4233A 4243A 8243 8233 RS-232/422/485 PC/104 Module

User's Manual

First Edition, July 2005



SUNIX Co., Ltd.

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

RS-232/422/485 PC/104 Module

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.
- 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.



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1. Introduction

Thanks for purchasing PC/104 compatible RS-232 or RS-422/485 serial interface module that combines small size, industrial grade construction and reliability specifications, plus perform the functions most commonly need in embedded application.

Because PC/104 modules use as smart stacking bus design, they avoid the costs and bulk associated with backplanes or card cage. Its work with PC/104 CPU boards that accept the PC/104 expansion interface, and comes with DB9 or DB25 connection cables are available as options to meet users' varied connection requirements.

The following topics covered in this chapter:

- Overview
- Package Checklist
- Product Features
- Product Specifications

Overview

This Multi-port PC/104 serial module equips with 2 or 4 ports high speed RS-232 or RS-422/485 standard serial ports which accessed through DB-9 or DB-25 male connectors. You can configure the I/O base address and interrupt vector of each serial port. Each serial port has built-in 64 byte hardware FIFO, and provides data transfer speed up to 921Kb/Sec with industry standard 16C750 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:

Multi-port PC/104 serial module × 1

Cable:

2 ports PC/104 series: 2x5 IDC socket to DB9 or DB25 Male × 2

4 ports PC/104 series: 2x5 IDC socket to DB9 or DB25 Male × 4

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

Product Features

♦ RS-232

- 2 or 4 independent RS-232 serial ports
- Single chip SUN1699 (16C750 compatible) hardware flow control
- Each serial port has built-in 64 byte hardware FIFO
- Low repair rate with ASIC design
- Data transmission speeds up to 921.6Kbps
- IRQ and I/O address selectable for each serial port by jumper
- Ideal for PC/104 embedded systems
- Support DOS, Linux, Microsoft WinCE.NET, 3.x, 95, 98, Me, NT, 2000, XP, and 2003
- Operation temperature: 0 to 60 & Storage Temperature: -20 to 85

♦ RS-422/485

- 2 or 4 independent RS-422/485 serial ports
- Single chip SUN1699 (16C750 compatible) hardware flow control
- Each serial port has built-in 64 byte hardware FIFO
- Automatic RS-485 RTS signal control technology
- Support Auto Detect and Switch RS-422 and RS-485
- RTS/CTS± Handshaking Communication mode for RS-422/485
- Data transmission speeds up to 921.6Kbps
- Built-in termination resistors to avoid cross-talking
- IRQ and I/O address selectable for each serial port by jumper
- Ideal for PC/104 embedded systems
- Support DOS, Linux, Microsoft WinCE.NET, 3.x, 95, 98, Me, NT, 2000, XP, and 2003
- Operation temperature: 0 to 60 & Storage Temperature: -20 to 85

NOTE:

You can get more core technology detail in Appendix chapter.

Product Specifications

• RS-232

• Function

Туре	PC/104 RS-232 Module	
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	SUN1699	
Controller	16C750 compatible UART	
Bus Interface	PC/104	
Number of Ports	2 or 4 ports	
Connector	Box Header	
Communication		
Interrupt	IRQ 3, 4, 5, 7, 9, 10, 11, 12, 15	
I/O address	3F8, 3E8, 2F8, 2E8, 260, 268, 250, 258, 240, 248,	
	230, 238	
FIFO	64 byte hardware FIFO	
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, GN	ID
5		

• 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
Dimensions	

• Dimensions

Dimensions ($W \times D$)	95.9 × 90.2 mm
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Regulatory Approvals

Regulatory Approvals CE, FCC

RS-422/485

• Function

Type PC/104 RS-422/485 Module	
Mode of Operation	Differential
	RS-422 Full-Duplex
Dus mansceivers	RS-485 Half-Duplex
Drivers per Line	RS-422 1 Driver
	RS-485 10 Drivers
Pocoivore por Lino	RS-422 10 Receivers
Receivers per Line	RS-485 32 Receivers

Hardware

IC	SUN1699	
Controller	16C750 compatible UART	
Bus Interface	PC/104	
Number of Ports	2 or 4 ports	
Connector	Box Header	

• Communication

Interrupt	IRQ 3, 4, 5, 7, 9, 10, 11, 12, 15	
I/O address	3F8, 3E8, 2F8, 2E8, 260, 268, 250, 258, 240, 248,	
	230, 238	
FIFO	64 byte hardware FIFO	
RS-485 Control	This ARSC [™] (Auto RTS Signal Control) technology	
Select RS-422/485	Auto Switch RS-422/485 technology	
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	RS-422: TxD+/-, RxD+/-, RTS+/-, CTS+/-, GND	
Signal	RS-485:Data+/-, RxD+/-, RTS+/-, CTS+/-, 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	

• Dimensions

Dimensions (W × D)	95.9 × 90.2	mm
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• Regulatory Approvals

Regulatory Approvals	CE, FCC
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Hardware Installation

This chapter includes information about hardware installation for PC/104 module. The following topics are covered:

- Hardware Installation
- Mechanical Drawings
- Jumper and Connectors
- I/O Address & IRQ Settings
- Pin Assignments

Hardware Installation

The hardware installation of PC/104 serial boards is easy to carry out. Before you insert the card into the PC/104 interface, you must first configure I/O Base Address & Interrupt Vector, and IRQ Settings. Follow the detailed steps given below to install the PC/104 serial board in your computer.

Step 1: Configure I/O Base Address & IRQ Settings (see details below).



Safety First

To avoid damaging your system and boards, make sure your PC's power is turned off before installing your PC/104 module.

- **Step 2:** Turn your PC's power off, and also shut off the power to any peripheral devices, and then remove the PC's cover.
- **Step 3:** Insert the PC/104 serial module into the PC/104 interface slot.
- **Step 4:** Fasten the holding screw to fix the serial board in place.

Step 5: Replace the PC's cover.

Step 6: Power on the PC.



♦ RS-232



Jumper and Connectors of RS-232 PC/104 Serial Board

Connectors			Jumpers
Label	Function	Label	Function
S1	RS-232 Port 1	JP1	Port 1 IRQ Select
S2	RS-232 Port 2	JP2	Port 2 IRQ Select
S3	RS-232 Port 3	JP3	Port 3 IRQ Select
S4	RS-232 Port 4	JP4	Port 4 IRQ Select
		JP5	Port 1 I/O Address Select
		JP6	Port 2 I/O Address Select
		JP7	Port 3 I/O Address Select
		JP8	Port 4 I/O Address Select

♦ RS-422/485



2-5

Jumper and Connectors of RS-422/485 PC/104 Serial Board

Connectors			Jumpers	
Label Function		Label	Function	
S1	RS422/485 Port 1	JP1	Port 1 IRQ Select	
S2	RS422/485 Port 2	JP2	Port 2 IRQ Select	
S3	RS422/485 Port 3	JP3	Port 3 IRQ Select	
S4	RS422/485 Port 4	JP4	Port 4 IRQ Select	
		JP6	Port 1 I/O Address Select	
		JP7	Port 2 I/O Address Select	
		JP9	Port 3 I/O Address Select	
		JP10	Port 4 I/O Address Select	

I/O Address & IRQ Settings

Please make sure the IRQ and I/O address settings on your PC/104 system before setting PC/104 serial board jumpers. There will be a conflict when users set the same parameter in different ports.

