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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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:

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-118U-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
CP-138U-T-I:	8 ports, RS-422/485, 2KV optical isolation, wide temperature
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

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 Female DB25 CP-112UL/CP-112UL-I: 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

Product Specifications

Interface 32-bit Universal PCI 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			
Max. No. of Boards: 8			
Signals			
RS-232: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND			
RS-422: TxD+(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 2000			
Windows 2003/XP/Vista/2008 (32-bit/64-bit)			
Windows 7/8/8.1/10 (32-bit/64-bit)			
Windows Server 2008 R2/2012/2012 R2/2016 (x64)			
Linux 2.4			
Linux 2.6 (x86/x64)			
Complete driver support information is available at www.moxa.com in t			
Download center.			
Power Output: 5V/12V (POS-104UL only)			
Power and Environment			
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 <u>www.moxa.com/warranty</u>			

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-134U, CP-134U-I, CP-112UL, CP-112UL-I, CP-132UL, CP-132UL-I, and POS-104UL. 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 board.
- Step 3:Install drivers and configure boardFor details, please refer to Chapters 3.
- **Step 4:** Connect your serial devices to the board's serial ports For details, please refer to Chapter 6.
- **Step 5:** Restart system and verify driver initialization For details, please refer to Chapters 3.
- **Step 6:** Develop and run your serial communication application For details, please refer to Chapter 5.

2

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
- 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 8 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	S 3
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.

<u>4 Ports</u>

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.



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	S3
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





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 2000, Windows 2003/XP/Vista/2008 (32-bit/64-bit), Windows 7/8/8.1/10 (32-bit/64-bit), Windows Server 2008 R2/2012/2012 R2/2016 (x64), 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 8 Universal PCI 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 2000, 2003/ XP/ Vista/ 2008 (x86/x64), 7/8 /8.1/ 10 (x86/x64), Server 2008 R2/ 2012/ 2012 R2/ 2016 (x64)
- Windows NT
- ➢ Windows 95/98/ME
- > Windows 95
- ➢ Windows 98 and 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 for a variety of Windows platforms.



Windows 2000, 2003/ XP/ Vista/ 2008 (x86/x64), 7/8 /8.1/ 10 (x86/x64), Server 2008 R2/ 2012/ 2012 R2/ 2016 (x64)

We will take Windows 7 (x64) as an example, which procedure is similar to the other Windows platforms, to describe how to install, configure, check the port status, remove, or uninstall the UPCI cards.

The following topics are included:

- Installing the Driver
- Configuring the Ports

- Checking the Status
- Removing the Driver
- Uninstalling the Driver

Installing the Driver

In this part, we will describe how to install the UPCI cards for the first time with Windows 7. First, make sure that you have already plugged the board or boards into the system's UPCI slot(s).

NOTE If you have already installed a Moxa UPCI board in your computer, and you are installing additional boards, then Windows 7 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.

Second, you may download the drivers at <u>www.moxa.com</u>. Based on the OS type, choose the corresponding driver. Then, follow the following procedures to the install driver.

1. The Setup Wizard will open. Click **Next** to begin installing the driver.



2. Please read the license agreement. If you agree, click **Next** to move on.

🙀 Setup - MOXA Smartio/Industio Windows Driver	×
License Agreement Please read the following important information before continuing.	Z
Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.	
MOXA END-USER LICENSE AGREEMENT FOR MOXA SMARTIO/INDUSTIO WINDOWS DRIVER	
IMPORTANT: Please Read This Agreement Before Using The Software Indicated Above.	
This End-User License Agreement ("EULA") is a legal agreement between you, the Customer (either as an individual or a single entity), and the Owner concerning this special purpose ("System") computer device that includes certain Ourse confurence modulate ("Software") installed on the System. Installing	
 I go not accept the agreement 	
< <u>B</u> ack <u>N</u> ext > Cancel	

3. Click **Next** to install the driver in the indicated folder, or use the drop-down menu to locate a different folder.

😼 Setup - MOXA Smartio/Industio Windows Driver	×
Select Destination Location Where should MOXA Smartio/Industio Windows Driver be installed?	3
Setup will install MOXA Smartio/Industio Windows Driver into the following folder.	
To continue, click Next. If you would like to select a different folder, click Browse.	
C:\Program Files\Moxa\SmartioIndustioDriver Browse	
At least 0.8 MB of free disk space is required.	
< Back Next > Cancel	

4. Click **Install** to proceed with the installation.

😼 Setup - MOXA Smartio/Industio Windows Driver 📃 🗌	• ×
Ready to Install Setup is now ready to begin installing MOXA Smartio/Industio Windows Driver on your computer.	Ð
Click Install to continue with the installation, or click Back if you want to review or change any settings.	
Destination location: C:\Program Files\Moxa\SmartioIndustioDriver	*
< >>	
< Back Install Ca	ancel

5. Click **Finish** to complete the installation of the driver.

👸 Setup - MOXA Smartio/Ind	ustio Windows Driver	
	Completing the MOXA Smartio/Industio Wind Setup Wizard	lows Driver
	Setup has finished installing MOXA Smarti Driver on your computer.	o/Industio Windows
	Click Finish to exit Setup.	
	Finis	n

Configuring the Port

After the driver has been installed, use the Device Manager to configure the serial ports of your UPCI cards. (CP-118U will be used as example).

In this section, we describe how to access MOXA Smartio/Industio Windows Driver and guide you on how to do the serial port configuration.

- □ Accessing MOXA Smartio/Industio Window Driver
- Configuring Serial Port
 - Port Number
 - > Rx, TX FIFO

Accessing MOXA Smartio/Industio Window Driver

Expand the **Multi-port serial adapters** tab, right-click **CP-118U Series (PCI Bus)**, and then click **Properties** to open the board's configuration panel.

