UPS3000 LV and UPS3000 HV

Installation and Maintenance Guide

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Before using this information and the product it supports, read the general information in Appendix B, “IBM Statement of Limited Warranty Z125-4753-08 04/2004,” on page 45 and Appendix C, “Notices,” on page 63.

Third Edition (July 2008)

Safety

Before installing this product, read the Safety Information.

قبل تركيب هذا المنتج، يجب قراءة الملاحظات الآمنية

Antes de instalar este produto, leia as Informações de Segurança.

在安装本产品之前，请仔细阅读 Safety Information
(安全信息)。

安裝本產品之前，請先閱讀「安全資訊」。

Prije instalacije ovog produkta obavezno pročitajte Sigurnosne Upute.

Před instalací tohoto produktu si přečtěte příručku bezpečnostních instrukcí.

Læs sikkerhedsforskrifterne, før du installerer dette produkt.

Lees voordat u dit product installeert eerst de veiligheidsvoorschriften.

Ennen kuin asennat tämän tuotteen, lue turvaohjeet kohdasta Safety Information.

Avant d'installer ce produit, lisez les consignes de sécurité.

Vor der Installation dieses Produkts die Sicherheitshinweise lesen.

Πριν εγκαταστήσετε το προϊόν αυτό, διαβάστε τις πληροφορίες ασφάλειας
(safety information).

לפני שתתקינו מוצר זה, קראו את הוראות הבטיחות.

A termék telepítése előtt olvassa el a Biztonsági előírásokat!

Prima di installare questo prodotto, leggere le Informazioni sulla Sicurezza.

製品の設置の前に、安全情報をお読みください。

본 제품을 설치하기 전에 안전 정보를 읽으십시오.

Пред да се инсталира овој продукт, прочитајте информацијата за безбедност.

Les sikkerhetsinformasjonen (Safety Information) før du installerer dette produktet.

Przed zainstalowaniem tego produktu, należy zapoznać się
z książką "Informacje dotyczące bezpieczeństwa" (Safety Information).

Antes de instalar este produto, leia as Informações sobre Segurança.

Перед установкой продукта прочтите инструкции по
технике безопасности.

Pred inštaláciou tohto zariadenia si pečítaje Bezpečnostné predpisy.

Pred namestitvijo tega proizvoda preberite Varnostne informacije.

Antes de instalar este producto, lea la información de seguridad.

Läs säkerhetsinformationen innan du installerar den här produkten.

Important:

Each caution and danger statement in this document is labeled with a number. This number is used to cross reference an English-language caution or danger statement with translated versions of the caution or danger statement in the *Safety Information* document.

For example, if a caution statement is labeled “Statement 1,” translations for that caution statement are in the *Safety Information* document under “Statement 1.”

Be sure to read all caution and danger statements in this document before you perform the procedures. Read any additional safety information that comes with the server or optional device before you install the device.

DANGER

When working on or around the system, observe the following precautions:

Electrical voltage and current from power, telephone, and communication cables are hazardous. To avoid a shock hazard:

- **Connect power to this unit only with the provided power cord. Do not use the provided power cord for any other product.**
- **Do not open or service any power supply assembly.**
- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **The product might be equipped with multiple power cords. To remove all hazardous voltages, disconnect all power cords.**
- **Connect all power cords to a properly wired and grounded electrical outlet. Ensure that the outlet supplies proper voltage and phase rotation according to the system rating plate.**
- **Connect any equipment that will be attached to this product to properly wired outlets.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications systems, networks, and modems before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following procedures when installing, moving, or opening covers on this product or attached devices.**

  To disconnect:

  1. **Turn off everything (unless instructed otherwise).**
  2. **Remove the power cords from the outlets.**
  3. **Remove the signal cables from the connectors.**
  4. **Remove all cables from the devices.**

  To connect:

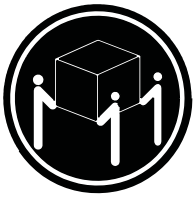
  1. **Turn off everything (unless instructed otherwise).**
  2. **Attach all cables to the devices.**
  3. **Attach the signal cables to the connectors.**
  4. **Attach the power cords to the outlets.**
  5. **Turn on the devices.**

  (D005a)

CAUTION:
Lead-acid batteries can present a risk of electrical burn from high, short-circuit current. Avoid battery contact with metal materials; remove watches, rings, or other metal objects, and use tools with insulated handles. To avoid possible explosion, do not burn.

Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C004)

CAUTION:



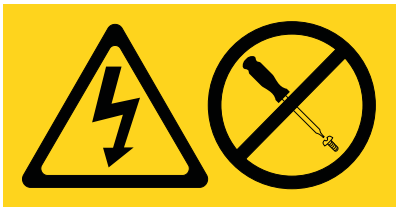
or ***or***

The weight of this part or unit is between 32 and 55 kg (70.5 and 121.2 lb). It takes three persons to safely lift this part or unit. (C010)

DANGER

Hazardous voltage, current, or energy levels are present inside any component that has this label attached. Do no open any cover or barrier that contains this label.

(L001)



The following general safety information should be used for all rack-mounted devices:

DANGER

Observe the following precautions when working on or around your IT rack system:

- **Heavy equipment—personal injury or equipment damage might result if mishandled.**
- **Always lower the leveling pads on the rack cabinet.**
- **Always install stabilizer brackets on the rack cabinet.**
- **To avoid hazardous conditions due to uneven mechanical loading, always install the heaviest devices in the bottom of the rack cabinet. Always install servers and optional devices starting from the bottom of the rack cabinet.**
- **Rack-mounted devices are not to be used as shelves or work spaces. Do not place objects on top of rack-mounted devices.**

- **Each rack cabinet might have more than one power cord. Be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.**
- **Connect all devices installed in a rack cabinet to power devices installed in the same rack cabinet. Do not plug a power cord from a device installed in one rack cabinet into a power device installed in a different rack cabinet.**
- **An electrical outlet that is not correctly wired could place hazardous voltage on the metal parts of the system or the devices that attach to the system. It is the responsibility of the customer to ensure that the outlet is correctly wired and grounded to prevent an electrical shock.**

(R001 part 1 of 2)

CAUTION:

- **Do not install a unit in a rack where the internal rack ambient temperatures will exceed the manufacturer's recommended ambient temperature for all your rack-mounted devices.**
- **Do not install a unit in a rack where the air flow is compromised. Ensure that air flow is not blocked or reduced on any side, front, or back of a unit used for air flow through the unit.**
- **Consideration should be given to the connection of the equipment to the supply circuit so that overloading of the circuits does not compromise the supply wiring or overcurrent protection. To provide the correct power connection to a rack, refer to the rating labels located on the equipment in the rack to determine the total power requirement of the supply circuit.**
- ***(For sliding drawers)* Do not pull out or install any drawer or feature if the rack stabilizer brackets are not attached to the rack. Do not pull out more than one drawer at a time. The rack might become unstable if you pull out more than one drawer at a time.**
- ***(For fixed drawers)* This drawer is a fixed drawer and must not be moved for servicing unless specified by the manufacturer. Attempting to move the drawer partially or completely out of the rack might cause the rack to become unstable or cause the drawer to fall out of the rack.**

(R001 part 2 of 2)

Contents

Chapter 1. Introduction

The IBM® UPS3000 LV (low voltage) and UPS3000 HV (high voltage) models are designed to prevent blackouts, brownouts, sags, and surges from reaching your servers and other valuable electronic equipment. The uninterruptible power supply filters small utility line fluctuations and isolates your equipment from large disturbances by internally disconnecting from the utility line. The uninterruptible power supply provides continuous power from its internal battery until the utility line returns to safe levels or the battery is fully discharged. This document contains the following information:

- Setting up the uninterruptible power supply
- Starting and configuring the uninterruptible power supply
- Solving problems

If firmware and documentation updates are available, you can download them from http://www.ibm.com/support/. The uninterruptible power supply might have features that are not described in the documentation that comes with the uninterruptible power supply, and the documentation might be updated occasionally to include information about those features, or technical updates might be available to provide additional information that is not included in the uninterruptible power supply documentation. To check for updates, go to http://www.ibm.com/support/. For firmware updates, click **Downloads and drivers**. For documentation updates, under **Search technical support**, type `2130`, and click **Search**.

Note: Changes are made periodically to the IBM Web site. Procedures for locating firmware and documentation might vary slightly from what is described in this document.

The uninterruptible power supply comes with a limited warranty. See Appendix B, “IBM Statement of Limited Warranty Z125-4753-08 04/2004,” on page 45.

See the *Rack Installation Instructions* document for complete rack installation and removal instructions.

Note: The illustrations in this document might differ slightly from your hardware.

The IBM Documentation CD

The *IBM Documentation* CD contains documentation for your uninterruptible power supply in Portable Document Format (PDF) and includes the IBM Documentation Browser to help you find information quickly.

Hardware and software requirements

The *IBM Documentation* CD requires the following minimum hardware and software:

- Microsoft® Windows NT® 4.0 (with Service Pack 3 or later), Windows® 2000, or Red Hat® Linux®.
- 100 MHz microprocessor.
- 32 MB of RAM.
- Adobe Acrobat Reader 3.0 (or later) or xpdf, which comes with Linux operating systems. Acrobat Reader software is included on the CD, and you can install it when you run the Documentation Browser.

Using the Documentation Browser

Use the Documentation Browser to browse the contents of the CD, read brief descriptions of the documents, and view documents, using Adobe Acrobat Reader or xpdf. The Documentation Browser automatically detects the regional settings in use in your computer and displays the documents in the language for that region (if available). If a document is not available in the language for that region, the English-language version is displayed.

Use one of the following procedures to start the Documentation Browser:

- If Autostart is enabled, insert the CD into the CD drive. The Documentation Browser starts automatically.
- If Autostart is disabled or is not enabled for all users, use one of the following procedures:
  - If you are using a Windows operating system, insert the CD into the CD drive and click **Start --> Run**. In the **Open** field, type

    ```
    e:\win32.bat
    ```

    where *e* is the drive letter of the CD drive, and click **OK**.
  - If you are using Red Hat Linux, insert the CD into the CD drive; then, run the following command from the /mnt/cdrom directory:

    ```
    sh runlinux.sh
    ```

Select your uninterruptible power supply from the **Product** menu. The **Available Topics** list displays all the documents for your uninterruptible power supply. Some documents might be in folders. A plus sign (+) indicates each folder or document that has additional documents under it. Click the plus sign to display the additional documents.

When you select a document, a description of the document is displayed under **Topic Description**. To select more than one document, press and hold the Ctrl key while you select the documents. Click **View Book** to view the selected document or documents in Acrobat Reader or xpdf. If you selected more than one document, all the selected documents are opened in Acrobat Reader or xpdf.

To search all the documents, type a word or word string in the **Search** field and click **Search**. The documents in which the word or word string is displayed are listed in order of the most occurrences. Click a document to view it, and press Crtl+F to use the Acrobat search function or Alt+F to use the xpdf search function within the document.

Click **Help** for detailed information about using the Documentation Browser.

Specifications

The specifications of the uninterruptible power supply are shown in the following table.

Table 1. UPS3000 LV and UPS3000 HV specifications

	UPS3000 LV	**UPS3000 HV**
Height	89 mm (3.5 in.)	89 mm (3.5 in.)
Width	482.6 mm (19.0 in.)	482.6 mm (19.0 in.)
Depth	622.3 mm (24.5 in.)	622.3 mm (24.5 in.)
Additional clearance	25 mm (0.98 in.) for circuit breakers 3 mm (0.12 in.) for outlets	25 mm (0.98 in.) for circuit breakers 3 mm (0.12 in.) for outlets
Weight	37.0 kg (82.0 lb)	37.0 kg (82.0 lb)
Operating temperature at 0 to 3000 m (0 to 10 000 ft)	0° to 40°C (32° to 104°F)	0° to 40°C (32° to 104°F)
Maximum operating altitude	2000 m (6562 ft)	2000 m (6562 ft)
Relative humidity	0 to 95% noncondensing	0 to 95% noncondensing
Nominal input voltage	120 V	220 V ac (selectable from 200 - 240 V ac)
Maximum input current	30 amps	16 amps
Input voltage range for main operations	90 to 144 V	160 to 288 V
Input voltage adjustable range for main operations	77 to 152 V	154 to 288 V
Nominal output voltage	120 V	220 V, configurable for 200, 220, 230, or 240 V
Input frequency	50/60 Hz ± 4 Hz (auto sensing)	50/60 Hz ± 4 Hz (auto sensing)
Rated power output	2880 VA	3000 VA
Output power capacity in watts	2700 W	2700 W
Circuit breakers	Three supplemental circuit breakers rated at 15 amps, one for each load segment	Three supplemental circuit breakers rated at 15 amps, one for each load segment
Fixed power cord	Length: 12 ft; Nema L5-30P connection to source	
Input connection type		IEC-320 C20, connection to source using country specific power cords
Power outlets	One L5-30R outlet Six 5-15R outlets	Six IEC C13 outlets One IEC C19 outlet
Audible noise at 1 meter	<45 dBA normal <50 dBA Battery mode	<45 dBA normal <50 dBA Battery mode
Online thermal dissipation	171 Btu per hour	171 Btu per hour

Notices and statements in this document

The caution and danger statements in this document are also in the multilingual *Safety Information* document, which is on the IBM *Documentation* CD. Each statement is numbered for reference to the corresponding statement in the *Safety Information* document.

The following notices and statements are used in this document:

- **Note:** These notices provide important tips, guidance, or advice.
- **Important:** These notices provide information or advice that might help you avoid inconvenient or problem situations.
- **Attention:** These notices indicate potential damage to programs, devices, or data. An attention notice is placed just before the instruction or situation in which damage could occur.
- **Caution:** These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.
- **Danger:** These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

Chapter 2. Installing the uninterruptible power supply in a rack or tower configuration

This chapter describes the following tasks:

- Checking the package contents
- Installing the uninterruptible power supply in a tower configuration
- Connecting the internal battery
- Connecting the UPS to EBMs
- Installing a remote emergency power-off connector

You will need the following tools to install the uninterruptible power supply:

- One number 2 Phillips screwdriver
- One 5/16-inch wrench (to remove the battery module [**trained service technicians only**])
- One flat-blade screwdriver

Inventory checklist

The uninterruptible power supply comes with the following items.

Note: Your uninterruptible power supply model might not come with all of the items in the following list.

- Uninterruptible power supply
- One bezel
- Rail kit, including rails and rack-mounting brackets
- Tower conversion kit, including mounting pedestals
- Documentation CD
- Power-management software CD
- Four 2 meter C13/C14 jumper cables
- Serial and USB communication cables
- One 2.5 meter C19/C20 jumper cable (UPS3000 HV models only)
- Remote emergency power-off connector

Rack configuration

To install the uninterruptible power supply in a rack cabinet, see the *Rack Installation Instructions* document that comes with the rail kit.

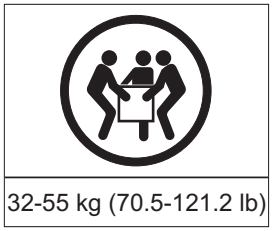
Tower configuration

The following sections provide instructions for setting up the uninterruptible power supply and optional extended battery modules in a tower configuration.

CAUTION:

or

or



The weight of this part or unit is between 32 and 55 kg (70.5 and 121.2 lb). It takes three persons to safely lift this part or unit. (C010)

Note: The uninterruptible power supply and extended battery modules must be stabilized with pedestals or EBM brackets. The setup varies, depending on the number of chassis that you are installing:

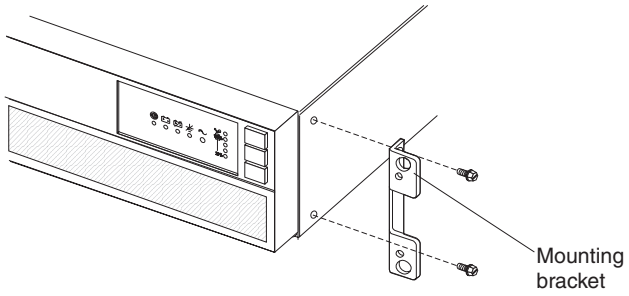
- **For one chassis:** Install two sets of pedestals (see “Setting up the uninterruptible power supply (with no extended battery module)” on page 7).
- **For two chassis:** Install two pedestals on each chassis and two extended battery module brackets (see “Setting up the uninterruptible power supply with one extended battery module” on page 8).
- **For three chassis:** Install four extended battery module brackets (see “Setting up the uninterruptible power supply with two or more extended battery modules” on page 9).
- **For four chassis:** Install six extended battery module brackets (see “Setting up the uninterruptible power supply with two or more extended battery modules” on page 9).
- **For five chassis:** Install eight extended battery module brackets (see “Setting up the uninterruptible power supply with two or more extended battery modules” on page 9).

