

Power Systems

*Managing devices for the 5148-21L,  
5148-22L, 8247-21L, 8247-22L,  
8247-42L, 8284-21A, 8284-22A,  
8286-41A, or 8286-42A*

**IBM**



Power Systems

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8286-41A, or 8286-42A*

**IBM**

**Note**

Before using this information and the product it supports, read the information in “Safety notices” on page v, “Notices” on page 13, the *IBM Systems Safety Notices* manual, G229-9054, and the *IBM Environmental Notices and User Guide*, Z125-5823.

This edition applies to IBM Power Systems™ servers that contain the POWER8 processor and to all associated models.

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## Safety 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, safety information documentation is included in the publications package (such as in printed documentation, on DVD, or as part of the product) shipped with the product. The documentation 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 documentation. You should also refer to the safety information documentation any time you do not clearly understand any safety information in the U.S. English publications.

Replacement or additional copies of safety information documentation can be obtained by calling the IBM Hotline at 1-800-300-8751.

## 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

IBM servers may be installed inside or outside of an IT equipment rack.

**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.
- 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 continue with the inspection if any unsafe conditions are present.
- 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.

**DANGER:**

- 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)

**(R001 part 1 of 2):**

**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. In addition, do not lean on rack mounted devices and do not use them to stabilize your body position (for example, when working from a ladder).





- Each rack cabinet might have more than one power cord.
  - For AC powered racks, be sure to disconnect all power cords in the rack cabinet when directed to disconnect power during servicing.
  - For racks with a DC power distribution panel (PDP), turn off the circuit breaker that controls the power to the system unit(s), or disconnect the customer's DC power source, 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 2 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.

**CAUTION:**

Removing components from the upper positions in the rack cabinet improves rack stability during relocation. Follow these general guidelines whenever you relocate a populated rack cabinet within a room or building.

- Reduce the weight of the rack cabinet by removing equipment starting at the top of the rack cabinet. When possible, restore the rack cabinet to the configuration of the rack cabinet as you received it. If this configuration is not known, you must observe the following precautions:
  - Remove all devices in the 32U position (compliance ID RACK-001 or 22U (compliance ID RR001) and above.
  - Ensure that the heaviest devices are installed in the bottom of the rack cabinet.
  - Ensure that there are little-to-no empty U-levels between devices installed in the rack cabinet below the 32U (compliance ID RACK-001 or 22U (compliance ID RR001) level, unless the received configuration specifically allowed it.
- If the rack cabinet you are relocating is part of a suite of rack cabinets, detach the rack cabinet from the suite.
- If the rack cabinet you are relocating was supplied with removable outriggers they must be reinstalled before the cabinet is relocated.
- Inspect the route that you plan to take to eliminate potential hazards.
- Verify that the route that you choose can support the weight of the loaded rack cabinet. Refer to the documentation that comes with your rack cabinet for the weight of a loaded rack cabinet.
- Verify that all door openings are at least 760 x 230 mm (30 x 80 in.).
- Ensure that all devices, shelves, drawers, doors, and cables are secure.
- Ensure that the four leveling pads are raised to their highest position.
- Ensure that there is no stabilizer bracket installed on the rack cabinet during movement.
- Do not use a ramp inclined at more than 10 degrees.
- When the rack cabinet is in the new location, complete the following steps:
  - Lower the four leveling pads.
  - Install stabilizer brackets on the rack cabinet.
  - If you removed any devices from the rack cabinet, repopulate the rack cabinet from the lowest position to the highest position.
- If a long-distance relocation is required, restore the rack cabinet to the configuration of the rack cabinet as you received it. Pack the rack cabinet in the original packaging material, or equivalent. Also lower the leveling pads to raise the casters off of the pallet and bolt the rack cabinet to the pallet.

(R002)

(L001)



**DANGER:** Hazardous voltage, current, or energy levels are present inside any component that has this label attached. Do not open any cover or barrier that contains this label. (L001)

(L002)



**DANGER:** Rack-mounted devices are not to be used as shelves or work spaces. (L002)

(L003)



or



or



or



or



**DANGER:** Multiple power cords. The product might be equipped with multiple AC power cords or multiple DC power cables. To remove all hazardous voltages, disconnect all power cords and power cables. (L003)

(L007)



**CAUTION:** A hot surface nearby. (L007)

(L008)



**CAUTION:** Hazardous moving parts nearby. (L008)

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. Although shining light into one end and looking into the other end of a disconnected optical fiber to verify the continuity of optic fibers may not injure the eye, this procedure is potentially dangerous. Therefore, verifying the continuity of optical fibers by shining light into one end and looking at the other end is not recommended. To verify continuity of a fiber optic cable, use an optical light source and power meter. (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)**

