

***Not Recommended for New Installations.***

Please contact Technical Support for more information.

## ***PCMCIA RS-232 2-Port Card***

**Model 232PCC2**

**Documentation Number 232PCC23799**

# **B & B Electronics**

### ***International Headquarters***

B&B Electronics Mfg. Co. Inc.

707 Dayton Road -- P.O. Box 1040 -- Ottawa, IL 61350 USA

Phone (815) 433-5100 -- General Fax (815) 433-5105

**Home Page:** [www.bb-elec.com](http://www.bb-elec.com)

Sales e-mail: [orders@bb-elec.com](mailto:orders@bb-elec.com) -- Fax (815) 433-5109

Technical Support e-mail: [support@bb.elec.com](mailto:support@bb.elec.com) -- Fax (815) 433-5104

### ***European Headquarters***

B&B Electronics Ltd.

Westlink Commercial Park, Oranmore, Co. Galway, Ireland

Phone +353 91 792444 -- Fax +353 91 792445

**Home Page:** [www.bb-europe.com](http://www.bb-europe.com)

Sales e-mail: [orders@bb-europe.com](mailto:orders@bb-europe.com)

Technical Support e-mail: [support@bb-europe.com](mailto:support@bb-europe.com)

B&B Electronics -- Revised September 1999

# TABLE OF CONTENTS

<b>CHAPTER 1: INTRODUCTION .....</b>	<b>1</b>
SPECIFICATIONS .....	1
<b>CHAPTER 2: DOS / WINDOWS 3.X INSTALLATION .....</b>	<b>3</b>
232PCC2 CLIENT DRIVER FOR DOS .....	4
CLIENT DRIVER INSTALLATION .....	4
COMMAND LINE OPTIONS .....	5
COMMON PROBLEMS .....	9
<i>Identifying the 232PCC2</i> .....	9
<i>Generic Client Drivers Generic Client Drivers</i> .....	9
<i>Available Resources</i> .....	9
<i>Multiple Configuration Attempts</i> .....	9
<i>Older Versions of Card and Socket Services</i> .....	9
<b>CHAPTER 3: 232PCC2 ENABLER FOR DOS .....</b>	<b>10</b>
COMMAND LINE OPTIONS .....	11
COMMON PROBLEMS .....	13
<i>Identifying the 232PCC2</i> .....	13
<i>Memory Range Exclusion</i> .....	13
<i>Socket Numbers</i> .....	14
<i>Card and Socket Services Software</i> .....	14
<b>CHAPTER 4: WINDOWS 95/98 INSTALLATION .....</b>	<b>15</b>
INSTALLING A 232PCC2 UNDER WINDOWS 95/98 .....	15
232PCC2 RESOURCE SETTINGS IN WINDOWS 95/98 .....	16
VIEWING THE 232PCC2 RESOURCE SETTINGS .....	17
CHANGING RESOURCE SETTINGS WITH DEVICE MANAGER .....	18
<b>CHAPTER 5: HARDWARE INFORMATION .....</b>	<b>21</b>
<b>CHAPTER 6: EXTERNAL CONNECTIONS .....</b>	<b>22</b>
<b>APPENDIX A: DECLARATION OF CONFORMITY .....</b>	<b>A-1</b>

# Chapter 1: Introduction

B&B Electronics 232PCC2 provides two independent RS-232 asynchronous serial communications interfaces for systems equipped with PCMCIA Type II and/or Type III expansion sockets. The 232PCC2 is a PCMCIA Type II (5 mm) card and is PCMCIA PC Card Standard Specification 2.1 compliant.

The 232PCC2's serial ports are implemented using 16C550 Universal Asynchronous Receiver/Transmitters (UARTs) that are the recommended communications interface for multitasking environments and applications involving high data transfer rates.

The 232PCC2's two serial ports are addressable in two modes:

1. **Block Mode:** The two serial ports are configured in one 16-byte continuous block of I/O address space. The block must begin on an even 16-byte division. Both serial ports share one IRQ level.
2. **COM Mode:** The two serial ports are configured at the standard COM port I/O address location. The ports may be configured as COM1 and COM3; also, the ports may be configured as COM2 and COM4. Both serial ports share one IRQ level.

A special interrupt status register is also available to simplify the software required to service multiple serial ports in an interrupt driven environment. See the Hardware Information section for details.

