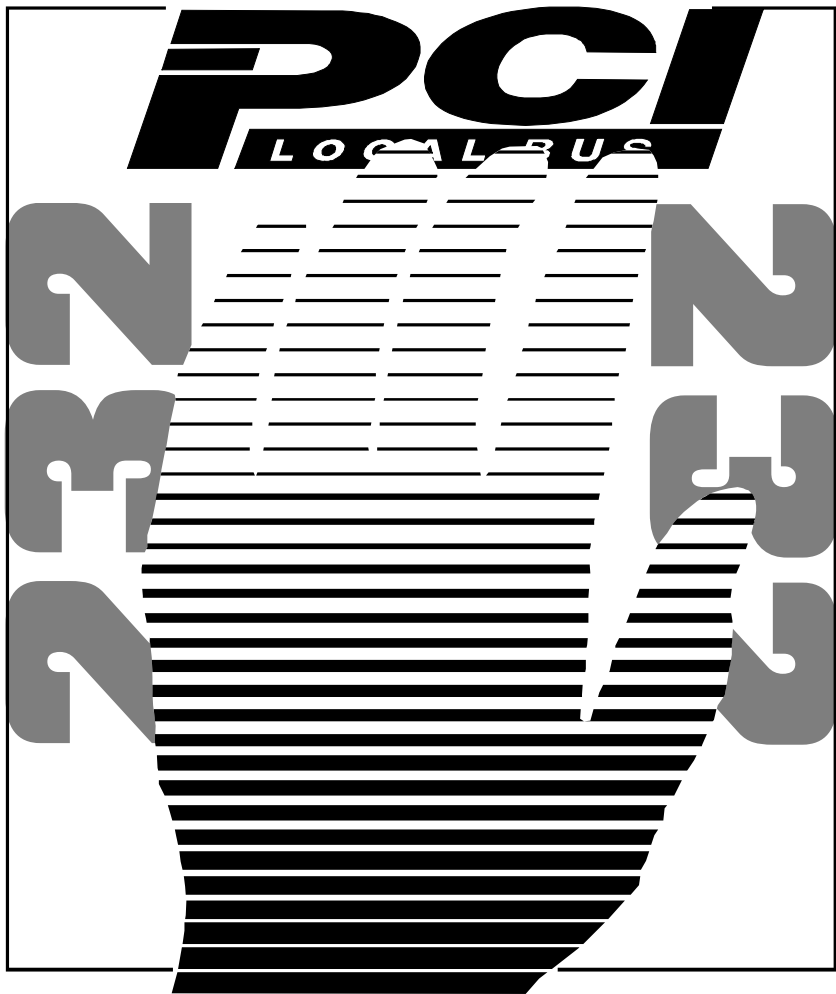


# Hardware Manual



**PCI** Dual LPT & RS232  
1.2 Edition February 1999

## **Guarantee.**

### **FULL 36 MONTHS GUARANTEE.**

We guarantee your Serial Port Card for a full 36 months from purchase, parts and labour, provided it has been used in the specified manner. In the unlikely event of failure return your interface to your Dealer, with proof of purchase, who will determine whether to repair or replace this product with an equivalent unit.

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Serial Solutions is supplied to you by



## **ACKNOWLEDGEMENTS.**

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**PCI DUAL LPT & RS232 MANUAL****OUTLINE CONTENTS**

**Chapter 1 - Optional Serial Solution Software.**

**Chapter 2 - PCI DUAL LPT & RS232 Specifications.**

**Chapter 3 - PCI DUAL LPT & RS232 Software  
Configuration Guide.**

**The Layout Of This Manual**

**Chapter 1 - Serial Solution Software**, is an overview of the optional, ideal companion software package for our range of serial port cards. Buy it from your dealer now!

**Chapter 2 - PCI DUAL LPT & RS232 Specifications**, gives details of the PCI DUAL LPT & RS232 specifications, details of how to install the optional parallel port and shows you how to install your PCI Dual LPT & RS232 Card.

