

***Four Port, PCI Bus  
RS-232/422/485 Serial Card CE  
with Send Data Control  
3PCISD4A 3PCISD4B***

**Documentation Number 3PCISD4x-3903** (pn4324-r006)

This manual applies to models 3PCISD4A and 3PCISD4B. The "A" models are equipped with 16550A UARTs which have 16 byte transmit and receive buffers. The "B" models are equipped with 16850 UARTs with 128 byte transmit and receive buffers. The model number of each card is printed on a sticker on the board.

*This product designed and manufactured in Ottawa, Illinois USA  
of domestic and imported parts by*



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Documentation Number 3PCISD4x-3903 Manual Cover Page

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## Chapter 1: GENERAL INFORMATION

### Introduction

The B&B Electronics 3PCISD4x serial interface card is designed for IBM compatibles with a PCI Bus. The PCI design is Plug and Play compatible which allows the driver and Operating System to select the IRQ and hardware addresses used by the card.

The 3PCISD4x card offers exceptional setup flexibility with a mix of selectable operating modes. If you are writing your own applications, be sure the communications routine used supports Windows communication drivers and a wide range of COM ports.

### Description

Each of the four ports can be independently configured for RS-232, RS-422, or RS-485 data protocols. The 485-mode Send Data Control feature transparently handles the enable and disable functions of the RS-485 transceiver. Buffered, high speed UARTs (16550A or 16850) make it ideal for high speed (modem) and multitasking applications.

### Features

- IBM compatible, PCI Version 2.1 bus
- Supports baud rates to 460.4 Kbaud with 4X clock option enabled
- High speed 16 byte FIFO 16550A UARTs (Model 3PCISD4A), 128 byte FIFO 16850 UARTs (Model 3PCISD4B)
- RS-232/422/485 Mode Independently Configurable For Each Port
- RS-485 Automatic Send Data Control or RTS Control
- 2-wire or 4-wire RS-485 Operation (Half or Full Duplex)
- 120Ω Termination Select Jumpers for RS-422/RS-485 Networks
- RS-232 Mode Signal Lines: TD, RD, RTS, CTS, DSR, DTR, DCD, RI and Signal Ground.
- 2 Channel RS-422 Signal Lines: TD(A), TD(B), RD(A), RD(B) and Signal Ground

- RS-485 Signal Lines: TD(A), TD(B), RD(A), RD(B) and Signal Ground. (Data A & Data B lines when wired for 2-wire operation.)

### Specifications

Bus:	PCI bus version 2.1
Slot:	Requires 1 PCI slot
Dimensions:	11.2 x 4.2 in (28.4 x 10.7 cm)
I/O connection:	One DB-37 female (DB-37F)
Cable:	One DB-37 male to four DB-9 male (included) Replacement cable available, order model 37M9M
OS Supported:	Windows 95, 98, 2000 and NT 4.0
Baud rates:	460,800 Baud Max - RS-232/422/485
UARTs:	16550A 16 byte TX and RX buffers (A model), or 16850 128 byte TX and RX buffers (B model)
Character length:	5, 6, 7, or 8 bits
Parity:	Even, odd or none
Stop bits:	1, 1.5, or 2

#### RS-232 Control Lines Drivers/Receivers:

Device:	75185 Transceiver
High level output voltage:	6.0 V minimum
Low level output voltage:	-6.0 V minimum
Output current limited to:	±10 mA
Input high threshold voltage:	1.5V
Input low threshold voltage:	0.75V
Device will withstand:	±30V

#### RS-232 Data Lines Drivers/Receivers:

Device:	SP211H Transceiver
High level output voltage:	5.0 V minimum
Low level output voltage:	-5.0 V minimum
Output current limited to:	±25 mA
Input high threshold voltage:	1.7V
Input low threshold voltage:	0.8V
Device will withstand:	±15V

RS-422/485 Driver/Receiver:

Device: 75ALS180 or MAX491  
Differential driver output voltage: 1.5 - 6 V  
Differential input high-threshold voltage: 0.2 V  
Differential input low-threshold voltage: -0.2 V

Automatic RS-485 Driver Control Timing:

Driver is enabled when data is a logic "0" (start bit). Driver remains enabled for one character transmission time (10 bits of data at current baud rate). Each additional logic "0" resets the timeout.

Termination: A 120Ω termination resistor is jumper selectable on each 422/485 receiver.

Max Power Consumption: All ports loaded

+5V,	437 mA,	2.18W
+12V,	124 mA,	1.49W
-12V,	124 mA,	1.491W

**Accessories:**

Cable: One DB-37 Male to four DB-9 Male (included)  
Replacement cable model number: 37M9M

Software: Driver Disk (3.5) for Windows 95/98/2000/NT 4.0  
PCI/USB COM Port Utility Disk (3.5)

Manual: Instruction Manual (this booklet)



## RS-232 Mode

To configure Port 1 for RS-232 mode, 5 jumpers must be checked. The following settings will configure Port 1 as RS-232.

1. Set the four jumpers of JP1 to the "232" (left) position.
2. Set the first jumper of JP3 (A) to the "232" (left) position.

The remaining jumpers of JP3 are unused in the RS-232 mode and may be in either position.

**Table 7: RS-232 Pinouts**

RS-232 Signal	Description	Direction	DB9M Pin
DCD	Data Carrier Detect	input	1
RD	Receive Data	input	2
TD	Transmit Data	output	3
DTR	Data Terminal Ready	output	4
GND	Signal Ground	----	5
DSR	Data Set Ready	input	6
RTS	Request to Send	output	7
CTS	Clear to Send	input	8
RI	Ring Indicator	Input	9

## RS-422 Mode

Nine jumpers must be set/checked to configure each Port to the RS-422 mode. To set Port 1 for RS-422, set as follows below:

1. Set the four jumpers on JP1 to the "422" (right) position.
2. Set the top jumper of JP3 (A) to the "422/485" (right) position.
3. Set the second and third jumpers of JP3 (B) & (C) to the "422" (right) position. (These constantly enable receive & transmit.)
4. The fourth jumper JP3 (C) is unused in the RS-422 mode. (Selects RTS/SD for 485 mode)
5. The bottom jumper of JP3 (E) switches the 120Ω receiver termination resistor IN or OUT. Typically this resistor is not used. In some cases using high baud rates and very long cables, termination is needed. See our **RS-422/485 Application Note**.
6. Configure each port as above using the table in **Appendix B**.

