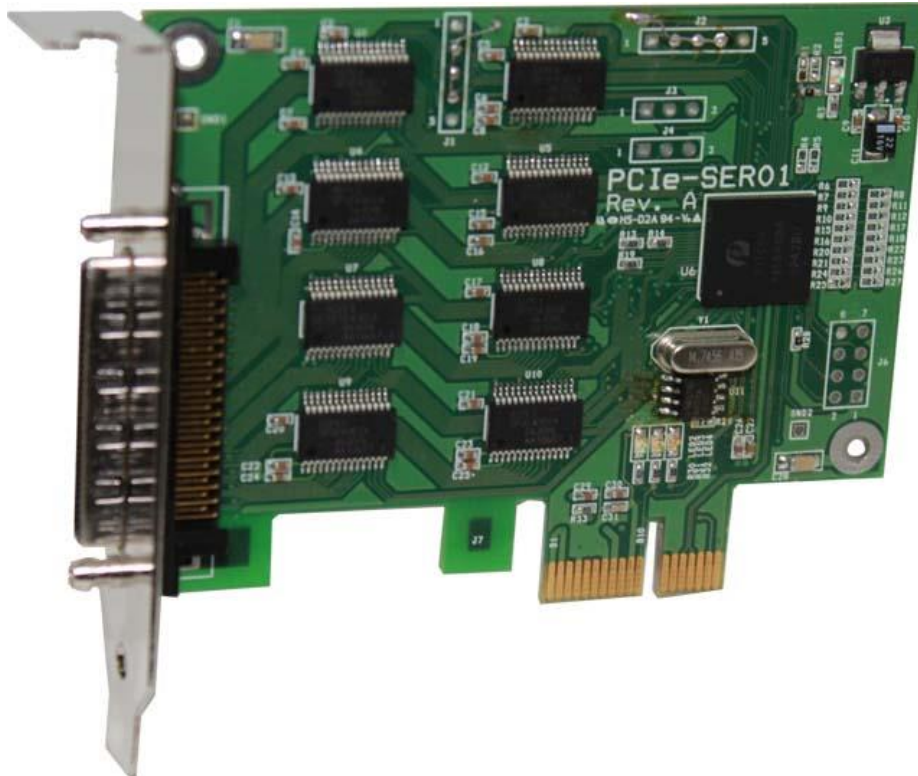


PCIe-SER01

User Manual

Version 1.0



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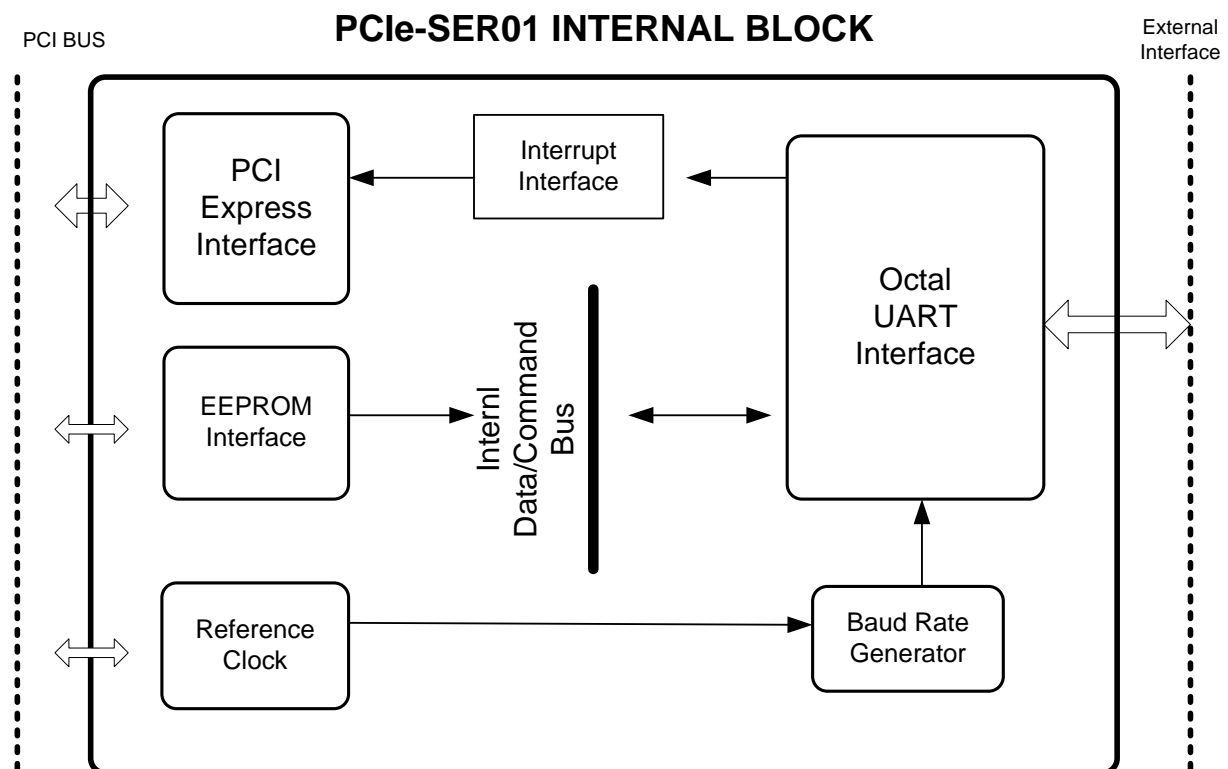
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1. PCIe-SER01 Introduction

PCIe-SER01 is a PCI Express interface card with 8 UART (Universal Asynchronous Receiver Transmitter). It supports x1 PCI Express and is fully compatible with PCI express 1.1 and PCI power management 1.2 specifications. Additionally, in-baud and out-baud are automatically adjusted and up to 15Mbps(asynchronous mode) Provides 8 high-spec UARTs with baud rate.

PCIe-SER01 can be used for Multi-port such as RS-232, RS-422, RS-485, and Remote Access Servers such as ATM, POS, Instrumentation, Process control and automation.



