MOXA®

C168H/PCI Smart Serial Board
Quick Installation Guide

Third Edition, June 2008

1. Overview

C168H/PCI is an 8-port RS-232 PCI serial board that is ideal for connecting a wide range of serial devices—including terminals, modems, printers, scanners, cash registers, bar code readers, keypads, numeric displays, electronic scales, and data acquisition equipment—to a PC. The board's well-designed device drivers make full use of the 16-byte Tx/Rx FIFO and on-chip H/W and S/W flow control, which allow data transmission at speeds of up to 921.6 Kbps.

C168H/PCI is a MOXA Green Product. Moxa's Green Products satisfy the RoHS directive of the European Parliament, and accordingly, do not contain cadmium and cadmium compounds, hexavalent chromium compounds, lead and lead compounds, mercury and mercury compounds, PBBs (polybrominated biphenyls), or PBDEs (polybrominated diphenyl ethers).

2. Package Checklist

Before installing the C168H/PCI board, verify that the package contains the following items:

- 1 C168H/PCI 8-port serial board
- Documentation and Software CD
- Quick Installation Guide

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

3. Hardware Installation Procedure

The C168H/PCI board MUST be installed in the PC before installing the driver. The following directions explain how to install the board in the PC.

STEP 1: Power off the PC.
STEP 2: Insert the C168H/PCI control board firmly into a free PCI slot.
STEP 3: Fasten the holding screw to fix the control board in place.
STEP 4: Connect one of the connection boxes or connection cables to C168H/PCI, and connect an adapter of required.
STEP 5: Power on the PC; the BIOS will automatically set the IRQ and I/O address.

4. Software Installation Information

The board MUST be plugged in before installing the driver software. See the previous section for instructions on how to install the board in your PC. Refer to the C168H/PCI User's Manual for detailed instructions on installing the drivers for this board.

Windows 2003/XP Driver Installation

1. After powering on your PC, Windows 2003/XP will automatically detect the C168H/PCI board.
2. Insert the C168H/PCI software CD in your CD-ROM drive.
3. Select **Install from a list or specific location (Advanced)**.
4. After selecting **Search for the best driver in these locations**, check the **Include this location in the search** checkbox, and then use the browse button to navigate to the CD's **C168HPCI\Software\Win2K-XP-2003** folder.
5. Click **Continue Anyway** in response to any admonitions that the software hasn't passed Windows Logo testing.
6. After the board has been installed, the installation wizard will guide you through the port installation procedure, starting with port 0. NOTE: Use the instructions given in step 3 above to locate the driver file.
7. Use the **Device Manager** to check if the installation of the board and ports was successful. Click on the + sign next to **Hardware**, and then check under **Multi-port serial adapters** and **Ports (COM & LPT)**. If there are any special marks, such as a question mark or exclamation point in front of the board or port icons, examine the **Event Log** as a first step to determine where the problem is.

Windows 2000 Driver Installation

1. After powering on your PC, Windows 2000 will automatically detect the C168H/PCI board.
2. Insert the C168H/PCI software CD in your CD-ROM drive.
3. Select **Search for a suitable driver for my device (recommend)**.
4. In **Optional search location**, checkmark **specify a location**. Navigate to the **\C168HPCI\Software\Win2K-XP-2003** folder on the software CD, and then click on **OK** to continue.
5. Click **Continue Anyway** in response to any admonitions that the software hasn't passed Windows Logo testing.
6. After the board has been installed, the installation wizard will guide you through the port installation procedure, starting with port 0. NOTE: Be sure to install the software from the CD's **C168HPCI \Software\Win2K-XP-2003** folder.
7. Use the **Device Manager** to check if the installation of the board and ports was successful. Click on the + sign next to **Hardware**, and then check under **Multi-port serial adapters** and **Ports (COM & LPT)**. If there are any special marks, such as a question mark or exclamation point in front of the board or port icons, examine the **Event Log** as a first step to determine where the problem is.

Windows 95/98 Driver Installation

1. After powering on your PC, Windows 95/98 will automatically detect the C168H/PCI board.
2. Insert the C168H/PCI software CD in your CD-ROM drive.
3. There some differences between the installation procedures for Windows 95 and Windows 98. However, in both cases, be sure to install the driver from the CD's **C168HPCI\Software\Win9x\Windows.95** folder.
4. After the board has been installed, the installation wizard will open the port configuration window. NOTE: If an error message similar to "C168PCI (BusNo=x, DevNo=x, Port1=COMx) interrupt number is invalid!" pops up, refer to the "Troubleshooting" chapter of the User's Manual for information on how to handle this error.

