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Model DSCLP-100

Two-Channel, Low-Profile RS-232 Asynchronous Communications Adapter

For PCI Bus

USER MANUAL



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1. PRODUCT OVERVIEW

B+B SmartWorx' Model DSCLP-100 (two-port) provides RS-232 asynchronous serial communication interfaces for low-profile IBM-compatible personal computer systems using the PCI expansion bus. The DSCLP-100 uses an enhanced serial adapter design. Legacy serial port data rates are limited to a maximum of 115,200 bits per second.

As a PCI device, the DSCLP-100 requires no hardware configuration. The card is automatically configured by the computer's BIOS or operating system.

The two serial ports share a single interrupt line and are addressed in a contiguous block of 16 bytes. A special interrupt status register is provided to help software to manage the shared interrupt.

The DSCLP-100's serial ports are implemented using 16550 Universal Asynchronous Receiver/Transmitters (UARTs). These UARTs contain hardware buffers (FIFOs) which reduce processing overhead and allow higher data rates to be achieved.

The DSCLP-100 is supported under several popular operating systems and environments. Contact B+B SmartWorx Technical Support for details on current software offerings. Most device drivers are available for download from *www.advantech-bb.com*

2. HARDWARE CONFIGURATION

The DSCLP-100 is automatically configured at boot time by the computer's BIOS or operating system. There are no required switches or jumpers to set for installation.

This chapter lists a number of optional jumper settings that control various hardware features. Jumpers J2, J4-J5 are grouped together at the end of the board opposite the D-type DB25 connector. Any changes from the factory default should be made before installing the DSCLP-100 in the computer.

2.1 FACTORY DEFAULT CONFIGURATION

Figure 1 shows the jumper configuration as shipped from the factory, with two spare jumpers applied in neutral positions. Remove one or both and apply as shown in following sections to set optional features.

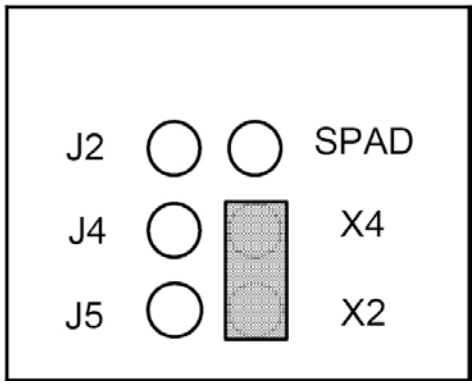


Figure 1: Factory Default Jumper Configuration

2.2 ENABLE SCRATCHPAD REGISTER (SPAD, J2)

In the default configuration, an Interrupt Status Register (see section 4.3) and an Options Register (see section 4.4) replace the scratchpad (base address + 7) of each UART. If the SPAD jumper is applied as in Figure 2, the UART scratchpad registers are enabled, and the Interrupt Status Register and the Options Register are not available.

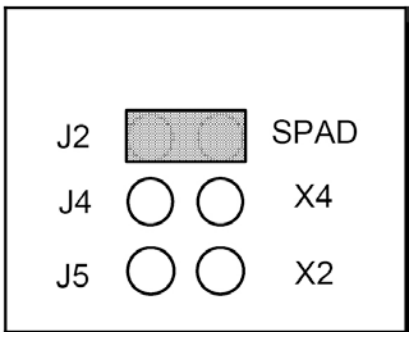


Figure 2: Enable Scratchpad Registers

2.3 FORCE HIGH-SPEED UART CLOCK (X2 OR X4, J4-J5)

These jumpers force an increase of the UART input clock frequency by a factor of two or four. This feature can allow legacy software to use baud rates above 115,200 bits per second. It is also useful if the serial port device driver does not directly support setting the higher baud rates through the Options Register (see section 4.4).

If one of these jumpers is applied, it overrides any value written to the Options Register to set the clock multiplier by software. The effective baud rate will be either two or four times the value for which the UART itself is programmed.

The factory default is none of these jumpers applied, which allows for software control of the clock multiplier via the Options Register. The Options Register power-up default is for a standard times-1 clock of 1.8432 MHz for compatibility with standard serial ports.

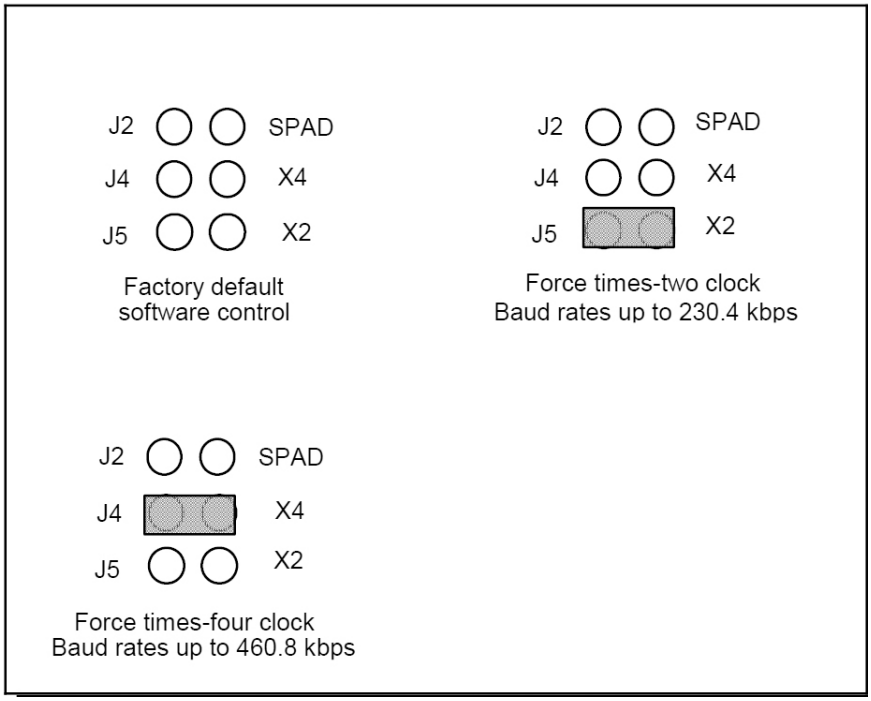


Figure 3: Clock Multiplier Jumper Options

3. HARDWARE INSTALLATION

1. Turn off the power of the computer system in which the DSCLP-100 is to be installed.

2. Remove the system cover according to the instructions provided by the computer manufacturer.

3. Make any desired optional jumper setting changes.

4. Install the DSCLP-100 in any empty PCI expansion slot. The board should be secured by installing the Option Retaining Bracket (ORB) screw.