Setting up the uninterruptible power supply (with no extended battery module)

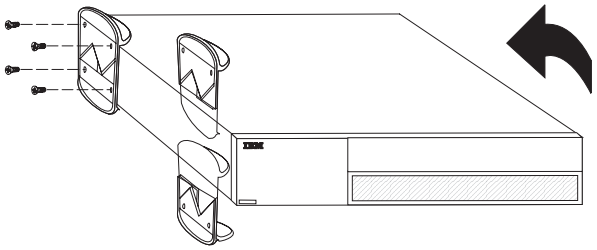
If you are setting up the uninterruptible power supply with extended battery modules, see “Setting up the uninterruptible power supply with one extended battery module” on page 8 or “Setting up the uninterruptible power supply with two or more extended battery modules” on page 9.

To set up the uninterruptible power supply in a tower configuration, complete the following steps:

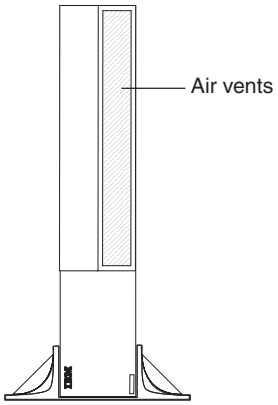
1. Unscrew and remove the mounting brackets on each side of the uninterruptible power supply.



2. Place the uninterruptible power supply chassis horizontally so that the left side of the unit is accessible (see the illustration in step 3).
3. Position one set of two pedestals at the rear end of the chassis and one set of two pedestals at the front end of the chassis. Align the holes and secure the pedestals with the 6-32 x 3/8-inch flat-head screws from the accessory kit.



4. Carefully rotate the chassis upright so that the air vents are at the top.

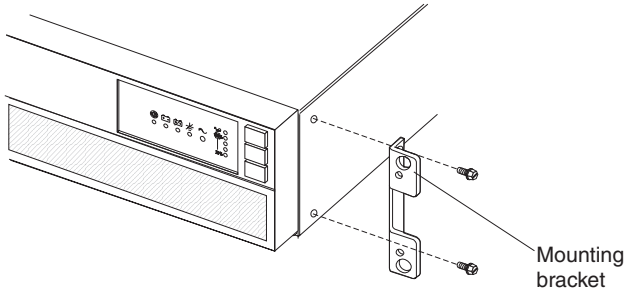


Setting up the uninterruptible power supply with one extended battery module

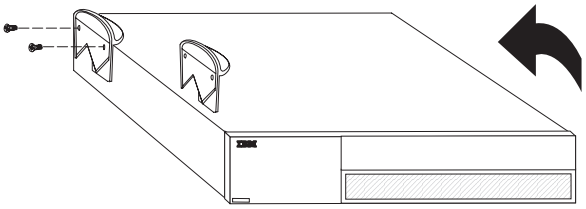
Note: Two sets of pedestals and two extended battery module brackets are required for this tower configuration.

To set up the uninterruptible power supply with an extended battery module in a tower configuration, complete the following steps:

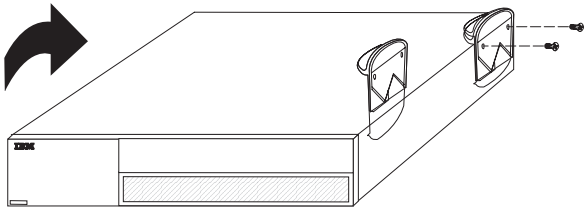
1. Unscrew and remove the mounting brackets on both sides of the uninterruptible power supply and the extended battery module.



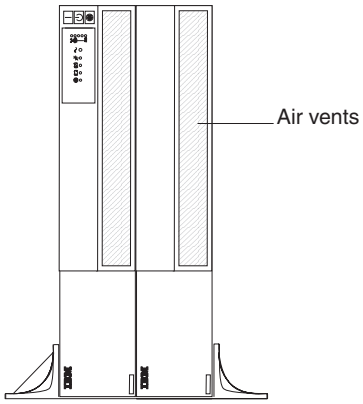
2. Place the uninterruptible power supply chassis horizontally so that the left end of the unit is accessible (see the illustration in step 3).
3. Position two of the pedestals over the edge of the chassis so that the weight of the unit is evenly distributed. Secure the pedestals with the 6-32 x 3/8-inch flat-head screws that come in the accessory kit.



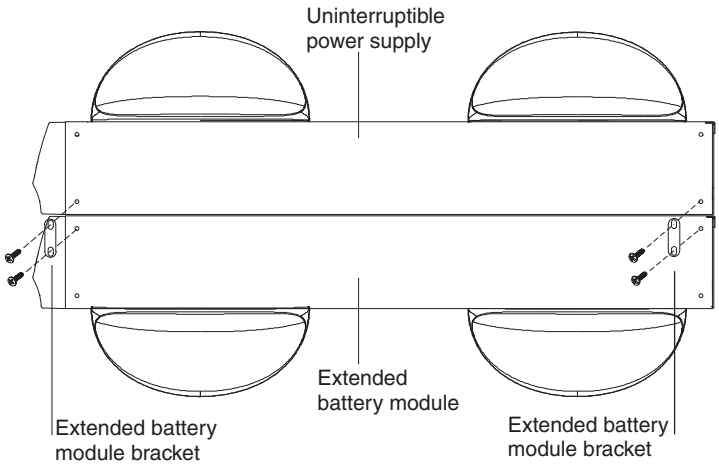
4. Place the extended battery module chassis upside down so that the right side of the unit is accessible (see the illustration in step 5).
5. Position two of the pedestals over the edge of each chassis so that the weight of the unit is evenly distributed. Secure the pedestals with the 6-32 x 3/8-inch flat-head screws that come in the accessory kit.



6. Carefully position the chassis upright so that the air vents are at the top.



7. Attach the extended battery module brackets to the top of the uninterruptible power supply and extended battery module:
   a. Align each extended battery module bracket with the adjacent corner screw holes in the uninterruptible power supply and extended battery module.



Top view

   b. Secure the brackets with the screws that come with the extended battery module.

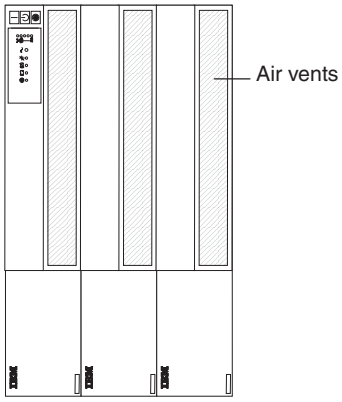
Setting up the uninterruptible power supply with two or more extended battery modules

Note: For a tower configuration with three or more chassis, the pedestals are not required. The following extended battery module brackets are required:

- **For three chassis:** 4 brackets
- **For four chassis:** 6 brackets
- **For five chassis:** 8 brackets

To set up the uninterruptible power supply with two or more extended battery modules in a tower configuration, complete the following steps:

1. Carefully position the chassis upright so that the air vents are at the top.



2. Attach the extended battery module brackets to the top of the uninterruptible power supply and extended battery modules:
   a. Align each extended battery module bracket with the adjacent corner screw holes in the uninterruptible power supply and extended battery module.
   b. Install the other extended battery module brackets so that all the extended battery modules are connected together.
   c. Secure the brackets with the screws that come with the extended battery module.

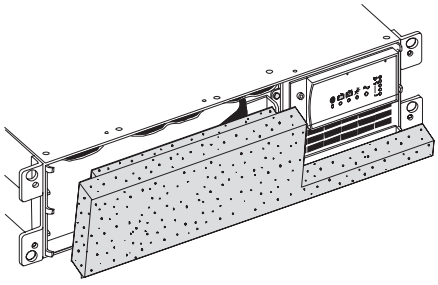
Connecting the internal battery

Important:

- Check the battery recharge date on the shipping carton label. If the expiration date has passed and the batteries were never recharged, do not use the uninterruptible power supply. Contact your service representative.
- Connect the internal battery *after* you install the uninterruptible power supply in a rack cabinet or in a tower configuration.

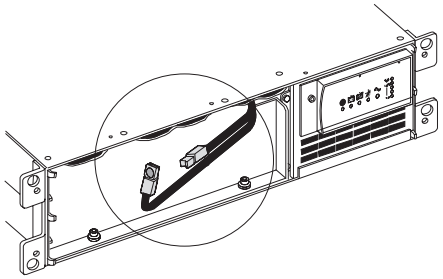
To connect the internal battery, complete the following steps:

1. Make sure that the uninterruptible power supply is turned off and the power cords are disconnected.
2. Remove the packing material from the front of the uninterruptible power supply.

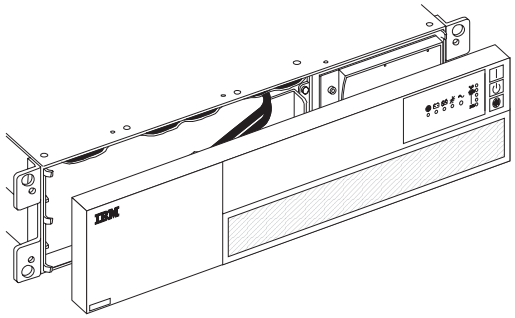


3. Connect the internal battery connector.

   Note: A small amount of arcing might occur while you are connecting the batteries. This is normal and does not damage the unit or cause any safety concern.



4. Install the uninterruptible power supply front bezel.



Important: Before you move the uninterruptible power supply to another location, make sure that you disconnect the uninterruptible power supply internal battery.

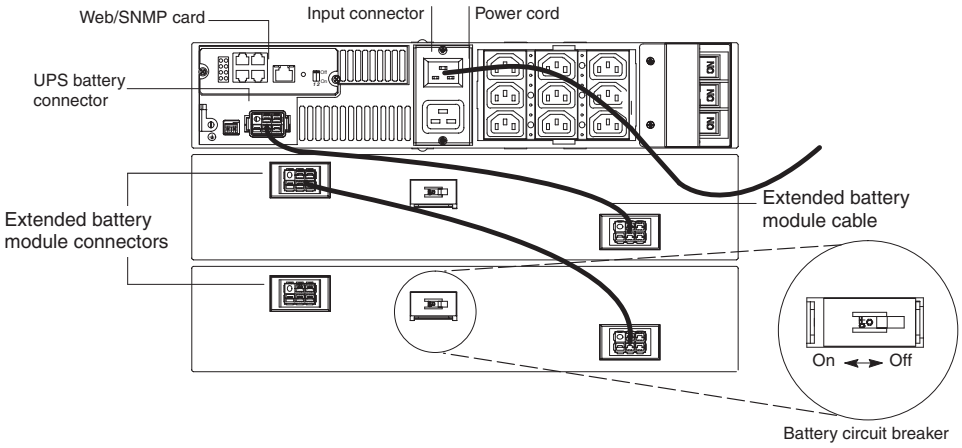
Connecting the uninterruptible power supply to the extended battery modules (rack configuration)

The illustration in this section shows a typical installation with a UPS3000 HV. See “Rear view” on page 18 for the rear view of the UPS3000 LV model.

Note: You can connect up to four extended battery modules to the uninterruptible power supply. If there are two uninterruptible power supplies in a rack, you can connect up to two extended battery modules to each uninterruptible power supply.

To connect the uninterruptible power supply to the extended battery modules, complete the following steps:

1. Make sure that all battery circuit breakers on the extended battery modules are in the Off position.



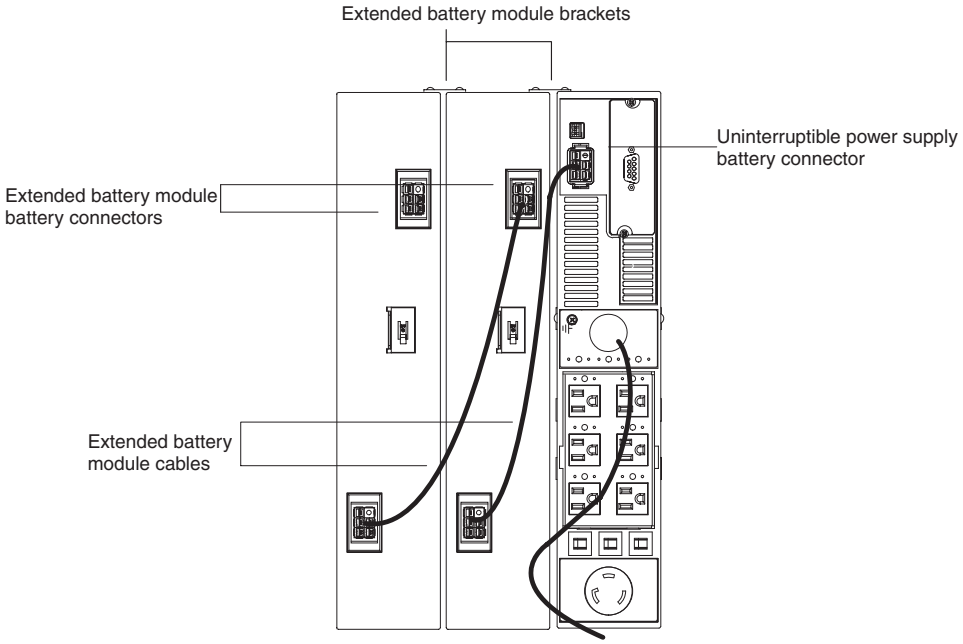
2. Connect an extended battery module to the uninterruptible power supply, using an extended battery module cable. Connect one end of the extended battery module cable to the connector on the right side of the extended battery module. Connect the other end of the cable to the uninterruptible power supply battery connector. The illustration in step 1 shows this preferred cabling method.
3. To connect a second extended battery module, connect one end of an extended battery module cable to the connector on the right side of the second extended battery module. Connect the other end of the cable to the connector on the left side of the extended battery module that is directly connected to the uninterruptible power supply. The illustration in step 1 shows this preferred cabling method.
4. Remove the breaker tie from all battery circuit breakers. Switch all battery circuit breakers to the On position.

Connecting the uninterruptible power supply to the extended battery modules (tower configuration)

The illustration in this section shows a typical installation of a UPS3000 LV. See “Rear view” on page 18 for the rear view of the UPS3000 HV model.

To connect the uninterruptible power supply to the extended battery modules, complete the following steps:

1. Make sure that all battery circuit breakers on the extended battery modules are in the Off position.



2. Connect an extended battery module to the uninterruptible power supply, using an extended battery module cable. Connect one end of the extended battery module cable to the connector on the bottom of the extended battery module. Connect the other end of the cable to the uninterruptible power supply battery connector. The illustration in step 1 shows this preferred cabling method.
3. To connect a second extended battery module, connect one end of an extended battery module cable to the connector on the bottom of the second extended battery module. Connect the other end of the cable to the connector on the top of the extended battery module that is directly connected to the uninterruptible power supply. The illustration in step 1 shows this preferred cabling method.
4. Remove the breaker tie from all battery circuit breakers. Switch all battery circuit breakers to the On position.

Completing the installation

To complete the installation of the uninterruptible power supply, complete the following steps:

1. If you are installing power-management software, connect a workstation or notebook computer to the uninterruptible power supply communication connector (the COM connector on the Web/SNMP card), using the communication cable that comes with the uninterruptible power supply.
2. Connect the devices that you want to protect to the applicable uninterruptible power supply output receptacles. For information about load segments, see “Load segments” on page 23.

   Note: *Do not* protect laser printers with the uninterruptible power supply because of the exceptionally high power requirements of the heating elements.

3. If an emergency power-off (disconnect) switch is required by local codes, see “Remote emergency power-off installation” to install the remote emergency power-off switch before you turn on the uninterruptible power supply.
4. Connect the uninterruptible power supply power cord to a power source. All front panel LEDs flash briefly, and then only the power-on LED flashes, indicating that the uninterruptible power supply is in Standby mode and the connected devices are offline. If the alarm beeps or an uninterruptible power supply general alarm LED stays lit, see Table 7 on page 39.
5. Press and hold the on button until you hear the uninterruptible power supply beep (approximately 1 second). The power-on LED stops flashing, and the load level LEDs display the percentage of load that is being applied to the uninterruptible power supply. The uninterruptible power supply is now in Normal mode and is providing power to the connected devices.

Notes:

1. The batteries charge to 90% capacity in approximately 3 hours. Make sure that you charge the batteries for 24 hours after installation or long-term storage.
2. If more than two extended battery modules are installed, use an external battery charger for faster recharge times.

