4 PORT RS-422 CARD
OPERATION MANUAL

PC COM USER MANUAL
4 PORT RS422 ADAPTER

CONTENTS:

Rev. Date: 1995 FEB. 18

CHAPTER 1 INTRODUCTION

The PCCOM 4 port RS422 adapter provides four asynchronous serial communication ports, which link the computer and serial peripheral devices such as terminals, modems, serial printers, plotters, etc. A programmable baud rate generator allows operation from 50 baud to 56K baud and up to 3000 ft transmission distance.

The PCCOM 4 port RS422 adapter may be configured with up to four individually addressable RS422 ports for any IBM PC/XT, PC/AT, PC/386, PC/486, Pentium or hardware compatible system under MS/DOS, or any other multi-user operating systems, such as: PC-MOS/386, Concurrent DOS, PICK, XENIX, UNIX, OS/2, MS/WINDOWS, ... etc.

The PCCOM 4 port RS422 adapter can be configured to either compatible mode or enhanced mode. When configured to compatible mode, it takes the place of the standard serial ports (COM1:,COM2:). When configured to enhanced mode, the four ports coexist with standard serial ports.

The features of the PCCOM 4 port RS422 adapter are:

* Four EIA RS422 ports for asynchronous communications.
* Suitable for XENIX/UNIX, PICK, MS/DOS, PC-MOS/386, CONCURRENT DOS, MS/WINDOWS, OS/2, ... etc.
* IBM PC/XT, PC/AT, PC/386, PC/486, Pentium hardware compatibles.
* Maximum of 3000 ft transmission distance.
* Up to 56K baud transmission speed.
* AST FourPort/XN compatible.
* Interrupt selectable. (IRQ2 - IRQ7)
* I/O address selectable.
* COM1 and COM2 compatible.
* 16450 or 16550 or 16650 chips on board.

CHAPTER 2 UNPACKING INFORMATION

Check that your PCCOM 4 port package includes the following items:

* PCCOM 4 port RS422 adapter.
* Expansion cable with standard 25-pin connectors.
* User manual.
* PCCOM software.
* Warranty form.

CHAPTER 3 SYSTEM REQUIREMENTS

Before installing your PCCOM 4 port adapter, make sure that:

* The PCCOM 4 port adapter can be installed in all compatible computers including: IBM PC/XT, PC/AT, PC/386, PC/486, and Pentium machines.

* The one switch bank and three jumpers must be correctly configured to coincide with the operating system you are using.

* The operating system you intend using capable of driving multiple serial ports.

CHAPTER 4 HARDWARE INSTALLATION

Your PCCOM 4 port adapter is designed to be inserted in any available slot in your PC/XT, PC/AT, PC/386, PC/486, Pentium or compatibles. In order to gain access to the expansion slots, follow the steps listed below:

1. Turn off all power to your computer and all peripheral devices before installing your PCCOM 4 port adapter.

2. Remove the cover of the computer.

3. Insert the preconfigured PCCOM 4 port adapter into any available slot. Make sure the adapter is firmly seated in the chosen slot.

4. Replace the cover of the computer.

5. Connect cables to the DB25 connectors as required.

CHAPTER 5 SWITCH SETTINGS

5.1 Compatible Mode

The first two serial ports are referred to as COM1: and COM2: which are standard ports for IBM PCs. If the PCCOM 4 port adapter is configured to emulate two standard ports by setting two of the four ports to be compatible with COM1: and COM2:. This is called compatible mode.

5.2 Enhanced Mode

The PCCOM 4 port adapter may be configured to coexist with the two standard ports, adding four ports for a total of six. This is called enhanced mode. Under the enhanced mode, a maximum of two adapters can be added to the system, which provides eight additional ports for a total of ten.