The I/O base address settings of PC/104 serial board are selectable by JP5~8 jumpers for port1 to port4. Before you insert a PC/104 serial board into the PC/104 interface, you need to choose an available jumper from 3F8, 2F8, 3E8, 2E8, 250, 258, 260, 268, 240, 248, 230, or 238 to configure the I/O address setting.

The IRQ settings of PC/104 serial board are selectable by JP5~8 jumpers for port1 to port4. Before you insert a PC/104 serial board into the PC/104 interface, you need to choose an available jumper from 3, 4, 5, 7, 9, 10, 11, 12, or 15 to configure the IRQ setting.

	RQ	I/O Address
15	$(\bullet \bullet)$	238 • •
12	$\bullet \bullet$	230 • •
11		248 ••
10		240
9	$(\bullet \bullet)$	268 •
7	$(\bigcirc \bigcirc)$	260
5	$(\bullet \bullet)$	258
4		250
3	$\bullet \bullet$	2E8
		3E8
		2F8 • •
		3F8 • •

Pin Assignment

• RS-232



• RS-422





• RS-485



Software Installation

After installing the PC/104 serial module 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 PC/104 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
- Windows 95/98/Me
- Windows NT
- Windows CE.NET
- Linux

Windows 2000/XP/2003

•

Checking system resource

Please check available I/O and IRQ resources before installing the hardware.

1. Click Start → Control Panel → System



2. Click the "Hardware" tab page, and click "Device Manager".

System Properties	? X System Properties	<u>? ×</u>
General Network Identification Hardware User Profiles Advanced System: Microsoft Windows 2000 5.00.2195 Registered to: G4E6202K Computer: Intel(R) Celeron(R AT/AT COMPATIBLE 261,616 KB RAM	d General Network Identification Hardware User Profiles Advanced Hardware Wizard The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware. Hardware Wizard Device Manager Hardware Wizard Hardware Wizard Device Manager The Device Manager lists all the hardware devices installed on your computer. Use the Device Manager to change the properties of any device. Driver Signing Device Manager Hardware Profiles Hardware profiles Hardware Profiles Hardware configurations. Hardware Profiles Hardware configurations.	
OK Cancel	pply OK Cancel Apply	y

3. Click View → Resources by type.



- 3. Click "**Interrupt request (IRQ)**" showing IRQ sub tree to check if any unused IRQ resources available.
- 4. Click "**Input/output (IO)**" showing IO sub tree to check if any unused IO resources available.



 Setup the jumper setting on PC/104 serial board by using available IRQ & IO resource.

Installing PC/104 Serial board Driver

1. Click Start -> Control Panel -> Add/Remove Hardware



2. The Add/Remove Hardware Wizard window will open next.

Click on Next to continue.



3. When the **Choose a Hardware Task** window opens, please select **"Add/Troubleshoot a device**", and then click on **"Next**" to continue.

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

- 4. The **New Hardware Detection** window will search PC/104 serial board on your computer.
- 5. When the **Choose a Hardware Device** window opens, select "**Add a new device**" and then click "**Next**" to continue.

Add/Remove Hardware Wizard
Choose a Hardware Device Which hardware device do you want to troubleshoot?
The following hardware is already installed on your computer. If you are having problems with one of these devices, select the device, and then click Next. If you are attempting to add a device and it is not shown below, select Add a new device, and then click Next.
Devices Add a new device System timer Direct memory access controller Standard floppy disk controller ACPI Fixed Feature Button Intel(r) 82802 Firmware Hub Device
V=V Programmable interrunt controller < Back

6. The **Find New Hardware** window will open next. Select "**No, I want to select the hardware from a list**", since PC/104 is a brand new type of ISA serial board, and then click on "**Next**" to continue.

Add/Remove Hardware Wizard
Find New Hardware Windows can also detect hardware that is not Plug and Play compatible.
When Windows detects new hardware, it checks the current settings for the device and installs the correct driver.
Do you want Windows to search for your new hardware?
○ Yes, search for new hardware
No. I want to select the hardware from a list
< <u>Back</u> <u>Next</u> Cancel

7. When the **Hardware Type** window opens, select "**Multi-port serial adapters**" under **Hardware types**, and then click on "**Next**" to continue.

Add/Remove Hardware Wizard			
Hardware Type What type of hardware do you want to install?			
Select the type of hardware you want to install. Hardware types:			
Memory technology driver Modems Multi-port serial adapters Network adapters NT Apm/Legacy Support Other devices PCMCIA adapters Printers Printers			•
	< <u>B</u> ack	<u>N</u> ext >	Cancel

8. When the **Select a Device Driver** window opens, click on "**Have Disk**" to install driver from the CD driver that came with the PC/104 serial board.



9. Click "**Browse..**", and specify the driver locate within the CD driver as bound with PC/104 serial board.

CD/DVD ROM:

\IO\ISA IO\Win2000,XP,2003\



10. Explore the driver CD and select "twisaser.inf" and click "Open".

Locate File					? ×
Look in:	🔁 Win2000,XP,	2003	•	🗧 🗈 💣 🎟 •	
History	twisaser				
Desktop					
My Documents					
My Computer	File <u>n</u> ame:	twisaser.inf		•	<u>Open</u>
my Network P	Files of type:	Setup Information (*.inf)		V	Cancel

11. Click "**OK**" to continue driver installation steps.

Install Fro	om Disk	X
_	Insert the manufacturer's installation disk into the drive selected, and then click OK.	OK Cancel
	Copy manufacturer's files from: F:\IO\ISA IO\Win2000,XP,2003	Browse

12. When the **Select a Device Driver** window opens, select PC/104 serial board type from the list and click "**Next**" to continue.

Here is an example by selecting "2 ports Serial Communication Board".

Add/Remove Hardware Wizard				
Select a Device Driver Which driver do you want to install for this device?				
Select the manufacturer and model of your hardware device and then click Next. If you have a disk that contains the driver you want to install, click Have Disk.				
Mo <u>d</u> els: 1 port 2 ports 4 ports 8 ports	Serial Communication Board Serial Communication Board Serial Communication Board (Independen Serial Communication Board (Independen)	nt IRQ) nt IRQ)		
		<u>H</u> ave Disk		
		< Back Next > Cancel		

Note: The following windows will show in Windows 2000 only.

(1)Click "OK" to continue. (2)Click "Cancel" to ignore to the hardware setting.

Add/Remove Hardware Wizard	X
Windows could not detect the settings of the Consult the documentation that came with this	device. To use this device, you must enter its hardware settings. : device for information
Add New Hardware Wizard Properties	
Resources	
Unknown Device	Creating a Forced Configuration
Resource settings: Resource type Setting Input/Dutput Range ? Input/Dutput Range ? Interrupt Request 05 Setting based on: Basic configuration 0000 Setting based on: Basic configuration 0000	Before you can use this forced configuration, resources marked with '?' must be explicitly set
Conflicting device list: No conflicts. OK Cancel	

13. The Start Hardware Installation window will open next and click "Next".

Add/Remove Hardware Wizard
Start Hardware Installation Windows is ready to install drivers for your new hardware.
2 ports Serial Communication Board Windows will use default settings to install the software for this hardware device. To install the software for your new hardware, click Next.
< <u>B</u> ack <u>Next</u> Cancel

14. A **Digital Signature Not Found** window will open. Although this message states that this PC/104 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 "Yes" to continue the installation.



