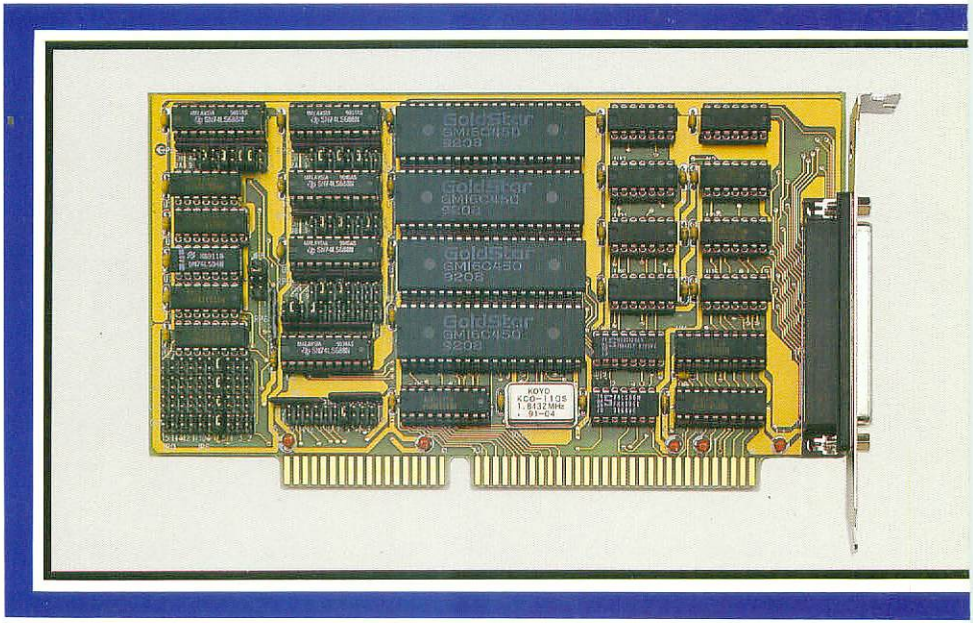
PC COM ISA BUS
4 PORT RS-232 CARD
USER MANUAL



PC COM® ISA BUS USER MANUAL
4 PORT SERIAL ADAPTER

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Rev. Date: 1992 SEP. 6

CHAPTER 1 INTRODUCTION

The PC COM ISA bus 4 port adapter provides four asynchronous serial communication ports (RS232C), which link the computer and serial peripheral devices such as modems, serial printers, plotters, etc.

The PC COM ISA bus 4 port adapter may be configured with up to four individually addressable RS232 ports and individually interruptible for any IBM PC/AT, PC/386 or hardware compatible system under MS/DOS, or any other multi-user operating systems, such as: PC-MOS/386, Concurrent DOS, (Dr. DOS), PICK, XENIX, UNIX etc.

The PC COM ISA bus 4 port adapter can be addressed anywhere within the full range of PC I/O ports and each port address can be set individually as your requirement. The interrupt selectable feature provide individual interrupt selection for each port, so that you can arrange the 4 ports in any combination of interrupt you need.

The features of the PC COM ISA bus 4 port adapter are:

* Four RS232C ports for asynchronous communications.
* Suitable for XENIX/UNIX, MS/DOS, PC-MOS/386, CONCURRENT DOS (Dr. DOS), etc.
* IBM PC/AT, PC/386, PC/486 hardware compatible.
* Interrupt selectable for each port.
* ISA bus IRQ selectable. (IRQ2 - IRQ15)
* I/O address selectable for each port.
* Interrupt vector address selectable.

CHAPTER 2 UNPACKING INFORMATION

Check that your PC COM ISA bus 4 port package includes the following items:

* PC COM ISA bus 4 port adapter.
* Expansion cable with standard 25-pin connectors.
* User manual.
* PC COM software.
* Warranty form.

CHAPTER 3 SYSTEM REQUIREMENTS

Before installing your PC COM ISA bus 4 port adapter, make sure that:

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

* The nine 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 PC COM ISA bus 4 port adapter is designed to be inserted in any available slot in your PC/AT, PC/386 or compatible. 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 PC COM ISA bus 4 port adapter.

2. Remove the cover of the computer.

3. Insert the preconfigured PC COM ISA bus 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 JUMPER SETTINGS

5.1 Introduction

The nine jumper blocks on the PC COM ISA bus 4 port adapter must be configured correctly in accordance with the operating system you are using.

JP1 (Jumper 1)
Determines the I/O address of the port 1.

JP2 (Jumper 2)
Determines the I/O address of the port 2.

JP3 (Jumper 3)
Determines the I/O address of the port 3.

JP4 (Jumper 4)
Determines the I/O address of the port 4.

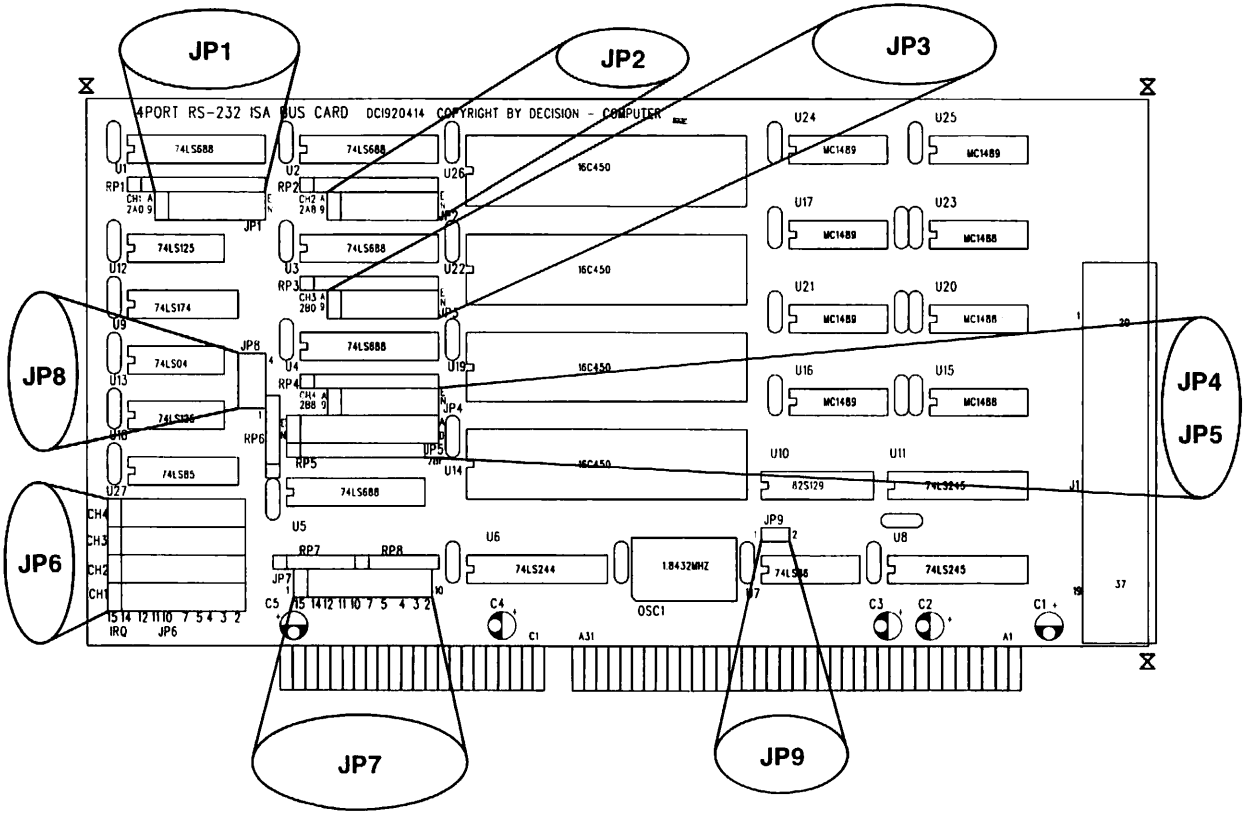
JP5 (Jumper 5)
Selects the interrupt vector address and determines which port is active when an interrupt occurs.

JP6 (Jumper 6)
Select interrupt for each I/O port. The range is from IRQ2 to IRQ15.

JP7 (Jumper 7)
Enable selected interrupt. The selection of this jumper should correspond to the selection of JP6.

JP8 (Jumper 8)
Select delay wait state.

JP9 (Jumper 9)
Select the activation status (low or high) of interrupt vector.


JP1
JP2
JP3
JP4
JP5
JP6
JP7
JP8
JP9
4PORT RS-232 ISA BUS CARD DCI920414 COPYRIGHT BY DECISION - COMPUTER
74LS688
74LS125
74LS174
74LS04
74LS126
74LS85
16C450
MC1489
MC1488
82S129
74LS244
74LS245
1.8432MHZ
OSC1
IRQ
JP6

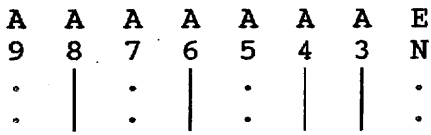
5.2 Selection of Jumper Settings

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 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.

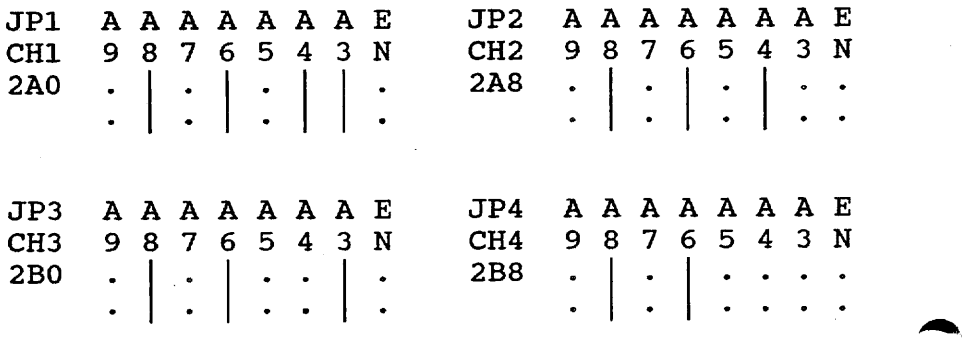
Please refer to the following settings for each jumper block. If you are installing more than one board do not duplicate jumper settings for any parameter.

