Bull ESCALA EPC610, PL 400R and PL 600R

Installation Guide

ORDER REFERENCE
86 A1 92KX 02

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Installation Guide

Hardware

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Communication Statements

The following statement applies to this product. The statement for other products intended for use with this product appears in their accompanying documentation.

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. Neither the provider nor the manufacturer are 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.

European Union (EU) Statement

This product is in conformity with the protection requirements of EU Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. The manufacturer cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non–recommended modification of the product, including the fitting of option cards supplied by third parties. Consult with your dealer or sales representative for details on your specific hardware.

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

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

International Electrotechnical Commission (IEC) Statement

This product has been designed and built to comply with IEC Standard 950.

United Kingdom Telecommunications Safety Requirements

This equipment is manufactured to the International Safety Standard EN60950 and as such is approved in the UK under the General Approval Number NS/G/1234/J/100003 for indirect connection to the public telecommunication network.

The network adapter interfaces housed within this equipment are approved separately, each one having its own independent approval number. These interface adapters, supplied by the manufacturer, do not use or contain excessive voltages. An excessive voltage is one which exceeds 70.7 V peak ac or 120 V dc. They interface with this equipment using Safe Extra Low Voltages only. In order to maintain the separate (independent) approval of the manufacturer's adapters, it is essential that other optional cards, not supplied by the manufacturer, do not use main voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by the manufacturer.

Avis de conformité aux normes du ministère des Communications du Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Réglement sur le matériel brouilleur du Canada.

Canadian Department of Communications Compliance Statement

This Class A digital apparatus meets the requirements of the Canadian Interference–Causing Equipment Regulations.

VCCI Statement

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラス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。

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 Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

Electromagnetic Interference (EMI) Statement – Taiwan

警告使用者:

這是甲類的資訊產品，在居住的環境中使用
時，可能會造成射頻干擾，在這種情況下，
使用者會被要求採取某些適當的對策。

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

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

Radio Protection for Germany

Dieses Gerät ist berechtigt in Übereinstimmung mit Dem deutschen EMVG vom 9.Nov.92 das EG–Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die IBM Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse A. Für diese von Geräten gilt folgende Bestimmung nach dem EMVG:

Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministers für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind.

(Auszug aus dem EMVG vom 9.Nov.92, Para.3, Abs.4)

Hinweis

Dieses Genehmigungsverfahren ist von der Deutschen Bundespost noch nicht veröffentlicht worden.

Safety Notices

A *danger* notice indicates the presence of a hazard that has the potential of causing death or serious personal injury. *Danger* notices appear on the following pages:
x

A *caution* notice indicates the presence of a hazard that has the potential of causing moderate or minor personal injury. A Caution notice appears on the following pages:
x
x
xi
1-1
1-2
1-4
1-5.

Rack Safety Instructions

- Do not install this unit in a rack where the internal rack ambient temperatures will exceed 40 degrees C.
- Do not install this unit in a rack where the air flow is compromised. Any side, front or back of the unit used for air flow through the unit must not be in indirect contact with the rack.
- Care should be taken to insure that a hazardous condition is not created due to uneven mechanical loading when installing this unit in a rack. If the rack has a stabilizer it must be firmly attached before installing or removed this unit.
- This unit requires 6 amp. of power with an input of 100–127 V ac or or 3 amp. with an input of 200–240. Consideration should be given to the connection of the equipment to the supply circuit such the overloading of circuits does not compromise the supply wiring or overcurrent protection.
- 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.

Electrical Safety

Observe the following safety instructions any time you are connecting or disconnecting devices attached to the workstation.

DANGER

An electrical outlet that is not correctly wired could place hazardous voltage on 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.

Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.

When adding or removing any additional devices to or from the system, ensure that the power cables for those devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

Use one hand, when possible, to connect or disconnect signal cables to prevent a possible shock from touching two surfaces with different electrical potentials.

During an electrical storm, do not connect cables for display stations, printers, telephones, or station protectors for communication lines.

CAUTION:
This product is equipped with a three–wire power cable and plug for the user's safety. Use this power cable with a properly grounded electrical outlet to avoid electrical shock.

DANGER

To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.

CAUTION:
This unit has more than one power supply cord. To reduce the risk of electrical shock, disconnect two power supply cords before servicing.

Laser Safety Information

The optical drive in this system unit is a laser product. The optical drive has a label that identifies its classification. The label, located on the drive, is shown below.

The optical drive in this system unit is certified in the U.S. to conform to the requirements of the Department of Health and Human Services 21 Code of Federal Regulations (DHHS 21 CFR) Subchapter J for Class 1 laser products. Elsewhere, the drive is certified to conform to the requirements of the International Electrotechnical Commission (IEC) 825 (1st edition 1984) and CENELEC EN 60 825:1991 for Class 1 laser products.

CAUTION:
A class 3 laser is contained in the device. Do not attempt to operate the drive while it is disassembled. Do not attempt to open the covers of the drive as it is not serviceable and is to be replaced as a unit.

Class 1 laser products are not considered to be hazardous. The optical drive contains internally a Class 3B gallium–arsenide laser that is nominally 30 milliwatts at 830 nanometers. The design incorporates a combination of enclosures, electronics, and redundant interlocks such that there is no exposure to laser radiation above a Class 1 level during normal operation, user maintenance, or servicing conditions.

Environmental Notices

Product Recycling and Disposal

This unit contains materials such as circuit boards and connectors with lead that require special handling and disposal at end of life. Before this unit is disposed, these materials must be removed and recycled or discarded according to applicable regulations. This manual contains specific information on batteries where applicable. Contact your account representative for more information. This product may contain nickel–cadmium and /or lithium batteries. The battery(s) must be recycled or disposed of properly. Recycling facilities may not be available in your area.

For information on reuse, recycling or proper battery disposal procedures, contact your sales representative or local waste disposal facility.

Unit emissions

The unit–related emission value is equal to or lower than 70dB(A).

Der Geräuschpegel der Einheit ist kleiner oder gleich 70 db(A).

About this Book

This book provides information on how to set up and cable the system, install and remove options, and verify system options.

ISO 9000

ISO 9000 registered quality systems were used in the development and manufacturing of this product.

Related Publications

The following publications are available:

- The *System Unit Safety Information*, order number 86 X1 11WD, contains translations of safety information used throughout this book.
- The *User's Guide*, order number 86 A1 28KX, contains information on how to use the system, use diagnostics, use service aids and verify system operations.
- The *Service Guide*, order number 86 A1 30KX, contains reference information, maintenance analysis procedures (MAPs), error codes, removal and replacement procedures, and a parts catalog.
- The *T00 Rack Installation and Service Guide*, order number 86 A1 94KX, contains information regarding the Model T00 Rack, in which the EPC810 may be installed.
- The *Diagnostic Information for Multiple Bus Systems*, order number 86 A1 26HX, contains diagnostic information, service request numbers (SRNs) and failing function codes FFCs).
- The *Adapters for Multiple Bus Systems*, order number 86 A1 27HX, contains cabling and technical information about some of the adapters and devices available for your system unit.
- The *Site Preparation for Rack Systems*, order number , provides a step–by–step approach to prepare a customer site dor the installation of single and multiple rack–mounted machines together with their subsystems and peripherals.
- The *Disks and Tapes Configuration Information*, order number 86 A1 88GX, gives the jumper and switch settings to configure disks and tapes peripherals that use the Small Computer System Interface (SCSI).

Chapter 1. Installing the System

This chapter provides procedures to help you set up the system.

The system is a multiprocessor, multibus system packaged in drawers. The processors and memory are packaged in a 5 EIA–unit central electronics complex (CEC drawer), and the I/O devices are in a 5 EIA–unit I/O drawer. The basic system consists of one CEC drawer and one or two I/O drawers in the same rack. Connections between the CEC drawer and I/O drawers are made through a number of cables.

Step 1. Checking Inventory

Before you begin the installation, check your inventory.

- *Installation Guide*, 86 A1 92KX (this book)
- *System Unit Safety Information*, 86 X1 11WD

Verify with the customer that the following items are available. You will need them to complete this installation.

- A floor plan, showing where to place each rack.
- A console, including cables and a power source.
- A modem for the electronic customer–support function (if the customer ordered this function). This includes the correct telephone jack, cables, and a power source.

Step 2. Observe the Safety Notice During Installation

Observe the electrical safety instructions listed on page x.

Step 3. Checking the Customer Environment

- Verify with your Installation Planning Representative or the customer that any station–protector boxes used are correctly installed according to the *Site Preparation for Rack Systems* manual.
- Make sure the customer is aware that the recommended temperature for this system is 24°C (75°F) and the recommended relative humidity is 45%. The acceptable operating temperature range is 10°C (50°F) to 38°C (100°F), and the acceptable operating humidity range is 8% to 80%
- Make sure the customer is aware that the front and rear service clearances around the central electronics complex (CEC), primary I/O, secondary I/O drawer, and rack should be 36 inches (900mm). The service clearances are important for proper air circulation, weight distribution, and safety to both the service representative and the customer.

Step 4. Checking Customer Outlets

CAUTION:
Do not touch the receptacle or the receptacle faceplate with anything other than your test probes before you have met the requirements in Step 8 below.

1. Have the customer locate and turn off the branch circuit CB (Circuit Breaker). Attach tag S229–0237, which reads ”Do Not Operate.”)