## RS-422/RS-485 Pinouts

The RS-422 mode supports 2 channels (transmit and receive).

**Table 8: RS-422/RS-485 Pinouts**

RS-422 Signal	Description	Direction	DB9M Pinout
--		--	1
RD(A) –	Receive Data A	input	2
TD(A) –	Transmit Data A	output	3
--		--	4
GND	Signal Ground	----	5
--		--	6
TD(B) +	Transmit Data B	output	7
RD(B) +	Receive Data B	input	8
--		NA	9

With 2-wire RS-485 mode operation, your connection cable must jumper RD(A) to TD(A) and RD(B) to TD(B). Connect from TD(A) & TD(B) to the Data A(–) and Data B(+) wires of your RS-485 network.

The EIA RS-422 Specification labels data lines with an "A" and "B" designator. Some RS-422 equipment uses a "–" and "+" designator. In almost all cases, the "A" line is the equivalent of the "–" line and the "B" line is the equivalent of the "+" line. *More information on RS-422 communications can be found in our free **RS-422/485 Application Note** (available on our websites).*

## RS-485 Mode

For a 4-wire RS-485 single master system, the card can be set as in the RS-422 mode (full duplex, transmit & receive enabled).

Nine jumpers must be set/checked to configure each Port to the RS-485 mode. To set Port 1 for RS-485, set as follows below:

1. Set the four jumpers on JP1 to the "422" (right) position.
2. Set the top jumper of JP3 (A) to the "422/485" (right) position.
3. For 2-wire mode, set the second jumper, JP3(B) to the "485" (left) position (half duplex). For 4-wire mode, set it to the "422" (right) position (full duplex, receive enabled).
4. Set the third jumper, JP3 (C) to the "485" (left) position.

5. Set the fourth jumper of JP3 (D) to select the type of RS-485 transmit driver control, RTS or Send Data. Select SD control unless you are sure your software requires RTS control.
6. The bottom jumper of JP3 (E) switches the 120Ω receiver termination resistor in or out. Typically this resistor is not used. In some cases using high baud rates and very long cables, termination is needed. *See our **RS-422/485 Application Note** (available on our websites).*
7. Configure each port as above using the table in **Appendix B**.

### RS-485 Pinouts

The pinouts in RS-485 mode are the same as those listed in Table 8 for RS-422 mode.

### Explanation of RS-485 Operation

In RS-485 mode, the transmit driver must be enabled to transmit, and set to a high impedance (tri-state) mode at the end of transmission. In two wire (half duplex) mode, the receiver is disabled during transmit, and enabled when not transmitting.

The 3PCISD4 card provides two methods of enabling/disabling the transmit driver: automatic Send Data (SD) control and Request To Send (RTS) control. With automatic SD control, the transmit driver is enabled when data is sent. The driver remains enabled for the transmission time and ten data bits after data transfer is complete. The SD circuit automatically adjusts its timing to the baud rate of the data. With RTS control, software must assert the RTS line to enable the driver and disassert to disable the driver. To select SD control for Port 1, place the fourth jumper of JP3 (D) in the SD (right) position. Place this jumper in the RTS (left) position for RTS control.

The receiver can also be enabled and disabled, a useful feature in two-wire communications to prevent the transmitted data from "echoing back" on its own receiver. The second jumper on JP3 (B) determines the receiver mode. If the jumpers are placed in the 485 position, the "echo" is turned off. This is achieved by disabling the receiver when the transmit driver is enabled. Placing this jumper in the 422 position will hold the receiver enabled at all times.

Refer to the **Jumper Mode Table** in **Appendix B** for all ports. *More information on RS-485 communications can be found in our **RS-422/485 Application Note** (available on our websites).*

## RS-422 and RS-485 Termination

An 120Ω termination resistor has been provided for the RS-422/485 receivers. Note that termination should only be used in systems with both high baud rates (>19200) and over several thousand feet of cable. If a value other than 120Ω is desired, space for a through hole resistor has been provided on the board adjacent to the surface mount termination resistor. The termination resistors are labeled RTAB, RTBB, RTCB and RTDB for ports 1, 2, 3 and 4 respectively. See our **RS-422/485 Application Note** for more discussion on termination (available on our websites).

## 4X Baud Rate Option

Baud rates higher than 115,200 are possible with the 3PCISD4x card in RS-232, 422, or 485 mode. Jumper JP5 controls the clock frequency supplied to the UARTs. By moving this jumper to the \*4 (left) position, the clock frequency is increased from 1.8432 to 7.3728 MHz. This multiplies all UART baud rates by 4 times. For example, if the software is set for 57.6 Kbaud, the actual baud rate will be increased by a factor of four to 230.4 Kbaud. In many systems, these higher baud rates can improve throughput significantly. However, remember that baud rates and actual throughput are only proportional if the system can keep up with the communications, otherwise increasing the baud rate effectively only increases the idle time between characters.

*continued next page*

## Installing the Card

1. Ground yourself by touching the metal chassis of the computer to discharge any static electricity.
2. Turn the power to your computer off and unplug the power cord.
3. Remove the cover of the computer.
4. Locate a free PCI expansion slot.
5. Remove the expansion slot cover. Save the screw for installation of the 3PCISD4x card.
6. Install the card into the unused slot. Be certain that the card is inserted completely (fully seated) in the slot.
7. Secure the card with the mounting screw from step 5.
8. Replace the cover, plug in the power cord, and power up the system.



## Chapter 3: WINDOWS INSTALLATION

### Windows 95 and Windows 98

Any prior installation using previous B&B Serial drivers must be removed before installing the new drivers (refer to page 20).

Windows 98 screens are shown for this section. Windows 95 is a bit different, fewer steps and the screen names and text shown differs. Windows 95 differences are noted (*W95:...*).

