PCIS-LVIEW

LabVIEW™ Interfaces of

NuDAQ PCI Cards for Windows 95/98/NT

Manual Rev. 3.01: August 30, 2000

Trademarks

Getting Service From ADLINK

- **Customer Satisfaction is always the most important thing for ADLink Tech Inc. If you need any help or service, please contact us and get it.**

ADLink Technology Inc.			
Web Site	http://www.adlink.com.tw http://www.adlinktechnology.tw		
Sales & Service	service@adlink.com.tw		
Technical	NuDAQ	nudaq@adlink.com.tw	
Support	NuDAM	nudam@adlink.com.tw	
	NuIPC	nuipc@adlink.com.tw	
	NuPRO	nupro@adlink.com.tw	
	Software	sw@adlink.com.tw	
	AMB	amb@adlink.com.tw	
TEL	+886-2-82265877	FAX	+886-2-82265717
Address	9F, No. 166, Jian Yi Road, Chungho City, Taipei, 235 Taiwan, R.O.C.		

- **Please inform or FAX us of your detailed information for a prompt, satisfactory and constant service.**

Detailed Company Information			
Company/Organization			
Contact Person			
E-mail Address			
Address			
Country			
TEL		FAX	
Web Site			

Questions	
Product Model	
Environment to Use	☐OS : _____ ☐Computer Brand : _____ ☐M/B : ☐CPU : ☐Chipset : ☐Bios : ☐Video Card : ☐Network Interface Card : ☐Other :
Challenge Description	
Suggestions for ADLINK	

Contents

How to Use This Manual

This manual is designed to help you install the PCIS-LVIEW, the LabVIEW driver for NuDAQ PCI-bus data acquisition cards. For the detail description of PCIS-LVIEW VIs, please refer to PCIS-LVIEW on-line help or PDF file format Function Reference. This manual is organized as follows:

- **Chapter 1, "Introduction to PCIS-LVIEW" describes how to program your application by using PCIS-LVIEW.**
- **Chapter 2, "Device Driver Handling in Windows NT/2000/98" describes how to configure the NuDAQ PCI cards NT/2000/98 device driver.**
- **Chapter 3, "PCIS-LVIEW NT/2000/98 Utilities" describes the utilities included in PCIS-LVIEW NT, Win2000, or Win98 version.**
- **Chapter 4, "PCIS-LVIEW NT/2000/98 Overview" briefly describes each VI in PCIS-LVIEW NT, Win2000, and Win98 versions.**
- **Chapter 5, "PCIS-LVIEW/95 Overview" briefly describes each VI in PCIS-LVIEW/95.**

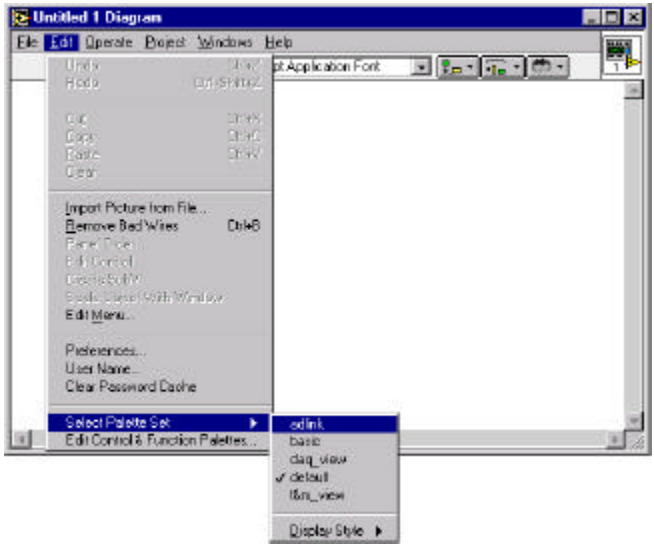
1

Introduction to PCIS-LVIEW

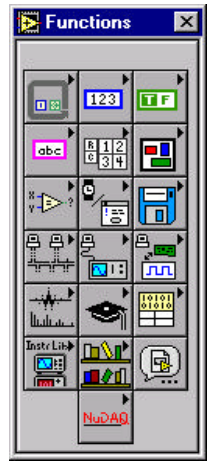
1.1 Using PCIS-LVIEW Vis in LabVIEW

1.1.1 Windows NT/2000/98 Version

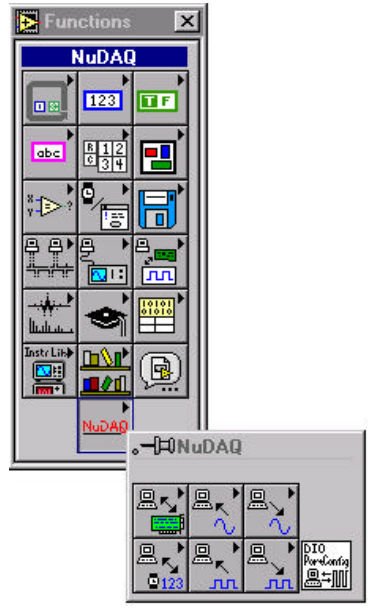
To use PCIS-LVIEW VIs, you may switch the palette to the adlink view. Select Select Palette Set command in the Edit menu from panel or block diagram in LabVIEW. Then select the adlink view from the menu setup ring.



The **Functions** palette then becomes to the following:

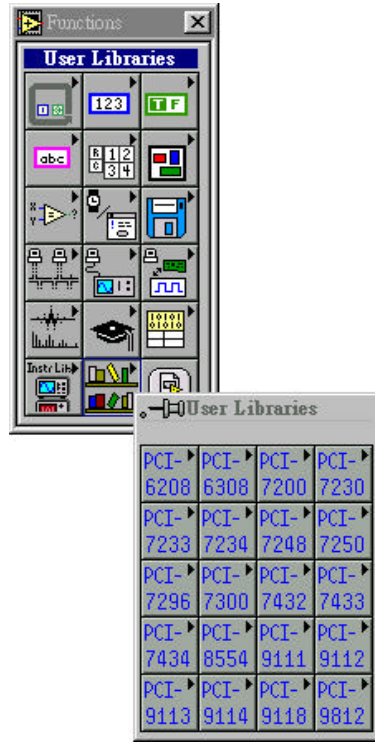


You can find PCIS-LVIEW VIs in **NuDAQ** icon.