5. Replace the system cover according to the instructions provided by the computer manufacturer.

6. Attach and secure the cable connectors to the desired equipment.

7. Turn on the power of the computer system.

The output of the DSCLP-100 is a 25-pin D-connector. A cable is provided to convert the D-25 into two standard male D-9 connectors with all control signals provided to each port (RTS, DTR, CTS, DSR, DCD, and RI).

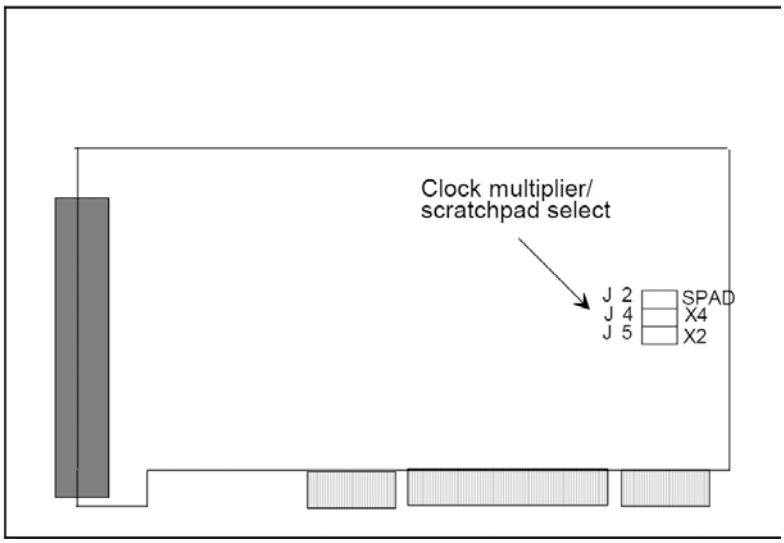


Figure 4: Jumper/Connector Locations

4. ADDRESS MAP AND SPECIAL REGISTERS

This chapter explains how the two UARTs and special registers are addressed, as well as the layout of those registers. This material will be of interest to programmers writing driver software for the DSCLP-100.

4.1 BASE ADDRESS AND INTERRUPT LEVEL (IRQ)

The base address and IRQ used by the DSCLP-100 are determined by the BIOS or operating system. Each serial port uses 8 consecutive I/O locations. The two ports reside in a single block of I/O space in eight byte increments, for a total of 16 contiguous bytes, as shown in Figure 5.

Port	I/O Address Range
Serial 1	Base Address + 0 to Base Address + 7
Serial 2	Base Address + 8 to Base Address + 15

Figure 5: Port Address Map

All serial ports share the same IRQ. The DSCLP-100 signals a hardware interrupt when any port requires service. The interrupt signal is maintained until no port requires service. Interrupts are level-sensitive on the PCI bus.

The base address and IRQ are automatically detected by the device drivers that B+B SmartWorx supplies for various operating systems. For cases where no device driver is available, such as for operation under DOS, B+B SmartWorx supplies the "QTPCI" DOS software utility for manually determining the resources used. See section 6.3.1 for details.

4.2 ENABLING THE SPECIAL REGISTERS

The DSCLP-100 contains two unique registers: an Interrupt Status Register and an Options Register. These registers are enabled when the SPAD jumper (J2) is removed (factory default). They replace the UART Scratchpad Register on accesses to register address 7.

The Interrupt Status Register and Options Register are accessed through the scratchpad location of any UART. The DLAB bit of the UART (Line Control Register, bit 7) is used to select between the two registers. The most recent write of a DLAB bit in any UART selects between the two registers as shown in Figure 7.

DLAB Bit	SPAD Jumper	Register Selected For Address 7 Accesses
0	Removed	Interrupt Status Register
1	Removed	Options Register
X	Applied	Scratchpad Registers

Figure 6: DLAB Bit Selects Between Special Registers

4.3 INTERRUPT STATUS REGISTER

The read-only Interrupt Status Register can be used to quickly identify which serial ports require servicing after an interrupt. Reading the Interrupt Status Register will return the interrupt status of the entire DSCLP-100, as shown in Figure 7. The individual bits are cleared as the interrupting ports are serviced.

The interrupt service routine should ensure that the interrupt status register reads zero before exiting.

Bit	Description
7 (MSB)	0 (not used)
6	0 (not used)
5	0 (not used)
4	0 (not used)
3	0 (not used)
2	0 (not used)
1	Port 2 --- 1 if interrupt pending
0	Port 1 --- 1 if interrupt pending

Figure 7: Interrupt Status Register

4.4 OPTIONS REGISTER

The Options Register allows software to identify the DSCLP-100 as an enhanced serial adapter. It also allows software to set the UART clock rate multiplier. Figure 8 shows the structure of the Options Register.

The power-up default of the Options Register is all bits zero.

Bit	Name	Description
7 (MSB)	ID1	ID bit 1
6	ID0	ID bit 0
5	-	(reserved, 0)
4	-	(reserved, 0)
3	-	(reserved, 0)
2	-	(reserved, 0)
1	RR1	Clock rate multiplier bit 1
0	RR0	Clock rate multiplier bit 0

Figure 8: Options Register Bit Definitions

4.4.1 ENHANCED SERIAL ADAPTER IDENTIFICATION

The ID bits are used to identify the DSCLP-100 as an enhanced serial adapter. Logic operations are performed such that the values read back from these bits will not necessarily be the values that were written to them. Bit ID1 will return the logical-AND of the values written to ID[1:0], while bit ID0 will return their exclusive-OR.

Software can thus identify an enhanced serial adapter by writing the ID bits with the patterns shown in the "write" column of Figure 10, then reading the bits and comparing the result with the patterns in the "read" column. Matching read patterns verify the presence of the Options Register.