Remote emergency power-off installation

The uninterruptible power supply includes a remote emergency power-off connector that enables you to turn off power at the uninterruptible power supply output receptacles from a customer-supplied switch in a remote location.

The remote emergency power-off feature shuts down the connected devices immediately and does not follow the orderly shutdown procedure that is initiated by any power-management software.

Any devices that are operating on battery power are also shut down immediately. When the remote emergency power-off switch is reset, the connected devices will not return to battery power until the uninterruptible power supply is restarted manually.

If the off button is pressed after the remote emergency power-off is activated, the uninterruptible power supply remains in Standby mode when it is restarted until the on button is pressed.

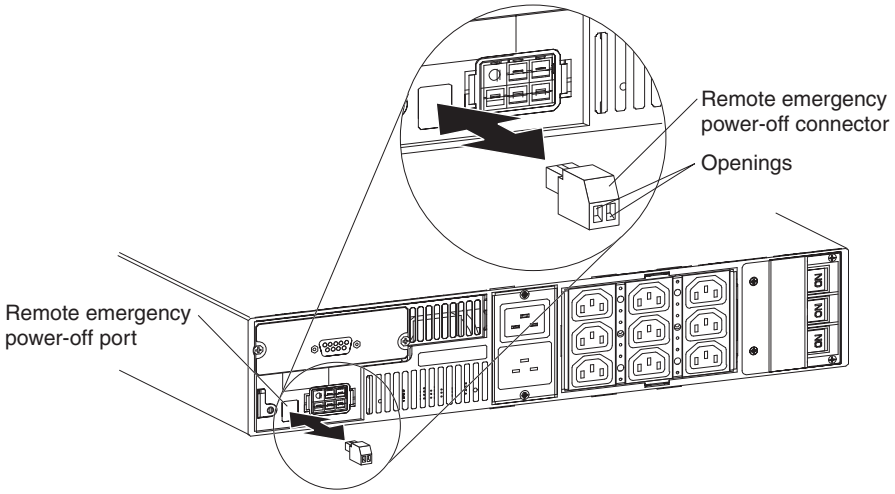
Notes:

1. The remote emergency power-off function activates when the remote emergency power-off contacts close.
2. For Europe, the emergency switch requirements are detailed in Harmonized document HD-384-48 S1, “Electrical Installation of the Buildings, Part 4: Protection for Safety, Chapter 46: Isolation and Switching.”

To connect a remote emergency power-off switch, complete the following steps:

1. Turn off the uninterruptible power supply and disconnect all external cables and power cords.

2. If the remote emergency power-off connector is installed, disconnect it from the remote emergency power-off connector on the rear of the uninterruptible power supply.



3. Connect isolated, normally open, dry contacts (rated to handle 60 V dc maximum, 30 V ac RMS maximum, and 20 mA maximum) to the two openings on the remote emergency power-off connector. Use stranded, non-shielded wiring, size 18 - 22 AWG (0.75 mm^2 - 0 mm^2). Tighten the two small screws on the remote emergency power-off connector to hold the wire in place.

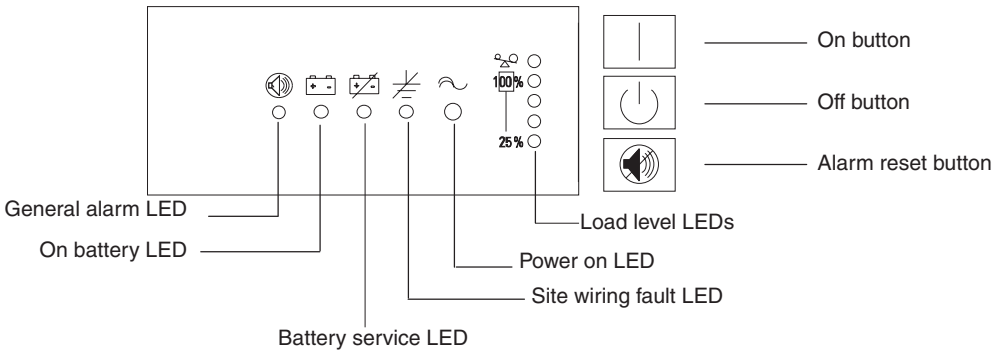
   Note: A separate contact must simultaneously cause uninterruptible power supply input ac power to be removed.
4. Install the remote emergency power-off connector in the remote emergency power-off port (see the illustration in step 2).
5. Make sure that the externally connected remote emergency power-off switch is not activated, to enable power to the uninterruptible power supply output receptacles.
6. Connect the uninterruptible power supply to a power outlet and press the on button.
7. Activate the external remote emergency power-off switch to test the remote emergency power-off function.
8. De-activate the external remote emergency power-off switch and restart the uninterruptible power supply.

Chapter 3. Uninterruptible power supply controls, LEDs, operating modes, and power

This chapter describes the controls, light-emitting diodes (LEDs), connectors, operating modes, and how to turn the uninterruptible power supply on and off.

Front view

The following illustration shows the controls, LEDs, and connectors on the front of the uninterruptible power supply.



For more information about the LEDs, see “Operating modes” on page 18 and Table 7 on page 39.

General alarm LED: When this LED is red and flashing and the alarm beeps every 5 seconds, the uninterruptible power supply is charging the battery. When this LED is red and flashing and the alarm beeps continuously, the uninterruptible power supply internal temperature is too high. When this LED is flashing and there is no alarm beep, the battery is recharging.

On battery LED: When this LED is lit, the uninterruptible power supply is running on battery power. When this LED is flashing, the battery capacity is low.

Battery service LED: When this LED is red and flashing, the battery is not connected correctly or the battery needs to be replaced.

Site wiring fault LED: When this LED is red and flashing, there are problems with the wiring outside the uninterruptible power supply.

Power-on LED: When this LED is green, the uninterruptible power supply is in Normal mode. When this LED is red, the uninterruptible power supply is in Bypass mode. When this LED is flashing, the uninterruptible power supply is in Standby mode.

Note: If this LED is off, it does not mean that there is no electrical power in the uninterruptible power supply. The LED might be burned out. To remove all electrical power from the uninterruptible power supply, you must disconnect the power cord from the electrical outlet.

On button: Press this button to turn on the uninterruptible power supply.

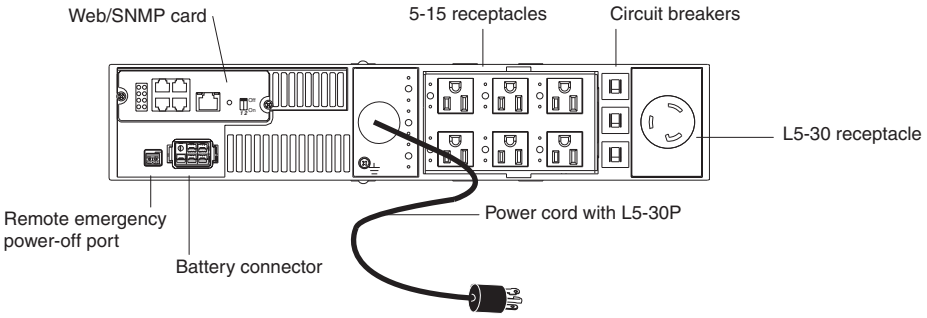
Off button: Press this button to turn off the uninterruptible power supply.

Alarm reset button: Press this button to silence the alarm for an existing fault.

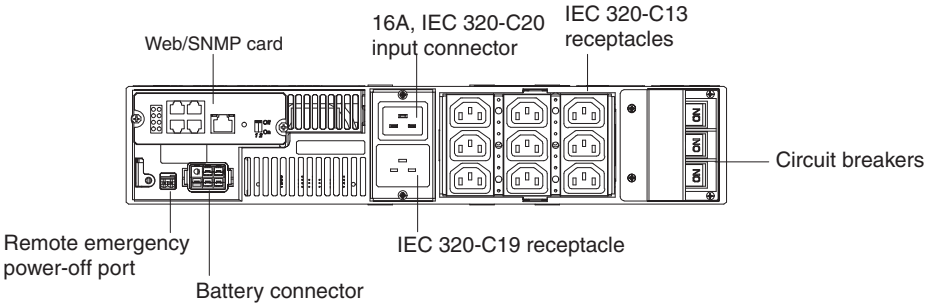
Load level LEDs: When these LEDs are lit, they indicate the percentage of uninterruptible power supply load capacity that is being used by the connected devices.

Rear view

The following illustration shows the controls and connectors on the rear of the UPS3000 LV.

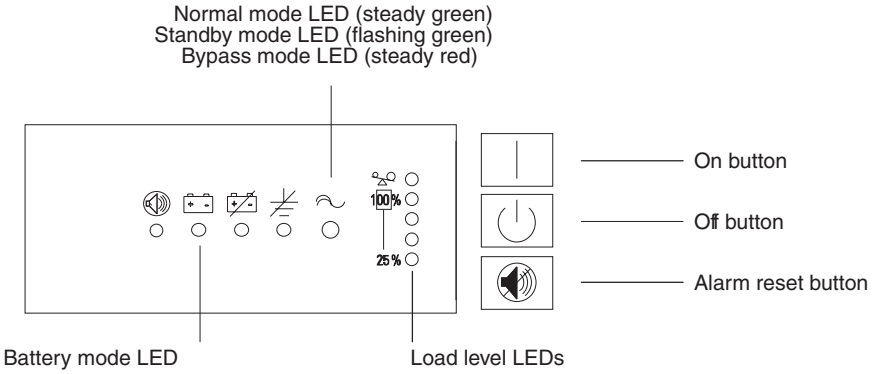


The following illustration shows the controls and connectors on the rear of the UPS3000 HV.



Operating modes

The following illustration shows the operating mode LEDs.



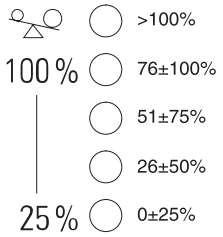
The uninterruptible power supply has the following operating modes:

- Normal
- Battery
- Bypass
- Standby

- Configuration

Normal mode

When the uninterruptible power supply is in Normal mode, the power-on LED is lit, and the front panel displays the percentage of uninterruptible power supply load capacity that is being used by the connected devices. The uninterruptible power supply monitors and charges the batteries as needed and provides power protection to the connected devices.



When all of the load level LEDs and the overload LED are lit, power requirements exceed uninterruptible power supply capacity. For more information, see “Troubleshooting guide” on page 39.

Battery mode

When the uninterruptible power supply is operating during a power outage, the alarm beeps once every 5 seconds, and the battery LED is lit. When the utility power returns, the uninterruptible power supply switches to Normal mode operation while the battery recharges.

If battery capacity becomes low while the uninterruptible power supply is in Battery mode, the battery LED starts flashing, and the alarm becomes continuous. Immediately complete and save your work to prevent data loss.

When utility power is restored after the uninterruptible power supply shuts down, the uninterruptible power supply automatically restarts. The general alarm LED flashes until the battery is recharged to an acceptable level.

Bypass mode

If the uninterruptible power supply reaches an overload condition or has an internal failure, the uninterruptible power supply transfers the connected devices to utility power. In this case, Battery mode is not available; however, the utility power continues to be passively filtered by the uninterruptible power supply. The alarm sounds, and the power-on LED turns red.

The uninterruptible power supply switches to Bypass mode when any of the following situations occur:

- The uninterruptible power supply has an overtemperature condition.
- The uninterruptible power supply has an overload condition of 103% to 110% for 30 seconds.
- The uninterruptible power supply detects a fault in the battery or uninterruptible power supply electronics.

Standby mode

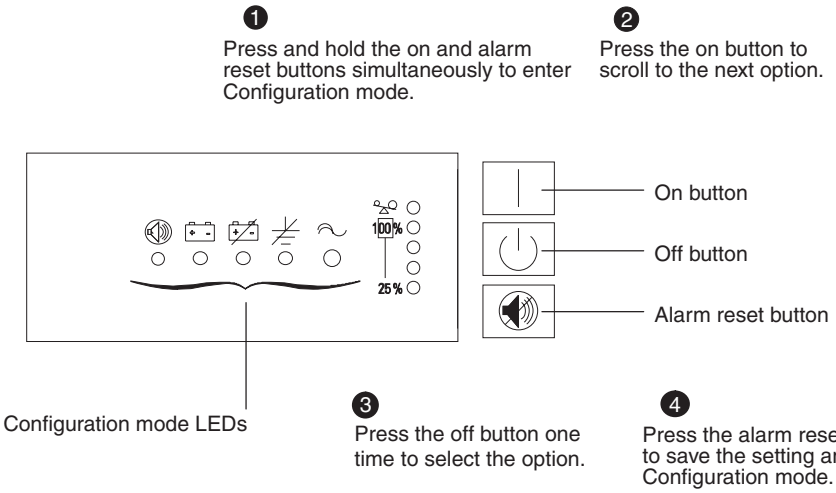
When the uninterruptible power supply is turned off and remains connected to a power outlet, the uninterruptible power supply is in Standby mode. The power-on

LED flashes, and the load level LEDs are off, indicating that power is not available to the connected devices. The battery recharges when necessary.

Note: For 200 - 240 V models, the output receptacles might remain electrically live (up to 100 - 120 V). Disconnect the power to the uninterruptible power supply to be sure that power is not available to the output receptacles.

Configuration mode

When the uninterruptible power supply is in Configuration mode, the front panel LEDs represent the configuration options. Use the control buttons (on button, off button, and alarm reset button) to modify the uninterruptible power supply configuration. The following illustration shows the LEDs and Table 2 on page 21 explains the corresponding options.



To work with Configuration mode, complete the following steps:

1. Press and hold the on button and the alarm reset button simultaneously for one beep (approximately 5 seconds). The uninterruptible power supply switches to Configuration mode. The LEDs flash briefly and then indicate the enabled options.
2. Press the on button to scroll through the options. Each time you press the button, the uninterruptible power supply beeps. The LED for the selected option indicates the current setting; flashing LEDs indicate disabled options (see the illustration in step 4 and Table 2 on page 21). Scrolling past the last LED returns to the first configuration option.

   If you press the on button and nothing happens, the uninterruptible power supply is still in Operation mode. Repeat step 1 for only one beep to enter Configuration mode, and then repeat this step.
3. Press the off button one time to select the Voltage option or to toggle the site wiring fault alarm on or off.

   Note: The uninterruptible power supply exits Configuration mode automatically after 2 minutes.
4. Press the alarm reset button to confirm the selection and exit Configuration mode. If you do not press the alarm reset button, the uninterruptible power supply defaults to the original settings.

The Configuration mode LEDs and options are described in Table 2. Use the following LED legend for an explanation of the LEDs.

LED legend

- ○ Not lit
- ◎ Green
- ● Red
- ☼ Flashing

For the factory default voltages for IBM uninterruptible power supply models, see Table 3 on page 22.

Table 2. Configuration mode LEDs and options

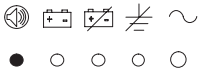
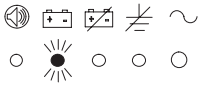
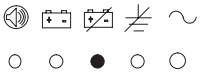
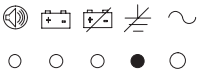
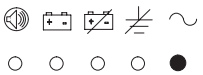
Configuration mode LEDs	**Option**	**LED status**	**Explanation**
	100/200 - 208 V nominal input voltage	Lit	Selecting this option changes the nominal input voltage on low-voltage models to 100 V and to 200 - 208 V for high-voltage models.
		Flashing	100/200 - 208 V is disabled; one of the other input voltage options is selected.
	110/220 V nominal input voltage	Lit	Selecting this option changes the nominal input voltage on low voltage models to 110 V and to 220 V for high-voltage models.
		Flashing	110/220 V is disabled; one of the other input voltage options is selected.
	120/230 V nominal input voltage	Lit	Selecting this option changes the nominal input voltage on low-voltage models to 120 V and to 230 V for high-voltage models.
		Flashing	120/230V is disabled; one of the other input voltage options is selected.
	127/240 V nominal input voltage	Lit	Selecting this option changes the nominal input voltage on low-voltage models to 127 V and to 240 V for high-voltage models.
		Flashing	127/240 V is disabled; one of the other input voltage options is selected.
	Site wiring fault alarm	Lit	An alarm sounds when the polarity of the outlet is reversed or the ground connection is missing; have a qualified electrician repair the outlet wiring.
		Flashing	An alarm does *not* sound when the polarity of the outlet is reversed or the ground connection is missing. The site wiring fault alarm is not available in 100, 200, and 208 V models.

