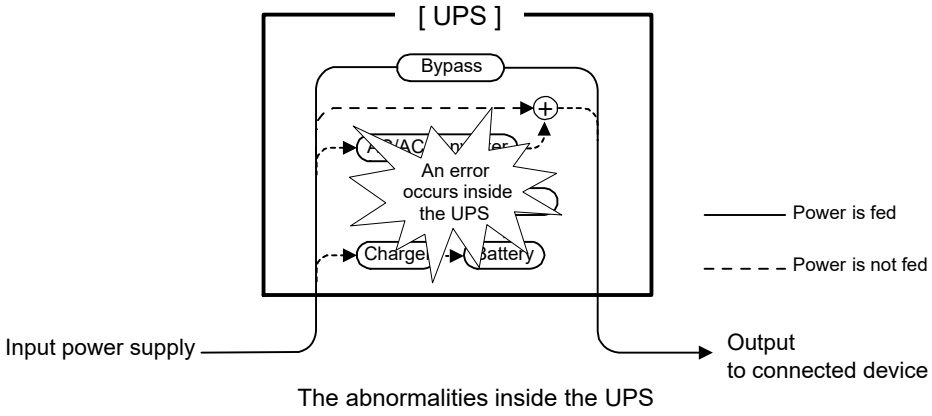
- **Battery power failure**
  If a power failure or input power voltage/frequency error occurs, the UPS starts discharging from the battery and continues to supply stable power to the connected device. The system switches to battery operation without interruption. When the input power is restored (when 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 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.

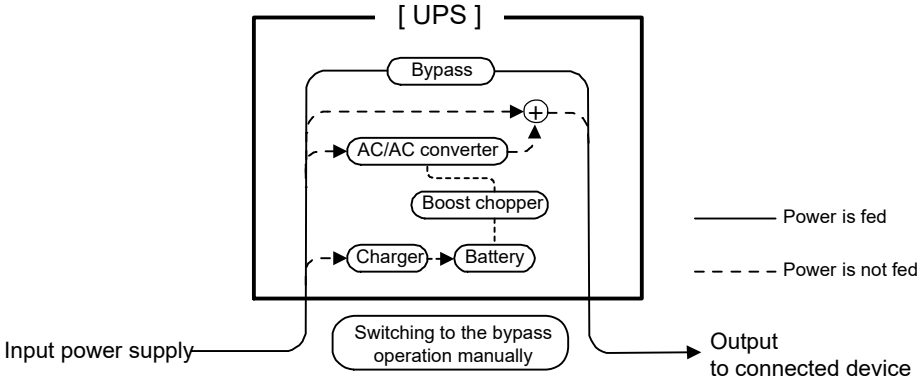


Electricity flow during automatic bypass operation

● **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 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.

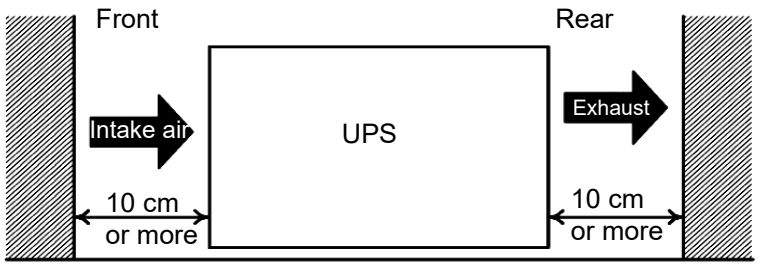
This UPS is a Class A information technology device according to VCCI (Voluntary Control Council for Interference by Information Technology Equipment) standards. Use of this UPS in a residential area may cause radio interference. In this case, the user may be required to take appropriate measures.

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

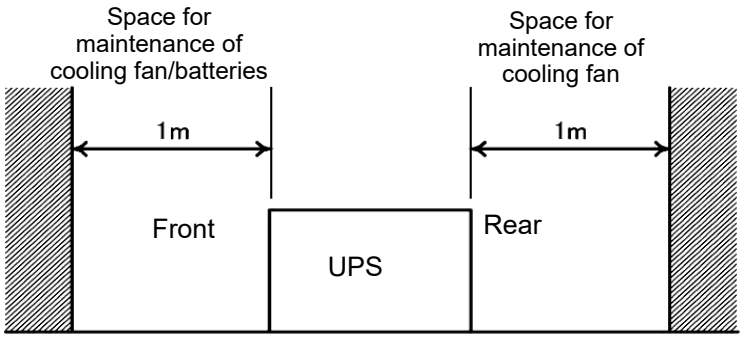
The UPS is equipped with vents and cooling fans to cool the inside of the UPS; the internal and ambient temperatures of the UPS may deviate from the rated specifications.

The following space is required for 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.

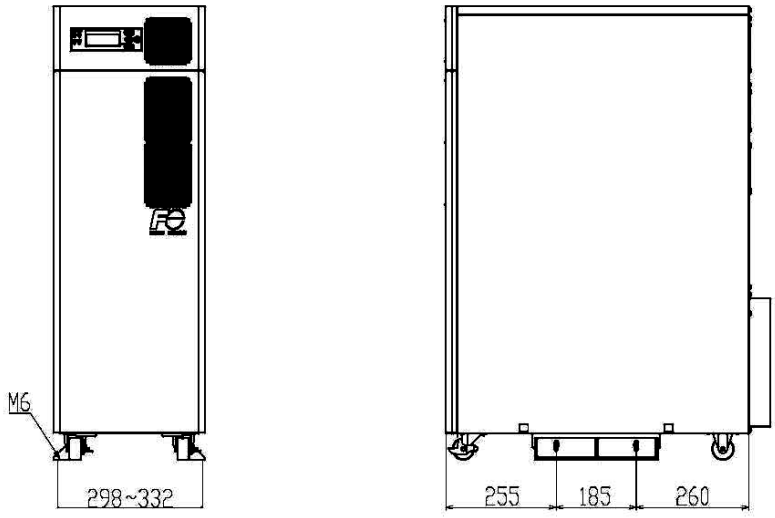
Item	Recommended environment
Temperature	15 to 25°C
Humidity	30 to 70% (no condensation)

● Installation Position

⚠ CAUTION	
Injury Damage	Take out the UPS in a level and flat surface. Be cautious to prevent accidents such as tipping over or dropping. The weight of the UPS is as follows: • M-UPS050AD1S/2S: 180 kg (without battery: 125 kg) • M-UPS075AD1S/2S: 235 kg (without battery: 160 kg) • M-UPS100AD1S/2S: 300 kg (without battery: 190 kg)

This UPS may only be used in a vertical position and not to be used in a tilted position. After installation, be sure to lock the casters to prevent displacement of the product. The casters on the front side have locks on both the left and right sides.

When using the L-shaped fixture to secure the main unit of this product to the floor, first secure the fixture to the floor, then secure this product. This L-shaped fixture is intended for preventing an overturn of the UPS.



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. When connecting this product to the input power line, connect a grounding conductor to the AC input protective ground terminal of this product.

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× 50 μsec).** **If a surge voltage of 5kV peak or more is applied, the filter circuit in the input section may be damaged.** **The input voltage to this product is 15% of the rated voltage.** If the input voltage is different from the rated voltage, install a transformer for voltage conversion outside of this product. If a voltage outside the input voltage range is applied, the product may be damaged. **The input voltage to the product must not exceed the rated input voltage range of the connected equipment.** During bypass operation, the input voltage to the product is output as it is. If a voltage exceeding the rated input voltage range of the connected device is applied, the connected device may be damaged.

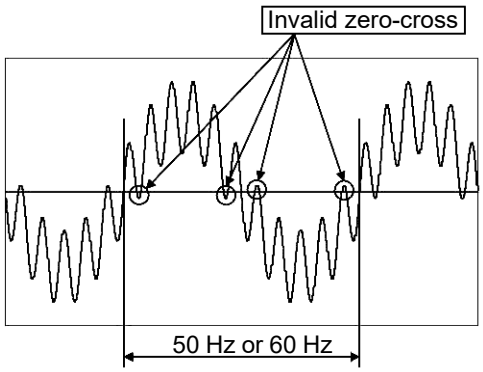
● Preparation before connection

IMPORTANT

When connecting this UPS to a 3-phase power supply, be sure to connect the ground phase of the 3-phase power supply to the AC input ground terminal of this UPS.
Connecting to an ungrounded power supply may result in 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 UPS.

- Voltage range: within ±15%
- Frequency variation: within ±5% frequency (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-UPS050 AD1S	70 A or greater	5.5 kV or greater	100 V AC ±15%	50/60 Hz ±5% (See note.)	Single phase, 2-wire system
M-UPS050 AD2S	35 A or greater	5.5 kV or greater	200 V AC ±15%		
M-UPS075 AD1S	100 A or greater	8.3 kV or greater	100 V AC ±15%		
M-UPS075 AD2S	50 A or greater	8.3 kV or greater	200 V AC ±15%		
M-UPS100 AD1S	125 A or greater	11 kV or greater	100 V AC ±15%		
M-UPS100 AD2S	70 A or greater	11 kV or greater	200 V AC ±15%		

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:
“Abnormalities of input voltage” is detected and the battery operation is performed. If the UPS is connected to an input power supply which gets out of this range frequently, by repeating the charge and discharge of the battery, the battery will be in an empty state or will become the cause of deterioration.