**Chapter 3 - PCI DUAL LPT & RS232 Software Configuration Guide**, shows you how to configure your operating system to successfully allow trouble free operation of your PCI Dual LPT & RS232 Card. Installation procedures are for Windows 95/98.

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## CHAPTER 1

# SERIAL SOLUTIONS SOFTWARE.

### Introducing Serial Solution Software.

The perfect partner for any Serial Port is Serial Solutions Software! Serial Solutions is a fully featured suite of programs designed to squeeze the most from PC serial communications.

Serial Solutions is made up of the following components: -

Serial Solutions for DOS  
Serial Solutions for Windows 3.x  
Serial Solutions for Windows 95  
Serial Solutions for Windows NT

All the Serial Solutions drivers have the following features:

-

- Drivers for PC FIFO UARTs e.g. 16550 as well as the new improved 32 byte 16650, 64 byte 16750 and 128 byte 16950 UARTs
- Support for any mix of RS232, RS422 and RS485 handshake schemes.
- Support for wider range of Baud rates and for more than 4 serial ports.

**Serial Solutions For DOS.**

Serial Solutions for DOS consists of the following programs: -

- NewCOM.sys      A device driver, it supports COM1 to COM16, allowing 16 serial ports to be used under DOS. It also includes an interrupt handler for enhanced performance with user definable buffer sizes. Accessible from all DOS languages, it is the heart of the Serial Solution. It has extensive handshaking support, implementing both hardware handshaking using any combination of the DTR, DSR, CTS, RTS, and DCD lines, and a software handshake using the XON/XOFF protocol.
- NewCOM24.sys    A device driver providing support for 24 ports.
- NewCOM32.sys    A device driver providing support for 32 ports.
- NewMode.exe      A replacement for the DOS 'mode com...' command. NewMode is used to set the serial parameters, including the port address, IRQ line used, the baud rate, parity and data and stop bit options.  
e.g. NEWMODE COM5:38400,E,7,1 01A0 7  
Baud rates supported are from 110 baud to 115,200 baud! Included is a very handy query mode that reports the settings of the various serial ports. Flexible and fast!
- EASY programs.    The EASY disk contains short, simple to understand and use EASYBAS, EASYC and ASYPAS programs, providing straight forward, file type I/O to serial ports with debug information. Use these FIRST, base your sample applications on them.

Source code, make files and compiled ready to run programs supplied.

TERM programs A suite of larger terminal emulation programs written in C (Cterm), Assembly language (Aterm), Pascal (Pasterm), BASIC (BASterm) and FORTRAN (FORterm) show how to access the NEWBIOS routines as well as the simple file I/O to ports. They contain many lines of code and are thus harder to grasp. They demonstrate in depth serial port programming in a variety of languages but they are also useful tools for using serial devices.

Comtest.exe

Comtest is a short but invaluable program that is used to check that the serial port at a particular I/O address is functioning correctly and is connected to the particular IRQ line. The program correctly identifies the UART type e.g. non-FIFO, 16550 FIFO, 16550AF FIFO and the improved 16650 32 byte FIFO and 16750 64 byte FIFO's. By employing the built in loop back capability of the PC serial port chip, a full test of the baud rate generator, transmitting and receiving buffer, parity enable and start stop bit is performed. There is no need for a second serial port or a cable when using this utility.

## **Serial Solutions For Windows 3.x**

Serial Solutions for Windows 3.x works with Windows 3.0, 3.1 and 3.11 as well as Windows For Workgroups 3.11.

Serial Solutions for Windows 3.x consists of the following programs: -

Setup.exe	The install routine for the package.
Port.DLL	Enhanced Control Panel applet. Allows configuration of extra serial ports from the Windows Control Panel. Supports single as well as multiport cards using shared interrupts.
BbLynx.driv	Replacement for COMM.DRV.
LynxAPI.dll	Enhancement to the Windows Comms API's allowing support for more than 9 ports.
Term.exe	Terminal program.
EasyCWIN	C source code, project files and ready to run.exe program for an easy to understand Windows terminal program. Learn how to write Windows comms apps correctly the easy way.