**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**

**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. (C003)**

## CAUTION:

Regarding IBM provided VENDOR LIFT TOOL:

- Operation of LIFT TOOL by authorized personnel only.
- LIFT TOOL intended for use to assist, lift, install, remove units (load) up into rack elevations. It is not to be used loaded transporting over major ramps nor as a replacement for such designated tools like pallet jacks, walkies, fork trucks and such related relocation practices. When this is not practicable, specially trained persons or services must be used (for instance, riggers or movers).
- Read and completely understand the contents of LIFT TOOL operator's manual before using. Failure to read, understand, obey safety rules, and follow instructions may result in property damage and/or personal injury. If there are questions, contact the vendor's service and support. Local paper manual must remain with machine in provided storage sleeve area. Latest revision manual available on vendor's web site.
- Test verify stabilizer brake function before each use. Do not over-force moving or rolling the LIFT TOOL with stabilizer brake engaged.
- Do not move LIFT TOOL while platform is raised, except for minor positioning.
- Do not exceed rated load capacity. See LOAD CAPACITY CHART regarding maximum loads at center versus edge of extended platform.
- Only raise load if properly centered on platform. Do not place more than 200 lb (91 kg) on edge of sliding platform shelf also considering the load's center of mass/gravity (CoG).
- Do not corner load the platform tilt riser accessory option. Secure platform riser tilt option to main shelf in all four (4x) locations with provided hardware only, prior to use. Load objects are designed to slide on/off smooth platforms without appreciable force, so take care not to push or lean. Keep riser tilt option flat at all times except for final minor adjustment when needed.
- Do not stand under overhanging load.
- Do not use on uneven surface, incline or decline (major ramps).
- Do not stack loads.
- Do not operate while under the influence of drugs or alcohol.
- Do not support ladder against LIFT TOOL.
- Tipping hazard. Do not push or lean against load with raised platform.
- Do not use as a personnel lifting platform or step. No riders.
- Do not stand on any part of lift. Not a step.
- Do not climb on mast.
- Do not operate a damaged or malfunctioning LIFT TOOL machine.
- Crush and pinch point hazard below platform. Only lower load in areas clear of personnel and obstructions. Keep hands and feet clear during operation.
- No Forks. Never lift or move bare LIFT TOOL MACHINE with pallet truck, jack or fork lift.
- Mast extends higher than platform. Be aware of ceiling height, cable trays, sprinklers, lights, and other overhead objects.
- Do not leave LIFT TOOL machine unattended with an elevated load.
- Watch and keep hands, fingers, and clothing clear when equipment is in motion.
- Turn Winch with hand power only. If winch handle cannot be cranked easily with one hand, it is probably over-loaded. Do not continue to turn winch past top or bottom of platform travel. Excessive unwinding will detach handle and damage cable. Always hold handle when lowering, unwinding. Always assure self that winch is holding load before releasing winch handle.
- A winch accident could cause serious injury. Not for moving humans. Make certain clicking sound is heard as the equipment is being raised. Be sure winch is locked in position before releasing handle. Read instruction page before operating this winch. Never allow winch to unwind freely. Freewheeling will cause uneven cable wrapping around winch drum, damage cable, and may cause serious injury. (C048)

## **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 metalically 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 metalically 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.

The dc-powered system is intended to be installed in a common bonding network (CBN) as described in GR-1089-CORE.





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## Managing devices for the 5148-21L, 5148-22L, 8247-21L, 8247-22L, 8247-42L, 8284-21A, 8284-22A, 8286-41A, or 8286-42A system

Learn about managing media and communications devices.

The topic collection contains reference information that information technology (IT) personnel and service representatives can use to learn about using and managing removable media devices and communications devices. You can also find specifications and installation notes for specific devices.

The following features are electromagnetic compatibility (EMC) Class B features. See the Class B Notices in the Hardware Notices section.

*Table 1. Electromagnetic compatibility (EMC) Class B features*

Feature code (FC)	Description
5771	SATA Slimline DVD-RAM Drive
EU04 and EUA4	RDX USB External Dock
EUA3	RDX USB Internal Dock
1106, 1107, EU01, EU08, EU2T, and EU15	RDX Removable Disk Drives

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## Managing DVD drives

Learn about using and managing removable media devices. Find specifications and installation notes for specific drives.

### SATA Slimline DVD-RAM Drive (FC 5771)

Learn about the specifications of the feature code (FC) 5771 DVD-RAM drive.

The Serial Advanced Technology Attachment (SATA) Slimline DVD-RAM Drive is an internal, low profile DVD-RAM drive that is capable of reading and writing 4.7 GB DVD-RAM discs, and reading a multitude of other optical media discs. This drive also reads type II (removable from cartridge) DVD-RAM discs. System boot and installation functions are supported by the CD-ROM and DVD-RAM media.