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

2. Select the size and length (one way) of input/output cables with reference to the table below.

Product type	Cable type		Wire size	Length
M-UPS050AD1S	Input	100 V	14 mm^2	10 m or less
			22 mm^2	20 m or less
	Output	100 V	14 mm^2	10 m or less
			22 mm^2	20 m or less
		200 V	14 mm^2	20 m or less
M-UPS050AD2S	Input	200 V	14 mm^2	20 m or less
	Output	100 V	14 mm^2	10 m or less
			22 mm^2	20 m or less
		200 V	14 mm^2	20 m or less
M-UPS075AD1S	Input	100 V	38 mm^2	20 m or less
	Output	100 V	22 mm^2	10 m or less
			38 mm^2	20 m or less
		200 V	22 mm^2	20 m or less
M-UPS075AD2S	Input	200 V	22 mm^2	20 m or less
	Output	100 V	22 mm^2	10 m or less
			38 mm^2	20 m or less
		200 V	22 mm^2	20 m or less
M-UPS100AD1S	Input	100 V	60 mm^2	20 m or less
	Output	100 V	38 mm^2	10 m or less
			60 mm^2	20 m or less
		200 V	38 mm^2	20 m or less
M-UPS100AD2S	Input	200 V	38 mm^2	20 m or less
	Output	100 V	38 mm^2	10 m or less
			60 mm^2	20 m or less
		200 V	38 mm^2	20 m or less

3. The specifications of the terminal block are as follows. Prepare an input power receptacle and plug the connecting device.

<table>
<tr><th>UPS side</th><th colspan="3">Specification</th><th>connect with</th></tr>
<tr><td rowspan="9">Input/output terminal block</td><td>Terminal symbol</td><td>Connection</td><td>Form</td><td rowspan="9">Input power supply and output system</td></tr>
<tr><td>L/R</td><td>AC input (ungrounded side terminal)</td><td rowspan="8">8P screw terminal
(M6)
M-UPS050AD1S
M-UPS050AD2S
(M8)
M-UPS075AD1S
M-UPS075AD2S
M-UPS100AD1S
M-UPS100AD2S</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>I1/U1</td><td>AC output (ungrounded side terminal)</td></tr>
<tr><td>I3/V1</td><td>AC output (ungrounded side terminal)</td></tr>
<tr><td>GND (FG)</td><td>Ground</td></tr>
<tr><td>I1/U2</td><td>AC output (ungrounded side terminal)</td></tr>
<tr><td>I2/V2</td><td>AC output (ungrounded side terminal)</td></tr>
<tr><td>Protective grounding terminal</td><td>PE (G)</td><td>Ground (protective grounded)</td><td>(M6 screw)
M-UPS050AD1S
M-UPS050AD2S
(M8 screw)
M-UPS075AD1S
M-UPS075AD2S
M-UPS100AD1S
M-UPS100AD2S</td><td>Grounding conductor</td></tr>
</table>

Input/Output Insulation

The input and output of this product are insulated by a transformer. When wiring input/output lines or installing a ground-fault circuit breaker, etc., consider that the input/output is insulated.

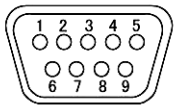
- **Connecting the output cable**
  Remove the AC input/output terminal block cover from the back side, and connect the AC output cable to the AC output terminal block. Have the ground terminal securely grounded.

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

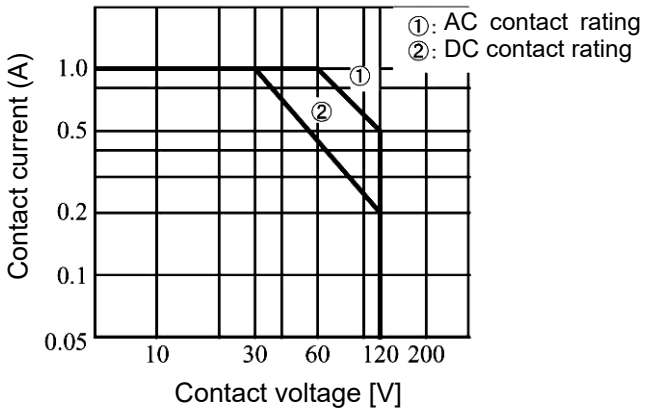
- **CN1 (standard monitoring interface)**



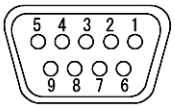
D-sub 9-pin male
port (3 mm threads)

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 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	"Closes" on action		
3-9	"Opens" on action	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	"Closes" on action		

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



● CN2 (PC interface)



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

Pin No.	Signal type	Signal name	Description
2-3	"Closes" on action	Input power supply error signal (See Note 1)	This is a no-voltage contact signal that is output when a voltage error occurs in the input power supply due to power supply interruption, etc. (If the power failure lasts up to 1.5 seconds, there is no operation.)
1-3	"Closes" on action	Low battery voltage signal (See Note 1)	No-voltage contact signal that is output about 2 minutes (during rated load) before termination of battery discharge during battery running.
8-7	AC output stops upon receipt of "H" signal	UPS automatic shutdown signal (See Note 2)	Signal input to the Product for stopping AC output from the Product. (1) AC output may be stopped only during battery running. (2) This signal (5 to 25 V DC) should be input for 0.6 second or longer.
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: See 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: Windows 2000 and XP permit shutdown of the OS on occurrence of interruption of power supply, and UPS automatic shutdown thereafter is not feasible.

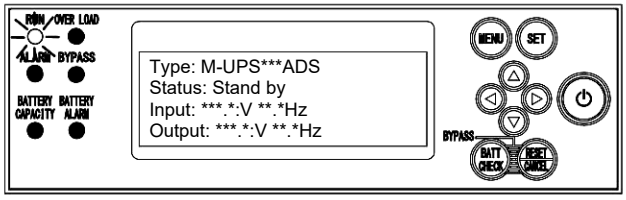
Note 3: Dedicated RS-232C communication cable is required elsewhere for execution of RS-232C serial communication. Please contact the in-charge maintenance staff.

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

4 Running

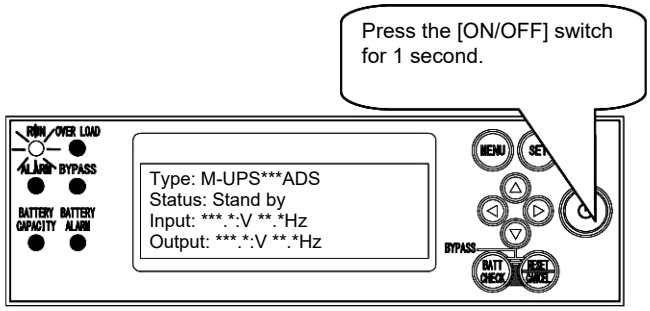
4.1 Turning on the UPS

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.).

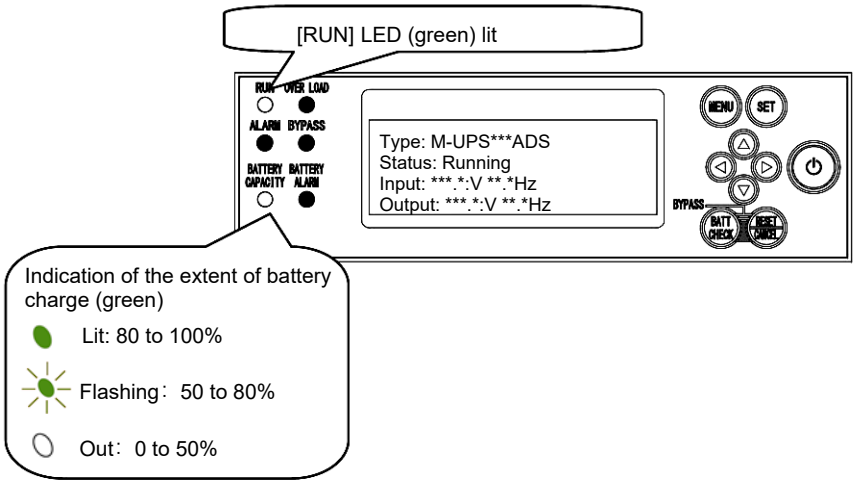


Refer to Chapter 3.2 "Connecting the cables"

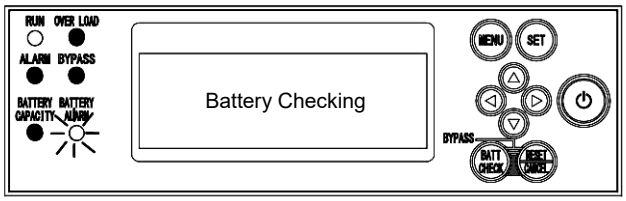
2. Turning on the UPS. Press the [ON/OFF] switch on the front of the UPS for 1 second. The buzzer will sound when the power is on.



3. AC voltage is output from the 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. Battery check is executed automatically.
   The [BATTERY ALARM] LED (orange) on the front of the UPS flashes slowly (in 1.6 second period).



5. If no error was found in batteries during battery check for 5 seconds, and [BATTERY CAPACITY] LED on the front face of the Product shows the extent of battery charge (green) again, and return to the normal running status arises.

   If the normal running does not start, refer to Chapter 7 "Troubleshooting".

- **Turning on the connected device**

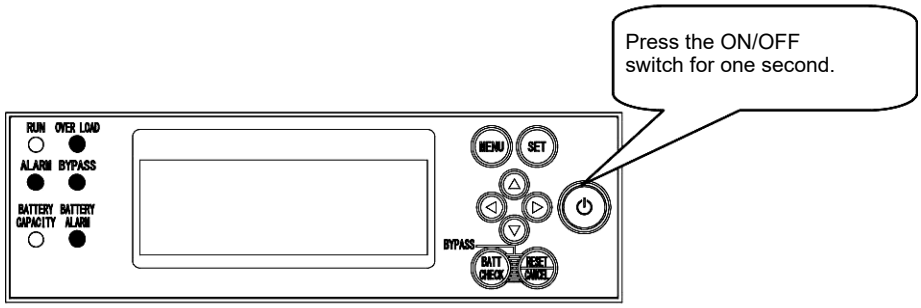
6. Upon normal start-up of normal running, turn ON the power for the connected device.

