RS-232 Universal PCI Multi-Port Communication Board

User's Manual

Second Edition, Aug 2005



SUNIX Co., Ltd.

Tel : +886-2-8913-1987 Fax: +886-2-8913-1986 Http://www.sunix.com.tw info@sunix.com.tw

CE F©

RS-232 Universal PCI Multi-Port Communication Board User's Manual

Copyright

Copyright© 2005 SUNIX Co., Ltd. All Rights Reserved.

No part of this publication may be reproduced, transcribed, stored in a retrieval system, translated into any language, or transmitted in any from or by any means, photocopying, manual, or otherwise, without prior written permission from SUNIX Co., Ltd.

Disclaimer

SUNIX Co., Ltd. Shall not be liable for any incidental or consequential damages resulting from the performance or use of this equipment.

SUNIX Co., Ltd. makes no representations or warranties regarding the contents of this manual. Information in this manual has been carefully checked for reliability; however, no guarantee is given as to the correctness of this content. In the interest of continued product improvement, this company reserves the right to revise the manual or include change in the specifications of the product described within it at any time without notice and without obligation to notify any person of such revision or changes. The information contained in this manual is provided for general use by the customers.

Trademarks

SUNIX is a registered trademark of SUNIX Co., Ltd.

Other registered marks used herein are for identification purposes only and may be trademarks of their respective owners.

Safety Information

- 1. Keep this User's Manual for future reference.
- 2. Always read the safety information carefully.
- 3. Keep this equipment away from direct sunlight, or in humid or damp places.
- 4. Do not place this equipment in an unstable position, or on vibrating surface before setting it up.
- 5. Do not use or place this equipment near magnetic fields, televisions, or radios to avoid electronic interface that affects device performance.
- 6. Do not attempt to disassemble or repair the equipment or the warranty would be useless.
- 7. To avoid damaging your system and equipment, please make sure that your computer is off before you install the product.



Chapter 1	Introduction1-1
	Overview1-2
	Package Checklist1-2
	Product Features 1-3
	Product Specifications1-4
Chapter 2	Hardware Installation2-1
	Hardware Installation2-2
	Pin Assignment 2-2
Chapter 3	Software Installation3-1
	Windows 2000/XP/2003 (32bit)
	Windows 2000/XP/2003 (32bit WHQL)
	Windows XP/2003 (64bit)3-17
	Windows 95/98/Me
	Windows NT3-32
	Windows 3.13-36
	Windows CE.NET
	DOS
	Linux
Chapter 4	Trouble Shooting4-1
Appendix	5-1
	Core Technologies 5-2
	Contract Information 5-5

1. Introduction

RS-232 Golden I/O series, a line of Universal PCI Multi-port Serial Communication Board, is designed for both 3.3V / 5V and 32 / 64-bit PCI Bus with Plug and Play feature. Its can be installed in virtually any available PC system and compatible with all major operating systems. Users do not need to manually set jumpers to configure I/O addresses and IRQ locations.

These boards offer independent serial ports for connecting terminals, modems, printers, scanners, cash registers, bar code readers, keypads, numeric displays, electrical scales, data acquisition equipment, and other serial devices for the PC and compatible systems. This board offers a reliable and high performance solution for serial multi-port communications.

The following topics covered in this chapter:

- Overview
- Package Checklist
- Product Features
- Product Specifications

Overview

Thanks for purchasing Universal PCI Multi-Port Communication Board compatible RS-232.V24 standard serial interfaces. The Multi-port PCI serial card equips with 1, 2, 4, or 8 independent DB9 or DB25 RS-232 high-speed serial ports which accessed through DB-9 or DB-25 male connectors for industrial communication and automation applications. Each serial port has built-in 32byte hardware FIFO, on-chip hardware flow control, and provides data transfer speed up to 921Kb/Sec with industry standard 16C650 asynchronous communication chip.

Package Checklist

Please check if the following items are present and in good condition upon opening your package. Contract your vendor if any item is damaged or missing.

1. Hardware:

Serial Communication Board: RS-232 Universal PCI Multi-Port Communication Board × 1 Cable: (Depend on what product you bought) 4 ports PCI series: DB37M to 4 ports DB9/25 Male Cable × 1 RJ45 to 1 port DB9/25 Male Cable × 4 8 ports PCI series: DB62M to 8 ports DB9/25 Male Cable × 1 DB37M to 4 ports DB9/25 Male Cable × 2 2. CD Driver

- 3. Quick Installation Guide
- 4. User's Manual (This document)

Product Features

- Fully compatible with PCI Spec. Ver2.2 standard.
- Support 1, 2, 4 or 8 independent RS-232 serial ports.
- Supports both 64-bit & 32-bit PCI Bus and 3.3V &5V connector keys.
- Low repair rate with ASIC design.
- Data transmission speeds up to 921.6Kbps.
- Certified by Microsoft WHQL, CE, FCC approval.
- Each serial port has built-in 32 byte hardware FIFO and 128K byte FIFO under Windows 2000, XP, and 2003 operation system.
- High speed 16C650 compatible communication controller with SUN1889 single chip hardware flow control to guarantee no data loss and best technical support.
- Hardware supports Re-map function for legacy COM I/O ISA address 3F8, 2F8, 3E8, 2E8. (Re-Map card only)
- Support DOS, Linux, Microsoft Windows CE.NET, 3.x, 95, 98, Me, NT, 2000, XP, and 2003.
- Ready for the Intel® Itanium® and AMD® Athlon 64® 64-bit CPU system on the Microsoft Windows® XP 64-bit Edition Version 2003 and Windows® Sever 2003 for 64-bit Itanium-based or Extended Systems.
- Operation Temperature: 0 to 60 °C
 Operation Humidity: 5~95% RH
 Storage Temperature: -20 to 85°C

NOTE:

You can get more core technologies detail in Appendix chapter.

Product Specifications

• Function

Туре	Universal PCI Multi-Port Communication Board					
Mode of Operation	Hand-Shaking					
Bus Transceivers	RS-232 Full-Duplex					
Drivers per Line	RS-232 1 Driver					
Receivers per Line	RS-232 1 Receivers					
Hardware						
IC	SUN1889					
Controller	16C650 compatible UART					
Bus Interface	64-bit & 32-bit PCI Bus					
Dus interiace	3.3V & 5V Connector Key					
Number of Ports	1, 2, 4 or 8 ports					
Bracket	Standard 121 mm, Low Profile79.2 mm					
Communication						
IRQ & I/O address	Assigned by BIOS / O.S.					
FIFO	32 byte hardware FIFO					
	128K byte FIFO under Windows 2000, XP, and 2003 OS					
Baud rate	75bps ~ 921.6 Kbps					
Data bit	5,6,7,8					
Stop bit	1,1.5,2					
Parity	even, odd, none, mark, space					
Flow Control	None, Xon/Xoff, Hardware					
Signal	TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND					
Driver support						
	Microsoft Windows					
Driver Support	CE4.2/CE5.0/3.x/95/98SE/Me/NT/2000/XP/2003					
	DOS, Linux 2.0.x / 2.2.x / 2.4.x / 2.6.x					
Dimensions						
	1 port: 120 × 52 mm					
Dimensions $(W \times D)$	2 port: 120 × 74 mm					
	4 port: 120 × 80 mm					
	8 port: 144 × 102 mm					
Regulatory Approvals						

Regulatory Approvals CE, FCC, Microsoft WHQL

Hardware Installation

This chapter includes information about hardware installation for RS-232 Universal PCI Multi-Port Communication Board. The following topics are covered:

- Hardware Installation
- Pin Assignments

Hardware Installation

The hardware installation of PCI serial boards is easy to carry out. Before inserting the card into the PCI bus, please follow the detailed steps given below to install the PCI serial board in your computer.

Safety First

To avoid damaging your system and boards, make sure your PC's power is turned off before installing PCI card.

- Step 1: Turn your PC's power off, and shut off the power to any peripheral.
- Step 2: Remove the power plug from the plug socket.
- Step 3: Remove the cover from the computer case.
- Step 4: If fitted. Remove the metal cover plate on the rear of a free PCI slot.
- **Step 5:** Insert Universal PCI Multi-Port Communication Board into the free PCI slot and screw it firmly on the bracket side.
- Step 6: Place the cover back onto the computer.
- Step 7: Insert the plug into the plug socket.



Pin Assignment



1 DCD

2 RxD

3 TxD

4 DTR

5 GND

Software Installation

After installing the RS-232 Universal PCI Multi-Port Communication Board in your system successfully, please follow the step by step software installation guide to confirm how to install appropriate driver and configure the serial port settings.

The driver for PCI serial board supports various operating systems, and you can select your requirement in the following chapter:

The following topics covered in this chapter:

- Windows 2000/XP/2003 (32-bit)
- Windows 2000/XP/2003 (32-bit WHQL)
- Windows XP/2003 (64-bit)
- Windows 95/98/Me
- Windows NT
- Windows 3.1
- Windows CE.NET
- DOS
- Linux

Windows 2000/XP/2003 (32-bit)

Installing Driver

On booting up, system will detect present of the PCI Serial Board and prompt for driver installation wizard, but ignore it. Please insert the driver CD in your CD/DVD ROM drive and run point directory setup file:

: \IO\PCI IO\win2k and xp\setup.exe



(1) Please click "**Next**" to continue when Multi-IO Adapter PCI Driver window shows up.



Note:

The driver program will detect and uninstall the previous I/O driver which you installed before. This step may take a few minutes and please be patient of the process.