1. Configure each port on the PCI card to the desired RS-232/422/485 mode using the jumpers for Port 1, 2, 3 & 4.
2. Install the card in the slot, start the computer.
3. Windows will detect the PCI card, start the Add New Hardware Wizard, and begin driver installation. When installation is complete, Windows will set the hardware addressing & interrupt using the drivers and the Plug and Play function of the Operating System.
4. The driver installation proceeds in two parts: the first part installs the driver for the PCI Serial card, the second part installs the serial driver for each Com port on the card. After Port A installation is finished, installation of Ports B, C, & D will proceed without additional user input. (Port A=Port 1, Port D=Port 4)

*continued next page*

5. After new hardware is detected, this screen will appear. (*W95: This screen is named Update Device Driver Wizard.*)



6. Click **Next** to continue. (*W95: Insert the Driver Disk in Drive, then click Next - skip to step 9.*)



7. Click **Next**.



8. Select **Floppy disk drives**, Specify **A:**
9. Insert the driver disk, then Click **Next**.

Windows will find “4-Port PCI Serial Adapter (3PCISD4)” and the driver inf file. (W95: Driver name not shown - skip to step 11.)



10. Click **Next**.



11. Click **Finish** to begin the second part of the driver installation which installs the Com port drivers for Port A , B, C & D.



12. Click **Next**. (W95: Skip to step 15.)



13. Click **Next** to continue. Re-insert the driver disk if needed. Windows will find the Communications Port and inf file.



14. Click **Next**. (W95: Driver name not shown.)



15. Click **Finish** to complete Com driver installation.

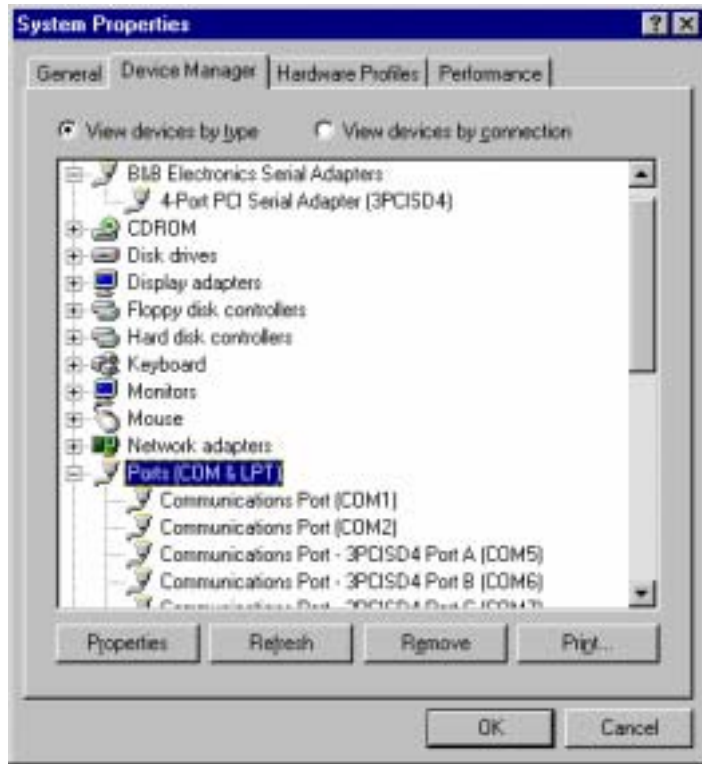
The computer will finish Com driver installation for Port A, then search, find and install the driver for Port B, then Port C, and Port D without requiring any more user input.

16. Wait for the process to complete.

To verify the installation, open **My Computer, Control Panel, System** (or Start, Setting, Control Panel, System).

Then select the **Device Manager** Tab.

*continued next page*



Click the **B&B Electronics Serial Adapters** device to view the adapter. If you want other details, Select **Properties**.

Click **Ports (COM & LPT)** to view the COM numbers assigned by Windows to the card.

The 3PCISD4x card will have 3PCISD4 Port A (COMx), Port B, Port C and Port D. The COM port numbers will normally be COM5, COM6 COM7 and COM8, if available.

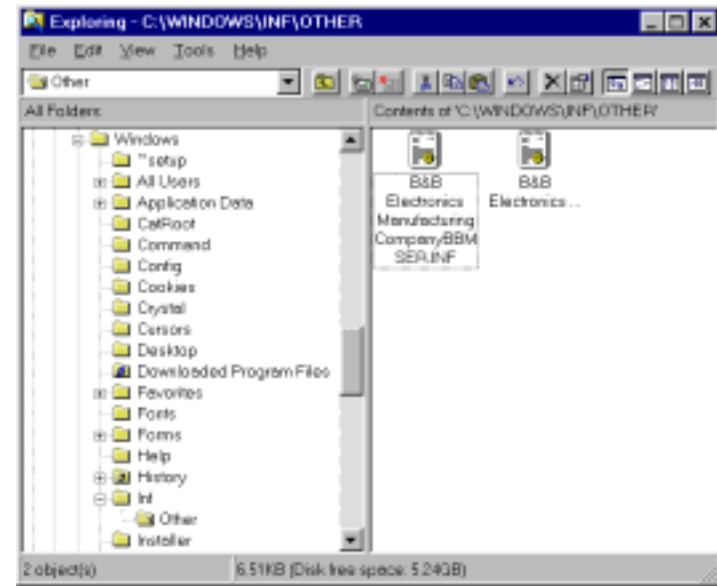
17. You can now remove the driver disk, close the Windows, and check the new ports with your software.

If your software requires accessing a COM port below COM5, and you have unused COM numbers not occupied by a FAX/Modem or other device, you can re-assign the PCI card COM numbers using our B&B PnP COM Rename utility. Refer to Appendix E.

## Removal of Card And Drivers

If you need to remove the card from your system or remove the current driver before installing a possible future driver upgrade:

1. Open **My Computer, Control Panel, System** (or Start, Setting, Control Panel, System).
2. Select the **Device Manager** Tab (see figure on previous page).
3. Click **B&B Electronics Serial Adapters**, then Select the **4-Port PCI Serial Adapter (3PCISD4)**.
4. Click the **Remove** button.
5. Close the Windows, and Open **My Computer, Drive C:**
6. Open the Windows directory on your hard drive, then open the Inf folder, then Other. (If the Inf folder is not shown, it is hidden. Select **View, Folder Options, Files and Folders, Show all files.** Win95: Select **View, Options, View, Show all files.**)



7. Remove the B&B INF files. (\*BBMSER.INF & \*BBMSER95.INF) Close the Window.
8. Shut down the computer, then remove the card.