## **Serial Solutions For Windows 95.**

Windows 95 has an improved communication API and directly supports up to 255 ports. Our Windows 95 driver supports the shared interrupt mechanism used on our multiport cards. Serial Solutions for Windows 95 consists of the following programs: -

ISA.INF	The information files to aid the installation process "Have Disk...
PCI.inf	
SSDRVS.INF	
SSCARDUI.DLL	...The DLL's and...
SSPORTUI.DLL	
SSSENUM.VXD	...the virtual device driver providing the shared interrupt handler.
SSM485.VXD	
SSMULT.VXD	
SSV485.VXD	
SSVEL.VXD	



**Complete Documentation and Technical Backup.**

We believe in supplying complete documentation with every package we sell. The Serial Solution Software Package is no exception, it has an attractive CD ROM containing all required documentation. A complete technical backup service is available to ensure that you get the maximum performance out of your investment.

## CHAPTER 2

# PCI DUAL LPT & RS232 SPECIFICATIONS

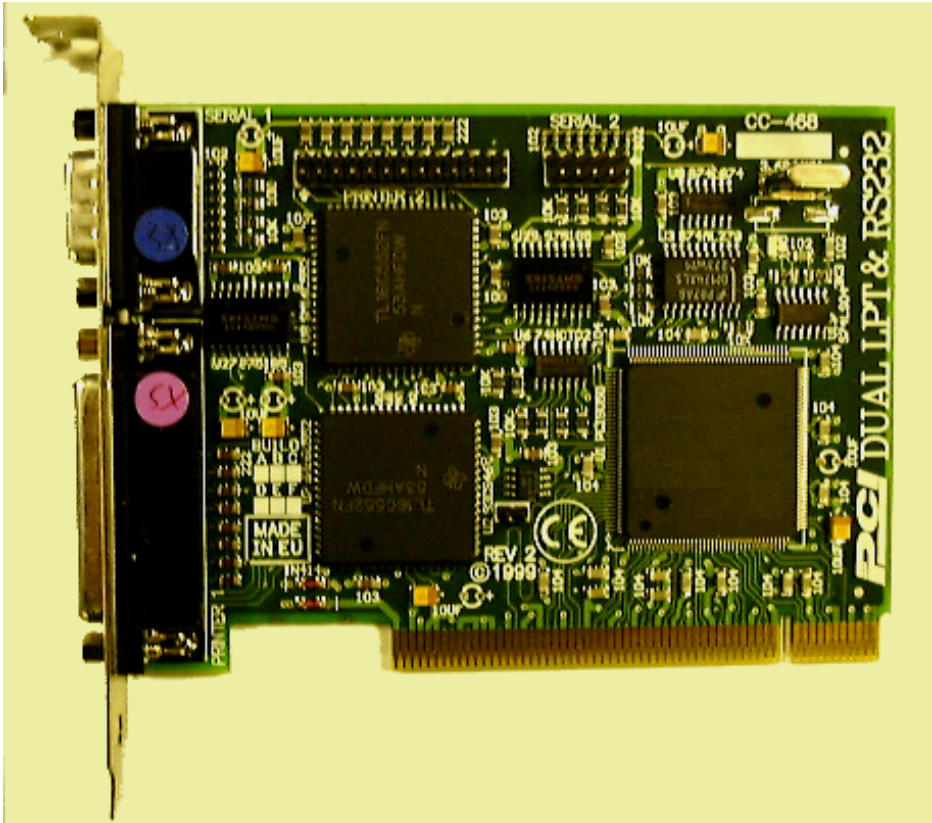
### Introduction.

This chapter details the specifications of the PCI Dual LPT & RS232 Card and explains how to add the optional serial/parallel port to the card.

This half-sized card will work happily in any PCI 2.0 or greater compliant PC compatible.