Note: All measurements are made with the receptacle faceplate in the normally installed position.

2. Some receptacles are enclosed in metal housings. On receptacles of this type, perform the following steps:

   a. Check for less than 1 volt from the receptacle case to any grounded metal structure in the building, such as a raised–floor metal structure, water pipe, building steel, or similar structure.

   b. Check for less than 1 volt from receptacle ground pin to a grounded point in the building.

Note: If the receptacle case or faceplate is painted, be sure the probe tip penetrates the paint and makes good electrical contact with the metal.

3. Check the resistance from the ground pin of the receptacle to the receptacle case. Check resistance from the ground pin to building ground. The reading should be less than 1.0 ohm, which indicates the presence of a continuous grounding conductor.

4. If any of the three checks made in substep 2 are not correct, ask the customer to remove the power from the branch circuit and make the wiring corrections; then check the receptacle again.

Note: Do not use the digital multimeter to measure grounding resistance.

5. Check for infinite resistance between the phase pins. This is a check for a wiring short.

CAUTION:
If the reading is other than infinity, do not proceed! Have the customer make necessary wiring corrections before continuing. Do not turn on the branch circuit CB until all the above steps are satisfactorily completed.

6. Have the customer turn on the branch circuit CB. Measure for appropriate voltages between phases. If no voltage is present on the receptacle case or grounded pin, the receptacle is safe to touch.

7. With an appropriate meter, verify that the voltage at the outlet is correct.

8. Verify that the grounding impedance is correct by using the ECOS 1020, 1023, B7106, or an appropriately approved ground impedance tester.

Note: Do not use the 120–volt convenience outlets inside a machine to power the tester.

Step 5. Setting Up Rails in the Rack

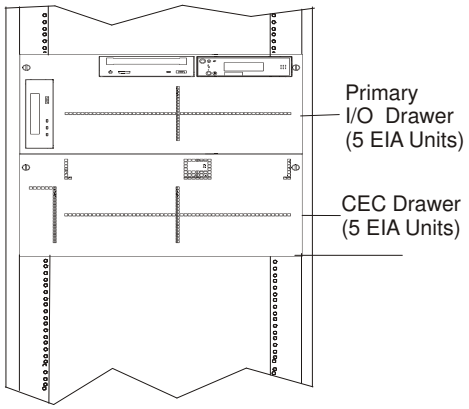
If your system arrived installed in a rack with all the cables attached, skip to ”Step 9. Setting Up Attached Devices”. If not, continue with this step.

Note: Read the following drawer placement notes, and Caution statements before installing the system rails.

Note: Service clearance may be required on the early Model EPC610 I/O and CEC drawers. Refer to the following notes for specific instructions.

Notes:

1. The T00 rack has EIA numbers visible from the front and rear that start with 1 (at the bottom) to 36 (at the top). Therefore, the rail surface that a drawer sits on is approximately in line with the lower edge of the EIA position for that drawer. The lowest EIA number completely occupied by a drawer is said to be that drawer’s EIA position. An EIA number is also used in identifying cables attached to that drawer. The I/O and CEC drawers occupy 5 EIA units each.
2. Because of service restriction for the CEC drawer (see note 6), the I/O drawer should be installed above the CEC drawer as shown in the figure under note 8.
3. The system has two service positions. One position is with the drawer pulled out the front of the rack, and the other position is with the drawer pulled out the rear of the rack.
4. Two stabilizers are required on the rack before installing the system if the rack is not bolted to the floor. One must be installed at the bottom front of the rack unit, and the other at the bottom rear of the rack unit. Both must be installed prior to servicing the system.
5. If the system is the only system in the rack, follow this placement guideline: on the T00 rack, start from bottom or mount rails so that the top drawer will not exceed 32nd EIA location.
6. The CEC drawer requires 5 EIA units (8.75 inches) service clearance from the top of the T00 rack. It should never be installed in the top most position in this rack.
7. Early EPC610 I/O drawers require 4 EIA units service clearance from the top of the rack when placed in their rear service position. These early drawers have a rear service stop latch 11.25 inches (285.75mm) from the rack mounting flange at the front of the drawer. The redesigned drawers have a rear service stop latch 5.75 inches from the rack mounting flange at the front of the drawer and do not have this service clearance requirement.
8. If there are no drawers placed immediately above the system, install drawer anti–tip guides as shown in the rack drawer rail instructions shipped with the system. This will help support the drawers when placed in their rear service position.

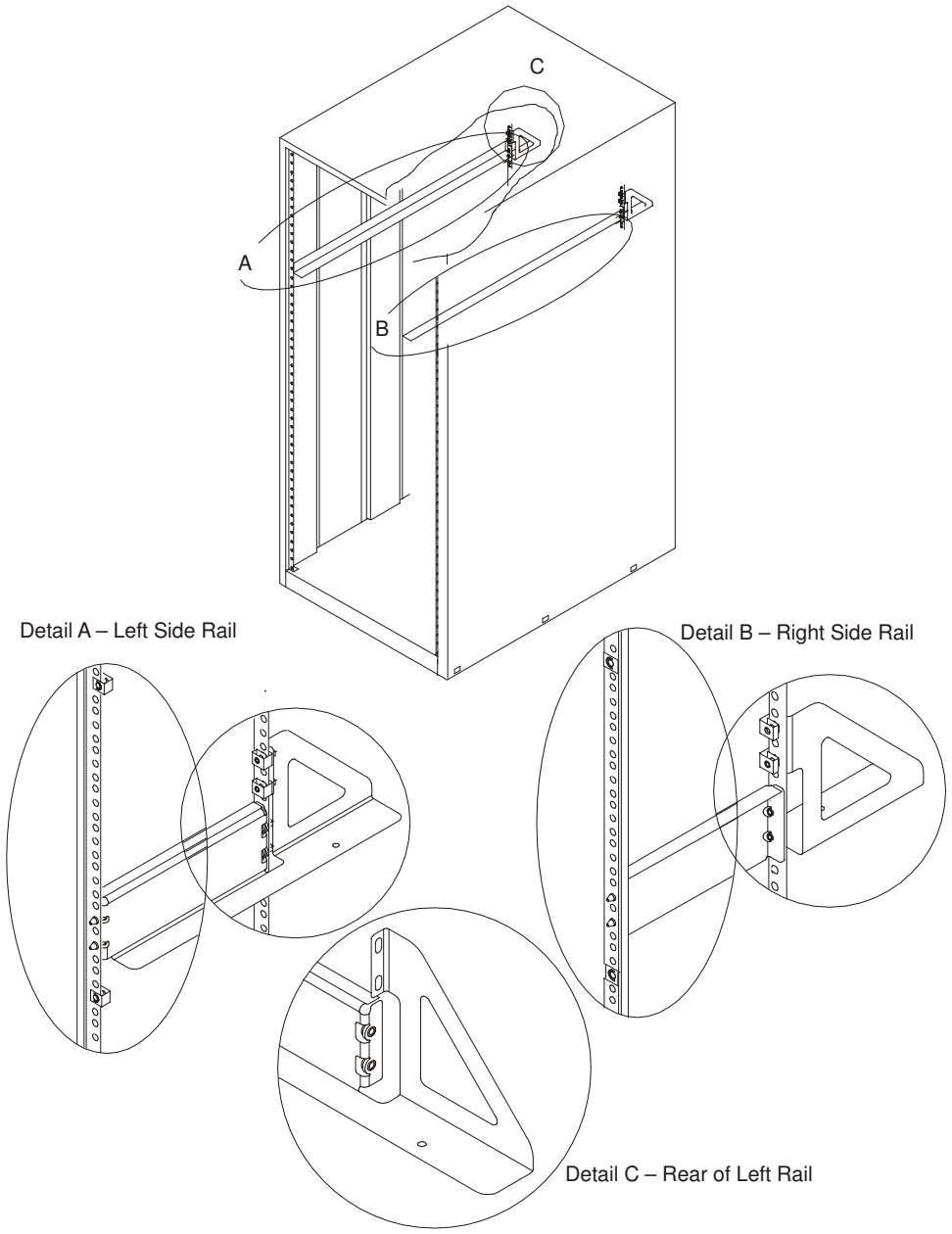


CAUTION:
The stabilizer must be firmly attached to the bottom front of the rack to prevent the rack from turning over when the drawers are pulled out of the rack. Do not pull out or install any drawer or feature if the stabilizer is not attached to the rack.

CAUTION:
The stabilizer must be firmly attached to the bottom rear of the rack to prevent the rack from turning over when the drawers are pulled out of the rack. Do not pull out or install any drawer or feature if the stabilizer is not attached to the rack.

To set up the rails in the rack, do the following:

1. Determine the EIA locations for the drawer rails. (See the illustration on the previous pages.)
2. Install the nut clip on the rails, install the rails in the rack unit as shown in the following figure.

