Manuals+ — User Manuals Simplified.

ADVANTECH High Speed Multi function Card User Manual

Contents [hide

STARTUP MANUAL
PCI-1712/1712L
1 MS/s, 12-bit, 16-ch High-Speed Multifunction card

Packing List

Before installation, please make sure that you have received the following:

- PCI-1712, PCI-1712L card
- Driver CD
- Quick Start User Manual

If anything is missing or damaged, contact your distributor or sales representative immediately.

User Manual

For more detailed information on this product, please refer to the PCI-1712 User Manual on the CD-ROM (PDF format).
CD:\Documents\Hardware Manuals\PCI\PCI-1712

Declaration of Conformity

FCC Class A
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause interference in which case the user is required to correct the interference at his own expense.
CE
This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from Advantech. Please contact your local supplier for ordering information.

Overview

The PCI-1712/1712L is a powerful high-speed multifunction DAS card for PCI bus. It features a 1MHz 12-bit A/D converter, an on-board FIFO buffer (storing up to 1K samples for A/D, and up to 32K samples for D/A conversion). The PCI-1712/1712L provides a total of up to 16 single-ended or 8 differential A/D input channels or a mixed combination, 2 12-bit D/A output channels, 16 digital input/output channels, and 3 10MHz 16-bit multifunction counter channels.PCI-1712/1712L provides specific functions for different user requirements.

Notes
For more information on this and other Advantech products, please visit our websites at:
http://www.advantech.com/eAutomation
For technical support and service: **http://www.advantech.com/support/**

This startup manual is for PCI-1712/1712L.
Part No.2003171210
1st Edition
June 2007

Specifications

Digital Input/Output

Input Channels	16 bi-directional	
Number of Ports	2	
Input Voltage	**Low**	0.8 V max.
	High	2.0V min.
Output Voltage	**Low**	0.5 V max. @ + 24 mA (sink)
	High	2.4V min. @ – 15 mA (source)

Analog Input

Channels	16 single-ended or 8 differential or combi-nation					
Resolution	12-bit					
FIFO Size	1K samples					
Max. Sampling Rate	Milti-channel, single gain: MS/s Milti-channel, multi gain: 600kS/s Milti-channel, multi gain, unipolar/bipolar: 400kS/s					
Conversion Time	500 ns					
Input range and Gain List	Gain	0.5	1	2	4	8
	Unipolar	N/A	0~10	0~5	0~2.5	0~1.25
	Bipolar	±10	±5	±2.5	±1.25	±0.625
Drift	Gain	0.5	1	2	4	8
	Zero(μV /°C)	±80	±30	±30	±30	±30
	Gain(ppm/°C)	±30	±30	±30	±30	±30
Small Signal Bandwidth for PGA	Gain	0.5	1	2	4	8
	Band-width	4.0 MHz	4.0 MHz	2.0 MHz	1.5 MHz	0.65 MHz
Common Mode Voltage	±11 V max. (operational)					
Max. Input Voltage	±20 V					
Input Protect	30 Vp-p					
Input Impedance	100 M Ω /10pF(Off); 100 M Ω /100pF(On)					
Trigger Mode	Software, onboard programmable pacer or external, pre-trigger, post-trigger, delay-trigger, about-trigger					

