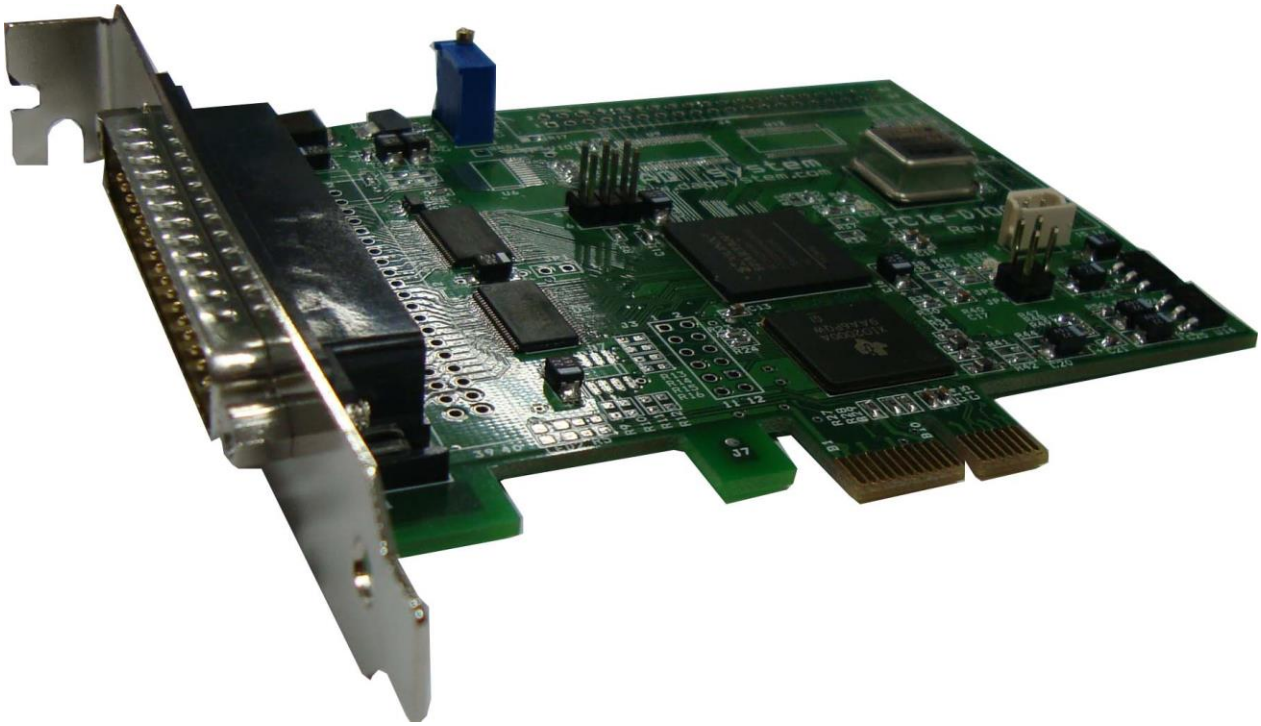
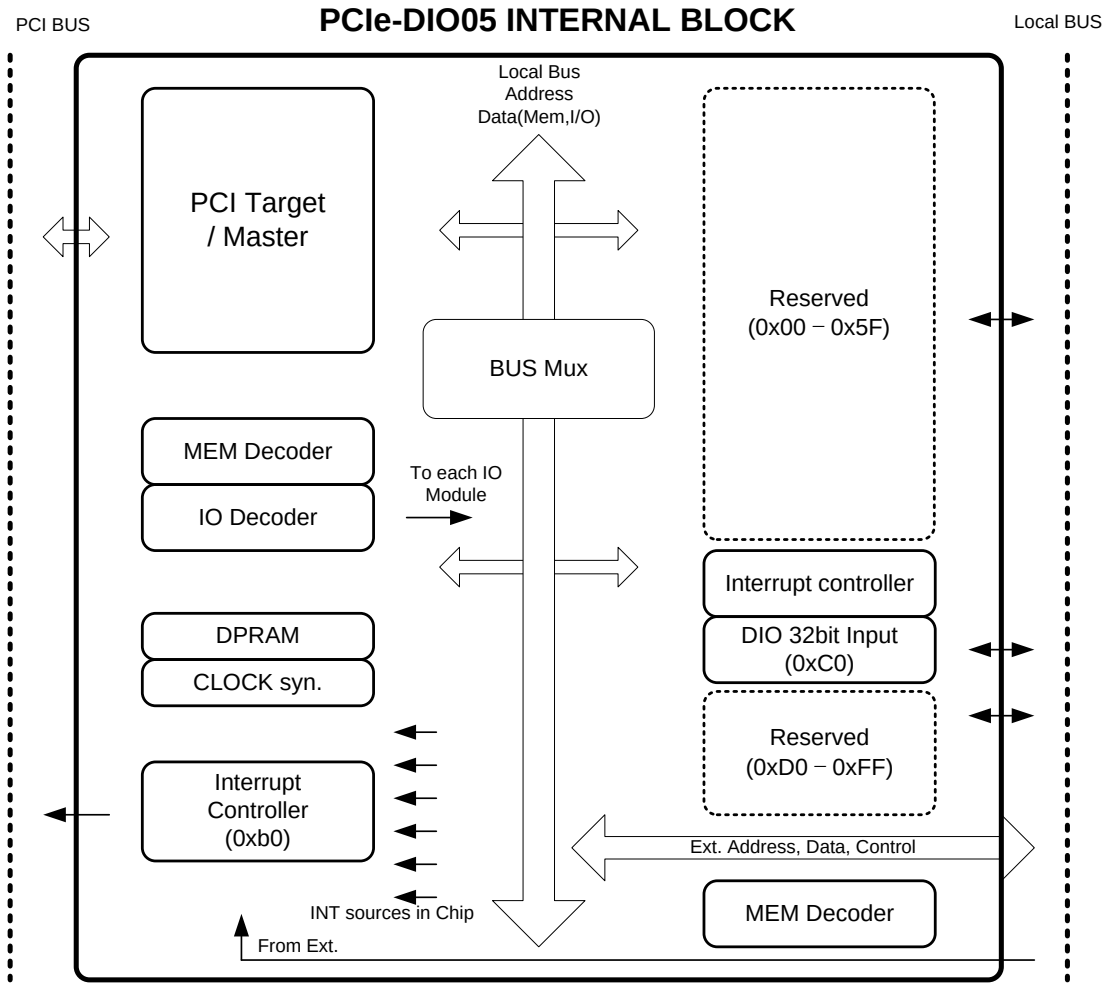
PCIe-DIO05

