

USER'S MANUAL

PCI Express RS-232 Communication Board

English Version

Third Edition, January 2011



SUNIX Co., Ltd.

Tel : +886-2-8913-1987

Fax: +886-2-8913-1986

[Http://www.sunix.com.tw](http://www.sunix.com.tw)

info@sunix.com.tw

CE FC

PCI Express RS-232 Communication Board

User's Manual

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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.

Table of Contents

| | | |
|------------------|-------------------------------------|-----------|
| Chapter 1 | Introduction..... | 4 |
| | Overview..... | 5 |
| | Package Checklist..... | 5 |
| | Product Features..... | 6 |
| | Product Specifications..... | 7 |
| | | |
| Chapter 2 | Hardware Installation..... | 8 |
| | Hardware Installation..... | 9 |
| | Pin Assignment..... | 10 |
| | | |
| Chapter 3 | Driver Installation..... | 13 |
| | Windows Driver Installation..... | 14 |
| | Windows Driver Uninstallation..... | 19 |
| | Linux Driver Installation..... | 20 |
| | Verify Installation..... | 22 |
| | | |
| Chapter 4 | Port Configuration..... | 23 |
| | Configure Serial Port Settings..... | 24 |
| | COM Port Number Settings..... | 25 |
| | COM I/O Resource..... | 25 |
| | FIFO Settings..... | 26 |
| | Advanced Settings..... | 27 |
| | | |
| Chapter 5 | Appendix | 28 |
| | Troubleshooting..... | 29 |
| | Product Family..... | 31 |
| | Contact Information..... | 36 |

WHQL Certification Approval



The Designed for Microsoft Windows 32/64-bit operation system WHQL logo identifies products that meet Microsoft's quality standards, SUNIX I/O products carry with this logo and listed on Windows Catalog. WHQL logo includes below operation system version

Microsoft Windows Client: Windows 2000 / XP / Vista / 7 (X86/X64)

Microsoft Windows Server: Windows 2003 / 2008 (X86/X64)

1.

Introduction

RS-232 Golden I/O series, a line of PCI Express Multi-port Serial Communication Board, is designed to meet PCI Express Base Specification Ver1.1 (Compliant with PCI Express General 2 Specification). It 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 SUNIX PCI Express Multi-Port Communication Board; it is compatible with RS-232.V24 standard serial interfaces. User can expand Multi RS-232 ports on PC-based system by installing in PCI Express x1, x2, x4, x8 and x16 lane slots. Each port has on-chip hardware and software flow control, a built-in 128-byte Tx/Rx FIFO, and WHQL certificated device drivers. This board is designed with SUNIX 16C950 UART controller and as well built with many of SUNIX advanced features and technologies, making it the best solution for commercial and industrial automation applications.

Package Checklist

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

1. Hardware:

Serial Communication Board:

RS-232 PCI Express Multi-Port Communication Board × 1

Cable: (Depend on what product you bought)

* 4 ports PCI series: DB44M to 4 ports DB9/25 Male Cable × 1

* 8 ports PCI series: DB62M to 8 ports DB9/25 Male Cable × 1

2. CD Driver

3. Quick Installation Guide

4. User's Manual (This document)

Product Features

- Expands Multi RS-232 serial ports on the system
- High performance SUNIX 16C950 compatible UART controller on-board.
- Ultra low power consumption design for Green Environment.
- Designed to meet PCI Express Base Specification Revision 1.1
- Supports x1, x2, x4, x8, x16 (lane) PCI Express Bus connector keys.
- Data transmission speeds up to 115.2Kbps (*921.6Kbps Optional).
- On-chip hardware auto flow control to guarantee no data loss.
- Built-in ± 15 KV ESD protection for all serial signals.
- Plug-n-Play, I/O address and IRQ assigned by BIOS.
- Certified by CE, FCC, RoHS, and Microsoft WHQL approval.
- Support Microsoft Windows, Linux, and DOS.

Note:

SUNIX High Speed RS-232 Card (**H** Version) baud rate setting supports 921.6Kpbs, and please refers to the Chapter5 Appendix, Product Family for detail.

Product Specifications

Serial Communication

| | | | |
|---------------------|---|---------------------|--|
| Interface | RS-232 | Signal | TxD, RxD, RTS, CTS, DTR, DSR, DCD, RI, GND |
| Controller | SUNIX SUN1999 (16C950 UART Compatible) | Baud rate | 50bps ~115.2Kbps (921.6Kbps Optional) |
| BUS | PCI Express one lane (x1) | Stop bit | 1, 1.5, 2 |
| No. of Port | 2/4/8/16-port | Parity | even, odd, none, mark, space |
| IRQ & IO | Assigned by System | Flow Control | None, Xon/Xoff, RTS/CTS |
| FIFO | 128byte Hardware | Connector | DB9 / 25 Male |
| Protection | ±15KV ESD protection for each signal Human Body Model (HBM) | | |

Driver Support

| | |
|---|---|
| Microsoft Client | XP / Vista / 7 (X86/X64) |
| Microsoft Server | 2000 / 2003 / 2008 (X86/X64) |
| Microsoft Embedded | XP Embedded / POS Ready 2009 / Embedded System 2009 |
| Linux | Linux 2.4.x / 2.6.x |
| DOS | DOS |
| FreeBSD | FreeBSD 5.3~5.5 / 6.0~6.4 |
| QNX | QNX 6.3.2 / 6.4.0 |
| IBM OS/2* | WARP 3 / WARP 4 |
| SCO UnixWare* | UnixWare 7.1.3 / 7.1.4 Open Server 5.0.7 / 6.0 |
| Sun Microsystems* | Solaris 10 |
| <i>Note : “ * “ Supported by special inquiry.</i> | |

Regulatory Approvals

| | |
|-----------------|--|
| Hardware | EN55022 Class B, EN55024, EN61000-3-2, EN61000-3-3, FCC Part 15 Class B, RoHS |
| Software | Microsoft WHQL Windows Microsoft Client: XP / Vista / 7 (X86/X64) Microsoft Server: 2000 / 2003 / 2008 (X86/X64) |

Environment

| | |
|------------------------------|---------------------------|
| Operation Temperature | 0 to 60°C (32 to 140°F) |
| Operation Humidity | 5 to 95% RH |
| Storage Temperature | -20 to 85°C (-4 to 185°F) |

2.

Hardware Installation

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

- ◆ **Hardware Installation**
- ◆ **Pin Assignments**

Hardware Installation

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

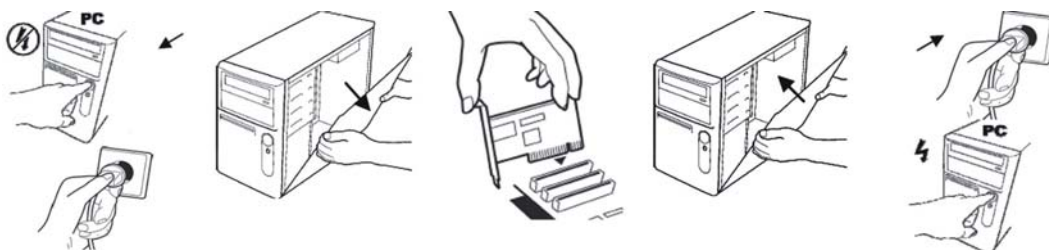
Step 3: Remove the cover from the computer case.

Step 4: If fitted. Remove the metal cover plate on the rear of a free PCI-E slot.

Step 5: Insert PCI Express Multi-Port Communication Board into the free PCI Express slot and screw it firmly on the bracket side.

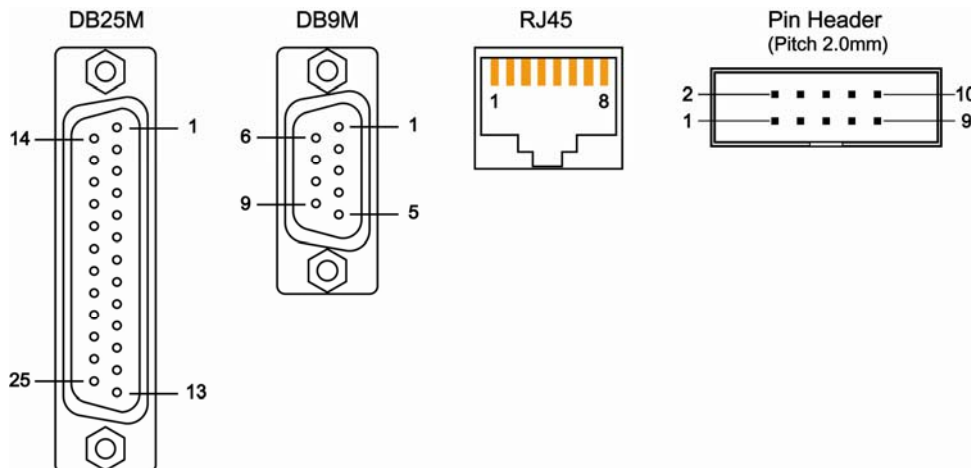
Step 6: Place the cover back onto the computer.