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")

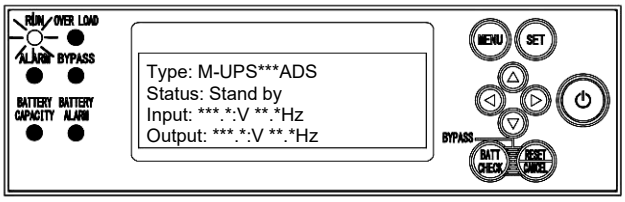
⚠ CAUTION	
Damage	Refer to "4.2 Turning off the UPS" when: a) Performing planned power outage or, b) Turning off the input breaker on the back of the UPS See that the RUN LED (green) is blinking slowly (1.6 second cycle). Do not unplug the AC input plug from the power outlet or turn off the input breaker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

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



   If output does not stop normally, refer to "Chapter 7 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 (L1/R, N/S). Only authorized maintenance personnel should perform maintenance other than daily inspections, such as replacing batteries and cooling fans.
Damage	When the input breaker on the rear panel of the UPS is turned off, confirm that the [RUN] LED (green) blinks 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.

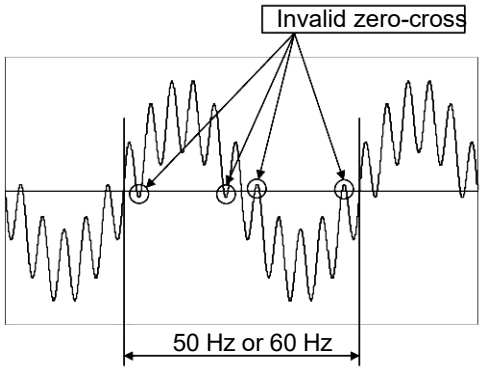
- **Daily maintenance**

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: within ±15% of VAC • 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 7.1 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

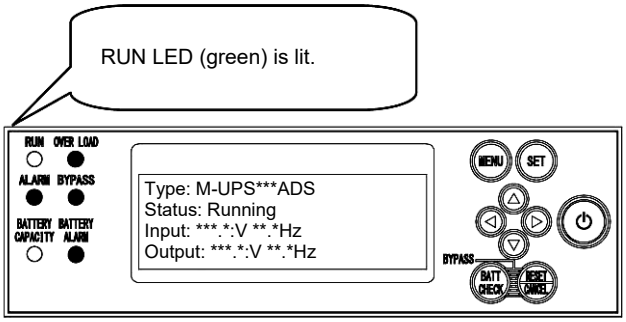
Manual checks are performed in the following cases:

- 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**

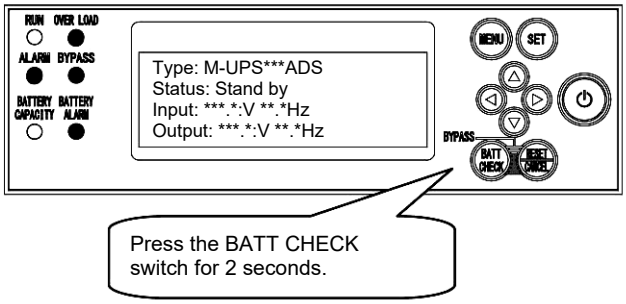
1. Check if the UPS is operating



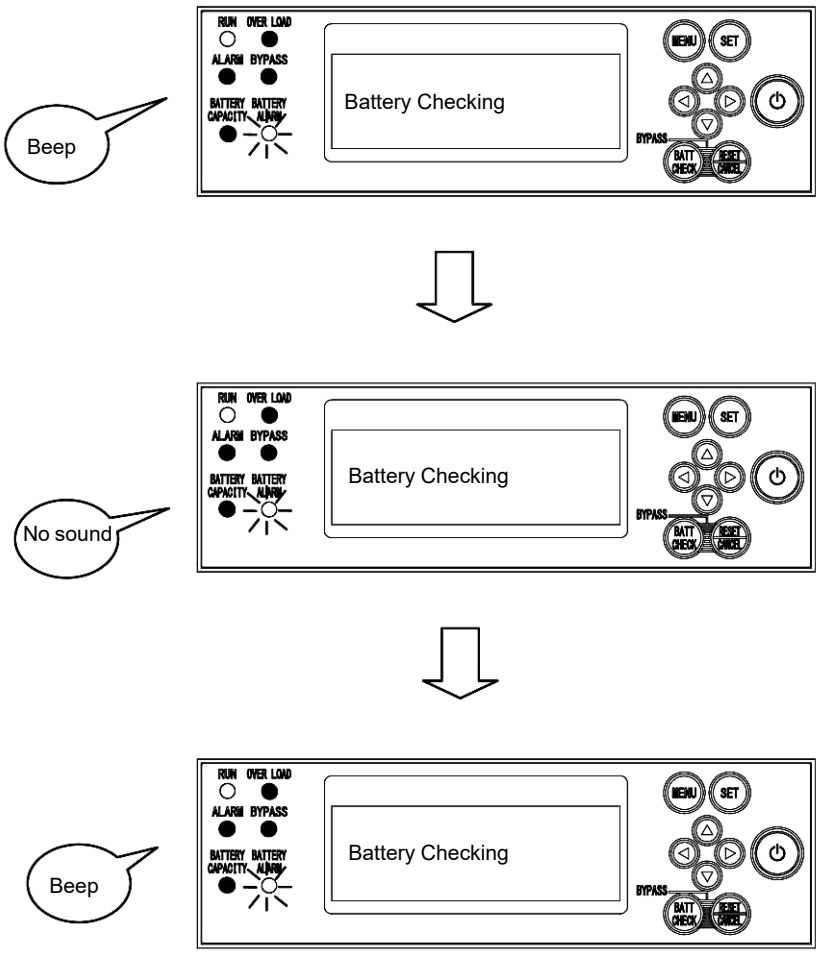
When all the LEDs on the front of the UPS are off, turn on the UPS and proceed to step 2. For details, refer to Chapter 4.1 “Turning on the UPS”. Also refer to Chapter 7 "Troubleshooting”.

- **Using the manual check function**

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



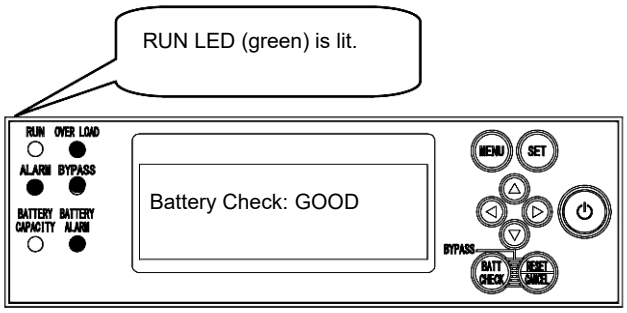
A buzzer will sound and the BATTERY CONDITION LED (orange) will flash (1.6 second cycle).
After 5 seconds, the buzzer will sound again to complete the battery check.



3. After the battery check,

If the battery is fully charged:

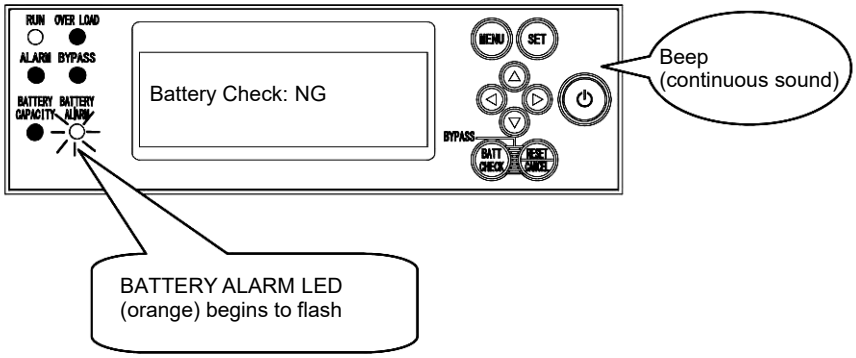
The RUN LED (green) on the front of the UPS will light up and the UPS will return to the normal operation.
The LCD panel will display the following for 5 seconds, then return to the screen before the automatic battery check.



If the battery is not fully charged:

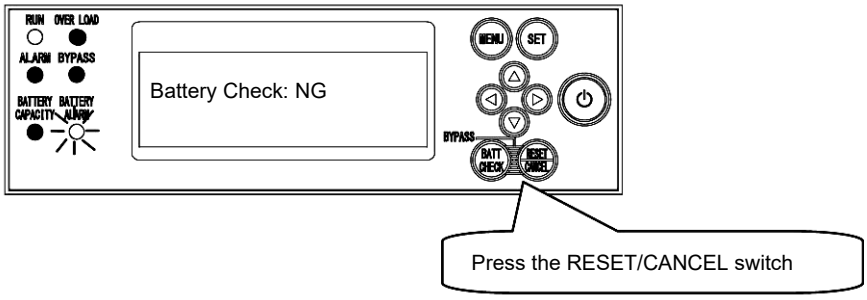
A warning beep will sound and the BATTERY CONDITION LED (orange) on the front of the UPS will flash.

Go to step 4.



- **Charging the battery**

4. Press the RESET/CANCEL 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. The LCD panel will return to the screen before the automatic battery check.



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.

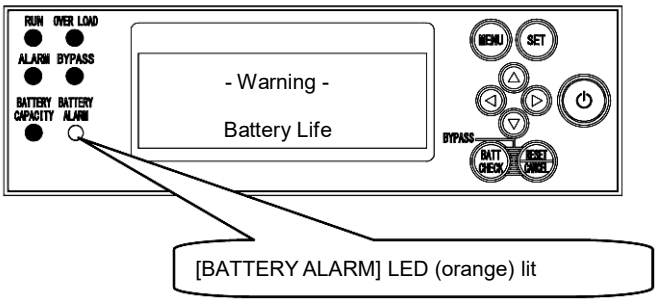
   See Chapter 5.4 for "Replacing the Battery" information.