(2) You can select the folder location which driver installed.

Click "Next" to continue.

🚇 Multi-IO Adapter PCI Multi-I/O Driver ¥6.000 Setup 🛛 🛛 🔀
Destination Location
Setup will install Multi-IO Adapter PCI Multi-I/O Driver V6.000 in the following folder.
To install into a different folder, click Browse and select another folder.
You can choose not to install Multi-IO Adapter PCI Multi-I/O Driver V6.000 by clicking Cancel to exit Setup.
Destination Folder C\Program Files\Multi-IO Adapter\PCL MultiIO Driver Browse
Wise Installation Wizard?
Cancel

(3) A Digital Signature Not Found window will open. Although this message states that this PCI serial board driver does not contain a Microsoft digital signature, you can rest assured, since the driver has already been tested and been shown that it can support Windows OS. (

|--|

Softwar	e Installation
<u>.</u>	The software you are installing has not passed Windows Logo testing to verify its compatibility with Windows XP. (<u>Tell me why</u> <u>this testing is important.</u>) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the software vendor for software that has passed Windows Logo testing.
	Continue Anyway STOP Installation

(4)Please click "Finish" to finish installation step and Eject the CD driver.

(5)New "PCI Serial Port" will be found in Found New Hardware Wizard window. Select "Install the software automatically (Recommend) " and click "**Next**".

Found New Hardware Wiz	ard
	Welcome to the Found New Hardware Wizard This wizard helps you install software for: PCI Serial Port
	If your hardware came with an installation CD or floppy disk, insert it now. What do you want the wizard to do?
	 Install the software automatically (Recommended) Install from a list or specific location (Advanced) Click Next to continue.
	< Back Next > Cancel

(6)A **Digital Signature Not Found** window will open. Although this message states that this PCI serial board driver does not contain a Microsoft digital signature, you can rest assured, since the driver has already been tested and been shown that it can support Windows OS.

Click "Continue Anyway" to continue the installation.



(7)System will install "PCI Serial Port" driver automatically.

Found New Hardware Wizard	
Please wait while the wizard installs the software.	
PCI Serial Port	
snxprops.dll To C:\WINDOWS\System32	5
(<u>N</u> ext > Cancel

(8)Please click "Finish" to finish installation step.

Found New Hardware Wiz	ard
	Completing the Found New Hardware Wizard The wizard has finished installing the software for: PCI Multi-I/O Adapter
	Click Finish to close the wizard.
	< Back Finish Cancel

Note:

The "Found New Hardware Wizard" windows will show up and re-install driver several times until you finish installing each serial port. Please repeat step(5) to step(8) installation steps.

Configure the Serial Port Settings

- 1. Please launch the "**Device Manager**" from Start \rightarrow Control Panel \rightarrow System
- 2. Right click the "PCI Serial Port (COMXXX)" item from the "Ports (COM & LPT)" sub-tree and click "Properties".



3. Click "Port Settings" tab page and click "Advanced" for advanced settings.

PCI Serial Port (COM4) Properties	PCI Serial Port (COM4) Properties 🛛 🔹 🛛 🛛
General Port Settings Driver	General Port Settings Driver
PCI Serial Porv(COM4)	Bits per second: 9600
Device type: Ports (COM & LPT)	Data bits: 8
Manufacturer: Multi-IO Adapter Location: Location 6 (PCI Serial Port 2)	Parity: None
Device status	Stop bits: 1
This device is working properly.	Elow control: None
start the troubleshooter.	Advanced
	ŭ
Device usage:	
Use this device (enable)	
OK Cancel	OK Cancel

4. Click "Defaults" button for restoring default advanced settings.

	for COM	14					?
Enable CTS/	RTS Auto I	Flow Con	trol				ок
Note: This option is selected on the for high bit rates (;	has an eff Port Settir 230 kbps a	ect only il ngs page. and abovi	f Hardware . Use Auto e).	e flow con Flow Cor	ntrol ntrol		Cancel
	fers contro	1					Defaults
Enable 32 By	te FIFO bu	ffers					N
Enable <u>6</u> 4 By	te FIFO bu	ffers					
Select lower settin	ngs to corr	ect conne	ection prot	olems.			
Select higher sett	ings for fas	ster perfor	mance.		-		
Select higher sett <u>R</u> eceive Buffer:	ings for fas Low (1)	ster perfor	mance.		—Į	High (28)	
Select higher sett	ings for fas Low (1)	ster perfor	mance.		—ļ	High (28)	
Select higher sett <u>R</u> eceive Buffer: <u>T</u> ransmit Buffer:	ings for fas Low (1) Low (1)	ster perfor	, i		—Ţ	High (28) High (32)	

5. Check/un-check the "Enable CTS/RTS Auto Flow Control" checkbox to enable/ disable the hardware auto flow control feature.

OK Cancel
Cancel
<u>D</u> efault

6. Check/Un-check the "**Use FIFO buffers control**" checkbox to enable / disable the hardware FIFO buffering feature or you can select the size of FIFO if "Use FIFO buffers control" is enabled.

Enable CTS/RTS Auto Flow Control Note: This option has an effect only if Hardware flow control is selected on the Port Settings page. Use Auto Flow Control for high bit rates (230 kbps and above).	OK Cancel
Use FIFO buffers control Shable 32 Byte FIFO buffers Enable 64 Byte FIFO buffers Select lower settings to correct connection problems. Select higher settings for faster performance.	Defaults
Receive Buffer: Low (1)	
Iransmit Buffer: Low (1)	
Software FIFO Size 4k	
COM Port Number: COM4	

Also you can use software FIFO length from **128 byte to 128K byte**. There is more detail introduction in trouble shooting chapter FAQ8.

			7	
ow Con	trol			OK
xt only il Is page. d above	f Hardware Use Auto e).	e flow contr Flow Cont	rol rol	Cancel
				<u>D</u> efaults
ers				
ers				
t conne r perfor	ection prob mance.	olems.		
1	1		— / High (28)	
			— / High (32)	
	8k			
	it only il s page. d above rs t conne r perfor	IN Control It only if Hardware s page. Use Auto d above). It connection prot r performance. Bk	It only if Hardware flow contr s page. Use Auto Flow Cont d above). It connection problems. It connection problems. It performance. Bk Bk It	It only if Hardware flow control s page. Use Auto Flow Control d above). It connection problems. It connection problems. It performance. It high (28) It high (32) It high (

7. Re-map the COM port number by select a free COM port number from the "COM Port Number" combo box. The (in use) means this COM port number is used by another COM port.

anced Settings for COM	14					?
Enable CTS/RTS Auto	Flow Con	trol				OK
Note: This option has an eff is selected on the Port Settii for high bit rates (230 kbps a	ect only i ngs page and abov	f Hardware . Use Auto e).	e flow con I Flow Con	trol htrol		Cancel
☑ Use FIFO buffers contro	í.					<u>D</u> efaults
Enable 32 Byte FIFO bu	ffers					
Enable <u>6</u> 4 Byte FIFO bu	ffers					
Select lower settings to corr Select higher settings for fas	ect conne ter perfor	ection prot mance.	olems.			
<u>Receive Buffer:</u> Low (1)	-			—J	High (28)	
Transmit Buffer: Low (1)			<i>.</i>		High (22)	
	T.		-	{_{1}}	riigh (52)	
Software FIFO Size		8k		•		
OM Port Number: COM4	1	Į				
COM12	-	12				

8. Click "**OK**" to save your settings, and repeat above steps for each serial port.

vanced Settings for COM	A4				?
Enable CTS/RTS Auto	Flow Contr	rol			
Note: This option has an eff is selected on the Port Setti for high bit rates (230 kbps	fect only if ngs page, and above	Hardwar Use Auto).	e flow con 5 Flow Cor	trol htrol	Cancel
☑ Use FIFO buffers contro	bl				Defaults
🔽 Enable <u>3</u> 2 Byte FIFO bu	uffers				
☐ Enable <u>6</u> 4 Byte FIFO bu	iffers				
Select lower settings to corr Select higher settings for fa	rect conne ster perforn	ction prol nance.	blems.		
<u>R</u> eceive Buffer: Low (1)		1	1	— High (28)	
<u>I</u> ransmit Buffer: Low (1)				—— High (32)	
		La.		-	



(1) Please launch the "Add or Remove Programs" in control panel

Add or Remove Programs

- Start > Control Panel > Add or Remove Programs
- (2) Please select PCI Multi-I/O Driver, and click "Change/Remove" button to uninstall driver.

🐻 Add or Re	move Programs	
Change or Remove	Currently installed programs:	Sort by: Name
Programs	To change this program or remove it from your computer, click Change/Remove.	Change/Remove
Add <u>N</u> ew Programs		N
Add/Remove <u>W</u> indows Components		
		Cl <u>o</u> se

(3) Please click "**Uninstall**" in Multi-IO Adapter Uninstall Wizard then system will uninstall your PCI serial board automatically.



Windows 2000/XP/2003 (32-bit WHQL)

The following procedure is for installing PCI serial board driver under 32- bit hardware system under Windows 2000, XP and 2003. This driver is certified by Microsoft. You can get more detail in trouble shootings chapter FAQ9.

Installing Driver

On booting up, system will detect present of the PCI Serial Board and prompt for driver installation wizard. Please insert the CD driver bound with PCI serial board into you CD/DVD ROM.

(1) Please select "Install from a list or specific location (Advanced)" and click "Next" to continue in Found New Hardware Wizard window.