File Action View Help Image: Spigd2 Image:				ice Manager	🖂 Device
Actions Device Manager on loc More Actions Device Manager on loc Montors Device Manager on loc More Actions Device Manager on loc More Actions Device Manager on loc Montors Dev				Action View Help	File Ac
 Computer Disk drives Display adapters Display dives More Actions More Actions<			15	🖬 🖸 🛛 🖬 🔍 😭 🍢	<
Disk drives Disk drives Display adapters Display adapters Floppy drive controllers Human Interface Devices The ATA/ATAPI controllers The ATA/ATAPI controllers Mice and other pointing devices Monitors Multi-port serial adapters Movie CP-118U Series (PC) Wetwork adapters Disable Uninstall Disable Uninstall Scan for hardware changes System devices System devices		Actions			
Image: Display adapters More Actions Image: Display adapters More Actions Image: Display dive controllers Image: Display dive controllers Image: Display dive controllers Image: Display dive controllers <td>al co 🔺</td> <td>Device Manager on local co.</td> <td></td> <td></td> <td></td>	al co 🔺	Device Manager on local co.			
Display datapters Floppy disk drives	_	More Actions			
Image: Properties		More Actions			
Human Interface Devices IDE ATA/ATAPI controllers IDE ATA/ATAPI controllers Work or and other pointing devices Monitors Multi-port serial adapters Mox A CP-118U Series (PC) Wotwork adapters Wotwork adapters Other devices Disable Uninstall Disable Uninstall Scan for hardware changes Properties System devices					
IDE ATA/ATAPI controllers Keyboards IDE and other pointing devices Multi-port serial adapters IMULTI-port serial adapters IMULTI-port serial adapters IDE Atta/ATAPI controllers IDE Atta/AttaPi controllers					
 Keyboards Mice and other pointing devices Monitors Multi-port serial adapters MoxA CP-118U Series (PC) Update Driver Software Disable Uninstall Processors Sound, video and game contro MoxA CP-118U Series (PC) Processors Sound, video and game contro MoxA CP-118U Series (PC) Properties 					
Monitors Monitors Multi-port serial adapters Multi-port serial adapters MoxA CP-118U Series (PCT MoxA CP-118U Series (PCT MoxA CP-118U Series (PCT MoxA Adapters MoxA CP-118U Series (PCT MoxA Adapters MoxA CP-118U Series (PCT MoxA CP-118U Series (PCT MoxA Adapters MoxA CP-118U Series (PCT MoxA Adapters MoxA CP-118U Series (PCT MoxA Adapters MoxA CP-118U Series (PCT MoxA CP-118U Series					
Multi-port serial adapters Multi-port serial ada					
Multi-port serial adapters MOXA CP-118U Series (PCI					
Image: Work Adapters Update Driver Software Image: Work Adapters Disable Image: Work Adapters Uninstall Image: Work Adapters Scan for hardware changes Image: Work Adapters Properties Image: Work Adapters Properties					
Network adapters Update Driver Software Other devices Disable Uninstall Processors Sound, video and game contro Sound video and game contro			•		
Other devices Disable Disable Uninstall Ports (COM & LPT) Processors Sound, video and game contro Get High Definition Audio Devi- System devices			Update Driver Software		
Ports (COM & LPT) Processors Sound, video and game contro Age High Definition Audio Devi Properties			Disable		
Processors Sound, video and game contro Migh Definition Audio Devi System devices			Uninstall	📜 🦍 Unknown device	
A Sound, video and game contro Properties A System devices				Ports (COM & LPT)	⊳
High Definition Audio Devi			Scan for hardware changes	Processors	Þ -
i ligh Definition Audio Devi			Properties		a - 🖬
⊳- ♥ Universal Serial Bus controllers					Þ 📲
				🏺 Universal Serial Bus controllers	Þ 🖤
pens property sheet for the current selection.		1	 		

Configuring the Serial Ports

Port Number

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

МОХА СР	-118U Serie	es (PCI B	us) Prop	perties			x
General	Ports Conf	iguration	Driver	Details	Resou	rces	
Port) Level	Tx FIFO	Level		
1	COM 1	High		High			
2	COM 2	High		High			
3	COM 3 COM 4	High High		High High			
5	COM 5	High		High			
6	COM 6	High		High		Help	
7	COM 7	High		High			
8	COM 8	High		High		Port Info	
						Port Setting	
					OK	Cancel	

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

Port 1	×
Port Number	COM1 (current)
	uto Enumerating COM Number
Rx FIFO Level	High
🔽 Se	et the change to all ports
Tx FIFO Level	High 💌
🔽 Se	et the change to all ports
	OK Cancel
	OK Cancel

Rx, Tx FIFO

1. Select an **Rx FIFO** trigger from the **Rx FIFO Level** drop-down menu. Rx FIFO trigger levels of **High**, **Middle**, and **Low** are available, with the default set at **High** (120 bytes). Select the **Set the change to all ports** option to apply this Rx FIFO trigger to all ports.

2. Select a **Tx FIFO Level** from the **Tx FIFO Level** drop-down menu. Tx FIFO Levels of **High**, **Middle**, and **Low** are available, with the default set at **High** (128 bytes). Select the **Set the change to all ports** option to apply the just defined Tx FIFO size to all ports.

	Tx FIFO	Rx
	(Byte)	FIFO(Byte)
High	128	120
Middle	64	60
Low	1	1

3. Click **OK** to save the port settings and then click **OK** in the **Property** window to finish the port settings procedure.

Checking the Status

The PComm Diagnostic program is a useful tool for checking the status of Moxa's multiport serial boards. The program can be used to test internal and external IRQ, TxD/RxD, UART, CTS/RTS, DTR/DSR, etc. Use this program to ensure that your Moxa boards and ports are working properly.

To start the program, click Start→ Programs→ MOXA→ PComm Ver 1.X→ PComm Diagnostic





NOTE	You can download the PComm Lite software for free from Moxa's website at
	www.moxa.com/support/free_downloads.htm

Removing the Driver

1. Open Device Manager and use the mouse to place the cursor over the MOXA CP-118U Series (UPCI Bus) under **Multi-port serial adapters**, right-click, and then select the **Uninstall** option.