1.1.2 Windows 95 Version

You can find the PCIS-LVIEW VIs in the **User Libraries** icon in the **Functions** palette from your block diagram in LabVIEW.



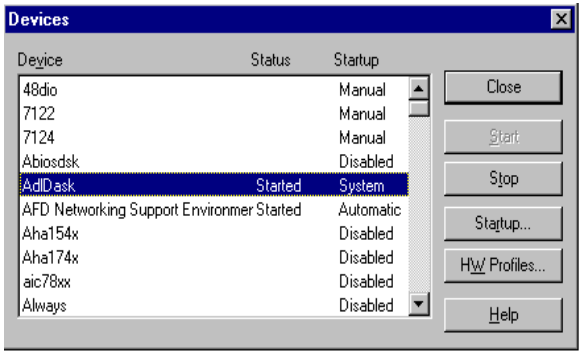
2

Device Driver Handling in Windows NT/2000/98

2.1 NT 4.0 Device Driver

Driver Status

After finishing the installation and re-entering Windows NT, make sure the PCI device drivers are already started. For PCIS-LVIEW/NT to be able to communicate with NuDAQ PCI-bus card, device driver AdlDask as well as the card' s own device driver (e.g. PCI6208, PCI7200, PCI7230, PCI7234, PCI7250, PCI7248, PCI7296, PCI7300, PCI7432, PCI7433, PCI7434, 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 AdlDask, PCI6208, PCI7200, PCI7230, PCI7234, PCI7250, PCI7248, PCI7296, PCI7300, PCI7432, PCI7433, PCI7434, PCI9111, PCI9112, PCI9113, PCI9114, PCI9118, or PCI9812 device and press the "Start" button.

Note: The AdlDask driver must have been started as you press Start button to start the card' s own device driver.

Driver Utility

PCIS-LVIEW/NT provides a utility, PCI Configuration utility (PciUtil). This utility is used to register new PCI drivers, remove installed drivers and modify AI/AO/DI/DO continuous buffer of installed drivers. The allocated buffer sizes 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 page KB, i.e. 1024 bytes. Device driver will try to allocate these sizes of memory at system startup time. If this size of memory is not able to get, driver will allocate as much memory as system can provide. The size of initially allocated memory is the maximum memory sizes 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.

The PCI Configuration utility is installed with PCIS-LVIEW/NT setup program and located in <InstallDir>\Util directory.

Using this utility to install a new driver or set the size of continuous buffer, please refer to the section "NuDAQ PCI Configuration Utility" in the NuDAQ PCI and NuIPC CompactPCI DAQ Cards Software Installation Guide.

2.2 Win2000 or Win98 Device Driver

Once Windows 2000/98 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 2000/98 system, you will be informed to install the device driver. Please follow the procedures described in the section "Device Installation in Windows 2000" or "Device Installation in Windows 98" in the *NuDAQ PCI and NuIPC CompactPCI DAQ Cards Software Installation Guide* to install the device.

Driver Utility

PCIS-LVIEW/98 or PCIS-LVIEW/2000 provides a PCI Configuration Utility (*PciUtil*). This utility is used to ***set/change*** the allocated buffer sizes of AI, AO, DI and DO. The allocated buffer sizes 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 page *KB*, i.e. 1024 bytes. Device driver will try to allocate these sizes of memory at system startup time. If this size of memory is not able to get, driver will allocate as much memory as system can provide. 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.

The *PciUtil* is installed with PCIS-LVIEW/98 or PCIS-LVIEW/2000, and located in <InstallDir>\Util directory.

Using *PciUtil* to ***set/change*** the buffer size, please refer to the section "NuDAQ PCI Configuration Utility" in the *NuDAQ PCI and NuIPC CompactPCI DAQ Cards Software Installation Guide*.

3

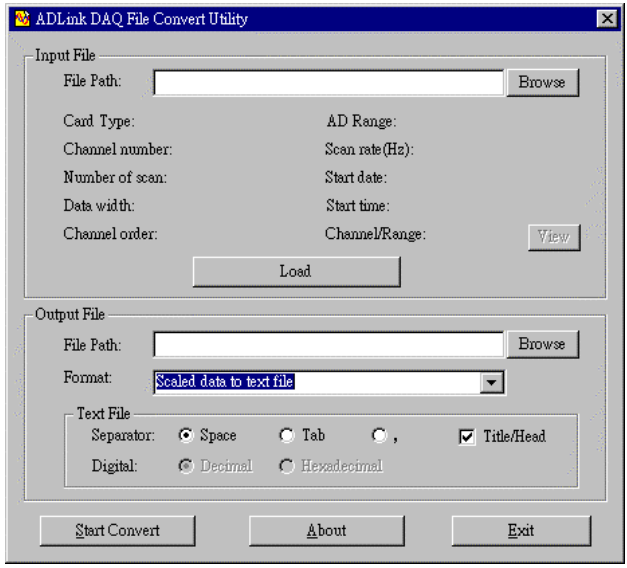
PCIS-LVIEW NT/2000/98 Utilities

3.1 NuDAQ Registry/Configuration utility (PciUtil)

PciUtil is used to ***register*** NuDAQ PCI card drivers (Windows NT4 only), ***remove*** installed drivers (Windows NT4 only), and ***modify*** the allocated buffer sizes of AI, AO, DI and DO. The default location of this utility is <InstallDir>\Util directory. Because it has been mentioned in the previous chapter, we will not introduce it here. Please refer to the section " NuDAQ PCI Configuration Utility" in the *NuDAQ PCI and NuIPC CompactPCI DAQ Cards Software Installation Guide*.

