

PCI-7432 / 7433 / 7434

cPCI-7432 / 7433 / 7434

64 Channels Isolated
Digital I/O / Digital Input /
Digital Output Card

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Introduction

The PCI-7432 provides 64 isolated digital I/O (32 Isolated inputs and 32 isolated outputs), PCI-7433 provides 64 isolated digital input and PCI-7434 provides 64 isolated digital output. The isolated I/O channels are isolated to 5000 Vdc (excluding cables), both channel-to-channel and channel-to-computer. It protects your computer against damage caused by accidental contact with high external voltage and eliminates troublesome ground loops.

The PCI-7432, 7433, and 7434 uses ASIC PCI controller to interface the board to the PCI bus. The ASIC fully implement the PCI local bus specification Rev 2.0. All bus relative configurations, such as base memory and interrupt assignment, are automatically controlled by BIOS software. It does not need any user interaction and pre-study for the configurations. This removes the burden of searching for a conflict-free configuration, which can be very time consuming and difficult with some other bus standards.

Software Supporting :

There are several software options help you get your application running quickly and easily.

1. Linking with data acquisition software packages :
 - . DasyLab 4.0
 - . LabVIEW 5.0
 - . InTouch 7.0
2. Custom Program :

For the customers who are writing their own programs, the PCI-7432/33/34 are supported by a comprehensive set of drivers and programming tools. These software supports are available in multiple platform.

- .C/C++ program library for MS-DOS and DLL library for Window 95, shipped with board.
- .PCIS-DASK/NT: Advanced data acquisition software kit and DLL driver for Win-NT
- .DAQBench: ActiveX (OLE) controls for Win-NT

1.1 Features

The PCI-743X Isolated D/I cards provide the following advanced features:

	PCI-7432	PCI-7433	PCI-7434
	cPCI-7432	cPCI-7433	CPCI-7434
32 Isolated Digital Input / Output Channels	√	--	--
64 Isolated Digital Input Channels	--	√	--
64 Isolated Digital Output Channels	--	--	√
High output driving capability	√	--	√
500mA sink current on isolated output channels	√	--	√
5000 Vrms high voltage isolation	√	√	√
External interrupt signal	√	√	--
Dual interrupt trigger	√	√	--
Up to 24V voltage protection for isolated input	√	√	--
100-pin SCSI-II connector	√	√	√

1.2 Applications

- Laboratory and Industrial automation
- Watchdog timer
- Event counter
- Frequency counter and generator
- Low level pulse generator
- Time delay

1.3 Specifications

◆ Isolated Digital I/O (DIO)

• Optical Isolated Input Channel

Number of Channels: 32 digital inputs for 7432
64 digital inputs for 7433

Input Voltage: 5 - 24V dc

Input resistance: 1.2K Ω @ 0.5W

Isolated voltage: 5000 Vdc

Throughput: 10K Hz

• Optical isolated Output channel

Number of Channels: 32 digital outputs for 7432
64 digital outputs for 7434

Output Voltage: open collector 5 to 35Vdc

Sink Current: 500mA max.

Isolated voltage: 5000 Vdc

Throughput: 10K Hz

• Interrupt sources (for PCI-7432/7433)

Channel 0 and channel 1 of digital input channels

◆ General Specifications

- **Connector** : 100-pin SCSI-II connector
- **Operating Temperature** : 0° C ~ 60° C
- **Storage Temperature** : -20° C ~ 80° C
- **Humidity** : 5 ~ 95%, non-condensing
- **Power Consumption** :

- PCI-7432: +5V @ 530 mA typical
 - PCI-7433: +5V @ 500 mA typical
 - PCI-7434: +5V @ 560 mA typical
 - cPCI-7432: +5V @ 455 mA typical
 - cPCI-7433: +5V @ 500 mA typical
 - cPCI-7434: +5V @ 430 mA typical
- **Dimension :**
 - PCI-7432/33/34: Compact size only 98mm(H) X 173mm(L)
 - cPCI-7432/33/34: Standard 3U CompactPCI form factor

2

Installation

This chapter describes the configurations of the PCI-7432/33/34 and teaches users to install the PCI-7432/33/34. At first, the contents in the package and unpacking information that you should care about are described. The PCI-7432/33/34 are plug-and-play; it is very easy to install into any PC system with PCI slots.

2.1 What You Have

In addition to this *User's Manual*, the package includes the following items:

- PCI-7432, PCI-7433, or PCI-7434 Isolated Digital I/O Card
- Manual & Software Utility CD

If any of these items is missing or damaged, contact the dealer from whom you purchased the product. Save the shipping materials and carton in case you want to ship or store the product in the future.

2.2 Unpacking

Your PCI-7432/33/34 card contains sensitive electronic components that can be easily damaged by static electricity.

The card should be done on a grounded anti-static mat. The operator should be wearing an anti-static wristband, grounded at the same point as the anti-static mat.

Inspect the card module carton for obvious damage. Shipping and handling may cause damage to your module. Be sure there are no shipping and handling damages on the module before processing.

After opening the card module carton, extract the system module and place it only on a grounded anti-static surface component side up.