📇 Device Manager	
File Action View Help	
🔺 🛁 3p5gd2	*
⊳	
👂 👝 Disk drives	
🔈 📲 Display adapters	
Floppy disk drives	
Floppy drive controllers	
🔈 🕼 Human Interface Devices	
IDE ATA/ATAPI controllers	Confirm Device Uninstall
þ Keyboards	
Mice and other pointing devices	MOXA CP-118U Series (PCI Bus)
Monitors	
 The mathematical adapters 	Warning: You are about to uninstall this device from your system.
MOXA CP-118U Series (PCI Bus)	·······
Network adapters	
Other devices	Delete the driver software for this device.
Inknown device	
Ports (COM & LPT)	
	OK Cancel
MOXA Communication Port 1 (COM1)	
MOXA Communication Port 2 (COM2)	
MOXA Communication Port 3 (COM3)	
MOXA Communication Port 5 (COM5)	
MOXA Communication Port 6 (COM6)	
MOXA Communication Port 7 (COM7)	-

2. Select **Delete the driver software for this device** and click **OK** to proceed with uninstalling the board.

Uninstalling the Driver

The MSB driver may be removed through Add/Remove Programs in the Windows Control Panel. Click **Uninstall** next to **MOXA Smartio/Industio Windows Driver Verx.xx**

Control Panel Home	Uninstall or change a program					
View installed updates Turn Windows features on or	To uninstall a program, select it from the list and the	hen click Uninstall, Change, or Repair	r.			
off	Organize 👻 Uninstall			8	•	(
	Name Uninstall this program.	Publisher	✓ Installed On	Size	Version	
	DSU Ver2.1	Moxa Inc.	1/18/2017	312e 1.65 MB	VEISIG.	
	MOXA Smartio/Industio Windows Driver Ver1.24	Moxa Inc. Moxa Inc.	1/18/2017	1.00 1.10	1.24	
	MOXA smartio/industio windows Driver ver1.24 Windows Driver Manager	Moxa Inc.	1/31/2017		1.19	
	PComm Lite Ver1.6	Moxa Inc.	1/9/2017	4.52 MB	1.10	
	4	11				
🔍 🗣 💽 🕨 Control Panel 1	Moxa Inc. Product version: 1.24 Help link: http://www.r All Control Panel Items Programs and Features N	moxa.com Update information: ht			eatures)(
Control Panel Home View installed updates	Help link: http://www.r	moxa.com Update information: ht	ttp://www.moxa.co ح في Search I	m		
Control Panel Home View installed updates	Help link: http://www.r All Control Panel Items Programs and Features N Uninstall or change a program	moxa.com Update information: ht	ttp://www.moxa.co ح في Search I	m Programs and Fe		
Control Panel Home View installed updates Turn Windows features on or	Help link: http://www.r All Control Panel Items Programs and Features N Uninstall or change a program To uninstall a program, select it from the list and the	moxa.com Update information: ht	 ▼ 4y Search ł 	m Programs and Fe	eatures	
Control Panel Home View installed updates Turn Windows features on or	Help link: http://www.r All Control Panel Items Programs and Features N Uninstall or change a program To uninstall a program, select it from the list and the Organize Uninstall Name	Moxa.com Update information: ht Moxa Inc. hen click Uninstall, Change, or Repair Publisher	 + +y Search I r. Installed On 	m Programs and Fe Size	eatures	
Control Panel Home View installed updates Turn Windows features on or	Help link: http://www.r All Control Panel Items Programs and Features N Uninstall or change a program To uninstall a program, select it from the list and th Organize Uninstall Name DSU Ver2.1	Moxa.com Update information: htt Moxa Inc. hen click Uninstall, Change, or Repair Publisher Moxa Inc.	 4) Search # r. Installed On 1/18/2017 	m Programs and Fe	eatures	
Control Panel Home View installed updates Turn Windows features on or off	Help link: http://www.r All Control Panel Items Programs and Features N Uninstall or change a program To uninstall a program, select it from the list and th Organize Uninstall Name DSU Ver2.1 MOXA Smartio/Industio Windows Driver Ver1.24 Nort Windows Driver Manager	Moxa Inc. Moxa Inc. Publisher Moxa Inc. Moxa Inc. Moxa Inc. Moxa Inc.	 + +y Search I r. Installed On 	m Programs and Fe Size	eatures	
Control Panel Home View installed updates Turn Windows features on or off	 All Control Panel Items All Control Panel Items Programs and Features N 	Moxa.com Update information: ht Moxa Inc. hen click Uninstall, Change, or Repair Publisher Moxa Inc. Moxa Inc. Moxa Inc. 83	 Installed On 1/14/2017 1/14/2017 1/18/2017 1/18/2017 	m Programs and Fe Size 1.65 MB	eatures	
Control Panel Home View installed updates Turn Windows features on or off	 All Control Panel Items All Control Panel Items Programs and Features N 	Moxa.com Update information: htt Moxa Inc. hen click Uninstall, Change, or Repair Publisher Moxa Inc. Moxa Inc. Moxa Inc.	 Installed On 1/14/2017 1/14/2017 1/18/2017 1/18/2017 	m Programs and Fe Size 1.65 MB	eatures	

Control Panel Home View installed updates	Uninstall or change a program To uninstall a program, select it from the list and th	en click Uninstall Change of R	Repair.			
Turn Windows features on or off	Organize - Uninstall	en ener onnstan, enange, or n			8=	:• 🔟 (
	Name	Publisher	J	Installed On	Size	Version
	DSU Ver2.1	Moxa Inc.		1/18/2017	1.65 MB	
	MOXA Smartio/Industio Windows Driver Ver1.24	Moxa Inc.		1/31/2017		1.24
	🐝 NPort Windows Driver Manager	Moxa Inc.		1/18/2017		1.19
	MOXA Smartio/Industio Windows Driver Uninstall MOXA Smartio/Industio Windows Driver was sur from your computer.	ccessfully removed		1/9/2017	4.52 MB	
	MOXA Smartio/Industio Windows Driver was su				4.52 MB	

Windows NT

This section 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.
C:\Windows.nt
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 supported by this hardware manufacturer's disk.	
MOXA Smartio/Industio Family multiport board	
OK Cancel <u>H</u> elp	

3. 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.

Moxa Smartio/Indu	ustio Configui	ation Pane	I			
				_	-	
Board Type	I/O address	INT vector	IRQ	Bus	Dev	COM Number
<u>A</u> dd		<u>R</u> emove				Property
\smile						
		OK	1			Cancel
		<u>o</u> k				Cancel
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			×
	B	oard Type	CP-10	58U Series(B	us/Dev=2/12)
	₩ INT <u>v</u> ector			AC00	
	ļn	iterrupt No.		48	v
	B	ase I/O Port	<u>A</u> ddress	A800	
				, 	
	Port	COM No.	Rx FIFO Lev	/el Tx FIFO	Level
	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	
				Port Info	Port Setting
				<u>o</u> ĸ	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

ا ا	Moxa Smartio/Indu	stio Configur	ation Pane	I					×
	Board Type	I/O address	INT vector	IRQ	Bus	Dev	COM N	lumber]
	CP-168U Series	A800	ACOC	48	2	12	COM3	- COM10	
1									
	Add		Remove				Prope	erty	
	ii								
			<u>o</u> k				Car	nce <u>l</u>	

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
[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. 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.

<u>(</u>	Moxa Smartio/Indu:	stio Configu	ation Pane					×
	Board Type	I/O address	INT vector	IRQ	Bus	Dev	COM Number	
	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**.

P	ropert	y				2	×
	Ð	oard Type		-168L	Series(Bi	us/Dev=2/12)	
	M	NT <u>V</u> ecto	or	A	.C00		
	Įn	terrupt No.		4	3	~	
	B	ase I/O Port	: <u>A</u> ddress	Ā	800	_	
	Port	COM No.	Rx FIFO I	evel	Tx FIFO I	Level	
	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	
				Ċ	ĸ	Cancel	

4. 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
	Rx FIFO Level High ▼ ▼ Set the change to <u>all</u> ports
	I× 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

5. 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.

loxa Smartio/Indu	stio Configur	ation Pane	I			
	1					
Board Type	I/O address	INT vector	IRQ	Bus	Dev	COM Number
CP-168U Series	A800	ACOC	48	2	12	COM3 - COM10
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 ? 🗙
Identification Services Protocols Adapters Bindings
Network Adapters:
[1] Intel(R) PR0/100 VE Network Connection [2] MOXA Smartio/Industic Family Adapter
Add. Bernove Properties Update
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

 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) PRO/100 VE Network Connection
E [2] MOXA Smartio/Industio Family Adapter
Add
Item Notes: MOXA Smartio/Indust o Family Adapter
inter er omander madetter annig Maapter
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 tha: 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. If 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 drive Browse.	er 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		
	< Back 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.

Add New Hardware Wiz	ard
Add New Hardware Wiz	This wizard searches for new drivers for: PCI Serial Controller A device driver is a software program that makes a hardware device work.
	< Back Next > Cancel

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

Add New Hardware Wizard		
Add New Hardware Wiz	ard What do you want Windows to do? Search for the best driver for your device. (Recommended). Cipisplay a list of all the drivers in a specific location, so you can select the driver you want.	
	< <u>₿</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 Multi-function roller		
🕺 🔔	Multitu Dicontroller Network adapters Other detectec devices		
	Other devices		
	PCMCIA socket Ports (COM & LPT)		
	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. I ¹ you have a disk that contains the updated driver, click Have Disk. To install the updated driver, click Finish.		
Mo <u>d</u> els: Unsupp	vorted 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 Finish 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.



 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 Hurdware Profiles Performance	
• View devices by type • • • • • • • • • • • • • • • • • • •	
Computer Co	
Properties Refresh Remove Print]
OK Cance	.1

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

CP-168U Series Properties					
General	Ports Config	uration Driver	Resources		
	M INT	i ⊻ector A	\C00		
	int	errupt No	0 🔻		
	Base I/O Port	<u>A</u> ddress	4800		
	PCI Bus Nur	nber is 0 and Dev	vice Number is 0		
	L COM N				
Por	t COM No. COM 3	High	Tx FIFO Level High		
2	COM 4	High	High		
3	COM 5 COM 6	High High	High High		
5	COM 7	High	High		
6	COM 8	High	High		
7	COM 9 COM 10	High High	High High		
		-	-		
			P <u>o</u> rt Info	Port Setting	
			<u> </u>	Cancel	

4. 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.

Po	rt 1
	Port Number COM3
	Rx FIFO Level High ▼ Set the change to <u>all ports</u>
	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

5. 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	¦× ×
General Device Manager Hardware Profiles Performance	
• View devices by type • • • • • • • • • • • • • • • • • • •	
Computer CDROM CDROM CDROM CDROM CDROM Display adapters CDROP disk controllers CDROP disk controlers CDROP disk controllers CDROP disk contr	
Properties Refresh Remove Print	
OK Cari	:el

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



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

Update Device Driver Wizard
Select the manufacturer and nodel of your hardware device. If you have a disk that contains the updated driver, click Have Disk. To install the updated driver, click Finish.
Models: CP-104U Series CP-114 Series CP-132 Series CP-132U Series CP-134U Series CP-158U Series CT-114 Series ↓ Have Disk
< <u>B</u> ack Next > Cancel

- 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		<u>? ×</u>
Install/Uninstall Windows Setup Startup 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 NDXA Smartio/Industio Driver ?	2
Yes <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.

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.



2. Enter a Name for Workspace and press Next.

New Platform W	/izard - Step 2	
	Name And Location I friendly name for your workspace.	1
	Name: [cst] Path: E:\WINCE500\PBWorkspaces\Test1\	
0	< Back Next > Finish	Cancel

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.



New Platform Wizard - Step 7	×
OBEX Server	~
ODEX SCIVEI	
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	
	<u>M</u>
Image: Second	
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 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.

