PC Plus Adapters

FEDERAL COMMUNICATIONS COMMISSION
AND
INDUSTRY CANADA
RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

NORMAS OFICIALES MEXICANAS (NOM)
ELECTRICAL SAFETY STATEMENT

INSTRUCCIONES DE SEGURIDAD

1. Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.

2. Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.

3. Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.

4. Todas las instrucciones de operación y uso deben ser seguidas.

5. El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc..

6. El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.

7. El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.

8. Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.

9. El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10. El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11. El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12. Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13. Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15. En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17. Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18. Servicio por personal calificado deberá ser provisto cuando:

   A: El cable de poder o el contacto ha sido dañado; u

   B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

   C: El aparato ha sido expuesto a la lluvia; o

   D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

   E: El aparato ha sido tirado o su cubierta ha sido dañada.

TRADEMARKS USED IN THIS MANUAL

Any trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

Contents

1. Specifications

System Requirements—IBM® PC or compatible with Windows® 95 or Windows NT

Speed—IC127C: 460.8 Kbps, IC129C: 2.5 Mbps

CE Approval—All items listed are approved

Connectors—IC127C: (1) DB9, IC129C: (1) DB25

Power—From PC bus

Card Type—IC127C: ISA, IC129C: EPP, ECP

Size—¾ Card

2. Introduction

2.1 Description

The PC Plus Adapters let you take advantage of the fastest speed of your peripherals. They have a 16650 UART chip and a 32-bit buffer. The following models are available:

- PC Plus RS-232 Serial Adapter (IC127C): This ISA card is compatible with all V.34 external modems and all external ISDN terminal adapters.

- PC Plus Enhanced Parallel Adapter (IC129C): This card supports both EPP and ECP standards for parallel printing from your PC at speeds up to 2.5 Mbps.

2.2 Features

IC127C:

- 4x clock crystal enables speeds up to 460 Kbps and realizes the maximum capabilities of V.34, 56.6 modems, and ISDN terminal adapters.
- Intelligent 16650 UART chip detects flow control at the port and prevents overrun errors.
- 32-byte FIFO buffer doubles the buffer space of on-board IOs and reduces CPU overhead.
- Selectable COM addressing for COM 1/2/3/4 makes it easy to configure.
- Drivers for Windows NT, 95, 3.1, and 3.11 included.

IC129C:

- Enhanced Capabilities Port (ECP), Enhanced Parallel Port (EPP), and parallel bidirectional port.
- Selectable IRQs 2/3/4/5/7/10/11/12 offer greater configurability beyond IRQs 5 and 7.
- Selectable LPT addressing for LPTs 1/2/3/4/5/6 permits more flexibility.

3. Configuration and Installation

3.1 ISA Card

3.1.1 BEFORE INSTALLATION

Before beginning installation, determine what types of add-in boards are currently in your PC. Most devices (ports, network cards, sound cards, controllers) use a particular IRQ (numbering 2-15). The PC Plus Adapter requires an unused IRQ, so determining which are in use is important.

NOTE

Many diagnostic programs do not accurately report IRQ usage. DO NOT rely on MDS (Win 3.1) or Win95 to report IRQ conflicts accurately.

The following list of devices shows common IRQ allocation. Note that this is not universal—your PC may be different.

IRQ 2/9	Network or Sound Card
3	Com 2
4	Com 1
5	LPT 2 or Sound Card
10	Network Card
11	SCSI Controller
12	usually free
15	Secondary IDE channel

NOTE

A Com port that is not connected to any external devices continues to be seen as "in use" by the PC hardware. If you are disabling an existing Com Port or other device, to make room for the PC Plus Adapter, be sure to physically remove the port/device, or disable it with the proper jumper. Disabling a Com Port through software, or merely disconnecting its cable, will not necessarily disable the port, and may cause a hidden conflict.

PCI Motherboard users take note:

Many PCI motherboards automatically allocate IRQs 10-15 to the PCI bus. If you wish to use one of these IRQs for the PC Plus Adapter, you must release one of them to the ISA bus through the PCI Bus Configuration Menu, which you can access at boot-up.

3.1.2 HARDWARE INSTALLATION
Follow these steps to install your PC Plus Adapter (IC127C).

1. Determine the number of serial ports installed in your system. Each port will have a unique "COM" designation number. Configure the PC Plus Adapter for the next consecutive unused COM address and make a note of your selection. You will need it when installing the Adapter software. **Figure 3-1** shows the location of the jumpers on the card.


COM 3 — **COM 1**
COM 4 — **COM 2**

Configuration jumpers for IRQ settings

Configuration jumpers for COM settings
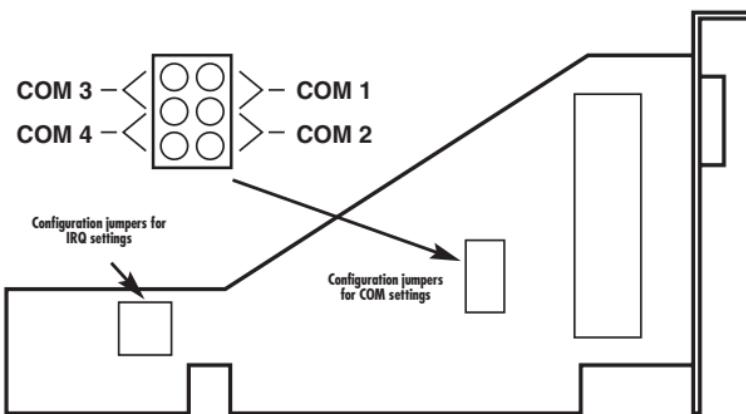
Figure 3-1. Location of the Configuration Jumpers.