Table 3. Factory default voltages for IBM uninterruptible power supply models

IBM uninterruptible power supply model	Description	Factory default voltage
40K9792	IBM 2130-1JX UPS Japan LV	100 V ac
40K9656	IBM 2130-1RX UPS	120 V ac
40K9793	IBM 2130-2JX UPS Japan HV	200 V ac
40K9657	IBM 2130-2RX UPS	230 V ac
41Y9276	LV Japan UPS Electronics Module FRU	100 V ac
40K9713	LV UPS Electronics Module FRU	120 V ac
41Y9275	HV Japan UPS Electronics Module FRU	200 V ac
40K9712	HV UPS Electronics Module FRU	230 V ac

Turning on the uninterruptible power supply

After the uninterruptible power supply is connected to a power outlet, it enters Standby mode.

To turn on the uninterruptible power supply, press and hold the on button until you hear the uninterruptible power supply beep (for approximately 1 second). The power-on LED is lit, and the load level LEDs show the percentage of load that is being applied to the uninterruptible power supply.

Starting the uninterruptible power supply on battery

Note: Before you use this feature, the uninterruptible power supply must have been powered by utility power at least one time.

To turn on the uninterruptible power supply without using utility power, press and hold the on button for at least 4 seconds. The uninterruptible power supply supplies power to the connected devices, and it switches into Battery mode.

Turning off the uninterruptible power supply

To turn off the uninterruptible power supply, complete the following steps:

1. Prepare the connected devices for shutdown.
2. Press and hold the off button until the long beep ceases (approximately 5 seconds). The power-on LED starts flashing, and the uninterruptible power supply switches to Standby mode (if utility power is available) and removes power from the connected devices.
3. Disconnect the power cord from the uninterruptible power supply. If you do not disconnect the uninterruptible power supply from the power source, it remains in Standby mode.

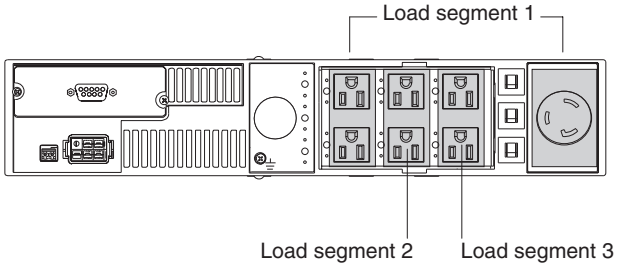
Load segments

Load segments are sets of receptacles that can be controlled by power-management software, providing an orderly shutdown and startup of the connected devices. For example, during a power outage, you can keep key devices running while you turn off other devices. This feature enables you to save battery power. For more information, see your power-management software documentation.

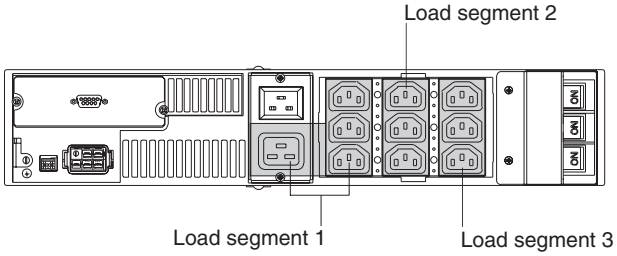
Note: If you are not using power-management software, you cannot control the individual load segments.

Each uninterruptible power supply has three load segments.

The following illustration shows the three load segments in the UPS3000 LV uninterruptible power supply.



The following illustration shows the three load segments in the UPS3000 HV uninterruptible power supply.



Chapter 4. Using the Web/SNMP card

This chapter provides detailed instructions for using the ConnectUPS Web/SNMP Card that is on the top left side on the rear of the uninterruptible power supply.

Introduction

The Web/SNMP card is a network device for the uninterruptible power supply that provides both SNMP and HTTP compatibility. The Web/SNMP card can be connected to a twisted-pair Ethernet network (10BASE-T or 100BASE-T), using an RJ-45 connector.

The Web/SNMP card has an integrated switching hub that enables three additional network devices to be connected to the network without the requirement of additional network drops.

With the Web/SNMP card, you can monitor and manage the uninterruptible power supply in the following ways:

- Using a Web browser such as Microsoft Internet Explorer or Netscape
- Using an Internet-ready cell phone or personal digital assistant (PDA)
- Using SNMP-compatible network-management software (user-supplied)

The Web/SNMP card also supports remote monitoring and shutdown from computer systems that are protected by uninterruptible power supplies. NetWatch client software that is used with the card comes on the Powerware Software Suite CD or is available from http://www.powerware.com. The client software is available for the following operating systems:

- Microsoft Windows 95, Windows 98, Windows Me, Windows NT, and Windows XP
- Macintosh OS X
- Novell NetWare
- UNIX
- Linux

These operating systems communicate through TCP/IP with the Web/SNMP card and automatically shut down the connected devices during extended power outages.

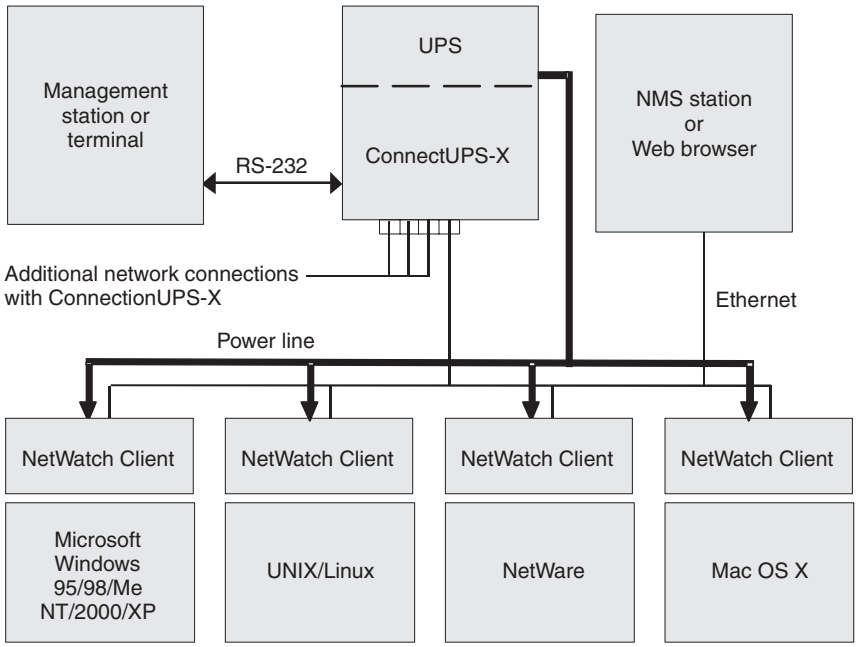
In addition, the Web/SNMP card has the following features:

- It can be configured from a serial port, Telnet, or HTTP Web browser.
- It can be managed from a HTTP Web browser, Internet-ready cell phone or PDA, or SNMP management software.
- E-mail notification of changes in the uninterruptible power supply status can be generated through simple mail transport protocol (SMTP) using e-mail client software, a personal communication services (PCS) phone, or alphanumeric pager.
- It supports Powerware (XUPS.MIB) and RFC-1628 Standard UPS (STDUPSV1.MIB) management information bases.
- It is firmware upgradable from a Microsoft Windows utility, using a network connection.

- It has a scheduling function to control uninterruptible power supply shutdowns and startups.
- It generated history log files (data and events) for recording power problems.
- Uninterruptible power supply status information is available to registered NetWatch clients for automatic shutdown of Microsoft Windows 95/98/Me/NT/2000/XP, Mac OS X, Novell NetWare, and UNIX (various versions, including Linux).
- With a special Status@aGlancet page, a color-coded background on your Web browser provides quick visibility of the uninterruptible power supply status.
- Multiple Web/SNMP cards can be monitored, using free Powerware MultiView software.
- Two normally open or normally closed contact devices can be monitored through a connection to the configuration port. To configure this option, see “Set external contact monitoring” on page 31.

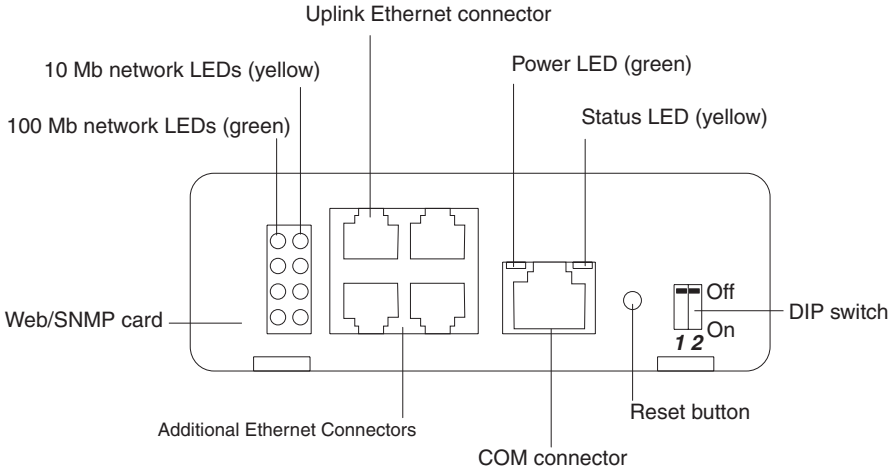
System application

The following illustration shows how you can use the Web/SNMP card in a network application.



Web/SNMP card LEDs and controls

The following illustration shows the LEDs and controls on the Web/SNMP card.



The Web/SNMP card LEDs are described in the following table.

Table 4. Web/SNMP card LED descriptions

Status LED	10 Mb or 100 Mb LED	Card function description
Flickering	On or flickering	Normal operation with Ethernet traffic
On	On	Web/SNMP card error
Off	Off	Uninterruptible power supply power is low (no power to the Web/SNMP card)
Flashing (approximately once per second)	Flashing (approximately once per second)	No connection to uninterruptible power supply (alternate flashing as the Web/SNMP card restarts)

Configuring the Web/SNMP card locally

Use the procedure in this section to access the Web/SNMP configuration utility through a serial connector.

Before you begin

To use the configuration utility for the card, you need the following items:

- The DB9-to-RJ-45 cable that comes with the uninterruptible power supply
- A terminal with a serial communication port, or a computer with a terminal emulation program. Set the serial line to 9600 baud, no parity, 8 data bits, 1 stop bit, and no flow control.

Connecting the card to a terminal or computer

To connect the card to a terminal or computer and start the configuration utility, complete the following steps:

1. Connect the serial cable that comes with the uninterruptible power supply to the COM connector on the Web/SNMP card.
2. Connect the other end of the serial cable into the TTY connector on the terminal or the COM connector on a computer.
3. Open a terminal emulation program and select the applicable serial connection (such as COM1).

   Set the serial line to 9600 baud, no parity, 8 data bits, 1 stop bit, and no flow control.
4. Turn on the uninterruptible power supply.
5. After a few seconds, press Enter. The Password screen is displayed. If the screen is not displayed, press Enter again.

   If you still do not see the Password screen, check the following conditions:
   - Make sure that the serial line is set to 9600 baud, no parity, 8 data bits, 1 stop bit, and no flow control.
   - If the serial line settings are correct, check the cabling to make sure that all connections are secure.
   - Make sure that the terminal program is on the correct communication port for the serial connection.
   - Make sure that the Web/SNMP card has power (one or more LEDs on the card are lit) and that the uninterruptible power supply is turned on.
6. Type your password (the default password is admin) and press Enter. The main menu is displayed.

```
+====================================================================
| [ ConnectUPS Web/SNMP Card Configuration Utility ]
+====================================================================
Enter Password: *****
+====================================================================
| [ ConnectUPS Web/SNMP Card Configuration Utility ]
+====================================================================
1. Web/SNMP Card Settings
2. Reset Configuration to default
3. Restart Web/SNMP Card
4. UPS Pass-Through
0. Exit
Please Enter Your Choice =>_
```

Configuring the Web/SNMP card

To configure the Web/SNMP card, complete the following steps:

1. In the Web/SNMP Card Configuration Utility main menu, type 1 to display the settings menu.

```
+====================================================================
| [ ConnectUPS Web/SNMP Card Configuration Utility ]
+====================================================================
1. Web/SNMP Card Settings
2. Reset Configuration to default
3. Restart Web/SNMP Card
4. UPS Pass-Through
0. Exit
Please Enter Your Choice =>1
+====================================================================
| [ ConnectUPS Web/SNMP Card Configuration Utility ]
+====================================================================
1. Set the IP Address, Gateway Address and MIB System Group
2. Set Web/SNMP Card Control Group
3. Set Write Access Managers
4. Set Trap Receivers
5. Set IP Addresses of Primary and Secondary Date Server
6. UPS Event Actions
7. Set UPS Information
8. Set Superuser Name and Password
9. Email Notification
10. Set Website Links
11. Card Settings and Event Log Summary
12. Set External Contact Monitoring
0. Back to Main Menu
Please Enter Your Choice =>_
```

2. Type `1` to display the Set the IP Address, Gateway Address and MIB System Group screen. Enter the applicable settings for your network (see Table 5).
3. Change any other options as needed for your configuration by typing the corresponding number in the menu (2 through 10). The settings are described in the following sections.
4. Type `0` to return to the main menu.
5. Type `0` to exit the Web/SNMP Card Configuration Utility. The Web/SNMP card automatically saves all settings after you exit the configuration utility.

Notes:

1. The Web/SNMP card can take up to 2 minutes to establish communication with the uninterruptible power supply. Wait before you attempt communication with the card from a Web browser or network management system (NMS).
2. **For Telnet operation:** After the card is accessible on the network, you can use a Telnet utility to modify any of the configuration settings. The menus are identical to those that are displayed during serial configuration and are password-protected for superuser access only.

Set the IP address, gateway address, and MIB system group

To set the IP address, the gateway address, or the management information base (MIB) parameters of the card, select option 1. The following table lists the Web/SNMP card parameters.

Table 5. Web/SNMP card configuration parameters with examples

Menu option number	Function	Description	Example
1	IP address	IP address of the Web/SNMP card	192.72.173.188
2	Gateway address	Default IP address of the network gateway	192.72.173.254
3	Network mask	Subnet mask setting	255.255.255.0

Table 5. Web/SNMP card configuration parameters with examples (continued)

Menu option number	Function	Description	Example
4	sysContact	System contact string of MIB (up to 127 characters)	Powerware
5	sysName	System name parameter for MIB (up to 127 characters	Web/SNMP card
6	sysLocation	System location parameter for MIB (up to 127 characters)	TEST LAB

Set Web/SNMP card control group

To use BOOTP/DHCP, Telnet, or secure HTTP to configure, control, update, or manage the Web/SNMP card, you must enable or disable certain control parameters. Select option 2 to modify the parameters.

Notes:

1. To prevent unauthorized viewing of the Web pages that are displayed by the Web/SNMP card, use option 2 to enable HTTP Security Control.
2. To obtain an IP address by using BOOTP/DHCP (instead of serial configuration), set DIP switch 2 on the front panel of the Web/SNMP card to the On position (Off is the default).

Set write access managers

To use an SNMP-compatible NMS to manage the Web/SNMP card, you must add the IP address of the management station to the list on the Web/SNMP card to receive read (get) or write (set) access rights. Select option 3 to add or delete the IP address of the management station. Community strings might be different for read or write access.

Set trap receivers

To use an SNMP-compatible NMS to manage the Web/SNMP card, you must add the IP address of the workstation that is intended to be the trap receiver to the list on the Web/SNMP card. Select option 3 to add or delete the IP address of the trap receivers. You can modify this information through the HTTP interface after the card is connected to the network.

Set IP addresses of primary and secondary date server

Computer systems with the Web/SNMP card-compatible NetWatch client software are periodically monitored by the Web/SNMP card to maintain a consistent date and time with your network. The IP address of the computer must be listed as the primary or secondary date server. To set the IP addresses of the primary and secondary date servers, select option 5. You can modify this information through the HTTP interface after the card is connected to the network.

UPS event actions

To configure actions that the Web/SNMP card performs during an ac power failure and low battery events, select option 6. You can modify this information through the HTTP interface after the card is connected to the network.

Set UPS information

To enter additional information about the uninterruptible power supply including the date of the installation and the date of the last battery replacement, select option 7. You can also set timing values that are relating to the shutdown and restart of the uninterruptible power supply. You can modify this information through the HTTP interface after the card is connected to the network.

Set superuser name and password

To set or change the user name and password of the administrator who will use a Web browser to configure the Web/SNMP card, select option 8.

Email notification

To notify selected e-mail accounts of events and changes in the status as they occur in the uninterruptible power supply, or to provide a daily status message at a predetermined time, select option 9. You can modify this information through the HTTP interface after the card is connected to the network.

