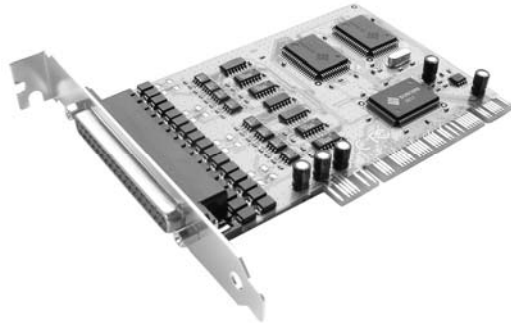


PCI MULTI PORT SERIAL CARD



IC-424AP

PCI 32 bit RS-422/485 Multi Port Adapter

User Manual



Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- *Reorient or relocate the receiving antenna;*
- *Increase the separation between the equipment and receiver;*
- *Connect the equipment into an outlet on a circuit different from that which the receiver is connected;*
- *Consult the dealer or an experienced radio/television technician for help.*

■ Introduction

The IC-424AP is a PCI bus card that supports four independent RS-422 or RS-485 serial ports. It is ideal for various industrial communication and automation applications.

Each port utilizes 128K FIFO memory and is able to control devices in a multi-drop mode. Furthermore, built-in isolation and surge functionality can protect your equipment and controller from being damaged by lightning or high voltage damage.

The IC-424AP supports both 3.3 and 5 voltages and can be used in either a 32 or 64 bit PCI slot. It can be installed in virtually any computer. Setup is easy since it is plug and play compatible, users do not need to set jumpers for I/O addresses or interrupt locations.

Auto RTS Signal Control technology is integrated into the card providing the best way to send and receive half-duplex RS-485 transmissions without software or writing extra code. In addition, RS-422 and RS-485 auto identify and switch technology makes it more convenient for users to change between RS-422 and RS-485 peripherals.

■ Features

- Fully compliant with PCI Specification Version 2.2 standard
- Supports both 64-bit & 32-bit PCI Bus and 3.3V & 5V connector keys
- High speed serial ports support baud rates up to 921.6Kbps
- 128K FIFO can reduce CPU loading, interrupting and improving system performance dramatically
- Auto Identify and Switch RS-422/485 technology makes it more convenient to manage devices without jumpers or switch settings
- Auto RTS Signal Control technology can identify the status of data transceiver or receiver and send RTS signal automatically, instead of using software to control the transmitter.
- An optional function of optical isolation (2.5KV) can prevent lightning or high potential voltage damage. The embedded surge protection (600W) for all signals are available in this series.
- High speed 16C650 compatible communication controller with SUN1889 single chip hardware flow control to guarantee no data loss and best technical support.
- Plug and Play, I/O address and IRQ assigned by BIOS.
- Support Microsoft Windows 3.x, 9x, NT, 2000, XP, 2003, DOS, and Linux.

■ Package Contents

- 1 - PCI Serial IO Card
- 1 - DB9 or DB25 Male cable
- 1 - CD Driver
- 1 - User Manual

If anything is missing or damaged, please contact your dealer immediately.

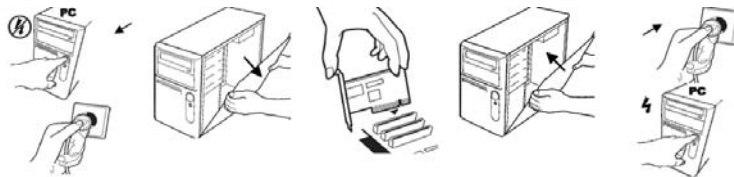
■ Hardware Requirements

- Pentium or equivalent computer with an available PCI slot.
- CD-ROM / DVD-ROM required for software installation.
- Windows 3.1x/95/98SE/ME/NT4.0/2000/XP, DOS, Linux OS.

■ Installation

Follow the instructions given below to install the Serial PCI Card:

1. Turn your computer off and remove the power plug from the wall outlet.
2. Remove the cover of your computer case.
3. If necessary, remove the metal cover plate on the rear of a free PCI slot.
4. Insert the Serial PCI card into a free PCI slot and screw in place.
5. Place the cover back onto the computer.
6. Insert the plug into the plug socket, power up your PC.



■ Driver Installation

On Windows systems, the system will detect the presence of the PCI Serial card during the boot process and prompt you with a driver installation wizard. Please ignore the wizard. Instead, insert the driver CD in your CD/DVD ROM drive and run the appropriate setup file according to your operating system. The setup files can be found in the following directories on the CD ROM:

Driver Location on CD ROM	
Windows 2000 / XP / 2003	\win2k and xp\setup.exe
Windows 2000 / XP / 2003 on 64-bit systems	\win2k and xp_64bit\
Windows NT4.0	\winNT\setup.exe
Windows 95 / 98SE / ME:	\win9x\

Once the setup program begins, follow the instructions on the screen to setup and configure your card. If you want to change the default install directory, type in a directory name at the prompt and press **Next**.

A Software Installation Notice will appear, please click “**Continue Anyway**”, and the system will install the driver automatically.

Click “**Finish**” to finish installation step and eject the CD driver.

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

Now go back to “Found New Hardware Wizard” window, Select “Install the software automatically (Recommended)” and click “**Next**”.



The system will search and install the appropriate I/O driver automatically.

Lastly, click **Finish** to complete the installation.



Note: The "Found New Hardware Wizard" windows will show up and re-install the driver several times until you finish setting up each serial port.

Uninstall Driver

Please click **Start > Control Panel > Add or Remove Programs** then click on **"Change/Remove"** to uninstall I/O driver.

Setup for Other Operating Systems

Linux

Please read the detailed files listed below about RedHat Linux OS system installation:

Kernal: 2.2.x : \Linux\RedHat V6.0.pdf

Kernal: 2.4.18 : \Linux\RedHat V8.0.pdf

Kernal: 2.4.20 : \Linux\RedHat V9.0.pdf

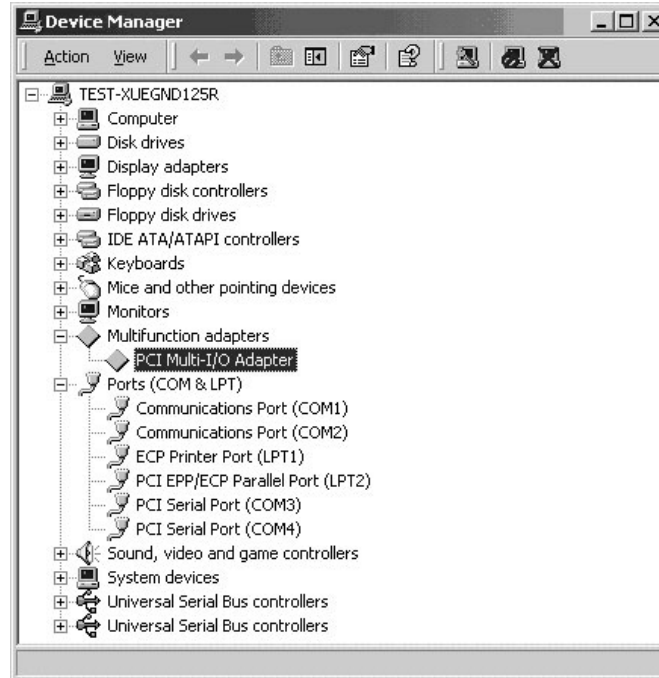
Dos

Please install the driver from CD ROM: \DOS\install.exe, and follow the installation steps in the file: \DOS\readme.txt

■ Verifying the Serial PCI Card

When Windows finishes installing the driver, you can verify the card is recognized by the OS by checking:

Control Panel>System-Hardware>Device Manager>Ports [COM&LPT] it should show the PCI Multifunction adapter.

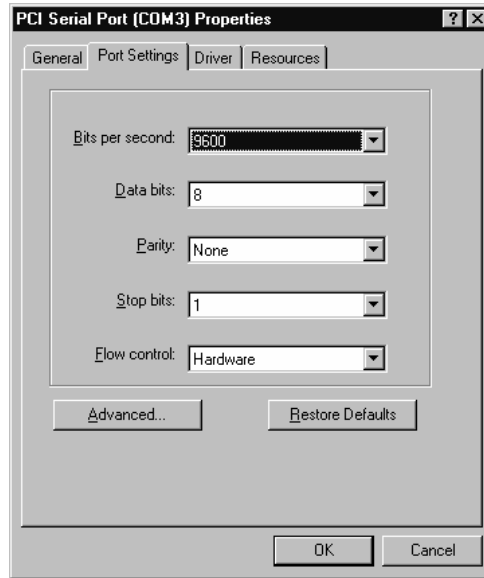


Note: If you install PCI serial ports to your system, you will be requested to restart your computer when you finish setting up each serial port. Click "Yes" if all serial ports have been installed, otherwise click "No".

■ Configuring the COM Port

Select the PCI Serial Port you want to configure (for example COM3) by right clicking the mouse, then click “**Properties**”.

Click the “**Port Settings**” to configure the Bits per second, Data bits, Parity, Stop bits and Flow control if you need to adjust the settings.



Notes:

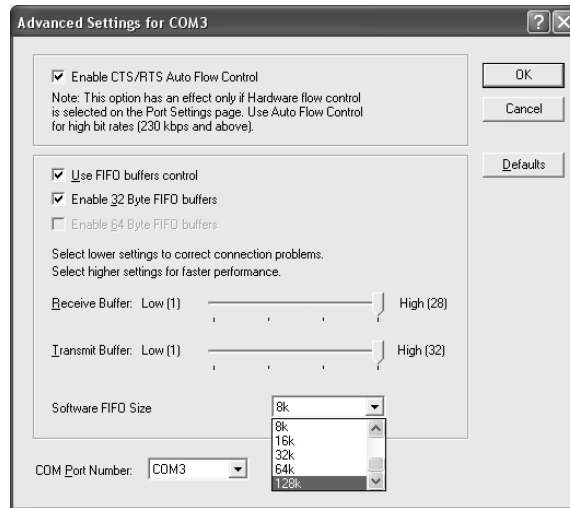
Click the “**Advanced**” if you want to set more advanced features.