15. Click "Finish" to end the PC/104 serial board installation.



Installing PC/104 Serial port Driver

1. New Hardware Wizard will pop-up for new arrived port devices.

Click "Next" to continue to driver installing.



2. When the **Install Hardware Device Drivers** window opens, select "**Search for a suitable driver for my device (recommended)**" for SUN1699 serial port installation. Click "**Next**" to continue.

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

3. When the Locate Driver Files window opens, select "specify a location" and click "Next" to install driver from the CD driver.

Found New Hardware Wizard
Locate Driver Files Where do you want Windows to search for driver files?
Search for driver files for the following hardware device:
SUN1699_01
The wizard searches for suitable drivers in its driver database on your computer and in any of the following optional search locations that you specify.
To start the search, click Next. If you are searching on a floppy disk or CD-ROM drive, insert the floppy disk or CD before clicking Next.
Optional search locations:
Floppy disk drives
CD-ROM drives
Specify a location
Microsoft Windows Update
< Back Next > Cancel

4. Click "**Browse..**", and specify the driver locate within the CD driver as bound with PC/104 serial board. Click "**OK**" to continue.

CD/DVD ROM: \IO\ISA IO\Win2000,XP,2003\

Found New	v Hardware Wizard	×
	Insert the manufacturer's installation disk into the drive selected, and then click OK.	OK Cancel
	Copy manufacturer's files from: F:\IO\ISA.IO\Win2000XP,2003	<u>B</u> rowse

5. When the **Driver Files Search Results** window opens, system will install driver for SUN1699 serial port. Click "**Next**" to continue.

Found New Hardware Wizard
Driver Files Search Results The wizard has finished searching for driver files for your hardware device.
The wizard found a driver for the following device:
Windows found a driver for this device. To install the driver Windows found, click Next.
f:\io\isa io\win2000,xp,2003\twserial.inf
< <u>B</u> ack <u>Next</u> Cancel

6. Click "Finish" to end PC/104 serial board serial port installation steps.



The **New Hardware Wizard** will popup several times, and you should repeat **Installing PC/104 Serial port Driver** steps for every individual ports.

7. Please click "**Yes**" to restart you computer after each serial ports are installed successfully.



NOTE:



For the successful case, the hardware settings just match the resources assigned by the OS. For the failed case, we will modify the default IRQ and IO settings later. You can ignore the "**Code10**" error message which shown in end of PC/104 serial board serial port installation steps.

Setting IO & IRQ in PC/104 Serial port Driver

The following procedure explains how to resolve the hardware resources mismatch problems.

- 1. Please launch the "Device Manager" from Start \rightarrow Control Panel \rightarrow System
- Expand the "Ports" sub-tree to see if any "SUN1699 Serial Port" is with an exclamation mark. Expand the "Multi-port serial adapters" sub-tree, and right-click the "2 ports Serial Communication Board" item, and choose "Porperties".

🖳 Device Manager	
ActionYiew」 ← → m m m []	😫 🛛 🔜
G4E6202K G4E6202K G4E6202K G4E6202K G4E6202K Gamma Computer Disk drives Display adapters Display adapters Display adapters DVD/CD-ROM drives G4E6202K Gamma Computer Disk drives Display adapters Display adapters	
Ports (COM & LPT) Ports (COM & LPT) SUN1699 Serial Port (COM3 SUN1699 Serial Port (COM4 Sound, video and game controll Storage volumes System devices Universal Serial Bus controllers	Disable Uninstall Scan for hardware changes Properties

3. Click "**Board Information**" tab page to see the default resource assignments. Keep in mind the current resources settings for each child serial ports.

2 ports Serial Communication	n Board Pro	perties	? ×
General Board Information)river Resc	ources	
Port1: IO Address:	268	IRQ:	5
Port2: IO Address:	260	IRQ:	7
Port3: 10 Address:		IRQ;	
Port4: 10 Address:	<u></u>	IRQ;	
Port5: 10 Address:		IRQ;	
Port6: 10 Address:	<u></u>	IRQ;	
Port7: 10 Address:		IRQ;	
Port8: 10 Address:	, 	IRQ;	
	,		
		OK	Cancel

4. Click "**Resources**" tab page to modify the default resource assignments, and <u>un-check</u> the "Use automatic settings" checkbox.

2 ports Serial Communic	ation Board Properties	<u>?</u> ×	
General Board Informatio	n Driver Resources		
2 ports Serial Co	ommunication Board		
<u>R</u> esource settings:			
Resource type	Setting	▲	
input/Output Range	0268 - 026F		
Input/Output Range	0260 - 0267		
Interrupt Request	05	-	
Setting <u>b</u> ased on: Curre	nt configuration	<u> </u>	
R U	se automatic settings	Change Setting	Use automatic settings
Conflicting device list:			
No conflicts.		× ¥	
		DK Cancel	

5. Select "Basic configuration 001" from the "Setting based on" list.

2 ports Serial Communic	ation Board Properties	? ×
General Board Informatio	n Driver Resources	
2 ports Serial C	ommunication Board	
Pesseuroe tupe	Satting	
Input/Output Bange	0268 - 026E	
Input/Output Bange	0260 - 0267	
Interrupt Request	05	
Setting based on: Curre	ent configuration	-
Curre	nt configuration	
Basio	configuration 0000	
	se automatic settings	arig
Conflicting device list:	r//	
No conflicte		
No connicts.		-
		_
1		
	ОК	Cancel

6. Choose the in-correct "**Input/Output Range**" in Resource Type item from Resource Settings list, and click "**Change setting**...".

2 ports Serial Communication Board Properties	'×
General Board Information Driver Resources	
2 ports Serial Communication Board Resource settings:	
Resource type Setting Imput/Output Range 0268 - 026F Input/Output Range 0260 - 0267 Interrupt Request 05	
Setting based on: Basic configuration 0001]
Conflicting device list:	5
No conflicts.	
OK Cancel	

7. Select an available and correct "**Value**" (It depends on the hardware jumper setting.) including IO and IRQ settings and click "**OK**".

Be careful, to avoid the resource conflicting by referring "conflict information". If the hardware settings conflict with the other device's resources, please re-configure your hardware jumper settings before continuing.

You should repeat **select IO & IRQ settings** for every individual ports.

Edit Input/Output Range	×	Edit Interrupt Request	? ×
Enter the input/output range you would like to set for this device.		Enter the interrupt request you would like to set for this device.	
You may either enter a specific range and the nearest valid range will be automatically selected, or you may select a range using the up and down arrows.		You may either enter a specific value and the nearest valid valu will be automatically selected, or you may select a value using t up and down arrows.	le he
This resource is assigned to the following child device(s):		This resource is assigned to the following child device(s):	
Value: D3F8 - 03FF Conflict information The setting you have chosen does not conflict with any other devices. No devices are conflicting.		Yalue: D3 Conflict information The setting you have chosen does not conflict with any other devices. No devices are conflicting.	
OK Cancel		OK Cancel	

7. Click "Yes" to use manually forced setting.



8. The Device Manager will start to re-install the child serial ports. It is not necessary to reboot the PC.

9. The exclamation mark of the serial port should be removed if your forced resource settings match with the hardware configuration. The serial port is ready for using.