**NOTE: When installed, a 232PCC2 appears as a DSP-100 by Quatech, Inc.**

## *Specifications*

<b>Bus Interface:</b>	PCMCIA PC Card Standard 2.1 compliant
<b>Physical Dimensions:</b>	Type II PCMCIA card (5mm)
<b>Maximum Baud Rate:</b>	120K
<b>Power Requirements:</b>	+5 V, 35.9 mA typical, 45.9 mA maximum
<b>Connector:</b>	Adapter to 2 standard male D-9

## Chapter 2: DOS / Windows 3.x Installation

Two configuration software programs are provided with the 232PCC2: a Client Driver, DSP100CL.SYS, and a card Enabler, DSP100EN.EXE. Both of these programs are executed from DOS (before entering Windows) and allow operation of the 232PCC2 in both the DOS and Windows 3.x environments. For optimal operation, however, the Client Driver is the preferred method of installation and configuration. The table below highlights the differences between these programs.

<b>Client Driver (recommended)</b>	<b>Enabler</b>
File name: DSP100CL.SYS	File name: DSP100EN.EXE
File type: DOS device driver	File type: DOS executable
Interfaces to PCMCIA Card and Socket Services software (PCMCIA host adapter independent)	Interfaces directly to Intel 82365SL and other PCIC compatible PCMCIA host adapters
Allows automatic configuration of 232PCC2 adapters upon insertion (Hot Swapping)	Does not support automatic configuration of 232PCC2 adapters upon insertion (Hot Swapping)
Requires PCMCIA Card and Socket Services software	Does not require PCMCIA Card and Socket Services software

**Table 1. Client Driver vs. Enabler for DOS/Windows 3.x.**

Card and Socket Services software is commercially available from several vendors for most desktop and laptop PCs. If you are unsure whether Card and Socket Services software is currently installed on your system, install the 232PCC2 Client Driver as discussed in following section. When loaded, the Client Driver will display an error message if Card and Socket Services software is not detected.

## **232PCC2 Client Driver for DOS**

In order to use the 232PCC2 Client Driver, the system must be configured with Card and Socket Services software.

### **IMPORTANT:**

Some versions of Card and Socket Services dated before 1993 do not support general purpose I/O cards. If after careful installation of the Client Driver the 232PCC2 does not configure or operate properly, an updated version of Card and Socket Services may be required.

### **Client Driver Installation**

The following procedure is used to install the 232PCC2 Client Driver:

- Copy the file DSP100CL.SYS from the 232PCC2 distribution diskette onto the system's hard drive.
- Using an ASCII text editor, open the system's CONFIG.SYS file located in the root directory of the boot drive.
- Locate the line(s) in the CONFIG.SYS file where the Card and Socket Services software is installed.
- **AFTER** the line(s) installing the Card and Socket Services software, add the following line to the CONFIG.SYS file:

DEVICE = *drive:\path*DSP100CL.SYS *options*

where *options* are the 232PCC2 Client Driver command line options discussed on the following pages.

- Save the CONFIG.SYS file and exit the text editor.
- Insert the 232PCC2 into one of the system's PCMCIA slots.

**NOTE:** Since the 232PCC2 Client Driver supports "Hot Swapping", it is not necessary to have the 232PCC2 installed when booting the system. By inserting the card before booting, however, the Client Driver will report the adapter configuration during the boot process thereby verifying the changes made to the CONFIG.SYS.

- Reboot the system and note the message displayed when the 232PCC2 Client Driver is loaded. If the Client Driver reports an "invalid command line option", correct the entry in the CONFIG.SYS file and reboot the system again. If the Client Driver reports "Card and Socket Services not found", a version of Card and Socket Services must be installed on the system or the 232PCC2 Enabler program must be used to configure the adapter. If the Client Driver reports the desired adapter configuration, the installation process is complete and the 232PCC2 may be removed and / or inserted from the system as desired. On each insertion into the PCMCIA socket, the 232PCC2 will be automatically re-configured according to the command line options.