User's Manual



Contents

1. PCIe-DIO05 Block Diagram

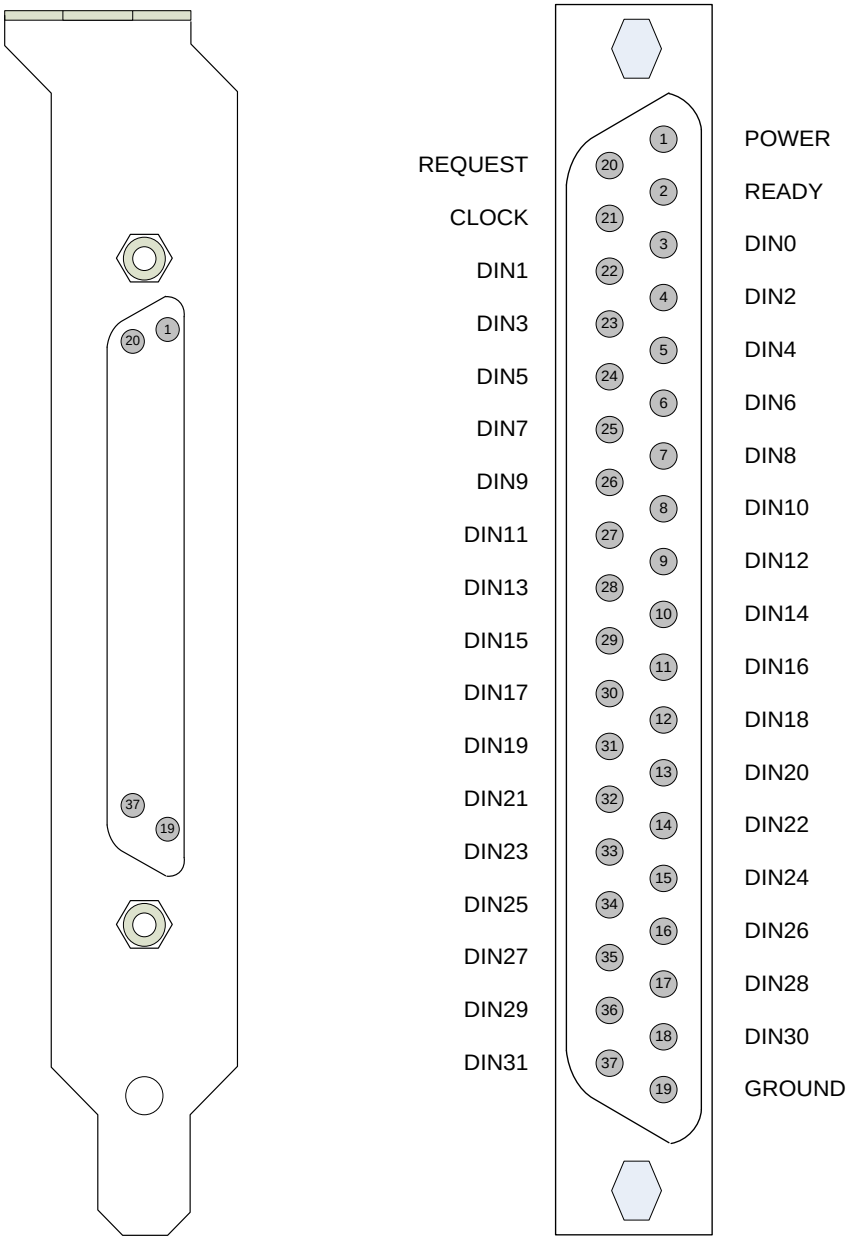


[Figure 1-1. PCIE-DIO05 Internal Block Diagram]

The PCIe-DIO05 is a board having the function of external with the 32 TTL level input port. This product is designed for High speed digital data logger with PCI Express Interface.

