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◆ INTRODUCTION

The PCI 32 Bit Multi I/O series cards are equipped with High-Speed Standard Serial-Interface and/or IEEE 1284 Parallel Interface.

1. Commercial Cards

- Serial ports cannot remap to address 3F8h, 2F8h, 3E8h, 2E8h.
- Parallel ports can remap via user interface to 378h, 278h if any one of those addresses is available.

Model	Function	Connector
4006A	1P(SPP/BPP)	1 DB25F
4008A	1P(ECP/EPP)	
4014A	2P(SPP/BPP)	1 DB25F
4018A	2P(ECP/EPP)	1 3x2Header
4014C	2P(SPP/BPP)	1 DB62F
4018C	2P(ECP/EPP)	
4025A	1S(16FIFO)	1 DB9M
4027A	1S(32FIFO)	
4036A	2S(16FIFO)	2 DB9M
4037A	2S(32FIFO)	
4055A	4S(16FIFO)	1 DB37F
4056A	4S(32FIFO)	
4056R	4S(32FIFO)	4 RJ45
4065A	8S(16FIFO)	1 DB37F
4066A	8S(32FIFO)	1 20x2Header
4066R	8S(32FIFO)	1 DB62F
4078A	2S(16 FIFO) + 1P (SPP/BPP)	2 DB9M
4078 U	2S(32 FIFO) + 1P (SPP/BPP)	1 13x2Header
4079H	2S(16FIFO) + 1P(ECP/EPP)	
4079A	2S(32FIFO) + 1P(ECP/EPP)	
4079R	2S(16FIFO) + 1P(ECP/EPP)	1 DB62F
4079S	2S(32FIFO) + 1P(ECP/EPP)	
4085H	2S(16FIFO) + 2P(SPP/BPP)	1 DB9M
4085 U	2S(32FIFO) + 2P(SPP/BPP)	1 DB25F
4088A	2S(16FIFO) + 2P(ECP/EPP)	1 5x2Header
4089A	2S(32FIFO) + 2P(ECP/EPP)	1 13x2Header
4095A	$4S(16FIFO) + \overline{2P(ECP/EPP)}$	1 DB62F

4096A 4S(32FIFO) + 2P(ECP/EPP) 2 13x2Header

2. Commercial Cards

- Serial ports can automatically remap to address 3F8h, 2F8h, 3E8h, 2E8h if any one of those addresses is available.
- Parallel ports can remap via user interface to 378h, 278h if any one of those addresses is available.

Model	Function	Connector
4025D	1S(16FIFO)	1 DB9M
4027D	1S(32FIFO)	(or 1 5x2Header)
4028D	1S(64FIFO)	
4036D	2S(16FIFO)	2 DB9M
4037D	2S(32FIFO)	(or 2 5x2Header)
4038D	2S(64 FIFO)	
4079D	2S(16FIFO) + 1P(ECP/EPP)	2 DB9M
4079E	2S(32FIFO) + 1P(ECP/EPP)	1 13x2Header
4079F	2S(64FIFO) + 1P(ECP/EPP)	

- 3. Industrial RS422/485 Cards
 - Serial ports cannot remap to address 3F8h, 2F8h, 3E8h, 2E8h.

Model	Function	Connector
8137	2S(32FIFO)	2 mini block
8137S	2S(32FIFO),surge	
8138	2S(32FIFO)	2 DB9M
8138S	2S(32FIFO),surge	
8156	4S(32FIFO)	4 mini block
8156S	4S(32FIFO),surge	
8157	4S(32FIFO)	4 RJ45
8157S	4S(32FIFO),surge	
8166	8S(32FIFO)	1 DB62F
8166S	8S(32FIFO),surge	

4. Industrial Current Loop Cards

- Serial ports cannot remap to address 3F8h, 2F8h, 3E8h,

2E8h.

Model	Function	Connector
8237	2S(32FIFO)	2 mini block
8237S	2S(32FIFO),surge	
8238	2S(32FIFO)	2 DB9M
8238S	2S(32FIFO),surge	
8256	4S(32FIFO)	4 mini block
8256S	4S(32FIFO),surge	
8257	4S(32FIFO)	4 RJ45
8257S	4S(32FIFO),surge	

> The driver put in CD-ROM sub-dir. /IO/PCI IO/

♦ *RECORD OF CHANGES*

- 1. Add new models
 - Serial ports can remap to 3F8h, 2F8h, 3E8h, 2E8h
 - Industrial RS422/485 cards
 - Industrial Current Loop cards
 - New bracket for saving usage of PCI slots
- 2. Add new DOS and Win3.1 driver
 - Serial port that can remap to 3F8h, 2F8h, 3E8h, 2E8h will remap automatically if any one of those ports is available.
 - Parallel ports will remap automatically if 378h or 278h is available.
 - Inquire and display the card information (port index, I/O and IRQ)
- 3. Solve WinNT LPT port index problem
 - In V3.1 driver: To solve the connection with the scanner, the port driver will start with higher priority than scanner, thus the on board parallel port will become the last port.
 - In V3.2 driver: The on board parallel port is the LPT1 if the remap function is not enabled. When the parallel port is remap to 378h or 278h to support the scanner or ZIP disk, the on board is the last port.

♦ WINDOWS 95 / 98

1. Windows 98 Driver Installation Guide

- \succ Turn off the power of your computer.
- > Plug-in the SUNIX Multi I/O card to PCI bus of your computer
- Add-on the peripheral (Modem, Printer, Scanner... etc.) that you need to this card
- > Turn on the power of your computer
- You can press "Pause" key on the keyboard to see the message when PCI device listing display (for example...)

Bus No	Device No	Func No	Vendor ID	Device ID	Device Class	IRQ
0	9	0	1409	7168	Simple Comm. Controller	10
or						
Bus No	Device No	Func No	Vendor ID	Device ID	Device Class	IRQ
0	13	0	1409	7268	Simple Comm. Controller	10

- After running the Windows 98, Windows 98 will find a "PCI Serial Controller" or "PCI Parallel Controller" installed in your computer and need new drivers to support this hardware.
- Click [Next]



> Click [Next].



Please insert the driver disk provided with PCI multi I/O card by SUNIX to floppy disk Driver A: or B: Click [Next].



