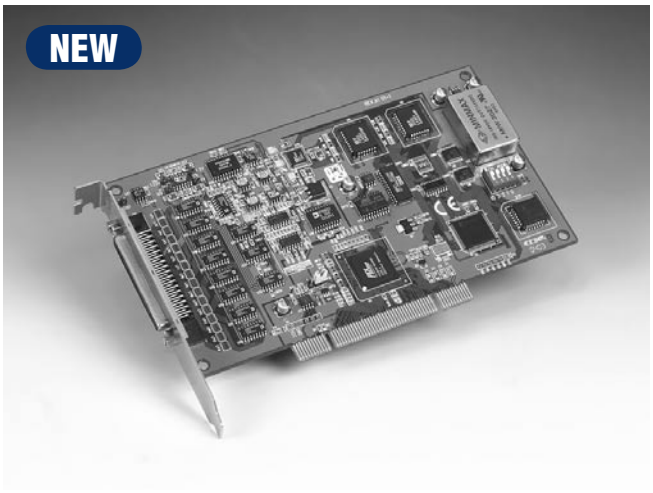
PCI-1747U

250 kS/s, 16-bit, 64-ch Analog Input Card



Features

- 16-bit high resolution
- 250 kS/s sampling rate
- 64 S.E. or 32 Diff. AI, or a combination
- Auto calibration function
- Unipolar/Bipolar input range
- 1k samples FIFO for AI
- Bus master DMA data transfer
- Universal PCI Bus
- BoardID™ switch

CE

Introduction

PCI-1747U is a high-resolution high channel count analog input card for the PCI bus. Its sampling rate is up to 250 kS/s and 16-bit resolution provides the power needed for most data acquisition applications. PCI-1747U provides 64 single-ended, 32 differential analog input channels or a combination of these. It also has built in a 1k-sample FIFO buffer for analog input data.

Specifications

Analog Input

- **Channels** 64 single-ended or 32 differential or combination
- **Resolution** 16-bit
- **FIFO Size** 1 K samples
- **Max. Sampling Rate** 250 kS/s

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
Bandwidth for PGA	Gain	0.5	1	2	4	8
	Bandwidth	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 MΩ/10pF(Off); 100 MΩ/100pF(On)

Accuracy	DC	DNLE: ±1LSB					
		INLE: ±1LSB					
		Zero (Offset) error: Adjustable to ±1 LSB					
		Gain	0.5	1	2	4	8
		Gain error (% FSR)	0.03	0.02	0.02	0.03	0.04
	AC	THD: -90 dB					
		ENOB: 13.5 bits					
Clocking and Trigger Inputs	Trigger Mode	Software, on-board programmable pacer or external					
	A/D pacer clock	250 kHz (max.); 2.328mHz (min.)					

Counter/Timer

- **Counter chip** 82C54 or equivalent
- **Channels** 3 channels, 2 channels are permanently configured as programmable pacers; 1 channel is for internal use only
- **Resolution** 16-bit
- **Base Clock** Channel 1: 10 MHz
Channel 2: Takes input from output of channel 1
Channel 0: Internal 100 kHz
- **Counter 0** 16-bit timer
- **Counter 1, 2** Cascade as a 32-bit clock divider for pacer clock for A/D conversion

General

- **I/O Connector Type** 68-pin SCSI-II female
- **Dimensions** 175 x 100 mm (6.9" x 3.9")

Power Consumption	Typical	+5 V @ 850 mA +12 V @ 600 mA
	Max.	+5 V @ 1 A +12 V @ 700 m A
Temperature	Operating	0 ~ 60 °C (32 ~ 158 °F) (refer to IEC 68-2-1,2)
	Storage	-20 ~ 70°C (-4 ~ 185°F)

- **Relative Humidity** 5 ~ 95%RH non-condensing (refer to IEC 68-2-3)
- **Certifications** CE certified

Ordering Information:

- **PCI-1747U** 250 kS/s, 16-bit, 64-ch, analog input universal PCI bus card
- **ADAM-3968** 68-pin SCSI cable wiring terminal for DIN-rail mounting
- **PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1m.
- **PCL-10168-2** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 2m.