5.3 Add two PC COM 4 Prot Adapters

A. Compatible with COM1: and COM2:

	Port
First adapter	COM1: COM2: 3 4
Second adapter	5 6 7 8

B. Coexist with COM1: and COM2:

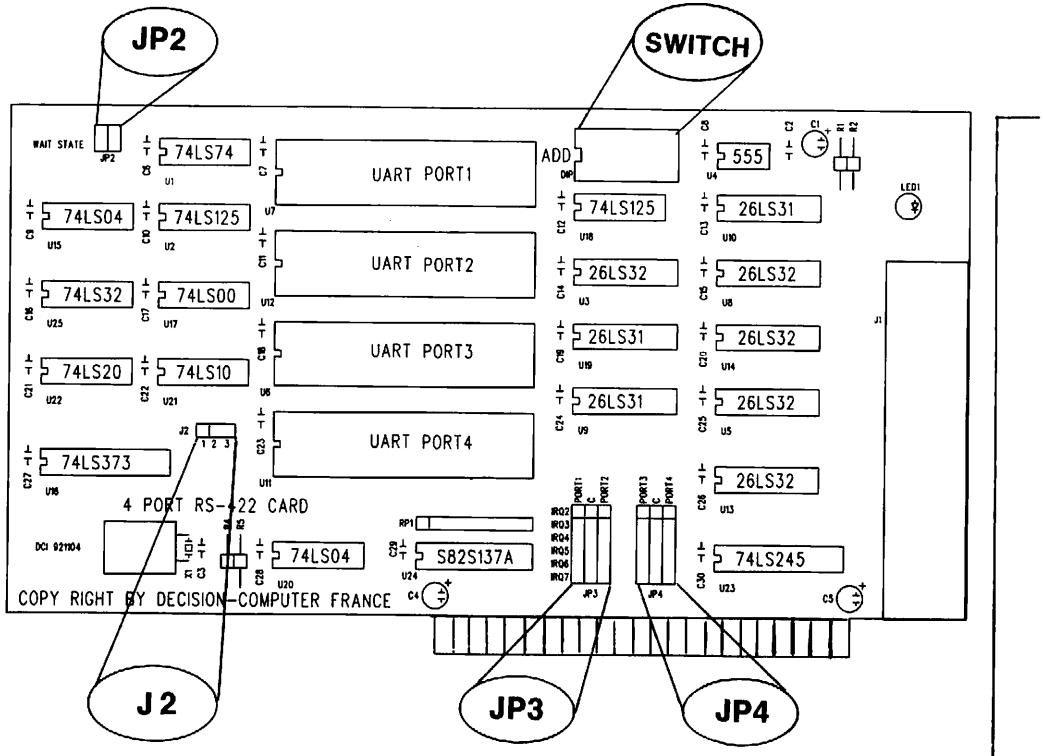
	Port
Standard port	COM1: COM2:
First adapter	1 2 3 4
Second adapter	5 6 7 8

5.4 Configuration for DIP Switch and Jumper

It is important to refer to the user manual supplied with your operating system to determine the correct configuration. Although we provide installation advice for various operating systems, it is not possible to cover all systems in this user guide. Please contact your supplier if you have any difficulties with configuration.

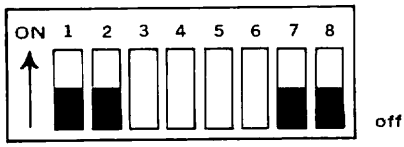
IMPORTANT: CARE MUST BE TAKEN IN SELECTING THE CONFIGURATION OF SWITCH AND JUMPERS TO ENSURE YOU DO NOT DUPLICATE SETTINGS OF OTHER EQUIPMENT ALREADY INSTALLED IN YOUR COMPUTER. DUPLICATION OF SETTINGS WILL RESULT IN A MALFUNCTION OF ONE OR BOTH DEVICES.

Please refer to the following settings for each switch and jumper. If you are installing more than one board do not duplicate switch settings for any parameter.


JP2
SWITCH
WAIT STATE
74LS74
UART PORT1
ADD
555
74LS04
74LS125
UART PORT2
74LS125
26LS31
74LS32
74LS00
UART PORT3
26LS32
26LS32
74LS20
74LS10
UART PORT4
26LS31
26LS32
74LS373
26LS32
4 PORT RS-422 CARD
74LS04
S82S137A
74LS245
COPY RIGHT BY DECISION-COMPUTER FRANCE
J2
JP3
JP4

1. SWITCH

SWITCH 1,2: Select Compatible Mode or Enhanced Mode.



SW1	SW2	MODE
ON	ON	Compatible Mode (high address)
ON	OFF	Compatible Mode (low address)
OFF	ON	*Enhanced Mode (high address)
OFF	OFF	Enhanced Mode (low address)

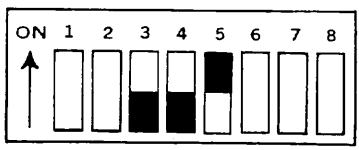
Default setting is in Enhanced mode (high address).

In compatible mode, COM1: and COM2: automatically generate interrupts on IRQ4 and IRQ3 respectively.

The mapping of I/O addresses to each channel are shown in below:

SW1	SW2	Channel 1	Channel 2	Channel 3	Channel 4	Vector
ON	ON	3F8-3FF	2F8-2FF	2B0-2B7	2B8-2BF	2BF
ON	OFF	3F8-3FF	2F8-2FF	1B0-1B7	1B8-1BF	1BF
OFF	ON	2A0-2A7	2A8-2AF	2B0-2B7	2B8-2BF	2BF
OFF	OFF	1A0-1A7	1A8-1AF	1B0-1B7	1B8-1BF	1BF

SWITCH 3,4,5: Selects interrupt mode



SW3	SW4	SW5	MODE
OFF	OFF	ON	Global interrupt
ON	ON	OFF	Separate interrupt

Global interrupt means all 4 ports use common IRQ and separate interrupt means each port uses individual interrupt. Default setting is in global interrupt mode and almost applications are used in global interrupt mode.