E Hie Eak yew Project Platform Target	Build Project Build OS Tools Window Help	_18
EPC: ×86_Release	🖌 😫 🚟 🦳 🗅 🖑 🛛 😋 💌 🖻 🏠 CE Device	
2 • 2 3 a# X 10 ⊟ 3 2 • 3 Ka:		[
E:\WINCE500 Frayorites Projecte5 Projecte5 Projecte5 Projecte6 Projecte6 Projecte6 Projecte7 Projsyagen.bat Projsyagen.bat Projsyagen.bat Projk.bat Resource files Source files	[MKV/L0CAL_MACHINE\DriversBuiltIn\PCI\Tenplate\H0XA "DII"-"MSVErmaxu.DII" "Prefix"-"HKU" "WendorID"-multi_sz:"1393","1393","1393","1393","1 "DeviceID"-multi_sz:"1022","1021","1321","1020","1 "SubClass"-duord:00 "index"=duord:0 "IsrHandler"-"ISRHandler" "Tsp"-"Unindem.dII" "DeviceTpp"-"duord:0 "DeviceTpp"-duord:0 "DeviceTpp"-duord:0 "FriendlyHam"="H0XA Serial Port " "Fife"duord:1	Catalog Catal
	[HKEY_LOCAL_HACHINE\Drivers\BuiltIn\PCI\Template\H0XA "Tsp"="Uninoden.dll" "DevicaType"-downd:8 "DevicaType"-downd:8 "FriendlyName"-"Serial Cable on HXU 05:00,00,00,10,01 "FriendlyName"-"Serial Cable on HXU 05:00,00,00,10,01 [KKEY_LOCAL_HACHINE\Drivers\BuiltIn\HXU1] "Driem"-"Uninoden.dll"	
🖗 OS 🚱 Pa 📑 CI 📄 Fil	"DeviceTune"-dword:#	<
Added the Real-time <mark>Commu</mark> File Completed the Feature and dr	we ons (RTC) Client API feature (SYSGEN_UOIP) to the platfor luer list update successfully.	m -
Build / Debug / Log / Find in	Files 1 🔪 Find in Files 2 /	3

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		N
<u>P</u> roject types:		Templates:
 Visual C++ ATL CLR General MFC Smart Dev Win32 Other Project Platform Build 	ges Tymes	Visual Studio installed templates OS Design My Templates Search Online Templates
		k2
A project for creati	ng a Windows Embedd	led CE 6.0 operating system
<u>N</u> ame:	OSDesign1	
<u>L</u> ocation:	C:\WINCE600\OSD	esigns 💌 🖪rowse
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 6.0 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 > Pinish Cancel		

Windows Embedded CE 6.0 OS Design Wizard		
Board Support Packages (BSPs) A BSP contains a set of device drivers that are added to your OS design		
Available BSPs: ✓ CEPC:x86	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	Next > 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.	
< Previous Next > Finish 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 the functionality that your target device requires.		
<u>V</u> ariants: Mobile Handheld Enterprise Web Pad	Mobile Handheld	
< Previous	axt > <u>F</u> inish Cancel	

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 >Einish Cancel	

 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 > <u>Fi</u> nish 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.

Findows Embedded	CE 6.0 OS Design Wizard	? 🛛
OS Design Proj	ect Wizard Complete	
You have completed the	wizard. Press Finish to create your OS Design p	project.
	< Previous Next >	Einish Cancel
Catalog Item Noti	fication	
Catalog Item Noti		
OBEX S	erver	
OBEX S Security V	erver Varning	
OBEX S Security V	erver Varning	col (OBEX) catalog
OBEX S Security V Security Warnin Under certain circ	Erver Varning Jg sumstances, the Object Exchange Proto mise the security of your platform. This	
OBEX S Security V Security Warnin Under certain circ item can comproi following potentia • If proper secu	Erver Varning umstances, the Object Exchange Proto nise the security of your platform. This I security risks: rity and authentication techniques are r	catalog item poses the
OBEX S Security V Security Warnin Under certain circlitem can comproi following potentia • If proper secu- interferes with • If proper encr	Erver Varning umstances, the Object Exchange Proto nise the security of your platform. This I security risks: rity and authentication techniques are r services.exe can be installed. yption techniques are not used, OBEX r	catalog item poses the not used, a service that
OBEX S Security V Security Warnin Under certain circlitem can comproi following potentia • If proper secu- interferes with • If proper encr	Erver Varning umstances, the Object Exchange Protonise the security of your platform. This I security risks: rity and authentication techniques are riservices.exe can be installed.	catalog item poses the not used, a service that
OBEX S Security V Security Warnin Under certain circ item can comprou following potentia If proper secu interferes with If proper ener could expose of To learn more ab	Erver Varning umstances, the Object Exchange Proto nise the security of your platform. This I security risks: rity and authentication techniques are r services.exe can be installed. yption techniques are not used, OBEX r	catalog item poses the not used, a service that unning over Bluetooth ell as the best practices
OBEX S Security Warnin Under certain circ item can comprou following potentia If proper secu interferes with If proper encr could expose of To learn more ab for using this cata OBEX Security	erver Varning sumstances, the Object Exchange Proton nise the security of your platform. This I security risks: rity and authentication techniques are r services.exe can be installed. yption techniques are not used, OBEX r data packets to third parties. out potential OBEX security risks, as we log item more securely, see the follow	catalog item poses the not used, a service that unning over Bluetooth ell as the best practices
OBEX S Security Warnin Under certain circ item can comprou following potentia If proper secu interferes with If proper encr could expose of To learn more ab for using this cata OBEX Security	Erver Varning umstances, the Object Exchange Protonise the security of your platform. This I security risks: rity and authentication techniques are reservices.exe can be installed. yption techniques are not used, OBEX redata packets to third parties. out potential OBEX security risks, as we	catalog item poses the not used, a service that unning over Bluetooth ell as the best practices
OBEX S Security Warnin Under certain circ item can comprov following potentia If proper secu interferes with If proper encr could expose of To learn more ab for using this cata OBEX Security	erver Varning sumstances, the Object Exchange Proton nise the security of your platform. This I security risks: rity and authentication techniques are r services.exe can be installed. yption techniques are not used, OBEX r data packets to third parties. out potential OBEX security risks, as we log item more securely, see the follow	catalog item poses the not used, a service that unning over Bluetooth ell as the best practices

 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].