### Specifications

- Field replaceable unit (FRU) part number: 74Y7341
- Custom card identification number (CCIN): 6331 model 004
- Media:
  - Reads CD-ROM, CD-R, CD-RW, DVD-R, DVD+R, DVD-RW, DVD+RW, DVD-ROM, and DVD-RAM discs
  - Writes 4.7 GB DVD-RAM discs
  - CD read speed at 24X.
  - DVD-ROM read speed at 8X
  - DVD-RAM has a write speed of 5X.
  - The buffer size is 2 MB and cannot be disabled.
- Interface: SATA
- Connector: Slimline SATA

- Connector: SATA
- Loading tray: supports 12 cm and 8 cm discs
- Operating positions: vertical or horizontal (8 cm discs require horizontal operation)
- Form factor: 12.7 mm Slimline
- DVD video: not supported
- Requirements: 1 Slimline media bay

## Operating system or partition requirements

If you are installing a new feature, ensure that you have the software that is required to support the new feature and that you determine whether there are any prerequisites for this feature and attaching devices. For information about the prerequisites, see the IBM Prerequisite website ([www-912.ibm.com/e\\_dir/eServerPrereq.nsf](http://www-912.ibm.com/e_dir/eServerPrereq.nsf)).

The media device is supported on the following versions of the operating systems:

- AIX®
  - AIX 7.1, or later.
  - AIX 6.1, or later.
- Linux
  - Red Hat Enterprise Linux Version 6, or later.
  - SUSE Linux Enterprise Server 11, Service Pack 3, or later, with current maintenance updates available from SUSE.
- IBM i
  - IBM i Version 7.2.
  - IBM i Version 7.1, or later.

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## Managing removable disk drives

Learn to use and manage removable disk drives. Find specifications and installation notes for specific drives.

### **RDX USB External Docks (FC EU04 and EUA4) and RDX Removable Disk Drives (FC 1107, EU01, EU08, EU15, and EU2T)**

Learn about the features of the RDX USB External docking station and the supported disk drives.

#### **Description**

FC EUA4 is a follow on product to the FC EU04 RDX docking station. FC EUA4 has identical performance and application function compared to the previously announced FC EU04 and 1104 USB external docking stations.

The USB removable disk drive consists of a docking station, which holds a removable disk drive. The docking station is available as an external device. The disk drive is a back up and restore device that can be used as an alternative to tape drives. The removable disk drive is not a replacement for regular disk drives and cannot be used as part of a disk array. Figure 1 on page 3 and Figure 2 on page 3 show the front and rear views of the RDX USB external dock.

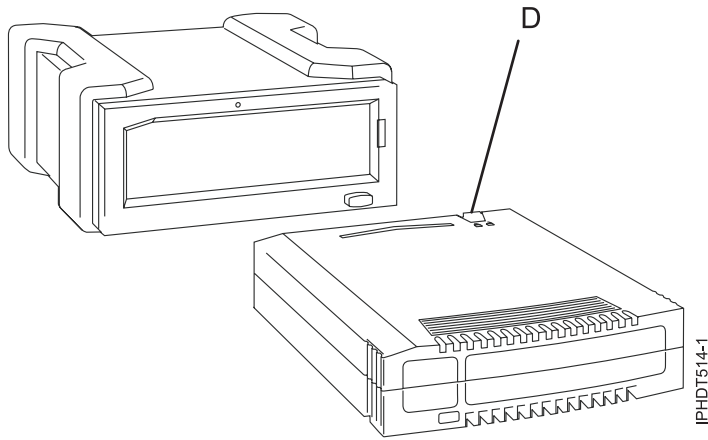


Figure 1. Front view of a USB External Dock and the removable disk drive cartridge

D Write-protect switch

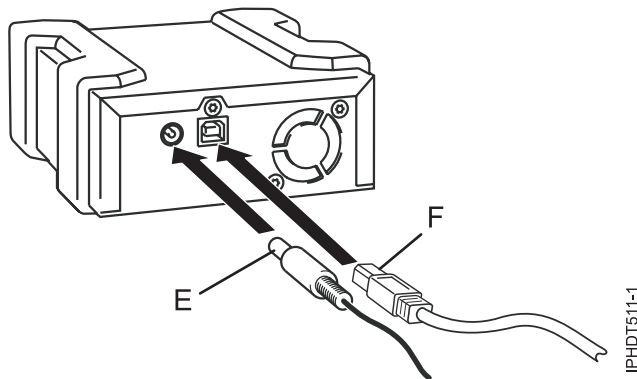


Figure 2. Rear view and connectors on the external drive

E Power connector

F USB connector

## Feature codes and part numbers

Learn about the feature codes (FCs) and part numbers for the USB Removable Disk Drive.

