

Retail Store Solutions Adapters



# Installation and Service

**Note**

Before using this information and the product it supports, be sure to read "Safety Information" on page 27 and the general information under "Appendix. Notices" on page 23. Translations of the safety notices can be found in *IBM Safety Information--Read This First, GA27-4004*.

**Third Edition (December 1998)**

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# Preface

This manual provides unique information for adapters that are being installed in IBM Point-of-Sale terminals, or in personal computers that will be used as Point-of-Sale controllers or servers.

This manual is organized into the following sections:

- Chapter 1. PCI Bus Adapters provides information about PCI adapters.
- Chapter 2. ISA Bus Adapters provides information about Industry Standard Architecture adapters.
- Chapter 3. MicroChannel Adapters provides information about Microchannel Adapters and option diskettes.



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## Related Publications

The following IBM publications are also available from the IBM Retail and Store Solutions web site at: [www.ibm.com/solutions/retail/](http://www.ibm.com/solutions/retail/) Then select the *Support* button.

- *IBM Point of Sale Attachment Kit: Physical Planning, Installation, and Service Manual*, GA27-4034
- *IBM Multiprotocol Communications Adapter: Installation, Problem Determination, and Technical Reference*, GA27-4033
- *IBM 4693 Point of Sale Terminals: Configuration and Operation Guide*, SA27-3978
- *4694 Point-of-Sale Terminals: Installation and Operation Guide*, SA27-4005
- *4693, 4694, and 4695 Point-of-Sale Terminals: Hardware Service Manual*, SY27-0337
- *IBM Store Systems: Supplement for Point of Sale Terminals - Installation, Operation, and Service*, GA27-4035
- *Store Systems: Installation and Operation Guide for Point-of-Sale Input/Output Devices*, SA27-4028
- *Store Systems: Hardware Service Manual for Point-of-Sale Input/Output Devices*, SY27-0339
- *Store Systems: Parts Catalog*, S131-0097
- *Safety Information – Read This First*, GA27-4004
- *Point of Sale Subsystem: Programming Reference and User's Guide*, SC30-3560
- *Point of Sale Subsystem: Installation, Operation and Keyboards*, GC30-3623
- *IBM 4690 Operating System Messages Guide*, SC30-3598

For information about IBM publications not shipped with the adapter or your personal computer, contact your IBM representative or your dealer.

### Driver and Service Diskette Information

You can download driver and service diskette images from URL:

[www.ibm.com/solutions/retail/](http://www.ibm.com/solutions/retail/) Select the *Support* button; then select either of the following links:

- *Terminal Hardware*
- *Peripheral Drivers*

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From there, you can take the link to the Publications Web page where you will find a feedback page for entering comments and sending them to us. Be sure to include the name and part number of the book.

- Fill out one of the forms at the back of this book and return it by mail or give it to an IBM representative.

If applicable, include a reference to the specific location of the text on which you are commenting. For instance, include the page or table number.

Between major revisions of this manual we may make minor technical updates. The latest softcopy version of this manual is available on the Publications Web page.

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## Chapter 1. PCI Bus Adapters

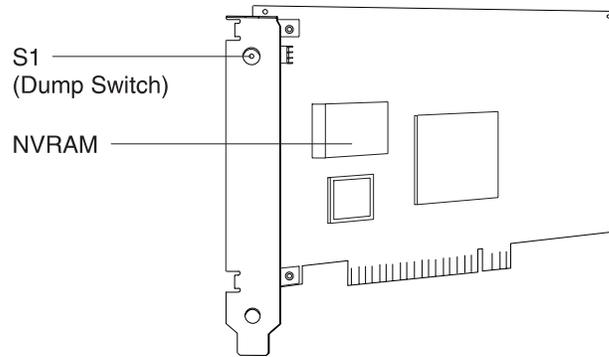
Installing and servicing the following PCI bus adapters is discussed in this chapter:

- IBM PCI NVRAM Adapter
- IBM PCI Store Loop Adapter

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### IBM PCI NVRAM Adapter

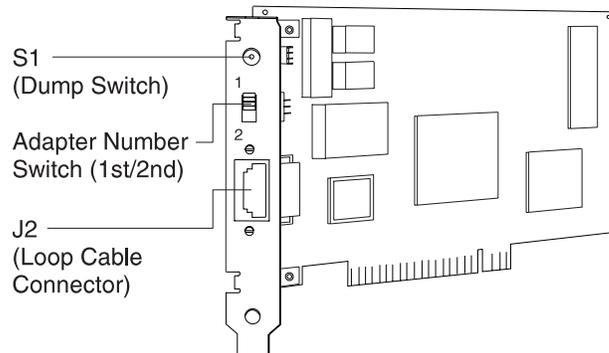
This adapter provides NVRAM and a Dump Switch to enable 4690 OS to be installed on an IBM Personal Computer that supports PCI adapters. NVRAM enables the Power Line Disturbance protection and memory retention features of the 4690 Operating System in a Store Controller or server. It is designed to be used with 4690 OS in Ethernet or Token Ring network environments.



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### IBM PCI Store Loop Adapter

This adapter includes the Store Loop communication interface and an NVRAM function. NVRAM enables the Power Line Disturbance protection and memory retention features of the 4690 Operating System in a Store Controller or server. It also provides a dump switch intended to assist in 4690 OS diagnostic procedures.



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## Installing PCI Adapters

**CAUTION:**

**Danger of explosion if battery is incorrectly replaced .**

**Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.**

A Service Diskette containing configuration and test programs for PCI adapters can be downloaded from URL: [www.ibm.com/solutions/retail/](http://www.ibm.com/solutions/retail/) Select the *Support* button; then select the *Terminal Hardware* link.

The adapter diskette diagnostic can also be used to reset all of NVRAM to zeros if necessary, when entering machine type/serial number information during adapter installation, or whenever the adapter is swapped or relocated from one controller to another.

---

## Adapter Installation

1. Switch **POWER OFF** at the system unit and to all attached POS I/O devices. Disconnect the system unit and device power plugs from the electrical outlets.

**Note:** Adapters can be damaged by static discharge. To prevent this, the adapters are wrapped in anti-static packages. Avoid touching connectors and components on the card.

2. PCI Bus adapters often have jumpers or switches that must be set before the adapter is installed. The store programmer or planner must determine the correct settings for your computer or terminal. Set the Loop Number Selection switch as follows:
  - Set to **1st** if this is the first or only Loop adapter.
  - Set to **2nd** only if this is the second of two installed adapters. The switch setting is used to differentiate between the two adapters with respect to attaching loop cables.
3. After setting the switches or making jumper connections, install the adapter. Refer to the reference documentation for your computer for information on how to install adapters.
4. If you have any additional adapter cards to install, do so now.
5. This completes adapter physical installation. See "Adapter Testing" to test the adapter.