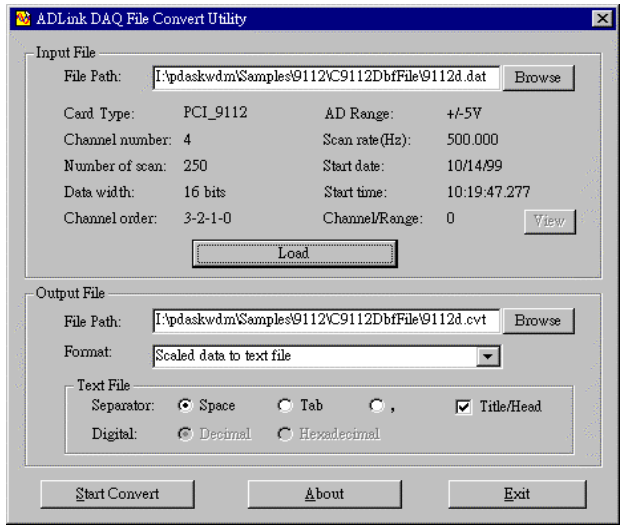
3.2 Data File Converter utility (DAQCvt)

The data files, generated by the PCIS-LVIEW functions performing continuous data acquisition followed by storing the data to disk, is written in binary format. Since a binary file can' t be read by the normal text editor and can' t be used to analyze the accessed data by Excel, PCIS-LVIEW provides a convenient tool *DAQCvt* to convert the binary file to the file format read easily. The default location of this utility is <InstallDir>\Util directory. The *DAQCvt* main window is as the following figure:



The *DAQCvt* main window includes two frames. The upper frame, *Input File frame* is used for the source data file and the lower frame is used for the destination file.

To **load the source binary data file**, type the binary data file name in *File Path* field or click *Browser* button to select the source file from *Input File frame*, and then click *Load* button. As the file is loaded, the information related to the data file, e.g. *data type*, *data width*, *AD Range*, ...etc., are shown in the corresponding fields in " Input File" frame, and the default converted data file path and format are also listed as the figure below.



The default **destination file** with a *.cvt* extension is located in the same directory as the source one. To change the default setting, type the file path you wish or click the *Browser* button from *Output File* frame to select the destination file location.

DAQCvt provides three types of data format conversion.

Scaled data to text file :

The data in hexadecimal format is scaled to engineering unit (voltage, ample, …etc) according to the card type, data width and data range and then written to disk in text file format. This type is available for the data accessed from continuous AI operation only.

Scaled data to binary file (float) :

The data in hexadecimal is scaled to engineering unit (voltage, ample, …etc) according to the card type, data width and data range and then written to disk in binary file format. This type is available for the data accessed from continuous AI operation only.

Binary codes to text file :

The data in hexadecimal format or converted to a decimal value is written to disk in text file format. If the original data includes channel information, the

raw value will be handled to get the real data value. This type is available for the data accessed form continuous AI and DI operations.

The data separator in converted text file is selectable among *space*, *comma* and *Tab*.

If you want to add title/head which includes the card type information at the beginning of file, check the "Title/Head" box.

After setting the properties (File Path, Format, …etc) related to the converted file, you can push *Start Convert* button from the *Output File* frame to perform the file conversion.

4

PCIS-LVIEW NT/2000/98 Overview

This chapter briefly describes each VI in PCIS-LVIEW/NT, PCIS-LVIEW/2000, and PCIS-LVIEW/98. The interfaces of VI's in these three versions are the same. Therefore all applications developed with PCIS-LVIEW are compatible across Windows 98, Windows NT, and Windows 2000.

You can find the detailed description of each VI by the following ways:

1. Select Show Help command of Help menu in LabVIEW. When you put the mouse cursor on PCIS-LVIEW/NT VI, LabVIEW will show the description of the VI.
2. Through PCIS-LVIEW/NT or PCIS-LVIEW/98 on-line help
3. PDF manual files in <Install Dir>\Manual directory.

PCIS-LVIEW VI's are grouped to the following classes:

- **General Configuration Function Group**
- **Analog Input Function Group**
  - Analog Input Configuration VIs
  - One-Shot Analog Input VIs
  - Continuous Analog Input Vis

- **Analog Output Function Group**
  - Analog output Configuration VIs
  - One-Shot Analog Output VIs
- **Digital Input Function Group**
  - Digital Input Configuration VIs
  - One-Shot Digital Input VIs
  - Continuous Digital Input VIs
  - Asynchronous Digital Input Monitoring VIs
- **Digital Output Function Group**
  - Digital Output Configuration VIs
  - One-Shot Digital Output VIs
  - Continuous Digital Output VIs
- **DIO Function Group**
  - Digital Input/Output Configuration Vis

4.1 General Configuration Function Group

Use these functions to initializes and configures data acquisition card.

Initial VIs (6208A Initial, …): Initializes the hardware and software states of a NuDAQ PCI-bus data acquisition card. Initial VI must be called before any other PCIS-LVIEW/NT VI can be called for that card.

Release Card: Tells PCIS-LVIEW/NT driver that this card is not used currently and can be released. This would make room for new card to initialize.

4.2 Analog Input Function Group

4.2.1 Analog Input Configuration VIs

AI 9111 Config: Informs PCIS-LVIEW/NT of the trigger source and trigger mode selected for the analog input operation of PCI9111.

AI 9112 Config: Informs PCIS-LVIEW/NT of the trigger source selected for the analog input operation of PCI9112.

AI 9113 Config: Informs PCIS-LVIEW/NT of the trigger source selected for the analog input operation of PCI9113.

AI 9114 Config: Informs PCIS-LVIEW/NT of the trigger source selected for the analog input operation of PCI9114.

AI 9118 Config: Informs PCIS-LVIEW/NT of the trigger source, trigger mode, input mode, and conversion mode selected for the analog input operation of PCI9118.

AI 9812 Config: Informs PCIS-LVIEW/NT of the trigger source, trigger mode, and trigger properties selected for the analog input operation of PCI9812/10.

AI Initial Memory Allocated: Gets the actual size of analog input memory that is available in the device driver.

4.2.2 One-Shot Analog Input VIs

AI Read Channel: Performs a software triggered A/D conversion (analog input) on an analog input channel and returns the value converted.

AI VRead Channel: Performs a software triggered A/D conversion (analog input) on an analog input channel and returns the value scaled to a voltage in units of volts.

AI VScale: Converts the result from an AI_ReadChannel call to the actual input voltage.

4.2.3 Continuous Analog Input VIs

AI Cont Read Channel 2-byte / AI Cont Read Channel 4-byte: Starts continuous A/D conversions on the specified analog input channel.

AI Cont Scan Channels 2-byte / AI Cont Scan Channels 4-byte: Starts continuous A/D conversions on the specified *continuous* analog input channels.

AI Cont Read Multiple Channels: Starts continuous A/D conversions on the specified analog input channels (PCI-9118 only).