The RDX USB External Docks (FC EU04 and EUA4) use an external USB cable to connect to an external USB port. The EU04 and EUA4 feature codes include a USB cable, an external power supply, and a power cord as part of the feature code. Table 2 provides the part numbers for FC EU04 and EUA4 and Table 3 on page 4 provides the part numbers of the supported disk drives in the FC EU04 and EUA4.

FC EU04 and EUA4 provide the following parts:

Table 2. Parts of the FC EU04 and EUA4 External Docks

FRU Part number	Description
46C2333 or 46C2347	External RDX USB 3.0 Dock (FC EU04)
01GY550 or 01GY551	External RDX USB 3.0 Dock (FC EUA4)
81Y3649 or 81Y8905	External power supply with power cord and universal plugs for all supported geographies (FC EU04)

Table 2. Parts of the FC EU04 and EUA4 External Docks (continued)

FRU Part number	Description
01GY552 or 01GY553	External power supply with power cord and universal plugs for all supported geographies (FC EUA4)
05H5081 or 05H5080	External USB 3.0 Cable (2.7 meters (8 ft 10 in))
39M5516	Power cord (1 meter (3.28 ft)) that connects the power supply to the rack power distribution unit

The supported disk drives in the FC EU04 and EUA4 are listed in the following table:

Table 3. Removable disk drives

Feature code	Part number	Description
EU08	46C5377	320 GB Removable Disk Drive (FC EU04)
1107	46C5379	500 GB Removable Disk Drive (FC EU04 and EUA4)
EU01	46C2335	1 TB Removable Disk Drive (FC EU04 and EUA4)
EU15	46C2831	1.5 TB Removable Disk Drive (FC EU04)
EU2T	46C2975	2 TB Removable Disk Drive (FC EU04 and FC EUA4)

## Purchasing extra removable disk drives

For best results, use only the removable disk drives that are listed in Table 3.

The removable disk drives are a supply item that can be ordered as a feature code. To order in the United States and Canada, call 1-888-IBM-MEDIA. To order drives in other locations, contact your local provider of IBM storage products or see the Storage Media (<http://www-03.ibm.com/systems/storage/media/>) website.

IBM service representatives will not be dispatched to service or replace the removable disk drives.

## Storing removable disk drives

Store removable disk drives in their protective containers, on a flat surface with the top side up. The storage area must be clean and dry, must have normal room temperature, and must be away from any magnetic fields. For best storage life, use the removable disk drives every six months.

## Supported USB adapters and cables

**Attention:** The docking station supports the USB cable that is provided as part of the feature code. The docking station does not support attachment by using other USB cables, USB hubs, add-on USB cables, or USB cable extenders.

The external docking station can be connected to the external, integrated USB ports on POWER8® processor-based systems or can be connected to the USB ports on the PCIe2 LP 4-Port USB 3.0 Adapter (FC EC45) or PCIe2 4-Port USB 3.0 Adapter (FC EC46).

## Specifications

### Interface

USB 3.0

### Mksysb

Yes

## Bootable

Yes

## Environmental

Table 4. Operating conditions

USB Removable Disk Drive	Operating conditions	Non-operating conditions
Temperature	5°C - 55°C	-40°C - 65°C
Relative humidity	8% - 90% noncondensing	5% - 95% noncondensing
Maximum wet bulb temperature	29.4°C noncondensing	40°C noncondensing
Maximum temperature gradient	20°C per hour	20°C per hour
Altitude	-300 meters (-984.25 ft) to 3048 m (10,000 ft)	-300 meters (-984.25 ft) to 12,192 m (40,000 ft)

## Operating system or partition requirements

If you are installing a new feature, ensure that you have the software that is required to support the new feature and that you determine whether there are any prerequisites for this feature and attaching devices. For information about the prerequisites, see the IBM Prerequisite website ([www-912.ibm.com/e\\_dir/eServerPrereq.nsf](http://www-912.ibm.com/e_dir/eServerPrereq.nsf)).

The media device is supported on the following versions of the operating systems:

- AIX
  - AIX 7.1, or later.
  - AIX 6.1, or later.
- Linux
  - Red Hat Enterprise Linux Version 6, or later.
  - SUSE Linux Enterprise Server 11, Service Pack 3, or later, with current maintenance updates available from SUSE.
- IBM i
  - IBM i Version 7.2.
  - IBM i Version 7.1, or later.

## Using the USB Removable Disk Drive for backup and restore

The disk drive is a back up and restore device that can be used as an alternative to tape drives. The removable disk drive is not a replacement for regular disk drives and cannot be used as part of a disk array.