Again inspect the module for damage. Press down on all the socketed IC's to make sure that they are properly seated. Do this only with the module place on a firm flat surface.

Note :DO NOT APPLY POWER TO THE CARD IF IT HAS BEEN DAMAGED.

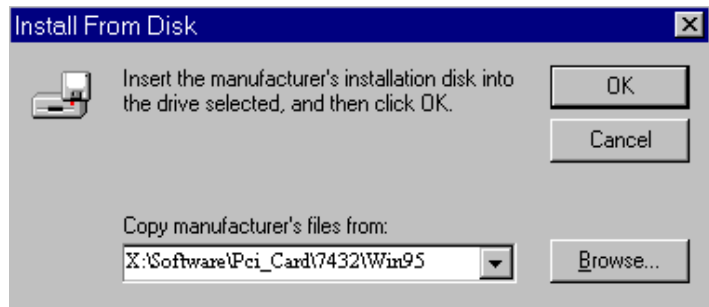
Now you are ready to install your PCI-7432/33/34 card.

2.3 Device Installation for Windows 95

While you first plug PCI-7432/7433/7434 card and enter Windows 95, the system will detect this device automatically and show the following dialog box that prompts you to select the device information source.



Choose the default option “*Driver from disk provided by hardware manufacturer*” and then a dialog box is shown to prompt you give the path of installation disk.



Place ADLink's "Manual & Software Utility" CD into the appropriate CD driver. Type "X:\Software\Pci_Card\7432\Win95", "X:\Software\Pci_Card\7433\Win95" or "X:\Software\Pci_Card\7434\Win95" (these directories include PCI-7432/33/34 device information files "7432.inf", "7433.inf", or "7434.inf") in the input field (**X indicates the CD ROM driver**) and then click OK. The system will start the installation of PCI-7432/33/34 device.

2.4 PCI-7432/33/34's Layout

PCI-7432/33/34's layout are quite alike. The following is PCI-7432's layout.

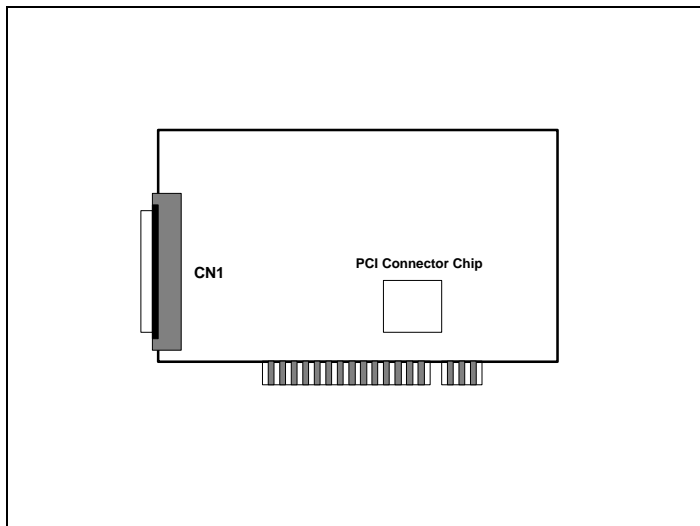


Figure 2.1

2.5 PCI-7432/33/34 Installation Outline

2.5.1 Hardware configuration

PCI-7432/33/34 support plug and play, the card can requests memory usage (I/O port locations) assigned by system BIOS. The address assignment is done on a board-by-board basis for all PCI-7432/33/34 in the system.

2.5.2 PCI slot selection

Your computer will probably have both PCI and ISA slots. Do not force the PCI-7432/33/34 into a PC/AT slot.

2.5.3 Installation Procedures

1. Turn off your computer
2. Turn off all accessories (printer, modem, monitor, etc.) connected to computer.
3. Remove the cover from your computer.
4. Select a 32-bit PCI expansion slot. PCI slots are short than ISA or EISA slots and are usually white or ivory.

**Caution !! Don't put PCI-7432/33/34 card into
ISA or EISA slot.**

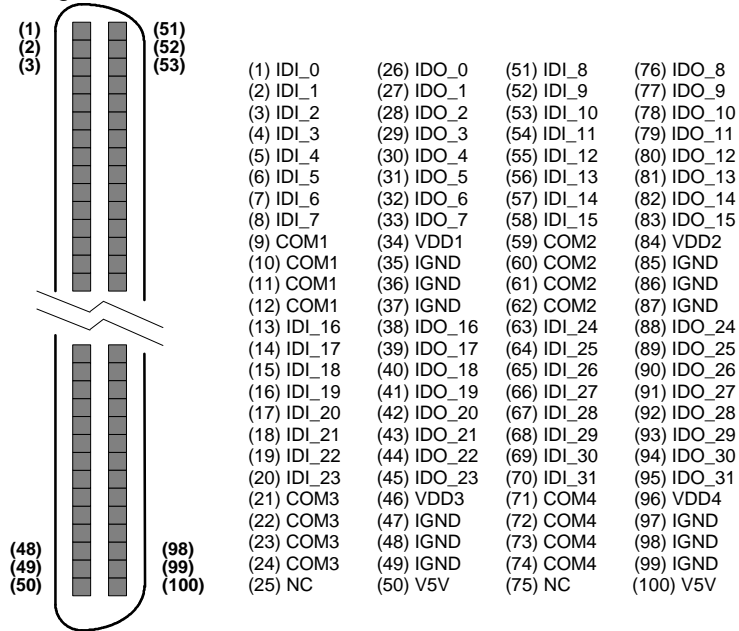
5. Before handling the PCI-7432/33/34, discharge any static buildup on your body by touching the metal case of the computer. Hold the edge and do not touch the components.
6. Position the board into the PCI slot you selected.
7. Secure the card in place at the rear panel of the system unit using screw removed from the slot.