2. Delay wait state

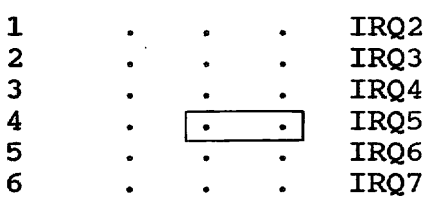
JP2: Select Wait State

	Speed
Short 1,3	Lower Than 16MHZ
Short 2,4	Above 16MHZ

3. Interrupt

JP4 is used to select global interrupt. Short right side of JP4 means to select interrupt line of all channels.

JP4



In standard PC system, COM1 and COM2 generate interrupts on IRQ4 and IRQ3 respectively. The default setting is IRQ5 (enhance mode / high address). We recommend you to set IRQ5 for first adapter and IRQ7 for second adapter. However, you may set any interrupt line according to your requirements.

Suppose you set SW3, SW4, SW5 to separate interrupt mode, then JP3 and JP4 are used to set interrupt for each port. Short right side of JP3 means select interrupt for port 2, short left side of JP3 means select interrupt for port 1. Short right side of JP4 means select interrupt for port 4, and short left side of JP4 means select interrupt for port 3.

JP3

port 1 L		port 2 R
1	. . .	IRQ2
2	. . .	IRQ3
3	. . .	IRQ4
4	. . .	IRQ5
5	. . .	IRQ6
6	. . .	IRQ7

JP4

port 3 L		port 4 R
1	. . .	IRQ2
2	. . .	IRQ3
3	. . .	IRQ4
4	. . .	IRQ5
5	. . .	IRQ6
6	. . .	IRQ7

If you set separate interrupt mode, then for each channel, you may select each interrupt separately. Please note that if compatible mode is selected, the COM1 and COM2 generate interrupt on IRQ4 and IRQ3 respectively.

4. J2 jumper

Always short pin 1 and pin 2.

CHAPTER 6 CABLING INFORMATION

6.1 DB25 Connectors

The signal assignments for a standard DB25 connector are shown below:

RS 422 signal definition:

RS-422 D25 connector (male type)

pin	DESCRIPTION	pin
1	GROUND	°
2	Transmit Data (+)	→
3	Receive Data (+)	←
4	Request to Send (+)	→
5	Clear to Send (+)	←
6	Data Set Ready (+)	←
7	Ground	°
8	DCD (+)	←
9	Data Terminal Ready (–)	→
10	Ring Indicator (–)	←
11		
12		
13		
14	Transmit Data (–)	→
15	Receive Data (–)	←
16	Request to Send (–)	→
17	Clear to Send (–)	←
18	Data Set Ready (–)	←
19	DCD (–)	←
20	Data Terminal Ready (+)	→
21		
22	Ring Indicator (+)	←
23		
24		
25		

EXTERNAL DEVICE

* A symbol '+' represents a transmit current.

* A symbol '-' represents a receive current.

* Data Carrier Detect(DCD) is also known as Received Line Signal Detector(RLSD).

6.2 Cable Connections

To connect the PCCOM 4 port RS422 adapter to other DATA TERMINAL EQUIPMENT (DTE) devices, we recommend DTE to DTE connection which is shown below:

A. With handshake

PC RS-422 to PC RS-422 with hand shake signal:

side A PC RS-422		Side B PC RS-422	
pin			pin
2	Transmit date (+)	Receive Data (+)	3
14	Transmit data (−)	Receive Data (−)	15
3	Receive data (+)	Transmit data (+)	2
15	Receive data (−)	Transmit data (−)	14
1	Ground	Ground	1
7	Ground	Ground	7
4	Request to Send (+)	Clear to Send (+)	5
16	Request to Send (−)	Clear to Send (−)	17
5	Clear to Send (+)	Request to Send (+)	4
17	Clear to Send (−)	Request to Send (−)	16
6	Data Set Ready (+)	Data Terminal Ready (+)	20
18	Data Set Ready (−)	Data Terminal Ready (−)	9
20	Data Terminal Ready (+)	Data Set Ready (+)	6
9	Data Terminal Ready (−)	Data Set Ready (−)	18

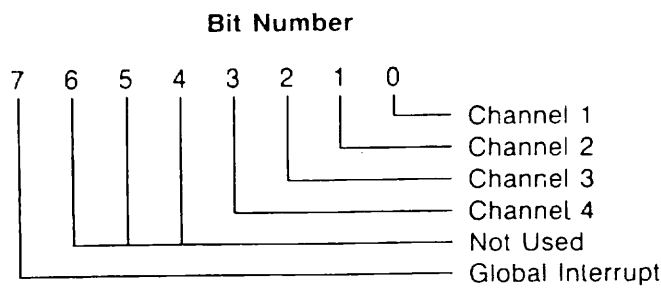
B. Without handshake

PC RS-422 without hand shake signal:

side A PC RS-422				side B PC RS-422
1	Ground		Ground	1
7	Ground		Ground	7
2	Transmit Data (+)		Receive Data (+)	3
14	Transmit Data (–)		Receive Data (–)	15
3	Receive Data (+)		Transmit Data (+)	2
15	Receive Data (–)		Transmit Data (–)	14
4		x x		4
16		x x		16
5		x x		5
17		x x		17
6		x x		6
18		x x		
8		x x		8
19		x x		
20		x x		20
9		x x		

