# PCI-1712/L

# 1 MS/s, 12-bit, 16-ch PCI Multifunction Card



#### **Features**

- 16 single-ended or 8 differential or a combination of analog inputs
- 12-bit A/D converter, with up to 1 MHz sampling rate
- Programmable gain
- Automatic channel/gain scanning
- Onboard FIFO memory (Al: 1,024 samples AO: 32,768 samples)
- Two 12-bit analog output channels with continuous waveform output function (PCI-1712 only)
- 16-ch digital input and 16-ch digital output
- Three 16-bit programmable multifunction counter/timers on 10 MHz
- Auto-calibration (Al/AO)
- PCI-Bus mastering data transfer
- Pre-, post-, about- and delay-trigger data acquisition modes for analog input channels
- Flexible triggering and clocking capabilities





#### Introduction

PCI-1712 and PCI-1712L are powerful high-speed multifunction cards for the PCI bus. They feature a 1 MHz 12-bit A/D converter, an onboard FIFO buffer (storing up to 1024 samples for A/D, and up to 32,768 samples for D/A conversion). The PCI-1712 cards provide a total of up to 16 single-ended or 8 differential A/D input channels or a mixed combination, two 12-bit D/A output channels, 16 digital input/output channels, and three 10 MHz 16-bit multifunction counter channels. PCI-1712L is a low-cost version without analog output.

### **Specifications**

#### **Analog Input**

• **Channels** 16 single-ended/ 8 differential (software programmable)

• Resolution 12 bits

Max. Sampling Rate Multi-channel, single gain: 1 MS/s

Multi-channel, multi gain: 600 kS/s

Multi-channel, multi gain, unipolar/bipolar: 400 kS/s

• FIFO Size 1,024 samples

■ Overvoltage Protection 30 Vp-p

■ Input Impedance 100 MW/10 pF (Off), 100 MW/100 pF (On)

• Sampling Modes Software, onboard programmable pacer and external

Trigger Modes
 Pre-trigger, post-trigger, delay-trigger and about-trigger

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)	0.1	0.1	0.2	0.2	0.4

#### **Analog Output (PCI-1712 only)**

Channels

Resolution 12 bits
Output Rate 1 MS/s
FIFO Size 32,768 samples

Output Range (V, software programmable)

Internal Reference	Bipolar	±5, ±10				
	Unipolar	0 ~ 5, 0 ~ 10				
External Reference		$0 \sim +x \ V \ @ +x \ V \ (-10 \le x \le 10)$ -x \sim +x \ V \ @ +x \ V \ (-10 \ \le x \ \le 10)				

Slew Rate 20 V/µs
 Driving Capability 10 mA
 Output Impedance 0.1 W max.

Operation Mode Software polling, continuous output and waveform

output

Accuracy INLE: ±1 LSB

DNLE: ±1 LSB (monotonic)

#### **Digital Input**

Channels 16Compatibility 5 V/TTL

Input Voltage Logic 0: 0.8 V max.

Logic 1: 2.0 V min.

#### **Digital Output**

Channels 16Compatibility 5 V/TTL

Output Voltage Logic 0: 0.8 V max.

Logic 1: 2.0 V min.

• Output Capability Sink: 8.0 mA @ 0.8 V

Source: -0.4 mA @ 2.0 V

#### Pacer/Counter

Channels 3
 Resolution 16 bits
 Compatibility 5 V/TTL
 Max. Input Frequency 10 MHz

Reference Clock Internal: 10 MHz, 1 MHz, 100 kHz, 10 kHz

External Frequency: 10 MHz max.

#### General

**Bus Type** PCI V 2.2

I/O Connector
 Dimensions (L x H)
 1 x 68-pin SCSI female connector
 175 x 100 mm (6.9" x 3.9")

■ Power Consumption Typical: 5 V @ 850 mA, 12 V @ 600 mA

Max.: 5 V @ 1.0 A, 12 V @ 700 mA

• Operating Temperature  $0 \sim 60^\circ$  C (32  $\sim$  140 $^\circ$  F) (refer to IEC 68-2-1, 2)

■ Storage Temperature -20 ~ 85° C (-4 ~ 185° F)

• **Storage Humidity** 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)

## **Ordering Information**

PCI-1712 1 MS/s, 12-bit High-speed Multifunction PCI Card PCI-1712L 1 MS/s, 12-bit High-speed Multi. PCI Card w/o AO PCLD-8712 DIN-rail Wiring Board for PCI-1712/L PCL-10168-1 68-pin SCSI Shielded Cable, 1 m

PCL-10168-2 68-pin SCSI Shielded Cable, 2 m 68-pin DIN-rail SCSI Wiring Board ADAM-3968

# **Pin Assignments**

			1				
AI0	68	34	Al1				
Al2	67	33	Al3				
Al4	66	32	Al5				
Al6	65	31	AI7				
Al8	64	30	Al9				
Al10	63	29	Al11				
Al12	62	28	Al13				
Al14	61	27	Al15				
AIGND	60	26	ANA_TRG				
AO0_REF*	59	25	AO1_REF*				
AO0_OUT*	58	24	AO1_OUT*				
AOGND*	57	23	AOGND*				
AI_CLK*	56	22	AI_TRG*				
DGND	55	21	DGND				
AO_CLK*	54	20	AO_TRG*				
CNT0_CLK	53	19	CNT0_GA TE				
CNT0_OUT	52	18	DGND				
CNT1_CLK	51	17	CNT1_GA TE				
CNT1_OUT	50	16	DGND				
CNT2_CLK	49	15	CNT2_GA TE				
CNT2_OUT	48	14	DGND				
DIO0	47	13	DIO1				
DIO2	46	12	DIO3				
DIO4	45	11	DIO5				
DIO6	44	10	DIO7				
DGND	43	9	DGND				
DIO8	42	8	DIO9				
DIO10	41	7	DIO11				
DIO12	40	6	DIO13				
DIO14	39	5	DIO15				
DGND	38	4	DGND				
AI_TRG_OUT	37	3	Al_CLK_OUT				
NC	36	2	NC				
+12V	35	1	+5V				
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\*: Pin 20, 22~25, 54, 56~59 are not defined on PCI-1712L