## Windows 2000 Professional

This section covers device driver installation for Windows 2000 Professional.

Windows 2000 Server

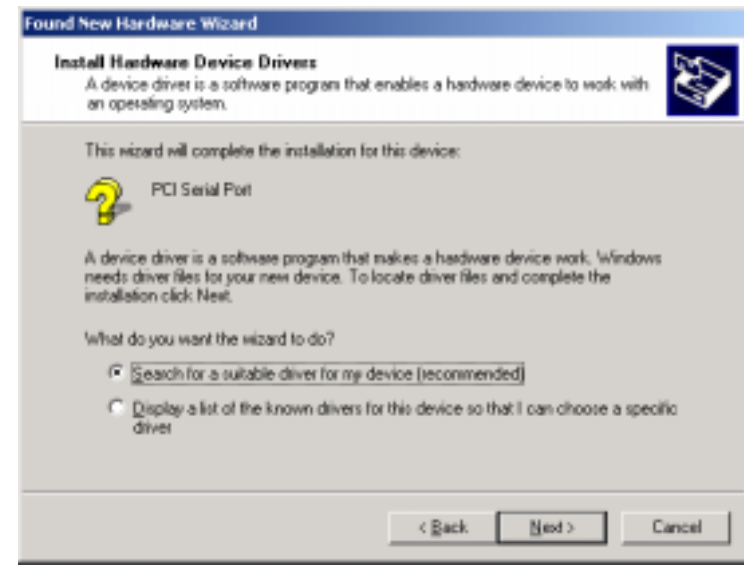
Windows 2000 Advanced Server

Windows 2000 Data Center

1. Configure each port on the PCI card to the desired RS-232/422/485 mode using the jumpers for Port 1, 2, 3, & 4.
2. Install the card in the slot, start the computer as an Administrator or ask your system administrator to install the software.
3. Windows will detect the PCI card and start Found New Hardware Wizard, to begin driver installation. When installation is complete, Windows will set the hardware addressing & interrupt using the drivers and the Plug and Play function of the Operating System.
4. After the driver for the PCI Serial Card installs, the serial driver for the Com port will be installed once for each port on the card.



5. Click **Next** to continue.



6. Select Search, Click **Next**.



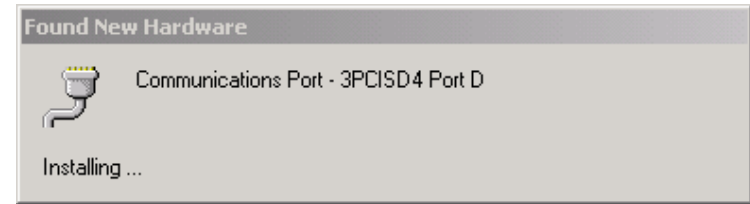
7. Insert the driver disk in **floppy disk** drive A: Click **Next**.



8. Click **Next**.



9. Click **Finish** to complete the Install.



The computer will finish the installation of the driver for the card, then search for, find and install the Com driver for Port A, Port B, Port C and Port D.

15. Wait for the process to complete.

Don't remove the floppy disk until you verify that Com ports have been assigned to the card.

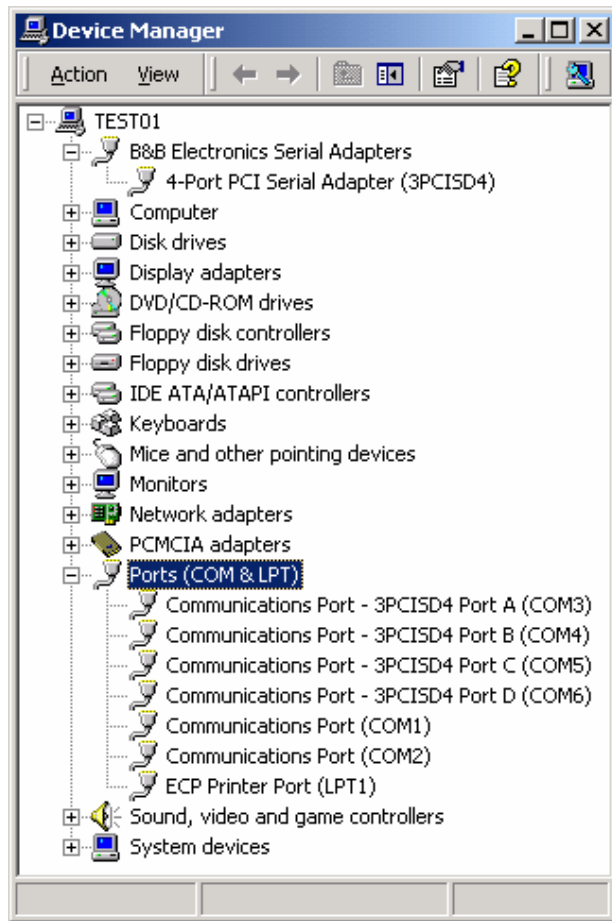
16. Open **My Computer, Control Panel, System**, then select the **Hardware** Tab on System Properties.

17. Select the Device Manager button.

18. View the device list (next page).

The 4-Port PCI Serial Adapter card is installed under B&B Electronics Serial Adapters. This can be opened to show General, Driver, Resources (Address settings & IRQ).

Under Ports, COM3 was assigned to Port A , and COM4 through COM6 was assigned to Port B, C and D. (Port 1=A, 2=B, 3=C & 4=D)



19. You can now remove the driver disk, close the Windows and check the new Com ports with your software.

## Removal of Card & Drivers

If you need to remove the card from your system or remove the current driver before installing a possible future driver upgrade:

Refer to the figure on the prior page:

1. Click on *3PCISD4 Port D* under **Ports (COM & LPT)**, and select **Uninstall** (right click). Repeat for Port C, B, and A.
2. Next Click on *4-Port PCI Serial Adapter (3PCISD4)* under **B&B Electronics**. Select **Uninstall**.
3. Remove the two sets of driver files from the Windows INF directory. (These are named by the OS in the sequence of installation. On a clean system they are: Oem0.inf & Oem0.PNF and Oem1.inf & Oem1.PNF. The .inf versions should be verified by opening it with Notepad, then checking that it is a B&B Electronics file. The PNF version is a compiled copy of the same information.)