### PCI Dual LPT & RS232 Card Features.

- One or two Centronics Parallel printer ports, PC compatible
- One or two independent 9 pin D RS232 Serial ports.
- Reliable communications up to 50 feet, 15m, and beyond!
- 16550 FIFO provides 16-byte input and 16-byte output buffer on each port.
- Maximum baud rate of 115,200 Baud.
- Word length of 5, 6, 7 or 8 bits.
- Even, Odd, None, Mark or Space parity options.
- 1 start bit always sent.
- 1, (1.5 for 5 bit data word length) or 2 stop bits.
- Clock input of 1.8432 MHz
- 100% PC Compatible serial port TI 16C550, up to 115,200 baud.
- Full modem control TXD, RXD, DSR, DCD, DTR, RTS, CTS and RI signals.
- Fully double buffered for reliable asynchronous operation.
- High-speed integrated circuitry ensures operation with fast PC's e.g. 500MHz Pentium II WITHOUT extra wait states.

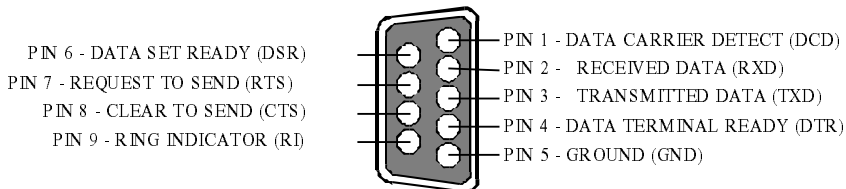
**Figure 2-1. PCI DUAL LPT & RS232 Card Layout.****PCI DUAL LPT & RS232 Specifications:**

Dimensions:	4.8 x 3.5 in, 120 x 90 mm
I/O Connection:	Serial Port 1: 9 pin Male D type. Optional Serial Port 2: 9 pin Male D type. (via flylead with PC bracket.)
LPT port:	Parallel Port 1: 25 pin Female D type Optional Parallel Port 2 : 25 pin Female D type (via flylead with PC bracket.)

## Configuring The PCI DUAL LPT & RS232 Card.

PCI cards, by definition, require no hardware configuration and can be installed "directly from the box".

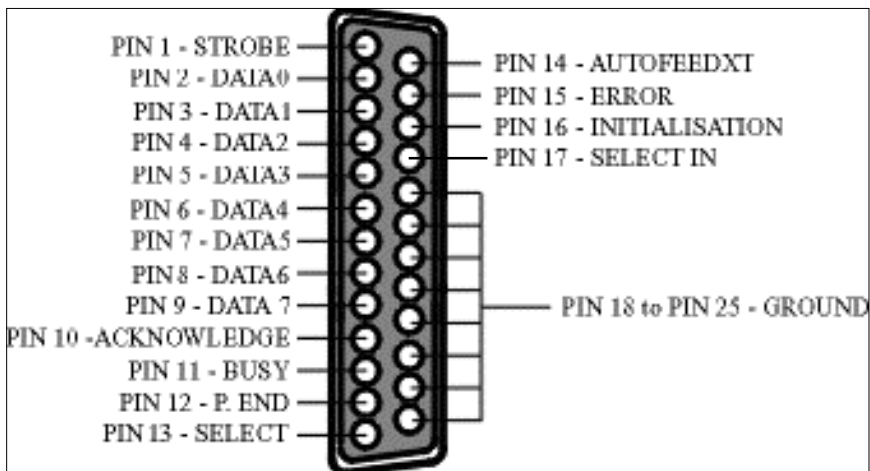
### Figure 2-2. 9 Pin D Connector Port Pinouts.



### Parallel Printer Port Configuration.

On the PCI Dual LPT & RS232 Card, the parallel printer port is the lower 25-pin connector on the card.

### Figure 2-3 Printer Port Pin Outs.



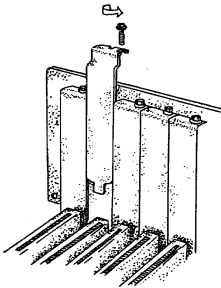
## **Hardware Installation.**

**NOTE:** Always turn the computer OFF before installing or removing any interface board..!!!

STEP 1: Before the PC card can be installed the power to the PC must be switched off and for additional safety it is recommended that the mains supply plug is removed from the PC itself.