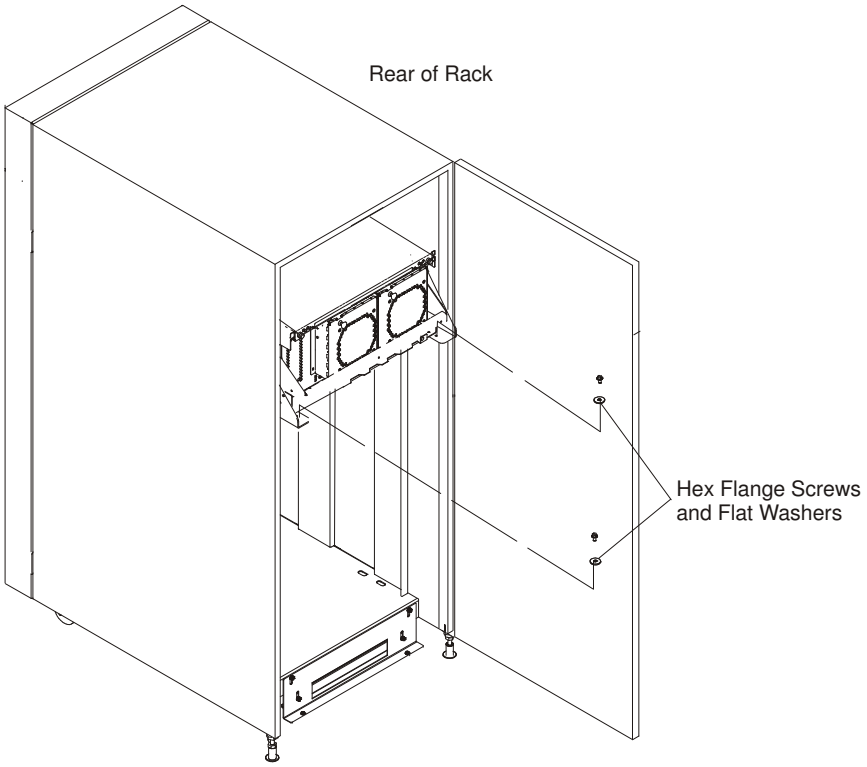


Step 6. Installing Drawers in the Rack

CAUTION:
This unit weighs between 32 kg (70.5 pounds) and 55 kg (121.2 pounds). Three persons are required to safely move it. Using less than three persons to move it can result in injury.

To install the drawers in the rack, do the following:

1. Slide the shipping box containing the drawer in front of the rack.
2. If present, remove the front door of the rack to make installing the drawer easier.
3. Remove the following parts to facilitate lifting the drawer into the rack unit:
   - Front bezel
   - Both power supplies
4. Lift the drawer onto the support rails, and slide it **slowly** into the rack.
5. Continue sliding the drawer into the rack until the front of the drawer rests against the nut clips on the rack.
6. Attach the rear of the drawer to the rack rails with the two hex flange screws and the two flat washers provided with the drawer. This secures the drawer to the rack.

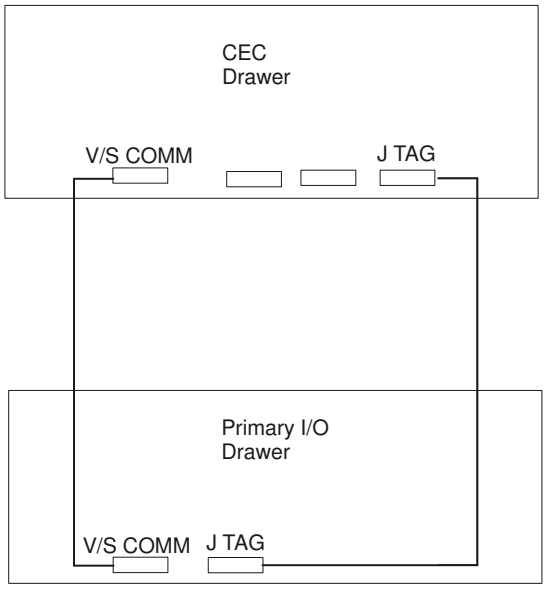


7. Replace the parts that you removed earlier:
   - Both power supplies
   - Front bezel

Step 7. Connecting JTAG and VS/COMM Cables

Use the following figure to connect the JTAG and VS/COMM cables.

CEC Drawer Attached to One I/O Drawer



Step 8. Connecting RIO and SPCN Cables

The RIO and SPCN cables provide two functions in the system: remote data bus connection and power control. The following basic rules must be followed when connecting these two types of cables:

- The I/O drawers must be connected in a loop fashion for both the RIO cables and the SPCN cables. The loop connection provides redundant paths so that if a failure occurs in part of a cable, the system will continue to operate. If a failure occurs, a warning message is displayed on the system console but the system continues to operate.
- One loop is required for the SPCN cabling. This loop begins and ends at the primary I/O drawer.
- Two loops are possible for the RIO cabling, depending on the number and desired configuration of I/O drawers. These loops begin and end at the primary I/O drawer.

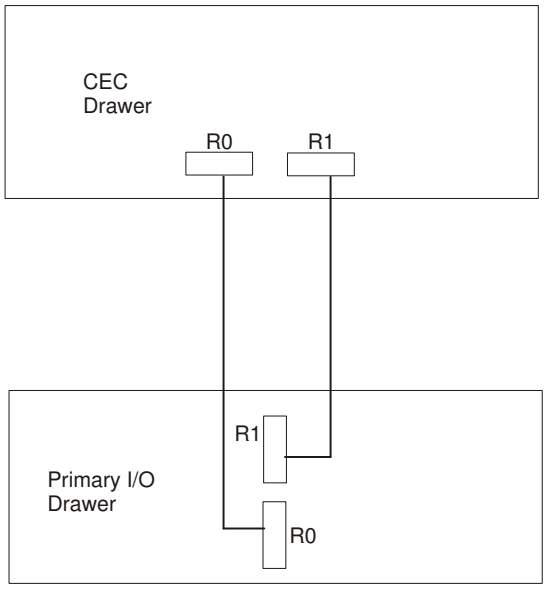
RIO Cabling

The following rules apply to RIO cable connections:

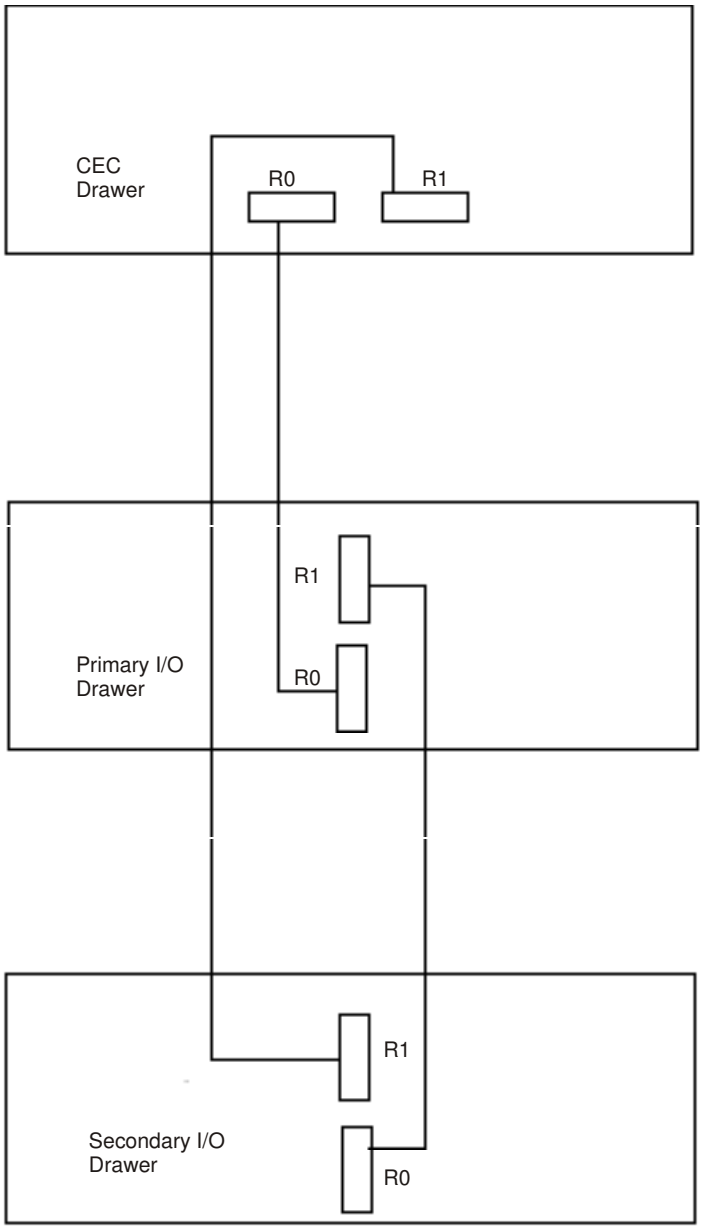
- I/O drawers 0 and 1 are connected using the first RIO loop, which uses RIO ports 0 and 1 on the CEC drawer.
- The primary I/O drawer must be installed and connected to RIO port 0 of the CEC drawer. The connection must be made from RI0 port 0 of the CEC drawer to RIO port 0 of the primary I/O drawer. This connection is required to make the primary drawer the first drawer in the loop, which allows the firmware to initialize the system.

The following figures provide cabling examples for all valid cabling configurations. Match your configuration to the correct figure and connect your RIO cables as shown.