1. I/O Port Address



JP1 to JP4 are used to select UART I/O address for each port. Where JP1 is used to select port 1 address, JP2 is used to select port 2 address etc. Each JP contains A9 to A3 jumper pins and EN jumper pin. The A9 to A3 are used to set I/O port address, when the corresponding pin is short means 0, otherwise no pin short means 1. The figure above set the I/O address to 2A0H. The EN pin is used to enable selected port, not short the jumper means enable the port, otherwise, if you short the jumper means disable this port.

The default setting of this board are



2. Interrupt Vector

JP5

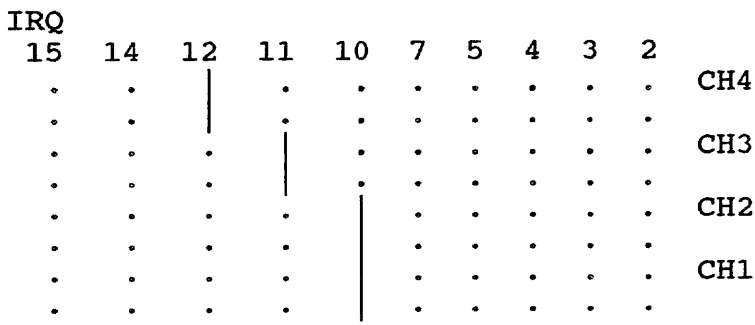
A 9	A 8	A 7	A 6	A 5	A 4	A 3	A 2	A 1	A 0	E N
.	|	.	|	.	.	.	.	.	.	.
.	|	.	|	.	.	.	.	.	.	.

The interrupt vector is used to detect which of the four channels is creating the interrupt. JP5 is used to set the interrupt vector address. A9 to A0 corresponding to address selection bit, not short the pin when you select the bit to 1, otherwise short the pin to select 0. The default setting of this board is 2BFH. The EN pin is used to enable the interrupt vector, when short the pin means enable, otherwise not short the pin means disable interrupt vector.

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. If you set active low (JP9 open), 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.

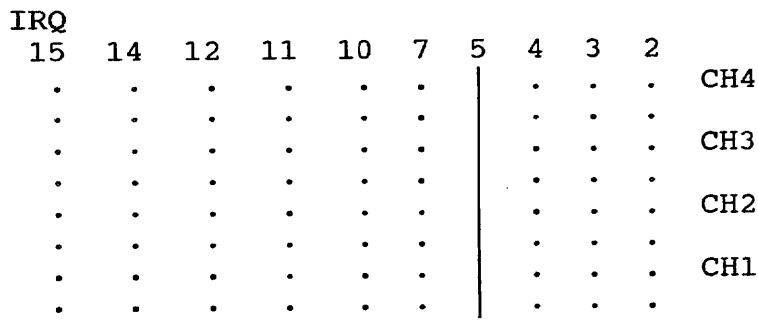
7	6	5	4	3	2	1	0
0	0	0	0	CH4	CH3	CH2	CH1

3. Interrupt Selection

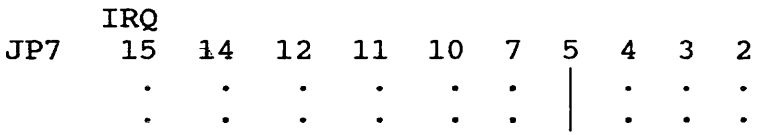


JP6 is a channel interrupt select matrix, you may select interrupt for each channel. You can arrange these interrupts in any combination, this means you can set all ports in different interrupt, or combine several ports into a group to share the same interrupt. The figure shown above are for CH1 and CH2 to be combined on interrupt 10, CH3 on interrupt 11 and CH4 on interrupt 12.

The default setting of this board is combined to share the same interrupt (IRQ5).



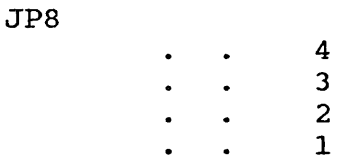
4. Common IRQ



The JP7 is used to enable IRQ2 to IRQ15 bus lines. Please note that the selection of this jumpers should correspond to the selection of the interrupts on the interrupt select matrix (JP6). For example, if you select IRQ5 and IRQ10 on the JP6, you need short IRQ5 and IRQ10 of JP7.

HOWEVER, IF MORE THAN ONE BOARD USE COMMON IRQ, ONLY SELECT ONE BOARD TO SHORT THE JP7.

5. Select Wait State



The JP8 is used to select delay wait state.

short	Wait State
1	Not more than 8 MHZ
2	Not more than 12 MHZ
3	Not more than 25 MHZ
4	More than 33MHZ

6. Select activation status

JP9

. .

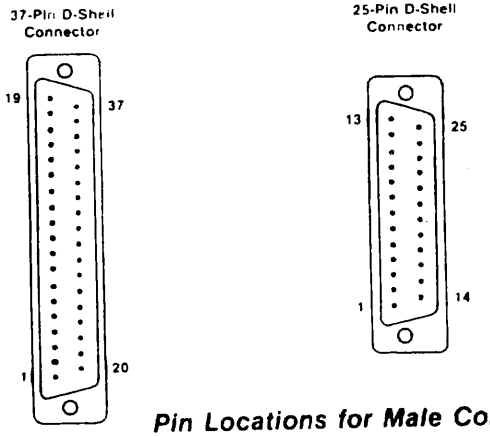
1 2

The JP9 is used to select the activation status of interrupt. Please see interrupt vector setting section for more details.

short pin	activation
short	active high
open	active low

CHAPTER 6 CABLING INFORMATION

The communication interface follows the EIA RS232C standard. A special cable with a DB37 connector is provided in the package, this cable connects the signals from the DB37 connector into four standard DB25 connectors.



Pin Locations for Male Connectors.

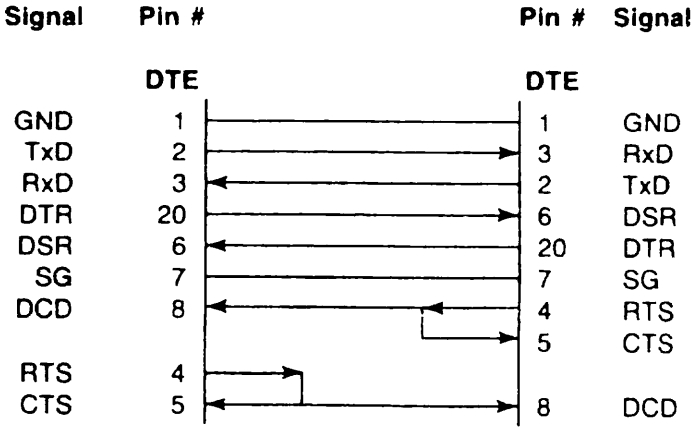
6.1 DB25 Connectors

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

Pin #	DB25 Signal Name	RS-232C Name	Signal Direction
1	Chassis Ground(GND)	AA	Common
2	Transmit Data(TxD)	BA	Output
3	Receive Data(RxD)	BB	Input
4	Request to Send(RTS)	CA	Output
5	Clear to Send(CTS)	CB	Input
6	Data Set Ready(DSR)	CC	Input
7	Signal Ground(SG)	AB	Common
8	Data Carrier Detect(DCD)	CF	Input
20	Data Terminal Ready(DTR)	CD	Output
22	Ring Indicator(RI)	CE	Input

6.2 Cable Connections

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

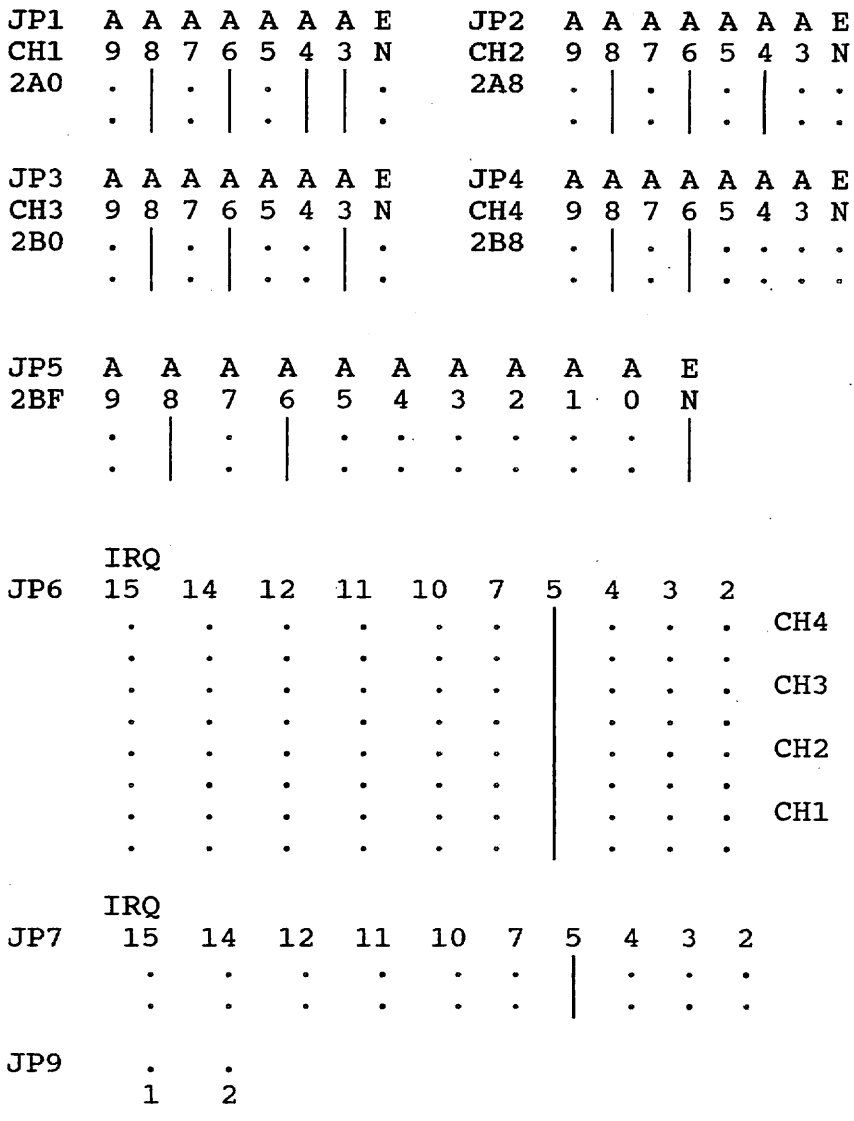


APPENDIX A PC COM DIAGNOSTIC UNDER MS/DOS

A.1 Diagnostic under MS/DOS

The 4rs232 program provides a diagnostic routine to test your PC COM ISA bus 4 port adapter under MS/DOS. It has internal and external loopback tests. A loopback plug must be connected to each port being tested. Pins 2 (Tx) and 3 (Rx) must be shorted together in the plug.