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## Adapter Testing

The PCI adapters discussed in this chapter require a diagnostic diskette for advanced testing. The PCI/ISA Diagnostic Diskette is for use during adapter installation, or for use by service personnel during a service call. You can download the diskette from URL: [www.ibm.com/solutions/retail/](http://www.ibm.com/solutions/retail/) Select the *Support* button; then select the *Terminal Hardware* link.

**Note:** To run the Store Loop Adapter tests, you must have the Store Loop Adapter Cable connected to the adapter, BUT disconnected from the store loop receptacle. If you have more than one Store Loop Adapter, you must have

ALL Store Loop Adapter Cables connected to the adapters, BUT disconnected from the store loop receptacles. When testing is complete, be sure to reconnect any cables that were disconnected.

1. Switch **POWER OFF** at the system unit.
2. Insert the PCI/ISA Diagnostic Diskette in drive A, and switch **POWER ON**.
3. Select the desired test from the menu selections. If an error is detected, follow any displayed instructions or exchange the adapter.

**Note:** If status message 08 00 00 00 00 00 60 00 85 appears, start over with Step 1 and retry the diagnostic.

4. The diagnostic program should be used to reset the contents of NVRAM to zeros when entering machine type/serial number information during adapter installation, or whenever the adapter is swapped or relocated from one controller to another.
5. Then the diagnostic program should also be used to initialize Vital Product Data (VPD) for the adapter. You are prompted to enter the *machine type*, *model number*, and *serial number*. This information is saved in NVRAM in the adapter and is saved during power outages with battery backup. Then the remaining *User Area* in NVRAM is initialized to zeros. The User Area of NVRAM is designated for use by the operating system and application programs.
6. When VPD is initialized, subsequent executions of the diagnostic program ask you to verify the VPD content. If correct, VPD is not changed and the User Area is not initialized to zeroes.

If the adapter is moved from the original machine to another machine, the diagnostic program should be run to allow you to change the VPD content to reflect the machine type, model and serial number of the new machine. When asked to verify the VPD content and you respond that the existing vital product data is not current, the program proceeds as if this is a new adapter installation as described above, by prompting for the current VPD and initializing the adapter VPD save area and initializing the User Area to zeroes.

Each time the PCI Store Loop/NVRAM diagnostic program is executed an advanced set of adapter diagnostics are performed to verify the functionality of each adapter subsystem. The results of this test are displayed on the console for confirmation.

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## PCI Adapter Part Numbers

Description	FRU Part Number
NVRAM Adapter	08L2684
Store Loop Adapter	08L2683



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## Chapter 2. ISA Bus Adapters

Installing and servicing of the following adapters is discussed in this chapter. For switch and jumper settings, see the section of this chapter that applies to the adapter you are installing.

- “IBM Point of Sale Attachment Adapter” on page 6.
- “IBM 4695 Point of Sale Adapters” on page 7.
- “IBM Flat Panel Display Adapter Switch Settings” on page 9.
- “IBM 4695 RS232 Expansion Adapter” on page 10.
- “IBM Kitchen Adapter” on page 12.
- “IBM Parallel Port Adapter” on page 13.
- “ISA Bus Store Loop Adapter P/N 01L1154 and 6347798” on page 14.
- “ISA Store Loop Adapter with Remote Program Load (RPL) RPQ” on page 15.

---

### Installing ISA Adapters

1. Switch **POWER OFF** at the system unit and to all attached POS I/O devices. Disconnect the system unit and device power plugs from the electrical outlets.

**Note:** Adapters can be damaged by static discharge. To prevent this, the adapters are wrapped in anti-static packages. Avoid touching connectors and components on the card.

2. ISA Bus adapters often have jumpers or switches that must be set before the adapter is installed. The store programmer or planner must determine the correct settings for your computer or terminal. See the jumper and switch information for the adapter you are installing later in this chapter.
3. After setting the switches or making jumper connections, install the adapter. Refer to the documentation for your computer for information on how to install adapters.
4. If you have any additional adapter cards to install, do so now.
5. This completes adapter physical installation. See “Testing ISA Bus Adapters” on page 17 to test the adapter.

# IBM Point of Sale Attachment Adapter

This adapter provides the ability to attach point-of-sale I/O devices to an ISA bus personal computer.