Feature Details

Auto-Calibration Function

The PCI-1747U provides an auto-calibration function with an calibration utility. The built-in calibration circuitry of the PCI-1747U corrects gain and offset errors in analog input, thereby eliminating the need for external equipment and user adjustments.

On-Board Programmable Timer/Counter

PCI-1747U provides a programmable timer counter for generating a pacer trigger for the A/D conversion. The timer/counter chip is 82C54, which includes three 16-bit counter 10 MHz clocks. One counter is used as an event counter for counting events coming from the input channel. The other two are cascaded together to make a 32-bit timer for pacer trigger time base.

Plug & Play Function

The PCI-1747U is a Plug & Play device, which fully complies with PCI Specification Rev 2.2. During card installation, there is no need to set jumpers or DIP switches. Instead, all bus-related configurations such as base I/O address and interrupt are automatically done by the Plug & Play function.

Automatic Channel/Gain/SD/BU Scanning

The PCI-1747U features an automatic channel/gain/SD/BU scanning circuit. This circuit controls multiplexer switching during sampling in a way that is more efficient than software implementation. An on-board SRAM stores different gain, SD (Single-Ended/Differential) and BU (Bipolar/Unipolar) values for each channel. This combination lets users perform multi-channel high-speed sampling with different gain, SD and BU values for each channel.

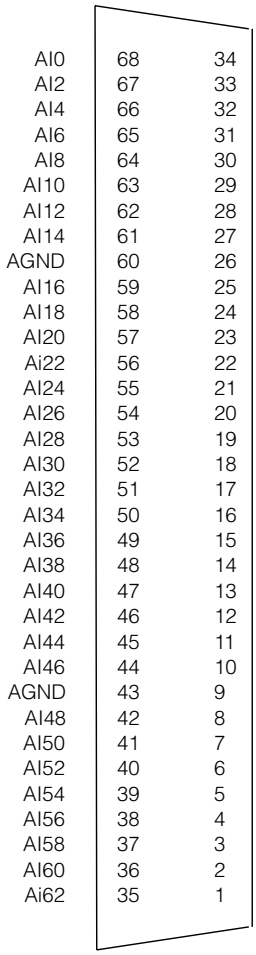
PCI-Bus Mastering Data Transfer

PCI-1747U supports PCI-Bus mastering DMA for high-speed data transfer and gap-free analog input and analog output. By setting aside a block of memory in the PC, the PCI-1747U performs bus-mastering data transfers without CPU intervention, setting the CPU free to perform more urgent tasks such as data analysis and graphics manipulation. The function makes it possible to run all I/O functions simultaneously at full speed without losing data.

On-board FIFO Memory

PCI-1747U provides 1K samples on-board FIFO (First In First Out) memory buffer for AD. This is an important feature for faster data transfer and more predictable performance under the Windows system.

Pin Assignments



AI0	68	34	AI1
AI2	67	33	AI3
AI4	66	32	AI5
AI6	65	31	AI7
AI8	64	30	AI9
AI10	63	29	Ai11
AI12	62	28	AI13
AI14	61	27	AI15
AGND	60	26	AGND
AI16	59	25	AI17
AI18	58	24	AI19
AI20	57	23	AI21
Ai22	56	22	AI23
AI24	55	21	AI25
AI26	54	20	AI27
AI28	53	19	AI29
AI30	52	18	AI31
AI32	51	17	AI33
AI34	50	16	AI35
AI36	49	15	AI37
AI38	48	14	AI39
AI40	47	13	AI41
AI42	46	12	AI43
AI44	45	11	AI45
AI46	44	10	AI47
AGND	43	9	AGND
AI48	42	8	AI49
AI50	41	7	AI51
AI52	40	6	AI53
AI54	39	5	AI55
AI56	38	4	AI57
AI58	37	3	AI59
AI60	36	2	AI61
Ai62	35	1	Ai63