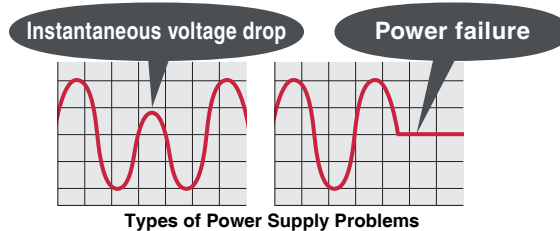


## Introduction

### What Is a Uninterruptible Power Supply (UPS)?

A UPS, or a uninterruptible power supply, is a device used to backup a power supply to prevent devices and systems from power supply problems, such as a power failure or lightning strikes. A UPS can help prevent power supply problems that can often occur on a production site, such as an instantaneous voltage drop and a power failure.



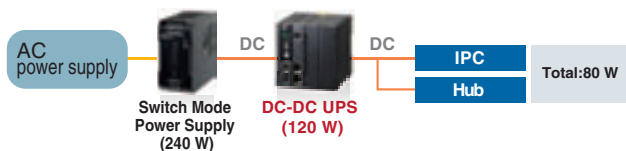
### Function

If power supply to devices stops because of an instantaneous voltage drop or a power failure, devices such as PCs or registers shut down abnormally, which can damage hard disks and corrupt the data. A UPS can supply power to devices from a built-in battery for a given period of time during an instantaneous voltage drop or a power failure to protect devices and important data.

### Classifications

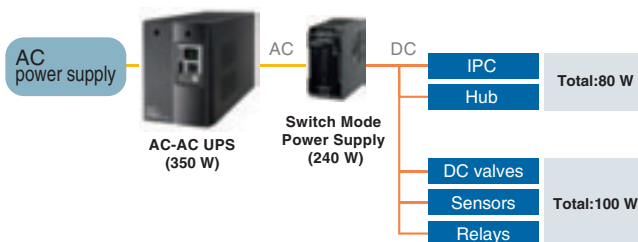
There are two major classifications of UPSs: DC input/DC output models and AC input/AC output models. Select the optimum UPS for your needs based on the type of power supply, load capacity, and other specifications of the equipment and devices that you want to backup. You can also use a UPS together with a switch mode power supply to further increase your options.

#### DC-DC UPS



A DC-DC UPS is the optimum option for backing up devices with a DC input power supply.

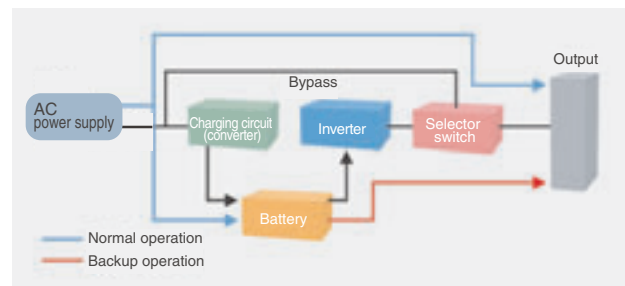
#### AC-AC UPS



An AC-AC UPS is the optimum option for backing up devices with an AC input power supply.

### Mechanism

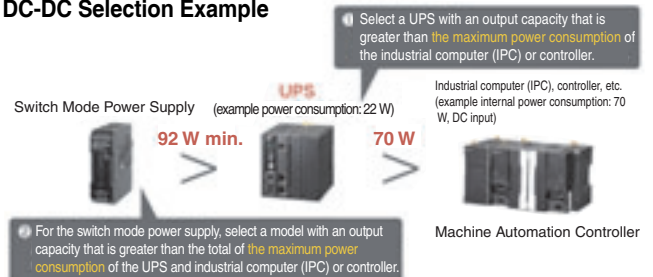
During normal operation, the input power supply bypasses the UPS and is output as-is. During backup operation when a power failure or an instantaneous voltage drop has occurred, the UPS changes to inverter operation with power supplied from its internal battery.



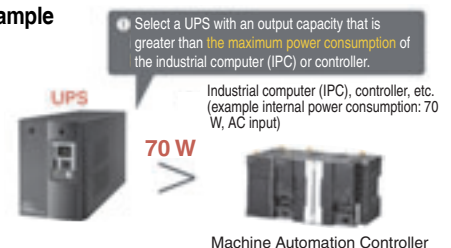
### Selection Method

Check the power consumption (W) of the device that will be backed up by the UPS, and select a UPS that has an output capacity greater than that amount.

#### DC-DC Selection Example



#### AC-AC Selection Example



## Explanation of Terms

### **Rated Input Voltage**

The rated value of the input voltage that can be used by the UPS.

### **Input Voltage Range**

The input voltage range in which a normal operation is possible. A UPS performs backup operation when the input voltage is outside of this range.

