

Advantech Device Specific Help

Advantech PCL- 1800 Cards, V 1.0

The Advantech DLL driver supports the operation of ADVANTECH data acquisition cards and signal conditioning boards. You will need the PCLD-774 Analog Expansion Board or PCLD-8115 Wiring Terminal Board to make connections. The following table lists the cards and functions supported:

TABLE 1: Advantech DLL Driver Software Support

Hardware Type	DLL Driver	A/D	D/A	DIO	TEMP	COUNTER	
<u>MONITOR</u>							
PCL-1800	AD1800.DRV	YES	YES	YES	YES*	YES	YES

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

* Temperature measurement using the PCLD-789, PCLD-779, PCLD-5B16, or PCLD-770 daughterboards.

All cards listed can be used in an IBM PC or compatible. A series of wiring terminal boards and signal conditioning boards, listed below, are also available for making your applications easier to implement:

- * 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-1800

16 channels single ended, or 8channels differential analog inputs
2 analog output channels, one with DMA transfer
16 digital inputs
16 digital outputs
1 counter channel

HARDWARE CONFIGURATION

Before an acquisition board can work properly with the DLL driver software, it must be configured correctly. You must determine the hardware options (input range(s), I/O address, etc.) which suit your particular requirements. On 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 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.

A/D DATA TRANSFER

The PCL-1800 can transfer the A/D conversion data in four different ways: software polling, interrupt service routine, DMA and FIFO. The method you use determines the speed of the data transfer, as shown below:

<u>Method</u>	<u>Max. A/D throughput</u>
Interrupt	1-2 KHz
DMA	200 KHz
FIFO w/repeat input string	330 KHz

CONFIGURING PCL-1800

The following options must be configured on the PCL-1800 before it can be used with the Advantech DLL driver:

Base Address

You control the PCL-1800s operation by reading or writing data to the PCs I/O (input/output) port addresses. The PCL-1800 requires 32 consecutive address locations. Valid base addresses range from Hex 000 to Hex 3F0. Other devices in your system may, however, be using some of these addresses.

Interrupt Channel

The PCL-1800 supports interrupt channel number: 2, 4, 5, 7, 10, 11, 12, 15. Make sure that the channel you select is not being used by any other device.

DMA Selection

The PCL-1800 offers three DMA channels: 5, 6 and 7. Dual DMA uses channels 5 and 6. If you use double buffer mode for A/D or D/A transfer, you have to select Dual DMA.

Clock Selection

The clock selection affects the sampling speed. If your application uses the speed higher than 100 KHz, you have to select 10 MHz.

D/A Reference Voltage

The PCL-1800 supports internal and external reference for D/A.

* internal reference: 0 to 5 V or 0 to 10 V

* external reference: 10 V max.

A/D Channel Mode (Differential or Single-Ended)

Software Gain Setting

The A/D input gain is set directly through the application software.

Event Counter/Square Wave Generator/Frequency Counter

Counter channel 0 functions as a rising edge event counter, square wave generator, or frequency counter. 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 separate external hardware input, is not supported

by the driver DLL. When using the API function to start the counter/timer, you may start the counter at any value between zero and 2^{32} . Since only one 8253/8254 counter channel is available, the pulse output may only be in the form of a square wave generator (50% duty cycle only). The frequency counter is not a highly accurate one, also because there is only one counter channel used.

When using the PCL-1800 as a square wave generator, the on-board clock source will be selected automatically by the driver. The square wave will then be generated on the output pin of the counter used (counter zero). As an event counter, connect the external event generator to the clock input of the desired counter (counter zero). As a frequency counter, wire the same as for event counter operation.