Click [Next].

Windows 98 will install PCI multi I/O card driver to your computer.



≻Click
[Finish].



Note: If you install PCI parallel ports to your system, you will be requested to restart your computer when you finish setting up each parallel port. Click [Yes] if all parallel ports have been installed, others click [No]. For example, if you install two parallel ports in your system, click [No] for the first System Setting Change and click [Yes] for the last System Setting Change.

System Settings Change 🛛 🛛 🔀					
?	To finish setting up your new hardware, you must restart your computer.				
	Do you want to restart your computer now?				
	Yes <u>N</u> o				

2. How to check your Win98 installation



Step 1:

Double click my computer icon Double click Control Panel icon

Step 2:

Double click System icon



Step 3:

After install PCI multi I/O card (for example 4079A), you will find three ports added (COM3, COM4, LPT2).



3. How to Configure COM port

Step 1:

Select the PCI Serial Port you want to configure for example COM3. Press the **[Properties]**.



Step 2: Click the **[Sunix Port Settings]**.

Configure the Bits per second, Data bits, Parity, Stop bits and Flow control if you want to change.

PCI	Seria	Port (COM3) Prope	rties	\$? ×
Ge	eneral	Port Settings	Driver] R∈	esources	1		
	Bit	s per second:	9600				·	
		<u>D</u> ata bits:	8	_		1	-	
		Parity:	None	_		1	-	
		<u>S</u> top bits:	1			1	-	
		<u>F</u> low control:	Hardw	are			-	
		<u>A</u> dvanced			<u>R</u> esta	ore Defa	iults	
					0	К	Ca	ancel

There are three kinds of flow control: Xon/Xoff, Hardware and None. The Xon/Xoff is using software protocol. The Hardware means the flow control is using RTS/CTS, but the RTS/CTS is controlled by software. The None means there is no flow control.

Click the **[Advanced]** if you want to set more advanced features.

Step 3:

Configure the Enable Auto CTS/RTS Flow Control, 16/32/64 bytes FIFO length, and Receive/Transmit Buffer trigger level if you want to change.

Enable Auto CTS/RTS Flow Control		OK
Use 16 Byte EIFO buffers		Cancel
Enable <u>3</u> 2 Byte FIFO buffers		
Enable <u>6</u> 4 Byte FIFO buffer:		<u>D</u> efaults
Select lower settings to correct connection problems. Select higher settings for faster performance.		
Receive Buffer: Low	High (28)	

Enable Auto CTS/RTS Flow Control means the CTS/RTS flow control is controlled by hardware automatically. System will be more stable if the function is enabled.

If your card can support 32 bytes FIFO, you can use 16 or 32 bytes FIFO. The default value is Use 16 Byte FIFO buffers. If your card cannot support 32 bytes FIFO, the Enable 32 Byte FIFO buffers will be shadowed.

Set the Receive/Transmit Buffer to higher value will get faster performance because the interrupts will be reduced, but the time for interrupt service routine will become shorter. The receive buffer overflow will be easily happened if the CPU speed is not enough to handle. If the system is not stable, select the lower value to correct problems.

4. Windows 98 uninstall guide

> Double click Add/Remove Programs in Control Panel.



Choose PCI Multi-I/O Card. Click [Add/Remove].



> Click **[Yes]** to remove Multi-I/O Card driver



➢ Click 【Yes】 to restart the computer.



5. How to connect your peripheral to SUNIX LPT device Step 1:

Be sure your printer or other parallel peripheral had connected to SUNIX PCI Multi I/O card.

Step 2:

Double click my computer icon, Double click Printers icon



Step 3:

Double click Add Printer icon.





Step 5:

Install Printer (for example HP DeskJet 1120C) driver from disk. Click **[OK]**.



Step 6:

Select HP DeskJet 1120C Printer. Click [Next].



Step 7:

If you want to connect the printer to your PCI Multi I/O Card, select **PCI ECP/EPP** Port to your device.

Click [Next].



Step 8:

Type the printer name then click **[Finish]**.

dd Printer Wizard	
and an and a second sec	You can type a name for this printer, or you can use the name supplied below. When you are ready, click Finish to install the printer and add it to the Printers folder.
The same are the same	Printer name:
and the second second	HP DeskJet 1120C Printer
	Your Windows-based programs will use this printer as the default printer.
	< <u>B</u> ack Finish Cancel

Note: If you want to connect the scanner or the zip disk to PCI multi I/O Card, you need to remap the Parallel Port I/O address to 0x378 or 0x278.

Double click MultiIOController in Device Manager of System Properties.

Select PCI 4079A Multi-I/O Adapter.

Click [Properties].



If you want to remap I/O address, select Remap to legacy 0x378 and/or 0x278 I/O ports. Click [OK], then it will be set after reboot computer



- After reboot computer, you can check Parallel Port I/O address from System Properties.
- If you don't want to remap Parallel Port I/O address to 0x378 or 0x278, unselect Remap to legacy 0x378 and/or 0x278 I/O port. Click [OK], then it will be set after reboot computer

6. How to connect your peripheral to SUNIX COM device

Step 1:

Be sure your modem or other serial peripheral had connected to SUNIX PCI Multi I/O card.

Step 2:

Double click my computer icon, Double click Control Panel icon.



Step 3:

Click Modem

Here will take modem for example.



Step 4:

icon

Then Windows 98 will start modem install wizard, click [Next].



Step 5:

Please wait a moment, Windows 98 will search you modem. If display standard modem or other modem type, then click **[Next]**. Otherwise, please check your modem. (Power on? Connect right? Telephone line?)



Step 6: Click [Finish]



Step 7:

You can find Standard Modem in Modems Properties. The installation finishes.

Modems Properties
General Diagnostics
The following moderns are set up on this computer:
Standard Modem
Add Remove Properties
Dialing preferences
Dialing from: New Location
Click Dialing Properties to modify how your calls are dialed.
Dialing Properties
Close Cancel

♦ WINDOWS NT

1. Windows NT 4.0 Driver Installation Guide

Step 1:

Run the setup.exe program in PCI Multi I/O card (for example 4079A) Installation Disk.

