

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

Please contact Technical Support for more information.

## ***PCMCIA RS-232 4-Port Card CE***

**Model 232PCC4**

**Documentation Number 232PCC43799**

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# Chapter 1: Introduction

B&B Electronics 232PCC4 provides four independent RS-232 asynchronous serial communications interfaces for systems equipped with PCMCIA Type II and/or Type III expansion sockets. The 232PCC4 is a PCMCIA Type II (5 mm) card and is PCMCIA PC Card Standard Specification 2.1 compliant.

The 232PCC4's serial ports are implemented using 16C550 Universal Asynchronous Receiver/Transmitters (UARTs) which are the recommended communications interface for multitasking environments and with applications involving high data transfer rates.

The 232PCC4's four serial ports are addressed in a single 32 byte I/O block for simplified programming and all four channels share a common interrupt (IRQ). A special interrupt status register is also available to simplify the software required to service multiple serial ports in an interrupt driven environments.

**Note: When installed, a 232PC appears as a QSP-100 manufactured by Quatech.**

## *Specifications*

**Bus Interface:** PCMCIA  
PC Card Standard 2.1 compliant

**Physical Dimensions:** Type II PCMCIA card (5mm)

**Maximum Baud Rate:** 120K

**Power Requirements:** +5 V, 35.9 mA typical, 45.9 mA max.

**Connector:** Adapter to 4 standard male D-9

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

Two configuration software programs are provided with the 232PCC4: a Client Driver, QSP100CL.SYS, and a card Enabler, QSP100EN.EXE. Both of these programs are executed from DOS (before entering Windows) and allow operation of the 232PCC4 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: QSP100CL.SYS	File name: QSP100EN.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 232PCC4 adapters upon insertion (Hot Swapping)	Does not support automatic configuration of 232PCC4 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 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.

## 232PCC4 Client Driver for DOS

In order to use the 232PCC4 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 232PCC4 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 232PCC4 Client Driver:

- Copy the file QSP100CL.SYS from the 232PCC4 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*QSP100CL.SYS *options*

where *options* are the 232PCC4 Client Driver command line options discussed on the following pages.

- Save the CONFIG.SYS file and exit the text editor.
- Insert the 232PCC4 into one of the system's PCMCIA slots.

**NOTE:** Since the 232PCC4 Client Driver supports "Hot Swapping", it is not necessary to have the 232PCC4 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 232PCC4 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 232PCC4 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 232PCC4 may be removed and / or inserted from the system as desired. On each insertion into the PCMCIA socket, the 232PCC4 will be automatically re-configured according to the command line options.

### **Command Line Options**

The 232PCC4 Client Driver accepts up to eight command line arguments from the user to determine the configuration of the 232PCC4. If any arguments are provided, the Client Driver will attempt to configure any 232PCC4s 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 232PCC4 in hexadecimal and must reside on an even 32-byte (20H) boundary. If this option is omitted, a base address will be assigned by Card and Socket Services.

**irq** specifies the interrupt level (IRQ) of the 232PCC4 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 232PCC4 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 232PCC4 inserted into any socket.

**U** instructs the Client Driver to disable the 232PCC4'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 232PCC4's interrupt status register is enabled and the UARTs' Scratchpad registers are disabled.

- E instructs the Client Driver to update the BIOS equipment list with the addresses assigned to the 232PCC4. This option is only required in very rare cases where an application program checks the BIOS equipment list to determine the address of a COM port. If this option is omitted, the BIOS equipment list is not updated.

### **Example 1**

```
DEVICE = C:\QSP-100\QSP100CL.SYS
```

In example 1, no command line arguments are specified. The Client Driver will configure a 232PCC4 inserted into any socket with a base address and IRQ assigned by Card and Socket Services. The 232PCC4's interrupt status register will be enabled and the BIOS equipment list will not be updated.

### **Example 2**

```
DEVICE = C:\ QSP-100\QSP100CL.SYS (b300)
```

In example 2, a single command line argument is provided. The Client Driver will attempt to configure a 232PCC4 inserted into any socket with a base address of 300H and an IRQ assigned by Card and Socket Services. If address 300H is unavailable, the 232PCC4 will not be configured. If the Client Driver can successfully configure the 232PCC4, its interrupt status register will be enabled and the BIOS equipment list will not be updated.