5.4 Replacing the Battery

- **Timing of battery replacement**

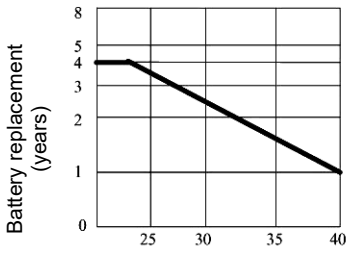
⚠ CAUTION	
Damage	Batteries should be replaced periodically. Use of the product with a depleted battery may cause leakage, smoking, or ignition.

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



Relation between ambient temperature and time 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	Applied Model	Type of battery unit	Number of units (per UPS)	Battery unit	
				Mass (per unit)	Battery capacity
M-UPS050 AD1S/2S (5 kVA)	Battery for M-UPS 050ADS	RRABU-J4	6 units	Approx 9kg	12 V, 9Ah × 3
M-UPS075 AD1S/2S (7.5 kVA)	Battery for M-UPS 075ADS	RRABU-J5	4 units	Approx 10kg	12 V, 5Ah × 5
		RRABU-J6	4 units	Approx 8kg	12 V, 5Ah × 4
M-UPS100 AD1S/2S (10 kVA)	Battery for M-UPS 100ADS	RRABU-J4	12 units	Approx 9kg	12 V, 9Ah × 3

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.

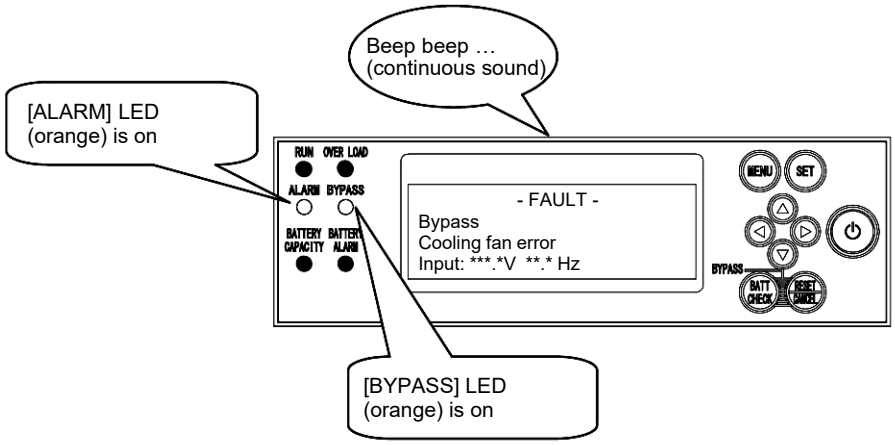
This mark is a recycling mark for small sealed lead-acid batteries.

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.



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 fan of this product can be replaced while the power is on. (Parts replacement can be performed with the power of this UPS and connected devices on.)

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-UPS050ADS (RRAF-R1×1/RRAF-GX12×2)
Fan for M-UPS075ADS (RRAF-R1×2/ RRAF-GX12×3)
Fan for M-UPS100ADS (RRAF-R1×2 / RRAF-GX12×3)

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.

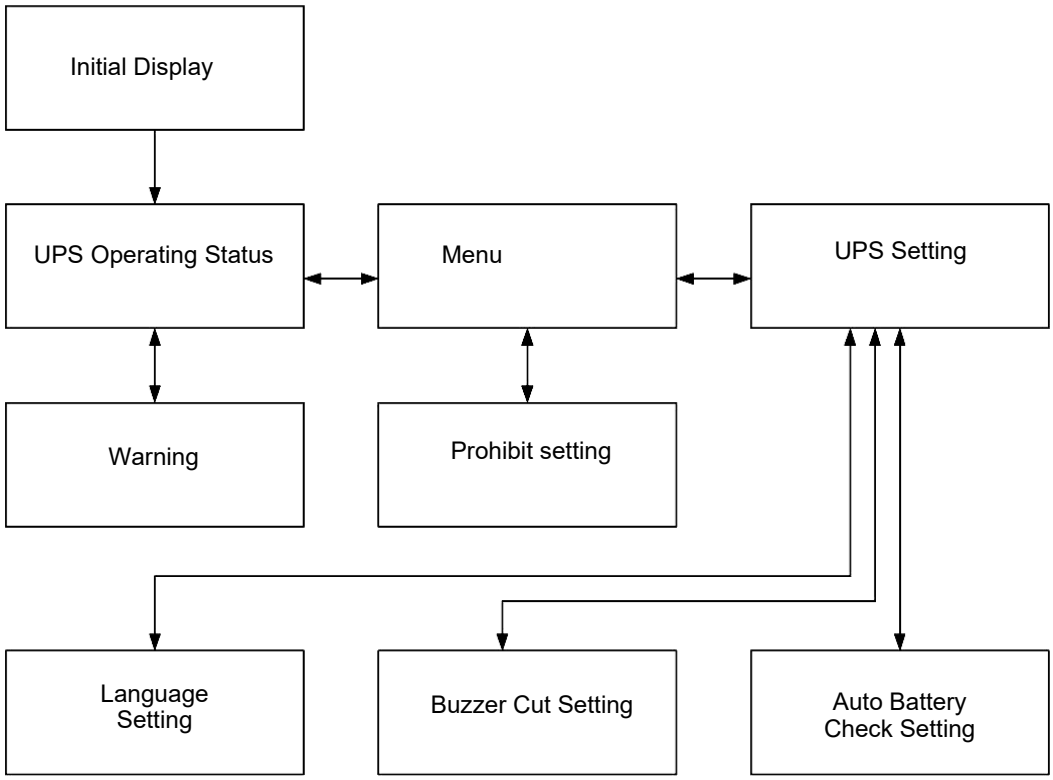
For details, refer to Chapter 5.3 “Inspecting the Battery (Battery Check)”.
Even when the UPS is not in use, the battery will discharge naturally in the UPS; if the UPS is left unattended for more than two months, the battery may become over discharged, rendering the UPS unusable.

6 LCD Display

This product is equipped with an LCD panel for viewing various detailed information and for setting and operating.

6.1 Overview of LCD

- **LCD screen transitions**



● LCD Display Contents

The LCD panel displays the following "UPS Operation Status" or "Warning Indication" screens unless the [MENU] button is pressed. The "UPS Operation Status" screen is displayed when the product is in a normal state, and the "Warning Indication" screen is displayed when an error or warning occurs on the UPS.

Screen name		Contents of displayon LCD screen English (default)	Remarks
UPS Operating Condition		Type: M-UPS***ADS Status: Running Input: 201.4 V / 60.0 Hz Output: 200.0 V / 60.0 Hz Battery Vol: 243.5 V Battery Life: 48 months Battery Temp: 21.5°C Load: 040% Input Power: 02.4 kW Backup Times: 0007	Product status and measured values Items below the dotted line can be viewed by scrolling down
Warning Indication	[1]	- WARNING -No Access	When a communication error occurs between the LCD panel and the control circuit
	[2]	Data Reading	During initialization when commercial power is turned on. It is also displayed during data communication between the LCD panel and the control circuit
	[3]	- FAULT -Transformer Temp Output is off	The output stops as a means of protection upon occurrence of temperature error to the UPS internal transformer
	[4]	- FAULT -Thyristor Temp Output is Off	When a temperature abnormality occurs in the internal transformer of the UPS and the output stops
	[5]	- WARNING - Manual Bypass Input: ***.* V **.* Hz	During a manually operated bypass run
	[6]	- OVERLOAD -Input Failure Cannot Bypass Output if Off	When an overload occurs on the UPS during backup operation and the output is stopped
	[7]	- FAULT - Input Failure Cannot Bypass Output Turn Off	When the UPS malfunctions during backup execution
	[8]	- OVERLOAD - Bypass Load: ***%	When the UPS is switched to bypass run due to overload
	[9]	- INPUT FAILURE - Backup Battery Low	When the battery voltage has dropped to the specified value due to backup runs, and the time remaining when backup runs can continue is short
	[10]	- FAULT -Bypass @@@@@@@@@ Input: ***.* V **.* Hz	When the UPS has switched to bypass operation due to a malfunction See Note 2 on page 36 for details of description

Warning Indication	[11]	- OVERLOAD - Backup Load: ***%	When the UPS is overloaded during backup execution
	[12]	- WARNING - Booting Failure	When the input power supply is outside the rated range during startup
	[13]	- INPUT FAILURE - Backup	While the UPS is performing a backup
	[14]	- WARNING - Battery Life	When the battery lifetime has matured
	[15]	Change to Inverter	When returning from bypass operation to normal operation
	[16]	Battery Checking	During the battery check
	[17]	BatteryCheck: NG	When the battery check is abnormal
	[18]	BatteryCheck: GOOD	When the battery check is normal

Note 1: When multiple warning screens overlap, the item with the smallest number is displayed first.

Note 2: Followings are the failure descriptions of the [10] on page 35.

Failure contents	1	UPS Temp
	2	Output Failure
	3	BattCharge Failure
	4	DC Voltage Failure
	5	FAN Failure
	6	Feedback Failure
	7	Battery Temp

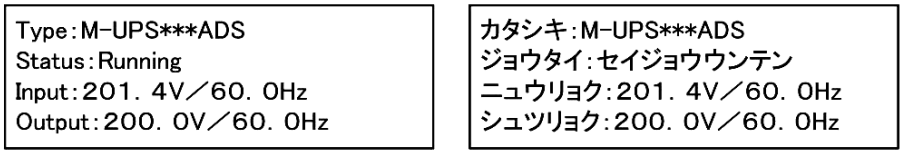
Press MENU to move from the "Menu Display" to the "UPS Settings Display" or to view/execute various settings.

