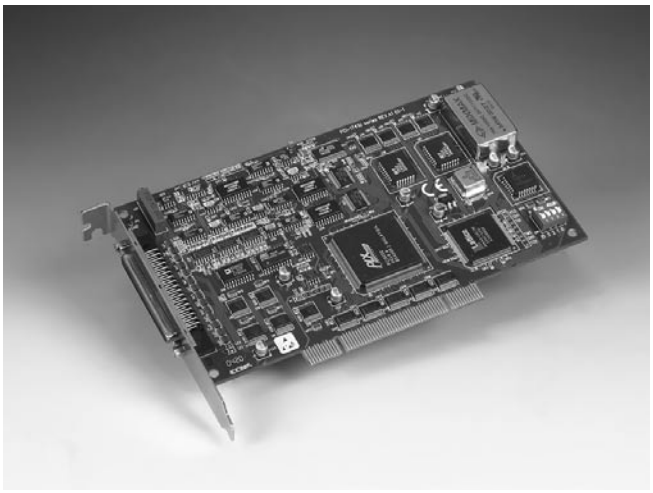
PCI-1741U

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



Features

- 16-bit high resolution
- 200 kS/s sampling rate
- Auto calibration function
- 16 single-ended, 8 differential or a combination of analog inputs
- Unipolar/Bipolar input range
- 1024 samples FIFO for AI
- Universal PCI bus (support 3.3 V or 5 V PCI bus signal)
- BoardID™ switch

CE

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.

Specifications

Analog Input

- **Channels** 16 single-ended /8 differential (SW programmable)
- **Resolution** 16 bits
- **Max. Sampling Rate** 200 kS/s
- **FIFO Size** 1024 samples
- **Overvoltage Protection** 30 Vp-p
- **Input Impedance** 100 MΩ/10pF (Off); 100 MΩ/100pF (On)
- **Sampling Mode** Software, on-board programmable pacer or external
- **Input Range** **(V, software programmable)**

Unipolar	N/A	0~10	0~5	0~2.5	0~1.25
Bipolar	±10	±5	±2.5	±1.25	±0.625
Accuracy (% of FSR ±1LSB)	0.03	0.02	0.02	0.03	0.04

Analog Output

- **Channels** 1
- **Resolution** 16 bits
- **Output Rate** Static update
- **Output Range** **(V, software programmable)**

Internal Reference	**Bipolar**	±5, ±10
	Unipolar	0 ~ 5, 0 ~ 10
External Reference		0~+xV @ +xV (-10 ≤ x ≤ 10) -x~+xV @ +xV (-10 ≤ x ≤ 10)

- **Slew Rate** 20 V/μs
- **Driving Capability** ±20 mA
- **Output Impedance** 0.1 Ω max.
- **Operation Mode** Software polling
- **Accuracy** INLE: ±1LSB

Digital Input

- **Channels** 16
- **Compatibility** 5 V/TTL
- **Input Voltage** Logic 0: 0.8 V max.
Logic 1: 2.0 V min.

Digital Output

- **Channels** 16
- **Compatibility** 5 V/TTL
- **Output Voltage** Logic 0: 0.8 V max.
Logic 1: 2.0 V min.
- **Output Capability** Sink: 24 mA @ 0.8 V
Source: -15 mA @ 2.0 V

Counter/Timer

- **Channels** 1
- **Compatibility** 5 V/TTL
- **Resolution** 16 bits
- **Max. Input Frequency** 10 MHz
- **Reference Clock** Internal: 10 MHz
External Clock Frequency: 10 MHz

General

- **Bus Type** Universal PCI 2.2
- **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
- **Operating Temperature** 0 ~ 60° C (32 ~ 158° F) (refer to IEC 68-2-1, 2)
- **Storing Temperature** -20 ~ 70 °C (-4 ~ 185 °F)
- **Storing Humidity** 5 ~ 95% RH, non-condensing (refer to IEC 68-2-3)
- **Certifications** CE

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)
- **PCLD-8710BNC** Industrial Wiring Terminal Board with CJC circuit and BNC connectors for DIN-rail Mounting (cable not included)
- **PCI-1741S** PCI-1741U with PCLD-8710 and PCL-10168 cable

Feature Details

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.

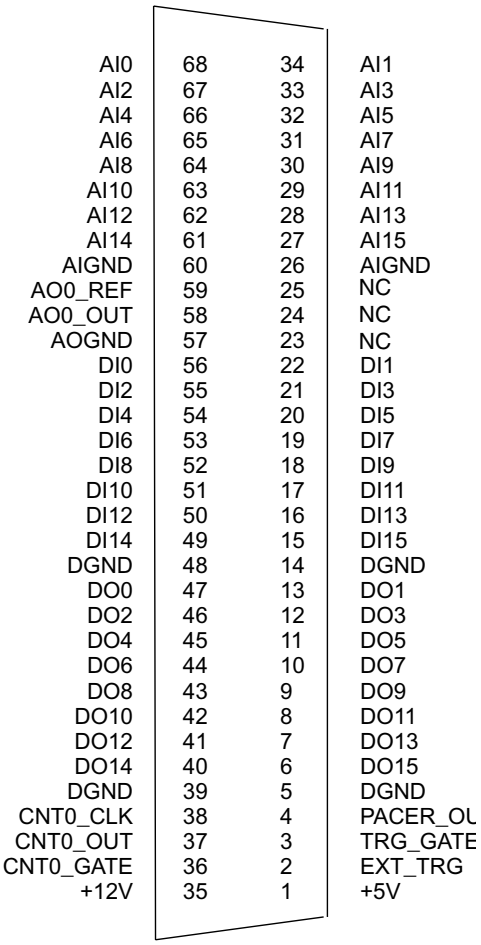
On-board FIFO Memory

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.

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	NC
AO0_OUT	58	24	NC
AOGND	57	23	NC
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_OU
CNT0_OUT	37	3	TRG_GATE
CNT0_GATE	36	2	EXT_TRG
+12V	35	1	+5V