CHAPTER 7 INTERRUPT VECTOR

The interrupt vector is used to detect which of the four channels is creating the interrupt. A global interrupt (bit 7 of interrupt vector) is used to enable or disable all four channels by writing a logic 1 to enable, or 0 to disable the interrupt. After enable global interrupt (by software or hardware), each channel must be enabled or disabled separately by programming the OUT1 (0 for enable) signal in the 16450 chip. After the interrupt is enabled, you may read bit 0 to detect whether channel 1 is creating an interrupt or not? to read bit 1 to detect whether channel 2 is creating an interrupt or not? ...etc. When a data bit of the interrupt vector is set to 0, the corresponding channel is creating an interrupt. When the bit is set to 1, there is no interrupt.



Under compatible mode, (since COM1: and COM2: are handled by PC system) bit 0 and bit 1 of interrupt vector are not used.

APPENDIX A PC COM DIAGNOSTICS UNDER MS/DOS

The PCCOMQC program provides a diagnostic routine to test your PCCOM 4 port adapter under MS/DOS. It has internal and external external loopback tests. A loopback plug must be connected to each port being tested, and you can select different signals connection to test communication signals from hardware configuration function.

To test your PCCOM 4 port adapter under MS/DOS, please type

A>PCCOMQC

(A> means system prompt)

Then select "PCCOM 4 port RS422" item.

APPENDIX B PC COM V2 DEVICE DRIVER

B.1 PC COM Software

The PCCOM V2.0 is a high performance, easy to use RS232/RS422 device driver for PC/XT, PC/AT, PC/386, PC/486 or compatibles. Under MS/DOS environment, you can set up your serial ports by PCCOM device driver, and these serial ports can be treated as COM1: and COM2: devices. The setup procedure provides flexible functions to specify the configuration of multi-serial card, that is, the hardware configurations of I/O port number, I/O port address, interrupt and interrupt vector are user selectable.

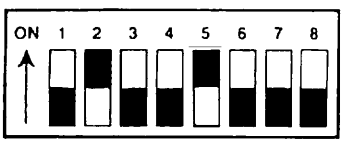
After the device driver is installed, It takes over communication between CPU and multi-serial cards such as four port card, eight port card, ... etc. For each I/O port, the service routine handles a ring buffer to keep track of all I/O data. Moreover, the PCCOM software provides library routines (C, PASCAL, BASIC, FoxPro) and DOS communication interface (DOS device driver, BIOS call) for several access levels.

The PCCOM V2.0 is an upgrade version of PCCOM V1.0 software, it combines with PCCOM V1.0 and SERIAL DRIVER utilities. Each serial

port may be either 8250, 16450, or 16550 (FIFO), 16650 chip which was detected automatically.

For more details, please refer PCCOMV2 manual.

B.2 Hardware Configuration



JP3

1	• • •	IRQ2
2	• • •	IRQ3
3	• • •	IRQ4
4	• • •	IRQ5
5	• • •	IRQ6
6	• • •	IRQ7

JP4

1	• • •	IRQ2
2	• • •	IRQ3
3	• • •	IRQ4
4	• [• •]	IRQ5
5	• • •	IRQ6
6	• • •	IRQ7

B.3 Software Installation

When the board is installed, please install software drivers as follows:

STEP 1 : Prepare PCCOM4.OPT file

The PCCOM4.OPT file contents are :

```
/B:2
/D:COM3
/A:[5:
       2A0,4,2BF,LO:
           (2k:9600:N-8-1:RTS+DTR:XON) * 4]
```

STEP 2 : Prepare CONFIG.SYS file

Insert statement into CONFIG.SYS file.

DEVICE = PCCOM.SYS @c:\pccom4.opt

If more than one PCCOM board be installed, please refer PCCOM manual.

APPENDIX C SCO XENIX/UNIX CONFIGURATION

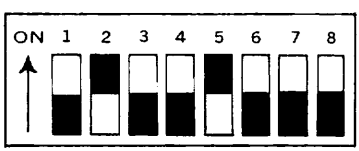
In this chapter, the XENIX and UNIX are exchangeable, and please follow the AST compatible card to install the system. To install software drivers into SCO XENIX V2.2X or above, the procedure is described in the following steps:

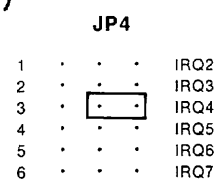
1. Select interrupt level

The first PCCOM 4 port adapter should be strapped at IRQ4 (COM1:). The second adapter should be set to IRQ3 which corresponds to COM2:.

