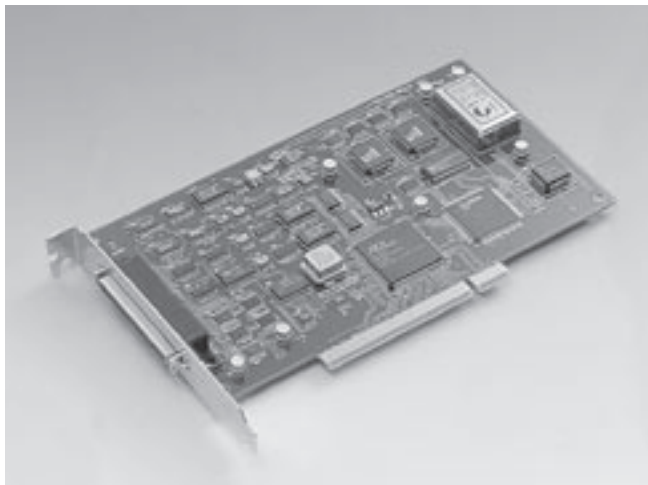


# PCI-1716

# PCI-1716L

**250 kS/s, 16-bit High-Resolution  
Multifunction Card**

**250 kS/s, 16-bit High-Resolution  
Multifunction Card w/o AO Function**



## Features

- 16 single-ended, 8 differential or a combination of analog inputs
- 16-bit A/D converter, with up to 250 kHz sampling rate
- Onboard FIFO memory (1024 samples)
- Auto-calibration
- PCI-Bus mastering data transfer
- 2 analog output channels (PCI-1716 only)
- 16 digital inputs and 16 digital outputs
- Onboard programmable counter
- BoardID™ switch

## Introduction

PCI-1716 and PCI-1716L are powerful high-resolution multifunction cards for the PCI bus. They feature a 250 kS/s 16-bit A/D converter, and an onboard 1K sample FIFO buffer for A/D. The cards can also have up to sixteen single-ended or eight differential A/D input channels or a combination of these; two 16-bit D/A output channels, 16 digital input/output channels, and one 10 MHz 16-bit counter channel. PCI-1716 and PCI-1716L provide specific functions for different user requirements.

## Specifications

### Analog Input

- **Channels** 16 single-ended/ 8 differential (SW programmable)
- **Resolution** 16 bits
- **Max. Sampling Rate\*** 250 kS/s max.
- **FIFO Size** 1024 samples
- **Overvoltage Protection** 30 Vp-p
- **Input Impedance** Off: 100 M $\Omega$ /10 pF, On: 100 M $\Omega$ /100 pF
- **Sampling Modes** Software, onboard programmable pacer, or external
- **Trigger Modes** Pre-trigger, Post-trigger, Delay-trigger, About-trigger
- **Input Range** (V, software programmable)

|                                                  |          |         |           |            |             |
|--------------------------------------------------|----------|---------|-----------|------------|-------------|
| <b>Unipolar</b>                                  | N/A      | 0 ~ 10  | 0 ~ 5     | 0 ~ 2.5    | 0 ~ 1.25    |
| <b>Bipolar</b>                                   | $\pm 10$ | $\pm 5$ | $\pm 2.5$ | $\pm 1.25$ | $\pm 0.625$ |
| <b>Accuracy (% of FSR <math>\pm 1</math>LSB)</b> | 0.05     | 0.03    | 0.03      | 0.05       | 0.1         |

#### \*Note:

The sampling rate and throughput depends on the computer hardware architecture and software environment. The rates may vary due to programming language, code efficiency, CPU utilization and other factors.

### Analog Output (PCI-1716 only)

- **Channels** 2
- **Resolution** 16 bits
- **Output Rate** Static update
- **Output Range** (V, software programmable)

|                           |                                          |                       |
|---------------------------|------------------------------------------|-----------------------|
| <b>Internal Reference</b> | <b>Unipolar</b>                          | 0 ~ 5, 0 ~ 10         |
|                           | <b>Bipolar</b>                           | $\pm 5$ V, $\pm 10$ V |
| <b>External Reference</b> | 0 ~ +x V @ +x V (-10 $\leq x \leq 10$ )  |                       |
|                           | -x ~ +x V @ +x V (-10 $\leq x \leq 10$ ) |                       |

- **Slew Rate** 20 V/ $\mu$ s
- **Driving Capability**  $\pm 20$  mA
- **Output Impedance** 0.1  $\Omega$  max.
- **Operation Mode** Software polling
- **Accuracy** INLE:  $\pm 1$  LSB

### 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: 0.4 V max.  
Logic 1: 2.4 V min.
- **Output Capability** Sink: 0.8 mA @ 0.8 V  
Source: -2.4 mA @ 2.0 V

### Pacer/Counter

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

### General

- **Bus Type** PCI V2.2
- **I/O Connector** SCSI-68P female x 1
- **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
- **Operating Temperature** 0 ~ 60° C (32 ~ 158° F) (refer to IEC 68-2-1, 2)
- **Storing Temperature** -20 ~ 85° C (-4 ~ 158° F)
- **Operating Humidity** 5 ~ 85% RH non-condensing (refer to IEC 68-1, -2, -3)
- **Storage Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-1, -2, -3)

## Ordering Information

- **PCI-1716** 250 kS/s, 16-bit high-resolution multifunction card
- **PCI-1716L** 250 kS/s, 16-bit high-resolution multifunction card without AO
- **PCLD-8710** SCSI-68 wiring terminal w/CJC, DIN-rail mount
- **PCLD-8710BNC** SCSI-68 wiring terminal w/CJC and BNC connectors, DIN-rail mount
- **PCL-10168-1** SCSI-68 Shielded Cable, 1 m
- **PCL-10168-2** SCSI-68 Shielded Cable, 2 m
- **ADAM-3968** SCSI-68 wiring terminal, DIN-rail mount

## 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       |

\*: Pins 23~25 and pins 57~59 are not defined for the PCI-1742U