🖳 Device Manager	
] <u>A</u> ction <u>V</u> iew] ← → ﷺ 🖬 😭 😫] 🔜	
🖃 🖳 G4E6202K	
🗄 📃 Computer	
🗄 💷 Disk drives	
🗄 🖳 Display adapters	
🖶 🔬 DVD/CD-ROM drives	
🕀 🚭 Floppy disk controllers	
🗄 🖃 Floppy disk drives	
🗄 🚭 IDE ATA/ATAPI controllers	
🗄 🥰 Keyboards	
⊞…∑ Mice and other pointing devices	
E	
🖃 🚚 Multi-port serial adapters	
2 ports Serial Communication Board	
Ports (COM & LPT)	
SUN1699 Seril, COM3)	
SUN1699 Serial Port (COM4)	
Here Sound, video and game controllers	
E Storage volumes	
By System devices	
바~~~ Universal Serial Bus controllers	

10. You can confirm the IO and IRQ settings in "Board Information" tab page.

	318	IRQ.	3
Port2: 10 Address:	2f8	IRQ:	4
Port3: 10 Address:		IRQ;	
Port4: 10 Address:		IRQ;	<u> </u>
Port5: 10 Address:	í –	IRQ;	í –
Port6: 10 Address:	í	IRQ;	<u> </u>
Port7: 10 Address:	<u> </u>	IRQ;	
Port8: 10 Address:		IRQ;	
Port7: 10 Address: Port8: 10 Address:		IRQ: IRQ:	

Configure the Serial Port Settings

- 1. Please launch the "Device Manager" from Start \rightarrow Control Panel \rightarrow System
- 2. Right click the "SUN1699 Serial Port (COMXXX)" item from the "Ports" sub-tree and click "Properties".

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

SUN1699 Serial Port (COM3) Properties	? ×	SUN1699 Serial Port (COM3) Properties	<u>?</u> ×
General Port Settings Driver		General Port Settings Driver	
SUN1699 Scrial Port (COM3)			٦
		<u>B</u> its per second:	
Device type: Ports (COM & LPT)		Data bits: 8	
Manufacturer: SUNIX Co., Ltd.		Parity None	
Location: Location 1		Stop bits: 1	
Device status		Elow control: None	
If you are having problems with this device, click Troubleshooter to start the troubleshooter. If you are having problems with this device, click Troubleshooter to start the troubleshooter. If you are having problems with this device, click Troubleshooter to start the troubleshooter. If you are having problems with this device, click Troubleshooter to start the troubleshooter. If you are having problems with this device, click Troubleshooter. If you are having problems with this device, click Troubleshooter.		Advanced <u>R</u> estore Defaults	
OK Can	icel	OK Canc	el


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

Advanced Settings for COM3	×
Flow Control Flow Control Enable CTS/RTS Auto Flow Control Note: This option has an effect only if Hardware f is selected on the Port settings page. Use Auto F fro high bit rates (230 Kbps and above).	Iow control low Control
Use FIFO buffers control	
FIFO Settings	
FIFO Szie: O 16 O 32 O 64	(Bytes)
Transmitter:	High High
Receiver:	Medium High
Port Remapping COM Port Number: COM3	OK Cancel

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

Advanced Settings for COM3	×
Flow Control 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 fro high bit rates (230 Kbps and above).	<u>D</u> efaults
Use FIFO buffers control	
FIFO Settings	
FIFO Szie: O 16 O 32 O 64 (Byte	es)
Transmitter: High	High
Receiver: Medium	High
Port Remapping	OK Cancel

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.

Advanced Settings for COM3		X
Flow Control Enable CTS/RTS Auto Flow Control Note: This option has an effect only if Hardware is selected on the Port settings page. Use Auto I fro high bit rates (230 Kbps and above).	flow control Flow Control	<u>D</u> efaults
Use FIFO buffers control		
- No Settings		
FIFO Szie: C 16 C 32 C 64	(Byte	:s]
Transmitter:	High H	High
Receiver:	Medium H	High
Port Remapping COM Port Number: COM3		OK Cancel

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.

Advanced Settings for COM3	×
Flow Control Enable CTS/RTS Auto Flow Control Note: This option has an effect only if Hardware flu- is selected on the Port settings page. Use Auto Flo fro high bit rates (230 Kbps and above).	Defaults
Use FIFO buffers control	
FIFO Settings	
FIFO Szie: O 16 O 32 O 64	(Bytes)
Transmitter:	High High
Receiver:	Medium High
Port Remapping COM Port Number: COM3	OK Cancel

Uninstalling Device

- 1. Please launch the "Device Manager" from Start \rightarrow Control Panel \rightarrow System
- 2. Expand the "Multi-port serial adapter" sub-tree and right-click the mouse on "x ports Serial Communication Board" item, and select "Uninstall".



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 PC/104 serial board driver under Windows 95/98/ME.

Installing Driver

1. Please insert the CD Driver bound with PC/104 serial board into your CD/ DVD ROM, and then run under the **Setup.exe** program

CD/DVD ROM: \IO\ISA IO\Win9x\Setup.exe

🚔 Win9x				_	. 🗆 ×
∫ <u>F</u> ile <u>E</u> dit <u>V</u> iew	<u>G</u> o F <u>a</u> vorites	<u>H</u> elp			
Back Forward	- È Up	X Cut	Copy	Paste	»
Address 📄 F:\IO\ISA	. 10\Win9x				-
	Setu	Sisacpl	sisar	mio	
Win9x					
Application	sisaport	sisauni			
Modified: 5/8/01 3:35 AM					
Size: 442KB					
		9	My Compu	iter	

2. Please click "OK" to install driver.



3. Please click "Next" to install driver.



4. Please click "Finish" to install driver.



5. Double click "Multi-I/O Card Configuration" in control panel.



6. Press "Add" to add new model in ISA Multi I/O Card configuration winodws.



- 7. Select the model, and press "Select".
 - 4 ports RS-232 or RS-422/485 → ISA 4043A 4 16C750 (64FIFO)

2 ports RS-232 or RS-422/485 → ISA 4033A 2 16C750 (64FIFO)

No.	Model	Description.
21	4022A	1 16C650(32FIFO)
22	4023A	1 16C750(64FIFO)
23	4031A	2 16C550(16FIFO)
24	4032A	2 16C650(32FIFO)
25	4033A	2 16C750(64FIFO)
26	4061A	4 16C550(16FIFO)
27	4042A	4 16C650(32FIFO)
28	4043A	4 16C750(64FIFO)
29	40441	4 16C550(16FIFO)
30	40451	4 16C650(32FIFO)
31	40461	4 16C750(64FIFO)
32	4062A	8 16C550(16FIFO)
33	4063A	8 16C650(32FIFO)
•		Þ

8. Select the IRQ and I/O Address as the hardware jumper setting and press "Install".

erial Port 1	Serial Port 5	Parallel Port1	
Interrupt 3	- Interrupt	Interrupt	1
O Address 0x3F8	I/O Address	VO Address]
erial Port 2	Serial Port 6	Parallel Port2	
Interrupt 4	Interrupt	Interrupt	1
/O Address Ox2F8	I/O Address	VO Address]
erial Port 3	Serial Port 7	Parallel Port3	
Interrupt 5	Interrupt	Interrupt	
/O Address 0x3E8	I/O Address	VO Address]
rial Port 4	Serial Port 8		
Interrupt 7	- Interrupt	V	
/O Address 0x2E8	I/O Address		

9. Click "Close" if the installation is finished.

_		ISA 4043A
No.	Model	Description.
21	4022A	1 16C650(32FIFO)
22	4023A	1 16C750(64FIFO)
23	4031A	2 16C550(16FIFO)
24	4032A	2 16C650(32FIFO)
25	4033A	2 16C750(64FIFO)
26	4061A	4 16C550(16FIFO)
27	4042A	4 16C650(32FIFO)
28	4043A	4 16C750(64FIFO)
29	40441	4 16C550(16FIFO)
30	40451	4 16C650(32FIFO)
31	40461	4 16C750(64FIFO)
32	4062A	8 16C550(16FIFO)
33	4063A	8 16C650(32FIFO)
		•

- 10. This PC/104 serial board had been installed in your system.
 - (a)Click "**Add**", if you have another ISA card to install, select the card modem and click "Select" and repeat the installation step from step5.
 - (b) Click "Config" to view or modify the IRQ or I/O address settings.
 - (c) Click "Remove" to remove the selected card installation.
 - (d) Click "Exit" to finish the setting.