### **Maximum Current**

The maximum input current of the UPS.

Maximum Current Conditions

It will be the maximum current value when the following conditions are met.

- (1) The rated load is connected to the UPS.
- (2) The input voltage is at the minimum value.
- (3) The battery is being charged.

### **Input Terminal**

The input terminal type of the input power supply.

### **Input Protection**

The type of input overcurrent protection in the UPS.

This can be either a fuse or a resettable overcurrent protector.

A fuse must be replaced when input overcurrent protection is activated. With a resettable overcurrent protector, the UPS operation can be restored by operating a switch.

### **Input Protection Capacity**

The detected current value for the input overcurrent protection.

### **Inrush Current**

The inrush current on the input power supply side of the UPS.

### **Rated Current**

The rated current on the output side of the UPS.

### **Switching Time**

The amount of time required to switch to backup operation when a power failure occurs.

### **Output Voltage**

The rated value of the output voltage.

### **Output Terminal**

The output terminal type of the UPS output.

### **Overload Protection**

The conditions for the operation of overload protection when the rated current on the UPS output side is exceeded.

### **Battery Type**

The type of battery pack in the UPS.

### **Battery Rated Voltage**

The rated voltage of the battery pack in the UPS.

### **Battery Rated Capacity**

The rated capacity of the battery pack in the UPS.

### **Expected Battery Life**

The life expectancy for the battery when used for trickle charging to perform backup operation one or two times per month.

### **Auto Battery Check Function**

A self-diagnostic test is automatically performed at regular intervals to diagnose and send notification when the battery needs to be replaced.

### **Battery Life Counter Function**

A function that uses the UPS's built-in temperature sensor to calculate the battery life expectancy and send notification when battery replacement becomes necessary.

### **Charging Time**

The amount of time required to fully charge the battery after it has been completely discharged.

### **Backup Time**

The estimated backup time that is possible in an environment with an ambient temperature of 25 °C and when the battery is in its initial state (i.e., with no deterioration).

### **Ambient Operating Temperature and Humidity**

The ambient temperature and humidity range in which the UPS can be used.

### **Ambient Storage Temperature Humidity**

The ambient temperature and humidity range in which the UPS can be stored.

### **Vibration Resistance**

A reference value for vibration resistance.

### **Shock Resistance**

A reference value for shock resistance.

### **Cooling Method**

The cooling method of the UPS main unit.

- Forced-air cooling: An internal cooling fan operates when needed for cooling.
- Natural air cooling: No built-in cooling fan is used for quieter operation.

### **Voltage Resistance**

A reference value for voltage resistance.

### **Insulation Resistance**

A reference value for insulation resistance.

### **Applicable Safety Standards**

The safety standards that the UPS conforms to.

- UL : A safety standard applicable in the USA that symbolizes the safety of electric goods.
- CE : A mark (called the CE Marking) that indicates compliance with EC directives. The EC directives are safety standards applicable in the EU that symbolizes the safety of electric goods.

### **Internal Power Consumption**

The power consumed by the UPS (Unit: W).

- Normal: The power consumption during normal operation when the battery is fully charged.
- Maximum: The power consumption during normal operation at the maximum battery charging current.

### **Serial Communications**

Whether or not there is a RS-232C or USB communications port and the interface terminal.

### **I/O Port**

Whether or not there are I/O signals and the interface terminal.

### **Additional Functions**

Settings, tests, and other functions built into the UPS.

## Further Information

### Shutdown Software

The UPS shutdown software is used to shutdown a PC's operating system and the UPS automatically when there is a power supply problem. Special shutdown software is provided by the UPS manufacturers. You can use the following software with OMRON UPSs:

#### (Simple Shutdown Software)

- This software enables automatic shutdown of the computer and the UPS when there is an input power supply problem (e.g., a power failure).
- This open-source version is provided as a free download.
- You can use this software and its source code to add an automatic shutdown function to your Windows or Linux systems.

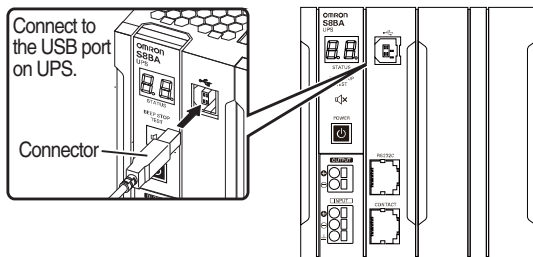
#### Main Features

- You can use this software to automatically shut down your computer and OMRON UPS when there is an input power supply problem (e.g., a power failure).
- You can modify and recompile the source code to add the ability to manage an OMRON UPS from your Windows or Linux systems.