Set Web site links

To set links to different Web sites, select option 10. Links are displayed on the HTTP interface of the Web/SNMP card. You can modify this information through the HTTP interface after the card is connected to the network.

Card settings and event log summary

To display each configuration menu and the current settings, select option 11. The current data and event logs for the card are also displayed. You can access this data through a terminal program, using the DB9-to-RJ-45 cable or through a Telnet connect. Displaying and capturing the configuration items and log entries is helpful in service-related situations.

Set external contact monitoring

With the Web/SNMP card (firmware v3.00), two separate contact closures are supported. Examples of contact devices include rack-door switches, water detectors, and fire detectors. Select option 12 to configure this feature.

```
+================================================================
| [ ConnectUPS Web/SNMP Card Configuration Utility ]
+================================================================
1. External Contact #1 Name: External Contact #1 Status
2. External Contact #1 Type: Disabled
3. External Contact #2 Name: External Contact #2 Status
4. External Contact #2 Type: Normally Closed
0. Return to previous menu
Please Enter Your Choice =>_
```

By changing the external contact name (which maps to PowerMIB xupsContactDescr), you can define the label text of the **Contact Status** field as displayed on the Summary page. The defaults are **External Contact #1 Status** and **External Contact #2 Status**. The external contact types have three possible values:

- **Disabled** (Default): maps to PowerMIB xupsContactType = notUsed(4)
- **Normally Open**: maps to PowerMIB xupsContactType = normallyOpen(1)
- **Normally Closed**: maps to PowerMIB xupsContactType = normallyClosed(2)

Remote configuration

The information in this section describes how to access the Web/SNMP Configuration Utility through a Web browser.

Note: Make sure that an active 10/100BASE-T cable is connected to the network connector on the Web/SNMP card (the Uplink Ethernet connector on the Web/SNMP card). For more information, see the illustration in “Web/SNMP card LEDs and controls” on page 27.

Adding a routing condition in the computer

If the IP address of the computer is on the same network with the Web/SNMP card, you can run the Web browser directly.

If the IP address of the computer is not on the same network with the Web/SNMP card (required only when you are configuring the card), you can use the Add Routing command.

To add a routing condition, complete the following steps:

1. Turn on the computer and set up the TCP/IP protocol, if needed.
2. Enter the following command to add a routing condition:

   `Route add 192.168.7.18 xxx.xx.xxx.xx`

   where 192.168.7.18 is the default IP address of the card and *xxx.xx.xxx.xx* is the IP address of the computer.

For more information about how to add a routing condition, see the documentation that comes with the operating system

Opening the Web interface

To open the Web interface for the Web/SNMP card, from a computer, host computer, or server that is connected to a network, open a Web browser and connect to the Web/SNMP card IP address (the default is 192.168.7.18). The home page of the Web/SNMP card Web interface opens.

Setting up the network configuration

To set up the network configuration, complete the following steps:

1. Select **Configuration** from the menu at the top of the home page, and then select **Web/SNMP Card Configuration** to set the Web/SNMP card parameters.
2. Click **Become Superuser** and log in with the user name and password (the default user name and password is admin).
3. Select and edit the **ConnectUPS Web/SNMP Card IP Address**.
4. Select and edit the **Gateway Address** of the network.
5. Select and edit the **Subnet Mask** of the network.
6. Select **Set Values** to save the new settings.

   Note: If you changed the IP address in step 3, you must restart the Web browser, using the new IP address (see “Opening the Web interface”), to restore communication with the Web/SNMP card. Repeat steps 1 and 2 to continue the configuration.
7. Select **Date and Time** from the menu at the top of the page and enter the applicable date and time information in the specified format.

8. Select **Set Values** to save the date and time settings.

The Web/SNMP card is now configured for operation on your network. See the online help for detailed information about each menu selection.

Using the Web/SNMP card in Serial Pass-through mode

During normal operation, the Web/SNMP card controls the communication path to the uninterruptible power supply and provides network-based access to uninterruptible power supply data through the Web and through SNMP. You can disable the normal operation of the Web/SNMP card and enable serial communication in a pass-through mode directly to the uninterruptible power supply.

You can use Serial Pass-through mode in the following scenarios:

- The uninterruptible power supply firmware requires a field upgrade and a 9600 baud serial port connection to the uninterruptible power supply is required to perform the upgrade.
- You want to run a local copy of the Powerware LanSafe software and communicate serially with the uninterruptible power supply.

Before you begin, go to http://www.powerware.com/ to download a later version of the Web/SNMP card firmware, if it is available.

To set up the Serial Pass-through mode, complete the following steps:

1. Change the DIP switch positions on the Web/SNMP card to On and On. The default is Off and Off. For the location of the DIP switches, see the illustration on page 27.
2. Press the Web/SNMP card reset switch to restart the card in the Serial Pass-through mode.
3. Using the DB9-to-RJ-45 cable that comes with the uninterruptible power supply, connect the RJ-45 end of the cable into the COM connector on the Web/SNMP card.
4. Connect the DB9 end of the cable into an available serial port on a workstation or notebook computer. You can now run applicable software on your workstation or notebook computer and can communicate serially with the uninterruptible power supply at 9600 baud, 8 bits, no parity, and 1 stop bit.

   Note: In Serial Pass-through mode, communication through the Web/SNMP Ethernet connector stops, and any existing connections, for example, to NetWatch software clients or SNMP management tools, also stop.

When you are finished using the Web/SNMP card in Serial Pass-through mode, disconnect the DB9-to-RJ-45 cable from the card and the workstation or notebook computer. Return the DIP switches to the original settings, and press the reset button to restart the card.

Chapter 5. Hardware maintenance information

This chapter contains information about IBM customer replaceable units (CRUs) and field replaceable units (FRUs) for the uninterruptible power supply and instructions for replacement parts that are not installed during a typical installation.

Replaceable uninterruptible power supply components

Replaceable components are of three types:

- **Tier 1 customer replaceable unit (CRU):** Replacement of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation.
- **Tier 2 customer replaceable unit:** You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service that is designated for your uninterruptible power supply.
- **Field replaceable unit (FRU):** FRUs must be installed only by trained service technicians.

For information about the terms of the warranty and getting service and assistance, see Appendix A, “Getting help and technical assistance,” on page 43 and Appendix B, “IBM Statement of Limited Warranty Z125-4753-08 04/2004,” on page 45.

Table 6. Uninterruptible power supply CRU and FRU listing

Description	CRU part number (Tier 1)	CRU part number (Tier 2)	FRU part number
Uninterruptible power supply assembly (UPS3000 LV)			40K9707
Uninterruptible power supply assembly (UPS3000 HV)			40K9708
Uninterruptible power supply battery module			40K9710
High voltage electronics module			40K9712
Low voltage electronics module			40K9713
Bezel	40K9715		
DB9-to-RJ-45	40K9719		
Tower conversion kit	40K9720		
Rail kit	40K9721		
Miscellaneous parts kit	40K9722		
2M C13/C14 jumper cable	39M5376		
2.5 M C19/C20 jumper cable (UPS3000 HV model only)	39M5389		

Uninterruptible power supply and battery care

For the best preventive maintenance, keep the area around the uninterruptible power supply clean and dust-free. If the atmosphere is very dusty, clean the outside of the system with a vacuum cleaner. For full battery life, keep the uninterruptible power supply at an ambient temperature of 25°F (77°F).

Storing the uninterruptible power supply and batteries

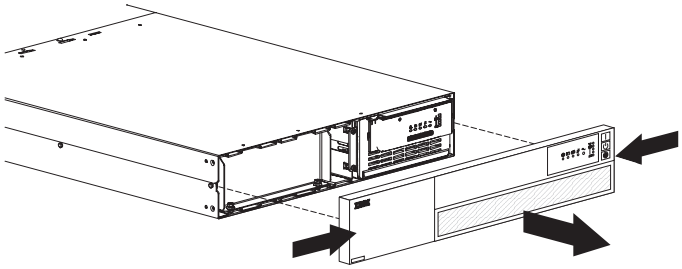
If you store the uninterruptible power supply for a long period, recharge the battery every 6 months by connecting the uninterruptible power supply to a power outlet. The batteries charge to 90% capacity in approximately 3 hours. However, you should charge the batteries for 24 hours after long-term storage. Check the battery recharge date on the shipping carton label. If the expiration date has passed and the batteries were never recharged, do not use the uninterruptible power supply. Contact your technical-support representative.

Replacing the electronics module (for trained service technician only)

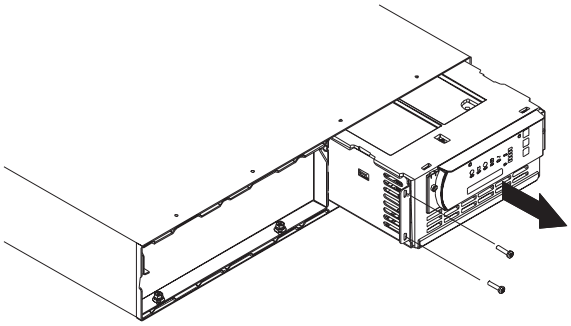
The electronics module can be hot-swapped for replacement without losing power to the connected devices. The uninterruptible power supply automatically switches to Bypass mode. Battery mode is not available; however, the utility power continues to be passively filtered by the uninterruptible power supply.

To replace the electronics module, complete the following steps:

1. Disconnect the extended battery module cable, the remote emergency power-off cable, and the DB9-to-RJ-45 cable, if they are installed.
2. If the uninterruptible power supply is installed in a rack, remove the uninterruptible power supply from the rack and set it on a level surface.
3. To remove the uninterruptible power supply bezel, grasp the left and right sides of the bezel and pull it off.



4. Remove the two screws on the left of the electronics module. Firmly grasp the module and pull it out of the bay.



Note: To prevent power loss to the connected devices, follow step 5 closely.

5. While you insert the new electronics module, press and hold the alarm reset button for approximately 5 seconds or until the front panel LEDs are lit individually.

Note: If the five load level LEDs are flashing, the electronics module might not be seated correctly. Remove and reinsert the module as described in this step.

6. Secure the electronics module to the uninterruptible power supply chassis with the screws that you removed in step 4 on page 36.
7. Replace the front bezel.
8. Reconnect any cables that you removed in step 1 on page 36.

Replacing the battery module (for trained service technicians only)

CAUTION:
Lead-acid batteries can present a risk of electrical burn from high, short-circuit current. Avoid battery contact with metal materials; remove watches, rings, or other metal objects, and use tools with insulated handles. To avoid possible explosion, do not burn.

Exchange only with the IBM-approved part. Recycle or discard the battery as instructed by local regulations. In the United States, IBM has a process for the collection of this battery. For information, call 1-800-426-4333. Have the IBM part number for the battery unit available when you call. (C004)

If the battery service LED is flashing and the audible alarm is beeping once every 5 seconds, you might have to replace the battery module. Contact your technical-support representative to order new batteries.

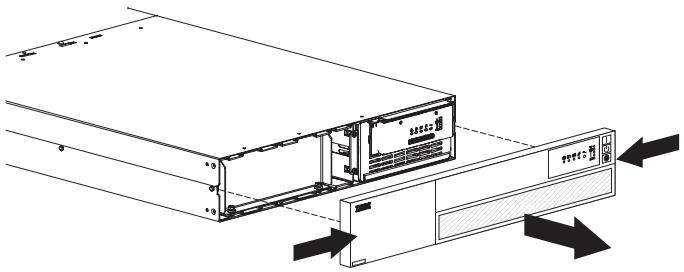
Important: *Do not* disconnect the batteries while the uninterruptible power supply is in Battery mode. Consider all warnings, cautions, and notes before you replace batteries.

With the hot-swappable battery feature, you can replace uninterruptible power supply batteries without turning off the uninterruptible power supply or disconnecting the load. To remove input power to change the battery, complete the following steps:

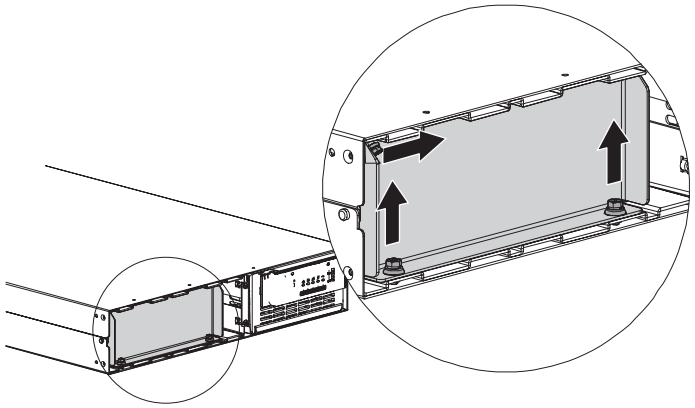
1. Press and hold the off button until the long beep ceases (approximately 5 seconds), and then disconnect the uninterruptible power supply.
2. Wait 60 seconds while the internal processor shuts down before you disconnect the battery.

To replace the battery module, complete the following steps. You will need a 5/16-inch wrench to remove the battery module.

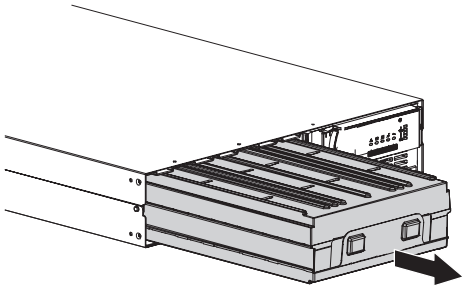
1. If the uninterruptible power supply is installed in a rack, remove the uninterruptible power supply from the rack and set it on a level surface.
2. To remove the uninterruptible power supply bezel, grasp the left and right sides of the bezel and pull it off



3. Unscrew three nuts (one in the upper-left corner and two on the bottom of the bracket) and set aside the battery retaining bracket.



4. Pull the battery out onto a flat, stable surface. For information about recycling the battery, see “Battery return program” on page 66.



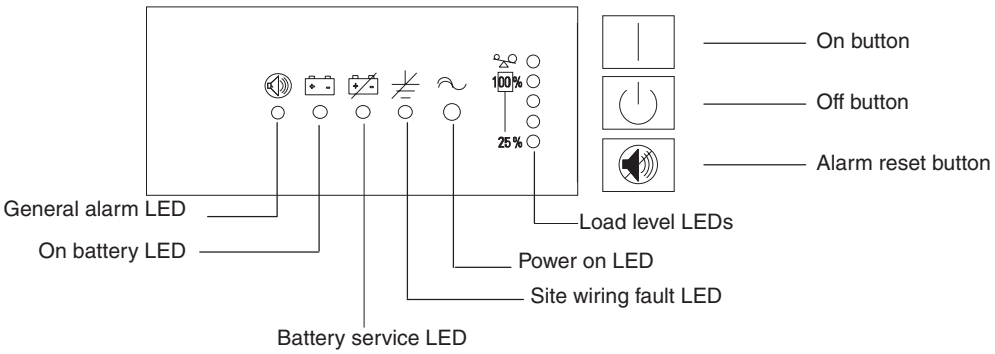
5. Slide the new battery module into the uninterruptible power supply.
6. Reinstall the battery retaining bracket and nuts that you removed in step 3.
7. Replace the bezel.

Chapter 6. Troubleshooting

This chapter provides basic troubleshooting information to help you solve some common problems that might occur while you are using the uninterruptible power supply.

Audible alarms and uninterruptible power supply conditions

The uninterruptible power supply has an audible alarm feature to alert you of potential power problems. Use Table 7 to determine and solve the uninterruptible power supply alarms and conditions.



To silence the alarm for an existing fault, press the alarm reset button. If the uninterruptible power supply status changes, the alarm beeps, overriding the previous alarm silencing. The alarm cannot be silenced if there is a low-battery condition.

Troubleshooting guide

The uninterruptible power supply alarms, conditions, causes, and actions are described in Table 7. Use the following LED legend for an explanation of the LEDs.

LED legend

- ○ Not lit
- ◌ Green
- ● Red
- ☼ Flashing

Table 7. Troubleshooting guide

Alarm or condition	Possible cause	Action
ThepPower-on LED is not lit; the uninterruptible power supply does not start.	The power cord is not connected correctly.	Check the power cord connections
	The electrical outlet is faulty.	Have a qualified electrician test and repair the outlet.
The power-on LED is flashing; power is not available at the uninterruptible power supply output receptacles.	The uninterruptible power supply is in Standby mode.	Press the on button to supply power to the connected devices.
The uninterruptible power supply does not provide the expected backup time.	The batteries must be charged or serviced.	Connect the uninterruptible power supply into an electrical outlet for 24 hours to charge the battery. If the Battery service LED is lit, see “Replacing Batteries” on page 44 to replace the battery.