### **Command Line Options**

The 232PCC2 Client Driver accepts up to eight command line arguments from the user to determine the configuration of the 232PCC2. If any arguments are provided, the Client Driver will attempt to configure any 232PCC2s with the options specified in the order they are entered on the command line. Each argument must be enclosed in parenthesis and must be separated from other arguments by a space on the command line. Within each argument, any or all of the following parameters may be specified using a comma (no spaces) to separate each parameter:

- Baddress** specifies the base I/O address of the 232PCC2 in hexadecimal and must reside on an even 16-byte (10H) boundary. This option **must** be omitted if using the *Dmode* option. If both the *Dmode* and *Baddress* option are omitted, Card and Socket Services will assign a block mode base address.
- Dmode** specifies a COM mode base I/O address configuration for the 232PCC2. The D1 option configures the 232PCC2 at COM1/COM3 (3F8/3E8), and the D2 option configures the 232PCC2 at COM2/COM4 (2F8/2E8). This option **must** be omitted if using the *Baddress* option. If both the *Dmode* and *Baddress* options are omitted, Card and Socket Services will assign a block mode base address.

- irq* specifies the interrupt level (IRQ) of the 232PCC2 in decimal. *irq* must be one of the following values: 3, 4, 5, 7, 9, 10, 11, 12, 14, 15, or 0 if no IRQ is desired. If this option is omitted, Card and Socket Services will assign an interrupt level.
- Ssocket* specifies which PCMCIA socket the 232PCC2 must be inserted into for this configuration argument to be used. *socket* must be in the range 0 - 15. If this option is omitted, the configuration argument will apply to the 232PCC2 inserted into any socket.
- U** instructs the Client Driver to disable the 232PCC2's interrupt status register and enable the Scratchpad registers of the individual UARTs. This option is only required in very rare cases where an application program requires access to the UART's Scratchpad register. If this option is omitted, the 232PCC2's interrupt status register is enabled and the UARTs' Scratchpad registers are disabled.

### **Example 1**

```
DEVICE = C:\DSP-100\DSP100CL.SYS
```

In example 1, no command line arguments are specified. The Client Driver will configure a 232PCC2 inserted into any socket with a base address and IRQ assigned by Card and Socket Services. The 232PCC2's interrupt status register will be enabled.

### **Example 2**

```
DEVICE = C:\DSP-100\DSP100CL.SYS (d1)
```

In example 2, a single command line argument is provided. The Client Driver will attempt to configure a 232PCC2 inserted into any socket in COM mode at COM1/COM3 and an IRQ assigned by Card and Socket Services. If address COM1 (3F8) or COM3 (3E8) are unavailable, the 232PCC2 will not be configured. If the Client Driver can successfully configure the 232PCC2, its interrupt status register will be enabled.

### **Example 3**

DEVICE = C:\DSP-100\DSP100CL.SYS (s0,b300,i5)

In example 3, a single command line argument is provided. The Client Driver will attempt to configure a 232PCC2 inserted into socket 0 with a base address of 300H and IRQ 5. If address 300H or IRQ 5 is unavailable, the 232PCC2 will not be configured. In addition, if a 232PCC2 is inserted into any other socket, it will not be configured. If the Client Driver can successfully configure the 232PCC2, its interrupt status register will be enabled.

### **Example 4**

DEVICE = C:\DSP-100\DSP100CL.SYS (i5,e,u,b300)

In example 4, a single command line argument is provided. Because the parameter order is not significant, the Client Driver will attempt to configure a 232PCC2 inserted into any socket with a base address of 300H and IRQ 5. If address 300H or IRQ 5 is unavailable, the 232PCC2 will not be configured. If the Client Driver can successfully configure the 232PCC2, its interrupt status register will be disabled (Scratchpad registers enabled).

### **Example 5**

DEVICE = C:\ DSP-100\DSP100CL.SYS (b300,i5) (i10) ( )

In example 5, three command line arguments are provided. The Client Driver first attempts to configure a 232PCC2 inserted into any socket with a base address of 300H and IRQ 5. If address 300H or IRQ 5 is unavailable, the Client Driver will proceed to the second command line argument and attempt to configure the card with a base address assigned by Card and Socket Services and IRQ 10. If IRQ 10 is also unavailable, the Client Driver will proceed to the third command line argument and attempt to configure the 232PCC2 with a base address and an IRQ assigned by Card and Socket Services. If the 232PCC2 is successfully configured, its interrupt status register will be enabled.