💐 Exploring - Win_NT						
<u>Eile Edit V</u> iew <u>I</u> ools <u>H</u> elp						
All Folders Contents of 'Win_NT'						
🗟 Desktop		Name	Size	Туре	Modified	
🖹 🖳 💭 My Computer		🙀 Setup.exe	481KB	Application	01/01/2000 8:00 AM	
🕀 🖃 3½ Floppy (A:)		🐻 Setup.ini	1KB	Configuration Setti	01/01/2000 8:00 AM	
		SNPCICTL.cpl	584KB	Control Panel exte	01/01/2000 8:00 AM	
hpw5	_	🗑 SNUnInst.exe	395KB	Application	01/01/2000 8:00 AM	
		🔊 snxpar.sys	22KB	System file	01/01/2000 8:00 AM	
Win_NI		SNXSER.sys	76KB	System file	01/01/2000 8:00 AM	
E Program Files						
M necycled	_					
1 object(s) selected	481KB					

Step 2:

Press **[Continue]** to install the driver.

	Welcome to the setup program, the following procedure will copy all necessary file to your system, it will also update your registry entry.		
8	Press "Continue" to install the driver, "Cancel" to abort.		
	Continue Cancel		

- 🗆 ×

Step 3:

Click **[OK]** to reboot computer to load the new installed driver to NT.



2. Check Your Windows NT 4.0 Installation

Click 【Start 】 → 【Programs 】 → 【Administrative Tools [Common]
 】 → 【Windows NT Diagnostics 】

-						
Д Му (Eomputi					
Neig	etwork hborho					
é						
(Q				➢ Administrative Wizards Backup Bisk Administrator	
		New Office Document			Event Viewer Event Viewer License Manager Migration Tool for NetWare	
		Programs ·	Accessories Startup Books Online))	Network Client Administrator Performance Monitor Remote Access Admin	
erver	1))	Settings	Command Prompt		 Server Manager System Policy Editor User Manager for Domains 	
NTS	2	Help	Administrative Tools (Common)	ł	Kindows NT Diagnostics	
Vindov	<u>7</u> -	Bun	W Microsoft Word			
2	~					

Press Resources then press I/O port. You can find the I/O address of one parallel port (SNXPAR) and two serial ports (SNXSER).

You can find the IRQ information by press **[IRQ]**.

<u></u>	∕indows NT Di ∐elp	agnostics	- \\SUNIX-NT		
	Version Services	System	Display Resources	Drives	Memory vironment
				Include <u>H</u> A	L resources 🗖
	Address	Device		Bus	Туре 🔺
	0064 - 0064	i8042prt		0	lsa
	01/0+01/7	atapi MasSava		0	Isa Roj
	01E0.01E7	atapi		0	lea l
	02F8 - 02FE	Serial		ő	Isa
	0376 - 0376	atapi		Ō	Isa
	03B0 - 03BB	VgaSave		0	Pci
	03BC - 03BE	Parport		0	Isa
	03C0 - 03DF	VgaSave		0	Pci
	03F0 - 03F5	Floppy		0	Isa
	03F6 - 03F6	atapi		U	lsa 🔰
		Floppy		U	Isa
	03F8 - 03FE	CN/VPAR		0	Isa Poi
6	D000 - 0007	SNXSEB		0	Pei
	D008 - D00F	SNXSER		Ő	Pci 🚽
				1	· · · · · · · · · · · · · · · · · · ·
	IRQ	1/0 Port	<u>D</u> MA	<u>M</u> emory	Devices
	E	Properties	<u>R</u> efresh	Pri <u>n</u> t	OK

- 3. How to configure your PCI Multi I/O Card
- > Double click Multi-I/O Card Configuration icon.





Press [PCI/ISA Serial Ports] and select the serial port you want to configure, press [Setup] to configure the serial port.

🚟 Multi-I/O Configuration Utility 🛛 🗙
PCI/ISA Serial Ports PCI Parallel Ports ISA Multi-I/O Setup About
Select serial port
СОМЗ
Setup Close

Set the 32 byte FIFO or Auto Flow Control or Receive Trigger Level, click [Ok]].



If your card can support 32 (64) bytes FIFO, you can use 16 or 32 (or 64) bytes FIFO. The default value is Use 16 Byte FIFO buffers. If your card cannot support 32 (64) bytes FIFO, the Use 32 (32 and 64) Bytes FIFO will be shadowed.

Auto Flow Control Enable means the CTS/RTS flow control is controlled by hardware automatically. System will be more stable if the function is enabled.

Set the Receive Trigger Level to higher value will get faster performance because the interrupts will be reduced, but the time for interrupt service routine will become shorter. The receive buffer overflow will be easily happened if the CPU speed is not enough to handle. If the system is not stable, select the lower value to correct problems.

Note:

If you stall the modem that is using auto detect by windows NT, the Auto Flow Control Enable shall be disabled.

Click PCI Parallel Ports to configure the I/O address of parallel port. Select Remap to legacy 0x378 and/or 0x278 I/O Ports, if you want to remap I/O address to 0x378 and/or 0x278.

Click **[Ok]**.



> It will be set after reboot computer.

Note:

- **1.** The on board parallel port is always LPT1 if the remap function is disabled. When the parallel port is remap to 0x378 or 0x278, the on board parallel port will become the last LPT port.
- **2.** When you connect the scanner to the remap parallel port, you must turn on the scanner before the computer.

4. Windows NT 4.0 Uninstall Guide

Double click Add/Remove Programs in Control Panel.



Select Multi-I/O Card Uninstall, press [Add/Remove].

Nuuvirenio	re i logranis i loperces	· · ·		
Install/Uni	install Windows NT Setup			
2	To install a new program from a floppy disk or CD-ROM drive, click Install.			
	install			
3	The following software can be automatically removed by Windows. To remove a program or to modify its installed components, select it from the list and click Add/Remove.			
lomega\ Microso	Ware for Windows NT /ft Office 97, Professional Edition			
Ulead P	D Card Uninstall PhotoImpact 3.01 SE Special Edition			
	Add/ <u>R</u> emove	э		
	OK Cancel 🛆	ylqq		

> Press **[OK]** to remove Multi-I/O Card driver.

🌃 Mulit-170 Card Uninsta	
Do you want to remove M	ulti-1/0 Card drivers?
ОК	Cancel

> Click **[OK]** to reboot the computer.