<table>
<tr><td rowspan="8">Accuracy</td><td rowspan="5">DC</td><td colspan="6">DNLE: ±1LSB</td></tr>
<tr><td colspan="6">INLE: ±3LSB</td></tr>
<tr><td colspan="6">Offset error: < 1 LSB</td></tr>
<tr><td>Gain</td><td>0.5</td><td>1</td><td>2</td><td>4</td><td>8</td></tr>
<tr><td>Gain error (% FSR)</td><td>0.15</td><td>0.03</td><td>0.03</td><td>0.05</td><td>0.1</td></tr>
<tr><td rowspan="3">AC</td><td colspan="6">SNR: 68 dB</td></tr>
<tr><td colspan="6">ENOB: 11 bits</td></tr>
<tr><td colspan="6">THD: -75 dB typical</td></tr>
<tr><td rowspan="2">External TTL Trigger Input</td><td>Low</td><td colspan="6">0.8 V max.</td></tr>
<tr><td>High</td><td colspan="6">2.0 V min.</td></tr>
<tr><td rowspan="3">External Ana- log Trigger Input</td><td>Range</td><td colspan="6">-10V to + 10 V</td></tr>
<tr><td>Resolution</td><td colspan="6">8-bit</td></tr>
<tr><td>Impedence</td><td colspan="6">100 M Ω /10 pF typical</td></tr>
<tr><td rowspan="2">Clock Output</td><td>Low</td><td colspan="6">0.5 V max.@ +24 mA</td></tr>
<tr><td>High</td><td colspan="6">2.4 V min. @ -15 mA</td></tr>
<tr><td rowspan="2">Trigger Output</td><td>Low</td><td colspan="6">0.5 V max.@ +24 mA</td></tr>
<tr><td>High</td><td colspan="6">2.4 V min. @ -15 mA</td></tr>
</table>

Channels	2	
Resolution	12-bit	
FIFO Size	32K samples	
Operation Mode	Single output, continuous output, waveform output	
	Using Internal	0~+5V, 0~+10 V
Output Range (Internal & External Reference)	**Reference**	-5~+5V, -10~+10V
	Using External Reference	0 ~ + x V @ + x V (- 10 ≤ x ≤ 10) -x ~ + x V @ + x V (- 10 ≤ x ≤ 10)
Accuracy	**Relative**	±1 LSB
	Differential Non-linearity	±1 LSB (monotonic)
Offset	< 1 LSB	
Slew Rate	20 V / µs	
Drift	10 ppm / °C	
Driving Capability	±10 mA	
Max. Transfer Rate	Single-channel: 1 MS/s max. for FSR Dual-channel: 500 kS/s max. for FSR	
Output Impedance	0.1 Ω max.	
Digital Rate	5 MHz	
Settling Time	2 µs(to ±1/2 LSB of FSR)	
External Clock Input	**Low**	0.8 V max.
	High	2.0 V min.
External TTL Trigger Input	**Low**	0.8 V max.
	High	2.0 V min.

Analog Output (PCI-1712 only)

Counter/Timer

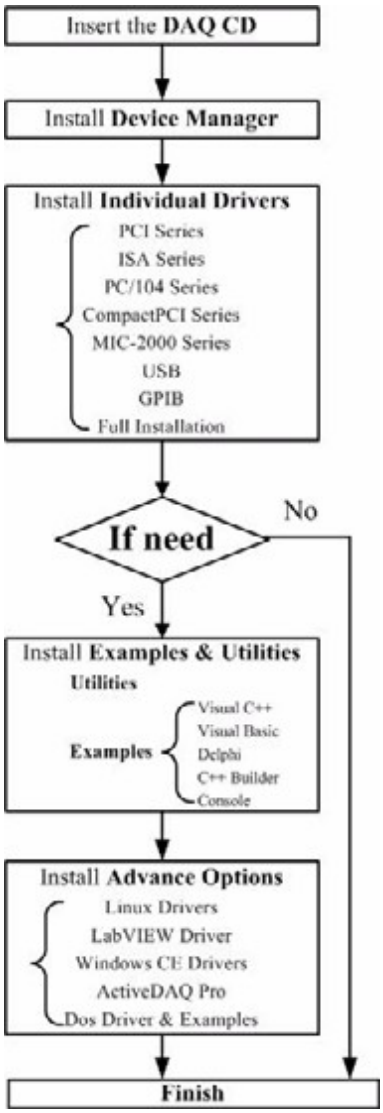
Channels	3	
Resolution	16-bit	
Compatibility	TTL level	
Base Clock	10 MHz, 1 MHz, 100 MHz, 10 kHz	
Max. Input Frequency	10 MHz	
Clock Input	**Low**	0.8 V max.
	High	2.0 V min.
Gate Input	**Low**	0.8 V max.
	High	2.0 V min.
Counter Output	**Low**	0.5 V max. @ +24mA
	High	2.4 V min. @ -15mA

