

# PCIE-1813

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

NEW



### 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  $120\ \Omega$ ,  $350\ \Omega$ ,  $1\text{ k}\Omega$
- Shunt Calibration  $33.333\text{ k}\Omega$ ,  $50\text{ k}\Omega$ ,  $100\text{ k}\Omega$
- Excitation Voltage  $0 \sim 10\text{ V}$
- Remote Sensing Yes

#### Analog Output

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

| Internal Reference | Unipolar                                                      | $0 \sim 5\text{ V}$ , $0 \sim 10\text{ V}$                      |
|--------------------|---------------------------------------------------------------|-----------------------------------------------------------------|
|                    | Bipolar                                                       | $-5\text{ V} \sim 5\text{ V}$ , $-10\text{ V} \sim 10\text{ V}$ |
| External Reference | $0 \sim +x\text{ V}$ @ $-x\text{ V}$ ( $-10 \leq x \leq 10$ ) |                                                                 |

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

#### Analog Trigger

- Channels 2
- Resolution 16 bits
- Input Range  $-10\text{ V} \sim +10\text{ V}$
- Hysteresis Yes. Hysteresis range is configurable
- Trigger Edge Rising edge or falling edge, selected by software

#### Digital Trigger

- Channels 2

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

#### Digital I/O

- Channels 32 (shared)
- Input Voltage Logic 0:  $1.5\text{ V}$  max.  
Logic 1:  $3.5\text{ V}$  min.  
Low  $0.5\text{ V}$  max. @  $+20\text{ mA}$  (sink)  
High  $4.5\text{ V}$  min. @  $-20\text{ mA}$  (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  $10\text{ MHz}$
- Counter/Timer Functions Frequency measurement, pulse width measurement, pulse output, PWM output
- Encoder Functions Quadrature (X1, X2, X4), dual pulse (CW/CCW), signed pulse (OUT/DIR)

#### General

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