CEC Drawer Attached to One I/O Drawer



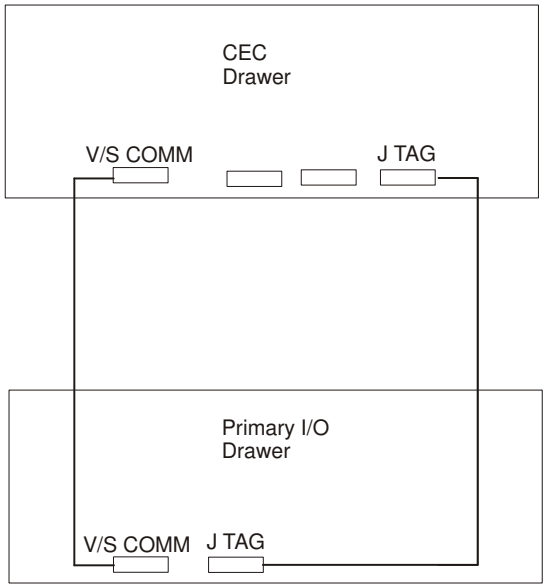
CEC Drawer Attached to Two I/O Drawers



SPCN Cabling

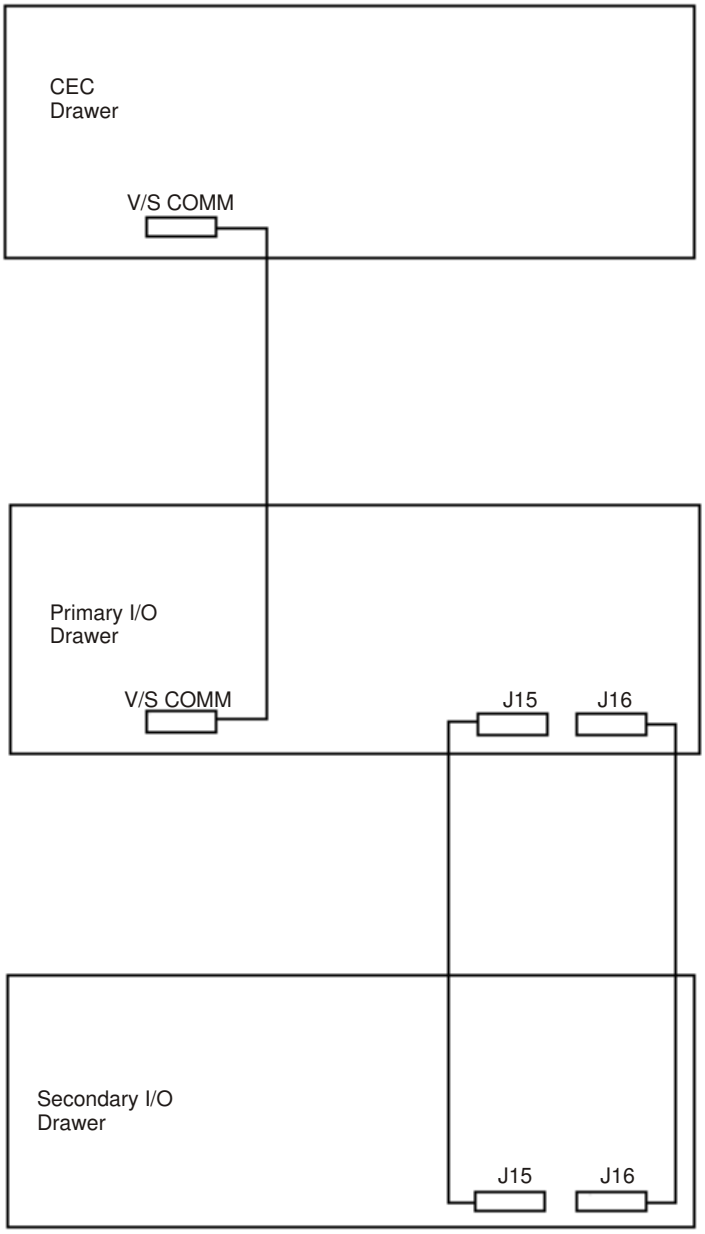
The following figures provide cabling examples for all valid cabling configurations. Match your configuration to the correct figure and connect your SPCN cables as shown.

CEC Drawer Attached to One I/O Drawer



Note: The V/S COMM cable includes SPCN signals in addition to other signals.

CEC Drawer Attached to Two I/O Drawers

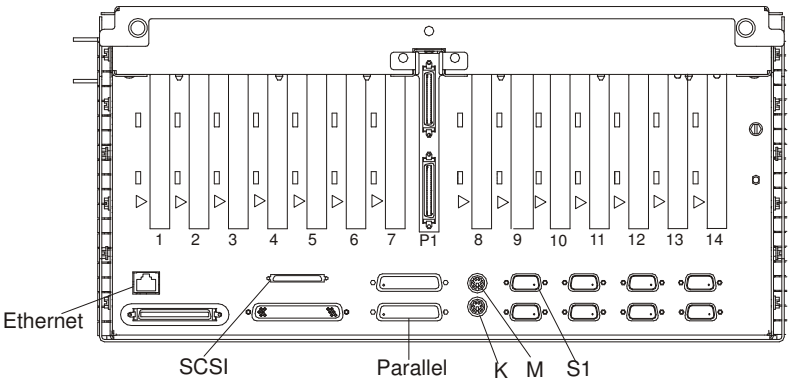


Step 9. Setting Up Attached Devices

Notes:

1. During the setup of each device, connect only the device end of the signal cable. *Do not* connect the device signal cables to the rack now.
2. Do the setup procedures in the documentation for each device being attached to the rack; then return to ”Step 10. Updating the Device Records”.

Connect the ASCII terminal to serial port 1 (S1). Connect the keyboard (K), mouse (M), and graphics display (if available). Refer to the diagram below for the locations of the connectors.



Step 10. Updating the Device Records

Update the ”System Records” in Appendix A to reflect the configuration of the system adapters and devices that are installed.

Step 11. Attaching External Devices

External devices used with the system are connected to connectors on the I/O drawers or to adapters that are installed inside any of the I/O drawers. Attach any external devices now.

Step 12. Connecting the Power

To connect the power, do the following:

1. Plug the drawer power cords into the power distribution bus (PDB) of the rack.
2. Plug the power cords of the external devices into power outlets.
3. Plug the PDB power cord into the customer’s electrical outlet.

Step 13. Installing Options

If you have any options to install, go to Chapter 3, ”Installing Options for the system” and install them at this time.

Return here after installing your options.

Step 14. Starting the Operating System

If you plan to install the AIX operating system now, refer to the *AIX Installation Guid*e.

If the AIX operating system was preinstalled on your system, go to the AIX operating system installation documentation.

Perform the following steps to power on the CEC drawer and attached I/O drawers:

1. Open the rack door. Look for the OK message in the primary I/O drawer operator panel display, which indicates that the system is in Standby mode.
2. Press the power button on the primary I/O drawer operator panel.

The power LED on the primary I/O drawer operator panel starts blinking at a fast rate. Checkpoint codes (9xxx) appear in the operator panel display.

When the power–on sequence is complete:

- The power LED on the primary I/O drawer operator panel stops blinking and stays on.
- The power LED on the CEC drawer stops blinking and stays on.

Step 15. Verify the Hardware Operation

If your system did not load the AIX operating system successfully, or you would like to test your hardware, go to Chapter 2, ”Running System Verification”.

Chapter 2. Verifying the Hardware Operation

The system verification procedure checks the system for correct hardware operation. Use this procedure to verify that your system is set up correctly. If you have a problem with your system in the future, use this procedure to test the system hardware to help you determine if you have a hardware problem. Run the system verification procedure as described in the following steps.

Step 1. Considerations before Running This Procedure

Read the following before using this procedure:

- The AIX operating system must be installed on your system before you attempt to perform this procedure.
- If this system unit is directly attached to another system unit or attached to a network, be sure communication with the other systems is stopped.
- This procedure requires use of all of the system resources. No other activity can be running on the system while you are performing this procedure.
- This procedure requires a display connected to a graphics adapter, or an ASCII terminal attached to the S1 or S2 port.
- This procedure runs the AIX Online Diagnostics in Service mode. If the system console is an ASCII terminal, see the documentation for your type of ASCII terminal to find the key sequences you need in order to respond to the diagnostics.
- If a console display is not selected, the diagnostics stop. The instructions for selecting a console display are displayed on all of the graphic displays and any terminal attached to the S1 port. Follow the displayed instructions to select a console display.

Go to step 2.

Step 2. Loading the Diagnostics

Note: If the system is in Standby mode (light–emitting diode (LED) on the operator panel is slowly blinking and the operator panel displays `OK`), skip the first three steps of this procedure. If the system is running, and you do not want to shut it down, begin on substep 6.

1. Stop all application programs running on the operating system.
2. Stop the operating system by logging on as root user and typing **shutdown**.
3. Wait for the system to go into Standby mode. The power–on LED on the operator panel starts to slowly blink, and the operator panel displays OK, indicating that the system is in standby mode.
4. If you are loading the diagnostics and running them from an ASCII terminal, you might need to change your terminal settings. Record the normal settings, and be sure the terminal attributes are set to work with the diagnostics. If needed, see the documentation for your terminal hardware for terminal attributes.
5. Turn on the system by pressing the Power on/off button once.
6. After the AIX operating system loads, log in as **root**.
7. Type **diag** at the command prompt.
8. Follow the instructions that appear on the display to select a console.
9. When the Diagnostic Operating Instructions display, go to ”Step 3. Running the Verification Procedure”.

If you are unable to load the diagnostics to the point when the Diagnostic Operating Instructions display, call your support center for assistance.