Step 7: Insert the plug into the plug socket.



Pin Assignment

This chapter provides the pin assignments for SUNIX PCI Express Multi-Port Communication Board, as well as the pin assignments for the optional accessories.

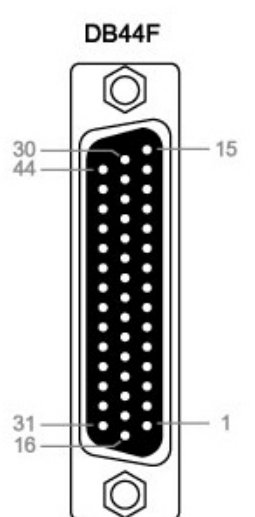


| PIN | DB9M | DB25M | RJ45 | Pin Header |
|-----|------|-------|------|------------|
| DCD | 1 | 8 | 7 | 1 |
| RxD | 2 | 3 | 6 | 3 |
| TxD | 3 | 2 | 3 | 5 |
| DTR | 4 | 20 | 2 | 7 |
| GND | 5 | 7 | 4 | 9 |
| DSR | 6 | 6 | 8 | 2 |
| RTS | 7 | 4 | 1 | 4 |
| CTS | 8 | 5 | 5 | 6 |
| RI | 9 | 22 | - | 8 |

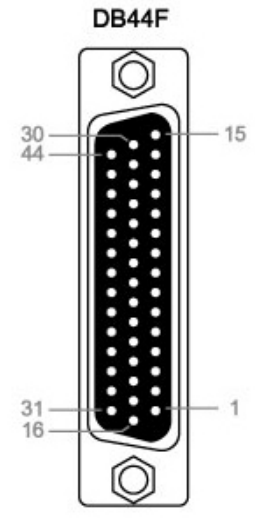
Note:

8-port RS-232 card product line does not build RI signal.

SUNIX 2-port RS-232 Low Profile Card builds DB44F connector on board.

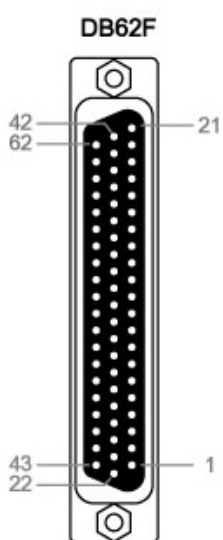
| SUNIX DB44 Female 2 ports Serial Communication Boards Pin Assignment | | | | |
|--|--------|----|----|---|
| RS-232 | Port | 1 | 2 |  |
| | Signal | | | |
| | TxD | 3 | 7 | |
| | RxD | 32 | 36 | |
| | RTS | 2 | 6 | |
| | CTS | 31 | 35 | |
| | DSR | 18 | 34 | |
| | GND | 4 | 21 | |
| | DCD | 17 | 22 | |
| | DTR | 1 | 5 | |
| RI | 16 | 20 | | |

SUNIX 4-port RS-232 Card builds DB44F connector on board.

| SUNIX DB44 Female 4 ports Serial Communication Boards Pin Assignment | | | | | | |
|--|--------|----|----|----|----|---|
| RS-232 | Port | 1 | 2 | 3 | 4 |  |
| | Signal | | | | | |
| | TxD | 3 | 7 | 11 | 15 | |
| | RxD | 32 | 36 | 40 | 44 | |
| | RTS | 2 | 6 | 10 | 14 | |
| | CTS | 31 | 35 | 39 | 43 | |
| | DSR | 18 | 34 | 38 | 42 | |
| | GND | 4 | 21 | 25 | 29 | |
| | DCD | 17 | 22 | 26 | 30 | |
| | DTR | 1 | 5 | 9 | 13 | |
| RI | 16 | 20 | 24 | 28 | | |

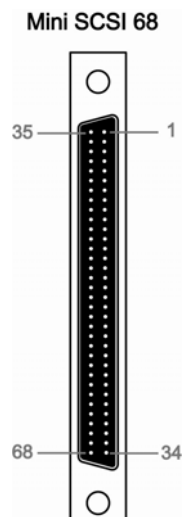
SUNIX 8-port RS-232 Card builds DB62F connector on board.

| SUNIX DB62 Female 8 ports Serial Communication Boards Pin Assignment | | | | | | | | | |
|---|--------|-----|-----|-----|-----|-----|-----|-----|----|
| RS-232 | Port | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | Signal | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | DCD | 24 | 45 | 8 | 50 | 11 | 55 | 58 | 21 |
| | RxD | 44 | 47 | 49 | 52 | 54 | 57 | 60 | 62 |
| | TxD | 23 | 26 | 28 | 31 | 34 | 36 | 39 | 41 |
| | DTR | 2 | 5 | 7 | 10 | 13 | 15 | 18 | 20 |
| | DSR | 1 | 4 | 6 | 9 | 12 | 14 | 17 | 19 |
| | RTS | 22 | 25 | 27 | 30 | 33 | 35 | 38 | 40 |
| | CTS | 43 | 46 | 48 | 51 | 53 | 56 | 59 | 61 |
| GND | GND | GND | GND | GND | GND | GND | GND | GND | |



SUNIX 8-port RS-232 Low Profile Card builds DB68F connector on board.

| SUNIX DB68 Female 8 ports Serial Communication Boards Pin Assignment | | | | | | | | | |
|---|--------|----|----|----|----|----|----|----|----|
| RS-232 | Port | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | Signal | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| | TxD | 6 | 15 | 24 | 33 | 63 | 54 | 45 | 36 |
| | RxD | 3 | 12 | 21 | 30 | 66 | 57 | 48 | 39 |
| | RTS | 7 | 16 | 25 | 34 | 62 | 53 | 44 | 35 |
| | CTS | 4 | 13 | 22 | 31 | 65 | 56 | 47 | 38 |
| | DSR | 2 | 11 | 20 | 29 | 67 | 58 | 49 | 40 |
| | GND | 8 | 9 | 26 | 27 | 61 | 60 | 43 | 42 |
| | DCD | 1 | 10 | 19 | 28 | 68 | 59 | 50 | 41 |
| DTR | 5 | 14 | 23 | 32 | 64 | 55 | 46 | 37 | |
| RI | - | - | - | - | - | - | - | - | - |



3.

Driver Installation

After installing the RS-232 PCI Express 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 Express serial board supports Windows and Linux operating systems, and you can select your requirement in the following chapter:

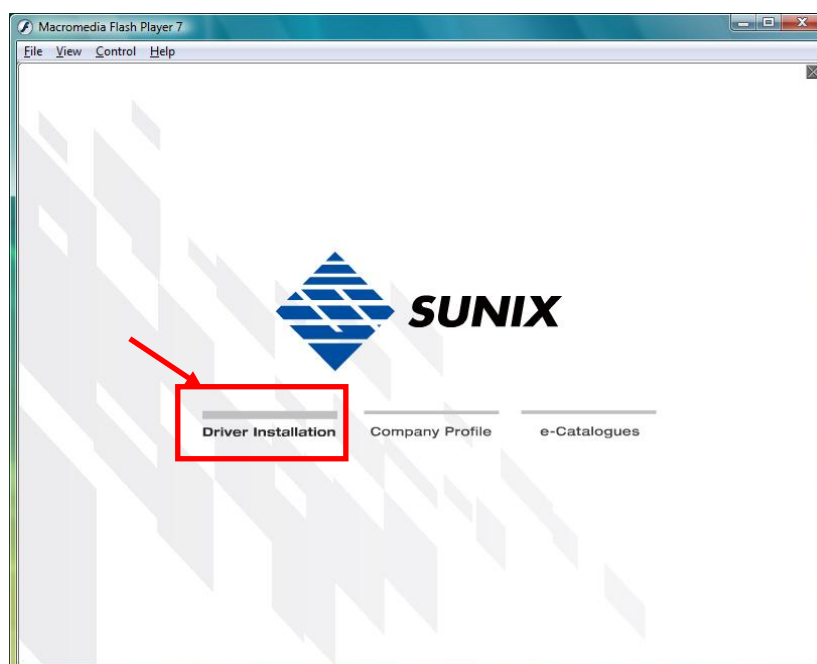
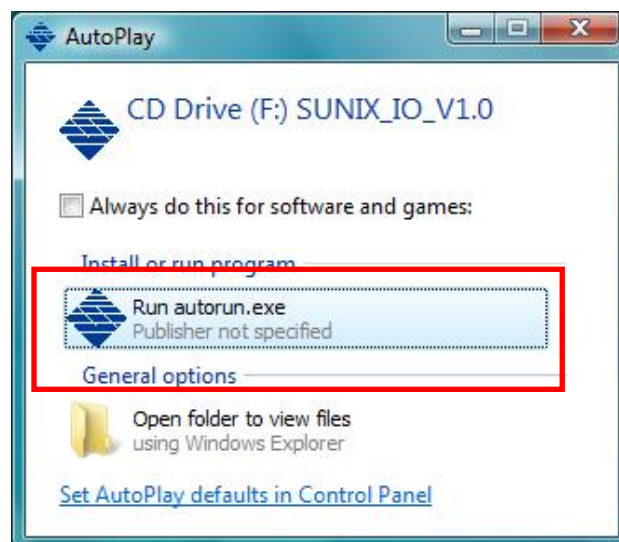
The following topics covered in this chapter:

- ◆ **Windows Driver Installation**
- ◆ **Windows Driver Uninstallation**
- ◆ **Linux Driver Installation**
- ◆ **Verify Installation**

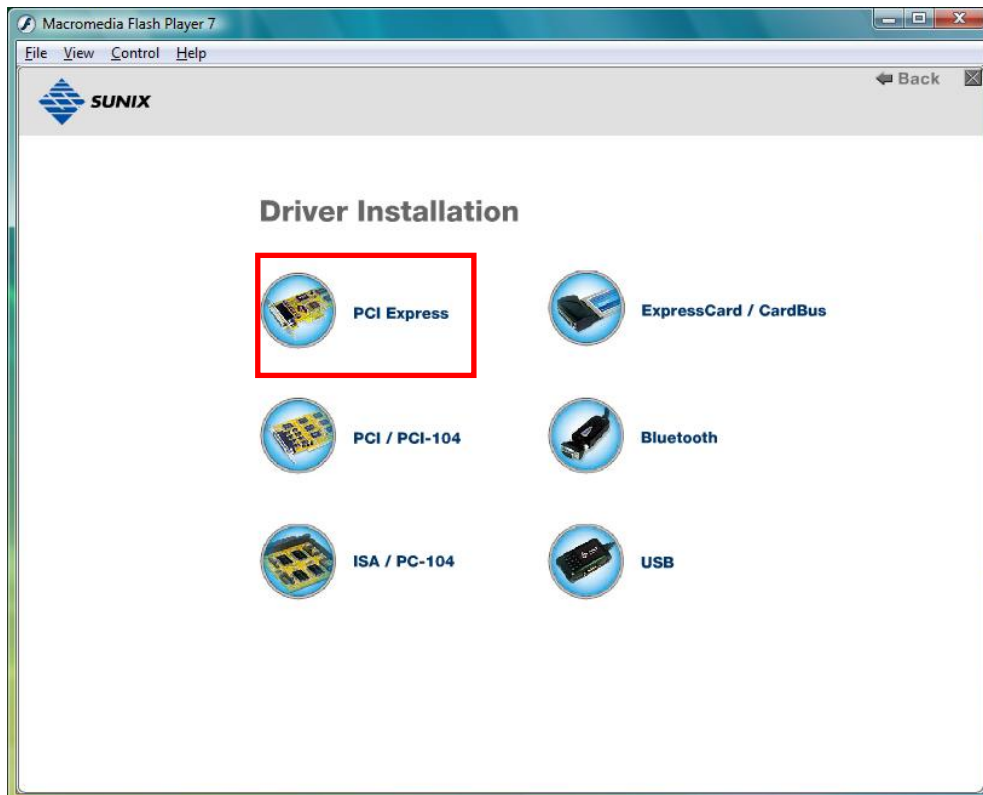
Windows Driver Installation

Please refer to following instructions to install the driver for the first time under Windows operation system. You will need to plug the board in an available PCI Express slot first, before installing the driver.

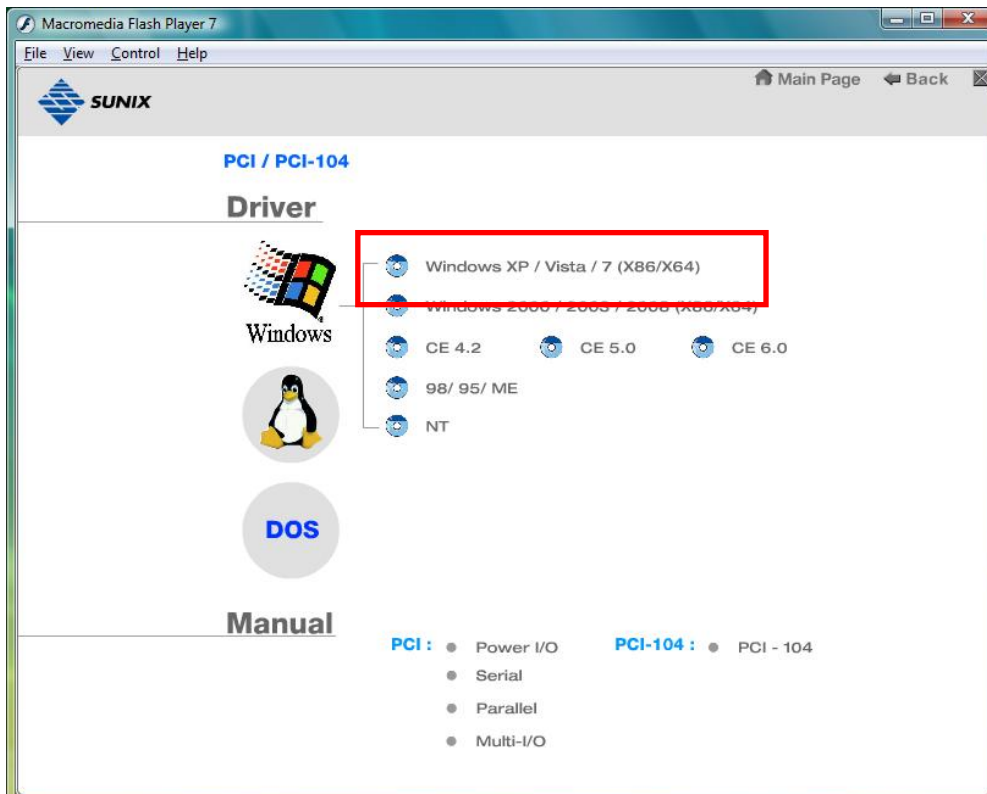
- (1) After the board is physically installed and the PC boots up, system will detect the PCI Express Serial card and prompt for driver installation wizard, please choose cancel.
- (2) Put CD driver bound with product in your CD / DVD ROM drive. Please select autorun.exe., then select “**Driver Installation**”.



