

# **NuDAQ PCI and NuIPC CompactPCI DAQ Cards**

## **Software Installation Guide**



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Product Model			
Environment to Use	OS _____ Computer Brand _____ MB :                      CPU : Chipset :                      Bios : Video Card : Network Interface Card : Other :		
Challenge Description			
Suggestions for ADLink			

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# 1

## DOS

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### 1.1 DOS Borland C and Microsoft C Library and Utility

In the following sections, we use PCI-7230/cPCI-7230 as an example to show how to install the software utilities and drivers. The installation procedure of the other PCI cards is the same as PCI-7230.

1. Put **ADLink All-in-One CD** into the appropriate CD-ROM drive.
2. If you use NuDAQ PCI card, type the following commands (*X* indicates the CD-ROM drive):

```
X:\>CD \NuDAQPCI
```

```
X:\NuDAQPCI\DOSSETUP
```

If you use Compact PCI DAQ card, type the following commands:

```
X:\>CD \NuIPC
```

```
X:\NuIPC\DOSSETUP
```

Then the user interface will be shown as follows :

ADLINK NuDAQ PCI Installation Rev. 3.00 (DOS Version)  
(C)CopyRight ADLINK Technology Inc. 2000.3.1

Press UP or DOWN key to select a card, or ESC to exit

PCI6208	ADLINK PCI6208 DAQ Card
PCI6308	ADLINK PCI6308 DAQ Card
PCI7200	ADLINK PCI7200 DAQ Card
PCI7230	ADLINK PCI7230 DAQ Card
PCI7233	ADLINK PCI7233 DAQ Card
PCI7234	ADLINK PCI7234 DAQ Card
PCI7248	ADLINK PCI7248 DAQ Card
PCI7250	ADLINK PCI7250 DAQ Card
PCI7296	ADLINK PCI7296 DAQ Card
PCI7300	ADLINK PCI7300 DAQ Card
PCI7396	ADLINK PCI7396 DAQ Card
PCI7432	ADLINK PCI7432 DAQ Card
PCI7433	ADLINK PCI7433 DAQ Card

Install directory:  
C:\ADLINK

3. Press **Up** or **Down** key to select the type of the card, then press **Enter** key to continue.  
Please also input the directory that you want to install to.

ADLINK NuDAQ PCI Installation Rev. 3.00 (DOS Version)  
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Setup will install PCI6208 in the following directory.

To change to another directory, please input the directory that you want to install.

C:\ADLINK

Press Enter to install, or ESC to back.

Install directory:  
C:\ADLINK

4. Press **Up** or **Down** key to select what kind of the library you want to install.

```
ADLINK NuDAQ PCI Installation   Rev. 3.00 (DOS Version)
(C)CopyRight ADLINK Technology Inc.  2000.3.1
```

```
Press UP or DOWN key to select, or ESC to back

Borland  C  Library, Samples and Utility

Microsoft  C  Library, Samples and Utility
```

```
Install directory:
C:\ADLINK
```

Then the installation will be completed, you can press **Esc** key to exit.

After installation, all the files of the card that you selected will be stored in the installation directory.



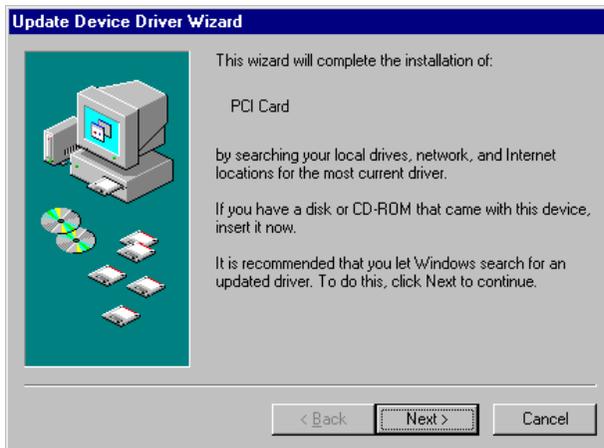
# 2

## Windows 95

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### 2.1 Device Installation

Windows 95 and NuDAQ/NuIPC data acquisition cards work very well together because Windows 95 includes Plug and Play capabilities. Once Windows 95 has started, the Plug and Play function of Windows 95 system will find the new NuDAQ/NuIPC cards. If this is the first time to install NuDAQ/NuIPC cards in your Windows 95 system, you will be informed to input the device information source.



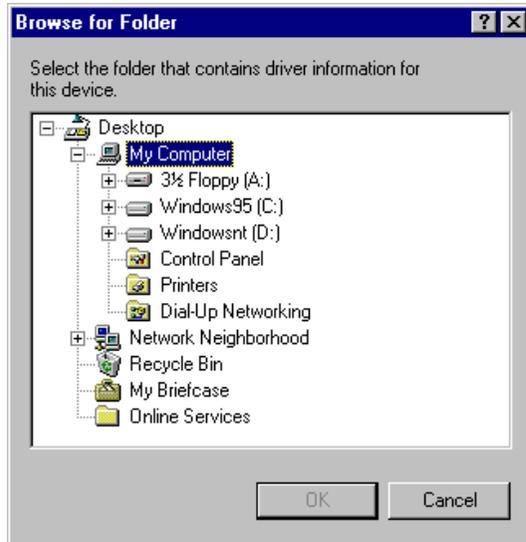
Click **Next** button to go on installing device. The system will search the device information on floppy drive A:. After it failed to load device information from drive A:, the following window is prompted to let you specify the location of device information. Place *ADLink All-in-One CD* into the CD-ROM drive then click **Other Location...** button.



The following window then is prompted for you to specify the location of device information.



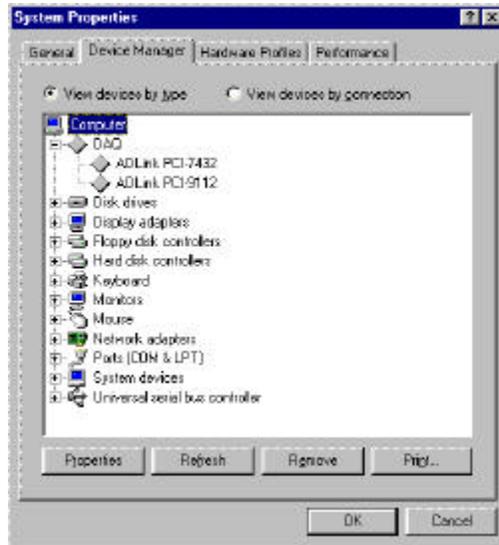
Please click **Browse...** button to invoke the Browser for Folder window, then select the appropriate location for your NuDAQ/NuIPC card.



The device information files (.INF) are located in x:\Win95Inf\  
<model\_number>. (x indicates the CD-ROM drive) For example, the  
device information file Pci7432.inf for PCI-7432 is located in  
x:\Win95Inf\7432.

To ensure the success of hardware device installation, you can open the  
Device Manager in **Start>>Settings>>Control Panel>>System**, and  
then select the **Device Manager** tab.

Under Device Manager, you should find the device in **DAQ**. You can double-click the device, select the **Resources** tab to check if I/O port and IRQ resources for the device are allocated successfully.



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## 2.2 Software Drivers Installation

### 2.2.1 Win95 DLL Software

1. Under Windows 95, put **ADLink All-in-One CD** into the appropriate CD-ROM drive.
2. If autorun setup program is not invoked automatically, please execute **X:\Setup.exe**. (X indicates the CD-ROM drive)
3. Select **NuDAQ PCI** → **PCI-7230** → **Drivers** → **Win95 DLL** to setup PCI-7230 DLL for Windows 95.

Setup first displays a Welcome dialog box. Please click **Next** button to go on installation. Setup then prompts the following dialog box for you to specify the destination directory. The default path is C:\ADLink\7230\w95. If you want to install *PCI-7230 DLL for Windows 95* in another directory, please click **Browse...** button to change the destination directory.