(2) Click "**Browse..**", and specify the driver locate within the CD driver. Click "**Next**" to continue.

:\IO\PCI IO\WHQL Driver for 2K_XP_2003\

rdware Update Wizard					
Please choose	your search and installation options.				
③ <u>S</u> earch fo	or the best driver in these locations.				
Use the c paths and	heck boxes below to limit or expand the default search, which includes local I removable media. The best driver found will be installed.				
🗌 Se	arch removable <u>m</u> edia (floppy, CD-ROM)				
🗹 Inc	lude this <u>lo</u> cation in the search:				
G:	VIO\PCI IO\WHQL Driver for 2K_XP_2003				
O Don't sea	rch. I will choose the driver to install. $\sqrt{2}$				
Choose th the driver	is option to select the device driver from a list. Windows does not guarantee the you choose will be the best match for your hardware.				
	Rack Next > Cancel				

(3) System will install the appropriate driver automatically.

Found New Hardware Wizard	
Please wait while the wizard installs the	software
PCI Serial Port	
snxprops.dll To C:\WINDOWS\System32	
	< <u>B</u> ack Next > Cancel

(4) Please click "Finish" to end of PCI serial board installation steps.

Hardware Update Wizard	
	Completing the Hardware Update Wizard The wizard has finished installing the software for: PCI Multi-I/O Adapter Click Finish to close the wizard.
	K Back Finish Cancel

Note:

The "Found New Hardware Wizard" windows will show up and re-install driver several times until you finish installing each serial port. Please repeat step(1) to step(4) installation steps.

Configure the Serial Port Settings

- 1. Please launch the "**Device Manager**" from Start \rightarrow Control Panel \rightarrow System
- 2. Right click the "PCI Serial Port (COMXXX)" item from the "Ports (COM & LPT)" sub-tree and click "Properties".



3. Click "Port Settings" tab page and click "Advanced" for advanced settings.

PCI Serial Port (COM4) Properties	? 🛛	PCI Serial Port (COM4) Properties	×
General Port Settings Driver		General Port Settings Driver	
PCI Serial Port (COM4)		Bits per second: 9600	
Device type: Ports (COM & LPT)		Data bits: 8	
Manufacturer: Multi-IO Adapter Location: Location 6 (PCI Serial Port 2)		Parity: None	
C Device status		Stop bits: 1	
This device is working properly. If you are having problems with this device, click Troubleshoot to	~	Elow control: None	
start the troubleshooter.	×.	<u>Advanced</u> <u>A</u> estore Defaults	1
Iroubleshoot			
Device usage:			
Use this device (enable)	~		
ОК	Cancel	OK Cancel	5

4. Click "Defaults" button for restoring default advanced settings.

vanced Settings for CUM	14			?
✓ Enable CTS/RTS Auto F Note: This option has an effi is selected on the Port Settir for high bit rates (230 kbps a	Flow Control ect only if Hardwar igs page. Use Auti ind above).	e flow contro 5 Flow Contro	ol ol	OK Cancel
✓ Use FIFO buffers control ✓ Enable <u>3</u> 2 Byte FIFO bui ← Enable <u>6</u> 4 Byte FIFO bui Select lower settings to corres	fers fers ect connection pro ter performance.	blems.		
Receive Buffer: Low (1)	2 1 1		— High (28)	
<u>I</u> ransmit Buffer: Low (1)			— High (32)	

5. Check/un-check the "Enable CTS/RTS Auto Flow Control" checkbox to enable/ disable the hardware auto flow control feature.

No. This option has an eff is selected on the Port Setti for high bit rates (230 kbps of	Flow Con ect only it ngs page, and above	trol f Hardwar . Use Auto e).	e flow cont Flow Con	rol trol		OK Cance
☑ Use FIFO buffers contro	1					(<u>D</u> efaul
Enable 32 Byte FIFO bu	ffers					
📕 Enable <u>6</u> 4 Byte FIFO bu	ffers					
Select lower settings to corr Select higher settings for fas	ect conne ster perfor	ection pro mance.	blems.			
Receive Buffer: Low (1)	-			—J	High (28)	
	1	2	2	ſ		
Transmit Buffer: Low (1)	-			—1	High (32)	

6. Check/Un-check the "**Use FIFO buffers control**" checkbox to enable / disable the hardware FIFO buffering feature or you can select the size of FIFO if "Use FIFO buffers control" is enabled.

anced Settings for COM	13					?
✓ Enable CTS/RTS Auto I	Flow Contr	ol				ОК
Note: This option has an eff is selected on the Port Setti for high bit rates (230 kbps a	ect only if I ngs page. I and above	Hardware Use Auto).	e flow con I Flow Cor	trol itrol		Cancel
	i					
₩ Shable 32 Byte FIFO bu	ffers					
Enable <u>6</u> 4 Byte FIFO bu	ffers					
Select lower settings to corr Select higher settings for fas	ect connec ster perform	ction prol nance.	olems.			
Receive Buffer: Low (1)				-1	High (28)	
)	1		ſ		
<u>T</u> ransmit Buffer: Low (1)				—1	High (32)	
	- N	100	2.5	100		

7. Re-map the COM port number by select a free COM port number from the "COM Port Number" combo box. The (in use) means this COM port number is used by another COM port.

Enable CTS/RTS Auto	Flow Control fect only if Ha	rdware	flow contr	ol		OK
is selected on the Port Setti for high bit rates (230 kbps	ngs page. Us and above).	e Auto	Flow Cont	rol		Cance
☑ Use FIFO buffers contro	d					<u>D</u> efault
Enable <u>3</u> 2 Byte FIFO bu	iffers					
F Enable <u>6</u> 4 Byte FIFO bu	Iffers					
Select lower settings to corr Select higher settings for fa	ect connectio ster performar	on prob nce.	olems.			
Receive Buffer: Low (1)				-1	High (28)	
	1	1	1	ſ		
<u>T</u> ransmit Buffer: Low (1)				—Į	High (32)	

8. Click "OK" to save your settings, and repeat above steps for each serial port.

Uninstalling Device

- 1. Please launch the "**Device Manager**" from Start \rightarrow Control Panel \rightarrow System
- 2. Expand the "Multifunction adapter" sub-tree and right-click the mouse on "PCI xxxx Multi-I/O Adapter" item, and select "Uninstall".



3. A "Confirm Device Removal" Warning window will open. Click "**OK**" to uninstall the device.



Windows XP/2003 (64-bit)

The following procedure is for installing PCI serial board driver under 64- bit operation system Windows XP and 2003 including both INTEL and AMD 64-bit hardware systems.

INTEL:

Windows XP 64-Bit Edition Version 2003 for 64-Bit Itanium-based Systems (IA64) & Windows Server 2003 for 64-Bit Itanium-based Systems (IA64)

AMD:

Windows XP 64-Bit Edition Version 2003 for 64-Bit Extended Systems (AMD64) & Windows Server 2003 for 64-Bit Extended Systems (AMD64)

Installing Driver

On booting up, system will detect present of the PCI Serial Board and prompt for driver installation wizard. Please insert the driver CD bound with PCI serial board in your CD/DVD ROM drive.

(1) Please select "Install from a list or specific location (Advanced)" and click "Next" to continue in Found New Hardware Wizard window.



(2) Click "**Browse..**", and specify the driver locate within the CD drive as bound with PCI serial board. Click "**Next**" to continue.

:\IO\PCI IO	D\Win2K and	XP_64 bit\
-------------	-------------	------------

Found New Hardware Wizard
Please choose your search and installation options.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM)
✓ Include this location in the search:
G:\IO\PCI IO\win2k and xp_64 bit
○ <u>D</u> on't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.

(3) A **Digital Signature Not Found** window will open. Although this message states that this PCI serial board driver does not contain a Microsoft digital signature, you can rest assured, since the driver has already been tested and been shown that it can support Windows OS.

Click "Continue Anyway" to continue the installation.



(4)System will install the appropriate driver automatically.

Found New Hardware Wizard	
Please wait while the wizard installs the	software
PCI Serial Port	
snxprops.dll To C:\WINDOWS\System32	
	<pre></pre>

(5) Please click "Finish" to end of PCI serial board installation steps.

Hardware Update Wizard	
	Completing the Hardware Update Wizard The wizard has finished installing the software for: PCI Multi-I/O Adapter Click Finish to close the wizard.
	Karak Finish Cancel

Note:

The "Found New Hardware Wizard" windows will show up and re-install driver several times until you finish installing each serial port. Please repeat step(1) to step(5) installation steps.

Configure the Serial Port Settings

- 1. Please launch the "**Device Manager**" from Start \rightarrow Control Panel \rightarrow System
- 2. Right click the "PCI Serial Port (COMXXX)" item from the "Ports (COM & LPT)" sub-tree and click "Properties".