SA M	ulti 170 Card	Win 95/98 Configuratio	х
No.	Model	Description.	
1	4043A	4 16C750(64FIFO)	
Add	 	<u>R</u> emove <u>E</u> xit	
	A M	A Multi I/O Carc No. Model 4043A <u>Add</u>	A Multi I/O Card Win 95/98 Configuratio No. Model Description. 4043A 4 16C750(64FIF0)

11. Please restart your computer to make the settings working.

Hardware Installation Verity

- 🔯 Control Panel _ 🗆 × <u>File Edit View Go</u> F<u>a</u>vorites <u>H</u>elp X Cut ß Þ £ Paste Up Сору Address 🕺 Control Panel • 9 T ٠ Multimedia ODBC Data Network **7** Sources (32bit) ų Control 200 ŧĩ Panel Power Passwords Printers Management System Provides system Regional Settings Sounds information and changes advanced settings. \$ Þ 🗐 My Computer
- 2. Expand the "MultiIO Controller" and "Ports [COM & LPT]" sub-tree to see "ISA 4043A Multi-I/O Adapter" and "ISA Serial Port [COMXXX] " in Device Manager tab page.

System Propert	ies				? ×
General Devi	ce Manager	Hardware	Profiles	Performance	1
View dev	ices by <u>t</u> ype	O Vi	ew devic	es by <u>c</u> onnec	tion
📃 🕀 🖳 🛄 Disp	ilay adapters				
🕒 🕀 🔁 Flop	py disk contro	llers			
🗄 🕀 🔁 Hard	d disk controlle	ers			
🗄 🔁 Keyl	board				
🗄 🖳 🖳 Mor	nitors				
🗄 🕀 🚫 Mou	ise				
📄 🔶 Mult	ilOController				
	ISA 4043A Mi	ulti-170 Ad	apter		
🕀 🏢 Neti	work adapters				
🖻 – 🍠 Port	s (COM & LPT)			
	ISA Serial Port	(COM1)			
-2	ISA Serial Port	t (COM2)			
-2	ISA Serial Port	t (COM3)			
	ISA Serial Port	t (COM4)			
⊡ 🖳 Syst	em devices				
🕀 😌 Univ	/ersal Serial Bu	us controlle	ers		_
	1 -	1	_	1	
P <u>r</u> opertie:	s <u> </u>	tresh	<u> </u>	move	Pri <u>n</u> t
			[Close	Cancel

1. Please launch the "System" from Start -> Control Panel -> System

Configure the Serial Port Settings

- 1. Please launch the "Device Manager" from Start \rightarrow Control Panel \rightarrow System
- 2. Right click the "**ISA Serial Port [COMXXX]**" item from the "**Ports**" sub-tree and click "**Properties**".

System Properties	? ×
General Device Manager Hardware Profiles Performance	
	1
• View devices by type • • • • • • • • • • • • • • • • • • •	
 Display adapters Floppy disk controllers Keyboard Monitors Monitors MultilOController MultilOController MultilOController SA 4043A Multi- 1/0 Adapter Network adapters Ports (COM & LPT) ISA Serial Port (CC ISA Serial Port (CC ISA Serial Port (CC System devices System devices Universal Serial Bus controllers 	
Properties Refresh Remove Print	
Close Ca	ncel

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

ISA Serial Port (COM1) Properties	? × I	ISA Serial Port (COM1) Properties	? ×
General Port Settings Driver Resources		General Port Settings Driver Resources	1
Cevice type: Ports (COM & LPT)		Bits per second: 3600	
Manufacturer: CO., LTD. Hardware version: Not available		Data bits: 8	
Device status This device is working properly.		Parity: None	
		Stop bits: 1	
		Elow control: Hardware	
Device usage Disable in this hardware profile Exists in all hardware profiles		Advanced	
OK Ca	ancel	OK Can	cel

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

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

6. Check/Un-check the "**FIFO buffers control**" checkbox to enable / disable the different hardware FIFO buffering features, and you can select the accurate **Receive/Transmit buffer** size of FIFO in control bar.

dvanced Port Settings	×
Enable Auto CTS/RTS Flow Control	ОК
✓ Use 16 Byte <u>FIFO</u> buffers Z Enable <u>3</u> 2 Byte FIFO buffers	Cancel Defaults
Select lower settings to correct connection problems. Select higher settings for faster performance.	
Receive Buffer: Low High (14)	
Iransmit Buffer: Low High (16)	

3-30

• Uninstalling Device

- 1. Please launch the "**Device Manager**" from Start \rightarrow Control Panel \rightarrow System
- 2. Expand the "Multi-port serial adapter" sub-tree and right-click the mouse on "ISA 4043A Multi-I/O Adapter" item, and select "Remove".

System Properties ? >
General Device Manager Hardware Profiles Performance
View devices by type O View devices by connection
E COMPARE CDROM E ── ⊇ Disk drives
⊕-
ISA 4043A Refresh Network adapt Bemove N
Ports (COM & L Print ISA Serial F
ISA Serial Port (COMA)
Properties Refresh Remove Print
OK Cancel

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



Windows NT

The following procedure is for installing PC/104 serial board driver under Windows NT.

Installing Driver

1. Please insert the CD Driver bound with PC/104 serial board into your CD/ DVD ROM, and then run under the **Setup.exe** program

CD/DVD ROM: \IO\ISA 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. Double click "Multi-I/O Card Configuration" in control panel.



