

PC-HELPER

RS-232C 2ch Serial I/O for PCI

COM-2CL-PCI

RS-232C 4ch Serial I/O for PCI

COM-4CL-PCI

User's Guide

CONTEC CO.,LTD.

Check Your Package

Thank you for purchasing the CONTEC product.

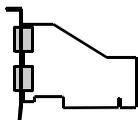
The product consists of the items listed below.

Check, with the following list, that your package is complete. If you discover damaged or missing items, contact your retailer.

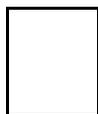
Product Configuration List

- Board (One of the followings) ...1
[COM-2CL-PCI, COM-4CL-PCI]
- First step guide ...1
- COM Setup Disk (CD-ROM *1) ...1
- Distribution cable (0.25m) ...1 (For COM-4CL-PCI only)

*1: The CD-ROM contains the driver software and User's Guide (this guide).



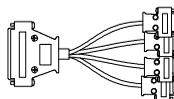
Board



First step guide



CD-ROM
[COM Setup Disk]



Distribution cable
(For COM-4CL-PCI only)

Copyright

Copyright 2007 CONTEC CO., LTD. ALL RIGHTS RESERVED

No part of this document may be copied or reproduced in any form by any means without prior written consent of CONTEC CO., LTD.

CONTEC CO., LTD. makes no commitment to update or keep current the information contained in this document. The information in this document is subject to change without notice.

All relevant issues have been considered in the preparation of this document. Should you notice an omission or any questionable item in this document, please feel free to notify CONTEC CO., LTD.

Regardless of the foregoing statement, CONTEC assumes no responsibility for any errors that may appear in this document nor for results obtained by the user as a result of using this product.

Trademarks

MS, Microsoft , Windows and Windows NT are trademarks of Microsoft Corporation. Other brand and product names are trademarks of their respective holder.

Table of Contents

| | |
|--------------------------|-----|
| Check Your Package | i |
| Copyright | ii |
| Trademarks | ii |
| Table of Contents | iii |

| | |
|------------------------------------|----------|
| 1. BEFORE USING THE PRODUCT | 1 |
|------------------------------------|----------|

| | |
|-----------------------------------|---|
| About the Board | 1 |
| Features | 1 |
| Support Software..... | 2 |
| Cable & Connector (Option)..... | 3 |
| Accessories (Option)..... | 3 |
| Customer Support..... | 4 |
| Web Site | 4 |
| Limited Three-Years Warranty..... | 4 |
| How to Obtain Service..... | 4 |
| Liability | 4 |
| Safety Precautions | 5 |
| Safety Information | 5 |
| Handling Precautions..... | 6 |
| Environment | 7 |
| Inspection | 7 |
| Storage..... | 7 |
| Disposal | 7 |

| | |
|-----------------|----------|
| 2. SETUP | 9 |
|-----------------|----------|

| | |
|--|----|
| What is Setup?..... | 9 |
| Using the Board under Windows Using the Standard COM Driver Software COM Setup Disk..... | 9 |
| Step 1 Setting the Hardware | 10 |
| Parts of the Board and Factory Defaults | 10 |
| Setting the Board ID | 12 |
| Plugging the Board | 13 |
| Step 2 Installing the Hardware | 14 |
| Turning on the PC | 14 |
| Windows 7..... | 15 |
| Windows Server 2008, Windows Vista | 17 |
| Windows Server 2003, XP, 2000 | 18 |
| The check method of the completion of hardware installation | 19 |
| Step 3 Initializing the Software | 20 |
| Windows 7, Server 2008, Vista, Server 2003, XP, 2000 | 20 |

| | |
|---|----|
| Step 4 Checking Operations with the Diagnosis Program | 22 |
| What is the Diagnosis Program?..... | 22 |
| Check Method..... | 22 |
| Using the Diagnosis Program | 23 |
| Setup Troubleshooting | 25 |
| Symptoms and Actions..... | 25 |
| If your problem cannot be resolved | 25 |

| | | |
|-----------|----------------------------|-----------|
| 3. | EXTERNAL CONNECTION | 27 |
|-----------|----------------------------|-----------|

| | |
|---|----|
| COM-2CL-PCI | 28 |
| Connecting directly to the port connector | 28 |
| COM-4CL-PCI | 29 |
| Using 9-pin D-SUB Connector Distribution Cable | 29 |
| Using 25-pin D-SUB Connector Distribution Cable | 30 |
| Using 25-pin D-SUB Connector Distribution Unit..... | 31 |
| Connecting directly to the port connector | 32 |
| Types of Cable and Example Connections..... | 33 |

| | | |
|-----------|------------------|-----------|
| 4. | FUNCTIONS | 35 |
|-----------|------------------|-----------|

| | |
|-------------------------------------|----|
| Communication Function | 35 |
| Serial Data Transmission | 35 |
| RS-232C Control Lines | 35 |
| Send and Receive Data Buffers | 35 |
| Setting the Baud Rate..... | 36 |

| | | |
|-----------|-----------------------|-----------|
| 5. | ABOUT SOFTWARE | 37 |
|-----------|-----------------------|-----------|

| | |
|---------------------------------------|----|
| About Sample programs | 37 |
| Uninstalling the driver software..... | 39 |
| Windows XP, Server 2003, 2000..... | 39 |
| Windows 7, Server 2008, Vista | 39 |
| CD-ROM Directory Structure..... | 39 |

| | | |
|-----------|-----------------------|-----------|
| 6. | ABOUT HARDWARE | 41 |
|-----------|-----------------------|-----------|

| | |
|-----------------------------|----|
| Hardware specification..... | 41 |
|-----------------------------|----|

1. Before Using the Product

This chapter provides information you should know before using the product.

About the Board

This product is a PCI board designed for extending RS-232C compatible serial communication functionality on your PC.

The < COM-2CL-PCI > has two RS-232C communication ports.

The < COM-4CL-PCI > has four RS-232C communication ports.

With a 64byte built-in FIFO buffer for transmission and reception of each channel, the product supports a baud rate of up to 230,400bps. It also comes with a Windows driver, which allows boards to be used as OS-standard COM ports.

Features

- Max. 230,400bps RS-232C Serial Communication

The < COM-2CL-PCI > has two RS-232C-standard serial ports.

The < COM-4CL-PCI > has four RS-232C-standard serial ports.

Baud rates from 15 to 230,400 bps can be set.

- Possibly used as Windows-standard COM ports, using the bundled driver library

Comes with a driver library that allows the boards to be used under Windows in the same way as COM ports on the PC. Under Windows, the product supports the OS-standard Win32 API communication function as well as Visual Basic MSComm. In addition, supplies a diagnostic program to confirm hardware operation and to perform a communication test with equipment.

- Max. 16 boards can be installed as configured in the range COM1 - COM256.

Up to 16 boards can be mounted on a single PC.

COM1 - COM256 can be set using the device manager.

- Each channel is equipped with separate 64-byte FIFO buffers for transmit and receive.

Employed a buffer memory 64-byte dedicated to transmission and 64-byte for each channel.

These are FIFO format, useful for high speed communications and to reduce the load to the CPU when transmitting/receiving.

- The boards use the same easy-to-use 9-pin D-SUB connectors as are used on a PC.

(For COM-2CL-PCI only)

Using the most versatile general-purpose 9-pin D-SUB connector for RS-232C, the product allows you to use commercial cables which support the RS-232C standard.

- Cables and connectors are available as optional.

COM-2CL-PCI : Straight cables (1.8m), cross cables (1.8m) and 9-pin D-SUB connectors (male or female type) for creating your own cables are available as optional.

COM-4CL-PCI : 4channels distribution cable and 37-pin D-SUB connectors (male type) for creating your own cables are available as optional.

- The control line for RS-232C can be controlled and monitored by software.

The control lines for RTS, CTS, DTR and DSR can be controlled and monitored using an application.

Support Software

You should use CONTEC support software according to your purpose and development environment.