Screen name	Contents of display on LCD screen	Remarks
Menu Indication	- Menu - > Operating Condition Settings Prohibition set	Product setting and operation
UPS Setting Indication	- Settings - > Language Buzzer cut Auto Battery Check	Various settings

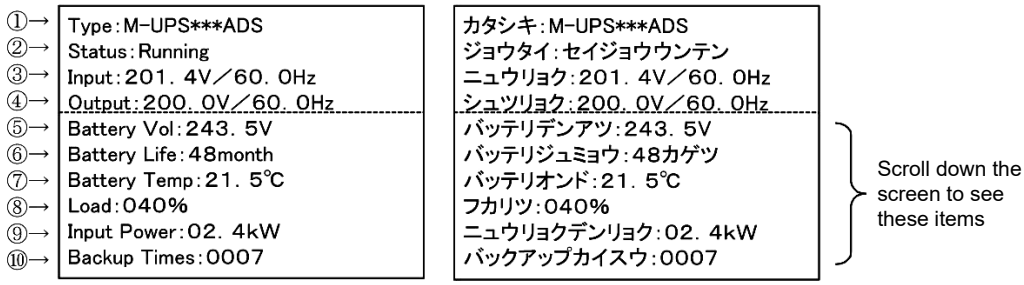
6.2 Details of display screen

- **UPS Operating Condition**

  This screen is displayed while the Product is in normal running.



Press the directional buttons to scroll up and down to read various measurement information.



① "Type" Indicates the Product type.

② "Status" Depending on the product requirements, choose one of the following.

[1] Running
[2] Stand by
[3] Backup
[4] Bypass
[5] UPS Booting
[6] Data Reading

③ "Input" - product input voltage and frequency

④ "Output" - output voltage and frequency

⑤ Battery Vol" - Product battery voltage.

⑥ Battery Life" - estimated remaining battery capacity in months.

Displays "99" if the estimated remaining battery capacity is invalid.

⑦ "Battery Temp" - ambient temperature of the battery. This measurement is used to calculate the estimated remaining life of the battery.

⑧ "Load" - current load amount relative to the allowable load amount of the product. (If the load amount exceeds 100%, backup operation is disabled.)

⑨ "Input Power" - input power of the product

⑩ "Backup Times" - total number of backup executions since the product was launched or since the battery was replaced

● **Warning Display Screen**

When a status change or error occurs in the UPS, the screen automatically transitions from the "UPS Operational Status" screen to the "Warning Indication" screen. For details on what is displayed, refer to the description of the "Warning Display" screen in Section 6.1. A buzzer sounds upon transition to the [Warning Indication] screen.

Pressing the [RESET/CANCEL] switch for 1 second stops the buzzer; pressing the [RESET/CANCEL] switch for 3 seconds automatically transitions to the [UPS Operational Status] screen.

The buzzer sound can be set to buzzer cut for each factor. (See "Buzzer Cut Settings.") When buzzer cut is set, the buzzer will not sound.

[Example 1] When an overload occurs with the input power supply in normal condition

ー OVER LOAD ー Bypass Load：106%	ー カフカ ー バイパスウンテン フカリツ：106%

The example above shows that the load factor is 106% of the rated load and that bypass operation is in progress. When the load rate falls below the rated load, the screen transitions to the "UPS Operating Conditions" screen.

[Example 2] When an input power supply interruption occurs

ー INPUT FAILUR ー Backup	ーニュウリョクイジョウー バックアップウンテン

The above example shows that the product is in backup operation because the input power has been interrupted. When the input power is restored, the display returns to the "UPS Operation Status" screen.

If multiple warning indications overlap, the item with the highest display priority is displayed.

For the display priority, see the explanation of the "Warning Indication" screen in section 6.1. The [1] to [18] shown here indicate the display priority.

<High display priority> [1], [2]……[17], [18] <Low display priority>

[Example] When a voltage drop (end-of-discharge warning) occurs during backup runs, it is displayed on the LCD screen.

ー INPUT FAILUR ー Backup	ーニュウリョクイジョウー バックアップウンテン

The priority of the backup running warning screen is [13].

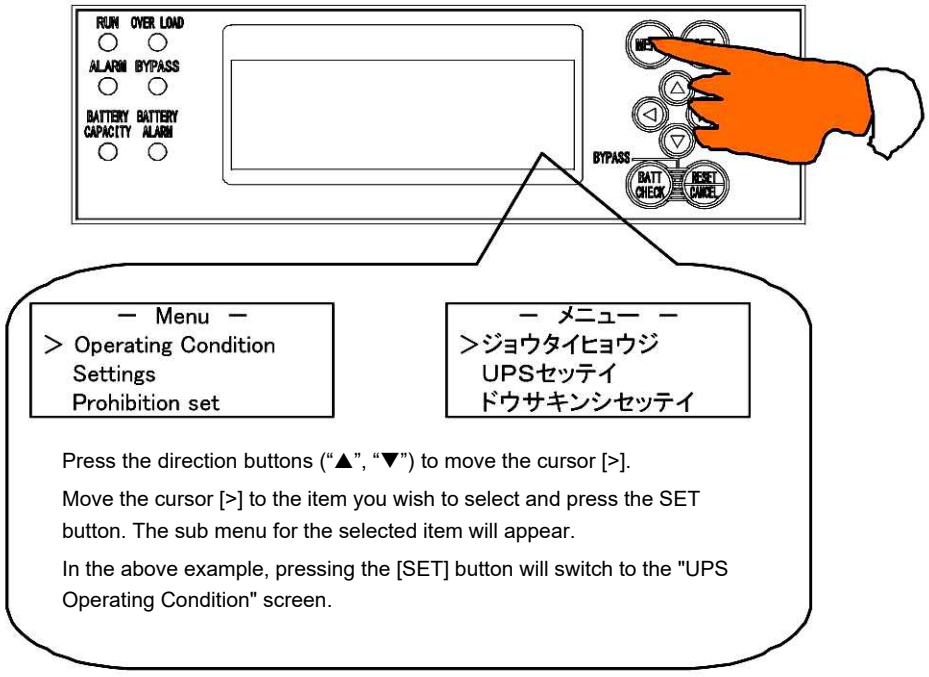
ーINPUT FAILUREー Backup Battery Low	ーニュウリョクイジョウー バックアップウンテン バッテリデンアツテイカ

The low battery voltage warning screen has priority [9].
The low battery voltage warning screen is displayed based on the above priority relationship.

6.3 Screen Operations

- **How to display [Menu Indication] screen**

  Press the [MENU] button to display the [Menu Indication] screen.



Press the direction buttons (“▲”, “▼”) to move the cursor [>].

Move the cursor [>] to the item you wish to select and press the SET button. The sub menu for the selected item will appear.

In the above example, pressing the [SET] button will switch to the "UPS Operating Condition" screen.

- **[Menu Indication] screen**

(1) “Operating Condition”
The UPS Operating Conditions screen lets you find various measurement information. See section 6.2.

(2) “Settings”
On the [UPS Settings Display] screen, the following items can be set.

(3) • Language
- Buzzer cutoff
- Automatic battery check

(4) “Prohibition Settings”
In the [Prohibit Settings] screen, the following items can be set.
- Battery lifetime calculation
- Automatic UPS startup upon power restoration

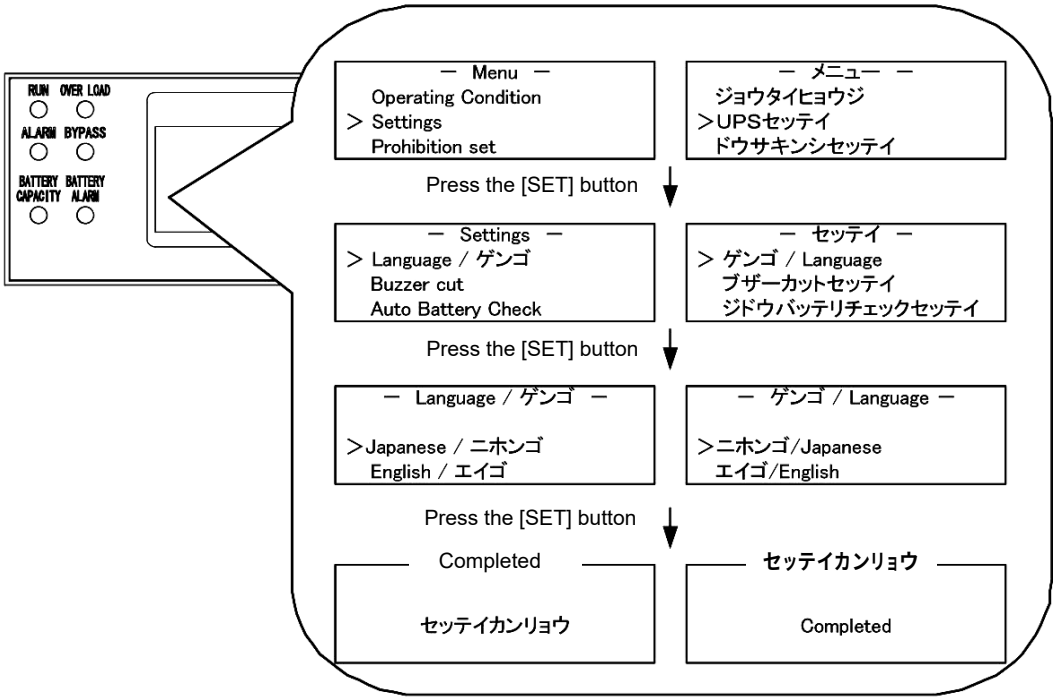
1. [Language Setting Indication] screen

(1) Press the [MENU] button to display the "Menu Display" screen. Use the directional keys (▼ button or ▲ button), to move the cursor [>] to [SETTINGS] and press the [SET] button.

(2) The display moves to the [To UPS Settings] screen.

(3) Move the cursor [>] to [Language] with the direction button (▼ button or ▲ button) again, and press the [SET] button.

(4) The display switches to the "Language Setting Indication" screen. You can select either [English] or [Japanese].



(5) Use the directional buttons (▼ button or ▲ button) to select the desired item. To select the Japanese language display, move the cursor [>] to "Japanese (ニホンゴ)" and press the [SET] button.