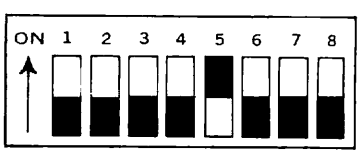
configuration	mode
COM1	enhanced mode(high address)
COM2	enhanced mode(low address)

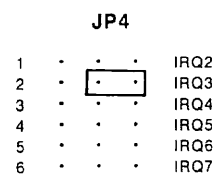
1. COM1 (Primary adapter)





2. COM2 (Second adapter)





2. Enter system maintenance mode

Boot the XENIX/UNIX operating system then enter system maintenance mode.

3. Install serial port

Type

```
# mkdev serial
```

4. The screen will display:

```
You would like to install a:
      1. 1 port card
      2. 2 port card
      3. 4 port card
      4. 5 port card
      5. 8 port card
Select an option or enter 'q' to quit:
```

Enter number 3 then press return.

5. The screen will display:

```
The card is configured as:
      1. COM1
      2. COM2
      3. COM3
      3. COM4
Select an option or enter 'h' for help or
'q' to quit:
```

Enter number 1 and press return. The system will configure four serial ports as: tty1a, tty1b, tty1c, tty1d.

Repeat step 3 to step 5 and enter number 2 to select COM2 configuration. The system will then configure another four serial ports: tty2a, tty2b, tty2c, tty2d.

6. Enable serial ports

Enable each serial port by using the 'enable' command. Please type

```
# enable tty1a
# enable tty1b
# enable tty1c
# enable tty1d
# enable tty2a
# enable tty2b
# enable tty2c
# enable tty2d
```

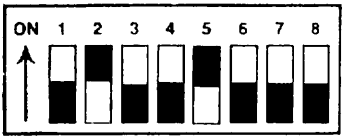
7. Connect each terminal to a DB25 connector.

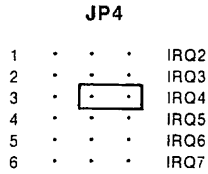
APPENDIX D PC-MOS/386 CONFIGURATION

D.1 Hardware Configuration

Before you install the PCCOM 4 port adapter in your computer, you must disconnect JP2 and short the right part of JP3. You may set arbitrary I/O addresses, and interrupts. However, we suggest you use the following:

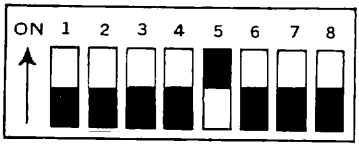
I/O port address = 2A0H
Interrupt = IRQ4

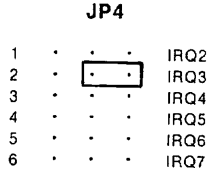




If an additional PCCOM 4 port adapter is installed, then set

I/O port address = 1A0H
Interrupt = IRQ3





D.2 Software Installation

We assume you will install two PCCOM 4 port adapters, which provides eight I/O ports. Addresses are 2A0H, 2A8H, 2B0H, 2B8H, 1A0H, 1A8H, 1B0H, and 1B8H. The interrupt is set to IRQ4 for the first adapter and IRQ3 for the second adapter. We also assume your PC-MOS/386 can support more than 9 users.

a. Prepare CONFIG.SYS file

The contents of CONFIG.SYS includes

```
DEVICE = 52TERM.SYS
DEVICE = $SERIAL.SYS  /AD=2A0,HS=X,IN=4 ~
                      /AD=2A8,HS=X,IN=4 ~
                      /AD=2B0,HS=X,IN=4 ~
                      /AD=2B8,HS=X,IN=4 ~
                      /AD=1A0,HS=X,IN=3 ~
                      /AD=1A8,HS=X,IN=3 ~
                      /AD=1B0,HS=X,IN=3 ~
                      /AD=1B8,HS=X,IN=3
```

There are several serial device drivers supported by PC-MOS/386. You must select the device driver according to the terminal type connected. In this example, we use VT52 as a terminal device.

After a device driver is declared, you must enter your I/O port addresses,

handshaking protocol, and interrupt. In this example, I/O port addresses are 2A0H, 2A8H, 2B0H, 2B8H, 1A0H, 1A8H, 1B0H, and 1B8H and the handshaking protocol is set to X (receiver controlled on and off). Interrupt level is set to IRQ4 and IRQ3. Where '~' tells MOS that the next line is a continuation of the attributes.

