**PCI-bus Opto-isolated RS-422A/485
Communication Board**

COM-4PD(PCI)H

This board is external equipment and an interface board of the PCI bus conformity which performs serial communication of RS-422A/485 conformity.
It has the serial port of RS-422A/485 conformity of four channels by one sheet.
By using attached standard COM driver software [COM Setup Disk], it can access as a Windows or standard COM port for Linux.
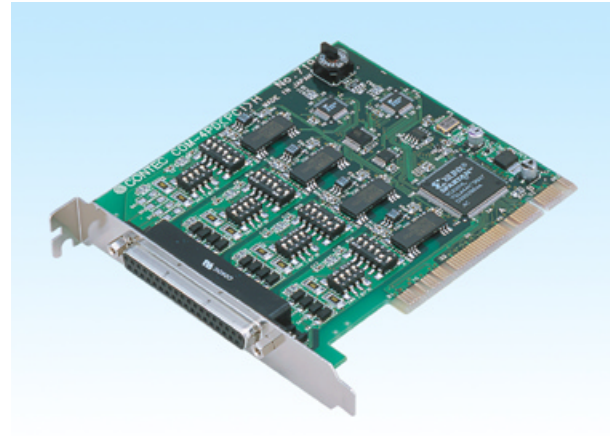
Features

- The serial communication port of RS-422A/485 conformity is carried.
- It is electrically insulated between each channel and between personal computers.
- It corresponds to a maximum of 921,600bps high-speed communication.
- The baud rate of each channel can be individually set up by software.
- FIFO buffer of 128 bytes of reception is carried for every channel 128 bytes of transmission.
- The board of a maximum of 16 sheets can be extended, and

a setup to COM1-COM256 is possible.
- It can be used as Windows and a standard COM port of Linux by attached driver software.
- Data-communications mode (full-duplex, half double) can change a setup by changing a switch.
- The 100Ohm terminator (terminus resistance) required at the time of party line (multi-drops) connection is built in, and it can insert in each signal line by changing a switch.
- Serge protection of all the RS-422A/485 signal lines is carried out.

Specification

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 to 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 to 50° C, 10 to 90%RH (No condensation)
PCI bus specification	32-bit, 33MHz, 5V
Dimension (mm)	121.69(L) ×106.38(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 to 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.

Board size

121.69(L)

106.68(H)

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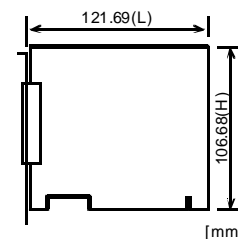
The standard outside dimension (L) is the distance from the end of the board to the outer surface of the slot cover.

Support Software

Attached support software

Standard COM driver software COM Setup Disk
It is the software for using the serial communication board of our company like the COM port (standard COM) of the main part of a personal computer by Windows or Linux. It can set up to COM1-COM256 by extension of a board.
It is possible to perform various serial communications, such as remote access service (RAS) and a power supply (UPS) non-cut the electric current off. In Windows, it corresponds to the standard Win32API communication functions (CreateFile () and WriteFile(), ReadFile () and SetCommState (), etc.) for OS. It corresponds to communication control (MSComm) of Visual Basic.
In Linux, it is based on the standard type driver for OS. It corresponds to the standard function of open () and close(), read () and write(), etc.
Environment of operation
The main correspondences OS Windows XP, 2000, NT, Me, 98, Linux, etc.

Optional support software

Collection for measurement systems development of ActiveX components ACX-PAC(W32)BP
It is the convenient measurement systems development tool for Windows in which the collection of examples which can be used immediately, and the collection (collection of software parts) of components which can program easily only by combining were mentioned.
Component for control of the input-and-output board (card) of our company is made the one package. Analog I/O, digital I/O, control of each interface of GPIB communication and X-Y graph display, and file preservation are possible.
Collection for measurement systems development of ActiveX components ACX-PAC(W32)AP
In addition to the function of ACX-PAC(W32)BP, components, such as display systems, such as various graph, switch, and lamp, and operation / analysis, serve as a package.

Gratis download service

API Function Library API-PAC(W32)
It is the library software which offers the command to the hardware of our company in standard Win32API function (DLL) form for Windows. By the various programming languages which are supporting Win32API functions, such as Visual Basic, and Visual C/C++, the high-speed application software which harnessed the special feature of the hardware of our company can be created.
The newest driver and download service (http://www.contec. co.jp/apipac/) of difference file are also offered.
Environment of operation
Main correspondence OS Windows 2000, NT, Me, 98, etc
Main adaptation languages Visual C++, Borland C++, Visual Basic, etc.
Others The hard disk which has 20MB empty domain for every library software is required.