2.5.4 Running the 7432UTIL.EXE

A testing program is included in this utility, you can check if your PCI card can work properly. Refer Section 5.2 for further detailed information.(If your pci card is PCI-7433, then the disk will contain 7433UTIL.EXE. If your pci card is PCI-7434, then the disk will contain 7434UTIL.EXE.)

2.6 Connector Pin Assignment of PCI-7432

The pin assignment of the 100 pins SCSI-II connector is an isolated signal connector, PCI-7432's pin assignment is as shown in Figure 2.7.



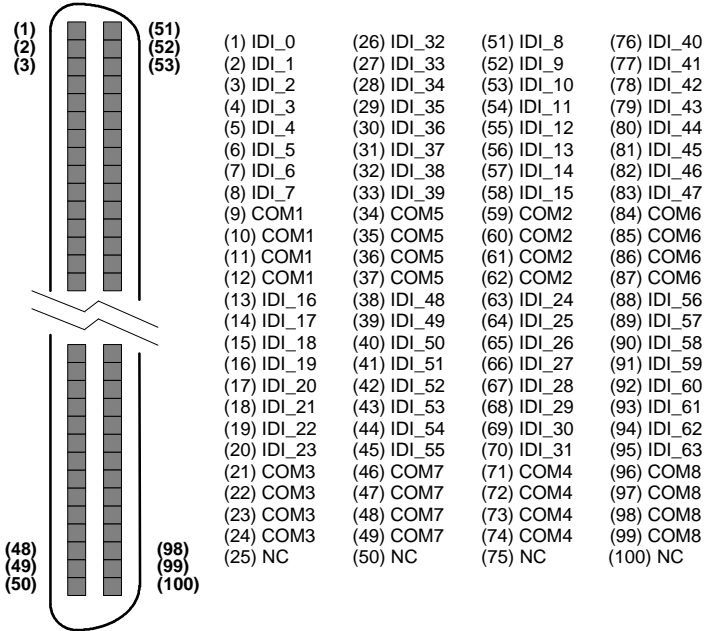
Legend:

- IDI_n** : Isolated digital input channel #n
- IDO_n** : Isolated digital output channel #n
- VDD_m** : Common pin of output channel group #m
(VDD1 is common pin of isolated output channel #0~7, VDD2 is common pin of isolated output channel #8~15,...)
- IGND** : Ground return path of isolated output channels
- COM_m** : Common junction of isolated input channel group #m
(COM1 is common junction of input channel #0~7, COM2 is common junction of input channel #8~15, COM3 is common junction of input channel #16~15, ...)
- V5V** : Onboard un-regulated 5V power supply output

Figure 2.7. Pin Assignment of PCI-7432 Connector CN1

2.7 Connector Pin Assignment of PCI-7433

The pin assignment of the 100 pins SCSI-II connector is an isolated signal connector, PCI-7433's pin assignment is as shown in Figure 2.8.



Legend:

IDI_n : Isolated digital input channel #n

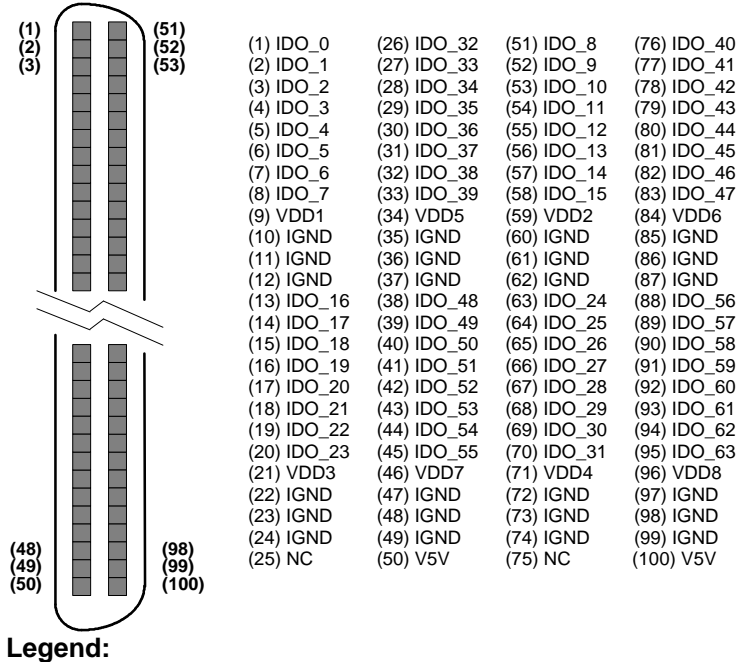
COM_m : Common junction of isolated input channel group #m

(COM1 is common junction of input channel #0~7, COM2 is common junction of input channel #8~15, COM3 is common junction of input channel #16~15, ...)

