

# PCIE-1813

## 38.4 kS/s, 26-Bit, 4-Ch, Simultaneous Sampling, Universal Bridge Input, Multifunction PCI Express Card

Preliminary



### Features

- 4 simultaneous sampling analog inputs, up to 38.4 kS/s, 26-bit resolution
- Full, half, and quarter-bridge sensor input with built-in anti-aliasing filter
- 2 analog outputs, up to 3 MS/s, 16-bit resolution
- Four 32-bit programmable encoder counters/ timers/ encoder counters
- 32 programmable DI/Os with interrupt functions
- Board ID switch
- Full automatic calibration

### Introduction

PCIE-1813 is a 26-bit high-resolution multifunction data acquisition PCI Express card specifically designed for bridge sensor inputs, such as strain gauges, load cells, pressure sensors, and torque sensors. PCIE-1813 also features 2-ch, 16-bit analog outputs with waveform generation capability and supports simultaneous waveform generation and analog input functions.

### Specifications

#### Analog Input Overview

- Channels 4
- Resolution 26 bits
- Sample Rate 38.4 kS/s max. simultaneous

#### Voltage Input

- Input Ranges  $\pm 10\text{ V}$ ,  $\pm 5\text{ V}$ ,  $\pm 2.5\text{ V}$ ,  $\pm 1.25\text{ V}$ ,  $\pm 625\text{ mV}$ ,  $\pm 312.5\text{ mV}$
- Accuracy  $\pm 0.01\%$  of FSR

#### Bridge Input

- Input Ranges  $\pm 31.25\text{ mV/V}$ ,  $\pm 62.5\text{ mV/V}$ ,  $\pm 125\text{ mV/V}$ ,  $\pm 250\text{ mV/V}$ ,  $\pm 500\text{ mV/V}$ , and  $\pm 1\text{ V/V}$
- Bridge Mode Full, half, quarter
- Bridge Resistance 120  $\Omega$ , 350  $\Omega$ , 1 k $\Omega$
- Shunt Calibration 33.333 k $\Omega$ , 50 k $\Omega$ , 100 k $\Omega$
- Excitation Voltage 0 ~ 10 V
- Remote Sensing Yes

#### Analog Output

- Channels 2
- Resolution 16 bits
- Output Rate 3 MSPS max.
- Output Range Software programmable

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

- Slew Rate 20 V/ $\mu$ s
- Driving Capability 5 mA
- Operation Mode Static update, waveform generation
- Accuracy  $\pm 0.01\%$  of FSR

#### Analog Trigger

- Channels 2
- Resolution 16 bits
- Input Range -10 V ~ +10 V
- Hysteresis Yes. Hysteresis range is configurable
- Trigger Edge Rising edge or falling edge, selected by software

#### Digital Trigger

- Channels 2

- Input Voltage Logic 0: 1.5 V max.  
Logic 1: 3.5 V min.
- Trigger Edge Rising edge or falling edge, selected by software

#### Digital I/O

- Channels 32 (shared)
- Input Voltage Logic 0: 1.5 V max.  
Logic 1: 3.5 V min.  
Low 0.5 V max. @ +20 mA (sink)  
High 4.5 V min. @ -20 mA (source)
- Output Voltage

#### Counter/ Timer/ Encoder Counter

- Channels 4
- Resolution 32 bits
- Input/Output Voltage Same as that for digital I/O
- Max. Input Frequency 10 MHz
- Counter/Timer Functions Frequency measurement, pulse width measurement, pulse output, PWM output  
Quadrature (X1, X2, X4), dual pulse (CW/CCW), signed pulse (OUT/DIR)
- Encoder Functions

#### General

- Form Factor PCI Express x1
- I/O Connector 100-pin SCSI female ribbon-type connector
- Dimensions (L x W) 167 x 100 mm (6.6" x 3.9")
- Operating Temperature 0 ~ 60  $^{\circ}$ C (32 ~ 140  $^{\circ}$ F) (refer to IEC 68-2-1, 2)
- Storage Temperature -40 ~ 70  $^{\circ}$ C (-40 ~ 158  $^{\circ}$ F)
- Storage Humidity 5 ~ 95% RH non-condensing (refer to IEC 68-2-3)
- Board ID TM switch

### Ordering Information

- PCIE-1813-AE 38.4 kS/s, 26-bit, 4-ch, simultaneous sampling, universal bridge input, multifunction PCI Express card

#### Accessories

- PCL-101100R-1E 100-pin SCSI shielded cable, 1 m
- PCL-101100R-2E 100-pin SCSI shielded cable, 2 m
- ADAM-39100-BE 100-pin DIN rail SCSI wiring board
- PCLD-8810-AE Low-Pass Active Filter Board
- PCLD-8813-AE 6Advanced Signal Conditioning Board for PCIE-1812/PCIE-1813
- PCLD-8811-AE Low-Pass Active Filter Board