The hardware configuration is shown in the following.


JP1 A A A A A A A E
CH1 9 8 7 6 5 4 3 N
2A0
JP2 A A A A A A A E
CH2 9 8 7 6 5 4 3 N
2A8
JP3 A A A A A A A E
CH3 9 8 7 6 5 4 3 N
2B0
JP4 A A A A A A A E
CH4 9 8 7 6 5 4 3 N
2B8
JP5 A A A A A A A A A A E
2BF 9 8 7 6 5 4 3 2 1 0 N
IRQ
JP6 15 14 12 11 10 7 5 4 3 2
CH4
CH3
CH2
CH1
IRQ
JP7 15 14 12 11 10 7 5 4 3 2
JP9
1 2

To test your PC COM ISA bus 4 port adapter under MS/DOS, please type

A>4rs232

(A> means system prompt)

the screen will display:

4 RS232C enhanced mode.
Please make sure a loopback plug be connected!
Input delay cycle? (386=4000, AT=1000, XT=600)

For an XT, you may type a number larger than 600. For an AT or 386, you may type a number larger than 1000. The number is dependent on your machine cycle. If your machine cycle is very fast, type a larger number to synchronize the I/O speed of the 16450 chips.

A.2 PC COM Software

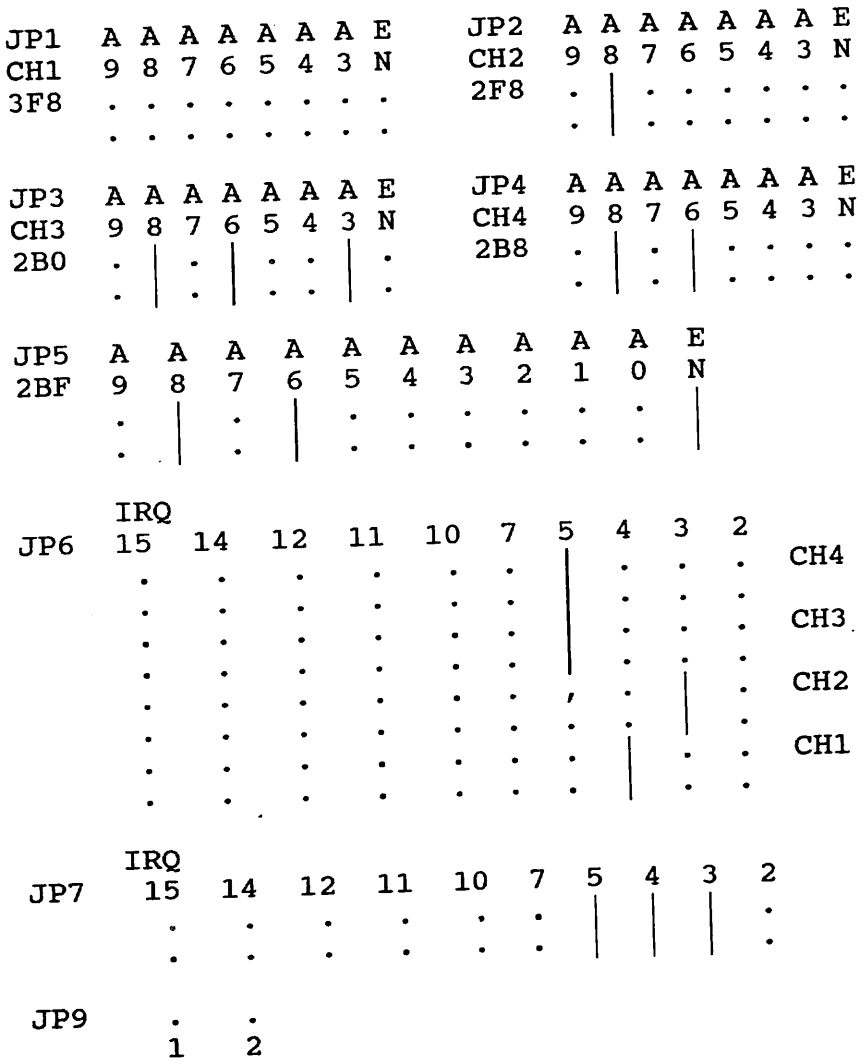
The PC COM software provides device drivers, library routines, and virtual terminal programs under MS/DOS. Please see the PC COM software manual for more details.