Standard COM Driver Software **COM Setup Disk** (Bundled)

The purpose of this software is to allow the CONTEC serial communication boards to be used under Windows in the same way as the standard COM ports on the PC. By installing additional boards, you can use COM ports in the range COM1 - COM256.

The boards can be used for all types of serial communications such as for remote access service (RAS) and uninterruptible power supply (UPS) applications.

Under Windows, the serial ports can be accessed using the standard Win32 API communication routines (CreateFile(), WriteFile(), ReadFile(), and SetCommState(), etc.) The serial ports are also compatible with the Visual Basic communication control (MSComm). Supports the communication class of .NET Framework 2.0 (SerialPort class).

< Operating environment >

OS Windows 7, Server 2008, Vista, Server 2003, XP, 2000.

You can download the updated version from the CONTEC's Web site (<http://www.contec.com/comdrv/>). For more details on the supported OS, applicable language and new information, please visit the CONTEC's Web site.



CAUTION

The maximum number of COM ports able to be used depends on the configuration of your OS.

Cable & Connector (Option)

| | | |
|---|---|-------------|
| RS-232C Straight Cable with D-SUB9P (1.8m) | : | RSS-9M/F |
| RS-232C Cross Cable with D-SUB9P (1.8m) | : | RSC-9F |
| RS-232C Straight Cable with D-SUB25P (1.8m) | : | RSS-25M/F |
| RS-232C Cross Cable with D-SUB25P (1.8m) | : | RSC-25F |
| RS-232C Connection Conversion Straight Cable (25M→9F, 1.8m) | : | RSS-25M/9F |
| RS-232C Connection Conversion Straight Cable (25F→9M, 1.8m) | : | RSS-25F/9M |
| RS-232C Connection Conversion Cross Cable (25F→9F, 1.8m) | : | RSC-25F/9F |
| Connection Conversion Cable (37M→9M x 4, 250mm) | : | PCE37/9PS |
| Connection Conversion Cable (37M→25M x 4, 250mm) | : | PCE37/25PS |
| COM-4ch Board Optional Cable for CCU-78F/25M (2m) | : | RSS-78M/37M |
| Set of five 9-pin D-SUB (male) connectors | : | CN5-D9M |
| Set of five 9-pin D-SUB (female) connectors | : | CN5-D9F |
| Set of five 37-pin D-SUB (male) connectors | : | CN5-D37M |

Accessories (Option)

| | | |
|--|---|----------------|
| Connection Conversion Unit for RS-232C (78P→25P x 8) | : | CCU-78F/25M *1 |
|--|---|----------------|

*1 The option cable RSS-78M/37M is needed.

* Check the CONTEC's Web site for more information on these options.

Customer Support

CONTEC provides the following support services for you to use CONTEC products more efficiently and comfortably.

Web Site

Japanese <http://www.contec.co.jp/>
English <http://www.contec.com/>
Chinese <http://www.contec.com.cn/>

Latest product information

CONTEC provides up-to-date information on products.

CONTEC also provides product manuals and various technical documents in the PDF.

Free download

You can download updated driver software and differential files as well as sample programs available in several languages.

Note! For product information

Contact your retailer if you have any technical question about a CONTEC product or need its price, delivery time, or estimate information.

Limited Three-Years Warranty

CONTEC products are warranted by CONTEC CO., LTD. to be free from defects in material and workmanship for up to three years from the date of purchase by the original purchaser.

Repair will be free of charge only when this device is returned freight prepaid with a copy of the original invoice and a Return Merchandise Authorization to the distributor or the CONTEC group office, from which it was purchased.

This warranty is not applicable for scratches or normal wear, but only for the electronic circuitry and original products. The warranty is not applicable if the device has been tampered with or damaged through abuse, mistreatment, neglect, or unreasonable use, or if the original invoice is not included, in which case repairs will be considered beyond the warranty policy.

How to Obtain Service

For replacement or repair, return the device freight prepaid, with a copy of the original invoice. Please obtain a Return Merchandise Authorization number (RMA) from the CONTEC group office where you purchased before returning any product.

* No product will be accepted by CONTEC group without the RMA number.

Liability

The obligation of the warrantor is solely to repair or replace the product. In no event will the warrantor be liable for any incidental or consequential damages due to such defect or consequences that arise from inexperienced usage, misuse, or malfunction of this device.

Safety Precautions

Understand the following definitions and precautions to use the product safely.

Safety Information

This document provides safety information using the following symbols to prevent accidents resulting in injury or death and the destruction of equipment and resources. Understand the meanings of these labels to operate the equipment safely.

| | |
|-----------|--|
| ⚠ DANGER | DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury. |
| ⚠ WARNING | WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury. |
| ⚠ CAUTION | CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage. |

Handling Precautions

DANGER

Do not use the product where it is exposed to flammable or corrosive gas. Doing so may result in an explosion, fire, electric shock, or failure.

CAUTION

- There are switches on this product that need to be set in advance. Be sure to check these before installing this product.
 - Only set the switches and jumpers on this product to the specified settings. Otherwise, this product may malfunction, overheat, or cause a failure.
 - Do not strike or bend this product. Otherwise, this product may malfunction, overheat, cause a failure or breakage.
 - Do not touch this product's metal plated terminals (edge connector) with your hands. Otherwise, this product may malfunction, overheat, or cause a failure. If the terminals are touched by someone's hands, clean the terminals with industrial alcohol.
 - Do not install or remove this product to or from the slot while the computer's power is turned on. Otherwise, this product may malfunction, overheat, or cause a failure. Be sure that the personal computer or the I/O expansion unit power is turned off.
 - Make sure that your PC or expansion unit can supply ample power to all this products installed. Insufficiently energized boards could malfunction, overheat, or cause a failure.
 - The specifications of this product are subject to change without notice for enhancement and quality improvement. Even when using this product continuously, be sure to read the manual and understand the contents.
 - Do not modify this product. CONTEC will bear no responsibility for any problems, etc., resulting from modifying this product.
 - Regardless of the foregoing statements, CONTEC is not liable for any damages whatsoever (including damages for loss of business profits) arising out of the use or inability to use this CONTEC product or the information contained herein.
-

Environment

Use this product in the following environment. If used in an unauthorized environment, the board may overheat, malfunction, or cause a failure.

Operating temperature

0 - 50°C

Humidity

10 - 90%RH (No condensation)

Corrosive gases

None

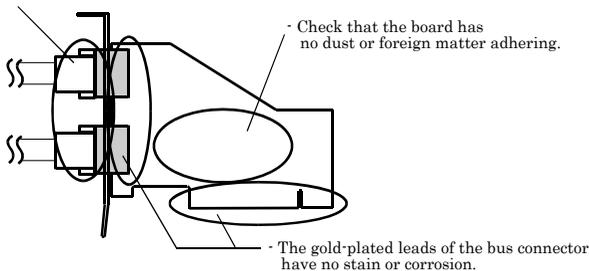
Floating dust particles

Not to be excessive

Inspection

Inspect the product periodically as follows to use it safely.

- Check that the bus connector of the board and its cable have been plugged correctly.



Storage

When storing this product, keep it in its original packing form.

- (1) Put the board in the storage bag.
- (2) Wrap it in the packing material, then put it in the box.
- (3) Store the package at room temperature at a place free from direct sunlight, moisture, shock, vibration, magnetism, and static electricity.

Disposal

When disposing of the product, follow the disposal procedures stipulated under the relevant laws and municipal ordinances.

2. Setup

This chapter explains how to set up the board.

What is Setup?

Setup means a series of steps to take before the product can be used.

Different steps are required for software and hardware.

The setup procedure varies with the OS and applications used.

Using the Board under Windows

Using the Standard COM Driver Software COM Setup Disk

This section describes the setup procedure to be performed before you can start developing application programs for the board using the bundled CD-ROM “Standard COM Driver Software - COM Setup Disk”.

Taking the following steps sets up the software and hardware. You can use the diagnosis program later to check whether the software and hardware function normally.