## **Example 6**

```
DEVICE = C:\ DSP-100\ DSP100CL.SYS (b300,i5) ( ) (i10)
```

In example 6, the three command line arguments of example 5 have been re-arranged. The Client Driver first attempts to configure a 232PCC2 inserted into any socket with a base address of 300H and IRQ 5. If address 300H or IRQ 5 is unavailable, the Client Driver will proceed to the second command line argument and attempt to configure the card with a base address and IRQ assigned by Card and Socket Services. Since the second command line argument includes all available address and IRQ resources, the third command line argument will never be reached by the Client Driver. It is the user's responsibility to place the command line arguments in a logical order.

## **Example 7**

```
DEVICE = C:\ DSP-100\ DSP100CL.SYS (s0,b300,i5)  
(s1,b340,i10)
```

The type of configuration shown in example 7 may be desirable in systems where more than one 232PCC2 is to be installed. In this example, the Client Driver will attempt to configure a 232PCC2 inserted into socket 0 with a base address of 300H and IRQ 5. If the 232PCC2 is inserted into socket 1, the Client Driver will attempt to configure it with base address 340H and IRQ 10. This allows the user to force the 232PCC2's address and IRQ settings to be socket specific that may simplify cable connections and software development. As in the previous examples, however, if the requested address or interrupt resources are not available, the 232PCC2 will not be configured.

## **Common Problems**

### **Identifying the 232PCC2**

The 232PCC2 when installed shows up as a DSP-100.

### **Generic Client Drivers Generic Client Drivers**

Many Card and Socket Services packages include a generic client driver (or SuperClient) that configures standard I/O devices. If one of these generic client drivers is installed, it may configure the 232PCC2 causing the 232PCC2 client driver to fail installation. In these cases, the user should do one of the following:

- Modify the operation of the generic client driver to disable the configuration of modem/serial port cards. Consult the Card and Socket Services documentation for availability and details of this feature.
- Place the 232PCC2 client driver before the generic client driver in the CONFIG.SYS.

### **Available Resources**

One function of the Card and Socket Services software is to track which system resources (memory addresses, I/O addresses, IRQs, etc.) are available for assignment to inserted PCMCIA cards. Sometimes, however, the Card Services software assumes or incorrectly determines that a particular resource is used when it is actually available. Most Card and Socket Services generate a resource table in a file (typically in the form of an .INI file) that the user can modify to adjust the available system resources. Consult the Card and Socket Services documentation for availability and details of this feature.

### **Multiple Configuration Attempts**

Some Card and Socket Services have a setting that aborts the configuration process after a single configuration failure (such as a requesting an unavailable resource). The user should change this setting to allow for multiple configuration attempts. Consult Card and Socket Services documentation for availability and feature details.

### **Older Versions of Card and Socket Services**

Some versions of Card and Socket Services dated before 1993 do not support general-purpose I/O cards. If, after careful installation of the Client Driver, the 232PCC2 does not configure or operate properly, an updated version of Card and Socket Services may be required.

## Chapter 3: 232PCC2 Enabler for DOS

For systems that are not operating PCMCIA Card and Socket Services software, the 232PCC2 DOS Enabler may be used to enable and configure the adapter. This Enabler, DSP100EN.EXE, will operate on any DOS system using an Intel 82365SL or PCIC compatible PCMCIA host adapter including the Cirrus Logic CL-PD6710 / 6720, the VLSI VL82C146, and the Vadem VG-365 among others.

### **IMPORTANT**

In order to use the 232PCC2 Enabler for DOS, the system **MUST NOT** be configured with Card and Socket Services software. If a Card and Socket Services software is installed, the 232PCC2 Enabler may interfere with its operation and with the device(s) it controls.

The 232PCC2 Enabler does not support automatic configuration of adapters upon insertion, more commonly referred to as "Hot Swapping". This means the adapter must be installed in one of the system's PCMCIA sockets before executing DSP100EN.EXE. If more than one adapter is installed in a system, the Enabler must be executed separately for each adapter. Furthermore, DSP100EN.EXE should be executed to release the resources used by the adapter before it is removed from the PCMCIA socket. Since PCMCIA adapters do not retain their configuration after removal, any adapter that is removed from the system must be reconfigured with the Enabler after re-inserting it into a PCMCIA socket.