3. Click "Port Settings" tab page and click "Advanced" for advanced settings.

PCI Serial Port (COM4) Properties	? 🔀 PCI Serial Port (COM4) Properties 🛛 ? 🛛
General Port Settings Driver	General Port Settings Driver
PCI Serial Poix(COM4)	Bits per second: 9600
Device type: Ports (COM & LPT)	Data bits: 8
Manufacturer: Multi-IO Adapter Location: Location 6 (PCI Serial Port 2)	Parity: None
C Device status	Stop bits: 1
This device is working properly.	Elow control: None
	Advanced
Iroubleshoot	
Device usage:	
Use this device (enable)	
OK Can	ncel OK Cancel

3-20

4. Click "Defaults" button for restoring default advanced settings.

vonseu settiii	gs for COM	14				?
🔽 Enable CT	S/RTS Auto	Flow Con	trol			ОК
Note: This opt is selected on for high bit rate	on has an eff the Port Setti s (230 kbps /	iect only il ngs page. and abovi	f Hardware . Use Auto e).	e flow con Flow Con	trol	Cancel
☑ Use FIFO I	ouffers contro	bl				Defaults
▼ Enable <u>3</u> 2	Byte FIFO bu	iffers				
Enable <u>6</u> 4	Byte FIFO bu	iffers				
Select lower se Select higher s	ettings to corr ettings for fa:	ect conne ster perfor	ection prot rmance.	olems.		
<u>R</u> eceive Buffe	r: Low (1)	-			— High (28)	
			*	1		
14 No. 4						
<u>T</u> ransmit Buffe	r: Low (1)	1		-	— High (32)	

5. Check/un-check the "Enable CTS/RTS Auto Flow Control" checkbox to enable/ disable the hardware auto flow control feature.

Ivanced Settings for COM	14					?
F Enable CTS/RTS Auto Nu This option has an eff is selected on the Port Setti for high bit rates (230 kbps a	Flow Cont ect only if ngs page. and above	rol Hardwar Use Auto a).	e flow con o Flow Cor	trol htrol		OK Cancel
	r					<u>D</u> efaults
Enable <u>3</u> 2 Byte FIFO bu	ffers					
Enable <u>6</u> 4 Byte FIFO bu	ffers					
Select lower settings to corr Select higher settings for fas	ect conne ster perfor	ction pro mance.	blems.			
Receive Buffer: Low (1)				—J	High (28)	
	1	1	1	ſ		
Iransmit Buffer: Low (1)				—1	High (32)	
Software FIFO Size		J4k		-		

6. Check/Un-check the "**Use FIFO buffers control**" checkbox to enable / disable the hardware FIFO buffering feature or you can select the size of FIFO if "Use FIFO buffers control" is enabled.

dvanced Settings for CO	₩4					? 🛛
✓ Enable CTS/RTS Auto Note: This option has an el is selected on the Port Sett for high bit rates (230 kbps)	Flow Cor ffect only ings page and abov	ntrol if Hardware e. Use Auto re).	e flow con Flow Cor	trol htrol		OK Cancel
Use FIFO buffers contro whable <u>3</u> 2 Byte FIFO buffers contro Enable <u>6</u> 4 Byte FIFO buffers Select lower settings to contro Select higher settings for fa	ol uffers uffers rect conn ister perfo	ection prof	olems.			Defaults
<u>R</u> eceive Buffer: Low (1)		i.		— ј н	igh (28)	
<u>I</u> ransmit Buffer: Low (1)				— 7 ні	gh (32)	
Software FIFO Size		4k		•		
COM Port Number: COM4		•				1

Also you can use software FIFO length from 128 byte to 128K byte. There is more detail introduction in trouble shooting chapter FAQ7.

anced Settings for COM	14				
Enable CTS/RTS Auto I	Flow Con	itrol			OK
Note: This option has an eff is selected on the Port Settir for high bit rates (230 kbps a	ect only i ngs page and abov	f Hardwar . Use Auto e).	e flow contr Flow Contr	ol ol	Cancel
✓ Use FIFO buffers control	j.				<u>D</u> efault:
Enable <u>3</u> 2 Byte FIFO bu	ffers				
Enable <u>6</u> 4 Byte FIFO bu	ffers				
Select lower settings to corre Select higher settings for fas	ect conn ter perfo	ection prol rmance.	olems.		
<u>R</u> eceive Buffer: Low (1)		1		— High (28)	
<u>T</u> ransmit Buffer: Low (1)		,	,	—] High (32)	
Software FIFO Size		8k		R	
OM Port Number 00M4		16k 32k			
JM Port Number: JCOM4		04K	L ^{es}	~	

7. Re-map the COM port number by select a free COM port number from the "COM Port Number" combo box. The (in use) means this COM port number is used by another COM port.

anced Settings for COM	14				?
Enable CTS/RTS Auto	Flow Con	trol			ОК
Note: This option has an eff is selected on the Port Settii for high bit rates (230 kbps a	ect only i ngs page and abov	f Hardware . Use Auto e).	e flow con I Flow Con	trol htrol	Cancel
☑ Use FIFO buffers contro	í.				<u>D</u> efaults
Enable 32 Byte FIFO bu	ffers				
Enable 64 Byte FIFO bu	ffers				
Select lower settings to corr Select higher settings for fas	ect conni ter perfo	ection prot rmance.	olems.		
Receive Buffer: Low (1)	-			—— High (28)	
	1	1			
<u>Iransmit Buffer:</u> Low (1)	ī			—— High (32)	
Software FIFO Size		8k			
OM Port Number: COM4	4	2			
COM12	X	12			

8. Click "**OK**" to save your settings, and repeat above steps for each serial port.

vanced Settings for COM	14				?
Enable CTS/RTS Auto Note: This option has an eff is selected on the Port Settii for high bit rates (230 kbps;	Flow Con ect only i ngs page and abov	trol f Hardwar . Use Auto eì.	e flow con o Flow Cor	trol htrol	OK Cancel
✓ Use FIFO buffers contro ✓ Enable <u>3</u> 2 Byte FIFO bu ← Enable <u>6</u> 4 Byte FIFO bu	l Iffers				<u>D</u> efaults
Select lower settings to corr Select higher settings for fas <u>R</u> eceive Buffer: Low (1)	ect conne ster perfor	mance.	Diems.	— / High	(28)
Iransmit Buffer: Low (1)	1				(32)
		4k		-	

• Uninstalling Device

- 1. Please launch the "**Device Manager**" from Start \rightarrow Control Panel \rightarrow System
- 2. Expand the "Multifunction adapter" sub-tree and right-click the mouse on "PCI xxxx Multi-I/O Adapter" item, and select "Uninstall".

🚇 Device Manager	
File Action View Help	
← → 🗷 🗗 🎒 🔮	🕺 🕿 🕱 🛃
G4EXP G4EXP Gamputer Disk drives Display adapters DVD/CD-ROM drives Floppy disk controller Floppy disk drives DE ATA/ATAPI contr Keyboards Mice and other pointin Monitors Category Multifunction adapter	s rollers ng devices s
PCI Serial Port (PCI Serial Port (Update Driver Disable Uninstall Scan for hardware changes Properties
Uninstalls the driver for the s	

3. A "Confirm Device Removal" Warning window will open. Click "**OK**" to uninstall the device.



Windows 95/98/Me

The following procedure is for installing PCI serial board driver under Windows 95/98/Me.

Installing Driver

1. System will detect a new PCI Serial Card installing, and "Add New Hardware Wizard" will show up to assist you in setting up the new device. Click "**Next**" to continue.



 Please select "Search for the best driver for your device (Recommended)" and click "Next" to continue.



 Please select "Specify a location" and click "Browse" button to specify the driver locate within the CD drive as bound with PCI serial board. Click "Next" to continue.

Add New Hardware Wizard		Browse for Folder
Win solution Image: solution of the solution	ndows will search for new drivers in its driver database your hard drive, and in any of the following selected ations. Click Next to start the search. Eloppy disk drives 	Select the folder that contains driver information (.INF file) for this device.

:\IO\PCI IO\Win9x\

Add New Hardware Wizard		
	Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.	
	< <u>B</u> ack Next > Cancel	

4. System will detect a "Multi IO Controller" and search the appropriate driver for PCI Serial Board. Click "**Next**" to continue.



5. System will install the driver automatically, then click "Finish" to end of installation steps.

Add New Hardware Wizard		
	Multi 10 Controller Windows has finished installing the software that your new hardware device requires.	
	< Back Finish Cancel	

Note:

System will detect and install each serial port automatically, and please be patient with the installation process.
- Configure the Serial Port Settings
- 1. Please launch the "**Device Manager**" from Start \rightarrow Control Panel \rightarrow System
- 2. Right click the "PCI Serial Port (COMXXX)" item from the "Ports (COM & LPT)" sub-tree and click "Properties".

System Properties	' ×
General Device Manager Hardware Profiles Performance	
General Device Manager Hardware Profiles Performance View devices by type View devices by connection • Monitors • Mouse • MultilOController • MultilOController • MultilOController • MultilOController • MultilOController • PCI Multi-I/O Adapter • PCI Serial Port • Properties • Print	
Close Cance	

3. Click "**Port Settings**" tab page and click "**Advanced**" for advanced settings.



4. Click "Defaults" button for restoring default advanced settings.

Advanced Port Settings	×
Enable Auto CTS/RTS Flow Control	OK
 ✓ Use 16 Byte FIFO buffers ✓ Enable <u>3</u>2 Byte FIFO buffers ✓ Enable <u>6</u>4 Byte FIFO buffers 	Cancel
Select lower settings to correct connection problems. Select higher settings for faster performance.	v
Beceive Buffer: Low High (14)	
Iransmit Buffer: Low High (16)	

5. Check/un-check the "Enable CTS/RTS Auto Flow Control" checkbox to enable/ disable the hardware auto flow control feature.

Advanced Port Settings	×
Enable Auto CTS/RTS Flow Control	ОК
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 (14)	
Iransmit Buffer: Low High (16)	

6. Check/Un-check the "Use 16 Byte FIFO buffers" or "Use 32 Byte FIFO buffers" checkbox to enable / disable the hardware FIFO buffering feature or you can select the size of FIFO if "Use FIFO buffers control" is enabled.