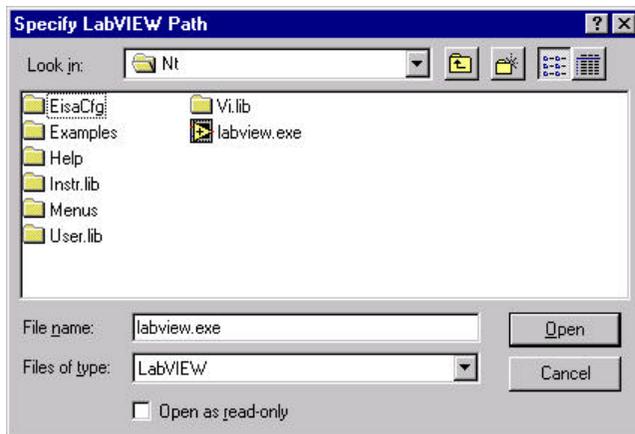
Then you can click **Next** to begin installing *PCI-7230 DLL for Windows 95*.

### 2.2.2 PCIS-LVIEW/95

- step 1.** Place **ADLink All-in-One CD** into the appropriate CD-ROM drive.
- step 2.** If autorun setup program is not invoked automatically, please click the *Start* button on the Taskbar, and then choose *Run*.
- step 3.** Type *x:\setup* (*x* identifies the drive that contains the compact disc) in *Open* text box, and then click *OK*.
- step 4.** Setup first displays the main screen. Select *Software Package*.
- step 5.** Setup then displays the ADLink software product screen. Select *NuDAQ PCI Software*.
- step 6.** In NuDAQ PCI Software screen select *PCIS-LVIEW*. Then select for *Win95* option.

Setup will detect LabVIEW directory and copy necessary files to LabVIEW directory. If you don't have LabVIEW installed in your system or your LabVIEW is earlier than version 5.0, Setup will prompt

a dialog box for you to specify the LabVIEW directory. Please specify your LabVIEW directory, then click **OK** button.



When the installation process completes, the PCIS-LVIEW/95 directory should contain the following files and sub-directories:

Sub-directory	Description
Manual <DIR>	PDF manual files, including User Guide and Function Reference
Help <DIR>	On-line help file
Lib <DIR>	A copy of all library files (.lib). These file are also copied to <LabVIEW Dir>\User.lib directory.
6208 <DIR> 7200 <DIR> 7230 <DIR> ...	library file (.lib) and example programs for each card

All of the PCIS-LVIEW library files should be copied to <LabVIEW Dir>\User.lib. They include 6208.lib, 7200.lib, 7230.lib, ... If you don't find these files in <LabVIEW Dir>\User.lib, please copy them from <PCIS-LVIEW Dir>\Lib.

### 2.2.3 PCIS-VEE/95

- step 1.** Place *ADLink All-in-One CD* into the appropriate CD-ROM drive.
- step 2.** If autorun setup program is not invoked automatically, please click the *Start* button on the Taskbar, and then choose *Run*.

- step 3.** Type `x:\setup` (*x* identifies the drive that contains the compact disc) in *Open* text box, and then click *OK*.
- step 4.** Setup first displays the main screen. Select *Software Package*.
- step 5.** Setup then displays the ADLink software product screen. Select *NuDAQ PCI Software*.
- step 6.** In NuDAQ PCI Software screen select *PCIS-VEE*. Then select *for Win95* option.

When the installation process completes, the PCIS-VEE/95 directory should contain the following files and sub-directories:

<b>File/Sub-directory</b>	<b>Description</b>
Manual <DIR>	PDF manual files
Help <DIR>	On-line help file
7230 <DIR> 7248 <DIR> 7250 <DIR> ...	User objects and sample programs for each card



# 3

## Windows 98

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### 3.1 Device Installation

Windows 98 and NuDAQ/NuIPC data acquisition cards work very well together because Windows 98 includes Plug and Play capabilities. Once Windows 98 has started, the Plug and Play function of Windows 98 system will find the new NuDAQ/NuIPC cards. If this is the first time to install NuDAQ/NuIPC cards in your Windows 98 system and you haven't install ADLink Windows 98 software drivers (PCIS-DASK/98, PCIS-LVIEW/98, DAQBench, etc.), you will be informed to install the device driver.

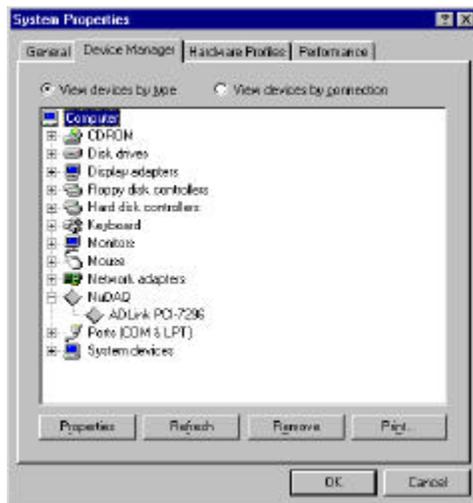


You can click **Next** button to go on installing device. The device information files are located in "DASK98Inf" directory of **ADLink All-in-**

**One CD.** However the device cannot work properly without the software driver files. The installation of any NuDAQ device will get the unsuccessful device installation. Therefore we suggest you just click **Cancel** button to skip it.

After installing any ADLink Windows 98 software driver, the INF files and Driver files are copied into appropriate directories. With the well-installed Device Information Files (.INF) and Device Driver Files (.SYS), Windows 98 system will identify and install any plugged NuDAQ acquisition card automatically at system startup time.

After installing any ADLink Windows 98 software driver then re-entering Windows 98, to ensure the success of hardware device installation, you can open the Device Manager in **Start>>Settings>>Control Panel>>System**, and then select the **Device Manager** tab.



In Device Manager, you should find the device in **NuDAQ**. You can double-click the device, select the **Resources** tab to check if I/O port and IRQ resources for the device are allocated successfully.

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## 3.2 Software Drivers Installation

### 3.2.1 System Requirements

- An IBM PC/AT or compatibles, running Windows 98
- A hard disk with enough disk space to install PCIS-DASK
- A CD-ROM drive or 1.44-MB, 3.5-inch floppy disk drive
- Application development system

**PCIS-DASK:** any Windows 98 programming language that allows calls to a DLL, such as Microsoft Visual C/C++, Microsoft Visual Basic, etc.

**PCIS-LVIEW:** Need National Instruments LabVIEW version 4.0 or later

- NuDAQ PCI-bus or NuIPC CompactPCI data acquisition cards that the software driver supports

### 3.2.2 DLL - *PCIS-DASK98*

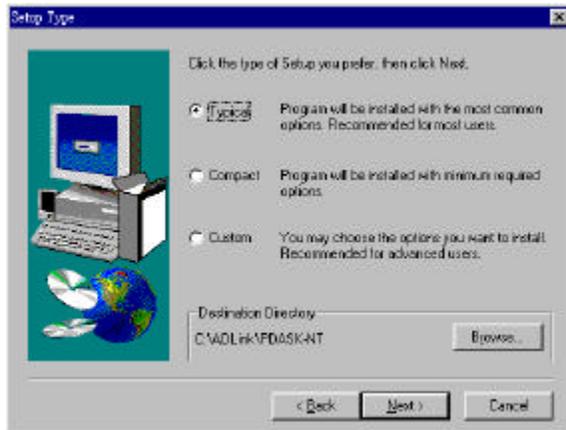
- step 1.** Place *ADLink All-in-One CD* into the appropriate CD-ROM drive.
- step 2.** If autorun setup program is not invoked automatically, please click the *Start* button on the Taskbar, and then choose *Run*.
- step 3.** Type *x:\setup* (*x* identifies the drive that contains the compact disc) in *Open* text box, and then click *OK*.
- step 4.** Setup first displays the main screen. Select *Software Package*.
- step 5.** Setup then displays the ADLink software product screen. Select *NuDAQ PCI Software*.
- step 6.** In NuDAQ PCI Software screen select **PCIS-DASK**. Then select for *Win98* option.

Setup first displays a Welcome dialog box. Please click **Next** button to go on installation.

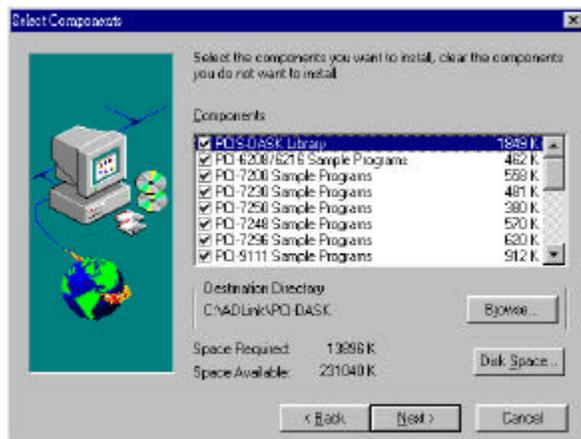
When Setup displays a User Information dialog box, please fill items in the dialog box.

Setup then prompts a dialog box for you to specify the destination directory for **PCIS-DASK**. The default path is *C:\ADLink\Pci-dask*. If you want to install **PCIS-DASK** in another directory, please enter the directory you would like to install **PCIS-DASK**.

Then you click **Next** button and Setup will show the following window:



- ◆ **Typical:** Install all the files that **PCIS-DASK** provides, on the hard disks, *Dll files, Driver files, and all of the sample programs of the cards that PCIS-DASK support, included.*
- ◆ **Compact:** Installs a minimum set of files on your hard disks, *INF files, Dll files, and Driver files included.*
- ◆ **Custom:** The Custom Installation dialog box is coming here for you to select just the sample programs of the cards you want to install. Custom Installation dialog box is shown below.



The selective components include **PCIS-DASK** Library & all of the sample programs **PCIS-DASK** supports. However, for a precise work with **PCIS-DASK**, **PCIS-DASK** Library is the requirement. Here **PCIS-DASK** Library **MUST** be selected.

When the software component installation process is completed, Setup will launch the NuDAQ PCI Configuration Utility, *PciUtil*. This utility accompanied with **PCIS-DASK98** is provided for making card configuration. Please refer to *NuDAQ PCI Configuration Utility* section for the usage of this utility.

If you choose "Typical" option in the "Select Components" window, when the installation process is completed, the PCI-DASK directory should contain the following files and sub-directories:

File/Sub-directory	Description
LIB <DIR>	<b>PCIS-DASK</b> import library and DLL. Pci-Dask.lib for Visual C/C++. Pdask_bc.lib for Borland C++.
INCLUDE <DIR>	Include files for application programming. DASK.BAS for Visual Basic Programming. DASK.H for C/C++ programming. DASK.PAS for Delphi programming.
INF <DIR>	INF files for NuDAQ PCI-cards installation.
HELP <DIR>	On-line help file.
MANUAL<DIR>	PDF manual files, including User Guide and Function Reference.
UTIL<DIR>	Driver Registry utility.
SAMPLES <DIR>	<b>PCIS-DASK</b> sample programs browser, <i>Examples.exe</i> , and various sub-directories for the sample programs of the cards that <b>PCIS-DASK</b> supports.

After installing **PCIS-DASK**, the INF files and Driver files are copied into appropriate directories. With the well-installed Device Information Files (.INF) and Device Driver Files (.SYS), Windows 98 system will identify and install any new plugged NuDAQ acquisition card automatically.

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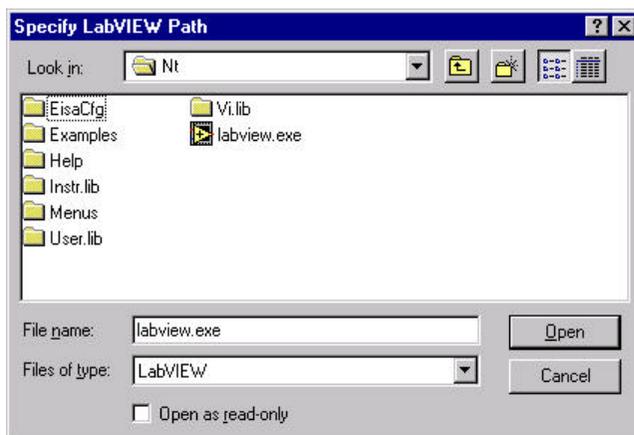
**Note:** ADLink will periodically upgrades **PCIS-DASK** to add support for new NuDAQ PCI-bus and NuIPC CompactPCI data acquisition cards, and the additional driver files for the new devices will be included. Please refer to **PCIS-DASK Read Me** in **PCIS-DASK** folder for the current card types that **PCIS-DASK** actually supports.

---

### 3.2.3 PCIS-LVIEW98

- step 1.** Place *ADLink All-in-One CD* into the appropriate CD drive.
- step 2.** If autorun setup program is not invoked automatically, please click the *Start* button on the Taskbar, and then choose *Run*.
- step 3.** Type *x:\setup* (*x* identifies the drive that contains the compact disc) in *Open* text box, and then click *OK*.
- step 4.** Setup first displays the main screen. Select *Software Package*.
- step 5.** Setup then displays the ADLink software product screen. Select *NuDAQ PCI Software*.
- step 6.** In NuDAQ PCI Software screen select **PCIS-LVIEW**. Then select for *Win98* option.

Setup will detect LabVIEW directory and copy necessary files to LabVIEW directory. If you don't have LabVIEW installed in your system or your LabVIEW is earlier than version 5.0, Setup will prompt a dialog box for you to specify the LabVIEW directory. Please specify your LabVIEW directory then click **OK** button.



When the software component installation process is completed, Setup will launch the NuDAQ PCI Configuration Utility, *PciUtil*. This utility accompanied with **PCIS-DASK/98** is provided for making card configuration. Please refer to *NuDAQ PCI Configuration Utility* section for the usage of this utility.

When the installation process is completed, the **PCIS-LVIEW/98** directory should contain the following files and sub-directories:

File / Sub-directory	Description
Plv.lib	A copy of <b>PCIS-LVIEW</b> VI library. It is also copied to <LabVIEW Dir>\User.lib directory.
Util <DIR>	NuDAQ PCI Configuration utility
Manual <DIR>	PDF manual files, including User Guide and Function Reference
Help <DIR>	On-line help file
Menus <DIR>	.mnu files. They are also copied to <LabVIEW Dir>\Menus\adlink directory.
6208 Samples <DIR> 7200 Samples <DIR> 7230 Samples <DIR> ...	sample programs for each kind of card

Please check if the following files are copied to your LabVIEW directory.

1. If Plv.lib doesn't exist in <LabVIEW Dir>\User.lib directory, please copy it from <**PCIS-LVIEW** Dir>.
2. If <LabVIEW Dir>\Menus doesn't have *adlink* sub-directory, or there is no file exists in *adlink* sub-directory, please copy all files in <**PCIS-LVIEW** Dir>\Menus to <LabVIEW Dir>\Menus\adlink directory.

After installing **PCIS-DASK**, the INF files and Driver files are copied into appropriate directories. With the well-installed Device Information Files (.INF) and Device Driver Files (.SYS), Windows 98 system will identify and install any new plugged NuDAQ acquisition card automatically.

### 3.2.4 **PCIS-VEE/98**

The native Windows 98 HP VEE driver is not available. You can use **PCIS-VEE/95** in Windows 98. However then you have to install

Windows 95 device. Please refer to *Windows 95* section for the details of installation Windows 95 device.

# 4

## Windows NT 4.0

---

### 4.1 Software Drivers Installation

#### 4.1.1 System Requirements

- An IBM PC/AT or compatibles, running Windows NT version 4.0 or later
- A hard disk with enough disk space to install **PCIS-DASK**
- A CD-ROM drive or 1.44-MB, 3.5-inch floppy drive
- Application development system

**PCIS-DASK:** Any Windows NT programming language that allows calls to a DLL, such as Microsoft Visual C/C++, Microsoft Visual Basic, etc.

**PCIS-LVIEW:** National Instruments LabVIEW version 4.0 or later

**PCIS-VEE:** HP VEE version 4.0 or later

- NuDAQ PCI-bus or NuIPC CompactPCI data acquisition cards those the software driver supports

#### 4.1.2 DLL - **PCIS-DASKNT**

- step 1.** Place *ADLink All-in-One CD* into the appropriate CD-ROM drive.
- step 2.** If autorun setup program is not invoked automatically, please click the *Start* button on the Taskbar, and then choose *Run*.
- step 3.** Type `x:\setup` (*x* identifies the drive that contains the compact

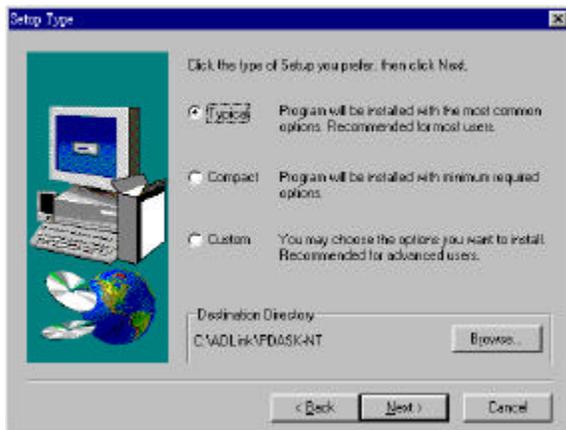
- disc) in *Open* text box, and then click *OK*.
- step 4.** Setup first displays the main screen. Select *Software Package*.
  - step 5.** Setup then displays the ADLink software product screen. Select *NuDAQ PCI Software*.
  - step 6.** In NuDAQ PCI Software screen select ***PCIS-DASK***. Then select for *WinNT* option.

Setup first displays a Welcome dialog box. Please click **Next** button to go on installation.

When Setup displays a User Information dialog box, please fill items in the dialog box.

Setup then prompts a dialog box for you to specify the destination directory for ***PCIS-DASK***. The default path is C:\ADLink\Pci-dask. If you want to install ***PCIS-DASK*** in another directory, please enter the directory you would like to install ***PCIS-DASK***.

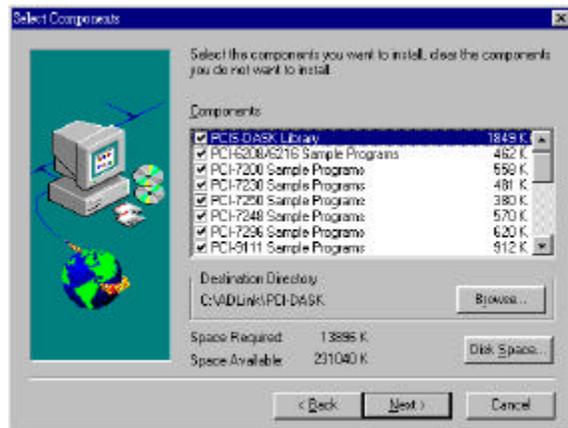
Then you click **Next** button and Setup will show the following window:



You can install ***PCIS-DASK*** in one of the following ways:

- ◆ **Typical:** Install all the files that ***PCIS-DASK*** provides onto the hard disks, *Dll files, Driver files, and all of the sample programs of the cards that PCIS-DASK supports, included.*
- ◆ **Compact:** Install a minimum set of files onto your hard disks. *Dll files, and Driver files, included.*

- ◆ **Custom:** The Custom Installation dialog box is coming here for you to select just the sample programs of the cards you want to install. Custom Installation dialog box is shown below.



The selective components include **PCIS-DASK** Library and all of the sample programs **PCIS-DASK** supports. However, for a precise work with **PCIS-DASK**, **PCIS-DASK** Library is the requirement. **PCIS-DASK** Library **MUST** be selected.

When the software component installation process is completed, Setup will launch the NuDAQ PCI Configuration Utility, *PciUtil*. This utility accompanied with **PCIS-DASK/NT** is provided for making the driver registries and card configuration. Please refer to *NuDAQ PCI Configuration Utility* section for the usage of this utility.

If you choose “Typical” option in the “Select Components” window, when the installation process is completed, the **PCIS-DASK** directory should contain the following files and sub-directories:

File/Sub-directory	Description
LIB <DIR>	<b>PCIS-DASK</b> import library and DLL. Pci-Dask.lib for Visual C/C++. Pdask_bc.lib for Borland C++.
INCLUDE <DIR>	Include files for application programming. DASK.BAS for Visual Basic Programming. DASK.H for C/C++ programming. DASK.PAS for Delphi programming.
HELP <DIR>	On-line help file.

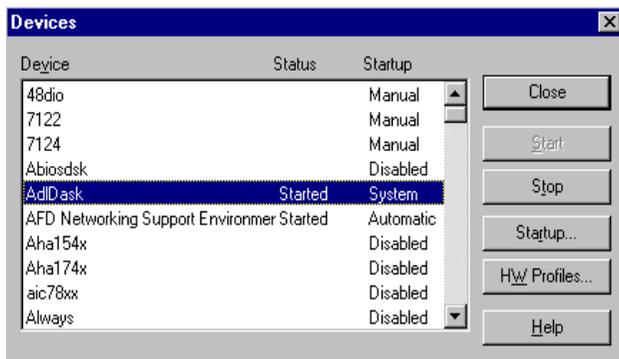
MANUAL<DIR>	PDF manual files, including User Guide and Function Reference.
UTIL<DIR>	Driver Registry utility.
SAMPLES <DIR>	<b>PCIS-DASK</b> sample programs browser, <i>Examples.exe</i> , and various sub-directories for the sample programs of the cards that <b>PCIS-DASK</b> supports.

---

**Note:** ADLink will periodically upgrades **PCIS-DASK** to add support for new NuDAQ PCI-bus and NuIPC CompactPCI data acquisition cards, and the additional driver files for the new devices will be included. Please refer to **PCIS-DASK** Read Me in **PCIS-DASK** folder for the current card types that **PCIS-DASK** actually supports.

---

After re-entering Windows NT and the NuDAQ devices you wish to operate have been plugged in your computer, make sure the **PCIS-DASK** device drivers corresponding to those NuDAQ cards are already started. For **PCIS-DASK** to be able to communicate with NuDAQ PCI-bus card, device driver AdIDask as well as the card's own device driver (e.g. PCI6208, PCI7200, PCI7230, PCI7234, PCI7248, PCI7250, PCI7252, PCI7296, PCI7300A\_RevA, PCI7300A\_RevB, PCI7432, PCI7433, PCI7434, PCI8554, PCI9111, PCI9112, PCI9113, PCI9114, PCI9118, or PCI9812, etc.) must be started. You can open the "Control Panel", double-click "Devices", and a Devices window will be shown as below.



If the device status is none, you have to select the AdIDask and our device from the device list and then press the "Start" button.

---

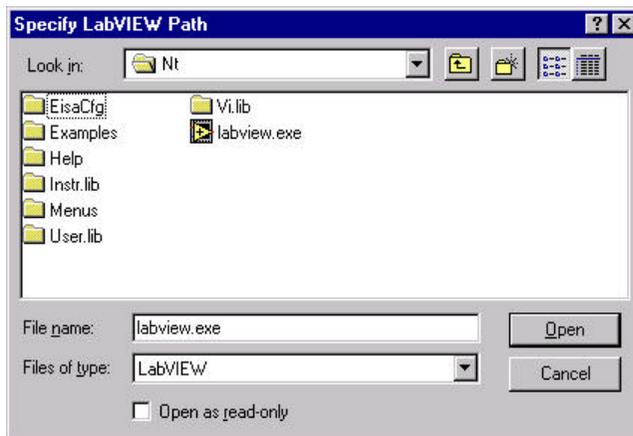
**Note:** The AdIDask driver must have been started as you set the card's own device driver status as started.

---

### 4.1.3 PCIS-LVIEW/NT

- step 1.** Place *ADLink All-in-One CD* into the appropriate CD-ROM drive.
- step 2.** If autorun setup program is not invoked automatically, please click the *Start* button on the Taskbar, and then choose *Run*.
- step 3.** Type *x:\setup* (*x* identifies the drive that contains the compact disc) in *Open* text box, and then click *OK*.
- step 4.** Setup first displays the main screen. Select *Software Package*.
- step 5.** Setup then displays the ADLink software product screen. Select *NuDAQ PCI Software*.
- step 6.** In NuDAQ PCI Software screen select **PCIS-LVIEW**. Then select for *WinNT* option.

Setup will detect LabVIEW directory and copy necessary files to LabVIEW directory. If you don't have LabVIEW installed in your system or your LabVIEW is earlier than version 5.0, Setup will prompt a dialog box for you to specify the LabVIEW directory. Please specify your LabVIEW directory then click **OK** button.



When the software component installation process is completed, Setup will launch the NuDAQ PCI Configuration Utility, *PciUtil*. This utility accompanied with **PCIS-LVIEW/NT** is provided for making the

driver registries and card configuration. Please refer to *NuDAQ PCI Configuration Utility* section for the usage of this utility.

When the installation process is completed, the **PCIS-LVIEW/NT** directory should contain the following files and sub-directories:

File / Sub-directory	Description
Plv.lib	A copy of <b>PCIS-LVIEW</b> VI library. It is also copied to <LabVIEW Dir>\User.lib directory.
Util <DIR>	PCI NT Driver Registry utility
Manual <DIR>	PDF manual files, including User Guide and Function Reference
Help <DIR>	On-line help file
Menus <DIR>	.mnu files. They are also copied to <LabVIEW Dir>\Menus\adlink directory.
6208 Samples <DIR> 7200 Samples <DIR> 7230 Samples <DIR> ...	sample programs for each kind of card

Please check if the following files are copied to your LabVIEW directory.

1. If Plv.lib doesn't exist in <LabVIEW Dir>\User.lib directory, please copy it from <**PCIS-LVIEW** Dir>.
2. If <LabVIEW Dir>\Menus doesn't have *adlink* sub-directory, or there is no file exists in *adlink* sub-directory, please copy all files in <**PCIS-LVIEW** Dir>\Menus to <LabVIEW Dir>\Menus\adlink directory.

#### 4.1.4 PCIS-VEE/NT

- step 1.** Place *ADLink All-in-One CD* into the appropriate CD-ROM drive.
- step 2.** If autorun setup program is not invoked automatically, please click the *Start* button on the Taskbar, and then choose *Run*.
- step 3.** Type *x:\setup* (*x* identifies the drive that contains the compact disc) in *Open* text box, and then click *OK*.
- step 4.** Setup first displays the main screen. Select *Software Package*.
- step 5.** Setup then displays the ADLink software product screen. Select *NuDAQ PCI Software*.
- step 6.** In NuDAQ PCI Software screen select **PCIS-VEE**. Then select *for WinNT* option.

When Setup displays a User Information dialog box, please fill items in the dialog box.

When the software component installation process is completed, Setup will launch the NuDAQ PCI Configuration Utility, *PciUtil*. This utility accompanied with **PCIS-VEE/NT** is provided for making the driver registries and card configuration. Please refer to *NuDAQ PCI Configuration Utility* section for the usage of this utility.

When the installation process is completed, the **PCIS-VEE/NT** directory should contain the following files and sub-directories:

<b>File/Sub-directory</b>	<b>Description</b>
UserObj	<b>PCIS-VEE/NT</b> user objects
Samples <DIR>	Sample programs
Util <DIR>	PCI NT Driver Registry utility
Manual <DIR>	PDF manual files
Help <DIR>	On-line help file



# 5

## Windows 2000

---

### 5.1 Device Installation

Windows 2000 and NuDAQ/NuIPC data acquisition cards work very well together because Windows 2000 includes Plug and Play capabilities. Once Windows 2000 has started, the Plug and Play function of Windows 2000 system will find the new NuDAQ/NuIPC cards. If this is the first time to install NuDAQ/NuIPC cards in your Windows 2000 system and you haven't install ADLink Windows 2000 software drivers (*PCIS-DASK/2000*, etc.), you will be informed to install the device driver.

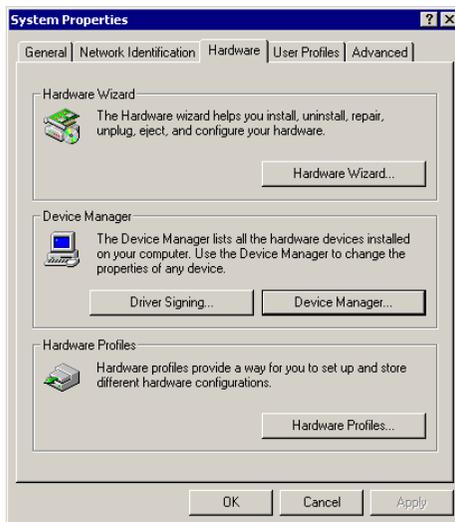


You can click **Next** button to go on installing device. The device information files are located in "DASK2000Inf" directory of *ADLink All-in-One CD*. However the device cannot work properly without the software

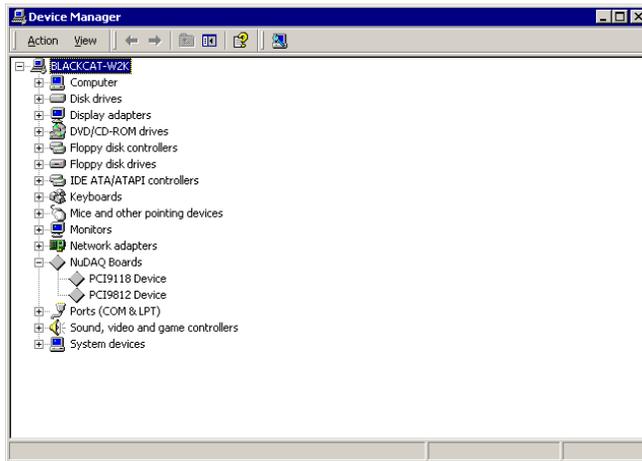
driver files. The installation of any NuDAQ device will get the unsuccessful device installation. Therefore we suggest you just click **Cancel** button to skip it.

After installing ADLink Windows 2000 software drivers, the INF files and Driver files are copied into appropriate directories. With the well-installed Device Information Files (.INF) and Device Driver Files (.SYS), Windows 2000 system will identify and install any plugged NuDAQ acquisition card automatically at system startup time.

After installing any ADLink Windows 2000 software driver then re-entering Windows 2000, to ensure the success of hardware device installation, you can open the Device Manager in **Start>>Settings>>Control Panel>>System**, and then select the **Hardware** tab.



In Device Manager, you should find the device in **NuDAQ Boards**. You can double-click the device, select the **Resources** tab to check if I/O port and IRQ resources for the device are allocated successfully.



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## 5.2 Software Drivers Installation

### 5.2.1 System Requirements

- An IBM PC/AT or compatibles, running Windows 2000
- A hard disk with enough disk space to install **PCIS-DASK**
- A CD-ROM drive or 1.44-MB, 3.5-inch floppy disk drive
- Application development system

**PCIS-DASK:** Any Windows 2000 programming language that allows calls to a DLL, such as Microsoft Visual C/C++, Microsoft Visual Basic, etc.

- NuDAQ PCI-bus or NuIPC CompactPCI data acquisition cards the **PCIS-DASK** supports

### 5.2.2 DLL - **PCIS-DASK2000**

- step 1.** Place *ADLink All-in-One CD* into the appropriate CD-ROM drive.
- step 2.** If autorun setup program is not invoked automatically, please click the *Start* button on the Taskbar, and then choose *Run*.

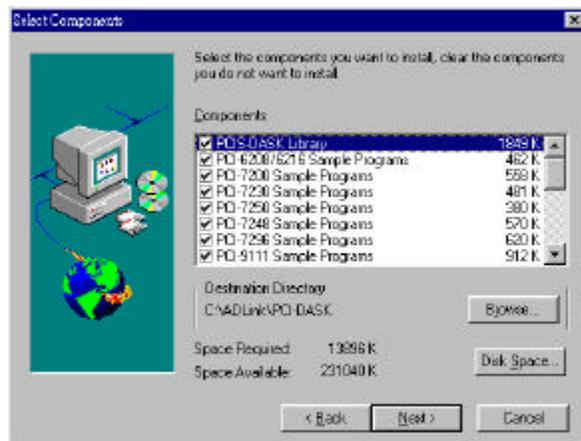
- step 3.** Type `x:\setup` (*x* identifies the drive that contains the compact disc) in *Open* text box, and then click *OK*.
- step 4.** Setup first displays the main screen. Select *Software Package*.
- step 5.** Setup then displays the ADLink software product screen. Select *NuDAQ PCI Software*.
- step 6.** In NuDAQ PCI Software screen select **PCIS-DASK**. Then select for *Win2000* option.

Setup first displays a Welcome dialog box. Please click **Next** button to go on installation.

When Setup displays a User Information dialog box, please fill items in the dialog box.

Setup then prompts a dialog box for you to specify the destination directory for **PCIS-DASK**. The default path is `C:\ADLink\Pci-dask`. If you want to install **PCIS-DASK** in another directory, please enter the directory you would like to install **PCIS-DASK**.

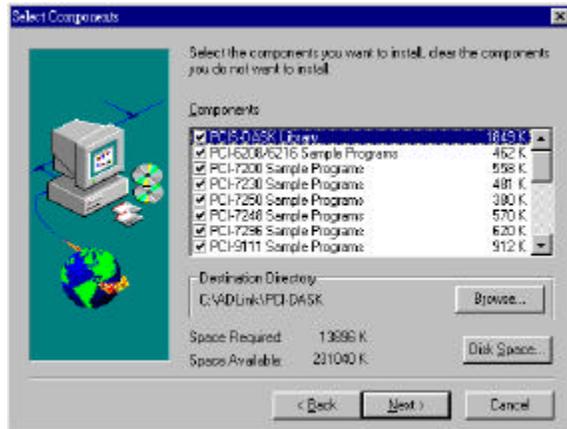
Then you click **Next** button and Setup will show the following window:



You can install **PCIS-DASK** in one of the following ways:

- ◆ **Typical:** Install all the files that **PCIS-DASK** provides, on the hard disks, *Dll files*, *Driver files*, and *all of the sample programs of the cards that PCIS-DASK support, included*.

- ◆ **Compact:** Installs a minimum set of files on your hard disks, *INF files, DLL files, and Driver files included.*
- ◆ **Custom:** The Custom Installation dialog box is coming here for you to select just the sample programs of the cards you want to install. Custom Installation dialog box is shown below.



The selective components include **PCIS-DASK** Library & all of the sample programs **PCIS-DASK** supports. However, for a precise work with **PCIS-DASK**, **PCIS-DASK** Library is the requirement. Here **PCIS-DASK** Library **MUST** be selected.

When the software component installation process is completed, Setup will launch the NuDAQ PCI Configuration Utility, *PciUtil*. This utility accompanied with **PCIS-DASK/2000** is provided for making card configuration. Please refer to *NuDAQ PCI Configuration Utility* section for the usage of this utility.

If you choose “Typical” option in the “Select Components” window, when the installation process is completed, the PCI-DASK directory should contain the following files and sub-directories:

File/Sub-directory	Description
LIB <DIR>	<b>PCIS-DASK</b> import library and DLL. Pci-Dask.lib for Visual C/C++. Pdask_bc.lib for Borland C++.

INCLUDE <DIR>	Include files for application programming. DASK.BAS for Visual Basic Programming. DASK.H for C/C++ programming. DASK.PAS for Delphi programming.
INF <DIR>	INF files for NuDAQ PCI-cards installation.
HELP <DIR>	On-line help file.
MANUAL<DIR>	PDF manual files, including User Guide and Function Reference.
UTIL<DIR>	Driver Registry utility.
SAMPLES <DIR>	<b>PCIS-DASK</b> sample programs browser, <i>Examples.exe</i> , and various sub-directories for the sample programs of the cards that <b>PCIS-DASK</b> supports.

After installing **PCIS-DASK**, the INF files and Driver files are copied into appropriate directories. With the well-installed Device Information Files (.INF) and Device Driver Files (.SYS), Win2000 system will identify and install any new plugged NuDAQ acquisition card automatically.

---

**Note:** ADLink will periodically upgrades **PCIS-DASK** to add support for new NuDAQ PCI-bus and NuIPC CompactPCI data acquisition cards, and the additional driver files for the new devices will be included. Please refer to **PCIS-DASK Read Me** in **PCIS-DASK** folder for the current card types that **PCIS-DASK** actually supports.

---

# 6

## Linux

---

### 6.1 Software Drivers Installation

#### 6.1.1 System Requirements

- An IBM PC/AT or compatibles, running Linux Kernel 2.2.x
- A hard disk with enough disk space to install **PCIS-DASK**
- A CD-ROM drive or 1.44-MB, 3.5-inch floppy disk drive
- Application development system

**PCIS-DASK:** Using the appropriated C/C++ compiler (gcc or cc) to compile the program .

- NuDAQ PCI-bus or NuIPC CompactPCI data acquisition cards the **PCIS-DASK** supports

#### 6.1.2 Install PCIS-DASK

##### step 1 . UNPACK

Place *ADLink All-in-One CD* into the appropriate CD-ROM drive.  
Decompress the *Pdask-Lx.tgz* in */Software/Pcis-dask/Linux* directory.  
ex.

```
tar xvzf Pdask-Lx.tgz
```

This will extract the *pci-dask\_xxx* ( where 'xxx' in *pci-dask\_xxx* is the version number ) directory with the following subdirectories:

File/Sub-directory	Description
lib <DIR>	<b>PCIS-DASK</b> shared library . libpci-dask.so for linux.

Include <DIR>	Include files for application programming. dask.h for C/C++ programming.
drivers <DIR>	Kernel modules for NuDAQ PCI-cards. High_Memory Management Module Installation Script
docs<DIR>	PDF manual files, including User Guide and Function Reference.
samples<DIR>	Some sample programs for NuDAQ device
util<DIR>	Driver Configuration utility.

## step 2 . RESERVE MEMORY

\*\*\* **Note: If your DO NOT perform any continuous operation, \*\*\*  
 \*\*\* you can skip this section and jump to step3. \*\*\***

For contiguous memory allocation, we reserve memory in higher memory space. And to reserve higher memory for drivers, user should pass a command line argument to the kernel. User can either use "append=" in /etc/lilo.conf or add commandline arguments to the *Lilo* interactive prompt at boot time. If you add "append=" in /etc/lilo.conf, you should execute */sbin/lilo* to update the setting.

For example, if you have 64MB RAM and reserve 4MB memory for devices:

In lilo.conf:

```
boot=/dev/hda
prompt

image=/boot/vmlinuz-2.2.12-20
label=linux
initrd=/boot/initrd-2.2.12-20.img
read-only
root=/dev/hda9
append="mem=60M"
```

Or, *Lilo* interactive prompt :

```
LILO: linux mem=60M
```

## step 3 . DEVICE INSTALLATION

Because the architecture of PCI bus, the *NuDAQ PCI* devices can be detected automatically. All user has to do is inserting modules and making nodes for the devices.

You can do these manually, or use the applets we provide.

- *pci-dask\_xxx/util/dask\_conf* for driver configuration
  - *pci-dask\_xxx/drivers/dask\_inst.pl* for driver installation
- The *dask\_conf* can configure device drivers, and save the information of devices into *pcidask.conf*. (please refer to *section 7.4* )

By the configuration file, *pcidask.conf*, the installation script inserts the device modules configured before and the memory management module if required. Then the script makes device nodes according to the number of cards. To make installation, execute the script as follows:

```
<InstallDir>/pci-dask_xxx/drivers/dask_inst.pl
```

#### **step 4 . INSTALL LIBRARY**

The library is provided as a shared library for Linux. To install the library, type the following command:

```
cp libpci_dask.so /usr/lib
```

In addition, *dask\_inst.pl* also involves the installation for the library.

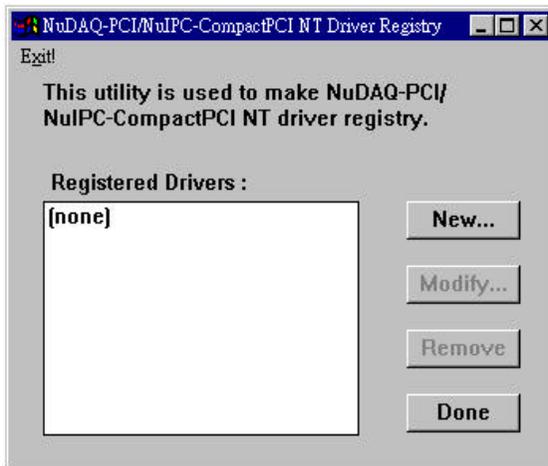
# NuDAQ PCI Configuration Utility

NuDAQ PCI Configuration Utility, *PciUtil*, is used to **set/modify** the allocated buffer sizes of continuous AI, AO, DI and DO operations.

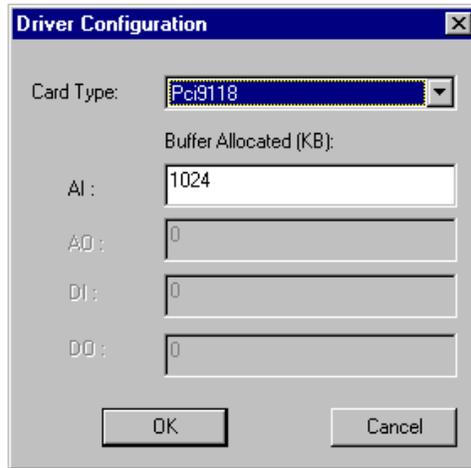
---

## 7.1 Windows NT 4.0

The main window of NuDAQ PCI Configuration utility, *PciUtil*, is shown as the following window. In Windows NT system, if any PCI card driver has been registered, it will be shown on the *Registered Driver* list.

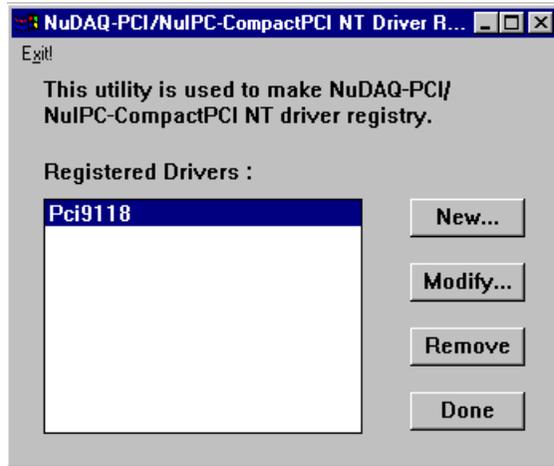


To register one of PCI card drivers, click **New...** button and a *Driver Configuration* window appears.



In this window, users can select the driver you want to register and input the parameters in the box corresponding to AI, AO, DI, or DO for the requirement of your applications. The "Buffer Allocated" of AI, AO, DI, DO represent the sizes of contiguous Initially Allocated memory for continuous analog input, analog output, digital input, digital output respectively. Its unit is Kbytes, i.e. 1024 bytes. Device driver will try to allocate these sizes of memory at system startup time. If system is not able to provide the memory as size specified, the device driver will allocate the memory as large as it can. You can use AI/DI/DO\_InitialMemoryAllocated function to get the memory size allocated. Only the fields that are available for this card type are enabled, the others are grayed. The size of initially allocated memory is the maximum memory size that DMA or Interrupt transfer can be performed. It will induce an unexpected result in that DMA or Interrupt transfer performed exceeds the initially allocated size.

After the device configurations of the driver you select is finished, click OK button to register the driver and return to the *PciUtil* main window. The driver you just registered will be shown on the registered driver list as the following figure:

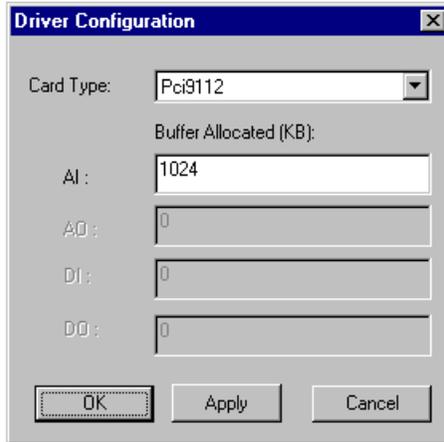


Then you can select **Exit!** command in the menu bar or **Done** button to exit the driver registry utility. To make the registered drivers work, you have to restart Windows NT system.

---

## 7.2 Windows 98

The main window of NuDAQ PCI Configuration utility, *PciUtil*, is shown as the following window.



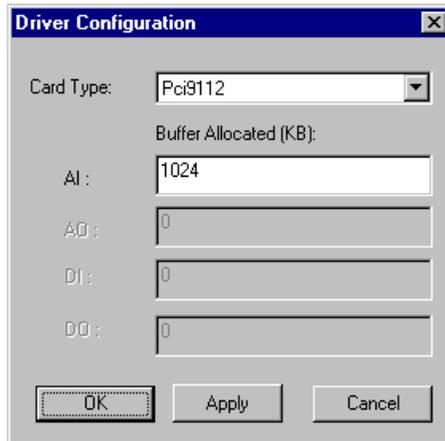
From this window, user can select the driver you want to configure and type the value in the box corresponding to AI, AO, DI, or DO according to the requirement of your applications. The “Buffer Allocated” of AI, AO, DI, DO represent the sizes of contiguous Initially Allocated memory for continuous analog input, analog output, digital input, digital output respectively. Its unit is Kbytes, i.e. 1024 bytes. Device driver will try to allocate these sizes of memory at system startup time. If system is not able to provide the memory as size specified, the device driver will allocate the memory as large as it can. You can use `AI/DI/DO_InitialMemoryAllocated` function to get the memory size allocated. Only the fields that are available for this card type are enabled, the others are grayed. The size of initially allocated memory is the maximum memory size that DMA or Interrupt transfer can be performed. It will induce an unexpected result in that DMA or Interrupt transfer performed exceeds the initially allocated size.

After one device configuration of the driver you select is finished, click “Apply”. While all of the device configurations you wish to modify are done, click **OK** to exit the NuDAQ PCI configuration utility. To make the configuration modification effective, you have to restart Windows 98 system.

---

## 7.3 Windows 2000

The main window of NuDAQ PCI Configuration utility, *PciUtil*, is shown as the following window.



From this window, user can select the driver you want to configure and type the value in the box corresponding to AI, AO, DI, or DO according to the requirement of your applications. The “Buffer Allocated” of AI, AO, DI, DO represent the sizes of contiguous Initially Allocated memory for continuous analog input, analog output, digital input, digital output respectively. Its unit is Kbytes, i.e. 1024 bytes. Device driver will try to allocate these sizes of memory at system startup time. If system is not able to provide the memory as size specified, the device driver will allocate the memory as large as it can. You can use AI/DI/DO\_InitialMemoryAllocated function to get the memory size allocated. Only the fields that are available for this card type are enabled, the others are grayed. The size of initially allocated memory is the maximum memory size that DMA or Interrupt transfer can be performed. It will induce an unexpected result in that DMA or Interrupt transfer performed exceeds the initially allocated size.

After one device configuration of the driver you select is finished, click “Apply”. While all of the device configurations you wish to modify are done, click **OK** to exit the NuDAQ PCI configuration utility. To make the configuration modification effective, you have to restart Windows 2000 system.

---

## 7.4 Linux

*dask\_conf* is used for the users to **configure** PCIS-DASK drivers, **remove** configured drivers, and **set/modify** the allocated buffer sizes of AI, AO, DI and DO. The default location of this utility is *pci-dask\_xxx/util* directory.

The *dask\_util* main screen is shown as following. If any PCIS-DASK driver has been configured, it will be shown on the *Configured Driver* list.

```
===== Configured Cards =====
Card Type   Cards   Buffer Size [unit: pages(4KB/page)]
           AI      AO      DI      DO
-----
PCI6208     1        0        0        0        0
PCI6308     2        0        0        0        0
PCI7200     3        0        0        0        0

=====
<1>PCI6208 <2>PCI6308 <3>PCI7200 <4>PCI7230 <5>PCI7233
<6>PCI7234 <7>PCI7248 <8>PCI7249 <9>PCI7250 <10>PCI7252
<11>PCI7296 <12>PCI7432 <13>PCI7433 <14>PCI7434 <15>PCI9111
Select the card type for configuration, or '0' to exit:|
```

To configure one of the PCIS-DASK drivers, type the number corresponding to the Card Type and a *Driver Configuration* screen appears.

```
*****
*****          DASK LINUX Configuration Utility          *****
*****

Card_Type : PCI9111

How many PCI9111 adapters in your machine : 1
Memory pages for AI function ( 1 Mem_Page = 4 KB ) : 4
```

In this screen, users can input the number of cards and buffer size for continuous operation. To be platform-independent, the buffer size is set by the memory-page. The PAGE\_SIZE in Intel platform is four kilo-byte. The "Memory Pages" of AI, AO, DI, DO represent the page sizes of contiguous Initially Allocated memory for continuous analog input,

analog output, digital input, digital output respectively. Device driver will allocate these sizes of memory from the memory management module.

After the device configurations of the driver you select is finished, type "Y" to confirm the input data and return to the *dask\_confmain* screen. The driver you just configured will be shown on the configured driver list as the following figure:

```

===== Configured Cards =====
Card Type   Cards   Buffer Size [unit: pages(4KB/page)]
           AI      AO      DI      DO
-----
PCI6208     1       0       0       0       0
PCI6308     2       0       0       0       0
PCI7200     3       0       0       0       0
PCI9111     1       4       0       0       0

=====
(1)PCI6208 (2)PCI6308 (3)PCI7200 (4)PCI7230 (5)PCI7233
(6)PCI7234 (7)PCI7248 (8)PCI7249 (9)PCI7250 (10)PCI7252
(11)PCI7296 (12)PCI7432 (13)PCI7433 (14)PCI7434 (15)PCI9111
Select the card type for configuration, or '0' to exit:

```

To **modify** the configuration, including number of cards and the buffer size, you just select the driver and assign the settings again. Similarly, if the number of cards is set to zero, configuration for the selected driver will be **removed**.

```

*****
*****      DASK LINUX Configuration Utility      *****
*****
Card_Type : PCI9111

How many PCI9111 adapters in your machine : 0
Memory pages for AI function ( 1 Mem_Page = 4 KB ) : 0

The setting for PCI9111 :
-----
AI:0 Pages AO:0 Pages DI:0 Pages DO:0 Pages for 0 PCI9111 Cards

** The Cards for PCI9111 is zero, that will remove PCI9111 **
** from configuration list. **

are these correct (Y/N) ? _

```

When the configuration is finished, the information of devices will be saved into pci-dask\_XXX/drivers/pcidask.conf.

The content of "pcidask.conf" is similar to the following :

```
===== Configured Cards =====  
Card Type   Cards   Buffer Size [unit: pages(4KB/page)]  
           AI     AO     DI     DO  
-----  
PCI6208     1       0      0      0      0  
PCI6308     2       0      0      0      0  
PCI7200     3       0      0      0      0  
PCI9111     1       4      0      0      0
```



# 8

## Software Un-Installation

---

### Windows 95/98/NT/2000

All ADLink's Windows 95/98/NT/2000 software has the capability of automatic un-installation.

To un-install software, open the **Control Panel**, double-click **Add/Remove Programs**, select the software you want to un-install.

---

### Linux

To remove *PCIS-DASK* for linux, execute the Un-installation script, **dask\_remove.pl**, in *pci-dask/util* directory. Then the script will remove the device nodes made in */dev* and the library copied into */usr/lib*.



# 9

## Trouble Shooting

---

### 9.1 PCI\_SCAN Utility

A software utility "PCI\_SCAN.EXE" is released to help you to diagnostic the PCI card installation problem. It is located in *PCI\_SCAN/DOS* directory of **ADLink All-in-One CD**. You can also download it from our web site, <http://www.adlink.com.tw>.

#### (a) Why PCI card can not be installed well?

The PCI card installation problem may happens according to the following situations:

1. BIOS Setting
2. BIOS Compatibility
3. OS Device Driver Installation
4. OS Compatibility
5. Software Library Installation
6. Hardware failure

#### (b) What problem can be diagnostic by "PCI\_SCAN.EXE"?

PCI\_SCAN utility is used to help to list the BIOS setting under DOS. It can not solve the installation problem. But you can use it to list the system PCI resources, check if BIOS has assigned resource to your PCI I/O cards, and check if the BIOS assign conflict resources to different I/O devices.

This utility is executed under DOS, it is used to diagnostic the BIOS compatibility and DOS installation problem.

**(c) How to use this utility?**

Whenever your card can not install or function well, please run this utility at first.

1. When the system is power on, the BIOS will assign resource to the PCI add-on card.
2. This utility must run under pure DOS mode. It call the BIOS to list all the PCI resource in your computer, and show the resource on the screen.
3. It will record the BIOS setting to a log file "PCI\_SCAN.LOG".
4. Due to some OS (like Windows 98) may change the BIOS default setting, the I/O cards resource getting under Windows 98 or NT may different from which get under pure DOS environment. Therefore, we recommend you to run this utility under pure DOS.

**(d) What is the usage of the log file?**

If there is a installation problem, please send us the Log file. We can help you to diagnostic the BIOS compatibility problem.

**(e) What's next step if the BIOS assignment is without problem?**

1. Windows 95/98/2000: Please compare the BIOS setting with Device Manager. If there is any conflict or unsolved problem of OS installation, Device Manager may show a "!" mark for the PCI device, otherwise, the PCI device has already been correctly installed.
2. Windows NT 4.0: Please compare the BIOS setting with NT Diagnostics.

---

## 9.2 Windows 95/98/NT/2000 Trouble Shooting

**Situation 1: After installation followed by re-entering Windows NT system, the device doesn't work.**

**Actions:**

1. Is the driver made registry or not?. If not, use NuDAQs device configuration utility *PciUtil* to make registry for your device. Please refer to *NuDAQ PCI Configuration Utility* section for the usage of this utility.
2. If the driver has been made registry, check the device status in **Devices** window (*Control Panel>>Devices*). If the device status is none, do as follows:
  - (1) Select the device from the device list and then press the **Start** button.
  - (2) If the device is still not stated after pressing the **Start** button, record the error message shown.
  - (3) Run utility *Ntfdpci*. The utility is located in *PCI\_SCANNT* directory of *ADLink All-in-One CD*. Install the utility, RE-START the system and run **Ntfdpci.exe** in the installed directory.
  - (4) A log file **NtPci.dat** is generated after running *Ntfdpci.exe*. Send us this log file and the *error message* got from step (2), so that we can help you to diagnostic the device installation problem.

**Situation 2: After installation followed by re-entering Windows 98 system, the device doesn't work.**

**Actions:**

1. Is the device installed or Not? If the device was installed correctly by proper INF file, you can find this device under **NuDAQ** class in **Device Manager**. If not, Windows 98 might classify a NuDAQ PCI or NuIPC CompactPCI DAQ device as a generic device and install it in the **Device Manager** under **Other Devices**. PCIS-DASK/98 will not recognize the device as a valid DAQ device.
2. The following steps will correct the problem:
  - (1) Open the Windows 98 **Device Manager**.
    - a. From the **Start** menu, select **Settings>>Control Panel**.
    - b. From the **Control Panel**, double-click on **System**.
    - c. In the **System Properties** dialog box, select the **Device Manager** tab.
  - (2) Under **Other Devices**, remove the entries that correspond to your DAQ devices.
  - (3) Restart your system. Windows 98 will re-identify all of your PCI or CompactPCI DAQ devices. Then please install the device driver

according to the procedures described in *Device Installation in Windows 98* chapter.

**Situation 3: After installation followed by re-entering Windows 95 system, the device doesn't work.**

**Actions:**

1. Is the device installed or Not? If the device was installed correctly by proper INF file, you can find this device under **DAQ** class in **Device Manager**. If not, Windows 95 might classify a NuDAQ PCI or NuIPC CompactPCI DAQ device as a generic device and install it in the **Device Manager** under **Other Devices**. Windows 95 DLL of this device will not recognize the device as a valid DAQ device.
2. The following steps will correct the problem:
  - (1) Open the Windows 95 **Device Manager**.
    - a. From the **Start** menu, select **Settings>>Control Panel**.
    - b. From the **Control Panel**, double-click on **System**.
    - c. In the **System Properties** dialog box, select the **Device Manager** tab.
  - (2) Under **Other Devices**, remove the entries that correspond to your DAQ devices.
  - (3) Restart your system. Windows 95 will re-identify all of your PCI or CompactPCI DAQ devices. Then please install the device driver according to the procedures described in *Device Installation in Windows 95* section.

**Situation 4: If you want to use PCIS-DASK/98, but the devices have been installed with Windows 95 software library?**

**Actions:**

1. Open the Windows 98 **Device Manager**.
  - a. From the **Start** menu, select **Settings>>Control Panel**.
  - b. From the **Control Panel**, double-click on **System**.
  - c. In the **System Properties** dialog box, select the **Device Manager** tab.
2. Under **DAQ**, remove the entries that correspond to your DAQ devices.
3. Restart your system. Windows 98 will re-identify all of your PCI or CompactPCI DAQ devices. Then please install the device driver according to the procedures described in *Device Installation in Windows 98* chapter.

**Situation 5: Performing continuous operations failed**

**Actions:**

1. The size of *initially allocated memory* of AI/DI/DO for your device is not assigned or not large enough. Use NuDAQPCI configuration utility *PciUtil* to set or modify the memory size. Please refer to *NuDAQPCI Configuration Utility* section to know the usage of this utility.
2. The buffer size your program asks for currently exceeds the size of *memory initially allocated*. Use the related memory allocation size report function (e.g. AI\_InitialMemoryAllocated) to check the size value.

**Situation 6: If you plugged new cards before PCIS-DASK installed, you will be informed a unsuccessful device installation (Win 98/2000).**

**Actions:**

1. Because of the un-searchable System Driver Files(.SYS), the device cannot work properly. Solving this problem, you just install the PCIS-DASK Software Kit. After installing PCIS-DASK, the necessary device information files (.INF) and system driver files (.SYS) will be copied into the proper directories. And the devices you installed will work well.