Step 1 Setting the Hardware

Step 2 Installing the Hardware

Step 3 Initializing the Software

On the CD-ROM, refer to the \PCI\Readmee.txt file and the installation instructions files for each OS located in the \PCI\InstDoc.

If Setup fails to be performed normally, see the “Setup Troubleshooting” section at the end of this chapter.

Step 1 Setting the Hardware

This section describes how to set the board and plug it on your PC.

The board has some switches and jumper to be preset.

Check the on-board switches and jumpers before plugging the board into an expansion slot.

The board can be set up even with the factory defaults untouched. You can change board settings later.

Parts of the Board and Factory Defaults

Figure 2.1 - Figure 2.2 shows the names of major parts on the board.

Note that the switch setting shown below is the factory default.

COM-2CL-PCI

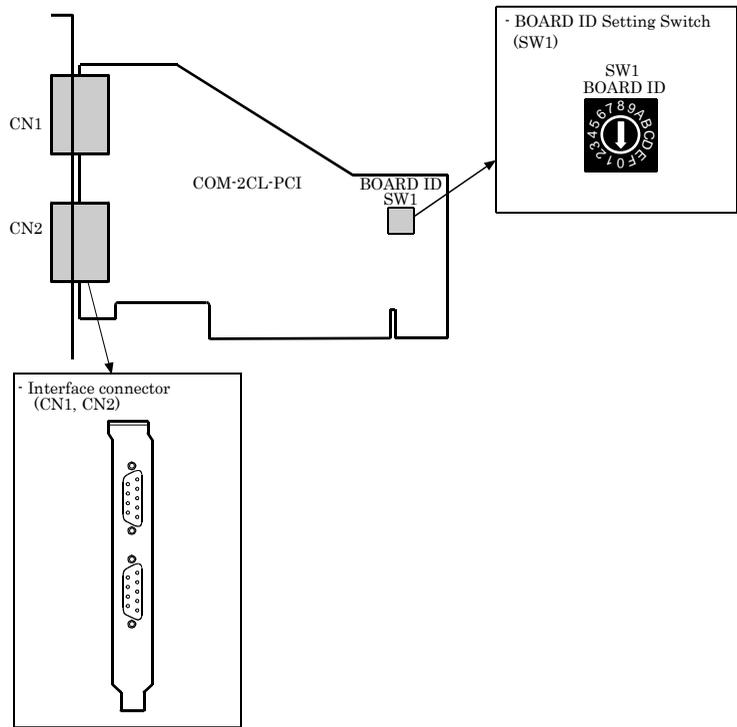
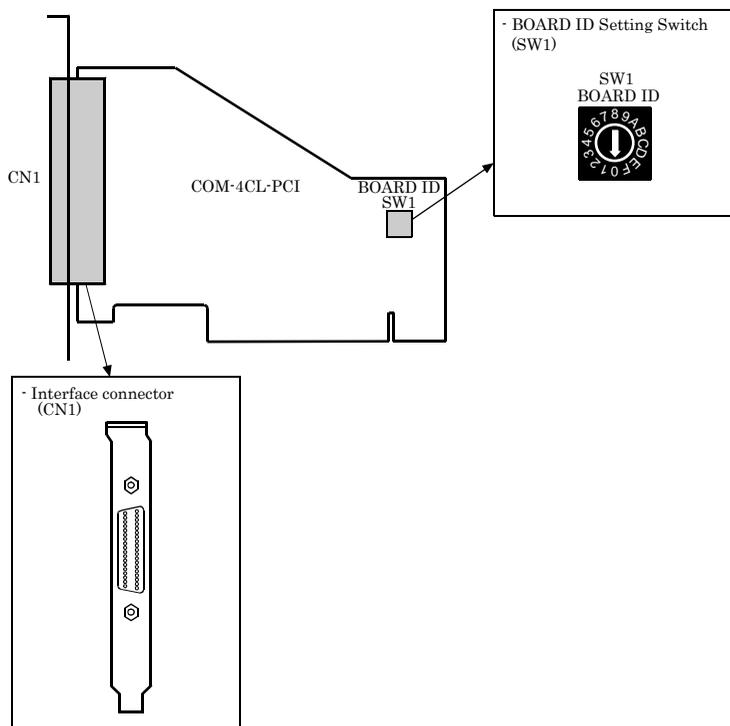


Figure 2.1. Component Locations < COM-2CL-PCI >

COM-4CL-PCI

**Figure 2.2. Component Locations < COM-4CL-PCI >**

Setting the Board ID

If you install two or more boards on one personal computer, assign a different ID value to each of the boards to distinguish them.

The board IDs can be set from 0 - Fh to identify up to sixteen boards.

If only one board is used, the original factory setting (Board ID = 0) should be used.

Setting Procedure

To set the board ID, use the rotary switch on the board. Turn the SW1 using, for example, a standard screwdriver, to set the arrow to the board ID.

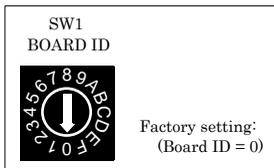


Figure 2.3. Board ID Settings (SW1)

Plugging the Board

- (1) Before plugging the board, shut down the system, unplug the power cord of your PC.
- (2) Remove the cover from the PC so that the board can be mounted.
- (3) Plug the board into an expansion slot.
- (4) Attach the board bracket to the PC with a screw.
- (5) Put the cover back into place.

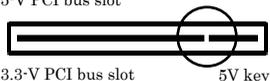


Applicable PCI bus slots

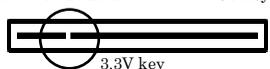
PCI bus slots used in PCs have keys to prevent 5V and 3.3V PCI bus boards from being accidentally plugged into wrong bus slots. This board can be plugged into the 5V PCI bus slots and not into the 3.3V PCI bus slots.

<PCI bus slot>

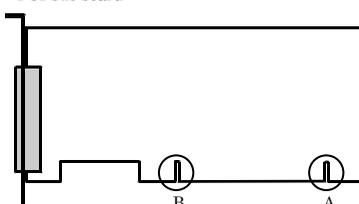
5-V PCI bus slot



3.3-V PCI bus slot



<PCI bus board>



A : Slit for 5-V PCI bus slot
B : Slit for 3.3-V PCI bus slot

⚠ CAUTION

- Do not touch the board's metal plated terminals (edge connector) with your hands. Otherwise, the board may malfunction, overheat, or cause a failure.
If the terminals are touched by someone's hands, clean the terminals with industrial alcohol.
- Do not install or remove the board to or from the slot while the computer's power is turned on. Otherwise, the board may malfunction, overheat, or cause a failure.
Doing so could cause trouble. Be sure that the personal computer or the I/O expansion unit power is turned off.
- Make sure that your PC or expansion unit can supply ample power to all the boards installed. Insufficiently energized boards could malfunction, overheat, or cause a failure.

Step 2 Installing the Hardware

For using an expansion board under Windows, you have to let the OS detect the I/O addresses and IRQ to be used by the board. The process is referred to as installing the hardware.

In the case of using two or more boards, make sure you install one by one with the Add New Hardware Wizard.

Turning on the PC

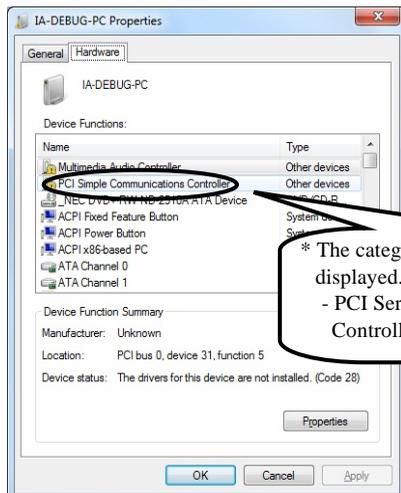
Turn on the power to your PC.

