IBM Z and LinuxONE

9175
Safety Inspection

GC28-7048-00

Note:

Before you use this information and the product it supports, read the information in "Safety" on page v, Appendix A, "Notices," on page 25, and *IBM Systems Environmental Notices and User Guide*, Z125–5823.

This edition, GC28-7048-00, applies to applies to the IBM z17 Model ME1 and IBM LinuxONE Emperor 5 Model ML1.

There might be a newer version of this document in a **PDF** file available on **IBM Documentation**. Go to https://www.ibm.com/docs/en/systems-hardware, select **IBM Z** or **IBM LinuxONE**, then select your configuration, and click **Library Overview** on the navigation bar.

Contents

Safety

Safety notices

Safety notices may be printed throughout this document. **DANGER** notices warn you of conditions or procedures that can result in death or severe personal injury. **CAUTION** notices warn you of conditions or procedures that can cause personal injury that is neither lethal nor extremely hazardous. **Attention** notices warn you of conditions or procedures that can cause damage to machines, equipment, or programs.

DANGER notices:

DANGER: To prevent a possible shock from touching two surfaces with different protective ground (earth), use one hand, when possible, to connect or disconnect signal cables. (D001)

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: Heavy equipment — personal injury or equipment damage might result if mishandled. (D006)

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: If IBM supplied the power cord(s), 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. For AC power, disconnect all power cords from their AC power source. For racks with a DC power distribution panel (PDP), disconnect the customer's DC power source to the PDP.
- When connecting power to the product ensure all power cables are properly connected. For racks with AC power, 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. For racks with a DC power distribution panel (PDP), connect the customer's DC power source to the PDP. Ensure that the proper polarity is used when attaching the DC power and DC power return wiring.
- 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.
- Do not attempt to switch on power to the machine until all possible unsafe conditions are corrected.
- When performing a machine inspection: Assume that an electrical safety hazard is present. Perform all continuity, grounding, and power checks specified during the subsystem installation procedures to ensure that the machine meets safety requirements. Do not attempt to switch power to the machine until all possible unsafe conditions are corrected. Before you open the device covers, unless instructed otherwise in the installation and configuration procedures: Disconnect the attached AC power cords,

turn off the applicable circuit breakers located in the rack power distribution panel (PDP), and disconnect any telecommunications systems, networks, and modems.

- 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) For AC power, remove the power cords from the outlets. 3) For racks with a DC power distribution panel (PDP), turn off the circuit breakers located in the PDP and remove the power from the Customer's DC power source. 4) Remove the signal cables from the connectors. 5) 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) For AC power, attach the power cords to the outlets. 5) For racks with a DC power distribution panel (PDP), restore the power from the Customer's DC power source and turn on the circuit breakers located in the PDP. 6) Turn on the devices.

-  Sharp edges, corners and joints may be present in and around the system. Use care when handling equipment to avoid cuts, scrapes and pinching. (D005)

CAUTION notices:

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: The doors and covers to the product are to be closed at all times except for service by trained service personnel. All covers must be replaced and doors locked at the conclusion of the service operation. (C013)

CAUTION: Ensure the building power circuit breakers are turned off BEFORE you connect the power cord or cords to the building power. (C023)

CAUTION: The battery contains lithium. To avoid possible explosion, do not burn or charge the battery.
Do not: Throw or immerse into water, heat to more than 100°C (212°F), repair or disassemble. (C003)

CAUTION: This equipment is not suitable for use in locations where children are likely to be present. (C052)

World trade safety information

Several countries require the safety information contained in product publications to be provided in their local language(s). 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 translated safety information with references to the US English source. Before using a US English publication to install, operate, or service this product, you must first become familiar with the related safety information in the *Systems Safety Notices*, G229-9054. You should also refer to the booklet any time you do not clearly understand any safety information in the US English publications.

Laser safety information

All IBM Z® and IBM LinuxONE (LinuxONE) models can use I/O cards such as FICON®, Open Systems Adapter (OSA), Network Express, Integrated Coupling Adapter2.0 SR (ICA SR2.0), zHyperLink Express, or other I/O features which are fiber optic based and utilize lasers (short wavelength or long wavelength lasers).

Laser compliance

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

Laser Notice: U.S. FDA CDRH NOTICE if low power lasers are utilized, integrated, or offered with end product systems as applicable. Complies with 21 CFR 1040.10 and 1040.11 except for conformance with IEC 60825-1 Ed. 3., as described in Laser Notice No. 56, dated May 8, 2019.

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
LASER
1M
IEC 1068/14

About this publication

This guide is for service representatives only. Use this guide to perform a safety inspection of the 9175 server.

Unless otherwise stated, throughout this document "9175" refers to IBM z17 Model ME1 and IBM LinuxONE Emperor 5 Model ML1.

Attention:

The task of using a meter with probes, alligator clips, or similar exposed metallic connectors to take electrical measurements on receptacles/outlets might be regulated in your jurisdiction and may require that a Qualified Electrical Worker (QEW) or licensed electrician perform the operation(s). Where IBM service personnel are not certified to perform these tasks, the service person must notify the customer that they must arrange for a QEW (a licensed electrician may be considered a QEW) to perform the receptacle testing.

Refer to IBM's Global Electrical Safety Program for more information on QEW:

- https://w3.ibm.com/w3publisher/ibm-global-safety/special-hazards/us/electrical-safety

If the inspection indicates an unacceptable safety condition, the condition must be corrected before IBM provides service to the machine.

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

General comments

- There might be product features represented in this manual that are not installed on the system and, although announced, might not be available at the time of publication.
- There might be product features on the system that are not represented in this manual.
- World Trade differences are identified where appropriate throughout the procedures rather than in a separate chapter.

Related publications

Publications that you will find helpful and that you should use along with this publication are in the following list. The following publications are available on **IBM Documentation**. Go to https://www.ibm.com/docs/en/systems-hardware, select **IBM Z** or **IBM LinuxONE**, then select your configuration, and click **Library Overview** on the navigation bar.