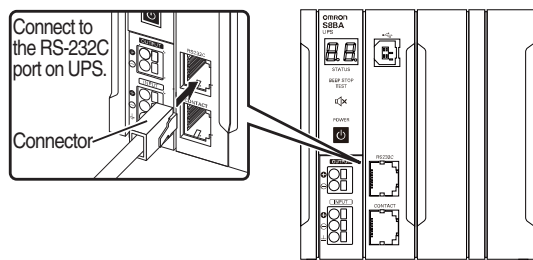
#### Connection Precautions

- USB connection: The USB cable that comes with the product can be used.
- RS-232C connection: An optional connection cable (S8BW-C01) is required.

##### ● USB Connection



##### ● RS-232C Connection



### UPS Configuration Utility

The UPS Configuration Utility is software for configuring UPS settings. You can use the software to easily change UPS settings.

You can also set the maximum backup time, backup the UPS settings to a file, and transfer settings to another UPS.

#### Main Settings

- Beeper setting
- Auto restart setting
- Input sensitivity setting
- Maximum backup time setting
- I/O signal delay time setting

#### Utility Functions

- Sending and receiving commands
- Saving settings to a backup file
- Restoring settings from a backup file
- Reading out settings from a UPS
- Resetting UPS settings to default values

### Battery

Batteries have a limited lifespan. (The life varies depending on your storage/use environment and backup frequency.)

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

#### Example Life Expectancy for an S8BA-series Battery

**Note:** Not a guaranteed performance.

Ambient temperature	Battery life expectancy
50 °C	2.5 years
40 °C	5 years
25 °C	10 years

#### Backup Time

The backup time will shorten as the battery deteriorates over time. At the end of the battery's expected service life, the backup time is approximately half that of when the battery was new.

**Note:** The backup times in the datasheet are reference only. Actual results depend on the frequency of backup operation and the external environmental conditions (e.g., temperature).

## Troubleshooting

Perform the check shown below if the UPS is operating abnormally.

Problem	Check and remedy
<p>The UPS does not start operation. The LED does not appear when the AC input is connected to commercial power and the "Power" switch is turned ON.</p>	<p>Make sure that the AC input is securely connected to commercial power. If the status indicator does not display properly after you perform the above operation, there is a problem with the UPS. Refer to <i>Interpreting beeps and displays</i> in the user's manual.</p>
<p>Backup is not possible. The computer stops when a power failure occurs.</p>	<p>The battery may not be fully charged. Charge the battery for at least the specified charging time. When input power supply is connected to the UPS and the power is turned ON, battery charging operation starts. When the "Power" switch is turned OFF, the battery charging operation does not start.</p>
<p>Backup is performed too frequently. Frequent switching is performed although a power failure does not occur. You hear the sound of switching.</p>	<p>Variations (decrease) in the input power occur frequently. Or, noise may be included that significantly distorts the voltage waveform of the input power.</p> <ul style="list-style-type: none"> <li>Try and check what happens when connecting the UPS to a different wall outlet (commercial power) located some distance away from the device consuming a large amount of power.</li> <li>This problem may occur also when you connect many devices to a plug strip or extension cord connected to the UPS if it is a long or thin cable.</li> </ul>
<p>The power is not turned ON even when the "Power" switch is pressed.</p>	<p>If the status indicator displays "h-" or "l-," the input voltage is outside the input voltage range and the UPS cannot start. Check if the input voltage is within the input voltage range.</p>
<p>The battery replacement alert "bη" is displayed.</p>	<ul style="list-style-type: none"> <li>Battery replacement alert "bη" blinks: The battery is judged to be deteriorated in the self-diagnosis test. Backup operation lasts only for a short period of time. Replace the battery. Refer to <i>Checking the battery</i> in the user's manual.</li> <li>Battery replacement alert "bη" turned ON: The battery life counter has counted up to the limit. The battery has been used up to its end-of-life. Replace the battery. Refer to <i>Notification that the battery needs to be replaced</i> in the user's manual.</li> </ul>
<p>The UPS life alert "Uη" is displayed.</p>	<p>The UPS has been used up to its end-of-life. Replace the UPS with a new one as soon as possible.</p>
<p>The status indicator displays "OL" and the beeper sounds every 0.5 seconds.</p>	<p>There are too many connected devices. Reduce the number of connected devices until "OL" is displayed on the status indicator.</p>
<p>The status indicator blinks "ED", and the beeper sounds at 0.5-second intervals.</p>	<p>Output stopped due to exceeded connection capacity. Turn OFF all power to the UPS and connected devices, and reduce the number of connected devices. Then, turn the power to the unit and connected devices back OK and check whether "OL" is displayed on the status indicator.</p>

For the user's manual, refer to the *Uninterruptible Power Supply (UPS) User's Manual* (Cat. No. U702).