🌃 Mulit-170 Card Uninstall	×
You must reboot the comput unnecessary Files.	ter to remove all
OK	Cancel

♦ DOS

1. Installation Guide for PCI Serial / Parallel Ports

This installation guide describes the procedures to install Sunix PCI serial / parallel ports in MS-DOS environment.

Normally serial and parallel I/O ports can be supported by BIOS call services in DOS environment. However there are only support 4 serial ports (3F8h,2F8h,3E8h,2E8h) and 3 parallel ports (3BCh/378h/278h) are supported by BIOS/DOS.

In case the Sunix PCI serial and parallel ports are different from the above configurations (e.g. I/O address or more than 4 serial ports / 3 parallel ports), they are not supported by BIOS/DOS directly. However some applications (e.g. "PComm Plus" could support 8 serial ports and each I/O address is settable) have their own driver, thus Sunix PCI cards could work correctly.

[DOS platform]

• Microsoft DOS : V5.0/V6.0/ V6.22

[Installation Steps]

(1) Run Install.exe (from DOS driver disk)

```
Please enter the directory path for
installation
C:\PCT DOS (return for
```

(2) Enter the destination subdirectory

You could enter your preferred destination subdirectory for installation, RETURN for default path. Once the dos driver has been installed successfully, the response looks like below.

```
succeed ... Press Any Key
```

Note:

- 1. The installation program will add the dos driver (one command line) "C:\Sunix\SunixPCI.exe AUTO" to autoexec.bat file. The original batch file will be saved to autoexec.SNX.
- 2. For uninstallation, just restore autoexec.snx into autoexec.bat.

(3) Start the dos driver automatically

Once the installation is completed, Install.exe will start the dos driver (SunixPCI.exe) automatically. This means that it is not necessary to restart the system once again.

```
On-Board/ISA Serial COM1
                              3f8H
 On-Board/ISA Serial COM2
                                 2f8H
 PCI Serial COM3 Remap
                              3e8H, IRQ
                                        11
 PCI Serial COM4 Remap
                              2e8H, IRQ
                                        11
 On-Board/ISA Parallel LPT1 3bcH
 PCI Parallel LPT2 Remap
                              378H, IRQ
                                         11
 PCI Parallel LPT3 Remap
                              278H, IRQ
                                         10
```

Note : This display is dependent on which PCI card you have.

(4) Check / inquire the Sunix PCI card information

You could run SunixPCI.exe any time to inquire the Sunix PCI serial and parallel port's I/O address & IRQ information.

	I	SA	PCI	Setup	Card	Abo	ut
O	n-E	Board/	ISA Sei	rial COM1	3f8H		
O	n-E	Board/	ISA Sei	rial COM2	2f8H		
P	CI	Seria	1 COM3	Remap	Зе8н,	IRQ	11
P	CI	Seria	1 COM4	Remap	2e8H,	IRQ	11
O	n-E	Board/	ISA Par	rallel LPT1	. Зbcн		
P	CI	Paral	lel LP	I2 Remap	378н,	ERQ	11
P	CI	Paral	lel LP	I3 Remap	278н,	ERQ	10
ESC:	Ex	it					

ISA	: Detect on-board/ISA legacy serial /parallel ports.
PCI	: Find PCI serial /parallels ports.
Setup	: Remap PCI serial port to legacy port / display port resources.
Card	: Display Sunix PCI card model.
About	: Version Information.
NOTE :	

- 1. All Sunix PCI parallel ports are possible to be remapped to legacy I/O address (378h,278h), thus the DOS driver will start remapping function automatically if any one of legacy ports is free.
- Since some Sunix PCI serial ports can support the remapping function (e.g. 4025D/4027D/4028D/4036D/4037D/4038D/ 4079D/E/F). thus please check it by "SETUP" in SunixPCI.exe utility.

	CIOCK 1.0152		
Item	Actual Baudrate	BIOS/DOS setting	Remark
1	921600		Do not support
2	460800		Do not support
3	230400		Do not support
4	115200	115200	
5	57600	57600	
6	38400	38400	
7	19200	19200	
8	9600	9600	
9	4800	4800	
10	2400	2400	
11	1200	1200	
12	300	300	

Clock= 1.8432 Mhz for remapable port in DOS

3. Since Sunix PCI serial card are drived by a higher CLK (14.7456 Mhz), thus the actual baud rate is 8 times higher than the BIOS/DOS baud rate setting. The below table shows the relation. Clock=14.7456 Mhz for all non-remapable port

			- Protection - Pro
Item	Actual Baud rate	BIOS/DOS setting	Remark
1	921600	115200	
2	460800	57600	
3	230400	28800	Non BIOS standard
4	115200	14400	Non BIOS standard
5	57600	7200	Non BIOS standard
6	38400	4800	
7	19200	2400	
8	9600	1200	
9	4800	600	Non BIOS standard
10	2400	300	
11	1200	150	
12	300	37.5	Non BIOS standard

♦ WINDOWS 3.1

1. Installation Guide for PCI Serial Ports

This installation guide describes the procedures to install Sunix PCI serial / parallel ports in MS WINDOWS 3.1 environment.

Normally serial and parallel I/O ports can be supported by WINDOWS 3.1 default device driver. However there are only 4 serial ports (3F8h,2F8h, 3E8h,2E8h) and 3 parallel ports (3BCh/378h/278h) are supported by default.

Most likely the Sunix PCI serial ports are different from the above configuration (eg. I/O address or IRQ), these ports setting need to changed / modified in WINDOWS 3.1 manually. However it is necessary to inquire these PCI serial and parallel ports's resources in advance.

[OS Platform]

• Microsoft WINDOWS : V3.1/V3.11

[Installation Steps]

(1) Inquire the PCI serial port resources (I/O address & IRQ) in DOS

Run "C:\PCI_DOS\SunixPCI.exe AUTO".