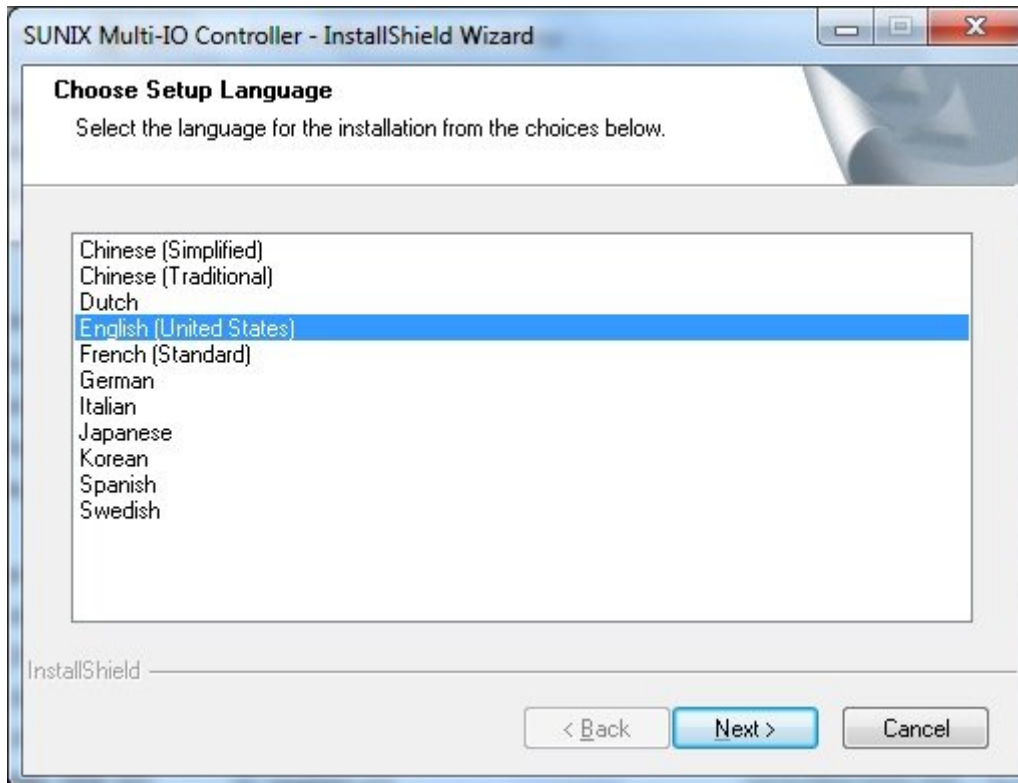
(3) Please select the product interface you bought, such as PCI Express.



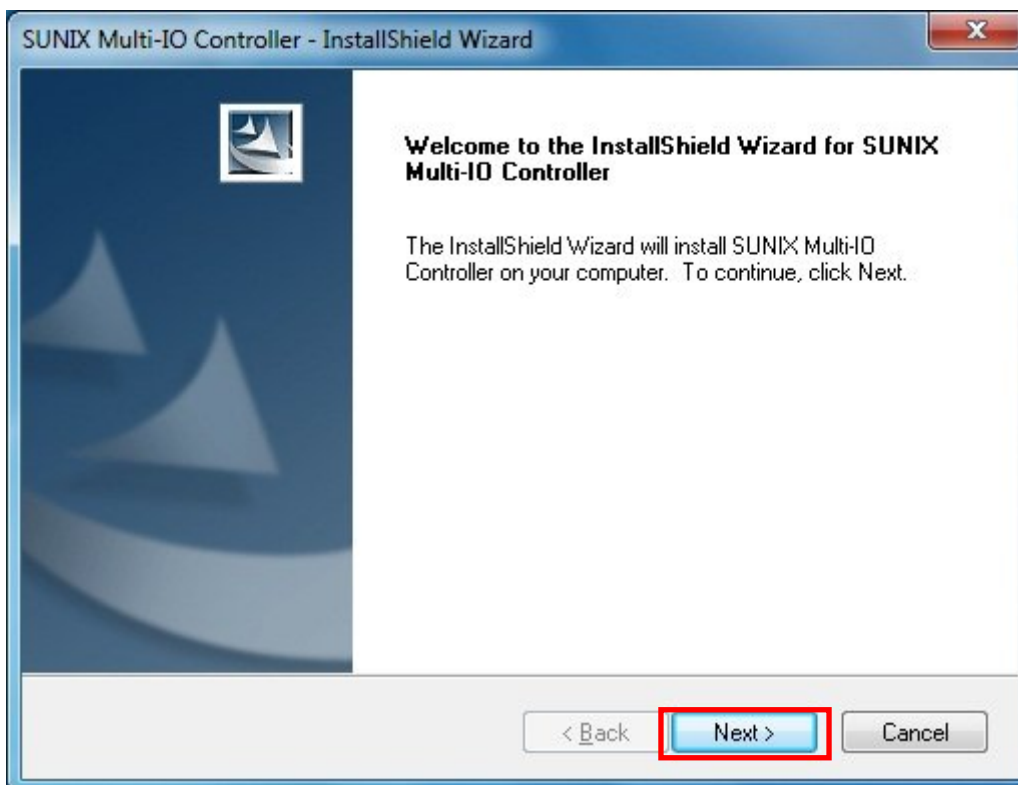
(4) Please select the O.S. version you are using, such as Windows Vista. Then system will process the driver installation step automatically.



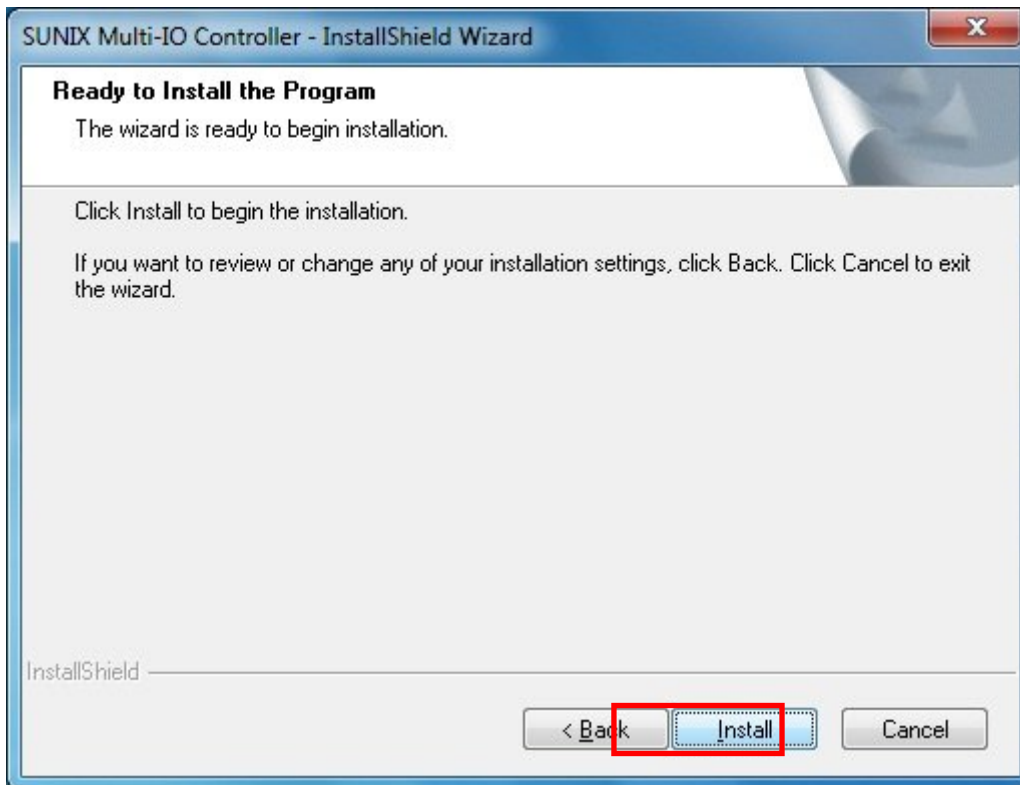
(5) Please select driver language for your operation system.



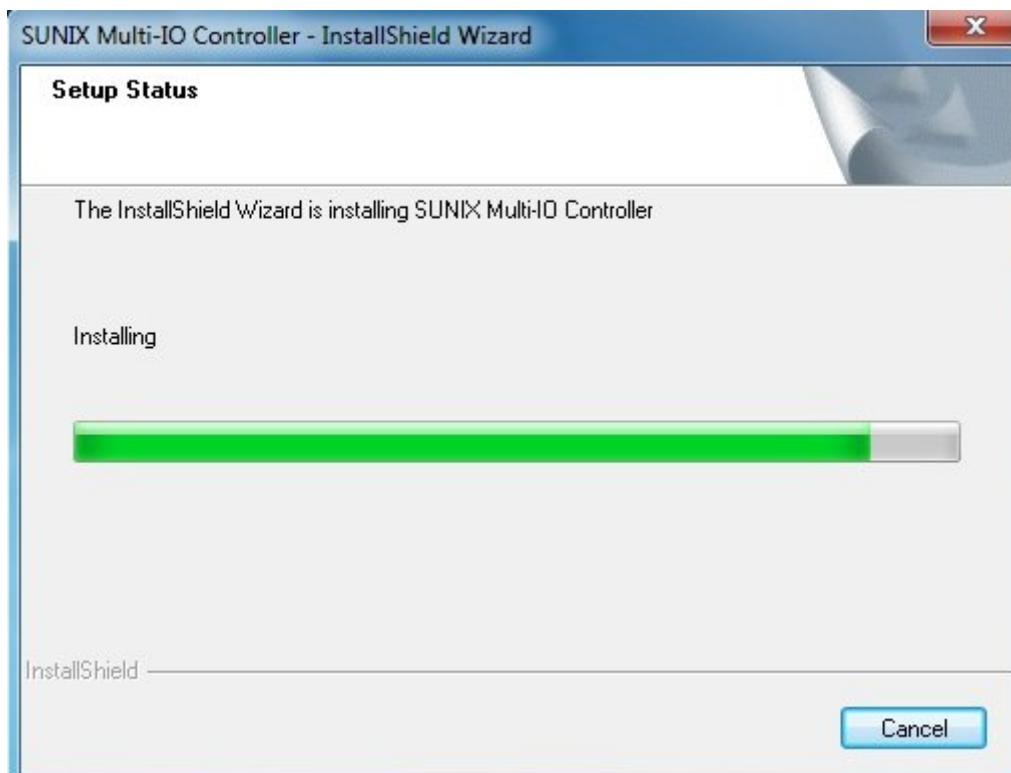
(6) Click “**Next**” to continue driver installation steps.



