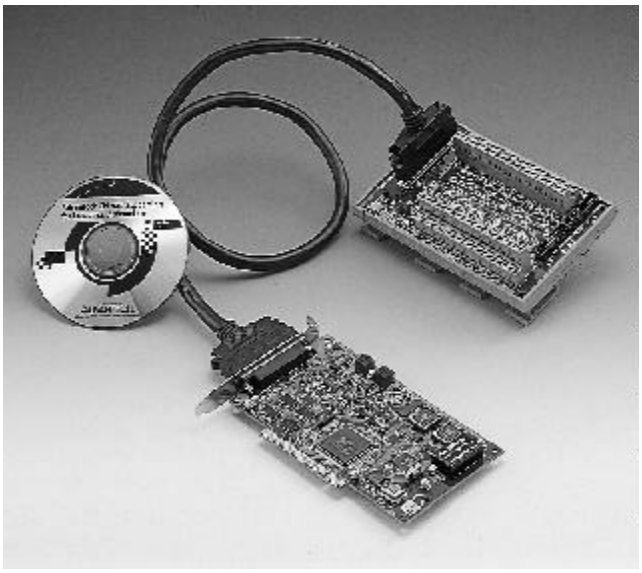
PCI-1711 / 1731

100kS/s, 12-bit, 16-ch S.E. inputs Low-Cost Multifunction Card



Features

- 16 single-ended analog inputs
- 12-bit A/D converter, with up to 100kHz sampling rate
- Programmable gain for each input channel
- Automatic channel/gain scanning
- On-board 1K samples FIFO buffer
- Two 12-bit analog output channels (Only for PCI-1711)
- 16 digital inputs and 16 digital outputs
- Programmable pacer/counter

Introduction

The PCI-1711/1731 is a powerful yet low-cost multifunction card for the PCI bus. The PCI-1711/1731 features 16 Analog Input, 16 Digital Input and 16 Digital Output channels, together with a programmable counter. The PCI-1711 further provides 2 analog output channels, while the PCI-1731 doesn't. It is for users to choose either the PCI-1711 or PCI-1731 according to what they really need as the best solution with no extra cost.

Plug-and-Play Function

The PCI-1711/1731 is a Plug-and-Play device, which fully complies with the PCI Specification Rev2.1. During card installation, you have virtually no need to set any jumpers or DIP switches. Instead, all bus-related configurations such as base I/O address and interrupts are conveniently taken care of by the Plug-and-Play function.

Flexible Input Types and Range Settings

The PCI-1711/1731 features an automatic channel/gain scanning circuit. This circuit design effectively controls multiplexer switching during sampling. Users can set different gain values for each channel according to their needs for corresponding ranges of input voltage. The gain values thus selected are stored in the SRAM. This flexible design enables multi-channel and high-speed sampling for high-performance data acquisition (up to 100 kS/s .)

On-board FIFO Memory

The PCI-1711/1731 provides an on-board FIFO (First In First Out) memory buffer, storing up to 1K A/D samples. Users can either enable or disable the interrupt request feature of the FIFO buffer. While the interrupt request for FIFO is enabled, users can further specify whether the interrupt request be sent with each sampling or only when the FIFO buffer is half saturated. This flexible feature enables a continuous high-speed data transfer with more predictable performance on Windows systems.

On-board Programmable Counter

The PCI-1711/1731 is equipped with a programmable counter, which can serve as a pacer trigger for A/D conversions. The counter chip is an 82C54 or equivalent, which incorporates three 16-bit channels on a 10 MHz clock. One of the three channels is used as an event counter for input channels. The other two are cascaded into a 32-bit timer for pacer triggering.

Applications

- Process monitoring and control
- Transducer and sensor measurement
- Multi-channel DC voltage measurement

Ordering information

- PCI-1711: 100kS/s, 12-bit, 16-ch S.E. inputs Low-Cost Multifunction Card
- PCI-1731: 100kS/s, 12-bit, 16-ch S.E. inputs Low-Cost Multifunction Card w/o analog output
- PCLD-8710: Wiring Terminal Board
- 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

Specifications

Analog Input

Channels	16 single-ended					
Resolution	12-bit					
FIFO Size	1K samples					
Max. Sampling Rate	100 kHz					
Conversion Time	10 µs					
Input range and Gain List	Gain	1	2	4	8	16
	Input	± 10V	± 5V	± 2.5V	± 1.25V	± 0.625V
Drift (ppm/°C)	Gain	1	2	4	8	16
	Zero	15	15	15	15	15
	Gain	25	25	25	30	40
Small Signal Bandwidth for PGA	Gain	1	2	4	8	16
	Bandwidth	4.0 MHz	2.0 MHz	1.5 MHz	0.65MHz	0.35MHz
Max. Input Overvoltage	±15V					
Input Protect	70 Vp-p					
Input Impedance	2 MΩ/5pF					
Trigger Mode	Software, on-board programmable pacer or external					
Accuracy	DC	INL: ± 0.5 LSB				
		Monotonicity: 12 bits				
		Offset error: Adjustable to zero				
		Gain error: 0.005% FSR (Gain=1)				
	AC	SNR: 68 dB				
		ENOB: 11 bits				

Analog Output *Only for PCI-1711*

Channels	2	
Resolution	12-bit	
Output Range (Internal & External Reference)	Internal Reference	0 ~ +5 V, 0 ~ +10 V
	External Reference	0 ~ +x V@ -x V (-10 ≤ x ≤ 10)
Accuracy	Relative	± 1/2 LSB
	Differential Non-linearity	± 1/2 LSB
Gain Error	Adjustable to zero	
Slew Rate	11V/µs	
Drift	40 ppm/°C	
Driving Capability	3mA	
Throughput	38 kHz (min.)	
Output Impedance	0.81 Ω	
Settling Time	26 µs (to ± 1/2 LSB of FSR)	
Reference Voltage	Internal	-5V or -10V
	External	-10V ~ +10V

Digital Input / Output

Input Channels	16	
Input Voltage	Low	0.8 V max.
	High	2.0 V min.
Output Channels	16	
Output Voltage	Low	0.8 V max.@8.0 mA (sink)
	High	2.0 V min.@-0.4 mA (source).

Programmable Counter / Timer

Channels	1
Resolution	16-bit
Compatibility	TTL level
Base Clock	10 MHz
Max. Input Frequency	10 MHz

General

I/O Connector Type	68-pin SCSI-II female		
Dimensions	175 mm x 100 mm (6.9" x3.9")		
Power Consumption	typical	PCI-1711	PCI-1731
		+5 V @ 850 mA	+5 V @ 700 mA
	Max.	+5 V @ 1.0 A	
Temperature	Operation	0~+60°C(32~140°F) (refer to IEC 68-2-1,2)	
	Storage	-20~+70°C(-4~158°F)	
Relative Humidity	5~95%RH non-condensing (refer to IEC 68-2-3)		

Pin Assignments