CAUTION

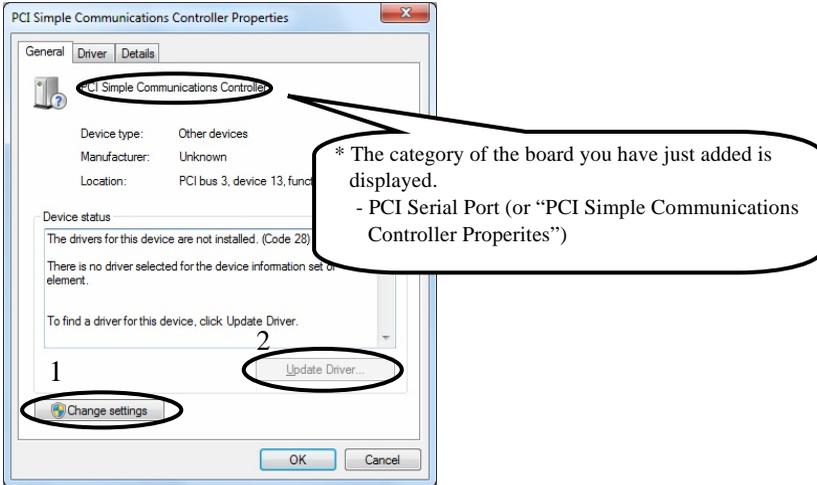
- The board cannot be properly installed unless the resources (I/O addresses and interrupt level) for the board can be allocated. Before attempting to install the board, first determine what PC resources are free to use.
 - The resources used by each board do not depend on the location of the PCI bus slot or the board itself. If you remove two or more boards that have already been installed and then remount one of them on the computer, it is unknown that which one of the sets of resources previously assigned to the two boards is assigned to the remounted board. In this case, you must check the resource settings.
-

Windows 7

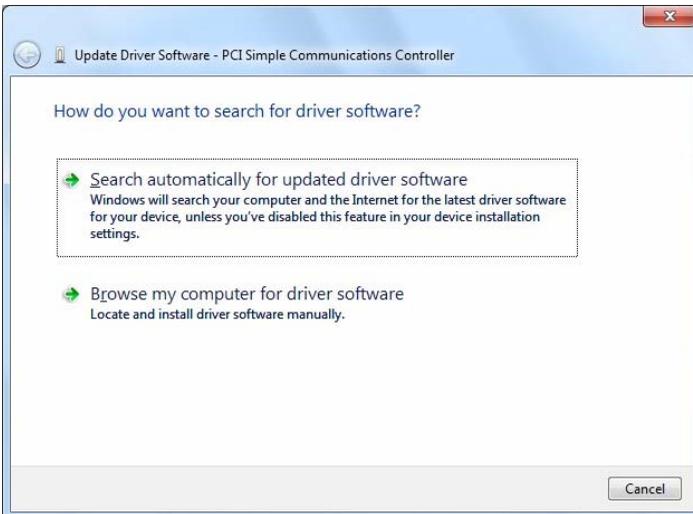
- (1) Select “Devices and Printers” from the Start menu and select the PC to which this board is attached. Click on the device “PCI Serial Port” (or “PCI Simple Communication Controller”) and open its properties by clicking the [Properties] button.



- (2) In the “PCI Serial `Port Properites (or “PCI Simple Communications Controller Properites”)” page, click the [Change settings] button and edit the settings as an Administrator. Then click the [Update Driver...] button.



- (3) The Driver Installation Wizard is open. Click “Browse my computer for driver software”.

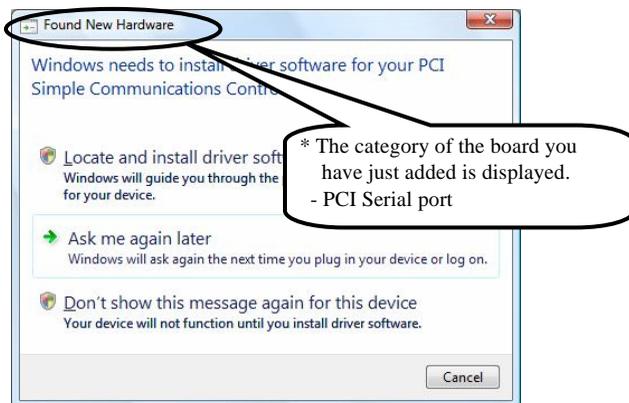


- (4) Specify that folder on the CD-ROM which contains the setup information (INF) file to register the board.
- Source folder \PCI \ComDrv

You have now finished installing the hardware.

Windows Server 2008, Windows Vista

- (1) “Found New Hardware” wizard is open. Click “Locate and install driver software”.



- (2) When the “Found New Hardware” window is displayed, insert the accompanying CD-ROM “COM Setup Disk” into the CD-ROM drive. After a while, the device installation process begins.



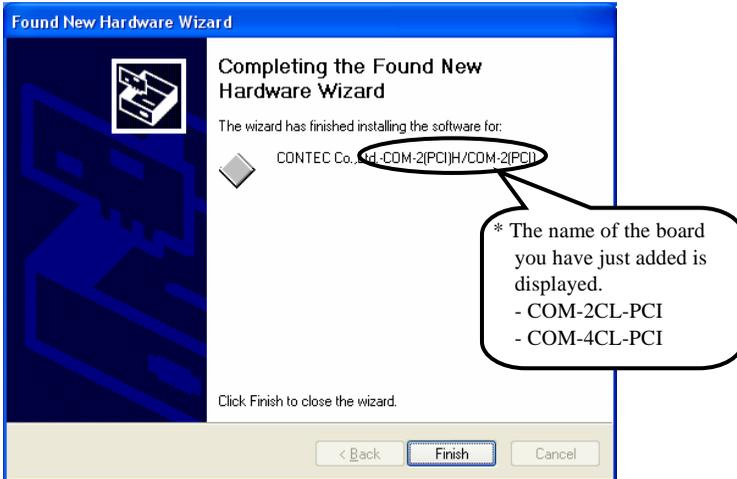
You have now finished installing the hardware.

Windows Server 2003, XP, 2000

- (1) The “Found New Hardware Wizard” will be started.
Select “Install from a list or specific location”, then click on the [Next] button.



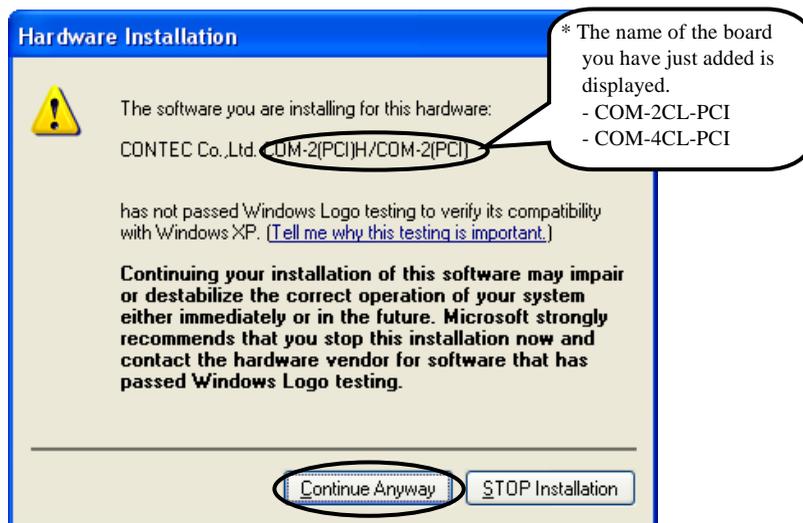
- (2) Specify that folder on the CD-ROM which contains the setup information (INF) file to register the board.
- Source folder \PCI\ComDrv



⚠ CAUTION

In Windows XP, the Hardware Wizard displays the following alert dialog box when you have located the INF file. This dialog box appears, only indicating that the relevant driver has not passed Windows Logo testing, and it can be ignored without developing any problem with the operation of the board.

In this case, click on the [Continue Anyway] button.



- (3) Installation of the "Communication Port" starts next. If prompted for a file by the OS, specify the location of the setup information (INF) file, as described above.

You have now finished installing the hardware.

