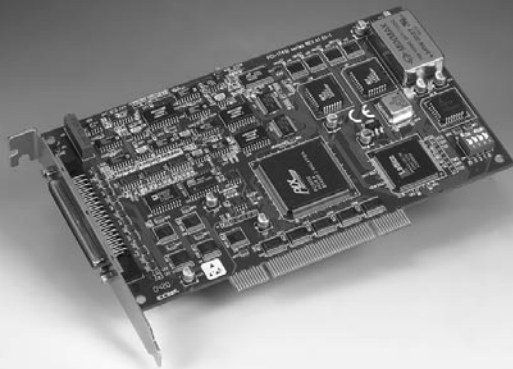


PCI-1741U

**16-bit, 200 kS/s Low cost
Multifunction card w/AO**

NEW



Features

- 16-bit high resolution
- 200 kS/s sampling rate
- Auto calibration function
- 16 S.E. or 8 Diff. AI
- Unipolar/Bipolar input range
- 1 K samples FIFO for AI
- Universal PCI bus (support 3.3 V or 5 V PCI bus signal)
- BoardID™ switch

Introduction

PCI-1741U is a powerful high-resolution multifunction DAS card for the PCI bus. Its sampling rate is up to 200 kS/s and the 16-bit resolution makes it suitable for most data acquisition applications. PCI-1741U provides 16 single-ended or 8 differential analog input channels, one 16-bit D/A output channel, 16 digital input/output channels, and one 10 MHz 16-bit counter channel.

Auto-calibration Function

PCI-1741U provides an auto-calibration function by using a calibration utility. The built-in calibration circuitry of the PCI-1741U corrects gain and offset errors in analog input and analog output channels thereby eliminating the need for external equipment and user adjustments.

BoardID™ Switch

PCI-1741U has a built-in BoardID™ DIP switch that helps define each card's unique identity when multiple identical PCI cards have been installed in the same computer. The BoardID switch is very useful when you build your system with multiple identical PCI cards. With the correct BoardID switch settings, you can easily identify and access each card during hardware configuration and software programming.

Plug & Play Function

The PCI-1741U 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.

On-board FIFO Memory

The PCI-1741U 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.

On Board Programmable Timer/Counter

The PCI-1741U 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.

Specifications

Analog Input

- **Channels** 16 single-ended or 8 differential or combination
- **Resolution** 16-bit
- **FIFO Size** 1 K samples
- **Max. Sampling Rate** 200 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
Bandwidth for PGA	Bipolar	±10	±5	±2.5	±1.25	±0.625
	Gain	0.5	1	2	4	8
Bandwidth for PGA	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 (protection)
- **Input Protect** 30Vp-p
- **Input Impedance** 100 MΩ/10pF(Off); 100 MΩ/100pF(On)

Accuracy	DC	DNLE: ± 1 LSB					
		INLE: ± 1 LSB					
		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	200 kHz (max.) : 2.328MHz (min.)					

Analog Output

- **Channels** 1
- **Resolution** 16-bit
- **Operation mode** Single output
- **Throughput** PC dependent, Software update (Direct AO)

Output Range (Internal & External Reference)	Using Internal Reference	0 ~ +5 V, 0 ~ +10 V, -5 ~ +5 V, -10 ~ +10 V
	Using External Reference	0 ~ +x V @ +x V (-10.x.10) -x ~ +x V @ +x V (-10.x.10)
Accuracy	DC	DNLE: ± 1 LSB (monotonic)
		INLE: ± 1 LSB
		Zero (Offset) error: Adjustable to ± 1 LSB
		Gain (Full-scale) error: Adjustable to ± 1 LSB
Dynamic Performance	Settling Time	5 μ s (to 4 LSB of FSR)
	Slew Rate	20 V/ μ s

- **Drift** 10 ppm/.
- **Driving Capability** ± 20 mA
- **Output Impedance** 0.1 Ω max.

Digital Input /Output

- **Input Channels** 16
- **Output Channels** 16
- **Number of Ports** 2

Input Voltage	Low	0.8 V max.
	High	2.0 V min.
Output Voltage	Low	0.5 V max. @ +24 mA (sink)
	High	2.4 V min. @ -15 mA (source)
	High	2.0 V min.

Counter/Timer

- **Counter Chip** 82C54 or equivalent
- **Channels** 3 channels, 2 channels are permanently configured as programmable pacers; 1 channel is free for user application
- **Counter 0** 16-bit counter
- **Counter 1, 2** Cascade as a 32-bit clock divider for pacer clock for A/D conversion
- **Resolution** 16-bit
- **Base Clock** Channel 1: 10 MHz
Channel 2: Takes input from output of channel 1
Channel 0: Internal 100 kHz or external
- **Compatibility** TTL level

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. @ +24 mA (sink)
	High	2.4 V min. @ -15 mA (source)

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 mA
Temperature	Operation	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

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
AIGND	60	26	AIGND
AO0_REF	59	25	AO1_REF
AO0_OUT	58	24	AO1_OUT
AOGND	57	23	AOGND
DI0	56	22	DI1
DI2	55	21	DI3
DI4	54	20	DI5
DI6	53	19	DI7
DI8	52	18	DI9
DI10	51	17	DI11
DI12	50	16	DI13
DI14	49	15	DI15
DGND	48	14	DGND
DO0	47	13	DO1
DO2	46	12	DO3
DO4	45	11	DO5
DO6	44	10	DO7
DO8	43	9	DO9
DO10	42	8	DO11
DO12	41	7	DO13
DO14	40	6	DO15
DGND	39	5	DGND
CNT0_CLK	38	4	PACER_OUT
CNT0_OUT	37	3	TRG_GATE
CNT0_GATE	36	2	EXT_TRG
+12V	35	1	+5V

Ordering Information

- **PCI-1741U** 200 kS/s, 16-bit, 16-ch High-Resolution Multifunction Card, user's manual and driver CD-ROM. (cable not included)
- **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.
- **ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail Mounting
- **PCLD-8710** Industrial Wiring Terminal Board with CJC circuit for DIN-rail Mounting. (cable not included)
- **PCI-1741S** PCI-1741U with PCLD-8710 and PCL-10168 cable