[Figure 1-1. PCIe-SER01 Internal Connection]

1-1 PCIe-SER01 Features

- x1 PCI Express link host interface
- Eight high performance UARTs
- Compliant with PCI Express Base Specification 1.1
- Fully 16C550 software compatible UARTs
- 128-byte FIFO for each transmitter and receiver
- Baud rate up to 15Mbps in asynchronous mode
- Data framing size including 5, 6, 7, 8 and 9bits
- Detection of bad data in the receiver FIFO

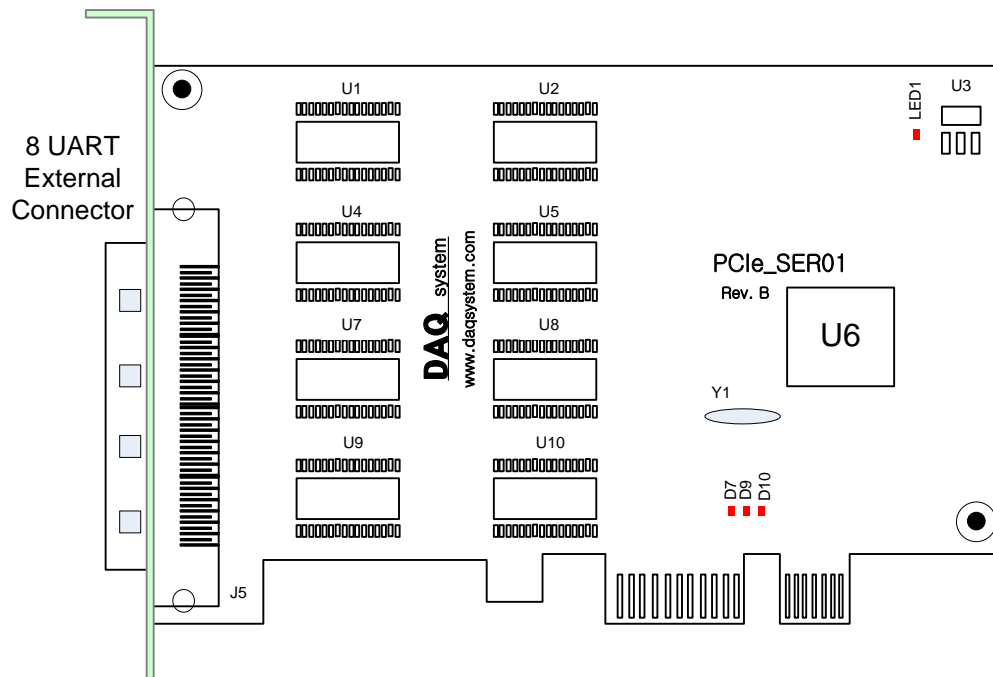
1-2 Applications

- Remote Access Server
- Network / Storage Management
- Factory Automation and Process Control
- Multi-port RS-232 / RS-422 / Rs485 Cards
- Point-of-Sale Systems (PoS)
- Industrial PC
- Industrial Control
- Embedded Systems

2. PCIe-SER01 Board Description

PCIe-SER01 is a x1 PCI Express host interface that provides 8 high-end UARTs, and UART channel status registers and environment settings can be accessed directly through the PCI Express interface through EEPROM. For more details, refer to the PI7C9X7958 manual.

2-1 PCIe-SER01 Connection



[Figure 2-1. PCIe-SER01 Board Block Diagram]

[Table 1. Description of each block function]

No.	Name	Description & Remark
1	U6	Octal UART Interface chip (PI7C9X7958, Pericom Corp.)
2	U1, U2, U4, U5, U7, U8, U9, U10	EIA/TIA-232-F standards from +3.0V to +5.5V power supply
3	J5	VHDCI68 connector로 외부 Interface
4	Y1	14.7456MHz Oscillator
5	U3	Power Generator (From 3.3V to 1.8V)

2-2 Connector Pin-Out

PCIE-SER01 is a 68pin VHDCI (Very High Density Cable Interconnect) 0.8mm female right angle connector and supports 8 UART communication ports.

J5		
R_DTR7	① ③⑤	R_RTS7
R_RI7	② ③⑥	R_TX7
R_CTS7	③ ③⑦	R_DSR7
R_RX7	④ ③⑧	R_DCD7
R_DTR6	⑤ ③⑨	R_RTS6
R_RI6	⑥ ④①	R_TX6
R_CTS6	⑦ ④②	R_DSR6
R_RX6	⑧ ④③	R_DCD6
R_DTR5	⑨ ④④	R_RTS5
R_RI5	⑩ ④⑤	R_TX5
R_CTS5	⑪ ④⑥	R_DSR5
R_RX5	⑫ ④⑦	R_DCD5
R_DTR4	⑬ ④⑧	R_RTS4
R_RI4	⑭ ④⑨	R_TX4
R_CTS4	⑮ ⑤①	R_DSR4
R_RX4	⑯ ⑤②	R_DCD4
GND	⑰ ⑤③	GND
GND	⑱ ⑤④	GND
R_DTR3	⑲ ⑤⑤	R_RTS3
R_RI3	⑳ ⑤⑥	R_TX3
R_CTS3	㉑ ⑤⑦	R_DSR3
R_RX3	㉒ ⑤⑧	R_DCD3
R_DTR2	㉓ ⑤⑨	R_RTS2
R_RI2	㉔ ⑥①	R_TX2
R_CTS2	㉕ ⑥②	R_DSR2
R_RX2	㉖ ⑥③	R_DCD2
R_DTR1	㉗ ⑥④	R_RTS1
R_RI1	㉘ ⑥⑤	R_TX1
R_CTS1	㉙ ⑥⑥	R_DSR1
R_RX1	③① ⑥⑦	R_DCD1
R_DTR0	③② ⑥⑧	R_RTS0
R_RI0	③③ ⑥⑨	R_TX0
R_CTS0	③④ ⑦①	R_DSR0
R_RX0	③⑤ ⑦②	R_DCD0

[Figure 2-2. PCIE-SER01 J5 Connector Pin-out]

[Table 2. J5 Connector Description]