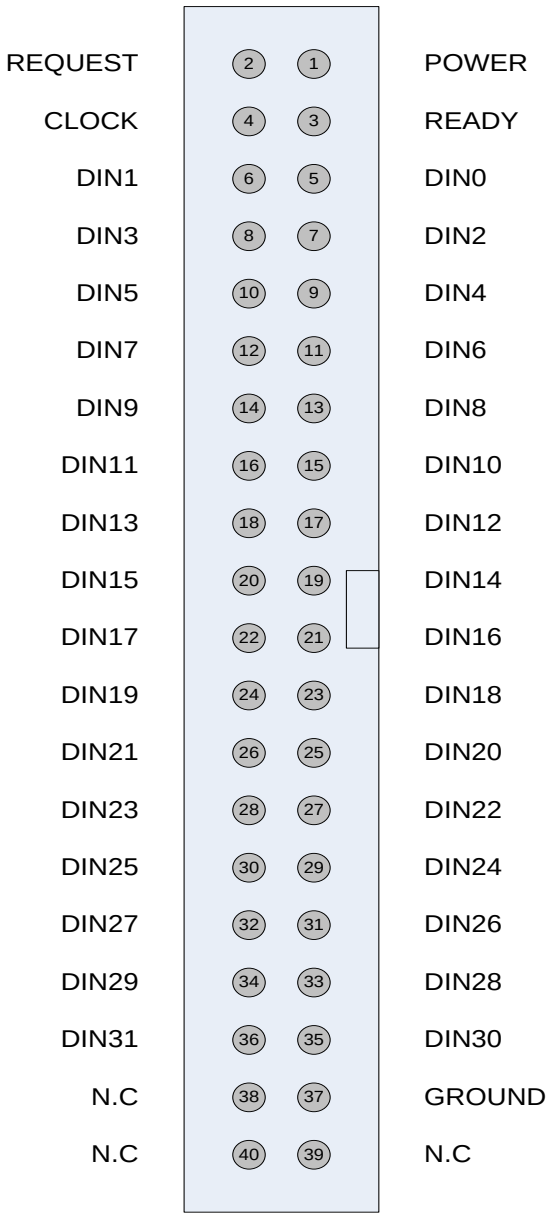
2. Connecter Pin map

2.1 External DSUB-37PIN



[Figure 2-1. PCIe-DIO05 DSUB 37 Connecter]

2.2 Internal BOX-40PIN



[Figure 2-2. Internal BOX 40 Connecter]

[Table 1. PCIe-DIO05 Connecter Pin Description]

Pin No. (DSUB37)	Pin No. (BOX40)	Pin Name	Description	Remark
1	1	POWER	Board Power Output	
2	3	READY	READY	
3	5	DIN0	Digital Input 0	
4	7	DIN2	Digital Input 2	
5	9	DIN4	Digital Input 4	

6	11	DIN6	Digital Input 6	
7	13	DIN8	Digital Input 8	
8	15	DIN10	Digital Input 10	
9	17	DIN12	Digital Input 12	
10	19	DIN14	Digital Input 14	
11	21	DIN16	Digital Input 16	
12	23	DIN18	Digital Input 18	
13	25	DIN20	Digital Input 20	
14	27	DIN22	Digital Input 22	
15	29	DIN24	Digital Input 24	
16	31	DIN26	Digital Input 26	
17	33	DIN28	Digital Input 28	
18	35	DIN30	Digital Input 30	
19	37	GROUND	Ground	
20	2	REQUEST	External TRIGGER Input Signal	
21	4	CLOCK	CLOCK Output Signal	
22	6	DIN1	Digital Input 1	
23	8	DIN3	Digital Input 3	
24	10	DIN5	Digital Input 5	
25	12	DIN7	Digital Input 7	
26	14	DIN9	Digital Input 9	
27	16	DIN11	Digital Input 11	
28	18	DIN13	Digital Input 13	
29	20	DIN15	Digital Input 15	
30	22	DIN17	Digital Input 17	
31	24	DIN19	Digital Input 19	
32	26	DIN21	Digital Input 21	
33	28	DIN23	Digital Input 23	
34	30	DIN25	Digital Input 25	
35	32	DIN27	Digital Input 27	
36	34	DIN29	Digital Input 29	
37	36	DIN31	Digital Input 31	
	38	N.C	No Connection	
	39	N.C	No Connection	
	40	N.C	No Connection	

3. Installation

After unpacking, inspect the board carton to make sure there are no damages on the board.