**Note:** If power is lost during a backup to the disk, the data can be compromised. Verify the data or rerun the backup.

## Using the disk drive with the AIX operating system

The AIX operating system names the drives as drive `usbmsx`, for example, `usbms1`, and `usbms2`. The AIX operating system can also use the device as a raw device, for example, `rusbms1` and `rusbms2`.

The AIX operating system uses the removable disk drive differently depending on the program that is being used. The AIX command `mksysb`, builds a list of files to backup, creates a universal disk format (UDF) file system, and puts a boot image and the root volume group on the removable disk drive. When

the **mksysb** process is complete, the removable disk drive can be used to boot the system. If you mount the removable disk drive, you can display and copy files to and from the UDF file system on the removable disk drive.

The AIX commands, **tar**, **backup**, **restore**, **dd**, and **cpio** can write to the removable disk drive as a raw device or non-raw device. You might get improved performance by using the device as a raw device.

See the AIX documentation for additional information.

## Using the disk drive with the IBM i operating system

The IBM i operating system configures the drive as a removable media drive with a name in the format RMSxx, for example, RMS01.

The drive and cartridge are used with optical commands and utilities (for example, WRKOPTVOL and INZOPT), and reports media in the Optical File System (QOPT).

See the IBM i operating system documentation for information about using the IBM i commands: **copy** and **backup**.

## Using the disk drive with the Linux operating system

The Linux operating system configures the drive as a disk drive with a name in the format sdx, for example, sda, sdb, and sdc.

See the Linux documentation for information about using the Linux commands: **copy** and **backup**.

## Setting the write-protect switch

The removable disk drives have a red, write-protect tab that is located on the back of the drive. To write-protect a drive, slide the write-protect tab toward the lock symbol. To disengage write protection, slide the tab to the unlock symbol.

## Using the emergency eject function

To eject a removable disk drive, press the eject button. If a drive is stuck, complete the following steps:

1. Unplug the power cable from the device.
2. Insert a large straightened paper clip (or similar object) into the emergency eject hole. Do not insert the object in the hole at an angle. Keep the object straight and apply some force to eject the drive.
3. When the drive has been ejected by the docking station, grasp the exposed sides of the drive and pull the drive straight out.
4. Reconnect the power cable for the docking station.
5. Restart your system to reset the docking station.

## Status lights

Learn about the power indicator and drive indicator status lights on the USB Removable Disk Drive.

### Power indicator

The eject button is illuminated by a power indicator light. The following table describes the operation of the power indicator.

Table 5. Power indicator

Indicator status	Meaning	Description
Off	No power	<ul style="list-style-type: none"> <li>FC EU04: Docking station does not have a power supply connected.</li> <li>FC EUA4: USB cable is not connected. The power supply may or may not be connected.</li> </ul>
Steady green	Ready	<ul style="list-style-type: none"> <li>FC EU04: Power supply is connected and the docking station will work correctly as long as the USB cable is connected.</li> <li>FC EUA4: USB cable is connected. The power supply may or may not be connected. If the power supply is connected, the docking station will work correctly. If the power supply is not connected, the docking station will not work correctly.</li> </ul>
Flashing green	Ejecting	Cartridge is ejecting.
Flashing amber	Fault	Docking station has detected a fault condition with the docking station.

### Removable disk drive indicator

The disk drive has an indicator light that displays the status of the drive. The following table describes the operation of the drive indicator.

Table 6. Cartridge indicator

Indicator status	Meaning	Description
Off	Not ready	Drive is not inserted correctly or the docking station has no power supply.
Steady green	Ready	Drive is ready.
Flashing green	Activity	Drive is reading, writing, or seeking.
Flashing amber	Fault	Docking station has detected a fault condition with the cartridge.

## RDX USB internal docking station (FC EUA3) and removable disk drive for the 8286-41A

Learn about the features of the RDX USB internal docking station and the supported disk drives.

### Description

**Note:** The internal RDX docking station (FC EUA3) is supported only on the 8286-41A.

The USB removable disk drive consists of a docking station, which holds a removable disk drive. The docking station is available as an internal device. The disk drive is a back-up and restore device that can be used as an alternative to tape drives. The removable disk drive is not a replacement for regular disk drives and cannot be used as part of a disk array. Figure 3 on page 8 shows the front view of the internal RDX docking station (FC EUA3) and removable disk drive cartridge.