Windows NT Driver Installation

1. After powering on your PC, log into NT as Administrator.
2. Copy the folder **C168HPCI \Software\WinNT\Windows.nt** to your hard drive.
3. Open the **Control Panel**, click on the **Network** icon, and select the **Adaptors** tab.
4. Click the **Add** button, and then **Have Disk…** in the **Select Network Adapter** window.
5. Specify the exact path to the folder created in step 2. above.
6. Select **MOXA Smartio/Industio Family multiport board** in the **Select OEM Option** window, and then click on **OK** to start installing the driver.
7. When the Moxa Smartio/Industio Configuration Panel dialog box appears, click on **Add** to open the **Property** window to modify port settings and advanced FIFO configuration done automatically by the system.

Linux Driver Installation

1. Execute the following commands from the Linux prompt:
```
#mount /dev/cdrom /mnt/cdrom
#cd /
#mkdir moxa
#cd moxa
#cp /mnt/cdrom/<driver directory>/mxser.tgz .
#tar xvfz mxser.tgz
```
2. ```
#cd mxser
#make clean; make install
```
3. ```
#cd /moxa/mxser/driver
#./msmknod
```
4. ```
#modprobe mxser
```
5. You can use the Moxa diagnostic utility to verify the driver status:
```
#cd /moxa/mxser/utility/diag
#./msdiag
```
6. You can use the Moxa terminal utility to test the tty ports:
```
#cd /moxa/mxser/utility/term
#./msterm
```

## 5. Pin Assignments

The C168H/PCI board has one female DB62 connector on the board. To connect the board to your serial devices, you may use one of the connection cables or connection boxes available from Moxa. In the following figures, we give the pin assignments for the serial device side of the various connection options.

### CBL-M62M25x8-100
Male DB62 to male DB25 x 8

### Opt8B
Male DB62 to male DB25 x 8

**Male DB25**
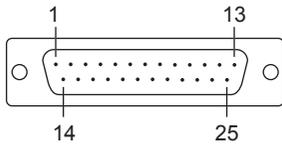
| Pin | RS-232 |
|-----|--------|
| 2 | TxD |
| 3 | RxD |
| 4 | RTS |
| 5 | CTS |
| 6 | DSR |
| 7 | GND |
| 8 | DCD |
| 20 | DTR |

### Opt8A, Opt8S
Male DB62 to female DB25 x 8

**Female DB25**
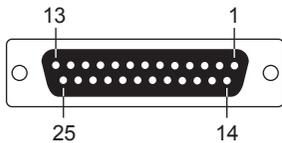
| Pin | RS-232 |
|-----|--------|
| 2 | RxD |
| 3 | TxD |
| 4 | CTS |
| 5 | RTS |
| 6 | DTR |
| 7 | GND |
| 8 | DCD |
| 20 | DSR |

### CBL-M62M9x8-100
Male DB62 to male DB9 x 8

### Opt8-M9
Male DB62 to male DB9 x 8

**Male DB9**
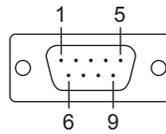
| Pin | RS-232 |
|-----|--------|
| 1 | DCD |
| 2 | RxD |
| 3 | TxD |
| 4 | DTR |
| 5 | GND |
| 6 | DSR |
| 7 | RTS |
| 8 | CTS |

### Opt8-RJ45
Male DB62 to 8-pin RJ45 x 8

**8-pin RJ45**
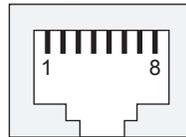
| Pin | RS-232 |
|-----|--------|
| 1 | DSR |
| 2 | RTS |
| 3 | GND |
| 4 | TxD |
| 5 | RxD |
| 6 | DCD |
| 7 | CTS |
| 8 | DTR |

### Opt8F, Opt8Z (RS-422 Converters)
Male DB62 to female DB25 x 8
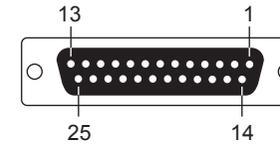
**Female DB25**

| Pin | RS-422 |
|-----|--------|
| 2 | RxD+(B) |
| 3 | TxD+(B) |
| 14 | RxD-(A) |
| 16 | TxD-(A) |
| 7 | GND |

### Opt8K (RS-422/485 Converter)
Male DB62 to female DB25 x 8

**Female DB25**
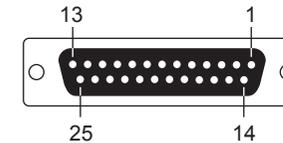
| Pin | RS-422 | 4-wire RS-485 | 2-wire RS-485 |
|-----|--------|---------------|---------------|
| 2 | RxD+(B) | RxD+(B) | Data+(B) |
| 3 | TxD+(B) | TxD+(B) | --- |
| 14 | RxD-(A) | RxD-(A) | Data-(A) |
| 16 | TxD-(A) | TxD-(A) | --- |
| 7 | GND | GND | GND |