11. 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)	P	roperties	→ ‡ ×
CHIP	REG_DWORD	0x0000001 (1)	F	IFO Registry Value	-
関 Class	REG_DWORD	0x0000007(7)			
DeviceArrayIndex	-		ĕ	2↓ □	
DeviceID	REG_MULTI_SZ		Ξ	Misc	
関 DeviceType	REG_DWORD	0×00000000 (0)		Data	1
	REG_SZ	mxser_com.Dll		Hex Value	1
FIFO	REG_DWORD	0x00000001 (1) 0x00000002 (2)		Key	HKEY LOCAL MACHINE Drivers
index ⊜ IsrDll	REG_DWORD REG_SZ	mxisr.dll		Name	FIFO
🗐 IsrHandler	REG_SZ	ISRHandler		Туре	REG_DWORD
Order	REG_DWORD	0x00000000 (0)	⊡	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	uild Debug Target Tools	Window Con	amunity Help
i 🛅 🕶 🛅 🖌 💕 🛃 🎒 🗌	Build Solution	F7 ,	86 Rel: 🔹 Platform Builder-Specific (_T(💌 🏄
	Rebuild Solution	Ctrl+Alt+F7	
Device: CE Device -	Clean Solution		
Solution Explorer - Solution 'OSI	Build OSDesign3		
	Rebuild OSDesign3		
😡 Solution 'OSDesign3' (1 pro	Clean OSDesign3		
📄 🐨 🌏 OSDesign3	Advanced Build Commands	•	Sysgen
- 💑 Favorites	Build All Subprojects		Clean Sysgen
A Parameter Files	Rebuild All Subprojects		Build and Sysgen 💦
🟹 Solution 🍓 Catalog <table-cell></table-cell>	Build All SDKs		Rebuild and Clean Sysgen
Output	Copy Files to Release Director	у	Build Current BSP and Subprojects
Show output from: Windows C	Make Run-Time Image		Rebuild 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:\M0XA	
	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 API-202	
	Installation complete, 57 files copied. After leaving this program, you have to run C:\NOXA\BIN\SETUP.EXE program to setup board & driver initial values. Do you want to run SETUP.EXE now ?(Y/N)	
P.		

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, $\textbf{BIN} \ \textbf{SETUP.EXE}.$

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

		1
Board no. Type 1 NG 2 NG 3 NG 4 NG FID: Sa	C168 PCI Series C104 PCI Series CT-114 Series CR-122 Series	IRQ Bus/Dev no.

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

	В	oard S	letup		1
Board no		Port no.	1/0 Address	IRQ	Bus/Dev no.
1	CP-134U Serie NONE	s 1–4	DCOO	?	0 / 11
	NONE			+	
4	NONE	-			
	F18: Save & Ex	it Bae: M	kit PgDn: P		
			000000000000		

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

		Po	rt S	letu	p			I
Port Number	81	. 82	03	84				
TxD buffer size	1.K	1K	1K	1K	-	-	_	_
RxD buffer size	1K	1K	1K	1K	-	=	-	_
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	0n	On	. On	0n	-	-	-	_
RTS output state	On	0n	On	0n	-		-	-
CTS flow control	No	No	No	No	-	-		_
RTS flow control	No	No	No	No	-			_
Tx XON/OFF cutr1	No	No	No	No	-	-	-	-
Rx XON/OFF entri	No	No	No	No	= 1	-	= 11	-
¥1: 1	lelp l	95: Geo	up edit	P10: 3	ave B	se: Abor	at.	

- **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.

M	SPT	UP			ari	-232	
	Port	t Se	etuj	р			
Port Number TxD buffer si	🗆 Group	Edi	1 t				
RxD buffer si	PORT PROFILE		POI	ore .	-		
Baud rate	TxI buffer size	1K	64		-	-	-
Character len	RxL buffer size	18	128		-		-
Stop bits	Baud rate	9600	256			-	-
Parity	Character length	8	512		-	-	
DTR output st	Stop bits	1	1K	7	-	-	
RTS output st	Parity	None	ZK		-	-	-
CTS flow cont	DTR output state	0n	4K		-	-	-
RTS flow cont	MTS output state	On	8K		-	-	-
Tx XON/OFF en	CTS flow control	No	16K			-	-
Rx XON/OFF en	RTS flow control	No	32K	8		-	1
	Tx XON/OFF cntrl	No	1	_	e: Abor	4	
28 272727272727272727272727272727	Rx XON/OFF entr1	No				ana	
	Inter: Mit/selec	e Ta	b: Sui	itch			
	F10: Update	Dis	e: Abo	ort	<i>difference</i>		
an a					_ Restauration		