Table 7. Troubleshooting guide (continued)

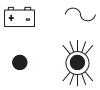
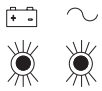
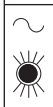
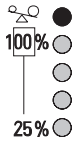
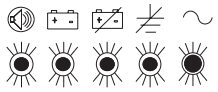
Alarm or condition	Possible cause	Action
 1 beep every 5 seconds.	The uninterruptible power supply is running on battery power because of a utility failure.	The uninterruptible power supply is powering the equipment with battery power. Prepare the connected devices for shutdown.
	The uninterruptible power supply is running on battery power because the input voltage is too high or too low.	The uninterruptible power supply continues to operate on battery until the condition is corrected or the battery is completely discharged. If the condition remains, the input voltage in your area might differ from the uninterruptible power supply nominal. Change the uninterruptible power supply input voltage to match your local voltage; see “Configuration mode” on page 20.
	The utility line voltage and frequency are out of specification.	Have a qualified electrician check the wiring.
 Continuous audible alarm.	The battery is running low.	Three minutes or less of battery power remains (depending on load configuration and battery charge). Save your work and turn off the connected devices. The alarm cannot be silenced.
 1 beep every 5 seconds.	The battery is not connected correctly.	Check the battery connections. Call your service representative if the problem persists.
	The battery must be replaced (trained service technician only).	Contact your technical-support representative to order a new battery. Have the battery replaced by a trained service technician only.
 1 beep every 5 seconds.	The battery is low when the uninterruptible power supply starts up or resumes operation after a utility failure.	The uninterruptible power supply is recharging the battery. The LED is not lit when the battery has reached an acceptable charge level. If the alarm reset LED or battery service LED is still lit after 24 hours, contact your technical-support representative.
 1 beep every 5 seconds.	A ground wire connection does not exist, or the line and neutral wires are reversed in the electrical outlet.	Have a qualified electrician correct the wiring. To disable this alarm, see “Configuration mode” on page 20.
 1 beep every 5 seconds.	Bypass is out of tolerance. Input voltage is not within ±12% of nominal.	The uninterruptible power supply is receiving utility power that might be unstable or in a brownout condition. The uninterruptible power supply continues to supply power to the connected devices. If the conditions worsen, the uninterruptible power supply might switch to battery power.
	The uninterruptible power supply is in Bypass mode.	The connected devices are transferred to utility power. Battery mode is not available; however, the utility power continues to be passively filtered by the uninterruptible power supply. Check for one of the following alarms: overtemperature, overload, uninterruptible power supply failure, or battery service.

Table 7. Troubleshooting guide (continued)

Alarm or condition	Possible cause	Action
	Power requirements exceed uninterruptible power supply capacity (103 - 110% for 30 seconds) or the load is defective.	Turn off and disconnect the uninterruptible power supply. Remove some of the connected devices from the uninterruptible power supply. Wait at least 5 seconds until all LEDs are off and restart the uninterruptible power supply. You might have to obtain a larger capacity uninterruptible power supply.
 Continuous audible alarm.	Uninterruptible power supply internal temperature is too high.	The uninterruptible power supply switches to Bypass mode, allowing the uninterruptible power supply to cool. Turn off and disconnect the uninterruptible power supply. Clear vents and remove any heat sources. Make sure that the airflow around the uninterruptible power supply is not restricted. Wait at least 5 minutes and restart the uninterruptible power supply. If the condition remains, contact your technical-support representative.
	Momentary overload	The uninterruptible power supply switches to Bypass mode. Repeat overloads will lock on bypass for one hour; press the on button to override Bypass mode immediately.
	Uninterruptible power supply fault condition	Save your work and turn off the connected devices. Turn off and disconnect the uninterruptible power supply. Contact your technical-support representative. The alarm cannot be silenced.

Appendix A. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you. This section contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your system, and whom to call for service, if it is necessary.

Before you call

Before you call, make sure that you have taken these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system. Information about diagnostic tools is in the *Problem Determination and Service Guide* on the IBM *Documentation* CD that comes with your system.
- Go to the IBM support Web site at http://www.ibm.com/systems/support/ to check for technical information, hints, tips, and new device drivers or to submit a request for information.

You can solve many problems without outside assistance by following the troubleshooting procedures that IBM provides in the online help or in the documentation that is provided with your IBM product. The documentation that comes with IBM systems also describes the diagnostic tests that you can perform. Most systems, operating systems, and programs come with documentation that contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

Using the documentation

Information about your IBM system and preinstalled software, if any, or optional device is available in the documentation that comes with the product. That documentation can include printed documents, online documents, readme files, and help files. See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates. To access these pages, go to http://www.ibm.com/systems/support/ and follow the instructions. Also, some documents are available through the IBM Publications Center at http://www.ibm.com/shop/publications/order/.

Getting help and information from the World Wide Web

On the World Wide Web, the IBM Web site has up-to-date information about IBM systems, optional devices, services, and support. The address for IBM System x™ and xSeries® information is http://www.ibm.com/systems/x/. The address for IBM BladeCenter® information is http://www.ibm.com/systems/bladecenter/. The address for IBM IntelliStation® information is http://www.ibm.com/intellistation/.

You can find service information for IBM systems and optional devices at http://www.ibm.com/systems/support/.

Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with System x and xSeries servers, BladeCenter products, IntelliStation workstations, and appliances. For information about which products are supported by Support Line in your country or region, see http://www.ibm.com/services/sl/products/.

For more information about Support Line and other IBM services, see http://www.ibm.com/services/, or see http://www.ibm.com/planetwide/ for support telephone numbers. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

Hardware service and support

You can receive hardware service through your IBM reseller or IBM Services. To locate a reseller authorized by IBM to provide warranty service, go to http://www.ibm.com/partnerworld/ and click **Find a Business Partner** on the right side of the page. For IBM support telephone numbers, see http://www.ibm.com/planetwide/. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

In the U.S. and Canada, hardware service and support is available 24 hours a day, 7 days a week. In the U.K., these services are available Monday through Friday, from 9 a.m. to 6 p.m.

IBM Taiwan product service

台灣 IBM 產品服務聯絡方式：
台灣國際商業機器股份有限公司
台北市松仁路 7 號 3 樓
電話：0800-016-888

IBM Taiwan product service contact information:
IBM Taiwan Corporation
3F, No 7, Song Ren Rd.
Taipei, Taiwan
Telephone: 0800-016-888

Appendix B. IBM Statement of Limited Warranty Z125-4753-08 04/2004

Part 1 - General Terms

Part 1 - General Terms

This Statement of Limited Warranty includes Part 1 - General Terms, Part 2 - Country-unique Terms, and Part 3 - Warranty Information. The terms of Part 2 replace or modify those of Part 1. The warranties provided by IBM in this Statement of Limited Warranty apply only to Machines you purchase for your use, and not for resale. The term "Machine" means an IBM machine, its features, conversions, upgrades, elements, or accessories, or any combination of them. The term "Machine" does not include any software programs, whether pre-loaded with the Machine, installed subsequently or otherwise. ***Nothing in this Statement of Limited Warranty affects any statutory rights of consumers that cannot be waived or limited by contract.***

What this Warranty Covers

IBM warrants that each Machine 1) is free from defects in materials and workmanship and 2) conforms to IBM's Official Published Specifications ("Specifications") which are available on request. The warranty period for the Machine starts on the original Date of Installation and is specified in Part 3 - Warranty Information. The date on your invoice or sales receipt is the Date of Installation unless IBM or your reseller informs you otherwise. Many features, conversions, or upgrades involve the removal of parts and their return to IBM. A part that replaces a removed part will assume the warranty service status of the removed part. Unless IBM specifies otherwise, these warranties apply only in the country or region in which you purchased the Machine.

THESE WARRANTIES ARE YOUR EXCLUSIVE WARRANTIES AND REPLACE ALL OTHER WARRANTIES OR CONDITIONS, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SOME STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OF EXPRESS OR IMPLIED WARRANTIES, SO THE ABOVE EXCLUSION MAY NOT APPLY TO YOU. IN THAT EVENT, SUCH WARRANTIES ARE LIMITED IN DURATION TO THE WARRANTY PERIOD. NO WARRANTIES APPLY AFTER THAT PERIOD. SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

What this Warranty Does not Cover

This warranty does not cover the following:

- any software programs, whether pre-loaded or shipped with the Machine, or installed subsequently;
- failure resulting from misuse (including but not limited to use of any Machine capacity or capability, other than that authorized by IBM in writing), accident, modification, unsuitable physical or operating environment, or improper maintenance by you;
- failure caused by a product for which IBM is not responsible; and
- any non-IBM products, including those that IBM may procure and provide with or integrate into an IBM Machine at your request.

The warranty is voided by removal or alteration of identification labels on the Machine or its parts.

IBM does not warrant uninterrupted or error-free operation of a Machine.

Any technical or other support provided for a Machine under warranty, such as assistance with “how-to” questions and those regarding Machine set-up and installation, is provided **WITHOUT WARRANTIES OF ANY KIND**.

How to Obtain Warranty Service

If the Machine does not function as warranted during the warranty period, contact IBM or your reseller to obtain warranty service. If you do not register the Machine with IBM, you may be required to present proof of purchase as evidence of your entitlement to warranty service.

What IBM Will Do to Correct Problems

When you contact IBM for service, you must follow the problem determination and resolution procedures that IBM specifies. An initial diagnosis of your problem can be made either by a technician over the telephone or electronically by access to an IBM website.

The type of warranty service applicable to your Machine is specified in Part 3 - Warranty Information.

You are responsible for downloading and installing designated Machine Code (microcode, basic input/output system code (called “BIOS”), utility programs, device drivers, and diagnostics delivered with an IBM Machine) and other software updates from an IBM Internet Web site or from other electronic media, and following the instructions that IBM provides.

If your problem can be resolved with a Customer Replaceable Unit (“CRU”) (e.g., keyboard, mouse, speaker, memory, hard disk drive), IBM will ship the CRU to you for you to install.

If the Machine does not function as warranted during the warranty period and your problem cannot be resolved over the telephone or electronically, through your application of Machine Code or software updates, or with a CRU, IBM or your reseller, if approved by IBM to provide warranty service, will either, at its discretion, 1) repair it to make it function as warranted, or 2) replace it with one that is at least functionally equivalent. If IBM is unable to do either, you may return the Machine to your place of purchase and your money will be refunded.

IBM or your reseller will also manage and install selected engineering changes that apply to the Machine.

Exchange of a Machine or Part

When the warranty service involves the exchange of a Machine or part, the item IBM or your reseller replaces becomes its property and the replacement becomes yours. You represent that all removed items are genuine and unaltered. The replacement may not be new, but will be in good working order and at least functionally equivalent to the item replaced. The replacement assumes the warranty service status of the replaced item.

Your Additional Responsibilities

Before IBM or your reseller exchanges a Machine or part, you agree to remove all features, parts, options, alterations, and attachments not under warranty service.

You also agree to:

1. ensure that the Machine is free of any legal obligations or restrictions that prevent its exchange;
2. obtain authorization from the owner to have IBM or your reseller service a Machine that you do not own; and
3. where applicable, before service is provided:
   a. follow the service request procedures that IBM or your reseller provides;
   b. backup or secure all programs, data, and funds contained in the Machine;
   c. provide IBM or your reseller with sufficient, free, and safe access to your facilities to permit IBM to fulfill its obligations; and
   d. inform IBM or your reseller of changes in the Machine's location.
4. (a) ensure all information about identified or identifiable individuals (Personal Data) is deleted from the Machine (to the extent technically possible), (b) allow IBM, your reseller or an IBM supplier to process on your behalf any remaining Personal Data as IBM or your reseller considers necessary to fulfill its obligations under this Statement of Limited Warranty (which may include shipping the Machine for such processing to other IBM service locations around the world), and (c) ensure that such processing complies with any laws applicable to such Personal Data.

Limitation of Liability

IBM is responsible for loss of, or damage to, your Machine only while it is 1) in IBM's possession or 2) in transit in those cases where IBM is responsible for the transportation charges.

Neither IBM nor your reseller are responsible for any of your confidential, proprietary or personal information contained in a Machine which you return to IBM for any reason. You should remove all such information from the Machine prior to its return.

Circumstances may arise where, because of a default on IBM's part or other liability, you are entitled to recover damages from IBM. In each such instance, regardless of the basis on which you are entitled to claim damages from IBM (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), except for any liability that cannot be waived or limited by applicable laws, IBM is liable for no more than

1. damages for bodily injury (including death) and damage to real property and tangible personal property; and
2. the amount of any other actual direct damages, up to the charges (if recurring, 12 months' charges apply) for the Machine that is subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

This limit also applies to IBM's suppliers and your reseller. It is the maximum for which IBM, its suppliers, and your reseller are collectively responsible.

UNDER NO CIRCUMSTANCES IS IBM, ITS SUPPLIERS OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING EVEN IF INFORMED OF THEIR POSSIBILITY: 1) THIRD PARTY CLAIMS AGAINST YOU FOR DAMAGES (OTHER THAN THOSE UNDER THE FIRST ITEM LISTED ABOVE); 2) LOSS OF,

OR DAMAGE TO, DATA; 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; OR 4) LOST PROFITS, BUSINESS REVENUE, GOODWILL OR ANTICIPATED SAVINGS. SOME STATES OR JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU. SOME STATES OR JURISDICTIONS DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU.

Governing Law

Both you and IBM consent to the application of the laws of the country in which you acquired the Machine to govern, interpret, and enforce all of your and IBM's rights, duties, and obligations arising from, or relating in any manner to, the subject matter of this Statement of Limited Warranty, without regard to conflict of law principles.

THESE WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH VARY FROM STATE TO STATE OR JURISDICTION TO JURISDICTION.

Jurisdiction

All of our rights, duties, and obligations are subject to the courts of the country in which you acquired the Machine.

Part 2 - Country-unique Terms

AMERICAS

ARGENTINA

Jurisdiction: *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Ordinary Commercial Court of the city of Buenos Aires.

BOLIVIA

Jurisdiction: *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the courts of the city of La Paz.

BRAZIL

Jurisdiction: *The following is added after the first sentence:*
Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the court of Rio de Janeiro, RJ.

CHILE

Jurisdiction: *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Civil Courts of Justice of Santiago.

COLOMBIA

Jurisdiction: *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Judges of the Republic of Colombia.

EQUADOR

Jurisdiction: *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Judges of Quito.

MEXICO

Jurisdiction: *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Federal Courts of Mexico City, Federal District.

PARAGUAY

Jurisdiction: *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the courts of the city of Asuncion.

PERU

Limitation of Liability: *The following is added at the end of this section:*

In accordance with Article 1328 of the Peruvian Civil Code the limitations and exclusions specified in this section will not apply to damages caused by IBM's willful misconduct ("dolo") or gross negligence ("culpa inexcusable").

URUGUAY

Jurisdiction: *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the City of Montevideo Court's Jurisdiction.

VENEZUELA

Jurisdiction: *The following is added after the first sentence:*

Any litigation arising from this Statement of Limited Warranty will be settled exclusively by the Courts of the Metropolitan Area Of the City of Caracas.

NORTH AMERICA

How to Obtain Warranty Service: *The following is added to this Section:*
To obtain warranty service from IBM in Canada or the United States, call 1-800-IBM-SERV (426-7378).

CANADA

Limitation of Liability: *The following replaces item 1 of this section:*

1. damages for bodily injury (including death) or physical harm to real property and tangible personal property caused by IBM's negligence; and

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*
laws in the Province of Ontario.

UNITED STATES

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*
laws of the State of New York.

ASIA PACIFIC

AUSTRALIA

What this Warranty Covers: *The following paragraph is added to this section:*
The warranties specified in this Section are in addition to any rights you may have under the Trade Practices Act 1974 or other similar legislation and are only limited to the extent permitted by the applicable legislation.

Limitation of Liability: *The following is added to this section:*
Where IBM is in breach of a condition or warranty implied by the Trade Practices Act 1974 or other similar legislation, IBM's liability is limited to the repair or replacement of the goods or the supply of equivalent goods. Where that condition or warranty relates to right to sell, quiet possession or clear title, or the goods are of a kind ordinarily acquired for personal, domestic or household use or consumption, then none of the limitations in this paragraph apply.

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*
laws of the State or Territory.

CAMBODIA AND LAOS

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*
laws of the State of New York, United States of America.

