

## Isolated RS-422A/485 1ch Serial I/O Board for Low Profile PCI

### COM-1PD(LPCI)H



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

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

This product has one RS-422A/485 communication ports. Higher noise-resistant models with isolation between a PC and bus line as well as a surge protection circuit for communication ports. With a 128byte built-in FIFO buffer for transmission and reception of each channel, the product supports a baud rate of up to 921,600bps.

It also comes with a Windows/Linux driver, which allows boards to be used as OS-standard COM ports.

This product supports CONTEC-defined driver library "API-PAC(W32)" that provide local routines.

## Features

### Max. 921,600bps RS-422A/485 Serial Communication

This product has one RS-422A/485-standard serial ports. Baud rates from 2 to 921,600bps can be set. When using the bundled "Standard COM Driver Software" and "Driver library API-PAC(W32)", baud rates from 15 to 921,600bps can be set.

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

Comes with a driver software that allows the products to be used under Windows / Linux 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. Under Linux, OS-standard tty driver's standard-function can be used. In addition, supplies a diagnostic program to confirm hardware operation and to perform a communication test with equipment.

### Isolation between channels and between PCs, surge protection for all signal lines

The channels are electrically isolated from each other and from the PC.

As isolation is provided between channels as well as isolation of the bus, this prevents electrical noise between channels as well as between the PC and external circuits. As surge protection is provided on all signal lines, you can safely use the boards in environments where you are concerned about surges causing incorrect operation or damage to the PC.

### 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 128-byte FIFO buffers for transmit and receive.

Employed a buffer memory 128-byte dedicated to transmission and 128-byte for each channel.

These are FIFO format, useful for high speed communications and to reduce the load to the CPU when transmitting/receiving. As the device manager can be used to enable/disable the use of FIFO and set the FIFO trigger size, you can build an optimum system according to your use.

### Support for Low Profile size slot / standard size slot

Bundled with each bracket for Low Profile size slot / standard size slot. Exchanges it for the standard size bracket when mounting on the standard size slot.

### To suit your application, cables and connectors are available as optional

9-pin D-SUB connectors (male or female type) for your own cables are available as optional.

### The control line for RS-422A/485 can be controlled and monitored by software.

The control lines for RTS+, RTS-, CTS+ and CTS- can be controlled and monitored using software.

### Driver library API-PAC(W32) is supported.

API-PAC(W32) is library software based on Win32 API routines (DLL), which provides local routines specific to CONTEC. You can 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++.

## Specification

Item	Specification
Number of channels	1ch
Interface type	RS-422A/RS-485
Isolation specification	Bus isolation
Isolation pressure proof	Between bus : 300VDC
Transfer method	Asynchronous serial transfer (Full-duplex / 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
Loading LSI	162850 or equivalent (Each channel has 128-byte receive and 128-byte transmit FIFO buffers.)
Connecting distance	Within 1200m *3*4
Interrupt requests	1 level use
I/O address	Any 32-byte boundary
Power consumption	5VDC Terminal OFF : 200mA (Max.) / Terminal ON : 300mA (Max.)
Operating temperature	0 - 50°C, 10 - 90%RH(No condensation)
Bus specification	PCI (32bit, 33MHz, Universal key shapes supported *5)
Dimension (mm)	121.69(L) x 63.41(H)
Weight	60g
Standard	VCCI Class A, CE Marking (EMC Directive Class A, RoHS Directive), UKCA

\*1 These items can be set by software. For the "Driver 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 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**

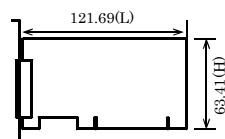
Terminator Resistor (Ω)	Cable Diameter	Maximum Communication Distance (m)
100	AWG28	400
	AWG26	700
	AWG24	1100
	AWG22	1200

**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 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

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 - 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.

### CAUTION

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

### Driver library API-PAC(W32)

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.

### 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.).

## Cable & Connector

### Cable (Option)

Connection Conversion Cable

for Serial I/O (44M→9M x 2, 250mm)

: PCE44/9P2S

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

## Packing List

Board [COM-1PD(LPCI)H] ...1  
 First step guide ... 1  
 COM Setup Disk \*1 (CD-ROM) ...1  
 Bracket for PCI ...1

\*1 The CD-ROM contains the driver software and User's Guide.

## External Connection

This chapter describes the interface connectors on the board. Check the information available here when connecting an external device.

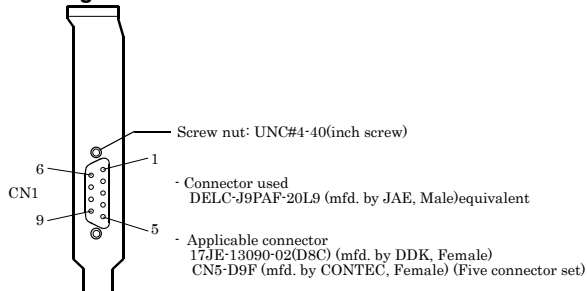
In addition to connecting directly to the connector on the board, you can also connect external devices via a distribution cable or distribution unit.

Connecting directly to the port connector

### Connecting it directly from the on-board connector

If connecting an external device directly from the connector on the board, use an optional connector CN5-D9F for creating your own cables.

### Pin Assignment



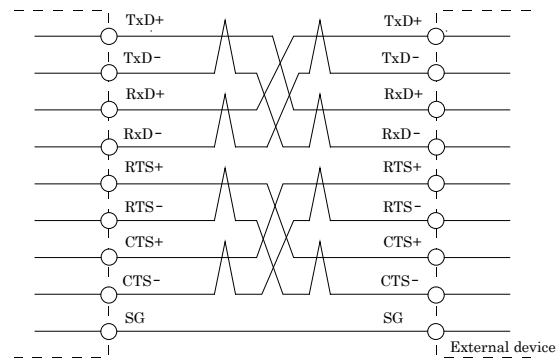
Clear to Send-	CTS1-	6	1	SG1	Signal Ground
Clear to Send+	CTS1+	7	2	RTS1+	Request to Send+
Receive Data+	RxD1+	8	3	RTS1-	Request to Send-
Receive Data-	RxD1-	9	4	TxD1+	Transmit Data+
			5	TxD1-	Transmit Data-

## Types of Cable and Example Connections

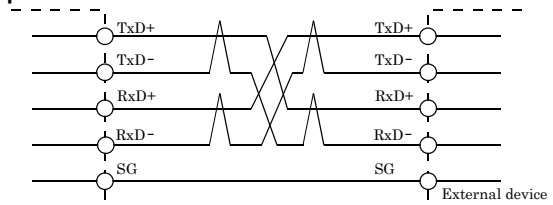
The figures below show examples of how to connect the cable for the board.

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.

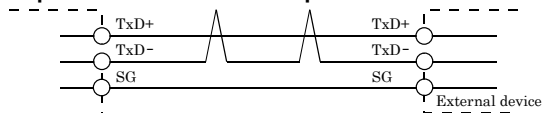
### Example Connection RTS and CTS to a External Device in Full Duplex



### Example Connection Oneself loop to RTS and CTS in Full Duplex



### Example Connection in Half Duplex



### CAUTION

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