### **Example 3**

DEVICE = C:\QSP-100\QSP100CL.SYS (s0,b300,i5)

In example 3, a single command line argument is provided. The Client Driver will attempt to configure a 232PCC4 inserted into socket 0 with a base address of 300H and IRQ 5. If address 300H or IRQ 5 is unavailable, the 232PCC4 will not be configured. In addition, if a 232PCC4 is inserted into any other socket, it will not be configured. If the Client Driver can successfully configure the 232PCC4, its interrupt status register will be enabled and the BIOS equipment list will not be updated.

### **Example 4**

DEVICE = C:\QSP-100\QSP100CL.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 232PCC4 inserted into any socket with a base address of 300H and IRQ 5. If address 300H or IRQ 5 is unavailable, the 232PCC4 will not be configured. If the Client Driver can successfully configure the 232PCC4, its interrupt status register will be disabled (Scratchpad registers enabled) and the BIOS equipment list will be updated.

### **Example 5**

DEVICE = C:\QSP-100\QSP100CL.SYS (b300,i5) (i10) ( )

In example 5, three command line arguments are provided. The Client Driver will first attempt to configure a 232PCC4 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 232PCC4 with a base address and an IRQ assigned by Card and Socket Services. If the 232PCC4 is successfully configured, its interrupt status register will be enabled and the BIOS equipment list will not be updated.