CAMBODIA, INDONESIA, AND LAOS

Arbitration: *The following is added under this heading:*
Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Singapore in accordance with the Arbitration Rules of Singapore International Arbitration Center ("SIAC Rules") then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the

post of chairman shall be filled by the president of the SIAC. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

HONG KONG S.A.R. OF CHINA AND MACAU S.A.R. OF CHINA

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*
laws of Hong Kong Special Administrative Region of China.

INDIA

Limitation of Liability: *The following replaces items 1 and 2 of this section:*
1. liability for bodily injury (including death) or damage to real property and tangible personal property will be limited to that caused by IBM's negligence; and
2. as to any other actual damage arising in any situation involving nonperformance by IBM pursuant to, or in any way related to the subject of this Statement of Limited Warranty, the charge paid by you for the individual Machine that is the subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

Arbitration: *The following is added under this heading:*

Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Bangalore, India in accordance with the laws of India then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the Bar Council of India. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

JAPAN

Governing Law: *The following sentence is added to this section:*
Any doubts concerning this Statement of Limited Warranty will be initially resolved between us in good faith and in accordance with the principle of mutual trust.

MALAYSIA

Limitation of Liability: *The word* "***SPECIAL***" *in item 3 of the fifth paragraph is deleted.*

NEW ZEALAND

What this Warranty Covers: *The following paragraph is added to this section:*
The warranties specified in this section are in addition to any rights you may have under the Consumer Guarantees Act 1993 or other legislation which cannot be excluded or limited. The Consumer Guarantees Act 1993 will not apply in respect of any goods which IBM provides, if you require the goods for the purposes of a business as defined in that Act.

Limitation of Liability: *The following is added to this section:*
Where Machines are not acquired for the purposes of a business as defined in the Consumer Guarantees Act 1993, the limitations in this section are subject to the limitations in that Act.

PEOPLE'S REPUBLIC OF CHINA (PRC)

Governing Law: *The following replaces "laws of the country in which you acquired the Machine" in the first sentence:*

laws of the State of New York, United States of America (except when local law requires otherwise).

PHILIPPINES

Limitation of Liability: *Item 3 in the fifth paragraph is replaced by the following:*

SPECIAL (INCLUDING NOMINAL AND EXEMPLARY DAMAGES), MORAL, INCIDENTAL, OR INDIRECT DAMAGES FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; OR

Arbitration: *The following is added under this heading:*

Disputes arising out of or in connection with this Statement of Limited Warranty shall be finally settled by arbitration which shall be held in Metro Manila, Philippines in accordance with the laws of the Philippines then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law.

The number of arbitrators shall be three, with each side to the dispute being entitled to appoint one arbitrator. The two arbitrators appointed by the parties shall appoint a third arbitrator who shall act as chairman of the proceedings. Vacancies in the post of chairman shall be filled by the president of the Philippine Dispute Resolution Center, Inc. Other vacancies shall be filled by the respective nominating party. Proceedings shall continue from the stage they were at when the vacancy occurred.

If one of the parties refuses or otherwise fails to appoint an arbitrator within 30 days of the date the other party appoints its, the first appointed arbitrator shall be the sole arbitrator, provided that the arbitrator was validly and properly appointed.

All proceedings shall be conducted, including all documents presented in such proceedings, in the English language. The English language version of this Statement of Limited Warranty prevails over any other language version.

SINGAPORE

Limitation of Liability: *The words* "**SPECIAL**" and "**ECONOMIC**" *in item 3 in the fifth paragraph are deleted.*

EUROPE, MIDDLE EAST, AFRICA (EMEA)

THE FOLLOWING TERMS APPLY TO ALL EMEA COUNTRIES:
The terms of this Statement of Limited Warranty apply to Machines purchased from IBM or an IBM reseller.

How to Obtain Warranty Service:

Add the following paragraph in ***Western Europe*** *(Andorra, Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, San Marino, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom, Vatican State, and any country subsequently added to the European Union, as from the date of accession):*

The warranty for Machines acquired in Western Europe shall be valid and applicable in all Western Europe countries provided the Machines have been announced and made available in such countries.

If you purchase a Machine in one of the Western European countries, as defined above, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM, provided the Machine has been announced and made available by IBM in the country in which you wish to obtain service.

If you purchased a Personal Computer Machine in Albania, Armenia, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Georgia, Hungary, Kazakhstan, Kyrgyzstan, Federal Republic of Yugoslavia, Former Yugoslav Republic of Macedonia (FYROM), Moldova, Poland, Romania, Russia, Slovak Republic, Slovenia, or Ukraine, you may obtain warranty service for that Machine in any of those countries from either (1) an IBM reseller approved to perform warranty service or (2) from IBM.

If you purchase a Machine in a Middle Eastern or African country, you may obtain warranty service for that Machine from the IBM entity within the country of purchase, if that IBM entity provides warranty service in that country, or from an IBM reseller, approved by IBM to perform warranty service on that Machine in that country. Warranty service in Africa is available within 50 kilometers of an IBM approved service provider. You are responsible for transportation costs for Machines located outside 50 kilometers of an IBM approved service provider.

Governing Law:

The phrase "the laws of the country in which you acquired the Machine" is replaced by:

1) "the laws of Austria" **in Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, FYR Macedonia, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, and FR Yugoslavia;** 2) "the laws of France" **in Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Madagascar, Mali, Mauritania, Mauritius, Mayotte, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis & Futuna;** 3) "the laws of Finland" **in Estonia, Latvia, and Lithuania;** 4) "the laws of England" **in Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, the United Kingdom, West Bank/Gaza, Yemen, Zambia, and Zimbabwe;** and 5) "the laws of South Africa" **in South Africa, Namibia, Lesotho and Swaziland.**

Jurisdiction: *The following exceptions are added to this section:*

1) **In Austria** the choice of jurisdiction for all disputes arising out of this Statement of Limited Warranty and relating thereto, including its existence, will be the competent court of law in Vienna, Austria (Inner-City); 2) **in Angola, Bahrain, Botswana, Burundi, Egypt, Eritrea, Ethiopia, Ghana, Jordan, Kenya, Kuwait, Liberia, Malawi, Malta, Mozambique, Nigeria, Oman, Pakistan, Qatar, Rwanda, Sao Tome, Saudi Arabia, Sierra Leone, Somalia, Tanzania, Uganda, United Arab Emirates, West Bank/Gaza, Yemen, Zambia, and Zimbabwe** all disputes arising out of this Statement of Limited Warranty or related to its execution, including summary proceedings, will be submitted to the exclusive jurisdiction of the English courts; 3) in **Belgium** and **Luxembourg**, all disputes arising out of this Statement of Limited Warranty or related to its interpretation or its execution, the law, and the courts of the capital city, of the country of your registered office and/or commercial site location only are competent; 4) **in France, Algeria, Benin, Burkina Faso, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo Republic, Djibouti, Democratic Republic of Congo, Equatorial Guinea, French Guiana, French Polynesia, Gabon, Gambia, Guinea, Guinea-Bissau, Ivory Coast, Lebanon, Madagascar, Mali, Mauritania, Mauritius, Mayotte, Morocco, New Caledonia, Niger, Reunion, Senegal, Seychelles, Togo, Tunisia, Vanuatu, and Wallis & Futuna** all disputes arising out of this Statement of Limited Warranty or related to its violation or execution, including summary proceedings, will be settled exclusively by the Commercial Court of Paris; 5) **in Russia**, all disputes arising out of or in relation to the interpretation, the violation, the termination, the nullity of the execution of this Statement of Limited Warranty shall be settled by Arbitration Court of Moscow; 6) **in South Africa, Namibia, Lesotho and Swaziland**, both of us agree to submit all disputes relating to this Statement of Limited Warranty to the jurisdiction of the High Court in Johannesburg; 7) **in Turkey** all disputes arising out of or in connection with this Statement of Limited Warranty shall be resolved by the Istanbul Central (Sultanahmet) Courts and Execution Directorates of Istanbul, the Republic of Turkey; 8) in each of the following specified countries, any legal claim arising out of this Statement of Limited Warranty will be brought before, and settled exclusively by, the competent court of a) Athens for **Greece**, b) Tel Aviv-Jaffa for **Israel**, c) Milan for **Italy**, d) Lisbon for **Portugal**, and e)

Madrid for **Spain**; and 9) **in the United Kingdom**, both of us agree to submit all disputes relating to this Statement of Limited Warranty to the jurisdiction of the English courts.

Arbitration: *The following is added under this heading:*

In Albania, Armenia, Azerbaijan, Belarus, Bosnia-Herzegovina, Bulgaria, Croatia, Georgia, Hungary, Kazakhstan, Kyrgyzstan, FYR Macedonia, Moldova, Poland, Romania, Russia, Slovakia, Slovenia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan, and FR Yugoslavia all disputes arising out of this Statement of Limited Warranty or related to its violation, termination or nullity will be finally settled under the Rules of Arbitration and Conciliation of the International Arbitral Center of the Federal Economic Chamber in Vienna (Vienna Rules) by three arbitrators appointed in accordance with these rules. The arbitration will be held in Vienna, Austria, and the official language of the proceedings will be English. The decision of the arbitrators will be final and binding upon both parties. Therefore, pursuant to paragraph 598 (2) of the Austrian Code of Civil Procedure, the parties expressly waive the application of paragraph 595 (1) figure 7 of the Code. IBM may, however, institute proceedings in a competent court in the country of installation.

In Estonia, Latvia and Lithuania all disputes arising in connection with this Statement of Limited Warranty will be finally settled in arbitration that will be held in Helsinki, Finland in accordance with the arbitration laws of Finland then in effect. Each party will appoint one arbitrator. The arbitrators will then jointly appoint the chairman. If arbitrators cannot agree on the chairman, then the Central Chamber of Commerce in Helsinki will appoint the chairman.

EUROPEAN UNION (EU)

THE FOLLOWING TERMS APPLY TO ALL EU COUNTRIES:

The warranty for Machines acquired in EU countries is valid and applicable in all EU countries provided the Machines have been announced and made available in such countries.

How to Obtain Warranty Service: *The following is added to this section:*

To obtain warranty service from IBM in EU countries, see the telephone listing in Part 3 - Warranty Information.

You may contact IBM at the following address:
IBM Warranty & Service Quality Dept.
PO Box 30
Spango Valley
Greenock
Scotland PA16 0AH

CONSUMERS

Consumers have legal rights under applicable national legislation governing the sale of consumer goods. Such rights are not affected by the warranties provided in this Statement of Limited Warranty.

AUSTRIA, DENMARK, FINLAND, GREECE, ITALY, NETHERLANDS, NORWAY, PORTUGAL, SPAIN, SWEDEN AND SWITZERLAND

Limitation of Liability: *The following replaces the terms of this section in its entirety:*

Except as otherwise provided by mandatory law:

1. IBM's liability for any damages and losses that may arise as a consequence of the fulfillment of its obligations under or in connection with this Statement of Limited Warranty or due to any other cause related to this Statement of Limited Warranty is limited to the compensation of only those damages and losses proved and actually arising as an immediate and direct consequence of the non-fulfillment of such obligations (if IBM is at fault) or of such cause, for a maximum amount equal to the charges you paid for the Machine. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

   The above limitation shall not apply to damages for bodily injuries (including death) and damages to real property and tangible personal property for which IBM is legally liable.
2. **UNDER NO CIRCUMSTANCES IS IBM, ITS SUPPLIERS OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING, EVEN IF INFORMED OF THEIR POSSIBILITY: 1) LOSS OF, OR DAMAGE TO, DATA; 2) INCIDENTAL OR INDIRECT DAMAGES, OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; 3) LOST PROFITS, EVEN IF THEY ARISE AS AN IMMEDIATE CONSEQUENCE OF THE EVENT THAT GENERATED THE DAMAGES; OR 4) LOSS OF BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED SAVINGS.**

FRANCE AND BELGIUM

Limitation of Liability: *The following replaces the terms of this section in its entirety:*

Except as otherwise provided by mandatory law:

1. IBM's liability for any damages and losses that may arise as a consequence of the fulfillment of its obligations under or in connection with this Statement of Limited Warranty is limited to the compensation of only those damages and losses proved and actually arising as an immediate and direct consequence of the non-fulfillment of such obligations (if IBM is at fault), for a maximum amount equal to the charges you paid for the Machine that has caused the damages. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

   The above limitation shall not apply to damages for bodily injuries (including death) and damages to real property and tangible personal property for which IBM is legally liable.
2. **UNDER NO CIRCUMSTANCES IS IBM, ITS SUPPLIERS OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING, EVEN IF INFORMED OF THEIR POSSIBILITY: 1) LOSS OF, OR DAMAGE TO, DATA; 2) INCIDENTAL OR INDIRECT DAMAGES, OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES; 3) LOST PROFITS, EVEN IF THEY ARISE AS AN IMMEDIATE CONSEQUENCE OF THE EVENT THAT GENERATED THE DAMAGES; OR 4) LOSS OF BUSINESS, REVENUE, GOODWILL, OR ANTICIPATED SAVINGS.**

THE FOLLOWING TERMS APPLY TO THE COUNTRY SPECIFIED:

AUSTRIA

The provisions of this Statement of Limited Warranty replace any applicable statutory warranties.

What this Warranty Covers: *The following replaces the first sentence of the first paragraph of this section:*
The warranty for an IBM Machine covers the functionality of the Machine for its normal use and the Machine's conformity to its Specifications.

The following paragraphs are added to this section:

The limitation period for consumers in action for breach of warranty is the statutory period as a minimum. In case IBM or your reseller is unable to repair an IBM Machine, you can alternatively ask for a partial refund as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

The second paragraph does not apply.

What IBM Will Do to Correct Problems: *The following is added to this section:*

During the warranty period, IBM will reimburse you for the transportation charges for the delivery of the failing Machine to IBM.

Limitation of Liability: *The following paragraph is added to this section:*

The limitations and exclusions specified in the Statement of Limited Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

The following sentence is added to the end of item 2:

IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

EGYPT

Limitation of Liability: *The following replaces item 2 in this section:*
as to any other actual direct damages, IBM's liability will be limited to the total amount you paid for the Machine that is the subject of the claim. For purposes of this item, the term "Machine" includes Machine Code and Licensed Internal Code ("LIC").

Applicability of suppliers and resellers (unchanged).

FRANCE

Limitation of Liability: *The following replaces the second sentence of the first paragraph of this section:*
In such instances, regardless of the basis on which you are entitled to claim damages from IBM, IBM is liable for no more than: (items 1 and 2 unchanged).

GERMANY

What this Warranty Covers: *The following replaces the first sentence of the first paragraph of this section:*

The warranty for an IBM Machine covers the functionality of the Machine for its normal use and the Machine's conformity to its Specifications.

The following paragraphs are added to this section:

The minimum warranty period for Machines is twelve months. In case IBM or your reseller is unable to repair an IBM Machine, you can alternatively ask for a partial refund as far as justified by the reduced value of the unrepaired Machine or ask for a cancellation of the respective agreement for such Machine and get your money refunded.

The second paragraph does not apply.

What IBM Will Do to Correct Problems: *The following is added to this section:*

During the warranty period, transportation for delivery of the failing Machine to IBM will be at IBM's expense.

Limitation of Liability: *The following paragraph is added to this section:*

The limitations and exclusions specified in the Statement of Limited Warranty will not apply to damages caused by IBM with fraud or gross negligence and for express warranty.

The following sentence is added to the end of item 2:

IBM's liability under this item is limited to the violation of essential contractual terms in cases of ordinary negligence.

HUNGARY

Limitation of Liability: *The following is added at the end of this section:*

The limitation and exclusion specified herein shall not apply to liability for a breach of contract damaging life, physical well-being, or health that has been caused intentionally, by gross negligence, or by a criminal act.

The parties accept the limitations of liability as valid provisions and state that the Section 314.(2) of the Hungarian Civil Code applies as the acquisition price as well as other advantages arising out of the present Statement of Limited Warranty balance this limitation of liability.

IRELAND

What this Warranty Covers: *The following is added to this section:*
Except as expressly provided in these terms and conditions, all statutory conditions, including all warranties implied, but without prejudice to the generality of the foregoing all warranties implied by the Sale of Goods Act 1893 or the Sale of Goods and Supply of Services Act 1980 are hereby excluded.

Limitation of Liability: *The following replaces the terms of this section in its entirety:*

For the purposes of this section, a "Default" means any act, statement, omission, or negligence on the part of IBM in connection with, or in relation to, the subject matter of this Statement of Limited Warranty in respect of which IBM is legally liable to

you, whether in contract or tort. A number of Defaults which together result in, or contribute to, substantially the same loss or damage will be treated as one Default occurring on the date of occurrence of the last such Default.

Circumstances may arise where, because of a Default, you are entitled to recover damages from IBM.