### **IMPORTANT**

The Enabler requires a region of high DOS memory when configuring a 232PCC2. This region is 1000H bytes (4KB) long and by default begins at address D0000H (the default address may be changed using the "W" option). If a memory manager such as EMM386, QEMM, or 386Max is installed on the system, this region of DOS memory must be excluded from the memory manager's control. Consult the documentation provided with the memory manager software for instructions on how to exclude this memory region.

## Command Line Options

To configure a 232PCC2 in the system, the Enabler requires one command line argument from the user to determine the configuration of the card. This argument must be enclosed in parenthesis and within the argument, any or all of the following parameters may be specified using a comma (no spaces) to separate each parameter:

*Ssocket* specifies which PCMCIA socket the 232PCC2 must be inserted into for this configuration argument to be used. *socket* must be in the range 0 - 15. This option is always required.

*Baddress* specifies a block mode base I/O address of the 232PCC2 in hexadecimal and must reside on an even 16-byte (10H) boundary. Specify only **one** of the following three options: *Baddress*, *Dmode*, or 'R'. Use of one of these options is **always** required.

*Dmode* specifies a COM mode base I/O address configuration for the 232PCC2. The 'D1' option configures the 232PCC2 at COM1/COM3 (3F8/3E8), and the 'D2' option configures the 232PCC2 at COM2/COM4 (2F8/2E8). Specify only **one** of the following three options: *Baddress*, *Dmode*, 'R'. Use of one of these options is **always** required.

*irq* specifies the interrupt level (IRQ) of the 232PCC2 in decimal. *irq* must be one of the following values: 3, 4, 5, 7, 9, 10, 11, 12, 14, 15, or 0 if no IRQ is desired. This option is required if the 'R' option is not used.

*Waddress* specifies the base address of the memory window required to configure the 232PCC2. Set *address* = D0 for a memory window at segment D000, *address* = D8 for a memory window at segment D800, etc. Valid settings for *address* are C8, CC, D0, D4, D8, and DC. If this option is omitted, a memory window at segment D000 will be used.

**U** instructs the Enabler to disable the 232PCC2's interrupt status register and enable the Scratchpad registers of the individual UARTs. This option is only required in very rare cases where an application program requires access to the UART's Scratchpad register. If this option is omitted, the 232PCC2's interrupt status register is enabled and the UARTs'

Scratchpad registers are disabled.

Before removing a 232PCC2 from its PCMCIA socket, the Enabler should be executed to free the system resources allocated when the card was installed. For this operation the Enabler provides an additional command line option:

R instructs the Client Driver to release the resources previously allocated to the 232PCC2. When the 'R' option is used, any settings specified by the 'B', 'I', and 'U'.

### **Example 1**

DSP100EN.EXE

In example 1, no command line argument is specified. The Enabler will report an error and display the proper usage of the command.

### **Example 2**

DSP100EN.EXE (s0,b300,i5)

In example 2, the Enabler will configure the 232PCC2 in socket 0 with a base address of 300H and IRQ 5 using a configuration memory window at segment D000. The 232PCC2's interrupt status register will be enabled.

### **Example 3**

DSP100EN.EXE (i10,e,u,b340,s1)

In example 3, the Enabler will configure the 232PCC2 in socket 1 with a base address of 340H and IRQ 10 using a configuration memory window at segment D000. The 232PCC2's interrupt status register will be disabled (Scratchpad registers enabled) and the BIOS equipment list will be updated. Note that the parameter order is not significant.

#### **Example 4**

DSP100EN.EXE (s0,b300,i3,wd8)

In example 4, the Enabler will configure the 232PCC2 in socket 0 with a base address of 300H and IRQ 3 using a configuration memory window at segment D800. The 232PCC2's interrupt status register will be enabled and the BIOS equipment list will not be updated.

#### **Example 5**

DSP100EN.EXE (s0,b300,i5,r)

In example 5, the Enabler will release the configuration used by the 232PCC2 in socket 0 using a configuration memory window at segment D000. The base address and IRQ parameters are ignored and may be omitted.

#### **Example 6**

DSP100EN.EXE (s1,r,wcc)

In example 5, the Enabler will release the configuration used by the 232PCC2 in socket 1 using a configuration memory window at segment CC00.