- *9175 Installation Manual for Physical Planning*, GC28-7049
- *9175 Installation Manual*, GC28-7050
- *9175 Service Guide*, GC28-7051
- *Systems Safety Notices*, G229-9054

Accessibility features

Accessibility features help users who have physical disabilities such as restricted mobility or limited vision use software products successfully. The accessibility features can help users do the following tasks:

- Run assistive technology such as screen readers and screen magnifier software.
- Operate specific or equivalent features by using the keyboard.
- Customize display attributes such as color, contrast, and font size.

Consult assistive technologies

Assistive technology products, such as screen readers, function with the user interfaces found in this product. Consult the product information for the specific assistive technology product that is used to access our product information.

Keyboard navigation

This product uses standard Microsoft Windows navigation keys.

IBM and accessibility

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

How to provide feedback to IBM

We welcome any feedback that you have, including comments on the clarity, accuracy, or completeness of the information.

For additional information use the following link that corresponds to your configuration:

Configuration	Link
IBM z17® Model ME1	https://www.ibm.com/docs/en/systems-hardware/zsystems/9175-ME1?topic=how-send-feedback
IBM LinuxONE Emperor 5 Model ML1	https://www.ibm.com/docs/en/systems-hardware/linuxone/9175-ML1?topic=how-send-feedback

Chapter 1. Safety inspection

A safety inspection is performed:

- When you inspect the system for an IBM maintenance agreement
- When there is reason to question the unit safety
- When IBM per call service is requested and no service has recently been performed by IBM
- When an alterations and attachments review is performed.

Attention:

The task of using a meter with probes, alligator clips, or similar exposed metallic connectors to take electrical measurements on receptacles/outlets might be regulated in your jurisdiction and may require that a Qualified Electrical Worker (QEW) or licensed electrician perform the operation(s). Where IBM service personnel are not certified to perform these tasks, the service person must notify the customer that they must arrange for a QEW (a licensed electrician may be considered a QEW) to perform the receptacle testing.

Refer to IBM's Global Electrical Safety Program for more information on QEW:

- https://w3.ibm.com/w3publisher/ibm-global-safety/special-hazards/us/electrical-safety

If the inspection indicates an unacceptable safety condition, the condition must be corrected before IBM provides service to the machine.

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

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

- Feature/model changes and Engineering Change (EC) upgrades
- Additions of non-IBM power supplies, logic cards, or attachments
- Missing safety covers
- Removed, faded, or painted-over safety labels
- Primary power parts replacement requirements
- Other product safety-related items.

Before you start, you must have completed the *General Safety* or equivalent course for this year. Reviewed the *Electrical Safety for IBM Service Representatives*, S229-8124, or equivalent handbook. Certain geographies might have different safety training requirements, see your safety training requirements within your geography for more information.

Items you need

- An IBM SSR toolkit (or equivalent)
- Copies of Safety Engineering Changes released for this machine type.
- Latest machine history, if possible
- *Electrical Safety for IBM Service Representatives*, S229-8124
- A Fluke 8060A digital voltmeter (part 8496278) or equivalent
- Electrical tape or rubber gloves
- A Suretest tester (part 25F9715) and Isolated Earth Adapter (part 00P7019), preferred in the United States, if available

Processor safety inspection

Safety inspection is performed on all power cords.

Attention: 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: Heavy equipment — personal injury or equipment damage might result if mishandled. (D006)

CAUTION: Servicing of this product or unit is to be performed by trained service personnel only. (C032)

CAUTION: The doors and covers to the product are to be closed at all times except for service by trained service personnel. All covers must be replaced and doors locked at the conclusion of the service operation. (C013)

CAUTION: Ensure the building power circuit breakers are turned off BEFORE you connect the power cord or cords to the building power. (C023)

危險：在某些狀況下，分支電路超載可能會有火災及電擊的危險。若要避免這些危險，請確保系統的電力需求不會超過分支電路保護的需求。請參閱裝置隨附的資訊或電源功率標籤，以取得電氣規格。(D002)

危險：如果插座有金屬殼，則必須等到您完成電壓及接地檢查之後才能觸摸此外殼。佈線或接地不當可能會在金屬外殼上產生危險的電壓。如果發生任何未說明的情況，請停止作業。確保已更正不適當的電壓或阻抗狀況之後，再繼續進行。(D003)

危險：如果電源插座接線不正確，可能會將危險的電壓施加於系統或連接至系統之裝置的金屬部分。客戶*必須*負責確定插座的佈線正確且已接地，以預防觸電。(D004)

危險：重型設備—處理不當可能會導致人身傷害或設備損壞。(D006)

警告：本產品的機門與蓋板必須時刻關閉，只有受訓練的檢修人員進行檢修時例外。
檢修作業結束時，所有蓋子必須蓋回定位，且機門要關上。 **(C013)**

警告：請確保在將電源線連接到建築物電源之前，建築物的電源斷路器已關閉。(C023)

Gefahr: Bei Überlastung eines Netzstromkreises besteht unter gewissen Umständen Brandgefahr oder das Risiko eines elektrischen Schlags. Um dies zu vermeiden, stellen Sie sicher, dass der elektrische Bedarf Ihres Systems die Absicherung des Netzstromkreises nicht überschreitet. Technische Daten zur Elektrik stehen in der Dokumentation zu der IBM Einheit oder auf dem Typenschild. (D002)

Gefahr: Besitzt die Netzsteckdose ein Metallgehäuse, die Steckdose nicht berühren, bevor die Prüfung der Netzspannung und der Erdung erfolgreich durchgeführt wurde. Durch eine nicht ordnungsgemäß angeschlossene Steckdose oder durch nicht ordnungsgemäße Erdung können am Metallgehäuse gefährliche Berührungsspannungen auftreten. Ist die Prüfung nicht erfolgreich, die Arbeit *ABBRECHEN*. Die korrekte Netzspannung und Impedanz herstellen, bevor die Installation fortgesetzt wird. (D003)

Gefahr: Bei nicht ordnungsgemäß angeschlossener Netzsteckdose können an Metallteilen des Systems oder an angeschlossenen Einheiten gefährliche Berührungsspannungen auftreten. Für den ordnungsgemäßen Zustand der Steckdose ist der Betreiber verantwortlich. (D004)

Gefahr: Schwere Einheit — Gefahr von Verletzungen oder Beschädigung der Einheit bei unsachgemäßer Behandlung. (D006)

Vorsicht: Die Türen und Abdeckungen müssen immer geschlossen sein. Sie dürfen nur von ausgebildetem Kundendienstpersonal geöffnet werden. Nach Abschluss der Wartung müssen wieder alle Abdeckungen eingesetzt und alle Türen geschlossen werden. (C013)

Vorsicht: Die Sicherungsautomaten der Gebäudeinstallation VOR dem Anschließen der Netzkabel an die Stromversorgung des Gebäudes auftrennen. (C023)

Check the power source

Before you start, you must have completed the **General Safety** or equivalent course for this year and reviewed the *Safety Manual for IBM Service Personnel* or equivalent handbook. Certain geographies might have different safety training requirements. See the safety training requirements within your geography for more information.

