

RS-422A/485 Serial I/O Board with Isolation for PCI

2ch

COM-2PD(PCI)H

4ch

COM-4PD(PCI)H



This board is a PCI bus interface board for performing RS-422A/485 serial communications with external devices.

The <COM-2PD(PCI)H> has two RS-422A/485 serial ports per board.

The <COM-4PD(PCI)H> has four RS-422A/485 serial ports per board.

You can use the standard COM driver software (COM Setup Disk) supplied with the board to access the serial ports as standard Windows or Linux COM ports.

The COM-2PD(PCI)H board is backward compatible with the CONTEC COM-2PD(PCI) board. The COM-2PD(PCI)H can therefore replace the COM-2PD(PCI) in an existing system.

The specification, color, and design of a product may be changed without a preliminary announcement.

Features

- RS-422A/485 serial communication ports
- The communication lines for each channel are electrically isolated from each other and from the PC.
- Maximum communication speed = 921,600bps.
- The baud rate can be set independently for each channel, by software.
- Each channel is equipped with separate 128-byte FIFO buffers for transmit and receive.
- A maximum of 16 boards can be installed as configured in the range COM1 - COM256.
- Driver software is supplied to allow the serial ports to be used as standard Windows or Linux COM ports.
- The data transfer mode (full duplex or half duplex) can be set by a switch.
- The board includes a 100 terminating resistor required for multi-drop (party line) connections. The resistor for each channel can be inserted into the signal line by a switch.
- Surge protection is provided for each RS-422A/485 signal line.

Product Configuration List

- Board
[COM-2PD(PCI)H or COM-4PD(PCI)H]
 - First step guide ... 1
 - COM Setup Disk *1 (CD-ROM) ... 1
- *1 The CD-ROM contains the driver software and User's Guide.

Cable & Connector (Option)

- Connection Conversion Cable (37M 9M x 4, 250mm) : PCE37/9PS
- 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

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

Support Software

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

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

The purpose of this software is to allow the CONTEC serial communication boards to be used under Windows or Linux 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 to 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).

Under Linux, the serial ports are compatible with the operating system's standard tty driver. The standard routines including open(), close(), read(), write() are supported.

< Operating environment >

OS Windows XP, 2000, NT, Me, 98, etc..

▼ CAUTION

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

Driver library API-PAC(W32) (Available for downloading (free of charge) from the CONTEC web site.)

API-PAC(W32) is the library software that provides the commands for CONTEC hardware products in the form of Windows standard Win32 API functions (DLL). It makes it easy to create high-speed application software taking advantage of the CONTEC hardware using various programming languages that support Win32 API functions, such as Visual Basic and Visual C/C++.

It can also be used by the installed diagnosis program to check hardware operations.

CONTEC provides download services to supply the updated drivers and differential files.

For details, visit the CONTEC's Web site.

< Operating environment >

OS Windows XP, 2000, NT, Me, 98, etc..

Adaptation language Visual C/C++, Visual Basic, Delphi, Builder, etc..

Others Each piece of library software requires 50 megabytes of free hard disk space.

▼ CAUTION

This library provides local routines that are specific to CONTEC (SioOpen(), SioWrite(), SioRead(), SioStatus(), etc.). These are not compatible with the standard Win32 API communication routines (CreateFile() and WriteFile(), etc.).

specification

COM-2PD(PCI)H

Item	Specification
Number of channels	2 channels
Interface type	RS-422A/RS-485
Isolation	Channel Isolation/Bus Isolation
Isolation voltage	Channel Isolation: 1000VDC, Bus Isolation: 1000VDC
Transfer method	Asynchronous serial transfer (Full/Half duplex)
Baud rate	2 · 921,600bps *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	162850 or equivalent (Each channel has 128-byte receive and 128-byte transmit FIFO buffers.)
Connecting distance	1200m(Typ.) *3
Interrupt requests	1 level use *4
I/O address	Any 32-byte boundary
Power consumption	5VDC 550mA (Max.)
Operating temperature	0 · 50°C, 10 · 90%RH (No condensation)
PCI bus specification	32-bit, 33MHz, Universal key shapes supported *5*6
Dimension (mm)	121.69(L) x 105.68(H) *7
Weight	95g

*1 These items can be set by software.

For the "API Function Library API-PAC(W32)" and the "Standard COM Driver Software COM Setup Disk" on the supplied CD-ROM, the range is 15 · 921,600 bps.

*2 Data transmission at high speed may not be performed normally depending on the environment including the type of status of connected material of cable and environment.