AI Cont Read Channel To File: Starts a continuous A/D conversions on the specified analog input channel and saves the acquired data in a disk file.

AI Cont Scan Channels To File: Starts continuous A/D conversions on the specified continuous analog input channels and saves the acquired data in a disk file.

AI Cont Read Multiple Channels To File: Starts continuous A/D conversions on the specified analog input channels and saves the acquired data in a disk file (PCI-9118 only).

AI Cont VScale: Converts the values of an array of acquired data from an continuous A/D conversion call to the actual input voltages.

AI Cont Status: Checks the current status of the continuous analog input operation.

4.2.4 Asynchronous Analog Input Monitoring VIs

AI Async Check: Checks the current status of the asynchronous analog input operation.

AI Async Clear: Stops the asynchronous analog input operation.

AI Async Double Buffer Mode: Enables or Disables double buffer data acquisition mode.

AI Async Double Buffer Half Ready: Checks whether the next half buffer of data in circular buffer is ready for transfer during an asynchronous double-buffered analog input operation.

AI Async Double Buffer Transfer: Copies half of the data of circular buffer to user buffer. You can execute this function repeatedly to return sequential half buffers of the data.

4.3 Analog Output Function Group

4.3.1 Analog output Configuration VIs

AO 6208A Config: Informs PCIS-LVIEW/NT of the current range selected for the analog output operation of PCI-6208A.

AO 9111 Config: Informs PCIS-LVIEW/NT library of the polarity (unipolar or bipolar) that the output channel is configured for the analog output of PCI-9111. You must call this function before calling function to perform voltage output operation.

AO 9112 Config: Informs PCIS-LVIEW/NT library of the reference voltage source (internal or external) and the reference voltage value selected for the analog output channel(s) of PCI-9112. You must call this function before calling function to perform voltage output operation.

4.3.2 One-Shot Analog Output Functions

AO Write Channel: Writes a binary value to the specified analog output channel.

AO VWrite Channel: Accepts a voltage value, scales it to the proper binary value and writes a binary value to the specified analog output channel.

AO VScale: Scales a voltage to a binary value.

4.4 Digital Input Function Group

4.4.1 Digital Input Configuration VIs

DI 7200 Config: Informs PCIS-LVIEW/NT of the trigger source and trigger properties selected for the digital input operation of PCI7200.

DI 7300 RevA Config: Informs PCIS-LVIEW/NT of the trigger s ource and trigger properties selected for the digital input operation of PCI-7300A Rev.A board.

DI 7300 RevB Config: Informs PCIS-LVIEW/NT of the trigger source and trigger properties selected for the digital input operation of PCI-7300A Rev.B board.

DI Initial Memory Allocated: Gets the actual size of continuous digital input memory that is available in the device driver.

4.4.2 One-Shot Digital Input VIs

DI Read Line: Reads the digital logic state of the specified digital line in the specified port.

DI Read Port: Reads digital data from the specified digital input port.

4.4.3 Continuous Digital Input VIs

DI Cont Read Port 8 / DI Cont Read Port 16 / DI Cont Read Port 32: Starts continuous digital input on the specified digital input port.

DI Cont Read Port To File: Starts continuous digital input on the specified digital input port and saves the acquired data in a disk file.

DI Cont Status: Checks the current status of the continuous digital input operation.

4.4.4 Asynchronous Digital Input Monitoring VIs

DI Async Check: Checks the current status of the asynchronous digital input operation.

DI Async Clear: Stops the asynchronous digital input operation.

DI Async Double Buffer Mode: Enables or Disables double buffer data acquisition mode.

DI Async Double Buffer Half Ready: Checks whether the next half buffer of data in circular buffer is ready for transfer during an asynchronous double-buffered digital input operation.

DI Async Double Buffer Transfer: Copies half of the data of circular buffer to user buffer. You can execute this function repeatedly to return sequential half buffers of the data.

4.5 Digital Output Function Group

4.5.1 Digital Output Configuration VIs

DO 7200 Config: Informs PCIS-LVIEW/NT of the trigger source and trigger properties selected for the digital input operation of PCI7200.

Do 7300 RevA Config: Informs PCIS-LVIEW/NT of the trigger source and trigger properties selected for the digital input operation of PCI-7300A Rev.A board.

DO 7300 RevB Config: Informs PCIS-LVIEW/NT of the trigger source and trigger properties selected for the digital input operation of PCI-7300A Rev.B board.

EDO 9111 Config: Informs PCIS-LVIEW/NT library of the mode of EDO channels of PCI9111.

DO Initial Memory Allocated: Gets the actual size of continuous digital output memory that is available in the device driver.

4.5.2 One-Shot Digital Output VIs

DO Write Line: Sets the specified digital output line in the specified digital port to the specified state.

DO Write Port: Writes digital data to the specified digital output port.

DO Read Line: Read the digital logic state of the specified digital output line in the specified port.

DO Read Port: Read back the output digital data from the specified digital output port.

4.5.3 Continuous Digital Output VIs

DO Cont Write Port 8 / DO Cont Write Port 16 / DO Cont Write Port 32: Starts continuous digital output on the specified digital output port.

DO Cont Status: Checks the current status of the continuous digital output operation.

DO PG Start 8 / DO PG Start 16 / DO PG Start 32: Starts pattern generation operation on PCI-7300A.

DO PG Stop: Stops pattern generation operation on PCI-7300A.

4.5.4 Asynchronous Digital Output Monitoring VIs

DO Async Check: Checks the current status of the asynchronous digital output operation.

DO Async Clear: Stops the asynchronous digital output operation.

4.6 DIO Function Group

DIO Port Config: Informs PCIS-LVIEW/NT of the port direction selected for the digital input/output operation.

4.7 Timer/Counter Function Group

CTR Read: Reads the current contents of the selected counter without disturbing the counting process.

CTR Reset: Sets the output of the selected counter to the specified state.

CTR Setup: Configures the selected counter to operate in the specified mode.

CTR 8554 ClkSrc Config: Sets the counter clock source of PCI-8554.

CTR 8554 CK1 Config: Sets the source of CK1 of PCI-8554.

CTR 8554 Debounce Config: Sets the debounce clock of PCI-8554.