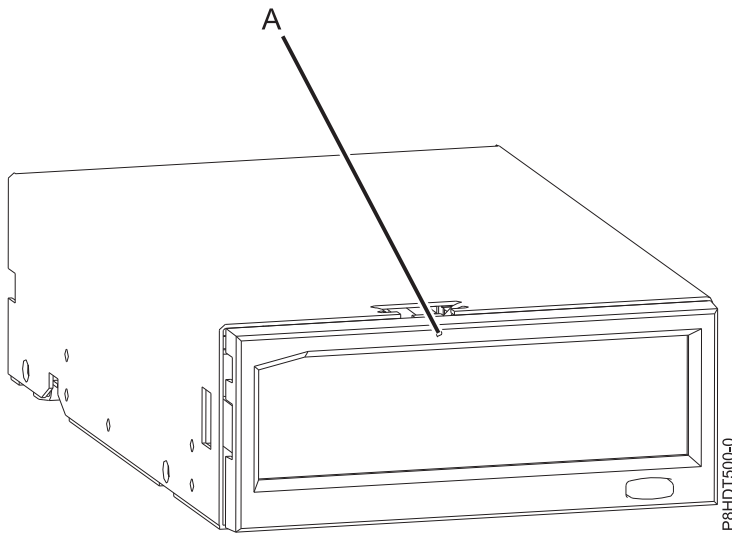


Figure 3. Front view of an internal RDX docking station (FC EUA3) and the removable disk drive cartridge

## Feature codes and part numbers

Learn about the feature codes (FCs) and part numbers for the USB removable disk drive.

The internal RDX docking station (FC EUA3) includes a USB cable and uses it to connect to an internal USB port. Table 7 provides the part numbers for the internal RDX docking station (FC EUA3) and Table 8 provides the part numbers of the supported disk drives in the media device.

The internal RDX docking station (FC EUA3) provides the following parts:

Table 7. Parts of the internal RDX docking station (FC EUA3)

FRU Part number	Description
46C2443 or 46C2444	Internal RDX USB 3.0 Dock
01KL161	Internal USB 3.0 Cable

The supported disk drives in the internal RDX docking station (FC EUA3) are listed in the following table:

Table 8. Removable disk drives

Feature code	Part number	Description
1107	46C5379	500 GB Removable Disk Drive
EU01	46C2335	1 TB Removable Disk Drive
EU2T	46C2975	2 TB Removable Disk Drive

## Purchasing extra removable disk drives

For best results, use only the removable disk drives that are listed in Table 8.

The removable disk drives are a supply item that can be ordered as a feature code. To order in the United States and Canada, call 1-888-IBM-MEDIA. To order drives in other locations, contact your local provider of IBM storage products.



IBM service representatives will not be dispatched to service or replace the removable disk drives.

## Storing removable disk drives

Store removable disk drives in their protective containers, on a flat surface with the top side up. The storage area must be clean and dry, must have normal room temperature, and must be away from any magnetic fields. For best storage life, use the removable disk drives every six months.

## Supported USB adapters and cables

**Attention:** The docking station supports the USB cable that is provided as part of the feature code. The docking station does not support attachment by using other USB cables, USB hubs, add-on USB cables, or USB cable extenders.

The internal docking station must be connected to the internal, integrated USB port on the 8286-41A system.

## Specifications

### Interface

USB 3.0

### Mksysb

Yes

### Bootable

Yes (IBM i requires an HMC)

### Environmental

*Table 9. Operating conditions*

USB Removable Disk Drive	Operating conditions	Non-operating conditions
Temperature	5°C - 55°C	-40°C - 65°C
Relative humidity	8% - 90% non-condensing	5% - 95% non-condensing
Maximum wet bulb temperature	29.4°C non-condensing	40°C non-condensing
Maximum temperature gradient	20°C per hour	20°C per hour
Altitude	-300 meters (-984.25 ft) to 3048 m (10,000 ft)	-300 meters (-984.25 ft) to 12,192 m (40,000 ft)

## Operating system or partition requirements

If you are installing a new feature, ensure that you have the software that is required to support the new feature and that you determine whether there are any prerequisites for this feature and attaching devices. For information about the prerequisites, see the IBM Prerequisite website ([www-912.ibm.com/e\\_dir/eServerPrereq.nsf](http://www-912.ibm.com/e_dir/eServerPrereq.nsf)).

The media device is supported on the following versions of the operating systems:

- AIX
  - AIX 7.1, or later.
  - AIX 6.1
- Linux
  - Red Hat Enterprise Linux Version 6, or later
  - Red Hat Enterprise Linux Version 7, or later
  - Red Hat Enterprise Linux Version 7.1, little endian, or later

- SUSE Linux Enterprise Server 11, Service Pack 3, or later, with current maintenance updates available from SUSE
- SUSE Linux Enterprise Server 12, or later, with current maintenance updates available from SUSE
- Ubuntu 14.04.3, or later
- Ubuntu 16.04, or later
- IBM i
  - IBM i Version 7.3, or later
  - IBM i Version 7.2
  - IBM i Version 7.1

## Using the USB Removable Disk Drive for backup and restore

The disk drive is a back-up and restore device that can be used as an alternative to tape drives. The removable disk drive is not a replacement for regular disk drives and cannot be used as part of a disk array.