Step 3. Running System Verification

When the Diagnostic Operating Instructions display, do the following to run system verification:

1. Press Enter.
2. If the terminal type has not been defined, you must use the **Initialize Terminal** option on the Function Selection menu to initialize the operating system environment before you can continue with the diagnostics.
3. If you want to do a general checkout with minimal operator action, Select the **Diagnostic Routines** option on the Function Selection menu.

   If you want to do a more complete checkout including the use of wrap plugs, select the **Advanced Diagnostics** option on the Function Selection menu. The advanced diagnostics are primarily for the service representative; they may instruct you to install wrap plugs to better isolate a problem.
4. Select the **System Verification** option on the Diagnostic Mode Selection menu.
5. If you want to run a general checkout of all installed resources, Select the **All Resource** option on the Diagnostic Selection menu.

   If you want to check one particular resource, select that resource on the Diagnostic Selection menu. Follow the instructions on the screen to complete the checkout procedure.

The checkout programs end with either of the following results:

- The Testing Complete menu displays with a message stating `No trouble was found`.
- The A Problem Was Detected On (Time Stamp) menu displays, with either a service request number (SRN) or an error code. Make a note of any codes displayed on the display or operator panel.

Step 4. Performing Additional System Verification

To perform additional system verification, do the following:

1. Press Enter to return to the Diagnostic Selection menu.
2. If you want to check other resources, select the resource. When you have checked all of the resources you need to check, go to Step 5.

Step 5. Stopping the Diagnostics

To stop the diagnostics, do the following:

1. Press the F10 key to exit the diagnostics.
2. If you changed any attributes on your ASCII terminal to run the diagnostics, change the settings back to normal.
3. This completes the system verification. If the system failed any of the diagnostic tests, call your service representative. If you received an error code, record the code and report it to the service organization.

If the system passed all the diagnostic tests, the verification process is complete and your system is ready to use.

Chapter 3. Installing Options for the System

Hot–Pluggable Options

Observe the electrical safety instructions listed on page x.

Handling Static–Sensitive Devices

Attention: Adapters, planars, diskette drives, and disk drives are sensitive to static electricity discharge. These devices are wrapped in antistatic bags, to prevent this damage.

Take the following precautions:

- If you have an antistatic wrist strap available, use it while handling the device.
- Do not remove the device from the antistatic bag until you are ready to install the device in the system unit.
- With the device still in its antistatic bag, touch it to a metal frame of the system.
- Grasp cards and boards by the edges. Hold drives by the frame. Avoid touching the solder joints or pins.
- If you need to lay the device down while it is out of the antistatic bag, lay it on the antistatic bag. Before picking it up again, touch the antistatic bag and the metal frame of the system unit at the same time.
- Handle the devices carefully in order to prevent permanent damage.

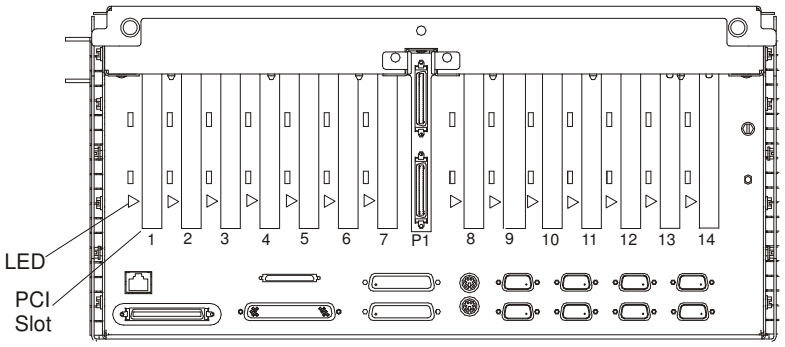
Stopping the System Unit

Attention:When shutting down your system to install options, shut down all applications first and then shut down the operating system. The system power turns off and the system will be in Standby mode when the operating system is shutdown. Before removing power from the system unit, ensure that the shutdown process is complete. Failure to do so can result in the loss of data. Some option–installation procedures do not require the system to be stopped for installation. If necessary, the option–installation procedures in this section will direct you here if stopping the system is required.

1. Log in to the system as **root**.
2. Stop any applications that are running on the system.
3. At a command line, type **shutdown** to stop the operating system.
4. After you shut down the operating system, set the power switches of any attached devices to Off.
5. The system unit is powered down by the shutdown procedure.

I/O Drawer PCI Slot LED Definitions

The following table describes the possible states of the LEDs associated with the I/O drawer PCI slots. These LEDs are located at the rear of the I/O drawer. One LED is associated with each PCI slot.



LED Indication	PCI Slot State	Definition
Off	Off	Slot power is Off. It is safe to remove or replace adapters.
On (not flashing)	On	Slot power is On. Do not remove or replace adapters.
Flashing slow (one flash per second)	Identify	Indicates slot has been identified by the software. Do not remove or replace adapters at this time.
Flashing fast (six to eight flashes per second)	Action	Indicates slot is ready for removal or replacement of adapters.

Installing Adapter Cards

Note: If you are installing devices which connect to an adapter, install the devices and cables before you install the adapter.

If the adapter you are installing requires device driver software, see the documentation for the adapter and load the software before installing the adapter.

Note: To get to the diskette, you will need to remove the front benzel. Refer to the figure on page A-5.

With this system, you can install PCI adapters with the power on. These adapters are referred to as *hot–pluggable PCI adapters*. Some adapters are not hot–pluggable and power must be removed from the system for adapter installation.

Before you install the adapter, determine if the PCI adapter you are installing is hot–pluggable. See Appendix B “PCI Adapter Placement Reference” .

If you are installing a PCI adapter that is:

- Not hot–pluggable, go to ”Installing a Non–Hot–Pluggable PCI Adapter”, on page 3-3.
- Hot–pluggable, go to ”Installing a Hot–Pluggable PCI Adapter”, on page 3-4.

Installing a Non–Hot–Pluggable PCI Adapter

Perform the following steps to install the adapter:

1. Turn power off and unplug the system unit power cable from the electrical outlet.

   If the system is operating under AIX, type the **shutdown** command to power off the system.

   If you cannot use this method, you can power off the system by using the following operator–panel power button procedure.

   Attention: Using the primary I/O drawer operator–panel power button to power off the system may cause unpredictable results in the data files, and the next IPL will take longer to complete.

   a. Open the rack door.

   b. Press the power button on the primary I/O drawer operator panel.

   The primary I/O drawer operator panel Power LED starts blinking at a fast rate. B0FF appears in the primary operator panel display.

   When the power–off sequence is complete, the system will go into Standby mode, as evidenced by:

   – AN `OK` message displays in the primary operator panel display.

   – The primary I/O drawer operator panel LED will start blinking at a slow rate.

   – The CEC drawer power LED will start blinking at a slow rate.

2. Place the I/O drawer in the rear service position:

   a. If you have not already done so, open the front door of the rack unit.

   b. Loosen the two thumbscrews that attach the front bezel to the drawer.

   c. Grasp both sides of the front bezel and pull the bezel off the drawer.

   d. If you have not already done so, open the rear door of the rack unit.

   e. If present, remove the two retaining screws at the rear of the drawer. See the figure on page 1-5.

   f. Grasp the bar at the rear of the drawer, and pull the drawer to the rear until it is stopped by the two detents on the top of the drawer.

Note: Make sure that you do not damage the cables while pulling out the drawer.

3. Remove the two thumbscrews and remove the top cover from the drawer.
4. See the Appendix B “PCI Adapter Placement Reference”, for adapter placement information. Then select an empty PCI slot for the adapter.
5. Turn the locking latch and lift the plastic stop for the adapter you are installing.
6. Remove the blank cover.
7. Carefully grasp the adapter by the edges and align the adapter in the slot guides. Insert the adapter fully into the adapter slot connector. If you are installing a full–length adapter, ensure that both ends of the adapter engage the card guides.
8. Lower the plastic stop over the adapter bracket and rotate the locking latch clockwise until it clicks into the locked position.
9. Connect appropriate cables to the adapter.
10. Install the covers that you removed earlier and return the drawer to the normal operating position.
11. Plug in the system unit power cable.
12. Turn on the power.

Installing a Hot–Pluggable PCI Adapter

Perform the following steps to install the adapter:

1. Refer to “PCI Hot–Plug Manager Access” on page 3-8 and follow the steps in the access procedure to select PCI Hot Plug Manager. Then return here to continue.
2. From the **PCI Hot–Plug Manager** menu, select **Add a PCI Hot–Plug Adapter** and press Enter. The Add a Hot–Plug Adapter window displays.
3. Select the appropriate empty PCI slot from the ones listed on the screen, and press Enter.
4. Place the I/O drawer in the rear service position:
   a. If you have not already done so, open the front door of the rack unit.
   b. Loosen the two thumbscrews that attach the front bezel to the drawer.
   c. Grasp both sides of the front bezel and pull the bezel off the drawer.
   d. If you have not already done so, open the rear door of the rack unit.
   e. If present, remove the two retaining screws at the rear of the drawer. See the figure on page 1-5.
   f. Grasp the bar at the rear of the drawer, and pull the drawer to the rear until it is stopped by the two detents on the top of the drawer.

Note: Make sure that you do not damage the cables while pulling out the drawer.

