

# System p and System i Safety Inspection Guide

SA76-0122-01





# System p and System i Safety Inspection Guide

SA76-0122-01

# Note Before using this information and the product it supports, read the information in "Notices" on page 9 and the IBM Systems Safety Information manual, G229-9054.

## Second Edition (September 2007)

This edition applies to IBM System i and System p servers that contain the POWER6 processor and to all associated models.

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## Safety and environmental notices

Safety notices may be printed throughout this guide:

- **DANGER** notices call attention to a situation that is potentially lethal or extremely hazardous to people.
- **CAUTION** notices call attention to a situation that is potentially hazardous to people because of some existing condition.
- Attention notices call attention to the possibility of damage to a program, device, system, or data.

## **World Trade safety information**

Several countries require the safety information contained in product publications to be presented in their national languages. If this requirement applies to your country, a safety information booklet is included in the publications package shipped with the product. The booklet contains the safety information in your national language with references to the U.S. English source. Before using a U.S. English publication to install, operate, or service this product, you must first become familiar with the related safety information in the booklet. You should also refer to the booklet any time you do not clearly understand any safety information in the U.S. English publications.

## German safety information

Das Produkt ist nicht für den Einsatz an Bildschirmarbeitsplätzen im Sinne § 2 der Bildschirmarbeitsverordnung geeignet.

## Laser safety information

IBM® servers can use I/O cards or features that are fiber-optic based and that utilize lasers or LEDs.

#### Laser compliance

All lasers are certified in the U.S. to conform to the requirements of DHHS 21 CFR Subchapter J for class 1 laser products. Outside the U.S., they are certified to be in compliance with IEC 60825 as a class 1 laser product. Consult the label on each part for laser certification numbers and approval information.

#### **CAUTION:**

This product might contain one or more of the following devices: CD-ROM drive, DVD-ROM drive, DVD-RAM drive, or laser module, which are Class 1 laser products. Note the following information:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of the controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.

(C026)

#### **CAUTION:**

Data processing environments can contain equipment transmitting on system links with laser modules that operate at greater than Class 1 power levels. For this reason, never look into the end of an optical fiber cable or open receptacle. (C027)

#### **CAUTION:**

This product contains a Class 1M laser. Do not view directly with optical instruments. (C028)

#### **CAUTION:**

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following information: laser radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam. (C030)

## Power and cabling information for NEBS (Network Equipment-Building System) GR-1089-CORE

The following comments apply to the IBM servers that have been designated as conforming to NEBS (Network Equipment-Building System) GR-1089-CORE:

The equipment is suitable for installation in the following:

- · Network telecommunications facilities
- Locations where the NEC (National Electrical Code) applies

The intrabuilding ports of this equipment are suitable for connection to intrabuilding or unexposed wiring or cabling only. The intrabuilding ports of this equipment must not be metallically connected to the interfaces that connect to the OSP (outside plant) or its wiring. These interfaces are designed for use as intrabuilding interfaces only (Type 2 or Type 4 ports as described in GR-1089-CORE) and require isolation from the exposed OSP cabling. The addition of primary protectors is not sufficient protection to connect these interfaces metallically to OSP wiring.

**Note:** All Ethernet cables must be shielded and grounded at both ends.

The ac-powered system does not require the use of an external surge protection device (SPD).

The dc-powered system employs an isolated DC return (DC-I) design. The DC battery return terminal shall not be connected to the chassis or frame ground.

## 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/prp.shtml.

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

Appliances are 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.

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 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/batteryrecycle.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 other battery packs from IBM Equipment. For information on proper disposal of these batteries, contact IBM at 1-800-426-4333. Please have the IBM part number listed on the battery available prior to your call.

For Taiwan: Please recycle batteries.



For the European Union:



**Note:** 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.

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.

For California: Perchlorate Material - special handling may apply. See 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.