Attention:

- The following power check procedures **must** be performed by a Qualified Electrical Worker (QEW) or licensed electrician.
- In countries where IBM service personnel are not qualified to perform this task, the customer **must** arrange for a QEW or licensed electrician to perform the receptacle testing.
- The safety inspection is performed on *all* power cords.

If you, the IBM System Service Representative (SSR):

- ***ARE*** qualified to perform these tasks, complete the following power check procedures.
- ***ARE NOT*** qualified to perform these tasks, contact customer personnel to perform the necessary power checks before continuing.

Power

__ 1. Remove power from the 9175 by doing one of the following:

- Removing the power source
- Opening the supply circuit breakers
- Removing the power cords from the PDUs.

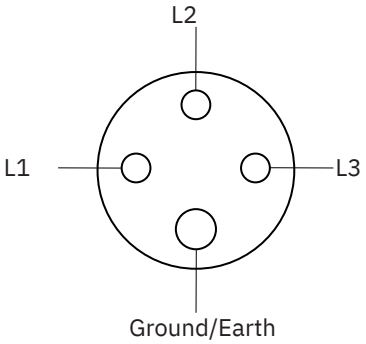
__ 2. If the system does not power off, see the *9175 Service Guide*, GC28-7051 to troubleshoot the problem.

Checking the receptacle for wiring errors

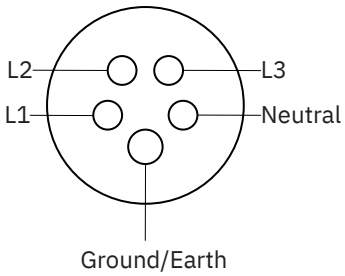
DANGER: If the receptacle has a metal shell, do not touch the shell until you have completed the voltage and grounding checks. Improper wiring or grounding could place dangerous voltage on the metal shell. If any of the conditions are not as described, *STOP*. Ensure the improper voltage or impedance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

The receptacle the customer uses to supply power to the frames will be tested in the following steps.

Note: The following graphics represent a customer's 3-phase branch circuit IEC 60309 compliant female connectors. These graphics may not apply if the customer used their own different connector/plug set with IBM's cut-end power line cords.



4 pins



5 pins

Perform the following *AC voltage checks* on all of the receptacles that the customer uses to supply power to the frame.

__ 1. Verify that the wall breaker is set to the **OFF** position.

__ 2. **Power**

- Carefully probe the PDU outlets to verify that all power is turned off. Make sure the PDU circuit breakers or other controls are on so that you can measure voltage on the output connectors, if present.

__ 3. Using the digital voltage meter, check to be sure that there is no AC voltage from receptacle ground/earth to building ground/earth (water pipe, building steel, etc.). Grounded raised floors **might not** be an acceptable building ground/earth. A grounded raised floor **is acceptable** if the following is true:

- It is bonded to building steel
- It is a bolted stringer design
- The stringer system is not corroded.

For metal receptacle shells or shells with metal components, check for no AC voltage from the receptacle ground/earth pin to the metal.

Checking the ground/earth path

Perform the ground/earth path checks using either ***Procedure A*** or ***Procedure B*** on all receptacles the customer uses to supply power to the frame. If the correct equipment is available, ***Procedure A*** is the preferred method in the United States.

The wall breaker should be **OFF**.

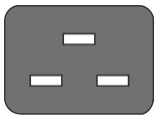
Procedure A (preferred in the USA)

This procedure checks for a ground/earth impedance of 1 ohm or less at the receptacle ground/earth pin using any of the following:

- SureTest Model 61-164 Circuit Analyzer, **P/N 39X8928** with accessories:
  - SureTest Model 61-175 Ground Continuity Adapter, **P/N 39X8929**
  - SureTest Model 61-183 Alligator Clip Adapter, **P/N 39X8930** (for testing 208/220 volts)
- SureTest Model ST-1D with IG adapter, **P/N 25F9715**
- SureTest Model ST-1THD tester, **P/N 25F9722**
- ECOS C7106 tester (make sure the ECOS tester is Model C7106)

Use of the word "tester":

In the following procedure, the word "tester" refers to any of the devices listed above. Be certain to follow the tester manufacturer’s instructions to perform the electrical tests.



__ 1. Locate a "live" outlet near the receptacle that will be tested. The outlet selected **must** be derived from the same power source as the receptacle to be tested.

Attention: Do not use a customer's receptacle with GFCI protection.

__ 2. Insert the tester into the outlet.

__ 3. Perform the impedance test as indicated in the instructions for the tester.

__ 4. Unplug the tester.

__ 5. Plug the tester into the ground test probe.

__ 6. Attach the alligator clip from this probe to the ground/earth pin of the receptacle to be tested.

__ 7. Reinsert the tester into the receptacle (you might need an extension cord).

__ 8. Repeat the test as specified in the tester instructions, looking for an indication of 1 ohm or less.

__ 9. If the connector has a metal shell or metal components, unplug the tester from the wall receptacle and reconnect the alligator clip to the metal, then reinsert the tester and repeat the test. For more information, refer to *Safety Manual for IBM Service Personnel*, or equivalent documentation for your geography.

Procedure B

This procedure checks for a ground/earth resistance of 1 ohm or less at the receptacle ground/earth pin using the SSR meter.

The wall breaker should be OFF.

__ 1. Using the SSR meter, measure the resistance from the ground/earth pin of the receptacle to building ground/earth. The reading should be 1 ohm or less.