**Note:** If power is lost during a backup to the disk, the data can be compromised. Verify the data or rerun the backup.

## Using the disk drive with the AIX operating system

The AIX operating system names the drives as drive `usbmsx`, for example, `usbms1`, and `usbms2`. The AIX operating system can also use the device as a raw device, for example, `rusbms1` and `rusbms2`.

The AIX operating system uses the removable disk drive differently depending on the program that is being used. The AIX command `mksysb`, builds a list of files to backup, creates a universal disk format (UDF) file system, and puts a boot image and the root volume group on the removable disk drive. When the `mksysb` process is complete, the removable disk drive can be used to boot the system. If you mount the removable disk drive, you can display and copy files to and from the UDF file system on the removable disk drive.

The AIX commands, `tar`, `backup`, `restore`, `dd`, and `cpio` can write to the removable disk drive as a raw device or non-raw device. You might get improved performance by using the device as a raw device.

See the AIX documentation for additional information.

## Using the disk drive with the IBM i operating system

The IBM i operating system configures the drive as a removable media drive with a name in the format `RMSxx`, for example, `RMS01`.

The drive and cartridge are used with optical commands and utilities (for example, `WRKOPTVOL` and `INZOPT`), and reports media in the Optical File System (QOPT).

See the IBM i operating system documentation for information about using the IBM i commands: `copy` and `backup`.

## Using the disk drive with the Linux operating system

The Linux operating system configures the drive as a disk drive with a name in the format `sdx`, for example, `sda`, `sdb`, and `sdc`.

See the Linux documentation for information about using the Linux commands: `copy` and `backup`.

## Setting the write-protect switch

The removable disk drives have a red, write-protect tab that is located on the back of the drive. To write-protect a drive, slide the write-protect tab toward the lock symbol. To disengage write protection, slide the tab to the unlock symbol.

## Using the emergency eject function

To normally eject a removable disk drive, press the eject button, wait for the eject button to stop flashing green and for the removable disk drive to be ejected. If a drive is stuck and does not eject, the drive and the dock need service. Complete the following steps to eject the cartridge:

1. Prepare the system for servicing by following the instructions at: Preparing the system to remove and replace an internal RDX docking station (FC EUA3) in the system with the power turned off.
2. Insert a large straightened paper clip (or similar object) into the emergency eject hole. Do not insert the object in the hole at an angle. Keep the object straight and apply some force to eject the drive.
3. When the drive has been ejected by the docking station, grasp the exposed sides of the drive and pull the drive straight out.
4. Prepare the system for operation by following the instructions at: Preparing the system for operation after removing and replacing an internal RDX docking station (FC EUA3) and removable disk drive.

## Status lights

Learn about the power indicator and drive indicator status lights on the internal RDX docking station (FC EUA3).

### Power indicator

The eject button is illuminated by a power indicator light. The following table describes the operation of the power indicator.

Table 10. Power indicator

Indicator status	Meaning	Description
Off	No power	Docking station does not have power supply.
Steady green	Ready	Power is on and the docking station is working correctly.
Flashing green	Ejecting	Cartridge is ejecting.
Flashing amber	Fault	Docking station has detected a fault condition with the docking station.

### Removable disk drive indicator

The disk drive has an indicator light that displays the status of the drive. The following table describes the operation of the drive indicator.

Table 11. Cartridge indicator

Indicator status	Meaning	Description
Off	Not ready	Drive is not inserted correctly or the docking station has no power supply.
Steady green	Ready	Drive is ready.
Flashing green	Activity	Drive is reading, writing, or seeking.

Table 11. Cartridge indicator (continued)

<b>Indicator status</b>	<b>Meaning</b>	<b>Description</b>
Flashing amber	Fault	Docking station has detected a fault condition with the cartridge.

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## Accessibility features for IBM Power Systems servers

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

### Overview

The IBM Power Systems servers include the following major accessibility features:

- Keyboard-only operation
- Operations that use a screen reader

The IBM Power Systems servers use the latest W3C Standard, WAI-ARIA 1.0 ([www.w3.org/TR/wai-aria/](http://www.w3.org/TR/wai-aria/)), to ensure compliance with US Section 508 ([www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-section-508-standards/section-508-standards](http://www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-section-508-standards/section-508-standards)) and Web Content Accessibility Guidelines (WCAG) 2.0 ([www.w3.org/TR/WCAG20/](http://www.w3.org/TR/WCAG20/)). To take advantage of accessibility features, use the latest release of your screen reader and the latest web browser that is supported by the IBM Power Systems servers.