Advanced Port Settings		×
Enable Auto CTS/RTS Flow Control		OK
Use 16 Byte <u>FIFO</u> buffers Enable <u>32</u> Byte FIFO buffers Enable <u>64</u> Byte FIFO buffers Select lower settings to correct connection problems. Select higher settings for faster performance		Cancel <u>D</u> efaults
Beceive Buffer: Low Iransmit Buffer: Low	High (28) High (32)	

7. Click "OK" to save your settings. Repeat above steps for each serial port.

Uninstalling Device

1. Please launch the "Add/Remove Programs" from Start → Control Panel → Add/Remove Programs



2. Please select "PCI Multi-I/O Card", and click "Add/Remove".



3. Please click "Yes" to remove PCI Multi-I/O card.



4. System will uninstall both driver and device automatically. Please click "**Yes**" to restart your computer.





Windows NT

The following procedure is for installing PCI serial board driver under Windows NT.

Installing Driver

1. Please insert the CD Driver bound with PCI serial board into your CD/ DVD ROM, and then run under the **Setup.exe** program.



: \IO\PCI IO\WinNT\Setup.exe

- 2. Press "Continue" to install the driver.
- 3. Click "OK" to reboot computer to load the new installed driver to NT.



4. Please launch the "Windows NT Diagnostics" from Start → Programs → Administrative Tools [Common] → Windows NT Diagnostics



5. Please press "**Resources**" tab page and click "I/O Port. Yu can find the I/O address of four serial ports (**SNXSER**). Or you can find the IRQ information by press "**IRQ**" tab page.

<u>اير</u>	Vindows NT Di	agnostics	- \\SUNIX-NT		_ 🗆 ×
<u>F</u> ile	<u>H</u> elp				
	Version Services	System	Display Resources	Drives	Memory /
				Include <u>H</u> A	L resources 🥅
	Address	Device		Bus	Type 🔺
	0064 - 0064 0170 - 0177	18042prt atapi		U 0	lsa Isa
	01CE - 01CF 01F0 - 01F7	VgaSave atapi		0 0	Pci III
	02F8 - 02FE	Serial		0	lsa
	03B0 - 03BB	VgaSave		Ő	Pci
	0360 - 036E 03C0 - 03DF	Parport VgaSave		0	Pci
	03F0 - 03F5 03F6 - 03F6	Floppy atapi		0 0	lsa Isa
	03F7 - 03F7	Floppy Serial		0	lsa
	B800 - B807	SNXPAR		Ö	Pci
	D000 - D007 D008 - D00F	SNXSER		0	Pci 🗸
	IRQ	1/0 Port	<u>D</u> MA	<u>M</u> emory	De <u>v</u> ices
	E	Properties	<u>R</u> efresh	Pri <u>n</u> t	ОК

• Configure the Serial Port Settings

🔯 Control P	anel				_ 🗆 ×
<u>E</u> ile <u>E</u> dit ⊻i	ew <u>H</u> elp				
Ś.		MS	B	ø	
Accessibility Options	Add/Remove Programs	Console	Date/Time	Devices	
	2	Aa	۲	ů	
Dial-Up Monitor	Display	Fonts	Internet	Keyboard	
		õ		60	
Licensing	Modems	Mouse	Multi-1/0 Card Configuration	Multimedia	
₽Ŷ	B ?		Ŗ	Sec	
Network	ODBC	PC Card (PCMCIA)	Ports	Printers	•
29 object(s)					
🔚 Multi-l	/O Configura	tion Utility			×
PCI/ISA 9	erial Ports 1 PC	1 Parallel Por	rts Î. ISA Multi-	V0 Setun At	out
					[
	Multi-I/D Card Configuration				
Version: 3.2					
	(C) C	opyright 199:	9. Sunix Co., L	td.	
	Last	Revision: 2	000/01/03		

1. Double click "Add/Remove Programs" in control panel.

2. Press "**PCI/ISA Serial Ports**" and select the serial port you want to configure, press "**Setup**" to configure the serial port.

	Serial Ports Setup
🚟 Multi-1/0 Configuration Utility 🛛 🔀	COM3, PCI Bus PCI 4078A , 2 16C550(16FIF0)+1 SPP/BPP
PCI/ISA Serial Ports PCI Parallel Ports ISA Multi-I/O Setup About	Lato Flow Control Enable
Select serial port	Luse 32 Bytes FIF0
СОМЗ	Use 64 Bytes FIF0
	C 1 Bytes
Close	C 8 Bytes
	I 4 Bytes
	Ok Cancel

3. Set the 32 byte FIFO or Auto Flow Control or Receive Trigger Level, click "**Ok**".

Uninstalling Device



1. Double click "Add/Remove Programs" in control panel.

2. Select "Multi-I/O Card Uninstall" and click "Add/Remove" button.

Add/Remo	ve Programs Properties	? ×			
Install/Uni	Install/Uninstall Windows NT Setup				
2	To install a new program from a floppy disk or CD-ROM drive, click Install.				
	Install	ן ב			
3	Ihe 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	TomegaWare for Windows NT Microsoft Office 97, Professional Edition				
Ulead P	D Card Uninstall PhotoImpact 3.01 SE Special Edition				
	Add/ <u>B</u> emove	T V			
	OK Cancel App	ly .			

3. Click "OK" to remove Multi-I/O card driver and click "OK" to reboot your PC.

📷 Mulit-I/O Card Uninstall 🛛 🛛 🗙	🌃 Mulit-1/O Card Uninstall 🛛 🗙
Do you want to remove Multi-I/O Card drivers?	You must reboot the computer to remove all unnecessary Files.
OK Cancel	OK Cancel

Windows 3.1

This installation guide describes the procedures to install the PCI Serial Board in Microsoft Windows 3.1 operation system.

Normally PCI Serial Board can be supported by Windoes 3.1 default driver. However there are only 4 serial ports (3F8h,2F8h, 3E8h,2E8h) are supported by default.

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

Installing Driver

1. Please insert the CD Driver bound with PCI serial board into your CD/ DVD ROM, and then run **PCIDOS.exe** program.



2. Start the Windows 3.1.



2. Change the port settings in Control Panel

Control Panel
<u>S</u> ettings <u>H</u> elp
Color Fonts Fonts Mouse Desktop Keyboard
Printers International Date/Time 396 Expanded Divers Sound
Frinkers inkeinational Dakerhine Soo Ennanceu Drivers Sound
Specifies communications settings for serial ports
- Ports
Cancel
COM <u>1</u> : COM <u>2</u> : <u>Settings</u>
A Help
СОМ <u>3</u> : СОМ <u>4</u> :
- Settings for COM3:
<u>B</u> aud Rate: 19200
Data Bits: 8 🛨 Cancel
Parity: None Advanced
Elow Control: Hardware <u>Help</u>
Advanced Settings for COM3:
Base I/O Port Address: b800
Interrupt Request Line (IRQ):
10 🛨
<u>H</u> eip

3. Restart the system



Check the new settings



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

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

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

NOTE :

.

Since the PCI Serial Board is drive by a higher CLK (14.7456 Mhz), thus the actual baud rate is 8 times higher than the BIOS/DOS baud rate setting. The following table shows the relation.

ltem	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

Windows CE.NET

This installation guide describes the procedures to install the PCI Serial Board in Microsoft Windows CE.NET (Ver4.2 or 5.0) operation system on x86 systems.

Driver Compiling

1. Preparation prior to installation:

Copy driver file into the your platform BSP "File" folder.

:\IO\PCI IO\WinCE\

(SUN1889.DLL, SUN1699.DLL, SerialCardControl.exe)

Path Example : _WINCEROOT\Platform\MyBSP\File\

("_WINCEROOT" is your platform builder folder name) ("MyBSP" is your platform BSP base name)

2. Install PCI Serial Board Driver for PCI Bus

The platform setting must meet the following requirements.

(1) Edit the _WINCEROOT\Platform\MyBSP\Files\Platform.bib file, Insert CopyFile command into the MODULES section.
("_WINCEROOT" is your platform builder folder name)
("MyBSP" is your platform BSP base name)
;Example :

SUN1699.dll	\$(_FLATRELEASEDIR)\SUN1699.dll	NK	SH	
SUN1889.dll	\$(_FLATRELEASEDIR)\SUN1889.dll	NK	SH	
SerialDriverControl.exe				
\$(_F	LATRELEASEDIR)\SerialDriverControl.exe	NK	SH	

- (2) Edit the _WINCEROOT\Platform\MyBSP\Files\Platform.reg file, Insert your serial card PCI Bus setting of file end,
 ** Property illustration at [9.Other information] step(1).
 ("_WINCEROOT" is your platform builder folder name)
 - ("MyBSP" is your platform BSP base name)

;Example :

. ; Sun1889 PCI Serial Card Bus Driver Setting ; Property illustrations at [9.Other information] step(1). ; Please puts Bus Driver setting in the PCI Template folder, ex:[...Drivers\BuiltIn\PCI\Template\Sunix] [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\PCI\Template\SUN1889] "Prefix"="SUN" "DII"="SUN1889.DII" "Class"=dword:07 "SubClass"=dword:00 "ProgIF"=dword:02 "VendorID"=multi_sz:"1409" "DeviceID"=multi_sz:"7168" "DeviceArrayIndex"=dword:0 "IsrDII"="giisr.dll" "IsrHandler"="ISRHandler" _____