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
# cd moxa
# cp /<driver directory>/driv_linux_smart_<version>_build_<build_date>.tgz .
# tar -zxvf driv_linux_smart_<version>_build_<build_date>.tgz
# 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.

```
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.

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: 0	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

6. 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	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					

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** → **Program** → **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	0,None,8,1,Dumb Terminal	_ 8 ×
<u>File</u> Edit <u>Port Manager</u> Port <u>W</u> indo	ow <u>H</u> elp	
🖪 🗖 🕅 🖻 🃚 Brk		
CDM43,9600,None,8,1,ANSI	LCome to SCO XENIX System V	
You have mai. TERM = (ansi # 1c .profile bin boot # State:OPEN crs b 12345 01235	38400. None. 8, 1. Dumb Terminal 56789ab.cde fghij0123456789ab.cde fghij0123456789ab.cde 56789ab.cde fghij01234	de fghij0123 de fghij0123

Smartio/Industio Programming Guide

If you want to develop your own driver, no matter whether it is on a Windows or Linux platform, the Moxa Smartio/Industio Programming Guide is a useful instruction.

The following topics are covered in this chapter:

- Relative Product List
- Resource Requirements for Moxa Board
- PCI Configuration for Moxa Board
- UART Register Structure for MU860 chip
- For Baud Rate Setting
- Moxa Board PCI Device ID List
- UART Datasheet
Relative Product List

Please see the "Moxa Board PCI Device ID List" at the end of this chapter.

Resource Requirements for Moxa Board

IRQ* 1

I/O:

UART register : 64 bytes (8 bytes / port * 8port) for MU860 4096 bytes (512 bytes / port * 8port) for MUE250/450/850 IRQ Vector register : 16 bytes (only 1 byte used)

PCI Configuration for Moxa Board

A. MOXA Vendor ID: 0x1393

B. Device ID: Please see "Moxa Board PCI Device ID List" at the end of this chapter.

C. Hardware resource on the Device Configuration Register of the **PCI configuration space**:

Resource Name	Chip Address Off		Offset	Size
IRQ	All	0x3C		
IRQ Vector Address	MU860	0x1C	BAR3	16 bytes
UART register	MU860	0x18	BAR2	64 bytes
(I/O Base Address)	10000	0110	DAKZ	04 Dytes
UART register	MUE250, MUE450, MUE850	0x14	BAR1	4096
(Memory Base Address)	M0E230, M0E430, M0E830	UX14	DARI	bytes
Vector Base Address	MUE250, MUE450, MUE850	0x18	BAR2	16 bytes

Byte Offset	0-7	8-15	16-23	24-31		
00h	Vend	or ID	Devi	ce ID		
04h	Comr	mand	Sta	tus		
08h						
0Ch						
10h	BAR0					
14h	BAR1					
18h	BAR2					
1Ch	BAR3					
3Ch	Interrupt Line	Interrupt Pin	Rese	erved		

NOTE For MUE250, MUE450, and MUE850 chips only: Memory mode is recommended for these chips to access UART. To use memory mode, the driver has to access the memory base address, which is located at BAR1.

UART Register Structure for MU860 chip



NOTE For a detailed UART register description, please see "UART Datasheet" section.

UART register address = I/O base address + (port-1) *8

For example, if the base address is 0x180:

- The first port's UART register I/O address is 0x180+(1-1)*8 = 0x180 The first registered I/O address is 0x180, The second registered I/O address is 0x181,
- The second port's UART register I/O address is 0x180+(2-1)*8 = 0x188 The first registered I/O register is 0x188, The second registered I/O register is 0x189,

IRQ Vector Register Structure



Bit Value	Status
0	Interrupt pending. Please read the UART register to get the detail interrupt information *.
1	No interrupt pending.

All serial ports on the same Moxa board use the same IRQ. Check **Vector** to detemine which port issues the interruptions. You can also get the information by querying the IIR of each port.

UART Register Structure for MUE250, MUE450, and MUE850 chips

There are 512 bytes for each UART register and an offset of 0x200 between each port. However, there is one exception: for the models that are 4-port boards, such as **CP-104EL-A**, **CP-114EL**, **CP-114EL-I**, and **CP-134EL-A**, the offset of the fourth UART register is 0xE00.



UART register address = I/O base address + (port-1) * 0x200

For example, if the base address is 0x200:

- The first port's UART register I/O address is 0x200 + (1-1) * 0x200 = 0x200The first registered I/O address is 0x200, The second registered I/O address is 0x201,
- The second port's UART register I/O address is 0x200 + (2-1) * 0x200 = 0x400 The first registered I/O address is 0x400, The second registered I/O address is 0x401,

NOTE	For the CP-104EL-A, CP-114EL, CP-114EL-I, and CP-134EL-A only:
	The first port's UART registered address: I/O base address
	The second port's UART registered address: I/O base address + 1 * 0x200
	The third port's UART registered address: I/O base address + 2 * 0x200
	The fourth port's UART registered address: I/O base address + 7 * 0x200

Control Serial Interface and Termination Resistor for MUE chips

For Moxa boards that use MUE250, MUE450, and MUE850 chips, BAR2, which is allocated 16 bytes, is the vector base address that can be used to control serial interface and termination resistor, according to the following table:

Offset	Bit	Port #	Parameters
0x4	[30]	1	0x0 : RS-232
	[74]	2	0x1 : RS-422
0x5	[30]	3	0xF : RS-485 2W

Offset	Bit	Port #	Parameters	
	[74]	4	0xB : RS-485 4W	
0x6	[30]	5		
	[74]	6		
0x7	[30]	7		
	[74]	8		
0x8	[70]	[81]	GPIO – Input	
0x9	[70]	[81]	GPIO direction configuration	
			0 : Set GPIO direction to input	
			1 : Set GPIO direction to output	
0xA	[70]	[81]	GPIO – Output (Termination Resistor)	
			0 : Low (0 Ohm)	
			1 : High (120 Ohm)	

The interface of 4-port models, such as **CP-114EL and CP-114EL-I.**, is using the following offset to set the interface of port 4.

Offset	Bit	Port #	Parameters
0x4	[30]	1	0x0 : RS-232
	[74]	2	0x1 : RS-422
0x5	[30]	3	0xF : RS-485 2W
	[74]	-	0xB:RS-485 4W
0x6	[30]	-	
	[74]	-	
0x7	[30]	4	

For Baud Rate Setting

For General PC Com Port: CLK=1.8432MHzDiv = CLK/ (Baud x 16)

