

IBM 4695 RS232 Adapter Usage Guide

P/N 08L2672 Rev 0

**Configuration Instructions and OS Recommendations
for the IBM 4695 RS232 Adapter
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**This document contains information necessary to properly configure the
4695 RS232 Adapter and 4695 Integrated Units for use with
supported Operating Systems.**

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Overview

This adapter provides two additional RS232 (serial) ports for the IBM 4695. It operates in Plug-and-Play (PnP) mode as well as non-PnP mode by optional jumper settings. In PnP mode, the operating system determines the resources used by the adapter. In non-PnP mode, the card's resources are manually chosen using jumpers on the adapter.

The default factory setting is PnP mode.

Adapter Configuration

Configuration 0 is PnP mode. All other configurations are non-PnP modes. PnP mode is determined by Jumper 1. Jumpers 2 through 6 are for non-PnP configurations. See Figure 1

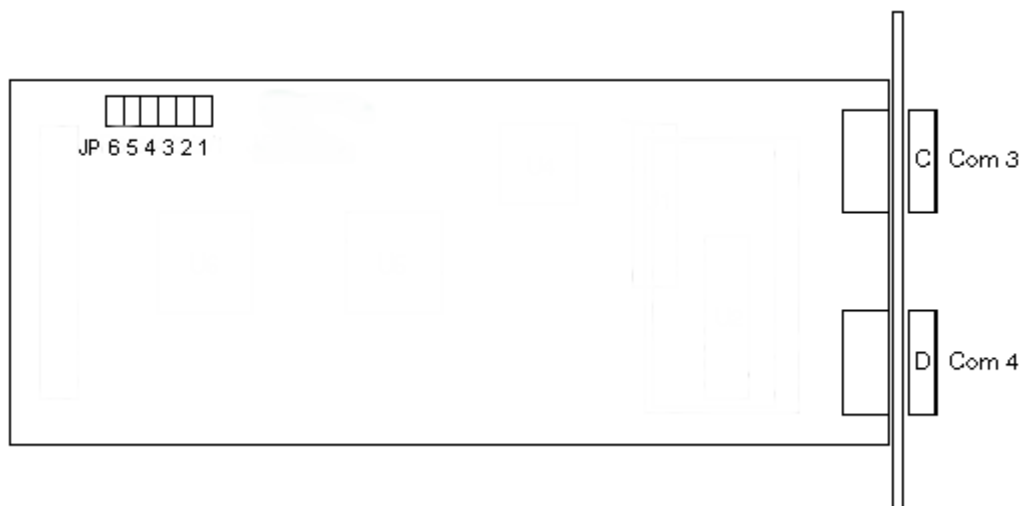
Configuration No.	JP:6 5 4 3 2 1	Port C	Port D
0	x x x x x 0	COM3 / IRQs 5,7,9,11,15	COM4 / IRQs 5,7,9,11,15
1	0 1 0 0 0 1	COM3 / IRQ5	COM4 / IRQ9
2	1 1 0 0 0 1	COM3 / IRQ5	COM4 / IRQ11
3	1 0 1 0 0 1	COM3 / IRQ5	COM4 / IRQ15
4	0 1 1 0 0 1	COM3 / IRQ9	COM4 / IRQ11
5	0 0 0 1 0 1	COM3 / IRQ9	COM4 / IRQ15
6	0 1 0 1 0 1	COM3 / IRQ11	COM4 / IRQ15

Jumper Legend:
1 indicates pins connected or shorted
0 indicates pins open
X indicates does not matter.

Example:

open (no jumper - setting=0)
open (setting=0)
shorted (setting=1)

Figure 1



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4695-3x1 Models

Select the Operating System below for specific instructions.

Follow the steps in order.

- **Windows 95:** **Supports PnP Configuration 0 only.**
 1. Configure and install the adapter.
 2. In the 4695 BIOS Setup, ensure the following:
 - In the "Devices and I/O Ports" Menu, serial ports A and B should be set to "Auto Configure".
 - In the "Plug and Play" Menu, "Plug and Play adapter configuration" should be set to "Disabled". No other resources under PnP should be reserved for the adapter.
 3. Under Windows 95:
 - Windows 95 should find two new ports when booted. Use the "Windows default driver" if asked.

