Advantech Device Specific Help

Advantech PCL-816/814B modular I/O Cards, V 3.1
The Advantech DLL driver allows you to use ADVANTECH's data acquisition cards and signal conditioning boards under Microsoft Windows. The following table lists the cards and the functions they support:

TABLE 1: Advantech DLL Driver Software Support

Hardware Type	DLL Driver	A/D	D/A	DIO	TEMP	COUNTER
PCL-81601	adPCL816.drv	YES	NO	YES	YES*	NO
PCL-81401	adPCL816.drv	YES	NO	YES	YES*	NO
PCL-816-DA-1	adPCL816.drv	NO	YES	NO	NO*	NO
PCL-814-DA-1	adPCL816.drv	NO	YES	NO	NO*	NO
PCL-814-DIO-1	adPCL816.drv	NO	NO	YES	NO*	NO
PCL-814-TC-1	adPCL816.drv	NO	NO	NO	NO*	YES

*A/D=ANALOG INPUT,   D/A=ANALOG OUTPUT,   DIO=DIGITAL I/O, TEMP=TEMPERATURE MEASUREMENT

* Temperature measurement using the PCLD-789, PCLD-779   daughterboards.

All cards listed above can be used in an IBM PC or compatible.

Several wiring terminal boards and signal conditioning boards are available, to help you implement your application:

* PCLD-770   Signal conditioning board
* PCLD-779   Thermocouple Amplifier/Multiplexer Board
* PCLD-789   Amplifier/Multiplexer Board.
* PCLD-5B16 5B Module Carrier Board
* PCLD-774   Analog Expansion Board
* PCLD-786   AC/DC Power SSR and Relay Driver Board.
* PCLD-7216 SSR I/O Module Carrier Board
* PCLD-7224 SSR I/O Module Carrier Board
* PCLD-785   Relay Output Board.
* PCLD-885   Power Relay Output Board
* PCLD-782   Isolated D/I Board.
* PCLD-7115 Wiring Terminal Board
* PCLD-780   Wiring Terminal Board.
* PCLD-880   Industrial wiring Terminal Board.

I/O CARD FUNCTIONAL DESCRIPTION
PCL-816/814B Modular Data Acquisition Card
The card is equipped with one of the following high performance A/D modules:

PCL-81601 or PCL-81401:
16channels differential analog inputs
16 digital inputs
16 digital outputs
(*   digital   input and   digital output connection ports are located on the carrier board)

In addition, its two 64-pin connectors provide you with expansion when using the following optional modules:

PCL-816-DA-1 or PCL-814-DA-1:
2 channels D/A output

PCL-814-DIO-1:
24 programmable D/IO channels

PCL-814-TC-1
5-channel Timer/Counter

HARDWARE CONFIGURATION

Before an acquisition board can work properly with the DLL driver software, it must be configured correctly. First determine the hardware options (output range(s), I/O address, etc.) which suit your particular requirements. For all ADVANTECH boards, configuration is a matter of setting jumpers and switches. Read the manual that comes with your ADVANTECH board in conjunction with this help text to determine how to configure the hardware. All ADVANTECH boards are shipped with factory default settings. If the default configuration is appropriate for your system, no additional set-up is required.

Configuring the PCL-816 / 814B

The following options (switches) must be configured before the PCL-816/814B can work with the Advantech DLL driver:

1. The carrier board   :
    * Base Address

2. PCL-814-DA-1 :
    * D/A   Output Polarity (Bipolar or Unipolar)
    * D/A Reference Voltage (External , Internal -10V or Internal -5V)

DEVICE INSTALLATION NOTE

When you want to install the PCL-816/814B DLL driver, use the Windows Device Installation Utility "DEVINST.EXE". When you run the program go to "Setup" and select the "PCL816" as the card you want to configure. A configuration window will appear with three entries: SLOT0, SLOT1 and SLOT2. SLOT0 configures the carrier board's standard module (PCL-816 or PCL814B). You can use the other two entries to configure optional modules. The setup program stores the configuration parameters in the "ADVANTEK.INI" file. Every SLOT entry is being regarded as one device, so parameters will be saved as separate devices.

Configuring the 814-TC-1

Configure the on-board frequency time base. An on-board frequency source(F1, F2, F3, F4 and F5) is provided. The corresponding F1-F5 frequencies are:

F1	F2	F3	F4	F5
1MHz	100KHz	10KHz	1KHz	100Hz

In reference to the Advantech API functions for event counter, pulse output, or frequency counter/measurement operation (all supported), hardware "gating", in which the counter may be started by a seperate external hardware input, is supported by the driver DLL.

Gating supported:

1) No Gating
2) Active High Level Gating
3) Active Low Level Gating

Event Counter:
Counter channels 0 - 4 all can function as a rising edge event counter . When using the API function to start the counter/timer, you may start the counter at any value between zero and 2^32. Connect the your external event generator to the clock input of the desired counter. If hardware "gating", in which the counter may be started by a seperate external hardware input, is desired, choose a gating type (above), and use an external device to trigger the gate input of the counter.

Pulse Generator:
Counter channels 0 - 4 all can function as an arbitrary duty cycle pulse generator. You should select an on-board   frequency (F1-F5) source that is closest to the desired output frequency for pulse output. The pulse waveform will then be generated on the output pin of the counter used. If hardware "gating", in which the counter may be started by a seperate external hardware input, is desired, choose a gating type (above), and use an external device to trigger the gate input of the counter.

Frequency Counter:
By using two counter/timer channels, a highly accurate frequency measurement device can be attained with the 814-TC-1. Channels 0 - 3 function as possible input sources for frequency measurement from 1 HZ to 65535 HZ. Channel 4, the last channel on the card, is reserved and used as a "gate period" counter.   For frequency measurement, the on-board time base is used and divided by the "gate period" counter channel.   Since generally a long gating period is desirable, choosing F5 (100hz) will allow for longer gating periods. You must connect a jumper between the gate period   counter output, and the "gate input" of the desired frequency measurement counter.   Then wire your external frequency generator to the frequency measurement counter's "clock source"   input. If hardware "gating", in which the counter may be started by a seperate external hardware input, is desired, choose a gating type (above), and use an external device to trigger the gate input of the gate period counter (fixed at channel 4 by DLL).