Note!
  - *They are the local functions which were original with our company as for this library, and were defined. (SioOpen ( ) and SioWrite( ), SioRead ( ) and SioStatus( ), etc.) It is not compatible with the standard Win32API communication functions (CreateFile( ) and WriteFile( ) etc.) for OS.*

When using it by MS-DOS

Please refer to the sample program for MS-DOS in appending CD-ROM.

Cable & Connector (Option)

Cable (option)

The distribution cable for COM-4ch boards
(37M -> 9M x 4, 250mm) :   PCE37/9PS

Connector (option)

9pin D-SUB (male) connector Five-piece set :CN5-D9M
9pin D-SUB (female) connector Five-piece set :CN5-D9F
37pin D-SUB (male) connector Five-piece set :CN5-D37M

Packing List

- Board [COM-4PD(PCI)H] - 1
- This User's Manual - 1
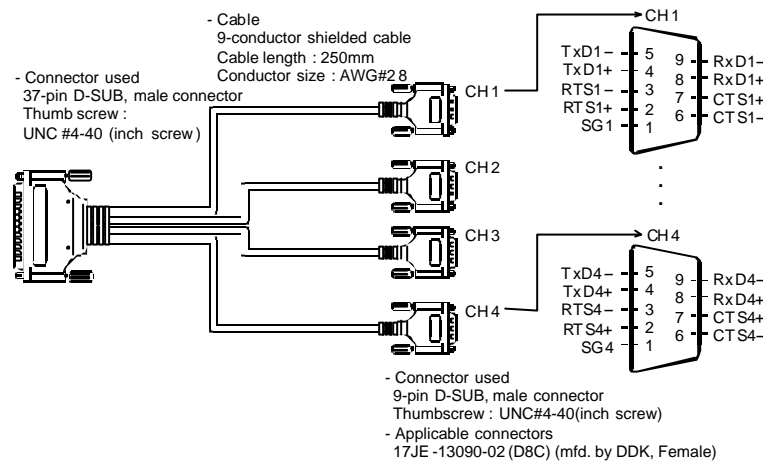- COM Setup Disk(CD-ROM) - 1

External Connection

The distribution cable other than the method of carrying out a direct file from the connector on board can be used for connection of COM-4PD(PCI)H and external apparatus.

9pin D-SUB connector distribution cable is used.

After using PCE37/9PS of optional distribution cables and distributing to 9pin D-SUB connector for four channels [M (male) type], it connects with external apparatus.

Specification of "PCE37/9PS"

- Cable
  9-conductor shielded cable
  Cable length : 250mm
  Conductor size : AWG#28

- Connector used
  37-pin D-SUB, male connector
  Thumb screw :
  UNC #4-40 (inch screw)

CH1
TxD1− 5   9 RxD1−
TxD1+ 4   8 RxD1+
RTS1− 3   7 CTS1+
RTS1+ 2   6 CTS1−
SG1 1

CH4
TxD4− 5   9 RxD4−
TxD4+ 4   8 RxD4+
RTS4− 3   7 CTS4+
RTS4+ 2   6 CTS4−
SG4 1

- Connector used
  9-pin D-SUB, male connector
  Thumbscrew : UNC#4-40(inch screw)
- Applicable connectors
  17JE-13090-02 (D8C) (mfd. by DDK, Female)

Distribution cable (option)

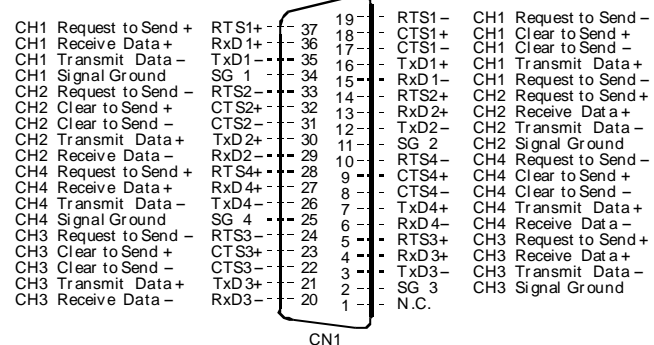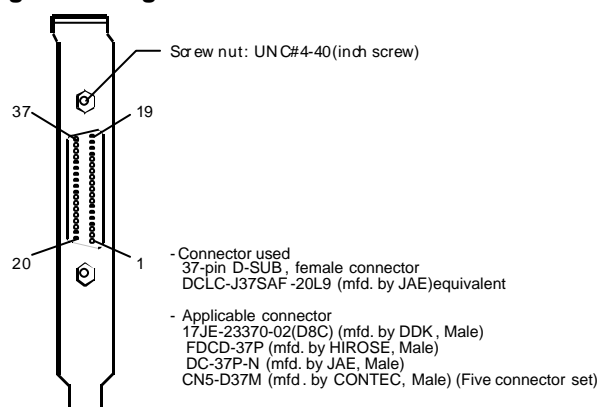The distribution cable for COM-4ch boards (37M -> 9M x 4, 250mm) PCE37/9PS

Note!
- *Each SG of CH 1-4 of option cable is not connected to the shield of option cable. However, the frame of each connector is connected to the shield. This means that the shield of option cable is connected to a personal computer case via the frame of interface connector.*
- *Moreover, this option cable is not a twisted-pair cable (balance line/twisted-pair line).*

It connects directly from the connector on a board.