No.	Name	Description	Remark
1	R_DTR7	Modem Data-Terminal-Ready Output 7	Port 7
2	R_RI7	Modem Ring-Indicator Input 7	Port 7
3	R_CTS7	Modem Clear-To-Send Input 7	Port 7
4	R_RX7	UART Serial Data Input 7	Port 7
5	R_DTR6	Modem Data-Terminal-Ready Output 6	Port 6
6	R_RI6	Modem Ring-Indicator Input 6	Port 6
7	R_CTS6	Modem Clear-To-Send Input 6	Port 6
8	R_RX6	UART Serial Data Input 6	Port 6
9	R_DTR5	Modem Data-Terminal-Ready Output 5	Port 5
10	R_RI5	Modem Ring-Indicator Input 5	Port 5
11	R_CTS5	Modem Clear-To-Send Input 5	Port 5
12	R_RX5	UART Serial Data Input 5	Port 5
13	R_DTR4	Modem Data-Terminal-Ready Output 4	Port 4
14	R_RI4	Modem Ring-Indicator Input 4	Port 4
15	R_CTS4	Modem Clear-To-Send Input 4	Port 4
16	R_RX4	UART Serial Data Input 4	Port 4
17	GND	Ground	
18	GND	Ground	
19	R_DTR3	Modem Data-Terminal-Ready Output 3	Port 3
20	R_RI3	Modem Ring-Indicator Input 3	Port 3
21	R_CTS3	Modem Clear-To-Send Input 3	Port 3
22	R_RX3	UART Serial Data Input 3	Port 3
23	R_DTR2	Modem Data-Terminal-Ready Output 2	Port 2
24	R_RI2	Modem Ring-Indicator Input 2	Port 2
25	R_CTS2	Modem Clear-To-Send Input 2	Port 2
26	R_RX2	UART Serial Data Input 2	Port 2
27	R_DTR1	Modem Data-Terminal-Ready Output 1	Port 1
28	R_RI1	Modem Ring-Indicator Input 1	Port 1
29	R_CTS1	Modem Clear-To-Send Input 1	Port 1
30	R_RX1	UART Serial Data Input 1	Port 1
31	R_DTR0	Modem Data-Terminal-Ready Output 0	Port 0
32	R_RI0	Modem Ring-Indicator Input 0	Port 0
33	R_CTS0	Modem Clear-To-Send Input 0	Port 0
34	R_RX0	UART Serial Data Input 0	Port 0
35	R_RTS7	Modem Request-To-Send Output 7	Port 7
36	R_TX7	UART Serial Data Output 7	Port 7
37	R_DSR7	Modem Data-Set-ready Input 7	Port 7
38	R_DCD7	Modem Data-Carrier-Detect Input & General Purpose	Port 7

		Input 7	
39	R_RTS6	Modem Request-To-Send Output 6	Port 6
40	R_TX6	UART Serial Data Output 6	Port 6
41	R_DSR6	Modem Data-Set-ready Input 6	Port 6
42	R_DCD6	Modem Data-Carrier-Detect Input & General Purpose Input 6	Port 6
43	R_RTS5	Modem Request-To-Send Output 5	Port 5
44	R_TX5	UART Serial Data Output 5	Port 5
45	R_DSR5	Modem Data-Set-ready Input 5	Port 5
46	R_DCD5	Modem Data-Carrier-Detect Input & General Purpose Input 5	Port 5
47	R_RTS4	Modem Request-To-Send Output 4	Port 4
48	R_TX4	UART Serial Data Output 4	Port 4
49	R_DSR4	Modem Data-Set-ready Input 4	Port 4
50	R_DCD4	Modem Data-Carrier-Detect Input & General Purpose Input 4	Port 4
51	GND	Ground	
52	GND	Ground	
53	R_RTS3	Modem Request-To-Send Output 3	Port 3
54	R_TX3	UART Serial Data Output 3	Port 3
55	R_DSR3	Modem Data-Set-ready Input 3	Port 3
56	R_DCD3	Modem Data-Carrier-Detect Input & General Purpose Input 3	Port 3
57	R_RTS2	Modem Request-To-Send Output 2	Port 2
58	R_TX2	UART Serial Data Output 2	Port 2
59	R_DSR2	Modem Data-Set-ready Input 2	Port 2
60	R_DCD2	Modem Data-Carrier-Detect Input & General Purpose Input 2	Port 2
61	R_RTS1	Modem Request-To-Send Output 1	Port 1
62	R_TX1	UART Serial Data Output 1	Port 1
63	R_DSR1	Modem Data-Set-ready Input 1	Port 1
64	R_DCD1	Modem Data-Carrier-Detect Input & General Purpose Input 1	Port 1
65	R_RTS0	Modem Request-To-Send Output 0	Port 0
66	R_TX0	UART Serial Data Output 0	Port 0
67	R_DSR0	Modem Data-Set-ready Input 0	Port 0
68	R_DCD0	Modem Data-Carrier-Detect Input & General Purpose Input 0	Port 0

(Note) R_TX[7..0] --- Transmit serial data packets using start and end bits as output pins.

R_RX[7..0] --- Receive serial data packets using start and end bits as input pins.

The rest of the signals are for Modem, but are rarely used.

3. How to Install and Use

Before installing the board, check that the contents of the package are intact.