On-Board/ISA Serial COM1	3f8H
On-Board/ISA Serial COM2	2f8H
PCI Serial COM3	b800H,IRQ 10
PCI Serial COM4	b808H,IRQ 10
On-Board/ISA Parallel LPT1	ЗbcH
PCI Parallel LPT2 Remap	378н,IRQ 10

(2) Start the WINDOWS 3.1



(3) Change the port setting in Control Panel

	Control	Panel		-
<u>S</u> ettings	Help			
	A 7	Ð	<u>~</u>	
Color	Fonts Ports	Mouse	Desktop	Keyboard
		Ŷ	, © ĭ ii	<u>.</u>
Printers	International Date/Time 3	386 Enhanced	Drivers	Sound
Specifies o	communications settings	s for serial po	rts	
	Pa	rts		
	•	C	ancel	
- F	The second s	L		- I
COM	<u>1</u> : COM <u>2</u> :	<u>S</u> e	ttings	11
				5 I -
Ā			<u>H</u> elp	
COM	 3:			
_	Settings	for COM	3:	
Baud Rate:	19200			חוי
<u>v</u> ala Dil\$. 	• •		Ca	ancel
<u>P</u> arity:	None 生		Adve	head
<u>S</u> top Bits:	1 💻		Auva	
Flow Contro	d: Hardware	±	<u> </u>	lelp
	Advanced Se	ttings f	or CON	43:

Advanced Settings for COM3:							
Base I/O Port Address: b800	OK						
Interrupt Request Line (IRQ):	Cancel						
10 💻	<u>H</u> elp						

(4) Restart the system



(5) Check the new setting

After system restart, the I/O port setting maybe become DEFAULT.

Advanced Settings for COM3:									
<u>B</u> ase I/O Port Address: Default	OK								
Interrupt Request Line (IRQ):	Cancel								
10 👲	<u>H</u> elp								

At this time, it is possible to check the PCI serial port setting in \setminus windows\system.ini file.

```
.....
[386Enh]
.....
COM3Base=B800
COM4Base=B808
COM3Irq=10
COM4Irq=10
...
```

NOTE :

1. Since some Sunix PCI serial ports can support the remapping function (4025D/4027D/4028D/4036D/4037D/4038D/4079D/E/F), thus please check the Sunix PCI card by SunixPCI.exe utility. Clock= 1.8432 Mhz for remapable port

-	Clock 1.0452 White for reinapable port									
Item	Actual Baudrate	BIOS/DOS setting	Remark							
1	921600		Do not support							
2	460800		Do not support							
3	230400		Do not support							
4	115200	115200								
5	57600	57600								
6	38400	38400								
7	19200	19200								
8	9600	9600								
9	4800	4800								
10	2400	2400								
11	1200	1200								
12	300	300								

2. Since Sunix PCI serial card are drived by a higher CLK (14.7456 Mhz), thus the actual baud rate is 8 times higher than the BIOS/DOS baud rate setting. The below table shows the relation.

Clock 14.7430 Winz for an non-remapable port								
Item	Actual Baud rate	BIOS/DOS setting	Remark					
1	921600	115200						
2	460800	57600						
3	230400	28800	Non BIOS standard					
4	115200	14400	Non BIOS standard					
5	57600	7200	Non BIOS standard					
6	38400	4800						
7	19200	2400						
8	9600	1200						
9	4800	600	Non BIOS standard					
10	2400	300						
11	1200	150						
12	300	37.5	Non BIOS standard					

Clock= 14.7456 Mhz for all non-remapable port

2. Installation Guide for PCI Parallel Ports

Since WINDOWS 3.1 only support 3 parallel port (3BCh, 378h,278h) by default device driver. Thus the Sunix PCI parallel ports can be recognized in WINDOWS 3.1 if the DOS driver is activated in advance.

[Installation Steps]

(1) Check the PCI parallel port resources in DOS

Run "C:\PCI DOS\SunixPCI.exe AUTO".

On-Board/ISA Serial COM1	3f8H	
On-Board/ISA Serial COM2	2f8H	
PCI Serial COM3	b800H,IRQ	10
PCI Serial COM4	b808H,IRQ	10
On-Board/ISA Parallel LPT1	3bcH	
PCI Parallel LPT2 Remap	378H,IRQ	10
PCI Parallel LPT3 Remap	278H,IRQ	11

(2) Install the Printer in Control Panel





(3) Select Parallel Port for Printer Connection

- Connect	
HP LaserJet 5P/5MP (HP)	OK
Ports:	Cancel
LPT1: Local Port +	
LPT3: Local Port	<u>Settings</u>
COM1: Local Port Not Present COM2: Local Port +	Network
Timeouts (seconds) <u>D</u> evice Not Selected: 15	<u>H</u> elp
Transmission Retry: 45	
East Printing Direct to Port	

NOTE :

- 1. All Sunix PCI parallel ports are possible to be remapped to legacy I/O address (378h,278h), thus the DOS driver will start remapping function automatically if any one of the legacy ports is free.
- 2. For the better compatibility, it is recommended that on-board LPT1 is set to 3BCh.

♦ LINUX

1. Installation Guide for PCI Serial Ports

This installation guide describes the procedures to install SUNIX PCI serial ports in Linux platform.

[Linux Platform]

- Operating System : RedHat V6.1/V6.0 (Kernel 2.2.x / 2.0.x)
- Terminal Emulation AP : minicom / xminicom
- Internet Dialer : Kppp

[Installation Steps]

(1) Find the available serial ports

Since Linux only support 4 serial ports (ttyS0, ttyS1, ttyS2, ttyS3) under the default condition. Most likely, ttyS0 & ttyS1 are supported by mother board's built-in 16550 controllers and ttyS2 & ttyS3 are free for additional I/O card. (Note that ttyS2: S is upper case)

It could be checked by the following commands.

#setserial /dev/ttyS0 -a	(COM1)
#setserial /dev/ttyS1 -a	(COM2)
#setserial /dev/ttyS2 -a	(COM3)
#setserial /dev/ttyS3 -a	(COM4)

If COM1 is used by mouse, the response is similar to

/dev/ttyS0 : Device or resource busy

If the COM1 does not attach any device, the response is similar to

/dev/ttyS0, Line 0, UART: 16550A, Port: 0x3f8, irq: 4 Baud_base: 115200, clos_delay: 50, divisor: 0 closing_wait: 3000, closing_wait2: infinite Flags: spd_normal skip_test In case ttyS2 (COM3) is free, the response for command **# setserial /dev/ttyS2 -a** is shown below.