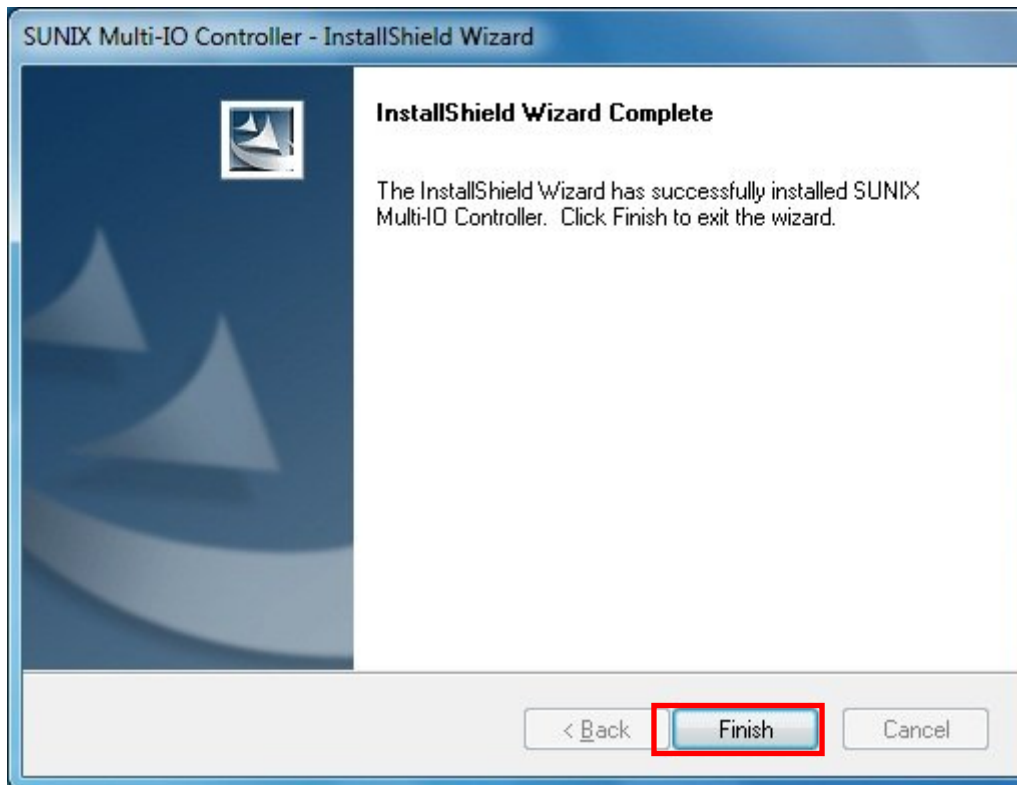
(7) Click **“Install”** to continue driver installation steps.



(8) System will install driver automatically. It takes about one minute.



(9) Click “**Finish**” to end installation steps.

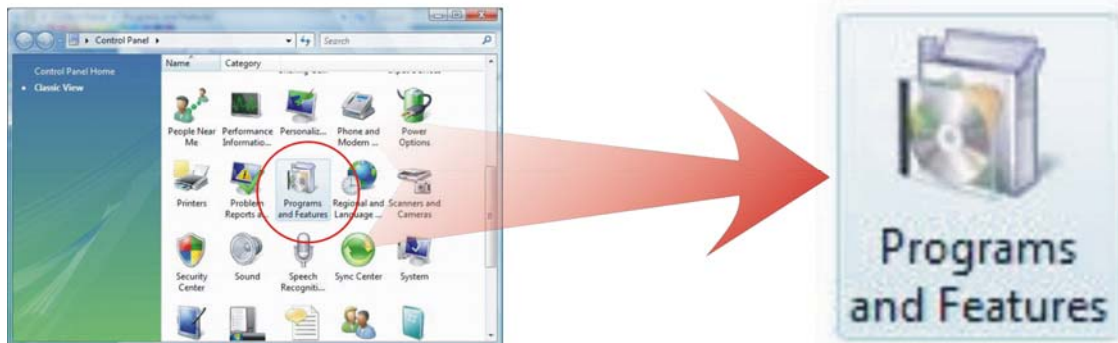


Windows Driver Uninstallation

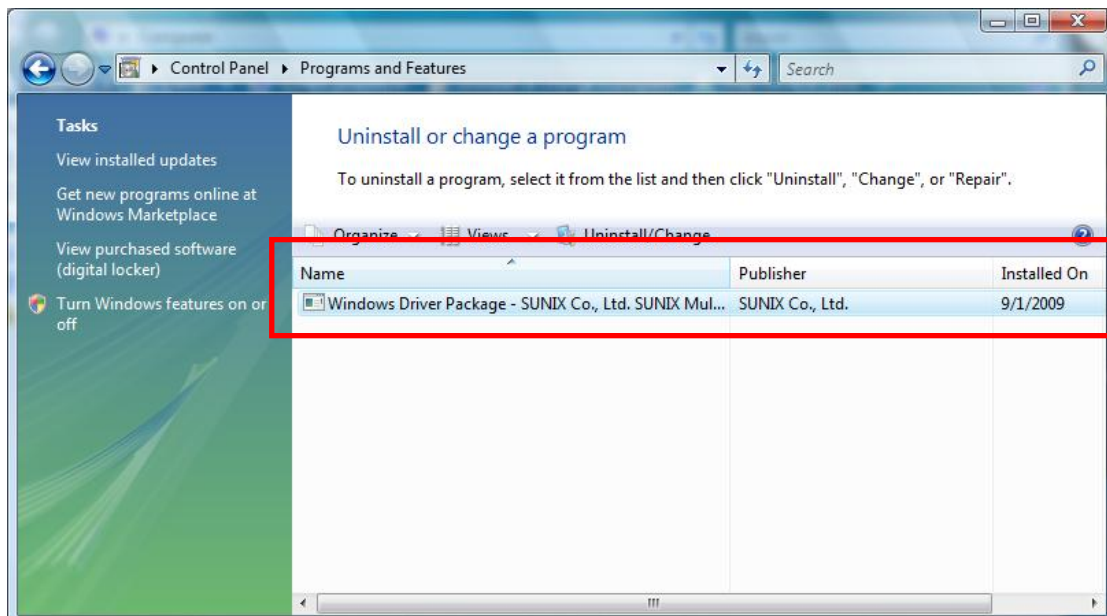
Please refer to following instructions uninstall Multi-I/O card driver.

- (1) Click on the “**Programs and Features**” tab in the Windows Control Panel.

Start > Controller Panel > Programs and Features



- (2) Entry Uninstall or change a program page, and double click “**Windows Driver Package – SUNIX Co., Ltd SUNIX Multi-I/O Controller**” to process driver uninstallation procedure.



Linux Driver Installation

This installation guide describes the procedures to install the PCI serial board in Linux kernel 2.4.x and 2.6.x. Please refer to "snx_Vx.x.x.x.tar.gz" for driver installation detail in CD Driver (Linux folder) directory.