You can use the **Find, File or Folder** function to search for the text *B&B* within the files.

You may need to set your Views (under My Computer to show all files and folders if the INF directory and .inf files are not visible.

4. Shut down the system and remove the card.

## WINDOWS NT 4.0

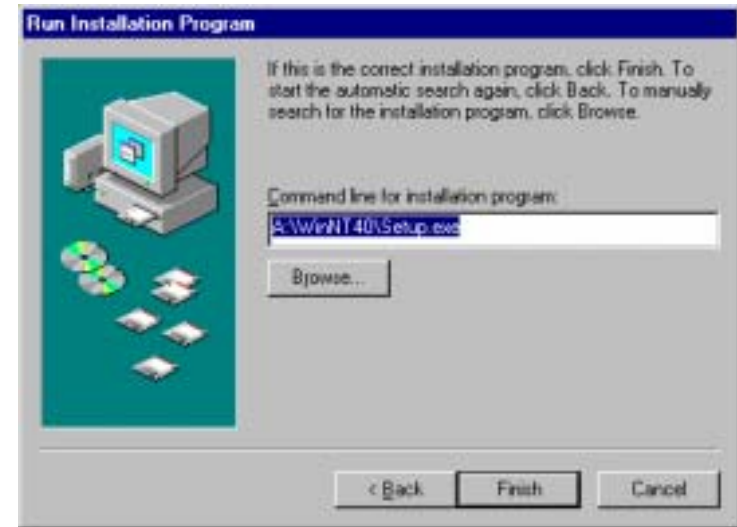
1. Configure each port on the PCI card to the desired RS-232/422/485 mode using the jumpers for Port 1, 2, 3, & 4.
2. Install the card in the slot, start the computer, and log on to Windows NT 4.0 as an Administrator or ask your system administrator to install the software.
3. Open the **Control Panel**. (Select **Start, Settings**.)



4. Select **Add/Remove Programs**.



5. Click the **Install** button, then click **Next**.



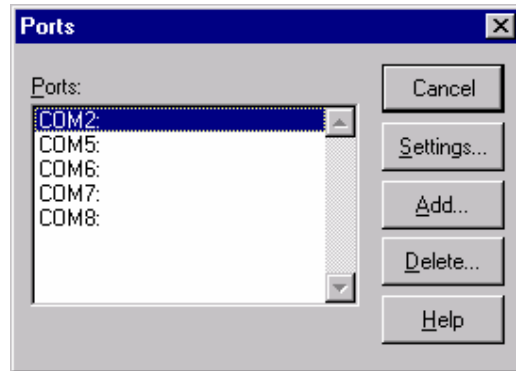
6. Insert the driver disk into drive A:
7. Enter **A:\WinNT40\Setup.exe** in the **Command line for installation program** window (as above).
8. Click **Finish** to start the Setup program.



9. Click **Next**. Follow the instructions until completed.



10. This driver does not require re-booting to complete installation.
11. Open the **Control Panel**, select **Ports**.



12. Verify 4 new COM Ports (COM5, COM6, COM7, COM8).

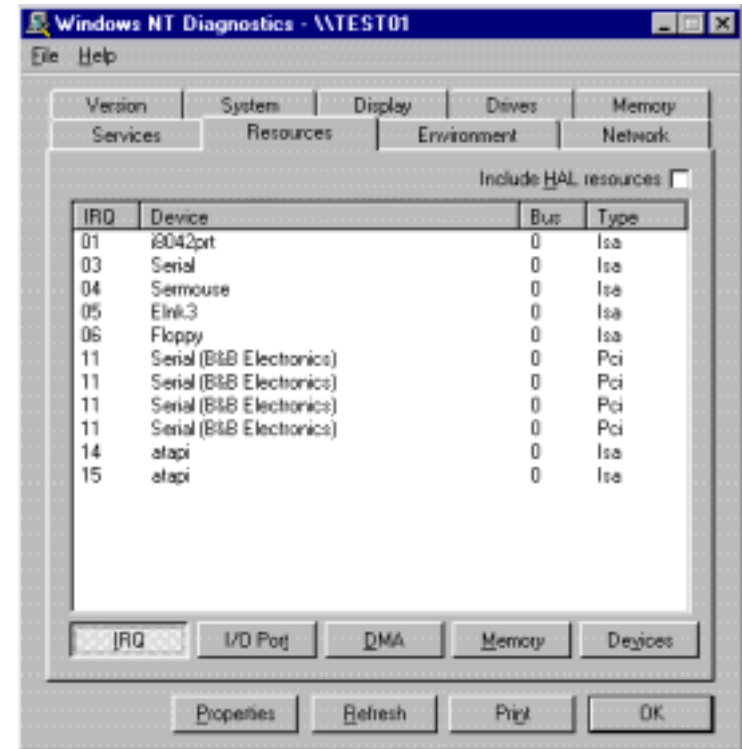
If you have 4 new COM ports, the installation is complete. Select one of the new ports, select Settings, Advanced. You should obtain the message, "There are no user configurable advanced I/O parameters for this COM port."

Check the ports with your software or with a Loopback test (see page 33).

Note: In the above example, a serial mouse is connected to the port which would usually be COM1. NT does not show it. COM2 is the second built-in serial port.

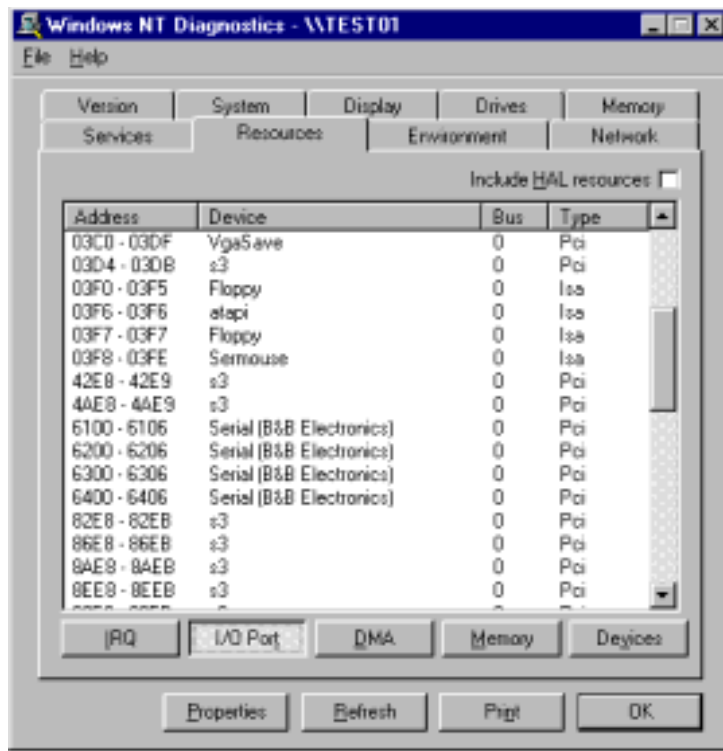
You can check details of the serial card setup using **Windows NT Diagnostics**, found under **Administrative Tools**. This can show the **Resources** used such as addresses and IRQ.