3-1 Check the contents

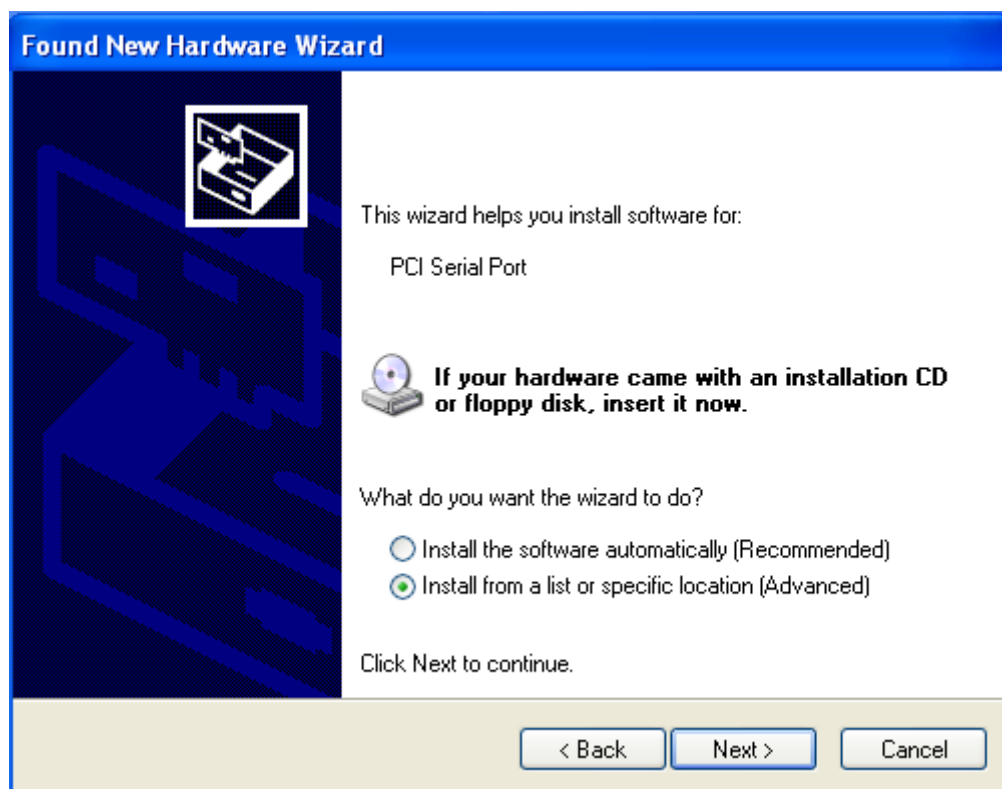
product contents

1. PCIe-SER01 Board
2. CD (Driver/Manual etc)

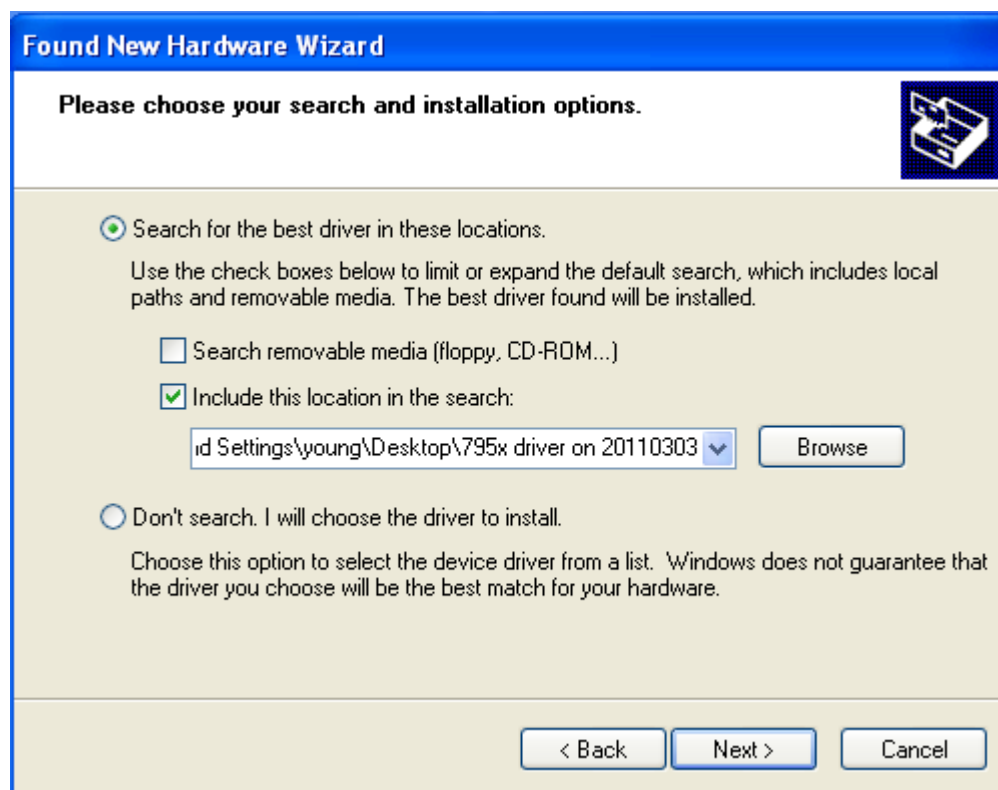
3-2 Installation

If new hardware is found, Wizard will ask you to install the corresponding driver. For installation of the driver, select the item "Install from a list or specific location (Advanced)" and click "Next" as in the figure.

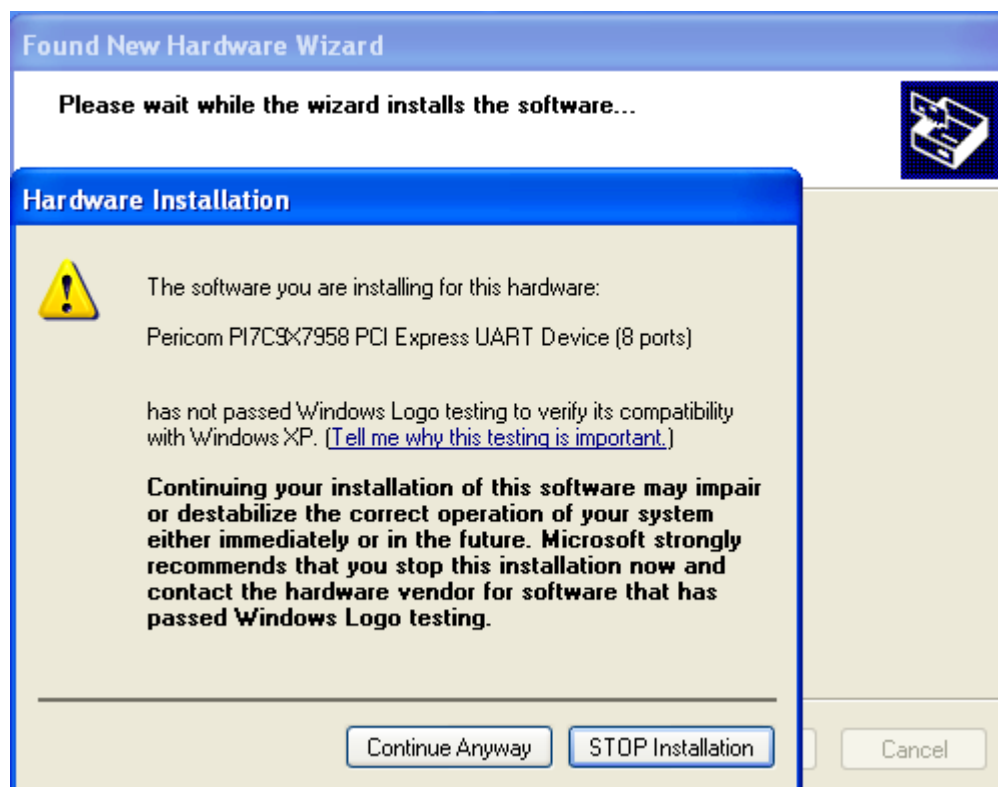
- Your OS requirement : Windows 2000 SP4 or Windows XP SP1 above