APPENDIX B IBM XENIX CONFIGURATION

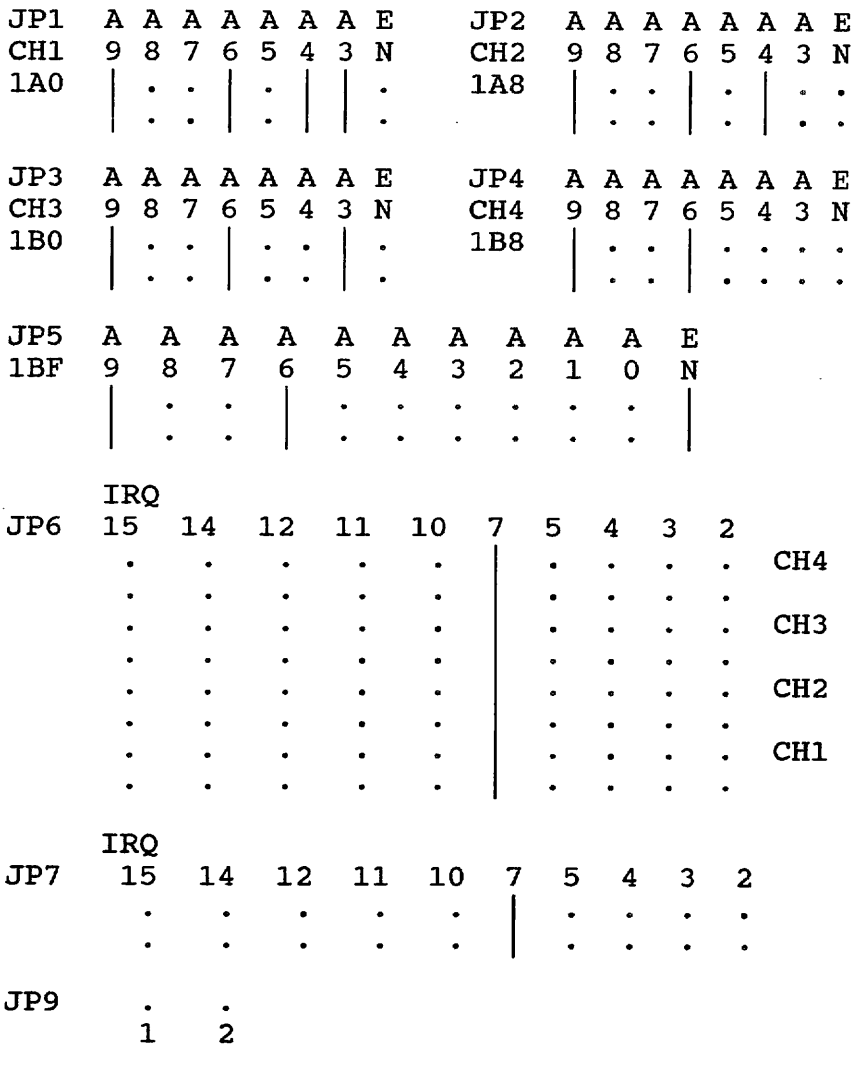
B.1 Hardware Configuration

1. Compatible Mode

a. First adapter



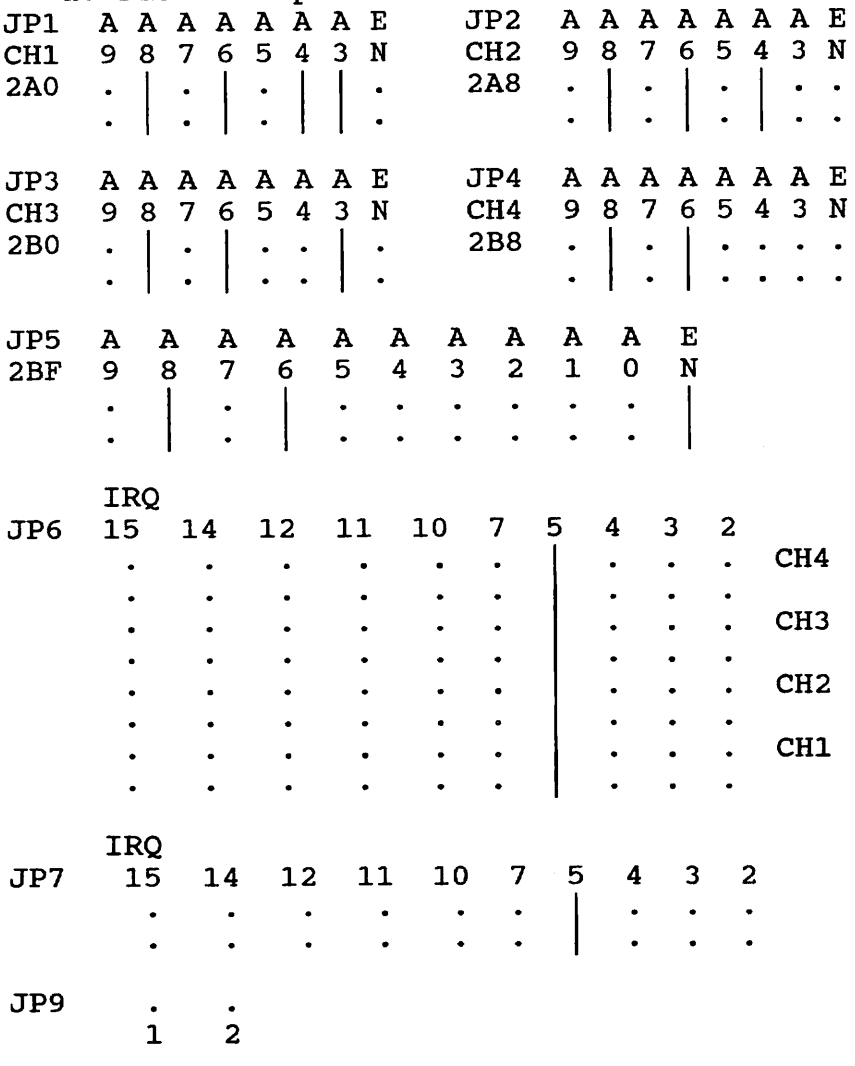
b. Second adapter



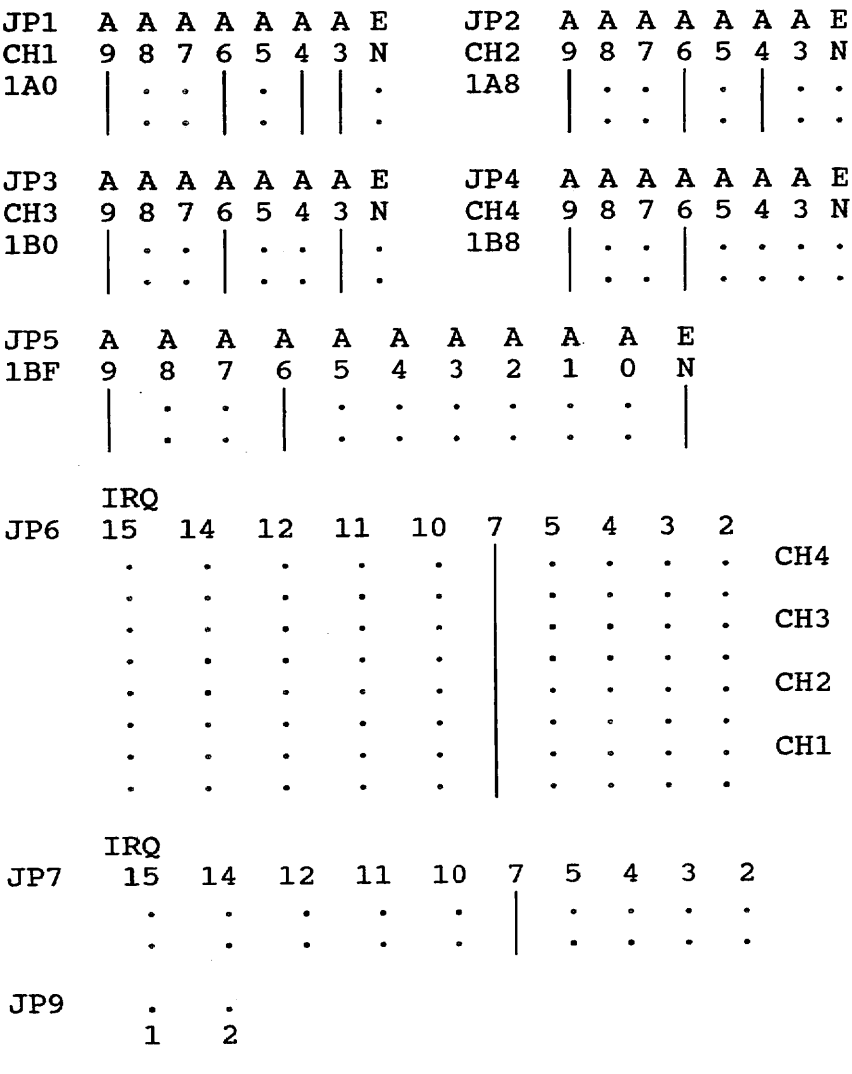
	Port	Device	Address
First adapter	COM1:	/dev/tty00	3F8 - 3FF
	COM2:	/dev/tty01	2F8 - 2FF
	3	/dev/tty02	2B0 - 2B7
	4	/dev/tty03	2B8 - 2BF
Second adapter	5	/dev/tty04	1A0 - 1A7
	6	/dev/tty05	1A8 - 1AF
	7	/dev/tty06	1B0 - 1B7
	8	/dev/tty07	1B8 - 1BF

2. Enhanced Mode

a. First adapter



b. Second adapter



	Port	Device	Address
Standard port	COM1: COM2:	/dev/tty00 /dev/tty01	3F8 - 3FF 2F8 - 2FF
First adapter	1 2 3 4	/dev/tty02 /dev/tty03 /dev/tty04 /dev/tty05	2A0 - 2A7 2A8 - 2AF 2B0 - 2B7 2B8 - 2BF
second adapter	5 6 7 8	/dev/tty06 /dev/tty07 /dev/tty08 /dev/tty09	1A0 - 1A7 1A8 - 1AF 1B0 - 1B7 1B8 - 1BF

B.2 Software Installation

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

1. Login as a root user.

2. Create a temporary directory and change default to this directory. Please type

```
# mkdir   /usr/temp
# cd      /usr/temp
```

(where # is the system prompt)

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.

Step 1: Copy batch file to /usr/temp, please type

```
#doscp -r A:/copy .
#chmod 0755 copy
```

Step 2: Copy device drivers to temporary directory, please type

```
#./copy
```

4. To install device drivers, please type:

```
# ./setup
```

The setup program will ask you

How many adapters are installed (1 or 2):

Is the first adapter in compatible or enhanced mode (c or e):

After you answer, the system will take about four minutes to install the device drivers. After installation, the old kernel is renamed as XENIX.SAVE, and the new system kernel is installed as XENIX.

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

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

```
# enable  /dev/tty00
# enable  /dev/tty01
          .
          .
          .
          .
# enable  /dev/tty09
```

7. Connect each terminal to a DB25 connector.

NOTE: If the new system fails to reboot, please boot the original system using the command:

```
# hd /XENIX.SAVE
```

APPENDIX C SCO XENIX/UNIX CONFIGURATION

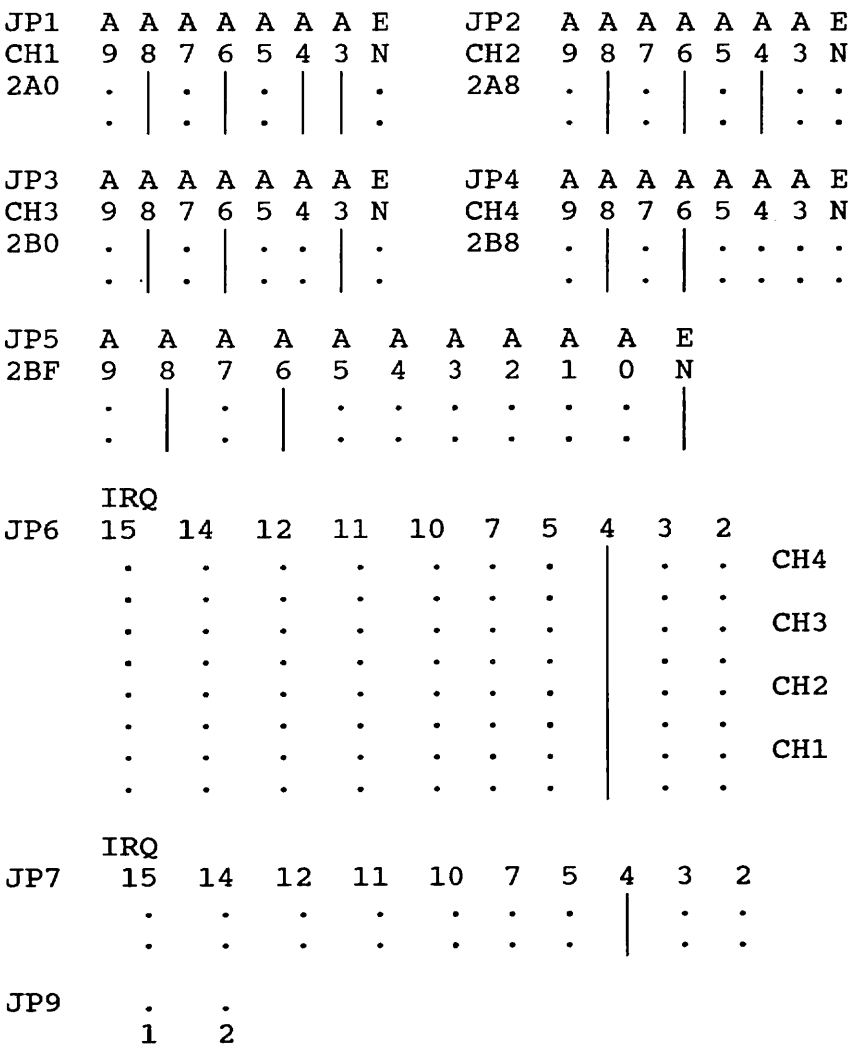
In this chapter, the XENIX and UNIX are exchangeable, when install the card, please follow the AST compatible card.

To install software drivers into SCO XENIX V2.2X or above, the procedure is described in the following steps:

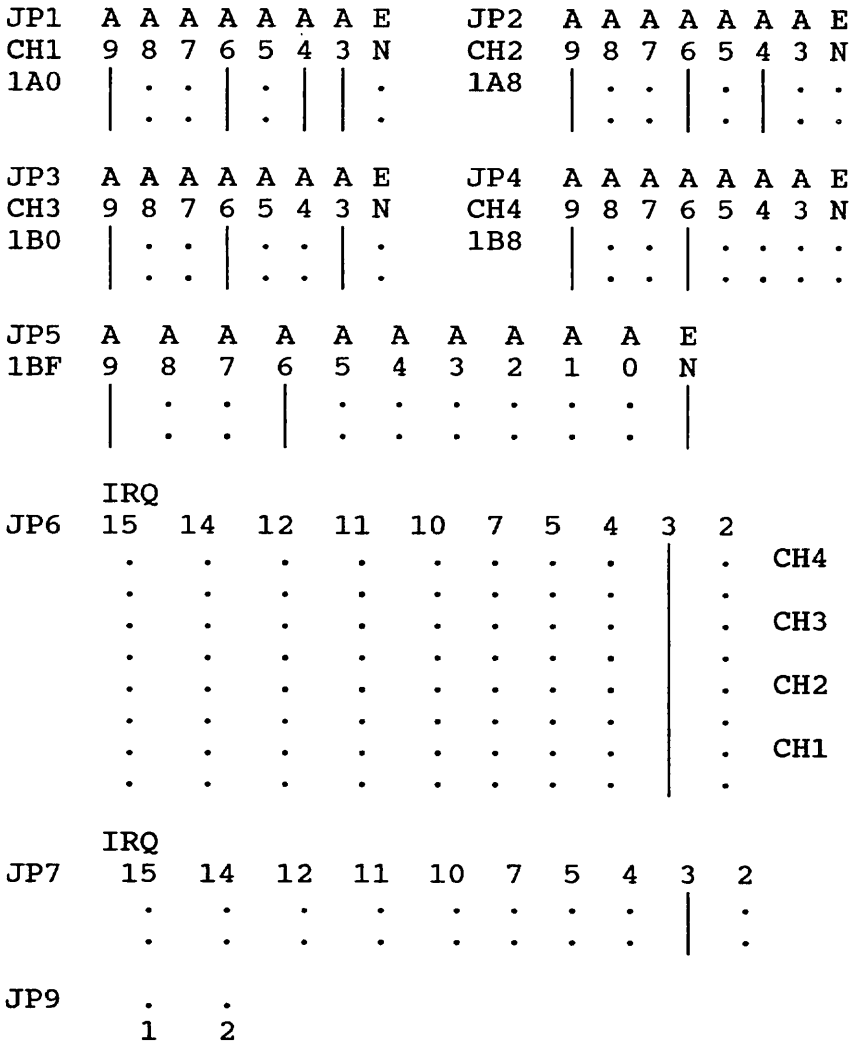
1. Select interrupt level

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

1. COM1 (Primary adapter)



2. COM2 (Second adapter)



2. Enter system maintenance mode

Boot the XENIX 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

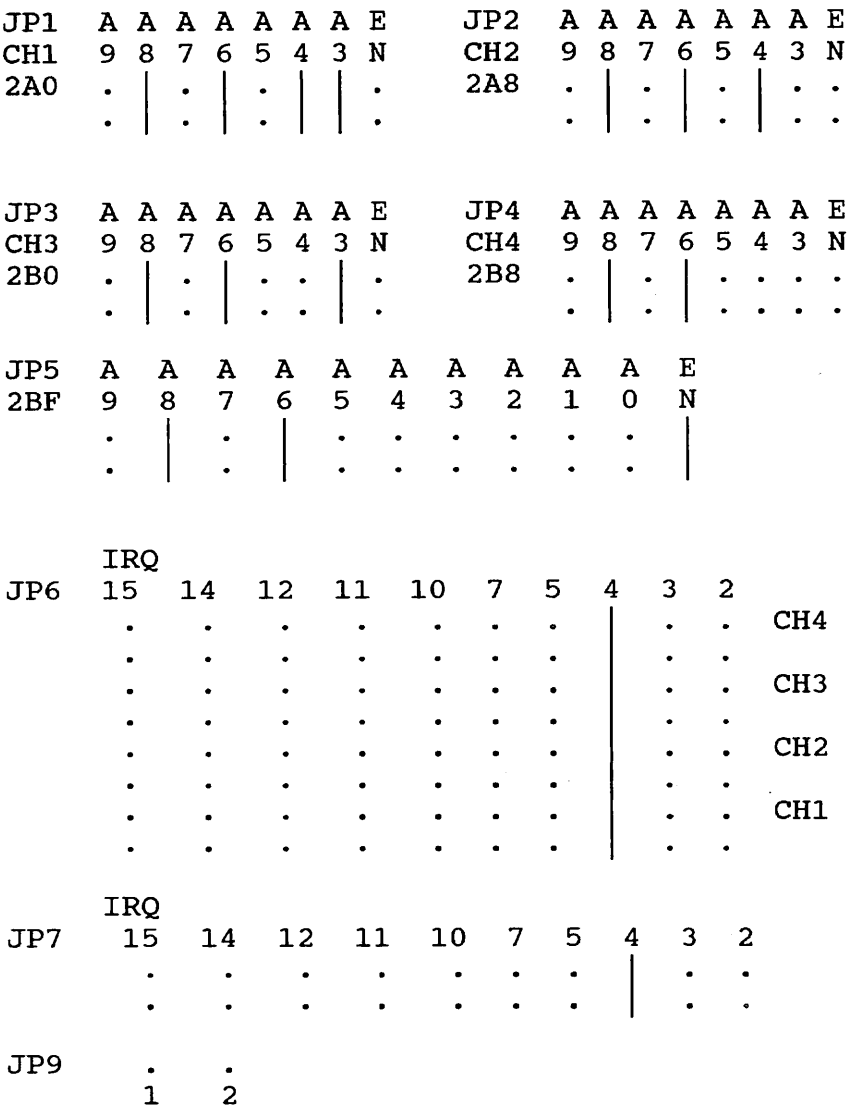
```
# enable tty1a
# enable tty1b
# enable tty1c
# enable tty1d
# enable tty2a
# enable tty2b
# enable tty2c
# enable tty2d
```

7. Connect each terminal to a DB25 connector.

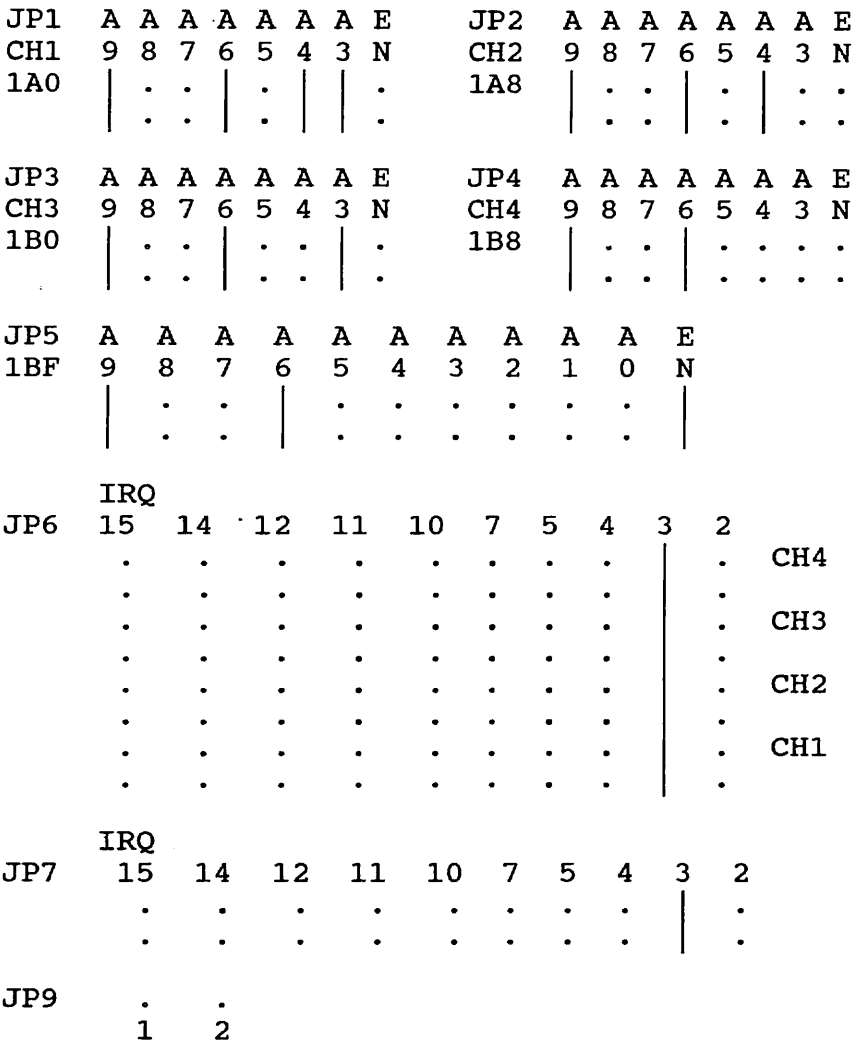
APPENDIX D PC-MOS/386 CONFIGURATION

D.1 Hardware configuration

You may set arbitrary I/O addresses and interrupts under PC-MOS/386. However, we suggest you use the following:


JP1 A A A A A A A E
CH1 9 8 7 6 5 4 3 N
2A0
JP2 A A A A A A A E
CH2 9 8 7 6 5 4 3 N
2A8
JP3 A A A A A A A E
CH3 9 8 7 6 5 4 3 N
2B0
JP4 A A A A A A A E
CH4 9 8 7 6 5 4 3 N
2B8
JP5 A A A A A A A A A A E
2BF 9 8 7 6 5 4 3 2 1 0 N
IRQ
JP6 15 14 12 11 10 7 5 4 3 2
CH4
CH3
CH2
CH1
IRQ
JP7 15 14 12 11 10 7 5 4 3 2
JP9
1 2

If an additional PC COM ISA bus 4 port adapter is installed, then set



D.2 Software installation

We assume you will install two PC COM ISA bus 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. The following device drivers are supported by PC-MOS/386:

PCTERM:
For PC type terminals, Ampex 232, Emulink software, Falco 5500, Kimtron KT-7 PC, Link Technologies MC1, MC3 and PCterm, Televideo PCS1, and Wyse Wy-60.

TTTERM:
For Teletype type terminals.

AVTERM:
For ADDS Viewpoint type terminals.

3ATERM:
ADM 3A.

T1TERM:
Televideo 910.

52TERM:
DEC VT-52.

31TERM:
IBM 3101.

19TERM:
Zenith Z-19.

TVTERM:
Televideo 912C, 920C, 925.

EXTERM:
Excel 42/44.

ANTERM:
ANSI terminals.

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. We explain each parameter setting in the following.

AD= : the port address.
HS= : handshaking protocol, can be set to
N - None.
D - DTR.
X - XOFF.
P - XPC.
R - results in DTR, XPC, and RTS.
IN= : interrupt level.

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. The syntatic specification of ADDTASK is

```
ADDTASK memsizeK,{task ID},{class},{startup},
        term ID,port,baud rate
```

memsize :

Enter the amount of memory you want to allocate to the user, it must be at least 32K. The memory size should be large enough to facilitate whatever applications are to be run in the partition.

task ID :

Enter up to two digits for the task number to assign to the partition. Zero is reserved for the partition in base memory.

class :
Enter the security class.

startup :
enter up to eight characters for the name of a startup batch file for the task.

term ID :
Enter device driver name, which is specified in the step a.

port :
Enter the number of the serial port to which a terminal for this partition is connected.

baud rate :
Enter the baud rate for the serial port.

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 as follows:

MOS SERINIT n,r,p,b,s

n - the I/O port number.
r - the baud rate.
p - the parity may be N(None), E(Even), or O(Odd).
b - the number of data bits.
s - the number of stop bits.

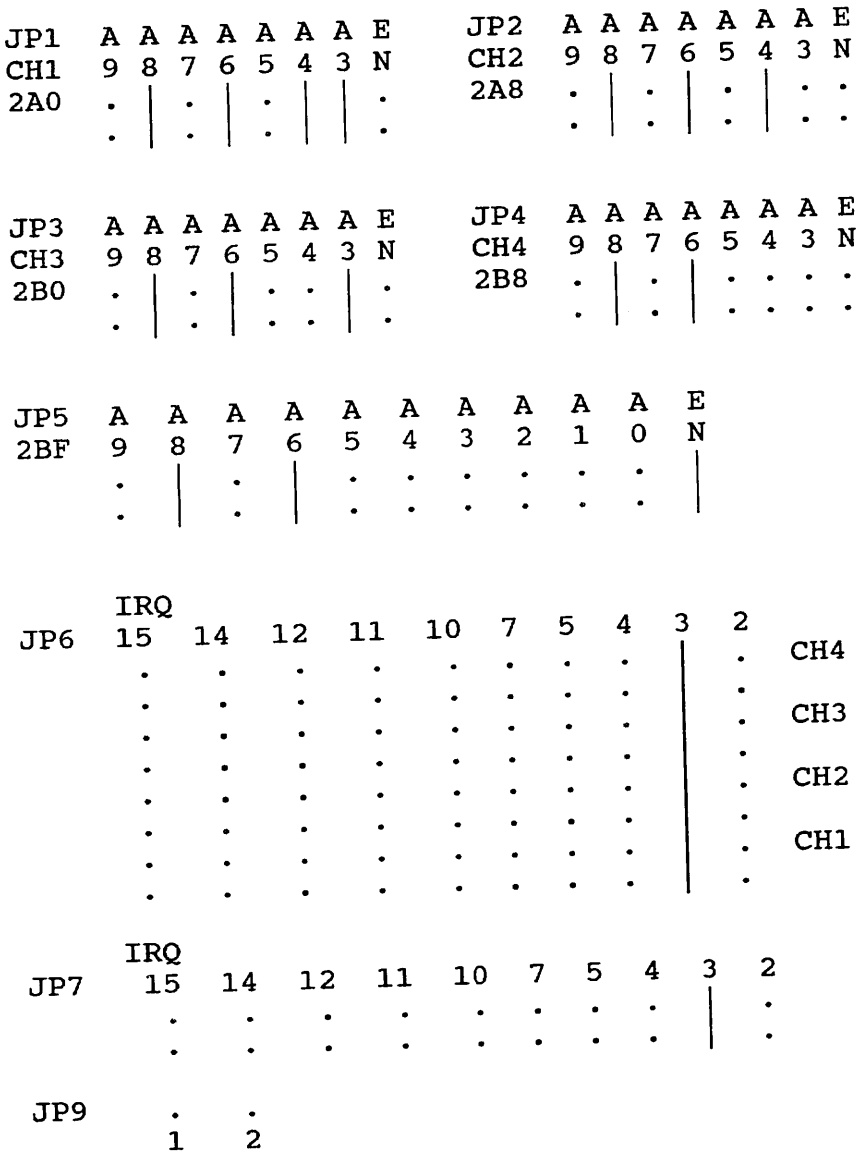
In this example, we set no parity, baud rate = 9600, 8 data bits, and 1 stop bit.

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 (DR.) DOS CONFIGURATION

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


JP1
A A A A A A A E
CH1
9 8 7 6 5 4 3 N
2A0
JP2
A A A A A A A E
CH2
9 8 7 6 5 4 3 N
2A8
JP3
A A A A A A A E
CH3
9 8 7 6 5 4 3 N
2B0
JP4
A A A A A A A E
CH4
9 8 7 6 5 4 3 N
2B8
JP5
A A A A A A A A A A E
2BF
9 8 7 6 5 4 3 2 1 0 N
JP6
IRQ
15 14 12 11 10 7 5 4 3 2
CH4
CH3
CH2
CH1
JP7
IRQ
15 14 12 11 10 7 5 4 3 2
JP9
1 2

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 IRQ15) is used.

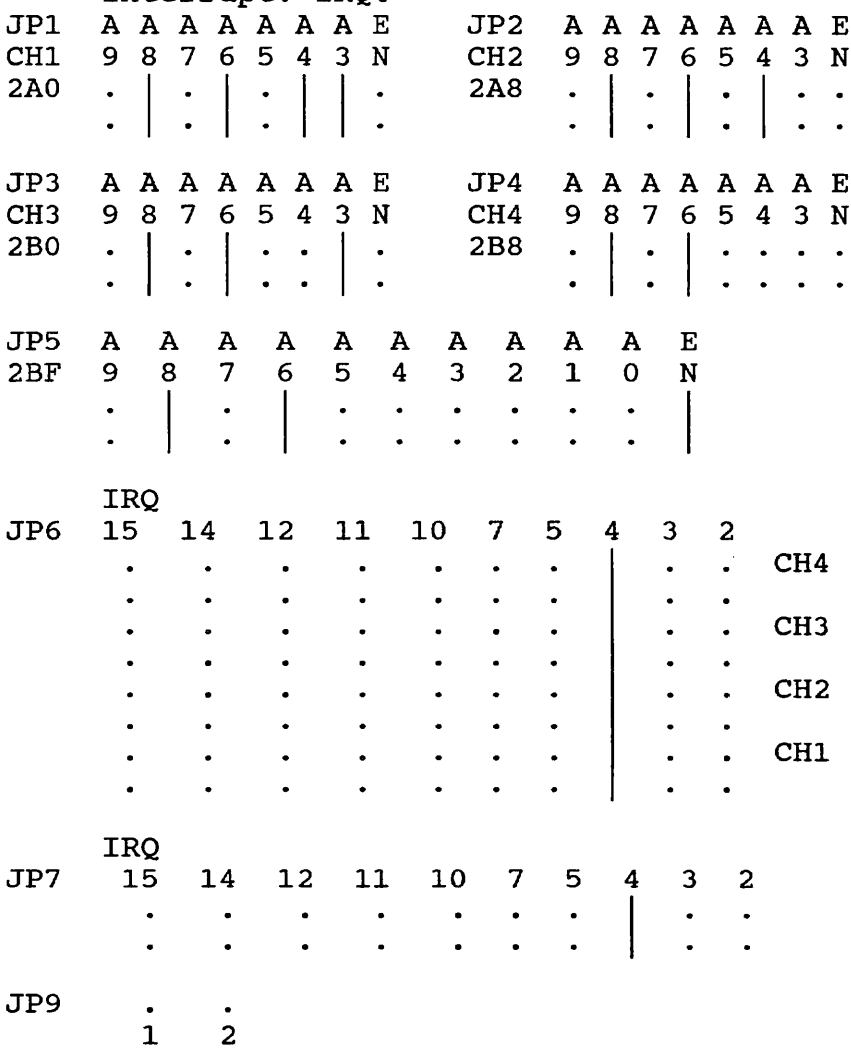
APPENIDX F PICK CONFIGURATION

The first PC COM ISA bus 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

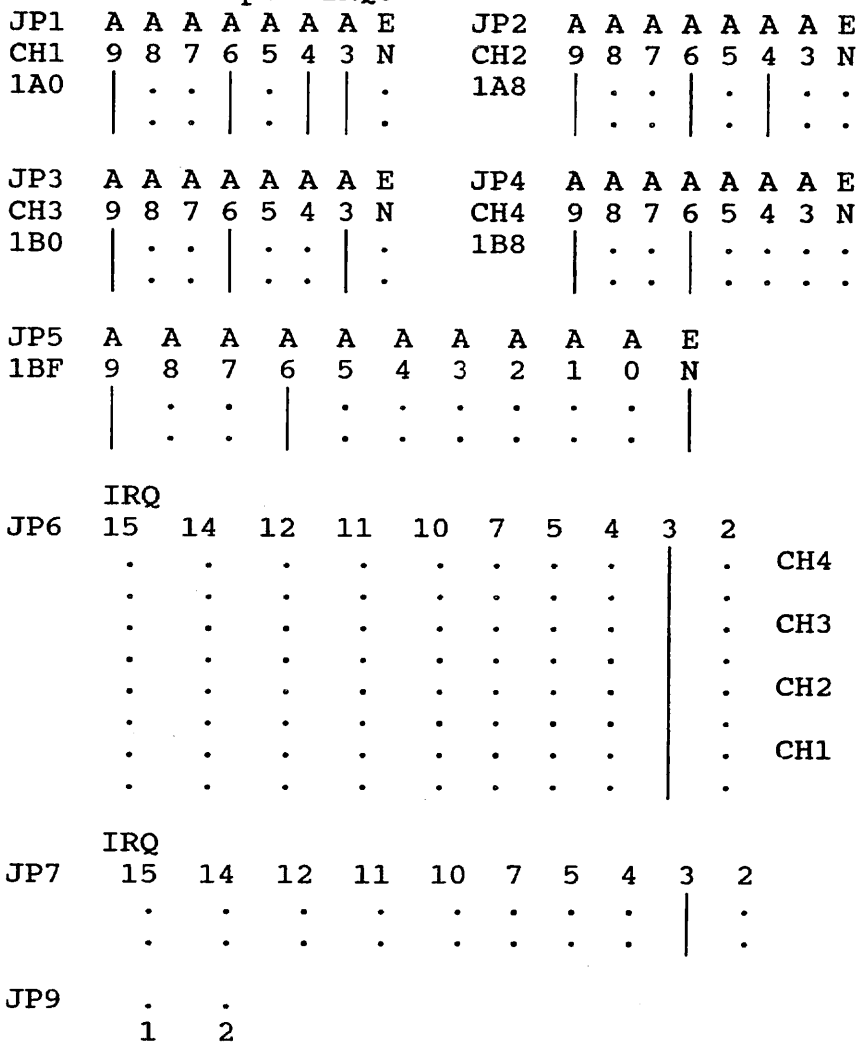
Interrupt: IRQ4



2. Second Board

Address range: 1A0H to 1B8H

Interrupt: IRQ3



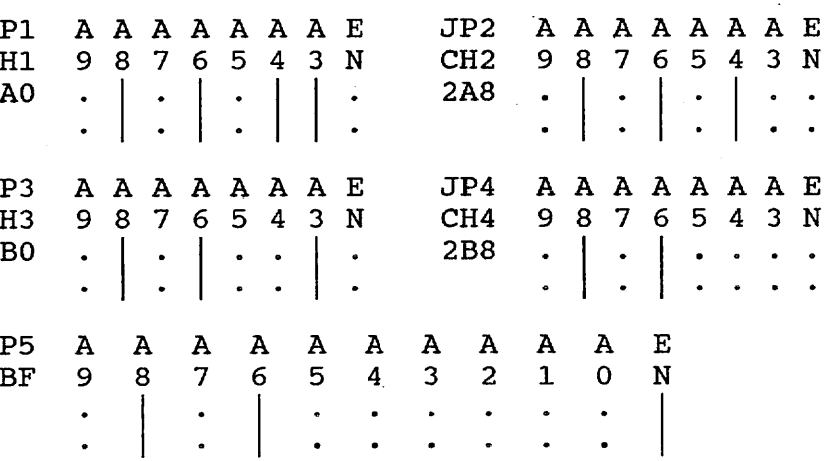
APPENDIX G AT&T UNIX CONFIGURATION INTERACTIVE UNIX CONFIGURATION

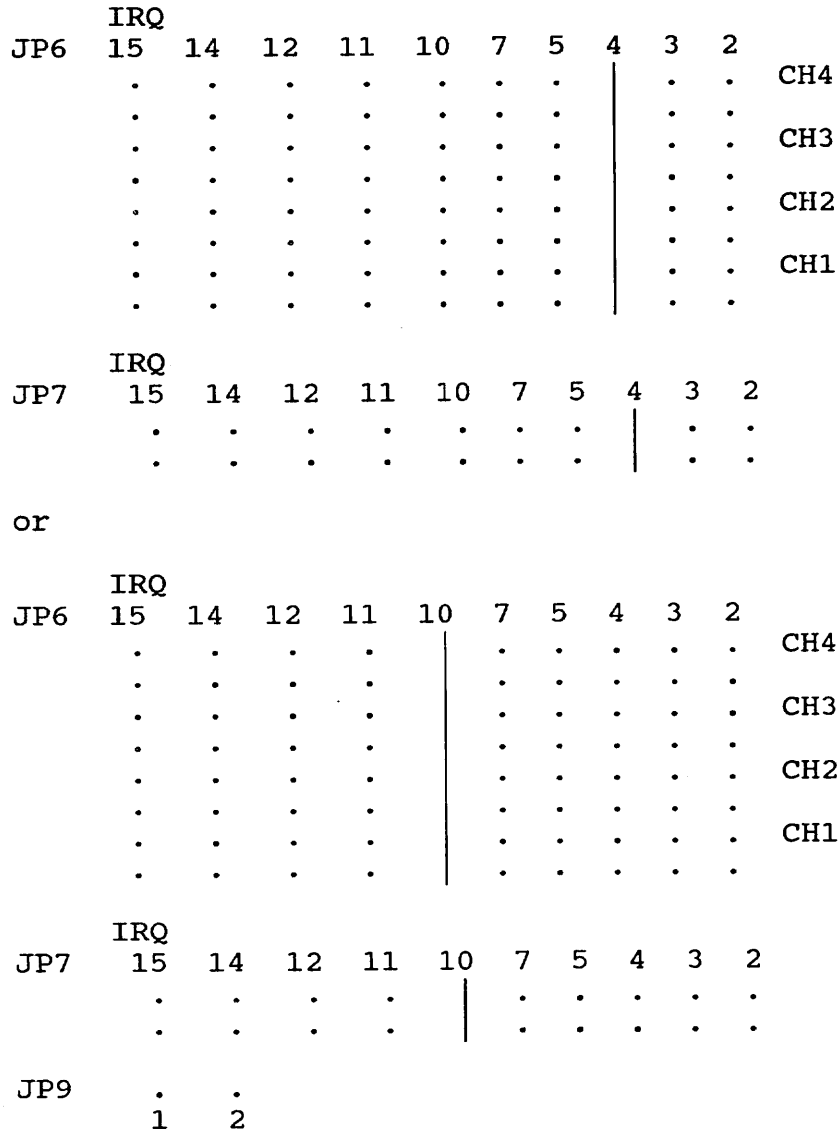
G.1 Hardware Configuration

For AT&T UNIX and INTERACTIVE UNIX, 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 or IRQ10
Interrupt vector: 2BFH

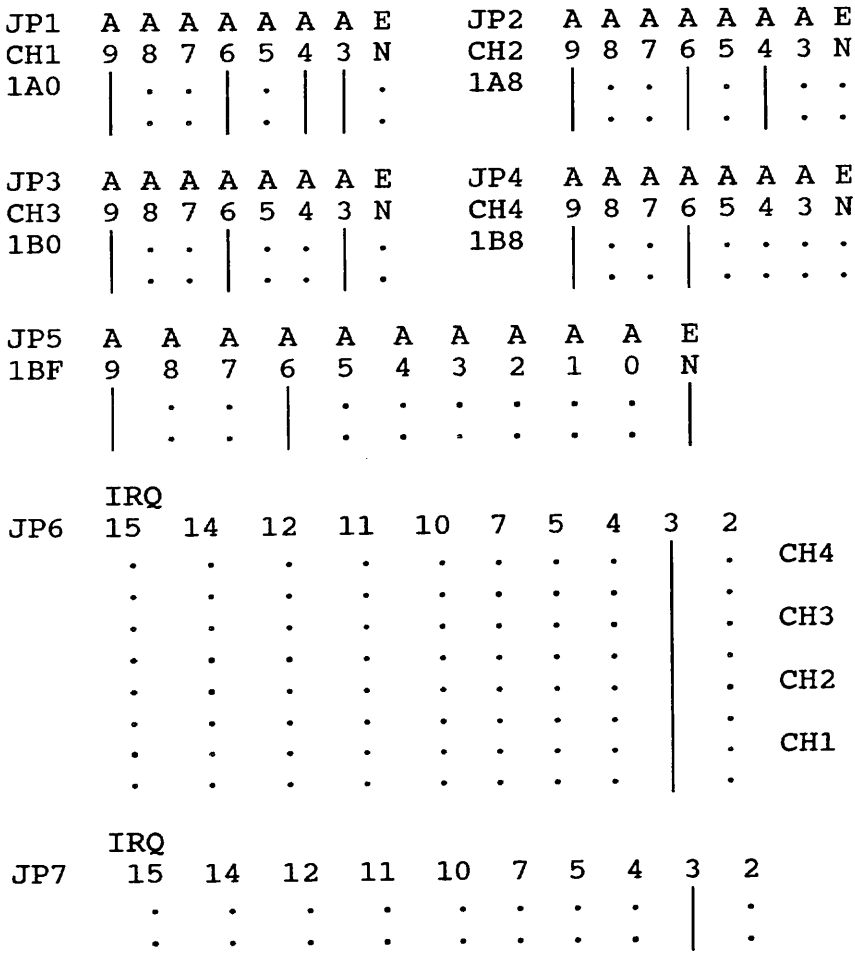



IRQ
JP6 15 14 12 11 10 7 5 4 3 2
CH4
CH3
CH2
CH1
IRQ
JP7 15 14 12 11 10 7 5 4 3 2
or
IRQ
JP6 15 14 12 11 10 7 5 4 3 2
CH4
CH3
CH2
CH1
IRQ
JP7 15 14 12 11 10 7 5 4 3 2
JP9
1 2

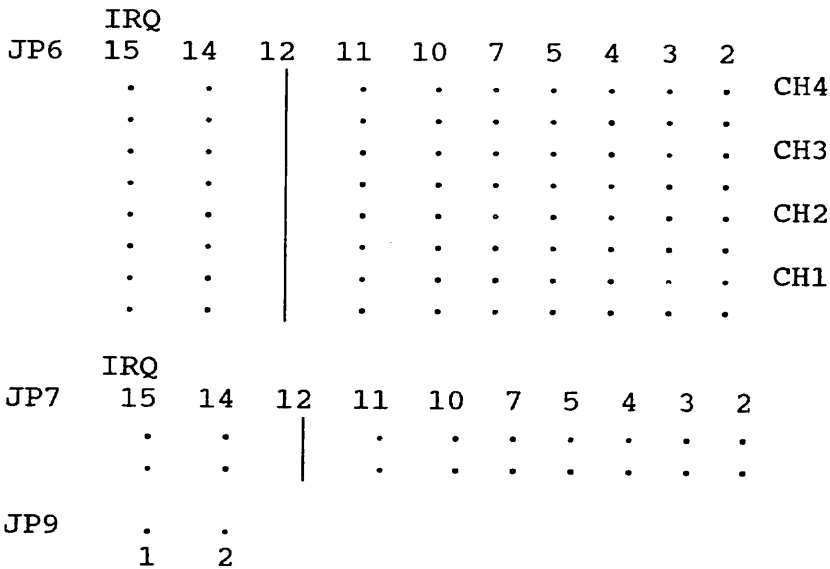
port	device name	MODEM name
1	/dev/ttyi11	/dev/ttyI11
2	/dev/ttyi12	/dev/ttyI12
3	/dev/ttyi13	/dev/ttyI13
4	/dev/ttyi14	/dev/ttyI14

2. second adapter

I/O port address: 1A0H to 1B8H
Interrupt level : IRQ3 or IRQ12
Interrupt vector: 1BFH



or



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 UNIX kernel, please type

```
# cd /
# cp /unix  /unix.bck
```

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/dsk/f05d9t ./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 system fails to reboot, please boot the original system. For interactive UNIX, when system is boot, please press return key to halt autoboot, then type

```
# unix.bck
```

For AT&T UNIX, please modify AUTOBOOT=NO parameter from /etc/default/boot file, then type

```
# unix.bck
```

Please note that, before you install your distribution disk, you need modify AUTOBOOT parameter.

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 FOR MULTI-USER DOS

To use the FIFO chips and FIFO driver under multi-user DOS (Dr. DOS), please note us for extra charge. The DRMDOS driver provides up to 2 cards in the system. It uses the external driver (generic) to drive 16550 chips with FIFO. Before use the DRM42.SYS driver, please insert protect key (dongles) into your printer adapter.

The communication protocol are

1. None
2. XON/XOFF
3. DTR/DSR
4. CTS/RTS

The installation procedures are shown in the following.

1. Copy DRM42.SYS file from distribution disk into /OSUTILS directory.

```
C:> copy A:DRM42.SYS C:\OSUTILS
```

2. Add command into CConfig.SYS file.

```
DEVICE=C:\OSUTILS\DRM42.SYS/In,m
```

IM	IRQ for master board
IS	IRQ for second board
n	IRQ2 to IRQ15 for master board
m	IRQ2 to IRQ15 for second board

The master board address is set from 2A0 to 2B8 and its interrupt vector is 2BF. The second board address is set from 1A0 to 1B8 and its interrupt vector is 1BF.

The default setting is

/I4,3

3. To use setup program to setup serial ports. The setup program is provides from multi-user DOS. please note that, you must select

    1. Generic (own driver)
    2. 8 ports
    3. PC terminal

    when you setup system.