- **Windows NT 4:** **Supports non-PnP Configurations 1, 3, 4, 5, and 6 only.**
 1. Configure and install the adapter.
 2. In the 4695 BIOS Setup, ensure the following:
 - In the "Devices and I/O Ports" Menu:
 - Serial port A should be "Port 3F8 IRQ 4".
 - Serial port B should be "Port 2F8 IRQ 3".
 - In the "Plug and Play" Menu:
 - "Plug and Play adapter configuration" should be set to "Disabled".
 - I/O ranges 3e8-3ef and 2e8-2ef should be set to "Isa Legacy" in the "I/O Port Resources" Menu.
 - The IRQs used by COM3 and 4 should be set to "Isa Legacy" in the "Interrupt Resources" Menu. The IRQs used are listed by the COM ports for your Configuration number in Figure 1.
 - If you are using Configurations **1, 2, or 3** then ensure that the "Interrupt Level" for "Device Channel" is IRQ 11.
 - If you are using Configuration **4 or 6**, change "Interrupt Level" to "IRQ7" in the "Device Channel" Menu.
 2. Under Windows NT, do the following:
 - Open "Ports" in the Control Panel.
 - Select "Add":
 - for "COM Port Number" select 3.
 - for "Base I/O Port number" select 3e8.
 - for "Interrupt Request Line" select the IRQ used by COM3. The IRQ used is listed by COM3 for your Configuration number in Figure 1.
 - Click "OK", "Don't Restart Now".
 - Click on "Settings" and change "Baud Rate" to the highest available number, then click "OK".
 - Select "Add" again:
 - for "COM Port Number" select 4.
 - for "Base I/O Port number" select 2e8.

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- for “Interrupt Request Line” select the IRQ used by COM4. The IRQ used is listed by COM4 for your Configuration number in Figure 1.
- Click “OK”, “Don’t Restart Now”.
- Click on “Settings” and change “Baud Rate” to the highest available number, then click “OK”.
- Restart NT for the changes to take effect.

• Windows 3.x:

Supports non-PnP Configurations 1, 3, 4, 5, and 6 only.

1. Configure and install the adapter.
2. In the 4695 BIOS Setup, ensure the following:
 - In the "Devices and I/O Ports" Menu:
 - Serial port A should be "Port 3F8 IRQ 4".
 - Serial port B should be "Port 2F8 IRQ 3".
 - In the "Plug and Play" Menu:
 - "Plug and Play adapter configuration" should be set to "Disabled".
 - I/O ranges 3e8-3ef and 2e8-2ef should be set to "Isa Legacy" in the "I/O Port Resources" Menu.
 - The IRQs used by COM3 and 4 should be set to "Isa Legacy" in the "Interrupt Resources" Menu. The IRQs used are listed by the COM ports for your Configuration number in Figure 1.
 - If you are using Configurations 1, 2, or 3 then ensure that the “Interrupt Level” for “Device Channel” is IRQ 11.
 - If you are using Configuration 4 or 6, change “Interrupt Level” to “IRQ7” in the “Device Channel” Menu.
3. Under Windows 3.11:
 - Open “Ports” in the Control Panel.
 - Click on COM3 and select “Settings”, “Advanced”:
 - for “Base I/O Port Address” select 3e8.
 - for “Interrupt Request Line” select the IRQ used by COM3. The IRQ used is listed by COM3 for your Configuration number in Figure 1.
 - Click “OK”. Select “Don’t Restart Now”, “OK”.
 - Click on COM4 and select “Settings”, “Advanced”:
 - for “Base I/O Port Address” select 2e8.
 - for “Interrupt Request Line” select the IRQ used by COM4. The IRQ used is listed by COM4 for your Configuration number in Figure 1.
 - Click “OK”. Restart when asked.

• PC DOS 7:

Supports non-PnP Configurations 1, 2, 3, 4, 5, and 6 only.

Note: Configuration 3 should only be used if your application’s parallel port driver does not use IRQs.