Windows Diagnostics will not allow changing anything.



The above shows the 4 ports using the PCI card interrupt.

The screen below shows the address range for each serial port on the B&B Electronics 4 port Serial Card.



### Removal of Card and Driver

If you need to remove the card from your system or remove the current driver before installing a possible future driver upgrade:

1. Open the Windows NT subdirectory.
2. Open System32.
3. Open Drivers.
4. Find the "Bbserial.Sys" file and delete it.
5. Shut down the system.
6. Remove the 4-Port PCI Serial Adapter card.

## Chapter 4: TROUBLESHOOTING

If you have any trouble starting your system after installing the card, the card may not be properly seated in the slot. Remove and re-insert it or try a different slot.

If you are unable to communicate with the card using your software and hardware devices:

1. Check your pinouts. In RS-422 or RS-485 mode the "A" lines should match your "A" or "-" lines. "B" lines should match your "B" or "+" lines. *Note: RS-422/485 pinouts are non-standard.*
2. Use the COMTest program provided on the PCI/USB Port Utility Disk with a loop back to check the card. Run Setup.exe to install COMTest on your program menu under B&B Electronics.

A Loopback connection for RS-232 connects the Transmit output to the Receive input. (pins #2 & #3 on the DB9 connector) For RS-422 or 4-wire RS-485, connect the TD(A) to RD(A) and the TD(B) to RD(B). Then use the COMTest program to send characters, and observe the characters being received. To check 2-wire RS-485, you will need to enable the receiver by moving the receive jumper to 422 mode, or use one Port to transmit to another by cross connecting and loading COMTest twice, one copy for each port. Characters typed in one copy of COMTest will appear in the receive window of the other. Note that software must ignore the RS-232 handshaking lines in RS-422/RS-485 mode, the input lines (CTS, DSR, DCD, RI) are not pulled high.

3. Try another software package for troubleshooting.
4. Check our website for available FAQ's or troubleshooting hints.
5. Call B&B Electronics Technical Support for troubleshooting assistance.

### International Office

Technicians are available at (815) 433-5100 to answer your questions from 8 AM - 5 PM weekdays (Central Time).

### European Office

Technicians are available at +353 91-792444 to answer your questions from 8:30 AM – 5 PM weekdays (GMT Time).

## Appendix A: DB9 Signal Connections

Table 7: RS-232 Pinouts

RS-232 Signal	Description	Direction	DB9M Pin
DCD	Data Carrier Detect	input	1
RD	Receive Data	input	2
TD	Transmit Data	output	3
DTR	Data Terminal Ready	output	4
GND	Signal Ground	----	5
DSR	Data Set Ready	input	6
RTS	Request to Send	output	7
CTS	Clear to Send	input	8
RI	Ring Indicator	Input	9

Table 8: RS-422/RS-485 Pinouts

RS-422 signal	Description	Direction	DB9M Pinout
--		--	1
RD(A) –	Receive Data A	input	2
TD(A) –	Transmit Data A	output	3
--		--	4
GND	Signal Ground	----	5
--		--	6
TD(B) +	Transmit Data B	output	7
RD(B) +	Receive Data B	input	8
--		NA	9

With 2-wire RS-485 mode operation, your connection cable must jumper RD(A) to TD(A) and RD(B) to TD(B). Connect from TD(A) & TD(B) to the Data A(–) and Data B(+) wires of your RS-485 network.

The EIA RS-422 Specification labels data lines with an "A" and "B" designator. Some RS-422 equipment uses a "–" and "+" designator. In almost all cases, the "A" line is the equivalent of the "–" line and the "B" line is the equivalent of the "+" line. See our **RS-422/485 Application Note** (available on our websites).

## Appendix B: Jumper Mode Tables

### Port A Jumper Settings Mode Table

Jumpers Port A (1)	RS-232	RS-422 4-wire	RS-485 4-wire	RS-485 2-wire
JP1 (4 Jumpers)	232	422	422	422
JP3A MODE	232	422/485	422/485	422/485
JP3B RX	not used	422	422	485
JP3C TX	not used	422	485	485
JP3D (SD/RTS) (typical)	not used	not used	RTS/SD SD	RTS/SD SD
JP3E - Term 120Ω (typical)	not used	IN/OUT OUT	IN/OUT OUT	IN/OUT OUT
JP5 Clock (x4 or x1) (typical)	*4/*1 *1	*4/*1 *1	*4/*1 *1	*4/*1 *1

**How to use the table:** The left vertical column shows the jumpers for port A. The right 4 vertical columns show the position setting of the jumper at the left for RS-232, RS-422 or 4-wire RS-485 or 2-wire RS-485 modes.

#### NOTES:

Refer to the Setup section for explanations of the RTS/SD, Termination and Clock settings. All ports share the Clock setting.

RS-485 Mode: The SD/RTS jumpers should be set to automatic SD unless your software requires RTS Control.

Note that termination should only be used in systems with both high baud rates (>19200) and over several thousand feet of cable.

Information on RS-422 and RS-485 communications can be found in the B&B Electronics **RS-422/485 Application Note** (available on our Website).

### Port B Jumper Settings Mode Table

Jumpers Port B (2)	RS-232	RS-422 4-wire	RS-485 4-wire	RS-485 2-wire
JP2 (4 Jumpers)	232	422	422	422
JP4A MODE	232	422/485	422/485	422/485
JP4B RX	not used	422	422	485
JP4C TX	not used	422	485	485
JP4D (SD/RTS) (typical)	not used	not used	RTS/SD SD	RTS/SD SD
JP4E - Term 120Ω (typical)	not used	IN/OUT OUT	IN/OUT OUT	IN/OUT OUT
JP5 Clock (x4 or x1) (typical)	*4/*1 *1	*4/*1 *1	*4/*1 *1	*4/*1 *1

**How to use the table:** The left vertical column shows the jumpers for Port B. The right 4 vertical columns show the setting of the jumper at the left for RS-232, RS-422 or 4-wire RS-485 or 2-wire RS-485 modes.

#### NOTES:

Refer to the Setup section for explanations of the RTS/SD, Termination and Clock settings. All ports share the Clock setting.

RS-485 Mode: The SD/RTS jumpers should be set to automatic SD unless your software requires RTS Control.

Note that termination should only be used in systems with both high baud rates (>19200) and over several thousand feet of cable.

Information on RS-422 and RS-485 communications can be found in the B&B Electronics **RS-422/485 Application Note** (available on our Website).

### Port C Jumper Settings Mode Table

Jumpers Port C (3)	RS-232	RS-422 4-wire	RS-485 4-wire	RS-485 2-wire
JP8 (4 Jumpers)	232	422	422	422
JP6A MODE	232	422/485	422/485	422/485
JP6B RX	not used	422	422	485
JP6C TX	not used	422	485	485
JP6D (SD/RTS) (typical)	not used	not used	RTS/SD SD	RTS/SD SD
JP6E - Term 120Ω (typical)	not used	IN/OUT OUT	IN/OUT OUT	IN/OUT OUT
JP5 Clock (x4 or x1) (typical)	*4/*1 *1	*4/*1 *1	*4/*1 *1	*4/*1 *1

**How to use the table:** The left vertical column shows the jumpers for port C. The right 4 vertical columns show the position setting of the jumper at the left for RS-232, RS-422, 4-wire RS-485 or 2-wire RS-485 modes.

#### NOTES:

Refer to the Setup section for explanations of the RTS/SD, Termination and Clock settings. All ports share the Clock setting.

RS-485 Mode: The SD/RTS jumpers should be set to automatic SD unless your software requires RTS Control.

Note that termination should only be used in systems with both high baud rates (>19200) and over several thousand feet of cable.

Information on RS-422 and RS-485 communications can be found in the B&B Electronics **RS-422/485 Application Note** (available on our Website).

### Port D Jumper Settings Mode Table

Jumpers Port D (4)	RS-232	RS-422 4-wire	RS-485 4-wire	RS-485 2-wire
JP9 (4 Jumpers)	232	422	422	422
JP7A MODE	232	422/485	422/485	422/485
JP7B RX	not used	422	422	485
JP7C TX	not used	422	485	485
JP7D (SD/RTS) (typical)	not used	not used	RTS/SD SD	RTS/SD SD
JP7E - Term 120Ω (typical)	not used	IN/OUT OUT	IN/OUT OUT	IN/OUT OUT
JP5 Clock (x4 or x1) (typical)	*4/*1 *1	*4/*1 *1	*4/*1 *1	*4/*1 *1

**How to use the table:** The left vertical column shows the jumpers for port D. The right 4 vertical columns show the position setting of the jumper at the left for RS-232, RS-422, 4-wire RS-485 or 2-wire RS-485 modes.

#### NOTES:

Refer to the Setup section for explanations of the RTS/SD, Termination and Clock settings. All ports share the Clock setting.

RS-485 Mode: The SD/RTS jumpers should be set to automatic SD unless your software requires RTS Control.

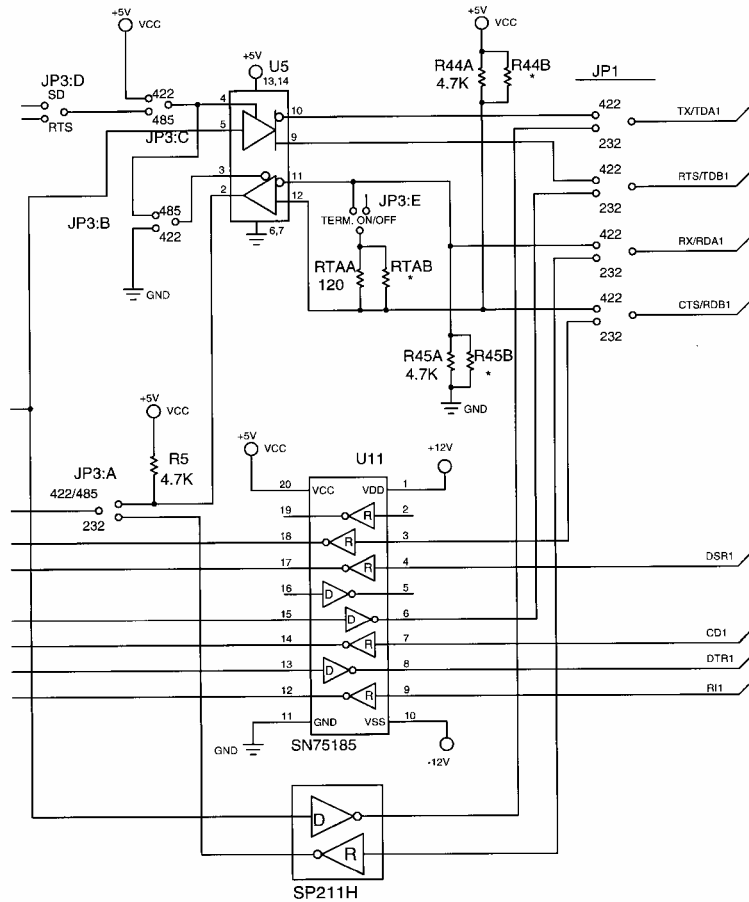
Note that termination should only be used in systems with both high baud rates (>19200) and over several thousand feet of cable.

Information on RS-422 and RS-485 communications can be found in the B&B Electronics **RS-422/485 Application Note** (available on our Website).