__ 2. For metal receptacle shells or shells with metal components, also measure the resistance from the ground/earth pin of the receptacle to the metal. This reading should be 0.1 ohm or less.

Note: Digital meters might give unstable resistance readings if leakage current is flowing in the building ground/earth circuit. If the reading is above (or is fluctuating above) 1 ohm, **STOP**.

a. Have the customer's electrician inspect the ground path back to the power source.

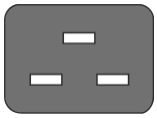
b. If the electrician corrects the problem, retest.

c. If the problem persists and the electrician has confirmed that the ground from the receptacle back to the power source is acceptable:

__ i) Document the electrician’s finding in the installation report

__ ii) Notify the supporting IPR for the account

Checking the AC voltage on the PDU outlets



Perform the following *AC voltage check* on all of the wall breakers that the customer uses to supply power to the frame.

__ 1. Verify that the wall breaker is set to the **ON** position.

__ 2. Measure the customer supplied voltage and write the voltage here. If the voltage is outside the acceptable range (see below), advise the customer to have a licensed electrician correct the problem.

_____ V AC

__ 3. The acceptable voltage range for 50 or 60 Hz, three phase power supplies is as follows:

Power

- Three-phase delta connection: 200-240 V AC (Measured between phase and ground)
- Three-phase wye connection: 380-415 V AC (Measured between any two phases; check all three combinations of phases: A-B, B-C, C-A)

Check the power cord

Perform the following check on all of the power cords that the customer uses to supply power to the frame.

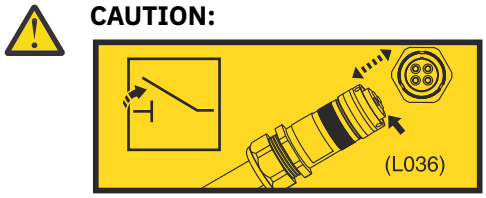
Note: Skip steps 2 and 3 if the power cord is wired directly to the power source.

Power

__ 1. Check all power cords for damage, broken insulation, or burned pins. Ensure that the removable plug is fully inserted in the PDU.

__ 2. Verify that all of the FRU power supply units (PSUs) have a cable clip installed. The cable clip is located on the handle of each PSU and secures the power cable.

__ 3. Verify that all delta-connected power cords have the following label (**L036**) in place and readable:



This line cord uses an appliance coupler that is not intended to be mated, unmated, or moved while electrically active. Supply voltage to appliance coupler should be turned off (for example: by the supply side plug or branch circuit breaker) whenever the line cord is being plugged, unplugged, or is not attached to the product. (**L036**)

__ 4. Be sure that you are plugging the line cord to the system, but not into the wall.

__ 5. Measure the resistance from the earth pin of the disconnected power cord to frame earth of the PDU. The reading must be 0.1 ohms or less. Note that you are measuring from the ground pin on the male mains plug of the line cord to exposed ground on the system, which may only be available in certain locations (for example, the stud on the PDU or any exposed, bare metal (unpainted and uncoated) EIA rails).

__ 6. Check the strain relief clamp to ensure that it is correctly installed and tightly fastened.

Processor frame check

PDU system

At the FRONT of the unit:

__ 1. Check the following:

__ • Check for damaged or missing covers.

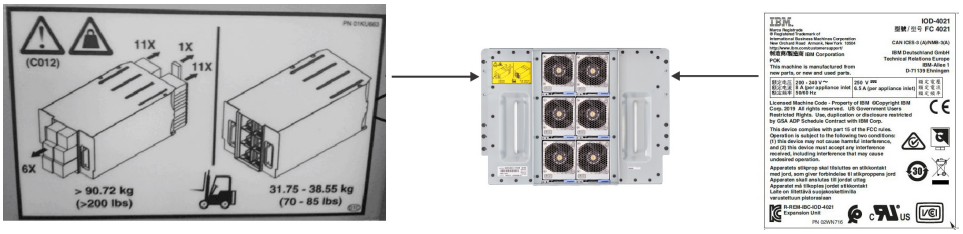
__ • Check all covers for sharp edges.

__ • Ensure that all fasteners are properly set on installed features.

__ 2. Ensure that the following labels are in place and readable.

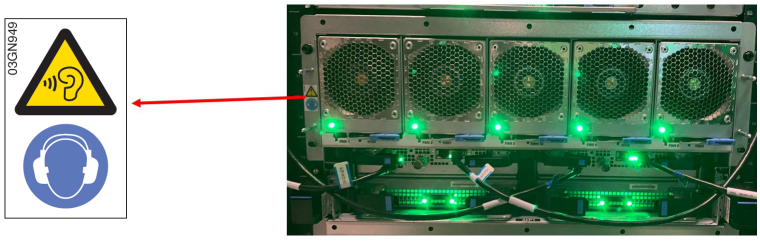
__ • The tilt warning label that runs across the bottom.

__ • The heavy weight warning and voltage warning that appear on each of the PCIe+ I/O drawers. The PCIe+ I/O drawer bezel must be removed to view these safety labels.

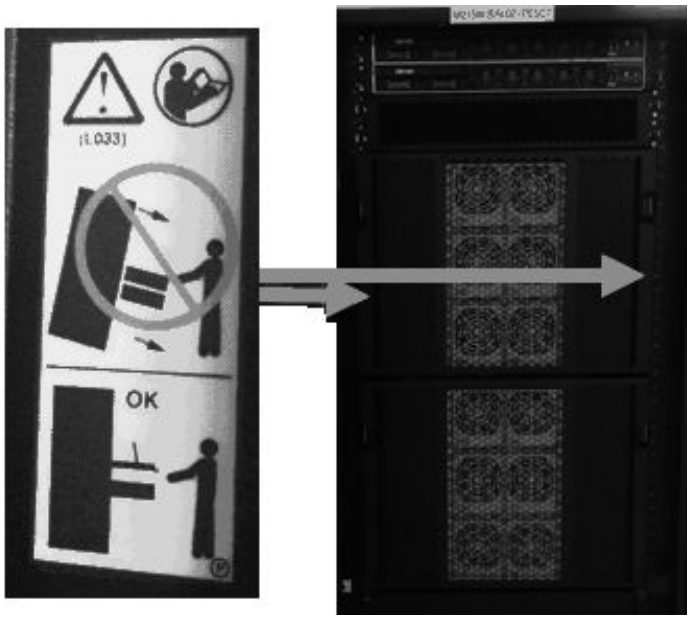


__ • The hearing protection label that appears on the front of the frame.

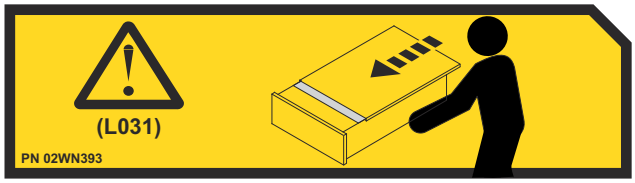
__ 3. Ensure that the hearing protection label appears next to the CPC drawer as shown.



__ 4. Ensure that the label instructing you not to pull out multiple drawers at the same time appears on the frame as shown.



__ 5. Ensure that the enclosure integrity label is in place and readable. The label (**L031**) instructs you to promptly reinstall all covers, bezels, lids, and/or doors immediately after service completion. This label appears on the *inside* of the PCIe+ I/O and CPC drawer bezels.



At the REAR of the unit (PDU):

__ 1. Check the following:

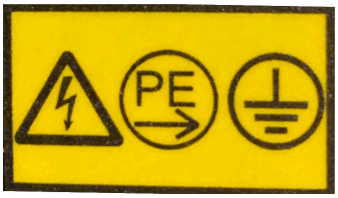
__ • Check for damaged or missing covers.

__ • Check all covers for sharp edges.

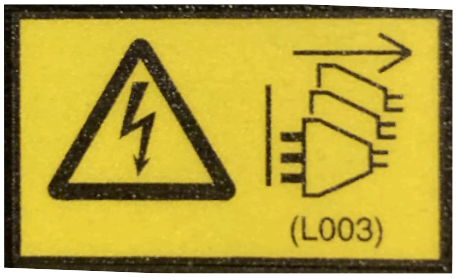
__ • Ensure that all thumb screws are in place and tightly fastened on installed features.

__ 2. Ensure that the following labels are in place and readable.

__ • High leakage warning (label **P/N 01KL318**) - *4 labels on each side of the frame (8 total)*

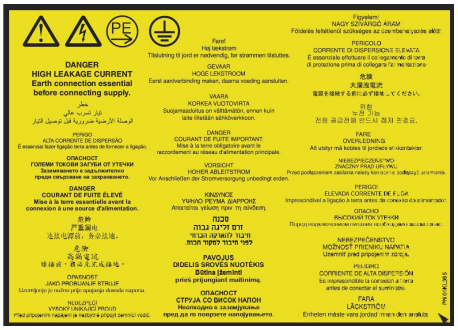


__ • Multiple power cords, similar to *Safety Notices* label L003 - *4 labels on each side of the frame (8 total)*



__ • Read manual - *1 label on each side of the frame, approximately 2 ft from the top (2 total)*

__ • High leakage warning (label **P/N 01KL395**), located on the bottom right side of the frame.



__ • The hearing protection label that appears on the rear of the frame.

__ 3. Ensure that the 9175 machine type certification label is in place and readable.

The label (**P/N 03RL666**) is located on the right side of the rear of the frame.

__ 4. Ensure that an input ratings label is in place and visible. It will be for one of the following: three phase wye-connected or three phase delta-connected.

Three phase wye-connected label:

Three phase delta-connected label:

__ 5. Ensure that the following labels are in place and readable, on every installed PCIe+ I/O drawer.

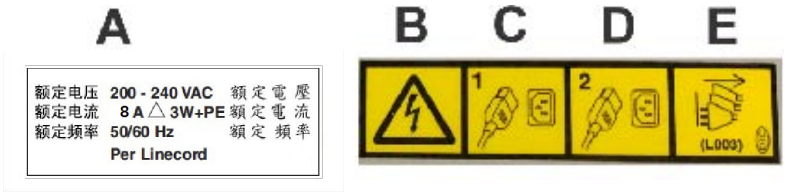
__ • Electrical rating per power cord (**A**):

__ – 200-240 V AC single phase, 8A, 50/60 Hz (per appliance inlet)

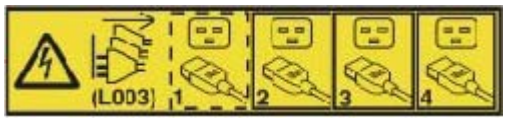
__ • Shock hazard (**B**)

__ • Multiple power cords (**C**) and (**D**)

__ • Multiple line cord warning (**E**), similar to *Safety Notices* label L003



__ 6. Ensure that a multiple line cord label is in place and visible on the CPC drawer.



Note: Installed power supply units (PSUs) may partially obscure this label.

Internal frame check

__ 1. Check for non-IBM alterations or attachments. If present, complete form R-009, *Non-IBM Alterations/Attachments Survey.*

__ 2. Inspect for smoke or water damage and presence of rust or other contamination.

__ 3. Check that all covers are installed and that no screws or washers are missing.

__ 4. Check for sharp edges.

Machine safety changes

__ 1. Check for any Safety Engineering Changes released for this machine type.

__ 2. Check the machine to ensure that all safety changes have been installed.

__ 3. Order any missing safety changes or labels that must be replaced and install them as soon as possible.

__ 4. Update machine history (if available) to show all safety changes installed.

System power on

Connecting frame power

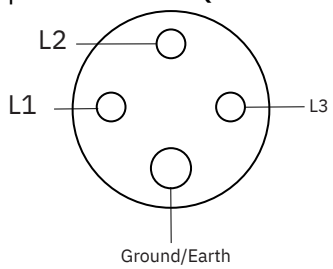
Attention: *IBM service personnel:* The task of using a meter and probes to take voltage measurements on receptacles/outlets **must** be performed by a Qualified Electrical Worker (QEW) or licensed electrician. In countries where IBM service personnel are not qualified to perform this task, the IBM service person must notify the customer that they must arrange for a QEW (a licensed electrician may be considered a QEW) to perform the receptacle testing.

Important Note (PDU):

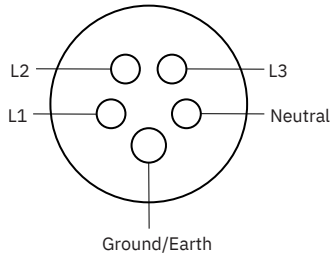
CAUTION: A mismatch in the wiring configuration (delta versus wye) between the IBM product and your facility AC voltage supply can cause significant product damage. Ensure that the PDUs of the product match the supply voltage and wiring configuration of your facility. If the number of wires in the power cord does not match the wiring configuration in your facility, or if the rated voltage on the product does not match the supply voltage in your facility, or if you have any questions about the connection method, do not connect the product to the supply voltage. Contact a certified electrician familiar with your installation, and IBM, for guidance. (C054)

Machine base power is customized to the customer's power source, depending on the line cord selection. The line cord selection (voltage and phase) determines what power PDU and line cord part numbers are required for the system.

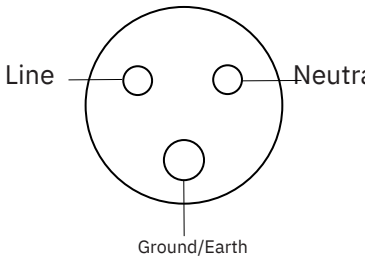
- For three phase power, data center voltage ranges 380 - 415 V AC, must be connected with a *five wire* line cord that then connects to the neutral wire. If the neutral wire is not connected, the system will be damaged due to voltage overstress of the internal power components.
- The lower voltage range, 200 - 240 V AC, remains unchanged from previous systems and must be connected with a *four wire* line cord - no neutral.
- **Important:** You **MUST** verify the following before continuing (all voltages listed in this section are measured phase-to-phase rather than phase-to-ground, or phase-to-neutral):
  - If your system order has a *4 pin* PDU mains plug as shown here, confirm with the electrician that the power source is **(200 - 240 V AC)** three phase attachment before connecting the line cord.



  - If your system order has line cords with 5 pins on the mains plug as shown here, confirm with the electrician that the power source is **(380 - 415 V AC)** three phase attachment before connecting the line cord.



  - If your system order has a 3-pin connection to mains as shown here, confirm with the electrician that the power source is **(200 - 240 V AC)** single phase before connecting the power cord.



If the line cords on your system order include cut ends (bare wires) for the customer connection, the line cords will be shipped with a labeled bag fastened over the customer end.
Do NOT remove this bag. The line cord bag should only be removed by the electrician that is installing the line cord.

If you identify a shipped, uninstalled system that was ordered and built incorrectly for system power, contact IBM Support for assistance.

Power

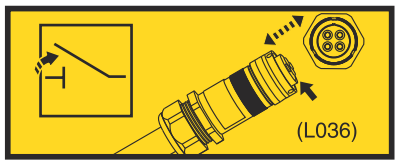
__ 1. Have the customer open the circuit breakers to remove power from the system.

__ 2. Connect all system power cords to the source power.

__ 3. Verify that all of the FRU power supply units (PSUs) have a cable clip installed. The cable clip is located on the handle of each PSU and secures the power cable.

__ 4. Verify that all delta-connected power cords have the following label (**L036**) in place and readable:

CAUTION:



This line cord uses an appliance coupler that is not intended to be mated, unmated, or moved while electrically active. Supply voltage to appliance coupler should be turned off (for example: by the supply side plug or branch circuit breaker) whenever the line cord is being plugged, unplugged, or is not attached to the product. (**L036**)

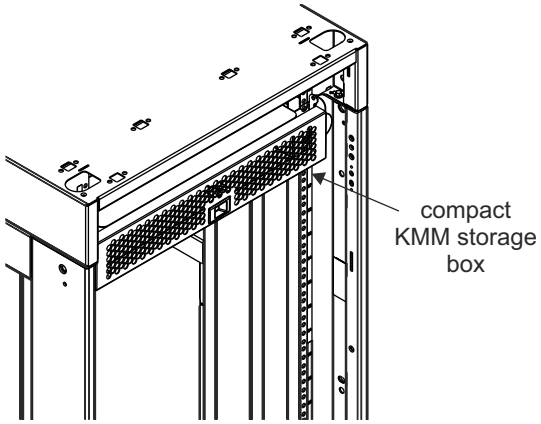
__ 5. Have the customer reset the circuit breakers for the system.

Power on

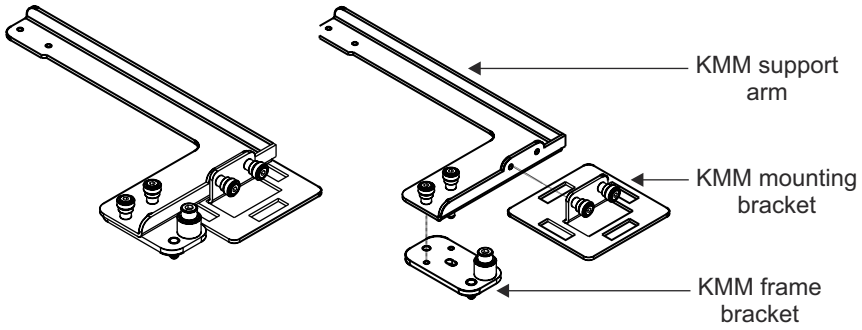
Preparing the compact KMM (keyboard, monitor, mouse)

Complete the following procedure to assemble the compact KMM (keyboard, monitor, mouse) support hardware:

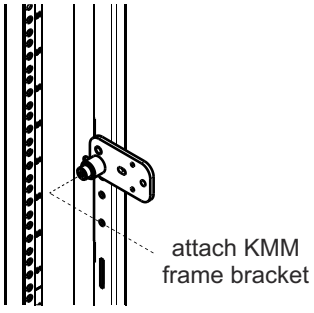
__ 1. Retrieve the compact KMM from the KMM storage box.



__ 2. Unscrew the KMM frame bracket (**P/N 02WN899**) and the KMM mounting bracket (**P/N 02WN992**) from the KMM support arm (**P/N 02WN481**).