The IBM Power Systems servers online product documentation in IBM Knowledge Center is enabled for accessibility. The accessibility features of IBM Knowledge Center are described in the Accessibility section of the IBM Knowledge Center help ([www.ibm.com/support/knowledgcenter/doc/kc\\_help.html#accessibility](http://www.ibm.com/support/knowledgcenter/doc/kc_help.html#accessibility)).

## Keyboard navigation

This product uses standard navigation keys.

## Interface information

The IBM Power Systems servers user interfaces do not have content that flashes 2 - 55 times per second.

The IBM Power Systems servers web user interface relies on cascading style sheets to render content properly and to provide a usable experience. The application provides an equivalent way for low-vision users to use system display settings, including high-contrast mode. You can control font size by using the device or web browser settings.

The IBM Power Systems servers web user interface includes WAI-ARIA navigational landmarks that you can use to quickly navigate to functional areas in the application.

## Vendor software

The IBM Power Systems servers include certain vendor software that is not covered under the IBM license agreement. IBM makes no representation about the accessibility features of these products. Contact the vendor for accessibility information about its products.

## Related accessibility information

In addition to standard IBM help desk and support websites, IBM has a TTY telephone service for use by deaf or hard of hearing customers to access sales and support services:

TTY service  
800-IBM-3383 (800-426-3383)  
(within North America)

For more information about the commitment that IBM has to accessibility, see IBM Accessibility ([www.ibm.com/able](http://www.ibm.com/able)).

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When attaching a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices supplied with the monitor.

### Class A Notices

The following Class A statements apply to the IBM servers that contain the POWER8 processor and its features unless designated as electromagnetic compatibility (EMC) Class B in the feature information.

### 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

CAN ICES-3 (A)/NMB-3(A)

### 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.

European Community contact:  
IBM Deutschland GmbH  
Technical Regulations, Abteilung M456



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Tel: +49 800 225 5426  
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.

### VCCI Statement - Japan

この装置は、クラスA 情報技術装置です。この装置を家庭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 VCCI Japanese statement in the box 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 Statement

This statement explains the Japan JIS C 61000-3-2 product wattage compliance.

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This statement explains the Japan Electronics and Information Technology Industries Association (JEITA) statement for 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

This statement explains the JEITA statement for 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

This statement explains the JEITA statement for 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。

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- 換算係数 : 0

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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。

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.

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**IBM Taiwan Contact Information:**

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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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New Orchard Road

Armonk, New York 10504  
Tel: 914-499-1900

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Technical Relations Europe, Abteilung M456  
IBM-Allee 1, 71139 Ehningen, Germany  
Tel: +49 (0) 800 225 5426  
email: HalloIBM@de.ibm.com

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Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 / EN 55032 Klasse A.

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### **Federal Communications Commission (FCC) Statement**

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This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult an IBM-authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from IBM-authorized dealers. IBM is not responsible for any radio or television interference caused by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate this 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

CAN ICES-3 (B)/NMB-3(B)

### 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.

European Community contact:  
IBM Deutschland GmbH  
Technical Regulations, Abteilung M456  
IBM-Allee 1, 71139 Ehningen, Germany  
Tel: +49 800 225 5426  
email: halloibm@de.ibm.com

### VCCI Statement - Japan

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。 VCCI-B

### Japan Electronics and Information Technology Industries Association Statement

This statement explains the Japan JIS C 61000-3-2 product wattage compliance.

(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 : Knowledge Centerの各製品の  
仕様ページ参照

This statement explains the Japan Electronics and Information Technology Industries Association (JEITA) statement for 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

This statement explains the JEITA statement for 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

This statement explains the JEITA statement for 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

### 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

### Germany Compliance Statement

**Deutschsprachiger EU Hinweis: Hinweis für Geräte der Klasse B EU-Richtlinie zur Elektromagnetischen Verträglichkeit**

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 55022/ EN 55032 Klasse B 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.

**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 Richtlinie 2014/30/EU) für Geräte der Klasse B**

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:  
International Business Machines Corp.  
New Orchard Road  
Armonk, New York 10504  
Tel: 914-499-1900

Der verantwortliche Ansprechpartner des Herstellers in der EU ist:  
IBM Deutschland GmbH  
Technical Relations Europe, Abteilung M456  
IBM-Allee 1, 71139 Ehningen, Germany  
Tel: +49 (0) 800 225 5426  
email: HalloIBM@de.ibm.com

Generelle Informationen:

**Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022/ EN 55032 Klasse B.**

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