The check method of the completion of hardware installation

- (1) Select "System" from "Control Panel" and open [Device Manager].
- (2) Check that the names of the boards you are using are registered correctly in the [Multifunction adapters] folder.
- (3) Similarly, confirm that the COM ports have been added in the [Ports] folder.

Step 3 Initializing the Software

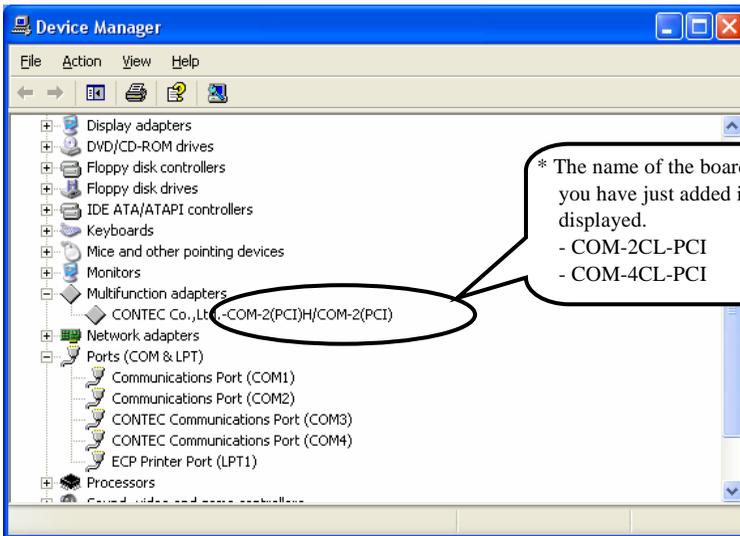
This assigns COM ports to the serial ports on the board. You can also change a previously assigned COM port number to a different number.

Windows 7, Server 2008, Vista, Server 2003, XP, 2000

On Windows 7, Server 2008, Vista, Server 2003, XP, 2000, the COM ports are already assigned by the hardware installation step. Run Device Manager as described below if you wish to view or modify the COM port settings.

Start Device Manager

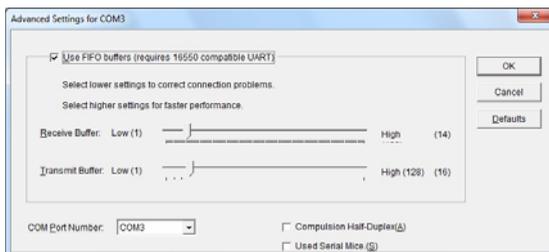
- (1) Select "System" from "Control Panel" and start [Device Manager].



- (2) Check that the new COM ports are displayed in the [Ports] folder.

Updating the Settings

- (1) If you wish to change a port number, open the properties page for the port and click the [Advanced...] button under [Port Settings].
- (2) Use the [COM Port Number] combo box to modify the COM port number.
- (3) Clicking the [Advanced...] button opens the “Advanced Settings for COMn” window.



- Use the “COM Port Number” combo box to select the COM port number.
- By selecting the “Compulsion Half-Duplex”, the software settings are forced to switch from full-duplex communication to half-duplex.
- By selecting the “Used Serial Mice”, support for the serial mouse devices is enabled.

You have now finished installing the initial setting of Software.

Step 4 Checking Operations with the Diagnosis Program

Use the diagnosis program to check that the board and driver software work normally, thereby you can confirm that they have been set up correctly.

What is the Diagnosis Program?

These programs perform some simple checks on the board operation. Two programs are provided.

Terminal program (CTstCom.exe)

Data entered from the keyboard is sent directly from the port. The function of the program is equivalent to the Hyper Terminal program provided with Windows.

Serial Communications Diagnostic Program (CommChk.exe)

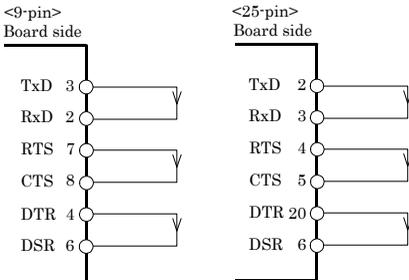
Performs actual communications and indicates whether the results are correct or not (error).

The following describes the procedure for testing using the serial communications diagnostic program (CommChk.exe).

Check Method

Obtain an RS-232C cross cable or a loopback connector. If using a loopback connector, you can test a single COM port on its own. The diagram below shows the connections for a loopback connector.

Wiring diagram for loopback connector



Using the Diagnosis Program

Starting the Diagnosis Program

Run\Utility\CommChk\CommChk.exe from the supplied CD-ROM.

Communication Settings

COM Setup: Specify the number of the COM port you wish to test.

If connecting two COM ports via a cross cable, specify the respective COM ports in [Device1] and [Device2].

If using a loopback connector, specify the same port number in both [Device1] and [Device2].

Communication Settings: Specify the [Bits / Second], [Data bits] and other settings you wish to use.

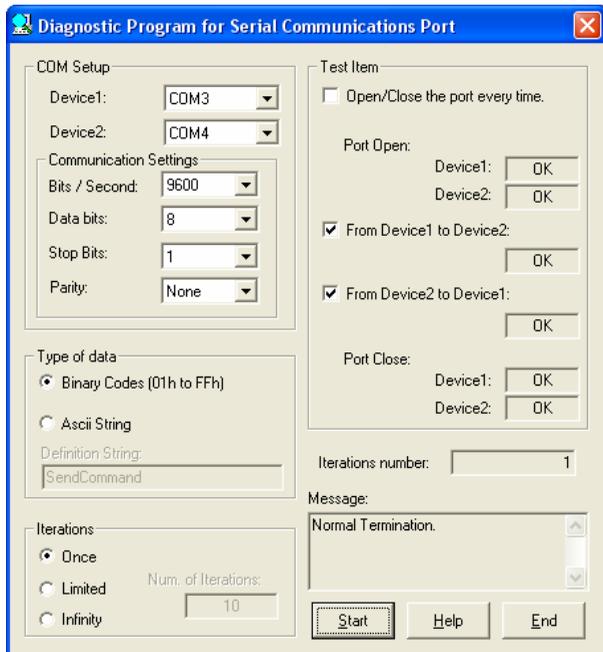
Start test

Click the [Start] button to start the test using the specified conditions.

View test result

The test result is displayed in the [Message] window.

A successful completion message appears if the test completed OK.



Setup Troubleshooting

Symptoms and Actions

Incorrect driver software was installed by mistake [**Windows 7, Server 2008, Vista, XP, Server 2003, 2000**]

“API-SIO(98/PC)” in the “Driver Library API-PAC(W32)” cannot be used by this product. Please use “Standard COM Driver Software COM Setup Disk” in the bundled CD-ROM.

If the incorrect software is installed by mistake, please uninstall the incorrect software then install the correct software.

If your problem cannot be resolved

Contact your retailer.

3. External Connection

This chapter describes the interface connectors on the board.

Check the information available here when connecting an external device.

In addition to connecting directly to the connector on the board, you can also connect external devices via a connection distribution cable or connection distribution unit.

- Connecting directly to the port connector.
- Using a connection distribution cable. (COM-4CL-PCI)
- Using a connection distribution unit. (COM-4CL-PCI)

COM-2CL-PCI

Connecting directly to the port connector

If connecting an external device directly from the connector on the board, use a cable purchased separately. If making your own cable, use a CN5-D9F or equivalent connector.

