RS-422A/485 4ch Serial I/O for PCI

COM-4DL-PCI

* Specifications, color and design of the products are subject to change without notice.

This product is a PCI board designed for extending RS-422A/485 compatible serial communication functionality on your PC.

The product has four RS-422A/485 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.

⚠CAUTION

The channels are not electrically isolated from each other and from the PC. It is recommended to use an isolated product when the use environment is susceptible to noise. The isolated products that support a PCI bus are as follows :
- COM-1PD(LPCI)H - COM-2PD(LPCI)H - COM-2PD(PCI)H - COM-4PD(PCI)H

*The contents in this document are subject to change without notice.
*Visit the CONTEC website to check the latest details in the document.
*The information in the data sheets is as of September, 2022.

Features

Max. 230,400bps RS-422A/485 Serial Communication
The product has four RS-422A/485-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 control line for RS-422A/485 can be controlled and monitored by software.
The control lines for RTS+, RTS-, CTS+, CTS- can be controlled and monitored using an application.

Specifications

Item	Specification
Number of channels	4 channels
Interface type	RS-422A/RS-485
Isolation specification	Un-isolated
Isolation pressure proof	None
Transfer method	Asynchronous serial transfer (Full-duplex / half-duplex)
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
Loarding LSI	17154 or equivalent (Each channel has 64-byte receive and 64-byte transmit FIFO buffers.)
Connecting distance	Within 1200m *3*4
Interrupt requests	1 level use *5
Memory address	2048byte boundary
Power consumption (Max.)	5VDC 640mA
Operating temperature	0 - 50°C, 10 - 90%RH (No condensation)
PCI bus specification	PCI (32bit, 33MHz *6)
Dimension (mm)	121.69(L) x 105.68(H)
Connector used	37-pin D-SUB connector, 2031-2-37-S [mfd. by gallant, F(female) type] equivalent
Weight	100g
Standard	VCCI Class A, CE Marking (EMC Directive Class A, RoHS Directive), UKCA

*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 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 The table below lists the maximum communication distances of the terminator resistor value and individual cable diameters.
The terminators on the product (100Ω) and the terminators generally used with RS-422A/485 (120Ω) are listed.

Maximum communication distances of the terminator resistor value (100Ω) and cable diameter

Terminator Resistor (Ω)	Cable Diameter	Maximum Communication Distance (m)
100	AWG28	400
	AWG26	700
	AWG24	1100
	AWG22	1200

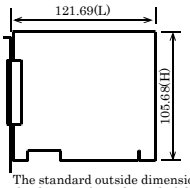
Maximum communication distances of the terminator resistor value (120Ω) and cable diameter

Terminator Resistor (Ω)	Cable Diameter	Maximum Communication Distance (m)
120	AWG28	500
	AWG26	800
	AWG24	1200
	AWG22	1200

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

*6 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).

Board Dimensions



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

Support Software

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).

You can download the updated version from the CONTEC's Web site. For more details on the supported OS, applicable language and new information, please visit the CONTEC's Web site.

Packing List

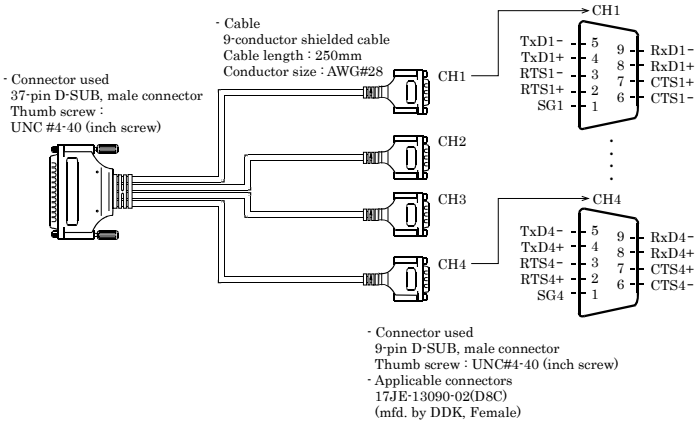
- Board [COM-4DL-PCI] ...1
- First step guide ...1
- COM Setup Disk (CD-ROM *1) ...1
- Distribution cable (0.25m) ...1

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

External Connection

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.



Connection distribution cable (Option)

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

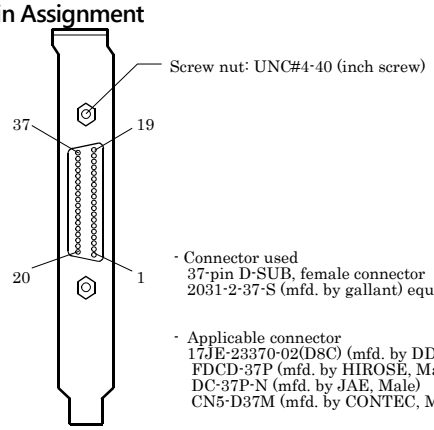
⚠ CAUTION

The SG lines for CH1 - 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-D9F 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	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.	

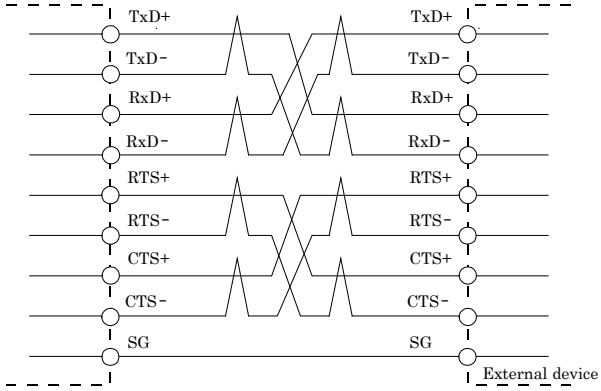
CN1

Types of Cable and Example Connections

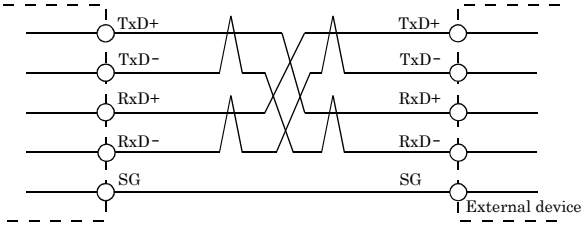
The figures below show examples of how to connect the cable for the board.

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 (balanced cable / twisted pair cable).

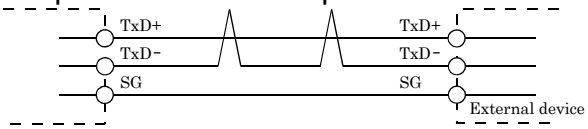
Example Connection RTS and CTS to a External Device in Full Duplex



Example Connection Oneself loop to RTS and CTS in Full Duplex



Example Connection in Half Duplex



⚠ CAUTION

If connecting between external devices and this board with faulty wiring, it will become the cause of failure.