### ***Common Problems***

#### **Identifying the 232PCC2**

The 232PCC2 is identified as a DSP-100 when installed.

#### **Memory Range Exclusion**

The Enabler requires a region of high DOS memory when configuring a 232PCC2. This region is 1000H bytes (4KB) long and by default begins at address D0000H (the default address may be changed using the "W" option). If a memory manager such as EMM386, QEMM, or 386Max is installed on the system, this region of DOS memory must be excluded from the memory manager's control. Consult the documentation provided with the memory manager software for instructions on how to exclude this memory region.

Furthermore, some systems use the high memory area for BIOS shadowing to improve overall system performance. In order for the Enabler to operate, any BIOS shadowing must be disabled in the address range specified for the configuration window. BIOS shadowing can usually be disabled through the system's CMOS setup utility.

### **Socket Numbers**

The Enabler requires the 232PCC2's socket number to be specified on the command line and the 232PCC2 must be inserted into the socket before the Enabler is invoked. Some vendors number their sockets from 1 to N while other vendors number their sockets from 0 to N-1. For the 232PCC2 Enabler, the lowest socket number in the system is designated socket 0.

### **Card and Socket Services Software**

In order to use the 232PCC2 Enabler for DOS, the system **MUST NOT** be configured with Card and Socket Services software. If a Card and Socket Services software is installed, the 232PCC2 Enabler may interfere with its operation and with the device(s) it controls. For systems configured with Card and Socket Services, the 232PCC2 Client Driver is the recommended method of configuration.

## Chapter 4: Windows 95/98 Installation

To allow easy configuration of the 232PCC2, a Windows 95/98 "INF" configuration file has been written for the hardware. This configuration file supports the 232PCC2 in both addressing modes: block mode and COM mode.

### ***Installing a 232PCC2 Under Windows 95/98.***

1. Insert the 232PCC2 into any available PC Card socket.
2. The first time a new PC Card type is installed, either the **New Hardware Found** window or the **Update Device Driver Wizard** window is displayed. After the initial installation, Windows 95/98 will automatically detect and configure the card. If the neither window is displayed, skip to the section "232PCC2 Resource Settings".
3. If your version of Windows displays the **New Hardware Found** window select the **Driver from Disk** option button and click **OK** to continue. An **Install from Disk** dialog box should open. Insert the 232PCC2 disk, select the correct drive letter (generally A:), and click the **OK** button. Windows 95/98 automatically browses the root directory for an INF file that defines configurations for the new hardware, as well as the required files.
4. If your version of Windows displays the **Update Device Driver Wizard** window, insert the 232PCC2 disk into the A: or B: drive and click **Next**. Windows 95/98 automatically browses the root directory of A: and B: for an INF file that defines configurations for the new hardware, as well as the required files. Windows 95/98 will report that it has found the driver for the device, click **Finish** to complete the installation.

During the installation process, it may be required to supply the computer with the Windows 95/98 CD or installation diskettes. The 232PCC2's serial devices will require the file "**SERIALUI.DLL**". Insert the CD or diskette and click "OK".

**NOTE:** If the user already has these files installed on the computer, or if the installation disks are unavailable, it may not be necessary to supply the computer with the Windows 95/98 CD or installation diskettes. If prompted for the disks, click "OK". A dialog box with an option to skip will appear. Click the "Skip" button and the files will not be installed. If the latest version of these files exist in the system directory, those files will be used.

The 232PCC2 PC Card should now be configured and will be identified as a Quatech Inc-PCMCIA Dual RS-232 Serial Port Card. In the future, Win95/98 will automatically recognize and configure the 232PCC2.

## ***232PCC2 Resource Settings in Windows 95/98***

Windows 95/98 maintains a registry of all known hardware installed within the computer. Inside this hardware registry Windows 95/98 keeps track of all of the computer's resources, such as base I/O addresses, IRQ levels, and DMA channels. In the case of a **PC Card (PCMCIA)** type board, Windows 95/98 configures the new hardware using free resources it finds within the hardware registry, and updates the registry automatically.

To view and / or edit hardware devices in Windows 95/98 use the system Device Manager. To access **Device Manager** double click on the **System** icon in the Windows 95 control panel, or click the **My Computer** icon on the Win 95/98 desktop with the right mouse button and select **Properties** from the pull down menu. Consult Windows 95/98 on-line help for details on the use of the **Device Manager**.