Pin Assignment

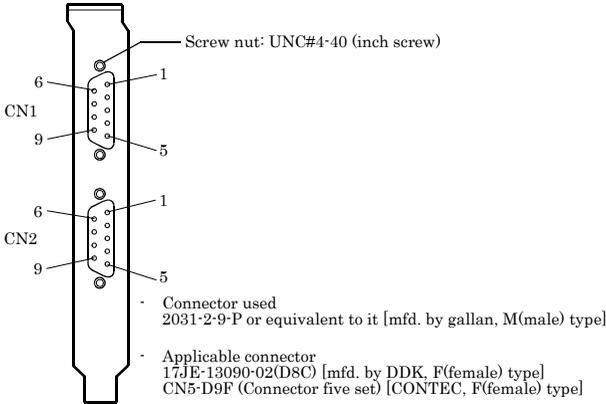


Figure 3.1. Interface Connector < COM-2CL-PCI >

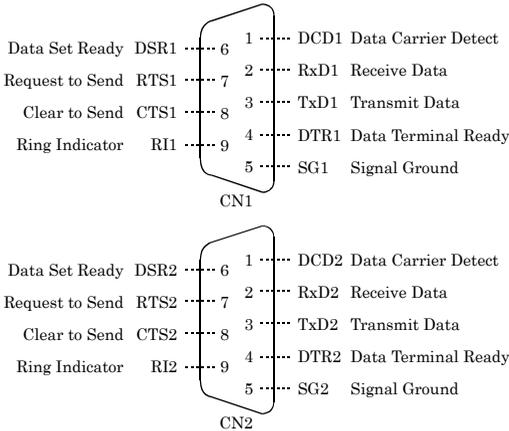


Figure 3.2. Pin Assignments of Interface Connector < COM-2CL-PCI >

Cable (Option)

RS-232C Straight Cable with D-SUB9P (1.8m)

RSS-9M/F

RS-232C Cross Cable with D-SUB9P (1.8m)

RSC-9F

COM-4CL-PCI

When using a COM-4CL-PCI, an alternative to connecting an external device directly to the connector on the board is to use a connection conversion cable or connection conversion unit.

Using 9-pin D-SUB Connector Distribution Cable

Use the bundled distribution cable or PCE37/9PS (purchased separately) to connect to external devices after dividing into four 9-pin D-SUB male connector channels.

Use separately purchased 9-pin D-SUB or equivalent cables to connect from the four individual connectors.

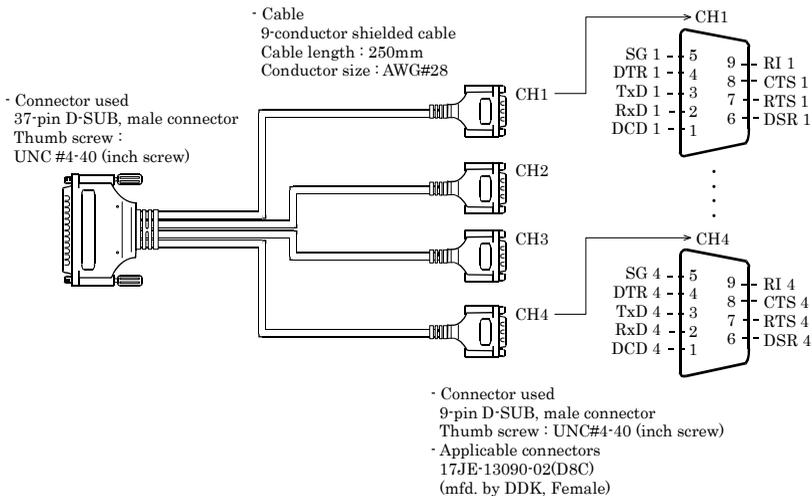


Figure 3.3. Specification of “The bundled distribution cable”

Connection distribution cable (Option)

Connection Conversion Cable (37M→9M x 4, 250mm)

PCE37/9PS

Cable (Option)

RS-232C Straight Cable with D-SUB9P (1.8m)

RSS-9M/F

RS-232C Cross Cable with D-SUB9P (1.8m)

RSC-9F

Using 25-pin D-SUB Connector Distribution Cable

Use a PCE37/25PS connection distribution cable (purchased separately) to connect to external devices after dividing into four 25-pin D-SUB male connector channels.

Use separately purchased 25-pin D-SUB or equivalent cables to connect from the four individual connectors.

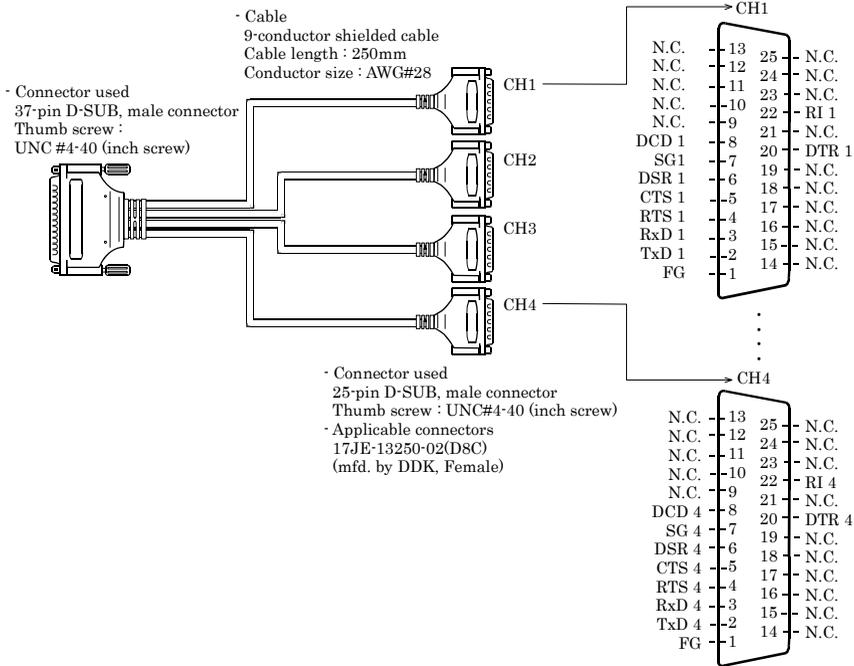


Figure 3.4. Specification of “PCE37/25PS”

Connection distribution cable (Option)

Connection Conversion Cable (37M→25M x 4, 250mm)

PCE37/25PS

Cable (Option)

RS-232C Straight Cable with D-SUB25P (1.8m)

RSS-25M/F

RS-232C Cross Cable with D-SUB25P (1.8m)

RSC-25F

RS-232C Connection Conversion Straight Cable (25F→9M, 1.8m)

RSS-25F/9M

RS-232C Connection Conversion Cross Cable (25F→9F, 1.8m)

RSC-25F/9F

Using 25-pin D-SUB Connector Distribution Unit

Use a CCU-78F/25M connection distribution unit (purchased separately) to connect to external devices after dividing into four 25-pin D-SUB male connector channels.

This method has the following features.

- The unit can be fitted to a DIN rail using a separately purchased ADP-1 DIN rail adapter.
- The unit can be fitted to a wall or similar using screws.
- By connecting an external power supply, the unit can output a power supply from the 25-pin D-SUB connector.

Use a separately purchased 25-pin D-SUB connector cable to connect from the four individual connectors.

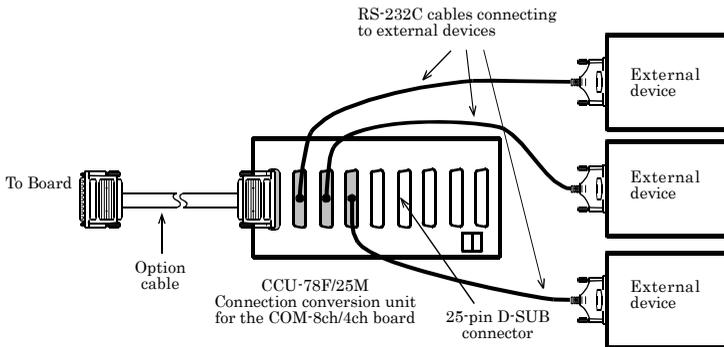


Figure 3.5. Connection Procedure

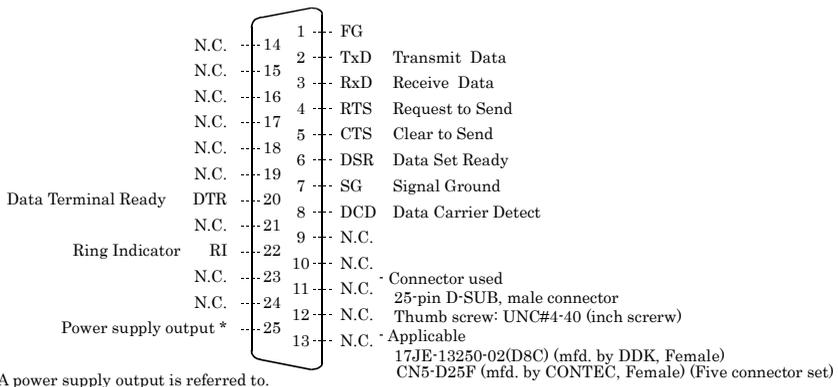


Figure 3.6. Pin Assignments of Interface Connector

Connection distribution cable & connection distribution unit (Option)