5. Press "ISA Multi-I/O Setup" tab page in Multi-I/O Configuration Utility.



6. Press "Add" to add new model.

PCI/ISA Serial Ports	PCI Parallel Ports ISA	Multi-I/O Setup	About
Model Number	Description	<u>^</u>	Add
			Delete
			Setup
		~	Ok

7. Select the model, and press "Select". 4 ports RS-232 or RS-422/485 → ISA 4043A 4 16C750 (64FIFO)

2 ports RS-232 or RS-422/485 \rightarrow ISA 4043A 2 16C750 (64FIFO) 2 ports RS-232 or RS-422/485 \rightarrow ISA 4033A 2 16C750 (64FIFO)

Model Number	Description	^
ISA 4023A	1 16C750(64FIFO)	
ISA 4031A	2 16C550(16FIFO)	
ISA 4032A	2 16C650(32FIFO)	
ISA 4033A	2 16C750(64FIFO)	
ISA 4061A	4 16C550(16FIFO)	
ISA 4042A	4 16C650(32FIFO)	
ISA 4043A	4 16C750(64FIFO)	
ISA 4044I	4 16C550(16FIFO)	
ISA 4045I	4 16C650(32FIFO)	
ISA 4046I	4 16C750(64FIFO)	~

8. Select the IRQ and I/O Address as the hardware jumper setting and press "**OK**".

lodel Name: IS	A 4043A , 4 16C750(64FIFC))
Serial Port 1	Serial Port 5	Parallel Port1
Interrupt 3 <u></u>	Interrupt 3	Interrupt 3
1/D Address 0x3F8 <u></u>	1/0 Address 0x238	1/0 Address 0x258
Serial Port 2	Serial Port 6	Parallel Port2
Interrupt 4 🛫	Interrupt 3 -	Interrupt 3
1/0 Address 0x2F8 🛫	I/O Address 0x238 -	1/0 Address 0x258
Serial Port 3	Serial Port 7	Parallel Port3
Interrupt 5 <u></u>	Interrupt 3 *	Interrupt 3
I/O Address 0x3E8 <u></u>	1/0 Address 0x238 *	1/0 Address 0x258
Serial Port 4 Interrupt 7	Serial Port 8 Interrupt 3 •	

9. This PC/104 serial board had been installed in your system.

(a)Click "**Add**", if you have another ISA card to install, select the card modem and click "Select" and repeat the installation step from step5.

- (b) Click "Delete" to remove the selected card installation
- (c) Click "Setup" to view or modify the IRQ or I/O address settings.
- (d) Click "**OK**" to finish the setting.

🧱 Multi-I/O Conf	iguration Utility		
PCI/ISA Serial Ports	PCI Parallel Ports	ISA Multi-I/O Setup	About
Model Number	Description	^	Add
ISA 4043A	4 16C750(64FIFO)		Delete
			Setup
		~	OK

10. Please press "Yes" to restart your computer to make the settings working.



Configure Serial Port

- 🔯 Control Panel - 🗆 × Edit MS 愚 ٠ Ħ 111 ę. Add/Remove Date/Time Devices Accessibility Options Console Programs 7 Ag ۲ Dial-Up Monitor Display Fonts Internet Keyboard Q 1 64 2 Mouse Multimedia Licensing Modem ₽ģ ODBC Network PC Card (PCMCIA) Port Printe 29 object(s)
- 1. Double click "Multi-I/O Card Configuration" in control panel.

2. Press "**PCI/ISA Serial Port**" tab page in Multi-I/O Configuration Utility. Select the COM port you want to configure (e.g. COM3), and click "**Setup**".

PCI/ISA Serial Ports PCI Parallel Ports ISA Multi-I/O Setup About Select serial port	🚟 Multi-170 Configuration Utility 🛛 🛛 🔀
Select serial port	PCI/ISA Serial Ports PCI Parallel Ports ISA Multi-I/O Setup About
Close	Select serial port

- 3. Check/un-check the "**Auto Flow Control**" checkbox to enable/ disable the hardware auto flow control feature.
- 4. Check/Un-check the "FIFO buffers control" checkbox to enable / disable the different hardware FIFO buffering features, and you can select the accurate Receive buffer size of FIFO in "Receive Trigger Level".

	COM3, ISA Bus ISA 4043A , 4 16C750(64FIFO)
	uto Flow Control Enable
۲ ا	Ise 32 Bytes FIFO
٧	Ise 64 Bytes FIFO
- Re	ceive Trigger Level
0.1	6 Bytes
0.3	2 Bytes
04	8 Bytes
• 5	6 Bytes

If your card can support 64 (32) bytes FIFO, you can use 16 or 32 or 64 (16 or 32) bytes FIFO. The default value is Use 16 Byte FIFO buffers.

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

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

Note:

- 1. If you stall the modem-using auto detect by Windows NT, the Auto Flow Control Enable shall be disabled.
- 2. When the serial I/O is 3F8, 2F8, 3E8, 2E8, the port driver is using WinNT default driver and can support 115200. When using other address, the driver must be installed and baud rate setting supports 921600bps. If you install 4 ports serial card, the order of port1 ~ port4 should be following the sequence of 3F8, 2F8, 3E8, 2E8, others, otherwise you may have trouble to identify port number.

Hardware Installation Verity

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



2 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.

Q 14	vindows NT D	iagnostics -	\\SUNIX-NT		_1
<u>F</u> ile	<u>H</u> elp				
	Version	System	Display	Drives	Memory
	Services		Resources	E	invironment
				Include H	AL resources
	Address	Device		Bus	Tupe 🔺
	0060 - 0060	i8042prt		0	lsa
	0064 - 0064	i8042prt		ō	Isa
	0170 - 0177	atapi		0	Isa
	01CE - 01CF	VgaSave		0	Pci
	01F0 - 01F7	atapi		0	Isa
	0250 - 0257	SNXSER		0	Isa
	0260 - 0267	SNXSER		0	lsa
	02F8 - 02FE	Serial		0	Isa
	0368 - 036F	SNXPAR		0	Isa
	0376 - 0376	atapi		0	Isa
	0378 - 037A	Parport		0	Isa
	03B0 · 03BB	VgaSave		0	Pci
	03C0 - 03DF	VgaSave		0	Pci
	03F0 - 03F5	Floppy		0	Isa
	03F6 - 03F6	atapi		0	Isa
	03F7 - 03F7	Floppy		0	sa 👻
	IBO []	1/D Port	1 DMA	Memoru	Devices
	110	wor op		- ETennorby	
		Properties	Befresh	Print	ОК

• 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] Windows NT Setup]	
2	To install a new program from a floppy disk or drive, click Install.	r CD-ROM
	In	stall
3	The following software can be automatically Windows. To remove a program or to modify components, select it from the list and click Add/Remove.	removed by its installed
Iomega\ Microsol MoltrixC Ulead P	Ware for Windows NT If Office 97, Professional Edition D Card Uninstall PhotoImpact 3.01 SE Special Edition	
	Add/ <u>F</u>	emove.
	OK Cancel	Apply

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

🌃 Mulit-I/O Card Uninstall 🛛 🛛 🗙	📷 Mulit-1/0 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 CE.NET

This installation guide describes the procedures to install the PC/104 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\ISA 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. Prepare a hardware target platform:

The platform setting must meet the following requirements.

 If your motherboard have the standard serial port, then PC/104 Serial board IRQ and IO Base jump setting don't be like motherboard standard serial port please. (Serial board jump setting don't like this example : 02F8, 03E8, 02E8... IRQ3, IRQ4, IRQ5, and please reference your motherboard menu)

Serial card jump setting can use of the other IOBase and IRQ.

(2) In the motherboard BIOS setting, you must be to preserve IRQ for serial card.

Example step (Phoenix - AwardBIOS): BIOS \rightarrow PnP/PCI Configurateions \rightarrow Resources Controlled By \rightarrow

change setting to "Manual".

 $\label{eq:BIOS} \begin{array}{l} \rightarrow \mbox{PnP/PCI Configurateions} \rightarrow \mbox{IRQ Resources} \rightarrow \mbox{IRQ-10} \\ \mbox{assigned to} \quad \rightarrow \mbox{change setting to "Reserved"}. \end{array}$

BIOS \rightarrow PnP/PCI Configurateions \rightarrow IRQ Resources \rightarrow IRQ-11 assigned to \rightarrow change setting to "Reserved".