2. Determine which IRQs (interrupts) are free in your system. Configure the Adapter for an unused IRQ.

NOTE

Although some devices allow sharing of IRQs, this is not recommended.

Figure 3-2 shows the proper jumper positions for configuring the Adapter for a given interrupt (IRQ).
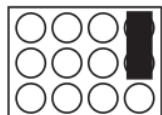

IRQ 4
(factory default)
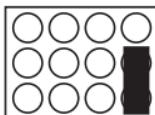
IRQ 3
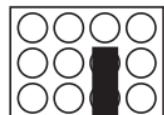
IRQ 5
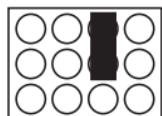
IRQ 2
(same as IRQ 9)
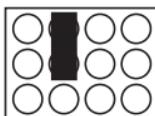
IRQ 10
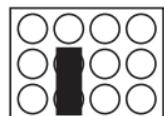
IRQ 11
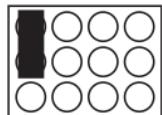
IRQ 12
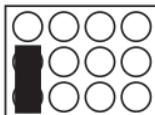
IRQ 15

Figure 3-2. Proper Jumper Positions for a Given Interrupt (IRQ).

NOTE

The Adapter is not a DOS product. To use a DOS communications program with the Adapter, open a DOS window under Windows 3.1/3.11 or Windows 95.

3.1.3 SOFTWARE INSTALLATION

Windows 3.1 and Windows for Workgroups 3.11

NOTE

Do not install the Adapter's Windows 3.1/3.11 driver for use with Windows 95—see Win95 driver installation instructions.

1. If you have previously installed a replacement Com driver (for example, Turbocomm, KingCom, etc.), remove it. The Com Port Utility will not install correctly if the original Microsoft COMM.DRV has been replaced.

2. While in Windows, insert the Adapter diskette into your floppy drive.

3. From the Program Manager, select FILE, and choose RUN.

4. Type A:\WIN311\SETUP and follow instructions on the screen.

5. After restarting Windows, double-click the icon in Program Manager and select the Com Port that corresponds to the hardware setup of your Adapter.

6. Select UART Type 650 and the IRQ that corresponds to your hardware jumper setup.

7. Further information on FIFO Control, Flow Control, and Clock is available from the appropriate HELP button screens. To activate changes, you must exit Windows and restart.

Communicating faster than 115.2 Kbps in Windows 3.11

The PC Plus Adapter supports data rates up to 460.8 Kbps. Windows 3.11, however, does not inherently support rates above 115.2 Kbps. To access data rates higher than 115.2 Kbps in Windows 3.1/3.11, use the High Speed Clock option in the Com Port Utility. Data rates selected through Windows software will then be multiplied by 4.

For example, if High Speed Clock is enabled, selecting 57.6 Kbps in software will result in an actual rate of 230.4 Kbps (57.6 x 4).

NOTE

To access data rates above 115.2 Kbps, your modem must also support these higher rates.

Windows 95 Driver Installation

1. After configuring the hardware jumpers, install the Adapter in any available ISA slot in your system and begin Windows 95.

2. From the My Computer icon, choose Control Panel and click Install New Hardware.

3. Select the Auto-Detect option. Windows 95 will detect the Adapter as a standard Com Port residing at the address and IRQ that you selected when you set the jumpers (see **Section 3.1.2**).

4. From Control Panel, Device Manager, select the Com Port that corresponds to your Adapter.

5. When the Com Port properties page appears, select the Driver page and choose the Change Driver/Have Disk option.

6. Insert the Adapter driver installation diskette into your floppy drive and access the Win 95 subdirectory. Double-click on the icon. The Adapter driver will install automatically.

7. Configure Tx/Rx triggers, Flow Control, etc. as desired. For more information on optimum settings, click the right mouse button when accessing a particular setting.

Notes on the Adapter Win95 Driver

- The configuration options displayed in Device Manager may also be accessed directly from any Win95 communications software package by selecting Com Port Properties. Any updates made to the Adapter configuration in this method will automatically update Device Manager.

- The Adapter supports data rates up to 460.8 Kbps. However, to access these higher data rates in Win95, the modem (or other device) driver (.INF file) must also support high- speed data rates. If you select a data rate higher than 115.2 Kbps in Device Manager Com Port Properties, and then find your rate changed back to 115.2 Kbps after connecting your modem and accessing Port Settings in the Modem Properties page, contact your modem manufacturer for an updated .INF file.