b. Prepare AUTOEXEC.BAT file

The contents of AUTOEXEC.BAT file includes

```
ADDTASK 32K,1,,TTY1,52TERM,1,9600
ADDTASK 32K,2,,TTY2,52TERM,2,9600
ADDTASK 32K,3,,TTY3,52TERM,3,9600
ADDTASK 32K,4,,TTY4,52TERM,4,9600
ADDTASK 32K,5,,TTY5,52TERM,5,9600
ADDTASK 32K,6,,TTY6,52TERM,6,9600
ADDTASK 32K,7,,TTY7,52TERM,7,9600
ADDTASK 32K,8,,TTY8,52TERM,8,9600
MOS SERINIT 1,9600,N,8,1
MOS SERINIT 2,9600,N,8,1
MOS SERINIT 3,9600,N,8,1
MOS SERINIT 4,9600,N,8,1
MOS SERINIT 5,9600,N,8,1
MOS SERINIT 6,9600,N,8,1
MOS SERINIT 7,9600,N,8,1
MOS SERINIT 8,9600,N,8,1
```

If you have multi-user capability, you must use the ADDTASK command to create a user

partitions. The ADDTASK command may be included in the AUTOEXEC.BAT file to add users when you boot the computer automatically.

In this example, we add eight serial ports in the system and each memory partition occupies 32K bytes of memory. When we turn on the first terminal (I/O port address 2A0H), it will run the auto execution file which is TTY1.BAT. The task ID of the first terminal is 1.

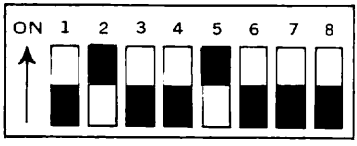
After we create a user partition with the ADDTASK command, we must set the communication parameters for the serial ports. The MOS SERINIT command is used to specify communication parameters. In this example, we set no parity, baud rate = 9600, 8 data bits, and 1 stop bit.

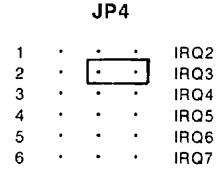
D.3 Terminal Setup

Suppose you use PC and VTERM software to emulate VT52, you must press CTRL \ (which represents ESC), then press B, which will refresh the bottom 24 lines (lines 2 through 25) of the display on the video screen of a terminal. Otherwise, your cursor may disappear.

APPENDIX E CONCURRENT DOS CONFIGURATION
MULTI-USER DOS (DR. DOS) CONFIGURATION

Set I/O port address to 2A0 and interrupt to IRQ3. The hardware configuration is shown in the following:





To install device drivers, please run the SETUP program, then follow the menu instructions to set up I/O port address, communication parameters (such as: baud rate, parity, data bits, ... etc.), and handshaking.

For multi-user DOS (Dr. DOS) configuration, please set I/O port address to 2A0H, any interrupt (IRQ3 to IRQ7) is used.

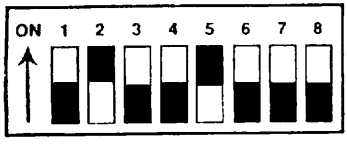
APPENDIX F PICK CONFIGURATION

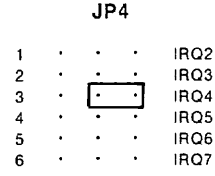
Two boards may be installed under PICK, if you require more than 8 ports, the PCCOM 8 port serial adapter is more appropriate.

The first PCCOM 4 port board should be installed using IRQ4 (COM1:) and the second board as IRQ3 (COM2:). Be sure to disable any existing COM1 or COM2 serial ports.

1. First board

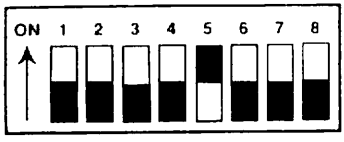
   Address range: 2A0H to 2B8H
   Interrupt: IRQ4

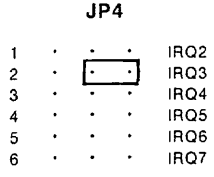




2. Second Board

   Address range: 1A0H to 1B8H
   Interrupt: IRQ3





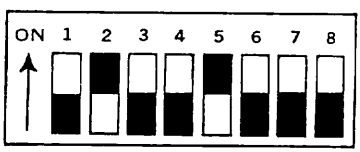
APPENDIX G AT&T UNIX CONFIGURATION
INTERACTIVE UNIX CONFIGURATION
UNIXWARE CONFIGURATION

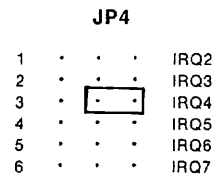
G.1 Hardware Configuration

For AT&T UNIX, INTERACTIVE UNIX, and UNIXWARE, the special device drivers are provided on the distribution diskette. The hardware configurations are shown in the following.