- (3) Edit the _WINCEROOT\Platform\MyBSP\Files\Platform.reg file, Insert your Serial Port setting of file end,
 - ** Property illustration at [3.Other information] step(2).
 - ("_WINCEROOT" is your platform builder folder name)
 - ("MyBSP" is your platform BSP base name)

```
;Example :
```

;-----

[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\PCI\Template\SUN1889\MySer ial]

```
"Prefix"="COM"
"DII"="SUN1699.DII"
"Class"=dword:07
"SubClass"=dword:00
"ProgIF"=dword:02
"VendorID"=multi_sz:"1409"
"DeviceID"=multi_sz:"7168"
"DeviceArrayIndex"=dword:1
"UARTIndex"=dword:1
"Index"=dword:2
"EnableRTSCTSAutoFlowControl"=dword:0
```

"WaterMarkerMode"=dword:1 "WaterMarker"=dword:1C

[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\PCI\Template\SUN1889\MySer ial\Unimodem] "Tsp"="Unimodem.dll" "DeviceType"=dword:0 "FriendlyName"=LOC_FRIENDLYNAME_SERIAL2 "DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00

·_____

;Example the second Port

;-----

[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\PCI\Template\SUN1889\MySer ial2]

"Prefix"="COM" "DII"="SUN1699.DII" "Class"=dword:07 "SubClass"=dword:00 "ProgIF"=dword:02 "VendorID"=multi_sz:"1409" "DeviceID"=multi_sz:"7168" "DeviceArrayIndex"=dword:2 "UARTIndex"=dword:2 "Index"=dword:3 "EnableRTSCTSAutoFlowControl"=dword:0 "WaterMarkerMode"=dword:1 "WaterMarker"=dword:1C

[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\PCI\Template\SUN1889\MySeri al2\Unimodem]

"Tsp"="Unimodem.dll" "DeviceType"=dword:0 "FriendlyName"=LOC_FRIENDLYNAME_SERIAL3 "DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00

;-----

;Example the three Port;

;-----

[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\PCI\Template\SUN1889\MySer ial3]

"Prefix"="COM" "DII"="SUN1699.DII" "Class"=dword:07 "SubClass"=dword:00 "ProgIF"=dword:02 "VendorID"=multi_sz:"1409" "DeviceID"=multi_sz:"7168" "DeviceArrayIndex"=dword:3 "UARTIndex"=dword:3 "Index"=dword:4 "EnableRTSCTSAutoFlowControl"=dword:0 "WaterMarkerMode"=dword:1 "WaterMarker"=dword:1C [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\PCI\Template\SUN1889\MySer ial3\Unimodem] "Tsp"="Unimodem.dll" "DeviceType"=dword:0 "FriendlyName"=LOC_FRIENDLYNAME_SERIAL4 "DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00,

00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00

;------

(4) Build your platform system.

3. Other information

(1)	PCI Bus property : (to be car	eful of dword is hexadecimal)
	"Prefix"="SUN"	(Set "SUN"))
	"DII"="SUN1889.DII"	(Set "SUN1889.DII))
	"Class"=dword:07	(Serial Card Class Number)
	"SubClass"=dword:00	(Serial Card SubClass Number)
	"ProgIF"=dword:02	(Serial Card ProgIF Number)
	"VendorID"=multi_sz:"1409"	(Serial Card VendorID Number)
	"DeviceID"=multi_sz:"7168"	(Serial Card DeviceID Number)
	"DeviceArrayIndex"=dword:0	(Device Array Index, zero is initializes)
	"IsrDII"="giisr.dll"	(Set "giisr.dll")
	"IsrHandler"="ISRHandler"	(Set "ISRHandler")

Serial Port property : (to be careful of dword is hexadecimal) "Prefix"="COM" (Set "COM") "DII"="SUN1699.DLL" (Set "SUN1699.DLL") "IoBase"=dword:0268 (This is you serial card loBase jump Setting)

%How to keeps IoBase.please reference Windows CE

menu, Resource manager section

"loLen"=dword:8 (Set 8)

"SysIntr"=dword:1C (This is you serial card IRQ jump setting

value add 16)(example : IRQ = 3, SysIntr = 13)(HEX). %How to keeps IRQ.please reference Windows CE menu, Resource manager

"Index"=dword:2	(This is you serial port number)
	(This property can be ignored.)

"EnableRTSCTSAutoFlowControl"=dword:0 (This property is setting hardware flow control state. this property can be ignored. defauld is disabled.

"WaterMarkerMode"=dword:1 (This property is setting Buffer Size (16/32) Bytes). this property can be ignored. defauld is 32 Bytes.(16 Bytes : 0,32 Bytes : 1)

"WaterMarker"=dword:1C (This property is setting FIFO level. this property can be ignored. defauld is 28bytes.(16 bytes: 1 / 4 / 8 / 15(E), 32 bytes: 1 / 16(10) / 24(18) / 28(1C))

U	nimodem property :	
"T	sp"="Unimodem.dll"	(Set "Unimodem.dll")
"C	DeviceType"=dword:0	(please reference Windows CE menu)
3-43		

"FriendlyName"=LOC_FRIENDLYNAME_SERIAL3 (**Attention!!) (if you want use

"LOC_FRIENDLYNAME_SERIAL5" (> 4) key words, you maybe need string define of the language file, please reference Windows CE menu)

"DevConfig"=hex: 10,00, (please reference Windows CE menu)

(2) If you sure, want use the same motherboard standard serial port IoBase or IRQ(02F8, 03E8, 02E8... IRQ3, IRQ4, IRQ5). Then, Your mainboard standard serial port must be disabled. And also need to mark standard serial port registry in the platform.reg please following step. (please reference Windows CE menu)

(1) Disabled motherboard step.
BIOS --> CHIPSET FEATURES SETUP --> Onboard Serial Port 1--> change setting to disabled.
BIOS --> CHIPSET FEATURES SETUP --> Onboard Serial Port 2--> change setting to disabled.
BIOS --> CHIPSET FEATURES SETUP --> Parallel Port --> change setting to disabled.

(2) Mark standard serial port registry. please open platform.reg. Find string "[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial]" You will find this section.

```
; @CESYSGEN IF CE_MODULES_SERIAL

IF BSP_NOSERIAL !

[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial]

"SysIntr"=dword:13

"IoBase"=dword:02F8

"IoLen"=dword:8

"DeviceArrayIndex"=dword:0

"Prefix"="COM"

"IClass"="{CC5195AC-BA49-48a0-BE17-DF6D1B0173DD}"

"DII"="Com16550.DII"

"Order"=dword:0

"Priority"=dword:0

; Turn on follows for Installable ISR (isr16550 supporting SOFTWARE
```

```
FIFO
```

; "IsrDII"="isr16550.dll"

"IsrHandler"="ISRHandler"

[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial\Unimodem] "Tsp"="Unimodem.dll" "DeviceType"=dword:0 "FriendlyName"=LOC_FRIENDLYNAME_SERIAL "DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00, 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00 ENDIF BSP_NOSERIAL !

> IF BSP_SERIAL2 [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial2] "SysIntr"=dword:14 "IoBase"=dword:03E8 "IoLen"=dword:8 "DeviceArrayIndex"=dword:1 "Prefix"="COM" "IClass"="{CC5195AC-BA49-48a0-BE17-DF6D1B0173DD}" "DII"="Com16550.DII" "Order"=dword:0

```
[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial2\Unimodem]
"Tsp"="Unimodem.dll"
"DeviceType"=dword:0
"FriendlyName"=LOC_FRIENDLYNAME_SERIAL2
"DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00,
00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00
ENDIF BSP_SERIAL2
```

IF BSP_SERIAL3 [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial3] "SysIntr"=dword:15 "IoBase"=dword:02E8 "IoLen"=dword:8 "DeviceArrayIndex"=dword:2 "Prefix"="COM" "IClass"="{CC5195AC-BA49-48a0-BE17-DF6D1B0173DD}" "DII"="Com16550.DII" "Order"=dword:0 [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial3\Unimodem]

"Tsp"="Unimodem.dll"

"DeviceType"=dword:0

"FriendlyName"=LOC_FRIENDLYNAME_SERIAL3

"DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00,

00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00

ENDIF BSP_SERIAL3

(3) Please use ";" character mark all registry.

IF BSP_NOSERIAL !

;[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial]

- ; "SysIntr"=dword:13
- ; "IoBase"=dword:02F8
- ; "IoLen"=dword:8
- ; "DeviceArrayIndex"=dword:0
- ; "Prefix"="COM"
- ; "IClass"="{CC5195AC-BA49-48a0-BE17-DF6D1B0173DD}"
- ; "DII"="Com16550.DII"
- ; "Order"=dword:0
- ; "Priority"=dword:0
- ;; Turn on follows for Installable ISR (isr16550 supporting SOFTWARE

FIFO

- ;; "Irq"=dword:3
- ;; "IsrDII"="isr16550.dll"
- ;; "IsrHandler"="ISRHandler"

;[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial\Unimodem]

- ; "Tsp"="Unimodem.dll"
- ; "DeviceType"=dword:0
- ; "FriendlyName"=LOC_FRIENDLYNAME_SERIAL
- ; "DevConfig"=hex: 10,00, 00,00, 05,00,00,00, 10,01,00,00,
- 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00

ENDIF BSP_NOSERIAL !