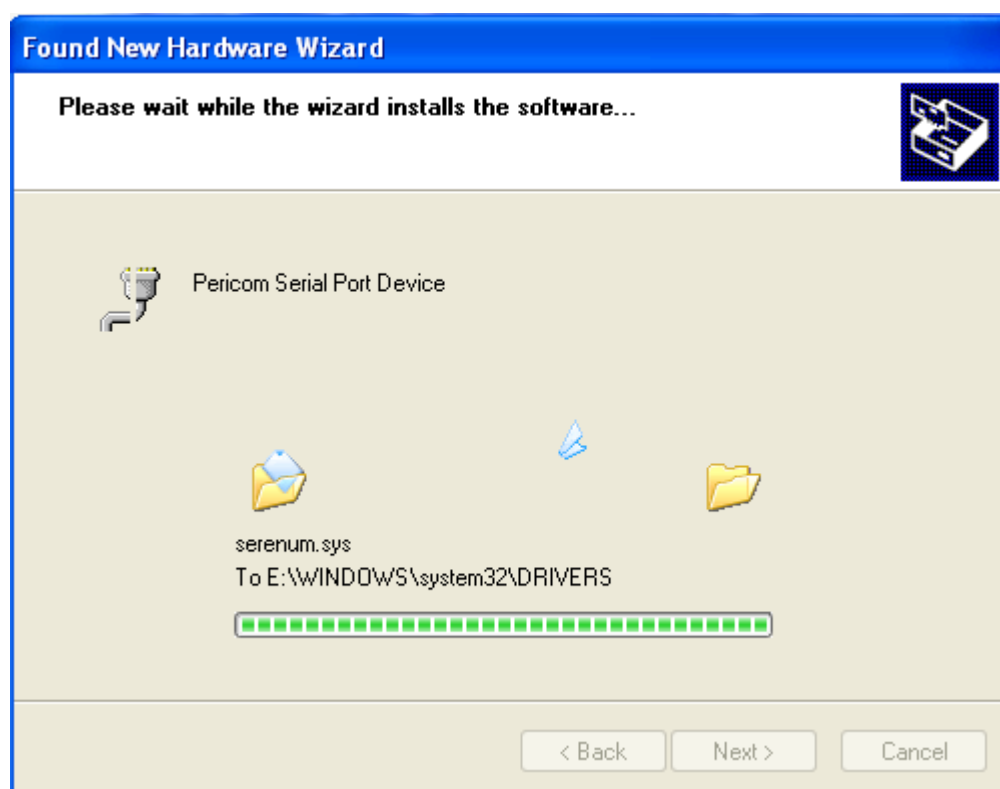
After find a driver folder of the CD, press "next" button.



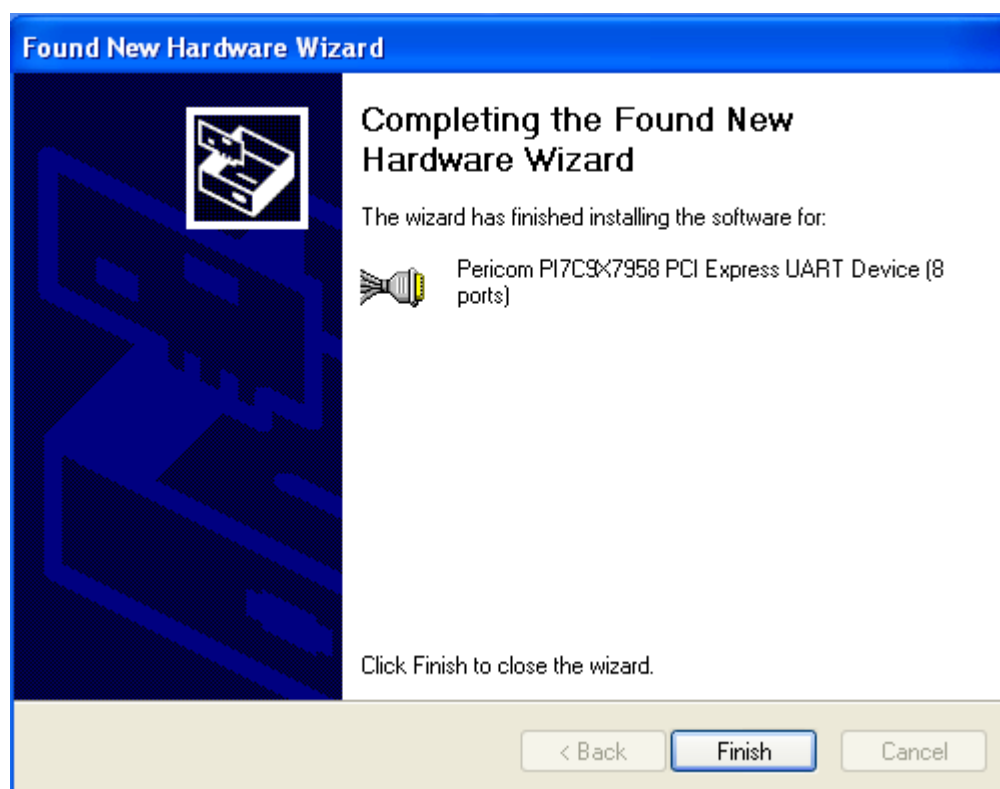
Process progress as follows (continuous button click).



Process progress as follows.

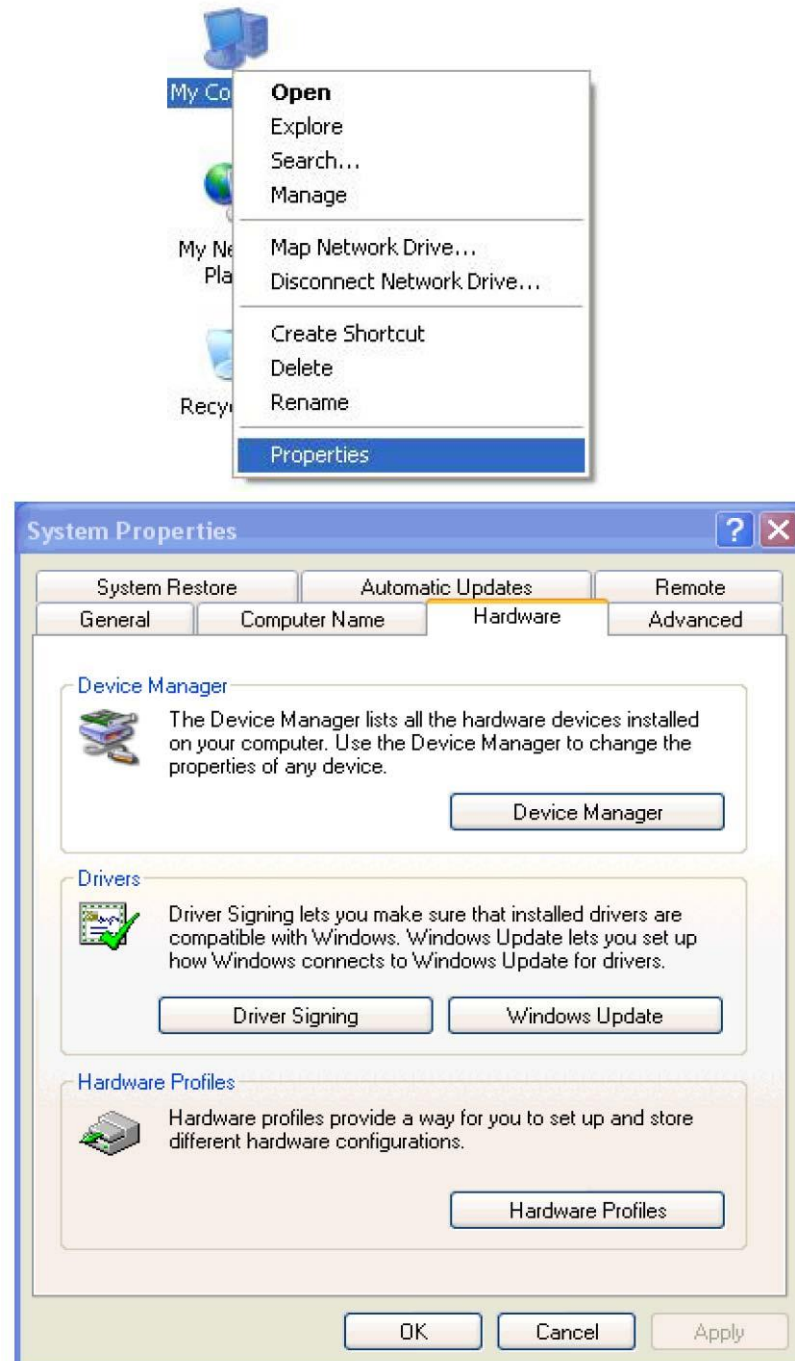


"Finish" button click.



Repeat this process at each port. (If Win XP)

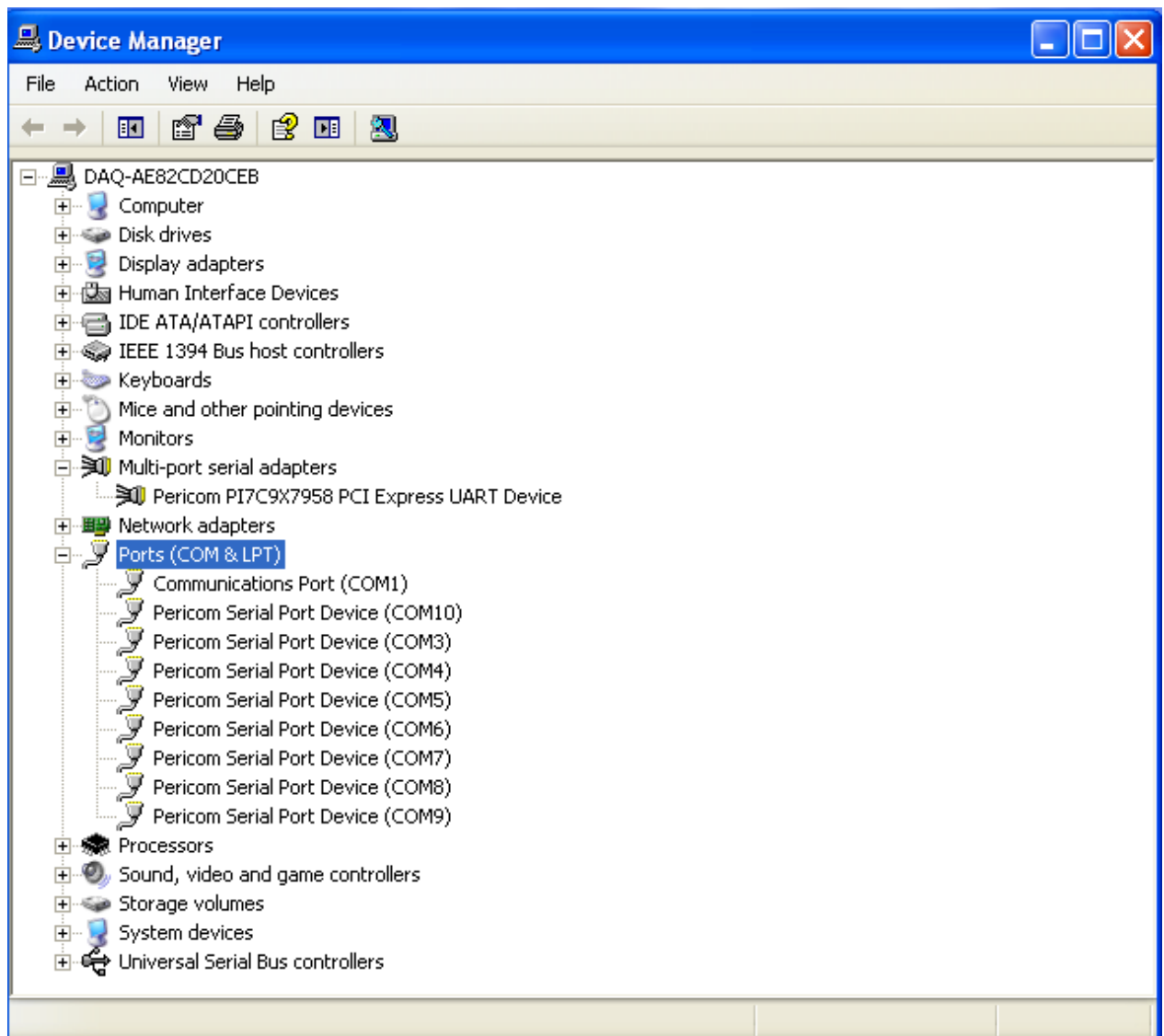
If the installation is completely finished, you can use the USB-DIO6400 board. But, it confirm a driver normally installation in the following ways.



Do the following steps to show up the "Device Manager" window.

[My Computer -> Properties -> Hardware -> Device Manager -> Multifunction Adapters

-> "Pericom PI7C9X7958 PCI Express UART Device"]

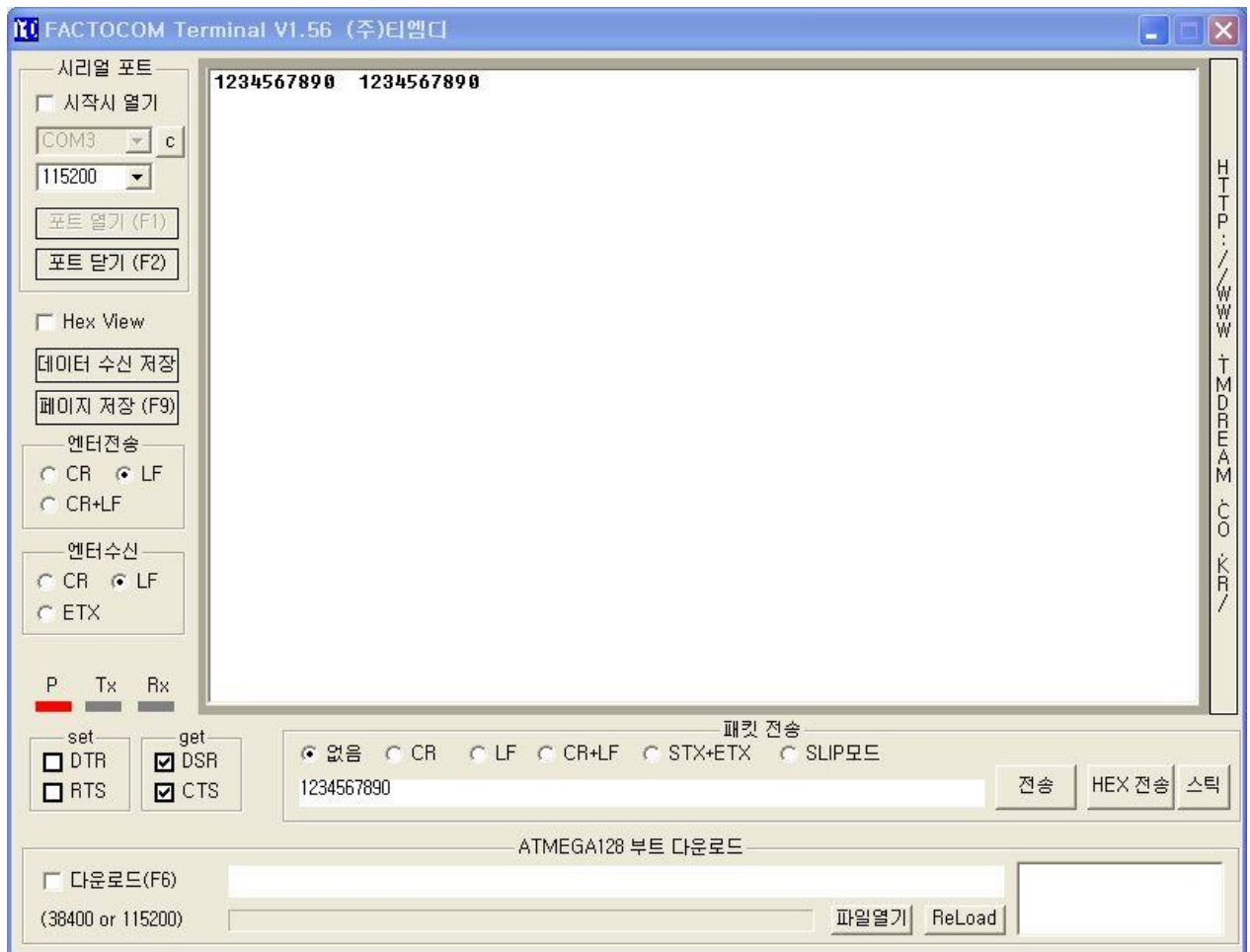


If you can see the "Pericom PI7C9X7958 PCI Express UART Device" at Multifunction Adapters, the driver installation is to have been over.

(Notice) If the installation is completely finished, you can see eight COM ports. However it can be different according to PC status.

3-3 How to Use

The figure below shows the data (1234567890) exchanged by connecting the COM3 port of the PCIe-SER01_TEST (refer to Appendix A.2) board, which is our test board, through Loop-back. To test the PCIe-SER01 board, you need a terminal emulator program to communicate with an external device. It is okay to use Hyper Terminal or other serial communication program provided by Windows.



3-4 Test Board Connection

The table below is the PCIe_SER01 TEST port number connected to the program COM port when connecting the PCIe-SER01 board and the PCIe-SER01_TEST (refer to Figure 2.3) board, which is our test board. If the serial port is connected to RS232_0, the port number becomes COM5 as shown in [Table 3].

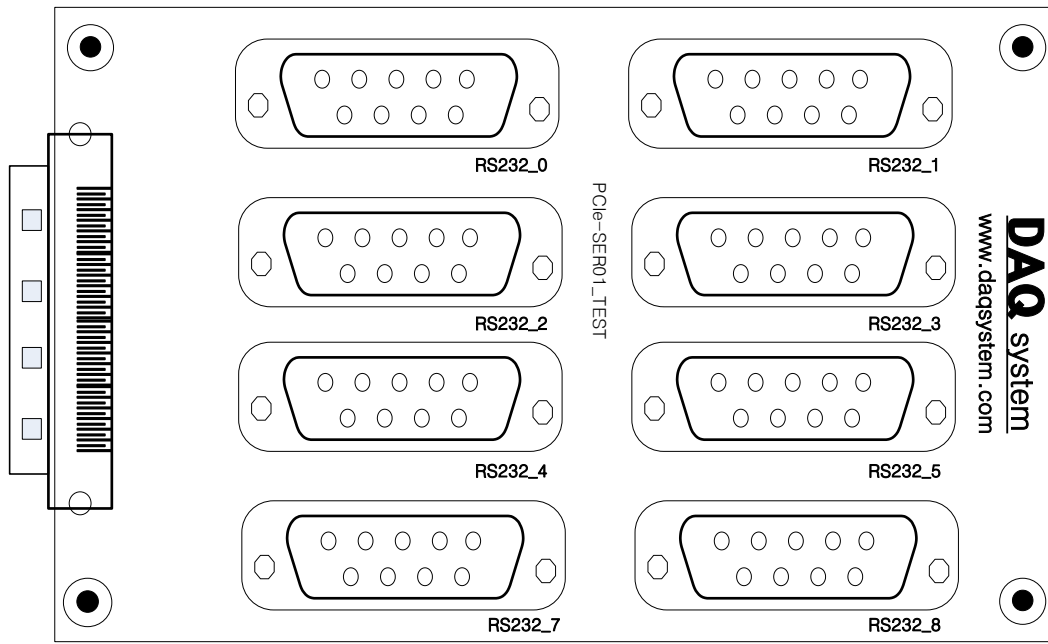
(Notice) If you right-click on the Pericom Serial Port Device (COM) port and look at the properties, you will see a location value that allows you to know the location of the port. This location value is already set in the PC and there is a COM port in use, or it can be changed according to the system specifications, so the user must select an appropriate port.

Ex) If the value is "Location 2" in Properties->Location of COM3, it corresponds to RS_232_2 port.

In COM10's Properties->Location, the value corresponds to "Location 7" or RS-232_8 port

[Table 3. PCIe-SER01과 PCIe-SER01_TEST Connection Description Example]

No.	PCIe-SER01	PCIe-SER01_TEST	Remark
1	COM3	RS-232_2	Port 3
2	COM4	RS-232_1	Port 4
3	COM5	RS-232_0	Port 5
4	COM6	RS-232_3	Port 6
5	COM7	RS-232_4	Port 7
6	COM8	RS-232_5	Port 8
7	COM9	RS-232_7	Port 9
8	COM10	RS-232_8	Port 10

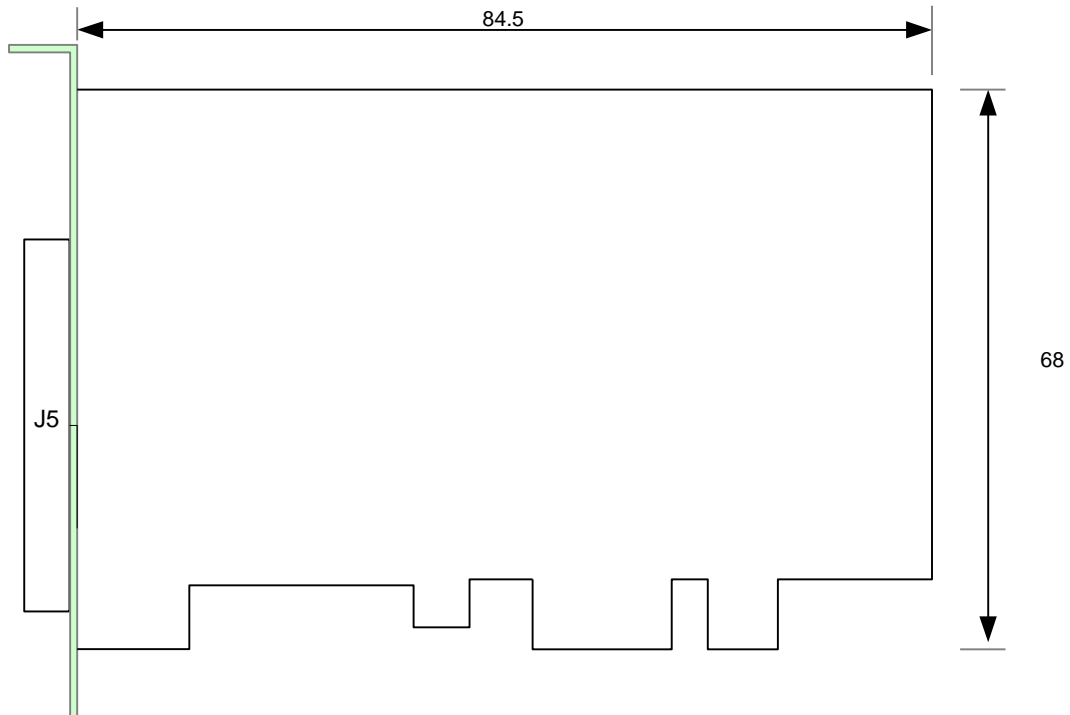


[Figure 3-1. PCIe-SER01_TEST Layout]

Appendix

A-1 PCIe-SER01 Board Size

The size of the board is as follows. (84.5 x 68mm)



A-2 PCIe-SER01_TEST Board (for separate purchase)



A-3 Repair Regulations

Thank you for purchasing DAQ SYSTEM's product. Please refer to the following regarding Customer Service stipulated by DAQ SYSTEM.

- (1) Please read the user's manual and follow the instructions before using the DAQ SYSTEM product.
- (2) When returning the product to be repaired, please send it to the head office with the symptoms of the malfunction as well.
- (3) All DAQSYSTEM products have a one-year warranty.
 - The warranty period is counted from the date the product is shipped from DAQ SYSTEM.
 - Peripherals and third-party products not manufactured by DAQ SYSTEM are covered by the manufacturer's warranty.
 - If repair is required, please contact the contact points below.
- (4) Even during the free repair warranty period, paid repairs are made in the following cases.
 - ① Failure or damage caused by not following the user's manual
 - ② Failure or damage caused by customer negligence during product transportation after purchase
 - ③ Natural phenomena such as fire, earthquake, flood, lightning, pollution, etc. or power supply exceeding the recommended range malfunction or damage
 - ④ Failures caused by inappropriate storage environment (eg, high temperature, high humidity, volatile chemicals, etc.) damaged
 - ⑤ Failure or damage due to unreasonable repair or modification
 - ⑥ Products whose serial number has been changed or intentionally removed
 - ⑦ In the event that DAQ SYSTEM determines that it is the customer's negligence for other reasons
- (5) The customer must bear the shipping cost of returning the repaired product to DAQ SYSTEM.
- (6) The manufacturer is not responsible for any problems caused by incorrect use regardless of our warranty provisions.

MEMO

Contact Point

Web sit : <https://www.daqsystem.com>

Email : postmaster@daqsystem.com