```
But for Moxa Board: CLK=14.7456MHz 
\label{eq:Div} {\sf Div} = {\sf CLK}/ \ ({\sf Baud} \ge 16)
```

Moxa Board PCI Device ID List

Model	Ports	Bus	Chip	Max Baud	Vendor ID	Device ID
CP-102U	2	UPCI	MU860	921.6k	0x1393	0x1022
CP-102UL	2	UPCI	MU860	921.6k	0x1393	0x1021
CP-132UL	2	UPCI	MU860	921.6k	0x1393	0x1321
CP-132UL-I	2	UPCI	MU860	921.6k	0x1393	0x1321
CP-102E	2	PCIe	MUE250	921.6k	0x1393	0x1024
CP-102EL	2	PCIe	MUE250	921.6k	0x1393	0x1025
CP-132EL	2	PCIe	MUE250	921.6k	0x1393	0x1322
CP-132EL-I	2	PCIe	MUE250	921.6k	0x1393	0x1322
CP-104UL	4	UPCI	MU860	921.6k	0x1393	0x1041
CP-104JU	4	UPCI	MU860	921.6k	0x1393	0x1042
CP-114UL	4	UPCI	MU860	921.6k	0x1393	0x1143
CP-114UL-I	4	UPCI	MU860	921.6k	0x1393	0x1143
CP-134U	4	UPCI	MU860	921.6k	0x1393	0x1340
CP-134U-I	4	UPCI	MU860	921.6k	0x1393	0x1340

Model	Ports	Bus	Chip	Max Baud	Vendor ID	Device ID
CP-104EL-A	4	PCIe	MUE450	921.6k	0x1393	0x1045
CP-114EL	4	PCIe	MUE450	921.6k	0x1393	0x1144
CP-114EL-I	4	PCIe	MUE450	921.6k	0x1393	0x1144
CP-134EL-A	4	PCIe	MUE450	921.6k	0x1393	0x1342
CB-114	4	PC/104-Plus	MU860	921.6k	0x1393	0x1142
CB-134I	4	PC/104-Plus	MU860	921.6k	0x1393	0x1341
CP-118U	8	UPCI	MU860	921.6k	0x1393	0x1180
CP-118U-I	8	UPCI	MU860	921.6k	0x1393	0x1180
CP-138U	8	UPCI	MU860	921.6k	0x1393	0x1380
CP-138U-I	8	UPCI	MU860	921.6k	0x1393	0x1380
CP-168U	8	UPCI	MU860	921.6k	0x1393	0x1681
CP-116E-A(A)	8	PCIe	MUE850	921.6k	0x1393	0x1160
CP-116E-A(B)	8	PCIe	MUE850	921.6k	0x1393	0x1161
CP-118EL-A	8	PCIe	MUE850	921.6k	0x1393	0x1182
CP-118E-A-I	8	PCIe	MUE850	921.6k	0x1393	0x1183
CP-138E-A-I	8	PCIe	MUE850	921.6k	0x1393	0x1381
CP-168EL-A	8	PCIe	MUE850	921.6k	0x1393	0x1683
CB-108	8	PC/104-Plus	MU860	921.6k	0x1393	0x1080

UART Datasheet

Moxa's chips are compatible with the following chips. For more details about the UART register description, please refer to the downloaded links below.

UART	Port	Datasheet
MU-860	2-8	TL16C550C
MUE-250	2	PI7C9X7952
MUE-450	4	<u>PI7C9X7954</u>
MUE-850	8	PI7C9X7958

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

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	Board Connector	Supported Accessories	Serial Connectors
CP-102U	2×DB9 (male)		
CP-102UL			
CP-112UL			
CP-112UL-I	DB25 (female)	CBL-M25M9x2-50	2×DB9 (male)
CP-132UL			
CP-132UL-I			
CP-104UL		CBL-M44M9x4-50	4×DB9 (male)
CP-114UL			
CP-114UL-I	DB44 (female)	CBL-M44M25x4-50	4×DB25 (male)
CP-134U		CDL-11441123X4-30	
CP-134U-I			
CP-104JU	RJ45	CBL-RJ45M9-150	4×DB9 (male)
CI 10450	1045	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)	CBL-M62M25x8-100 (OPT8C)	8×DB25 (IIIale)
CP-168U		OPT8A, OPT8S, OPT8F, OPT8Z, OPT8K,	8×DB25 (female)
		OPT8I	. ,
		OPT8-RJ45*	8×RJ45
CP-118U-I	DB78 (female)	CBL-M78M9x8-100	8×DB9 (male)
CP-138U-I		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	DTR0	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	D145	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 (female)		CBL-M44M9x4-50	4×DB9 (male)
	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	DTR0	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	DTR0	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).

Model	Board Connector	Supported Accessories	Serial Connectors
CD 11411	DB44 (female)	CBL-M44M9x4-50	4×DB9 (male)
CP-114UL		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	DTR0	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	expec (male)
		CBL-M62M9x8-100 (OPT8D)	8×DB9 (male)
CD 1101	DB(2 (female)	OPT8B	8×DB25 (male)
CP-118U	DB62 (female)	CBL-M62M25x8-100 (OPT8C)	oxddzb (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	DTR0	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
CD 119U I	DB78 (female)	CBL-M78M9x8-100	8×DB9 (male)
CP-118U-I		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	DTR0	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	DB25 (female)		$2\times DB0$ (male)
CP-132UL-I		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	CTS0-(A)	21	TxD0-(A)
9	RxD0-(A)	22	GND0
10	RTS0-(A)	23	CTS0+(B)
11	RTS0+(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
Ē	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	TXD0	28	CTS0	43	RIO
14	RXD0	29	DTR0	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	CTS0+(B)	43	CTS0-(A)
14	TXD0+(B)	29	RXD0-(A)	44	GND0
15	RTS0+(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,	8×DB25 (female)
		OPT8K, 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		CBL-M78M9x8-100	8×DB9 (male)
CP-1360-1	DB78 (female)	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)
		OPT8B	8×DB25 (Male)
CP-168U	DB62 (Female)	CBL-M62M25x8-100 (OPT8C)	
		OPT8A, OPT8S, OPT8F, OPT8Z, OPT8K,	8×DB25 (Female)
		OPT8I	
		OPT8-RJ45	8×RJ45

			c : 1	.	c: 1
Pin	Signal	Pin	Signal	Pin	Signal
1	TxD0	22	RxD0	43	CTS0
2	DTR0	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

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DB62 (Female): RS-232

POS-104UL

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This board supports RS-232 only.

DCD7

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

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DTR7

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	DTR0	44	GND
15	RTS0	30	DSR0	-	-

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	DRG2 (fample)	8xDB0 (male)
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, *OPT8I	DB62 (female)	8×DB25 (female)

* 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

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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