/dev/ttyS2, Line 2, UART: unknown, Port: 0x3e8, irq: 4 Baud_base: 115200, clos_delay: 50, divisor: 0 closing_wait: 3000, closing_wait2: infinite Flags: spd_normal skip_test (note that UART: unknown)

In case ttyS3 (COM4) is free, the response for command **# setserial** /dev/ttyS3 -a is shown below.

/dev/ttyS3, Line 3, UART: unknown, Port: 0x2e8, irq: 3 Baud_base: 115200, clos_delay: 50, divisor: 0 closing_wait: 3000, closing_wait2: infinite Flags: spd_normal skip_test (note that UART: unknown)

Finally, the /dev/ttyS2 & /dev/ttyS3 are free for PCI serial ports.

(2) Find the PCI card resource (IO port address & IRQ) for the serial ports

Please enter the command "#more /proc/pci". The response is similar to the following

Bus 0, Device 11, function 0: ^^ Serial controller : Unknown vendor Unknown device (rev 1). Vendor id=1409, Device id=7168 Medium devsel. Fast back-to-back capable. IRQ 10 ^^ I/O at 0xef80 [0xef81] ^^^ (note : ^^ means it could be different from the above.

They are varied with the different PC.)

From the /proc/pci file, it is possible to find the PCI card's IO port address and IRQ. Especially, the SUNIX card always shows

"Vendor id=1409, Device id=7168".

(3) Configure the parameters for ttyS2 & ttyS3

for SUNIX 4025A card (PCI 1S), please enter (if ttyS2 is free) # setserial /dev/ttyS2 port 0xef80 UART 16550A irq 10 Baud_base 921600

for SUNIX 4036A card (PCI 2S), please enter (if ttyS2 & ttyS3 are free)

setserial /dev/ttyS2 port 0xef80 UART 16550A
irq 10 Baud_base 921600
setserial /dev/ttyS3 port 0xef88 UART 16550A
irq 10 Baud_base 921600

(4) Check the setting for ttyS2 & ttyS3

Please enter **# setserial /dev/ttyS2 -a** The response look likes below

- /dev/ttyS2, Line 2, UART: 16550A, Port: 0xef80, irq: 10 Baud_base: 921600, clos_delay: 50, divisor: 0 closing_wait: 3000, closing_wait2: infinite Flags: spd_normal skip_test
- (5) Then the ttyS2 & ttyS3 are ready for application (eg. minicom -s or xminicom -s or Kppp ...)

(6) In case more than 4 serial ports are needed

If there are more than 4 serial ports to be supported by Linux system, (e.g. Sunix 4055A/4056A/4065A/4066A/4095A/4096A cards) the first step is to add more tty device nodes into system.

Inquire the system tty device nodes,

#ls -al /dev/ttyS*

crw	1	root	tty	4,	64	Jan	8	11:40	/dev/ttyS0
crw	1	root	tty	4,	65	Jan	8	11:40	/dev/ttyS1
crw	1	root	tty	4,	66	Jan	8	11:40	/dev/ttyS2
crw	1	root	tty	4,	67	Jan	8	11:40	/dev/ttyS3

Add tty device node one by one

/dev/ttyS4	c	4	68	(for ttyS4)
/dev/ttyS5	c	4	69	(for ttyS5)
/dev/ttyS6	c	4	70	(for ttyS6)
/dev/ttyS7	c	4	71	(for ttyS7)
	/dev/ttyS4 /dev/ttyS5 /dev/ttyS6 /dev/ttyS7	/dev/ttyS4 c /dev/ttyS5 c /dev/ttyS6 c /dev/ttyS7 c	/dev/ttyS4 c 4 /dev/ttyS5 c 4 /dev/ttyS6 c 4 /dev/ttyS7 c 4	/dev/ttyS4 c 4 68 /dev/ttyS5 c 4 69 /dev/ttyS6 c 4 70 /dev/ttyS7 c 4 71

Please add all tty device nodes accordingly

Configure the parameters for all new ttyS*

Please repeat step (2) (3) (4) to inquire and change the I/O address for each tty device. Because all the new added tty device nodes are still invalid by default.

For <u>PCI 4S card (4055A/4056A</u>), it allocate **2** I/O resources. You could inquire it according to step(2). E.g. # more /proc/pci

.....

Vendor id=1409, Device id=7168 Medium devsel. Fast back-to-back capable. IRQ 10

I/O at 0xd000 [0xd001] \rightarrow 1st port=0xd000, 2nd port=0xd008 I/O at 0xb800 [0xb801] \rightarrow 3rd port=0xb800, 4th port=0xb808

For <u>PCI 8S card (4065A/4066A)</u>, it allocate **6** I/O resources. You also need to inquire its allocated address

more /proc/pci

Vendor id=1409. Device id=7168 Medium devsel. Fast back-to-back capable. IRQ 10 $\wedge \wedge$ → 1st port=0xd000, 2^{nd} port=0xd008I/O at 0xd000 [0xd001] \rightarrow 3rd port=0xb800, 4th port=0xb808 I/O at 0xb800 [0xb801] \rightarrow 5th port=0xb400 I/O at 0xb400 [0xb401] \rightarrow 6th port=0xb000 I/O at 0xb000 [0xb001] \rightarrow 7th port=0xa800 I/O at 0xa800 [0xa801] $\rightarrow 8^{\text{th}} \text{ port=0xa400}$ I/O at 0xa400 [0xa401]

Re-Inquire the system tty device nodes,

#ls -al /dev/tt	yS*							
crw	1	root	tty	4,	64	Jan	8	11:40
/dev/ttyS0								
crw	1	root	tty	4,	65	Jan	8	11 : 40
/dev/ttyS1								
crw	1	root	tty	4,	66	Jan	8	11 : 40
/dev/ttyS2								
Crw	1	root	tty	4,	67	Jan	8	11:40
/dev/ttyS3								
crw-rr	1	root	root	4,	68	Jan	18	11:40
/dev/ttyS4								
crw-rr	1	root	root	4,	69	Jan	18	11:40
/dev/ttyS5								
crw-rr	1	root	root	4,	70	Jan	18	11:40
/dev/ttyS6								
crw-rr	1	root	root	4,	71	Jan	18	11:40
/dev/ttyS7								

Important Notes :

(1) Since all serial ports on Sunix PCI card are using only one interrupt pin, you must set them the same IRQ number with **setserial** command.