IF BSP_SERIAL2

;[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial2]

- ; "SysIntr"=dword:14
- ; "IoBase"=dword:03E8

- ; "IoLen"=dword:8
- "DeviceArrayIndex"=dword:1
- ; "Prefix"="COM"
- ; "IClass"="{CC5195AC-BA49-48a0-BE17-DF6D1B0173DD}"
- ; "DII"="Com16550.DII"
- ; "Order"=dword:0

;[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial2\Unimodem]

- ; "Tsp"="Unimodem.dll"
- ; "DeviceType"=dword:0
- ; "FriendlyName"=LOC_FRIENDLYNAME_SERIAL2
- ; "DevConfig"=hex: 10,00, 00,00, 05,00,00, 10,01,00,00,

00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00

ENDIF BSP_SERIAL2

IF BSP_SERIAL3

;[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial3]

- ; "SysIntr"=dword:15
- ; "IoBase"=dword:02E8
- ; "IoLen"=dword:8
- ; "DeviceArrayIndex"=dword:2
- ; "Prefix"="COM"
- ; "IClass"="{CC5195AC-BA49-48a0-BE17-DF6D1B0173DD}"
- ; "DII"="Com16550.DII"
- ; "Order"=dword:0

;[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\Serial3\Unimodem]

- "Tsp"="Unimodem.dll"
- ; "DeviceType"=dword:0
- ; "FriendlyName"=LOC_FRIENDLYNAME_SERIAL3
- ; "DevConfig"=hex: 10,00, 00,00, 05,00,00, 00, 10,01,00,00,

00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00

ENDIF BSP_SERIAL3

 (3) SerialDriverControl.exe application reference "Microsoft Foundation Classes (MFC)" Library, and your platform must be include this item.(use catalog add this item) (please reference Windows CE menu)

DOS

This installation guide describes the procedures to install the PCI serial board in MS-DOS environment.

Normally serial 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) are supported by BIOS/DOS.

In case the RS-232 serial ports are different from the above configurations (e.g. I/O address or more than 4 serial 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 PCI Serial Board could work correctly.

Installing Driver

1. Please insert the CD Driver bound with PCI serial board into your CD/ DVD ROM, and then run **PCIDOS.exe** program.

: \IO\PCI IO\DOS\PCIDOS.exe

Please enter the directory path for installation C:\PCI_DOS (return for default)

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.



Note:

- (1). The installation program will add the dos driver (one command line) "C:\PCI_DOS\PciDos.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 (PciDos.exe) automatically. This means that it is not necessary to restart the system once again.

On-Board/ISA Parallel LPT1	3bcH	
PCI Serial COM4 Remap	2e8H,IRQ	11
PCI Serial COM3 Remap	3e8H,IRQ	11
On-Board/ISA Serial COM2	2f8H	
On-Board/ISA Serial COM1	3f8H	

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

4. Check / inquire the PCI card information

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

	ISA	PCI	Setup	Card	About
C	n-Board/I	SA Seria	al COM1	3f8H	
C	n-Board/I	SA Seria	al COM2	2f8H	
P	CI Serial	COM3 F	Remap	3e8H,IRQ	11
P	CI Serial	COM4 F	Remap	2e8H,IRQ	11
С)n-Board/I	SA Para	llel LPT1	3bcH	
ESC:	Exit				

ISA (ALT-I) : Detect on-board/ISA legacy serial /parallel ports.

PCI (ALT-P) : Find PCI serial /paralles ports.

Setup (ALT-S) : Remap PCI serial port to legacy port/display port resources.

Card (ALT-C) : Display PCI card model.

Store (ALT-R) : Store a configuration file to c:\snxcfg.txt

In this file the user find detailed information of every port from all PCI cards in the Slot.

In the program window the user can see only the fisrt ten

ports, in the file snxcfg.txt all ports of all PCI Cards are listed.

About (ALT-A) : Version Information.

NOTE :

Since the PCI Serial Board is drive by a higher CLK (14.7456 Mhz), thus the actual baud rate is 8 times higher than the BIOS/DOS baud rate setting. The following table shows the relation.

ltem	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	<mark>37.5</mark>	Non BIOS standard

Clock= 14.7456 Mhz for all non-remapable port

Linux

This installation guide describes the procedures to install the PCI serial board in Linux kernel 2.0.x, 2.2.x, 2.4.x and 2.6.x.

The following demonstration is showing the compiling steps under kernel 2.4.x or 2.6.x. Or you can check the other Kernel version in CD driver as bound with PCI serial board.

: \IO\PCI IO\Linux\

• Overview

1. Please insert the CD driver as bound with PCI serial board into you CD or DVD ROM. Then open the folder :

: \IO\PCI IO\Linux\Kernel2.6.x\

This package contains patches to the Linux kernel sources for both 2.4.x and 2.6.x series kernels. The patch modifies the serial driver provided by the kernel and will add an additional kernel module which handles card detection.

2. There are separate patches for 2.4.x and 2.6.x kernel versions in the folder.

The 2.4.x patch has been tested with the Linux kernel source version 2.4.20 and 2.4.27. However, it should work with other versions as well.

The 2.6.x patch has been tested with the Linux kernel source version 2.6.8.1. However, it should work with other versions as well.

Installation Steps

In order to apply the patch the Linux kernel sources need to be installed and the kernel needs to be compiled. Refer to the documentation that came with your Linux distribution for information on how to do that.

Normally, the kernel sources will be installed under **/usr/src/linux**. Often, this directory is a symbolic link that points to the location where the sources reside.

When the kernel sources are installed and you are able to successfully build a kernel then follow the installation instructions given below to apply the patch.

Kernel 2.4.x

- 1. Copy the patch file sunix_multi_io_patch_2.4.x.diff to /usr/src.
- 2. Change to the directory /usr/src/linux.
- To apply the patch issue the following command: patch -p1 < ../sunix_multi_io_patch_2.4.x.diff Warnings produced by patch can be ignored.
- To configure the kernel run the following command: make menuconfig Alternatively, you can use the command recommended by your Linux distribution, e.g. make xconfig
- 5. In the kernel configuration menus make sure that the options parport, parport_pc and serial are selected.
 These options can be found at the following locations:
 Parallel port support ->
 parport
 Parallel port support ->
 PC-style hardware ->
 parport_pc
 Character devices ->
 Standard/generic (8250/16550 and compatible UARTs) serial support
 -> serial

If one of these options is selected to compile as a module then the PCI serial board support has also to be compiled as a module. See the next step for details.

6. Now the following new kernel config option is available:

Character devices -> Standard/generic (8250/16550 and compatible UARTs) serial support -> Sunix Multi I/O PCI Card support Enable the option "Sunix Multi I/O PCI Card support". If one of the options parport, parport_pc or serial in the previous step was selected to compile as a module then this option has also to be compiled as a module.

- 7. Build and install the kernel. Refer to the documentation of your Linux distribution for more information on the required steps.
- 8. When the new kernel is running, the driver will be automatically loaded and initialized if compiled as a static driver. If the SUNIX driver was compiled as a module then it needs to be loaded with the following command:

modprobe snx_multi_io

You can decide to add this command to an init script.

Now the PCI Serial Board driver should work and the serial ports are available to the system.

Kernel 2.6.x

- 1. Copy the patch file sunix_multi_io_patch_2.6.x.diff to /usr/src.
- 2. Change to the directory /usr/src/linux.
- To apply the patch issue the following command: patch -p1 < ../sunix_multi_io_patch_2.6.x.diff Warnings produced by patch can be ignored.
- To configure the kernel run the following command: make menuconfig Alternatively, you can use the command recommended by your Linux distribution, e.g. make xconfig
- In the kernel configuration menus make sure that the options parport, parport_pc and serial are selected.

These options can be found at the following locations:

Device Drivers -> Parallel port support -> parport Device Drivers -> Parallel port support -> PC-style hardware -> parport_pc Device Drivers -> Character devices -> Serial drivers -> 8250/16550 and compatible serial support -> serial

If one of these options is selected to compile as a module then the PCI serial board support has also to be compiled as a module. See the next step for details.

6. Now the following new kernel config option is available:

Device Drivers -> Character devices -> Serial drivers -> Sunix Multi I/O PCI Card support Enable the option "Sunix Multi I/O PCI Card support". If one of the options parport, parport_pc or serial in the previous step was selected to compile as a module then this option has also to be compiled as a module.

7. Check the following kernel configuration parameter:

Device Drivers -> Character devices -> Serial drivers -> 8250/16550 and compatible serial support -> Maximum number of non-legacy 8250/16550 serial ports Make sure that this parameter is set to the number of external serial ports available on PCI cards + 4. For example, if you use an 8 serial ports card then this parameter needs to be set to 12. If you use two such cards then the parameter needs to be set to 20.

- 8. Build and install the kernel. Refer to the documentation of your Linux distribution for more information on the required steps.
- 9. When the new kernel is running, the SUNIX driver will be automatically loaded and initialized if compiled as a static driver. If the SUNIX driver was compiled as a module then it needs to be loaded with the following command:

modprobe snx_multi_io

You can decide to add this command to an init script.

Now the PCI serial board driver should work and the serial ports of your card are available to the system.

Device Files

After you installed your Linux system there will be a default set of device files in /dev. For each serial port you plan to use there needs to be a device file named /dev/ttySN, where N is an integer number usually starting at zero. Issue the following command to list the existing serial device files:

Is -al /dev/ttyS*

Note that usually the first 4 device files (/dev/ttyS0../dev/ttyS3) will be assigned to on-board serial ports (COM1..COM4). External serial ports, which include the SUNIX ports, will be assigned to /dev/ttyS4 and higher numbers. If there are not enough /dev/ttySN device files available by default, you have to create further device files manually.