This section sets out the extent of IBM's liability and your sole remedy.
1. IBM will accept unlimited liability for death or personal injury caused by the negligence of IBM.
2. Subject always to the **Items for Which IBM is Not Liable** below, IBM will accept unlimited liability for physical damage to your tangible property resulting from the negligence of IBM.
3. Except as provided in items 1 and 2 above, IBM's entire liability for actual damages for any one Default will not in any event exceed the greater of 1) EUR 125,000, or 2) 125% of the amount you paid for the Machine directly relating to the Default.

Items for Which IBM is Not Liable

Save with respect to any liability referred to in item 1 above, under no circumstances is IBM, its suppliers or resellers liable for any of the following, even if IBM or they were informed of the possibility of such losses:
1. loss of, or damage to, data;
2. special, indirect, or consequential loss; or
3. loss of profits, business, revenue, goodwill, or anticipated savings.

SLOVAKIA

Limitation of Liability: *The following is added to the end of the last paragraph:*

The limitations apply to the extent they are not prohibited under §§ 373-386 of the Slovak Commercial Code.

SOUTH AFRICA, NAMIBIA, BOTSWANA, LESOTHO AND SWAZILAND

Limitation of Liability: *The following is added to this section:*

IBM's entire liability to you for actual damages arising in all situations involving nonperformance by IBM in respect of the subject matter of this Statement of Warranty will be limited to the charge paid by you for the individual Machine that is the subject of your claim from IBM.

UNITED KINGDOM

Limitation of Liability: *The following replaces the terms of this section in its entirety:*

For the purposes of this section, a "Default" means any act, statement, omission, or negligence on the part of IBM in connection with, or in relation to, the subject matter of this Statement of Limited Warranty in respect of which IBM is legally liable to you, whether in contract or tort. A number of Defaults which together result in, or contribute to, substantially the same loss or damage will be treated as one Default.

Circumstances may arise where, because of a Default, you are entitled to recover damages from IBM.

This section sets out the extent of IBM's liability and your sole remedy.

1. IBM will accept unlimited liability for:
   a. death or personal injury caused by the negligence of IBM; and
   b. any breach of its obligations implied by Section 12 of the Sale of Goods Act 1979 or Section 2 of the Supply of Goods and Services Act 1982, or any statutory modification or re-enactment of either such Section.
2. IBM will accept unlimited liability, subject always to the **Items for Which IBM is Not Liable** below, for physical damage to your tangible property resulting from the negligence of IBM.
3. IBM's entire liability for actual damages for any one Default will not in any event, except as provided in items 1 and 2 above, exceed the greater of 1) Pounds Sterling 75,000, or 2) 125% of the total purchase price payable or the charges for the Machine directly relating to the Default.

These limits also apply to IBM's suppliers and resellers. They state the maximum for which IBM and such suppliers and resellers are collectively responsible.

Items for Which IBM is Not Liable

Save with respect to any liability referred to in item 1 above, under no circumstances is IBM or any of its suppliers or resellers liable for any of the following, even if IBM or they were informed of the possibility of such losses:

1. loss of, or damage to, data;
2. special, indirect, or consequential loss; or
3. loss of profits, business, revenue, goodwill, or anticipated savings.

Part 3 - Warranty Information

This Part 3 provides information regarding the warranty applicable to your Machine, including the warranty period and type of warranty service IBM provides.

Warranty Period

The warranty period may vary by country or region and is specified in the table below.

Note: "Region" means either Hong Kong or Macau Special Administrative Region of China.

A warranty period of 3 years on parts and 1 year on labor means that IBM provides warranty service without charge for:

1. parts and labor during the first year of the warranty period; and
2. parts only, on an exchange basis, in the second and third years of the warranty period. IBM will charge you for any labor provided in performance of the repair or replacement(s) in the second and third year of the warranty period.

Machine Types 2130-1RX, 2130-2RX

Country or Region of Purchase	Warranty Period	Type of Warranty Service*
Worldwide	3 years	5
* See "Types of Warranty Service" for the legend and explanations of warranty-service types.		

Types of Warranty Service

If required, IBM provides repair or exchange service depending on the type of warranty service specified for your Machine in the above table and as described below. Warranty service may be provided by your reseller if approved by IBM to perform warranty service. Scheduling of service will depend upon the time of your call and is subject to parts availability. Service levels are response time objectives and are not guaranteed. The specified level of warranty service may not be available in all worldwide locations, additional charges may apply outside IBM's normal service area, contact your local IBM representative or your reseller for country and location specific information.

1. **Customer Replaceable Unit ("CRU") Service**

   IBM provides replacement CRUs to you for you to install. CRU information and replacement instructions are shipped with your Machine and are available from IBM at any time on your request. Installation of Tier 1 CRUs is your responsibility. If IBM installs a Tier 1 CRU at your request, you will be charged for the installation. You may install a Tier 2 CRU yourself or request IBM to install it, at no additional charge, under the type of warranty service designated for your Machine. IBM specifies in the materials shipped with a replacement CRU whether a defective CRU must be returned to IBM. When return is required, 1) return instructions and a container are shipped with the replacement CRU, and 2) you may be charged for the replacement CRU if IBM does not receive the defective CRU within 30 days of your receipt of the replacement.
2. **On-site Service**

   IBM or your reseller will either repair or exchange the failing Machine at your location and verify its operation. You must provide suitable working area to allow disassembly and reassembly of the IBM Machine. The area must be clean, well lit and suitable for the purpose. For some Machines, certain repairs may require sending the Machine to an IBM service center.
3. **Courier or Depot Service***

   You will disconnect the failing Machine for collection arranged by IBM. IBM will provide you with a shipping container for you to return your Machine to a designated service center. A courier will pick up your Machine and deliver it to the designated service center. Following its repair or exchange, IBM will arrange the return delivery of the Machine to your location. You are responsible for its installation and verification.
4. **Customer Carry-In or Mail-In Service**

   You will deliver or mail as IBM specifies (prepaid unless IBM specifies otherwise) the failing Machine suitably packaged to a location IBM designates. After IBM has repaired or exchanged the Machine, IBM will make it available for your collection or, for Mail-in Service, IBM will return it to you at IBM's expense, unless IBM specifies otherwise. You are responsible for the subsequent installation and verification of the Machine.
5. **CRU and On-site Service**

   This type of Warranty Service is a combination of Type 1 and Type 2 (see above).
6. **CRU and Courier or Depot Service**

   This type of Warranty Service is a combination of Type 1 and Type 3 (see above).
7. **CRU and Customer Carry-In or Mail-In Service**

   This type of Warranty Service is a combination of Type 1 and Type 4 (see above).

When a 5, 6 or 7 type of warranty service is listed, IBM will determine which type of warranty service is appropriate for the repair.

* This type of service is called ThinkPad EasyServ or EasyServ in some countries.

The IBM Machine Warranty World Wide Web site at http://www.ibm.com/servers/support/machine_warranties/ provides a worldwide overview of IBM's Limited Warranty for Machines, a Glossary of IBM definitions, Frequently Asked Questions (FAQs) and Support by Product (Machine) with links to Product Support pages. **The IBM Statement of Limited Warranty is also available on this site in 29 languages.**

To obtain warranty service contact IBM or your IBM reseller. In Canada or the United States, call 1-800-IBM-SERV (426-7378). In the EU countries, see the telephone numbers below.

EU Country Telephone List

Phone numbers are subject to change without notice. For the warranty service contact telephone number in a country subsequently added to the EU and not yet reflected in the list below, contact IBM in that country or visit the website above for a current telephone listing.

Austria -- +43-1-24592-5901	Latvia -- +386-61-1796-699
Belgium -- +32-70-23-3392	Lithuania -- +386-61-1796-699
Cyprus -- +357-22-841100	Luxembourg -- +352-298-977-5063
Czech Republic -- +420-2-7213-1316	Malta -- +356-23-4175
Denmark -- +45-4520-8200	Netherlands -- +31-20-514-5770
Estonia -- +386-61-1796-699	Poland -- +48-22-878-6999
Finland -- +358-8001-4260	Portugal -- +351-21-892-7147
France -- +33-238-557-450	Slovakia -- +421-2-4954-1217
Germany -- +49-1805-253553	Slovenia -- +386-1-4796-699
Greece -- +30-210-680-1700	Spain -- +34-91-714-7983
Hungary -- +36-1-382-5720	Sweden -- +46-8-477-4420
Ireland -- +353-1-815-4000	United Kingdom -- +44-0870-550-0900
Italy -- +39-800-820-094	

Appendix C. Notices

This information was developed for products and services offered in the U.S.A.

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Active PCI-X	NetBAY	Wake on LAN
AIX	Netfinity	XA-32
Alert on LAN	PowerExecutive	XA-64
BladeCenter	Predictive Failure Analysis	X-Architecture
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@server	ServerProven	
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Important notes

Processor speed indicates the internal clock speed of the microprocessor; other factors also affect application performance.

CD or DVD drive speed is the variable read rate. Actual speeds vary and are often less than the possible maximum.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1024 bytes, MB stands for 1 048 576 bytes, and GB stands for 1 073 741 824 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1 000 000 bytes, and GB stands for 1 000 000 000 bytes. Total user-accessible capacity can vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard disk drive bays with the largest currently supported drives that are available from IBM.

Maximum memory might require replacement of the standard memory with an optional memory module.

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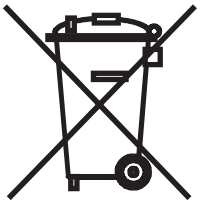
Some software might differ from its retail version (if available) and might not include user manuals or all program functionality.

Product recycling and disposal

This unit must be recycled or discarded according to applicable local and national regulations. IBM encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. IBM offers a variety of product return programs and services in several countries to assist equipment owners in recycling their IT products. Information on IBM product recycling offerings can be found on IBM's Internet site at http://www.ibm.com/ibm/environment/products/index.shtml.

Esta unidad debe reciclarse o desecharse de acuerdo con lo establecido en la normativa nacional o local aplicable. IBM recomienda a los propietarios de equipos de tecnología de la información (TI) que reciclen responsablemente sus equipos cuando éstos ya no les sean útiles. IBM dispone de una serie de programas y servicios de devolución de productos en varios países, a fin de ayudar a los propietarios de equipos a reciclar sus productos de TI. Se puede encontrar información sobre las ofertas de reciclado de productos de IBM en el sitio web de IBM http://www.ibm.com/ibm/environment/products/index.shtml.



Notice: This mark applies only to countries within the European Union (EU) and Norway.

This appliance is labeled in accordance with European Directive 2002/96/EC concerning waste electrical and electronic equipment (WEEE). The Directive determines the framework for the return and recycling of used appliances as applicable throughout the European Union. This label is applied to various products to indicate that the product is not to be thrown away, but rather reclaimed upon end of life per this Directive.

注意: このマークは EU 諸国およびノルウェーにおいてのみ適用されます。

この機器には、EU 諸国に対する廃電気電子機器指令 2002/96/EC(WEEE) のラベルが貼られています。この指令は、EU 諸国に適用する使用済み機器の回収とリサイクルの骨子を定めています。このラベルは、使用済みになった時に指令に従って適正な処理をする必要があることを知らせるために種々の製品に貼られています。

Remarque : Cette marque s'applique uniquement aux pays de l'Union Européenne et à la Norvège.

L'etiquette du système respecte la Directive européenne 2002/96/EC en matière de Déchets des Equipements Electriques et Electroniques (DEEE), qui détermine les dispositions de retour et de recyclage applicables aux systèmes utilisés à travers l'Union européenne. Conformément à la directive, ladite étiquette précise que le produit sur lequel elle est apposée ne doit pas être jeté mais être récupéré en fin de vie.

In accordance with the European WEEE Directive, electrical and electronic equipment (EEE) is to be collected separately and to be reused, recycled, or recovered at end of life. Users of EEE with the WEEE marking per Annex IV of the WEEE Directive, as shown above, must not dispose of end of life EEE as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and recovery of WEEE. Customer participation is important to minimize any potential effects of EEE on the environment and human health due to the potential presence of hazardous substances in EEE. For proper collection and treatment, contact your local IBM representative.

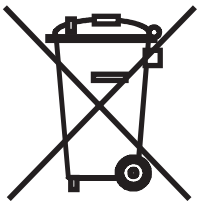
Battery return program

This product may contain a sealed lead acid, nickel cadmium, nickel metal hydride, lithium, or lithium ion battery. Consult your user manual or service manual for specific battery information. The battery must be recycled or disposed of properly. Recycling facilities may not be available in your area. For information on disposal of batteries outside the United States, go to http://www.ibm.com/ibm/environment/products/index.shtml or contact your local waste disposal facility.

In the United States, IBM has established a return process for reuse, recycling, or proper disposal of used IBM sealed lead acid, nickel cadmium, nickel metal hydride, and battery packs from IBM equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Have the IBM part number listed on the battery available prior to your call.

For Taiwan: Please recycle batteries.

For the European Union:



Notice: This mark applies only to countries within the European Union (EU).

Batteries or packaging for batteries are labeled in accordance with European Directive 2006/66/EC concerning batteries and accumulators and waste batteries and accumulators. The Directive determines the framework for the return and recycling of used batteries and accumulators as applicable throughout the European Union. This label is applied to various batteries to indicate that the battery is not to be thrown away, but rather reclaimed upon end of life per this Directive.

Les batteries ou emballages pour batteries sont étiquetés conformément aux directives européennes 2006/66/EC, norme relative aux batteries et accumulateurs en usage et aux batteries et accumulateurs usés. Les directives déterminent la marche à suivre en vigueur dans l'Union Européenne pour le retour et le recyclage des batteries et accumulateurs usés. Cette étiquette est appliquée sur diverses batteries pour indiquer que la batterie ne doit pas être mise au rebut mais plutôt récupérée en fin de cycle de vie selon cette norme.

バッテリーあるいはバッテリー用のパッケージには、EU 諸国に対する廃電気電子機器指令 2006/66/EC のラベルが貼られています。この指令は、バッテリーと蓄電池、および廃棄バッテリーと蓄電池に関するものです。この指令は、使用済みバッテリーと蓄電池の回収とリサイクルの骨子を定めているもので、EU 諸国にわたって適用されます。このラベルは、使用済みになったときに指令に従って適正な処理をする必要があることを知らせるために種々のバッテリーに貼られています。

In accordance with the European Directive 2006/66/EC, batteries and accumulators are labeled to indicate that they are to be collected separately and recycled at end of life. The label on the battery may also include a chemical symbol for the metal concerned in the battery (Pb for lead, Hg for mercury, and Cd for cadmium). Users of batteries and accumulators must not dispose of batteries and accumulators as unsorted municipal waste, but use the collection framework available to customers for the return, recycling, and treatment of batteries and accumulators. Customer participation is important to minimize any potential effects of batteries and accumulators on the environment and human health due to the potential presence of hazardous substances. For proper collection and treatment, contact your local IBM representative.

This notice is provided in accordance with Royal Decree 106/2008 of Spain: The retail price of batteries, accumulators, and power cells includes the cost of the environmental management of their waste.

For California:

Perchlorate material – special handling may apply. See http://www.dtsc.ca.gov/hazardouswaste/perchlorate/.

The foregoing notice is provided in accordance with California Code of Regulations Title 22, Division 4.5 Chapter 33. Best Management Practices for Perchlorate Materials. This product/part may include a lithium manganese dioxide battery which contains a perchlorate substance.

Electronic emission notices

Federal Communications Commission (FCC) statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Industry Canada Class A emission compliance statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de conformité à la réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Australia and New Zealand Class A statement

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

United Kingdom telecommunications safety requirement

Notice to Customers

This apparatus is approved under approval number NS/G/1234/J/100003 for indirect connection to public telecommunication systems in the United Kingdom.

European Union EMC Directive conformance statement

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any

failure to satisfy the protection requirements resulting from a nonrecommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to CISPR 22/European Standard EN 55022. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

European Community contact:
IBM Technical Regulations
Pascalstr. 100, Stuttgart, Germany 70569
Telephone: 0049 (0)711 785 1176
Fax: 0049 (0)711 785 1283
E-mail: tjahn@de.ibm.com

Taiwanese Class A warning statement

警告使用者:
這是甲類的資訊產品，在
居住的環境中使用時，可
能會造成射頻干擾，在這
種情況下，使用者會被要
求採取某些適當的對策。

Chinese Class A warning statement

声　　明
此为 A 级产品。在生活环境中，
该产品可能会造成无线电干扰。
在这种情况下，可能需要用户对其
干扰采取切实可行的措施。

Japanese Voluntary Control Council for Interference (VCCI) statement

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Part Number: 43W7864

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