(2) Un-installation,

e.g.#rm /dev/ttyS4 (remove ttyS4 device)

2. Installation Guide for PCI Parallel Ports

This installation guide describes the procedure to install SUNIX PCI parallel ports in Linux platform.

[Linux Platform]

- Operation System: RedHat V6.1/V6.0 (Kernel 2.2.x / 2.0.x)
- "AnotherLevel menu -> administration -> printtool" in X windows.

[Installation steps]

Linux kernel provide a 'parport' code to support parallel port (/dev/lp0, /dev/lp1, /dev/lp2). This code provides the ability to share one port between multiple devices. And it is loadable when kernel is running.

The 'parport' code is split into two parts : generic (which deals with port sharing) and architecture-dependent eg. X86, SPARC. (which deals with actually using the port). Thus, please take the following steps to install 'parport' module!

(1) Check the on-board parallel port's hardware resources

Most likely each motherboard has one built-in parallel port. And its hardware resources are settable with BIOS utility.

(for example, on-board parallel is in 0x378 port, IRQ=7)

(2) Find the PCI resource (IO port address & IRQ) for the parallel ports

please enter the command "**# more /proc/pci**" The response will look like the following

Bus 0, Device 11, function 0:

```
Parallel controller : Unknown vendor Unknown device (rev 1).
Vendor id=1409, Device id=7268 (or 7168)
Medium devsel. Fast back-to-back capable. IRQ 10
^^
I/O at 0xe000 [0xe001]
I/O at 0xd800 [0xd801]
I/O at 0xd400 [0xd401]
I/O at 0xd400 [0xd001]
^^^^
```

(**Note** : ^^ means it could be different from the above. They are varied with the different PC.)

From the /proc/pci file, it is possible to find the PCI card's I/O port address and IRQ. Especially, the SUNIX card always shows

"Vendor id=1409, Device id=7268" or "Vendor id=1409, Device id=7168"

(3) Install 'parport' module

<step I> to load the generic 'parport' code

insmod parport.o

<step II> to load the architecture-dependent code to tell 'parport' code

that you have three PC-style ports, one at 0x378 with IRQ 7, one at 0xe000 with no IRQ, one at 0xd400 with no IRQ.

Note :

1. Please enter "#find /lib -name parport.o" to find out the correct

file path. (it is varied with the different kernel version)

2. For the detailed description, please refer to /Documentation /parport.txt in Linux kernel

(4) Check the attached printer device [optional]

once the architecture-dependent part of the paraport code is loaded into the kernel. You could enter the following command

insmod parport_proble.o

to check any attached devices and log a message similar to

parport0: Printer, BJC-210 (Canon)

(5) Then /dev/lp0, /dev/lp1 and /dev/lp2 are ready for service

Now parallel port is available, please connect a correct type of printer for your printing applications.

(eg. AnotherLevel menu -> administration -> printttool in X windows)

Note :

- 1. Type "# cat /dev/printcap" to inquire the printer connection.
- 2. It's possible to print a text file to the printer for verification (#lpr -Pprinter_name textfile_name)

(6) In case more than 3 parallel ports (eg. /dev/lp3, /dev/lp4 ...) are needed for service

Please get the root privilege and enter the following command

#mknod /dev/lp3 6 3
#chmod 660 /dev/lp3
#chgrp daemon /dev/lp3
→to add /dev/lp3 into kernel

#mknod /dev/lp4 6 4
#chmod 660 /dev/lp4
#chgrp daemon /dev/lp4
→to add /dev/lp4 into kernel

•••••

then please enter the following command to check /dev/lp devices

#ls -al /dev/lp*								
Crwxrwxrwx	1	root	daemon	6,	0	may	5	1998
/dev/lp0								
Crwxrwxrwx	1	root	daemon	6,	1	may	5	1998
/dev/lp1								
Crwxrwxrwx	1	root	daemon	6,	2	may	5	1998
/dev/lp2								
Crwxrwxrwx	1	root	daemon	6,	3	dec	9	1999
/dev/lp3								
Crwxrwxrwx	1	root	daemon	6,	4	dec	9	1999
/dev/lp4								

and then repeat step (3) to load parport module for /dev/lp*.

Note : #rm /dev/lp3 to remove it

♦ Windows 2000

- 1. Windows 2000 Driver Installation Guide
 - After running the Windows 2000, Windows 2000 will find a "PCI Serial Port" or "PCI Parallel Port" installed in your computer and need new drivers to support this hardware.



➤ Click [Next].



Select "Search for a suitable driver for my device (recommended)" and click [Next].

Found New Hardware Wizard
Install Hardware Device Drivers A device driver is a software program that enables a hardware device to work with an operating system.
This wizard will complete the installation for this device:
C Senal Port
A device driver is a software program that makes a hardware device work. Windows needs driver files for your new device. To locate driver files and complete the installation click Next.
What do you want the wizard to do?
Search for a suitable driver for my device (recommended)
C Display a list of the known drivers for this device so that I can choose a specific driver
< Back Next > Cancel

Please insert the driver disk and select the driver location. Click [Next].



≻ Click [Next].

Windows 2000 will install PCI multi I/O card driver to your computer.

Found New Hardware Wizard
Driver Files Search Results The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
PCI Serial Port
Windows found a driver for this device. To install the driver Windows found, click Next.
a:\snxpci.inf
<back next=""> Cancel</back>

≻Click [Finish].



2. Windows 2000 uninstall guide

Click the "Hardware Wizard" in "Hardware" of System Properties.



Click [Next]

Add/Remove Hardware	Wizard
	Welcome to the Add/Remove Hardware Wizard
	This wizard helps you add, remove, unplug, and troubleshoot your hardware.
	To continue, click Next.
	<back next=""> Cancel</back>

Select "Uninstall/Unpluging a device and click [Next].

Add/Remove Hardware Wizard	
Choose a Hardware Task Which hardware task do you want to perform?	
Select the hardware task you want to perform, and then click Next. C Add/Troubleshoot a device Choose this option if you are adding a new device to your computer or are having problems getting a device working.	
C Uninstall/Unplug a device Choose this option to uninstall a device or to prepare the computer to unplug a device.	
< <u>B</u> ack <u>N</u> ext≻ Can	cel

Select "Uninstall a device and click [Next].