For example, if you use an 8 ports serial card then you have to ensure that /dev/ttyS4 to /dev/ttyS11 do exist in your system.

How to create additional device files? You should first try to use the MAKEDEV script. This script is usually located in /dev/MAKEDEV but might also have a copy (or a symbolic link) in /sbin/MAKEDEV. The command is used as follows: # /dev/MAKEDEV -v ttyS8 Repeat this command for any device file you need to create.

Note: On some Linux distributions it may be necessary to use the mknod command to create device files. Consult your Linux documentation for information on how to do that. Using MAKEDEV is the preferred way.

After you created additional device files you should set the correct ownership and access mode on these files. Issue an # Is -al /dev/ttyS0 command to see the mode set on the first device file. Use the chown and chmod commands to set the same rights on the newly created files, for example: # chown root:root /dev/ttyS8 # chmod 555 /dev/ttyS8 Repeat these commands for any device file you created.

4. Troubleshooting

This chapter shows some problems that user came with usually. Also you can check it if the PCI serial board can not work properly in your system after following hardware and software installation steps.

Troubleshooting

1. System fails to find the PCI serial board or COM port.

- A: It may cause by following issue:
 - a. The board is not properly plugged into the PCI slot.
 - b. Please clean the golden finger.
 - c. The PCI slot is defective. Please try other slots until you find one that works.
 - d. The mainboard does not have an available IRQ for the PCI serial board. Enter the PC.s BIOS and make sure an IRQ setting is available in the PCI/PnP settings.
 - e. The board itself might be defective. You can try another mainboard testing this board working or not.

2. There is a blue screen when I entry operation system.

A: The possible reason is an IRQ or I/O address conflict with other PCI bus adapters, such as LAN or serial boards, or with the system BIOS. Refer to the corresponding problem in the previous FAQ for solutions.

3. After the system reboots, I can not see this PCI Serial Board shown on the "PCI DeviceList" display.

A: After rebooting (before operation system starting), system will show the following information in the PCI devive list:

Bus No	Device No	Func No	Vendor ID	Device ID	Device Class	IRQ
2	9	0	1409	7168	Simple Comm. Controller	10

This indicates that this serial board was found.

If you do not see this information, please confirm the IRQ conflicts with another adapter. Check the PCI BIOS IRQ settings and then select an available IRQ for the serial boards. Also the board itself might be defective. You can try another mainboard testing this board working or not. 4. There are some exclamation marks in device manager and serial ports can not work properly.



- A: It caused by the wrong driver installing or hardware settings. Please turn off your computer firtly and re-install hardware and software.
- 5. The PCI serial board cannot be detected by the attached driver while installing the driver.
- A: It may cause by following issue:
 - a. The board is not installed. Please install the board in an empty PCI slot.
 - b. The board is not properly plugged into the system's PCI slot. If that is the case, re-plug the board in a 32-bit PCI slot. It may also be the case that the PCI slot is defective. In this case, try other PCI slots until you find one that works.

6. How large FIFO length I should set?

A: PCI serial board supports 32 bytes FIFO, and you can use 0,16 or 32 4 bytes FIFO. The default value is 16 Byte FIFO buffers.

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.

Advanced Port Settings	×
Enable Auto CTS/RTS Flow Control	OK
Use 16 Byte <u>F</u> IFO buffers Enable 32 Bute FIFO buffers	Cancel
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.	
Beceive Buffer: Low High (14)	
Iransmit Buffer: Low High (16)	

7. Shall I set Software FIFO?

A: FIFO (First-in-First-out) buffers are used to reduce the frequency of interrupt processes for UART chips. The size of the buffer will determines the number of times the cards need to interrupt the computer's CPU in order to process a string of data. With larger FIFO buffer size; there is more data flow and less interruption to the CPU, therefore allowing the CPU to be free to handle other more crucial tasks.

This Serial I/O Communication Boards can provide users with up to 128K byte of FIFO buffer size for high system performance. Embedded within unique serial driver, we have added the function which allows users to assign part of the system's DRAM memory to act as the FIFO buffer for the cards. Users can also assign various size of memory depends on their requirement. With the large buffer capacity, users can have more improved performance and increased efficiency to their systems.

PCI serial board driver supports software FIFO for serial port under Windows 2000, XP and 2003 operation system.



This FIFO is used to buffer data on the receive path. The size of the FIFO can be configured in the advanced property page of the driver. It allows setting between 128byte to 128 kilo byte. The setting of the software size can be chosen individually for each port.

The selected software FIFO size is allocated from kernel memory. This memory can not be used by different application. If a lot of serial ports are used on a system with a small memory size selection of a large software FIFO size may cause problem. Increase the size of the physical memory of the PC in the case. The software FIFO may help to make data transfer on the serial port more reliable.

You can go to page 3-8 checking how to set software FIFO.

8. Should I enable auto flow control features?

- A: 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.
- 9. I am confused in installing Windows 2000, XP, and 2003 driver. One is Microsoft WHQL certified, and the other is not. Which one I should install ?
- A: Both WHQL and none-WHQL drivers all can work finely under Windows 2000, XP and 2003. None-WHQL driver equips 128K byte software FIFO features but WHQL driver does NOT. If you install none-WHQL driver into your system, there will be an **Digital Signature Warring message** show up. You can skip this message.

Hardwa	are Installation
1	The software you are installing for this hardware:
-	PCI Multi-1/0 Adapter
	has not passed Windows Logo testing to verify its compatibility with Windows XP. [Tell me why this testing is important;]
	Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.
	Continue Anyway STOP Installation

10. What's WHQL certified driver?

A: This logo represent that this driver pass through Microsoft **Windows Hardware Quality Labs** (WHQL). It had been verified by Microsoft® Windows® Logo Program for hardware with the hardware and software compatibility testing. This driver will working finely on your system without any conflicting with your operation system.



5. Appendix

This chapter shows PCI serial board core technologies and shows you how to contact with us for information about this and other products.

In this appendix, we cover the following topics.

٠

Core Technologies

Contract Information

Core Technologies

Our R&D team is experienced and expert at many advanced technologies needed for manufacturing highly- reliable data communication products. This PCI serial board equips many hardware and software features for users easily equipping in kinds of critical or harsh factory and industrial environment. It's also the best solution for all of industrial communication and automation application.

High Performance & Intelligent ASIC SUN1889 & SUN1699

SUN1889 and SUN1699 are high performance and intelligent 16C650 UART. It's not only for full compatibility with Microsoft OS series and Linux, but also allowing us to offer complete support for driver and technological change on kinds of Serial interface including RS-232 / 422 / 485.



Microsoft WHQL Certification Approval

In order to make the systems more stable and compatible, We design our own chipsets which enable us to provide full support for our I/O products with WHQL certified.

This logo represent that this driver pass through Microsoft Windows Hardware Quality Labs (WHQL). It had been verified by Microsoft® Windows® Logo Program for hardware with the hardware and software compatibility testing.

This driver will working finely on your system without any conflicting with your operation system.


High Efficiency 128K byte FIFO

FIFO (First-in-First-out) buffer size decides the interrupt frequency to the computer's CPU. The bigger the size of the FIFO buffer, the more of the data flow, the system will work consistently at anytime and the resource of CPU will be saved, therefore the system performance can be dramatically increased. We provide large capacity size of 128K byte FIFO buffer memory; it is 1024 times faster than the current existing PCI-Bus serial card on the market. The unique 128K FIFO technology design is the leader in the I/O industrial circles.

• Universal PCI

With the trend of sharing maximum bandwidth, reducing power consumption, and speed up transmission speed, the PCI bus standard has moved from 32-bit PCI/5V to 64-bit PCI/3.3V. RS-232 Universal PCI Card allows users to plug into both a 3.3V/5V and 32/64-bit slot with fully compliance with PCI Spec.Ver2.2 standard. The hardware configuration for the IRQ and I/O address is automatically assigned by the PCI BIOS.

64-bit PCI/ 3.3V

32-bit PCI/ 5V

Ready for 64-bit System

RS-232 Universal PCI Communication Board series support 64-bit system:

- Windows XP 64-Bit Edition Version2003 for 64-Bit Extended Systems (AMD64)
- Windows Server 2003 for 64-Bit Extended Systems (AMD64)
- Windows XP 64-Bit Edition Version2003 for 64-Bit Itanium-based Systems (IA64)
- Windows Server 2003 for 64-Bit Itanium-based Systems (IA64)







Re-Map Function



One of the features of the PCI card is Plug-n-Play. When PCI card plug into the motherboard PCI Bus, system will assign the IRQ and I/O address automatically. Re-Map function I/O card is designed for the devices that will only work in particular I/O address such as COM1 port. Users can re-assign the serial ports to the following legacy ISA address, 3F8, 3E8, 2F8, 2E8, under Microsoft Windows 9x, Me, NT4.0 and DOS operation system with the Re-Map function on PCI Re-Map serial communication board. System will automatically detect it and assign COM ports to the legacy ISA address without any setting.

NOTE:

Only PCI Re-Map serial communication board supports Re-Map function.



Low Profile Bracket Support

We provide Low Profile 79.2mm bracket boards for easily fit into Slim PC or Low Profile system.



Contract Information

Customer satisfaction is our number one concern, and to ensure that customers receive the full benefit of our products, SUNIX services has been set up to provide technical support, driver updates, product information, and user's manual updates.

The following services are provided

E-mail for technical support