4. Reboot the system.

APPENDIX I FIFO CHIPS FOR UNIX

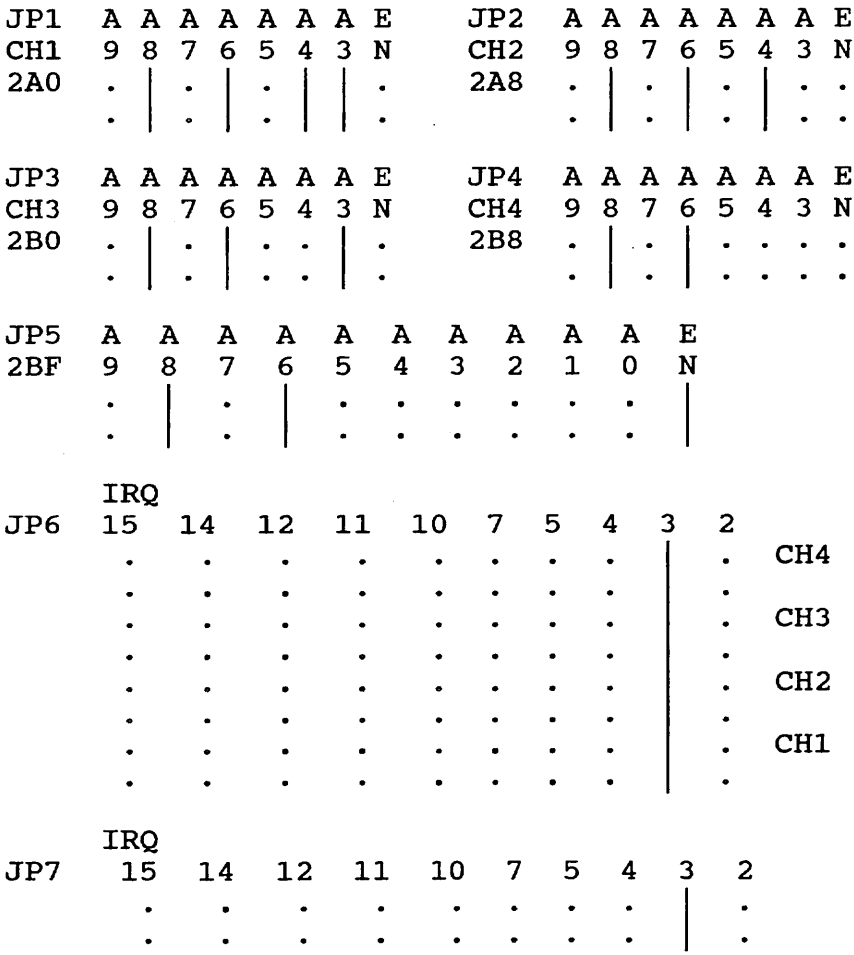
To use the FIFO chips and FIFO driver under UNIX/XENIX operating system, please note us· for extra charge. The UNIX/XENIX drivers are used to drive 16550 chips with FIFO. Before use the device driver, please insert protect key (dongles) into your printer adapter.

We provides SCO, 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.

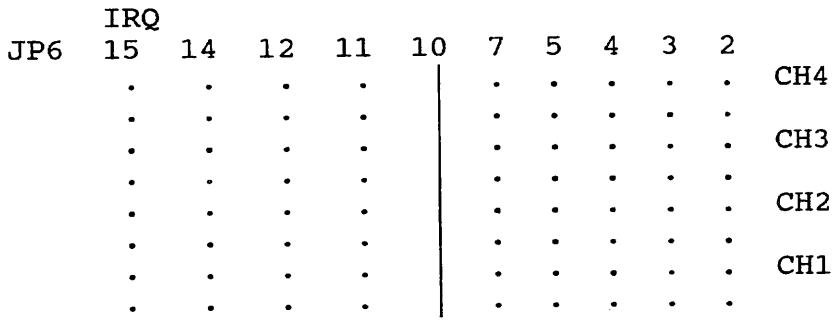
For SCO XENIX system, the hardware configuration is shown in the below and the software installation procedure is the same as APPENDIX G.

1. first adapter

I/O port address: 2A0H to 2B8H
Interrupt level : IRQ3 or IRQ10
Interrupt vector: 2BFH



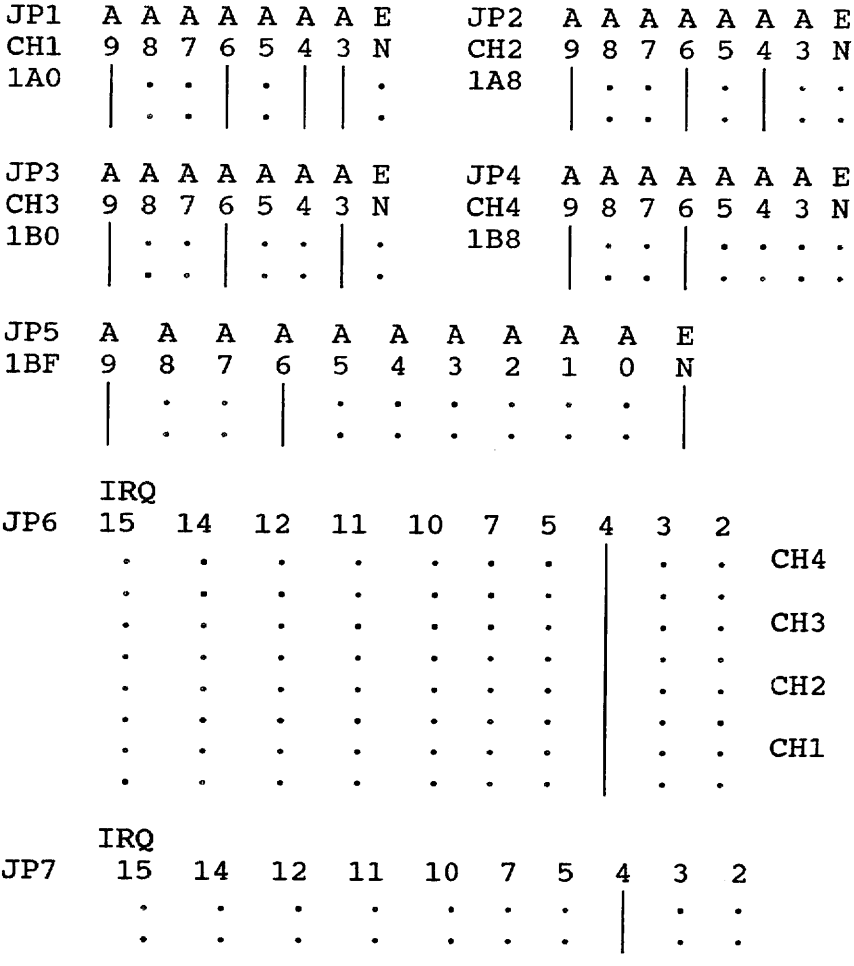
or



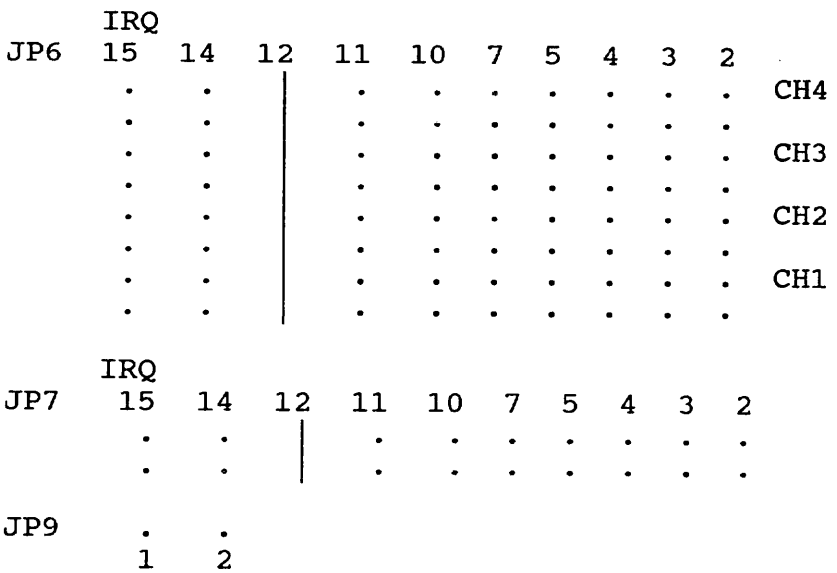
port	device name	MODEM name
1	/dev/ttyi11	/dev/ttyI11
2	/dev/ttyi12	/dev/ttyI12
3	/dev/ttyi13	/dev/ttyI13
4	/dev/ttyi14	/dev/ttyI14

2. second adapter

I/O port address: 1A0H to 1B8H
Interrupt level : IRQ4 or IRQ12
Interrupt vector: 1BFH



or



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 WARRANTY INFORMATION

J.1 Copyright

Each piece of PC COM 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.

J.2 Warranty Information

PC COM 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 PC COM 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 PC COM product within the specified warranty period, PC COM 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 PC COM.

To ensure that your PC COM product is covered by the warranty provisions, it is necessary that you return the Warranty card.

Under this Limited Warranty, PC COM's obligations will be limited to repair or replacement only, of goods found to be defective as specified above during the warranty period. PC COM is not liable to the purchaser for any damages or losses of any kind, through the use of, or inability to use, the PC COM product.

PC COM reserves the right to determine what constitutes warranty repair or replacement.

Return Authorization: It is necessary that any returned goods are clearly marked with an RA number that has been issued by PC COM. Goods returned without this authorization will not be attended to.

APPENDIX K OS/2 DEVICE DRIVER

Under OS/2 operating system, only one card can be used and the device driver works for 8250, 16450, 16550 (FIFO) ... etc. For PCCOM 4 port card, only compatible mode can be used, for PCCOM ISA bus 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. Copy ATCOM4.SYS file from distribution disk into /OS2 directory.

```
C:> copy A:ATCOM4.SYS  C:\OS2
```

2. Add command into CONFIG.SYS file.

```
DEVICE=C:\OS2\ATCOM4.SYS/Mxxx/Iyy
```

xxx The first I/O port address
yy IRQ2 to IRQ15

The interrupt vector address is xxx plus 1F.

The default setting is

```
/M2A0/I5
```

3. After the system is boot, the device driver name are defined as

Port no	Driver name
1	COM3
2	COM4
3	COM5
4	COM6

4. To set up communication parameters, please use the Mode.COM command from OS/2.

example :

```
c:\Mode:19200,N,8,2,TO=OFF,XON=XOFF,IDSR=OFF,
   ODSR=OFF,OCTS=OFF,RTS=OFF,DTR=OFF
```

NOTE:

NOTE:

NOTE:

NOTE:

NOTE:

NOTE:

NOTE: