PCI-1710
PCI-1710HG

12-bit, 100 kHz, (High-gain), PCI-bus Multi-function DAS Card

PCL-10168
PCLD-8710
PCI-1710/1710HG

Features

- 16 single-ended or 8 differential analog inputs, or a combination
- 12-bit A/D converter, with up to 100 kHz sampling rate
- Programmable gain for each input channel
- Free combination of single-ended and differential inputs
- On-board 4 K samples FIFO buffer
- Two 12-bit analog output channels
- 16 digital inputs and 16 digital outputs
- Programmable pacer/counter
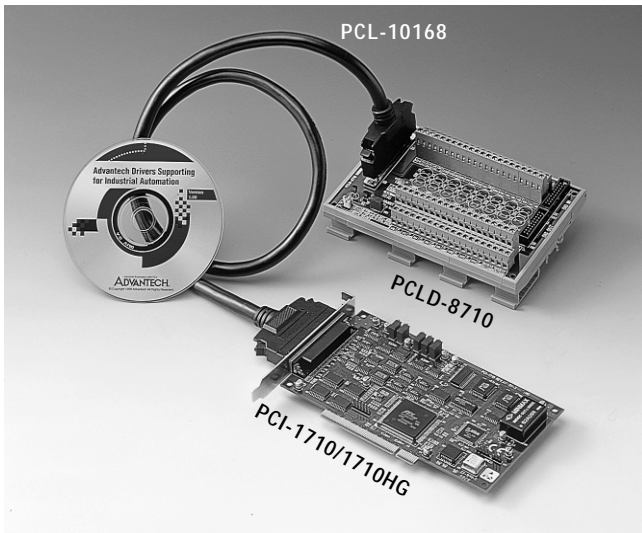
Introduction

The PCI-1710/1710HG is a multifunction DAS card for the PCI bus. Its advanced circuit design provides higher quality and more functions, including the five most desired measurement and control functions: 12-bit A/D conversion, D/A conversion, digital input, digital output, and counter/timer.

Mixed Single-ended or Differential Analog Inputs

The PCI-1710/1710HG features an automatic channel/gain scanning circuit. The circuit, rather than your software, controls multiplexer switching during sampling. The on-board SRAM stores different gain values and configurations for each channel. This design lets you perform multi-channel high-speed sampling (up to 100 kHz) with different gains for each channel and with free combination of single-ended and differential inputs.

On-board FIFO (First In First Out) Memory

The PCI-1710/1710HG has an on-board FIFO buffer which can store up to 4K A/D samples. The PCI-1710/1710HG generates an interrupt when the FIFO is half full. This feature provides continuous high-speed data transfer and more predictable performance on Windows systems.

On-board Programmable Counter

The PCI-1710/1710HG provides a programmable counter for generating a pacer trigger for the A/D conversion. The counter chip is an 82C54 or equivalent, which includes three 16-bit counters on a 10 MHz clock. One counter is used as an event counter for counting events coming from the input channels. The other two are cascaded together to make a 32-bit timer for a pacer trigger.

Special Shielded Cable for Noise Reduction

The PCL-10168 shielded cable is specially designed for the PCI-1710/1710HG for reducing noise in the analog signal lines. Its wires are all twisted pairs, and the analog lines and digital lines are seperately shielded, providing minimal cross talk between signals and the best protection against EMI/EMC problems.

Specifications

Analog Input:

- **Channels:** 16 single-ended or 8 differential (software programmable)
- **Resolution:** 12-bit
- **On-board FIFO:** 4 K samples
- **Conversion time:** 8 ms
- **Input range:** (V, software programmable)

	PCI-1710	PCI-1710HG
Bipolar	±10, ±5, ±2.5, ±1.25, ±0.625	±10, ±5, ±1, ±0.5, ±0.1, ±0.05 ±0.01, ±0.005
Unipolar	0 ~ 10, 0 ~ 5, 0 ~ 2.5, 0 ~ 1.25	0 ~ 10, 0 ~ 1, 0 ~ 0.1, 0 ~ 0.01

- **Maximum Input Overvoltage:** ±30 V
- **Common Mode Rejection Ratio (CMRR):**

PCI-1710		PCI-1710HG	
Gain	CMRR	Gain	CMRR
0.5, 1	75dB	0.5, 1	75dB
2	80dB	10	90dB
4	84dB	100	106dB
8	84dB	1000	106dB

- **Maximum A/D data throughput:** (Hz, depending on PGIA settling time)

PCI-1710: 100 k

PCI-1710HG:

Gain	Speed
0.5, 1	100k
5, 10	35k
50, 100	7k
500, 1000	770

- **Accuracy:** (Depends on gain)

PCI-1710		PCI-1710HG		
Gain	Accuracy	Gain	Accuracy	Remark
0.5, 1	0.01% of FSR ±1 LSB	0.5, 1	0.01% of FSR ±1 LSB	S.E./D
2	0.02% of FSR ±1 LSB	5, 10	0.02% of FSR ±1 LSB	S.E./D
4	0.02% of FSR ±1 LSB	50, 100	0.04% of FSR ±1 LSB	D
8	0.04% of FSR ±1 LSB	500, 1000	0.08% of FSR ±1 LSB	D

   *** S.E.: Single-ended   D: Differential**

- **Linearity error:** ±1 LSB
- **Input impedance:** 1 GW
- **Trigger mode:** Software, on-board programmable pacer or external

Analog Output:

- **Channels:** 2
- **Resolution:** 12-bit
- **Relative accuracy:** ±1/2 LSB
- **Gain error:** ±1 LSB
- **Maximum update rate:** 100 K samples / sec (polling)
- **Slew rate:** 10 V / µs
- **Output range (software programmable):**
  Internal reference: 0 ~ +5 V @ -5 V,
                      0 ~ +10 V @ -10 V
  External reference: 0 ~ +x V @ -x V (-10 ≤ x ≤ 10)

Digital Input:

- **Channels:** 16
- **Input voltage:**
  Low: 0.4 V max.
  High: 2.4 V min.
- **Input load:**
  Low: -0.2 mA @ 0.4 V
  High: 20 mA @ 2.7 V

Digital Output:

- **Channels:** 16
- **Output voltage:**
  Low: 0.4 V max. @ 8.0 mA (sink)
 High: 2.4 V min. @ -0.4 mA (source)

Programmable Timer/Counter

- **Counter chip:** 82C54 or equivalent
- **Counters:** 3 channels, 16 bits, 2 channels are permanently configured as a 32-bit programmable pacer; 1 channel is free for user applications
- **Input, gate:** TTL/CMOS compatible
- **Time base:**
  Channel 1: 10 MHz
  Channel 2: Takes input from output of channel 1
  Channel 0: Internal 1 MHz or external clock
  (10 MHz max.) selected by software.

General:

- **CE certified to CISPR 22 class B**
- **I/O Connector:** 68-pin SCSI-II female connector
- **Power consumption:** +5 V @ 850 mA (Typical),
                         +5 V @ 1.0 A (Max.)
- **Operating temperature:** 0 ~ +60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
- **Storage temperature:** -20 ~ +70° C (-4 ~ 158° F)
- **Operating humidity:** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- **Dimensions:** 175 mm (L) x 100 mm (H)   (6.9" x 3.9")
- **MTBF:** over 64,770 hrs @ 25° C, grounded-fix environment

Pin Assignments
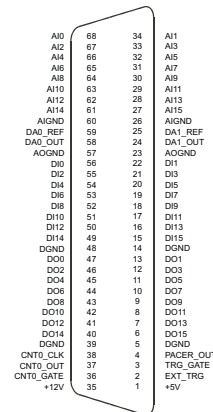
Ordering information

❑ **PCI-1710:** 12-bit, 100 kHz, PCI-bus Multifunction DAS Card, user's manual and driver CD-ROM. (cable not included)

❑ **PCI-1710HG:** 12-bit, 100 kHz, High-gain, PCI-bus Multifunction DAS Card, user's manual and driver CD-ROM. (cable not included)

❑ **PCLD-8710:** Wiring Terminal Board with CJC circuit (cable not included)

❑ **PCL-10168:** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1m.

❑ **ADAM-3968:** 68-pin SCSI-II Wiring Terminal Board for DIN-Rail Mounting

Plug-in Data Acquisition and Control

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