Windows 95/98 handles the 232PCC2 as a parent/child device.

- The 232PCC2 is the parent device and is listed as a DSP-100 under the hardware class **Multi-function Adapters** in the device manager.
- Each serial port is a child device of the parent device. There are 2 child COM ports for the 232PCC2 that are listed under the hardware class **Ports (Com & LPT)**.

## ***Viewing the 232PCC2 Resource Settings***

1. Double click on the **My Computer** icon located on the Windows 95/98 desktop. This opens a folder showing various drives, Control Panel, etc.
2. Double click on the **Control Panel** icon. This opens another folder with many different system utilities.
3. Double click on the **System** icon. This opens the "**System Properties**" window.
4. Click on the "**Device Manager**" tab. Double click on the class **Multi-functional Adapters** to list hardware devices in the class. The 232PCC2 parent device belongs to this hardware class. The device name for the 232PCC2 is **Quatech Inc-PCMCIA Dual RS-232 Serial Port Card**.
5. Open the **Properties** dialog for the 232PCC2, then click the **Resources** tab to view the Input/Output Range and Interrupt Request resource allocations. Examine and remember the Input/Output Range, then close the properties window.
6. Double click the hardware class **Ports (COM & LPT)**. Two of the Logical COM Ports (COM2, COM4, etc.) listed in this class are the child devices of the 232PCC2 parent device.
7. View the Properties dialog for each COM port and examine the Resources allocated to each port. Inside the Resource allocation window two of the COM ports will identify **Quatech Inc-PCMCIA Dual RS-232 Serial Port Card** and the parent device. The Input/Output Range and Interrupt Request resources allocations for these two COM ports will also match the resource allocation of the 232PCC2 parent device.
8. Use the COM Port device name (COM2, COM4, etc) to access any of the particular serial ports on the 232PCC2. This name is required by a Windows 95 application when accessing a particular port.

## ***Changing Resource Settings with Device Manager***

The 232PCC's serial ports are addressable in two modes: block mode, and COM mode (see Hardware Information). The 232PC2 is addressable in either mode from Windows 95/98. To change the hardware configuration of the 232PCC2, follow the instructions below.

1. Double click the **My Computer** icon located on the Windows 95/98 desktop.
2. Double click on the **Control Panel** icon.
3. Double click the **System** icon inside the **Control Panel** folder. This will open the **System Properties** box.
4. Click the **Device Manager** tab located along the top of the **System Properties** box.
5. The 232PCC2 appears as a DSP-100 parent device and is listed as a Quatech Inc-PCMCIA Dual RS-232 Serial Port Card. Click on the 232PCC2 item and then click on the button labeled "**Properties**". Then click the **Resources** tab to view the Input/Output Range and Interrupt Request resource allocations.
6. Several predefined Basic Configurations have been included for the 232PCC2. The table below defines the various configurations. When the Use Automatic Settings check box is enabled Windows 95/98 will attempt to configure the 232PCC2 in the order listed.

<b>Basic Configuration</b>	<b>Port Addresses</b>
0000*	3F8, 3E8
0001	2F8, 2E8
0002	390, 398
0003	100, 108
0004	110, 118
0005	120, 128
0006	130, 138
0007	140, 148
0008	1E0, 1E8
0009	220, 228
000A	260, 268
000B	280, 288
000C	290, 298
000D	330, 338
000E	340, 348
000F	350, 358
0010	300, 308
0011	310,318

**Table 1: 232PCC2 Basic Configuration Table**

\* Indicates COM mode addressing. Addresses 3F8/3E8 are the standard addresses for COM1/COM3. Addresses 2F8/2E8 are the standard addresses for COM2/COM4. All other basic configurations use block mode addressing at non-standard base addresses. Windows 95 enumerates any COM port at a non-standard address starting with COM5.