3.1 Package Content

Product Contents

1. PCIe-DIO05 Board
2. CD (Driver/Manual/API/Sample Source etc.)

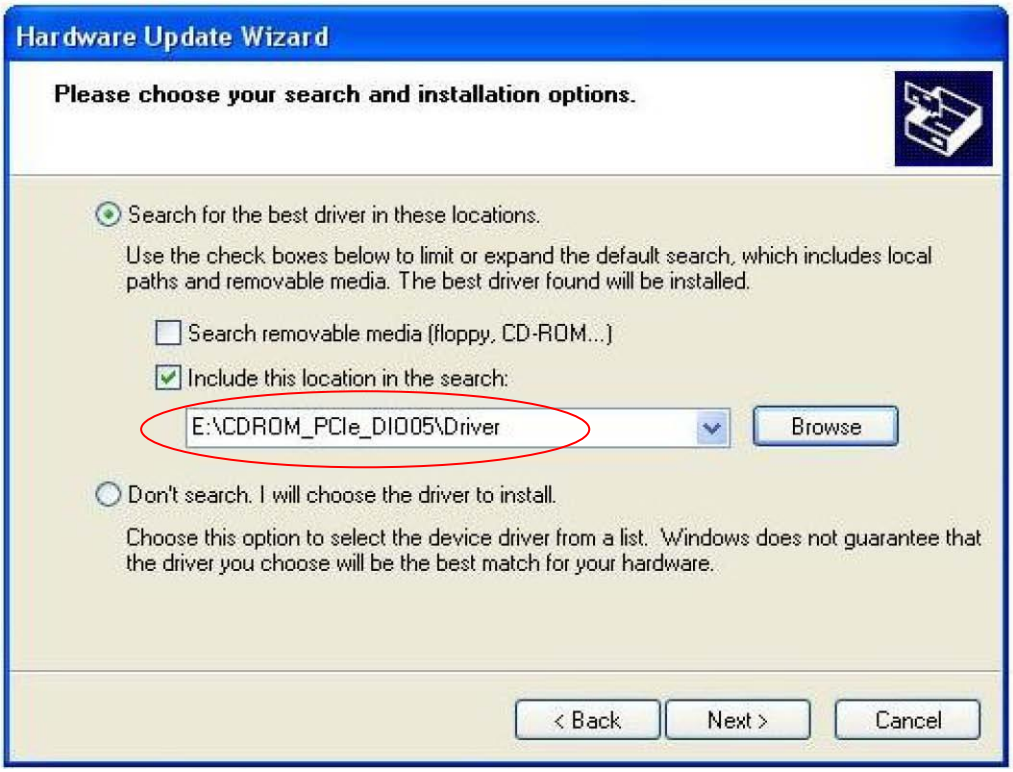
3.2 Installation Sequence

To install your PCIe-DIO05 board in your PC, follow the steps described in the document “How to install PCI DAQ Board” provided by DAQ System. If the document is missing, you can get it from www.daqsystem.com. The PCIe-DIO05 board is completely Plug & Play. There are no switches or jumpers to set. Therefore you can install it easily.

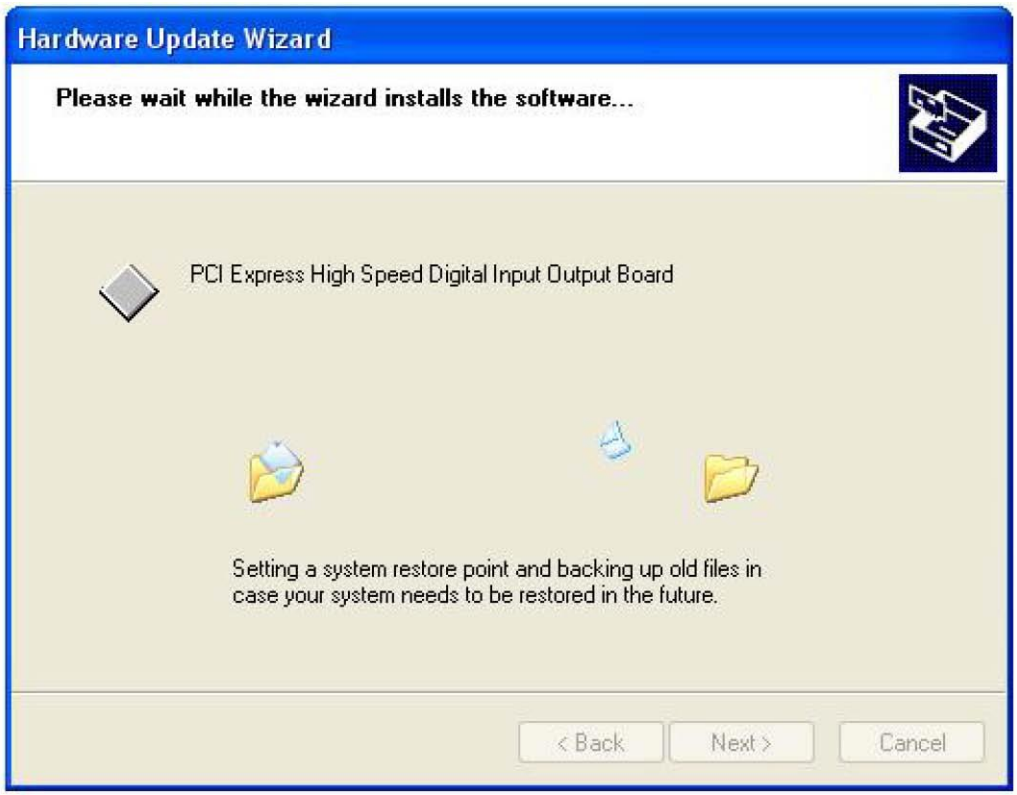
- Your OS requirement : Windows 2000 SP4 or Windows XP SP1 above

The PCIe-DIO05 connects to PCI Card Port. After that you can show the below picture of “Found New Hardware Wizard” window.

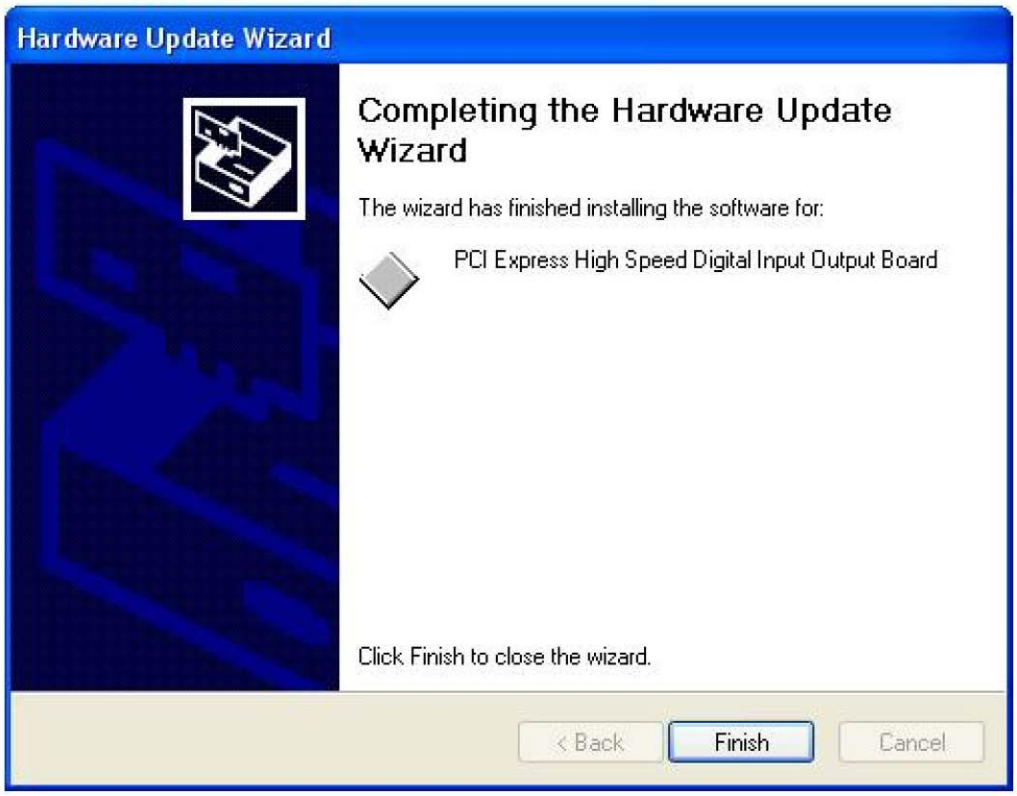
If new hardware is found, Wizard will ask you to install the corresponding driver. For installation of the driver, select the item “Install from a list or specific location (Advanced)” and click “Next” as in the figure.



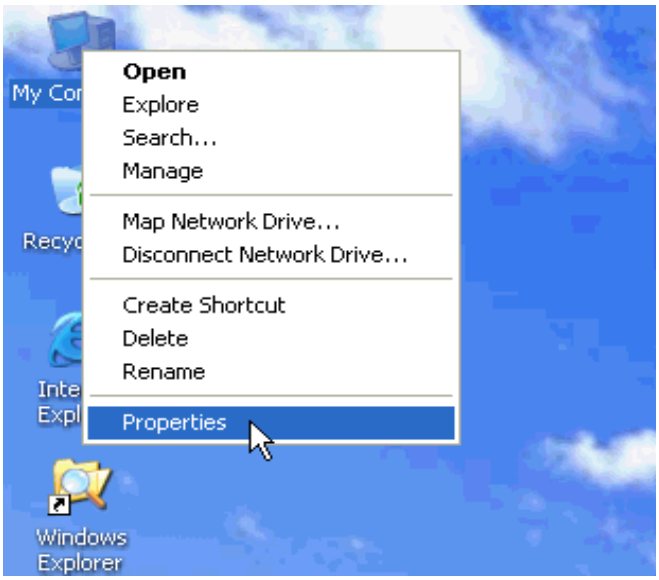
The driver folder includes a file of **"pci_aio05.inf"** and **"pci_aio05.sys"** that it is necessary for driver installation. A warning message appears during installation here, press "Continue Anyway" button. You can show below message window. The process progress as follows.

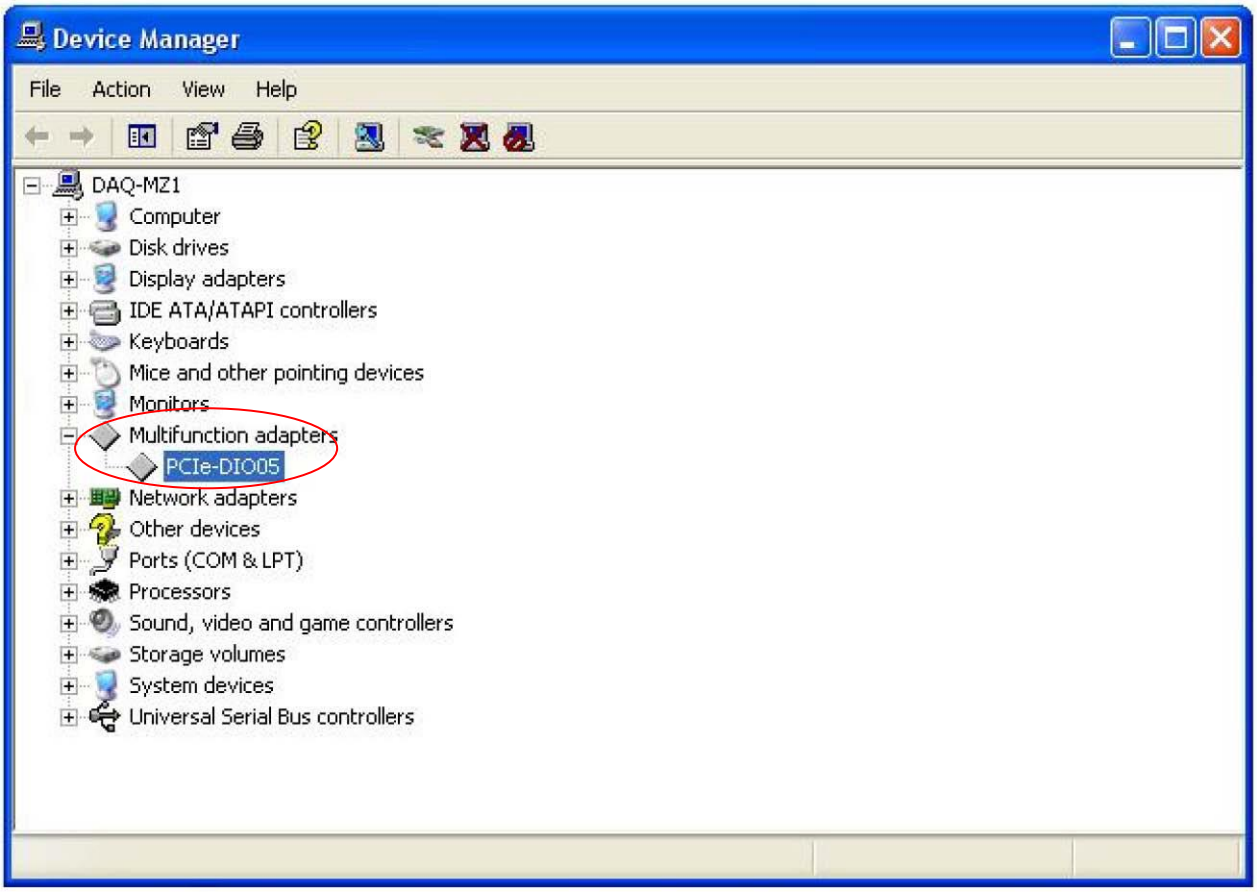


If the installation is completely finished, you can show below message window.



If the installation is completely finished, you confirm it in the following ways. Do the following steps to show up the “Device Manager” window. [My Computer -> properties -> Hardware -> Device Manager -> **Multifunction Adaptors -> PCIe-DIO05**]





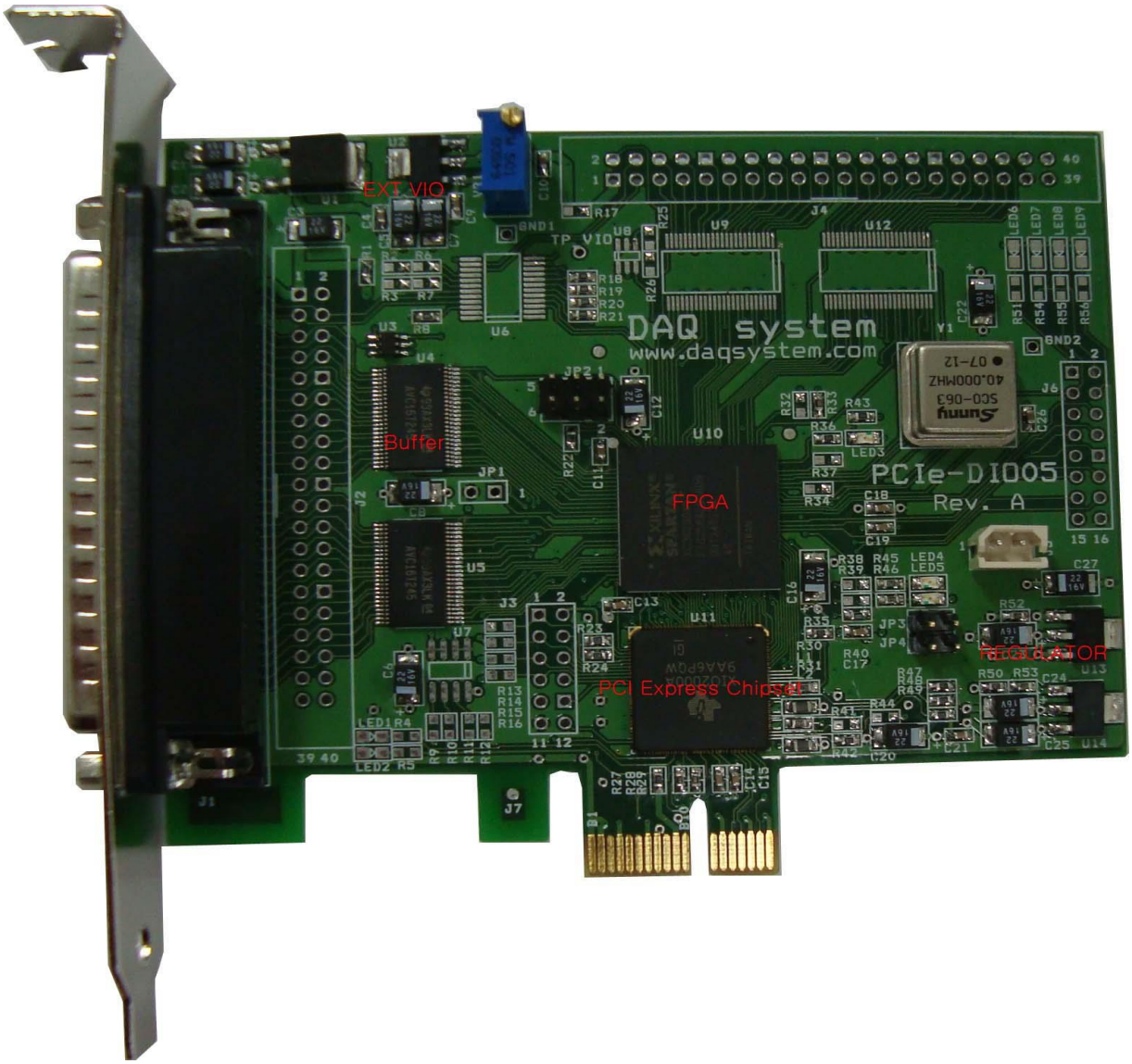
If you can see the “PCIe-DIO05” at Multifunction Adaptors, the driver installation is to have been over. (Check the red circle)

Notice : After installation, you should re-boot the system for the proper operation.

4. Board Function

In this chapter, the primary functions of the board are described briefly. For more information, refer to the device specification.

4.1 Layout



[Figure 4-1. PCIe-DIO05 Front side]

The board has three LEDs to indicate the operation status.

LED3 turns on when the board is ready to operate after finished operation.

LED4 turns on when the board transmits the data.

LED5 turns on when power is applied to the board and the initialization ends up.

4.2 Function Description

(1) **FPGA**

All of the board functions are controlled the FPGA Logic.

(2) **Buffer**

It receives external digital input.

(3) **Regulator**

A power supplies to the board.

(4) **PCI Express Chipset**

It's a PCI Express Bridge.

(5) **EXT VIO**

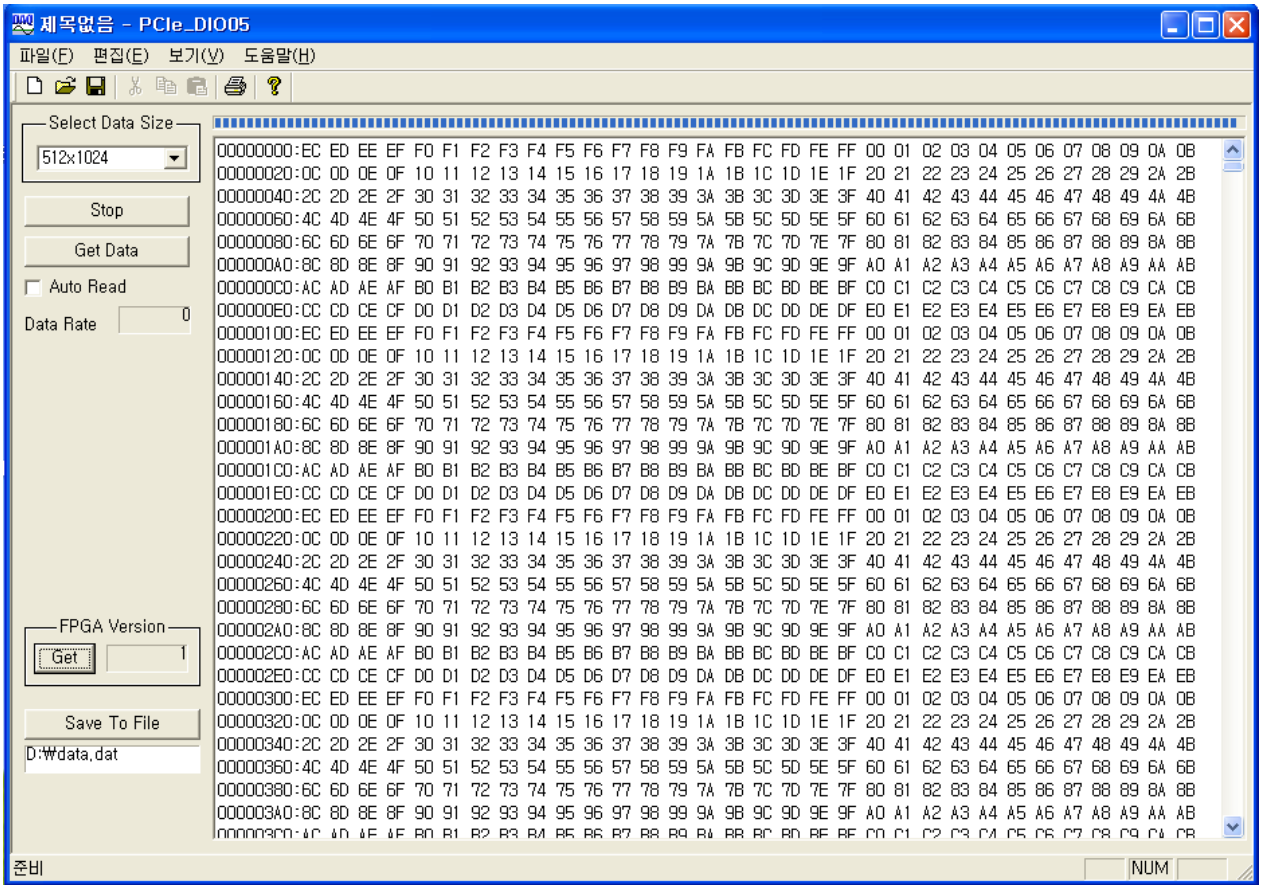
You shall fit it with an external power level as you adjust an equipped volume resistance. A base setting is 3.3V.

5. Sample Program

DAQ system provides a sample program to make the user be familiar with the board operation and to make the program development easier. You can find the sample program in the CDROM accompanying with the board. One of the execution file is **"PCIe_DIO05.exe"**.

Sample program is provided in source form in order to show the usage of API (Application Programming Interface) of the board and may be modified for customer's own usage.

To run the sample application program, you need to use API, it is a form of client DLL. To compile the sample source to make its executable file, you have to use Import Library files and header files. You can find them in the CDROM. To run the .exe file, the API DLL file **(PCIe_DIO05.DLL)** must be in the same directory with the .exe file or Windows system folder. Another method is to add the directory of API DLL file to PATH environmental variable.



[Figure 5-1. When Sample program execute]

(1) **Select Data Size**

It set up data size of input. The data can be input in 32 bits unit. It is transmitting to PC from PCIe-DIO05 with fixed size.

(2) **Stop/Run**

Stat/Stop Data collection

(3) **Get Data**

Get the data on the board. If it is not made of saving to a board like setting number, you shall wait until storage is finished.

(4) **Save to**

Save the image frame data of PC to a file.

References

1. PCI System Architecture

-- MindShare Inc.

2. PCI Local Bus Specification

-- PCI-SIG

3. General information on PCI board API

-- DAQ system

4. AN201 How to build application using APIs

-- DAQ system

5. AN312 PCIe-DIO05 API Programming

-- DAQ system