*3 The table below lists an example of the relationship between baud rate and communication distance.

Communication distance	Baud rate
300m	115,200bps
600m	57,600bps
900m	19,200bps
1200m	9,600bps

Communication cable: 28AWG, double shielded cable, twisted pairs used for each +/- signal line.

*4 A single interrupt signal "INTA" is output as a collection of interrupt input signals from two channels.

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

*6 If the board No. is 7195, PCI bus specification is 32bit, 33MHz, 5V.

*7 If the board No. is 7195, Dimension is 121.69(L) x 106.68(H).

COM-4PD(PCI)H

Item	Specification
Number of channels	4 channels
Interface type	RS-422A/RS-485
Isolation	Channel Isolation/Bus Isolation
Isolation voltage	Channel Isolation: 500VDC, Bus Isolation: 1000VDC
Transfer method	Asynchronous serial transfer (Full/Half duplex)
Baud rate	2 · 921,600bps *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	162850 or equivalent (Each channel has 128-byte receive and 128-byte transmit FIFO buffers.)
Connecting distance	1200m(Typ.) *3
Interrupt requests	1 level use *4
I/O address	Any 32-byte boundary
Power consumption	5VDC 950mA (Max.)
Operating temperature	0 · 50°C, 10 · 90%RH (No condensation)
PCI bus specification	32-bit, 33MHz, Universal key shapes supported *5*6
Dimension (mm)	121.69(L) x 106.68(H)
Weight	95g

*1 These items can be set by software.

For the "API Function Library API-PAC(W32)" and the "Standard COM Driver Software COM Setup Disk" on the supplied CD-ROM, the range is 15 · 921,600 bps.

*2 Data transmission at high speed may not be performed normally depending on the environment including the type of status of connected material of cable and environment.

*3 The table below lists an example of the relationship between baud rate and communication distance.

Communication distance	Baud rate
300m	115,200bps
600m	57,600bps
900m	19,200bps
1200m	9,600bps

Communication cable: 28AWG, double shielded cable, twisted pairs used for each +/- signal line.

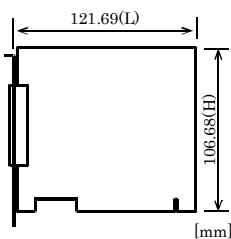
*4 A single interrupt signal "INTA" is output as a collection of interrupt input signals from two channels.

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

*6 If the board No. is 7194, PCI bus specification is 32bit, 33MHz, 5V.

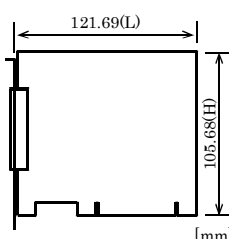
Board Dimensions

[COM-2PD(PCI)H, COM-4PD(PCI)H]



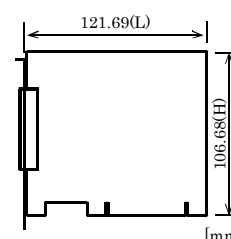
The standard outside dimension (L) is the distance from the end of the board to the outer surface of the slot cover.

[COM-2PD(PCI)H<No.7195A, No.7195B>]



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

[COM-4PD(PCI)H <No.7194A, No.7194B>]



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

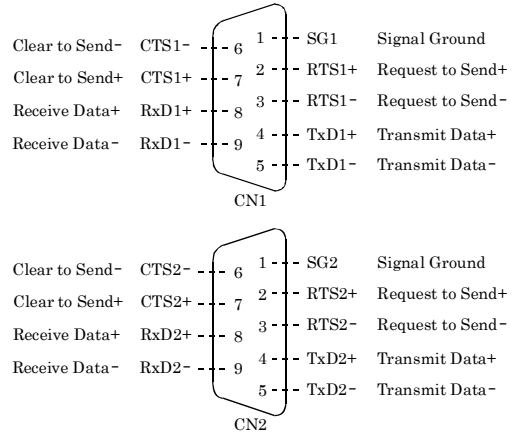
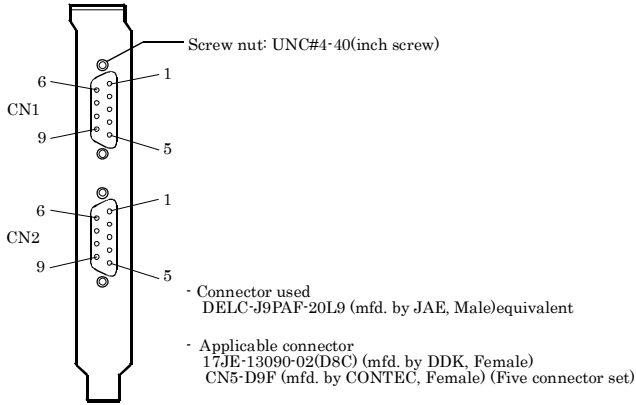
External Connection

In the case of COM-2PD(PCI)H

◆ 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



▼ CAUTION

For TxD, RxD, and RTS, even numbered pins are + and odd numbered pins are -.