: \PCI_IO \Linux

(1) Driver install

Please create a directory under root directory, e.g /temp, do commands:

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

After get driver file "snx_Vx.x.x.x.tar.gz". Copy file to /temp directory, then extract and install, do commands:

```
# cp snx_Vx.x.x.x.tar.gz /temp  
# cd /temp  
# tar xvfz snx_Vx.x.x.x.tar.gz  
# cd /temp/snx  
# make clean ; make install
```

```
* If system is Suse 9.0 and errors occur when  
* "make clean ; make install", do commands:
```

```
*
```

```
* # cd /usr/src/linux/  
* # make cloneconfig  
* # make dep
```

```
*
```

```
* then do "make clean ; make install" again in /temp/snx
```

Load driver module, do command:

```
# modprobe snx  
or  
# insmod /temp/snx/driver/snx.ko (snx.o for kernel 2.4)
```

Check driver module, do command:

```
# lsmod | grep snx
```

Unload driver, do command:

```
# rmmod snx
```

(2) Device node creation

Each serial port has one device node which is named "ttySNX?", maximum up to 32 serial ports.

Each parallel port has two device node which is name "lp?" and "parport?". This step will backup lp2~lp3 and parport2~parport3 to lp?.bak and parport?.bak in /dev for your system first. Then, create lp2~lp3 and parport2~parport3 in /dev for sunix driver, maximum up to 2 parallel ports.

This setp will be done when do "make clean ; make install", if device nodes aren't in /dev, do commands:

```
# cd /temp/snx/snxmknod  
# ./snxmknod
```

This will create device nodes in /dev.

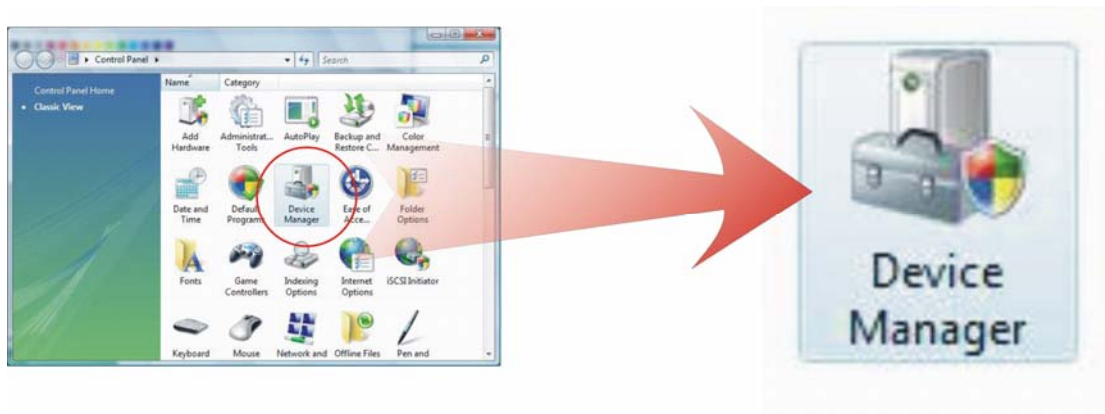
If there are more than two boards installed, serial port device nameing convention please refer to F1.

Verify Installation

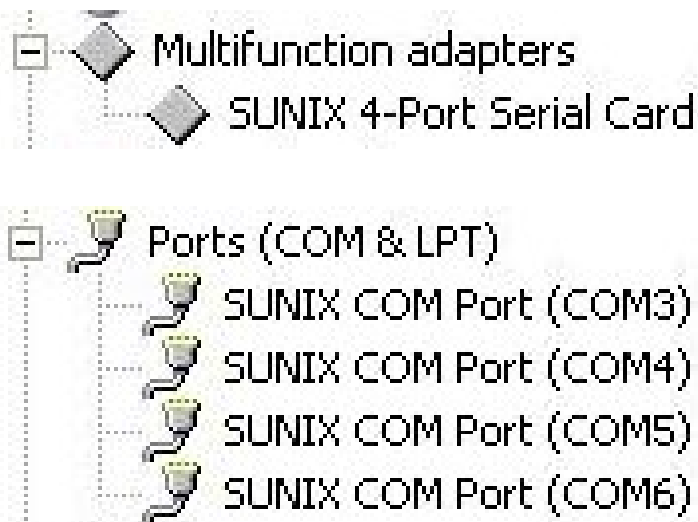
You can use Windows “**Device Manager**” to verify proper installation.

- (1) Click on the “**Programs and Features**” tab in the Windows Control Panel.

Start > Controller Panel > Device Manager



- (2) In the Device Manager window, you should see this board under **Multifunction adapters** (4-port RS-232 Serial Card in this example). You should also see SUNIX COM port under **Ports (COM & LPT)**.



4.

Port Configuration

This chapter shows all Serial COM port settings that user came with usually, such as COM port number, FIFO length(size), baud rate, IO address and others.

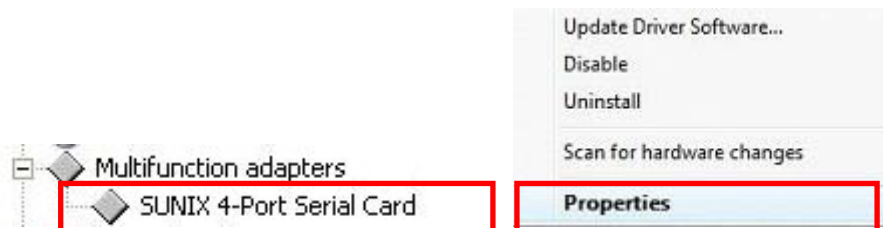
The following topics covered in this chapter:

- ◆ **Configure Serial Port Settings**
- ◆ **COM Port Number Settings**
- ◆ **COM I/O Resource**
- ◆ **FIFO Settings**
- ◆ **Advanced Settings**

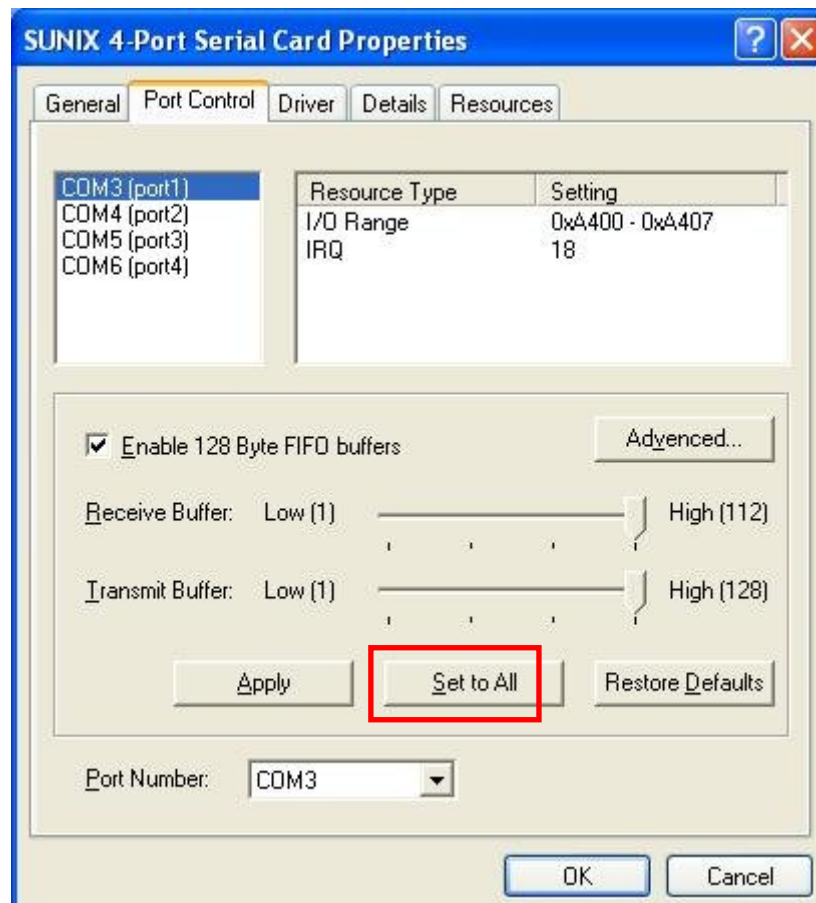
Configure Serial Port Settings

After the board and serial port drivers are installed, please refer to following instructions to configure Serial COM settings.

- (1) Please launch the “**Device Manager**”.
- (2) Right click the “**SUNIX Serial Card**” item from the “**Multifunction adapters**” sub-tree and click “**Properties**”.

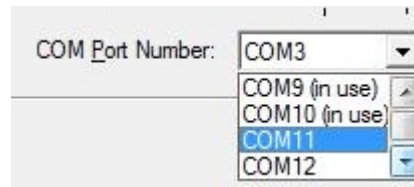


- (3) On the “**Port Control**” tab, select a port to configure.
 - * Click “**OK**” to approve the settings for the selected port.
 - * Click “**Set to All**” to approve the settings for all COM ports.