5. Remove the two thumbscrews and remove the top cover from the drawer.
6. See the Appendix B “PCI Adapter Placement Reference”, for adapter placement information. Then select an empty PCI slot for the adapter. If you noted the drawer’s location code, use it to select the slot from the appropriate drawer.
7. Follow the instructions on the screen to install the adapter until the visual indicator (LED) for the specified PCI slot is set to the Action state. See ”I/O Drawer PCI Slot LED Definitions”, on page 3-2.
8. Turn the locking latch, lift the plastic stop, and remove the blank cover.
9. When you are instructed to install the adapter in the adapter slot, carefully grasp the adapter by the edges and align the adapter in the slot guides. Insert the adapter fully into the adapter slot connector. If you are installing a full–length adapter, ensure that both ends of the adapter engage the card guides.
10. Lower the plastic stop over the adapter bracket and rotate the locking latch clockwise until it clicks into the locked position. Some full–length cards can be supported by rotating the blue adapter latch on the right end of the adapter counterclockwise.
11. Connect appropriate cables and devices to the adapter.
12. Continue to follow the screen instructions until you receive a message that the installation is successful. Successful installation is indicated by the `OK` message displayed next to the **Command** field at the top of the screen.
13. Press the F3 key to return to the PCI Hot–Plug Manager menu.
14. Select **Install/Configure Devices Added After IPL** and press Enter. Then follow the instructions on the screen.
15. Press F10 to exit the Hot–Plug Manager.

    If you have added, removed, or replaced any adapters, run the **diag –a** command. If the system responds with a menu or prompt, follow the instructions to complete the device configuration.
16. If you have other adapters to install, return to step 2.

17. If you do not have other adapters to install, install the covers that you removed earlier and return the drawer to the normal operating position.

Removing PCI Adapters

With this system, you can remove PCI adapters with the power on. These adapters are referred to as *hot–pluggable PCI adapters*. Some adapters are not hot–pluggable and power must be removed from the system for adapter removal.

Before you remove the adapter, determine if the PCI adapter you are removing is hot–pluggable. See the Appendix B “PCI Adapter Placement Reference”.

If you are removing a PCI adapter that is:

- Not hot–pluggable, go to ”Removing a Non–Hot–Pluggable PCI Adapter”, on page 3-5.
- Hot–pluggable, go to ”Removing a Hot–Pluggable PCI Adapter”, on page 3-6.

Removing a Non–Hot–Pluggable PCI Adapter

Perform the following steps to remove an adapter:

1. Turn power off and unplug the system unit power cable from the electrical outlet.

   If the system is operating under AIX, type the **shutdown** command to power off the system.

   If you cannot use this method, you can power off the system by using the following operator–panel power button procedure.

   Attention: Using the primary I/O drawer operator–panel power button to power off the system may cause unpredictable results in the data files, and the next IPL will take longer to complete.

   a. Open the rack door.

   b. Press the power button on the primary I/O drawer operator panel.

   The primary I/O drawer operator panel Power LED starts blinking at a fast rate. B0FF appears in the primary operator panel display.

   When the power–off sequence is complete, the system will go into Standby mode, as evidenced by:

   – An `OK` message displays in the primary operator panel display.

   – The primary I/O drawer operator panel LED will start blinking at a slow rate.

   – The CEC drawer power LED will start blinking at a slow rate.

2. Place the I/O drawer in the rear service position:

   a. If you have not already done so, open the front door of the rack unit.

   b. Loosen the two thumbscrews that attach the front bezel to the drawer.

   c. Grasp both sides of the front bezel and pull the bezel off the drawer.

   d. If you have not already done so, open the rear door of the rack unit.

   e. If present, remove the two retaining screws at the rear of the drawer. See the figure on page 1-5.

   f. Grasp the bar at the rear of the drawer, and pull the drawer to the rear until it is stopped by the two detents on the top of the drawer.

Note: Make sure that you do not damage the cables while pushing in the drawer.

3. Remove the two thumbscrews and remove the top cover from the drawer.

4. Determine the slot from which you are removing the adapter.

5. Disconnect any cables that are connected to the adapter being removed.
6. Turn the locking latch and lift the plastic stop for the adapter.
7. Carefully grasp the adapter by the edges and pull it straight out from the I/O board. Store the adapter in a safe place.
8. Place a blank slot cover in the adapter slot and then lower the plastic stop over the adapter bracket. Rotate the locking latch clockwise until it clicks into the locked position.
9. If you have other adapters to remove, remove them at this time.
10. If you do not have other adapters to remove, install all covers that you removed earlier and return the drawer to the normal operating position.
11. Plug the system unit power cable into an electrical outlet.
12. Turn on the power.

Removing a Hot–Pluggable PCI Adapter

Perform the following steps to remove an adapter:

1. Ensure that any processes or applications that might use the adapter are stopped.

Note: Removing a hot–pluggable PCI adapter requires the system administrator to take the PCI adapter offline before performing any PCI adapter hot–plug procedures. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

For additional information about taking an adapter offline or removing it from the system configuration, see the *AIX System Management Guide: Operating System and Devices*. This publication is also located on the AIX Hypertext Library CD-ROM.

2. Refer to ”PCI Hot–Plug Manager Access”, on page 3-8 and follow the steps in the access procedure to select **PCI Hot Plug Manager**. Then return here to continue.
3. Select **Unconfigure a Device** and press Enter.
4. Press F4 to display the Device Names menu.
5. Select the adapter you are removing from the menu.
6. If you are replacing an adapter with an identical one, answer YES to **Keep Definition**. If you are removing an adapter permanently, use the Tab key to answer NO to **Keep Definition**. Press Enter.
7. The ARE YOU SURE screen displays. Press Enter to verify the information.
8. Press F3 to return to the PCI Hot–Plug Manager.
9. Select **Replace/Remove a PCI Hot–Plug Adapter** and press Enter. The Replace/Remove a PCI Hot–Plug Adapter menu displays.
10. Move the cursor to select the adapter that you are removing and press Enter. (The description entry displays as ”unknown”).
11. Press the Tab key until the entry field displays the desired operation and then Press the Enter key. Follow the instructions that display on the screen until you are instructed to remove the adapter.
12. Place the I/O drawer in the rear service position:
    a. If you have not already done so, open the front door of the rack unit.
    b. Loosen the two thumbscrews that attach the front bezel to the drawer.
    c. Grasp both sides of the front bezel and pull the bezel off the drawer.
    d. If you have not already done so, open the rear door of the rack unit.

e. If present, remove the two retaining screws at the rear of the drawer. See the figure on page 1-5.

f. Grasp the bar at the rear of the drawer, and pull the drawer to the rear until it is stopped by the two detents on the top of the drawer.

13. Remove the two thumbscrews and remove the top cover from the drawer.

14. Determine the slot from which you are removing the adapter.

15. When you are instructed to remove the adapter from the adapter slot, Disconnect any cables that are connected to the adapter being removed.

16. Turn the locking latch and lift the plastic stop for the adapter.

17. Carefully grasp the adapter by the edges and pull it straight out from the I/O board. Store the adapter in a safe place.

18. Place a blank slot cover in the adapter slot and then lower the plastic stop over the adapter bracket. Rotate the locking latch clockwise until it clicks into the locked position.

19. Continue to follow the screen instructions until you receive a message that the adapter removal is successful. Successful removal is indicated by the `OK` message displayed next to the **Command** field at the top of the screen.

20. Press F10 to exit the Hot–Plug Manager.

21. If you have added, removed, or replaced any adapters, run the **diag –a** command. If the system responds with a menu or prompt, follow the instructions to complete the device configuration.

22. If you have other adapters to remove, return to step 9.

23. If you do not have other adapters to remove, install the covers that you removed earlier and return the drawer to the normal operating position.

PCI Hot–Plug Manager Access

The installation instructions for hot–pluggable PCI adapters refer you to these procedures when it is appropriate to perform them.

Note: A PCI adapter is only hot–pluggable if the PCI adapter is supported for hot–plug applications. See the Appendix B “PCI Adapter Placement Reference”.

Accessing Hot–Plug Management Functions

Note: Removing or installing a Hot–Pluggable PCI adapter requires the system administrator to take the PCI adapter offline prior to performing the operation. Before taking an adapter offline, the devices attached to the adapter must be taken offline as well. This action prevents a service representative or user from causing an unexpected outage for system users.

For additional information about taking an adapter offline or removing it from the system configuration, see the *AIX System Management Guide: Operating System and Devices*. This publication is located on the AIX Hypertext Library CD-ROM.

Use the following procedure to access the hot–plug menus.

1. Log in as root user.
2. At the command line type, **smitty**.
3. Select **Devices**.
4. Select **PCI Hot Plug Manager** and press Enter.
5. The PCI Hot–Plug Manager menu displays.
6. Return to the procedure that directed you here.
7. The following section describes the menu options.

PCI Hot–Plug Manager Menu

The following options are available from the PCI Hot Plug Manager menu:

Note: For information about the PCI slot LED states, see ”I/O Drawer PCI Slot LED Definitions”, on page 3-2.

List PCI Hot–Plug Slots

Provides a descriptive list of all slots that support PCI hot–plug capability. If the listing for a slot indicates it holds an ”Unknown” device, select the **Install/Configure Devices Added after IPL** to configure the adapter in that slot.

Add a PCI Hot–Plug Adapter

Allows the user to add a new PCI hot–plug capable adapter to the slot with the system turned on. You will be asked to identify the PCI slot that you have selected prior to the actual operation. The selected PCI slot will go into the Action state and finally into the On state.