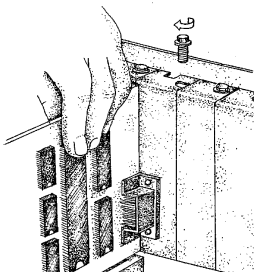
STEP 2: Remove the case.

### **Figure 2-4. Removing Blanking Cover**



STEP 3: Choose an empty appropriate expansion slot. Remove the blanking cover protecting the slot on the PC back panel. KEEP the blanking cover screw safely for later (Figure 2-4).

### **Figure 2-5. Inserting The PC Serial Card.**



STEP 4: Now insert the PC Serial card in the available slot. Be careful to ensure that the gold plated PCB fingers fits neatly into the I/O expansion connector. Press down firmly but evenly on the top of the PC Serial card (Figure 2-5).

STEP 5: The D connectors should fit neatly through the slot's aperture to the outside world. NB. Use the screw kept back from the blanking cover to screw the PC Serial retaining bracket into the PC back panel housing.

STEP 6: Now replace the system units cover by carefully sliding it down and back over the system unit. Replace the cover mounting screws.

STEP 7: After attaching all the monitor and keyboard cables, power up the PC. Do not forget the mains power cable! The PC should power on in the normal way.

### **Problems!**

If the system fails to power up normally check the following.:

- i.) Ensure that the PC Serial card is installed correctly.
- ii.) Ensure that other cards in the PC have not been upset.
- iii.) Ensure that the power is connected and the PC is switched ON!

■ If all these have been checked and the PC still does not power up then there is probably a conflict of I/O address between the PC Serial card and another board in the PC. Ask your dealer to check this

### **Installing 2nd parallel and Serial Ports**

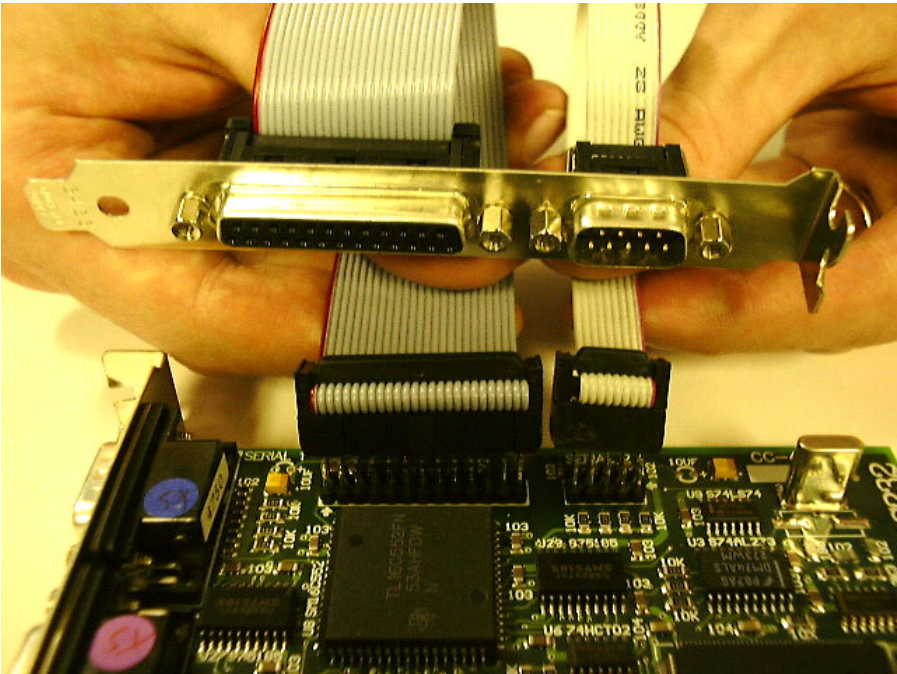
Supplied with the PCI DUAL LPT & RS232 card is a separate bracket containing a 9 pin serial port connector and a 25 pin parallel port connector. Both connectors have a ribbon cable attached terminating in an IDC style plug.