. . . .

NOTE:

- ** If you sure, want use the same motherboard standard serial port IoBase or IRQ(02F8, 03E8, 02E8... IRQ3, IRQ4, IRQ5)
- ** Then, Your motherboard standard serial port must be disabled,
- ** And also need to mark standard serial port registry in the platform.reg
- ** please follow [9.Other information] step(2).

3. Install Serial Card Driver for ISA Bus

(1) please following [1. Preparation prior to installation] step, copy file into the directory first.

(2) 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
SerialDriverCont	rol.exe		
\$(_FLATRELE	ASEDIR)\SerialDriverControl.exe	NK	SH

(3) Edit the _WINCEROOT\Platform\MyBSP\Files\Platform.reg file,
Insert your Serial Port setting of file end, you must setting for each port.
** Property illustration at [4.Other information].
("_WINCEROOT" is your platform builder folder name)
("MyBSP" is your platform BSP base name)

;Example :

;Please puts Bus Driver setting in the PCI Template folder,ex:[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\] :------

; Sun1699 Serial Port Setting

[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\MySunSerial] "Prefix"="COM" "DII"="SUN1699.DII" "IoBase"=dword:0258 "IoLen"=dword:8 "SysIntr"=dword:1A "DeviceArrayIndex"=dword:0 "Index"=dword:2 "EnableRTSCTSAutoFlowControl"=dword:0 "WaterMarkerMode"=dword:1 "WaterMarker"=dword:1C

[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\MySunSerial\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

:-----

; Sun1699 Comm Card Driver Setting [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\MySunSerial2] "Prefix"="COM" "DII"="SUN1699.DII" "IoBase"=dword:0260 "IoLen"=dword:8 "SysIntr"=dword:18 "DeviceArrayIndex"=dword:1 "Index"=dword:3 "EnableRTSCTSAutoFlowControl"=dword:0 "WaterMarkerMode"=dword:1 "WaterMarker"=dword:1C

[HKEY_LOCAL_MACHINE\Drivers\BuiltIn\MySunSerial2\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, 3 00,4B,00,00, 00,00, 08, 00, 00, 00,00,00,00 ;Example the three Port;

;------; ; Sun1699 Comm Card Driver Setting [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\MySunSerial3] "Prefix"="COM" "DII"="SUN1699.DII" "loBase"=dword:0268 "loLen"=dword:268 "loLen"=dword:8 "SysIntr"=dword:1C "DeviceArrayIndex"=dword:2 "Index"=dword:4 "EnableRTSCTSAutoFlowControl"=dword:0 "WaterMarker"=dword:1C "WaterMarker"=dword:12

"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.

4. Other information

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

(1) Disabled motherboard step.
 BIOS → CHIPSET FEATURES SETUP → Onboard Serial Port 1→ change setting to disabled.

 $\textsc{BIOS} \rightarrow \textsc{CHIPSET}$ FEATURES SETUP \rightarrow Onboard Serial Port 2 \rightarrow change setting to disabled.

 $\textsc{BIOS} \rightarrow \textsc{CHIPSET}$ FEATURES SETUP \rightarrow Parallel Port \rightarrow 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

- ; "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

"loLen"=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
- ; "loBase"=dword:02F8
- ; "loLen"=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
- ; "loBase"=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

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

Linux

This installation guide describes the procedure to install SUNIX ISA serial ports in Linux platform.

Linux Platform

Operating System : RedHat V6.0/V5.2 (Kernel 2.2.5 / 2.0.36) Terminal Emulation AP : minicom Internet Dialer : Kppp

Installation Steps

1. Find the available serial ports

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

It could be checked by the following commands.

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

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

/dev/ttyS0 : Device or resource busy

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

/dev/ttyS0, Line 0, UART: 16550A, Port: 0x3f8, irq: 4 Baud_base: 115200, clos_delay: 50, divisor: 0 closing_wait: 3000, closing_wait2: infinite Flags: spd_normal skip_test

In case ttyS2 (COM3) is free, the response for command **# setserial** /dev/ttyS2 -a is shown below.

/dev/ttyS2, Line 2, UART: unknown, Port: 0x3e8, irq: 4 Baud_base: 115200, clos_delay: 50, divisor: 0 closing_wait: 3000, closing_wait2: infinite Flags: spd_normal skip_test (note that UART: unknown) In case ttyS3 (COM4) is free, the response for command **# setserial** /dev/ttyS3 -a is shown below.

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

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

2. Check the ISA serial port's jumper setting (I/O port address & IRQ)

All ISA serial port I/O address is allowed to be one of the following location.

3F8h	2F8h	3E8h	2E8h
230h	238h	240h	248h
250h	258h	260h	268h

All ISA serial port interrupt is allowed to be one of the following IRQ. IRQ 3, 4, 5, 7, 9, 10, 11, 12,15

3. Configure the parameters for ttyS2 & ttyS3

For 1 port serial port board, please enter (if ttyS2 is free and jumper setting is 3E8h / IRQ10)

setserial /dev/ttyS2 port 0x3E8 UART 16550A irq 10 Baud_base 115200

For 2 ports serial port board, please enter (if ttyS2 & ttyS3 are free and jumper setting are 3E8h / IRQ10 & 2E8 / IRQ11)

setserial /dev/ttyS2 port 0x3E8 UART 16550A irq 10 Baud_base 115200 # setserial /dev/ttyS3 port 0x2E8 UART 16550A irq 11 Baud_base 115200

4. Check the setting for ttyS2 & ttyS3

Please enter # setserial /dev/ttyS2 -a

The Linux's response look likes below

/dev/ttyS2, Line 2, UART: 16550A, Port: 0x3E8, irq: 10 Baud_base: 115200, clos_delay: 50, divisor: 0 closing_wait: 3000, closing_wait2: infinite Flags: spd_normal skip_test

- 5. Then the ttyS2 & ttyS3 are ready for application (eg. minicom -s or xminicom -s or Kppp ...)
- 6. In case more than 4 serial ports are needed If there are more than 4 serial ports to be supported by Linux system, the first step is to add more tty device nodes into system.

Inquire the system tty device nodes,

#ls -al /@	dev/t	tyS*		
crw	1	root	tty	4, 64 Jan 8 11:40 /dev/ttyS0
crw	1	root	tty	4, 65 Jan 8 11:40 /dev/ttyS1
crw	1	root	tty	4, 66 Jan 8 11:40 /dev/ttyS2
crw	1	root	tty	4, 67 Jan 8 11:40 /dev/ttyS3

Add tty device node one by one

.....

#mknod	/dev/ttyS4	С	4	68	(for ttyS4)
#mknod	/dev/ttyS5	С	4	69	(for ttyS5)
#mknod	/dev/ttyS6	С	4	70	(for ttyS6)
#mknod	/dev/ttyS7	С	4	71	(for ttyS7)

Please add all tty device nodes accordingly

Configure the parameters for all new ttyS*

Please repeat step 2, 3, and 4 to set the correct parameters for each tty device. Because all the new added tty device nodes are still invalid by default.