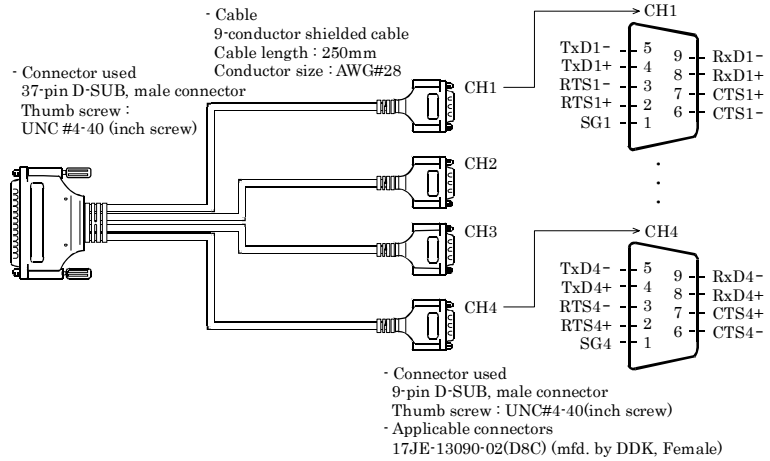
For CTS, even numbered pins are - and odd numbered pins are +. This is the opposite of the other signals, but is not a misprint.

In the case of COM-4PD(PCI)H

When using a COM-4PD(PCI)H, an alternative to connecting an external device directly to the connector on the board is to use a connection conversion cable.

◆ Converting the Interface Connector to 9-pin D-SUB, Male Connectors

Use a PCE37/9PS connection conversion cable (purchased separately) to connect to external devices after dividing into four 9-pin D-SUB male connector channels.



■ Connection conversion (Option)

Connection Conversion Cable (37M 9M x 4, 250mm) PCE37/9PS

▼ CAUTION

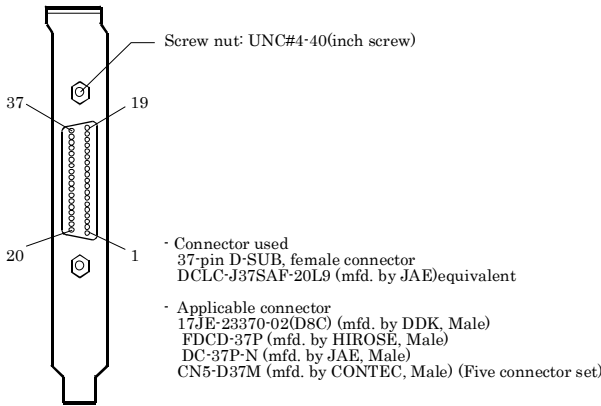
The SG lines for CH1 to CH4 of the option cable are not connected to the cable shielding. However, the frame of each connector is connected to the shielding. This means that the cable shielding is connected to the body of the PC via the frame of the interface connector.

Note that the option cable is not a twisted-pair cable.

◆ Connecting directly to the port connector

If connecting an external device directly from the connector on the board, use a CN5-D37M or equivalent connector.