1. Select a Basic Configurations that display “No Conflicts” in the bottom display region titled Conflicting Device List from the drop down list. Some applications may not be able to access ports higher than COM4. To use the 232PCC2 PCMCIA serial ports with these applications you might be forced to remove other serial communications devices from your system.
2. Windows 95/98 should have chosen an available **Interrupt Request** setting automatically when the I/O address range was configured by a Basic Configuration selection. This default **Interrupt Request** setting should not need changing as long as “No Conflicts” is displayed in the bottom display region titled **Conflicting Device List**. If you are satisfied with Windows 95/98 selection then skip the next step.
3. To modify the Interrupt Request setting click the resource name and click the Change Setting button. An Edit Resource window will open up. Inside this window click on the up/down arrows to the right of the Interrupt Request value. This scrolls you through all of the allowable resources for your hardware. Pay attention to the conflict information at the bottom of the window. Do not select a value that causes a conflict with any other installed hardware.
4. If any changes have been made to the 232PCC2’s configuration the card will automatically be reconfigured to the new resources specified. Any time a PCMCIA card of this type is inserted Windows 95/98 will attempt to configure the card at these resource settings. Click the **Use Automatic Settings** box to reset this card type for automatic configuration.

## Chapter 5: Hardware Information

The 232PCC2's two asynchronous serial ports are implemented using 2 standard 16C550 UARTs. Each of these UARTs requires 8 bytes of I/O space and when enabled which requires the 232PCC2 to be located on an even 16-byte (10H) boundary (e.g. 300H, 310H, 320H, etc.).

232PCC2 RS-232 Channel	Address Assignment
Channel A	Base Address + 0
Channel B	Base Address + 8

Each 16C550 UART contains 8 I/O registers. The last of these registers, located at (Base address + 7), is referred to as the 'Scratchpad Register' and provides no functionality to the UART. In place of this Scratchpad Register, the 232PCC2 implements an interrupt status register which can be accessed at (Base address + 7) of any UART. The purpose of the interrupt status register is to give the software programmer an easy way to inspect the interrupt state of the entire 232PCC2 with a single input operation. The format of the interrupt status register is shown below:

D7	D6	D5	D4	D3	D2	D1	D0
0	0	0	0	0	0	Intr B	Intr A

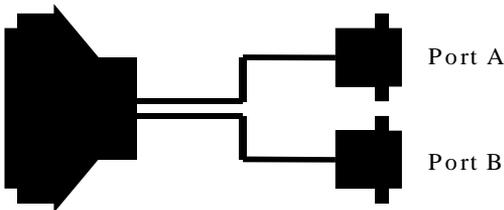
When one or more UARTs have interrupts pending, the associated bit(s) in the interrupt status register are set to logic 1. When all the pending interrupts have been serviced for a specific UART, its interrupt status bit will be cleared to logic 0 automatically. When all the pending interrupts from all UARTs have been serviced, the entire interrupt status register will return logic 0. The application program should not exit its interrupt service routine until all pending interrupts from all channels have been serviced (interrupt status register = 0) or no additional interrupts will be received.

If an application requires the UARTs' Scratchpad Registers, the interrupt status register can be disabled. Disabling the interrupt status register is supported by the 232PCC2 configuration software, which is operating system dependent. Refer to the relevant operating system installation section for specific usage of this feature.

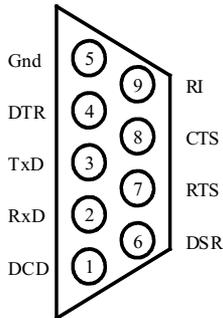
## Chapter 6: External Connections

The 232PCC2is fitted with a 25-pin 0.8mm shielded connector.

An adapter cable is included with the 232PCC2 to convert the 25-pin 0.8mm output connector into 2 standard D-9 male RS-232 connectors as shown in the figures below.



**Figure 1. 232PCC2 Adapter Cable to Standard RS-232 Connectors.**



**Figure 2. Standard D-9 Male RS-232 Connector Signal Assignment.**

# Appendix A: Declaration of Conformity

DECLARATION OF CONFORMITY	
Importer's Name:	B&B Electronics Manufacturing Company
Importer's Address:	P.O. Box 1040 707 Dayton Road Ottawa, IL 61350 USA
Model Numbers:	232PCC2
Description:	PCMCIA High-Speed Serial Card
Type:	Light industrial ITE equipment
Equipment Class:	Commercial, residential, light industrial
Application of Council Directive:	89/336/EEC
Standards:	EN 50082-1 (IEC 801-2, IEC 801-3, IEC 801-4) EN 50081-1 (EN 55022)
	
Michael J. Fahrion, Director of Engineering	
	