## **Example 6**

```
DEVICE = C:\QSP-100\QSP100CL.SYS (b300,i5) ( ) (i10)
```

In example 6, the three command line arguments of example 5 have been re-arranged. The Client Driver will first attempt to configure a 232PCC4 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:\QSP-100\QSP100CL.SYS (s0,b300,i5)  
(s1,b340,i10)
```

The type of configuration shown in example 7 may be desirable in systems where more than one 232PCC4 is to be installed. In this example, the Client Driver will attempt to configure a 232PCC4 inserted into socket 0 with a base address of 300H and IRQ 5. If the 232PCC4 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 232PCC4's address and IRQ settings to be socket specific which may simplify cable connections and software development. As in the previous examples, however, if the requested address or interrupt resources are not available, the 232PCC4 will not be configured.

## **Common Problems**

### **Identifying the 232PCC4:**

When installed, the 232PCC4 is identified as a Quatech Inc. QSP-100.

### **Generic Client Drivers:**

Many Card and Socket Services packages include a generic client driver (or SuperClient) which configures standard I/O devices. If one of these generic client drivers is installed, it may configure the 232PCC4 causing the 232PCC4 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 232PCC4 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) which 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 request for an unavailable resource). The user should change this setting to allow for multiple configuration attempts. Consult the Card and Socket Services documentation for availability and details of this feature.

### **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 232PCC4 does not configure or operate properly, an updated version of Card and Socket Services may be required.

## Chapter 3: 232PCC4 Enabler for DOS

For systems that are not operating PCMCIA Card and Socket Services software, the 232PCC4 DOS Enabler may be used to enable and configure the adapter. This Enabler, QSP100EN.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 232PCC4 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 232PCC4 Enabler may interfere with its operation and with the device(s) it controls.

The 232PCC4 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 QSP100EN.EXE. If more than one adapter is installed in a system, the Enabler must be executed separately for each adapter. Furthermore, QSP100EN.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 232PCC4. 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 232PCC4 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 232PCC4 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 the base I/O address of the 232PCC4 in hexadecimal and must reside on an even 32-byte (20H) boundary. This option is required if the 'R' option is not used.

*lirq* specifies the interrupt level (IRQ) of the 232PCC4 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 232PCC4. 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 232PCC4'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 232PCC4's interrupt status register is enabled and the UARTs' Scratchpad registers are disabled.

**E** instructs the Enabler to update the BIOS equipment list with the addresses assigned to the 232PCC4. This option is only required in very rare cases where an application program checks the BIOS equipment list to determine the address of a COM port. If this option is omitted, the BIOS equipment list is not updated.

Before removing a 232PCC4 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 232PCC4. When the 'R' option is used, any settings specified by the 'B', 'I', 'U', and 'E' options are ignored. This option **must** be omitted when installing a 232PCC4 into the system.

### **Example 1**

QSP100EN.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**

QSP100EN.EXE (s0,b300,i5)

In example 2, the Enabler will configure the 232PCC4 in socket 0 with a base address of 300H and IRQ 5 using a configuration memory window at segment D000. The 232PCC4's interrupt status register will be enabled and the BIOS equipment list will not be updated.

### **Example 3**

QSP100EN.EXE (i10,e,u,b340,s1)

In example 3, the Enabler will configure the 232PCC4 in socket 1 with a base address of 340H and IRQ 10 using a configuration memory window at segment D000. The 232PCC4'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**

QSP100EN.EXE (s0,b300,i3,wd8)

In example 4, the Enabler will configure the 232PCC4 in socket 0 with a base address of 300H and IRQ 3 using a configuration memory window at segment D800. The 232PCC4's interrupt status register will be enabled and the BIOS equipment list will not be updated.

#### **Example 5**

QSP100EN.EXE (s0,b300,i5,r)

In example 5, the Enabler will release the configuration used by the 232PCC4 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**

QSP100EN.EXE (s1,r,wcc)

In example 5, the Enabler will release the configuration used by the 232PCC4 in socket 1 using a configuration memory window at segment CC00.

### ***Common Problems***

#### **Identifying the 232PCC4:**

When installed the 232PC is identified as a QSP-100.

#### **Memory Range Exclusion:**

The Enabler requires a region of high DOS memory when configuring a 232PCC4. 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 232PCC4's socket number to be specified on the command line and the 232PCC4 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 232PCC4 Enabler, the lowest socket number in the system is designated socket 0.

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

In order to use the 232PCC4 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 232PCC4 Enabler may interfere with its operation and with the device(s) it controls. For systems configured with Card and Socket Services, the 232PCC4 Client Driver is the recommended method of configuration.

## Chapter 4: Windows 95 Installation

Windows 95 maintains a registry of all known hardware installed within the computer. Inside this hardware registry Windows 95 keeps track of all 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 configures the new hardware using free resources it finds within the hardware registry, and updates the registry automatically.