1. Configure and install the adapter.
2. In the 4695 BIOS Setup, ensure the following:
 - In the "Devices and I/O Ports" Menu:
 - Serial port A should be "Port 3F8 IRQ 4".
 - Serial port B should be "Port 2F8 IRQ 3".
 - In the "Plug and Play" Menu:

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- "Plug and Play adapter configuration" should be set to "Disabled".
 - I/O ranges 3e8-3ef and 2e8-2ef should be set to "Isa Legacy" in the "I/O Port Resources" Menu.
 - The IRQs used by COM3 and 4 should be set to "Isa Legacy" in the "Interrupt Resources" Menu. The IRQs used are listed by the COM ports for your Configuration number in Figure 1.
 - If you are using Configurations 1, 2, or 3 then ensure that the "Interrupt Level" for "Device Channel" is IRQ 11.
 - If you are using Configuration 4 or 6, change "Interrupt Level" to "IRQ7" in the "Device Channel" Menu.
- **OS/2 Warp 4:**
(Eng. and Jap.)

Supports non-PnP Configurations 1, 3, 4, 5, and 6 only.

1. Configure and install the adapter.
2. In the 4695 BIOS Setup, ensure the following:
 - In the "Devices and I/O Ports" Menu:
 - Serial port A should be "Port 3F8 IRQ 4".
 - Serial port B should be "Port 2F8 IRQ 3".
 - In the "Plug and Play" Menu:
 - "Plug and Play adapter configuration" should be set to "Disabled".
 - I/O ranges 3e8-3ef and 2e8-2ef should be set to "Isa Legacy" in the "I/O Port Resources" Menu.
 - The IRQs used by COM3 and 4 should be set to "Isa Legacy" in the "Interrupt Resources" Menu. The IRQs used are listed by the COM ports for your Configuration number in Figure 1.
 - If you are using Configurations 1, 2, or 3 then ensure that the "Interrupt Level" for "Device Channel" is IRQ 11.
 - If you are using Configuration 4 or 6, change "Interrupt Level" to "IRQ7" in the "Device Channel" Menu.
3. Under OS/2, do the following:
 - Open Config.sys in an editor.
 - Find the line with the following statement: `DEVICE=C:\OS2\BOOT\COM.SYS`. Append the following text one space after the end of this line:

```
( 3 , 3e8 , x , I ) ( 4 , 2e8 , y , I )
```

Where **x** is the IRQ used by COM3 and **y** is the IRQ used by COM4. The IRQs used are listed by the COM ports for your Configuration number in the above chart.

Here is an example statement for Configuration #1:

```
DEVICE=C:\OS2\BOOT\COM.SYS ( 3 , 3e8 , 5 , I ) ( 4 , 2e8 , 9 , I )
```

- Save Config.sys and reboot OS/2 for the changes to take effect.

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4695-2x1 Models

Select the Operating System below for specific instructions.
Follow the steps in order.

- **Windows 95:** **Supports PnP Configuration 0 only.**
 1. In the 4695 BIOS Setup, note the IRQ used by "Device Channel".
 2. Under Windows 95, reserve the Device Channel IRQ:
 - Open the "System" icon in the Control Panel".
 - Click on the "Device Manager" tab then double-click on "Computer" in the top of the window.
 - Click on the "Reserve Resources" tab and make sure "Interrupt Request (IRQ)" is selected
 - Click "Add", then select the IRQ used by "Device Channel" from Step 1.
 - Click "OK" then "OK" again. Select "No" when asked to restart the computer.
 - Shutdown Windows 95 and power off the system.
 3. Configure and install the adapter.
 4. Windows 95 should find two new ports when booted. Use the "Windows default driver" if asked.

- **Windows NT 4:** **Supports non-PnP Configurations 1, 3, 4, 5, and 6 only.**
 1. Configure and install the adapter.
 2. In the 4695 BIOS Setup, note the following:
 - If you are using Configuration 4 or 6, change "Interrupt Level" to "IRQ7" in the "Device Channel" Menu.
 3. Under Windows NT, do the following:
 - Open "Ports" in the Control Panel.
 - Select "Add":
 - for "COM Port Number" select 3.
 - for "Base I/O Port number" select 3e8.
 - for "Interrupt Request Line" select the IRQ used by COM3. The IRQ used is listed by COM3 for your Configuration number in the above chart.
 - Click "OK", "Don't Restart Now".
 - Click on "Settings" and change "Baud Rate" to the highest available number, then click "OK".
 - Select "Add" again:
 - for "COM Port Number" select 4.
 - for "Base I/O Port number" select 2e8.
 - for "Interrupt Request Line" select the IRQ used by COM4. The IRQ used is listed by COM4 for your Configuration number in the above chart.
 - Click "OK", "Don't Restart Now".
 - Click on "Settings" and change "Baud Rate" to the highest available number, then click "OK".
 - Restart NT for the changes to take effect.