Re-Inquire the system tty device nodes,

#ls -al /dev/ttyS*

crw	1	root	tty	4, 64 Jan 8	11:40 /dev/ttyS0
crw	1	root	tty	4, 65 Jan 8	11:40 /dev/ttyS1
crw	1	root	tty	4, 66 Jan 8	11:40 /dev/ttyS2
crw	1	root	tty	4, 67 Jan 8	11:40 /dev/ttyS3
crw-rr	1	root	root	4, 68 Jan 18	11:40 /dev/ttyS4
crw-rr	1	root	root	4, 69 Jan 18	11:40 /dev/ttyS5

Notes :

- (1) For those tty devices which are sharing a interrupt pin within one card, you just set them the same IRQ number with **setserial** command.
- (2) Un-installation,

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

4. Troubleshooting

This chapter shows some problems that user came with usually. Also you can check it if the PC/104 serial board can not work properly in your system after following hardware and software installation steps.

Troubleshooting

1. There are some exclamation marks in device manager and serial ports can not work properly.



- **A:** It caused by the wrong IRQ or IO settings. Those settings had conflicted with your system.
 - (1) Please check the avaliable IRQ and IO addresss in your system.
 - (2) Shot down your computer and check jumper settings fitting available value on PC/104 serial board for every individual ports.
 - (3) Remember your setting, and re-install PC/104 serial board dirver as descripted in chapter 3.

NOTE:

Please do NOT skip 3E8 and 2E8 IO address.

If the system is already supporting two RS-232 ports (3F8 and 2F8) on mainboard and you want to install new serial port. You must install into Address 3E8 and 2E8 first, do not skip 3E8 and 2E8 and directly install into the following Addresses, 250, 258, 260, 268, 240, 248, 230, or 238.

2. Can I set the same IRQ with other PC/104 serial board or system?

A: NO, you can not set the same IRQ or IO address same with other serial board or system. When you select IRQ, do not select the same IRQ as with other I/O card or system I/O port, because system performance and speed will be greatly reduced. This PC/104 serial board does not designed with IRQ sharing capability.

3. Do not test ISA Serial Port 16C750 chipset with QAPlus and CheckIT.

A: Our ISA chipset SUN1699 use IN1 and IN2 to control the 16C550 (16 FIFO), 16C650 (32 FIFO), and 16C750 (64 FIFO) chipset. The QAPlus and CheckIT also use these two signals to check for the 16C550 status, when 16C550, we send IN1 and In2 as 0/0, so the test will pass, but with 16C650, we send IN1 and IN2 as 0/1, the QAPlus and CheckIT will receive different value, and so they think the 16C550 has MODEM Ctl ERROR and MODEM Status ERROR. For this error, only test program value define, it is not relevant for using our card in any system. Our card will work correctly with any device and on any system, do not worry about the error.

4. There is no enough IRQ in my system.

A: If you install multi-port serial or parallel port, after installation, you will find yellow exclamation mark on "COM & LPT" in the Device Manager. This is because system IRQ is not enough; these cards don't have interrupter sharing capability, so each port needs one free IRQ.

To correct this, go to "System" \rightarrow "Device Manager" \rightarrow "Computer" \rightarrow "Interrupt Request" and check if there is any free interrupts and change the card's IRQ jumper to this free IRQ. If you cannot find free IRQ, your system use too much IRQ, and you must buy our other product for multi-port which uses only one IRQ (interrupter sharing card).

5. How large FIFO length I should set?

A: PC/104 serial board supports 64 bytes FIFO, and you can use 16 or 32 or 64 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>FIFO</u> 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.	
Receive Buffer: Low High (14)	
Iransmit Buffer: Low High (16)	

6. 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.

7. I forgot the model number that I can not install driver properly.

A: When installing PC/104 serial board driver on your system, there will be a window showing model numbers for selecting. If you are confused with the model you bought, please following the instruction.

(1) Windows 2000/XP/2003

Please select how many serial ports on PC/104 serial board.

Add/Remove Hardware Wizard	
Select a Device Driver Which driver do you want to install for this dev	rice?
Select the manufacturer and model of your have a disk that contains the driver you wa	hardware device and then click Next. If you nt to install, click Have Disk.
Mogels: 1 port Serial Communication Board 2 ports Serial Communication Board 4 ports Serial Communication Board (Independent IF 8 ports Serial Communication Board (Independent IF	3Q) 3Q)
	<u>H</u> ave Disk
	< Back Next > Cancel

(2) Windows NT/95/98/Me

Please select how many serial ports on PC/104 serial board.

4 ports RS-232 or RS-422/485 → ISA 4043A 4 16C750 (64FIFO) 2 ports RS-232 or RS-422/485 → ISA 4033A 2 16C750 (64FIFO)

Model Number	Description	^
ISA 4023A	1 16C750(64FIFO)	
ISA 4031A	2 16C550(16FIFO)	
ISA 4032A	2 16C650(32FIFO)	
ISA 4033A	2 16C750(64FIFO)	
ISA 4061A	4 16C550(16FIFO)	
ISA 4042A	4 16C650(32FIFO)	
ISA 4043A	4 16C750(64FIFO)	
ISA 4044I	4 16C550(16FIFO)	
ISA 4045I	4 16C650(32FIFO)	
ISA 4046I	4 16C750(64FIFO)	~

5. Appendix

This chapter shows PC/104 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.

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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 PC/104 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 SUN1699

SUN1699 is a high performance and intelligent 167C50 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 the Serial RS-232 / 422 / 485.



• RS-422/485 Auto Identify & Switch Technology



The unique circuit-designed RS-422/485 Auto Identify & Switch technology can automatically identify the state of RS-422 full-duplex or RS-485 half-duplex and control the data transceiver and receiver wires at the same port without selecting jumpers or switches anymore. It's more convenient for users to avoid shutting down the computer and opening the chassis for jumpers or switches setting.
◆ RS-485 ARSC[™] Technology



Due to the limitation of traditional RS-485 two wires half-duplex communication, system must determine when to switch the transmitter on and off. There is only one node can be switch on and off at any given time by software. ARSC[™] (Auto RTS Signal Control) technology can identify the status of data transceiver or receiver and send RTS signal automatically, instead of using software/hardware to control the transmitter.

This PC/104 RS-422/485 serial board has built-in ARSC[™] technology now. System can manage the RS-485 ports without writing extra code to control the half-duplex protocol by using ARSC[™] technology.



• Termination Resistors Building In

When an electrical signal travels through two different resistance junctions in a transmission line, the impedance mismatch will sometimes cause signal reflection. Signal reflection causes signal distortion, which in turn contributes to communication errors. The solution to this problem is to establish the same impedance at the line ends as in the line itself by terminating them with resistors. It is normally sufficient when the value of the termination resistor equals the characteristic impedance of the transmission line. PC/104 RS-422/485 serial board builds in termination resistors to prevent those problems.

• Optical Isolation Protection (Optional)



The ground loop is a common problem in many industrial environments, especially in the state of ground voltage levels differ between connected devices in the type of critical or harsh factory environment when transmission line is long. Communications devices connected by long cables may be damaged by the mismatch between ground voltage levels at the two ends of the wire. Optical isolation uses photo cells at both ends of the line to isolate the devices' sensitive components from this type of electrical damage. PC/104 serial board provides 2.5KV optical isolation for power and signals to eliminate this kind of problem.

Surge Protection (Optional)



Surges are high amplitude electrical pulses lasting only several millionths of a second in duration. They can be caused by heavy-duty equipment, power lines, short circuits, or large motors. A surge suppressor has the ability to effectively absorb the high energy in an extremely short period of time, preventing the connected devices from damage. To eliminate this problem, we provide the embedded 600W surge protection for all signals.

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