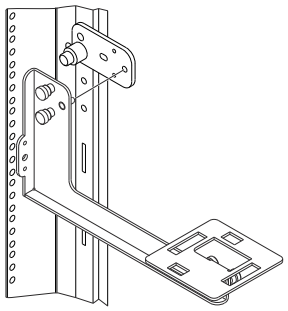


__ 3. Install the KMM frame bracket on the inner left or right side of the frame. Use the attached screw to fasten the bracket in one of the three existing holes at EIA 24 on the inner frame.

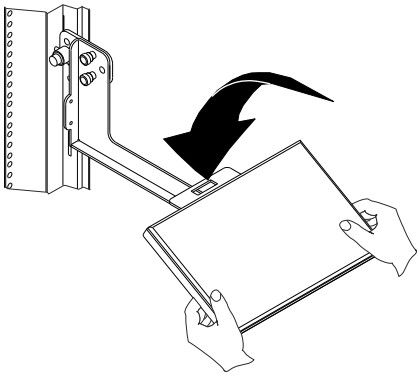


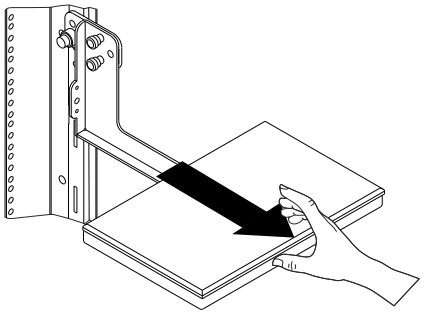
__ 4. Fasten the KMM mounting bracket to the KMM support arm using the 2 attached screws.

__ 5. Fasten the KMM support arm to the KMM frame bracket using the 2 attached screws.

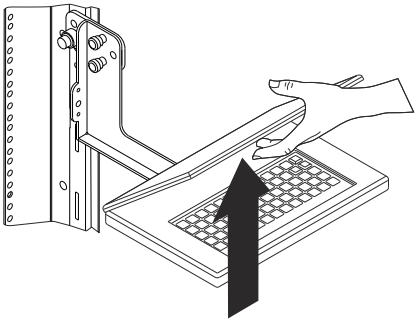


__ 6. Place the compact KMM onto the mounting bracket and pull the KMM towards you to fasten.



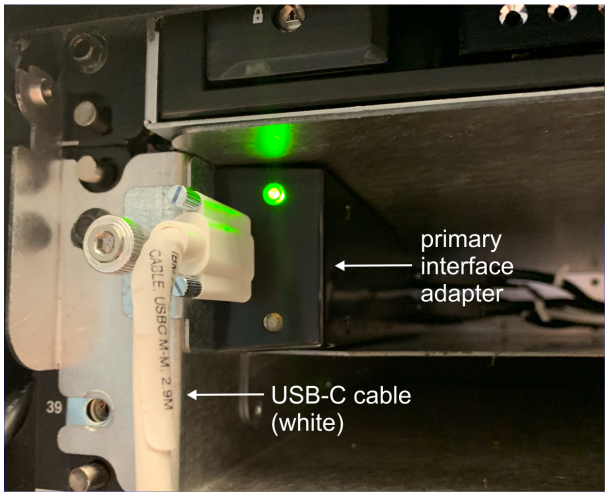


__ 7. Open the compact KMM and tilt the monitor to a usable position.



__ 8. Retrieve the white USB-C cable (**P/N 02EC951**) from the KMM storage box; 2 cables are provided (1 spare).

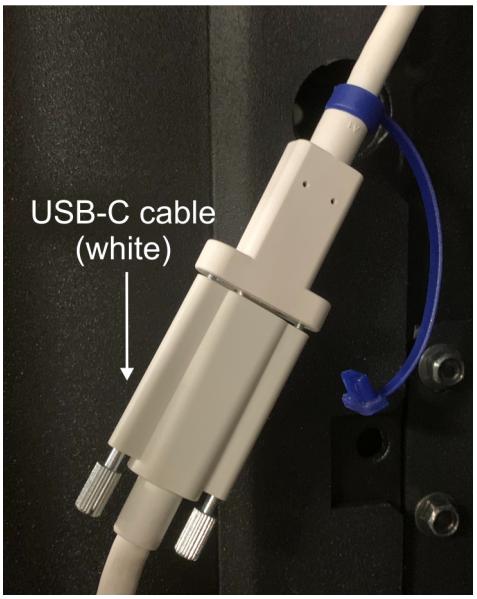
__ 9. If fastening the KMM to the *front* of the frame, plug the white USB-C cable into the primary interface adapter as shown below. Then go to Step “11” on page 21.



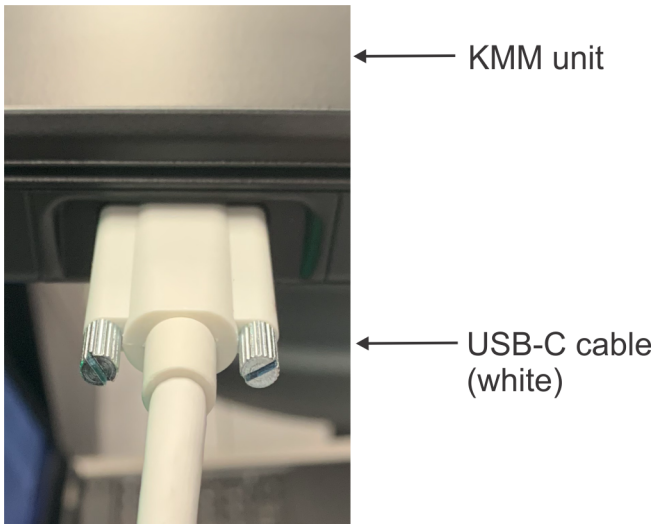
__ 10. If fastening the KMM to the *rear* of the frame:

a. Remove the blue protective cap from the USB-C connector.

b. Plug the white USB-C cable into the connector.