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- **Windows 3.x:** **Supports non-PnP Configurations 1, 3, 4, 5, and 6 only.**
 1. Configure and install the adapter.
 2. In the 4695 BIOS Setup, note the following:
 - If you are using Configuration 4 or 6, change “Interrupt Level” to “IRQ7” in the “Device Channel” Menu.
 3. Under Windows 3.11:
 - Open “Ports” in the Control Panel.
 - Click on COM3 and select “Settings”, “Advanced”:
 - for “Base I/O Port Address” select 3e8.
 - for “Interrupt Request Line” select the IRQ used by COM3. The IRQ used is listed by COM3 for your Configuration number in the above chart.
 - Click “OK”. Select “Don’t Restart Now”, “OK”.
 - Click on COM4 and select “Settings”, “Advanced”:
 - for “Base I/O Port Address” select 2e8.
 - for “Interrupt Request Line” select the IRQ used by COM4. The IRQ used is listed by COM4 for your Configuration number in the above chart.
 - Click “OK”. Restart when asked.

- **PC DOS 7:** **Supports non-PnP Configurations 1, 2, 3, 4, 5, and 6 only.**

Note: Configuration 3 should only be used if your application’s parallel port driver does not use IRQs.

 1. Configure and install the adapter.
 2. In the 4695 BIOS Setup, note the following:
 - If you are using Configuration 2, 4, or 6, change “Interrupt Level” to “IRQ7” in the “Device Channel” Menu.

- **OS/2 Warp 3 and 4:** **Supports Configurations 1, 3, 4, 5, and 6 only.**

(Eng. and Jap.)

 1. Configure and install the adapter.
 2. In the 4695 BIOS Setup, note the following:
 - If you are using Configuration 4 or 6, change “Interrupt Level” to “IRQ7” in the “Device Channel” Menu.
 3. Under OS/2, do the following:
 - Open Config.sys in an editor.
 - Find the line with the following statement: `DEVICE=C:\OS2\BOOT\COM.SYS`. Append the following text one space after the end of this line:

`(3, 3e8, x, I) (4, 2e8, y, I)`

Where **x** is the IRQ used by COM3 and **y** is the IRQ used by COM4. The IRQs used are listed by the COM ports for your Configuration number in the above chart.
Here is an example statement for Configuration #1:

```
DEVICE=C:\OS2\BOOT\COM.SYS ( 3, 3e8, 5, I ) ( 4, 2e8, 9, I )
```

 - Save Config.sys and reboot OS/2 for the changes to take effect.

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Glossary of Terms

- **RS232:** Recommend Standard number 232. It defines the parameters used in the interface between Data Terminal Equipment (DTE) and Data Communications Equipment (DCE). Typically a serial port on a PC is considered DTE and a modem DCE. There are eight control lines that can be used in the connection between DTE and DCE equipment. The RS232 standard supports two types of connectors -- a 25-pin D-type connector (DB-25) and a 9-pin D-type connector (DB-9). The type of serial communications used by PCs requires only 9 pins. The 4695 RS232 Adapter has 2 DB-9 connectors.
- **PnP:** Plug-and-Play. The Plug-and Play specification provides a means of automatically choosing valid resources for PnP devices, such as the 4695 RS232 Adapter, and ensures that these resources do not conflict with any other device in a PC. PnP eliminates the need to manually set jumpers or switches on an adapter to allocate resources and prevents the user from having to know what resources are free in a system. Windows 95 is a PnP Operating System, so it can automatically detect and configure a PnP device without requiring a system reboot. Windows is also responsible for automatically loading drivers needed by a PnP device (no need to manually type commands into config.sys or autoexec.bat). Plug and Play device drivers support dynamic reconfiguration, so they can be loaded and unloaded while a system is running.
- **COM:** Communication Port. A COM port is a logical way of referring to a physical serial port. Operating Systems and software use COM port numbers to communicate with hardware such as a modem or mouse. Traditionally, COM1 is chosen by assigning the I/O port resource of 3F8h to a serial port. COM2 is 2F8h, COM3 is 3E8h, and COM4 is 2E8h.