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

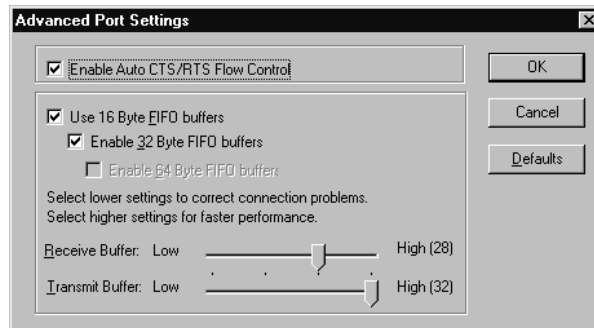
Configure the “Enable Auto CTS/RTS Flow Control”, “16/32/64 bytes FIFO length”, and Receive/Transmit Buffer trigger level if you want to change.

The 128K software FIFO adjusting only supports Microsoft Windows 2000 / XP / 2003 OS. You can change the FIFO size and COM port number as needed.

The screen shot below will be displayed on Windows 2000/XP/2003 systems:



The screenshot below will be displayed on Windows 95/98SE/ME systems:



Notes:

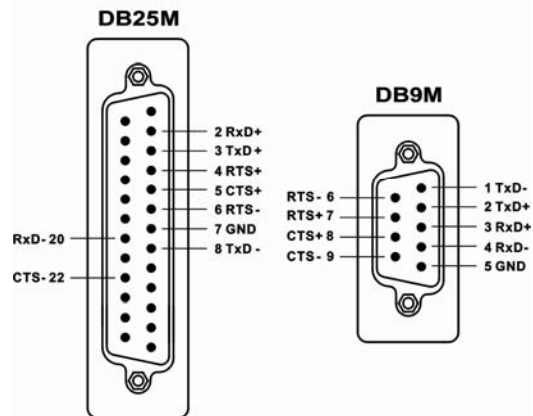
Enable Auto CTS/RTS Flow Control means the CTS/RTS flow control is controlled by hardware automatically. The system will be more stable if the function is enabled.

If you set the Receive/Transmit Buffer to a higher value you will get faster performance because the time for the interrupt service routine will become shorter.

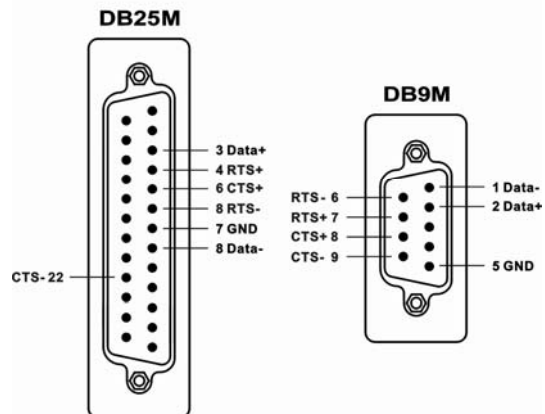
If your CPU speed is not fast enough, the receive buffer will overflow. If the system becomes unstable, select a lower value to correct this problem.

■ Pin Assignments

RS-422



RS-485



■ Specifications

Function	
Type	Serial Communication Host Controller
Mode of Operation	Differential Mode
Bus Transceivers	RS-422 Full-Duplex RS-485 Half-Duplex
Drivers per Line	RS-422 1 Driver RS-485 10 Driver
Receivers per Line	RS-422 10 Receivers RS-485 32 Receivers
Hardware	
IC	SUN1889
Controller	UART (16C650 compatible)
Bus Interface	64-bit & 32-bit PCI Bus - 3.3V & 5V connector keys
Connector	1 DB37 Female port to 4 DB9/25 Male
Protection	Bi-directional 600W Surge Protection
Communications	
IRQ & I/O address	Assigned by BIOS
FIFO	32 byte hardware FIFO, 128Kbyte software FIFO
RS-485 Signal Control	ARSC technology
Select RS-422/485	Auto Switch RS-422/485 technology
Baud rate	75bps ~ 921.6 Kbps
Data bit	4,5,6,7,8
Stop bit	1,1.5,2
Parity	even, odd, none, mark, space
Flow Control	None, Xon/Xoff, Hardware
Signals	RS-422 TxD+/-, RxD+/-, RTS+/-, CTS+/-, GND RS-485 Data+/-, RTS+/-, CTS+/-, GND
Driver Supported	
64-bit System	Intel Itanium and AMD Athlon64 CPU
Microsoft	DOS, Windows 3.x/9x/Me/NT/2000/XP/2003
Linux	2.0.x / 2.2.x / 2.4.18 / 2.4.20
Operation Environment	
Operation temperature	0°C ~ 57°, 5 to 95% RH
Storage temperature-	20°C ~ 85°C

■ Limited Warranty

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