Note: The system will indicate the slot holds an ”Unknown” device until you perform the **Install/Configure Devices Added After IPL** option to configure the adapter.

Replace/Remove a PCI Hot–Plug Adapter

Allows the user to remove an existing adapter, or replace an existing adapter with an identical one. For this option to work, the adapter must be in the Defined state (see ”Unconfigure a Device” option below).

You will be asked to identify the PCI slot prior to the actual operation. The selected PCI slot will go into the Action state.

Identify a PCI Hot–Plug Slot

Allows the user to identify a PCI slot. The selected PCI slot will go into the Identify state. See ”I/O Drawer PCI Slot LED Definitions”, on page 3-2.

Unconfigure a Device

Allows the user to put an existing PCI adapter into the Defined state if the device is no longer in use.

This step must be completed successfully before starting any remove or replace operation. If this step fails, the customer must take action to release the device.

Configure a Defined Device

Allows a new PCI adapter to be configured into the system if software support is already available for the adapter. The selected PCI slot will go into the On state.

Install/Configure Devices Added After IPL

The system attempts to configure any new devices and tries to find and install any required software from a user–selected source.

The add, remove, and replace functions return information to the user indicating whether the operation was successful. If additional instructions are provided on the screen, complete the recommended actions. If the instructions do not resolve the problem, see the following:

- If the adapter is listed as Unknown, perform the **Install/Configure Devices Added After IPL** option to configure the adapter.
- If you receive a warning indicating that needed device packages are not installed, the system administrator must install the specified packages before you can configure or diagnose the adapter.
- If you receive a failure message indicating a hardware error, the problem might be either the adapter or the PCI slot. Isolate the problem by retrying the operation in a different PCI slot, or trying a different adapter in the slot. If you determine that you have failing hardware, call your service representative.

System Firmware Update

This section provides information and instructions for updating the system firmware. You may need to perform these steps if you are installing an option or if your support representative has instructed you to update your firmware.

If the system cannot be powered on, but the service processor menus are available, see “Updating System Firmware From the Service Processor Menus” below.

If the service processor programming has been corrupted, the service processor will automatically enter recovery mode when power is applied to the system. Recovery mode is described later in this section.

To check the level of firmware that is currently on the system, see “Determining the Level of Firmware on the System” below.

General Information on System Firmware Updates

All the types of system firmware that can be reprogrammed are updated at the same time. They are:

- System power control network programming
- Service processor programming
- IPL programming
- Run–time abstraction services

Retain and store the latest firmware diskettes each time the firmware gets updated in the event that the firmware becomes corrupted and must be reloaded.

Determining the Level of Firmware on the System

The firmware level is denoted by XXYYMMDD, where XX = model designation, YY = year, MM = month, and DD = day of the release.

The firmware level can be determined by either of two methods:

- On the AIX command line, typing:

  ```
  lscfg -vp|grep -F .CL
  ```

  A line that begins with ”ROM level (alterable)..” displays the firmware level that is currently on the system.

- Looking at the top of the service processor main menu.

Updating System Firmware From the Service Processor Menus

This procedure requires a set of firmware update diskettes in backup format.

The service processor menus are available while the system is powered off. As a privileged user, from the service processor main menu, select **Service Processor Setup**, then select **Reprogram Flash EPROM Menu**. The update process requests update diskettes as needed.

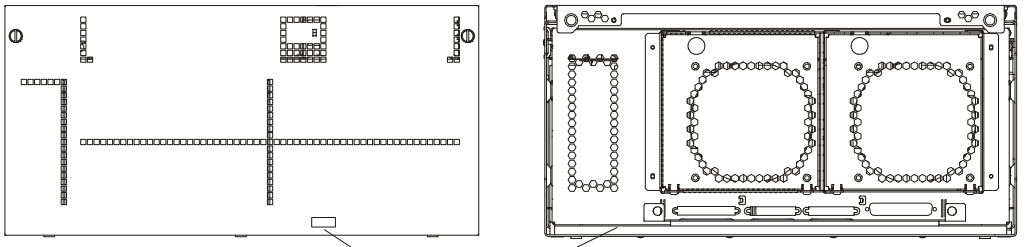
Appendix A. System Records

Record the Identification Numbers

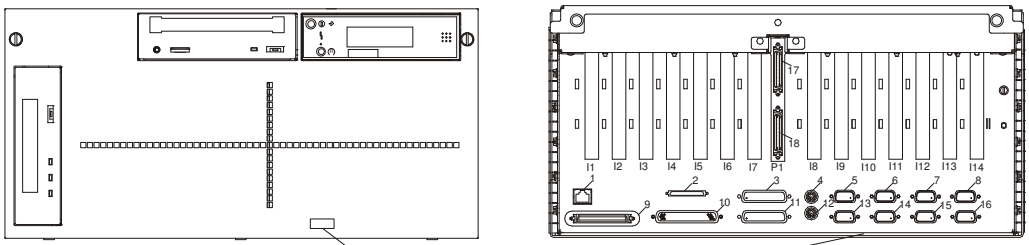
Record and retain the following information.

Product Name	EPC610, PL 400R, PL 600R
CPU Type/Speed	_____
Serial Number	_____

The serial number of the system is located on the front cover of the drawers and on the rear of the drawers, as shown in the following figures:



System Serial Number
on CEC drawer

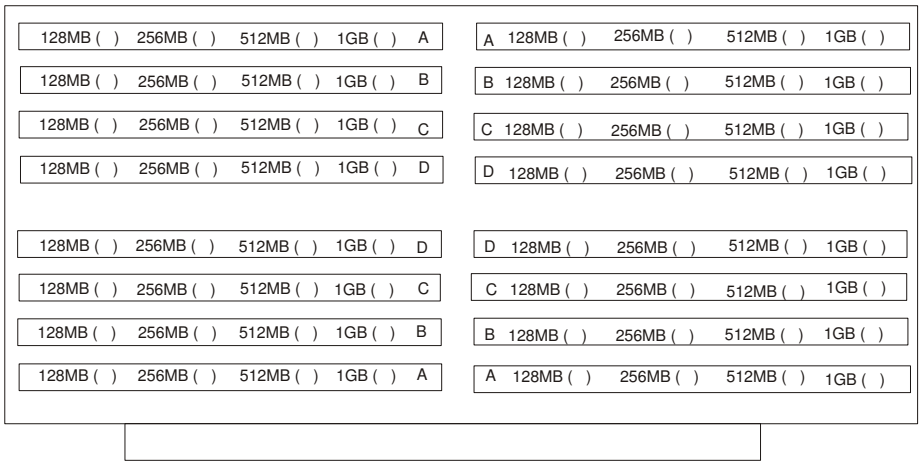


System Serial Number
on the I/O drawer

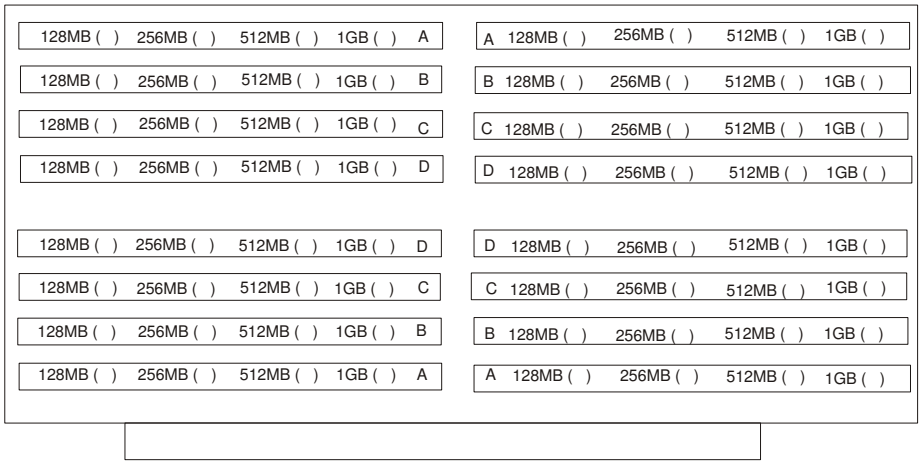
Device Records

Use the following tables to keep a record of the options installed in or attached to the system. This information can be helpful when you install additional options or if you ever need to have your system serviced.