## IBM Cryptographic Coprocessor Card Return Program

The following information applies only for systems originally sold prior to July 1, 2006:

This machine may contain an optional feature, the cryptographic coprocessor card, which includes a polyurethane material that contains mercury. Please follow local ordinances or regulations for disposal of this card. IBM has established a return program for certain IBM Cryptographic Coprocessor Cards. More information can be found at http://www.ibm.com/ibm/environment/products/prp.shtml.

## About this publication

This publication contains the information needed by service providers to perform a safety inspection on an IBM server.

For information about the accessibility features of this product, for users who have a physical disability, see "Accessibility features," on page 7.

## How to send your comments

Your feedback is important in helping to provide the most accurate and highest quality information. If you have any comments about this publication, send your comments using Resource Link  $^{\text{\tiny TM}}$  at http://www.ibm.com/servers/resourcelink. Click **Feedback** on the navigation pane. Be sure to include the name of the book, the form number of the book, and the specific location of the text you are commenting on (for example, a page number or table number).

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# **Using the Safety Inspection Guide**

Use this guide to perform a safety inspection of the server.

This guide is for service representatives only.

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## **English**

This part contains instructions for performing a safety inspection in English.

## When to perform a safety inspection

Lean when a safety inspection should be performed.

A safety inspection for the system should be performed:

- · when it is inspected for an IBM maintenance agreement,
- when IBM service is requested and no service has recently been performed by IBM,
- · when an alterations and attachments review is performed, or
- when changes have been made to the equipment that might affect its safety.

If the inspection indicates safety conditions that are not acceptable, the conditions must be corrected before IBM services the machine.

Note: The correction of any unsafe condition is the responsibility of the system owner.

While performing this inspection, special attention must be given to these areas:

- · Feature and model changes and engineering change (EC) upgrades
- Additions of non-IBM power supplies or attachments
- Missing safety covers
- · Removed, faded, or painted-over safety labels
- · Replacement requirements concerning parts for primary power
- Any other items relating to the product's safety

Before you start, you must have completed the *Electrical Safety Education Course for IBM Service Representatives* (self-study course 77170 or equivalent).

You will need these items:

- An IBM service representative tool kit (or equivalent)
- A copy of Service Memorandums (SMs), which include engineering change announcements (ECAs) and service aids (SAs) documents for the system
- · Latest machine history, if possible
- Electrical Safety for IBM Service Representatives, S229-8124
- A Fluke\*\* 8060A digital voltmeter (part 8496278) or equivalent

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## Preparing for a safety inspection

Read this information before you start a safety inspection.

Read the following notices before beginning:

#### **DANGER**

Overloading a branch circuit is potentially a fire hazard and a shock hazard under certain conditions. To avoid these hazards, ensure that your system electrical requirements do not exceed branch circuit protection requirements. Refer to the information that is provided with your device or the power rating label for electrical specifications. (D002)

#### **DANGER**

If the receptacle has a metal shell, do not touch the shell until you have completed the voltage and grounding checks. Improper wiring or grounding could place dangerous voltage on the metal shell. If any of the conditions are not as described, *STOP*. Ensure the improper voltage or impedance conditions are corrected before proceeding. (D003)

## **DANGER**

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. (D004)

#### **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 IBM provided power cord. Do not use the IBM 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.

(D005)

## Performing a safety inspection

Perform the following inspections.

#### Covers

Inspect the covers.

- 1. Check for any missing or damaged covers.
- 2. Check the covers for any sharp edges.

## AC safety grounds

Inspect the safety grounds.

- 1. Ensure that all power supply mounting screws are tight.
- 2. Ensure that the mounting screws of the ac module or internal uninterruptible power supply are tight.

## AC power cords

Inspect the power cords.

- 1. Power off the machine.
- 2. With the machine powered off, remove the power cord from the electrical outlet.
- 3. Check the power cord and power plug for visible cracks, wear, or damage.
- 4. Check for 1.0 ohm or less of resistance between the power cord ground and the power supply frame.
- 5. Ensure that the power cord is fully inserted and secured into position on the machine end.
- 6. Ensure that the power cord required for your country or region, and system, is installed.