COM Port Number Settings

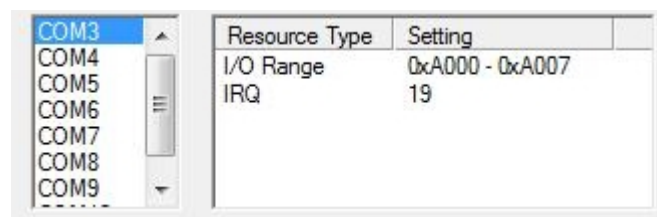
Under Port Number, select a COM number to assign to the serial port. Click “OK” to approve the settings for the selected port.



Note: In order to prevent system resource conflict, do not select “in use” port.

COM I/O Resource

User can read the COM “IO Range” and “IRQ” located in system by selecting COM port.

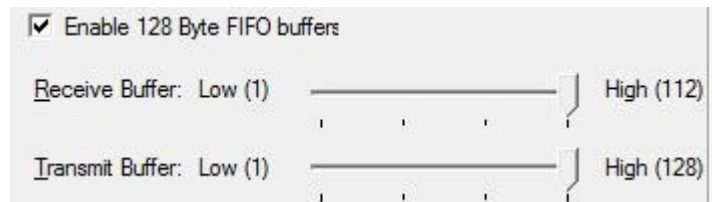


IRQ and I/O address is automatically assigned by the mainboard PCI BIOS automatically (before COM card driver installing). User can NOT assign legacy ISA address (3F8, 3E8, 2F8, 2E8) for the specific COM port. But for IRQ setting, user can set specific IRQ value for this PCI bus slot via mainboard’s BIOS settings (not via SUNIX driver). But all COM ports will share one IRQ value.

FIFO Settings

Select an Rx FIFO Trigger and Tx FIFO Size.

The default Rx FIFO Trigger is 112 bytes. The default Tx FIFO Size is 128 bytes. Click “**Set to All**” to change this setting for all serial ports on the board. Then click “**OK**” to save the settings.



Receive FIFO interrupt trigger level:

When the level of data in the receiver FIFO reaches this value, a receiver data interrupt is triggered.

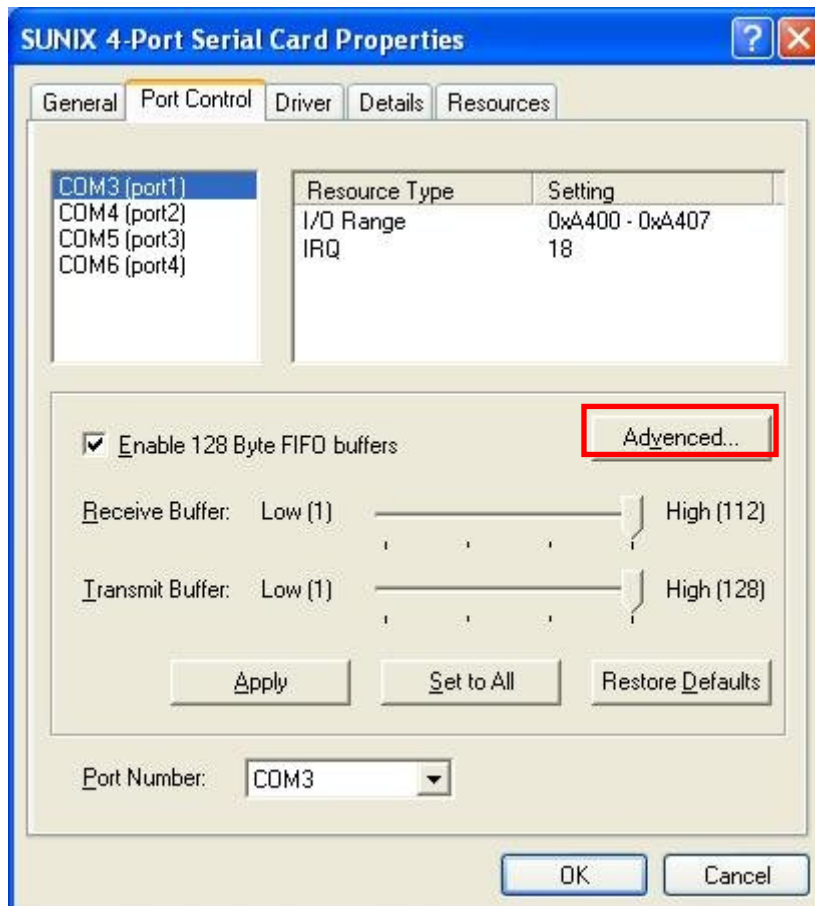
Transmit FIFO interrupt trigger level:

When the level of data in the transmit FIFO falls below this value, a transmitter interrupt is triggered. Setting this value to zero will not trigger an interrupt until the transmitter is completely idle.

The FIFO trigger levels can be fine tuned to gain optimum performance, depending on system performance, baud rate used, levels of serial traffic etc.

Advanced Settings

User can control RS-232 communication in Advanced Port Control page through “**Advanced**” settings.



Clock Rate

This is the “Data Rate” value for on board crystal frequency of input clock. The baud rate can optionally be adjusted according to the data rate required. The clock pre-divisor is used to divide the input clock prior to baud rate generation.

This parameter must matches with the oscillator (crystal) frequency on the board. System default is **14745600 Hz**. We do NOT recommend for modification without SUNIX instruction. User can click “**Defaults**” button back to manufactory settings.



5.

Appendix

This chapter shows some problems that user came with usually. Also you can check it if the PCI Express serial board can not work properly in your system after following hardware and software installation steps. In addition, you could contact with us for detail technical product information.

In this appendix, we cover the following topics.

- ◆ **Troubleshooting**
- ◆ **Product Family**
- ◆ **Contact Information**

Troubleshooting

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

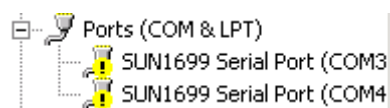
A: It may cause by following issue:

- a. The board is not properly plugged into the PCI Express slot.
- b. Please clean the golden finger.
- c. The PCI Express 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 Express 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 Express or 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. 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, especially re-install the correct driver.

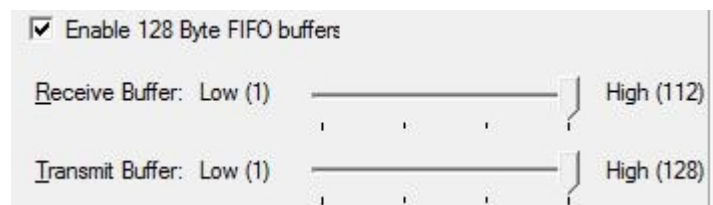
4. Should I enable auto flow control features?

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. Please make sure your serial device and cable wiring before enabling the hardware flow control function.

5. How large FIFO length I should set?

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.

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.



Product Family

SUNIX provides kinds of RS-232/422/485 interface cards for customer selection, including PCI Express, PCI, PCI/104, CardBus, and ExpressCard. Please refer to the product family table for reference.