## Appendix C: 3PCISD4 I/O Pinout

Signal	DB-37 Pinout
CD Port 1	Pin 1
RX/RDA Port 1	Pin 2
TX/RDA Port 1	Pin 3
DTR Port 1	Pin 4
GND	Pin 5
DSR Port 1	Pin 20
RTS/TDB Port 1	Pin 21
CTS/RDB Port 1	Pin 22
RI Port 1	Pin 23
CD Port 2	Pin 6
RX/RDA Port 2	Pin 7
TX/RDA Port 2	Pin 8
DTR Port 2	Pin 9
GND	Pin 24
DSR Port 2	Pin 25
RTS/TDB Port 2	Pin 26
CTS/RDB Port 2	Pin 27
RI Port 2	Pin 28
CD Port 3	Pin 10
RX/RDA Port 3	Pin 11
TX/RDA Port 3	Pin 12
DTR Port 3	Pin 13
GND	Pin 14
DSR Port 3	Pin 29
RTS/TDB Port 3	Pin 30
CTS/RDB Port 3	Pin 31
RI Port 3	Pin 32
CD Port 4	Pin 15
RX/RDA Port 4	Pin 16
TX/RDA Port 4	Pin 17
DTR Port 4	Pin 18
GND	Pin 33
DSR Port 4	Pin 34
RTS/TDB Port 4	Pin 35
CTS/RDB Port 4	Pin 36
RI Port 4	Pin 37
NA	Pin 19

## Appendix D: 3PCISD4 I/O Schematic



Port 1 I/O Schematic



## Appendix E: Renaming COM Ports - Win 95/98/ME

### Renaming PCI COM Ports Using the PnP COM Rename Utility

**CAUTION:** You must be using Windows 95/98 or ME. This utility is not designed for NT or other Windows versions.

*This program edits the registry directly, it will only change entries related to B&B PCI or USB Serial Ports. Improper use of this program can cause conflicts with other COM Ports installed on your computer.*

*Renaming COM ports will only affect software that accesses COM ports through Windows, not software that accesses ports from DOS or at the hardware level.*

*This program should only be used after all serial ports have been installed.*

Windows 95/98 and ME automatically assigns COM port numbers starting at COM5 when the port is not at the standard base addresses for COM1 to COM4.

If your software refuses to access COM ports above COM4, and you have unused COM numbers that you want to be able use with your B&B PCI Serial Card, this utility can be used to rename some or all of the ports to the unused COM numbers.

First, check the ports list shown in the Device Manager, then check any Modem or FAX device to make sure that the port number isn't being used for a FAX/Modem or Network Redirector.

If you have built-in ports you want to disable from the BIOS in order to use your PCI card at that COM number, first remove the port with the Device Manager. Then re-boot to the BIOS, disable the port with hardware settings, Exit with a "Save Settings", then re-start Windows. Next, verify the port number is not present. Then use the Rename utility to rename the PCI card ports as needed.

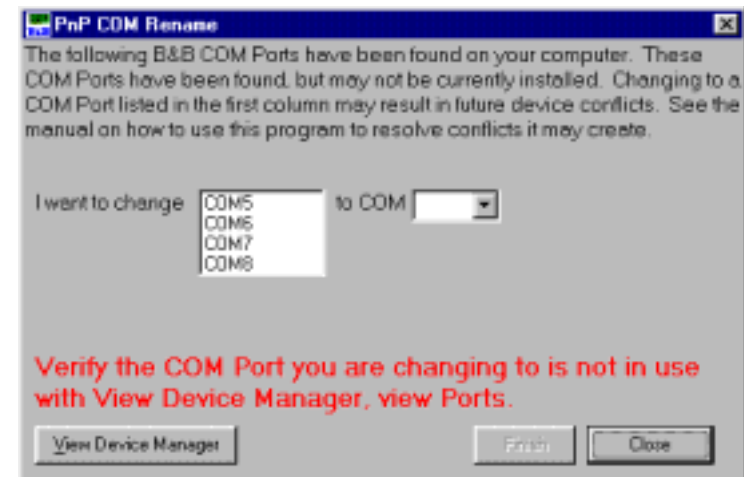
To Remove a Port: Choose Settings, Control Panel, System, Device Manager, then select the port to highlight it. Click Remove below the window. To remove all B&B PCI ports, select the B&B Serial Adapter. This clears registry entries for the card and ports.

### Install the PCI/USB COM Port Utilities

- (1) To use the PnP COM Rename utility, insert the PCI/USB COM Port Utility Disk and run Setup.exe. This will install COMTest and PnP COM Rename under Programs, B&B Electronics.
- (2) The Rename utility will not be installed if you are running Windows 2000 or NT.

### Using PnP COM Rename

- (1) Shut down all programs that are accessing any Com ports.
- (2) Start the PnP COM Rename Utility from the Programs menu under B&B Electronics.
- (3) Read the Cautionary Warnings, it is possible to rename a PCI or USB serial port to a number already in use which will cause problems. If any problems occur after renaming, you may need to re-start the system and rerun the Rename utility to correct the situation or remove the serial card in the Device Manager. Then Refresh the Device Manager to detect the card and re-install the drivers. Determine which renamed COM port caused the problem, and do not use that name for a renamed port.
- (4) Accept the conditions of use by clicking Yes or click No to exit.
- (5) Select the currently named COM port number you want to change in the left window, then the new number in the right window. Then click Finish. Repeat for other ports as needed.




- (6) If the PCI card was previously installed and not removed in the Device Manager, you may find several B&B COM ports with the same number. The last instance of the same number is usually the most recent installation. Only the active ports can be renamed with the program to show the new name under the Device Manager. Inactive port numbers will not show any change after renaming. Ideally, unused entries should be removed by using RegEdit, then having the system re-install the drivers to make the entries. This will result in a single entry for each port on the card, and only that entry will need to be changed.
- (7) After all B&B PCI or USB COM ports have been renumbered as needed, click Close to exit.

If you need to install another serial device after using renaming with this utility, you must:

- (1) Name all COM Ports back to original settings using this program.
- (2) Install the new device according to manufacturer directions.
- (3) Use this utility to rename the B&B COM Ports again as needed.

## Appendix F: 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:	3PCISD4 a/b
Description:	Four Port PCI Serial Card
Type:	Light industrial ITE equipment
Application of Council Directive:	89/336/EEC
Standards:	EN 55022 EN 61000-6-1 EN 61000 (-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11)
	
William H. Franklin III, Director of Engineering	