(6) When the setting completion screen appears, the setting is done.

(7) After the setting is completed, the display will move to the "UPS Operating Conditions" screen.

*1 "English display" is set by default.

2. Turn Off Warning Buzzer "[Buzzer Cut Setting]" screen

(1) Press the [MENU] button to display the "Menu Display" screen. Use the directional key (▼ button or ▲ button) to move the cursor [>] to [SETTINGS], and press the [SET] button.

(2) The UPS setting indication screen appears.

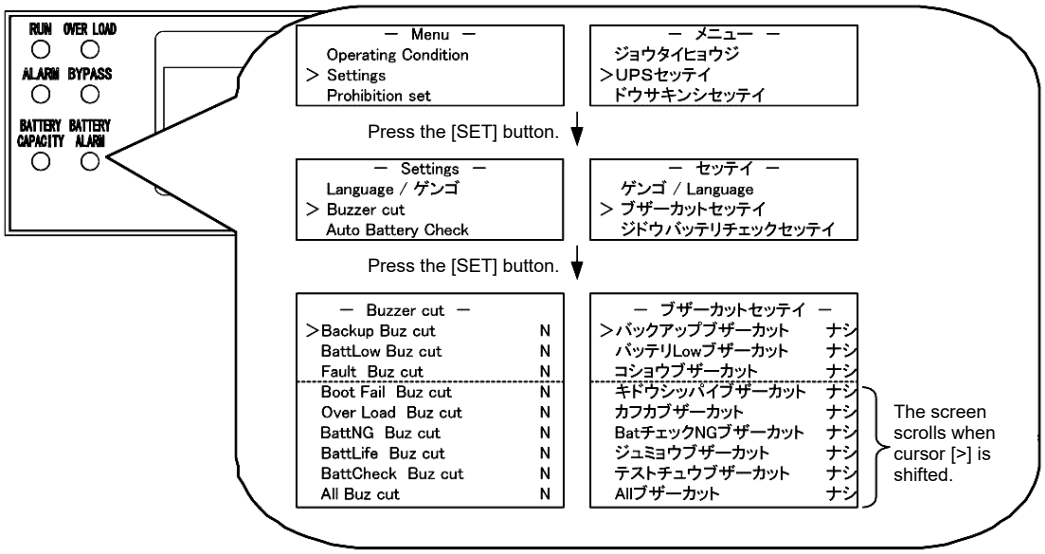
(3) Shift cursor [>] to Turn Off Buzzer “[Buzzer cut]” using the direction button (▼ button or ▲ button), and press the [SET] button.

(4) Turn Off Buzzer “[Buzzer Cut Setting]” screen appears.

“Buzzer cut” is for turning off the warning buzzer for each action mode below:

Disabling buzzers:

- [Backup]
  to disable during backup operation
- [BattLow]
  to disable when the battery voltage drops during backup operation
- [Fault]
  to disable when a failure occurs
- [Boot Fail]
  to disable when an input error occurs during product startup
- [Over Load]
  to disable when an overload occurs
- [BattNG]
  to disable when battery check result is NG
- [BattLife]
  to disable when maturity of battery lifetime
- [BattCheck]
  to disable at start of battery check
- [All]
  to disable in all modes



(5) Use the direction buttons (▼ button or▲ button) to select the target items.

To Turn off the buzzer, change the indication to [Y (Yes)] by pressing the ▶ button. To cancel turning off the buzzer, change the indication to [N (No)] by pressing the ◀ button. After selecting [Y (Yes)] or [N (No)], press the [SET] button.

*1 The selected letters blink on the screen.

(6) After the setup completes, the screen automatically shows UPS status.

3. [Auto Battery Check Setting] screen

The UPS has 2 different methods of battery check; automatic and manual. Automatic check settings are as follows:

- [No Battery Checking]
  Automatic battery check is not performed.
- [at booting & 2 weeks]
  When UPS restarts and continues operation, Battery check will be done automatically every 2 weeks.

- [at booting & 1 week]
  The battery check is performed automatically when the product is turned on with ON/OFF switch, etc., and once every week thereafter when the UPS is in continuous operation.
- [at booting]
  Battery check is performed only when the UPS is turned on (from a stopped state) by an ON/OFF switch, etc.

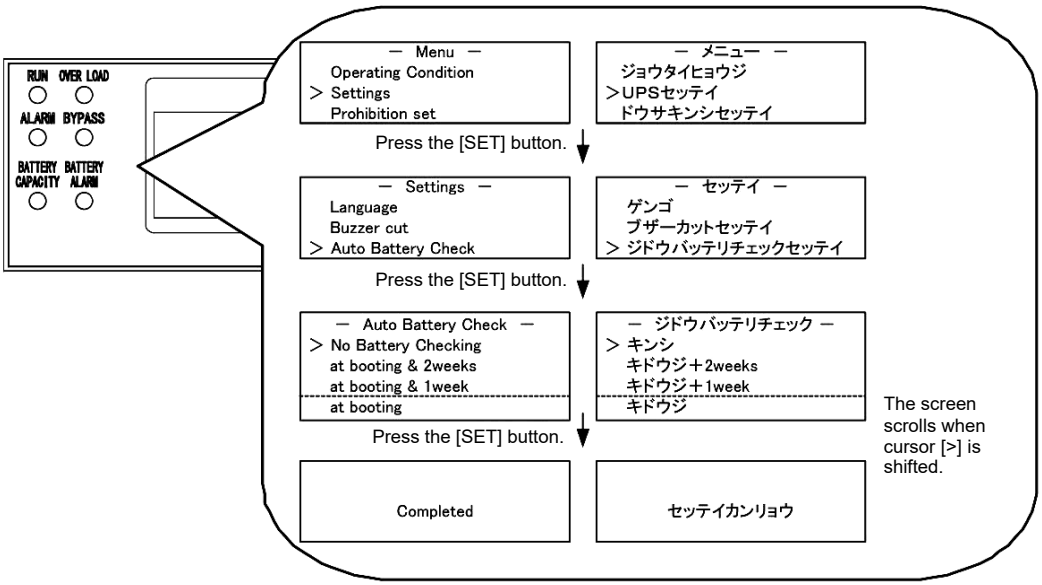
(1) In the "Menu" screen, move the cursor "**>**" to "Settings" using the directional buttons and press the "SET" button.
(2) The screen moves to the UPS setting display screen.
(3) Move the cursor [**>**] to "Auto Battery Check" again with the directional buttons and press the "SET" button.
(4) The display switches to the "Auto Battery Check Settings" screen.
(5) Move the cursor [**>**] to the item you want to set, press the button or buttons, and press the "SET" button.

This operation changes the setting value of the automatic battery check.

*1 The contents displayed at the time of transition to the automatic battery check setting are current.

If you do not want to change it, press the [CANCEL] switch, without pressing the ▲ button or ▼ button. Transition to the setting screen will occur.
The contents of the automatic battery check settings can also be changed and confirmed on the Web.
Details on how to operate on the Web are described in the Web/SNMP card User's Guide (separate volume).

(6) After setting is complete, the screen automatically changes to the "UPS Operating Conditions" screen.


RUN
OVER LOAD
ALARM
BYPASS
BATTERY CAPACITY
BATTERY ALARM
－ Menu －
Operating Condition
＞ Settings
Prohibition set
－ メニュー －
ジョウタイヒョウジ
＞UPSセッテイ
ドウサキンシセッテイ
Press the [SET] button.
－ Settings －
Language
Buzzer cut
＞ Auto Battery Check
－ セッテイ －
ゲンゴ
ブザーカットセッテイ
＞ ジドウバッテリチェックセッテイ
Press the [SET] button.
－ Auto Battery Check －
＞ No Battery Checking
at booting & 2weeks
at booting & 1week
at booting
－ ジドウバッテリチェック －
＞ キンシ
キドウジ＋2weeks
キドウジ＋1week
キドウジ
Press the [SET] button.
The screen scrolls when cursor [>] is shifted.
Completed
セッテイカンリョウ

4. Setting No Operation Mode [Prohibition Set]

(1) Press the [MENU] button to display the [Menu Display] screen. Move the cursor (▼ button or ▲ button) to [Inhibit Settings].

(2) Moves to the "Prohibited Settings" screen.

. [BattLife Calculate]

This setting is used to determine whether to enable or disable the battery life reduction process for the batteries installed in this product. The default setting is [N (No)].
(Warning processing is performed when the battery life is exhausted.) Change the setting to [Y (Yes)] if accurate management of battery replacement, etc. is to be performed at a cycle with a sufficient margin for battery life.

* When set to [Y (Yes)], the UPS is not allowed to detect battery life.

Even if this setting is changed to [Y (yes)] after life expectancy is detected, the life expectancy display will not be cleared. In such cases, replace the batteries as soon as possible.

- [UPS Auto Reboot]

Sets whether or not to automatically execute the process of restarting the output of this product when the input power supply is restored, if the backup operation continues until the product stops due to an extended period of input power failure. The default setting is [N (No)]. Change the setting to [Y (Yes)] if there is a problem with the connected device used when power is automatically restored.