General

I/O Connector Type	68-pin SCSI-II female	
Dimensions	175 mm x 100 mm (6.9″ x 3.9″)	
Power Consumption	**Typical**	+5 V @ 850mA +12 V @ 960mA
	Max.	+5 V @ 1A +12 V @ 700mA
Temperature	**Operation**	0 ~ +60°C (32~ 140°F) (refer to IEC 68 -2 – 1 ,2)
	Storage	-20 ~ +85°C (-4 ~185°F)
Relative Humidity	5 ~ 95% RH non-condensing (refer to IEC 68-2-3)	
Certification	CE certified	

Installation

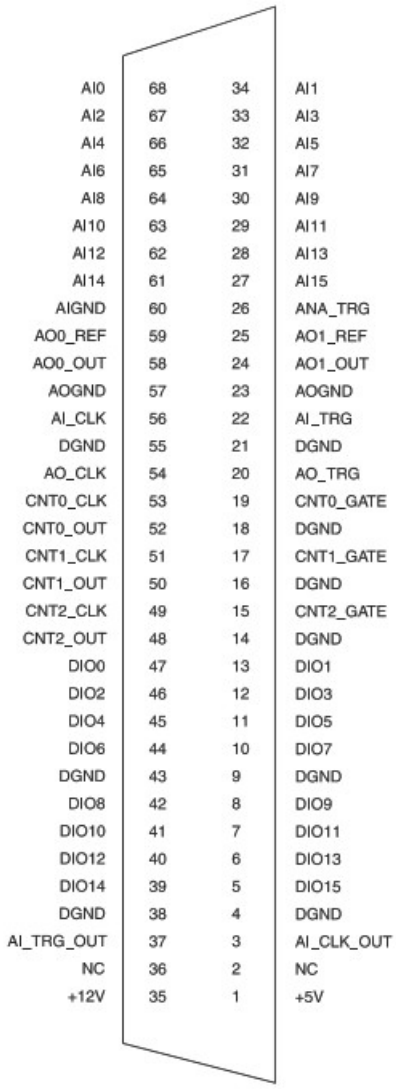
Software Installation



Hardware Installation

1. Turn off your computer and unplug the power cord and cables. TURN OFF your c
2. computer before installing or removing any components on the computer.
3. Remove the cover of your computer.
4. Remove the slot cover on the back panel of your computer.
5. Touch the metal part on the surface of your computer to neutralize the static electricity that might be on your body.
6. Insert the PCI-1712,1712L card into a PCI slot. Hold the card only by its edges and carefully align it with the slot. Insert the card firmly into place. Use of excessive force must be avoided; otherwise, the card might be damaged.
7. Fasten the bracket of the PCI card on the back panel rail of the computer with screws.
8. Connect appropriate accessories (68-pin cable, wiring terminals, etc. if necessary) to the PCI card.
9. Replace the cover of your computer chassis. Re-connect the cables you removed in step 2.
10. Plugin the power cord and turn on the computer.

PIN Assignment



*: Pins 20, 22~25, 54, 56~59 are not defined on PCI1712L.

Signal Name	Reference	Direction	Description
AI<0..15>	AIGND	Input	**Analog Input Channels 0 through 15.** Each channel pair, AI<i, i+8> (i = 0…7),can be configured as either one differential input or two single-ended inputs.
AIGND	–	–	**Analog Input Ground.** These pins are the reference points for single-ended measurements and the bias current return point for differential measurements. All three ground references – AIGND, AOGND, and DGND – are connected together on the PCI-1712 card.

AO0_REF AO1_REF	AOGND	Input	**Analog Channel 0 Output External Reference.** This is the external reference input for the analog output channel 0/1 circuity.