5

PCIS-LVIEW/95 Overview

This chapter briefly describes each VI in PCIS-LVIEW/95. You can find the detailed description of each VI by the following ways:

1. Select Show Help command of Help menu in LabVIEW. When you put the mouse cursor on PCIS-LVIEW/95 VI, LabVIEW will show the description of the VI.
2. Through PCIS-LVIEW/95 on-line help
3. PDF manual files in <Install Dir>\Manual directory.

5.1 6208/16 VIs

6208 Initial	Initialize PCI-6208/6216 card
6208 DA	Write data to D/A converters
6208 DI	Read data from digital input port
6208 DO	Write data to digital output port
6208A Volt2Current	Set PCI-6208A voltage-to-current mode control

5.2 6308 VIs

6308 Initial	Initialize PCI-6208/6216 card
6308 DA	Write data to D/A converters
6308 DA CH0-CH3	Simultaneously write data to D/A converters of channel 0 to channel 3
6308 DA CH4-CH7	Simultaneously write data to D/A converters of channel 4 to channel 7
6308 DI	Read data from digital input port
6308 DO	Write data to digital output port
6308A Volt2Current	Set PCI-6208A voltage-to-current mode control

5.3 7200 VIs

7200 Initial	Initialize PCI-7200 card
7200 Allocate DMA Memory	Contact Windows 95 system to allocate a block of contiguous memory for DMA transfer
7200 DI DMA Start	Start up digital input N times with DMA data transfer
7200 DI DMA Status	Check the operation status of DI DMA data transfer
7200 DI DMA Stop	Stop the DI DMA data transfer
7200 DI Timer	Set the internal timer pacer for digital input
7200 DMA Cont DI	A high level VI to perform digital input by N times with DMA data transfer
7200 DMA Cont DO	A high level VI to perform digital output N times with DMA data transfer
7200 DO DMA Start	Start up digital output N times with DMA data transfer
7200 DO DMA Status	Check the operation status of DO DMA data transfer
7200 DO DMA Stop	Stop the DO DMA data transfer
7200 DO Timer	Set the internal timer pacer for digital output
7200 Free DMA Memory	Deallocate a system DMA memory
7200 Get Sample	Retrieve the index-th data in DMA buffer
7200 Read from Digital Line	Read data from digital input port
7200 Read from Digital Port	Read data from digital input port
7200 Switch Card	Select which card is used currently.
7200 Write to Digital Line	Write data to digital output line.
7200 Write to Digital Port	Write data to digital output port.

5.4 7230 VIs

7230 Initial	Initialize PCI-7230 cards.
7230 DI	Read 16-bit digital input data from digital input port.
7230 DO	Write data to digital output port.

5.5 7233 VIs

7233 Initial	Initialize PCI-7233 cards.
7233 DI	Read 32-bit digital input data from digital input port.

5.6 7234 VIs

7234 Initial	Initialize PCI-7234 cards.
7234 DO	Write data to digital output port.

5.7 7248 VIs

7248 Initial	Initialize PCI-7248 card.
7248 Config Channel	Configure the input or output of each channel.
7248 Config Port	Configure the input or output of each port.
7248 Digital Input	Read 8-bit digital input data from digital input port.
7248 Digital Output	Write data to digital output ports.
7248 Timer Read	Read the current contents of the counter #0.
7248 Timer Start	Configure the counter #0 to operate in the specified mode.
7248 Timer Stop	Stop the event counting operation.

5.8 7249 VIs

7249 Initial	Initialize cPCI-7249 card.
7249 Config Channel	Configure the input or output of each channel.
7249 Config Port	Configure the input or output of each port.
7249 Digital Input	Read 8-bit digital input data from digital input port.
7249 Digital Output	Write data to digital output ports.
7249 Timer Read	Read the current contents of the counter #0.
7249 Timer Start	Configure the counter #0 to operate in the specified mode.
7249 Timer Stop	Stop the event counting operation.

5.9 7250 VIs

7250 Initial	Initialize PCI-7250 card.
7250 DI	Read digital input data from digital input port.
7250 DO	Write data to digital output port which can energized RELAY ON/OFF.
7250 DO Readback	Read-back data from digital output port.

5.10 7252 VIs

7252 Initial	Initialize cPCI-7252 card.
7252 DI	Read digital input data from digital input port.
7252 DO	Write data to digital output port which can energized RELAY ON/OFF.
7252 DO Readback	Read-back data from digital output port.

5.11 7296 VIs

7296 Initial	Initialize PCI-7296 card.
7296 Config Channel	Configure the input or output of each channel.
7296 Config Port	Configure the input or output of each port.
7296 Digital Input	Read 8-bit digital input data from digital input port.
7296 Digital Output	Write data to digital output port.
7296 Timer Read	Read the current contents of the counter #0.
7296 Timer Start	Configure the counter #0 to operate in the specified mode.
7296 Timer Stop	Stop the event counting operation.

5.12 7300A Rev.B VIs

7300 Initial	Initialize PCI-7300A Rev.B card.
7300 Allocate DMA Memory	Contact Windows 95 system to allocate a block of contiguous memory for DMA transfer.
7300 Aux DI	Read data from auxiliary digital input port.
7300 Aux DI Channel	Read data from one auxiliary digital input channel.
7200 Aux DO	Write data to auxiliary digital output port.
7200 Aux DO Channel	Write data to one auxiliary digital output channel (bit).
7300 Configure	Set the port DI/O configuration, terminator control, and control signal polarity for the PCI-7300A Rev.B card.
7300 DI DMA Start	Perform digital input with DMA data transfer
7300 DI DMA Status	Check the DMA DI operation status
7300 DI DMA Abort	Stop the DMA DI operation
7300 DI Mode	Set the clock mode and start mode for the DI operation
7300 DI Timer	Set the internal timer pacer for digital input
7300 DO DMA Start	Perform digital output with DMA data transfer
7300 DO DMA Status	Check the DMA DO operation status
7300 DO DMA Abort	Stop the DMA DO operation

7300 DO Mode	Set the clock mode and start mode for the DO operation.
7300 DO Timer	Set the internal timer pacer for digital output
7300 DO PG Start	Perform pattern generation
7300 DO PG Stop	Stop pattern generation
7300 Free DMA Memory	Deallocate a system DMA memory
7300 Get Sample	Retrieve the index-th data in DMA buffer
7300 Get Overrun Status	Check overrun status
7300 Set Sample	Write the output data to the *index*-th position in output DMA buffer

5.13 7396 VIs

7396 Initial	Initialize PCI-7396 card.
7396 Config Port	Configure the input or output of each port.
7396 Digital Input	Read digital input data from digital input port.
7396 Digital Output	Write data to digital output port.
7396 Timer Read	Read the current contents of the counter #0.
7396 Timer Start	Configure the counter #0 to operate in the specified mode.
7396 Timer Stop	Stop the event counting operation.