Each of these cables have 1 of the wires coloured red. Where this red wire terminates at the plug there is an inverted triangle, this denotes PIN1.

The PCI Dual LPT & RS232 card has 2 "headers" on the board labelled PRINTER2 and SERIAL2 located along the top edge. Each of these "headers" has a white arrow which points to PIN1.

Holding the cable assembly at right angles to the board (As shown in fig 2-6), ensuring that PIN1 on each plug mates with PIN1 on the "header", press each plug down evenly and firmly until resistance is felt - The extra ports have now been plugged in.

### **Figure 2-6 Installation of Serial Port 2.**



## Chapter 3

# PCI DUAL LPT AND RS232 SOFTWARE CONFIGURATION GUIDE

### Introduction.

This section contains the installation procedures of the PCI Dual LPT & RS232 card, with the Windows 95/98 operating system.

The setup procedures in this chapter assume that your PC has only one serial port present.

### Installing Ports In Microsoft Windows 95 & 98.

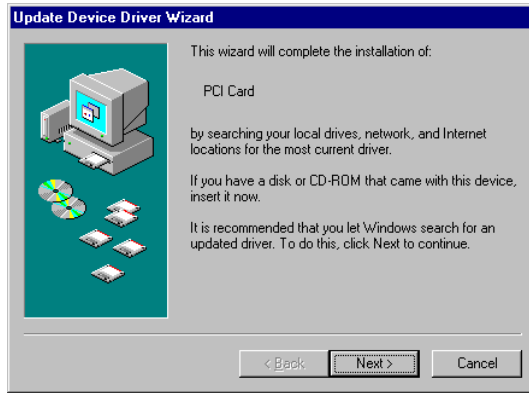
Although covering the installation of the PCI Dual LPT & RS232 into the Windows 95 operating system, the procedure is also valid, with only minor differences, in the Windows 98 Operating System. The Windows 95 environment now supports up to 255 standard serial ports, RS232, RS422, RS485 etc.

To obtain a trouble free mix-and-match of the COM ports:

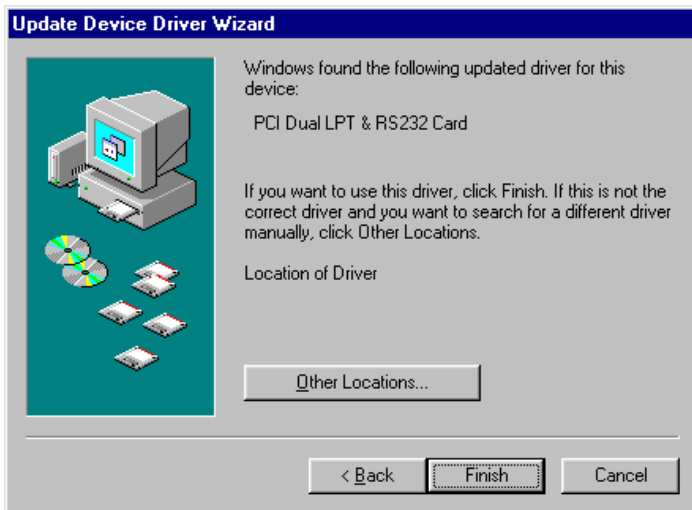
- Switch off your computer, insert your PCI Dual LPT & RS232 card into a free PCI slot, as described in the section "**Hardware Installation**" in Chapter 2, and switch your computer on again.
- During the booting process, Windows 95 will detect PCI Dual LPT & RS232, but will display it simply as a "PCI CARD", and you will briefly see a message box to this effect.
- Windows will then display the "Update Device Driver Wizard", which asks you to "insert any disk which came with the PCI



card". Insert the Windows 95 installation disk into an appropriate drive and click 'Next'.



