

# **RS-422/485 PCIe Card**

## **User Manual**

**Ver. 3.00**

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# Chapter 1: Introduction

## ***1.1 Product Introduction***

RS-422/485 I/O series, a line of PCI Express Multi-port Serial Communication Board, is designed to meet PCI Express Base Specification 1.1. It can be installed in virtually any available PC system and compatible with all major operating systems. Users do not need to manually set jumpers to configure I/O addresses and IRQ locations.

This boards offer independent RS-422 and RS-485 ports for connecting kinds of serial terminals on the PC based systems. This board is industrial stand which offer a reliable and high performance solution for serial multi-port communications.

## ***1.2 Features***

- Compliant with PCI Express Base Specification 1.1
- Supports x1, x4, x8, x16 (lane) PCI Express Bus connector keys
- Built-in 16C950 compatible UART

- 128-byte deep transmit/receive FIFOs
- Serial communication speeds up to 1Mbps
- RS-422 and RS-485 auto detect and switching
- Low profile form factor
- $\pm 15\text{KV}$  ESD protection on all signal pins
- 2KV isolation protection for all signal and power (Isolation version only)
- Plug-n-Play, I/O address and IRQ assigned by BIOS
- Support Windows XP/Vista/7/8, Linux 2.6.x/3.x

Note: Optical isolation (2000V) and embedded protection (max. ESD of 16 KV, max. EFT of 2 KV) are available with certain models.

## ***1.3 System Requirements***

- Windows® XP/Vista/7/8/10(32/64 bit), Linux 2.6.x/3.x
- One available PCI Express slot

## ***1.4 Package Contents***

- 1 x RS-422/485 PCIe Card

- 1 x Driver CD
- 1 x User Manual
- 1 x Fan Out Cable

## Chapter 2: Getting Started

### ***2.1 Hardware Installation***

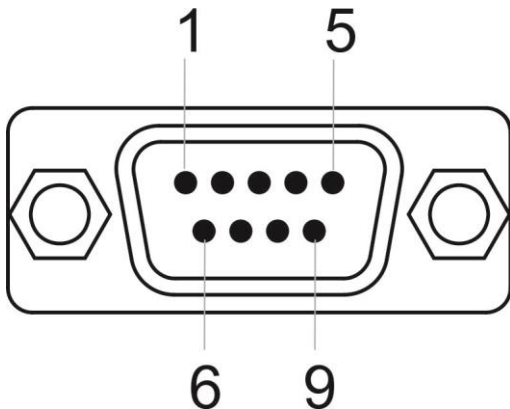
1. Turn off the power to your computer.
2. Unplug the power cord and remove your computer's cover.
3. Remove the slot bracket from an available PCIe slot.
4. To install the card, carefully align the card's bus connector with the selected PCIe slot on the motherboard. Push the board down firmly.
5. Replace the slot bracket's holding screw to secure the card.
6. Replace the computer cover and reconnect the power cord.

### ***2.2 Pin Assignment***

The 2-ports and 4-ports RS-232/485 PCIe Cards have a female DB44 connector on the board. In this section, we give the on-board connector's pin assignments to facilitate making your own connection

cable, and the male DB9 device-side pin assignments for the fan out cable.

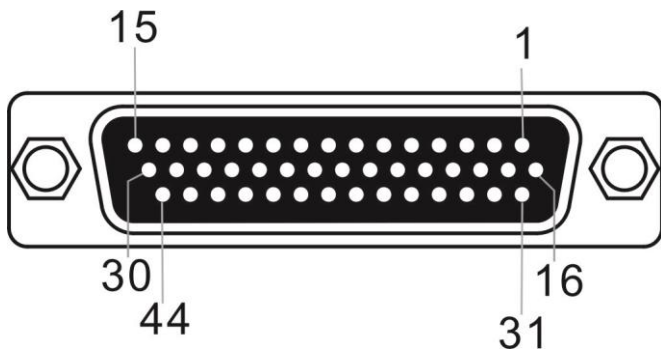
**Male DB9 Connector: Device-side Pin Assignments:**



Pin	Transmission Signals		
	RS-422	4-Wire RS-485	2-Wire RS-485
1	Tx-	Tx-	D-
2	Tx+	Tx+	D+

3	Rx+	Rx+	
4	Rx-	Rx-	
5	GND	GND	GND

**Female DB44: Board-side Pin Assignments:**



**2-Port RS-422/485 PCIe Card:**

<b>RS-422 or 4-Wire RS-485</b>			
Port		1	2
Signal			
Tx+		1	29
Tx-		2	30

Rx+	31	12
Rx-	32	28
GND	GND	GND

<b>2-Wire RS-485</b>		
Port	1	2
Signal		
D+	1	29
D-	2	30
GND	GND	GND

**4-Port RS-422/485 PCIe Card:**

<b>RS-422 or 4-Wire RS-485</b>				
Port	1	2	3	4
Signal				
Tx+	1	29	27	6
Tx-	2	30	23	20
Rx+	31	12	10	25



Rx-	32	28	26	7
GND	GND	GND	GND	GND

2-Wire RS-485				
Port \ Signal	1	2	3	4
D+	1	29	27	6
D-	2	30	23	20
GND	GND	GND	GND	GND