Write		Read	
ID1	**ID0**	**ID1**	**ID0**
0	0	0	0
0	1	0	1
1	0	0	1
1	1	1	0

Figure 9: ID Bit Write/Read Table

4.4.2 CLOCK RATE MULTIPLIER

A standard RS-232 serial port operates at a clock speed of 1.8432 MHz. In order to achieve higher data rates, Enhanced serial adapters can operate at two times, four times or even eight times this standard clock speed. This is controlled by the clock rate multiplier bits in the Options Register.

Software can determine the UART clock frequency by reading the clock rate multiplier bits RR1 and RR0 in the Options Register as shown in Figure 10. RR1 and RR0 can be set by writing to the Options Register if the X2 and X4 jumpers (J4-J5) are all removed. This card has the 16550 UART. If one of these jumpers is applied, the RR1 and RR0 bits are forced to the appropriate value. Reading the Options Register will always return the clock rate multiplier at which the board is operating.

RR1	RR0	Clock Rate Multiplier	UART Clock Frequency	Maximum Data Rate
0	0	X1 (default)	1.8432 MHz	115.2 kbaud
0	1	X2	3.6864 MHz	230.4 kbaud
1	0	X4	7.3728 MHz	460.8 kbaud
1	1	X8*	14.7456 MHz	921.6 kbaud

Figure 10: Rate Register Bit Definition

(*x* mode is only accessible via software control)

At power-up and reset, the Options Register is initialized to 0. The DSCLP-100 will thus power-up in the x1 mode with software control of the clock rate multiplier enabled as long as the X2 or X4 jumpers are not installed.

Software can control high baud rates through a combination of changing the clock rate multiplier and the UART baud rate divisor. For example, a baud rate of 230.4 kbps could be achieved by setting the clock rate multiplier to X2 mode (or by applying the X2 jumper) and setting a software application for 115.2 kbps.

5. WINDOWS CONFIGURATIONS

5.1 WINDOWS MILLENNIUM

1. After inserting the DSCLP-100 for the first time, the "Add New Hardware Wizard" will begin. Select "Search for the best driver for your device". Check the "Removable Media" and "Specify Location" box. Click the "Next" button.

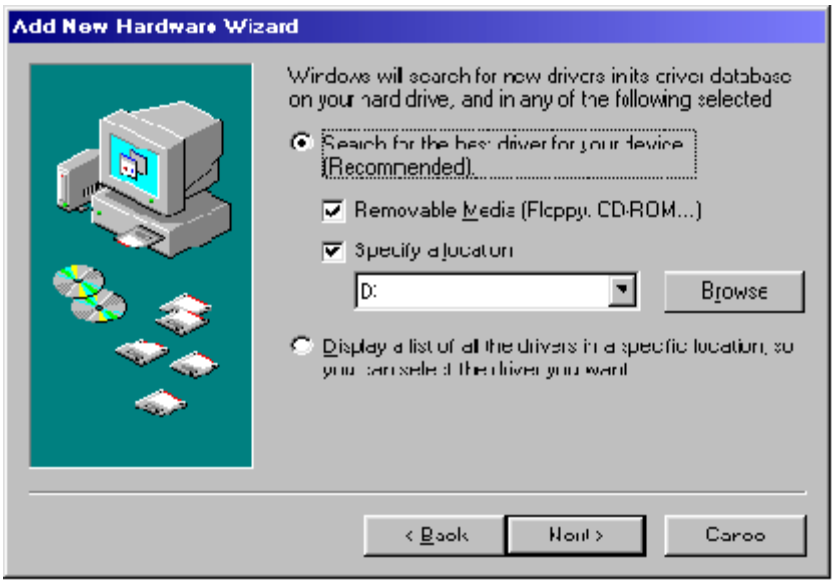


Figure 11: Windows Millennium

2. Window will locate the proper INF file and copy the file from the CD.

Click the "Next" button.

3. The final dialog screen will verify the file copy from the CD.

Click the "Finish" button.

5.2 WINDOWS 2000

1. After inserting a DSCLP-100 for the first time, the "Add New Hardware Wizard will appear at start up. Click the "OK" button.

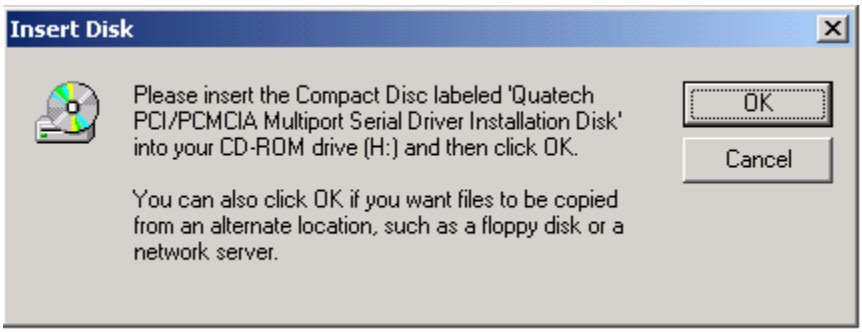


Figure 12: Windows 2000 - Insert CD

2. The following dialog box will be displayed. Insert the COM CD (shipped with the device). Click the "OK" button.

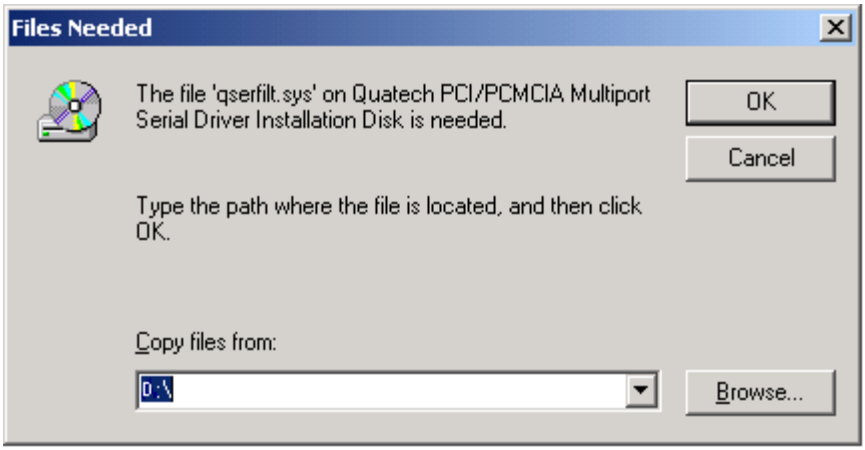


Figure 13: Windows 2000 - CD Files

3. The following dialog box will display the appropriate INF file on the CD in the drive. Click the "OK" button.

4. Window will copy the INF file from the CD and display a final dialog indication that the process is complete. Click the "Finish" button.

5.3 WINDOWS 98

1. After inserting a DSCLP-100 for the first time, the "Add New Hardware Wizard will appear at start up. Click the "Next" button.

2. Select "Search for the best driver for your device". Click the "Next" button.



Figure 14: Windows 98 - Device Manager

3. On the next dialog, select the "CD-ROM DRIVE" check box. Insert the COM CD (shipped with the device) into the CD-ROM drive. Click the "Next" button.



Figure 15: Windows 98 – Hardware Wizzard

4. The following dialog box will display the appropriate INF file on the disk in the drive. Click the "Next" button.

5. Window will copy the INF file from the disk and display a final dialog indication that the process is complete. Click the "Finish" button.

5.4 WINDOWS 95

Windows 95 maintains a registry of all known hardware installed in your computer. Inside this hardware registry Windows 95 keeps track of all of your system resources, such as I/O locations, IRQ levels, and DMA channels. The "Add New Hardware Wizard" utility in Windows 95 was designed to add new hardware and update this registry.

An "INF" configuration file is included with the DSCLP-100 to allow easy configuration in the Windows 95 environment.

5.5 USING THE "NEW HARDWARE FOUND" WIZARD

The following instructions provide step-by-step instructions on installing the DSCLP-100 in Windows 95 using the "New Hardware Found" wizard.

1. After booting the computer with a newly-installed DSCLP-100, the "New Hardware Found" dialog box will appear. If you have never installed a PCI communications adapter before, the dialog box may simply indicate that it has found a "PCI Card."

2. Select the radio button for "Driver from disk provided by hardware manufacturer." Click the "OK" button to continue.

3. An "Install From Disk" dialog box should pop up. Insert the disk with the INF files on it, select the correct drive letter and click the "OK" button. Windows 95 automatically browses the root directory for an INF file that defines configurations for multi-function adapters. If no INF files are found, click the "Browse" button and search the Win95 sub directory on the installation disk. You are not required to select the file name. After finding the directory containing the INF files, Windows 95 will choose the correct file.

4. The "New Hardware Found" dialog box will appear again, this time for an "Unknown Device."

5. Again select the radio button for "Driver from disk provided by hardware manufacturer." Click the "OK" button to continue.

6. Another "Install From Disk" dialog box will pop up. The path should already be pointing to the disk. Click the "OK" button to continue.

7. You should now see the "Copying Files" dialog box as Windows 95 copies the driver files from the disk.

8. The installation utility will ask for your Windows 95 installation disks. Serial communication ports require two drivers supplied by Microsoft to function: SERIAL.VXD and SERIALUI.DLL. Insert the disk or CD and click "OK".

   NOTE:
   You may be able to skip this step if you are certain that your system has the latest version of these files installed. If you do not have your Windows 95 install disks immediately available, click "OK" anyway. A dialog box appears with an option to Skip the files. Click the Skip button and the files will not be installed. This is all right if the latest version of these drivers are currently in the \WINDOWS\SYSTEM directory.

9. The "New Hardware Found" dialog will repeat for each of the serial ports on the DSCLP-100 as each port is registered with Windows 95.

10. Installation is complete.

5.6 VIEWING RESOURCES WITH DEVICE MANAGER

This discussion applies equally to Windows **95/98/ME** and **2000/XP**.

The following instructions provide step-by-step instructions on viewing resources used by the DSCLP-100 in Windows using the "Device Manager" utility. Select **Start|Help** from within Windows for additional information on this utility.

1. Double click the "System" icon inside the Control Panel folder. This opens up the System Properties box.

2. Click the "Device Manager" tab located along the top of the System Properties box. This lists all hardware devices registered inside the Windows registry. Additional information is available on any of these devices by clicking on the device name and then selecting the "Properties" button.

3. Double click the device group "Multi-function Adapters". The DSCLP-100 model name should appear in the list of Multi-function adapters.

4. Double click the DSCLP-100 model name and a properties box should open for the hardware adapter.

5. Click the "Resources" tab located along the top of the properties box to view the resources Windows has allocated for the DSCLP-100 match the hardware configuration. **Because PCI is a true plug-and-play bus, do not attempt to modify the configuration values listed.** Click "Cancel" to exit without making changes.

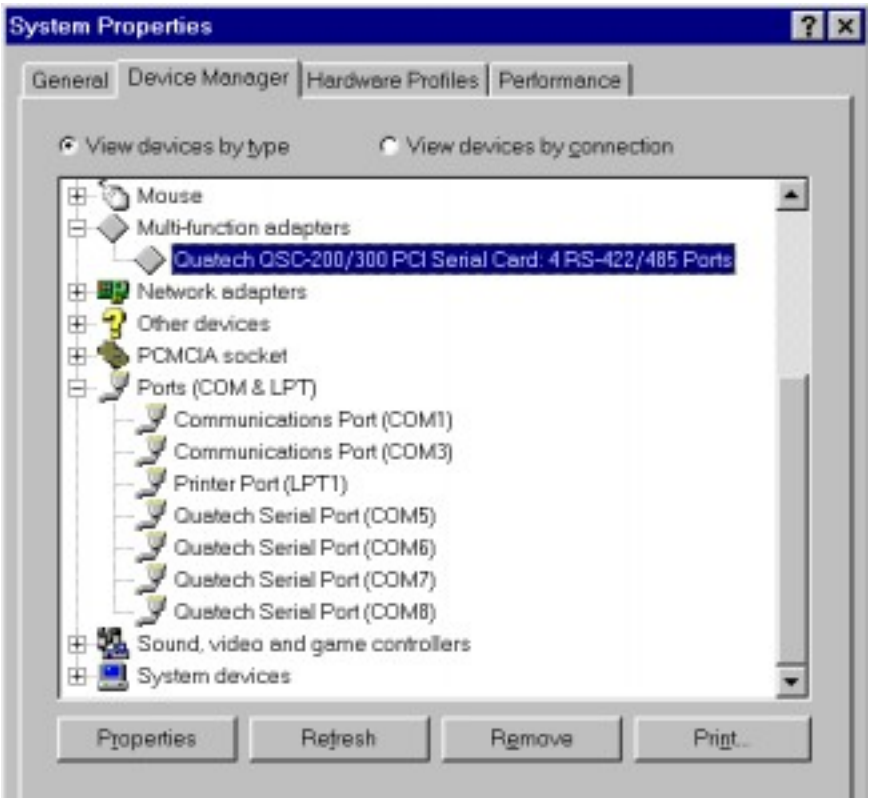


Figure 16: Windows Device Manager

6. The DSCLP-100 serial ports are also listed under the group Ports (COM and LPT). Windows 95 does not assign COM1-COM4 to ports addressed at nonstandard locations. The DSCLP-100 ports will be enumerated starting with COM5 (or higher) even if lower logical numbers are available.

7. Select any of the serial ports listed under the group Port (COM and LPT) and click the "Properties" button. This action opens a properties dialog for the specific COM port on the DSCLP-100.

8. Click the "Port Settings" tab and then click the "Advanced" button. The DSCLP-100 driver will display a custom Advanced Port Settings control, which allows the ports UART compatibility mode and FIFO threshold levels to be configured. The threshold values of full-scale for the transmit buffer and 3/4-scale for the receive buffer shown below are optimal for most applications. Note that the FIFO option for each of the DSCLP-100's two ports is configured independently.

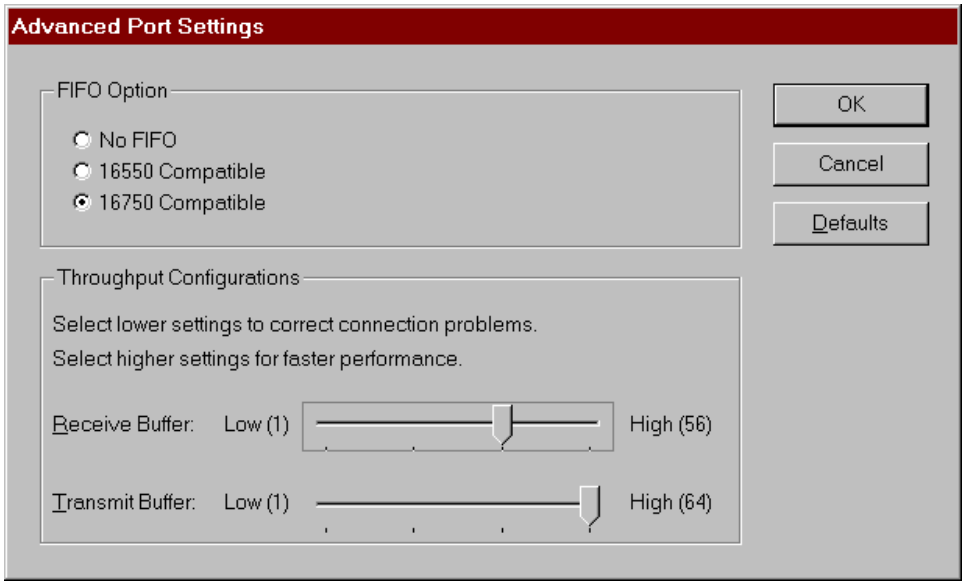


Figure 17: Windows Device Manager – Advanced Port Settings

9. Use the Logical COM Port names to access the serial ports on your DSCLP-100 through your software applications. Note: The Logical COM Port name is assigned to your ports by Windows. This name is required by a Windows application when accessing a particular port.

5.6.1 CHANGING RESOURCE SETTINGS WITH DEVICE MANAGER

1. Start the Windows 95/98/ME **Device Manager**.

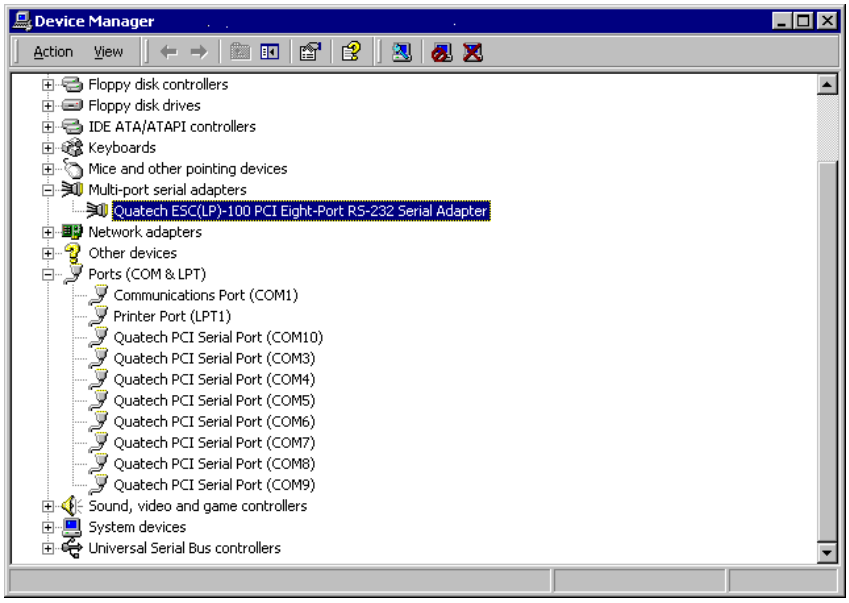


Figure 18: Windows Device Manager – Changing Resource Settings

2. Double click on the hardware class **Multi-Port Serial Adapters** to list hardware devices in the class.

3. The DSCLP-100 "parent device" belongs to this hardware class. The full device name for the DSCLP-100 is **Quatech DSCLP-100: Dual-Port RS-232 Serial Adapter.**

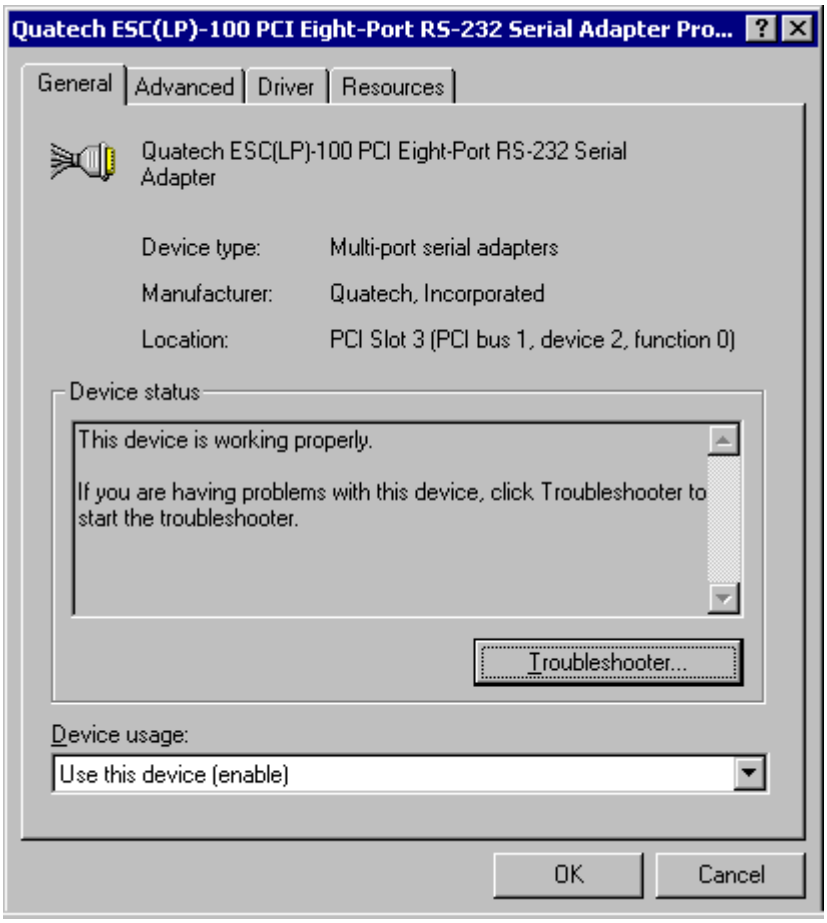


Figure 19: Windows Device Manager – Resources

4. Open the **Properties** dialog for the DSCLP-100 device, then click the **Resources** tab to view the Input/Output Range and Interrupt Request resource allocations. Do not change these settings without specific instructions from a B+B SmartWorx Technical Support Specialist. To exit without saving changes, click the "cancel" button.

5. Open the **Properties** dialog for the DSCLP-100 device, then click the **Advanced** tab to view the clock rate settings.

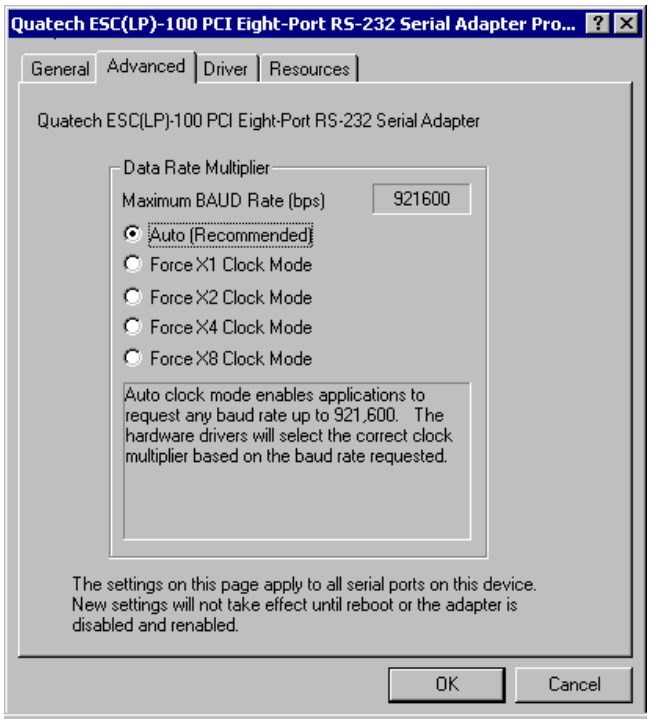


Figure 20: Windows Device Manager – Advanced – Data Rate

Data Rate Multiplier		
Clock Mode	**Max**	**Description**
Auto	921,600	Auto clock mode enables applications to request any baud rate up to 921,600. The hardware drivers will select the correct clock multiplier based on the baud rate requested.
X1	115,200	The X1 clock mode mimics a standard COM port. The hardware drivers lock the clock to the standard rate. The port will run at the baud rate requested by the application.
X2	230,400	The X2 clock mode locks the ports hardware clock at double the standard rate. The baud rate the port runs at will always be double the rate requested by the applications. This mode is useful for legacy applications which cannot request baud rates over 115200.
X4	460,800	The X4 clock mode locks the ports hardware clock at four times the standard rate. The baud rate the port runs at will always be four times the rate requested by the application. This mode is useful for legacy applications which cannot request baud rates over 115200.
X8	921,600	The X8 clock mode locks the ports hardware clock at eight times the standard rate. The baud rate the port runs at will always be eight times the rate requested by the application. This mode is useful for legacy applications which cannot request baud rates over 115200.

6. Double click the hardware class **Ports (Com and LPT)**. Each **PCI Serial Port** listed in this class is a “child device” of the DSCLP-100 “parent device.”

7. Open the **Properties** dialog for a COM port, then click the **Port Properties** tab to view the settings for that port.

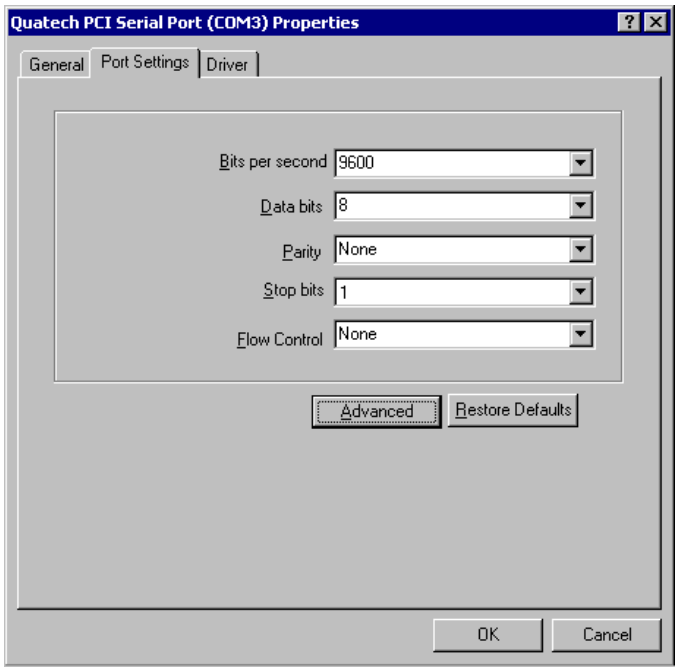


Figure 21: Port Settings

8. Click the "Port Settings" tab and then click the "Advanced" button. The DSCLP-100 driver will display a custom Advanced Port Settings control, which allows the ports UART compatibility mode and FIFO threshold levels to be configured. The threshold values of full-scale for the transmit buffer and ¾-scale for the receive buffer are optimal for most applications. Note: the FIFO option for each DSCLP-100 ports is configured independently.

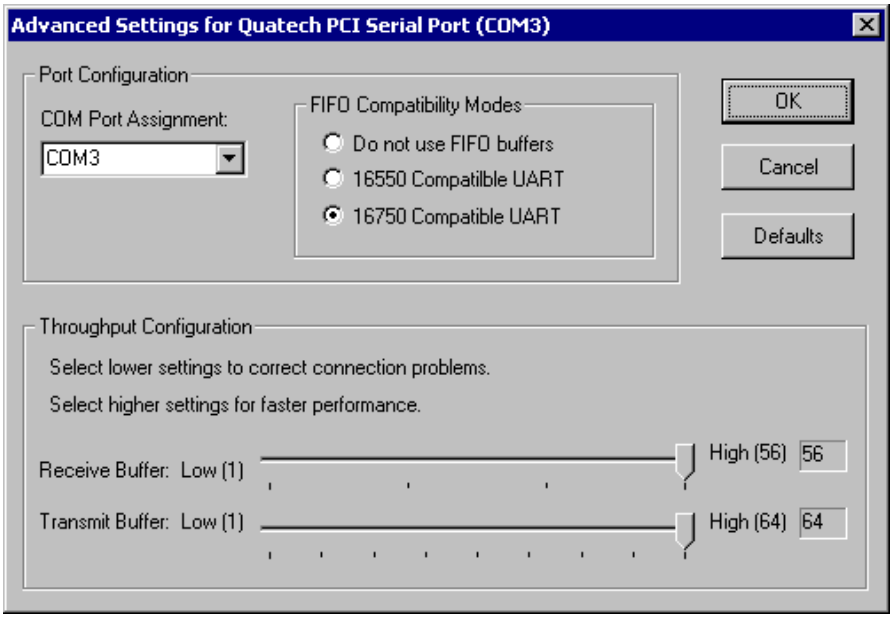


Figure 22: COM3 PCI Serial Port

6. OTHER OPERATING SYSTEMS

Device drivers for Windows NT and OS/2 are also available for the DSCLP-100. The board can be used under DOS and other operating systems as well in many circumstances. The software described below can be downloaded from the B+B SmartWorx web site if it did not come with the board.

6.1 WINDOWS NT

The Windows NT device driver is installed by running the SETUP program. Up to 256 serial ports are supported. There is a command line-based configuration utility which is used for adding PCI bus and ISA bus serial ports. Please refer to the documentation included with the device driver for full installation and configuration details.

6.2 OS/2

The OS/2 device driver supports up to 32 serial ports in a system. Installation is a manual, but simple, process. For full installation and configuration details, please refer to the documentation included with the device driver

6.3 DOS AND OTHER OPERATING SYSTEMS

The DSCLP-100 is not a direct drop-in replacement for a legacy serial port because its base address and IRQ cannot be fixed at values such as 3F8 hex, IRQ

4 (COM1) or 2F8 hex, IRQ 3 (COM2), etc. Rather, the system BIOS assigns the address and the IRQ in a plug-and-play fashion at boot time. Software which is to use the DSCLP-100 must be able to accommodate any valid assignments of these resources.

For Windows 95/98/2000/ME, Windows NT and OS/2, the device drivers determine what the resource assignments are and proceed accordingly. In other cases, however, the user must intervene. The discussion below will center on DOS, but the concepts can be applied to other operating systems as well.

Many DOS applications support user configuration of the base address and IRQ of a serial port. Such applications can generally make use of the DSCLP-100. Older applications, as well as some custom software, may use hard-coded standard legacy serial port addresses. These applications will require modifications if they are to use the DSCLP-100.

Custom applications for which the customer has source code can be modified to make just a few PCI BIOS function calls to obtain all the necessary configuration information. The PCI BIOS specification can be obtained from the PCI Special Interest Group. Contact B+B SmartWorx Technical Support for more information.

6.3.1 QTPCI.EXE

The "QTPCI" utility supplies the information required when modifying the serial port settings of the application. This program should be run from real DOS, not in a Windows DOS box.

Figure 23 shows the Basic Mode display for the DSCLP-100 after the "Q" key has been pressed. In this example, the DSCLP-100 uses I/O base address FF80 hex and IRQ 11. The hardware revision of the DSCLP-100 is also displayed. Pressing the "N" key will show similar information for all non-B+B PCI devices in the system, including those devices integrated on the motherboard.

NOTE: The QTPCI program is capable only of displaying the PCI configuration. It cannot be used to make changes.



Figure 23: QTPCI.EXE Basic Mode Display

Figure 25 shows the Expert Mode display for the DSCLP-100 after the "Q" key has been pressed. The information from the Basic Mode display is presented along with more details such as the Vendor and Device IDs, PCI Class Code, size of memory and I/O regions, etc. Pressing the "N" key will show similar information for all non-B+B PCI devices in the system, including those devices integrated on the motherboard. In this example, the "Base addr 0" resource is reserved.

For users interested in even more details, PCI BIOS information can be displayed by pressing the "B" key. Pressing the "I" key displays the PCI interrupt routing table.



Figure 24: QTPCI.EXE Expert Mode Display

7. EXTERNAL CONNECTIONS

RS-232-C devices are classified by their function as either Data Terminal Equipment (DTE) or Data Communication Equipment (DCE). Generally, data terminal equipment is defined as the communication source and data communication equipment is defined as the device that provides a communication channel between two DTE-type devices.