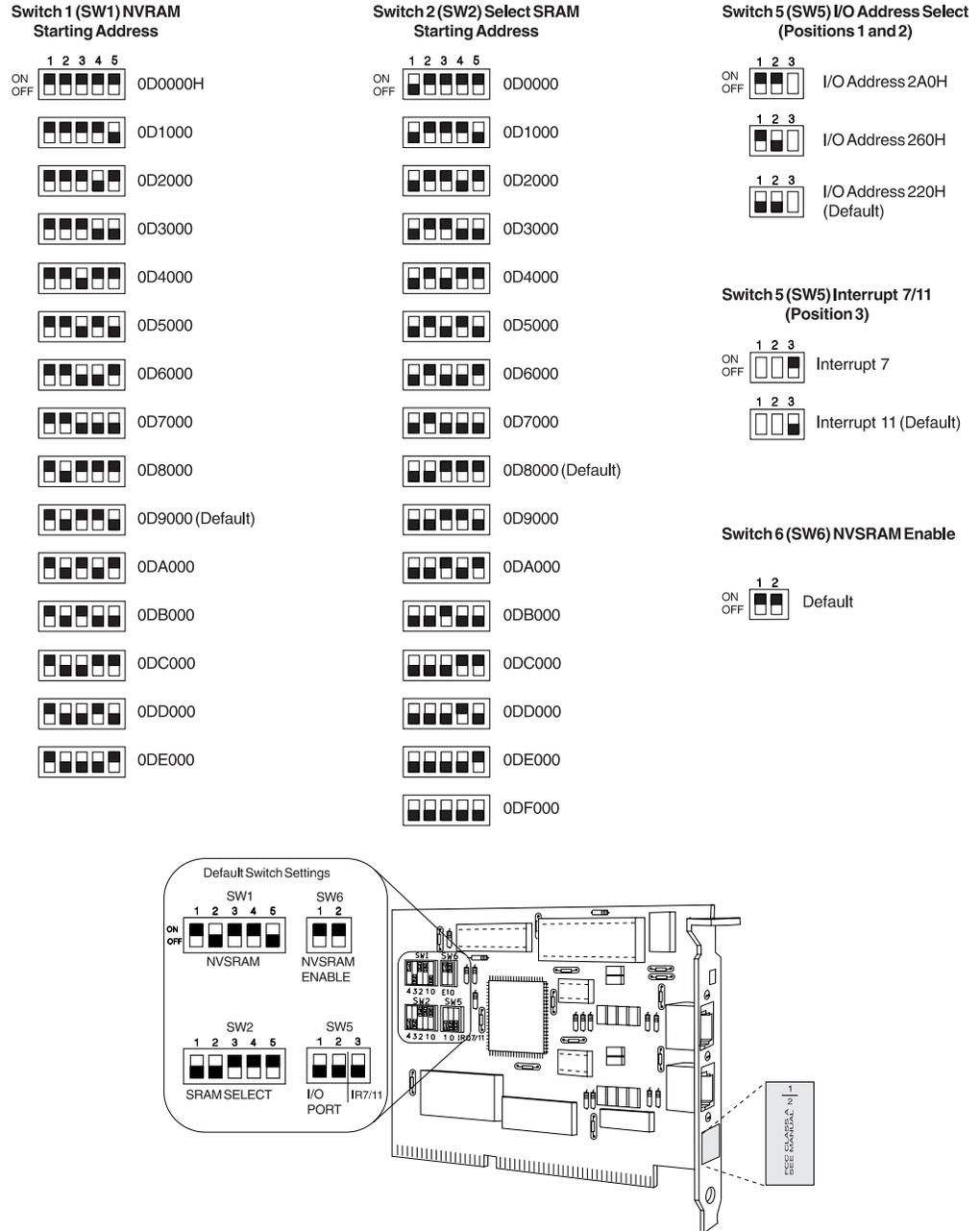


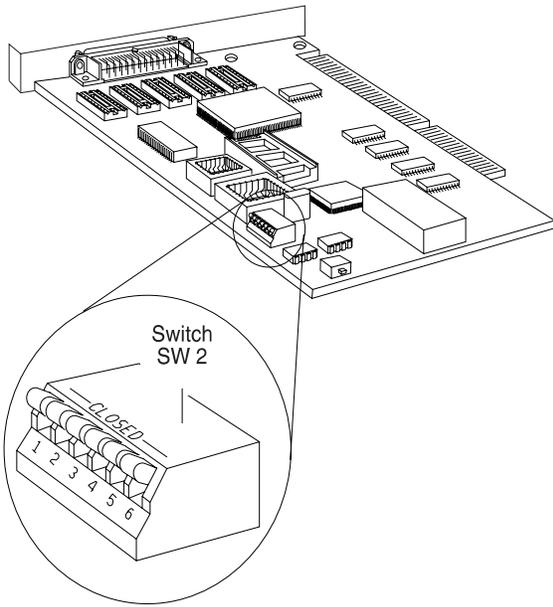
Figure 1. Point of Sale Attachment Adapter Switches

# IBM 4695 Point of Sale Adapters

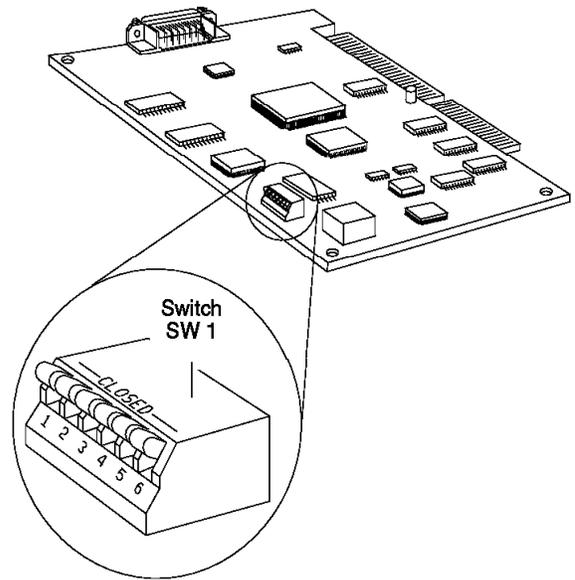
Perform the following steps to install 4695 POS adapter cards:

1. Two adapter cards are available:
  - POS Adapter Card for 4695 Models 002 and 012 - For this adapter, go to step 2.
  - POS Adapter Card II for 4695 Models 022 and 03x - For this adapter:
    - If you are installing a card in the 4694-124 for the first time, go to “Using the Proxy Configuration Diskette for 4694 Models 124” on page 8 and then return to step 2 of this procedure.
    - For other models of the 4694, use the 4694 setup procedure to change the RPL boot protocol to **LAN ADAPTER**; set SRAM Start Address to **E8000** and NVRAM Start Address to **E9000**.
2. Contact the programmer who installed your software application for the memory map specified for your application. You need to know this information in order to set the correct switches on the POS adapter to match the addresses in the memory map.
3. On the adapters, locate switch **SW2** for Models 002 and 012, or switch **SW1** for Models 022 and 03x.

**Switch SW2 Location, Models 002 and 012**



**Switch SW1 Location, Models 022 and 03x**



4. See Table 1 and Table 2 on page 8 to set the switches on **SW1** or **SW2** to match the configuration to the memory map.

*Table 1. Address Configurations*

Position 1	Position 2	I/O Address	Position 3	Position 4	Base Memory Address
Closed	Closed	600-61F	Closed	Closed	See note b.
Open	Closed	640-65F	Open	Closed	D0000-D1FFF
Closed	Open	680-69F	Closed	Open	D8000-D9FFF
Open	Open	6C0-6DF	Open	Open	DC000-DDFFF

**Notes:**

- a. The switch settings for the I/O address and for the base memory address must be unique for each POS adapter.
- b. Base memory address C8000-C9FFF should not be used if either one of the following conditions exist:
  - Installed in a 4694 using "IBM RPL" as the RPL Boot Protocol
  - Either a Model 022 or 03x adapter is installed in any slot.

Table 2. Interrupt Request Settings

Position 5	Function	Position 6	Interrupt Request (IRQ)
Closed	Primary Adapter	Closed	IRQ 7
Open	Secondary Adapter	Open	IRQ11

**Notes:**

- a. Select Primary for one POS adapter, and Secondary for all others. If a Model 022 or 03x adapter coexists with a Model 002 or 012 adapter, the primary adapter must be a Model 022 or 03x adapter.
  - b. A monitor adapter should not be installed when installing a POS adapter. Remove the monitor adapter from the 4694 and disable it using the configuration Setup program on the 4694. If the monitor adapter is not removable, disable it on the 4694 or PC by changing a physical jumper or through software settings. Refer to the appropriate system unit documentation for more information.
5. Remove the system unit cover. Refer to the manual that comes with your 4694, or ISA bus computer for instructions.
  6. Install the POS Adapter Card in the 4694 or ISA bus computer adapter slot. Replace the system cover.

### Using the Proxy Configuration Diskette for 4694 Models 124

The 4694-124 will not function properly if the default factory setup is used. This condition is automatically bypassed by inserting the Proxy diskette into the 4694 and powering the 4694 on.

The Proxy diskette will setup the 4694-124 to factory default setup values with the following exceptions; the value for RPL Boot Protocol will be LAN Adapter instead of IBM IPL, SRAM and NVRAM will be E8000 and E9000 instead of D8000 and D9000.