From the connector on board, when you connect with external apparatus directly, using optional connector CN5-D37M etc., please make a cable himself and connect.

Signal arrangement

Screw nut: UNC#4-40(inch screw)

37   19

20   1

- Connector used
  37-pin D-SUB, female connector
  DCLC-J37SAF-20L9 (mfd. by JAE)equivalent

- Applicable connector
  17JE-23370-02(D8C) (mfd. by DDK, Male)
  FDCD-37P (mfd. by HIROSE, Male)
  DC-37P-N (mfd. by JAE, Male)
  CN5-D37M (mfd. by CONTEC, Male) (Five connector set)

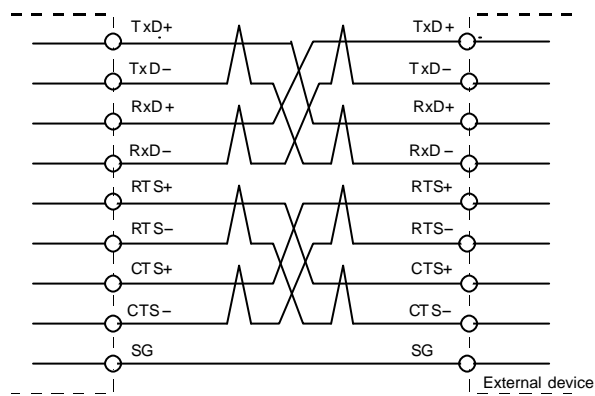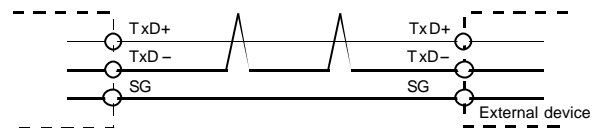|				
CH1 Request to Send +	RTS1+	37	19 RTS1−	CH1 Request to Send −
CH1 Receive Data +	RxD1+	36	18 CTS1+	CH1 Clear to Send +
CH1 Transmit Data −	TxD1−	35	17 CTS1−	CH1 Clear to Send −
CH1 Signal Ground	SG 1	34	16 TxD1+	CH1 Transmit Data +
CH2 Request to Send −	RTS2−	33	15 RxD1−	CH1 Request to Send −
CH2 Clear to Send +	CTS2+	32	14 RTS2+	CH2 Request to Send +
CH2 Clear to Send −	CTS2−	31	13 RxD2+	CH2 Receive Data +
CH2 Transmit Data +	TxD2+	30	12 TxD2−	CH2 Transmit Data −
CH2 Receive Data −	RxD2−	29	11 SG 2	CH2 Signal Ground
CH4 Request to Send +	RTS4+	28	10 RTS4−	CH4 Request to Send −
CH4 Receive Data +	RxD4+	27	9 CTS4+	CH4 Clear to Send +
CH4 Transmit Data −	TxD4−	26	8 CTS4−	CH4 Clear to Send −
CH4 Signal Ground	SG 4	25	7 TxD4+	CH4 Transmit Data +
CH3 Request to Send −	RTS3−	24	6 RxD4−	CH4 Receive Data −
CH3 Clear to Send +	CTS3+	23	5 RTS3+	CH3 Request to Send +
CH3 Clear to Send −	CTS3−	22	4 RxD3+	CH3 Receive Data +
CH3 Transmit Data +	TxD3+	21	3 TxD3−	CH3 Transmit Data −
CH3 Receive Data −	RxD3−	20	2 SG 3	CH3 Signal Ground
			1 N.C.	

CN1

Connection of cable

The example of connection of the cable in this board is shown in the following figure.

Transmission of RS-422A/485 interface is the differential system in which the relative potential difference between 2 lines (+, -) has a meaning as a signal. In order to raise opposite noise nature, if possible, please use a twisted-pair cable (balance line/ twisted-pair line).

The example of connection when connecting RTS and CTS with external apparatus in full duplex mode

TxD+ TxD+
TxD− TxD−
RxD+ RxD+
RxD− RxD−
RTS+ RTS+
RTS− RTS−
CTS+ CTS+
CTS− CTS−
SG   SG
External device

The example of connection when carrying out the self-loop of RTS and CTS in full duplex mode

TxD+ TxD+
TxD− TxD−
RxD+ RxD+
RxD− RxD−
SG   SG
External device

The example of connection in the half-double mode

TxD+ TxD+
TxD− TxD−
SG   SG
External device

Note!
  - *If it connects by mistaken connection, it will become the cause of failure of connection apparatus or this board.*