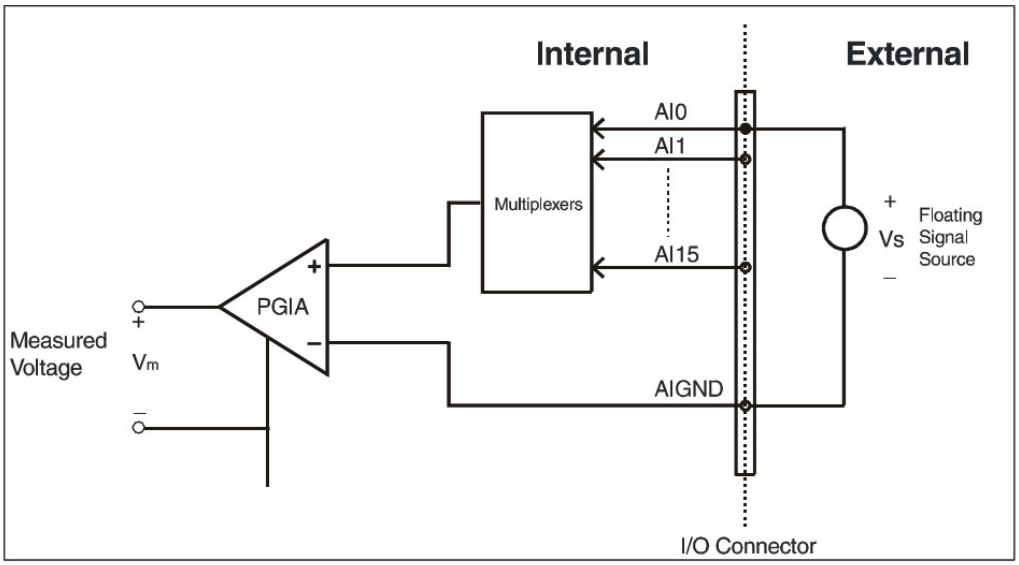
ANA_TRG	AIGND	Input	**Analog Threshold Trig-** **ger.** This pin is the analog input threshold trigg er input
AO0_OUT AO1_OUT	AOGND	Output	**Analog Channels 0 Out-** **put.** This pin supplies the voltage output of the analog output channel 0/1.
AI_CLK	DGND	Input	**Analog Input external** **clock input.** This is the external clock input for the analog input.
AI_TRG	DGND	Input	**Analog Input TTL Trigger.** This is the TTL trigger for the analog triggers.
AOGND	–	–	**Analog Output Ground.** The analog output voltages are referenced to t hese nodes. All three ground references – AIG ND, AOGND, and DGND – are connected toget her on your PCI -1712 card.
CNT0_CLK	DGND	Input	**Counter 0 Clock Input.** This pin is the counter 0 external clock input (u p to 10 MHz), counter 0 clock can be wither int ernal set by software.
CNT0_GATE	DGND	Input	**Counter 0 Gate Input.** This pin is for counter 0 gate control, see 82C5 4 data sheer for detailed information.
CNT0_OUT	DGND	Output	**Counter 0 Output.** This pin is counter 0 output, see 82C54 data sheer f or detailed information.
CNT1_CLK	DGND	Input	**Counter 1 Clock Input.** This pin is the counter 1 external clock input (u p to 10 MHz), counter 1 clock can be wither int ernal set by software.

CNT1_GATE	DGND	Input	**Counter 1 Gate Input.** This pin is for counter 1 gate control, see 82C5 4 data sheer for detailed information.
CNT1_OUT	DGND	Output	**Counter 1 Output.** This pin is counter 1 output , see 82C54 data sheer for detailed information
CNT2_CLK	DGND	Input	**Counter 2 Clock Input.** This pin is the counter 2 external clock input (u p to 10 MHz), the counter 2 clocks can be withe r internal set by software.
CNT2_GATE	DGND	Input	**Counter 2 Gate Input.** This pin is for counter 2 gate control, see 82C5 4 data sheer for detailed information.
CNT2_OUT	DGND	Output	**Counter 2 Output.** This pin is counter 2 output , see 82C54 data sheer for detailed information.
+12V	DGND	Output	**+12 VDC Source.** This pin is a +12 V power su pply.
+5V	DGND	Output	**+5 VDC Source.** This pin is a +5 V power supp ly.
NC	–	–	**No Connection.** These pins serve no connecti on.