Add/Remove Hardware Wizard
Choose a Removal Task You can remove a device permanently or temporarily.
Select the removal task you want to perform, and then click Next.
< <u>B</u> ack <u>N</u> ext> Cancel

Select the "PCI 4079A Multi I/O Adapter" and click [Next].

Add/Remove Hardware Wizard	
Installed Devices on Your Computer The following hardware is installed on your com	puter.
Select the device you want to uninstall.	
QUANTUM FIREBALL_TM1280A	
ISAPNP Read Data Port	
IMG VP1	
PCI 4079A Multi- I/O Adapter	
🔜 S3 Trio32/64	
📃 Intel 82439HX Pentium(r) Processor to PC	1 bridge
📃 Intel 82371 SB PCI to ISA bridge	•
「 └─_ Show hidden devices	
	< Back Next > Cancel

Select the "Yes, I want to uninstall this device" and click [Next].

Add/Remove Hardware Wizard			
Uninstall a Device Confirm that you want to uninstall this device.			
PCI 4079A Multi- I/O Adapter Are you sure that you want to uninstall this device? Yes, I want to uninstall this device No. I do not want to uninstall this device	7		
	< <u>B</u> ack	<u>N</u> ext >	Cancel

Click [Finish].



3. How to check your Win2000 installation

Step 1:

Double click the System icon in control panel.



Step 2:

Select the "Hardware" in system properties and click the "Device Manager".



Step 3:

After install PCI multi I/O card (for example 4079A), you will find three ports added (COM3, COM4, LPT2).



Note: Sometimes you may find the PCI serial port does not locate just behind the on board Communication Port. It may happen as following. The COM3 and COM4 are not used.



This problem is caused from the following reasons.

- When you plug the installed PCI card to another PCI slot without unistalling and re-installing the driver.
- When you remove the installed PCI card and installed a different PCI card without un-istalling and re-installing the driver.

There are three methods to solve this problem.

1. When you want to remove or change the PCI card, please un-install the driver first.

2. Change the individual COM port number in Advanced Setting for COM port. For example, change the COM5 to the actually unused COM3 port.

Device Manager DET Equip Device COME) Proportion		
Advanced Settings for COM5	? ×	
Enable Auto CTS/RTS Flow Control	OK Cancel	
Use FIFO buffers control	Defaults	
Enable 32 Byte FIFO buffers		
Enable 64 Byte FIFO buffers		
Select lower settings to correct connection problems. Select higher settings for faster performance.		
Receive Buffer: Low (1)		
Transmit Buffer: Low (1)		
COM Port Number: COM5 ▼ COM3 (in use) ▲ COM4 (in use) ← COM5 COM6 (in use) ▼ OK Cancel		
Analyzer		
	In-1	

3. Delete the hidden and unused COM port from un-installing a device.

dd/Remove Hardware Wizard			
Installed Devices on Your Computer The following hardware is installed on your o	computer.		
Select the device you want to uninstall.			
Rumeric data processor			
📃 Logical Disk Manager			
🔜 Parallel Class Enumerator			
Logitech First/Pilot Mouse Serial (M34,	M35,C43)		
PCI Parallel Port (LPT2)			
PCI Serial Port (COM6)			_
Show hidden devices			
	< Back	Next>	Cancel
		4	

Click the "Show hidden devices", You will find all COM ports. Please remove the driver and all COM ports and re-install the driver. You will find the continuous COM port index for the COM ports.

'Remove Hardware Wizard			
nstalled Devices on Your Computer The following hardware is installed on your	r computer.		
Select the device you want to uninstall.			
Devices			
PCI Parallel Port (LPT3)			
PCI Parallel Port (LPT2)			
PCI Parallel Port (LPT2)			
PCI Serial Port (COM3)			
PCI Serial Port (COM4)			
ZPCI Serial Port (COM5)			
PCI Serial Port (COM6)			•
Show hidden devices			
	< <u>B</u> ack	<u>N</u> ext >	Cancel

4. How to Configure COM port

Step 1:

Select the PCI Serial Port you want to configure for example COM3. Press the right button and select **[Properties]**.



Step 2:

Click the [Port Settings].

Configure the Bits per second, Data bits, Parity, Stop bits and Flow control if you want to change.

PCI Multi I/O Card Serial Port (COM3) Properties	?×
General Port Settings Driver	
Bits per second: 9600	
Data bits: 8	_
Parity: None	_
Stop bits: 1	
Elow control: None	_
Advanced	Restore Defaults
	OK Cancel
	Cancer

There are three kinds of flow control: Xon/Xoff, Hardware and None. The Xon/Xoff is using software protocol. The Hardware means the flow control is using RTS/CTS, but the RTS/CTS is controlled by software. The None means there is no flow control.

Click the [Advanced] if you want to set more advanced features.

Step 3:

Configure the Enable Auto CTS/RTS Flow Control, 16/32/64 bytes FIFO length, and Receive/Transmit Buffer trigger level if you want to change.

F Enable Auto	CTS/RTS FI	ow Control				OK
						Cancel
✓ Use FIFO but	ers control					Defaults
Enable 32 By	te FIFO buffe	ers				
🗖 Enable 64 By	te FIFO buffe					
Select lower sett	inas to corre	ct connection	problems.			
Select higher se	tings for fast	er performan	Ce.			
<u>R</u> eceive Buffer:	Low (1)			—Į	High (28)	
Transmit Buffer:	Low (1)]	High (32)	

Enable Auto CTS/RTS Flow Control means the CTS/RTS flow control is controlled by hardware automatically. System will be more stable if the function is enabled.

If your card can support 32 bytes FIFO, you can use 16 or 32 bytes FIFO. The default value is Use 16 Byte FIFO buffers. If your card cannot support 32 bytes FIFO, the Enable 32 Byte FIFO buffers will be shadowed.

Set the Receive/Transmit Buffer to higher value will get faster performance because the interrupts will be reduced, but the time for interrupt service routine will become shorter. The receive buffer overflow will be easily happened if the CPU speed is not enough to handle. If the system is not stable, select the lower value to correct problems.

If you want to change the COM port index, please select from "COM Port Number" and choose the new index that is not in use.