1. Download the 4694-124 Proxy Configuration diskette from URL <http://www.raleigh.ibm.com/rds/>
2. Select *Terminal Hardware - 4695 Downloads*, then select *4695-0x2*.
3. Select *4694-124 Proxy Configuration for 4695-0x2 Distributed Systems*.
4. Download the diskette image *4695 PROX.EXE* to your C: drive. Execute 4695 PROX.EXE to create an installation diskette. Place the diskette in the 4694-124.
5. POWER ON the 4694-124. The diskette automatically IPLs and changes the setup to allow the 4695 Model 022 or 03x adapter to be installed.

# IBM Flat Panel Display Adapter Switch Settings

This adapter provides the ability to attach Flat Panel Displays to ISA bus personal computers.

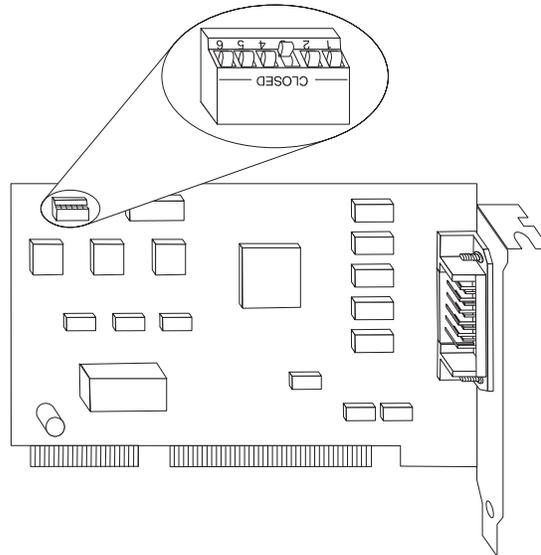


Figure 2. Flat Panel Display Adapter Switch Settings

Table 3. Base I/O Address

Position 1	Position 2	I/O Address
Closed	Closed	614, 616
Open	Closed	654, 656
Closed	Open	694, 696
Open	Open	6D4, 6D6

Table 4. Base Memory Address

Position 3	Position 4	Memory Address
Closed	Closed	C8000-Cf000
Open	Closed	D0000-D0FFF
Closed	Open	D8000-D8FFF
Open	Open	DC000-DCFFF

Table 5. Adapter Configurations

Position 5	Function
Closed	Primary Adapter
Open	Secondary Adapter

Table 6. Interrupt Request

Position 6	Function not used
Closed	N/A
Open	N/A

## IBM 4695 RS232 Expansion Adapter

This adapter provides two additional RS232 serial ports for the IBM 4695. It operates in Plug and Play (Pnp) mode or non-PnP mode, which is controlled by jumpers on the adapter. In Pnp mode, the operating system determines the resources that are used by the adapter. In non-PnP mode, you must manually choose the resources the adapter uses by installing jumpers on the adapter.

The factory setting of the adapter is PnP mode.

### Selecting PnP or Non-PnP Modes

For new adapter installations, select the desired mode. If you are replacing an existing adapter, be sure to record the jumper settings from the original adapter and install the jumpers identically on the replacement adapter.

- If the adapter is used with a plug and play operating system such as Windows 95 and manual configuration is not required, use Configuration 0 (PnP mode).
- If the adapter is used with an operating system that is not plug and play, use Configurations 1-6 (manual modes).

**Note: If configurations 2, 4, and 6 are selected, change the 4695 BIOS Setup Device Channel IRQ setting from 11 to 7.**

**Setting Configurations Using Jumpers:** Configuration 0 sets the adapter to Plug and Play mode. All other configurations are non-PnP modes. PnP mode is determined by Jumper 1. Jumpers 2 through 6 are for non-PnP configurations.

Configuration Number	Jumper Number	Port C	Port D
0	x x x x 0	COM3/IRQs 5, 7, 9, 11, 15	COM4/IRQs 5, 7, 9, 11, 15
1	0 1 0 0 0 1	COM3/IRQ5	COM4/IRQ9
2	1 1 0 0 0 1	COM3/IRQ5	COM4/IRQ11
3	1 0 1 0 0 1	COM3/IRQ5	COM4/IRQ15
4	0 1 1 0 0 1	COM3/IRQ9	COM4/IRQ11
5	0 0 0 1 0 1	COM3/IRQ9	COM4/IRQ15
6	0 1 0 1 0 1	COM3/IRQ11	COM4/IRQ15

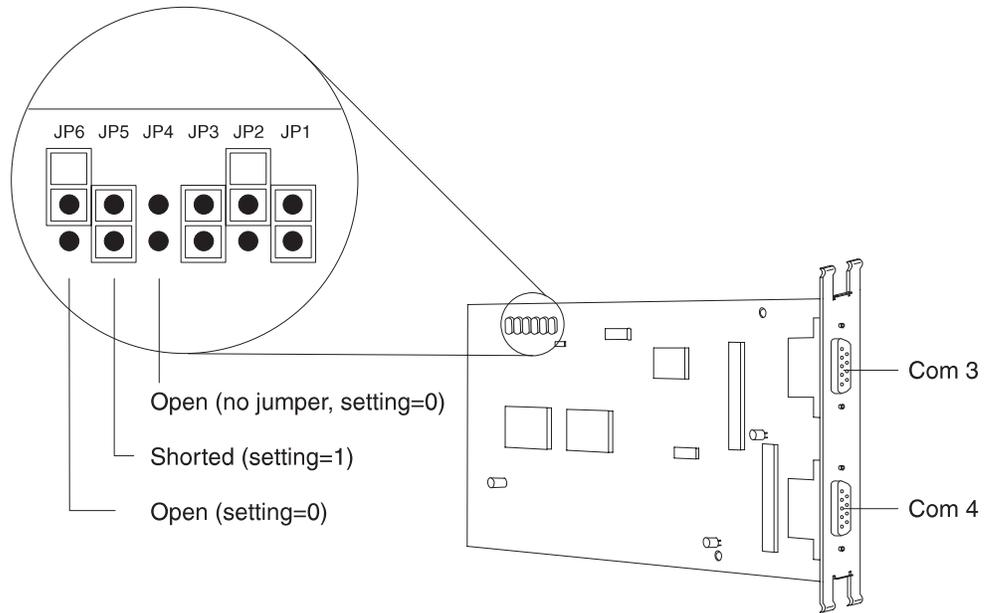


Figure 3. 4695 RS232 Expansion Adapter Jumpers

**Additional Information:** For detailed information about configuring this adapter for specific Operating Systems, go to the following URL:  
<http://www.raleigh.ibm.com/rds/poseng/4695swdl.htm>

# IBM Kitchen Adapter

This adapter provides the ability to attach I/O devices (monitors and bump bars) to point of sale terminals in restaurant environments.

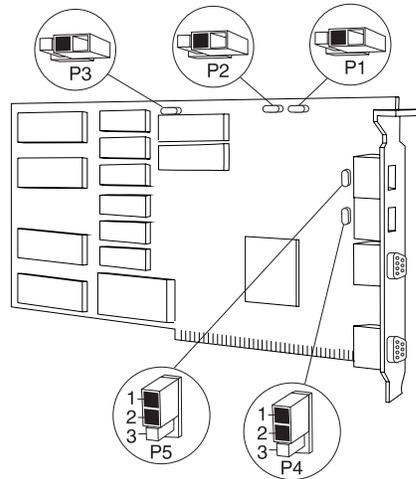


Figure 4. Kitchen Adapter Jumpers

Table 7. Kitchen Card Addressing

P1	P2	Adapter Designation
OFF	OFF	Adapter 0
ON	OFF	Adapter 1
OFF	ON	Reserved
ON	ON	Reserved

Table 8. Kitchen Display Character Set

P3	Kitchen Display Character Set
OFF	United States
ON	International

Table 9. Bump Bar A Beeper Control

P4 Pins	Description
1 and 2	Disable beeper
2 and 3	Enable beeper

Table 10. Bump Bar B Beeper Control

P5 Pins	Description
1 and 2	Disable beeper
2 and 3	Enable beeper

## IBM Parallel Port Adapter

When installed in a 4694, this adapter provides the ability to attach a parallel printer such as the IBM Proprinter(\*). It is designed to only be addressed as port *LPT1*.

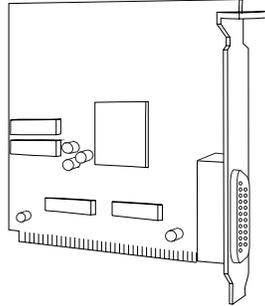


Figure 5. Parallel Port Adapter

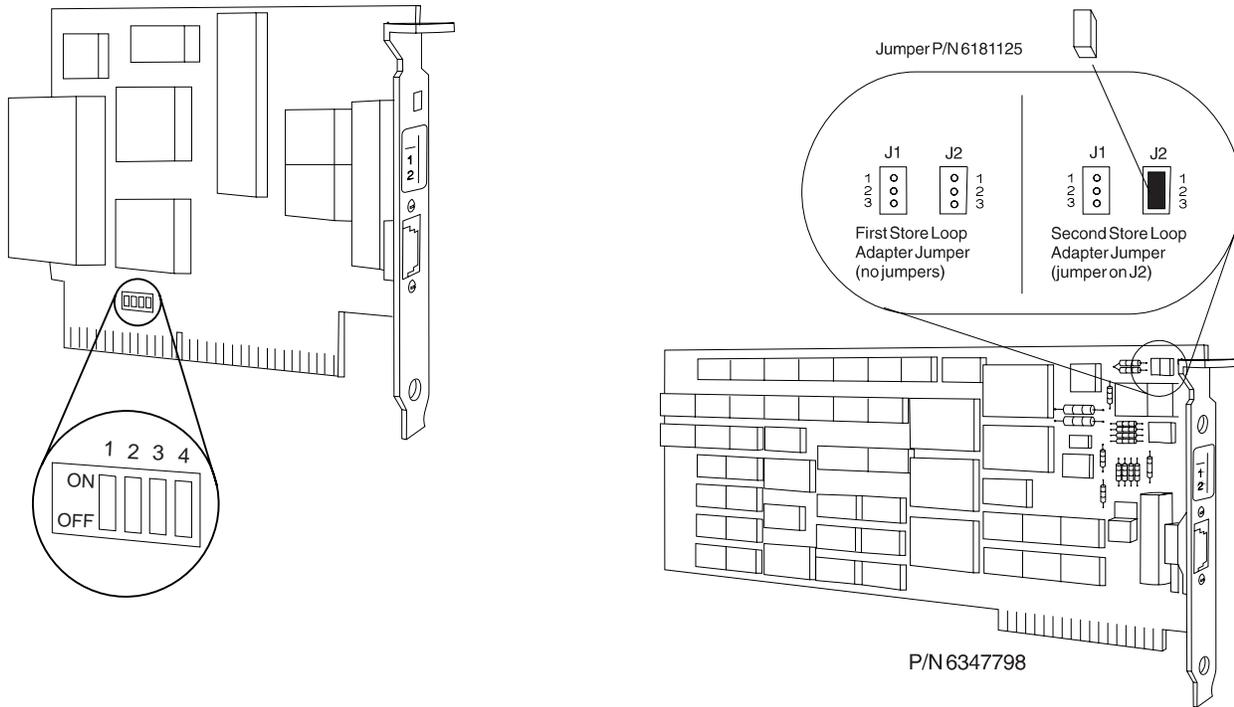
# ISA Bus Store Loop Adapter P/N 01L1154 and 6347798

Store Loop Adapter P/N 6347798 is replaced by P/N 01L1154. The setting for switches 2 and 3 (first or second adapter) on the replacement card must correspond with the jumpers on the adapter being replaced.

Adapter P/N 6347798 did not require an I/O MAP selection. However, adapter P/N 01L1154 requires switches 1 and 4 to be set for selection of an I/O MAP.

The setting for switches 1 and 4 depends on other adapters (if any) that are installed in this machine. You must select an I/O MAP location that does not conflict with another installed adapter. Contact the store programmer or store help desk for assistance in determining the correct I/O MAP selection

Table 11. Store Loop Adapter Switches



## ISA Store Loop Adapter with Remote Program Load (RPL) RPQ

Refer to the *IBM 4694 Point of Sale Terminals: Installation and Operation Guide*, SA27–4005, for guidance in selecting the RPL source for IBM 4694 Point of Sale Terminals. On the second page of the 4694 CMOS SETUP Utility Panel, select the following options:

FIRST BOOT SOURCE = LAN (RPL)  
RPL BOOT PROTOCOL = LAN ADAPTER

Memory address switch settings are determined as follows:

- **8 KB** Non-RPL Operation
- **16 KB** RPL Operation

### Remote Initial Program Load (RPL)

The code stored in Read Only Memory (ROM) on the 4694 Store Loop Adapter links the RPL boot microcode to the system boot loader by redirecting interrupt vector INT 18H. To ensure hardware and software compatibility in systems that normally or optionally boot from disk drives, the RPL boot process remains inactive and transparent to the system until the boot loader calls INT 18H.

INT 18H invokes a hardware initialization routine that reconfigures the Store Loop Adapter memory map and starts the RPL boot process. The RPL initialization routine expands the adapter memory map from 8 KB of address space to 16KB. Start-up of the RPL boot process is indicated by **U003** displayed on the top left-hand side of the system unit display.

If you stop the RPL boot process by using a system reset (Ctrl Alt Delete or a power-off/on sequence), the RPL ROM code restores the Store Loop Adapter to these settings:

- 8 KB memory map
- INT 18H redirected
- Non-RPL operation

### Setup Requirements

The 4694 Store Loop Adapter with RPL requires 16 KB of memory address space if any software in the system calls INT 18H while this interrupt is directed to the Store Loop Adapter ROM code. Normally this occurs when the boot loader makes a decision to boot the system through a network adapter. The 4694 Store Loop Adapter with RPL requires only 8 KB of memory address space if the system does not call INT 18H, or INT 18H is redirected from the Store Loop Adapter ROM code.

**Note:** In some systems, the boot loader cannot call INT 18H unless a network adapter boot option is enabled through a hardware *Setup* program. In other systems, the boot loader calls INT 18H automatically if bootable media is not found on a local disk drive.

In systems that have more than one network adapter, INT 18H points to the network adapter configured at the highest memory address. Therefore, the Store Loop adapter memory address must be configured above other network adapters if the system is required to boot through the Store Loop.

RPL support functions have no effect on interrupt level (IRQ) assignments and I/O address allocations for the 4694 Store Loop Adapter with RPL. Requirements for these system resources remain the same even if RPL is not used to boot the system.

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## Testing ISA Bus Adapters

Some adapters are tested as part of the system power on self-tests (POST) immediately after power is turned ON. When a failure is detected, an error code is displayed. If an error code displays, see “Error Codes”.

Each ISA bus adapter discussed in the previous sections requires a service diskette for advanced testing. You can download driver and service diskette images from URL: [www.ibm.com/solutions/retail/](http://www.ibm.com/solutions/retail/) Select the *Support* button; then select either of the following links:

- *Terminal Hardware*
- *Peripheral Drivers*

To load the *Service Diskette*:

1. Turn **POWER OFF** at the system unit or personal computer.
2. Insert the *Service Diskette* in Drive A, and turn **POWER ON**. Follow the instructions that appear.
3. Select the desired test from the test menu. If an error is detected, follow any displayed instructions or exchange the adapter.

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## Error Codes

Adapter error codes may appear when the system unit is running power-on self-tests (POST) immediately after power is turned ON, or when running tests from a *Service Diskette*. Messages from a *Service Diskette* usually have enough information displayed so you can determine the necessary actions to resolve the problem.

POST messages often do not have text to help determine their meaning. This table will help you associate the error code with a specific adapter and determine the action needed to solve the problem.

ERROR CODE	ACTIONS
6300 and 6308	The POS Attachment Adapter I/O configuration record is corrupted. If the problem occurs each time the Service Diskette is loaded, exchange the adapter.
83nn	The 4695 POS adapter failed during POST. If the problem persists, exchange the adapter.

---

## ISA Bus Adapter Part Numbers

Description	FRU Part Number
7497 Point of Sale Attachment Adapter	25H2203
4695 Point of Sale Attachment Adapter	01L1987
4695 Point of Sale Attachment Adapter II	25L5083
Flat Panel Display Adapter	26H7096
4695 RS232 Expansion Adapter	86H0427
465x Kitchen System Adapter	84F8976
4694 Parallel Port Adapter	59G8831

<b>Description</b>	<b>FRU Part Number</b>
Store Loop Adapter	01L1154

---

## Chapter 3. MicroChannel Adapters

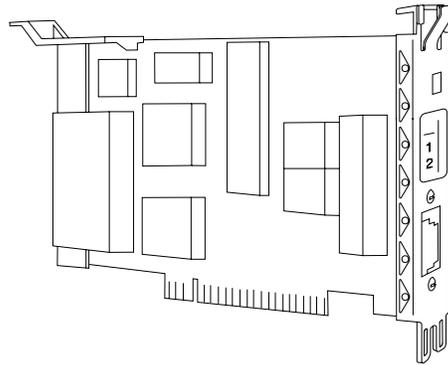
Installing and servicing the following MicroChannel adapters is discussed in this chapter:

- IBM Store Loop Adapter
- IBM 4693 Store Loop Adapter
- IBM Point of Sale Expansion Adapter
- IBM Flat Panel Display Adapter/A
- IBM 4695 Point of Sale Adapter/A.

---

### IBM Store Loop Adapter

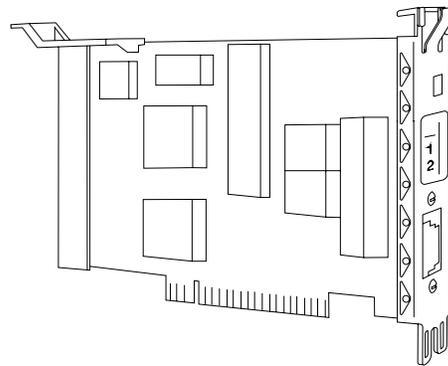
This adapter, when installed in supported models of the IBM Personal System/2, provides the ability to communicate with point-of-sale terminals attached to the store loop. It also provides 32KB of non volatile RAM.



---

### IBM 4693 Store Loop Adapter

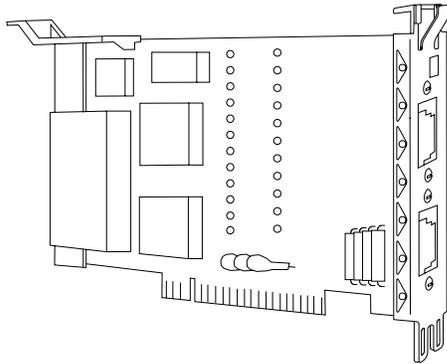
This adapter, when installed in a 4693, provides the ability to communicate with point-of-sale terminals attached to the store loop.



---

## IBM Point of Sale Expansion Adapter

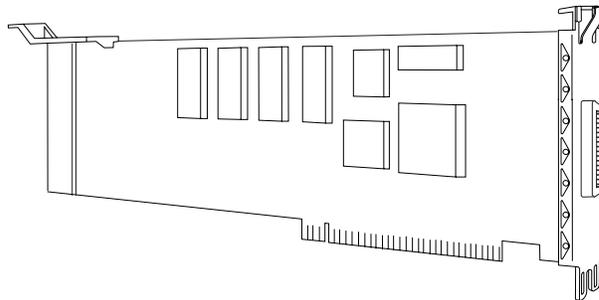
This adapter, when installed in supported models of the IBM Personal System/2, provides the ability to communicate with attached point-of-sale terminals. It also provides 32KB of non volatile RAM.



---

## IBM Flat Panel Display Adapter/A and IBM 4695 Point of Sale Adapter/A

These two adapters look very similar. The **IBM Flat Panel Display Adapter/A** provides the ability to attach the Flat Panel Display to a point-of-sale terminal. The **IBM 4695 Point of Sale Adapter/A** provides the ability to attach the 4695, Models 002 and 012, to a 4693 Point of Sale Terminal.



---

## Installing MicroChannel Adapters

You can download an Option Diskette containing configuration and test programs for MicroChannel adapters from URL: [www.ibm.com/solutions/retail/](http://www.ibm.com/solutions/retail/) Select the *Support* button; then select the *Terminal Hardware* link

These programs must be copied to the system *Reference Diskette*. Some computers or terminals with a fixed disk have a protected area on that disk, which is referred to as the *system partition*. The *system partition* for these machines must be updated, using the Option Diskette.

### Adapter Installation

1. Refer to the documentation for your system unit for information on how to copy the option diskette and update the system partition. This must be done before installing the adapter.
2. Switch **POWER OFF** at the system unit and to all the POS I/O devices. Disconnect the system unit and device power plugs from the electrical outlets.

**Notes:**

- a. Adapters can be damaged by static discharge. To prevent this, the adapters are wrapped in anti-static packages. Avoid touching connectors and components on the card.
  - b. If you are installing a loop adapter, see "Special Considerations for Store Loop Adapters".
3. Refer to the documentation for your system unit for information on how to install and test adapters.

---

### Special Considerations for Store Loop Adapters

When two Store Loop Adapters are present, the IBM 4680/4690 Operating System will use the Store Loop Adapter located in the lowest numbered expansion slot for **Loop 1** and the Store Loop Adapter in the next highest numbered expansion slot for **Loop 2**. IBM recommends that the Store Loop Adapter for **Loop 1** be installed in the lowest numbered available expansion slot.

Circle the "1" (for **Loop 1**) on the first adapter's label and circle the "2" (for **Loop 2**) when a second adapter is present.

Space is provided on the adapter label above the "1" to mark the adapter with some other identifying symbol to help you when connecting loop cables to the adapters.

The adapter diskette diagnostic can also be used to reset all of NVRAM to zeros if necessary, when entering machine type/serial number information during adapter installation, or whenever the adapter is swapped or relocated from one controller to another.

---

## Testing MicroChannel Adapters

1. Follow the instructions for *Testing* in the reference documentation for your system unit.

**Note:** To run the Store Loop Adapter tests, you must have the Store Loop Adapter Cable connected to the adapter, but disconnected from the store loop receptacle. If you have more than one Store Loop Adapter, you must have all Store Loop Adapter cables connected to the adapters, but disconnected from the store loop receptacles.

2. When testing is complete, be sure to reconnect any cables that were disconnected.

---

## Error Codes

This list identifies messages that result from a failing adapter.

**n** in an error message can be any number.

**x** in an error message indicates the adapter slot number.

---

### 62nx

**Explanation:** This message indicates an error was detected while POST was testing the IBM Store Loop Adapter.

**User Response:** Test the Store Loop Adapter using the system programs. Refer to "Starting the System programs" in the *Hardware Maintenance Manual* for your PS/2 computer.

**Note:** If the Store Loop Adapter is replaced, run the Store Loop Adapter diagnostic and enter the controller machine type and serial number when requested. This ensures correct system operation when the system application is reloaded.

---

### 83nn

**Explanation:** An IBM Point of Sale Expansion Adapter error occurred.

**User Response:** Refer to the reference documentation for your computer or system unit and run tests on the adapter. Follow the displayed instructions.

---

### 0148nnxn

**Explanation:** An IBM 4695 Point of Sale Adapter/A or IBM Flat Panel Display Adapter/A error occurred.

**User Response:** Exchange the adapter card.

---

## Adapter Part Numbers

Description	FRU Part Number
PS/2 Store Loop Adapter	73G2757
4693 Store Loop Adapter	93F1081
Point of Sale Expansion Adapter	73G2758
Flat Panel Display Adapter/A	66G4261
4695 Point of Sale Adapter/A	66G4260

---

## Appendix. Notices

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

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

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

### Industry Canada Class A Emission Compliance Statement

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

### Avis de conformité aux normes d'Industrie Canada

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

### Korean Communications Statement

Please note that this device has been approved for business purposes with regard to electromagnetic interference. If you find this is not suitable for your use, you may exchange it for a non-business purpose one.

#### A급 기기(업무용)

이 기기는 업무용으로 전자파적합등록을 받은 기기이오니 판매자 또는 이용자는 이점을 주의하시기 바라며, 만약 구입하였을 때에는 구입한 곳에서 가정용으로 교환하시기 바랍니다.

## European Community (CE) Mark of Conformity Statement

This product is in conformity with the protection requirements of EC Council Directive 89/336/EEC on the approximation of the laws of the Member States relating to electromagnetic compatibility. IBM cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the fitting of non-IBM option cards.

This product has been tested and found to comply with the limits for Class A Information Technology Equipment according to 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.

**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.

## Germany

**Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Geräten (EMVG) vom 30. August 1995 (bzw. der EMC EG Richtlinie 89/336).**

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

Verantwortlich für die Konformitätserklärung nach Paragraph 5 des EMVG ist die IBM Deutschland Informationssysteme GmbH, 70548 Stuttgart.

Informationen in Hinsicht EMVG Paragraph 3 Abs. (2) 2:

Das Gerät erfüllt die Schutzanforderungen nach EN 50082-1 und EN 55022 Klasse A.
--

EN 55022 Klasse A Geräte müssen mit folgendem Warnhinweis versehen werden:

"Warnung: dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen."

EN 50082-1 Hinweis:

"Wird dieses Gerät in einer industriellen Umgebung betrieben (wie in EN 50082-2 festgelegt), dann kann es dabei eventuell gestört werden. In solch einem Fall ist der Abstand bzw. die Abschirmung zu der industriellen Störquelle zu vergrößern."

Anmerkung:

Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den IBM Handbüchern angegeben, zu installieren und zu betreiben.

## Australia / New Zealand

**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.

---

## Japanese Voluntary Control Council for Interference (VCCI) Statement

This product is a Class A Information Technology Equipment and conforms to the standards set by the Voluntary Control Council for Interference by Technology Equipment (VCCI). In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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

---

## Taiwanese Class A Warning Statement

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

---

## Electrostatic Discharge (ESD)

**Attention:** ESD damage can occur when there is a difference in charge between the part, the product, and the service person. No damage will occur if the service person and the part being installed are at the same charge level.

### ESD Damage Prevention

Anytime a service action involves physical contact with logic cards, modules, back-panel pins, or other ESD sensitive (ESDS) parts, the service person must be connected to an ESD common ground point on the product through the ESD wrist strap and cord.

The ESD ground clip can be attached to any frame ground, ground braid, green wire ground, or the round ground prong on the AC power plug. Coax or connector outside shells can also be used.

## Handling Removed Cards

Logic cards removed from a product should be placed in ESD protective containers. No other object should be allowed inside the ESD container with the logic card. Attach tags or reports that must accompany the card to the outside of the container.

---

## Safety Information

**Danger:**

Before you begin to install this product, read the safety information in *IBM Safety Information — Read This First, GA27-4004*. This booklet describes safe procedures for cabling and plugging in electrical equipment.

**Gevaar:**

Voordat u begint met de installatie van dit produkt, moet u eerst de veiligheidsinstructies lezen in de brochure *Veiligheidsinstructies—Lees dit eerst, GA27-4004*. Hierin wordt beschreven hoe u elektrische apparatuur op een veilige manier moet bekabelen en aansluiten.

**Perigo:**

Antes de começar a instalar este produto, leia as informações de segurança contidas em *Informações Sobre Segurança—Leia Isto Primeiro, GA27-4004*. Esse folheto descreve procedimentos de segurança para a instalação de cabos e conexões em equipamentos elétricos.

**Fare!**

Før du installerer dette produkt, skal du læse sikkerhedsforskrifterne i *Sikkerhedsforskrifter—Læs dette først GA27-4004*. Vejledningen beskriver den fremgangsmåde, du skal bruge ved tilslutning af kabler og udstyr.

**Gevaar**

Voordat u begint met het installeren van dit produkt, dient u eerst de veiligheidsrichtlijnen te lezen die zijn vermeld in de publikatie *IBM Safety Information — Read This First*, GA27-4004. In dit boekje vindt u veilige procedures voor het aansluiten van elektrische apparatuur.

**VAARA**

Ennen kuin aloitat tämän tuotteen asennuksen, lue julkaisussa *Turvaohjeet—Luetämä ensin*, GA27-4004, olevat turvaohjeet. Tässä kirjasessa on ohjeet siitä, miten sähkölaitteet kaapeloidaan ja kytketään turvallisesti.

**Danger**

Avant d'installer le présent produit, consultez le livret *Informations pour la sécurité—Lisez-moi d'abord*, GA27-4004, qui décrit les procédures à respecter pour effectuer les opérations de câblage et brancher les équipements électriques en toute sécurité.

**Vorsicht**

Bevor mit der Installation des Produktes begonnen wird, die Sicherheitshinweise in *Sicherheitsinformationen—Bitte zuerst lesen*, IBM Form GA27–4004. Diese Veröffentlichung beschreibt die Sicherheitsvorkehrungen für das Verkabeln und Anschließen elektrischer Geräte.

**Vigyázat**

Mielőtt megkezdi a berendezés üzembe helyezését, olvassa el a *IBM Safety Information — Read This First*, GA27–4004 könyvecskében leírt biztonsági információkat. Ez a könyv leírja, milyen biztonsági intézkedéseket kell megtenni az elektromos berendezés huzalozásakor illetve csatlakoztatásakor.

**Pericolo**

prima di iniziare l'installazione di questo prodotto, leggere le informazioni relative alla sicurezza riportate nell'opuscolo *Informazioni di sicurezza—Prime informazioni da leggere* in cui sono descritte le procedure per il cablaggio ed il collegamento di apparecchiature elettriche.

**Fare**

Før du begynner å installere dette produktet, må du lese sikkerhetsinformasjonen i *Sikkerhetsinformasjon—Les dette først*, GA27–4004 som beskriver sikkerhetsrutinene for kabling og tilkobling av elektrisk utstyr.

**Perigo**

Antes de iniciar a instalação deste produto, leia as informações de segurança *Informações de Segurança—Leia Primeiro*, GA27-4004. Este documento descreve como efectuar, de um modo seguro, as ligações eléctricas dos equipamentos.

**Peligro**

Antes de empezar a instalar este producto, lea la información de seguridad en *Información de Seguridad—Lea Esto Primero*, GA27-4004. Este documento describe los procedimientos de seguridad para cablear y enchufar equipos eléctricos.

**Varning—livsfara**

Innan du börjar installera den här produkten bör du läsa säkerhetsinformationen i dokumentet *Säkerhetsföreskrifter—Läs detta först*, GA27-4004. Där beskrivs hur du på ett säkert sätt ansluter elektrisk utrustning.

危險：安裝本產品之前，請先閱讀  
"IBM Safety Information--Read  
This First" GA27-4004 手冊中所提  
供的安全注意事項。這本手冊將會說明  
使用電器設備的纜線及電源的安全程序。

Opasnost: Prije nego sto počnete sa instalacijom produkta,  
pročitajte naputak o pravilima o sigurnom rukovanju u  
Upozorenje: Pravila o sigurnom rukovanju - Prvo pročitaj ovo,  
GA27-4004. Ovaj privitak opisuje sigurnosne postupke za  
priključivanje kabela i priključivanje na električno napajanje.

**Upozornění:** než zahájíte instalaci tohoto produktu, přečtěte si  
nejprve bezpečnostní informace v pokynech „Bezpečnostní  
informace“ č. GA27-4004. Tato brožurka popisuje bezpečnostní  
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**Κίνδυνος:** Πριν ξεκινήσετε την εγκατάσταση αυτού του προϊόντος,  
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この小冊子は、電気機器の安全な配線と接続の  
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위험: 이 제품을 설치하기 전에 반드시  
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## ОПАСНОСТ

Пред да почнете да го инсталирате овој продукт, прочитајте ја информацијата за безбедност:

"Предупредување: Информација за безбедност: Прочитајте го прво ова", GA27-4004.

Оваа брошура опишува безбедносни процедури за каблирање и вклучување на електрична опрема.

## Uwaga:

Przed rozpoczęciem instalacji produktu należy zapoznać się z instrukcją:

"IBM Safety Information - Read This First", GA27-4004.

Zawiera ona warunki bezpieczeństwa przy podłączaniu do sieci elektrycznej i eksploatacji.

**ОСТОРОЖНО:** Прежде чем инсталлировать этот продукт, прочтите Инструкцию по технике безопасности в документе "Внимание: Инструкция по технике безопасности -- Прочестъ в первую очередь", GA27-4004. В этой брошюре описаны безопасные способы каблирования и подключения электрического оборудования.

Nebezpečenstvo: Pred inštaláciou výrobku si prečítajte bezpečnosté predpisy v

Výstraha: Bezpečnosté predpisy - Prečítaj ako prvé, GA27-4004. V tejto brožúrke sú opísané bezpečnosté postupy pre pripojenie elektrických zariadení.

Pozor: Preden začnete z instalacijo tega produkta preberite poglavje: "Opozorilo: Informacije o varnem rokovanju-preberi pred uporabo," GA27-4004. To poglavje opisuje pravilne postopke za kabliranje,

## 危險：

開始安裝此產品之前，請先閱讀安全資訊。

## 注意：

請先閱讀 - 安全資訊 GA27-4004

此冊子說明插接電器設備之電纜線的安全程序。

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Installation and Service**

**Publication No. GA27-4009-02**

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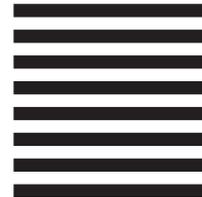
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