5.14 7432 VIs

7432 Initial	Initialize PCI-7432 card.
7432 DI	Read 32-bit digital input data from digital input port.
7432 DO	Write data to digital output ports.

5.15 7433 VIs

7433 Initial	Initialize PCI-7433 card.
7433 DI HiDW	Read high 32-bit digital input data from digital input port.
7433 DI LowDW	Read low 32-bit digital input data from digital input port.

5.16 7434 VIs

7434 Initial	Initialize PCI-7434 card.
7434 DO HiDW	Write data to high 32 bits of the 64 isolated digital outputs.
7434 DO LowDW	Write data to low 32 bits of the 64 isolated digital outputs.

5.17 8554 VIs

8554 Initial	Initialize PCI-8554 card.
8554 Write Counter	Write command to counter #1 ~ #12 by this function.
8554 Read Counter	Read counter information.
8554 Stop Counter	Stop counter.
8554 Read Status	Read current counter status.
8554 DO	Write a 8-bit data to the digital output port.
8554 DI	Read 8-bit data from digital input port.
8554 SET cntCLK	Select 8254 counter #1 ~ #10 clock source.
8554 SET CK1	Select source of CK1.
8554 SET DBCLK	Select debounce clock.
8554 Software Reset	Reset PCI-8554 card.

5.18 9111 VIs

9111 Initial	Initialize PCI-9111 card
9111 AD FFHF INT Restart	Restart the FIFO half full interrupt transfer without re-initial all the relative registers
9111 AD FFHF INT Start	Initial and start up the interrupt transfer by using AD FIFO Half-Full Interrupt transfer mode
9111 AD FFHF INT Status	Check the status of FIFO half-full Interrupt transfer analog input operation
9111 AD FFHF INT Stop	Stop the FFHF interrupt data transfer function
9111 AD INT Start	Initial and start up the interrupt transfer by using End-of-conversion (EOC) Interrupt transfer mode
9111 AD INT Status	Check the status of EOC Interrupt transfer analog input operation
9111 AD INT Stop	Stop the EOC interrupt data transfer function
9111 AD Set Channel	Set A/D channel
9111 AD Set Mode	Set A/D trigger and channel scan mode
9111 AD Set Range	Set the A/D range
9111 Analog Output	Write data to D/A converters.
9111 Digital Input Line	Read data from digital input line.
9111 Digital Input Port	Read data from digital input port.
9111 Digital Input from EDI	Read data from external digital input port.
9111 Digital Output Line	Write data to digital output port.
9111 Digital Output Port	Write data to digital output port.
9111 Digital Output to EDO	Write data to extended digital output port.
9111 FIFO Interrupt Cont AD	Performs A/D conversion N times with FFHF interrupt data transfer by using pacer trigger.
9111 Readback EDO	Read back the output data that is written to EDO output port last time.
9111 Reset FIFO	Reset A/D FIFO.
9111 Set EDO Function	Set the mode of EDO pins.

9111 DG AD Acquire	Trigger the A/D conversion data for PCI-9111DG by software trigger. It reads the 12-bit A/D data when the data is ready.
9111HR AD Acquire	Trigger the A/D conversion data for PCI-9111HR by software trigger. It reads the 16-bit A/D data when the data is ready.

5.19 9112 VIs

9112 Initial	Initialize PCI-9112 card
9112 AD Acquire	Software trigger the A/D conversion, then poll the A/D conversion data
9112 AD DMA Start	Initializes and starts up A/D conversion with DMA data transfer by using the pacer trigger (internal timer trigger)
9112 AD DMA Status	Check the status of DMA analog input operation
9112 AD DMA Stop	Stop the DMA analog input operation
9112 AD INT Start	Initializes and starts up A/D conversion with interrupt data transfer by using the pacer trigger (internal timer trigger)
9112 AD INT Status	Check the status of interrupt analog input operation
9112 AD INT Stop	Stop the interrupt analog input operation
9112 AD Set Autoscan	Set automatic hardware channel scan to be enable or disable
9112 AD Set Channel	Set A/D channel
9112 AD Set Mode	Set the A/D trigger and data transfer mode
9112 AD Set Range	Set the A/D range
9112 Allocate DMA Memory	Contact Windows 95 system to allocate a block of contiguous memory for DMA transfer
9112 Analog Output	Write data to D/A converters
9112 DMA Cont AD	Perform A/D conversion N times with DMA data transfer by using the pacer trigger (internal timer

	trigger)
9112 Free DMA Memory	Deallocate a system DMA memory
9112 Get DMA Sample	Retrieve the index-th data in DMA buffer
9112 INT Cont AD	Perform A/D conversion N times with interrupt data transfer by using the pacer trigger (internal timer trigger)
9112 Read from Digital Line	Read data from digital input port
9112 Read from Digital Port	Read data from digital input port
9112 Timer Read	Read the count value of the Tomer#0
9112 Timer Start	Program the Timer #0
9112 Timer Stop	Stop the timer #0 operation
9112 Write to Digital Port	Write data to digital output port

5.20 9113 VIs

9113 Initial	Initialize PCI-9113 card
9113 AD Acquire	Trigger the A/D conversion data for PCI-9113 by software trigger. Then read the 12-bit A/D data when the data is ready
9113 AD Acquire MUX	Trigger the A/D conversion data for PCI-9113 by software trigger. Then read the 32-bit A/D data when the data is ready
9113 AD FFHF INT Restart	Restart the FIFO half-full interrupt transfer without re-initial all the relative registers.
9113 AD FFHF INT Start	Initial and start up the interrupt transfer by using AD FIFO Half-Full Interrupt transfer mode by using internal pacer trigger
9113 AD FFHF INT Status	Check the status of FIFO half-full interrupt analog input operation
9113 AD FFHF INT Stop	Stop the FIFO half-full interrupt analog input operation