Connection Conversion Unit for RS-232C (78P→25P x 8) CCU-78F/25M

COM-4ch Board Optional Cable for CCU-78F/25M (2m) RSS-78M/37M

Connection cable (Option)

| | |
|---|------------|
| RS-232C Straight Cable with D-SUB25P (1.8m) | RSS-25M/F |
| RS-232C Cross Cable with D-SUB25P (1.8m) | RSC-25F |
| RS-232C Connection Conversion Straight Cable (25F→9M, 1.8m) | RSS-25F/9M |
| RS-232C Connection Conversion Cross Cable (25F→9F, 1.8m) | RSC-25F/9F |

Connecting directly to the port connector

If connecting an external device directly from the connector on the board, use a CN5-D9F or equivalent connector.

Pin Assignment

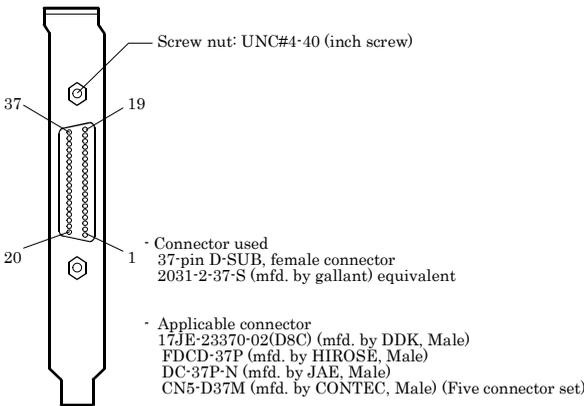


Figure 3.7. Interface Connector < COM-4CL-PCI >

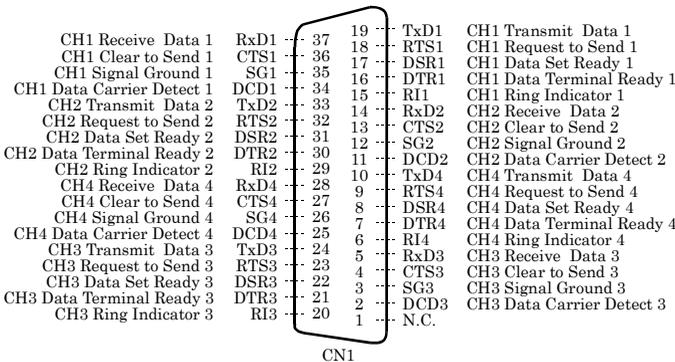


Figure 3.8. Interface Connector < COM-4CL-PCI >

Types of Cable and Example Connections

The connector used for this product has a wide interpin space and is highly reliable. In the case of a PC with a narrow slot opening, a gap might be created as wide as the thickness of the sheet metal of the PC when an external cable is connected, preventing the connector from being fitted properly. If the thickness of the sheet metal is less than 1.5mm (typically about 1.0mm), simply tighten the adjusting screw located on the side of the connector to install it properly. The connector should function without a problem.

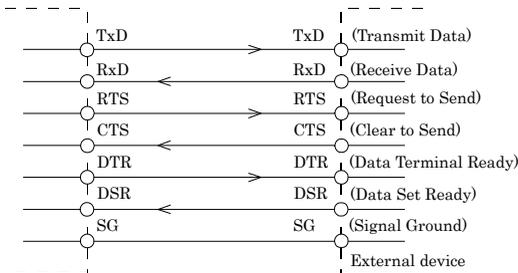


Figure 3.9. Example Connection to a Modem (Straight cable)

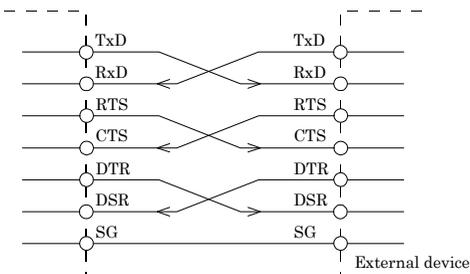


Figure 3.10. Example Connection to a PC (Cross cable)

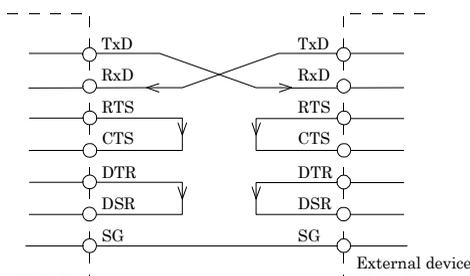


Figure 3.11. Example Connection to a Device

4. Functions

This section describes the functions of the board.

Communication Function

Serial Data Transmission

Sends and receives data in accordance with the RS-232C standard.

The baud rate for each channel can be set independently in the range 15 - 230,400bps by software.

RS-232C Control Lines

The control lines for RTS, CTS, DTR and DSR can be controlled and monitored using an application.

Send and Receive Data Buffers

Each channel has a separate 64-byte send and 64-byte receive buffer.

The buffers operate as FIFO buffers and help reduce the load on the CPU for high-speed communications or system operation.

The data buffer settings (Use FIFO ON/OFF and FIFO trigger size) are set by the Device Manager.

The FIFO trigger size specifies the data buffer size and determines the timing for generating hardware interrupts.

Setting a large FIFO trigger size lightens the load on the CPU by reducing the number of hardware interrupts generated by sending or receiving data.

However, as data is not actually sent or received until a certain amount of data has accumulated, the timing at which the data reaches the opposing device is slightly delayed. Similarly, there is also a delay in the timing between data being received and the data being passed the application.

Alternatively, setting a small FIFO trigger size or disabling FIFO operation increases the speed of data sending and receiving but increases the load on the CPU and risks received data being missed.

As the FIFO buffer size is variable, you can adjust this setting to achieve optimum performance for your system.

Setting the Baud Rate

The output baud rate can be set by setting the appropriate value to the Baud Rate (15 - 230400bps) Generator register.

However, some baud rate values do not have a corresponding Baud Rate Generator register setting. If the result of substituting the baud rate into the equation below is an integer, then that baud rate can be set. If the result contains a fractional part, the baud rate cannot be set.

$$921600 \div \text{Desired baud rate} = \text{Division register setting value}$$

Ex.) $921600 \div 9600\text{bps} = 96$ (As the result is an integer, this baud rate can be set.)

$921600 \div 128000\text{bps} = 7.2$ (As the result contains a fractional part, this baud rate cannot be set.)

CAUTION

As Visual Basic's communication control (MSComm) accepts any available baud rate settings, using the MSComm functionalities limits the rate to 115,200bps maximum. For setting the baud rate higher than 115,200bps using Visual Basic, refer to the VB sample program included in the accompanying CD-ROM "Standard COM Driver Software COM Setup Disk".

Refer to the following baud rate setting examples. Baud rates other than those listed below can also be set if they produce a valid setting value in the equation described above.