## Power on and power off (system unit)

Ensure that the system can be safely powered on and off.

- 1. Ensure that the system powers off correctly.
- 2. Ensure that the system powers on correctly.

## Safety labels

Ensure that all safety labels are visible and readable.

Check for the following labels:

- Main power rating label is attached to the right side frame at the back of the machine
- 240 V AC label is attached to each 23 pin connector (J2 and J3) on AC modules that have SPCN connectors (J15 and J16)
- Danger up to 240 V AC label is attached to the bottom frame under the power supplies
- · Weight restriction label is attached under the handle on the cover of the External Battery Backup Unit
- Main power rating label is attached to the left side frame at the back of the machine.
- Danger up to 240 V AC label is attached to the bottom frame under each power supply
- Caution lead acid battery label is attached to the side of the internal battery unit
- · Weight restriction label is attached to the top of the internal battery
- · Weight restriction label is attached to the top of the power sub-frame assembly
- Two weight restriction labels are attached to the active backplane assembly
- Main power rating label is attached to the back plate on the external battery unit
- · Caution lead acid battery label is attached to the back plate on the external battery unit
- · Weight restriction label is attached to the base at the back of the external battery unit

## Internal mechanical inspection

Perform internal inspections.

- 1. Ensure that air moving device (AMD) shields are installed on the ac module AMD assembly.
- 2. Ensure that the electromagnetic compatibility (EMC) access plate is installed over the power supplies.
- 3. Ensure that the card retainers are installed on the front and back of the card enclosure.
- 4. Ensure that the latch to lock the bottom adapter card is installed on all Magnetic Storage IOP (2624) cards with part number 86G8317.
- 5. Ensure that the safety shield is installed over the left side of the expansion unit AMD assembly.
- 6. Check the external battery backup power supply cable (if present) for visible cracks, wear, or damage.

## **Appendix. Accessibility features**

Accessibility features help users who have a physical disability, such as restricted mobility or limited vision, to use information technology products successfully.

The following list includes the major accessibility features:

- · Keyboard-only operation
- Interfaces that are commonly used by screen readers
- · Keys that are tactilely discernible and do not activate just by touching them
- Industry-standard devices for ports and connectors
- The attachment of alternative input and output devices

## IBM and accessibility

See the IBM Accessibility Center at http://www.ibm.com/able/ for more information about the commitment that IBM has to accessibility.

If you need an accessible version of this publication, send a request to reslink@us.ibm.com. In the request, make sure that you include the publication number and the title.

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**IBM** System p System i Resource Link POWER6

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## **Electronic emission notices**

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## 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 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 respecte est conforme à la norme NMB-003 du Canada.

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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 non-recommended 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 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.

European Community contact: IBM Technical Regulations Pascalstr. 100, Stuttgart, Germany 70569

Tele: 0049 (0)711 785 1176 Fax: 0049 (0)711 785 1283 E-mail: tjahn@de.ibm.com

**Warning:** 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.

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## Electromagnetic Interference (EMI) Statement - People's Republic of China

#### 声 眀

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Declaration: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may need to perform practical action.

## Electromagnetic Interference (EMI) Statement - Taiwan

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The following is a summary of the EMI Taiwan statement above.

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#### **IBM Taiwan Contact Information:**

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

Electromagnetic Interference (EMI) Statement - Korea

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Please note that this equipment has obtained EMC registration for commercial use. In the event that it has been mistakenly sold or purchased, please exchange it for equipment certified for home use.

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Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2004/108/EG zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55022 Klasse A ein.

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Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2004/108/EG in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2004/108/EG) für Geräte der Klasse A.

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen.

Verantwortlich für die Konformitätserklärung nach des EMVG ist die IBM Deutschland GmbH, 70548 Stuttgart.

Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.

Electromagnetic Interference (EMI) Statement - Russia

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