__ 11. Plug the other end of the white USB-C cable into the port on the compact KMM.



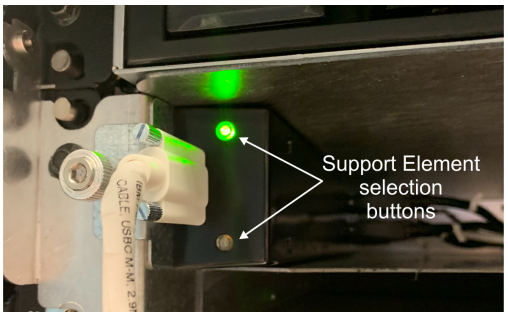
Power on

__ 1. The green **PSU PWR** LED on the PSUs will turn on solid.

__ 2. Wait for the **Primary Support Element** Logon window to appear.

a. If the **Alternate Support Element** window appears, click the non-lit selection button on the front end of the interface adapter to return to the Primary Support Element.

Note: The Support Element selection buttons light up when the related Support Element is selected. This allows you to know which Support Element is communicating with the compact KMM at any given time.



b. If the Hardware Management Appliance feature (FC 0355) is installed, the **Hardware Management Appliance HMC** Logon window will appear.

i) Logon to Hardware Management Appliance HMC.

ii) From the Tasks Index, click **Virtual Support Element Management Task**.

iii) From this task, click **Start SE Virtual Machine** to start the Virtual Support Element.

iv) Click **Show SE Console**. Wait for the **Primary Support Element** Logon window to appear.

v) If the **Alternate Support Element** window appears, click the top button on the KVM switch to the other Hardware Management Appliance HMC. Then repeat **Step 2b** to start the Primary Support Element.

__ 3. On the **Primary Support Element** Logon window:

- Type **SERVICE** in the **Username** field.
- Type **SERVMODE** in the **Password** field.

__ 4. Click **System Management**.

__ 5. Select the system name.

__ 6. Click **Service**.

__ 7. Click **Service Status**.

__ 8. If Service Status is already enabled, skip to Step “9” on page 22. Otherwise, complete the following steps:

a. If required, select the check box.

b. Click **Options**.

c. Click **Enable service status**.

d. Click **Save**.

e. Click **Yes**.

f. Click **OK**, if applicable.

g. Click **Cancel** to close.

__ 9. Click **Recovery**.

__ 10. Click **Power-On**.

__ 11. Click **OK** to close the window when system power-on completes successfully.

Appendix A. Notices

This information was developed for products and services offered in the US.

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Class A Notices

The following Class A statements apply to this IBM product. The statement for other IBM products intended for use with this product will appear in their accompanying manuals.

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.

United Kingdom Notice

This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts.

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.

European Community Compliance Statement

This product is in conformity with the protection requirements of EU Council Directive 2014/30/EU 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 55032. 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 Deutschland GmbH
Technical Regulations, Department M372
IBM-Allee 1, 71139 Ehningen, Germany
Tele: +49 (0) 800 225 5423 or +49 (0) 180 331 3233
email: halloibm@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.

Japan Voluntary Control Council for Interference (VCCI) Notice

この装置は、クラス A 機器です。 この装置を住宅環境で使用すると電波妨害を引き起こすことがあります。 この場合には使用者が適切な対策を講ずるよう要求される ことがあります。 ＶＣＣＩ－Ａ

The following is a summary of the Japanese VCCI statement above:

This is a Class A product based on the standard of the VCCI Council. If this equipment is used in a domestic environment, radio interference may occur, in which case the user may be required to take corrective actions.

Japan Electronics and Information Technology Industries Association (JEITA) Notice

（一社）電子情報技術産業協会　高調波電流抑制対策実施
要領に基づく定格入力電力値：IBM Documentationの各製品の仕様ページ参照

This statement applies to products less than or equal to 20 A per phase.

高調波電流規格　JIS C 61000-3-2 適合品

These statements apply to products greater than 20 A, single-phase.

高調波電流規格　JIS C 61000-3-2 準用品

本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対策ガイドライン」対象機器（高調波発生機器）です。
回路分類：6（単相、ＰＦＣ回路付）
換算係数：0

These statements apply to products greater than 20 A per phase, three-phase.

高調波電流規格　JIS C 61000-3-2 準用品

本装置は、「高圧又は特別高圧で受電する需要家の高調波抑制対策ガイドライン」対象機器（高調波発生機器）です。
回路分類　：5（3相、ＰＦＣ回路付）
換算係数　：0

People's Republic of China Notice

警告:在居住环境中,运行此设备可能会造成无线电干扰。

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.

Taiwan Notice

CNS 13438:

警告使用者：
此為甲類資訊技術設備，
於居住環境中使用時，
可能會造成射頻擾動，在此種情況下，
使用者會被要求採取某些適當的對策。

CNS 15936:

警告：為避免電磁干擾，本產品不應安裝或使用於住宅環境。

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

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Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2014/30/EU zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der EN 55032 Klasse A ein.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der IBM empfohlene Kabel angeschlossen werden. IBM übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung von IBM verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung von IBM gesteckt/eingebaut werden.

EN 55032 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

"Warnung: Dieses ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funk-Störungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen zu ergreifen und dafür aufzukommen."

Deutschland: Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Geräten

Dieses Produkt entspricht dem "Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG)". Dies ist die Umsetzung der EU-Richtlinie 2014/30/EU in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) (bzw. der EMC EG Richtlinie 2014/30/EU) für Geräte der Klasse A

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

Verantwortlich für die Einhaltung der EMV Vorschriften ist der Hersteller:
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Armonk, New York 10504
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Generelle Informationen:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55032 Klasse A.

Electromagnetic Interference (EMI) Statement - Russia

ВНИМАНИЕ! Настоящее изделие относится к классу А.
В жилых помещениях оно может создавать радиопомехи, для снижения которых необходимы дополнительные меры

Electromagnetic Interference (EMI) Statement - Kingdom of Saudi Arabia Notice

قد يتسبب هذا المنتج في حدوث تداخل إذا تم استخدامه في المناطق السكنية.

ويجب تجنب هذا الاستخدام ما لم يتخذ المستخدم تدابير خاصة لتقليل الانبعاثات الكهرومغناطيسية لمنع التداخل مع استقبال البث الإذاعي والتلفزيوني.

تحذير: هذا الجهاز متوافق مع الفئة أ من SASO CISPR 32

في البيئة السكنية، قد يتسبب هذا الجهاز في حدوث تداخل لاسلكي.

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