Windows 95 handles the 232PCC4 as a "parent/child device". The 232PCC4 is the "parent device". Each serial port is a "child device" of the "parent device" 232PCC4. To allow easy configuration the 232PCC4, two configuration files have been written. These files are called "**INF**" files. The "**QSP-100.INF**" file describes the resources of the 232PCC4 parent device. It also indicates the number of child devices. There are 4 child COM ports for the 232PCC4. The "**MLTPT\_SP.INF**" file describes the settings for each serial port including all the necessary device drivers.

Windows 95 allows changes in the system resources if the default choices are unacceptable. But first, allow Windows 95 to configure all of the devices. Since the child COM ports are dependent on the parent device resource allocations, the resources can only be modified at the parent device. Changing these resources is an easy task described in a later section.

The 232PCC4 installation procedure differs slightly between versions of Windows 95. In either case, the first step is to supply Windows 95 with the .inf configuration files supplied on the 232PCC4 disk.

## ***Installing a 232PCC4 Under Windows 95.***

1. Insert the 232PCC4 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 will automatically detect and configure the card. If the neither window is displayed, skip to the section "232PCC4 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 232PCC4 disk, select the correct drive letter (generally A:), and click the **OK** button. Windows 95 automatically browses the root directory for an INF file that defines configurations for the new hardware, as well as the files MLTPT\_SP.INF and SERIALQT.VXD.
4. If your version of Windows displays the **Update Device Driver Wizard** window, insert the 232PCC4 disk into the A: or B: drive and click **Next**. Windows 95 automatically browses the root directory of A: and B: for an INF file that defines configurations for the new hardware, as well as the files MLTPT\_SP.INF and SERIALQT.VXD. Windows 95 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 CD or installation diskettes. The 232PCC4's child 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 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 232PCC4 PC Card should now be configured. In the future, Win95 will automatically recognize and configure the 232PCC4.

## Viewing the 232PCC4 Resource Settings

The following steps detail how to view the resource settings that Windows 95 has allocated for the 232PCC4.

- Double click on the **My Computer** icon located on the Windows 95 desktop. This opens a folder showing various drives, Control Panel, etc.
- Double click on the **Control Panel** icon. This opens another folder with many different system utilities.
- Double click on the **System** icon. This opens the "**System Properties**" window.
- Click on the "**Device Manager**" tab. Double click on the item "**Ports (Com & LPT)**" located within the list of hardware.
- Double click on any of the items labeled "**Quatech Multi-port(COM x)**" where x represents the logical COM port number. The items labeled "**Quatech Multi-port**" are the child devices of the 232PCC4 parent device. Click the "**Resources**" tab at the top of the "**System Properties**" box.
- The base I/O address and IRQ level displayed here is the base I/O address and IRQ level of the entire parent device. The resources cannot be modified here. For information on how to change these settings, got to the section labeled "Changing Configuration of the 232PCC4".
- Use the **Logical Com Port** name to access any of the particular serial ports on the 232PCC4. This name is required by a Windows 95 application when accessing a particular port.

## ***Changing Configuration of the 232PCC4***

To change the hardware configuration of the 232PCC4, follow the instructions below.

- Double click the **My Computer** icon located on the Windows 95 desktop.
- Double click on the **Control Panel** icon.
- Double click the **System** icon inside the **Control Panel** folder. This will open the **System Properties** box.
- Click the **Device Manager** tab located along the top of the **System Properties** box.
- Double-click on the device group "**Quatech Comm Adapters**". The 232PCC4 model name should appear in this list. If either the "**Quatech Comm Adapters**" group or the 232PCC4 model number does not appear, contact B&B Technical Support for further assistance.
- Click on the QSP-100 item and then click on the button labeled "**Properties**".
- Select the resource that requires a change (I/O range or IRQ) and select "**Change Settings**". Make the desired changes and then click on "OK". A shutdown of the system may be required to allow the settings to change. If prompted for a shutdown, select the option that restarts Windows 95.
- The 232PCC4 will be automatically re-configured to the desired settings.
- The card is now ready for use.

## Chapter 5: Hardware Information

The 232PCC4's four asynchronous serial ports are implemented using 4 standard 16C550 UARTs. Each of these UARTs requires 8 bytes of I/O space and when enabled which requires the 232PCC4 to be located on an even 32-byte (20H) boundary (e.g. 300H, 320H, 340H, etc.).

232PCC4 RS-232 Channel	Address Assignment
Channel A	Base Address + 0
Channel B	Base Address + 8
Channel C	Base Address + 16
Channel D	Base Address + 24

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 232PCC4 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 232PCC4 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	Intr D	Intr C	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 using the "p" option on the 232PCC4 Client Driver for DOS or the DOS Enabler command lines.

# EXTERNAL CONNECTIONS

The 232PCC4 is fitted with a 33-pin 0.8mm shielded connector, a mating connector is available from AMP (order part number 558126-4).

An adapter cable is included with the 232PCC4 to convert the 33-pin 0.8mm output connector into 4 standard D-9 male RS-232 connectors as shown in the figures below.

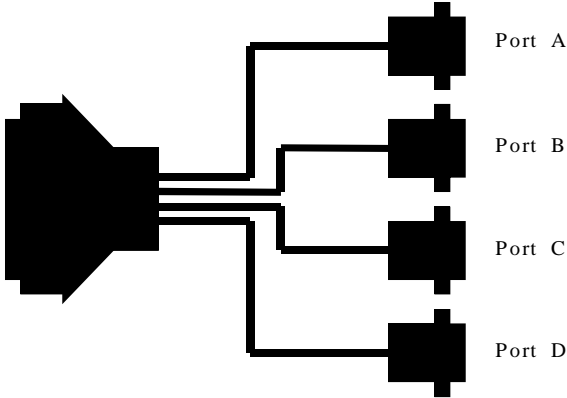


Figure 1. 232PCC4 Adapter Cable to Standard RS-232 Connectors.

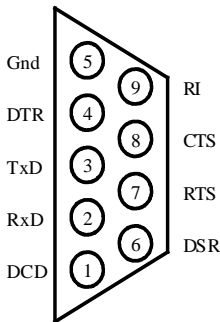



Figure 2. Standard D-9 Male RS-232 Connector Signal Assignment.

# Appendix A: DECLARATION OF CONFORMITY

DECLARATION OF CONFORMITY	
Manufacturer's Name:	B&B Electronics Manufacturing Company
Manufacturer's Address:	P.O. Box 1040 707 Dayton Road Ottawa, IL 61350 USA
Model Numbers:	232PCC4
Description:	PCMCIA Four Port 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	