9113 AD INT Start	Initial and start up the interrupt transfer by using End-of-conversion (EOC) Interrupt transfer mode by using internal pacer trigger
9113 AD INT Status	Check the status of EOC interrupt analog input operation
9113 AD INT Stop	Stop the EOC interrupt analog input operation
9113 AD Set Channel	Set A/D channel
9113 AD Set Mode	Set A/D trigger mode
9113 AD Set Range	Set A/D range
9113 Counter Read	Read the count value of the counter#0
9113 Counter Start	Program the counter #0.
9113 Counter Stop	Stop the timer/counter operation of the counter #0
9113 FIFO Interrupt Cont AD	Performs A/D conversion N times with FFHF interrupt data transfer by using pacer trigger
9113 Interrupt Cont AD	Performs A/D conversion N times with EOC interrupt data transfer by using pacer trigger
9113 Reset FIFO	Reset A/D FIFO

5.21 9114 VIs

9114 Initial	Initialize PCI-9114 card
9114 AD Acquire	Trigger the A/D conversion data for PCI-9114 by software trigger. Then read the 16-bit A/D data when the data is ready.
9114 AD Acquire MUX	Trigger the A/D conversion data for PCI-9114 by software trigger. Then read the 32-bit A/D data when the data is ready
9114 AD FFHF INT Restart	Restart the FIFO half full interrupt transfer without re-initial all the relative registers
9114 AD FFHF INT Start	Initialize and start up the interrupt transfer with AD FIFO Half-Full Interrupt transfer mode by using internal pacer trigger
9114 AD FFHF INT Status	Check the status o f FIFO half-full interrupt analog

	input operation
9114 AD FFHF INT Stop	Stop the FFHF interrupt data transfer function
9114 AD INT Start	Initialize and start up the interrupt transfer with End-of-conversion (EOC) Interrupt transfer mode by using internal pacer trigger
9114 AD INT Status	Check the status of EOC interrupt analog input operation
9114 AD INT Stop	Stop the EOC interrupt data transfer function
9114 AD Set Channel	Set A/D channel
9114 AD Set Mode	Set A/D trigger and channel scan mode
9114 AD Set Range	Set A/D range
9114 Counter Read	Read the count value of the counter#0
9114 Counter Start	Program the counter #0
9114 Counter Stop	Stop the timer/counter operation of the counter #0
9114 Digital Input Port	Read data from digital input ports
9114 Digital Output Port	Write data to digital output port
9114 FIFO Interrupt Cont AD	Performs A/D conversion N times with FFHF interrupt data transfer by using pacer trigger
9114 Interrupt Cont AD	Performs A/D conversion N times with EOC interrupt data transfer by using pacer trigger
9114 Reset FIFO	Reset A/D FIFO

5.22 9118 VIs

9118 Initial	Initialize PCI-9118 card.
9118DGHG AD Acquire	Software trigger the A/D conversion, then poll the A/D conversion data.
9118HR AD Acquire	Software trigger the A/D conversion, then poll the A/D conversion data.
9118 AD Begin Set AFIFO	After this VI is performed, the program can start to fill out A/D Channel/Gain register to set the A/D channel and range.

9118 AD DMA Start	Initialize and start up A/D conversion with DMA data transfer by using the pacer trigger (internal timer trigger)
9118 AD DMA Status	Check the status of DMA analog input operation
9118 AD DMA Stop	Stop the DMA analog input operation
9118 AD INT Start	Initialize and start up A/D conversion with interrupt data transfer by using the pacer trigger (internal timer trigger)
9118 AD INT Status	Check the status of interrupt analog input operation
9118 AD INT Stop	Stop the interrupt analog input operation
9118 AD End Set AFIFO	Stop setting A/D channel and input range.
9118 AD Reset AFIFO	Reset A/D Channel/Gain Register.
9118 AD Reset DFIFO	Reset A/D Channel/Gain Register.
9118 AD Set Burst Number	Set the number of conversion channels in a scan trigger.
9118 AD Set Control Register	Set the analog input mode.
9118 AD Set Differential	Set analog input mode as differential or single-ended.
9118 AD Set DMA Transfer	Specify the status of DMA transfer mode.
9118 AD Set External Gate	Specify the A/D control as External Gate control mode or Software Gate Control mode.
9118 AD Set Function Register	Set A/D trigger mode.
9118 AD Set Gain Channel	Specify the A/D channel and input range.
9118 AD Set Hardware Interrupt	Specify the status of interrupt operation.
9118 AD Set Hardware Trigger Source	Specify the hardware trigger source.
9118 AD Set Internal Trigger Source	Specify the internal trigger source.

9118 AD Set Scan	Set the first and last channels in a group of consecutive channels.
9118 AD Set Software Gate	Specify the status of software Gate.
9118 AD Set Unipolar	Set analog input range as uni-polar or bi-polar.
9118 Allocate AI Memory	Contact Windows 95 system to allocate a block of contiguous memory for DMA or interrupt transfer.
9118 DMA Cont AD	Perform A/D conversion N times with DMA data transfer by using the pacer trigger (internal timer trigger).
9118 Enable/Disable About Trigger Mode	Enable or disable About Trigger Mode.
9118 Enable/Disable AD Burst Mode	Enable or disable AD Burst Mode.
9118 Enable/Disable AD Burst Mode with S&H	Enable or disable AD Burst Mode with Sample and Hold.
9118 Enable/Disable Post Trigger Mode	Enable or disable Post Trigger Mode.
9118 Free AI Memory	Deallocate a system AI memory.
9118DGHG Get DMA Sample	Retrieve the index-th data in system AI buffer for DMA transfer.
9118HR Get DMA Sample	Retrieve the index-th data in system AI buffer for DMA transfer.
9118DGHG Get INT Sample	Retrieve the index-th data in system AI buffer for interrupt transfer.
9118HR Get INT Sample	Retrieve the index-th data in system AI buffer for interrupt transfer.
9118 INT Cont AD	Perform A/D conversion N times with interrupt data transfer by using the pacer trigger (internal timer trigger).
9118 INT Set Control Register	Set Interrupt Control Register.
9118 Output Channel Voltage	Write data to D/A converters.