Connections

Analog Input Connections

The PCI-1712/1712L supports either 16 single-ended or 8 differential analog inputs. Each individual input channel is software-selected. Single-ended Channel Connections The single-ended input configuration has only one signal wire for each channel, and the measured voltage (Vm) is the voltage of the wire as referenced against the common ground.



Differential Channel Connections

The differential input channels operate with two signal wires for each channel, and the voltage difference between both signal wires is measured. On the PCI1712/1712L, when all channels are configured to differential input, up to 8 analog channels are available.

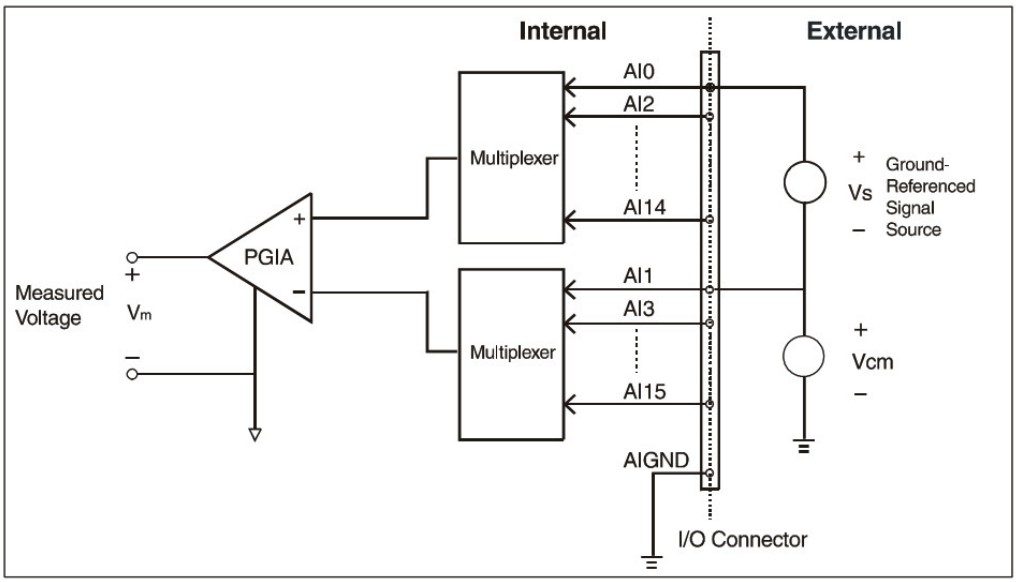


Figure 1: Differential input channel connection - ground reference signal source

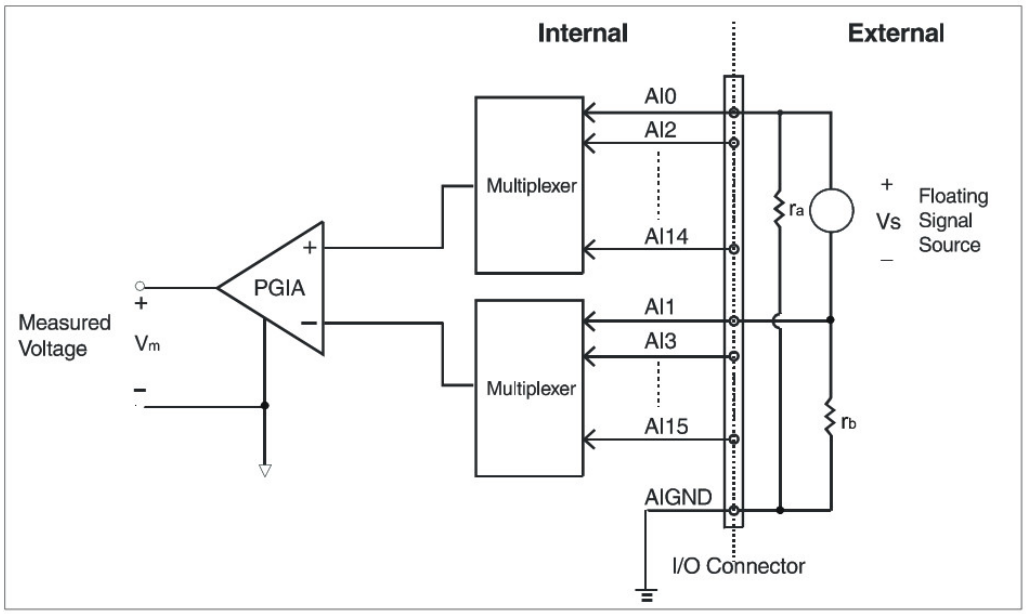
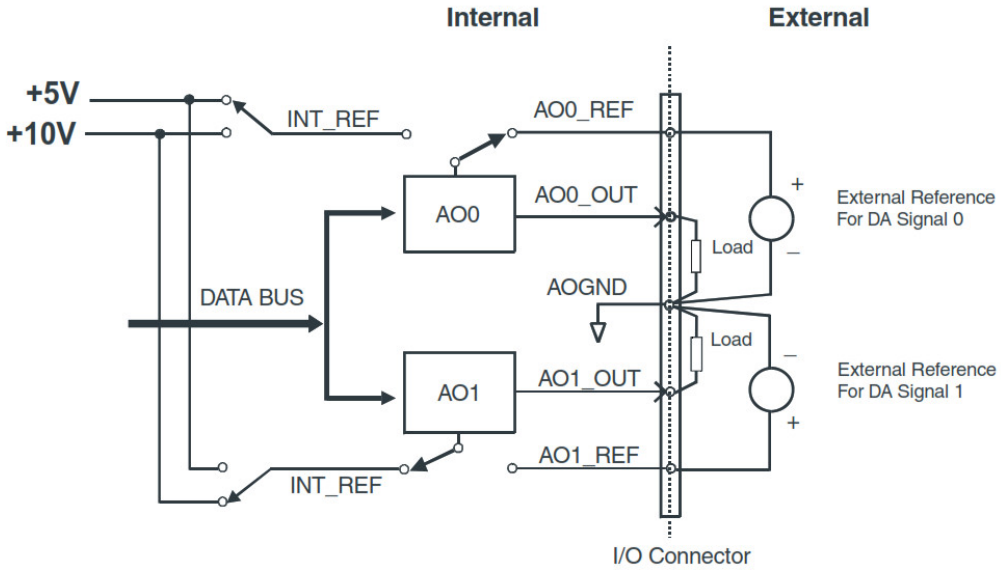


Figure 2: Differential input channel connection - floating signal source

Analog Output Connections

The PCI-1712/1712L provides two D/A output channels, AO0_OUT and AO1_OUT. Users may use the PCI- 1712 internally-provided precision +5V (+10V) reference to generate 0 ~+5 V and 0 ~+10 V unipolar D/A output range; or to generate -5 ~+5 V and -10 ~ +10 V for bipolar output range.Users also may createD/A output range through external references, AO0_REF and AO1_REF. The external reference input range is 0 ~10 V. For example, connecting with an external reference of +7 V will generate 0 ~+7 V D/A output for unipolar; and -7 ~+7 V for bipolar.



Documents / Resources

[ADVANTECH High Speed Multi function Card](#) [pdf] User Manual
High Speed Multi function Card, 1 MS s 12 bit 16 ch High Speed Card, PCI-1712, PCI-1712L

References

- Page Not Found - Advantech
- Online Support - Advantech

Manuals+, home privacy