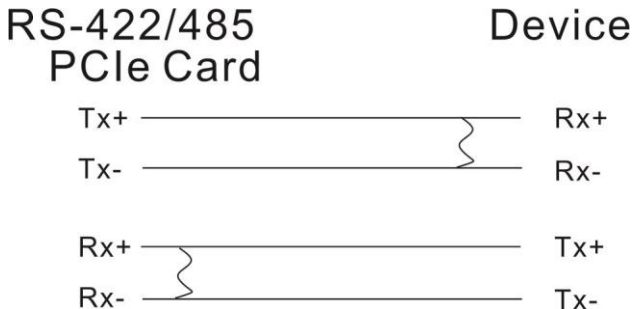
## 2.3 Jumper Settings

For RS-422/485 serial communications, when an electrical signal travels through two different resistance junctions in a transmission line, the impedance mismatch will sometimes cause signal reflection. Signal reflection causes signal distortion, which in turn will contribute communications errors. The solution to this problem is to establish the

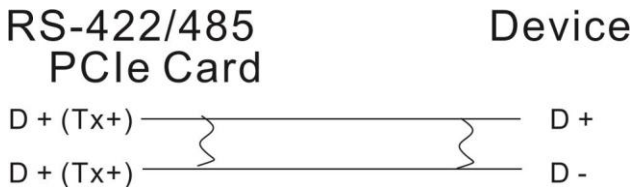
same impedance at the line ends as in the line itself by terminating them with resistors

Ideally, the two ends of the cable will have a termination resistor connected across the two wires. Without termination resistors, reflections of the fast driver edges can cause multiple data edges that can cause data corruption. Termination resistors also reduce electrical noise sensitivity due to the lower impedance, and bias resistors (120 ohms for twisted pairs) are required. The value of each termination resistor should be equal to the cable impedance.

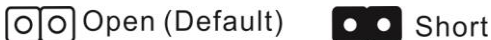
RS-422 or 4-Wire RS485 working model with termination resistor:



## 2-Wire RS485 working model with termination resistor:



This RS-422/485 PCI Express Serial board equips independent TX and RX termination resistors for each serial port. User can modify the jumper setting (short the pins) to avoid impedance mismatched problem when operate under Multi-drop transmission. Resistors should be added near the receiving side. Note: Stands for termination resistor near the receiving side.



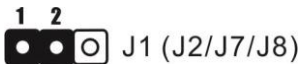
Factory default jumper setting is OPEN (Disable 120 ohms termination resistors across the two wires)

J1 (J2/J7/J8): RS-422/485 Mode Selector

1). Auto RS-422/485 (Default)

This COM port can automatically detect the state of RS-422 full

duplex or RS-485 half duplex and control the data transmitting and receiving wires at the same port.



2). RS-422 (4-Wire RS-485)

This COM port forces to run RS-422 full duplex mode.



## ***2.4 Driver Installation***

### **2.4.1 Installation for Windows XP/Vista/7/8**

1. Insert the provided CD into your disk drive. The CD-ROM will start automatically. The following screen will show up and please click **“Install Driver”**.



\*Note: Actual image may vary

**Note:** If the install program doesn't run automatically, please locate and double-click on the **Autorun.exe** file in the CD to launch the install program.

2. Please click "**RS-422/485 PCIe**" to start the installation.



\*Note: Actual image may vary

3. Follow the instructions on screen to install the driver.

## 2.4.2 Installation for Linux 2.6.x/3.x

Please refer to the installation guide and driver for Linux 2.6.x & 3.x operation system installation within the folder located in the CD driver.

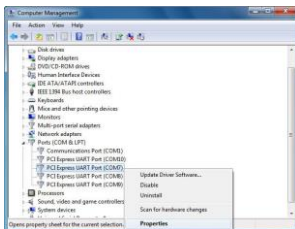
:\Driver\PCIE\Linux

## Chapter 3: Troubleshooting Tips

● Some or all of the ports will not communicate with any devices

Please refer to following instructions to configure Serial COM settings.

1. Please launch the “Device Manager”.
2. Right click the “PCI Express UART Port (COM?)” item from the “Ports (COM & LPT)” sub-tree and click “Properties”.



3. On the “Settings” tab, please set the mode to “RS422/485” and choose RS485 buffer enable to “Active High”. Click “OK” to approve the setting for the selected port.



4. Set the other port (e.g. COM8) by the same procedures mentioned.

- System fails to find the PCI Express serial board or COM port

It may cause by following issue:

1. The board is not properly plugged into the PCI Express slot. Please clean the golden finger.
2. The PCI Express slot is defective. Please try to shift another slots until you find one that works.
3. The mainboard dos not have an available IRQ for the PCI Express serial board. Please go to the BIOS and make sure an

IRQ setting is available in the PCI/PnP settings.

4. The board itself might be defective. You can try another mainboard testing this board working or not.
- There are some exclamation marks in device manager and serial ports can not work properly

It caused by the wrong driver installing or hardware setting. Please turn off your computer firstly and re-install hardware and software, especially re-install the correct driver.