1. first adapter

I/O port address: 2A0H to 2B8H
Interrupt level : IRQ4
Interrupt vector: 2BFH

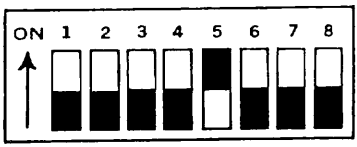


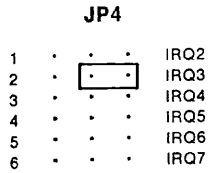


port	device name	MODEM name
1	/dev/ttyi11	/dev/ttyI11
2	/dev/ttyi12	/dev/ttyI12
3	/dev/ttyi13	/dev/ttyI13
4	/dev/ttyi14	/dev/ttyI14

2. second adapter

I/O port address: 1A0H to 1B8H
Interrupt level : IRQ3
Interrupt vector: 1BFH





port	device name	MODEM name
1	/dev/ttyi21	/dev/ttyI21
2	/dev/ttyi22	/dev/ttyI22
3	/dev/ttyi23	/dev/ttyI23
4	/dev/ttyi24	/dev/ttyI24

G.2 Software Installation

The installation procedure for the device drivers is described as follows:

1. Login as a root user.

2. Backup original Interactive UNIX kernel, please type

```
# cd /
# cp /unix  /unix.old
```

3. Insert distribution diskette (which contains device drivers) into floppy disk drive A:, then copy the files from the distribution diskette to a temporary directory.

```
#tar xvf /dev/install ./PC_COM
```

4. To install device drivers, please type:

```
# cd /PC_COM
# sh setup
```

The setup program will ask you

1. How many adapters are installed.
2. Which IRQ are selected.
3. Communication parameters.

After answer the above questions, then the script will prompt you with:

The UNIX Operating System will now be rebuilt. Please wait ...

5. Reboot the system. Now, your new UNIX system which includes device drivers is activated.

6. Enable each terminal by using the entty command. Please type

```
# entty   ttyi11
# entty   ttyi12
        .
        .
        .
        .
```

7. Connect each terminal to DB25 connector.

NOTE

1. If the new kernel fails to reboot, please boot the original kernel. When system is boot, please press return key to halt autoboot, then type

```
# unix.old
```

2. To remove device driver from UNIX, please type

```
# cd /PC_COM
# sh remove
```

3. After installation, please enable each port by entty command and disable port by distty command.

4. To change baud rate, please update /etc/inittab and /etc/conf/cf.d/init.base files.

5. To use local printer (connect auxiliary port from terminal), please check your terminal manual to send leading code to control your terminal to bypass data to printer.

APPENDIX H FIFO CHIPS

H.1 The Features of 16550 and 16650

The 16550 chip is an improved version of the 16450 Universal Asynchronous Receiver / Transmitter (UART), its internal FIFOs are activated allowing 16 bytes in receive and transmit buffer, which minimizes system overhead and maximizes system efficiency.

The 16650 chip is an improved version of the 16550 UART with deeper FIFO (32 bytes receive and transmit FIFO).

The features of 16550 chip:

* 16 bytes transmit FIFO.

* 16 bytes receive FIFO.

* Compatible with 16450.

The features of 16650 chip:

* 32 bytes transmit FIFO.

* 32 bytes receive FIFO.

* Compatible with 16550.

* Software/Hardware flow control.

* Independent transmit and receive control.

* 460 KHZ transmit/receive operation (not support in our card).

* Stand by mode (sleep).

H.2 FIFO Chips for PC COM Card

The PCCOM card can be used to plug in 8250, 16450, 16550, 16650 chips as your requirements. For MS/DOS, our PCCOM V2.0 software will detect those chips automatically. In our distribution diskette, we provide UNIX/XENIX, MS/WINDOWS, OS/2 device drivers for non-FIFO and FIFO chips which will be detected automatically. To install these device drivers, please refer the corresponding appendix.

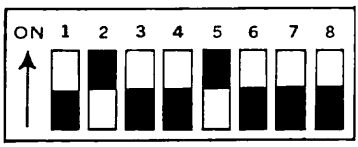
APPENDIX I FIFO CHIPS FOR UNIX

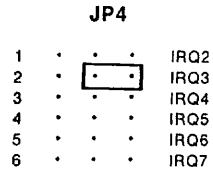
To use the FIFO chips and FIFO driver under UNIX/XENIX operating system. We provides SCO, UNIXWARE, AT&T, and INTERACTIVE UNIX/XENIX drivers in the distribution disk. For UNIX system, the hardware configuration and software installation procedures are the same as APPENDIX G, please refer it.

For SCO XENIX system, the hardware configuration is shown in the below and the software installation procedure is the same as APPENDIX G.

1. first adapter

I/O port address: 2A0H to 2B8H
Interrupt level : IRQ3
Interrupt vector: 2BFH

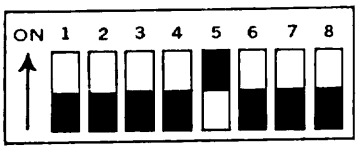


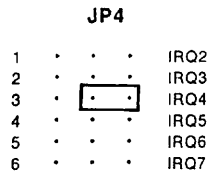


port	device name	MODEM name
1	/dev/ttyi11	/dev/ttyI11
2	/dev/ttyi12	/dev/ttyI12
3	/dev/ttyi13	/dev/ttyI13
4	/dev/ttyi14	/dev/ttyI14

2. second adapter

I/O port address: 1A0H to 1B8H
Interrupt level : IRQ4
Interrupt vector: 1BFH





port	device name	MODEM name
1	/dev/ttyi21	/dev/ttyI21
2	/dev/ttyi22	/dev/ttyI22
3	/dev/ttyi23	/dev/ttyI23
4	/dev/ttyi24	/dev/ttyI24

To enable the I/O port under SCO operating system, please use enable command which is provided by SCO system (DO NOT USE entty COMMAND which is used under AT&T and INTERACTIVE UNIX). Also use disable command to disable the I/O port under SCO operating system.