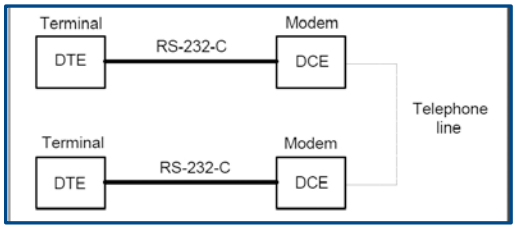


Figure 25: Use of DTEs and DCEs In A Communications Link

DTE- and DCE-type devices have complementary pinouts to allow terminals and modems to be connected directly using a one-to-one cable as shown in Figure 26. In many applications, DCEs are unnecessary, and in these cases a cable called a "null modem cable" or "modem eliminator cable" is used to directly connect two DTE-type devices. A typical null modem cable is also shown in Figure 26.

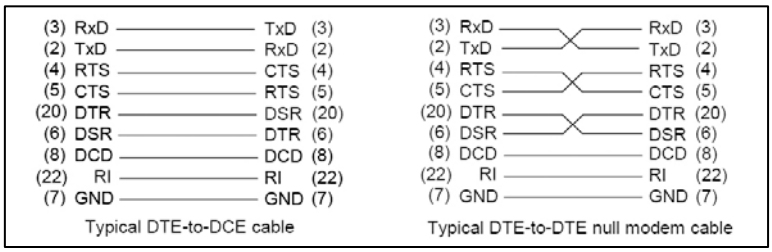


Figure 26: Cabling Requirements for RS-232-C Devices (cables using 24-pin connectors shown)

The DSCLP-100 is a DTE device which connects to peripheral equipment through a single male DB25 connector, or using the adapter cable, two male DB9 connectors. The standard serial port connections are listed in Figure 27.

RS-232 Signal	Port 1		Port 2	
	D-25	*D-9*	*D-25*	*D-9*
TxD	2	3	9	3
RxD	3	2	10	2
RTS	4	7	11	7
CTS	5	8	12	8
DTR	20	4	19	4
DSR	6	6	13	6
DCD	8	1	25	1
RI	22	9	23	9
GND	7	5	1	5

Figure 27: DSCLP-100 Connector Pinouts

8. PCI RESOURCE MAP

Listed below are the PCI resources used by the DSCLP-100. Such information may be of use to customers writing their own device drivers or other custom software. A detailed description of the DSCLP-100's UARTs is available on the B+B SmartWorx website.

(all numbers in hex) PCI

Vendor ID:	0x135C	Quatech, Inc.
PCI Device ID:	0x0180	DSCLP-100
PCI Class Code		
Base Class:	0x07	Simple communications controller
Subclass:	0x02	Multiport serial controller
Interface:	0x00	
IRQ Sourced By:	INTA#	
Base Address 0:	0x80 bytes Mem	Reserved region
Base Address 1:	0x80 bytes I/O	Reserved region
Base Address 2:	0x10 bytes I/O	Serial ports(DSCLP-100)
		Port 1 at offset 0x00
		Port 2 at offset 0x08(DSCLP-100)

9. SPECIFICATIONS

Bus Interface:	PCI, 32-bit bus, Universal Voltage Signaling, IBM-compatible computers
Dimensions:	Approx. 5.0" x 3.7"
Serial Ports	
Controller:	16550 with 16-byte FIFOs
Interface:	DSCLP-100: One male D-25 connector (two male D-9 connectors single adapter cable)
Transceivers:	ICL3245CA High-level output: +5V min Low-level output: -5V max, switching speed
Power Requirements:	+5.0 Volts: approx. 250 mA
Temperature:	Operating 0° to 70° Storage -50° to 80°
Humidity:	10% to 90%

Data Rate (k baud)	Maximum Load (pF)				
	4% trans time	10% trans time	15% trans time	20% trans time	25% trans time
921.6	N/A	100	300	430	470
460.8	100	430	670	900	1100
230.4	330	900	1100	1630	2000
115.2	800	1570	3300	4300	4800

Note 1: The signal transition time ratio is defined as the percentage of the unit interval or bit time (the inverse of the data rate) that is occupied by the signal transitioning from -3V to +3V. The EIA/TIA-232-E standard defines a maximum signal transition time ratio of 4%; most RS-232 receivers will recognize signal transitions with much larger ratios. With a 4% signal transition time ratio, EIA/TIA-232-E is limited to a theoretical data rate of 200 kbaud. If maximum signal transition time ratio is extended to 10%, 15%, 20%, or even 25%, the maximum data rate achievable using EIA/TIA-232-E can be increased past 200 kbaud.

Note 2: A typical value for capacitance per foot of standard cable is 50 pF/ft.

10. TROUBLESHOOTING

Listed here are some common problems and frequent causes of those problems. If the information here does not provide a solution, contact B+B SmartWorx Technical Support.

Warning: Any unauthorized repairs or modifications will void the DSCLP-100's warranty.

Computer will not boot up.

1. Is the DSCLP-100 properly inserted? Remove the card and try again. Perhaps try a different expansion slot.

2. Ensure that an ISA-bus card is not using the same IRQ that the PCI BIOS tries to assign to the DSCLP-100. Most computers have BIOS setup options to reserve IRQs for either ISA or PCI use. Try reserving the IRQ for the ISA card. The BIOS will automatically choose a different IRQ for the DSCLP-100. An address conflict is unlikely because most PCI-based computers will assign I/O addresses in such a way that they cannot conflict with ISA-bus devices.

3. The DSCLP-100 may be defective. Contact technical support for instructions.

Cannot communicate with other equipment.

1. Are the cable connections correct? Are the cables securely attached?

2. Is the software configured with the correct base address and IRQ information for the DSCLP-100? (This is mainly a DOS issue.)

3. Is the device driver installed?

4. If you are trying to communicate with another DTE, a null-modem cable will be required.

5. If possible, use a loopback connector to test the port. This connector needs to connect the following sets of signals on a DB-9 connector:

   _TxD and RxD (pins 2 and 3) RTS and CTS (pins 7 and 8)
   _DCD, DTR, DSR, and RI (pins 1, 4, 6 and 9)

11. TECHNICAL SUPPORT

Phone: **1 (800) 346-3119**
(Monday - Friday, 7 a.m. to 5:30 p.m. CST)
Fax: **(815) 433-5109**
Email: support@advantech-bb.com
Web: www.advantech-bb.com

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