NOTE

If you mistakenly install the Adapter driver for Windows 3.1/3.11 and wish to use Win95, the Win3.11 driver must be completely removed before installing the Adapter

Win95 driver.

3.2 Configuration for the PC Plus Enhanced Parallel Adapter

3.2.1 STANDARD LPT ASSIGNMENTS

The PC Plus Enhanced Parallel Adapter fully supports "standard" LPT settings represented by addresses 03BC h, 0378 h, and 0278 h. The system will check those hexadecimal addresses at boot time and assign them incrementally to be LPT 1, LPT 2, or LPT 3.

If you already have an LPT 1 on your system using 0378 h, then configure the Adapter for address 0278 h. It will be recognized as LPT 2.

If you already have an LPT 1 and an LPT 2 using 0378 h and 0278 h, respectively, configure the Adapter for address 03BC h. It will be recognized as LPT 1 and the other ports will be recognized as LPT 2 and LPT 3, respectively.

NOTE

03BC h uses a polled interrupt, so no IRQ jumper is required. 0378 h typically uses IRQ 7, and 0278 h

typically uses IRQ 5.

3.2.2 NON-STANDARD LPT ASSIGNMENTS FOR WINDOWS 95

When adding an extra printer port, double-click on the Add New Hardware icon in the Windows 95 Control Panel. We recommend against using the autodetect feature. Rather, answer "NO" to the first question ("Do you want Windows to search for your new hardware?"). Choose "PORTS (COM and LPT1)." Select the type of port you wish to add (either "PRINTER PORT," or "ECP PRINTER PORT"). Complete the installation procedure. When Windows asks if you want to restart the computer, choose "NO."

Start the Windows 95 Device Manager (found by double-clicking on the SYSTEM icon in the CONTROL PANEL). Choose "PORTS (COM and LPT1), " then double-click on whichever LPT you just added (numbered 1 through 6). Choose the RESOURCES page for that port. If Windows 95 failed to automatically detect the required Port address, you may alter it, by choosing the appropriate Basic Configuration. This may only be accessed by un-checking the box next to "USE

AUTOMATIC SETTINGS."

Choose Basic Configuration as follows:

Standard Printer Port (SPP)

   0 allows for standard addresses and polled interrupts (Microsoft default).

   1 allows for standard addresses and interrupt-driven printing (faster).

   2 allows for non-standard addresses and polled interrupts.

Enhanced Capabilities Port (ECP)

   0 allows for standard addresses and polled interrupts, no DMA channels.

   1 allows for standard addresses and interrupt-driven printing, no DMA channels.

   2 allows for standard addresses and interrupt-driven printing, DMA channel selectable.

   3 allows for non-standard addresses and polled interrupts.

The beginning and ending hexadecimal address must be configured as:

   03BC-03BF   0238-023F

```
0378-037F    0288-028F
0278-027F    0338-033F
```

NOTE

If you elect to enter the data without scrolling through the list, the spaces that appear on either side of the hyphen are critical.

3.2.3 HARDWARE SETUP

Follow the guidelines illustrated in **Figure 3-3** to set up the card.

For parallel-port addressing:

NOTE

When using 03BC (hex) address, 03BC ENABLE/DISABLE jumper must be enabled. When using all other addresses, 03BC ENABLE/DISABLE jumper must be DISABLED.

For DMA configuration:

NOTE

When using Ethernet Capabilities Port (ECP) mode, DMA channels must be set up according to mode specified by the peripheral device driver. Check the documentation accompanying your peripheral to see

what mode(s) it supports. Both jumpers should be moved together.

Parallel Port IRQ Setup

Remove jumper if using POLLED interrupt request
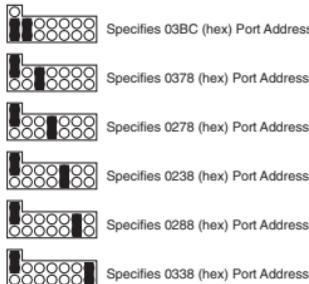
Specifies IRQ 4

Specifies IRQ 5

Specifies IRQ 7

Specifies IRQ 10

Specifies IRQ 2

Specifies IRQ 3

Specifies IRQ 11

Specifies IRQ 12

Parallel Port Addressing

Specifies 03BC (hex) Port Address

Specifies 0378 (hex) Port Address

Specifies 0278 (hex) Port Address

Specifies 0238 (hex) Port Address

Specifies 0288 (hex) Port Address

Specifies 0338 (hex) Port Address

Note: When using 03BC (hex) address, 03BC ENABLE/DISABLE jumper must be ENABLED. When using all other addresses, 03BC ENABLE/DISABLE jumper must be DISABLED.

DMA Configuration

DMA Request

1   3   None

DMA Acknowledge

1   3   None
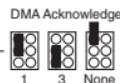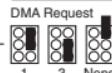
Note: When using Enhanced Capabilities Port (ECP) mode, DMA channels must be set up according to mode specified by peripheral device driver. Check the documentation accompanying your peripheral to see what mode(s) it supports. **Both jumpers should be moved together!**

Figure 3-3. Hardware Setup.

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