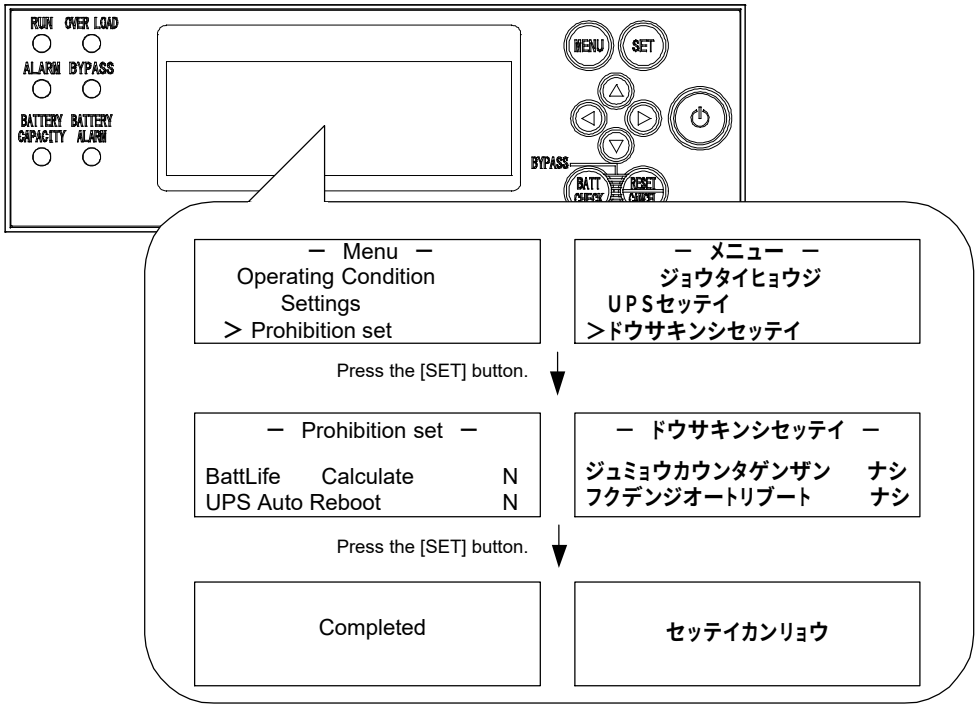
(3) Use the directional buttons (▼ button or ▲ button) to select the target item.

To prohibit, press ▶ button to change to [Y (Yes)]. Press the ◀ button to change to [N (No)] to allow the operation. Select [Y (Yes)] or [N (No)] for all items and press the SET button. This operation activates the inhibit setting.

*1 The text of the selected item will flash.
*2 Preset settings for each item are displayed at the time of transition to the [Inhibit Settings] screen. If you do not want to change the subject status, do not change the [Y (Yes)] or [N (No)] setting of the item.

(4) After setting is completed, the screen automatically moves to the "UPS Operating Conditions" screen.

*3 The default is entirely [N (No)].


RUN
OVER LOAD
ALARM
BYPASS
BATTERY CAPACITY
BATTERY ALARM
MENU
SET
BYPASS
BATT CHECK
RESET CANCEL
－ Menu －
Operating Condition Settings
＞ Prohibition set
－ メニュー －
ジョウタイヒョウジ
ＵＰＳセッテイ
＞ドウサキンシセッテイ
Press the [SET] button.
－ Prohibition set －
BattLife Calculate N
UPS Auto Reboot N
－ ドウサキンシセッテイ －
ジュミョウカウンタゲンザン ナシ
フクデンジオートリブート ナシ
Press the [SET] button.
Completed
セッテイカンリョウ

7 Troubleshooting

7.1 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).

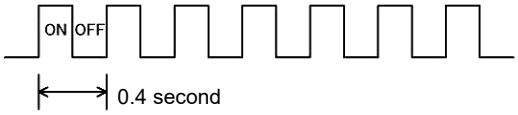
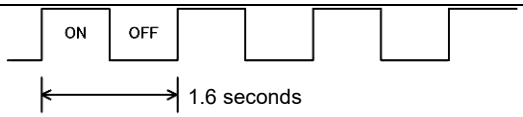
(4) Turn off the input breaker on the back of the UPS.

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

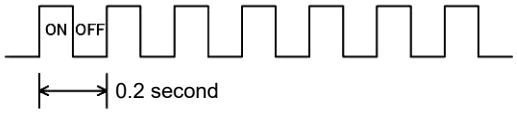
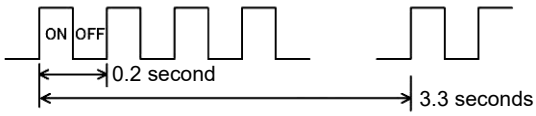
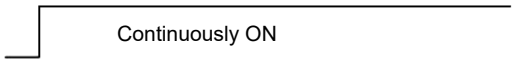
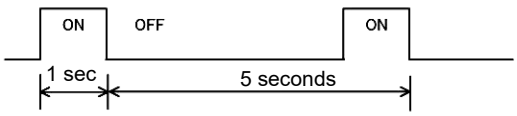
7.2 Operation Mode List

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)	Fash 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 (7 times every 3.3 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 Sound	Operation Status
	RUN (green)	ALARM (orange)	OVER LOAD (orange)	BYPASS (orange)	BATTERY CAPACITY (green)	BATTERY ALARM (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).

No.	LED						Warning Sound	Operation Status
	RUN (green)	ALARM (orange)	OVER LOAD (orange)	BYPASS (orange)	BATTERY CAPACITY (green)	BATTERY ALARM (orange)		
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.

5				(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.

No.	LED						Warning Sound	Operation Status
	RUN (green)	ALARM (orange)	OVER LOAD (orange)	BYPASS (orange)	BATTERY CAPACITY (green)	BATTERY ALARM (orange)		
6	(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

7	Lit	○	Lit	Lit	Charged amount	○	(1)	Bypass running due to output overload

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.

8	○	○	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)	BATTERY ALARM (orange)		
9	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.

10	○	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.

11	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)	BATTERY ALARM (orange)		
12	Lit	○	○	○	Charged amount	○	(1)	Battery voltage drop due to continuing the battery operation

Remarks: Battery Voltage Drop during Battery Operation
Battery voltage has dropped due to continued battery operation.
At rated load, power supply will stop approximately in 2 minutes.
Disconnect critical connected devices from the UPS.
The UPS automatically returns to normal operation (No 1) when input power is restored.

13	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)

14	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)	BATTERY ALARM (orange)		
15	Lit	○	○	○	○	Lit	(1)	Maturnity of battery lifetime

Remarks: Replace the batteries.
To turn off the alarm:

a) Press the RESET/CANCEL switch for 3 seconds. It'll turn off both the sound and display.
However the alarm sound will go off again 24 hours after turning off the alarm or restarting UPS.

b) Press the RESET/CANCEL switch for 1 second. This turns off the alarm sound.
However the alarm sound will go off again at the time of automatic battery check (every 2 weeks).

16	(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.

8 Appendix

8.1 Rated Specification

Type		M-UPS050AD1S	M-UPS050AD2S
AC output	Rated capacity	5000 VA / 4000 W	
	Voltage	100 V ±2%	200 V ±2%
	Frequency	50 Hz or 60 Hz (automatic switching in UPS)	
	Frequency accuracy	During normal operation: Various by input frequency	
		During backup: ±0.1% or better	
	Number of phases	Single phase, 2-wire system (with grounding terminal)	
	Load condition	Linear load or rectifying load of peak-to-rms ratio up to 3	
	Voltage waveform distortion factor	At load resistance: 4% or less At rectified load: 6% or less	
	Overcurrent protection	RMS value: 100% or greater Peak value: 300% or greater of rated RMS value (Shall withstand the load of crest factor = 3.)	
	Grounding method	Non-grounded or neutral grounded	
	Commercial electric power switching method	Thyristor switching (switching time: uninterruptible) Switching cannot be performed when the power is off.	
AC input	Voltage	100 V ±15%	200 V ±15%
	Frequency	50 Hz or 60 Hz ±5%	
	Number of phases	Single phase, 2-wire system (with grounding terminal)	
	Capacity	5000 VA or less	
	Grounding method	Single-line grounding	
	Power factor	0.97 or greater (during rated running)	
	Input higher harmonics current	Conforms to IEC61000-3-12.	
Storage battery	Type	Compact control valve lead-acid battery (long-life battery)	
	Backup time *1 [initial value]	About 10 minutes [4000 W]	
	Nominal voltage	216 V	
Others	Ambient temperature	0 to 40°C	
	Relative humidity	20 to 95% (no condensation)	
	Noise	50 dB (A) or less (at 1 m from the front of the UPS)	
	Cooling method	Forced air cooling	
External dimensions (W × D × H)		350 × 700 × 675 mm	
Mass		180 kg (without batteries: 125 kg)	
Applicable standard		Complies with VCCI CLASS A, UL1778-4th, IEC62040	
External connection	Input	Input/output terminal block (L/R, N/S: M6 screw)	
	Grounding terminal	Input/output terminal block (PE (G): M6 screw)	
	Output	Input/output terminal block (I1/U1, I3/V1: M6 screw)	Input/output terminal block (I1/U2, I2/V2: M6 screw)

Type		M-UPS075AD1S	M-UPS075AD2S
AC output	Rated capacity	7500 VA / 6000 W	
	Voltage	100 V ±2%	200 V ±2%
	Frequency	50 Hz or 60 Hz (automatic switching)	
	Frequency accuracy	During normal operation: Varies by input frequency	
		During backup: ±0.1% or better	
	Number of phases	Single phase, 2-wire system (with grounding terminal)	
	Load condition	Linear load or rectifying load of peak-to-rms ratio up to 3	
	Voltage waveform distortion factor	At load resistance: 4% or less At rectifying load: 6% or less	
	Overcurrent protection	RMS value: 100% or greater Peak value: 300% or greater of rated RMS value (Shall withstand the load of crest factor = 3)	
	Grounding method	Non-grounded or neutral point grounded	
	Commercial electric power switching method	Thyristor switching (switching time: uninterruptible) Switching cannot be performed when the power is off.	
AC input	Voltage	100 V ±15%	200 V ±15%
	Frequency	50 Hz or 60 Hz ±5%	
	Number of phases	Single phase, 2-wire system (with grounding terminal)	
	Capacity	7500 VA or less	
	Grounding method	Single-line grounding	
	Power factor	0.97 or greater (during rated running)	
	Input higher harmonics current	Conforms to IEC61000-3-12.	
Storage battery	Type	Small-size control valve type lead storage battery (long-life battery)	
	Backup time *1 [initial value]	About 10 minutes [6000 W]	
	Nominal voltage	216 V	
Others	Ambient temperature	0 to 40°C	
	Relative humidity	20 to 95% (no condensation)	
	Noise	55 dB (A) or less (at 1 m from on the front face of the Product)	
	Cooling method	Forced air cooling	
External dimensions (W × D × H)		350 × 700 × 900mm	
Mass		235 kg (without batteries: 160 kg)	
Applicable standard		Complies with VCCI CLASS A, UL1778-4th, IEC62040	
External connection	Input	Input/output terminal block (L/R, N/S: M8 screw)	
	Grounding terminal	Input/output terminal block (PE (G): M8 screw)	
	Output	Input/output terminal block (I1/U1, I3/V1: M8 screw)	Input/output terminal block (I1/U2, I2/V2: M8 screw)