APPENDIX J MS/WINDOWS CONFIGURATION

The PCCOM 4 port device driver for MS/WINDOWS provides COM3 to COM6 ports, It works for 8250, 16450, 16550 (FIFO), 16650 etc.

The installation procedures are shown in the following.

1. Under WINDOW environment, please select "File Manager" then execute

   A:install.exe

2. Select "Install" sub-function under "PCCOM" function, then select your PCCOM card.

3. Select "Extended" sub-function under "Configuration" function, then select
   a. Base I/O address
   b. Interrupt Vector Address
   c. Interrupt (IRQ)

SPECIAL NOTES

1. To set up PCCOM ICON, please select "Program Manager", then select "File" function, then select "New" sub-function.

2. Under standard WINDOW environment, to use "TERMINAL" and "CONTROL PANEL", only COM1 to COM4 can be used. If you need use COMx (more than COM4) with TERMINAL.EXE, please modify WIN.INI before enter to WINDOW. For example, to use COM6 with TERMINAL.EXE, please find

```
[TERMINAL]
port=COMx
```

in WIN.INI, then modify port=COMx to port=COM6.

3. To modify communication parameters, please select PCCOM ICON to replace "CONTROL PANEL". For example, to modify baud rate, please select "Coms" sub-function under "Configuration" function, then modify baud rate.

APPENDIX K OS/2 CONFIGURATION

Under OS/2 operating system, the PCCOM device driver provides total 96 ports and baud rate up to 115200. The device driver works for 8250, 16450, 16550 (FIFO), 16650, etc. For PCCOM 4 port card, any address can be selected, however the address muse be set to consecutive.

The installation procedures are shown in the following.

1. Add command into CONFIG.SYS file.

DEVICE=C:PCCOM4.SYS/Axxx/Iyy/D/Czz

xxx	The first I/O port address
yy	IRQ2 to IRQ7
zz	Assign the first port name
D	Optional, it will be used at compatible mode. Use COM.SYS (from IBM) to set up COM1 and COM2, and use PCCOM4.SYS for other two ports.

The interrupt vector address is xxx plus 1F.

When option /C1 or /C2 is used, the COM1 and COM2 is a logical port but not compatible to standard COM1 and COM2.

2. To set up communication parameters, please use the MODE.COM command from OS/2, or use PCCOM.EXE command. We highly recommend to use PCCOM.EXE command, because MODE.COM can be used only for COM1 to COM9. The PCCOM.EXE can be used to set COM1 to COM96. The syntax of PCCOM.EXE are the same as MODE.COM.

example :

1. Set two cards from COM3 to COM6 and COM7 to COM10.

```
DEVICE=C:\PCCOM4.SYS /A2A0 /I5 /C3
DEVICE=C:\PCCOM4.SYS /A1A0 /I7 /C7
```

2. Set up communication parameters.

```
C:\PCCOM COMx:38400,N,8,2,TO=OFF,XON=OFF,
                IDSR=ON,ODSR=ON,OCTS=ON,
                RTS=OFF,DTR=OFF
```

APPENDIX L WARRANTY INFORMATION

L.1 Copyright

Each piece of PCCOM package permits user to use PC COM only on a single computer, a registered user may use the program on a different computer, but may not use the program on more than one computer at the same time.

Corporate licensing agreements allow duplication and distribution of specific number of copies within the licensed institution. Duplication of multiple copies is not allowed except through execution of a licensing agreement. Welcome call for details.

L.2 Warranty Information

PCCOM warrants that for a period of one year from the date of purchase (unless otherwise specified in the warranty card) that the goods supplied will perform according to the specifications defined in the user manual. Furthermore that the PCCOM product will be supplied free from defects in materials and workmanship and be fully functional under normal usage.

In the event of the failure of a PCCOM product within the specified warranty period, PCCOM will, at its option, replace or repair the item at no additional charge. This limited warranty does not cover damage resulting from incorrect use, electrical interference, accident, or modification of the product.

All goods returned for warranty repair must have the serial number intact. Goods without serial numbers attached will not be covered by the warranty.

Transportation costs for goods returned must be paid by the purchaser. Repaired goods will be dispatched at the expense of PCCOM.

To ensure that your PCCOM product is

NOTE:

NOTE:

NOTE:

NOTE:

NOTE: