Universal PCI Board User's Manual

Multiport Serial Board for PCI and PCI-X Bus

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www.moxa.com/product



Universal PCI Board User's Manual

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Table of Contents

| 1. | Introduction | 1-1 |
|----|--|------|
| | Overview | 1-2 |
| | Applications | 1-4 |
| | Package Checklist | |
| | Product Features | 1-5 |
| | Product Specifications | 1-5 |
| | Installation Guide | 1-7 |
| 2. | Hardware Installation | 2 1 |
| ۷. | | |
| | Overview | |
| | Configuring the Board and Dimension CP-118U/CP-118U-I | |
| | | |
| | CP-138U/CP-138U-I | |
| | CP-168U | |
| | CP-114UL/CP-114UL-I | |
| | CP-134U/CP-134U-I CP-104UL | |
| | CP-1040L | |
| | POS-104JU | |
| | CP-112UL/CP-112UL-I | |
| | CP-132UL/CP-132UL-I | |
| | CP-102UL | |
| | CP-1020E | |
| | CP-102U | |
| | Plugging the Board into an Expansion Slot | |
| | | |
| 3. | Software Installation | |
| | Windows Drivers | |
| | Windows 7/8 (32-bit/64-bit) | |
| | Windows 2008/Vista (32-bit/64-bit) | |
| | Windows 2003/XP | |
| | Windows 2000 | |
| | Windows NT | |
| | Windows 95/98/ME | |
| | Windows CE | |
| | Non Windows Driver | |
| | DOS | |
| | Linux (32-bit/64-bit) | |
| | SCO | |
| 4. | Serial Programming Tools | 4-1 |
| | Overview | 4-2 |
| | Serial Programming Library | 4-2 |
| | PComm Utilities | 4-2 |
| | Installation | 4-2 |
| | PComm Diagnostic | 4-3 |
| | PComm Monitor | 4-3 |
| | PComm Terminal Emulator | 4-4 |
| 5. | Pin Assignments | 5-1 |
| | Overview | |
| | CP-102U | |
| | DB9 (Male): RS-232 | |
| | CP-102UL | |
| | DB25 (Female): RS-232 | |
| | CP-104JU | |
| | 8-pin RJ45: RS-232 | |
| | CP-104UL | |
| | DB44 (Female): RS-232 | 5-5 |
| | CP-112UL | 5-5 |
| | DB25 (Female): RS-232 | 5-5 |
| | DB25 (Female): RS-422 | 5-6 |
| | DB25 (Female): RS-485 (4-wire) | 5-6 |
| | DB25 (Female): RS-485 (2-wire) | |
| | CP-114UL | 5-7 |
| | DB44 (Female): RS-232 | 5-7 |
| | DB44 (Female): RS-422, RS-485 (4-wire) | 5-7 |
| | DB44 (Female): RS-485 (2-wire) | 5-8 |
| | CP-118U | |
| | DB62 (Female): RS-232 | |
| | DB62 (Female): RS-422, RS-485 (4-wire) | |
| | DB62 (Female): RS-485 (2-wire) | |
| | CP-118U-I | F 11 |

| DB78 (Female): RS-232 | |
|--|------|
| DB78 (Female): RS-422, RS-485 (4-wire) | |
| DB78 (Female): RS-485 (2-wire) | |
| CP-132UL, CP-132UL-I | |
| DB25 (Female): RS-422 | |
| DB25 (Female): RS-485 (4-wire) | |
| DB25 (Female): RS-485 (2-wire) | |
| CP-134U, CP-134U-I | 5-14 |
| DB44 (Female): RS-232 (Ports 1 and 2 only) | |
| DB44 (Female): RS-422 | |
| DB44 (Female): RS-485 (4-wire) | |
| DB44 (Female): RS-485 (2-wire) | |
| CP-138U | |
| DB62 (Female): RS-422, RS-485 (4-wire) | |
| DB62 (Female): RS-485 (2-wire) | |
| CP-138U-I | |
| DB78 (Female): RS-422, RS-485 (4-wire) | |
| DB78 (Female): RS-485 (2-wire) | |
| CP-168U | |
| DB62 (Female): RS-232 | |
| POS-104UL | |
| DB44 (Female): RS-232 | |
| CP-102UF | |
| Serial Connectors | |
| DB9 (Male) | 5-21 |
| DB25 (Male) | |
| DB25 (Female) | |
| RJ45 | |

The following topics are covered in this chapter:

- Overview
- □ Applications
- Package Checklist
- Product Features
- Product Specifications
- Installation Guide

Overview

Moxa Universal PCI (UPCI) multiport serial boards can be installed in PCI or PCI-X slots, and support both 3.3V and 5V PCI/PCI-X. With a UPCI board, you can connect data acquisition equipment and other serial devices to your PC over RS-232, RS-422, or RS-485. Each board has on-chip hardware and software flow control, a built-in 128-byte Tx/Rx FIFO, and well-designed device drivers that have been fine-tuned. This allows Moxa UPCI boards to support data transmission speeds of up to 921.6 Kbps.

The following UPCI multiport serial boards are available from Moxa:

| 5 | |
|---------------|---|
| 8 Ports | |
| CP-118U: | 8 ports, RS-232/422/485 |
| CP-118U-T: | 8 ports, RS-232/422/485, wide temperature |
| CP-118U-I: | 8 ports, RS-232/422/485, 2KV optical isolation |
| CP-118-U-I-T: | 8 ports, RS-232/422/485, 2KV optical isolation, wide temperature |
| CP-138U: | 8 ports, RS-422/485 |
| CP-138-T: | 8 ports, RS-422/485, wide temperature |
| CP-138-I: | 8 ports, RS-422/485, 2KV optical isolation, wide temperature |
| CP-138-U-T-I: | 8 ports, RS-422/485, 2KV optical isolation |
| CP-168U: | 8 ports, RS-232 |
| CP-168U-T: | 8 ports, RS-232, wide temperature |
| | |
| 4 Ports | |
| CP-114UL: | 4 ports, RS-232/422/485, low profile |
| CP-114UL-T: | 4 ports, RS-232/422/485, low profile, wide temperature |
| CP-114UL-I: | 4 ports, RS-232/422/485, low profile, 2KV optical isolation |
| CP-114UL-I-T: | 4 ports, RS-232/422/485, low profile, , 2KV optical isolation, wide temperature |
| CP-134U: | 4 ports, RS-422/485 |
| CP-134U-T: | 4 ports, RS-422/485, wide temperature |
| CP-134U-I: | 4 ports, RS-422/485, 2KV optical isolation |
| CP-134U-I-T: | 4 ports, RS-422/485, 2KV optical isolation, wide temperature |
| CP-104UL: | 4 ports, RS-232, low profile |
| CP-104UL-T: | 4 ports, RS-232, low profile, wide temperature |
| CP-104JU: | 4 ports, RS-232, 8-pin RJ45 connector on-board |
| CP-104JU-T: | 4 ports, RS-232, 8-pin RJ45 connector on-board, wide temperature |
| POS-104UL: | 4 ports, RS-232, low profile, serial port powered |
| POS-104UL-T: | 4 ports, RS-232, low profile, serial port powered, wide temperature |
| | |
| 2 Ports | |
| CP-112UL: | 2 ports, RS-232/422/485, low profile |
| CP-112UL-T: | 2 ports, RS-232/422/485, low profile, wide temperature |
| CP-112UL-I: | 2 ports, RS-232/422/485, low profile, 2KV optical isolation |
| CP-112UL-I-T: | 2 ports, RS-232/422/485, low profile, 2KV optical isolation |
| CP-132UL: | 2 ports, RS-422/485, low profile |
| CP-132UL-T: | 2 ports, RS-422/485, low profile, wide temperature |
| CP-132UL-I: | 2 ports, RS-422/485, low profile, 2KV optical isolation |
| CP-132UL-I-T: | 2 ports, RS-422/485, low profile, 2KV optical isolation, wide temperature |
| CP-102UL: | 2 ports, RS-232, low profile |
| CP-102UL-T: | 2 ports, RS-232, low profile, wide temperature |
| CP-102U: | 2 ports, RS-232 |
| CP-102U-T: | 2 ports, RS-232, wide temperature |
| CP-102UF: | 2 ports, Serial-over-fiber board |

Smartio—The Smart Multiport Async Solution

The Smartio Series of multiport serial boards includes the CP-168U, CP-104UL, CP-104JU, POS-104UL, CP-102UL, and CP-102U. These boards provide RS-232 serial ports for connecting terminals, modems, printers, scanners, cash registers, bar code readers, keypads, numeric displays, electrical scales, data acquisition equipment, and many other serial devices to a PC. These boards are a reliable, high-performance solution for multiport serial communication.

Industio-The Industrial Multiport Async Solution

The Industio Series of multiport serial boards includes the CP-118U-I, CP-118U, CP-138U-I, CP-138U, CP-114UL, CP134U, CP-134U-I, CP-132UL, and CP-132UL-I. These boards are designed for industrial use, with serial ports that can be configured independently for RS-232, RS-422, or RS-485 operation. Industio boards provide a reliable communication link over distances of up to 4000 ft and support point-to-point full-duplex or multi-drop half-duplex. With RS-485 operation, a single port can connect to 32 devices in a multi-drop environment.

ADDCTM (Automatic Data Direction Control) for RS-485

ADDC[™] (Automatic Data Direction Control) makes it easier to manage 2-wire RS-485 half-duplex connections, eliminating the need for software interference. This means that it is not necessary to write extra code for Windows applications to control the half-duplex protocol. ADDC intelligence is built into Industio boards.

Serial-over-fiber Board

The CP-102UF is a serial-over-fiber board designed for industrial automation applications that require a long distance, multi-point, PC-based data acquisition solution. The single-mode model (CP-102UF-S) can transmit up to 40 km, and the multi-mode model (CP-102UF-M) can transmit up to 5 km. For many industrial applications, an even bigger benefit is that optical fiber isolates the data from dangerous increases in ground potential, ground loops, and electrical EMI/RFI electromagnetic radiation.

Built-in Termination Resistors for RS-422 and RS-485

Industio boards have termination resistors built-in, eliminating the headaches involved in determining the proper impedance for the resistors. For additional information, please refer to Chapter 2.

ESD and Isolation Protection

Certain models include TVSS (Transient Voltage Surge Suppressor) technology to help prevent damage due to lightning or high potential voltage. Optical isolation (2000V) and embedded protection (max. ESD of 16 KV, max. EFT of 2 KV) are also available with certain models. These features help provide protection in critical or harsh factory-type environments.

PCI Solution

UPCI boards comply with PCI Spec. 2.1 and do not require switches or jumpers. IRQ and I/O address is automatically assigned by the PCI BIOS. This means that the board must be physically installed in the computer first before the driver software is installed.

Universal PCI

For maximum compatibility with the PCI local bus specification, UPCI boards support both 3.3V and 5V PCI connector types. The 32/64-bit PCI local bus specification specifies both a 3.3V/5V and 32/64-bit slot.

Operating System Support

Moxa UPCI boards are compatible with most major industrial platforms, including Windows, DOS, and Linux. Drivers are provided for smoother installation, configuration, and performance. This manual provides separate sections for the different operating systems that are supported.

Moxa Serial Communication Tools

For application development, Moxa provides a serial communication library for Windows called PComm. This library can help you develop your own applications in Visual Basic, Visual C++, Borland Delphi, and more. Utilities are included for debugging, monitoring communication status, terminal emulation, and file transfer.

Applications

UPCI boards are suitable for many industrial applications, including the following:

- Multipoint data acquisition
- Factory automation
- Critical industrial control
- Remote serial device control
- Internet/intranet connections
- Remote access applications
- Multi-user applications
- Industrial automation
- Office automation
- Telecommunications
- · PC-based vending machines or kiosk systems
- POS (Point-of-Sale) systems

Package Checklist

UPCI boards are shipped with the following items:

- 1 Moxa UPCI multiport serial board
- Low profile bracket (low profile models only)
- Document & software CD
- Quick installation guide (printed)
- Warranty card

NOTE: Notify your sales representative if any of the above items is missing or damaged. For information on optional accessories for each model, please refer to Chapter 5.

Product Features

Moxa UPCI boards enjoy the following features:

- Over 700 Kbps data throughput for top performance
- Serial communication speed up to 921.6 Kbps
- 128-byte FIFO and on-chip hardware and software flow control
- Universal PCI supporting 3.3V PCI, 5V PCI and PCI-X
- Driver support for Windows, Windows CE, Windows XP Embedded, DOS, Linux, FreeBSD, QNX SCO OpenServer, UnixWare7
- On-board 15 KV ESD protection
- Low profile for compact-sized PCs (on "L" models only)
- 2 KV optical isolation protection (on "I" models only)
- -40 to 85°C wide temperature (on "T" models only)

Hardware I/O Controller: MU860 (compatible with 16C550C) Connector Type: CP-118U-I: Female DB78 CP-118U: Female DB62 CP-138U-I: Female DB78 CP-138U: Female DB62 CP-168U : Female DB62 CP-114UL/CP-114UL-I: Female DB44 CP-134U/CP-134U-I : Female DB44 CP-104UL : Female DB44 CP-104JU : 8-pin RJ45 POS-104UL: Female DB44 CP-112UL/CP-112UL-I: Female DB25 CP-132UL/CP-112UL-I: Female DB25 CP-102UL: Female DB25 CP-102U: Male DB9 CP-114UL: Female DB44 CP-134U : Female DB44 CP-134U-I: Female DB44 CP-132UL : Female DB25 CP-132UL-I: Female DB25 CP-102UF: ST type

Product Specifications

| Interface | | |
|------------------------|---|--|
| Bus: | 32-bit Universal PCI | |
| No. of Ports: | 8 Ports: | |
| | CP-118U/CP-118U-I | |
| | CP-138U/CP-138U-I | |
| | CP-1168U | |
| | 4 Ports: | |
| | CP-114UL/CP-114UL-I | |
| | CP-134U/CP-134U-I | |
| | CP-104UL/CP-104JU | |
| | POS-104UL: | |
| | 2 Ports: | |
| | CP-112UL/CP-112UL-I | |
| | CP-132UL/CP-132UL-I | |
| | CP-102UL | |
| | CP-102U/CP-102UF | |
| Max. No. of Boards: | 4 | |
| Signals | 1' | |
| RS-232: | TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND | |
| RS-232: | TxD, RxD , RTS , CTS , DTR , DSR , DCD , $GNDTxD+(B)$, $TxD-(A)$, $RxD+(B)$, $RxD-(A)$, GND | |
| | | |
| 4-wire RS-485: | TxD+(B), TxD-(A), RxD+(B), RxD-(A), GND | |
| 2-wire RS-485: | Data+(B), Data-(A), GND | |
| Performance | | |
| Baudrate: | 50 bps to 921.6 Kbps | |
| Configuration | | |
| Parity: | None, Even, Odd, Space, Mark | |
| Data Bits: | 5, 6, 7, 8 | |
| Stop Bits: | 1, 1.5, 2 | |
| I/O Address, IRQ: | Assigned by BIOS | |
| FIFO: | 128 bytes | |
| Flow Control: | RTS/CTS, XON/XOFF | |
| Driver Support: | Windows 2012 x64, 8 x86/x64 | |
| | Windows 7 x86/x64 | |
| | Windows 2000 | |
| | Windows XP/2003/Vista/2008 (x86/x64) | |
| | Linux 2.4 | |
| | Linux 2.6 (x86/x64) | |
| | Complete driver support information is available at www.moxa.com in the | |
| | Download center. | |
| Power Output: | 5V/12V (POS-104UL only) | |
| Power and Environmen | t | |
| Operating Temperature: | 0 to 55°C (32 to 131°F) | |
| Operating Humidity: | 5 to 95% RH | |
| Storage Temperature: | -40 to 85°C (-40 to 185°F) | |
| Protection: | Embedded 15 KV ESD protection | |
| Certifications | | |
| | EN55032 Class B, EN55024, IEC61000-4-2, IEC61000-4-3, IEC61000-4-4, FCC | |
| | Part 15 Class B | |
| Warranty | | |
| Warranty Period | 5 years | |
| Details | See www.moxa.com/warranty | |
| | Soo minimoved on martany | |

Installation Guide

UPCI board installation can be divided into six steps as follows:

- **Step 1:** Select serial transmission mode.
 - For certain models, you will need to set onboard DIP switches to select the serial transmission mode for each port. This applies to the CP-118U-I, CP-138U-I, CP-118U, CP-138U, CP-114UL, CP-114UL-I, CP-134U, CP-134U, CP-134U-I, CP-112UL, CP-112UL-I, CP-132UL, CP-132UL-I, POS-104UL, and
- CP-102UF. For details, please refer to Chapter 2.
 Step 2: Install board. UPCI boards are installed in an open PCI or PCI-X expansion slot on the PC. For details, please refer to Chapter 2.
- Step 3:Install drivers and configure boardFor details, please refer to Chapters 3 through 8.
- **Step 4:** Connect your serial devices to the board's serial ports For details, please refer to Chapter 10.
- Step 5: Restart system and verify driver initializationFor details, please refer to Chapters 3 through 8.
- **Step 6:** Develop and run your serial communication application For details, please refer to Chapter 9.

Hardware Installation

The following topics are covered in this chapter:

- Overview
- Configuring the Board and Dimension
 - > CP-118U/CP-118U-I
 - > CP-138U/CP-138U-I
 - ≻ CP-168U
 - ➢ CP-114UL/CP-114UL-I
 - CP-134U/CP-134U-I
 - ➢ CP-104UL
 - ➢ CP-104JU
 - > POS-104UL
 - CP-112UL/CP-112UL-I
 - CP-132UL/CP-132UL-I
 - ➢ CP-102UL
 - ➢ CP-102U
 - ➢ CP-102UF
- Plugging the Board into an Expansion Slot

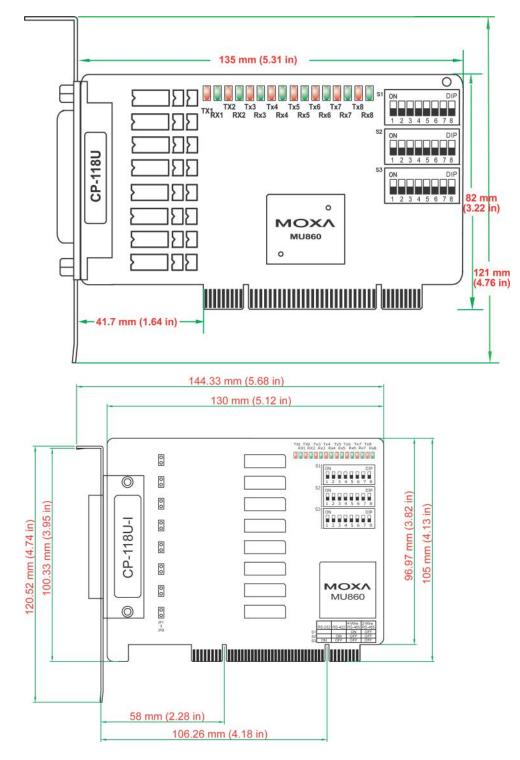
Overview

This chapter explains the hardware installation procedure in detail. Since the BIOS automatically assigns the IRQ number and I/O addresses, you will need to install the board before you install the drivers. You can install up to 4 UPCI boards in one system, as long as sufficient I/O address and IRQ number resources are available.

Configuring the Board and Dimension

<u>8 Ports</u>

CP-118U/CP-118U-I

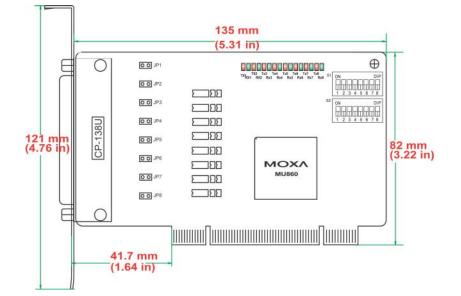


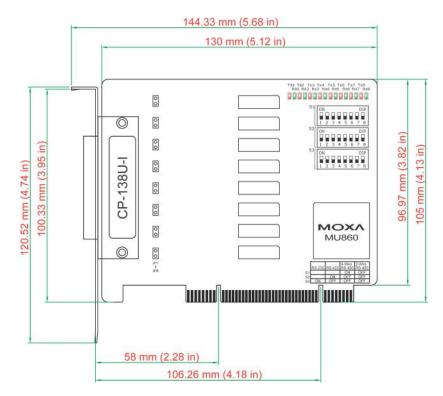
Onboard termination resistors can be activated individually for each serial port using jumpers JP1 through JP8. For CP-118U-I, JP1/2/3/4/5/6/7/8 corresponds to serial port 1/2/3/4/5/6/7/8, respectively. For CP-118U, JP1/2/3/4/5/6/7/8 corresponds to serial port 8/7/6/5/4/3/2/1, respectively. Short the jumper pins to activate the termination resistor; leave the jumper pins open to bypass the termination resistor.

The onboard DIP switches, S1, S2, and S3, are used to select RS-232, RS-422, or RS-485 mode for each serial port. There are 8 switches on each bank corresponding to the 8 serial ports. S3 selects between RS-232 and RS-422/485, S2 selects between RS-422 and RS-485, and S1 selects between 2-wire and 4-wire RS-485, as follows:

| Mode | S1 | S2 | S3 |
|---------------|-----|-----|-----|
| RS-232 | - | _ | ON |
| RS-422 | - | ON | OFF |
| 4-wire RS-485 | ON | OFF | OFF |
| 2-wire RS-485 | OFF | OFF | OFF |

CP-138U/CP-138U-I



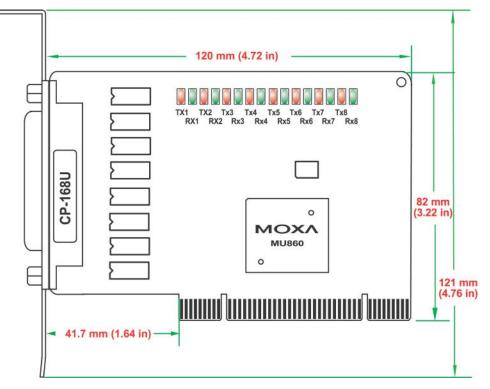


Onboard termination resistors can be activated individually for each serial port using jumpers JP1 through JP8. For CP-138U-I, JP1/2/3/4/5/6/7/8 corresponds to serial port 1/2/3/4/5/6/7/8, respectively. For CP-138U, JP1/2/3/4/5/6/7/8 corresponds to serial port 8/7/6/5/4/3/2/1, respectively. Short the jumper pins to activate the termination resistor; leave the jumper pins open to bypass the termination resistor.

The onboard DIP switches, S1 and S2, are used to select RS-422 or RS-485 mode for each serial port. There are 8 switches on each bank corresponding to the 8 serial ports. S2 selects between RS-422 and RS-485; S1 selects between 2-wire and 4-wire RS-485, as follows:

| Mode | S1 | S2 |
|---------------|-----|-----|
| RS-422 | _ | ON |
| 4-wire RS-485 | ON | OFF |
| 2-wire RS-485 | OFF | OFF |

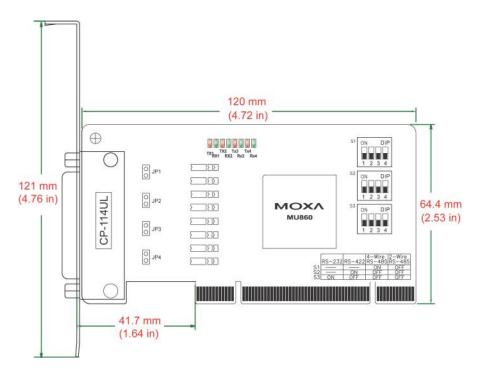
CP-168U

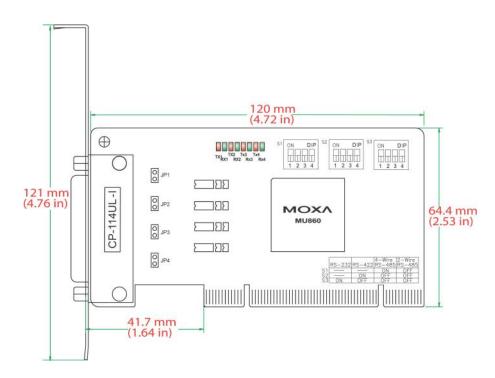


This board does not require configuration.

4 Ports

CP-114UL/CP-114UL-I



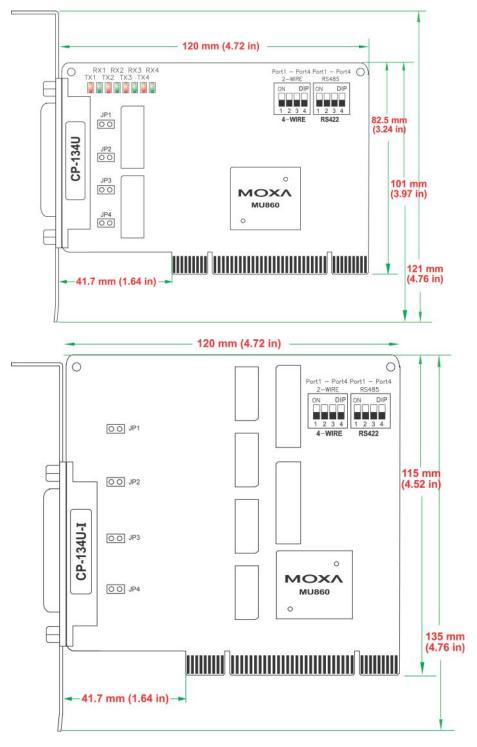


Onboard termination resistors can be activated individually for each serial port using jumpers JP1 through JP4. For CP-114UL, JP1/2/3/4 corresponds to serial port 1/2/3/4, respectively. For CP-114UL-I, JP1/2/3/4 corresponds to serial port 4/3/2/1, respectively. Short the jumper pins to activate the termination resistor; leave the jumper pins open to bypass the termination resistor.

The onboard DIP switches, S1, S2, and S3, are used to select RS-232, RS-422, or RS-485 mode for each serial port. Switches 1 through 4 on each bank correspond to the 4 serial ports. S3 selects between RS-232 and RS-422/485, S2 selects between RS-422 and RS-485, and S1 selects between 2-wire and 4-wire RS-485, as follows:

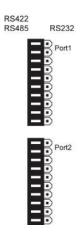
| Mode | S1 | S2 | S3 |
|---------------|-----|-----|-----|
| RS-232 | _ | _ | ON |
| RS-422 | _ | ON | OFF |
| 4-wire RS-485 | ON | OFF | OFF |
| 2-wire RS-485 | OFF | OFF | OFF |

CP-134U/CP-134U-I



Onboard termination resistors can be activated individually for each serial port using jumpers JP1 through JP4. For CP-134U, JP1/2/3/4 corresponds to serial port 1/2/3/4, respectively. For CP-134U-I, JP1/2/3/4 corresponds to serial port 4/3/2/1, respectively. Short the jumper pins to activate the termination resistor; leave the jumper pins open to bypass the termination resistor.

The onboard DIP switches, S1 and S2, are used to select RS-422 or RS-485 mode for each serial port. Switches 1 through 4 on each bank correspond to the 4 serial ports. S2 selects between RS-422 and RS-485; S1 selects between 2-wire and 4-wire RS-485. In addition, ports 1 and 2 can be set individually to RS-232 mode using the on-board 30-pin jumpers, as follows:



RS-422 or RS-485 mode: Use the jumper to cover the left two columns of jumper pins.

RS-232 mode: Use the jumper to cover the right two columns of jumper pins.

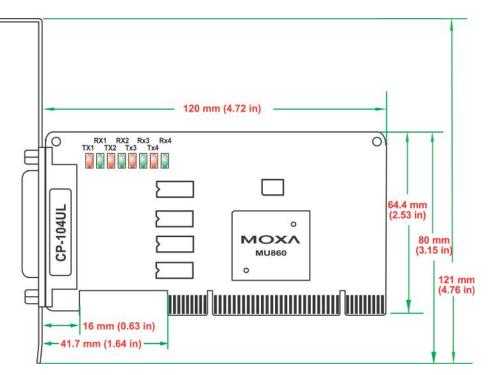
RS422 RS485

RS232

Port1

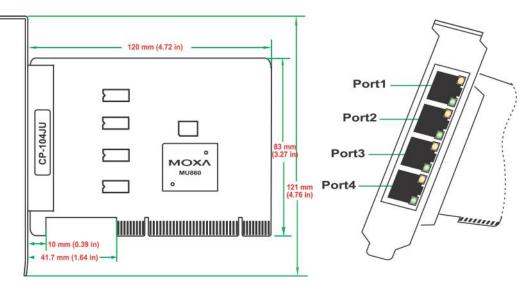
Port2

CP-104UL



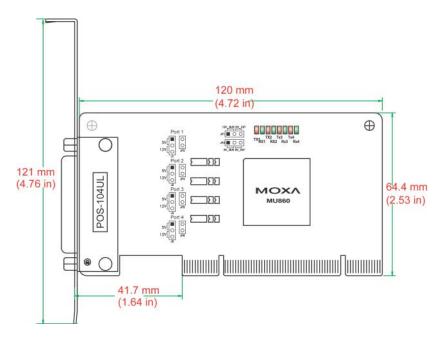
This board does not require configuration.

CP-104JU



This board does not require configuration.

POS-104UL



The onboard jumpers are used to specify the pin 9 power signal for each serial port.

Step a

The top row of jumper pins selects the source of 12V power; the bottom row of jumper pins selects the source of 5V power:

| Bus power | External power |
|-----------|----------------|
| ••• | • • • |

If 5V or 12V external power is enabled, you will need to connect the cable from the back of POS-104UL to the PC's power supply. Remove both jumpers to disable all power signals to all ports.

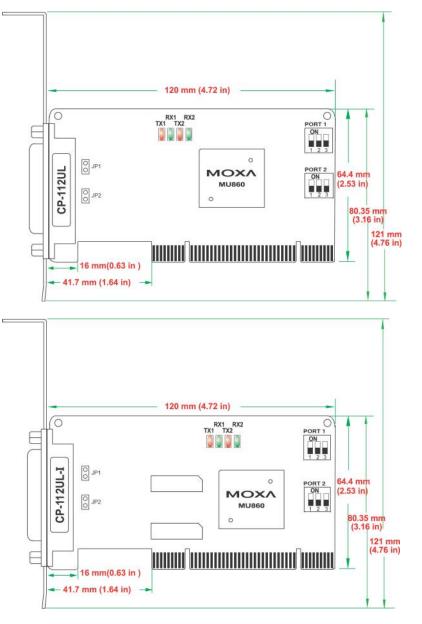
Step b

For each serial port, a set of 5 jumper pins is used select the power signal that is sent to pin 9.

| 5V | 12V | RI signal (input) |
|----|-----|-------------------|
| | • • | |

To disable pin 9 power signals for a specific port, remove the jumper.

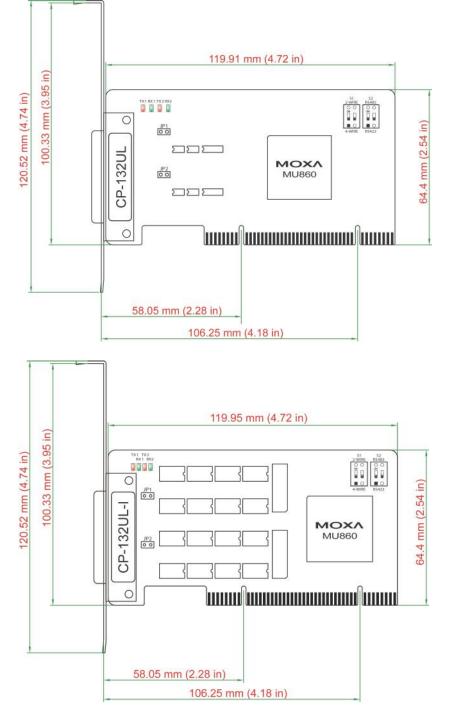
CP-112UL/CP-112UL-I



Onboard termination resistors can be activated individually for each serial port using jumpers JP1 and JP2. JP1 corresponds to serial port 1. Short the jumper pins to activate the termination resistor; leave the jumper pins open to bypass the termination resistor. The onboard DIP switches, S1, S2, and S3, are used to select RS-232, RS-422, or RS-485 mode for each serial port. Switch 1 corresponds to port 1 and switch 2 corresponds to port 2. S1 selects between RS-232, S2 selects between RS-422, and S3 selects between 2-wire and 4-wire RS-485, as follows:

| Mode | S1 | S2 | S 3 |
|---------------|-----|-----|------------|
| RS-232 | ON | _ | - |
| RS-422 | OFF | ON | - |
| 4-Wire RS-485 | OFF | OFF | ON |
| 2-Wire RS-485 | OFF | OFF | OFF |

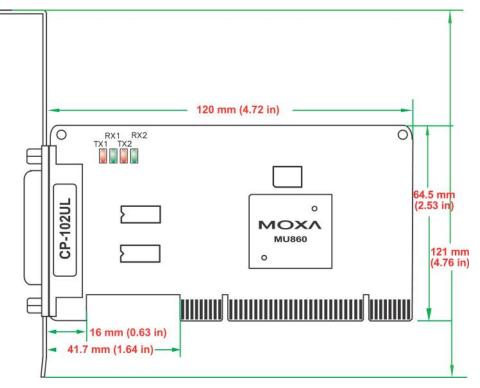
CP-132UL/CP-132UL-I



Onboard termination resistors can be activated individually for each serial port using jumpers JP1 and JP2. JP1 corresponds to serial port 1. Short the jumper pins to activate the termination resistor; leave the jumper pins open to bypass the termination resistor.

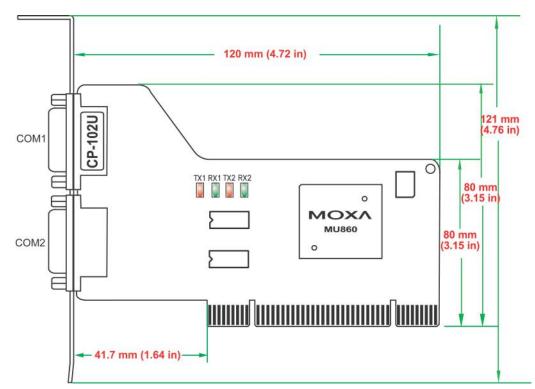
The onboard DIP switches, S1 and S2, are used to select RS-422 or RS-485 mode for each serial port. On each bank, switch 1 corresponds to port 1 and switch 2 corresponds to port 2. S2 selects between RS-422 and RS-485; S1 selects between 2-wire and 4-wire RS-485.

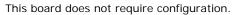
CP-102UL



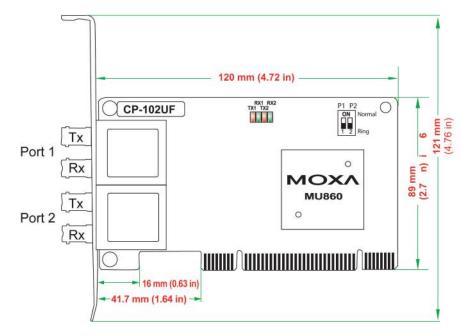
This board does not require configuration.

CP-102U

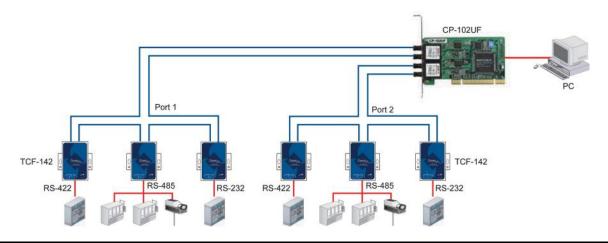




CP-102UF



The onboard DIP switches are used to configure the CP-102UF for "Ring mode" or "Normal". When using the CP-102UF board, your PC can be included as one node of a fiber ring formed using Moxa's own TCF-142 serial-to-fiber converter. Since each TCF-142 has two fiber ports and one serial port, PCs that are part of the ring will be able to communicate with serial devices connected to the ring. Note that the Tx port of the CP-102UF connects to a neighboring converter's Rx port to form the ring. When one node transmits a signal, the signal travels around the ring until it returns back to the transmitting unit, which then blocks the signals.



NOTE When configuring two or more CP-102UF boards installed in the same computer, please pay attention to the model names of the boards. The two models can be recognized by the type of connector on the board. Model CP-102UF-M uses plastic ST connectors, whereas model CP-102UF-S uses metal ST connectors.

Plugging the Board into an Expansion Slot



ATTENTION Safety First!

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

- Step 1: Power off the PC.
- Step 2: Shut off the power to any peripheral devices and remove the PC's cover.
- **Step 3:** Configure the UPCI board's DIP switches and jumpers as necessary. This only applies to certain models. For additional information, please refer to your model in this chapter.
- Step 4: Insert the board firmly into a free PCI or PCI-X slot on the PC.
- Step 6: Use a screw to secure the board in place.
- **Step 7:** Replace the PC's cover.
- Step 8: Power on the PC. The BIOS will automatically set the IRQ and I/O address.
- Step 9: Install the software. For details, please refer to the appropriate chapter for your operating system.

Software Installation

This chapter gives installation, configuration, and update/removal procedures for the driver for Windows Server 2012 (64-bit), Windows 8 (32-bit/64-bit), Windows 7 (32-bit/64-bit), Windows 2003/XP/Vista/2008 (32-bit/64-bit), Windows 2000, WinCE, DOS, Linux (32-bit/64-bit), and SCO. Before proceeding with the software installation, complete the hardware installation discussed in the previous chapter, "Hardware Installation."

Refer to the next chapter, "Serial Programming Tools," for information about developing your own serial programming applications. Note that you can install up to 4 PCI Express boards in one system, provided sufficient I/O address and IRQ number resources are available.

You can download the drivers from the Moxa website.

The following topics are covered in this chapter:

Windows Drivers

- Windows 7/8 (32-bit/64-bit)
- Windows 2008/Vista (32-bit/64-bit)
- Windows 2003/XP
- Windows 2000
- ➢ Windows NT
- ➢ Windows 95/98/ME
- Windows CE

Non Windows Driver

- > DOS
- Linux (32-bit/64-bit)
- > SCO

Windows Drivers

Moxa provides drivers that allow you to use the following serial board products under Windows 7/8, Windows 2008/Vista/2003/XP/2000.

The overall procedure for installing the drivers is shown on the right. A newly installed board will be automatically detected by the operating system.

The board's serial ports should be ready to work

Windows 7/8 (32-bit/64-bit)

The Windows 8 installation procedures and popup windows are almost the same as Windows 7. Thus, in this section, we describe the installation procedure for Windows 8 as an example.

Installing the Driver

The following procedure describes how to install the CP-104U driver for the first time with Windows 8. First, make sure that you have already plugged the board or boards into the system's PCI or PCI-X slot(s).

- **NOTE** If you have already installed a CP-104U or other Moxa UPCI board in your computer, and you are installing additional boards, Windows 8 will automatically detect and install the new board(s) the next time you boot up the computer. In this case, proceed directly to the next section, "Configuring the Ports," to configure the ports' serial transmission parameters.
 - Go to Device Manager/Other devices to install the PCI Serial Port driver. Right click on the PCI Serial port. Windows will offer to connect to the Windows update site to search for a driver. Select Update Driver Software....

| Recycle Bin | 1 | Device M | lanager | - 🗆 🗙 | |
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| | Mice and other points | ing devices | | | |
| | Monitors | ang devices | | | |
| | Network adapters | | | | |
| | A Dother devices | | | | |
| driv win sm | PCI Serial Por | Update Driver Software | | | |
| | PCI Simple C | Disable | | | |
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| | 👂 🏺 Universal Serial Bus (| ontrollers | | | |
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| | Launches the Update Driver Soft | vare Wizard for the selected device. | | | |
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2. Select Browse my computer for device software to continue.

| 📀 🗕 Update Driver Software - PCI Serial Port | × |
|--|--------|
| How do you want to search for driver software? | |
| Search automatically for updated driver software Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings. | |
| Browse my computer for driver software Locate and install driver software manually. | |
| | Cancel |

3. Select Search for driver software in this location, select Include subfolders, and then click Browse. If the system is a 32-bit (x86) platform, navigate to the \CP-104U Series\Software\Windows 8\x86 folder on the CD. If the system is a 64-bit (x64) platform, navigate to the \CP-104U Series\Software\Windows 8\x64 folder on the CD, and then click Next to continue. The following figure shows the path for x86.

| | | ¢ |
|---|--|---|
| € | Update Driver Software - PCI Serial Port | |
| | Browse for driver software on your computer | |
| | Search for driver software in this location: | |
| | C:\Users\moxa\Desktop\PCI Driver\disk.x86 		 Browse | |
| | Include subfolders Let me pick from a list of device drivers on my computer This list will show installed driver software compatible with the device, and all driver software in the same category as the device. | |
| | Next Cancel | |

4. Wait while the driver software is installed. The next window shows the model name of the board, and indicates that Windows has completed the driver installation. Click **Close** to proceed with the rest of the installation procedure.

| | | × |
|---|--|---|
| € | Update Driver Software - MOXA CP-104U Series (PCI Bus) | |
| | Windows has successfully updated your driver software | |
| | Windows has finished installing the driver software for this device: | |
| | MOXA CP-104U Series (PCI Bus) | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | Close | |

 After installing the multiport serial adaptors driver, install the Moxa Port diver next. Right click on MOXA communication port. A popup window will open to help you install the driver for MOXA Port 0. Select Update Driver Software...

| அ | Device Manager | |
|---|---|---|
| File Action View Help | | |
| (+ +) 🖂 🖾 📾 🖉 😰 🙀 | 15 | |
| Audio inputs and outputs Audio inputs and outputs Disk drives Disk drives | Update Driver Software Disable Uninstall Scan for hardware changes Properties | |
| Processors Sound, video and game controllers | • | |
| Storage controllers | | ~ |
| s 💶 System devices | | |

6. Select Browse my computer for device software to continue.

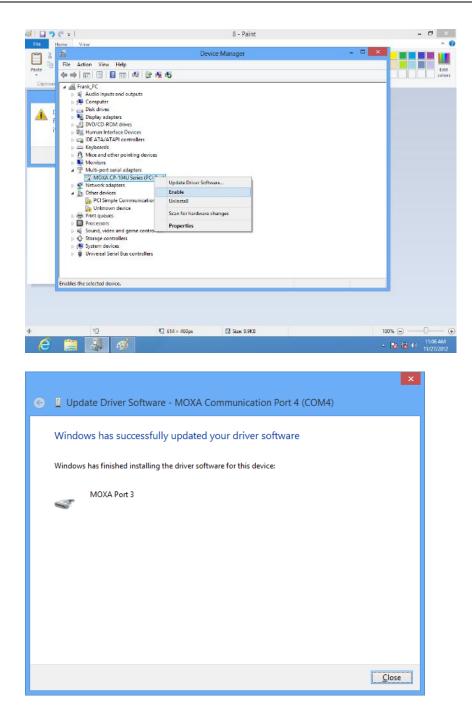
| | | <u> </u> |
|---|--|----------|
| € | Update Driver Software - MOXA communication port | |
| | How do you want to search for driver software? | |
| | Search automatically for updated driver software Windows will search your computer and the Internet for the latest driver software for your device, unless you've disabled this feature in your device installation settings. | |
| | Browse my computer for driver software Locate and install driver software manually. | |
| | | Cancel |

7. Select Search for driver software in this location, select Include subfolders, and then click Browse. If the system is a 32-bit (x86) platform, navigate to the \CP-104U Series\Software\Windows 8\x86 folder on the CD. If the system is a 64-bit (x64) platform, navigate to the \CP-104U Series\Software\Windows 8\x64 folder on the CD, and then click Next to continue. The following figure shows the path for x86.

| | × |
|---|--|
| G | Update Driver Software - MOXA communication port |
| | Browse for driver software on your computer |
| | Search for driver software in this location: |
| | C:\Users\moxa\Desktop\PCI Driver\disk.x86 		 Browse |
| | Include subfolders Let me pick from a list of device drivers on my computer This list will show installed driver software compatible with the device, and all driver software in the same category as the device. |
| | Next Cancel |

8. After all files have been copied to the system, window showing **Windows has successfully updated your driver software** will open to indicate that it has finished installing **MOXA Port 0**. The Port installation procedure is complete when Port 0 has been set up.

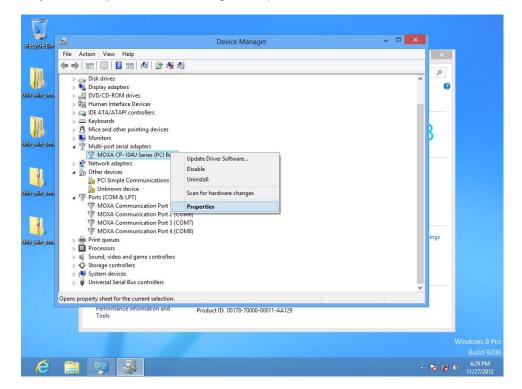
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| Ciptosr 2 Wi | Computer Computer Diploy elaytes D | v |
| + | 10 10 628 ≈ 508px 13 Size 12.8K8 | - 100% - 0 0 000 000 |
| | MOXA CP-104U Series (PCI Bus) Disabling this device will cause it to stop functioning. Do you really want to disable it? Yes No | 11/27/2012 |



Configuring the Ports

After the driver has been installed, use Device Manager to configure the CP-104U serial ports.

1. Expand the Multi-port serial adapters tab, right click MOXA CP-104U Series (PCI Bus), and then click Properties to open the board's configuration panel.



2. Click the port you would like to configure to highlight it, and then click Port Setting.

| | MOXA C | :P-104U | Series (F | CI Bus) P | roperties | × |
|------------|---|-----------------------------------|------------------------------------|-------------|--|----|
| General | Ports Confi | guration [| Driver Det | ails Events | Resources | |
| Port 2 3 4 | COM No. COM 5 COM 6 COM 7 COM 8 | Rx FIFO I High High High | Level Tx F High High High | IFO Level | <u>H</u> elp <u>P</u> ort Info P <u>o</u> rt Setting | |
| | | | | Oł | (Cance | el |

 Select a COM number for the port from the Port Number pull-down list. Select the Auto Enumerating COM Number option to map subsequent ports automatically. The port numbers will be assigned in sequence. For example, if COM 3 is assigned to Port 1, then COM 4 (if not already occupied) will be assigned to Port 2, etc.

| | Port 1 | × |
|-----------------------------|-----------------------|-----------|
| Port Number | COM5 (current) | • |
| I▼ A | uto Enumerating COI | vi Number |
| Rx FIFO Level | High | • |
| 🔽 Se | t the change to all p | orts |
| Tx FIFO Level | High | • |
| Set the change to all ports | | |
| | | |
| | OK | Cancel |

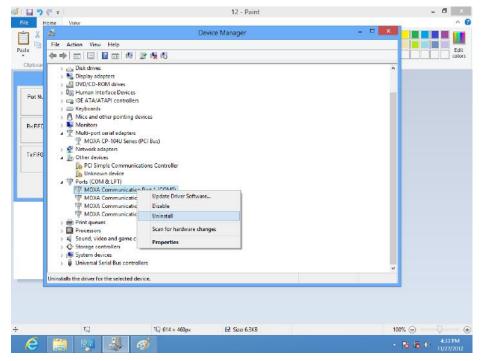
- 4. Select an Rx FIFO Trigger from the Rx FIFO Level pull-down list. Rx FIFO trigger levels of High, Middle, and Low are available, with the default set to High (120 bytes). Select Set the change to all ports option to apply this Rx FIFO Trigger to all ports.
- 5. Select a **Tx FIFO Level** from the **Tx FIFO Level** pull-down list. Tx FIFO Levels of **High**, **Middle**, and **Low** are available, with the default set to High (128 bytes). Select **Set the change to all ports** option to apply the just defined Tx FIFO Size to all ports.

| | Tx FIFO | Rx FIFO |
|--------|---------|---------|
| High | 128 | 120 |
| Middle | 64 | 60 |
| Low | 1 | 1 |

6. Click **OK** to save the port settings, and then click **OK** in the **Properties** window to finish the port settings procedure.

Removing the Driver

 Go to Device Manager. Remove port driver first, and then remove UPCI driver to prevent occupying the port number. Expand Ports (COM & LPT) tab, right click MOXA Communication Port 1, and then click Uninstall to remove port driver. Repeat same procedure until all ports driver are complete removed.



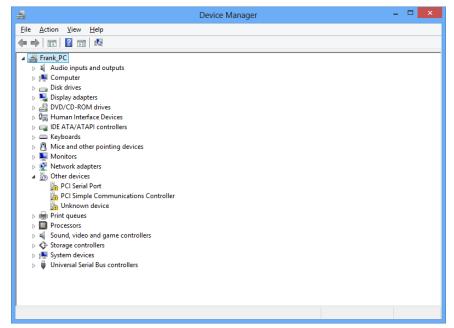


2. Expand **Multi-port Serial Adapters** tab, right click **CP-104U Series**, and then click **Uninstall** to remove the UPCI driver.

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| Confirm | Device Uninstall | × | | |



3. The **Device Manager** window refreshes automatically, showing that the driver and ports for the CP-104U Series board have been removed.



Windows 2008/Vista (32-bit/64-bit)

In this section, we describe the installation procedure for Windows Vista. The installation procedure for Windows 2008 is similar.

| 2 Ports | 4 Ports | 8 Ports |
|---------------------|---------------------|-------------------|
| CP-112UL/CP-112UL-I | CP-114UL/CP-114UL-I | CP-118U/CP-118U-I |
| CP-132UL/CP-132UL-I | CP-134U/CP-134U-I | CP-138U/CP-138U-I |
| CP-102UL | CP-104UL | CP-168U |
| CP-102U | CP-104JU | |
| CP-102UF | POS-104UL | |

Windows 2008 and Windows Vista support up to 256 serial ports from COM1 to COM256. In order to make the best use of Windows 2008/Vista's multi-process/multi-thread advanced features, 32-bit and 64-bit Windows 2008/Vista device drivers were developed for Moxa multiport boards. The drivers conform to the Win32 COMM API standard.

Installing the Driver

The following instructions show how to install the driver for the first time under Windows 2008/Vista. You will need to plug the board in an available PCI or PCI-X slot first, before installing the driver.



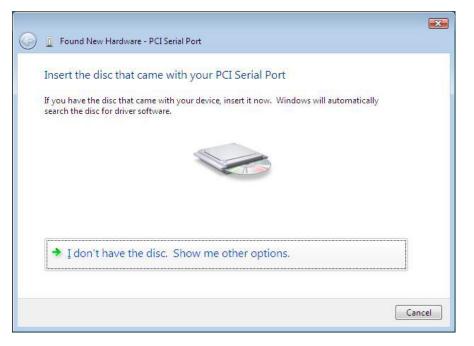
ATTENTION

The following steps will not be necessary if a Moxa UPCI board was already installed on your computer. Windows will automatically detect and install any additional board(s) at bootup. In this case, you may proceed directly to configuring the ports. Note that these instructions use the CP-118U as an example. The procedure for installing all models is the same.

 After the board is physically installed and the PC boots up, Windows will automatically detect the new board. The Found New Hardware Wizard window will open automatically. Select Locate and install driver software (recommended).



2. Select I don't have the disc. Show me other options.



00

3. Select Browse my computer for driver software (advanced).

| + | Check for a solution |
|---|---|
| | Windows will check to see if there are steps you can take to get your device working. |
| • | B <u>r</u> owse my computer for driver software (advanced) |
| | Locate and install driver software manually. |

4. Click **Browse** and select the appropriate directory on the Document & Software CD for the driver. Drivers for all operating systems are located under the product folder in the \Software directory (e.g., under \CP-118U Series\Software).

For 32-bit (x86) platforms, select the **\Windows 2008_Vista\x86** folder.

For 64-bit (x64) platforms, select the **\Windows 2008_Vista\x64** folder.

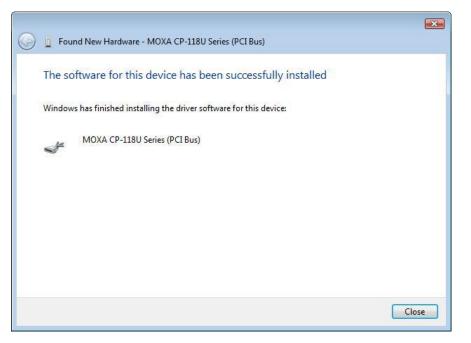
After selecting the folder, click $\ensuremath{\textbf{Next}}$ to continue.

| G I Found New Hardware - PCI Serial Port | |
|--|-------------|
| Browse for driver software on your computer | |
| Search for driver software in this location: | |
| F:\CP-118U\Software\Windows Vista\x86 | Browse |
| ☑ Include subfolders | |
| | |
| | |
| | |
| | |
| | |
| | |
| | Next Cancel |

5. If you receive a warning message stating that the Windows can't verify the publisher of the software, select **Install** this driver software anyway.



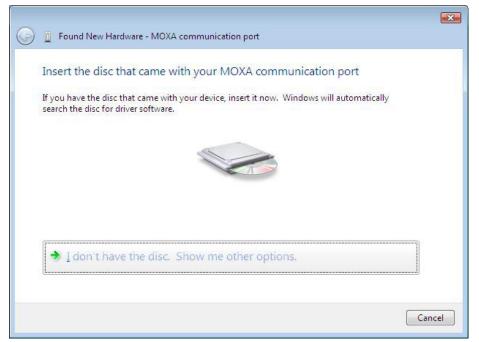
6. After the drivers have been installed, click **Close** to exit the wizard.



Installing the Ports

After the board and drivers have been installed, an installation wizard will guide you through installation of the newly added serial ports, starting with port 0.

1. When prompted to insert a disc, select I don't have the disc. Show me other options.



2. Select Browse my computer for driver software (advanced).



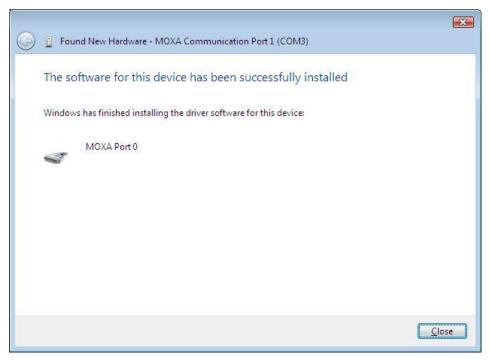
Click Browse and select the appropriate directory on the Document & Software CD for the driver. Drivers for all operating systems are located under the product folder in the \Software directory (e.g., under \CP-118U Series\Software). For 32-bit (x86) platforms, select the \Windows 2008_Vista\x86 folder. For 64-bit (x64) platforms, select the \Windows 2008_Vista\x64 folder. After selecting the folder, click Next to continue.

| Found New Hardware - PCI Serial Port | X |
|--|-------------|
| Browse for driver software on your computer | |
| Search for driver software in this location: | |
| F:\CP-118U\Software\Windows Vista\x86 | Browse |
| | |
| | |
| | |
| | |
| | Next Cancel |

4. If you receive a warning message stating that the Windows can't verify the publisher of the software, select **Install** this driver software anyway.



5. After the drivers have been installed, click **Close to exit the wizard**. The other serial ports will automatically install in the background.



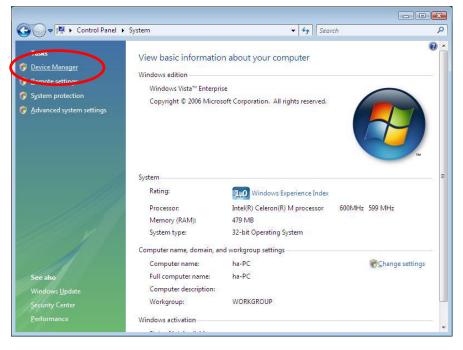
Verifying the Installation

You can use Windows Device Manager to verify proper installation.

1. Under My Computer, click System Properties.

| Comput | er 🗸 🗸 🕹 🗸 Search | ٩ |
|--|--|---|
| 🌗 Organize 👻 🚆 Views | 🗸 😰 System properties 📰 Jninstall or change a program 🛛 🚔 Map network drive 🛸 | 0 |
| Favorite Links EDCuments EDCUMENTS Fictures Fictures Fictures Fictures Fictures Fictures Fictures Fictures Fictures F | Name Show information about your Hard Disk Drive computer, such as the processor Local speed and the amount of installed Mamount Mamount of installed Mamount GCAL DISK (D:) 34.8 GB free of 53.9 GB FLASHDISK (F:) Pevices with Removable Storage (2) Floppy Disk Drive (A:) DVD Drive (E:) | |
| Folders ^ | | |
| Proc | roup: WORKGROUP esson: Intel(R) Celeron(R) M processor 600MHz mory: 480 MB | |

2. In the System window, click Device Manager.



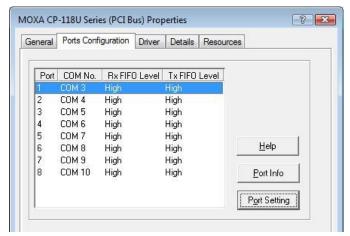
3. In the **Device Manager** window, you should see the UPCI board under Multi-port serial adapters (CP-118U in this example). You should also see Moxa communication ports under **Ports (COM & LPT)**.

4. If you see any special marks, such as a question mark or an exclamation mark, next to the Moxa items, the installation of your module or serial ports was not successful. Examine the Windows event log for details.

Configuring the Ports

After the board and serial port drivers are installed, the board's **Properties** window will appear. The system will map the ports automatically. You may be prompted to take care of port configuration if other Moxa boards have been installed.

1. On the Ports Configuration tab, select a port to configure and click Port Setting.



 Under Port Number, select a COM number to assign to the serial port. Select Auto Enumerating COM Number to map subsequent ports in numerical order. For example, if COM 3 is assigned to Port 1, then COM 4 will be automatically assigned to Port 2.

| Port Number | COM3 (current) | • |
|---------------------------------|--------------------------------|------|
| 🔽 Auto | Enumerating <u>C</u> OM Nu | imbe |
| <u>R</u> x FIFO Level | High | • |
| 🔽 Set th | ne change to <u>a</u> ll ports | |
| <u>I</u> x FIFO Level | High | • |
| <mark>I</mark> ✓ <u>S</u> et th | ne change to all ports | |

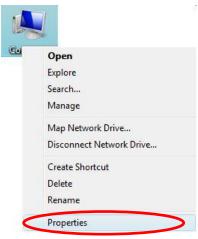
Select an **Rx FIFO Trigger** and **Tx FIFO Size**. The default Rx FIFO Trigger is 120 bytes (high level). The default Tx FIFO Size is 128 bytes (high level). Select **Set the change to all ports** to use this setting for all serial ports on the board.

| | Tx FIFO | Rx FIFO |
|--------|---------|---------|
| High | 128 | 120 |
| Middle | 64 | 60 |
| Low | 1 | 1 |

3. Click **OK** to approve the settings for the selected port. Continue in the same way to configure the other ports. When you have finished setting up the ports, click **OK** to close the **Properties** window and apply the new port settings.

Disabling the Board

1. Right-click My Computer and select Properties in the context menu.



2. In the System window, click Device Manager.

| 🌀 🔵 🗢 🕎 🕨 Control Panel | ▶ System | ✓ 4 Sear | ch 👘 |
|--|---|---|-----------------|
| Device Manager Device Manager Device settings System protection Advanced system settings | Windows edition Windows Vista™ Enterpri | n about your computer se soft Corporation. All rights reserved. | • |
| | System Rating: | 1.0 Windows Experience Index | |
| | Processor: Memory (RAM): | Intel(R) Celeron(R) M processor 479 MB | 600MHz 599 MHz |
| | System type: | 32-bit Operating System | |
| | Computer name, domain, ar Computer name: | nd workgroup settings ha-PC | Change settings |
| See also | Full computer name: | ha-PC | |
| Windows Update | Computer description: | | |
| Security Center | Workgroup: | WORKGROUP | |
| | Windows activation | | |

3. In **Device Manager**, right-click the UPCI board under **Multi-port serial adapters** and select **Disable** in the context menu. This will disable the board.

Uninstalling the Board

1. Right-click My Computer and select Properties in the context menu.



2. In the System window, click Device Manager.

| 🖉 🗢 👰 🕨 Control Pane | l ► System | 👻 🍫 Sear | ch |
|---|---|---|-----------------|
| Device Manager Device Manager System protection Advanced system settings | Windows edition Windows Vista™ Enterpr | in about your computer ise soft Corporation. All rights reserved. | |
| | System Rating: | 1,0 Windows Experience Index | |
| | Processor: Memory (RAM): | Intel(R) Celeron(R) M processor 479 MB | 600MHz 599 MHz |
| | System type: | 32-bit Operating System | |
| | Computer name, domain, a | nd workgroup settings | |
| | Computer name: | ha-PC | Change settings |
| See also | Full computer name: | ha-PC | |
| Windows <u>U</u> pdate | Computer description: | | |
| Security Center | Workgroup: | WORKGROUP | |
| | Windows activation | | |

- 3. Right-click the UPCI board under **Multi-port serial adapters** (CP-118U in this example) and select **Uninstall** in the context menu.
- 4. A confirmation dialog will appear. Click **OK** to uninstall the device.

Windows 2003/XP

This chapter explains how to install, configure, update, and remove the board drivers for Windows XP/2003. The following models are supported:

| 2 Ports | 4 Ports | 8 Ports |
|---------------------|---------------------|-------------------|
| CP-112UL/CP-112UL-I | CP-114UL/CP-114UL-I | CP-118U/CP-118U-I |
| CP-132UL/CP-132UL-I | CP-134U/CP-134U-I | CP-138U/CP-138U-I |
| CP-102UL | CP-104UL | CP-168U |
| CP-102U | CP-104JU | |
| CP-102UF | POS-104UL | |

Windows XP/2003 supports up to 256 serial ports, from COM1 to COM256. Moxa developed pure 32 and 64-bit Windows device drivers in order to fully utilize the advanced multi-process and multi-thread features of Windows XP/2003. The drivers conform to the Win32 COMM API standard.

Installing the Driver

The following instructions show how to install the driver for the first time under Windows XP. The same procedure is used for Windows 2003. You will need to plug the board in an available PCI or PCI-X slot first, before installing the driver.



ATTENTION

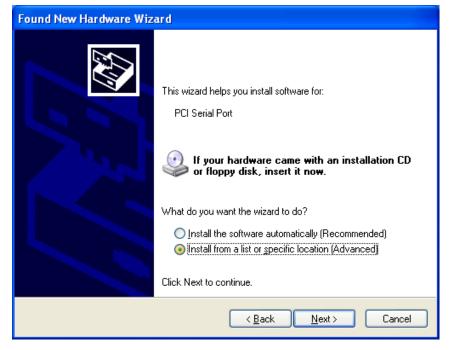
The following steps will not be necessary if a Moxa UPCI board was already installed on your computer. Windows will automatically detect and install any additional board(s) at bootup. In this case, you may proceed directly to configuring the ports.

Note that these instructions use the CP-118U as an example. The procedure for installing all models is the same.

 After the board is physically installed and the PC boots up, Windows will automatically detect the new board. The Found New Hardware Wizard window will open automatically. When prompted to connect to Windows Update, select. No, not this time and click Next to continue.

| Found New Hardware Wizard | | |
|---------------------------|---|--|
| | Welcome to the Found New Hardware Wizard Windows will search for current and updated software by | |
| | looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). <u>Read our privacy policy</u> | |
| | Can Windows connect to Windows Update to search for software? | |
| | ○ Yes, this time only | |
| | Yes, now and every time I connect a device No, not this time | |
| | Click Next to continue. | |
| | < <u>B</u> ack <u>N</u> ext > Cancel | |

2. Select Install from a list or specific location (Advanced) and click Next to continue.



3. Select **Search for the best driver in these locations** and **Include this location in the search**. Click **Browse** and select the appropriate directory on the Document & Software CD for the driver.

Drivers for all operating systems are located under the product folder in the \Software directory (e.g., under \CP-118U Series\Software). For 32-bit (x86) platforms, select the **\Windows XP_2003\x86** folder. For 64-bit (x64) platforms, select the **\Windows XP_2003\x64** folder. After selecting the folder, click **Next** to continue.

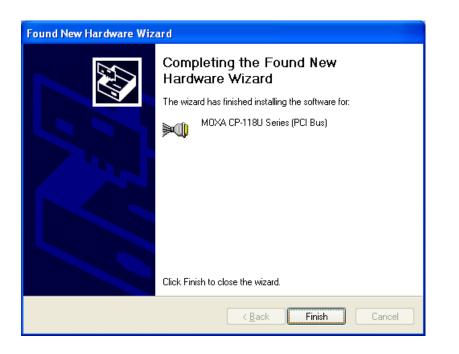
| Found New Hardware Wizard |
|--|
| Please choose your search and installation options. |
| Search for the best driver in these locations. |
| Use the check beyos below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed. |
| Search removable media (floppy, CD-ROM) |
| ✓ Include this location in the search: |
| F:\CP-118U\Software\Windows XP_2003\x86 |
| O Don't search. I will choose the driver to install. |
| Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware. |
| |
| < <u>B</u> ack <u>N</u> ext > Cancel |

4. If you see a warning that the software has not passed Windows Logo testing, click Continue Anyway.



5. Windows will install the drivers. When the installation is complete, click Finish.

| Found New Hardware Wizard | | | |
|---------------------------|----------------------------------|------------|--------------|
| Please w a | it while the wizard installs the | e software | |
| ×1) | MOXA CP-118U Series (PCI Bus) | | |
| | 6 | C | 3 |
| | | K Back N | ext > Cancel |



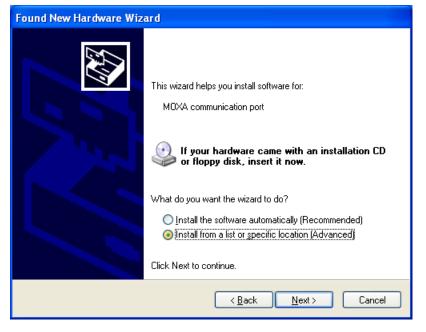
Installing the Ports

After the board and drivers have been installed, an installation wizard will guide you through installation of the newly added serial ports, starting with port 0.

1. When prompted to connect to Windows Update, select **No, not this time** and click **Next** to continue.

| Found New Hardware Wizard | | |
|---------------------------|--|--|
| | Welcome to the Found New Hardware Wizard | |
| | Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). <u>Read our privacy policy</u> | |
| | Can Windows connect to Windows Update to search for software? | |
| | ○ Yes, this time only | |
| | Yes, now and every time I connect a device | |
| | No, not this time | |
| | | |
| Click Next to continue. | | |
| | < <u>B</u> ack <u>N</u> ext > Cancel | |

2. Select Install from a list or specific location (Advanced) and click Next to continue.



 Select Search for the best driver in these locations and Include this location in the search. Click Browse and select the appropriate directory on the Document & Software CD for the driver. Drivers for all operating systems are located under the product folder in the \Software directory (e.g., under \CP-118U Series\Software).

For 32-bit (x86) platforms, select the **\Windows XP_2003\x86** folder.

For 64-bit (x64) platforms, select the **\Windows XP_2003\x64** folder.

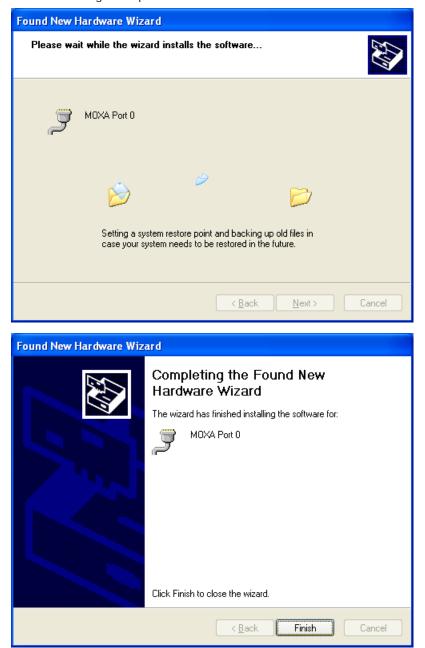
After selecting the folder, click **Next** to continue.

| Found New Hardware Wizard | | |
|--|--|--|
| Please choose your search and installation options. | | |
| Search for the best driver in these locations. | | |
| Use the sheek boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed. | | |
| Search removable media (floppy, CD-ROM) | | |
| ✓ Include this location in the search: | | |
| F:\CP-118U\Sottware\Windows XP_2003\x86 | | |
| Don't search. I will choose the driver to install. | | |
| Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware. | | |
| | | |
| | | |
| < <u>B</u> ack <u>N</u> ext > Cancel | | |

4. If you see a warning that the software has not passed Windows Logo testing, click Continue Anyway.

| Hardware Installation | | |
|-----------------------|--|--|
| 1 | The software you are installing for this hardware: MOXA Port 0 has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.) Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing. | |
| | Continue Anyway | |

5. After the drivers for the serial port have been installed, click **Finish** to close the wizard. Repeat this process for the remaining serial ports.



Verifying the Installation

You can use Windows Device Manager to verify proper installation of the board.

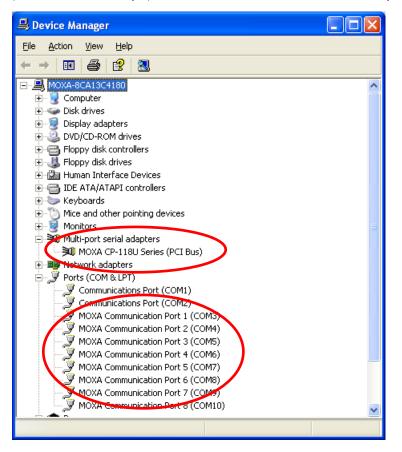
1. Right-click **My Computer** and select **Properties** in the context menu.



2. In the Hardware tab, click Device Manager.

| System Prope | erties | ? 🛛 | |
|--------------|--|---------|--|
| System R | estore Automatic Updates F | Remote | |
| General | Computer Name Hardware A | dvanced | |
| - Device Mar | nager | | |
| - X o | he Device Manager lists all the hardware devices instant n your computer. Use the Device Manager to change, roperties of any device. | | |
| | Device Manager | | |
| - 🖾 🖌 o | Drivers Driver Signing lets you make sure that installed drivers are compatible with Windows. Windows Update lets you set up how Windows connects to Windows Update for drivers. | | |
| | Driver <u>Sig</u> ning <u>W</u> indows Update | | |
| -Hardware P | Profiles | | |
| | Hardware profiles provide a way for you to set up and store different hardware configurations. | | |
| | Hardware Profiles | : | |
| | OK Cancel Apply | | |

3. In the **Device Manager** window, you should see your UPCI board under Multi-port serial adapters (CP-118U in this example). You should also see Moxa communication ports under **Ports (COM & LPT)**.



4. If you see any special marks, such as a question mark or an exclamation mark, next to the Moxa items, the installation of the board was not successful. Examine the Windows event log for details.

Configuring the Ports

After the board and serial port drivers are installed, the board's **Properties** window will appear. The system will map the ports automatically. You may be prompted to take care of port configuration if other Moxa boards have been installed.

1. On the Ports Configuration tab, select a port to configure and click Port Setting.

 Under Port Number, select a COM number to assign to the serial port. Select Auto Enumerating COM Number to map subsequent ports in numerical order. For example, if COM 3 is assigned to Port 1, then COM 4 will be automatically assigned to Port 2.

| Port 1 | × | |
|--|---|--|
| Port Number COM3 (current) | | |
| Bx FIFO Level High ▼ ▼ Set the change to all ports | | |
| Ix FIFO Level High ✓ Set the change to all ports | | |
| <u>O</u> K Cancel | | |

 Select an Rx FIFO Trigger and Tx FIFO Size. The default Rx FIFO Trigger is 120 bytes (high level). The default Tx FIFO Size is 128 bytes (high level). Select Set the change to all ports to use this setting for all serial ports on the board.

| | Tx FIFO | Rx FIFO |
|--------|---------|---------|
| High | 128 | 120 |
| Middle | 64 | 60 |
| Low | 1 | 1 |

 Click OK to approve the settings for the selected port. Continue in the same way to configure the other ports. When you have finished setting up the ports, click OK to close the Properties window and apply the new port settings.

Using PComm

PComm Diagnostic is a useful program for checking the board's status. It provides internal and external testing of IRQ, TxD/RxD, UART, CTS/RTS, DTR/DSR, and other items. You can use PComm Diagnostic to verify that the module and serial ports are working properly.

You may download PComm from the Moxa website.

| 😰 PComm Diagnostic | | |
|--|--------------|-----|
| File Diagnose Help | | |
| 🖻 🕨 🔳 🚇 | | |
| To be tested | | |
| CP-118U Series (COM3-COM10) IRQ=19,//O=C880 PCI bus 4, device 15, function 0 | Board Status | |
| Ready | | 11. |

Using Event Log

You may refer to the Windows event log to verify operation of the board. To view the event log, open Event Viewer, which is located under Administrative Tools in the Control Panel. Information about the board will be located under the System category.

Disabling the Board

1. Right-click My Computer and select Properties in the context menu.



2. In the Hardware tab, click Device Manager.

| System Properties | | |
|--|--|--|
| System Restore Automatic Updates Remote General Computer Name Hardware Advanced | | |
| 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. Device Manager | | |
| Drivers Driver Signing lets you make sure that installed drivers are compatible with Windows. Windows Update lets you set up how Windows connects to Windows Update for drivers. Driver Signing Windows Update | | |
| Hardware Profiles Hardware profiles provide a way for you to set up and store different hardware configurations. | | |
| Hardware Profiles | | |
| OK Cancel Apply | | |

3. In **Device Manager**, right-click the UPCI board under **Multi-port serial adapters** and select **Disable** in the context menu. This will disable the board.

Uninstalling the Board

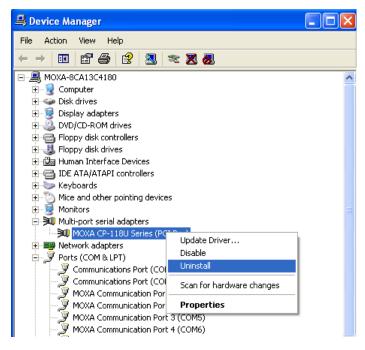
1. Right-click My Computer and select Properties in the context menu.



2. In the Hardware tab, click Device Manager.

| System Properties |
|--|
| System Restore Automatic Updates Remote General Computer Name Hardware Advanced |
| 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. Device Manager |
| Drivers Driver Signing lets you make sure that installed drivers are compatible with Windows. Windows Update lets you set up how Windows connects to Windows Update for drivers. Driver Signing Windows Update |
| Hardware Profiles Hardware profiles provide a way for you to set up and store different hardware configurations. |
| Hardware Profiles |
| |

3. Right-click the UPCI board under **Multi-port serial adapters** (CP-118U in this example) and select **Uninstall** in the context menu.



4. A confirmation dialog will appear. Click **OK** to uninstall the device.

Windows 2000

This chapter explains how to install, configure, update, and remove the board drivers for Windows 2000. The following models are supported:

| 2 Ports | 4 Ports | 8 Ports |
|---------------------|---------------------|-------------------|
| CP-112UL/CP-112UL-I | CP-114UL/CP-114UL-I | CP-118U/CP-118U-I |
| CP-132UL/CP-132UL-I | CP-134U/CP-134U-I | CP-138U/CP-138U-I |
| CP-102UL | CP-104UL | CP-168U |
| CP-102U | CP-104JU | |
| CP-102UF | POS-104UL | |

Windows 2000 supports up to 256 serial ports, from COM1 to COM256. Moxa developed pure 32-bit Windows device drivers in order to fully utilize the advanced multi-process and multi-thread features of Windows 2000. The drivers conform to the Win32 COMM API standard.

You can download the drivers from the Moxa website. For information on developing your own serial programming applications, please refer to Chapter 9.

Before installing the software, be sure to install the hardware first. For details on installing the hardware, please refer to Chapter 2.

Installing the Driver

The following instructions show how to install the driver for the first time under Windows 2000. You will need to plug the board in an available PCI or PCI-X slot first, before installing the driver.



ATTENTION

The following steps will not be necessary if a Moxa UPCI board was already installed on your computer. Windows will automatically detect and install any additional board(s) at bootup. In this case, you may proceed directly to configuring the ports.

Note that these instructions use the CP-118U as an example. The procedure for installing all models is the same.

1. After the board is physically installed and the PC boots up, Windows will automatically detect the new board and the Found New Hardware Wizard window will open automatically. Click **Next** to continue.





2. Select Search for a suitable driver for my device (recommended) and 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. Select **Specify a location** and click **Next** to continue.

| 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: | | | |
| PCI Serial Port | | | |
| 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: | | | |
| CD-ROM drives | | | |
| ✓ Specify a location | | | |
| Microsoft Windows Update | | | |
| | | | |
| < <u>Back</u> <u>N</u> ext> Cancel | | | |

4. Click Browse and select the appropriate directory on the Document & Software CD for the driver. Drivers for all operating systems are located under the product folder in the \Software directory (e.g., under \CP-118U Series\Software). Select the \Windows 2K folder and click Next to continue.



5. After the wizard has located the driver files, click **Next** to proceed.

| 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: | | | | |
| PCI Serial Port | | | | |
| Windows found a driver for this device. To install the driver Windows found, click Next. | | | | |
| d:\cp-118u\software\windows 2k\mxser.inf | | | | |
| | | | | |
| | | | | |
| < <u>B</u> ack Next> Cancel | | | | |

6. If you see a warning that the digital signature has not been found, click Yes to proceed.



7. Windows will install the drivers. When the installation is complete, click **Finish**.



Installing the Ports

After the board and drivers have been installed, an installation wizard will guide you through installation of the newly added serial ports, starting with port 0.

1. When the installation wizard opens, click **Next** to proceed.

| Found New Hardware Wizard | | | |
|---------------------------|--|--|--|
| | Welcome to the Found New Hardware Wizard This wizard helps you install a device driver for a hardware device. | | |
| | | | |
| | < <u>B</u> ack. (<u>N</u> ext > Cancel | | |

F

2. Select Search for a suitable driver for my device (recommended) and click Next to continue.

| ound 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: MDXA communication port 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. Select **Specify a location** and click **Next** to continue.

| 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: | | | | |
| MDXA communication port | | | | |
| 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 | | | | |
| ☑ <u>Specify a location</u> | | | | |
| Microsoft Windows Update | | | | |
| < <u>B</u> ack <u>N</u> ext > Cancel | | | | |

4. Click Browse and select the appropriate directory on the Document & Software CD for the driver. Drivers for all operating systems are located under the product folder in the \Software directory (e.g., under \CP-118U Series\Software). Select the \Windows 2K folder and click Next to continue.

| Found Nev | w Hardware Wizard | × |
|-----------|---|--------------|
| | Insert the manufacturer's installation disk into the drive selected, and then click OK. | OK Cancel |
| | Copy manufacturer's files from: | Browse |

5. After the wizard has located the driver files, click Next to proceed.

| 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. | | |
| d:\cp-118u\software\windows 2k\mxsport.inf | | |
| The wizard also found other drivers that are suitable for this device. To view a list of these drivers or install one of these drivers, select the following check box, and then click Next. | | |
| Install one of the other drivers | | |
| < <u>B</u> ack Cancel | | |

6. After the drivers have been installed, click **Finish** to exit the wizard. The other serial ports will automatically install in the background.

| Found New Hardware Wizard | | | |
|---------------------------|--|--|--|
| | Completing the Found New Hardware Wizard MDXA Port 0 Windows has finished installing the software for this device. To close this wizard, click Finish. | | |
| | | | |
| | < <u>B</u> ack Finish Cancel | | |

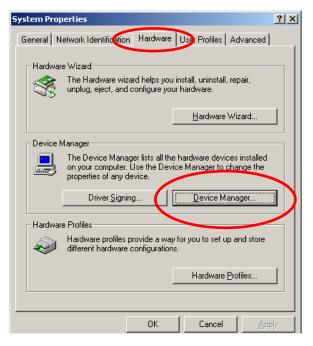
Verifying the Installation

You can use Windows Device Manager to verify proper installation of the board.

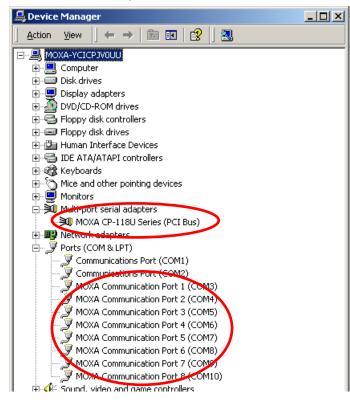
1. Right-click My Computer and select Properties in the context menu.



2. In the Hardware tab, click Device Manager.



3. In the **Device Manager** window, you should see your UPCI board under Multi-port serial adapters (CP-118U in this example). You should also see Moxa communication ports under **Ports (COM & LPT)**.



4. If you see any special marks, such as a question mark or an exclamation mark, next to the Moxa items, the installation of the board was not successful. Examine the Windows event log for details.

Configuring the Ports

After the board and serial port drivers are installed, the board's **Properties** window will appear. The system will map the ports automatically. You may be prompted to take care of port configuration if other Moxa boards have been installed.

1. On the Ports Configuration tab, select a port to configure and click Port Setting.

| Port | | | Tx FIFO Level | |
|--------------------------------------|---|--|--|-------------------|
| 1 2 3 4 5 6 7 8 | COM 3 COM 4 COM 5 COM 6 COM 7 COM 8 COM 9 COM 10 | High High High High High High High | High High High High High High High | Help Port Info |
| | | | | Port Setting |

 Under Port Number, select a COM number to assign to the serial port. Select Auto Enumerating COM Number to map subsequent ports in numerical order. For example, if COM 3 is assigned to Port 1, then COM 4 will be automatically assigned to Port 2.

| Port 1 | × |
|---------------------------|--------------------------------|
| | COM3 (current) |
| I♥ Auto | Enumerating COM Number |
| <u>R</u> x FIFO Level | High |
| I♥ Set th | ne change to <u>a</u> ll ports |
| <u>I</u> x FIFO Level | High |
| I ⊻ <u>S</u> et th | ne change to all ports |
| | <u>O</u> K Cance <u>l</u> |

 Select an Rx FIFO Trigger and Tx FIFO Size. The default Rx FIFO Trigger is 120 bytes (high level). The default Tx FIFO Size is 128 bytes (high level). Select Set the change to all ports to use this setting for all serial ports on the board.

| | Tx FIFO | |
|--------|---------|-----|
| High | 128 | 120 |
| Middle | 64 | 60 |
| Low | 1 | 1 |

 Click OK to approve the settings for the selected port. Continue in the same way to configure the other ports. When you have finished setting up the ports, click OK to close the Properties window and apply the new port settings.

Using PComm

PComm Diagnostic is a useful program for checking the board's status. It provides internal and external testing of IRQ, TxD/RxD, UART, CTS/RTS, DTR/DSR, and other items. You can use PComm Diagnostic to verify that the module and serial ports are working properly.

You may download PComm from the Moxa website.

| 👯 PComm Diagnostic | | | |
|---|--|---|--|
| File Diagnose Help | | | |
| 🗗 , , , , , , , , , , , , , , , , , , , | | | |
| To be tested | | | |
| CP-118U Series (COM3-COM10) IRQ=19,/0=C880 PCI bus 4, device 15, function 0 | CP-118U Series (CDM3-CDM10) IR0=191/0-C880 PCI bus 4, device 15, function 0 Driver : 1.14 | X | |
| | Total Configuration Boards = 1 COM Port Available Boards = 1 | | |
| | ок | | |
| Ready | × | | |

Using Event Log

You may refer to the Windows event log to verify operation of the board. To view the event log, open Event Viewer, which is located under Administrative Tools in the Control Panel. Information about the board will be located under the System category.

Disabling the Board

1. Right-click My Computer and select Properties in the context menu.



2. In the Hardware tab, click Device Manager.

| System Properties | ? × |
|--|-----------|
| 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 | |
| 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 | \square |
| Hardware Profiles | |
| Hardware profiles provide a way for you to set up and store different hardware configurations. | |
| Hardware Profiles | |
| | |
| OK Cancel Ap | oly |

3. In **Device Manager**, right-click the UPCI board under **Multi-port serial adapters** and select **Disable** in the context menu. This will disable the board.

Uninstalling the Board

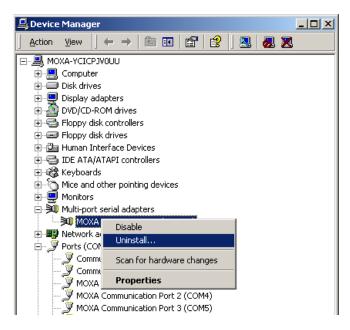
1. Right-click My Computer and select Properties in the context menu.



2. In the Hardware tab, click Device Manager.

| System Properties | ? × |
|--|------------------|
| General Network Identification Hardware ser Profiles Advanced | |
| Hardware Wizard The Hardware wizard helps you install, uninstall, repair, unplug, eject, and configure your hardware. <u>H</u> ardware 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 | \triangleright |
| Hardware Profiles Hardware profiles provide a way for you to set up and store different hardware configurations. | |
| Hardware Profiles | |
| OK Cancel | y |

3. Right-click the UPCI board under **Multi-port serial adapters** (CP-118U in this example) and select **Uninstall** in the context menu.



4. At the warning prompt, click **OK** to uninstall the device.

Windows NT

This chapter explains how to install, configure, update, and remove the board drivers for Windows NT. The following models are supported:

| 2 Ports | 4 Ports | 8 Ports |
|---------------------|---------------------|-------------------|
| CP-112UL/CP-112UL-I | CP-114UL/CP-114UL-I | CP-118U/CP-118U-I |
| CP-132UL/CP-132UL-I | CP-134U/CP-134U-I | CP-138U/CP-138U-I |
| CP-102UL | CP-104UL | CP-168U |
| CP-102U | CP-104JU | |
| CP-102UF | POS-104UL | |

Windows NT supports up to 256 serial ports, from COM1 to COM256. Moxa developed pure 32-bit Windows device drivers in order to fully utilize the advanced multi-process and multi-thread features of Windows NT. The drivers conform to the Win32 COMM API standard.

You can download the drivers from the Moxa website. For information on developing your own serial programming applications, please refer to Chapter 9.

Before installing the software, be sure to install the hardware first. For details on installing the hardware, please refer to Chapter 2.

Installing the Driver

You will need to plug the board in an available PCI or PCI-X slot first, before installing the driver. Note that these instructions use the CP-168U as an example. The procedure for installing all models is the same.

1. Log into Windows NT as Administrator.

Locate the appropriate folder for your board's drivers on the Document & Software CD. The NT drivers will be located under the product folder in the **\Software\WinNT** directory (e.g., under \CP-118U Series\Software). Copy this folder to the PC's hard disk and remember its location.

In the **Control Panel**, open **Network** applet. On the **Adapters** tab, click **Add**. When prompted to select a product, click **Have Disk**...

You will be prompted to enter the path to the driver. Enter the location of the drivers that you copied from the Document & Software CD (C:\Windows.nt in this example) and then click OK.

| Network ? X Identification Services Protocols Adapters Bindings |
|---|
| Network Adapters: |
| Select Network Adapter |
| Click the Network Adapter that matches your hardware, and then |
| Insert Disk |
| Insert disk with software provided by the software or hardware manufacturer. If the files can be found at a different location, for example on another drive type a new path to the files below. |
| OK Cancel |
| OK Cancel |

2. When prompted, select your board model (Smartio/Industio Family multiport board in this example) and click OK.

| Select OEM Option | | | × |
|--------------------------|----------------------|--------------------|-------|
| Choose a software suppor | ted by this hardwar | e manufacturer's c | lisk. |
| MOXA Smartio/Industio F | amily multiport boar | <u>d</u> | |
| OK | Cancel | Help | |

 After the files have been installed, a configuration panel will open. This is where boards are installed, configured, and removed. If another board has already been installed on the system, it will already be listed. Windows NT does not automatically detect Moxa UPCI boards, so you will need to click Add for a newly installed board.

| Board Type I/O address INT vector IRQ Bus Dev COM Number | Board Type I/O address INT vector IRQ Bus Dev COM Number | Moxa Smartio/Indu | stio Configur | ation Pane | I | | | |
|--|--|-------------------|---------------|------------|-----|-----|-----|------------|
| | Add Property | Board Type | I/O address | INT vector | IRQ | Bus | Dev | COM Number |
| | Add <u>Property</u> | | | | | | | |
| | Add Property | | | | | | | |

4. Under Board Type, select the UPCI board that is being installed. The window will show the COM settings for the serial ports on the board. You can modify the COM settings for any port at this time by selecting a port and clicking Port Setting. If you are satisfied with the COM settings, click OK to return to the configuration panel.

| Ρ | ropert | y | | | | | | X |
|---|--------|-------------------|-------------------|--------|---------|-------|--------------|---|
| | B | oard Type | CF | 2-168U | Series | (Bus/ | Dev=2/12) | - |
| | Þ | INT <u>v</u> ecto | or | A | C00 | | | |
| | ļn | iterrupt No. | | 4 | 3 | | 2 | |
| | B | ase I/O Port | : <u>A</u> ddress | A | 800 | | - | |
| | | | | | | | | |
| | Port | COM No. | Rx FIFO I | Level | Tx FIF | O Lev | vel | T |
| | 1 | COM3 | High | | High | | | |
| | 2 | COM4 | High | | High | | | - |
| | 3 | COM5 | High | | High | | | |
| | 4 | COM6 | High | | High | | | |
| | 5 | COM7 | High | | High | | | |
| | 6 | COM8 | High | | High | | | |
| | 7 | COM9 | High | | High | | | |
| | 8 | COM10 | High | | High | | | |
| | | | | Ec | rt Info | | Port Setting | |
| | | | | 0 | ĸ | D | Cancel | |

5. The board will now appear in the configuration panel (**CP-168U Series in this example**). Click **OK** to return to the Network applet. After that, click **OK** again to exit the Network applet

| Moxa Smartio/Indu | stio Configur | ation Pane | | | | |
|-------------------|---------------|----------------|-----|-----|-----|--------------|
| Board Type | I/O address | 1 | IRQ | Bus | Dev | COM Number |
| CP-168U Series | A800 | ACOC | 48 | 2 | 12 | COM3 - COM10 |
| | | | | | | |
| Add | | <u>R</u> emove | | | | Property |
| | | <u>о</u> к | | | | Cancel |

6. Restart the PC. After you have logged back into Windows NT, you may check the event log issued by the Moxa driver to see if the board's ports have been initialized successfully. In the Administrative group, open Event Viewer and select Log and System. For each newly installed or configured Moxa UPCI board, check for a message stating that the board has been enabled (e.g., "Moxa CP-168U board, with first serial port COM3, has been enabled").



ATTENTION

The driver configuration will NOT take effect until you restart the PC. Double check that all CP-168U board components are connected and fastened tightly to ensure that the system and the driver can start up successfully.

Configuring the Ports

1. In Windows **Control Panel**, open the **Network** applet. In the **Adapters** tab, UPCI boards will appear as a type of Moxa adapter (**Moxa Smartio/Industio Family Adapter** in this example). Select the Moxa adapter and click **Properties...**

| Network ? |
|---|
| Identification Services Protocols Adapters Bindings |
| Network Adapters: |
| 1] Intel(R) PRO/100 VE Network Connection |
| I MOXA Smartio/Industio Family Adapter |
| |
| |
| |
| |
| Add <u>B</u> emove <u>Properties</u> <u>U</u> pdate |
| Item Notes: |
| MOXA Smartio/Industo Family Adapter |
| |
| |
| |
| |
| |
| OK Cancel |

2. The configuration panel will open with a list of installed boards. Select your board and click **Property**. Up to 4 Moxa UPCI boards can be installed at a time.

| Moxa Smartio/Indu | stio Configur | ation Pane | | | | | X |
|-------------------|---------------|------------|-----|-----|-----|--------------|---|
| | | | | | | | |
| | | | | | | | |
| Board Type | I/O address | INT vector | IRQ | Bus | Dev | COM Number | 1 |
| CP-168U Series | A800 | ACOC | 48 | 2 | 12 | COM3 - COM10 | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Add | | Remove | | | | Property | |
| | | | | | | | |
| | | | | | | | |
| | | <u>o</u> k | | | | Cancel | |
| | | | | | | | |

3. Select a port to configure and click **Port Setting**.

| Ρ | roperl | ty | | | | | | X |
|---|------------|--------------|--------------|--------|--------------|--------|--------------|---|
| | Board Type | | | P-168L | Series | (Bus/D | ev=2/12) 🔽 |] |
| | INT Vector | | A | AC00 | | | | |
| | ļn | iterrupt No. | | 4 | 8 | ~ | 1 | |
| | в | ase I/O Port | Address | . [A | .800 | _ | 1 | |
| | | | _ | | | | | |
| | Port | COM No. | Rx FIFO | Loval | TX FIF | 01.00 | | т |
| | FOIL | | | Level | | O Levi | 51 | |
| | | COM3 COM4 | High | | High | | | |
| | 2 3 | COM4 COM5 | High High | | High High | | | |
| | 4 | COM5 COM6 | High | | High | | | |
| | 5 | COM0 COM7 | High | | High | | | |
| | i a | COM8 | High | | High | | | |
| | 6 7 | COM9 | High | | High | | | |
| | 8 | COM10 | High | | High | | | |
| | · | | | | | | | |
| | | | | Eq | rt Info | | Port Setting | |
| | | | [| Q | <u>i</u> K | | Cancel | _ |

 Under Port Number, select a COM number to assign to the serial port. Select Auto Enumerating COM Number to map subsequent ports in numerical order. For example, if COM 3 is assigned to Port 1, then COM 4 will be automatically assigned to Port 2.

| Poi | rt 1 | |
|-----|---|--|
| | Port Number COM3 | |
| | Rx FIFO Level High ▼ ▼ Set the change to all ports | |
| | I× FIFO Level High ▼ ▼ Set the change to all ports | |
| | <u>Q</u> K Cancel | |

Select an **Rx FIFO Trigger** and **Tx FIFO Size**. The default Rx FIFO Trigger is 120 bytes (high level). The default Tx FIFO Size is 128 bytes (high level). Select **Set the change to all ports** to use this setting for all serial ports on the board.

| | Tx FIFO | Rx FIFO |
|--------|---------|---------|
| High | 128 | 120 |
| Middle | 64 | 60 |
| Low | 1 | 1 |

 Click OK to approve the settings for the selected port. Continue in the same way to configure the other ports. When you have finished setting up the ports, click OK to close the Properties window and apply the new port settings. Click OK again to exit the Network applet.

| Moxa Smartio/Industio Configuration Panel | | | | | | |
|---|-------------|------------|-----|-----|-----|--------------|
| | | | | | | |
| | | | | | | |
| Board Type | I/O address | INT vector | IRQ | Bus | Dev | COM Number |
| CP-168U Series | A800 | ACOC | 48 | 2 | 12 | COM3 - COM10 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| J | | | | | | |
| | | | | | | |
| Add | | Remove | | | | Property |
| | | | | | | |
| | | | | | | |
| | | <u>o</u> k | | | | Cancel |
| | | | | | | |
| | | | | | | |

Removing the Board

To remove a board, shut of your PC and physically remove the board from the PCI slot. The next time you start up the PC, Windows NT will automatically remove the configuration. You do not need to go through the Windows control panel.

Updating the Driver

 In Windows Control Panel, open the Network applet. In the Adapters tab, UPCI boards will appear as a type of Moxa adapter (Moxa Smartio/Industio Family Adapter in this example). Select the Moxa adapter and click Remove.

| Network ?X |
|--|
| Identification Services Protocols Adapters Bindings |
| Network Adapters: |
| 1] Intel(R) PRO/100 VE Network Connection |
| [2] MOXA Smartio/Industio Family Adapter |
| |
| |
| |
| |
| Add <u>B</u> emove <u>P</u> roperties <u>U</u> pdate |
| Item Notes: |
| MOXA Smartio/Industo Family Adapter |
| |
| |
| |
| |
| |
| OK Cancel |

2. Restart the system. Go through the process of installing the drivers using the new drivers.

Removing the Driver

1. In Windows **Control Panel**, open the **Network** applet. In the **Adapters** tab, UPCI boards will appear as a type of Moxa adapter (**Moxa Smartio/Industio Family Adapter** in this example). Select the Moxa adapter and click **Remove**.

| Network |
|---|
| Identification Services Protocols Adapters Bindings |
| Network Adapters: |
| 1] Intel(R) PR0/100 VE Network Connection |
| Example 2 MOXA Smartio/Industio Family Adapter |
| |
| |
| |
| |
| Add |
| Item Notes: |
| MOXA Smartio/Industo Family Adapter |
| |
| |
| |
| |
| OK Cancel |
| |

2. Click **OK** to exit the Network applet and restart the system.

Windows 95/98/ME

This chapter explains how to install, configure, update, and remove the board drivers for Windows 95/98/ME. The following models are supported:

| 2 Ports | 4 Ports | 8 Ports | |
|---------------------|---------------------|-------------------|--|
| CP-112UL/CP-112UL-I | CP-114UL/CP-114UL-I | CP-118U/CP-118U-I | |
| CP-132UL/CP-132UL-I | CP-134U/CP-134U-I | CP-138U/CP-138U-I | |
| CP-102UL | CP-104UL | CP-168U | |
| CP-102U | CP-104JU | | |
| CP-102UF | POS-104UL | | |

Windows 95/98/ME supports up to 128 serial ports, from COM1 to COM128. In order to fully utilize the advanced multi-process and multi-thread features of Windows 95/98/ME, Moxa developed pure 32-bit virtual device port drivers (VxD) that are compliant with communication drivers (VCOMM). The drivers conform to the Win32 COMM API standard.

You can download the drivers from the Moxa website. For information on developing your own serial programming applications, please refer to Chapter 9.

Before installing the software, be sure to install the hardware first. For details on installing the hardware, please refer to Chapter 2.

Installing the Driver

The following instructions show how to install the driver for the first time under Windows 95/98/ME. You will need to plug the board in an available PCI or PCI-X slot first, before installing the driver.



ATTENTION

The following steps will not be necessary if a Moxa UPCI board was already installed on your computer. Windows will automatically detect and install any additional board(s) at bootup. In this case, you may proceed directly to configuring the ports.

Windows 95

1. After the board is physically installed and the PC boots up, Windows will automatically detect the new board and the Found New Hardware Wizard window will open. Click **Next** to continue.

| Update Device Driver Wizard | | | | | |
|-----------------------------|---|--|--|--|--|
| | This wizard will complete the installation of: PCI Serial Controller by searching your local drives, network, and Internet locations for the most current driver. If you have a disk or CD-ROM that came with this device, insert it now. It is recommended that you let Windows search for an updated driver. To do this, click Next to continue. | | | | |
| | < <u>B</u> ack Next > Cancel | | | | |

2. Select Other Locations...

| Update Device Driver Wizard | | | | |
|-----------------------------|---|--|--|--|
| | Windows was unable to locate a driver for this device. f you do not want to install a driver now, click Finish. To search for a driver manually, click Other Locations. Or, to begin the automatic search again, click Back. | | | |
| | Other Locations | | | |
| | < Back Fnish Cancel | | | |

 Click Browse and select the appropriate directory on the Document & Software CD for the driver. Drivers for all operating systems are located under the product folder in the \Software directory (e.g., under \CP-168U \Software). Select the \Win9x folder and click OK to continue.

| Select Other Location | × |
|---|---|
| Type the name of the folder that contains the di Browse. | river you want. To search for a folder, click |
| Location | Browse) |
| | OK Cancel |

4. After Windows finds the drivers, click Finish.

| Add New Hardware Wizard | | | | |
|-------------------------|--|--|--|--|
| | Windows driver file search for the device: | | | |
| | CP-168U Series | | | |
| | If you want to use this driver, click Finish. If this is not the correct driver and you want to search for a different driver manually, click Other Locations. | | | |
| 📕 🥗 🍣 🗌 | Location of Driver | | | |
| \$ | Windows.95 | | | |
| | Other Locations | | | |
| | · | | | |
| | < <u>B</u> ack Finish Cancel | | | |

5. You may begin configuring and using the new COM ports right away without restarting Windows.

Windows 98 and ME

 After the board is physically installed and the PC boots up, Windows will automatically detect the new board and the Found New Hardware Wizard window will open. Click Next to continue.



2. Select **Display a list...** and click **Next**.

| Add New Hardware Wizard | | | | |
|-------------------------|---|--|--|--|
| Add New Hardware Wit | Zard What do you want Windows to do? Search for the best driver for your device. (Recommended). Display a list of all the drivers in a specific location, so you can select the driver you want. | | | |
| | < <u>B</u> ack Next > Cancel | | | |

3. Select Other Devices and click Next.

| Add New Hardware Wizard | | | |
|-------------------------|---|--|--|
| | Select the type of device from the list below, then click Next. Mouse Multi-function adapters MultiIOController | | |
| 🗞 😵 | Network adapters Other detectec devices Other devices | | |
| <u> </u> | PCMCIA socket Ports (COM & LPT) | | |
| | Printer SBP2 SCSI controllers | | |
| | | | |
| | < <u>B</u> ack Next > Cancel | | |

4. Select Have Disk

| Add Nev | Hardware Wizard | | | |
|---------------------------|---|--|--|--|
| } | Select the manufacturer and model of your hardware device. If you have a disk that contains the updated driver, click Have Disk. To install the updated driver, click Finish. | | | |
| Mo <u>d</u> els: Unsup | iorted Device | | | |
| | <u>H</u> ave Disk <u>< B</u> ack Next > Cancel | | | |

 Click Browse and select the appropriate directory on the Document & Software CD for the driver. Drivers for all operating systems are located under the product folder in the \Software directory (e.g., under \CP-168U \Software). Select the \Win9x folder and click OK to continue.



6. After Windows installs the drivers, click Finish.

| Add New Hardware Wizard | | | | |
|-------------------------|--|--|--|--|
| | CP-168U Series Windows has finished installing the software you selected that your new hardware device requires. | | | |
| | < Back Frish Cancel | | | |

Configuring the Ports

You may configure the COM ports after the board and drivers have been installed.

1. In the Windows **Control Panel**, open the **System** applet.



2. In the **Device Manager** tab, expand the **Moxa Smartio/Industio multiport board** category by clicking the "+" sign next to it. Select the desired board (CP-168U in this example) and click **Properties**.

| System Properties | ? × |
|---|-----|
| General Device Manager Hardware Profiles Performance | 1 |
| • View devices by type • • • • • • • • • • • • • • • • • • • | |
| Computer Co | |
| Properties Refresh Remove Print | |
| OK Carru | :el |

3. On the Ports Configuration tab, select a port to configure and click Port Setting.

| CP-1 | 68U S | Series Prop | oerties | | <u>? ×</u> | |
|------|--|-----------------|-----------------|----------------------|--------------|--|
| Ge | General Ports Configuration Driver Resources | | | | | |
| | | | | | | |
| | INT Vector AC00 | | | | | |
| | Interrupt No 10 👻 | | | | | |
| | E | Base I/O Port | <u>A</u> ddress | A800 | - | |
| | | PCI Bus Nur | nber is 0 and D | , evice Number is | 0 | |
| [| | | 1 | | | |
| | Port | | | el Tx FIFO Lev | el | |
| | 1 | COM 3 COM 4 | High High | High High | | |
| | 3 | COM 5 | High | High | | |
| | 4 | COM 6 | High | High | | |
| | 5 | COM 7 | High | High | | |
| | 6 7 | COM 8 COM 9 | High | High | | |
| | 8 | COM 5 COM 10 | High High | High High | | |
| | - | | | _ | | |
| | | | | P <u>o</u> rt Info | Port Setting | |
| L | | | | | | |
| | | | | | | |
| | | | | OK | Cancel | |

 Under Port Number, select a COM number to assign to the serial port. Select Auto Enumerating COM Number to map subsequent ports in numerical order. For example, if COM 3 is assigned to Port 1, then COM 4 will be automatically assigned to Port 2.

| Poi | d 1 |
|-----|---|
| | Port Number COM3 |
| | Rx FIFO Level High ✓ Set the change to all ports |
| | Image: Image with the second secon |
| | <u>O</u> K Cancel |

Select an **Rx FIFO Trigger** and **Tx FIFO Size**. The default Rx FIFO Trigger is 120 bytes (high level). The default Tx FIFO Size is 128 bytes (high level). Select **Set the change to all ports** to use this setting for all serial ports on the board.

| | Tx FIFO | Rx FIFO |
|--------|---------|---------|
| High | 128 | 120 |
| Middle | 64 | 60 |
| Low | 1 | 1 |

 Click OK to approve the settings for the selected port. Continue in the same way to configure the other ports. When you have finished setting up the ports, click OK to close the Properties window and apply the new port settings. Click OK again to close the Device Manager and restart the system.

Updating the Driver

You may configure the COM ports after the board and drivers have been installed.

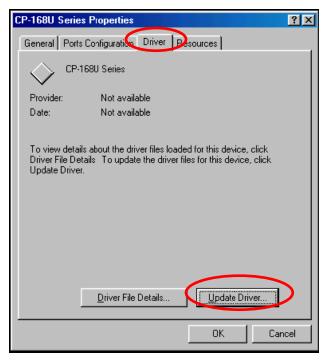
1. In the Windows **Control Panel**, open the **System** applet.



2. In the **Device Manager** tab, expand the **Moxa Smartio/Industio multiport board** category by clicking the "+" sign next to it. Select the desired board (CP-168U in this example) and click **Properties**.

| System Properties | <u>?</u> × |
|--|------------|
| General Device Manager Hardware Profiles Performance | |
| • View devices by type • • • • • • • • • • • • • • • • • • • | |
| Computer CDROM CDROM CDROM CDROM CDROM Display adapters CDROP disk controllers CDROP Floppy disk controllers CDROP Hard disk controllers Hard disk co | |
| Properties Refresh Remove Print | |
| OK Car | icel |

3. In the Driver tab, click Update Driver....



4. Select the appropriate model (CP-168U in this example) and click Have Disk...

- 5. When prompted, select the appropriate directory on the Document & Software CD for the driver. Drivers for all operating systems are located under the product folder in the \Software directory (e.g., under \CP-118U Series\Software). Select the \Win9x folder and click OK to continue.
- 6. You will be prompted to restart the system. The new drivers will be in effect the next time you restart.

Removing the Driver

1. In the Windows Control Panel, open the Add/Remove Programs applet. On the Install/Uninstall tab, select Moxa Smartio/Industio Driver and click Add/Remove.

| Add/Remo | ve Programs Properties | | ? × | |
|-------------|---|------------|------------------|--|
| Install/Uni | nstall Windows Setup St | artup Disk | | |
| Ð | To install a new program from a floppy disk or CD-ROM drive, click Install. | | | |
| | | | Install | |
| 3 | Lhe following software can be automatically removed by Windows. To remove a program or to modify its installed components, select it from the list and click Add/Remove. | | | |
| Intel(R) | AC'97 Audio PRO Ethernet Adapter and 9 mattio/Industio Driver _315E |) oftware | | |
| | | Add | / <u>R</u> emove | |
| | ОК | Cancel | Apply | |

2. When prompted, click Yes to confirm that you want to remove the driver.

| MOXA Smartio/Industio Driver | × |
|---|---|
| Do you really want to remove MOXA Smartio/Industio Driver | ? |
| <u>Y</u> es <u>N</u> o | |

3. After the driver has been removed, click OK to return to the Add/Remove Programs applet.



Windows CE

Windows CE 5.0

In this section, we explain how to install Moxa Universal PCI boards under WinCE 5.0. These instructions are intended for users who are familiar with the Windows CE Platform Builder 5.0 Toolkit, and would like to install one or more Moxa Tech products. Here, we only give the step-by-step installation instructions for the development environment. You will need to download the image file to the target host yourself.

The CP-104UL board is used to illustrate the installation procedure.

- 7 🗙

Installing the Driver

The following procedure explains how to install the CP-104UL multiport serial module driver under WinCE.

Obtain a copy of Moxa Tech WinCE 5.0 driver package and extract it to your computer. Double click the Install package to copy the **Mxser** folder to %WINCEROOT%\PLATFORM\ automatically, and import the supported Moxa Tech products into the **Folder**.

1. Start WinCE Platform Builder, select File, and open New Platform.

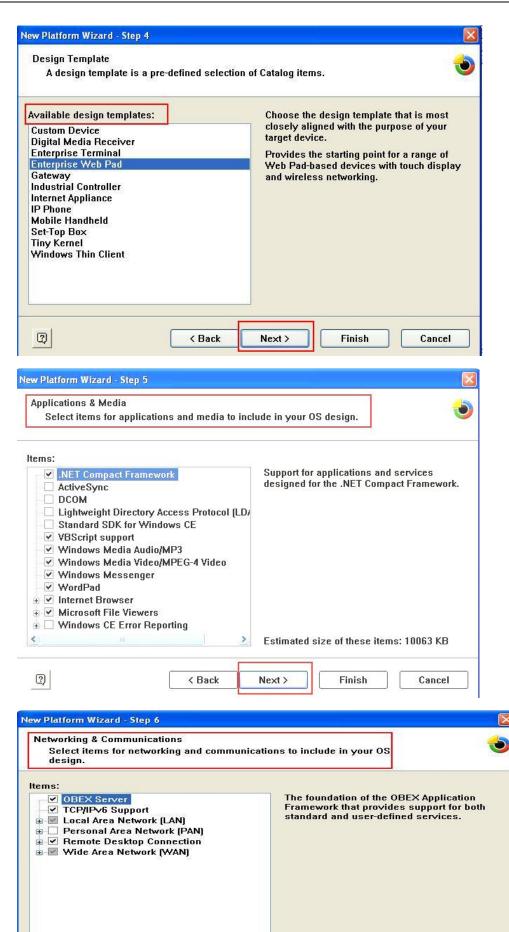
🕏 Platform Builder - [Welcome to Platform Builder]

3. When you see **Board Support Packages**, **Design Template**, **Applications & Media**, **Networking & Communications**, **OBEX Server**, select what you need to build your own environment. The **Completing the New Platform Wizard** window will open to indicate that it has finished creating a new platform. Click **Finish** to complete the setup.

| Eile Edit | View Project Platf | orm Target | Build Project Build OS Tool | ls <u>W</u> indow <u>H</u> elp | | _ 2) |
|---------------|--|-------------------------------|--|---|---|---------------|
| Rew F | roject or File Ctrl | Ctrl+N l+Shift+N Ctrl+O | | <mark>\</mark> ₩ ≱ ⊡ ⊕] 3 | ✓ ✓ | |
| Sa <u>v</u> e | <u>W</u> orkspace Workspace Wor <u>k</u> space | Ctrl+S | Start | | Catalog | - |
| Save Save | | | Home Getting Started What's New | Name <u>C:\WINCEs</u> \PBWorksp | ⊕ | n Manager |
| | it <u>Fi</u> les It Workspaces | Ctrl+P | Online Community Resources Downloads | <u>C:\WINCE5</u> \CP168UV2 | | |
| Manag | e Catalog Items e Run-Time Image | | Support | New Pla | | |
| | ild 🖉 Debug 🔪 Lo | g 🔪 Find in | Files 1) Find in Files 2 , | | 1 | ~ |
| Creates a r | ew Platform | | | | Size: | ~0 KB 🖄 🖹 🗐 🗐 |

2. Enter a Name for Workspace and press Next.

| New Platform Wize | urd - Step 2 | | | | |
|-------------------|---|--------------|--------------|--------|--------|
| | ne And Location endly name for you | ır workspacı | . | | • |
| [| Name: Test1 Path: E:\WINCE500\Pf | 3Workspace | s{Test1{ | | |
| 0 | | < Back | Next > | Finish | Cancel |



Next >

< Back

2

Estimated size of these items: 10924 KB

Finish

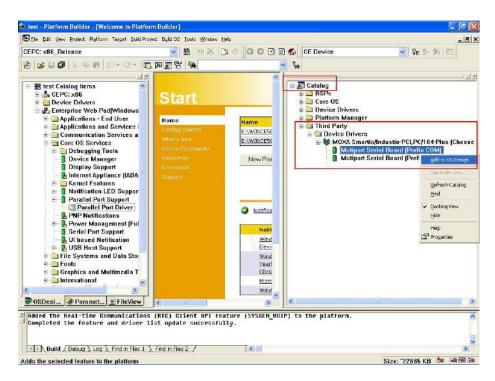
Cancel

| New Platform Wizard - Step 7 | X |
|--|---|
| OBEX Server | ~ |
| | |
| Security Warning | |
| Under certain circumstances, the Object Exchange Protocol (OBEX) catalog item can compromise the security of your platform. This catalog item poses the following potential security risks: | |
| If proper security and authentication techniques are not used, a service that interferes with services.exe can be installed. | |
| If proper encryption techniques are not used, OBEX running over Bluetooth could expose data packets to third parties. | |
| To learn more about potential OBEX security risks, as well as the best practices for using this catalog item more securely, see the following topics: | |
| OBEX Security | |
| Enhancing the Security of a Device | |
| | ~ |
| | |
| Cancel | |
| New Platform Wizard - Step 8 | X |
| Completing the New Platform Wizard | ~ |
| You have successfully completed the New Platform Wizard. | |
| You have created an OS design for a Windows CE-based platform. By default, Platform Builder provides a Debug configuration and a Release configuration of this OS design. | |
| Options: Modify build options for the Debug and Release configurations of your OS design without closing this wizard. | |
| To close this wizard, click <i>Finish</i> . | |
| Cancel | ~ |

4. Open Manage Catalog Items (File → Manage Catalog Items). In the Catalog (View → Catalog), browse to \Third Party\Device Drivers\ MOXA Smartio/Industio-PCI, PC/104-Plus. Right-click on the driver Prefix COM or Prefix MXU you would like to include and choose Add to OS Design.

NOTE You can only select either **Prefix COM** or **Prefix MXU**, but not both.

5. Prefix COM supports up to 10 ports, from COM0 to COM9. Prefix MXU supports more than 10 ports, so it is better for you to select Prefix MXU if you are not sure how many ports the device has. Otherwise, you will only be allowed to use one multiport serial board on the target host.

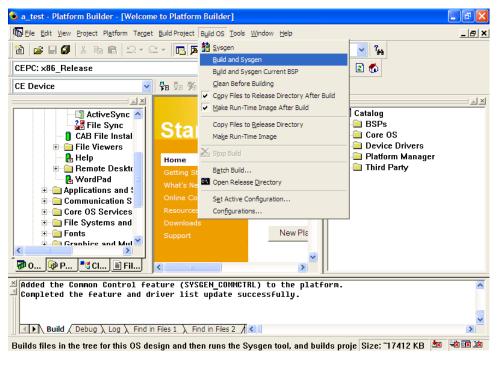


After adding Moxa Tech drivers into your OS Design, a new project is automatically added to your workspace. The project name is mxserce5. The project can be accessed from File View (View → File View). The mxserce5 project contains a number of files used to configure the drivers included in your OS Design.

| Image: Second State Sta | D Ele Edit View Brojett Platform Tage | e Build Project Byld OS Tools Window Help | _[0] |
|---|--|--|--------------------|
| <pre> For Points For Points</pre> | CEPC: x86_Release | S 1 1 2 5 5 1 2 5 5 5 5 5 5 5 5 5 5 5 5 5 | E Device 🚽 🖓 🖓 🦛 🕬 |
| Image: State Stat | 🔁 📾 🖬 🕼 🐘 📾 🗠 🗠 | 2 - 🗖 🛛 🐺 🐂 🛛 🖌 🖌 | |
| | Betwindeson Feywindeson Feywindeson Feywindeson Feywindeson Feywindeson Feymenter files Source files | <pre>(KKY_LOCAL_MACHINE\DriverxBulitIn\Pfl\Templa "Winder10"=multi_sz:"1909","1909","1909","1909"," "Uender10"=multi_sz:"1909","1909","1909","1909"," "Device10"=multi_sz:"1929","1921","1921","1921"," "Bevice10"=multi_sz:"1922","1921","1921","1921"," "Bevice10"="Miltisc.01" "IsPlact"=duord:0 "IsPlact"=duord:0 "Device0r=%1916#*"=duord:0 "Device0r=%1916#*"=duord:0 "Device0r=%1916#*"=duord:0 "Device0r=%1916#*"=HOXA Serial Port" "FriendlyMae"="HOXA Serial Port" "FriendlyMae"="HOXA Serial Port" "FriendlyMae"="HOXA Serial Port" "FriendlyMae"="Serial Contemplation" "Device190"="HOXA Serial Port" "FriendlyMae"="Serial Contemplation" "Device190"="Serial Contemplation" "Device190"="S</pre> | tager :: |
| Completed the feature and driver list update successfully. | Added the Real-time Commu | ons (RTC) Client API feature (SYSGEN UOIP) to | |
| | Completed the feature and C | Fiver list update successfully. | |
| 🖅 Neutici / Debug 🔪 Log 🔪 Find in Files 1 👌 Find in Files 2 / | Build (Debug) Log) Find | in Files 1) Rind in Files 2 / | |

NOTE If you would like to use "Terminal Emulator" tool, please modify mxserce5.reg and keyboard like below (This is only just for "one" "COM" port). You have to notice number of ports, COM, MXU and enter the correct information.

[HKEY_LOCAL_MACHINE\ExtModems\HayesCompat1] "Port" = "COM2: " "DeviceType" = dword: 1 "FriendlyName" = "Hayes Compatible on COM2: " 7. Finally, open Build OS, select Build and Sysgen, and be sure to click Copy Files to Release Directory After Build and Make Run-Time Image After Build.

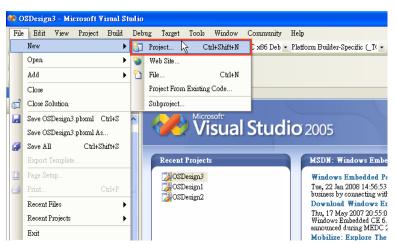


8. Finally, copy your image file to the target Host.

Windows CE 6.0

The following procedure explains how to install the CP-102U multiport serial board driver under WinCE 6.0.

- 1. Obtain a copy of Moxa's WinCE 6.0 driver and extract it to your computer. Double click the install package to automatically install **Mxser**.
- Create a new project in Visual Studio 2005.
 In Visual Studio 2005, click File → New → Project and select "Platform Builder for CE 6.0." Choose "OS Design" template and then click OK.



NOTE If you have created a Windows CE Platform Builder in the development environment, you can skip steps 2, 3, and 4.

| New Project Project types: | | <u>T</u> emplates: | | ? 🔀 |
|--|----------------------|---|-------------------------------|--------|
| Visual C++ ATL CLR General MFC Smart De Win32 Other Project | ges | Visual Studio installed temple S Design My Templates Search Online Templates | ates | |
| | | | k | |
| A project for creat | ing a Windows Embedo | led CE 6.0 operating system | | |
| <u>N</u> ame: | OSDesign1 | | | |
| Location: | C:\WINCE600\OSD | esigns | | Browse |
| Solution Na <u>m</u> e: | OSDesign1 | [| Create directory for solution | |
| | | | OK | Cancel |

3. The CE 6.0 OS Design Wizard will start. Click "Next" to get the Board Support Packages page and select CEPC: x86. Click "Next" to continue.

| Windows Embedded CE 6. | D OS Design Wizard | × |
|---|--|---|
| Windows ⁻ Embedded CE 6.0 | Welcome to the Windows Embedded CE 6.0 OS Design Wizard | |
| | This wizard guides you through the process of creating an OS design for a CE 6.0 based platform. An OS design defines the characteristics of a CE 6.0 OS. | |
| | You can create an OS design by choosing a design template and one or more board support packages (BSPs). A BSP includes an OEM adaptation layer (OAL) and device drivers. | |
| | This wizard helps you: | |
| | Choose a BSP. Choose a design template. Add items to your OS design or remove items from it. | |
| | To continue, click Next. | |
| (| < Previous Next > Prinish Cancel | |

| Windows Embedded CE 6.0 OS Design | Wizard ?X |
|--|---|
| Board Support Packages (BSPs A BSP contains a set of device drivers | · |
| Available BSPs: | Select one or more BSPs for your OS design. A BSP for a Windows Embedded CE PC-based hardware reference platform. The platform uses the OS based on the x86 architecture. Note: Only BSPs supported by installed CPUs are displayed in the list. |
| < <u>P</u> revious | <u>N</u> ext > Enish Cancel |

4. On the **Design Templates** page select your environment, PDA Device for example. Click "**Next**" to continue.

| Windows Embedded CE 6.0 OS Design Wizard | ? 🔀 |
|---|---|
| Design Templates A design template is a set of predefined catalog | items. |
| Available design templates: Consumer Media Device Custom Device Industrial Device PDA Device Phone Device Small Footprint Device Thin Client | Choose the design template that is most closely aligned with the purpose of your target device. Provides the starting point for a range of personal digital assistants (PDAs) or mobile devices with a clamshell-and-keyboard design. |
| < <u>P</u> revious | ext >Einish Cancel |

5. On the Design Template Variants page select your environment, Mobile Handheld for example. Click "**Next**" to continue.

| Windows Embedded CE 6.0 OS Design Wizard | ? 🔀 |
|--|--|
| Design Template Variants Select a design template variant that provides th requires. | ne functionality that your target device |
| <u>V</u> ariants: Mobile Handheld Enterprise Web Pad | Mobile Handheld |
| < <u>P</u> revious | ext >EinishCancel |

6. On the **Application & Media** page select your environment, .NET Compact Framework 2.0, ActiveSync, and Quarter VGA Resources-Portrait Mode for example. Click **"Next**" to continue.

| Windows Embedded CE 6.0 OS Design Wizard | ? 🛛 |
|--|---|
| Applications & Media Select items for applications and media to inclu | de in your OS design. |
| NET Compact Framework 2.0 File Systems and Data Store Windows Embedded CE Error Reporting Active Sync Internet Browser Quarter VGA Resources - Portrait Mode Windows Media Audio/MP3 Windows Messenger WordPad | Support for applications and services designed for the .NET V2.0 Compact Framework. |
| < Previous | ext > <u>F</u> inish Cancel |

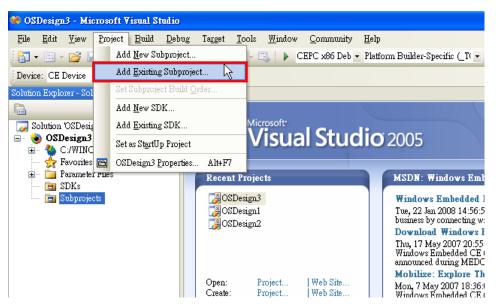
7. On the Networking & Communication page select your environment, TCP/IPv6 Support for example. Click "Next" to continue.

| Windows Embedded CE 6.0 OS Design Wizard | ? 🛛 |
|---|--|
| Networking & Communications Select items for networking and communication | s to include in your OS design. |
| CP/IPv6 Support Wide Area Network (WAN) Local Area Network (LAN) Personal Area Network (PAN) Security | The Internet standard protocol, version 6. |
| < <u>P</u> revious | ext > Einish Cancel |

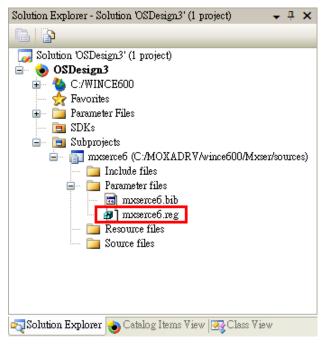
8. When the **OS Design Project Wizard Complete** screen appears, click "**Finish**." The catalog notification will pop up. Click "**Acknowledge**" to finish the project.

| Windows Embedded CE 6.0 OS Design Wizard 🛛 🥐 | × |
|--|---|
| OS Design Project Wizard Complete | |
| | |
| You have completed the wizard. Press Finish to create your OS Design project. | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| | |
| < Previous Next > Finish Cancel | |
| | |
| | |
| Catalog Item Notification | |
| | (|
| Catalog Item Notification OBEX Server | (|
| OBEX Server | |
| | |
| OBEX Server Security Warning Security Warning | |
| OBEX Server Security Warning | |
| Security Warning Security Warning Under certain circumstances, the Object Exchange Protocol (OBEX) catalog item can compromise the security of your platform. This catalog item poses the following potential security risks: If proper security and authentication techniques are not used, a service that | |
| OBEX Server Security Warning Security Warning Under certain circumstances, the Object Exchange Protocol (OBEX) catalog item can compromise the security of your platform. This catalog item poses the following potential security risks: If proper security and authentication techniques are not used, a service that interferes with services.exe can be installed. If proper encryption techniques are not used, OBEX running over Bluetooth | |
| OBEX Server Security Warning Security Warning Under certain circumstances, the Object Exchange Protocol (OBEX) catalog item can compromise the security of your platform. This catalog item poses the following potential security risks: If proper security and authentication techniques are not used, a service that interferes with services.exe can be installed. If proper encryption techniques are not used, OBEX running over Bluetooth could expose data packets to third parties. | : |
| OBEX Server Security Warning Security Warning Under certain circumstances, the Object Exchange Protocol (OBEX) catalog item can compromise the security of your platform. This catalog item poses the following potential security risks: If proper security and authentication techniques are not used, a service that interferes with services.exe can be installed. If proper encryption techniques are not used, OBEX running over Bluetooth could expose data packets to third parties. To learn more about potential OBEX security risks, as well as the best practices for using this catalog item more securely, see the following topics: | : |
| OBEX Server Security Warning Security Warning Under certain circumstances, the Object Exchange Protocol (OBEX) catalog item can compromise the security of your platform. This catalog item poses the following potential security risks: If proper security and authentication techniques are not used, a service that interferes with services.exe can be installed. If proper encryption techniques are not used, OBEX running over Bluetooth could expose data packets to third parties. To learn more about potential OBEX security risks, as well as the best practices for using this catalog item more securely, see the following topics: OBEX Security | : |
| OBEX Server Security Warning Security Warning Under certain circumstances, the Object Exchange Protocol (OBEX) catalog item can compromise the security of your platform. This catalog item poses the following potential security risks: If proper security and authentication techniques are not used, a service that interferes with services.exe can be installed. If proper encryption techniques are not used, OBEX running over Bluetooth could expose data packets to third parties. To learn more about potential OBEX security risks, as well as the best practices for using this catalog item more securely, see the following topics: | : |

 Open the project you created. Click Project on top of the screen, and select Add Existing Subproject. Specify the PCI MSB Mxser driver location with the subproject file "mxserce6.pbpxml."



10. After the subproject is added, you may configure the "**mxserce6.reg**" registry file with the location [HKEY_LOCAL_MACHINE\Drivers\BuiltIn\PCI\Template\MOXAPCICOM].



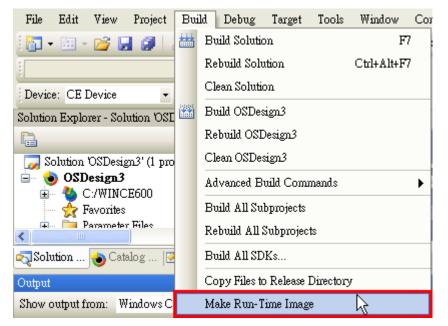
 Configuring FIFO and index: Setting the FIFO registry value to 1 enables the FIFO function and 0 disables it. The index allows you to define the initial COM port number in WinCE, but before using this function; make sure that the COM port numbers do not conflict.

| Name | Туре | Data | | | |
|--------------------|--------------|-----------------|----|--------------------|----------------------------|
| 📄 (Default) | REG_SZ | (value not set) | Pi | roperties | → ‡ × |
| 🗒 СНІР | REG_DWORD | 0x0000001 (1) | F | IFO Registry Value | - |
| 鶰 Class | REG_DWORD | 0x0000007 (7) | | | |
| 関 DeviceArrayIndex | - | 0x0000000 (0) | | 2↓ 0 | |
| 📄 DeviceID | REG_MULTI_SZ | | P | Misc | |
| 💐 DeviceType | REG_DWORD | 0x0000000 (0) | - | Data | 1 |
| | REG_SZ | mxser_com.Dll | | Hex Value | 1 |
| FIFO | REG_DWORD | 0x0000001 (1) | | Key | HKEY LOCAL MACHINE\Drivers |
| 💐 index | REG_DWORD | 0x0000002 (2) | | Name | FIFO |
| 📄 IsrDli | REG_SZ | mxisr.dll | | Туре | REG_DWORD |
| 📄 IsrHandler | REG_SZ | ISRHandler | _ | | REG_D WORD |
| 🗒 Order | REG_DWORD | 0x00000000 (0) | Ξ | Misc | |
| 📄 Prefix | REG_SZ | COM | | Data | 2 |
| 🗒 SubClass | REG_DWORD | 0x0000000 (0) | | Hex Value | 2 |
| 📄 Tsp | REG_SZ | Unimodem.dll | | Key | HKEY_LOCAL_MACHINE\Drivers |
| 📄 VendorID | REG_MULTI_SZ | 1393 1393 1393 | | Name | index |
| | | | | Туре | REG_DWORD |

12. Open **Build** and select **Advanced Build Commands** and choose **Build Sysgen**. This operation will take you a few minutes.

| File Edit View Project E | Build Debu | g Target | Tools | Window | Con | nnunity | Help | |
|--|-------------|---------------|-----------|-------------|-----|----------|---|------------------|
| i 🛅 🕶 🔤 🖌 🚰 📙 🎒 🗎 | 🛔 Build Sol | ution | | F7 | 7 x | :86 Rel: | Platform Builder-Sp | pecific (_T(👻 🌁 |
| | Rebuild \$ | olution | | Ctrl+Alt+F7 | ' | | | |
| Device: CE Device 🔹 | Clean So | ution | | | | | | |
| Solution Explorer - Solution 'OSI | 🖥 Build OS | Design3 | | | | | | |
| | Rebuild (|)SDesign3 | | | | | | |
| 🌄 Solution 'OSDesign3' (1 pro | Clean OS | Design3 | | | | | | |
| 📄 🐨 🌏 OSDesign3 | Advance | l Build Com | mands | | ► | Sy | rsgen | |
| - A Favorites | Build All | Subprojects | | | | Cl | ean Sysgen | |
| A Parameter Files | Rebuild A | ull Subprojec | :ts | | - [| Bu | uild and Sysgen | R I |
| 🟹 Solution 👌 Catalog <table-cell></table-cell> | Build All | SDKs | | | | Re | ebuild and Clean Sysge: | n |
| Output | Copy File | s to Release | Directory | , | | B | uild Current BSP and S | ubprojects |
| Show output from: Windows C | Make Ru | n-Time Imag | çe | | | Re | ebuild Current BSP and | Subprojects |

13. After building sysgen, select **Build** and choose **Make Run-Time Image** to create the WinCE OS image. Finally, copy your image file to the target Host.



Non Windows Driver

Drivers are provided for DOS, Linux, and SCO.

DOS

Moxa DOS API-232 is a software package that can help you develop or debug serial communications programs. This section will show you how to install the package, how to set up the driver, and how to load or unload the driver. The following models are supported:

| 2 Ports | 4 Ports | 8 Ports |
|---------------------|---------------------|-------------------|
| CP-112UL/CP-112UL-I | CP-114UL/CP-114UL-I | CP-118U/CP-118U-I |
| CP-132UL/CP-132UL-I | CP-134U/CP-134U-I | CP-138U/CP-138U-I |
| CP-102UL | CP-104UL | CP-168U |
| CP-102U | CP-104JU | |
| CP-102UF | POS-104UL | |

Installing the Driver

1. Run the installation program, **DOSINST.EXE** under \Software\DOS on the Document & Software CD. Specify the target directory for the API-232 files (e.g., C:\MOXA). Press **F2** to start the installation.

| <u>741</u> | INSTALLATION API-222 | |
|------------|---------------------------------|----|
| | | |
| | | |
| | Installation | 1 |
| | Target directory C:\MOXA | |
| | F1: Kelp F2: Start installation | IJ |
| | | |
| | | |
| | | |

2. After installation is complete, you will be prompted to set up the board and driver initial values. It is strongly recommended that you set up the board and driver at this time by pressing **Y**.

| INSTALLATION AR-222 |
|---|
| |
| Installation complete, 57 files copied. After leaving this program, you have to run C:\MOXA\BIN\SETUP.EXE program to setup board & driver initial values. Do you want to run SETUP.EXE now ?(Y/N) |
| |
| |
| |
| |
| |

Setting up the Driver

The following instructions are not intended to illustrate every function of the setup program. For more detailed information, please refer to the help files by pressing **F1** in the setup program.

1. Run the setup program, **BIN\SETUP.EXE**.

Select your board model (CP-134U in this example) and press Enter.

| M | SETUP | API-262 |
|--|--|---------------------------------|
| | Board Setup | |
| Board no. Type 1 NO 2 NO 3 NO 4 NO ¥13: 3cv | C168 PCI Series C104 PCI Series CT-114 Series CP-132 Series | IRQ Bus/Dev no. mri setup |

2. Press **PgDn** to view and modify the setup options for the selected board.



3. The settings for each port will be displayed. Verify the settings and make any necessary changes.

| | | Po | rt S | letu | p | | | |
|------------------|---------|----------|---------|--------|--------|---------|------|---|
| Port Number | 81 | 82 | 83 | 84 | | | | |
| TxD huffer size | 1.K | 1K | 1K | 1K | - | | — | |
| RxD huffer size | 1K | 1K | 1K | 1K | = | 1 | = | |
| Baud rate | 9600 | 9600 | 9600 | 9600 | - | | - | |
| Character length | 8 | 8 | 8 | 8 | - | | - | |
| Stop bits | 1 | 1 | 1 | 1 | - | - | - | - |
| Parity | None | None | None | None | - | - | - | - |
| DTR output state | On | On | On | On | | - | - | - |
| RTS output state | On | On | On | On | | | - | - |
| CTS flow control | No | No | No | No | - 1 | - | | - |
| RTS flow control | No | No | No | No | | | - | - |
| Tx XON/OFF cotr1 | No | No | No | No | - | | - | - |
| Bx XON/OFF ontri | No | No | No | No | - 1 | - | = 10 | - |
| 94: I | leilg l | 95j: Geo | up edit | P10: 3 | Save B | sed Abo | et | |

- Port number: This is the port ID of each port. Application software will refer to a port by its port number (ID). Port numbers must be unique; duplicate port numbers are not allowed. The port number can range from 0 to 255 as long as it does not overlap with another port. Generally, you should consider the convenience of programming when specifying the port number.
- TxD buffer size: This is the transmission (output) buffer allocated in the system for each port.
- **RxD buffer size:** This is the receiving (input) buffer allocated in the system for each port.
- F5: Group Edit: This allows you to configure several ports simultaneously as a group.

| A12 Mexic | SETU | lb | | | £1₽. | -232 | |
|------------------------------|-------------------|-------------------|-----------------------|-------------------|-------------------------|--------------|---------|
| | Port | s Se | etuj | p | | | |
| Port Number TxD buffer si | 🗖 Group | Edi | 16 | | | | |
| RxD buffer si | PORT PROFILE | | POI | 278 | - | - | - |
| Baud rate | TxD buffer size | 1K | 64 | | 175 | - | - |
| Character len | Rx1 huffer size | 18 | 128 | | | - | - |
| Stop hits | Baud rate | 9600 | 256 | | - | | - |
| Parity | Character length | 8 | 512 | | | | |
| DTR output st | Stop hits | 1 | 1K | | - | - | - |
| RTS output st | Parity | None | ZK | | | | |
| CTS flow cont | DTR output state | On | 4K | | - | - | - |
| RTS flow cont | MTS output state | On | 8K | | - | - | - |
| Tx XON/OFF en | CTS flow control | No | 16K | | | - | - |
| Rx SON/OFF en | RTS flow control | No | 32K | | 1 | = | |
| | Tx XON/OFF entri | No | | _ | ed Abor | | · · · · |
| | Bx NON-OFF entr1 | No | | | 1000 mag | ns Manada | |
| | Enter: Edit/selec | e Tfa | da: Stu | itch | | | |
| | F10: Update | De | e: Abi | oet | 0.000,000,000 | | |
| 4 | | terre terre terre | 1. 1. 1. 1. 1. 1. | C. I. S. Harrison | d y a statistica | | |

4. Press F10 to save the latest configuration and exit the setup program.

Loading the Driver

After setting up the driver, you must load the driver in order to gain access to the serial ports on the serial board. Run **BIN\DP-DRV.EXE** at the DOS prompt. The driver will detect your multiport serial board automatically. You should see messages indicating successful detection of your module, such as the following:

```
Smartio/Industio Family DOS driver Version 1.9
Setup driver .
CP-134U series (Bus= x ,Dev=y) : OK!
Device driver setup O.K.
```

At this point, you can execute applications that support API-232 functions, or start developing applications using the API-232 library.

Unloading the Driver

To unload or release the driver from memory, enter DP-DRV /Q at the DOS prompt.

Linux (32-bit/64-bit)

The Linux drivers support the following models:

| CP-102U | CP-114UL | CP-132UL-I | CP-138U-I |
|----------|-----------|------------|-----------|
| CP-102UL | CP-118U | CP-134U | CP-168U |
| CP-104JU | CP-118U-I | CP-134U-I | POS-104UL |
| CP-104UL | CP-132UL | CP-138U | CP-102UF |

To install and load the Linux drivers, enter the following commands from the Linux prompt:

```
# mkdir moxa
# cd moxa
# tar -xzvf driv_linux_smart_vx.x_build_yymmddhh.tgz
# cd mxser
# make clean; make install
# cd /moxa/mxser/driver
```

./msmknod

modprobe mxser

If the driver has loaded successfully, you should see a message such as the following:

```
MOXA Smartio/Industio family driver version 1.11
Found MOXA CP-168U series board(BusNo=2,DevNo=13)
ttyM0 - ttyM7 max. baudrate = 921600 bps
```

You can verify that the driver has loaded by entering the following:

lsmode |grep mxser

You should see a message such as the following:

mxser 59484 0

The installation will include **msdiag**, a diagnostic utility, **msterm**, a terminal emulation program, and **msmon**, a monitoring utility. For additional information, please refer to **readme.txt** in the **/home/moxa/mxser** directory.

SCO

- SCO OpenServer 5
- SCO OpenServer 6
- SCO UnixWare 7

Follow the steps given in this section to install the SCO OpenServer 5/6 & SCO UnixWare 7 driver. The installation procedures for SCO UnixWare 7 and SCO OpenServer 5/6 are similar.

- 1. Copy the driver file .tar to your host.
- #tar xvf <driver tar file>
 #/tmp/moxa/mxinstall
- 3. The window shown below will open next. Press RETURN to continue.

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Moxa Smartio/Industio Family Device Driver Installation (Ver. 1.11)

For SCO UnixWare 7

Tar files, please wait....O.K. Press RETURN to continue

4. <Note: If your environment is SCO OpenServer 5/6, you can skip step 4 & 5>

When you see the screen below, select "Esc" to exit and reboot your computer.

MOXA Smartio/Industio Family Installation Utility (Ver 1.11)

| Smartio/Industio Family Basic Configuration | | | | | | | | |
|---|-------------------------------|--------------|-------------|-------------|--|--|--|--|
| Board No. | Board Type | I/O Address | Interrupt | Bus/Dev No. | | | | |
| 1 | None | | | | | | | |
| 2 | None | | | | | | | |
| 3 | None | | | | | | | |
| 4 | None | | | | | | | |
| | PgDn: getty Setting Esc: Exit | | | | | | | |
| | Enter: Confirm Input | Value Tab: (| Change Item | | | | | |

5. After rebooting computer, key in "moxaadm", you will see MAIN MENU, select Basic Configuration.

| MAIN MENU |
|-------------------------|
| Basic Configuration |
| Advanced Configuration |
| Interface Configuration |
| Port Monitoring |
| Terminal Emulation |
| Driver Removal |
| Exit |

 When you see the following screen, press Enter to select the MOXA Multiport Serial Board you installed by port and by model. For example, if you installed the CP-104UL, you should select 4 ports and then CP-104UL.

| Smartio/Industio Family Basic Configuration | | | | | | | | |
|---|----------------------|------------------------|-------------|-------------|--|--|--|--|
| Board No. | Board Type | Board Type I/O Address | | Bus/Dev No. | | | | |
| 1 | None | | | | | | | |
| 2 | None | | | | | | | |
| 3 | None | | | | | | | |
| 4 | None | | | | | | | |
| | PgDn: getty S | etting Esc: E | Exit | | | | | |
| | Enter: Confirm Input | Value Tab: (| Change Item | | | | | |

MOXA Smartio/Industio Family Installation Utility (Ver 1.11)

- 7. The board's basic information, such as I/O address, Bus No., and Device No., will be shown. The SCO system will assign the resources automatically to the Universal PCI board you selected.
- 8. Next, press "Esc" to exit and reboot your computer.
- 9. Note, whenever you change a MAIN MENU item, you have to reboot your computer.

4

Serial Programming Tools

The following topics are covered in this chapter:

- Overview
- Serial Programming Library
- PComm Utilities
 - Installation
 - PComm Diagnostic
 - PComm Monitor
 - PComm Terminal Emulator

Overview

Moxa provides Windows serial programming libraries and troubleshooting utilities that are easy to use and powerful. You can use these tools to reduce software development time.

The serial communication library is useful for developing applications for data communications, remote access, data acquisition, and industrial control. It provides a simpler solution compared to the more complex Windows Win32 COMM API.

PComm is a professional serial communication tool for Windows PCs. PComm includes the following features:

- · Useful utilities for diagnostics, port monitoring, and terminal emulation
- Sample programs
- Comprehensive help files

Serial Programming Library

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

The library provides a complete set of functions as well as various sample programs for Visual C++, Visual Basic, and Delphi. To view detailed descriptions of the available functions and sample programs, go to **Start** \rightarrow **Program** \rightarrow **PComm Lite** and select **PComm Lib Help**, **PComm Porting Notes**, or **PComm Programming Guide**. You may also refer to the sample programs in the PComm directory.

PComm Utilities

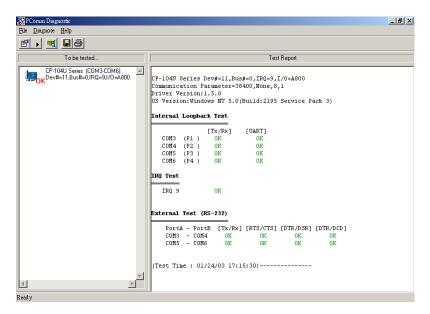
This section provides brief descriptions of the PComm utilities. For more information about these utilities, please refer to the Windows help files or to the API-232.txt file for DOS.

Installation

To install PComm, run **Setup.exe** from the Document and Software CD. Please note that the PComm diagnostic and monitor utilities are for Moxa boards only. These two utilities will not work with other serial boards.

PComm Diagnostic

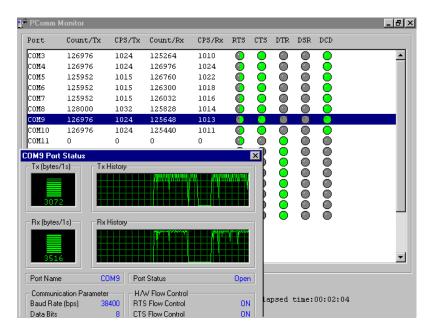
PComm Diagnostic is designed for Moxa boards only. It provides internal and external testing of IRQ, TxD/RxD, UART, CTS/RTS, DTR/DSR, DTR/DCD, and other items. You can use PComm Diagnostic to check the operation of both software and hardware.



To run the Diagnostic program, go to Start \rightarrow Program \rightarrow PComm Lite \rightarrow Diagnostic.

PComm Monitor

PComm Monitor is designed for Moxa boards in Windows NT only. It allows you to monitor data transmission of selected Moxa COM ports. It monitors data transmission, throughput, and line status at regular intervals. Click on a specific port to view that port's communication parameters and status.



To run PComm Monitor, go to Start → Program → PComm Lite → Monitor.

PComm Terminal Emulator

PComm Terminal Emulator can be used to connect to a serial port to verify that data transmission is functioning correctly. It supports multiple windows and both VT100 and ANSI terminal types. You can interactively transfer data, periodically send patterns, and transfer files using ASCII, XMODEM, YMODEM, ZMODEM, and KERMIT protocols.

To run PComm Terminal Emulator, go to **Start** \rightarrow **Program** \rightarrow **PComm Lite** \rightarrow **Terminal Emulator**.

| 🖥 PComm Terminal - COM44,38400,None,8,1,Dumb Terminal 📃 🖪 | P × |
|--|-----|
| <u>File</u> Edit <u>P</u> ort Manager <u>P</u> ort <u>W</u> indow <u>H</u> elp | |
| | |
| Image: COM43.9600.None.8.1 ANSI Image: Weilington and the state of the state | |
| from | |
| 🔂 COM44,38400,None,8,1,Dumb Terminal | × |
| Vou have mai. TBRM = (ansi # lc 0123456789abcdefghij0123456789abcdefghij0123456789abcdefghij0123 123456789abcdefghij0123456789abcdefghij0123456789abcdefghij0123 123456789abcdefghij0123456789abcdefghij0123456789abcdefghij0123 profile 0123456789abcdefghij0123456789abcdefghij0123456789abcdefghij0123 bin 0123456789abcdefghij0123456789abcdefghij0123456789abcdefghij0123 boot 0123456789abcdefghij0123456789abcdefghij0123456789abcdefghij0123 # 0123456789abcdefghij0123456789abcdefghij0123456789abcdefghij0123 boot 0123456789abcdefghij0123456789abcdefghij0123456789abcdefghij0123 0123456789abcdefghij0123456789abcdef | |

Pin Assignments

The following topics are covered in this chapter:

- Overview
- CP-102U
 - > DB9 (Male): RS-232
- CP-102UL
 - > DB25 (Female): RS-232
- CP-104JU
 - ▶ 8-pin RJ45: RS-232
- CP-104UL
 - ➢ DB44 (Female): RS-232
- CP-112UL
 - > DB25 (Female): RS-232
 - ➢ DB25 (Female): RS-422
 - DB25 (Female): RS-485 (4-wire)
 - DB25 (Female): RS-485 (2-wire)
- CP-114UL
 - ➢ DB44 (Female): RS-232
 - DB44 (Female): RS-422, RS-485 (4-wire)
 - DB44 (Female): RS-485 (2-wire)
- CP-118U
 - ➢ DB62 (Female): RS-232
 - DB62 (Female): RS-422, RS-485 (4-wire)
 - DB62 (Female): RS-485 (2-wire)
- CP-118U-I
 - DB78 (Female): RS-232
 - > DB78 (Female): RS-422, RS-485 (4-wire)
 - DB78 (Female): RS-485 (2-wire)
- CP-132UL, CP-132UL-I
 - DB25 (Female): RS-422
 - DB25 (Female): RS-485 (4-wire)
 - DB25 (Female): RS-485 (2-wire)
- CP-134U, CP-134U-I
 - > DB44 (Female): RS-232 (Ports 1 and 2 only)
 - ➢ DB44 (Female): RS-422
 - DB44 (Female): RS-485 (4-wire)
 - DB44 (Female): RS-485 (2-wire)

□ CP-138U

- > DB62 (Female): RS-422, RS-485 (4-wire)
- DB62 (Female): RS-485 (2-wire)
- CP-138U-I
 - > DB78 (Female): RS-422, RS-485 (4-wire)
 - DB78 (Female): RS-485 (2-wire)
- CP-168U
 - DB62 (Female): RS-232
- D POS-104UL
 - ➢ DB44 (Female): RS-232
- CP-102UF

Serial Connectors

- DB9 (Male)
- > DB25 (Male)
- > DB25 (Female)
- ≻ RJ45

Overview

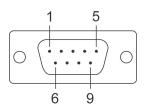
This chapter provides the pin assignments for each Moxa UPCI multiport serial board, as well as the pin assignments for the optional accessories. Except for the CP-102U and CP-102UF, which have two built-in DB9 (male) serial connectors and an ST type fiber connector, respectively, Moxa's UPCI boards do not have built-in serial port connectors. For all other models, you will need a cable or other accessory with standard serial connectors in order to connect serial devices to the board. The following chart shows the available cables and accessories for each model.

| Model | odel Board Connector Supported Accessories | | Serial Connectors | |
|-------------------------|--|---|-------------------|--|
| CP-102U | 2×DB9 (male) | | | |
| CP-102UL | | | | |
| CP-112UL | | | 2×DB9 (male) | |
| CP-112UL-I | DB25 (female) | CBL-M25M9x2-50 | | |
| CP-132UL | | | | |
| CP-132UL-I | | | | |
| CP-104UL | | CBL-M44M9x4-50 | 4×DB9 (male) | |
| CP-114UL | | | 4×DB25 (male) | |
| CP-114UL-I | DB44 (female) | CBL-M44M25x4-50 | | |
| CP-134U | | CDL-10441023X4-30 | | |
| CP-134U-I | | | | |
| CP-104JU | RJ45 | CBL-RJ45M9-150 | 4×DB9 (male) | |
| | | CBL-RJ45M25-150 | 4×DB25 (male) | |
| | | OPT8-M9 | 8×DB9 (male) | |
| | | CBL-M62M9x8-100 (OPT8D) | | |
| CP-118U | | OPT8B | 8×DB25 (male) | |
| CP-138U DB62 (female) 0 | | CBL-M62M25x8-100 (OPT8C) | 6×DB25 (Male) | |
| CP-168U | | OPT8A, OPT8S, OPT8F, OPT8Z, OPT8K, 8×DB25 (female | | |
| | | OPT8I | 8×DB25 (Temale) | |
| | | OPT8-RJ45* | 8×RJ45 | |
| CP-118U-I | DP79 (fomalo) | CBL-M78M9x8-100 | 8×DB9 (male) | |
| CP-138U-I DB78 (female) | | CBL-M78M25x8-100 | 8×DB25 (male) | |
| POS-104UL | DB44 (female) | CBL-M44M9x4-50(POS) | 4×DB9 (male) | |
| CP-102UF | STx2 | | | |

* The OPT8-RJ45 is designed for RS-232 only. It should only be used with the CP-118U in RS-232 mode or with the CP-168U.

The serial connectors on each accessory use standard serial port pin assignments. Please refer to the Serial Connectors section for details.

CP-102U



This board supports RS-232 only.

| Model | Board Connector | Supported Accessories | Serial Connectors |
|---------|-----------------|-----------------------|-------------------|
| CP-102U | 2×DB9 (male) | | |

DB9 (Male): RS-232

| Pin | Signal | |
|-----|--------|--|
| 1 | DCD | |
| 2 | RxD | |
| 3 | TxD | |
| 4 | DTR | |
| 5 | GND | |
| 6 | DSR | |
| 7 | RTS | |
| 8 | CTS | |

CP-102UL

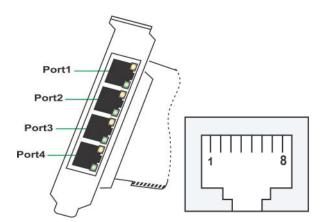
This board supports RS-232 only.

| Model | Board Connector | Supported Accessories | Serial Connectors |
|----------|-----------------|-----------------------|-------------------|
| CP-102UL | DB25 (female) | CBL-M25M9x2-50 | 2×DB9 (male) |

DB25 (Female): RS-232

| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1 | - | 14 | _ |
| 2 | DCD1 | 15 | DTR1 |
| 3 | GND | 16 | DSR1 |
| 4 | CTS1 | 17 | RTS1 |
| 5 | RxD1 | 18 | TxD1 |
| 6 | - | 19 | - |
| 7 | - | 20 | - |
| 8 | - | 21 | DCD0 |
| 9 | DTRO | 22 | GND |
| 10 | DSR0 | 23 | CTS0 |
| 11 | RTS0 | 24 | RxD0 |
| 12 | TxD0 | 25 | _ |
| 13 | _ | _ | _ |

CP-104JU



This board supports RS-232 only.

| Model | Board Connector | Supported Accessories | Serial Connectors |
|----------|-----------------|-----------------------|-------------------|
| CP-104JU | DIAE | CBL-RJ45M9-150 | 4×DB9 (male) |
| | RJ45 | CBL-RJ45M25-150 | 4×DB25 (male) |

8-pin RJ45: RS-232

| Pin | Signal |
|-----|--------|
| 1 | DSR |
| 2 | RTS |
| 3 | GND |
| 4 | TxD |
| 5 | RxD |
| 6 | DCD |
| 7 | CTS |
| 8 | DTR |

CP-104UL

This board supports RS-232 only.

| Model | Board Connector | Supported Accessories | Serial Connectors | |
|----------|-----------------|-----------------------|-------------------|--|
| CP-104UL | DB44 (formale) | CBL-M44M9x4-50 | 4×DB9 (male) | |
| | DB44 (female) | CBL-M44M25x4-50 | 4×DB25 (male) | |

DB44 (Female): RS-232

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|-----|--------|
| 1 | TxD3 | 16 | CTS3 | 31 | DCD3 |
| 2 | RxD3 | 17 | DTR3 | 32 | - |
| 3 | RTS3 | 18 | DSR3 | 33 | GND |
| 4 | _ | 19 | - | 34 | - |
| 5 | TxD2 | 20 | CTS2 | 35 | DCD2 |
| 6 | RxD2 | 21 | DTR2 | 36 | - |
| 7 | RTS2 | 22 | DSR2 | 37 | GND |
| 8 | - | 23 | — | 38 | - |
| 9 | TxD1 | 24 | CTS1 | 39 | DCD1 |
| 10 | RxD1 | 25 | DTR1 | 40 | - |
| 11 | RTS1 | 26 | DSR1 | 41 | GND |
| 12 | _ | 27 | - | 42 | DCD0 |
| 13 | TxD0 | 28 | CTS0 | 43 | - |
| 14 | RxD0 | 29 | DTRO | 44 | GND |
| 15 | RTS0 | 30 | DSR0 | _ | - |

CP-112UL

This board supports RS-232, RS-422, and RS-485 (both 2 and 4-wire).

| Model | Board Connector | Supported Accessories | Serial Connectors |
|----------|-----------------|-----------------------|-------------------|
| CP-112UL | DB25 (female) | CBL-M25M9x2-50 | 2×DB9 (male) |

DB25 (Female): RS-232

| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1 | _ | 14 | _ |
| 2 | DCD1 | 15 | DTR1 |
| 3 | GND | 16 | DSR1 |
| 4 | CTS1 | 17 | RTS1 |
| 5 | RxD1 | 18 | TxD1 |
| 6 | - | 19 | - |
| 7 | - | 20 | - |
| 8 | _ | 21 | DCD0 |
| 9 | DTRO | 22 | GND |
| 10 | DSR0 | 23 | CTS0 |
| 11 | RTS0 | 24 | RxD0 |
| 12 | TxD0 | 25 | _ |
| 13 | _ | - | - |

DB25 (Female): RS-422

| Pin | Signal | Pin | Signal |
|-----|----------|-----|----------|
| 1 | _ | 14 | - |
| 2 | TxD1-(A) | 15 | RxD1-(A) |
| 3 | GND1 | 16 | - |
| 4 | - | 17 | _ |
| 5 | TxD1+(B) | 18 | RxD1+(B) |
| 6 | - | 19 | - |
| 7 | - | 20 | _ |
| 8 | - | 21 | TxD0-(A) |
| 9 | RxD0-(A) | 22 | GND0 |
| 10 | - | 23 | - |
| 11 | _ | 24 | TxD0+(B) |
| 12 | RxD0+(B) | 25 | _ |
| 13 | _ | _ | _ |

DB25 (Female): RS-485 (4-wire)

| Pin | Signal | Pin | Signal |
|-----|----------|-----|----------|
| 1 | - | 14 | - |
| 2 | TxD1-(A) | 15 | RxD1-(A) |
| 3 | GND1 | 16 | - |
| 4 | - | 17 | - |
| 5 | TxD1+(B) | 18 | RxD1+(B) |
| 6 | _ | 19 | _ |
| 7 | - | 20 | - |
| 8 | - | 21 | TxD0-(A) |
| 9 | RxD0-(A) | 22 | GND0 |
| 10 | _ | 23 | _ |
| 11 | _ | 24 | TxD0+(B) |
| 12 | RxD0+(B) | 25 | _ |
| 13 | _ | _ | _ |

DB25 (Female): RS-485 (2-wire)

| Pin | Signal | Pin | Signal |
|-----|-----------|-----|-----------|
| 1 | - | 14 | - |
| 2 | _ | 15 | Data1-(A) |
| 3 | GND1 | 16 | - |
| 4 | - | 17 | - |
| 5 | - | 18 | Data1+(B) |
| 6 | - | 19 | - |
| 7 | _ | 20 | - |
| 8 | - | 21 | - |
| 9 | Data0-(A) | 22 | GND0 |
| 10 | - | 23 | - |
| 11 | _ | 24 | - |
| 12 | Data0+(B) | 25 | _ |
| 13 | _ | _ | _ |

CP-114UL

This board supports RS-232, RS-422, and RS-485 (both 2 and 4-wire).

| Mode | el | Board Connector | Supported Accessories | Serial Connectors |
|-------|------------------------|-----------------|-----------------------|-------------------|
| CD 11 | CP-114UL DB44 (female) | | CBL-M44M9x4-50 | 4×DB9 (male) |
| CP-TT | | CBL-M44M25x4-50 | 4×DB25 (male) | |

DB44 (Female): RS-232

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|-----|--------|
| 1 | TxD3 | 16 | CTS3 | 31 | DCD3 |
| 2 | RxD3 | 17 | DTR3 | 32 | - |
| 3 | RTS3 | 18 | DSR3 | 33 | GND |
| 4 | _ | 19 | - | 34 | - |
| 5 | TxD2 | 20 | CTS2 | 35 | DCD2 |
| 6 | RxD2 | 21 | DTR2 | 36 | - |
| 7 | RTS2 | 22 | DSR2 | 37 | GND |
| 8 | - | 23 | - | 38 | - |
| 9 | TxD1 | 24 | CTS1 | 39 | DCD1 |
| 10 | RxD1 | 25 | DTR1 | 40 | - |
| 11 | RTS1 | 26 | DSR1 | 41 | GND |
| 12 | _ | 27 | - | 42 | DCD0 |
| 13 | TxD0 | 28 | CTS0 | 43 | _ |
| 14 | RxD0 | 29 | DTRO | 44 | GND |
| 15 | RTS0 | 30 | DSR0 | _ | _ |

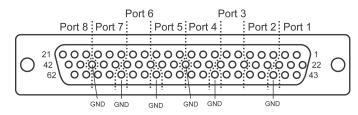
DB44 (Female): RS-422, RS-485 (4-wire)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|----------|-----|----------|-----|----------|
| 1 | RxD3+(B) | 16 | - | 31 | TxD3-(A) |
| 2 | TxD3+(B) | 17 | RxD3-(A) | 32 | - |
| 3 | - | 18 | - | 33 | GND |
| 4 | - | 19 | - | 34 | - |
| 5 | RxD2+(B) | 20 | - | 35 | TxD2-(A) |
| 6 | TxD2+(B) | 21 | RxD2-(A) | 36 | - |
| 7 | - | 22 | - | 37 | GND |
| 8 | - | 23 | - | 38 | - |
| 9 | RxD1+(B) | 24 | - | 39 | TxD1-(A) |
| 10 | TxD1+(B) | 25 | RxD1-(A) | 40 | - |
| 11 | - | 26 | - | 41 | GND |
| 12 | - | 27 | - | 42 | TxD0-(A) |
| 13 | RxD0+(B) | 28 | - | 43 | - |
| 14 | RxD0-(A) | 29 | RxD0-(A) | 44 | GND |
| 15 | _ | 30 | _ | - | _ |

DB44 (Female): RS-485 (2-wire)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|-----------|-----|-----------|-----|--------|
| 1 | Data3+(B) | 16 | _ | 31 | - |
| 2 | - | 17 | Data3-(A) | 32 | - |
| 3 | _ | 18 | _ | 33 | GND |
| 4 | - | 19 | - | 34 | - |
| 5 | Data2+(B) | 20 | - | 35 | - |
| 6 | - | 21 | Data2-(A) | 36 | - |
| 7 | - | 22 | - | 37 | GND |
| 8 | - | 23 | - | 38 | - |
| 9 | Data1+(B) | 24 | - | 39 | - |
| 10 | - | 25 | Data1-(A) | 40 | - |
| 11 | - | 26 | - | 41 | GND |
| 12 | - | 27 | - | 42 | - |
| 13 | Data0+(B) | 28 | _ | 43 | _ |
| 14 | _ | 29 | Data0-(A) | 44 | GND |
| 15 | _ | 30 | _ | - | _ |

CP-118U



This board supports RS-232, RS-422, and RS-485 (both 2 and 4-wire).

| Model | Board Connector | Supported Accessories | Serial Connectors |
|---------|-----------------|--------------------------|-------------------|
| | | OPT8-M9 | QuiDBQ (mala) |
| | | CBL-M62M9x8-100 (OPT8D) | 8×DB9 (male) |
| CD 110U | | OPT8B | 8×DB25 (male) |
| CP-118U | DB62 (female) | CBL-M62M25x8-100 (OPT8C) | 8×DB25 (male) |
| | | OPT8A, OPT8S | 8×DB25 (female) |
| | | OPT8-RJ45* | 8×RJ45 |

* The OPT8-RJ45 is designed for RS-232 only. It should only be used with the CP-118U in RS-232 mode.

| DB62 | (Female): RS-232 | |
|------|------------------|--|
|------|------------------|--|

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|-----|--------|
| 1 | TxD0 | 22 | RxD0 | 43 | CTS0 |
| 2 | DTRO | 23 | DSR0 | 44 | RTS0 |
| 3 | RxD1 | 24 | DCD0 | 45 | GND |
| 4 | DSR1 | 25 | TxD1 | 46 | CTS1 |
| 5 | DCD1 | 26 | DTR1 | 47 | RTS1 |
| 6 | TxD2 | 27 | RxD2 | 48 | CTS2 |
| 7 | DTR2 | 28 | DSR2 | 49 | RTS2 |
| 8 | RxD3 | 29 | DCD2 | 50 | GND |
| 9 | DSR3 | 30 | TxD3 | 51 | CTS3 |
| 10 | DCD3 | 31 | DTR3 | 52 | RTS3 |
| 11 | RxD4 | 32 | GND | 53 | CTS4 |
| 12 | DSR4 | 33 | TxD4 | 54 | RTS4 |
| 13 | DCD4 | 34 | DTR4 | 55 | GND |
| 14 | TxD5 | 35 | RxD5 | 56 | CTS5 |
| 15 | DTR5 | 36 | DSR5 | 57 | RTS5 |
| 16 | RxD6 | 37 | DCD5 | 58 | GND |
| 17 | DSR6 | 38 | TxD6 | 59 | CTS6 |
| 18 | DCD6 | 39 | DTR6 | 60 | RTS6 |
| 19 | RxD7 | 40 | GND | 61 | CTS7 |
| 20 | DSR7 | 41 | TxD7 | 62 | RTS7 |
| 21 | DCD7 | 42 | DTR7 | - | - |

DB62 (Female): RS-422, RS-485 (4-wire)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|----------|-----|----------|-----|--------|
| 1 | RxD0+(B) | 22 | TxD0+(B) | 43 | - |
| 2 | RxD0-(A) | 23 | _ | 44 | - |
| 3 | TxD1+(B) | 24 | TxD0-(A) | 45 | GND |
| 4 | - | 25 | RxD1+(B) | 46 | - |
| 5 | TxD1-(A) | 26 | RxD1-(A) | 47 | - |
| 6 | RxD2+(B) | 27 | TxD2+(B) | 48 | - |
| 7 | RxD2-(A) | 28 | _ | 49 | - |
| 8 | TxD3+(B) | 29 | TxD2-(A) | 50 | GND |
| 9 | - | 30 | RxD3+(B) | 51 | - |
| 10 | TxD3-(A) | 31 | RxD3-(A) | 52 | - |
| 11 | TxD4+(B) | 32 | GND | 53 | - |
| 12 | - | 33 | RxD4+(B) | 54 | - |
| 13 | TxD4-(A) | 34 | RxD4-(A) | 55 | GND |
| 14 | RxD5+(B) | 35 | TxD5+(B) | 56 | - |
| 15 | RxD5-(A) | 36 | _ | 57 | - |
| 16 | TxD6+(B) | 37 | TxD5-(A) | 58 | GND |
| 17 | - | 38 | RxD6+(B) | 59 | - |
| 18 | TxD6-(A) | 39 | RxD6-(A) | 60 | - |
| 19 | TxD7+(B) | 40 | GND | 61 | - |
| 20 | _ | 41 | RxD7+(B) | 62 | - |
| 21 | TxD7-(A) | 42 | RxD7-(A) | - | - |

DB62 (Female): RS-485 (2-wire)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|-----------|-----|-----------|-----|--------|
| 1 | Data0+(B) | 22 | _ | 43 | - |
| 2 | Data0-(A) | 23 | _ | 44 | - |
| 3 | _ | 24 | _ | 45 | GND |
| 4 | - | 25 | Data1+(B) | 46 | - |
| 5 | - | 26 | Data1-(A) | 47 | - |
| 6 | Data2+(B) | 27 | - | 48 | - |
| 7 | Data2-(A) | 28 | _ | 49 | - |
| 8 | - | 29 | - | 50 | GND |
| 9 | - | 30 | Data3+(B) | 51 | - |
| 10 | - | 31 | Data3-(A) | 52 | - |
| 11 | - | 32 | GND | 53 | - |
| 12 | - | 33 | Data4+(B) | 54 | - |
| 13 | - | 34 | Data4-(A) | 55 | GND |
| 14 | Data5+(B) | 35 | - | 56 | - |
| 15 | Data5-(A) | 36 | - | 57 | - |
| 16 | - | 37 | - | 58 | GND |
| 17 | _ | 38 | Data6+(B) | 59 | - |
| 18 | _ | 39 | Data6-(A) | 60 | _ |
| 19 | _ | 40 | GND | 61 | - |
| 20 | _ | 41 | Data7+(B) | 62 | - |
| 21 | _ | 42 | Data7-(A) | - | - |

CP-118U-I

This board supports RS-232, RS-422, and RS-485 (both 2 and 4-wire).

| Model | Board Connector | Supported Accessories | Serial Connectors |
|-----------|-----------------|-----------------------|-------------------|
| CP-118U-I | | CBL-M78M9x8-100 | 8×DB9 (male) |
| | DB78 (female) | CBL-M78M25x8-100 | 8×DB25 (male) |

DB78 (Female): RS-232

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|-----|--------|
| 1 | GND7 | 27 | DTR5 | 53 | CTS2 |
| 2 | TxD7 | 28 | RTS4 | 54 | DSR2 |
| 3 | - | 29 | DTR4 | 55 | CTS1 |
| 4 | GND6 | 30 | - | 56 | DSR1 |
| 5 | TxD6 | 31 | RTS3 | 57 | - |
| 6 | GND5 | 32 | DTR3 | 58 | CTS0 |
| 7 | TxD5 | 33 | RTS2 | 59 | DSR0 |
| 8 | - | 34 | DTR2 | 60 | DCD7 |
| 9 | GND4 | 35 | - | 61 | RxD7 |
| 10 | TxD4 | 36 | RTS1 | 62 | DCD6 |
| 11 | GND3 | 37 | DTR1 | 63 | RxD6 |
| 12 | TxD3 | 38 | RTS0 | 64 | - |
| 13 | - | 39 | DTRO | 65 | DCD5 |
| 14 | GND2 | 40 | CTS7 | 66 | RxD5 |
| 15 | TxD2 | 41 | DSR7 | 67 | DCD4 |
| 16 | GND1 | 42 | - | 68 | RxD4 |
| 17 | TxD1 | 43 | CTS6 | 69 | - |
| 18 | _ | 44 | DSR6 | 70 | DCD3 |
| 19 | GND0 | 45 | CTS5 | 71 | RxD3 |
| 20 | TxD0 | 46 | DSR5 | 72 | DCD2 |
| 21 | RTS7 | 47 | - | 73 | RxD2 |
| 22 | DTR7 | 48 | CTS4 | 74 | - |
| 23 | RTS6 | 49 | DSR4 | 75 | DCD1 |
| 24 | DTR6 | 50 | CTS3 | 76 | RxD1 |
| 25 | - | 51 | DSR3 | 77 | DCD0 |
| 26 | RTS5 | 52 | _ | 78 | RxD0 |

DB78 (Female): RS-422, RS-485 (4-wire)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|----------|-----|----------|-----|----------|
| 1 | GND7 | 27 | RxD5-(A) | 53 | - |
| 2 | RxD7+(B) | 28 | _ | 54 | - |
| 3 | _ | 29 | RxD4-(A) | 55 | - |
| 4 | GND6 | 30 | - | 56 | - |
| 5 | RxD6+(B) | 31 | - | 57 | - |
| 6 | GND5 | 32 | RxD3-(A) | 58 | - |
| 7 | RxD5+(B) | 33 | - | 59 | - |
| 8 | - | 34 | RxD2-(A) | 60 | TxD7-(A) |
| 9 | GND4 | 35 | - | 61 | TxD7+(B) |
| 10 | RxD4+(B) | 36 | _ | 62 | TxD6-(A) |
| 11 | GND3 | 37 | RxD1-(A) | 63 | TxD6+(B) |
| 12 | RxD3+(B) | 38 | _ | 64 | - |
| 13 | _ | 39 | RxD0-(A) | 65 | TxD5-(A) |
| 14 | GND2 | 40 | - | 66 | TxD5+(B) |
| 15 | RxD2+(B) | 41 | _ | 67 | TxD4-(A) |
| 16 | GND1 | 42 | - | 68 | TxD4+(B) |
| 17 | RxD1+(B) | 43 | — | 69 | - |
| 18 | _ | 44 | _ | 70 | TxD3-(A) |
| 19 | GND0 | 45 | _ | 71 | TxD3+(B) |
| 20 | RxD0+(B) | 46 | - | 72 | TxD2-(A) |
| 21 | _ | 47 | _ | 73 | TxD2+(B) |
| 22 | RxD7-(A) | 48 | _ | 74 | - |
| 23 | _ | 49 | _ | 75 | TxD1-(A) |
| 24 | RxD6-(A) | 50 | _ | 76 | TxD1+(B) |
| 25 | _ | 51 | - | 77 | TxD0-(A) |
| 26 | _ | 52 | _ | 78 | TxD0+(B) |

DB78 (Female): RS-485 (2-wire)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|-----------|-----|-----------|-----|-----------|
| 1 | GND7 | 15 | Data2+(B) | 29 | Data4-(A) |
| 2 | Data7+(B) | 16 | GND1 | 30 | - |
| 3 | - | 17 | Data1+(B) | 31 | - |
| 4 | GND6 | 18 | - | 32 | Data3-(A) |
| 5 | Data6+(B) | 19 | GND0 | 33 | - |
| 6 | GND5 | 20 | Data0+(B) | 34 | Data2-(A) |
| 7 | Data5+(B) | 21 | - | 35 | - |
| 8 | - | 22 | Data7-(A) | 36 | - |
| 9 | GND4 | 23 | _ | 37 | Data1-(A) |
| 10 | Data4+(B) | 24 | Data6-(A) | 38 | - |
| 11 | GND3 | 25 | - | 39 | Data0-(A) |
| 12 | Data3+(B) | 26 | _ | 40 | _ |
| 13 | _ | 27 | Data5-(A) | 41 | _ |
| 14 | GND2 | 28 | _ | 42 | _ |

CP-132UL, CP-132UL-I

These boards support RS-422 and RS-485 (both 2 and 4-wire).

| Model | Board Connector | Supported Accessories | Serial Connectors |
|------------|-----------------|-----------------------|-------------------|
| CP-132UL | | | 2. DBO (mala) |
| CP-132UL-I | DB25 (female) | CBL-M25M9x2-50 | 2×DB9 (male) |

DB25 (Female): RS-422

| Pin | Signal | Pin | Signal |
|-----|----------|-----|----------|
| 1 | - | 14 | CTS1-(A) |
| 2 | TxD1-(A) | 15 | RxD1-(A) |
| 3 | GND1 | 16 | RTS1-(A) |
| 4 | CTS1+(B) | 17 | RTS1+(B) |
| 5 | TxD1+(B) | 18 | RxD1+(B) |
| 6 | - | 19 | - |
| 7 | - | 20 | - |
| 8 | CTSO-(A) | 21 | TxD0-(A) |
| 9 | RxD0-(A) | 22 | GND0 |
| 10 | RTSO-(A) | 23 | CTSO+(B) |
| 11 | RTSO+(B) | 24 | TxD0+(B) |
| 12 | RxD0+(B) | 25 | _ |
| 13 | _ | _ | _ |

DB25 (Female): RS-485 (4-wire)

| Pin | Signal | Pin | Signal |
|-----|----------|-----|----------|
| 1 | - | 14 | - |
| 2 | TxD1-(A) | 15 | RxD1-(A) |
| 3 | GND1 | 16 | _ |
| 4 | - | 17 | - |
| 5 | TxD1+(B) | 18 | RxD1+(B) |
| 6 | - | 19 | - |
| 7 | - | 20 | _ |
| 8 | - | 21 | TxD0-(A) |
| 9 | RxD0-(A) | 22 | GND0 |
| 10 | - | 23 | - |
| 11 | _ | 24 | TxD0+(B) |
| 12 | RxD0+(B) | 25 | _ |
| 13 | _ | _ | _ |

DB25 (Female): RS-485 (2-wire)

| Pin | Signal | Pin | Signal |
|-----|-----------|-----|-----------|
| 1 | _ | 14 | _ |
| 2 | - | 15 | Data1-(A) |
| 3 | GND1 | 16 | _ |
| 4 | - | 17 | _ |
| 5 | - | 18 | Data1+(B) |
| 6 | - | 19 | - |
| 7 | - | 20 | _ |
| 8 | - | 21 | - |
| 9 | Data0-(A) | 22 | GND0 |
| 10 | - | 23 | - |
| 11 | _ | 24 | _ |
| 12 | Data0+(B) | 25 | _ |
| 13 | _ | _ | _ |

CP-134U, CP-134U-I

These boards support RS-422 and RS-485 (both 2 and 4-wire). Ports 1 and 2 also support RS-232.

| Model | Board Connector | Supported Accessories | Serial Connectors |
|-----------|-----------------|-----------------------|-------------------|
| CP-134U | DB44 (female) | CBL-M44M9x4-50 | 4×DB9 (male) |
| CP-134U-I | | CBL-M44M25x4-50 | 4×DB25 (male) |

DB44 (Female): RS-232 (Ports 1 and 2 only)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|-----|--------|
| 1 | - | 16 | - | 31 | - |
| 2 | _ | 17 | _ | 32 | - |
| 3 | - | 18 | - | 33 | - |
| 4 | _ | 19 | - | 34 | - |
| 5 | - | 20 | - | 35 | - |
| 6 | _ | 21 | - | 36 | - |
| 7 | _ | 22 | - | 37 | - |
| 8 | - | 23 | - | 38 | - |
| 9 | TXD1 | 24 | CTS1 | 39 | DCD1 |
| 10 | RXD1 | 25 | DTR1 | 40 | RI1 |
| 11 | RTS1 | 26 | DSR1 | 41 | GND |
| 12 | _ | 27 | _ | 42 | DCD0 |
| 13 | TXDO | 28 | CTS0 | 43 | RIO |
| 14 | RXD0 | 29 | DTRO | 44 | GND |
| 15 | RTS0 | 30 | DSR0 | _ | _ |

DB44 (Female): RS-422

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|----------|-----|----------|-----|----------|
| 1 | RXD3+(B) | 16 | CTS3+(B) | 31 | TXD3-(A) |
| 2 | TXD3+(B) | 17 | RXD3-(A) | 32 | CTS3-(A) |
| 3 | RTS3+(B) | 18 | RTS3-(A) | 33 | GND3 |
| 4 | _ | 19 | _ | 34 | - |
| 5 | RXD2+(B) | 20 | CTS2+(B) | 35 | TXD2-(A) |
| 6 | TXD2+(B) | 21 | RXD2-(A) | 36 | CTS2-(A) |
| 7 | RTS2+(B) | 22 | RTS2-(A) | 37 | GND2 |
| 8 | - | 23 | — | 38 | - |
| 9 | RXD1+(B) | 24 | CTS1+(B) | 39 | TXD1-(A) |
| 10 | TXD1+(B) | 25 | RXD1-(A) | 40 | CTS1-(A) |
| 11 | RTS1+(B) | 26 | RTS1-(A) | 41 | GND1 |
| 12 | - | 27 | — | 42 | TXD0-(A) |
| 13 | RXD0+(B) | 28 | CTSO+(B) | 43 | CTSO-(A) |
| 14 | TXD0+(B) | 29 | RXD0-(A) | 44 | GND0 |
| 15 | RTSO+(B) | 30 | RTS0-(A) | - | - |

DB44 (Female): RS-485 (4-wire)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|----------|-----|----------|-----|----------|
| 1 | RXD3+(B) | 16 | - | 31 | TXD3-(A) |
| 2 | TXD3+(B) | 17 | RXD3-(A) | 32 | - |
| 3 | - | 18 | - | 33 | GND3 |
| 4 | - | 19 | - | 34 | - |
| 5 | RXD2+(B) | 20 | - | 35 | TXD2-(A) |
| 6 | TXD2+(B) | 21 | RXD2-(A) | 36 | - |
| 7 | - | 22 | - | 37 | GND2 |
| 8 | - | 23 | - | 38 | - |
| 9 | RXD1+(B) | 24 | - | 39 | TXD1-(A) |
| 10 | TXD1+(B) | 25 | RXD1-(A) | 40 | - |
| 11 | - | 26 | - | 41 | GND1 |
| 12 | - | 27 | - | 42 | TXD0-(A) |
| 13 | RXD0+(B) | 28 | _ | 43 | _ |
| 14 | TXD0+(B) | 29 | RXD0-(A) | 44 | GND0 |
| 15 | _ | 30 | — | _ | _ |

DB44 (Female): RS-485 (2-wire)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|-----------|-----|-----------|-----|--------|
| 1 | Data3+(B) | 16 | _ | 31 | - |
| 2 | - | 17 | Data3-(A) | 32 | - |
| 3 | - | 18 | _ | 33 | GND3 |
| 4 | - | 19 | - | 34 | - |
| 5 | Data2+(B) | 20 | - | 35 | - |
| 6 | - | 21 | Data2-(A) | 36 | - |
| 7 | - | 22 | - | 37 | GND2 |
| 8 | - | 23 | - | 38 | - |
| 9 | Data1+(B) | 24 | - | 39 | - |
| 10 | - | 25 | Data1-(A) | 40 | - |
| 11 | - | 26 | - | 41 | GND1 |
| 12 | - | 27 | - | 42 | - |
| 13 | Data0+(B) | 28 | _ | 43 | _ |
| 14 | _ | 29 | Data0-(A) | 44 | GND0 |
| 15 | _ | 30 | _ | _ | _ |

CP-138U

This board supports RS-422 and RS-485 (both 2 and 4-wire).

| Model | Board Connector | Supported Accessories | Serial Connectors |
|---------|-----------------|------------------------------------|-------------------|
| | | OPT8-M9 | 8×DB9 (male) |
| | DB62 (female) | CBL-M62M9x8-100 (OPT8D) | |
| CP-138U | | OPT8B | 8×DB25 (male) |
| CP-1380 | | CBL-M62M25x8-100 (OPT8C) | |
| | | OPT8A, OPT8S, OPT8F, OPT8Z, OPT8K, | 8×DB25 (female) |
| | | OPT8I | |

DB62 (Female): RS-422, RS-485 (4-wire)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|----------|-----|----------|-----|--------|
| 1 | RxD0+(B) | 22 | TxD0+(B) | 43 | - |
| 2 | RxD0-(A) | 23 | _ | 44 | - |
| 3 | TxD1+(B) | 24 | TxD0-(A) | 45 | GND |
| 4 | - | 25 | RxD1+(B) | 46 | - |
| 5 | TxD1-(A) | 26 | RxD1-(A) | 47 | - |
| 6 | RxD2+(B) | 27 | TxD2+(B) | 48 | - |
| 7 | RxD2-(A) | 28 | _ | 49 | - |
| 8 | TxD3+(B) | 29 | TxD2-(A) | 50 | GND |
| 9 | _ | 30 | RxD3+(B) | 51 | - |
| 10 | TxD3-(A) | 31 | RxD3-(A) | 52 | - |
| 11 | TxD4+(B) | 32 | GND | 53 | - |
| 12 | - | 33 | RxD4+(B) | 54 | - |
| 13 | TxD4-(A) | 34 | RxD4-(A) | 55 | GND |
| 14 | RxD5+(B) | 35 | TxD5+(B) | 56 | - |
| 15 | RxD5-(A) | 36 | — | 57 | - |
| 16 | TxD6+(B) | 37 | TxD5-(A) | 58 | GND |
| 17 | _ | 38 | RxD6+(B) | 59 | - |
| 18 | TxD6-(A) | 39 | RxD6-(A) | 60 | - |
| 19 | TxD7+(B) | 40 | GND | 61 | - |
| 20 | _ | 41 | RxD7+(B) | 62 | _ |
| 21 | TxD7-(A) | 42 | RxD7-(A) | - | _ |

DB62 (Female): RS-485 (2-wire)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|-----------|-----|-----------|-----|--------|
| 1 | Data0+(B) | 22 | - | 43 | - |
| 2 | Data0-(A) | 23 | — | 44 | - |
| 3 | - | 24 | - | 45 | GND |
| 4 | - | 25 | Data1+(B) | 46 | - |
| 5 | - | 26 | Data1-(A) | 47 | - |
| 6 | Data2+(B) | 27 | - | 48 | - |
| 7 | Data2-(A) | 28 | — | 49 | - |
| 8 | - | 29 | - | 50 | GND |
| 9 | - | 30 | Data3+(B) | 51 | - |
| 10 | - | 31 | Data3-(A) | 52 | - |
| 11 | - | 32 | GND | 53 | - |
| 12 | — | 33 | Data4+(B) | 54 | - |
| 13 | - | 34 | Data4-(A) | 55 | GND |
| 14 | Data5+(B) | 35 | — | 56 | - |
| 15 | Data5-(A) | 36 | — | 57 | - |
| 16 | - | 37 | - | 58 | GND |
| 17 | - | 38 | Data6+(B) | 59 | - |
| 18 | _ | 39 | Data6-(A) | 60 | _ |
| 19 | - | 40 | GND | 61 | - |
| 20 | _ | 41 | Data7+(B) | 62 | - |
| 21 | - | 42 | Data7-(A) | - | _ |

CP-138U-I

This board supports RS-422 and RS-485 (both 2 and 4-wire).

| Model | Board Connector | Supported Accessories | Serial Connectors |
|-----------|-----------------|-----------------------|-------------------|
| CP-138U-I | DB78 (female) | CBL-M78M9x8-100 | 8×DB9 (male) |
| | | CBL-M78M25x8-100 | 8×DB25 (male) |

DB78 (Female): RS-422, RS-485 (4-wire)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|----------|-----|----------|-----|----------|
| 1 | GND7 | 27 | RxD5-(A) | 53 | - |
| 2 | RxD7+(B) | 28 | - | 54 | - |
| 3 | - | 29 | RxD4-(A) | 55 | - |
| 4 | GND6 | 30 | - | 56 | - |
| 5 | RxD6+(B) | 31 | — | 57 | - |
| 6 | GND5 | 32 | RxD3-(A) | 58 | - |
| 7 | RxD5+(B) | 33 | — | 59 | - |
| 8 | - | 34 | RxD2-(A) | 60 | TxD7-(A) |
| 9 | GND4 | 35 | - | 61 | TxD7+(B) |
| 10 | RxD4+(B) | 36 | _ | 62 | TxD6-(A) |
| 11 | GND3 | 37 | RxD1-(A) | 63 | TxD6+(B) |
| 12 | RxD3+(B) | 38 | _ | 64 | - |
| 13 | - | 39 | RxD0-(A) | 65 | TxD5-(A) |
| 14 | GND2 | 40 | — | 66 | TxD5+(B) |
| 15 | RxD2+(B) | 41 | _ | 67 | TxD4-(A) |
| 16 | GND1 | 42 | — | 68 | TxD4+(B) |
| 17 | RxD1+(B) | 43 | _ | 69 | - |
| 18 | _ | 44 | _ | 70 | TxD3-(A) |
| 19 | GND0 | 45 | _ | 71 | TxD3+(B) |
| 20 | RxD0+(B) | 46 | - | 72 | TxD2-(A) |
| 21 | - | 47 | - | 73 | TxD2+(B) |
| 22 | RxD7-(A) | 48 | _ | 74 | _ |
| 23 | - | 49 | _ | 75 | TxD1-(A) |
| 24 | RxD6-(A) | 50 | _ | 76 | TxD1+(B) |
| 25 | - | 51 | _ | 77 | TxD0-(A) |
| 26 | _ | 52 | _ | 78 | TxD0+(B) |

DB78 (Female): RS-485 (2-wire)

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|-----------|-----|-----------|-----|-----------|
| 1 | GND7 | 15 | Data2+(B) | 29 | Data4-(A) |
| 2 | Data7+(B) | 16 | GND1 | 30 | - |
| 3 | _ | 17 | Data1+(B) | 31 | _ |
| 4 | GND6 | 18 | _ | 32 | Data3-(A) |
| 5 | Data6+(B) | 19 | GND0 | 33 | - |
| 6 | GND5 | 20 | Data0+(B) | 34 | Data2-(A) |
| 7 | Data5+(B) | 21 | _ | 35 | - |
| 8 | - | 22 | Data7-(A) | 36 | - |
| 9 | GND4 | 23 | _ | 37 | Data1-(A) |
| 10 | Data4+(B) | 24 | Data6-(A) | 38 | - |
| 11 | GND3 | 25 | _ | 39 | Data0-(A) |
| 12 | Data3+(B) | 26 | _ | 40 | _ |
| 13 | _ | 27 | Data5-(A) | 41 | _ |
| 14 | GND2 | 28 | _ | 42 | _ |

CP-168U

This board supports RS-232. With the OPT8F or OPT8Z accessory, it can support RS-422. With the OPT8K or OPT8I accessory, it can support RS-422 and RS-485 (both 2 and 4-wire).

| Model | Board Connector | Supported Accessories | Serial Connectors |
|--------------|-----------------|------------------------------------|-------------------|
| | | OPT8-M9 | |
| | | CBL-M62M9x8-100 (OPT8D) | 8×DB9 (Male) |
| CP-168U DB6. | | OPT8B | 8×DB25 (Male) |
| | DB62 (Female) | CBL-M62M25x8-100 (OPT8C) | oxDD25 (Male) |
| | | OPT8A, OPT8S, OPT8F, OPT8Z, OPT8K, | 8×DB25 (Female) |
| | | OPT8I | oxdd25 (reinale) |
| | | OPT8-RJ45 | 8×RJ45 |

DB62 (Female): RS-232

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|-----|--------|
| 1 | TxD0 | 22 | RxD0 | 43 | CTS0 |
| 2 | DTRO | 23 | DSR0 | 44 | RTS0 |
| 3 | RxD1 | 24 | DCD0 | 45 | GND |
| 4 | DSR1 | 25 | TxD1 | 46 | CTS1 |
| 5 | DCD1 | 26 | DTR1 | 47 | RTS1 |
| 6 | TxD2 | 27 | RxD2 | 48 | CTS2 |
| 7 | DTR2 | 28 | DSR2 | 49 | RTS2 |
| 8 | RxD3 | 29 | DCD2 | 50 | GND |
| 9 | DSR3 | 30 | TxD3 | 51 | CTS3 |
| 10 | DCD3 | 31 | DTR3 | 52 | RTS3 |
| 11 | RxD4 | 32 | GND | 53 | CTS4 |
| 12 | DSR4 | 33 | TxD4 | 54 | RTS4 |
| 13 | DCD4 | 34 | DTR4 | 55 | GND |
| 14 | TxD5 | 35 | RxD5 | 56 | CTS5 |
| 15 | DTR5 | 36 | DSR5 | 57 | RTS5 |
| 16 | RxD6 | 37 | DCD5 | 58 | GND |
| 17 | DSR6 | 38 | TxD6 | 59 | CTS6 |
| 18 | DCD6 | 39 | DTR6 | 60 | RTS6 |
| 19 | RxD7 | 40 | GND | 61 | CTS7 |
| 20 | DSR7 | 41 | TxD7 | 62 | RTS7 |
| 21 | DCD7 | 42 | DTR7 | - | - |

POS-104UL

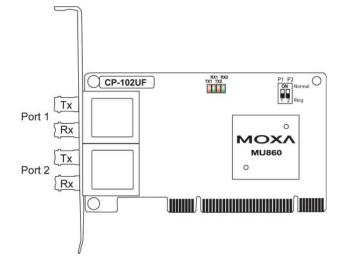
This board supports RS-232 only.

| Model | Board Connector | Supported Accessories | Serial Connectors |
|-----------|-----------------|-----------------------|-------------------|
| POS-104UL | DB44 (female) | CBL-M44M9x4-50(POS) | 4×DB9 (male) |

DB44 (Female): RS-232

| Pin | Signal | Pin | Signal | Pin | Signal |
|-----|------------|-----|--------|-----|------------|
| 1 | TxD3 | 16 | CTS3 | 31 | DCD3 |
| 2 | RxD3 | 17 | DTR3 | 32 | - |
| 3 | RTS3 | 18 | DSR3 | 33 | GND |
| 4 | 5V/12V/RI3 | 19 | - | 34 | - |
| 5 | TxD2 | 20 | CTS2 | 35 | DCD2 |
| 6 | RxD2 | 21 | DTR2 | 36 | - |
| 7 | RTS2 | 22 | DSR2 | 37 | GND |
| 8 | 5V/12V/RI2 | 23 | - | 38 | - |
| 9 | TxD1 | 24 | CTS1 | 39 | DCD1 |
| 10 | RxD1 | 25 | DTR1 | 40 | - |
| 11 | RTS1 | 26 | DSR1 | 41 | GND |
| 12 | 5V/12V/RI1 | 27 | - | 42 | DCD0 |
| 13 | TxD0 | 28 | CTS0 | 43 | 5V/12V/RI0 |
| 14 | RxD0 | 29 | DTRO | 44 | GND |
| 15 | RTS0 | 30 | DSR0 | _ | _ |

CP-102UF

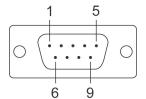


Serial Connectors

DB9 (Male)

The following accessories provide DB9 (male) serial connectors for your UPCI board:

| Accessory | Board Connector | Serial Connectors |
|-------------------------|-----------------|-------------------|
| CBL-M25M9x2-50 | DB25 (female) | 2×DB9 (male) |
| CBL-M44M9x4-50 | DB44 (female) | 4×DB9 (male) |
| CBL-M44M9x4-50(POS) | DB44 (female) | 4×DB9 (male) |
| CBL-RJ45M9-150 | RJ45 | 4×DB9 (male) |
| OPT8-M9 | DP(2) (female) | QuiDBO (mala) |
| CBL-M62M9x8-100 (OPT8D) | DB62 (female) | 8×DB9 (male) |
| CBL-M78M9x8-100 | DB78 (female) | 8×DB9 (male) |



The pin assignments for the DB9 (male) serial connector are shown below. There are different pin assignments depending on the serial interface that your board is configured for.

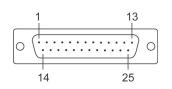
| Pin | RS-232 | RS-422/RS-485 (4W) | RS-485 (2W) |
|-----|------------|--------------------|-------------|
| 1 | DCD | TxD-(A) | - |
| 2 | RxD | TxD+(B) | - |
| 3 | TxD | RxD+(B) | Data+(B) |
| 4 | DTR | RxD-(A) | Data-(A) |
| 5 | GND | GND | GND |
| 6 | DSR | - | - |
| 7 | RTS | - | - |
| 8 | CTS | _ | _ |
| 9 | *5V/12V/RI | - | - |

* The 5V/12V/RI signal only applies to the POS-104UL

DB25 (Male)

The following accessories provide DB25 (male) serial connectors for your UPCI board:

| Accessory | Board Connector | Serial Connectors |
|--------------------------|-----------------|-------------------|
| CBL-M44M25x4-50 | DB44 (female) | 4×DB25 (male) |
| CBL-RJ45M25-150 | RJ45 | 4×DB25 (male) |
| OPT8B | | |
| CBL-M62M25x8-100 (OPT8C) | DB62 (female) | 8×DB25 (male) |
| CBL-M78M25x8-100 | DB78 (female) | 8×DB25 (male) |



The pin assignments for the DB25 (male) serial connector are shown below. There are different pin assignments depending on the serial interface that your board is configured for.

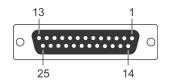
| Pin | RS-232 | RS-422/RS-485 (4W) | RS-485 (2W) |
|-----|--------|--------------------|-------------|
| 2 | TxD | RxD+(B) | Data+(B) |
| 3 | RxD | TxD+(B) | - |
| 4 | RTS | - | - |
| 5 | CTS | - | - |
| 6 | DSR | - | - |
| 7 | GND | GND | GND |
| 8 | DCD | TxD-(A) | _ |
| 20 | DTR | RxD-(A) | Data-(A) |

DB25 (Female)

The following accessories provide DB25 (female) serial connectors for your UPCI board:

| Accessory | Board Connector | Serial Connectors |
|---------------------------------------|-----------------|-------------------|
| OPT8A, OPT8S, *OPT8F, *OPT8Z, *OPT8K, | DB62 (female) | 8×DB25 (female) |
| *OPT8I | DB02 (leffale) | 8×DB25 (Ternale) |

* The OPT8F, OPT8Z, OPT8K, and OPT8I are designed for use with the CP-168U only.



The pin assignments for the DB25 (female) serial connector are shown below. There are different pin assignments depending on the serial interface that your board is configured for.

OPT8A, OPT8S

| Pin | RS-232 | RS-422/RS-485 (4W) | RS-485 (2W) |
|-----|--------|--------------------|-------------|
| 2 | RxD | TxD+(B) | - |
| 3 | TxD | RxD+(B) | Data+(B) |
| 4 | CTS | - | - |
| 5 | RTS | - | - |
| 6 | DTR | RxD-(A) | Data-(A) |
| 7 | GND | GND | GND |
| 8 | DCD | TxD-(A) | - |
| 20 | DSR | _ | _ |

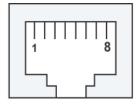
OPT8F, OPT8Z, OPT8K, OPT8I

| Pin | RS-422/RS-485 (4W) | RS-485 (2W) |
|-----|--------------------|-------------|
| 2 | RxD+(B) | Data+(B) |
| 3 | TxD+(B) | |
| 7 | GND | GND |
| 14 | RxD-(A) | Data-(A) |
| 16 | TxD-(A) | |

RJ45

The following accessories provide RJ45 serial connectors for your UPCI board:

| Accessory | Board Connector | Serial Connectors |
|-----------|-----------------|-------------------|
| OPT8-RJ45 | DB62 (female) | 8×RJ45 |



The pin assignments for the RJ45 serial connector are shown below. Only RS-232 is supported. The OPT8-RJ45 accessory should only be used with the CP-118U in RS-232 mode or with the CP-168U.

| Pin | RS-232 | |
|-----|--------|--|
| 1 | DSR | |
| 2 | RTS | |
| 3 | GND | |
| 4 | TxD | |
| 5 | RxD | |
| 6 | DCD | |
| 7 | CTS | |
| 8 | DTR | |