Memory Riser Card 1 or One–Way Processor Card



Memory Riser Card 2



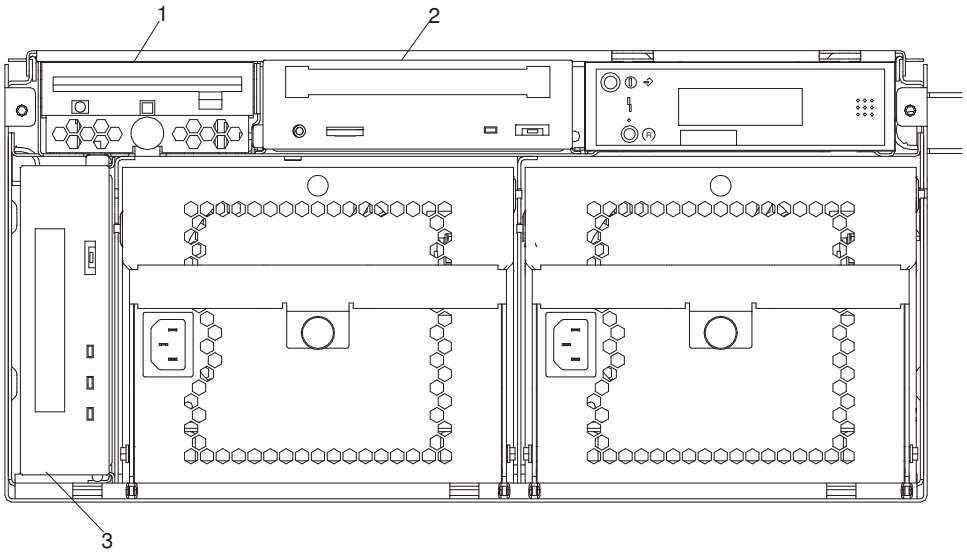
Primary I/O Drawer Records

Location	Option Description
Mouse Connector	Type:_____
Keyboard Connector	Space Saving ☐ Enhanced ☐ Other:_____
Ethernet Connector	Space Saving ☐ Enhanced ☐ Other:_____
SCSI Connector	Space Saving ☐ Enhanced ☐ Other:_____
Expansion Slot 1	_____
Expansion Slot 2	_____
Expansion Slot 3	_____
Expansion Slot 4	_____
Expansion Slot 5	_____
Expansion Slot 6	_____
Expansion Slot 7	_____
Expansion Slot 8	_____
Expansion Slot 9	_____
Expansion Slot 10	_____
Expansion Slot 11	_____
Expansion Slot 12	_____
Expansion Slot 13	_____
Expansion Slot 14	_____
Parallel Port	_____
Serial Port 1	_____
Serial Port 2	_____
Serial Port 3	_____
Serial Port 4	_____

Secondary I/O Drawer Records

Location	Option Description
Expansion Slot 1	
Expansion Slot 2	
Expansion Slot 3	
Expansion Slot 4	
Expansion Slot 5	
Expansion Slot 6	
Expansion Slot 7	
Expansion Slot 8	
Expansion Slot 9	
Expansion Slot 10	
Expansion Slot 11	
Expansion Slot 12	
Expansion Slot 13	
Expansion Slot 14	

Refer to the following diagram of the bays for the system when completing the following “Internal Fies and Devices” table.



1	Bay A1 – Diskette
2	Bay A2 – CD–ROM
3	Bay B1 – Optional Media

Notes:

1. If you attach a drive or other device to an adapter, record the expansion–slot number for that adapter in the Adapter field of table 1.
2. The SCSI bus IDs in Bays B1 and A2 are the recommended values. Features installed at the manufacturing site correspond to these IDs. Field installations may not comply with these recommendations.

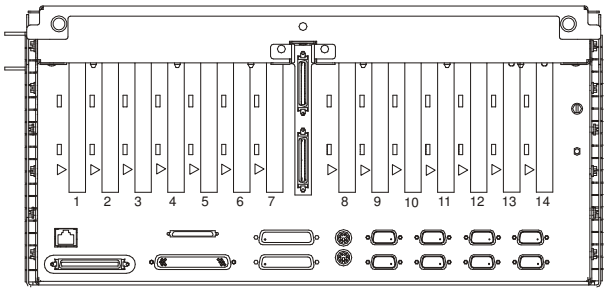
Internal Files and Devices			
Adapter	**Location**	**SCSI ID**	**Drive Description**
Integrated	Bay A1	Non–SCSI	Diskette Drive
Integrated	Bay A2	1	CD–ROM Drive
Integrated	Bay B1	0	Optional Media
_____	_____	_____	_____
_____	_____	_____	_____

Appendix B. PCI Adapters Placement Reference

This appendix lists a few important considerations regarding placement of adapters within your system unit.

Installing an Adapter in your System

This system is designed for customers to install adapters. Use this guide to determine if there are specific slot requirements for adapters that you may be installing.



(System Unit Rear View with Numbered Slots)

Adapter Placement

Some adapters must be placed in specific system unit slots to function correctly at highest performance. Use the table below to determine where to install an adapter in your system unit.

Many of the following notes refer to optimizing system performance.

Use the rear–view diagram above to identify slot locations described in the following tables.

Adapter Placement Guide

Use the following table to identify specific slot location options for the following adapters in your Escala EPC610 or PL 600R system.

Note: Note: The adapters with the highest slot placement priority are listed at the top of the table. The slot numbers in the Slot Usage column represent slot location priorities. Use the first numbered slot first. If an adapter has already filled the first slot in the list, go to the next number in the list.

Adapter	FC	MI	Slot Usage	Maximum per Drawer/ System	Hot–Plug-gable ?
10/100/1000 Base–T Ethernet PCI (Type A–A)	2975	DCCG150–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
Gigabit Ethernet–SX PCI (Type 9–U)	2969	DCCG144–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y (see notes 4 and 9)
PCI Dual Channel Ultra2 SCSI (Type 4–R)	6205	MSCG043–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y (see note 1)
PCI 4–Channel Ultra3 SCSI RAID (Type 4–X)	2498	MSCG047–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
PCI 64–Bit Copper Fibre Channel Adapter (Type B4–A)	Bull	DCCG147–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	8/16	Y
PCI 64–Bit Copper Fibre Channel Adapter (Type B4–B)	Bull	DCCG148–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	8/16	Y
PCI Universal Differential Ultra SCSI Adapter	6204	MSCG044–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y (see note 1)
SysKonnect SK–NET FDDI–LP SAS PCI Adapter	2741	DCCG123–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/28	Y (see notes 5 and 9)
SysKonnect SK–NET FDDI–LP DAS PCI Adapter	2742	DCCG124–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/28	Y (see notes 5 and 9)
SysKonnect SK–NET FDDI–UP SAS PCI Adapter	2743	DCCG125–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/28	Y (see notes 5 and 9)
8–Port Asynchronous EIA–232E/RS–422A PCI (Type 3–B)	2943	DCCG130–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/28	Y
2–Port Multiprotocol PCI (Type 9–L)	2962	DCCG129–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12 (see note 3)	5/10	Y
TURBOWAYS 155 PCI UTP ATM (Type 9–J)	2963	DCCG128–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/7	Y (see notes 7, 8 and 9)
10/100 Mbps Ethernet PCI (Type 9–P)	2968	DCCG137–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/28	Y (see notes 6 and 9)
TURBOWAYS 155 PCI MMF ATM (Type 9–F)	2988	DCCG099–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/7	Y (see notes 7, 8 and 9)
High–Speed Token Ring PCI (Type 9–Y)	4959	DCCG135–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/28	Y
PCI 3–Channel Ultra2 SCSI RAID (Type 4–T)	2494	MSCG045–0000	N/A	4/8	Y

Adapter	FC	MI	Slot Usage	Maximum per Drawer/ System	Hot–Plug-gable ?
ISDN Basic Rate PCI	2708		6, 11, 7, 12	1	Y
PCI 1–port Sync. Communication Adapter (Type B2–G)	Bull	DCCG097–0000	6, 11, 7, 12	4	Y
PCI 4–port Sync. Communication Adapter (Type B2–H)	Bull	DCCG098–0000	6, 11, 7, 12	4 (see note 2)	Y
128–Port Async Controller PCI (Type B3–9)	Bull	DCCG090–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14	Y

Notes:

1. Do not hot–plug any PCI adapter supporting the systems boot device or system console.
2. Do not connect V35 cables on PCI 4–port Sync. Communication Adapter.
3. Adapter migration may require the use of 5V slot. P/N 93H5261 can be installed only on slots 6, 11, 7, 12.
4. For optimum system performance, a maximum of two FC 2969: Gigabit Ethernet–SX PCI (Type 9–U) adapters per system is recommended.
5. For optimum performance, a maximum of 14 FC 2741: SysKonnect SK–NET FDDI–LP SAS PCI, FC 2742: SysKonnect SK–NET FDDI–LP DAS PCI and FC 2743: SysKonnect SK–NET FDDI–UP SAS PC adapters per system and a maximum of seven DC 2741, FC 2742, and FC 2743 adapters per I/O drawer is commended.
6. For optimum system performance, a maximum of eight FC 2968: 10/100 Mbps Ethernet Tx PCI (Type 9–P) adapters per system and a maximum of seven FC 2968 adapters per I/O drawer is recommended.
7. For optimum system performance, a maximum of 7 per system is recommended for both the FC 2963: TURBOWAYS 155 PCI UTP ATM (Type 9–J) MTU 1500 and FC 2988: TURBOWAYS 155 PCI MMF ATM (Type 9–F) MTU 1500 adapters.
8. For optimum system performance, a maximum of 16 per system and 7 per I/O drawer is recommended for both the FC 2963: TURBOWAYS 155 PCI UTP ATM (Type 9–J) MTU 9180 and FC 2988: TURBOWAYS 155 PCI MMF ATM (Type 9–F) MTU 9180 adapters.
9. For optimum system performance, the combination of FC 2969: Gigabit Ethernet–SX PCI (Type 9–U), FC 2741: SysKonnect SK–NET FDDI–LP SAS PCI, FC 2742: SysKonnect SK–NET FDDI–LP DAS PCI, FC 2743: SysKonnect SK–NET FDDI–UP SAS PCI, FC 2968: 10/100 Mbps Ethernet Tx PCI (Type 9–P), DC 4951: 10/100 4–Port Ethernet (Type 9–Z), FC 2963: TURBOWAYS 155 PCI MMF ATM (Type 9–F) adapters cannot exceed 7 adapters per I/O drawer.

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