| RS-232 PCI Express Interface | | | | | | |
|------------------------------|---------------------|-------------|----------------|--------------|-------------|------------|
| Port | Connecter | Baud Rate | ESD Protection | Power output | Bracket | Model NO. |
| 16 | Mini SCSI 68 Female | 921.6Kbps | ±15KV | - | Standard | SER1640A |
| | 8 | DB62 Female | | 115.2 kbps | - | Standard |
| Mini SCSI 68 Female | | 921.6Kbps | | - | Low profile | SER5466AL |
| | | | | - | Standard | SER5466H |
| | | | | - | Low profile | SER5466HL |
| | 4 | | | DB44 Female | 115.2 kbps | - |
| 5V/12V | | SER5456P | | | | |
| - | | Low profile | | | | SER5456AL |
| 5V/12V | | | | | | SER5456PL |
| 921.6Kbps | | - | | | Standard | SER5456H |
| | | 5V/12V | | | | SER5456PH |
| | | - | | | Low profile | SER5456HL |
| | | 5V/12V | | | | SER5456PHL |
| 2 | DB9 Male | 115.2 kbps | | - | Standard | SER5437A |
| | DB44 Female | | | 5V/12V | | SER5437P |
| | | | | - | Low profile | SER5437AL |
| | 5V/12V | | | SER5437PL | | |
| | DB9 Male | 921.6Kbps | | - | Standard | SER5437H |
| | DB44 Female | | | 5V/12V | | SER5437PH |
| | | | | - | Low profile | SER5437HL |
| | 5V/12V | | | SER5437PHL | | |
| | 5x2 Pin Header | | | - | | SER5037UHL |

| RS-232 PCI Interface | | | | | | | |
|----------------------|----------------|-----------|----------------|----------------|-------------|-------------|-----------|
| Port | Connecter | Baud Rate | ESD Protection | Power output | Bracket | Model NO. | |
| 8 | Mini SCSI 68 | 921.6Kbps | ±15KV | - | Standard | SER1600A | |
| | DB62 Female | 115.2Kbps | ±2KV | - | Standard | SER5066A | |
| | Mini SCSI 68 | | | - | Low profile | SER5066AL | |
| | 5x2 Pin Header | | | - | Standard | SER5066U | |
| | 5x2 Pin Header | | | - | Low profile | SER5066UL | |
| | DB62 Female | 921.6Kbps | ±15KV | - | Standard | SER5066H | |
| | Mini SCSI 68 | | | - | Low profile | SER5066HL | |
| | 5x2 Pin Header | | | - | Standard | SER5066UH | |
| 5x2 Pin Header | - | | | Low profile | SER5066UHL | | |
| 4 | DB44 Female | 115.2Kbps | ±2KV | - | Standard | SER5056A | |
| | | | | 5V/12V | | SER5056P | |
| | | | | - | Low profile | SER5056AL | |
| | | | | 5V/12V | | SER5056PL | |
| | 5x2 Pin Header | 921.6Kbps | ±15KV | - | Standard | SER5056U | |
| | | | | - | Low profile | SER5056UL | |
| | DB44 Female | 921.6Kbps | ±15KV | - | Standard | SER5056H | |
| | | | | - | Low profile | SER5056HL | |
| | | | | 5V/12V | Standard | SER5056PH | |
| | | | | - | | SER5056UH | |
| | 5x2 Pin Header | - | Low profile | SER5056UHL | | | |
| | DB44 Female | 5V/12V | | SER5056PHL | | | |
| 2 | DB9 Male | 115.2Kbps | ±2KV | - | Standard | SER5037A | |
| | | | | 5V/12V | | SER5037P | |
| | 5x2 Pin Header | | | - | Low profile | SER5037U | |
| | DB44 Female | | | 5V/12V | | SER5037AL | |
| | 5x2 Pin Header | - | SER5037PL | | | | |
| | DB9 Male | 921.6Kbps | ±15KV | - | Standard | SER5037UL | |
| | | | | 5V/12V | | SER5037H | |
| | | | | 5x2 Pin Header | - | Low profile | SER5037PH |
| | | | | DB44 Female | 5V/12V | | SER5037UH |
| | | | | 5x2 Pin Header | - | SER5037HL | |
| 5x2 Pin Header | | | | 5V/12V | SER5037PHL | | |
| 1 | DB9 Male | 115.2Kbps | ±2KV | - | Standard | SER5027A | |
| | | | | 5V/12V | | SER5027P | |
| | | | | - | Low profile | SER5027AL | |
| | | 5V/12V | SER5027PL | | | | |
| | | 921.6Kbps | ±15KV | - | Standard | SER5027H | |
| | | | | 5V/12V | | SER5027PH | |
| 5V/12V | Low profile | | | SER5027HL | | | |
| | | | | | | SER5027PHL | |

| RS-232 ExpressCard Interface | | | | | |
|-------------------------------------|-------------|-----------|----------------|---------|-----------|
| Port | Connecter | Baud Rate | ESD Protection | Bracket | Model NO. |
| 4 | DB44 Female | 921.6Kbps | ±15KV | 34mm | ECS4000 |
| 2 | | | | 34mm | ECS2000 |
| 1 | DB9 Male | | | 34mm | ECS1000 |

| RS-232 CardBus Interface | | | | | |
|---------------------------------|-------------|-----------|----------------|---------|-----------|
| Port | Connecter | Baud Rate | ESD Protection | Bracket | Model NO. |
| 4 | DB44 Female | 115.2Kbps | ±15KV | 54mm | CBS4000 |
| 2 | | | | 54mm | CBS2000 |
| 1 | DB9 Male | | | 54mm | CBS1000 |

| RS-232 PCI/104 Interface | | | | |
|---------------------------------|----------------|-----------|----------------|-----------|
| Port | Connecter | Baud Rate | ESD Protection | Model NO. |
| 8 | 5x2 Pin Header | 115.2Kbps | ±2KV | SER5337A |
| 4 | | | | SER5356A |
| 2 | | | | SER5366A |

| RS-422/485 PCI Express Interface | | | | | | |
|----------------------------------|-------------|-----------|----------------|------------------|----------------------|-------------|
| Port | Connecter | Baud Rate | ESD Protection | Surge Protection | Isolation Protection | Model NO. |
| 8 | DB44 Female | 921.6Kbps | ±15KV | 600W | 2.5KV | IPC-E2108SI |
| | | | | - | - | IPC-E2108 |
| 4 | DB44 Female | 921.6Kbps | ±15KV | 600W | 2.5KV | IPC-E2104SI |
| | | | | - | - | IPC-E2104 |
| 2 | DB9 Male | 921.6Kbps | ±15KV | 600W | 2.5KV | IPC-E2102SI |
| | | | | - | - | IPC-E2102 |

| RS-422/485 PCI Interface | | | | | | |
|--------------------------|-------------|-----------|----------------|------------------|----------------------|-------------|
| Port | Connecter | Baud Rate | ESD Protection | Surge Protection | Isolation Protection | Model NO. |
| 16 | DB79 Female | 921.6Kbps | ±15KV | - | - | IPC-P2116 |
| 8 | DB44 Female | 921.6Kbps | ±15KV | 600W | 2.5KV | IPC-P2108SI |
| | | | | - | - | IPC-P2108 |
| 4 | DB44 Female | 921.6Kbps | ±15KV | 600W | 2.5KV | IPC-P2104SI |
| | | | | - | - | IPC-P2104 |
| 2 | DB9 Male | 921.6Kbps | ±15KV | 600W | 2.5KV | IPC-P2102SI |
| | | | | - | - | IPC-P2102 |

| RS-422/485 PCI/104 Interface | | | | | | |
|------------------------------|----------------|-----------|----------------|------------------|----------------------|-------------|
| Port | Connecter | Baud Rate | ESD Protection | Surge Protection | Isolation Protection | Model NO. |
| 8 | 5x2 Pin Header | 921.6Kbps | ±15KV | 600W | 2.5KV | IPC-B2108SI |
| | | | | - | - | IPC-B2108 |
| 4 | 5x2 Pin Header | 921.6Kbps | ±15KV | 600W | 2.5KV | IPC-B2104SI |
| | | | | - | - | IPC-B2104 |
| 2 | 5x2 Pin Header | 921.6Kbps | ±15KV | 600W | 2.5KV | IPC-B2102SI |
| | | | | - | - | IPC-B2102 |

| RS-232/422/485 PCI Express Interface | | | | | | |
|--------------------------------------|-------------|-----------|----------------|------------------|----------------------|-------------|
| Port | Connecter | Baud Rate | ESD Protection | Surge Protection | Isolation Protection | Model NO. |
| 8 | DB44 Female | 921.6Kbps | ±15KV | 600W | 2.5KV | IPC-E3108SI |
| | | | | - | - | IPC-E3108 |
| 4 | DB44 Female | 921.6Kbps | ±15KV | 600W | 2.5KV | IPC-E3104SI |
| | | | | - | - | IPC-E3104 |

| RS-232/422/485 PCI Interface | | | | | | |
|------------------------------|-------------|-----------|----------------|------------------|----------------------|-------------|
| Port | Connecter | Baud Rate | ESD Protection | Surge Protection | Isolation Protection | Model NO. |
| 8 | DB44 Female | 921.6Kbps | ±15KV | 600W | 2.5KV | IPC-P3108SI |
| | | | | - | - | IPC-P3108 |
| 4 | DB44 Female | 921.6Kbps | ±15KV | 600W | 2.5KV | IPC-P3104SI |
| | | | | - | - | IPC-P3104 |

Contact 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

..... info@sunix.com.tw

World Wide Web (WWW) Site for product information:

..... <http://www.sunix.com.tw>