9118 Read from Digital Line	Read data from digital input port.
9118 Read from Digital Port	Read data from digital input port.
9118 Set Digital Trigger Type	Set the active type of digital trigger.
9118 Set External Trigger Type	Set the active type of external trigger.
9118 Set Trigger	Set up a trigger. The VI specifies the trigger mode and post trigger count.
9118 Start/Stop AD Burst Mode	Start or stop AD Burst Mode.
9118 Start/Stop Trigger	Start or stop Trigger.
9118 Timer Read	Read the count value of the Tomer#0.
9118 Timer Start	Program the Timer #0.
9118 Timer Stop	Stop the timer #0 operation.
9118 Write to Digital Port	Write data to digital output port.

5.23 9812/10 VIs

9812 Initial	Initialize PCI-9812/10 card.
9812 AD DMA Start	Initialize and start up A/D conversion with DMA data transfer
9812 AD DMA Status	Check the status of DMA analog input operation
9812 AD DMA Stop	Stop the DMA analog input operation
9812 Allocate DMA Memory	Contact Windows 95 system to allocate a block of contiguous memory for DMA transfer.
9812 DMA Cont AD	Perform A/D conversion N times with DMA data transfer.
9812 Free DMA Memory	Deallocate a system DMA memory.

9812 Get Sample	Retrieve the index-th data in DMA buffer.
9812 Set Clock Rate	Specify the clock divider for ADC clock.
9812 Set Clock Source	Specify the ADC clock source.
9812 Set Trigger	Set up a trigger, including the trigger mode, trigger level (voltage), trigger source, trigger slope and post trigger count.

6

Distribution of Applications

To install an application using PCIS-LVIEW on another computer, you also must install the necessary driver files and supporting libraries on the target machine. You can create an automatic installer to install your program and all of the files needed to run that program or you can manually install the program and program files. Whichever installation method you choose, you must install the following files:

Note: Do not replace any files on the target computer if the file on the target computer has a newer version than the file you are installing.

6.1 PCIS-LVIEW/95

- **LLB files:**

The corresponding LLB files in \Software\Pcis-lview\W95\redist\llb, e.g. 7200.llb for PCI-7200 card.

- **Required support DLLs:**

The corresponding DLL files in \Software\Pcis-lview\W95\redist\dll, e.g. LV7200.dll for PCI-7200 card. These files should be copied to Windows\system directory.

- **Driver files**

Pciw95.vxd in \Software\Pcis-lview\W95\redist\drivers. This file should be copied to Windows\system directory.

The corresponding driver files in \Software\Pcis-lview\W95\redist\drivers. These files should be copied to Windows\system directory. The required driver file for each device is as the following table:

Device	Driver file
PCI-6208/6216	Not needed
PCI-6308	Not needed
PCI-7200	W95_7200.vxd
PCI-7230	W95_7230.vxd
PCI-7233	W95_7233.vxd
PCI-7234	Not needed
PCI-7248	W95_7248.vxd
cPCI-7249	W95_7249.vxd
PCI-7250	Not needed
cPCI-7252	Not needed
PCI-7296	W95_7296.vxd
PCI-7300A Rev.B	W95_7300.vxd
PCI-7396	W95_7396.vxd
PCI-7432	W95_7432.vxd
PCI-7433	W95_7433.vxd
PCI-7434	Not needed
PCI-8554	W95_8554.vxd
PCI-9111	W95_9111.vxd
PCI-9112	W95_9112.vxd
PCI-9113	W95_9113.vxd
PCI-9114	W95_9114.vxd
PCI-9118	W95_9118.vxd
PCI-9812/9810	W95_9812.vxd

The corresponding INF files in \Software\Pcis-lview\W95\redist\Inf, e.g. pci7200.inf for PCI-7200. These files should be copied to Windows\system\inf\other directory.

6.2 PCIS-LVIEW/98

- **LLB files:**

Plv.llb in \Software\Pcis-lview\W98\redist\llb

- **Required support DLLs:**

Plv.dll in \Software\Pcis-lview\W98\redist\dll. This file should be copied to Windows\system directory.

- **Driver files**

The corresponding driver files in \Software\Pcis-lview\W98\redist\drivers, e.g. pci7200.sys for PCI-7200. These files should be copied to Windows\system32\drivers directory.

The corresponding INF files in \Software\Pcis-lview\W98\redist\Inf, e.g. p7200.inf for PCI-7200. These files should be copied to Windows\inf\other directory.

Device configuration utility in \Software\Pcis-lview\W98\redist\Util.

- **Utility file (option)**

Data Conversion utility DAQCvt.exe in \Software\Pcis-lview\W98\redist\Util to convert the binary data file to the file format read easily.

6.3 PCIS-LVIEW/NT

- **LLB files:**

Plv.dll in \Software\Pcis-lview\Wnt\redist\llb

- **Required support DLLs:**

Plv.dll in \Software\Pcis-lview\Wnt\redist\dll. This file should be copied to Winnt\system32 directory.

- **Driver files**

adldask.sys in \Software\Pcis-lview\Wnt\redist\drivers. This file should be copied to Winnt\system32\drivers directory.

The corresponding driver files in \Software\Pcis-lview\Wnt\redist\drivers, e.g. pci7200.sys for Pci7200 controls. These files should be copied to Winnt\system32\drivers directory.

Device configuration utility in \Software\Pcis-lview\Wnt\redist\Util.

- **Utility file (option)**

Data Conversion utility DAQCvt.exe in \Software\Pcis-lview\Wnt\redist\Util to convert the binary data file to the file format read easily.

6.4 PCIS-LVIEW/2000

- **LLB files:**

Plv.llb in \Software\Pcis-lview\W2000\redist\llb

- **Required support DLLs:**

Plv.dll in \Software\Pcis-lview\W2000\redist\dll. This file should be copied to Winnt\system32 directory.

- **Driver files**

The corresponding driver file in \Software\Pcis-lview\W2000\redist\drivers, e.g. pci7200.sys for PCI-7200. These files should be copied to Winnt\system32\drivers directory.

The corresponding INF file in \Software\Pcis-lview\W2000\redist\Inf, e.g. p7200.inf for PCI-7200. These files should be copied to Winnt\inf directory.

- **Device configuration utility in \Software\Pcis-lview\W2000\redist\Util.Utility file (option)**

Data Conversion utility DAQCvt.exe in or \Software\Pcis-lview\W2000\redist\Util to convert the binary data file to the file format read easily.