Figure 2.8. Pin Assignment of PCI-7433 Connector CN1

2.8 Connector Pin Assignment of PCI-7434

The pin assignment of the 100 pins SCSI-II connector is an isolated signal connector, PCI-7434's pin assignment is as shown in Figure 2.9.



Legend:

- IDO_n** : Isolated digital output channel #n
- IGND** : Ground return path of isolated output channels
- VDD_m** : Common pin of isolated output channel group #m
(VDD1 is the common pin of isolated output channel #0~7, VDD2 is for channel #8~15, VDD3 is for channel #16~23, VDD4 is for channel #24~31, VDD5 is for channel #32~39, VDD6 is for channel #40~47, VDD7 is for channel #48~55, VDD8 is for channel #56~63)
- V5V** : Onboard un-regulated 5V power supply output

Figure 2.9. Pin Assignment of PCI-7434 Connector CN1

3

Register Format & Connection

In this chapter, a primitive digital I/O operations of PCI-743X products will be specified. The I/O operations are also included.

3.1 I/O Port Base Address

The PCI-743X or cPCI-743X function as a 32-bit PCI target (slave) device to any master on the PCI bus. There are three types of registers on the PCI-743X: PCI Configuration Registers (PCR), Local Configuration Registers (LCR) and PCI-743X registers.

The PCR which conforms the PCI-bus specifications is initialized and controlled by the system plug & play PCI BIOS. User's can refer to the PCI BIOS specification to understand how to get information from the PCR.

The LCR is specified by the PCI bus controller PLX-9050. It is not necessary for users to understand the details of the LCR if you use the software library. The base address of the LCR is assigned by the PCI PnP BIOS. The assigned address is located at offset 14h of PCR. Please refer to the PCI-9050's data sheet for the detail operation of the LCR and also the register format of the PCR.

The PCI-743X registers are shown in the Table 3.1. The base address of the PCI-743X registers is also assigned by the PCI

PnP BIOS. The assigned base address is located at offset 18h of PCR. Therefore, users can read the PCR to know the base address by using the BIOS function call. Note that the PCI-743X registers are all 32 bits. The users can access these registers by 32 bits I/O instructions.

3.2 Registers Map

The PCI-7432 board requires 4 consecutive 8-bit addresses (32-bit) in the PC I/O address space. The PCI-7433 and 7434 requires 8 consecutive addresses (32-bit) in the PC I/O address space. Table 3.1 shows the I/O address of each register with respect to the base address.

	Address	Write	Read
PCI-7432	Base (0 - 3)	Isolated DO	Isolated DI
PCI-7433	Base (0 - 7)	--	Isolated DI
PCI-7434	Base (0 - 7)	Isolated DO	--

Table 3.1. I/O Address Map of PCI-7432/33/34

DO -- Digital Output
DI -- Digital Input

Caution :

1. I/O port is 32-bit width
2. 8-bit or 16-bit I/O access is not allowed.

3.2 Digital Input Register

There are 32 isolated digital input channels on PCI-7432 and 64 isolated digital input channels on the PCI-7433, each bit of based address is corresponding to a signal on the digital input channel.

Address :

BASE + 0 ~ BASE + 3 for 7432
BASE + 0 ~ BASE + 7 for 7433

Attribute: read only

Data Format :

PCI-7432

	7	6	5	4	3	2	1	0
Base + 0	IDI_7	IDI_6	IDI_5	IDI_4	IDI_3	IDI_2	IDI_1	IDI_0
Base + 1	IDI_15	IDI_14	IDI_13	IDI_12	IDI_11	IDI_10	IDI_9	IDI_8
Base + 2	IDI_23	IDI_22	IDI_21	IDI_20	IDI_19	IDI_18	IDI_17	IDI_16
Base + 3	IDI_31	IDI_30	IDI_29	IDI_28	IDI_27	IDI_26	IDI_25	IDI_24

PCI-7433

	7	6	5	4	3	2	1	0
Base + 0	IDI_7	IDI_6	IDI_5	IDI_4	IDI_3	IDI_2	IDI_1	IDI_0
Base + 1	IDI_15	IDI_14	IDI_13	IDI_12	IDI_11	IDI_10	IDI_9	IDI_8
Base + 2	IDI_23	IDI_22	IDI_21	IDI_20	IDI_19	IDI_18	IDI_17	IDI_16
Base + 3	IDI_31	IDI_30	IDI_29	IDI_28	IDI_27	IDI_26	IDI_25	IDI_24
Base + 4	IDI_39	IDI_38	IDI_37	IDI_36	IDI_35	IDI_34	IDI_33	IDI_32
Base + 5	IDI_47	IDI_46	IDI_45	IDI_44	IDI_43	IDI_42	IDI_41	IDI_40
Base + 6	IDI_55	IDI_54	IDI_53	IDI_52	IDI_51	IDI_50	IDI_49	IDI_48
Base + 7	IDI_63	IDI_62	IDI_61	IDI_60	IDI_59	IDI_58	IDI_57	IDI_56

IDI_N : Isolated Digital Input CH N

3.3 Digital Output Register

There are total 32 digital output channels on the PCI-7432 and 64 isolated digital input channels on the PCI-7434, each bit of based address is corresponding to a signal on the digital output channel.

Address: **BASE + 0 ~ BASE + 3 for 7432**
BASE + 0 ~ BASE + 7 for 7434

Attribute: write only

Data Format :

PCI-7432

	7	6	5	4	3	2	1	0
Base + 0	IDO_7	IDO_6	IDO_5	IDO_4	IDO_3	IDO_2	IDO_1	IDO_0
Base + 1	IDO_15	IDO_14	IDO_13	IDO_12	IDO_11	IDO_10	IDO_9	IDO_8
Base + 2	IDO_23	IDO_22	IDO_21	IDO_20	IDO_19	IDO_18	IDO_17	IDO_16
Base + 3	IDO_31	IDO_30	IDO_29	IDO_28	IDO_27	IDO_26	IDO_25	IDO_24

PCI-7434

	7	6	5	4	3	2	1	0
Base + 0	IDO_7	IDO_6	IDO_5	IDO_4	IDO_3	IDO_2	IDO_1	IDO_0
Base + 1	IDO_15	IDO_14	IDO_13	IDO_12	IDO_11	IDO_10	IDO_9	IDO_8

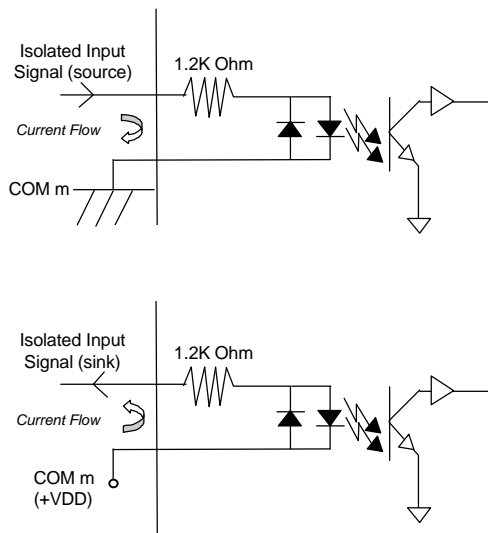
Base + 2	<i>IDO_23</i>	<i>IDO_22</i>	<i>IDO_21</i>	<i>IDO_20</i>	<i>IDO_19</i>	<i>IDO_18</i>	<i>IDO_17</i>	<i>IDO_16</i>
Base + 3	<i>IDO_31</i>	<i>IDO_30</i>	<i>IDO_29</i>	<i>IDO_28</i>	<i>IDO_27</i>	<i>IDO_26</i>	<i>IDO_25</i>	<i>IDO_24</i>
Base + 4	<i>IDO_39</i>	<i>IDO_38</i>	<i>IDO_37</i>	<i>IDO_36</i>	<i>IDO_35</i>	<i>IDO_34</i>	<i>IDO_33</i>	<i>IDO_32</i>
Base + 5	<i>IDO_47</i>	<i>IDO_46</i>	<i>IDO_45</i>	<i>IDO_44</i>	<i>IDO_43</i>	<i>IDO_42</i>	<i>IDO_41</i>	<i>IDO_40</i>
Base + 6	<i>IDO_55</i>	<i>IDO_54</i>	<i>IDO_53</i>	<i>IDO_52</i>	<i>IDO_51</i>	<i>IDO_50</i>	<i>IDO_49</i>	<i>IDO_48</i>
Base + 7	<i>IDO_63</i>	<i>IDO_62</i>	<i>IDO_61</i>	<i>IDO_60</i>	<i>IDO_59</i>	<i>IDO_58</i>	<i>IDO_57</i>	<i>IDO_56</i>

IDO_N : Isolated Digital Output CH N

3.4 Isolated Digital Input Channels

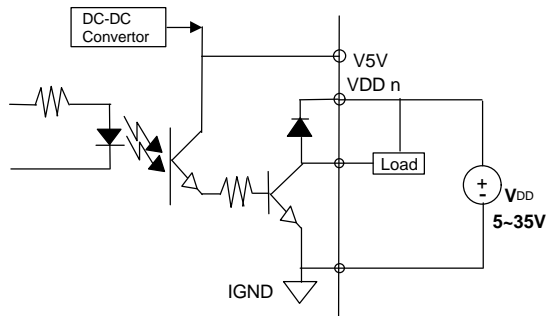
The isolated digital input is open collector transistor structure. The input voltage range form 5V to 24V and input resister is 1.2K Ω . The connection between outside signal and PCI-7432/33 is shown below.

Please note that the input common junction could be common ground or common power, they are dependent on the user's environment. Therefore, the digital input could be either current source or current sink.



3.5 Isolated Digital Output Channels

The connection of isolated-digital output is shown as following diagram. When the isolated digital output goes “ON”, the sink current will be conducted through the transistors. When the isolated digital output goes “OFF”, no current could flow through the transistor. Please note that when the loading is as “inductance type loading” such as relay, coil or motor, the VDD signal must be connect to the external power source. The extra connection is to utilize the ‘fly-wheel diode’ to form a current-release closed loop, so that the transistor won’t be destroyed by the reverse high voltage which conduct by the inductance loading.



4

C/C++ Libraries

In this chapter, the PCI-7432/33/34's software library, C/C++ language library, for DOS is described.

4.1 Installation

4.1.1 Installation

The PCI-7432/33/34 Software Library supplied with PCI-7432/33/34 includes a DOS utility software, C-language library and some demonstration programs which can help you reduce programming work.

◆ MS-DOS Software Installation

1. Turn your PC's power switch on
2. Put the ADLink's "Manual & Software Utility" CD into the appropriate CD driver.
3. Type the commands(X indicates the CD ROM driver):

For PCI-7432:

```
X:\> CD Software\Pci_Card\7432\DOS  
X:\ Software\Pci_Card\7432\DOS> SETUP
```

For PCI-7433:

```
X:\> CD Software\Pci_Card\7433\DOS  
X:\ Software\Pci_Card\7433\DOS> SETUP
```

For PCI-7434:

```
X:\> CD Software\Pci_Card\7434\DOS  
X:\ Software\Pci_Card\7434\DOS> SETUP
```


4. An installation complete message will be shown on the screen.

After installation, all the files of *PCI-7432/33/34 Library & Utility for DOS* are stored in C:\ADLink\7432\DOS , C:\ADLink\7433\DOS or C:\ADLink\7434\DOS directory.

◆ **Windows 95 Software Installation**

step 1. Place the ADLink's "Manual & Software Utility" CD into the appropriate CD driver.

step 2. If Windows 95 is loaded, choose Run from the menu bar.

step 3. Type **X:\Software\Pci_Card\7230\Win95\Setup.exe** in the Run dialog box.

After a welcome dialog box, Setup prompts the following dialog box for you to specify the destination directory. The default path is C:\7432w95 for PCI-7432, C:\7433w95 for PCI-7433, C:\7434w95 for PCI-7434. If you want to install *PCI-7432/33/34 DLL for Windows 95* in another directory, please click Browse button to change the destination directory.



Then you can click Next to begin installing *PCI-7432/33/34 DLL for Windows 95*.

After you complete the installation of PCI-7432/33/34 Software, PCI-7432/33/34's DLL (7432.DLL, 7433.DLL, or 7434.DLL) is copied to Windows System directory (default is C:\WINDOWS\SYSTEM), and the driver files (PCIW95.VXD, W95_7432.VXD or W95_7433.VXD) are also copied to the appropriate directory.

There are two kinds of import library files in <InstallDir>\LIB directory. 7432.lib, 7433.lib, 7434.lib are Visual C/C++ import library files. 7432_bc.lib, 7433_bc.lib, 7434_bc.lib are Borland C++ 5.0 import library files.

4.2 Running Testing Utility (7432UTIL.EXE)

After finishing the installation, you can execute the utility by typing as follows :

```
C> cd \7432\DOS\UTIL
```

```
C> 7432UTIL
```

(If your PCI card is PCI-7433 or 7434, please execute 7433UTIL.EXE or 7434UTIL.EXE)

4.3 I_EEPROM

This utility is used to enable or disable the interrupt of PCI-7432/33 board. This software is a text-driven program. Because the default interrupt on PCI-7432/33 board is “off”, users who want to use interrupt function can use this utility to turn on the interrupt of their PCI-7432/33 board.

4.3.1 Running I_eeeprom.exe

After finishing the DOS installation, you can execute the utility by typing as follows :

```
C> cd \ADLINK\DOS\7432\UTIL
```

or

```
C> cd \ADLINK\DOS\7433\UTIL
```

```
C> I_eeeprom
```

At first, this program prompts you to input the card type—7432 or 7433. After specifying the card type, this program shows the instructions to guide you to enable or disable the interrupt of your PCI-7432/33 board.

4.4 Software Driver Naming Convention

The functions of PCI-7432/33/34's software drivers are using full-names to represent the functions' real meaning. The naming convention rules are:

In DOS Environment :

`_{hardware_model}_{action_name}`. e.g. `_7432_Initial ()`.

The detail descriptions of each function are specified in the following sections.

4.5 `_7432_Initial / _7433_Initial / _7434_Initial`

@ Description

The PCI-7432/33/34 cards are initialized by this function. The software library could be used to control multiple PCI-7432/33/34 cards. Because PCI-7432/33/34 is in PCI bus architecture and meets the plug and play specifications, the **IRQ** and **I/O address** are assigned by system BIOS directly.

@ Syntax

PCI-7432

C/C++ (DOS)

U16 `_7432_Initial` (U16 `*existCards`, PCI_INFO `*pciInfo`)

C/C++ (Windows 95)

U16 `W_7432_Initial` (U16 `*existCards`, PCI_INFO `*pciInfo`)

Visual Basic (Windows 95)

`W_7432_Initial` (`existCards` As Integer, `info` As PCI_INFO)
As Integer

PCI-7433

C/C++ (DOS)

U16 `_7433_Initial` (U16 `*existCards`, PCI_INFO `*pciInfo`)

C/C++ (Windows 95)

U16 `W_7433_Initial` (U16 `*existCards`, PCI_INFO `*pciInfo`)

Visual Basic (Windows 95)

W_7433_Initial (existCards As Integer, info As PCI_INFO)
As Integer

PCI-7434

C/C++ (DOS)

U16 _7434_Initial (U16 *existCards, PCI_INFO *pciInfo)

C/C++ (Windows 95)

U16 W_7434_Initial (U16 *existCards, PCI_INFO *pciInfo)

Visual Basic (Windows 95)

W_7434_Initial (existCards As Integer, info As PCI_INFO)
As Integer

@ Argument

existCards : The numbers of installed PCI-7432/33/34 cards. The returned value shows how many PCI-7432/33/34 cards are installed in your system.

pciinfo: It is a structure to memorize the PCI bus plug and play initialization information which is decided by p&p BIOS. The PCI_INFO structure is defined in ACL_PCI.H. The base I/O address and the interrupt channel number are stored in pciinfo which is for reference.

@ Return Code

ERR_NoError
ERR_PCIBiosNotExist

4.6 _7432_DI / _7433_DI_HiDW / _7433_DI_LoDW

@ Description

This function is used to read 32-bit digital inputs data from digital input port. You can get 32 bits data from PCI-7432 by using function “_7432_DI”, get 32 bits data (MSB double word) from PCI-7433 by using “7433_DI_HiDW”, get 32 bits data (LSB double word) from PCI-7433 by using “7433_DI_LoDW”.

@ Syntax

PCI-7432

C/C++ (DOS)

U16 _7432_DI (U16 cardNo, U32 *di_data)

C/C++ (Windows 95)

U16 W_7432_DI (U16 cardNo, U32 *di_data)

Visual Basic (Windows 95)

W_7432_DI (ByVal cardNo As Integer, di_data As Long)
As Integer

PCI-7433

C/C++ (DOS)

U16 _7433_DI_HiDW (U16 cardNo, U32 *di_data)

U16 _7433_DI_LoDW (U16 cardNo, U32 *di_data)

C/C++ (Windows 95)

U16 W_7433_DI_HiDW (U16 cardNo, U32 *di_data)

U16 W_7433_DI_LoDW (U16 cardNo, U32 *di_data)

Visual Basic (Windows 95)

W_7433_DI_HiDW (ByVal cardNo As Integer, di_data As
Long) As Integer

W_7433_DI_LoDW (ByVal cardNo As Integer, di_data As
Long) As Integer

@ Argument

cardNo : card number to select board

di_data : return 32-bit value from digital port.

@ Return Code

ERR_NoError

ERR_BoardNoInit

4.7 _7432_DO / _7434_DO_HiDW / _7434_DO_LoDW

@ Description

This function is used to write data to digital output ports. There are 32 isolated digital outputs on the PCI-7432 and 64 isolated digital outputs on the PCI-7434,

@ Syntax

PCI-7432

C/C++ (DOS)

U16 _7432_DO (U16 cardNo, U32 do_data)

C/C++ (Windows 95)

U16 W_7432_DO (U16 cardNo, U32 do_data)

Visual Basic (Windows 95)

W_7432_DO (ByVal cardNo As Integer, ByVal do_data As Long) As Integer

PCI-7434

C/C++ (DOS)

U16 _7434_DO_HiDW (U16 cardNo, U32 do_data)

U16 _7434_DO_LoDW (U16 cardNo, U32 do_data)

C/C++ (Windows 95)

U16 W_7434_DO_HiDW (U16 cardNo, U32 do_data)

U16 W_7434_DO_LoDW (U16 cardNo, U32 do_data)

Visual Basic (Windows 95)

W_7434_DO_HiDW (ByVal cardNo As Integer, ByVal do_data As Long) As Integer

W_7434_DO_LoDW (ByVal cardNo As Integer, ByVal do_data As Long) As Integer

@ Argument

cardNo : card number to select board

do_data : value will be written to digital output port

@ Return Code

ERR_NoError

ERR_BoardNoInit

4.8 `_7432_Set_INT_Control / _7433_Set_INT_Control`

@ Description

The PCI-7432 or PCI-7433 has dual interrupts system, two interrupt sources can be generated and be checked by the software. This function is used to select and control PCI-7432/33 interrupt sources by writing data to interrupt control register. The interrupt source can be set as from Channel 0 (INT1) or channel 1 (INT2) of digital input channels. Only one of interrupt sources can be set as enable.

@ Syntax

PCI-7432

C/C++ (DOS)

```
void _7432_Set_INT_Control (U16 cardNo, U16 int1Flag,  
U16 int2Flag)
```

C/C++ (Windows 95)

```
void W_7432_Set_INT_Control (U16 cardNo, U16  
int1Flag, U16 int2Flag)
```

Visual Basic (Windows 95)

```
W_7432_Set_INT_Control (ByVal cardNo As Integer,  
ByVal int1Flag As Integer, ByVal int2Flag As Integer)
```

PCI-7433

C/C++ (DOS)

```
void _7433_Set_INT_Control (U16 cardNo, U16 int1Flag,  
U16 int2Flag)
```

C/C++ (Windows 95)

```
void W_7433_Set_INT_Control (U16 cardNo, U16  
int1Flag, U16 int2Flag)
```

Visual Basic (Windows 95)

```
W_7433_Set_INT_Control (ByVal cardNo As Integer,  
ByVal int1Flag As Integer, ByVal int2Flag As Integer)
```

@ Argument

cardNo : card number to select board

int1Flag : INT1 setting; 0: disable, 1: enable

int2Flag : INT2 setting; 0: disable, 1: enable

4.9 `_7432_Get_INT_Status / _7433_Get_INT_Status`

@ Description

The PCI-7432 or PCI-7433 has dual interrupts system. Two interrupt sources can be generated and be checked by the software. This function is used to distinguish which interrupt is inserted if both INT1 and INT2 interrupts are used.

@ Syntax

PCI-7432

C/C++ (DOS)

```
void _7432_Get_IRQ_Status (U16 cardNo, U16 *int1Status, U16 *int2Status)
```

C/C++ (Windows 95)

```
void W_7432_Get_IRQ_Status (U16 cardNo, U16 *int1Status, U16 *int2Status)
```

Visual Basic (Windows 95)

```
W_7432_Get_IRQ_Status (ByVal cardNo As Integer, int1Status As Integer, int2Status As Integer)
```

PCI-7433

C/C++ (DOS)

```
void _7433_Get_IRQ_Status (U16 cardNo, U16 *int1Status, U16 *int2Status)
```

C/C++ (Windows 95)

```
void W_7433_Get_IRQ_Status (U16 cardNo, U16 *int1Status, U16 *int2Status)
```

Visual Basic (Windows 95)

```
W_7433_Get_IRQ_Status (ByVal cardNo As Integer, int1Status As Integer, int2Status As Integer)
```

@ Argument

cardNo : card number to select board

int1Status : INT1 status; 0: interrupt is not from INT1, 1: interrupt is from INT1

int2Status : INT2 status; 0: interrupt is not from INT2, 1: interrupt is from INT2

4.10 _7432_INT_Enable / _7433_INT_Enable

@ Description

This function is only available in Windows 95 driver. This function is used to start up the interrupt control. After calling this function, every time an interrupt request signal generated, a software event is signaled. So that in your program, you can use wait operation to wait for the event. When the event is signaled, it means an interrupt is generated. Please refer to the sample program 7432int.c or 7433int.c.

@ Syntax

PCI-7432

C/C++ (Windows 95)

```
U16  W_7432_INT_Enable (U16 cardNo, HANDLE
                        *hEvent)
```

Visual Basic (Windows 95)

```
W_7432_INT_Enable (ByVal cardNo As Integer, hEvent
                  As Long) As Integer
```

PCI-7433

C/C++ (Windows 95)

```
U16  W_7433_INT_Enable (U16 cardNo, HANDLE
                        *hEvent)
```

Visual Basic (Windows 95)

```
W_7433_INT_Enable (ByVal cardNo As Integer, hEvent
                  As Long) As Integer
```

@ Argument

cardNo : card number to select board

hEvent : the address of an array of two handles. HEvent[0] and hEvent[1] are the events for interrupt signals INT1 and INT2 respectively.

@ Return Code

ERR_NoError

ERR_BoardNoInit

4.11 `_7432_INT_Disable` / `_7433_INT_Disable`

@ Description

This function is only available in Windows 95 driver. This function is used to disable the interrupt signal generation.

@ Syntax

PCI-7432

C/C++ (Windows 95)

```
U16 W_7432_INT_Disable (U16 cardNo)
```

Visual Basic (Windows 95)

```
W_7432_INT_Disable (ByVal cardNo As Integer) As Integer
```

PCI-7433

C/C++ (Windows 95)

```
U16 W_7433_INT_Disable (U16 cardNo)
```

Visual Basic (Windows 95)

```
W_7433_INT_Disable (ByVal cardNo As Integer) As Integer
```

@ Argument

cardNo : card number to select board

@ Return Code

ERR_NoError

ERR_BoardNoInit

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Seller warrants that equipment furnished will be free from defects in material and workmanship for a period of one year from the confirmed date of purchase of the original buyer and that upon written notice of any such defect, Seller will, at its option, repair or replace the defective item under the terms of this warranty, subject to the provisions and specific exclusions listed herein.

This warranty shall not apply to equipment that has been previously repaired or altered outside our plant in any way as to, in the judgment of the manufacturer, affect its reliability. Nor will it apply if the equipment has been used in a manner exceeding its specifications or if the serial number has been removed.

Seller does not assume any liability for consequential damages as a result from our products uses, and in any event our liability shall not exceed the original selling price of the equipment.

The equipment warranty shall constitute the sole and exclusive remedy of any Buyer of Seller equipment and the sole and exclusive liability of the Seller, its successors or assigns, in connection with equipment purchased and in lieu of all other warranties expressed implied or statutory, including, but not limited to, any implied warranty of merchant ability or fitness and all other obligations or liabilities of seller, its successors or assigns.

The equipment must be returned postage-prepaid. Package it securely and insure it. You will be charged for parts and labor if you lack proof of date of purchase, or if the warranty period is expired.