■ Pin Assignment



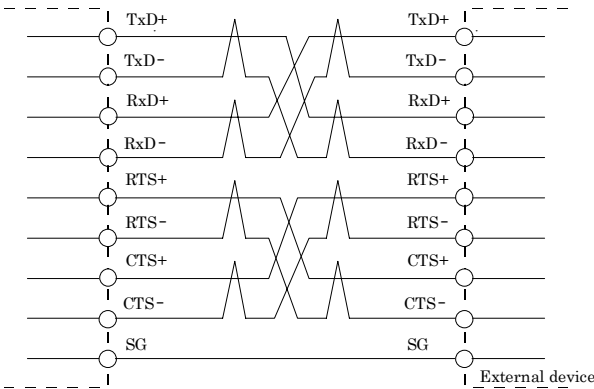
CH1 Request to Send +	RTS1+--	37	19--	RTS1-	CH1 Request to Send -
CH1 Receive Data +	RxD1+--	36	18--	CTS1+	CH1 Clear to Send +
CH1 Transmit Data -	TxD1--	35	17--	CTS1-	CH1 Clear to Send -
CH1 Signal Ground	SG 1	34	16--	TxD1+	CH1 Transmit Data +
CH2 Request to Send -	RTS2--	33	15--	RxD1-	CH1 Request to Send -
CH2 Clear to Send +	CTS2+--	32	14--	RxD2+	CH2 Request to Send +
CH2 Clear to Send -	CTS2--	31	13--	TxD2-	CH2 Receive Data +
CH2 Transmit Data +	TxD2+--	30	11--	SG 2	CH2 Signal Ground
CH2 Receive Data -	RxD2--	29	10--	RTS4-	CH4 Request to Send -
CH4 Request to Send +	RTS4+--	28	9--	CTS4+	CH4 Clear to Send +
CH4 Receive Data +	RxD4+--	27	8--	CTS4-	CH4 Clear to Send -
CH4 Transmit Data -	TxD4--	26	7--	TxD4+	CH4 Transmit Data +
CH4 Signal Ground	SG 4	25	6--	RxD4-	CH4 Receive Data -
CH3 Request to Send -	RTS3--	24	5--	RTS3+	CH3 Request to Send +
CH3 Clear to Send +	CTS3+--	23	4--	RxD3+	CH3 Receive Data +
CH3 Clear to Send -	CTS3--	22	3--	TxD3-	CH3 Transmit Data -
CH3 Transmit Data +	TxD3+--	21	2--	SG 3	CH3 Signal Ground
CH3 Receive Data -	RxD3--	20	1--	N.C.	

Types of Cable and Example Connections

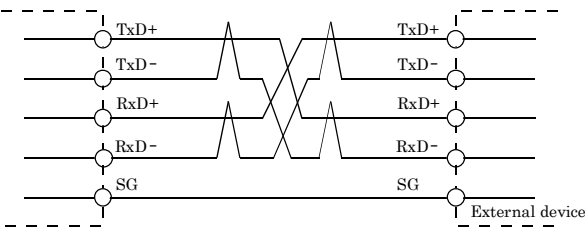
The figures below show examples of how to connect the cable for the board.

The RS-422A/485 interface works based on a differential signal whereby the signal is carried by the potential difference between two lines (+ and -). Using twisted pair cable is recommended to improve resistance to noise.

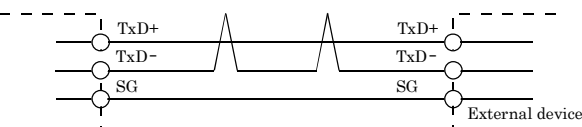
Example Connection RTS and CTS to a External Device in Full Duplex



Example Connection Oneself loop to RTS and CTS in Full Duplex



Example Connection in Half Duplex



Differences from COM-2PD(PCI)

The COM-2PD(PCI)H is the upgraded versions of the conventional COM-2PD(PCI) board, respectively. The COM-2PD(PCI)H is backward compatible with the COM-2PD(PCI) and can be used in the same way in principle.

In specifications, the COM-2PD(PCI)H board is different from the COM-2PD(PCI) board as listed below.

For details on the on-board controller chip, refer to the data sheet from EXAR Corporation.

Differences in Specifications

	COM-2PD(PCI)	COM-2PD(PCDH)
FIFO buffer for transmission and reception	16-byte	128-byte
Controller chip	16552 or equivalent	162850 or equivalent
Power consumption	670mA	550mA
Weight	110g	95g

Differences in Hardware

	COM-2PD(PCI)	COM-2PD(PCDH)
Data transmission mode setting switch	<p>SW2 (Data transfer mode settings for CH1)</p> <p>SW3 (Data transfer mode settings for CH2)</p>	<p>SW3 (Data transfer mode settings for CH1)</p> <p>SW5 (Data transfer mode settings for CH2)</p>
The meaning of each switch bit is the same for each model. See the data transfer mode settings in Chapter 2 for details.		
Terminator setting switch	<p>SW2 (Terminator settings for CH1)</p> <p>SW3 (Terminator settings for CH2)</p>	<p>SW2 (Terminator settings for CH1)</p> <p>SW4 (Terminator settings for CH2)</p>
6, 7 bit		1, 2 bit
The meaning of each of the above switch bits is the same. On the COM-2PD(PCDH), the terminators for transmission (TxD and RTS) are set by bits 3 and 4. See the terminator settings in Chapter 2 for details.		