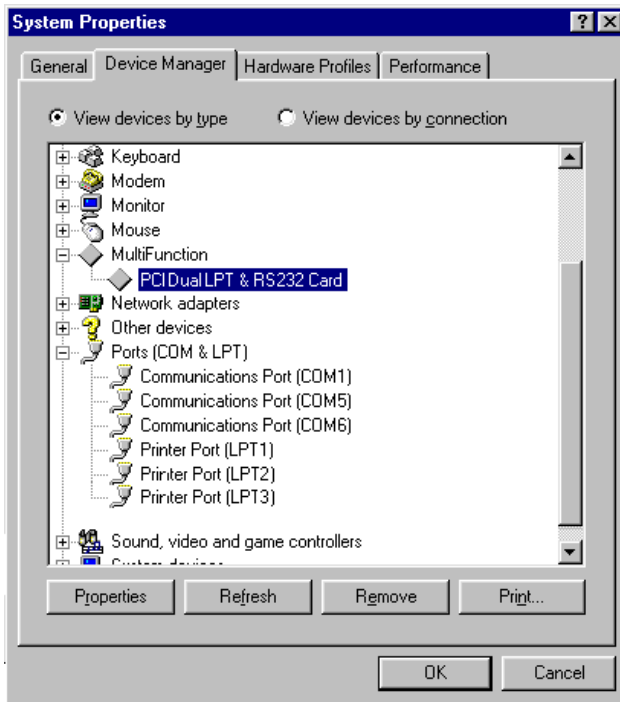
- The Wizard should then display something similar to following:



- Click **Finish**.
- A "Copying Files..." window should now appear. Click 'OK' when it asks you to insert the disk.

- After copying the file, Windows 95 will then detect each of the serial ports in turn and install them as communications ports; in the case of the PCI Dual LPT & RS232 it will also 2 parallel ports, and then installs them as printer ports.

When the "**Device Manager**" is viewed:

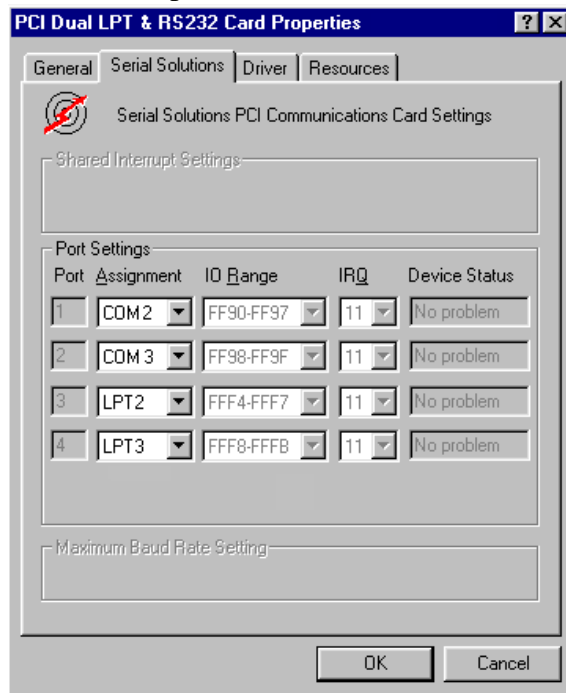


- PCI Dual LPT & RS232 will appear under the "**Multi-function adapters**" branch, 2 Communications Ports and 2 Printer Ports will appear under the "**Ports (COM & LPT) branch.**"

For most users who have 4 or less COM ports the new ports will appear as COM5 and COM6, as pictured below; for users with more than 5 COM ports the new ports will appear as the first available COM ports.