Table 4.1. Baud Rate Generator Programming Table

| Output baud rate | Baud Rate Generator register | Setup error (%) |
|------------------|------------------------------|-----------------|
| 15 | 61440 | None |
| 50 | 18432 | None |
| 75 | 12288 | None |
| 110 | 8378 | 0.0022 |
| 134.5 | 6852 | 0.0006 |
| 150 | 6144 | None |
| 300 | 3072 | None |
| 600 | 1536 | None |
| 1200 | 768 | None |
| 1800 | 512 | None |
| 2000 | 461 | 0.04 |
| 2400 | 384 | None |
| 3600 | 256 | None |
| 4800 | 192 | None |
| 7200 | 128 | None |
| 9600 | 96 | None |
| 14400 | 64 | None |
| 19200 | 48 | None |
| 28800 | 32 | None |
| 38400 | 24 | None |
| 57600 | 16 | None |
| 76800 | 12 | None |
| 115200 | 8 | None |
| 153600 | 6 | None |
| 230400 | 4 | None |

5. About Software

The "Standard COM Driver Software – COM Setup Disk" from the supplied CD-ROM provides the following functions.

- Operation under Windows.
- The serial ports can be used in the same way as the standard COM ports on the PC.
- The boards can be used for all types of serial communications such as for remote access service (RAS) and uninterruptible power supply (UPS) applications.
- Under Windows, the serial ports can be accessed using the standard Win32 API communication routines (CreateFile(), WriteFile(), ReadFile(), and SetCommState(), etc.)
- The serial ports are also compatible with the Visual Basic communication control (MSComm).
- Supports the communication class of .NET Framework (SerialPort class).

Refer to the \PCI\Readmee.txt file on the CD-ROM for details.

About Sample programs

Sample programs are provided in the \Samples folder on the CD-ROM. Use the sample programs for reference and testing when developing software.

Visual Basic sample programs

(1) Transmit/Receive sample

- Sends data entered from the keyboard and displays received data on the screen.
- Source folder: \Samples\Vb folder

Visual Basic 2005 sample programs

(1) Transmit/Receive sample

- Sends data entered from the keyboard and displays received data on the screen.
- Source folder: \Samples\VB.NET folder

Visual C# 2005 sample programs

(1) Transmit/Receive sample

- Sends data entered from the keyboard and displays received data on the screen.
- Source folder: \Samples \VCS folder

Visual C++ sample programs

(1) Transmit sample

- Sends data entered from the keyboard. Execute from the command prompt.
- Source folder: \Samples\Vc\Comsend.c file

(2) Receive sample

- Displays received data on the screen.
- Source folder: \Samples \Vc\Comread.c file

Uninstalling the driver software

To uninstall the driver software installed from the COM Setup Disk, follow the procedure given below.

About the uninstall function

The install function deletes the COM-DRV driver and registry information, available from [Add/Remove Programs].

This function can be used only in Windows Server 2003/XP/2000. In other OSs, you have to uninstall the driver manually.

Windows XP, Server 2003, 2000

- (1) Open the Control Panel and launch Device Manager from the [System] applet.
- (2) Expand [Multifunction adapters] and delete [CONTEC Co., Ltd-XXXXXXXXXX] (installed hardware name).
- (3) Start [Add/Remove Programs] from the Control Panel.
- (4) Select [CONTEC COM-DRV(WDM) driver] from the list of applications, then click the [Add/Remove] button to automatically start the uninstall procedure.

Windows 7, Server 2008, Vista

- (1) Open the Control Panel and launch Device Manager from the [System] applet.
- (2) Expand [Multifunction adapters] and delete [CONTEC Co., Ltd-XXXXXXXXXX] (installed hardware name).
To also delete all the driver files, check [Remove this device software].

CD-ROM Directory Structure

| | |
|--------------|--|
| \ | |
| - Linux | Linux device driver (for PCI boards and PC cards only) |
| - PCCARD | PC card related files |
| - PCI | PCI board related files |
| - ComDrv | Windows device driver and INF files, etc. |
| - InstDoc | Installation instructions for each OS. |
| - Samples | Various sample programs |
| - VB | Sample program for Visual Basic |
| - VC | Sample program for Visual C++ |
| - VB.NET | Sample program for VisualBasic.NET (for SerialPortClass) |
| - VCS | Sample program for VisualC.NET (for SerialPortClass) |
| - USB | USB related files |
| - UsersGuide | Manual of hardware (PDF) |
| - UTILITY | Various utilities |
| - CommChk | Self diagnostic program (Loopback communication test) |
| - CTstCom | Self diagnostic program (Terminal utility) |

6. About Hardware

This chapter provides hardware specifications and hardware-related supplementary information.

Hardware specification

Tables 6.1 - 6.2 list the board specifications.

COM-2CL-PCI

Table 6.1. Specification

| Item | Specification |
|--------------------------|--|
| Number of channels | 2channels |
| Interface type | RS-232C |
| Transfer method | Asynchronous serial transfer |
| Baud rate | 15 · 230,400bps *1 *2 |
| Data length | 5, 6, 7, 8 bits 1, 1.5, 2 stop bits *1 |
| Parity check | Even, Odd, Non-parity *1 |
| Controller chip | 17152 or equivalent (Each channel has 64-byte receive and 64-byte transmit FIFO buffers.) |
| Connecting distance | 15m (Typ.) |
| Interrupt requests | 1 level use *3 |
| Memory address | 1024byte boundary |
| Power consumption (Max.) | 5VDC 100mA |
| Operating temperature | 0 - 50°C, 10 - 90%RH (No condensation) |
| Bus specification | PCI (32bit, 33MHz *4) |
| Dimension (mm) | 121.69(L) x 88.0(H) |
| Connector used | 9-pin D-SUB connector, 2031-2-9-P [mfd. by gallant, M(male) type] equivalent |
| Weight | 70g |

*1 These items can be set by software.

*2 Data transmission at high speed may not be performed normally depending on the environment including the status of external device and cable length.

*3 The interrupt signals from individual channels are arranged into a single interrupt signal and output.

*4 This board requires power supply at +5V from an expansion slot (it does not work on a machine with a +3.3V power supply alone).

COM-4CL-PCI

Table 6.2. Specification

| Item | Specification |
|--------------------------|--|
| Number of channels | 4channels |
| Interface type | RS-232C |
| Transfer method | Asynchronous serial transfer |
| Baud rate | 15 - 230,400bps *1 *2 |
| Data length | 5, 6, 7, 8 bits 1, 1.5, 2 stop bits *1 |
| Parity check | Even, Odd, Non-parity *1 |
| Controller chip | 17154 or equivalent (Each channel has 64-byte receive and 64-byte transmit FIFO buffers.) |
| Connecting distance | 15m (Typ.) |
| Interrupt requests | 1 level use *3 |
| Memory address | 2048byte boundary |
| Power consumption (Max.) | 5VDC 120mA |
| Operating temperature | 0 - 50°C, 10 - 90%RH (No condensation) |
| Bus specification | PCI (32bit, 33MHz *4) |
| Dimension (mm) | 121.69(L) x 88.0(H) |
| Connector used | 37-pin D-SUB connector, 2031-2-37-S [mfd. by gallant, F(female) type] equivalent |
| Weight | 70g |

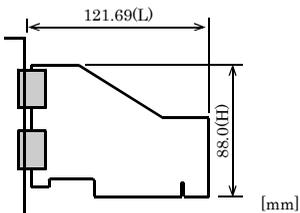
*1 These items can be set by software.

*2 Data transmission at high speed may not be performed normally depending on the environment including the status of external device and cable length.

*3 The interrupt signals from individual channels are arranged into a single interrupt signal and output.

*4 This board requires power supply at +5V from an expansion slot (it does not work on a machine with a +3.3V power supply alone).

Board Dimensions [COM-2CL-PCI, COM-4CL-PCI]



The standard outside dimension (L) is the distance from the end of the board to the outer surface of the slot cover.

COM-2CL-PCI COM-4CL-PCI User's Guide

CONTEC CO.,LTD.

June 2010 Edition

3-9-31, Himesato, Nishiyodogawa-ku, Osaka 555-0025, Japan

Japanese <http://www.contec.co.jp/>

English <http://www.contec.com/>

Chinese <http://www.contec.com.cn/>

No part of this document may be copied or reproduced in any form by any means without prior written consent of CONTEC CO., LTD. [06112010]

[03072007]

Management No. A-51-411

[06252010_rev3]

Parts No. LYHE043