# CA-132/132I User's Manual

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***www.moxa.com/product***


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# CA-132/132I User's Manual

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# 1

# Introduction

Welcome to MOXA CA-132/132I Series of advanced 2-port RS-422/485 PC/104 communication modules, a new industrial multiport serial board solution. Both ports of CA-132/132I can be configured by DIP Switch for either the RS-422 or RS-485 interface, and with its PC/104 standard, the CA-132/132I Series is compatible with any PC/104 CPU module or CPU card that accepts PC/104 expansion modules.

The following topics are covered in this chapter:

- **Overview**
- **Package Checklist**
- **Product Features**
- **Product Specifications**

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# Overview

CA-132/132I is a PC/104 module that supports the RS-422/485 serial interfaces, and can be used with PC/104 CPU modules or CPU cards that accept PC/104 expansion modules. CA-132/132I has two independent serial interfaces, which are accessed through RJ45 connectors. You can configure both ports for the RS-422 or RS-485 interfaces by DIP switch. The module's industry-standard MOXA UART (16C550 compatible) is fully programmable. Moxa has implemented its patented ADDC™ technology for RS-485 automatic direction control, so there is no need to change jumpers to switch the module between driver and receiver. The built-in 16 KV ESD surge protection protects other devices connected to the RS-485 network.

# Package Checklist

MOXA CA-132/132I products are shipped with the following items:

- 1 MOXA CA-132/132I 2-port serial board
- CA-132/132I Document & Software CD
- CA-132/132I Quick Installation Guide

NOTE: *Notify your sales representative if any of the above items is missing or damaged.*

# Product Features

CA-132/132I Series products enjoy the following features:

- 2 RS-422/485 ports
- RS-422/485 communication distance up to 4000 feet (1.2 km)
- High speed data transmission rate up to 230.4 Kbps
- Switch selectable for I/O and INT Vector addresses (from Hex 000 to 3FF)
- 64-byte FIFOs
- IRQ settings are selectable by jumper
- Built-in 16 KV ESD surge protection for TX and RX lines
- 4 LED indicators onboard (red for TX, and green for RX)
- Support 4-wire RS-422 and 2/4-wire RS-485
- ADDC™ for RS-485 transmission
- CA-132I has 2 KV isolation protection

# Product Specifications

CA-132/132I Series boards have the following specifications:

- Dimensions: 9.6 cm × 9.0 cm
- Bus: PC/104
- Baud rate: 50 to 230.4 Kbps
- Character length: 5, 6, 7, or 8 bits
- Parity: even, odd, none, mark, and space
- Stop bit: 1, 1.5 or 2
- I/O connectors: dual 8-pin RJ-45 connectors
- Interrupt levels: IRQ 3, 4, 5, 6, 7, 9, 10, 11, 12 or 15
- Clock input: 14.745 MHz
- Power consumption (+5 V): CA-132/210 mA, CA-132I/455 mA
- MTBF: 100,000 hrs @ 25℃ environment
- Operating temperature: 0 to 55℃



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- Storage temperature: -20 to 85℃
- Relative humidity: 5 to 95%, non-condensing
- Regulatory Approvals: FCC Class A, CE



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# 2

# Hardware Installation

This chapter includes information about hardware installation of CA-132/132I Series boards. The following topics are covered:

- **Hardware Installation**
- **Block Diagram of CA-132/132I**
- **RS-422/485 Interface Settings**
- **I/O Address & Interrupt Vector Settings**
- **IRQ Setting**
- **Initial Inspection**
- **RS-422/485 pin assignments**

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# Hardware Installation

The hardware installation of CA-132/132I serial boards is easy to carry out. Before you insert CA-132/132I into the PC/104 interface, you must first configure the RS-422/485 setting, I/O Base Address & Interrupt Vector, and IRQ Settings. Follow the detailed steps given below to install the CA-132/132I serial board in your computer.

**Step 1:** Configure the RS-422/485 setting, I/O Base Address & Interrupt Vector, and IRQ Settings (see details below).

**ATTENTION**

**Safety First!**

To avoid damaging your system and boards, make sure your PC's power is turned off before installing your CA-132/132I board.

**Step 2:** Turn your PC's power off, and also shut off the power to any peripheral devices, and remove the PC's cover.

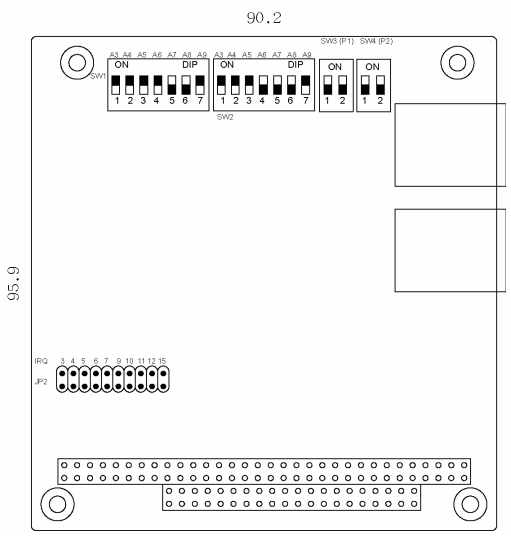
**Step 3:** Insert the CA-132/132I serial board into the PC/104 interface slot.

**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.

# Block Diagram of CA-132/132I



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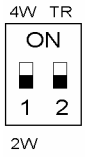
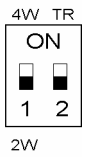
# RS-422/485 Interface Settings

You can use DIP switches SW3 and SW4 to configure each port individually for either RS-422 (4-wire) or RS-485 (2/4-wire) interface with termination resistor (TR) on/off (120 ohm). SW3 configures Port 1, and SW4 configures Port 2, as shown in the switch setting diagrams below.

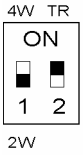
SW3 (P1)



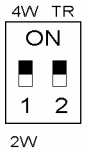

SW4 (P2)



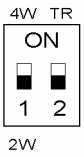

The following diagram shows how to use the DIP switches to configure each port for either RS-422 (4-wire) or RS-485 (2/4-wire) interface with or without termination resistor.



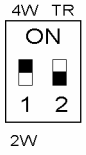

2-wire RS-485 with Termination Resistor




4-wire RS-485/422 with Termination Resistor




2-wire RS-485 without Termination Resistor




4-wire RS-485/422 without Termination Resistor

# I/O Base Address & Interrupt Vector Settings

CA-132/132I Series have two 7-switch DIP switch panels, named SW1 and SW2. Panel SW1 is for I/O Base Address setting, and SW2 is for Interrupt Vector setting. Once you configure Port 1's I/O Base Address and Interrupt Vector, the settings for the other ports will be configured automatically as well. You can choose base addresses from hex 000 to 3FF. The default settings are CH#1 (Hex 180) for I/O Base Address and 1C0 for Interrupt Vector settings.

Example:



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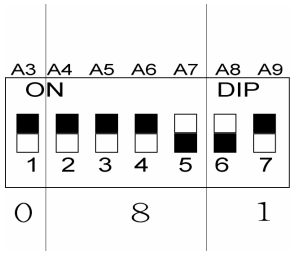
When you wish to configure your Port 1's I/O base address to 180, the DIP switch settings of panel SW1 should be as follows:

| A3 | A4 | A5 | A6 | A7 | A8 | A9 | Hex |
|---|---|---|---|---|---|---|---|
| On | On | On | On | Off | Off | On | 0 × 180 |

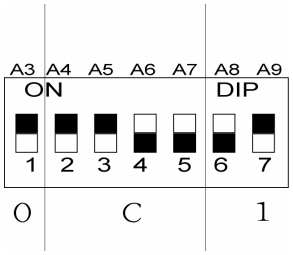
When you wish to configure your Port 1's INT Vector to 1C0, the DIP switch settings of panel SW2 should be as follows:

| A3 | A4 | A5 | A6 | A7 | A8 | A9 | Hex |
|---|---|---|---|---|---|---|---|
| On | On | On | Off | Off | Off | On | 0 × 1C0 |

The following diagrams show the DIP switch settings of panel SW1 and panel SW2 when the I/O base address is configured to be 180, and the INT Vector is configured to be 1C0.




The diagram shown above is SW1 for setting I/O Base Address.




The diagram shown above is SW2 for setting INT Vector.



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At this point, the start of I/O addresses of Port 2 will be automatically configured at 188.

| A3 | A4 | A5 | A6 | A7 | A8 | A9 | |
|---|---|---|---|---|---|---|---|
| 8 | 1 | 2 | 4 | 8 | 1 | 2 | Hex |
| On | On | On | On | On | On | On | 0x000 |
| On | On | On | On | On | On | Off | 0x200 |
| On | On | On | On | On | Off | Off | 0x300 |
| On | On | On | On | Off | Off | Off | 0x380 |
| On | On | On | Off | Off | Off | Off | 0x3C0 |
| On | On | Off | Off | Off | Off | Off | 0x3E0 |
| On | Off | Off | Off | Off | Off | On | 0x3F0 |
| Off | Off | Off | Off | Off | Off | Off | 0x3F8 |
| Off | On | On | On | On | On | On | 0x008 |
| Off | Off | On | On | On | On | On | 0x018 |
| Off | Off | Off | On | On | On | On | 0x038 |
| Off | Off | Off | Off | On | On | On | 0x078 |
| Off | Off | Off | Off | Off | On | On | 0x0F8 |
| Off | Off | Off | Off | Off | Off | On | 0x2F8 |

# IRQ Setting

CA-132/132I Series has a jumper selectable function for you to configure IRQ settings. Before you insert a CA-132/132I board into the PC/104 interface, you need to choose an available jumper from 3, 4, 5, 6, 7, 9, 10, 11, 12, or 15 to configure the IRQ setting.

# Initial Inspection

Before we ship CA-132/132I products, we first perform a careful mechanical and electrical inspection of these serial boards. Products should be free of any marks or scratches and in perfect electrical order when customers receive them. Handle these boards only by their edges, since the static charge from your body may damage the integrated circuits. Always keep the boards in their anti-static package whenever they are not installed. You can also use this package to return the board should it need to be repaired.



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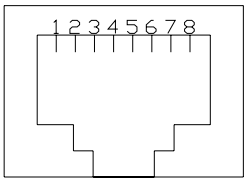
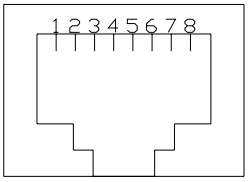
# RS-422/485 Pin Assignments

## Async Port 4-wire RS-422/4-wire 485 Pin Assignment (RJ45)




| PIN | SIGNAL |
|---|---|
| 1 | X |
| 2 | X |
| 3 | TXD+ |
| 4 | TXD- |
| 5 | RXD- |
| 6 | RXD+ |
| 7 | GND |
| 8 | X |

## Async Port 2-wire RS-485 Pin Assignment (RJ45)




| PIN | SIGNAL |
|---|---|
| 1 | X |
| 2 | X |
| 3 | X |
| 4 | X |
| 5 | DATA- |
| 6 | DATA+ |
| 7 | GND |
| 8 | X |



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# 3

# Software Installation

After installing the CA-132/132I serial boards in your computer, the next step is to install the software. The drivers for CA-132/132I support various operating systems, including Window NT, Windows 2000/XP/2003, and Windows 95/98/Me. This chapter includes information about how to install and remove the CA-132/132I board.

The following topics are covered in this chapter:

- **Windows NT**
- **Windows 2000/XP/2003**
- **Windows 95/98/Me**
- **DOS**

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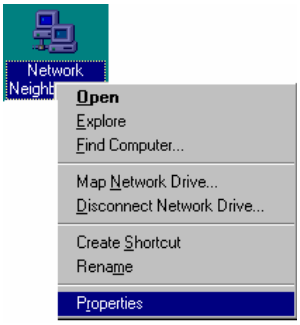
# Windows NT

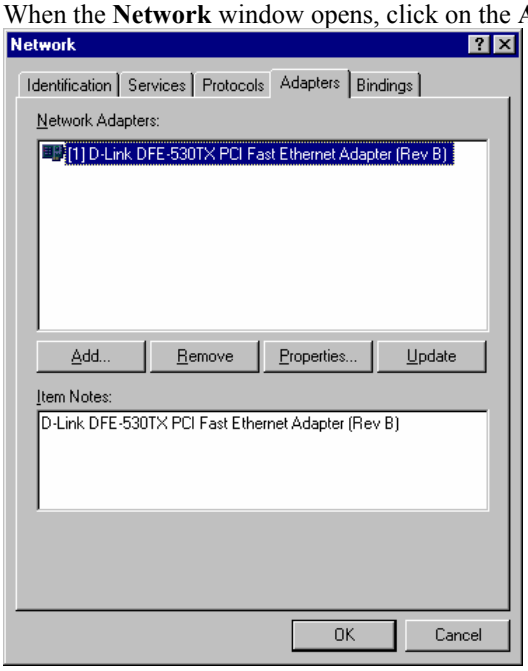
## Installing the driver

The following procedure is for installing the CA-132/132I serial board driver under Windows NT 4.0.

1. Use the mouse to position the cursor over your desktop's **Network** icon**,** and then click the right mouse button. Select **Properties** and then click the left mouse button.




2. When the **Network** window opens, click on the **Adapters** tab and then click on **Add**.



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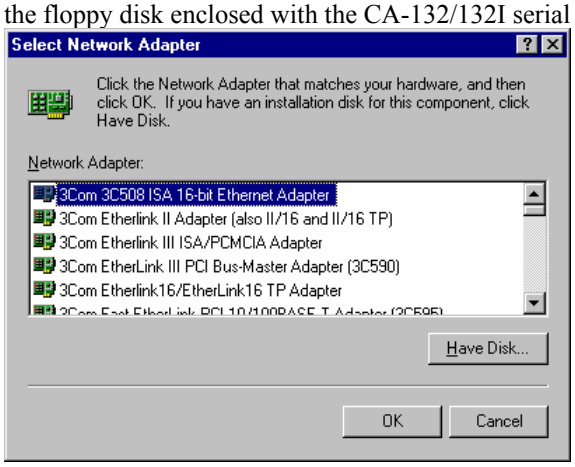
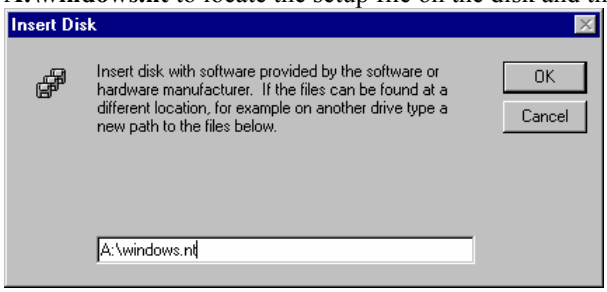
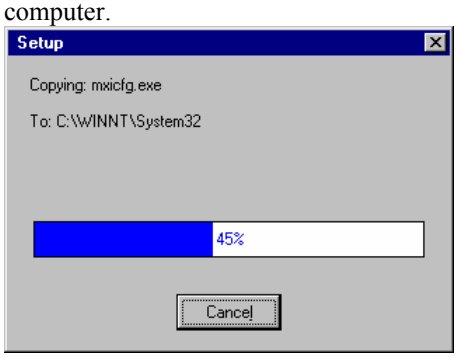
3. When the **Select Network Adapter** window opens, click on **Have Disk** to install the driver from the floppy disk enclosed with the CA-132/132I serial board.




4. The **Insert Disk** window will open asking you to insert the disk into your computer. Type **A:\windows.nt** to locate the setup file on the disk and then click **OK**.




5. The **Setup** window will open, showing that the computer is copying the setup file to your computer.



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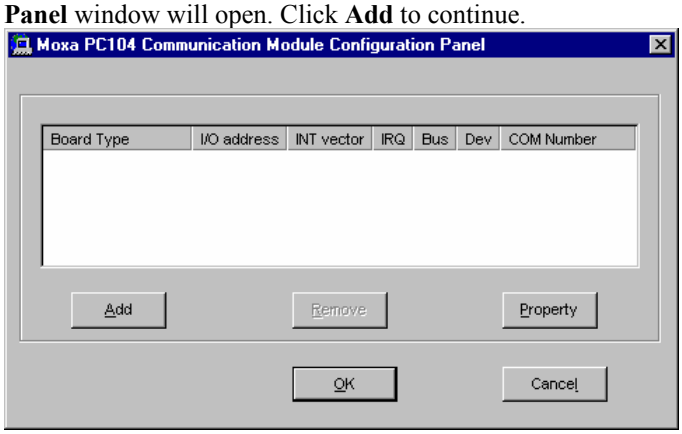
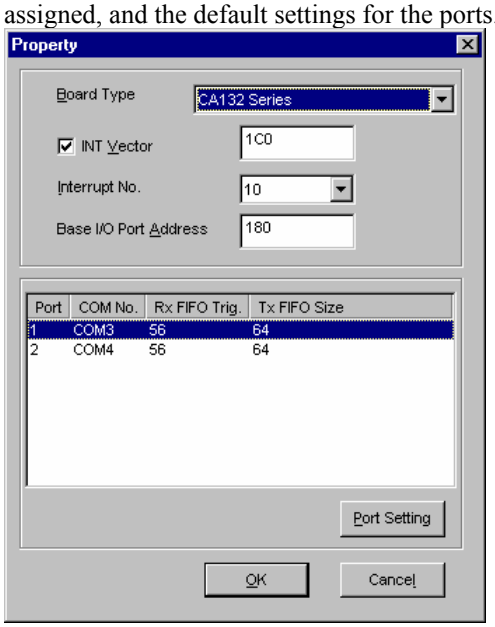
6. After the setup file has been copied, the **Moxa PC104 Communication Module Configuration Panel** window will open. Click **Add** to continue.




7. When the **Property** window opens, select **CA132 Series** or **CA132I Series** under **Board Type**. The window will show the COM port number to which the serial ports of CA-132/CA-132I are assigned, and the default settings for the ports. Click **OK** to continue.



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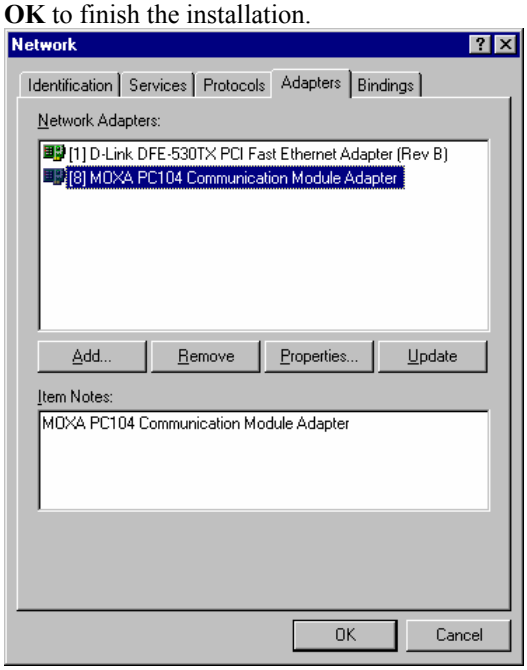
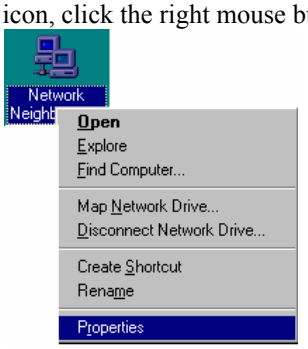
8. The **Network** window will open, showing the serial board you just added to your computer. Click **OK** to finish the installation.




## Removing a CA-132/132I serial board

1. If you wish to remove a CA-132/132I serial board, move your mouse to your desktop's **Network** icon, click the right mouse button, and then select **Properties**.



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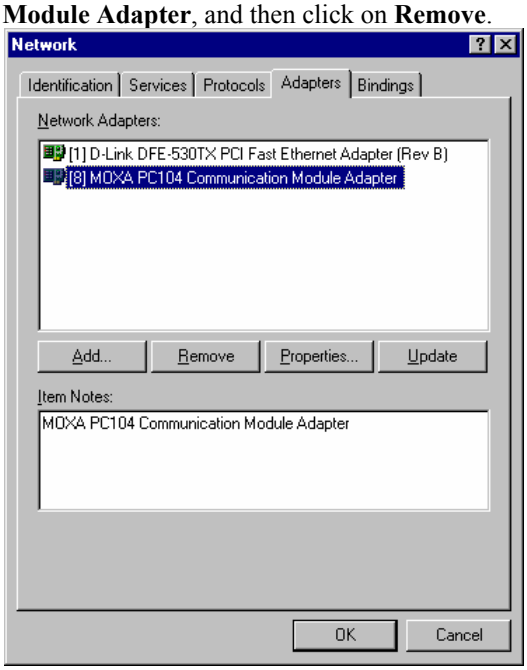
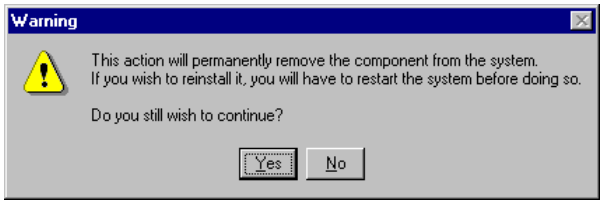
2. When the **Network** window opens, choose **Adapters,** select **MOXA PC104 Communication Module Adapter**, and then click on **Remove**.




3. A **Warning** window will open. Click **Yes** if you wish to remove the CA-132/132I serial board.

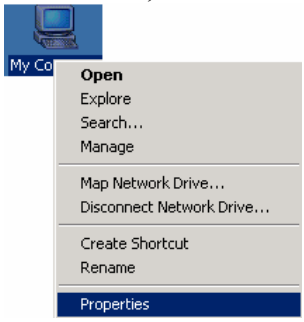



# Windows 2000/XP/2003

## Installing the driver

The following procedure explains how to install the CA-132/132I serial board driver under Windows 2000/XP/2003.

1. Use your mouse to position the cursor over your desktop's **My Computer** icon, click the right mouse button, and then select **Properties**.



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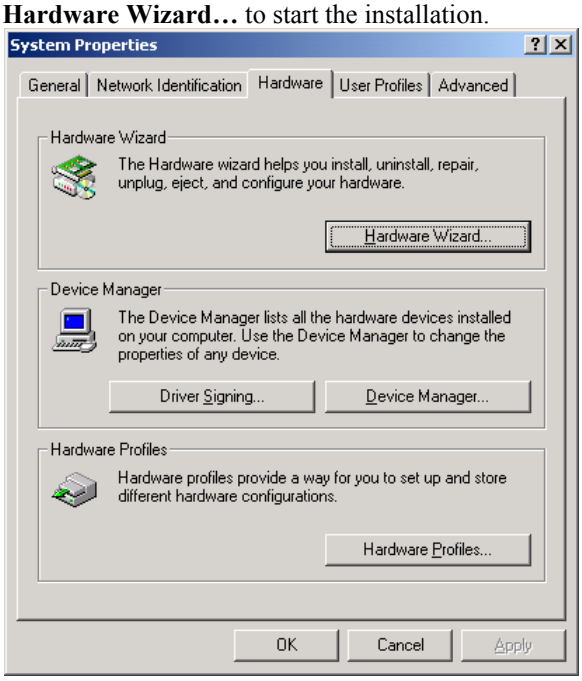
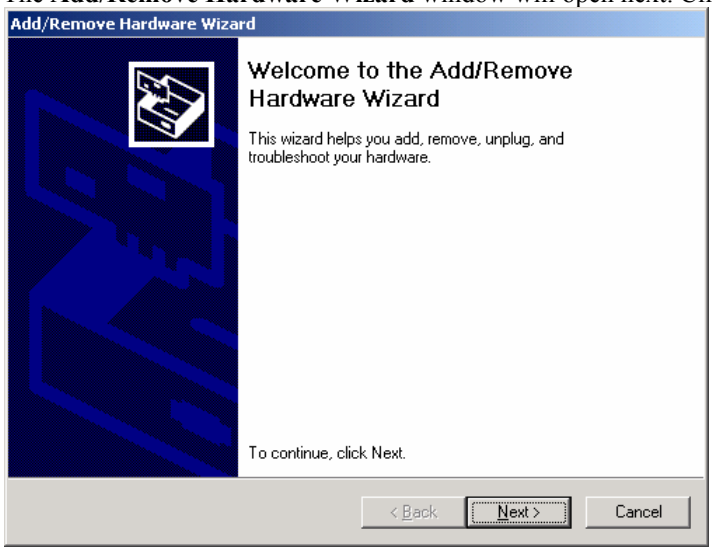
2. When the **System Properties** window opens, click on the **Hardware** tab, and then click on **Hardware Wizard…** to start the installation.




3. The **Add/Remove Hardware Wizard** window will open next. Click on **Next** to continue.



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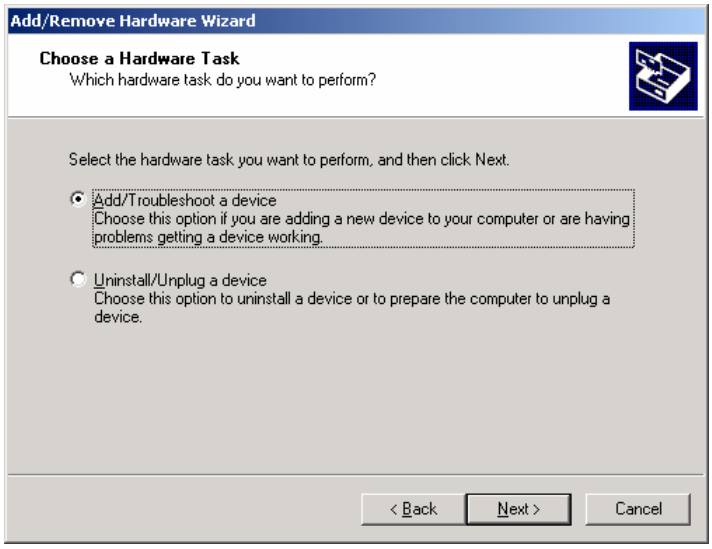
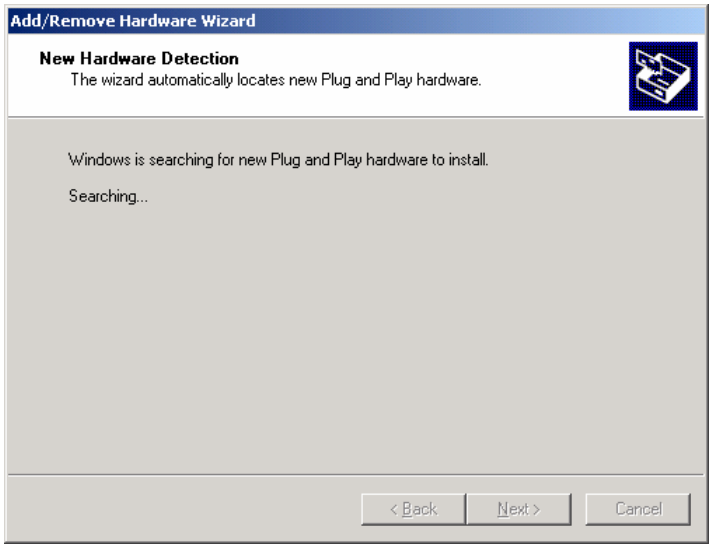
4. When the **Choose a Hardware Task** window opens, select **Add/Troubleshoot a device**, and then click on **Next** to continue.




5. The **New Hardware Detection** window will open showing that the Wizard is searching for the CA-132/CA-132I serial board on your computer.



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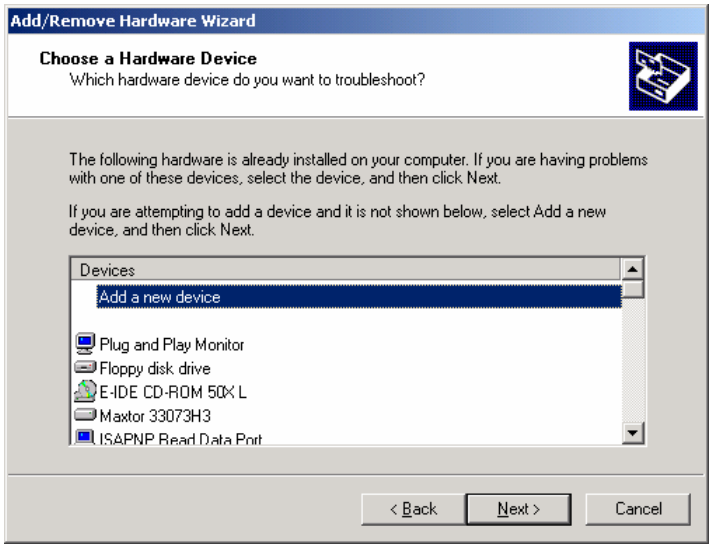
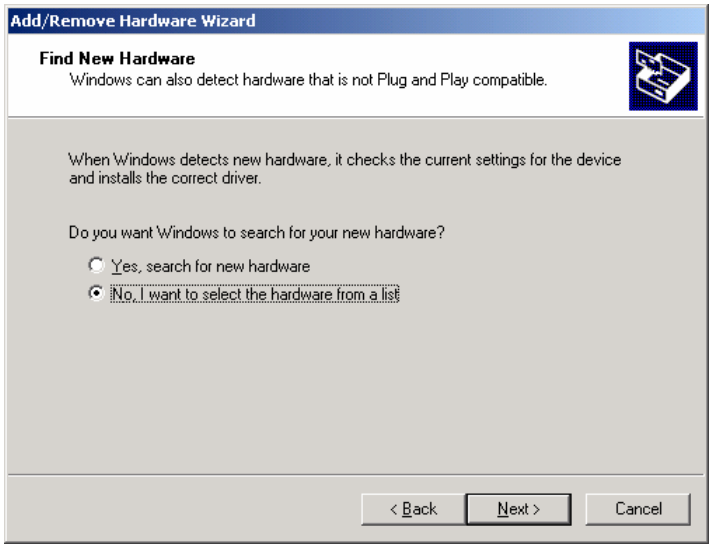
6. When the **Choose a Hardware Device** window opens, select **Add** a new device and then click **Next** to continue.




7. The **Find New Hardware** window will open next. Select **No, I want to select the hardware from a list**, since CA-132/132I is a brand new type of ISA serial board, and then click on **Next** to continue.



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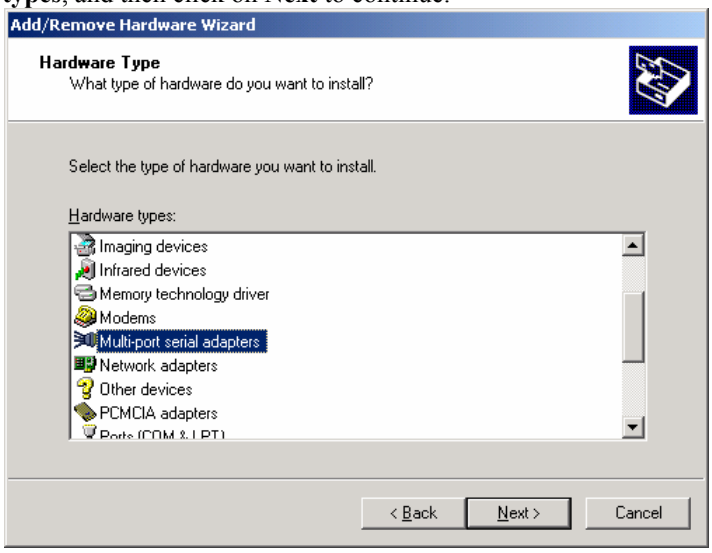
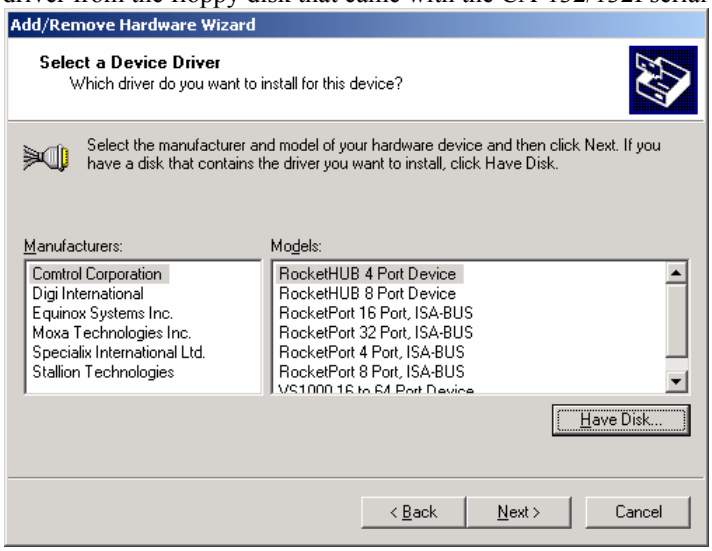
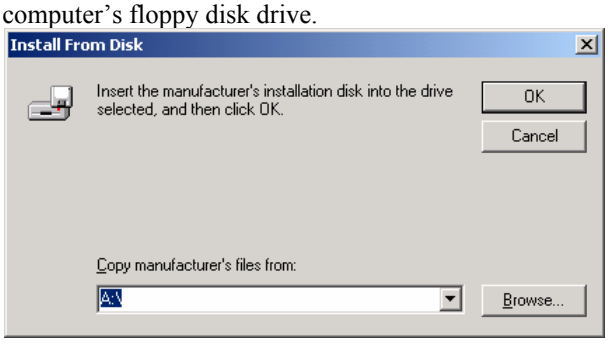
8. When the **Hardware Type** window opens, select **Multi-port serial adapters** under **Hardware types**, and then click on **Next** to continue.




9. When the **Select a Device Driver** window opens, click on **Have Disk** to install the CA-132/132I driver from the floppy disk that came with the CA-132/132I serial board.




10. The **Install from Disk** window that opens will prompt you to insert the installation disk into your computer's floppy disk drive.



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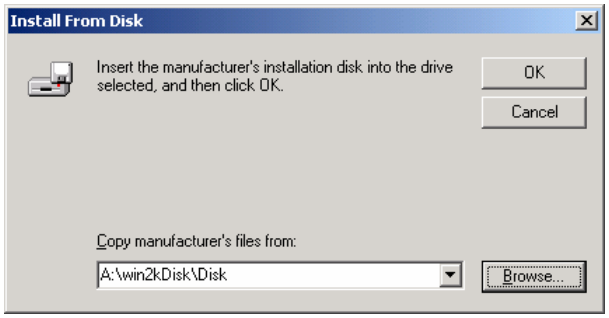
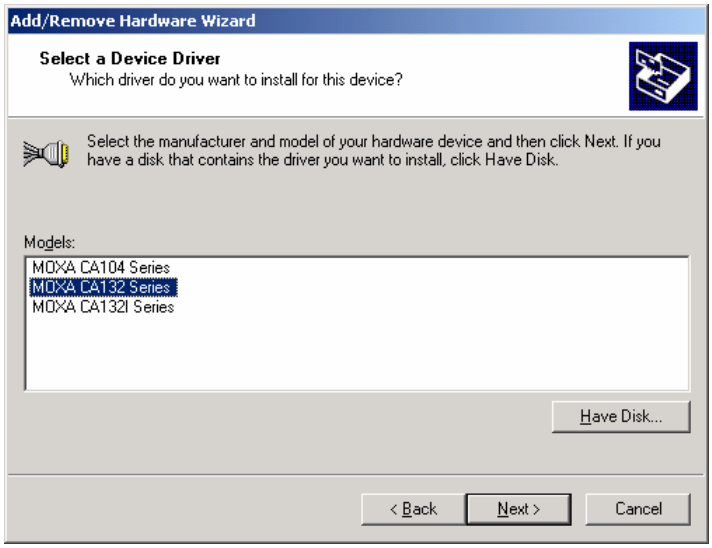
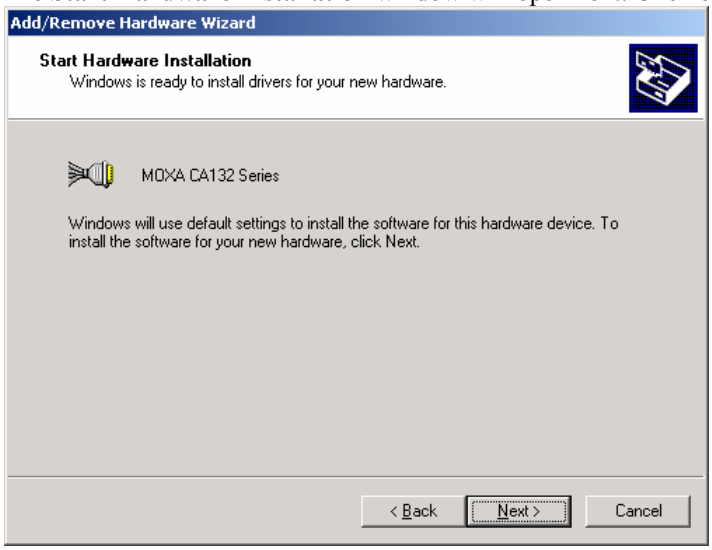
11. After inserting the installation disk, click on **Browse** to locate the setup file from the disk. Click **OK** to continue.




12. When the **Select a Device Driver** window opens, select **MOXA CA132 Series** or **MOXA CA132I Series** and then click **Next** to continue.




13. The **Start Hardware Installation** window will open next. Click on **Next** to continue.



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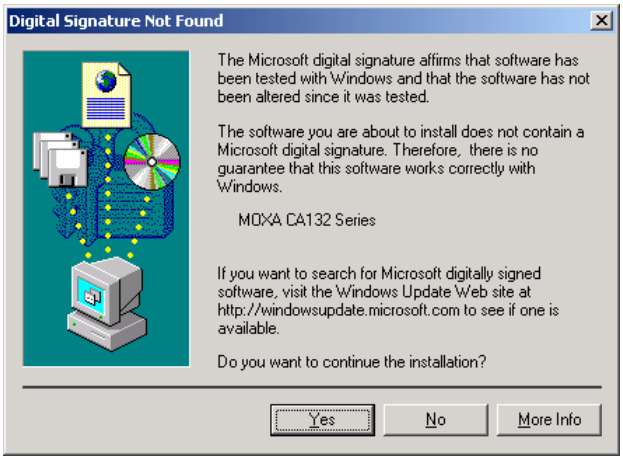
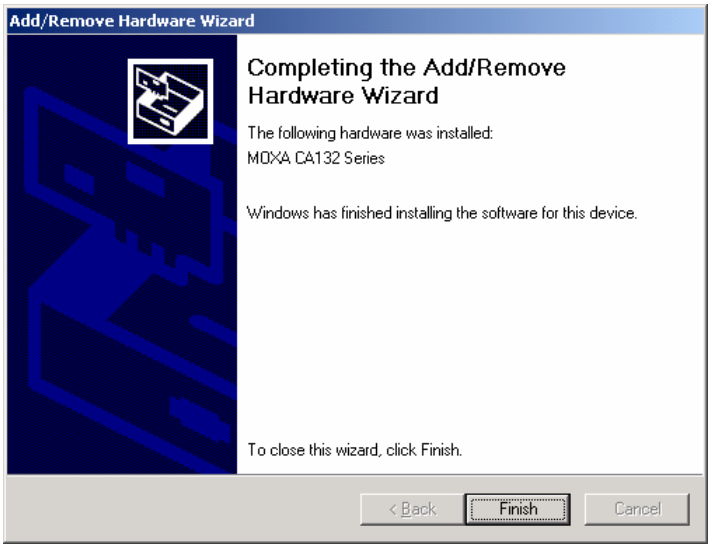
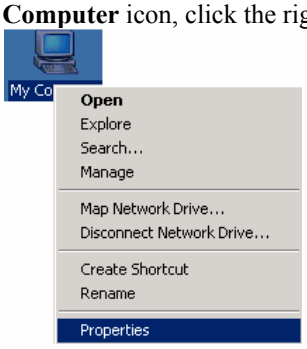
14. A **Digital Signature Not Found** window will open. Although this message states that MOXA CA132 Series (or CA132I Series if you choose it) driver does not contain a Microsoft digital signature, the CA132 Series driver has already been tested and been shown that it can support Windows OS. Click **Yes** to continue the installation.




15. The next window to open states that the installation is completed. Click **Finish** to end the installation.




16. After the installation is completed, use your mouse to position the cursor over your desktop's **My Computer** icon, click the right mouse button, and then select **Properties**.



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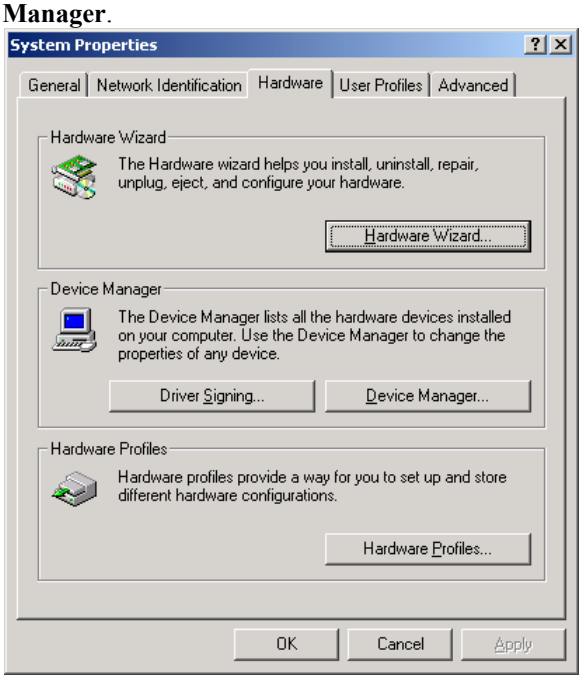
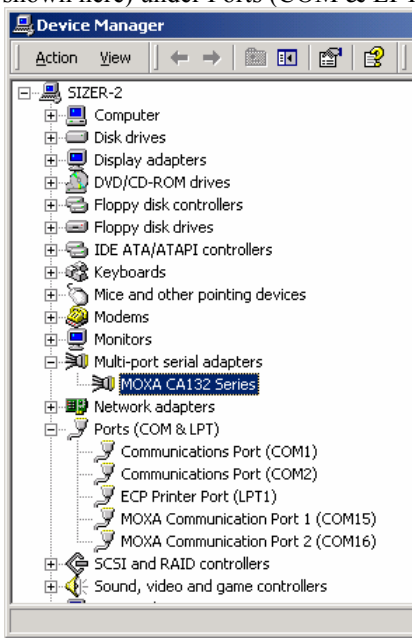
17. When the **System Properties** window opens, click on the **Hardware** tab, and then click on **Device Manager**.




18. The **Device Manager** window will open next. At this point, you should be able to find MOXA CA132 Series/MOXA CA132I Series under Multi-port serial adapters, and MOXA communication Port 1 and Port 2 (assigned to COM 15 and COM 16, respectively, for the example shown here) under Ports (COM & LPT).



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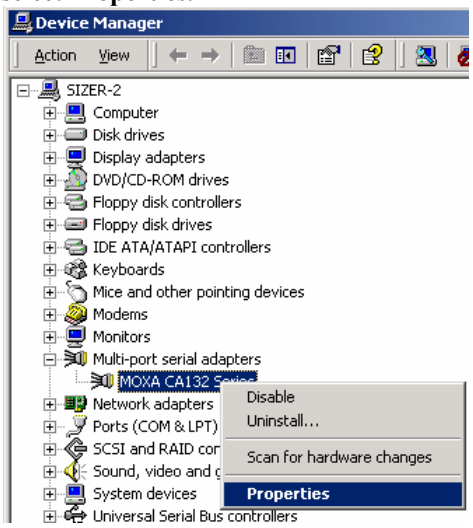
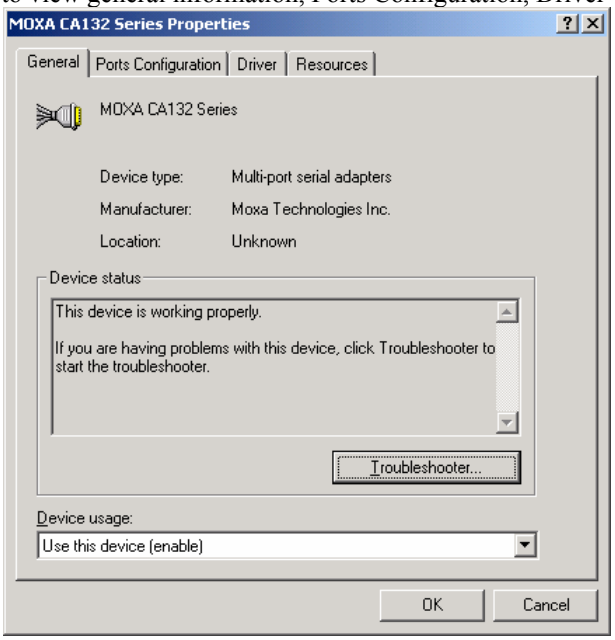
19. Select **MOXA CA132 Series/MOXA CA132I Series**, click the right mouse button, and then select **Properties**.




20. The **MOXA CA132 Series/MOXA CA132I Series Properties** window will open, allowing you to view general information, Ports Configuration, Driver version, and Resource Settings.




## Disabling the device

1. Use your mouse to position the cursor over you desktop's **My Computer** icon, click the right mouse button, and then select **Properties**.



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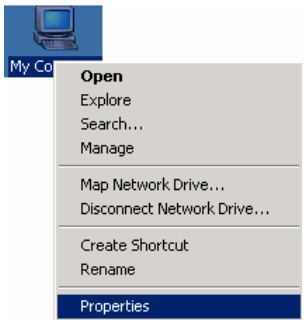
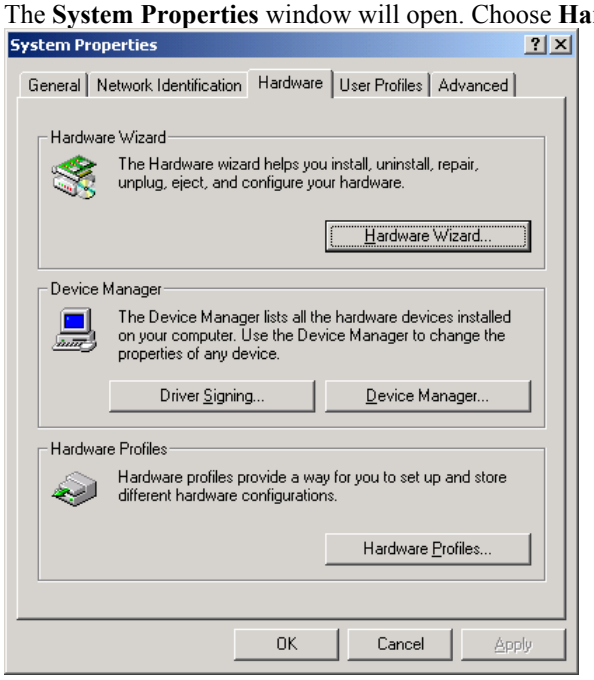
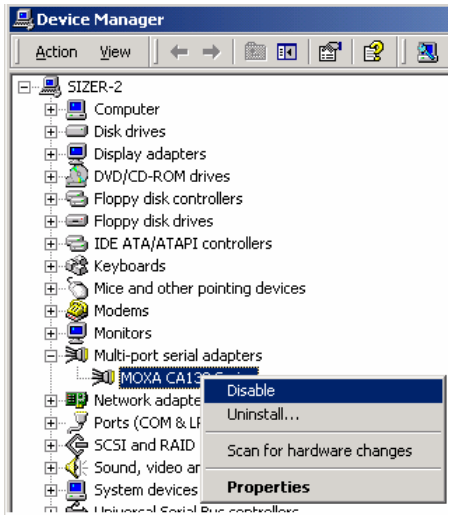



2. The **System Properties** window will open. Choose **Hardware** and select **Device Manager**.




3. The **Device Manager** window will open. Select **MOXA CA132 Series/MOXA CA132I Series** under **Multi-port serial adapters**, and click on the right mouse button. Select **Disable** and click on the left mouse button to disable the device.



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### Uninstalling the device

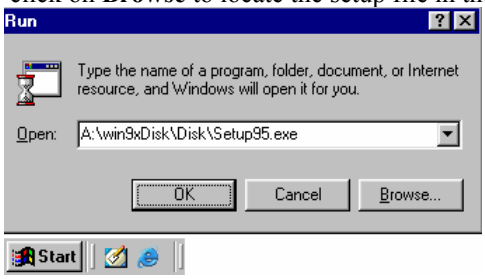
1. Follow steps 1 and 2 of **Disabling the device**.
2. Select **MOXA CA132 Series/MOXA CA132I Series** under **Multi-port serial adapters**, click the right mouse button, and then select **Uninstall**.
3. A Warning window will open. Click **OK** to uninstall the device.

# Windows 95/98/ME

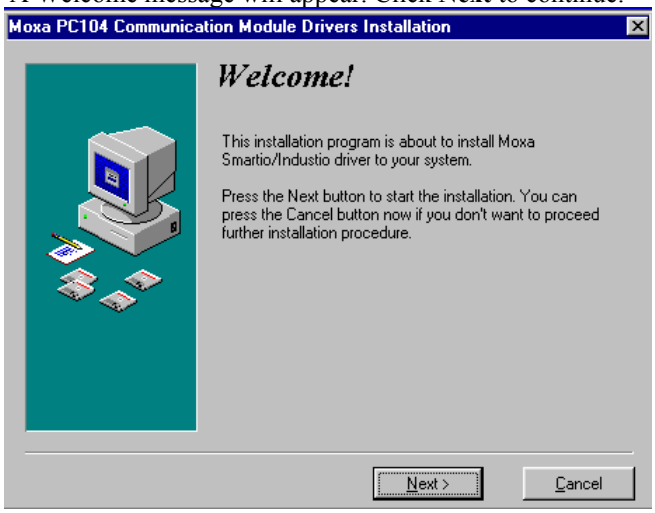
### Installing the driver

The following is for installing the driver of CA-132/132I serial boards under Windows 95/98/ME.

1. Insert the installation disk into your computer. Click on **Run** under the **Start Menu**, and then click on **Browse** to locate the setup file in the disk, or directly type in the path.




2. A Welcome message will appear. Click **Next** to continue.



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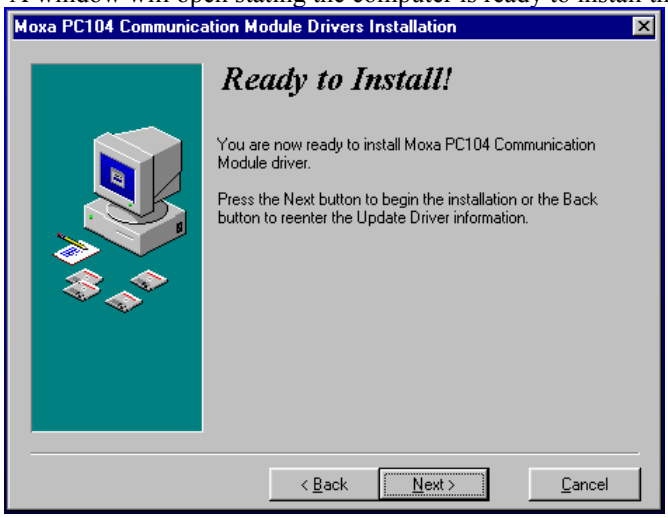
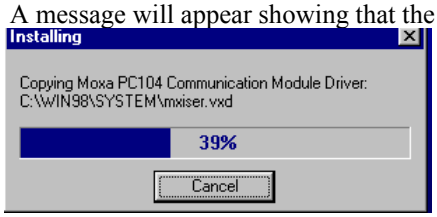
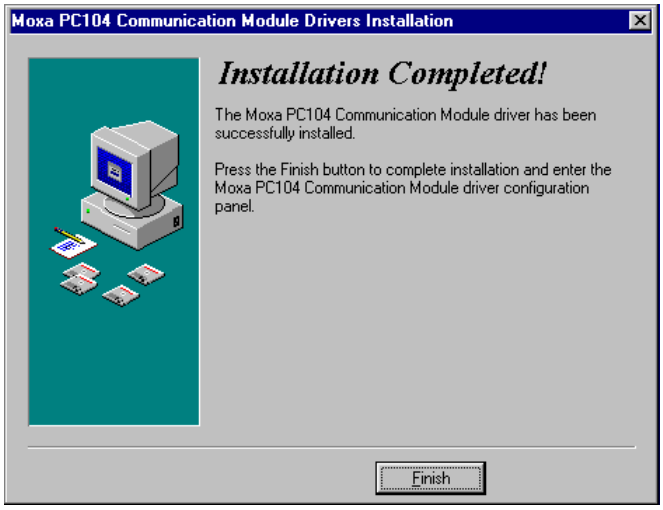
3. A window will open stating the computer is ready to install the driver. Click on **Next** to continue.




4. A message will appear showing that the setup file is being installed.




5. A window will appear showing that the installation is completed. Click on **Finish** to end the installation.



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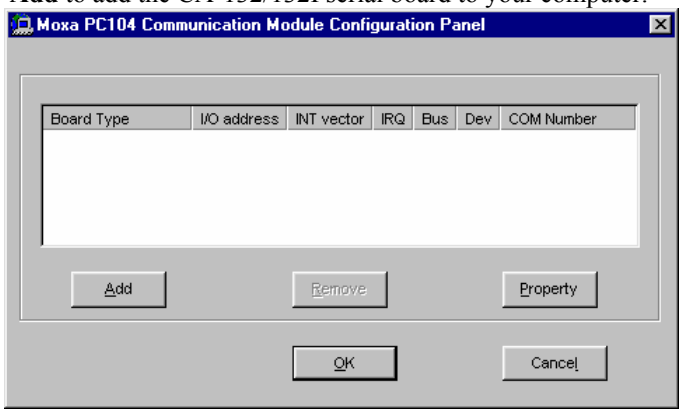
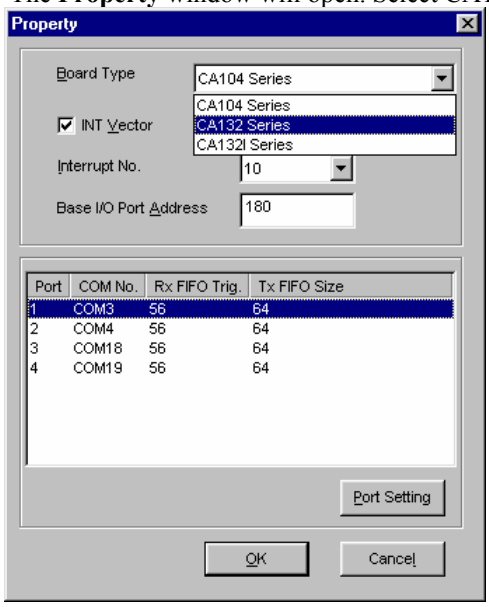
6. The **Moxa PC104 Communication Module Configuration Panel** window will appear. Click on **Add** to add the CA-132/132I serial board to your computer.




7. The **Property** window will open. Select CA132 Series/CA132I Series under **Board Type**.



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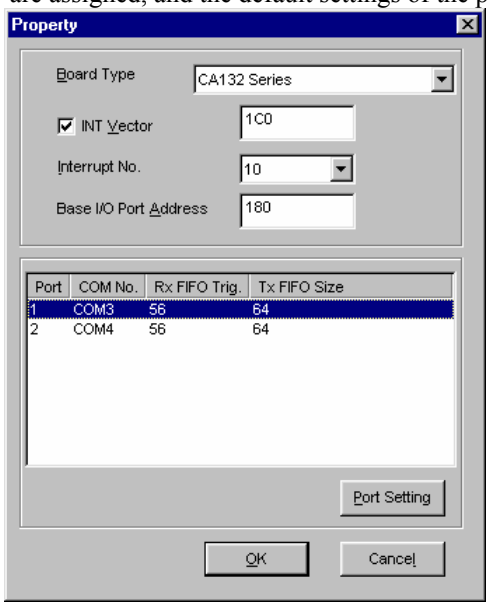
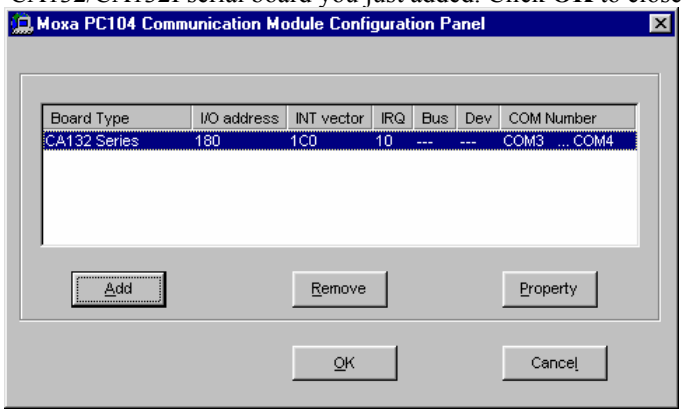
8. The **Property** window will show the COM port number to which the serial ports of CA-132/132I are assigned, and the default settings of the ports. Click **OK** to continue.




9. The **Moxa PC104 Communication Module Configuration Panel** window will show the CA132/CA132I serial board you just added. Click **OK** to close the window.



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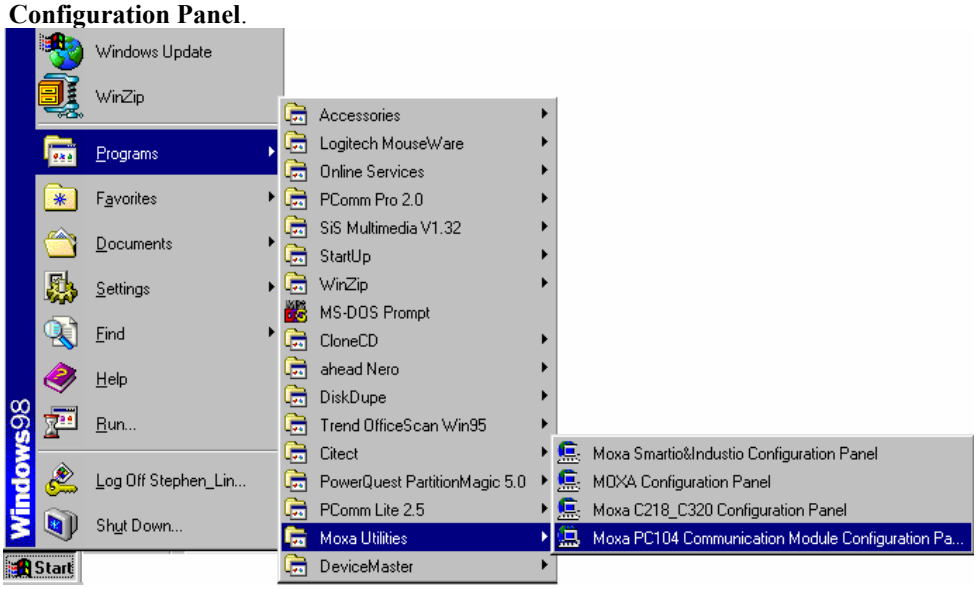
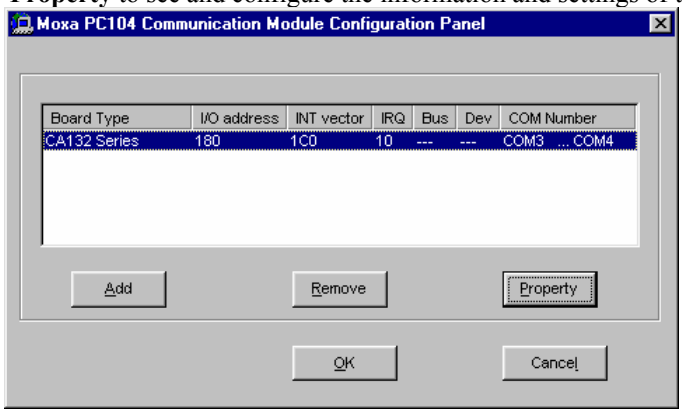
10. To open the **Moxa PC104 Communication Module Configuration Panel** window , click on **Start → Programs → Moxa Untilities → MOXA PC104 Communication Module Configuration Panel**.

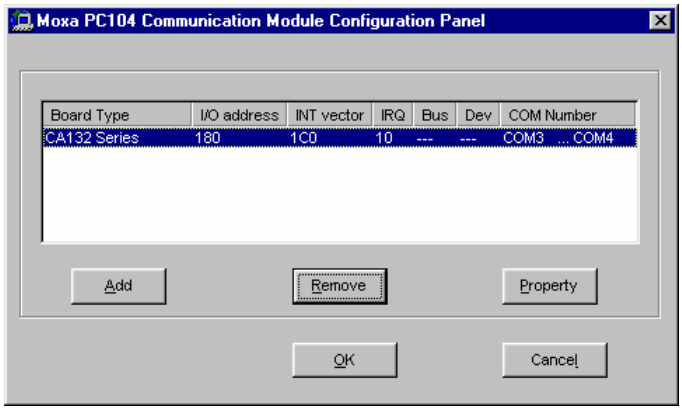



11. The **Moxa PC104 Communication Module Configuration Panel** window will open allowing you to see the CA132 Series/CA132I Series serial board you just added. You can click on **Property** to see and configure the information and settings of the board's COM ports.




## Removing the device

1. If you wish to remove the device, follow steps 11 and 12 of **Installing the driver**. Click on **Remove** when the **Moxa PC104 Communication Module Configuration Panel** opens.



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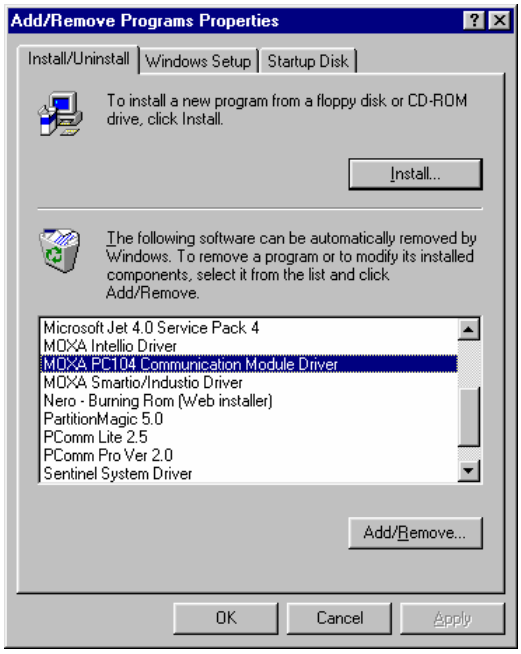
2. A warning message will appear asking you if you really want to remove this board. Click on **Yes** to remove the CA-132/132I serial board.

## Uninstalling the driver

1. Click on **Start → Settings → Control Panel**.
2. Select **Add/Remove Programs**.

Choose **Install/Uninstall**, select **MOXA PC104 Communication Module Driver**, and then click **Add/Remove** to uninstall the driver.



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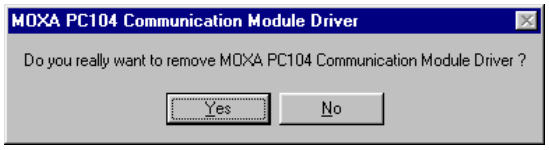
3. A message will appear asking you if you really want to remove the driver. Click **Yes** to uninstall the driver.




4. A message will prompt up confirming that the uninstallation of the driver is completed. Click **OK** to close the window.

# DOS

MOXA DOS API-232 is a software package that assists users to develop and/or debug programs for serial communications. This section will show you how to install the package, how to setup up the driver, and how to load or unload driver.

For details of the serial programming (API-232 Library) and utilities, please refer to the next chapter, "Serial Programming Tools".

## Installing Driver

Run the installation program, DOSINST.EXE, in the DOS folder. Specify the target API-232 directory (e.g. C:\MOXA) where software driver will be copied. Press F2 to start the installation.

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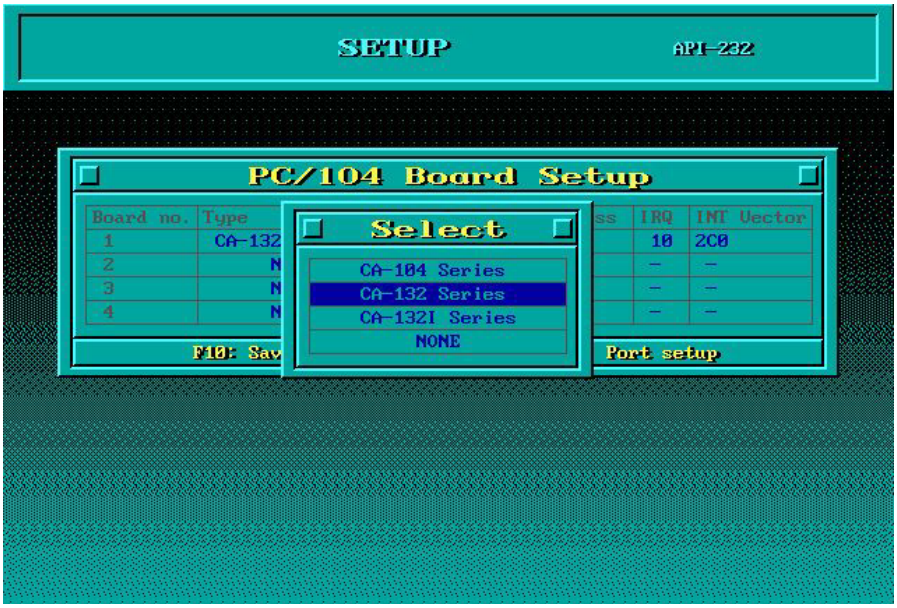
After installation is complete, you will be prompted to proceed running setup program. It is strongly recommended to do so.

## Driver Setup

The following are steps for setting up the CA-132 Series(CA-132/CA-132I) driver. Note that it is not intended to illustrate all the convenient functions of the setup programs when configuring the boards. Please refer to the F1 on-line help instructions as running setup program.

1. Run the setup program, **BIN\SETUP.EXE**.
2. Please press **Enter** to select the proper model name, CA-132 Series. If you install CA-132I model, select CA-132I Series.



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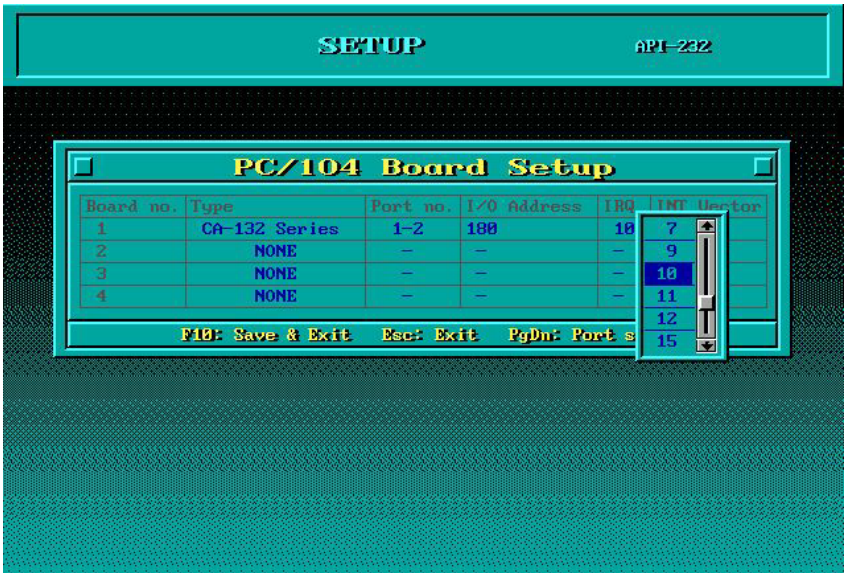
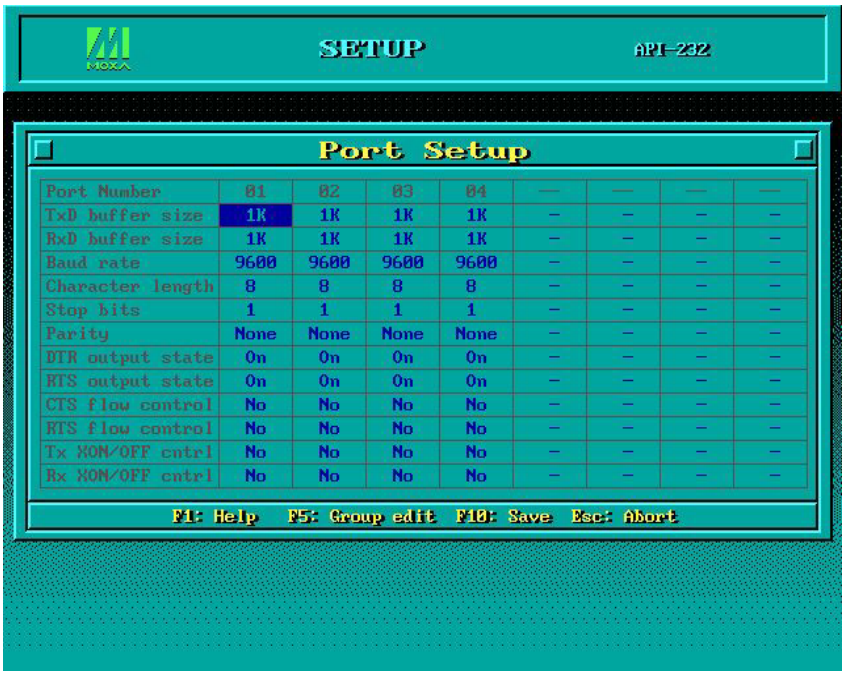
3. You have to configure the Port No., I/O Address, IRQ and INT Vector properly. These settings **MUST** match up the hardware configuration of CA-132 or CA-132I.




4. You may press **PgDn** key to have advanced "Port setup". Now the configuration of the desired CA-132 Series board will be shown along with other default settings, such as port number, buffer size, etc.

**ATTENTION**

Up to now you have completed the setup for ***CA-132*** Series board. You may skip this step and go directly to the next **step 4** if you need not change any setting or configure any board.
You may now enter/modify each port's configuration. These displayed values are the port initial values as driver is loaded.




**Legend:** Some noticeable fields and functions are explained below.



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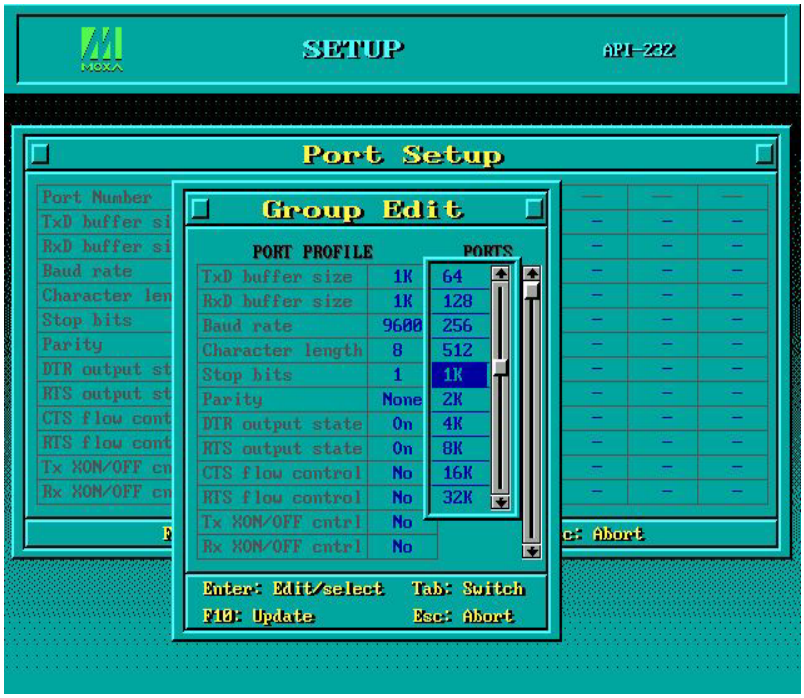
**Port number:** This is actually the port ID of each port. The application software will refer to the port by its port number (ID). Duplicated port number is not allowed. That is, each MOXA serial port is referred to as port number in terms of serial programming.

You may map the port number range to the one you prefer between 0 and 127 as long as no port number overlapping condition or port number undefined condition occurs. Generally, you should take the convenience of programming into consideration when specifying the port numbers for the board.

**TxD buffer size:** The transmission (output) buffer allocated in the system for each port.

**RxD buffer size:** The receiving (input) buffer allocated in the system for each port.

**F5: Group Edit:** This is a convenient function that helps you edit the configuration of several ports at one time as a group.




5. Press **F10** to save the latest configuration and exit the SETUP program.



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## Loading Driver

Having completed the setup, you can load the driver, “BIN\DPC-DRV.EXE”, at the DOS prompt. The driver will detect the CA-132 Series board automatically. If the board(s) is(are) detected, a message similar to below will show:

(CA-132)
PC/104 Communication Module DOS driver Version 1.0
Setup driver …
CA-132 series OK!
Device driver setup O.K.

(CA-132I)
PC/104 Communication Module DOS driver Version 1.0
Setup driver …
CA-132I series OK!
Device driver setup O.K.

It means the CA-132 Series driver is installed properly. At this point, you are ready to execute application that supports API-232 functions, or start developing applications using API-232 library.

## Unloading Driver

To unload (release) the CA-132 Series driver from memory, type “DPC-DRV/Q” at the DOS prompt.



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# 4

# Serial Programming Tool

Moxa supports a class of easy to use, yet powerful serial programming libraries and communication troubleshooting utilities under Windows NT/2000/XP/2003 and Windows 95/98/Me. Use these MOXA Serial Programming Tools to decrease your software development time. In the following sections, we describe the installation of the library, and the utilities supported for various programming platforms. *PComm*, a professional serial comm tool for PCs, is a software package that runs under Windows NT/2000/XP/2003 and Windows 95/98/Me. *PComm* provides:

- A powerful serial communication library for easy programming in the most popular programming languages. The serial communication library is useful for developing applications for data communications, remote access, data acquisition, and industrial control under Windows NT/2000/XP/2003 or Windows 95/98/Me. It is a simpler solution compared to the more complex Windows Win32 COMM API.
- Useful utilities such as diagnostic, monitor, and terminal emulator.
- Illustrative sample programs,
- Comprehensive on-line documentation.

The following topics are covered in this chapter:


- **PComm Installation**
- **PComm Programming Library**
- **Utilities**


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# PComm Installation

To install *PComm*, run \Setup.exe from the diskette enclosed in the package. Please note that the *PComm* diagnostic and monitor utilities are for MOXA boards only; these two utilities will not work with other manufacturer's serial boards.

# PComm Programming Library

The serial communication library assists you in developing serial communications programs for any COM port that complies with Microsoft Win32 API. It facilitates the implementation of multi-process and multi-thread serial communication programs and hence remarkably reduces development time.

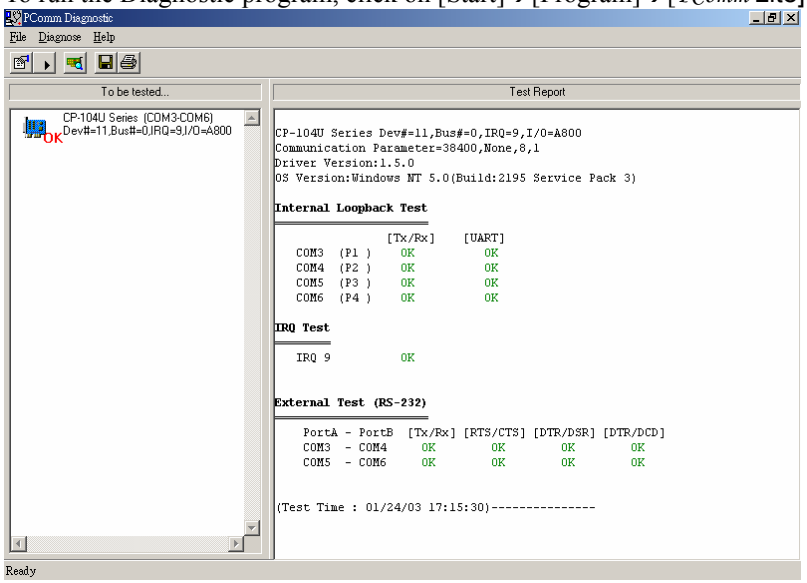
This serial communication library provides a complete function library and sample programs for Visual C++, Visual Basic, and Delphi. To view detailed function descriptions and sample programs, click on [Start] → [Program] → [*PComm* Lite] → [*PComm* Lib Help], [*PComm* Porting Notes] or [*PComm* Programming Guide], or refer to the sample programs in the *PComm* directory.

# Utilities

In this section, we give brief descriptions of each utility. For more information about these utilities, see the on-line help from the software diskette.

## Diagnostic (for MOXA boards only)

A convenient diagnostic program, ONLY for MOXA boards and ports, provides internal and external testing of IRQ, TxD/RxD, UART, CTS/RTS, DTR/DSR, DTR/DCD, etc. It allows the user to check the function of both software and hardware.
To run the Diagnostic program, click on [Start]→[Program]→[*PComm* Lite]→[Diagnostic].



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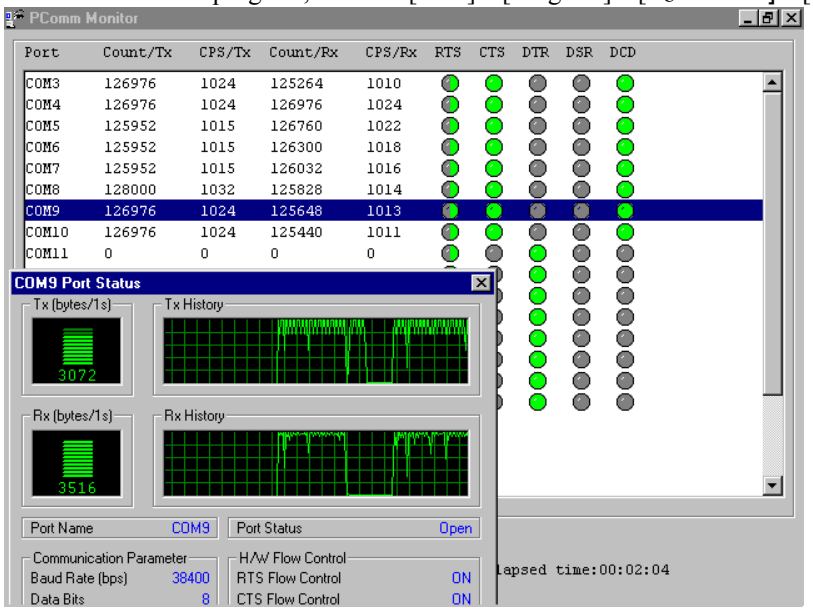
## Monitor (for MOXA boards under Windows NT Only)

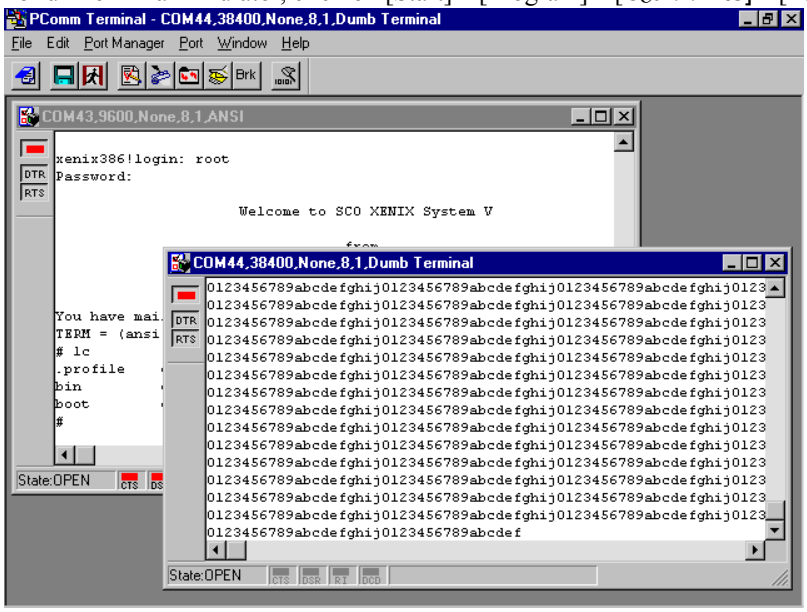
A useful port status monitoring program allows you to monitor data transmission of selected MOXA COM ports. It monitors data transmission/receiving throughput, and communication line status, with data updated and displayed on the screen at regular time intervals. Click on a specific port to see a graph of the current communication parameters and status of that port.
To run the Monitor program, click on [Start]→[Program]→[*PComm* Lite]→[Monitor].




## Terminal Emulator

Terminal Emulator can be used to connect to various ports to see if data transmission is functioning correctly. Terminal Emulator features multi-windows, and supports VT100 and ANSI terminal types. You can transfer data interactively, send patterns periodically, and transfer files using ASCII, XMODEM, YMODEM, ZMODEM, and KERMIT protocols.

To run Terminal Emulator, click on [Start]→[Program]→[*PComm* Lite]→[Terminal Emulator].



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# RS-485 Programming

If you intend to do RS-485 communication with CA-132/132I Series boards, please follow the RS-485 programming guide below and also refer to the chapter, "**Connection Cable and Cable Wiring"**, for more RS-485 operation details.
The CA-132/132I Series supports **only 2-wire half-duplex RS-485 communication**. Data+/- pins are used for both data transmitting and receiving, depending on the mode selected: either **Automatic Data Direction Control** or **By RTS**.

# By RTS Mode (For back-compatibility)

If the mode switch for the port is set to the **OFF** position, By RTS Mode is used. The port is ready for transmitting data if **RTS signal is asserted** and ready for receiving data if **RTS signal is not asserted**. **RTS** scheme is the traditional method, and is suitable for most systems, including Windows NT, Windows 95/98 and DOS, or even UNIX, that permits RTS control from application programs. This mode should be compatible with most existing RS-485 applications.

## How to transmit and receive data for Windows NT, 95/98

We recommend you to configure CA-132/132I Series ports as follows in order to acquire precise timing control in RS-485 2-wire transmission. There are 2 solutions to control RS-485 2-wire transmission.

### Solution 1

The following model is common in RS-485 2-wire transmission.

| | |
|---|---|
| **sio_SetWriteTimeouts(port, 0)** | **/* Set sio_write() into block mode if for Windows NT and Windows 95/98 */** |
| **sio_RTS(port, 1)** | **/* Turn on RTS signal. The RS-485 port is ready for transmitting data. */** |
| **sio_write(port, buff, 10)** | **/* Write 10 byte characters in "buff". The function blocks until last character transmitted */** |
| **sio_RTS(port, 0)** | **/* Turn off RTS signal. The RS-485 port is ready for receiving data. */** |
| **sio_read(port, buff, 10)** | **/* Read 10 bytes */** |

### Solution 2

There is a dedicated RS-485 function in *PComm* library. It integrates the above functions of solution 1 regarding sending data as one.

| | |
|---|---|
| **sio_putb_x(port, buff, tick ); /*** | **1. Turn on RTS and ready for transmitting data.<br>2. Send data.<br>3. Wait for tick time.<br>4. Turn off RTS and ready for receiving data. */** |

For more information on these functions, please refer to *PComm* library on-line Help file for Windows NT and Windows 95/98 respectively.



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# A

# Service Information

This appendix shows you how to contact Moxa for information about this and other products, and how to report problems.

In this appendix, we cover the following topics.

- **MOXA Internet Services**
- **Problem Report Form**
- **Product Return Procedure**

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# MOXA Internet Services

Customer satisfaction is our number one concern, and to ensure that customers receive the full benefit of our products, Moxa Internet 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.....support@moxa.com.tw

World Wide Web (WWW) Site for product information:

.....http://www.moxa.com



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# Problem Report Form

## *MOXA CA-132/132I Series*

| | |
|---|---|
| **Customer name:** | |
| **Company:** | |
| **Tel:** | **Fax:** |
| **Email:** | **Date:** |

1. **Moxa Product:** ☐ CA-132 ☐ CA-132I
2. **Serial Number:** _____

**Problem Description:** Please describe the symptoms of the problem as clearly as possible, including any error messages you see. A clearly written description of the problem will allow us to reproduce the symptoms, and expedite the repair of your product.



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# Product Return Procedure

For product repair, exchange, or refund, the customer must:

- Provide evidence of original purchase.
- Obtain a Product Return Agreement (PRA) from the sales representative or dealer.
- Fill out the Problem Report Form (PRF). Include as much detail as possible for a shorter product repair time.
- Carefully pack the product in an anti-static package, and send it, pre-paid, to the dealer. The PRA should be visible on the outside of the package, and include a description of the problem, along with the return address and telephone number of a technical contact.



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# Revision History

| Document Edition | Revision Date | Revision Details |
|---|---|---|
| 2nd | June 23, 2004 | 1. Updated the edition of this manual on the title page.<br>2. Changed Moxa's new logo on the title page.<br>3. p.1-2<br>Changed power consumption.<br>Added Regulatory Approvals.<br>4. p.2-2<br>Changed block diagram.<br>5. p.2-6<br>Changed "Async Port 4-wire RS-422 Pin Assignment (RJ45)" to "Async Port 4-wire RS/422/485 Pin Assignment (RJ45)." |



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