Type		M-UPS100AD1S	M-UPS100AD2S
AC output	Rated capacity	10000 VA / 8000 W	
	Voltage	100 V ±2%	200 V ±2%
	Frequency	50 Hz or 60 Hz (automatic switching in the Product)	
	Frequency accuracy	During normal operation: Variesby input frequency	
		During backup: ±0.1% or better	
	Number of phases	Single phase, 2-wire system (with grounding terminal)	
	Load condition	Linear load or rectifying load of peak-to-rms ratio up to 3	
	Voltage waveform distortion factor	Under load resistance: 4% or less Under rectifying load: 6% or less	
	Overcurrent protection	RMS value: 100% or greater Peak value: 300% or greater of rated RMS value (Shall withstand the load of crest factor = 3.)	
	Grounding method	Non-grounding or neutral point grounding	
	Commercial electric power switching method	Thyristor switching (switching time: uninterruptible) Switching cannot be performed when the power is off.	
AC input	Voltage	100 V ±15%	200 V ±15%
	Frequency	50 Hz or 60 Hz ±5%	
	Number of phases	Single phase, 2-wire system (with grounding terminal)	
	Capacity	10000 VA or less	
	Grounding method	Single-line grounding	
	Power factor	0.97 or greater (during rated running)	
	Input higher harmonics current	Conforms to IEC61000-3-12	
Storage battery	Type	Small-size control valve type lead storage battery (long-life battery)	
	Backup time *1 [initial value]	About 10 minutes [8000 W]	
	Nominal voltage	216 V	
Others	Ambient temperature	0 to 40°C	
	Relative humidity	20 to 95% (no condensation)	
	Noise	55 dB (A) or less (at 1 m from on the front face of the Product)	
	Cooling method	Forced air cooling	
External dimensions (W × D × H)		350 × 700 × 1050mm	
Mass		300 kg (without batteries: 190 kg)	
Applicable standard		Complies with VCCI CLASS A, UL1778-4th, IEC62040	
External connection	Input	Input/output terminal block (L/R, N/S: M8 screw)	
	Grounding terminal	Input/output terminal block (PE (G): M8 screw)	
	Output	Input/output terminal block (I1/U1, I3/V1: M8 screw)	Input/output terminal block (I1/U2, I2/V2: M8 screw)

(*1) Backup time is a test result, not a guaranteed value.

8.2 Additional Description for UL Type

IMPORTANT SAFETY INSTRUCTIONS

These important instructions relate to the installation and maintenance of the UPS GX100 series.

- Internal battery voltage is 216 V DC.

  Models M-UPS050AD*S-# with suffix
  Models M-UPS075AD*S-# with suffix
  Models M-UPS100AD*S-# with suffix
  *: 1 or 2, #: U or W

- The unit is intended for installation in a controlled environment, with a maximum ambient temperature of 25°C.
  (indoors, temperature controlled and free of conductive contaminants).
- This UPS must be secured to the floor with the blanket provided.
- This UPS is intended for use in Japan.
- All models require an external disconnect/over-current protection device for AC input and AC output. -For example, a UL listed branch circuit breaker can be used to provide both functions (disconnect and over-current protection).

  - A readily accessible disconnect device shall be incorporated in the building installation wiring.
  - When M-UPSXXXAD*S-# is not installed, a circuit breaker (UL-approved back flow prevention circuit breaker) is not installed on the input side of the UPS; a circuit breaker must be connected when the UPS is used. The rated trip current of the circuit breaker (2-pole type) is shown in Table 1, Table 2, and Table 3.
  - Field wiring must use UL- and CSA-rated closed-loop terminal connectors that match the wire size and are fully insulated all the way to the terminals. Connectors must be secured using a crimping tool specified by the connector manufacturer. Closed-loop terminals are available as shown in Table 1, Table 2, and Table 3 (manufactured by Japan Solderless Terminals). If these terminals are not available, use similar terminals.
  - Use 75°C copper wire for conductors.

- Wire sizes and tightening torques are shown in Table 1 , Table 2 and Table 3.
- Figure 1 shows the circuit diagram.
- The UPS must be installed with flexible conduit.

Table 1. Input ratings, wire size, torque, external input breaker size

MODEL	INPUT & GROUND				TIGHTENING TORQUE (N·m)	2 POLE BREAKER	
	Vin (V)	Iin (A)	WIRE SIZE AWG	Type of Closed-loop Terminal		V	A
M-UPS050AD1S-U	100	50	4	R22-6	4.1	240 AC	70
M-UPS050AD2S-U	200	25	8	R8-6			35
M-UPS075AD1S-U	100	75	2	R38-8	9.8	240 AC	100
M-UPS075AD2S-U	200	37.5	6	R14-8			50
M-UPS100AD1S-U	100	100	1/0	R60-8	9.8	240 AC	125
M-UPS100AD2S-U	200	50	4	R22-8			70

Table 2. M-UPSXXXAD1S/2S-W(provided UL489 breaker) Input ratings, wire size and torque

MODEL	INPUT & GROUND				TIGHTENING TORQUE (N·m)
	Vin (V)	Iin (A)	WIRE SIZE AWG	Type of Closed-loop Terminal	
M-UPS050AD1S-W M-UPS050AD2S-W	100 200	50	4	R22-6	4.1
M-UPS075AD1S-W M-UPS075AD2S-W	100 200	75	2	R38-6	9.8
M-UPS100AD1S-W M-UPS100AD2S-W	100 200	100	1/0	R60-8	9.8

Table 3. Output ratings, wire size, torque, external output breaker size

MODEL	INPUT & GROUND				TIGHTENING TORQUE (N·m)	2 POLE BREAKER	
	Vout (V)	Iout (A)	WIRE SIZE AWG	Type of Closed-loop Terminal		V	A
M-UPS050AD1S-U	100	50	4	R22-6	4.1	240 AC	70
M-UPS050AD2S-U	200	25	8	R8-6			35
M-UPS075AD1S-U	100	75	2	R38-8	9.8	240 AC	100
M-UPS075AD2S-U	200	37.5	6	R14-8			50
M-UPS100AD1S-U	100	100	1/0	R60-8	9.8	240 AC	125
M-UPS100AD2S-U	200	50	4	R22-8			70

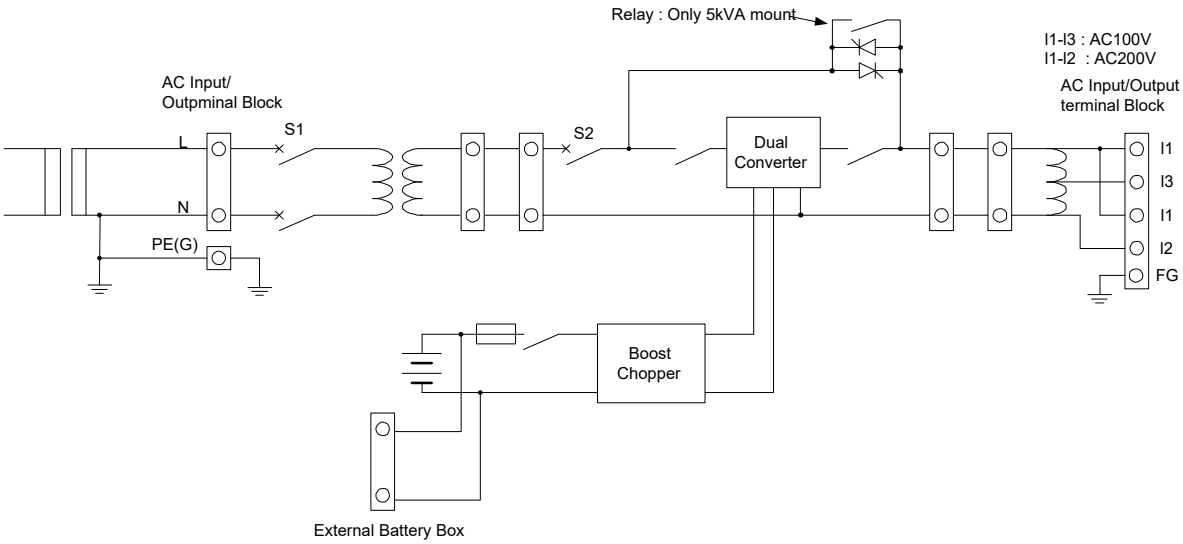


Figure 1. Diagram of All Models

⚠ DANGER

■ Risk of electric shock

• Do not touch uninsulated battery terminals.

⚠ WARNING

■ Risk of electric shock

• There are no user serviceable parts inside the UPS.

⚠ CAUTION

■ Avoid using this device on life support equipment where its failure could reasonably be expected to cause the failure of the life support equipment or to materially affect its safety or effectiveness.

■ Do not use non-genuine batteries. Failure to do so may cause severe damage.

■ Risk of electric shock

- Battery and cooling fan servicing should be performed by only authorized servicing personnel who were qualified technically.
- 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.

⚠ CAUTION

- Do not dispose of batteries in a fire. The batteries may explode.
- Do not open or damage the battery. Released electrolyte is harmful to skin and eyes.
- Batteries may present a risk of electric shock or high short-circuit current. Observe the following precautions when handling 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.