**Card Settings In Windows 95 & 98.**

- Select the PCI Dual LPT & RS232 card from the "**Multi-Function Adapter**" entry in **Device Manager** and click on properties to view the cards general properties; clicking on the Serial Solutions tab produces:

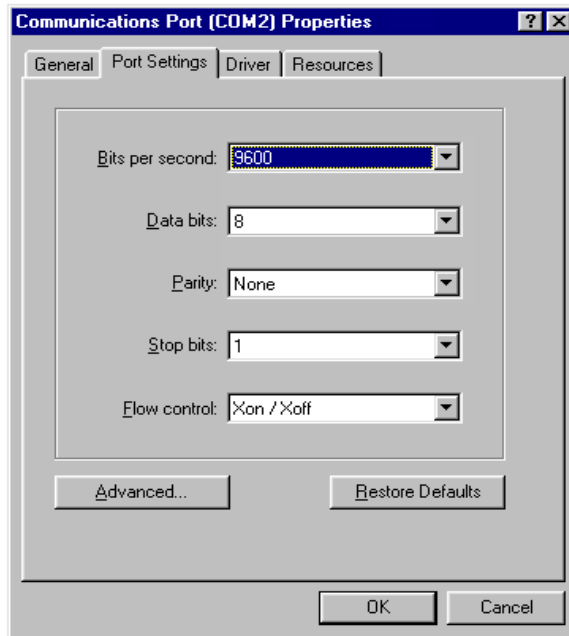


In this window, the COM (and LPT) port assignment may be changed, simply by selecting a new COM port value from the pull down menu relevant to the port. However, COM port usage other than those for the PCI Dual LPT & RS232 card itself are not checked, so it is advisable to first check which COM ports are in use - port availability can be checked by viewing the **Device Manager**. This process also applies to LPT assignment, and LPT port usage can also be viewed from the **Device Manager**.

. **NOTE: At time of print there exists no facility within the driver software to disable any of the card's ports.**

**Port Settings In Windows 95 & 98.**

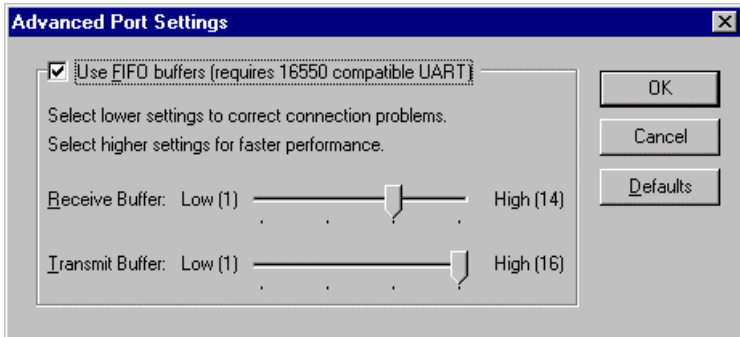
Double clicking on a Communications Port that belongs to a PCI Dual LPT & RS232 card will display general properties window for that port (in this case COM2). Selecting the Port Settings tab produces:



Settings available in these windows are:

1. **Baud Rate** - determines the baud rate at which the selected port operates.
    - the maximum value of operation is 115,200, even though the maximum value selectable is 921,600 - this is due to standard Windows COM port drivers being used.
  2. **Data Bits.**
  3. **Parity.**
  4. **Stop Bits.**
  5. **Flow Control.**
- } Change to suit remote device.

6. **Advanced** - clicking on this will display the following window:



Settings available in this window are:

- **Use FIFO Buffers** - turns the selected ports FIFO buffer on or off. It is strongly recommended that the FIFO for both ports is left enabled.
- **Receive Buffer** - These settings allow the selection of a receiver FIFO trigger setting. Selecting a low value will allow the interrupt to be serviced quicker, which is good for slow machines. If you have a fast machine, setting a high value will give you more time for multi-tasking operations.
- **Transmit Buffer** - These settings allow the selection of a transmitter FIFO trigger setting. Selecting a low value will send fewer data-bytes per interrupt, and this is recommended if you are communicating to a slower machine. Selecting a high value will send more data-bytes per interrupt, and will give more time for multi-tasking operations.
- **Defaults:** when clicked this button restores the advanced settings for the selected port to:

**Use FIFO Buffers:** On (Checked)

**Receive Buffer:** High (14)

**Transmit Buffer:** High (14)

7. **Restore Defaults** - when clicked, resets the selected COM port to the following values:

Baud Rate: 9600

Data Bits: 8

Parity: None

Stop Bits: 1

Flow Control: Xon / Xoff

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