

## Description

The PCI-4E does not support Windows 7 Operating System. Please see our USB4 interface product which is Windows 7 compatible.

The **PCI-4E** is a PCI interface card designed to track up to four incremental encoders. Multiple cards can be used concurrently on the same PCI bus of a PC to track additional encoders. Each encoder channel has a 24-bit real time up/down counter with a count range from 0 to 16,777,215.

The **PCI-3E** is available for applications where an I/O port and only three incremental encoders are desired (see the PCI-3E page).

The **PCI-4E** provides fast efficient encoder position counters for real-time data acquisition applications. A console application written in C running on a PC with a 1.8 GHz processor and Windows 2000 may potentially store up to 150,000 samples per second to a data array, each sample consisting of the four 24-bit encoder position counters and a 33 MHz time stamp. Please note: Due to how Microsoft Windows handles CPU time and processes the sampling rate may periodically drop.

Four counting modes can be selected, including modulo-N, non-recycle, range-limit and simple 24 bit counter mode. Quadrature input modes of x1, x2, x4 and pulse/direction can be selected.

Two versions are available: the single-ended **PCI-4E-S** for TTL inputs or the differential **PCI-4E-D** for RS-422 quadrature inputs.

The plug-and-play software automatically detects the existence of one or more **PCI-4E** cards on the PCI bus and assigns a unique device ID to each card. Demo software is available for Windows 98/ME and Windows 2000/XP. The software displays the position of each encoder and allows the user to change the parameters of each channel individually. This demo software includes the source code and provides a good starting point for the development of user customizable software. LabVIEW users are also provided with the LabVIEW driver software and application.

## Software

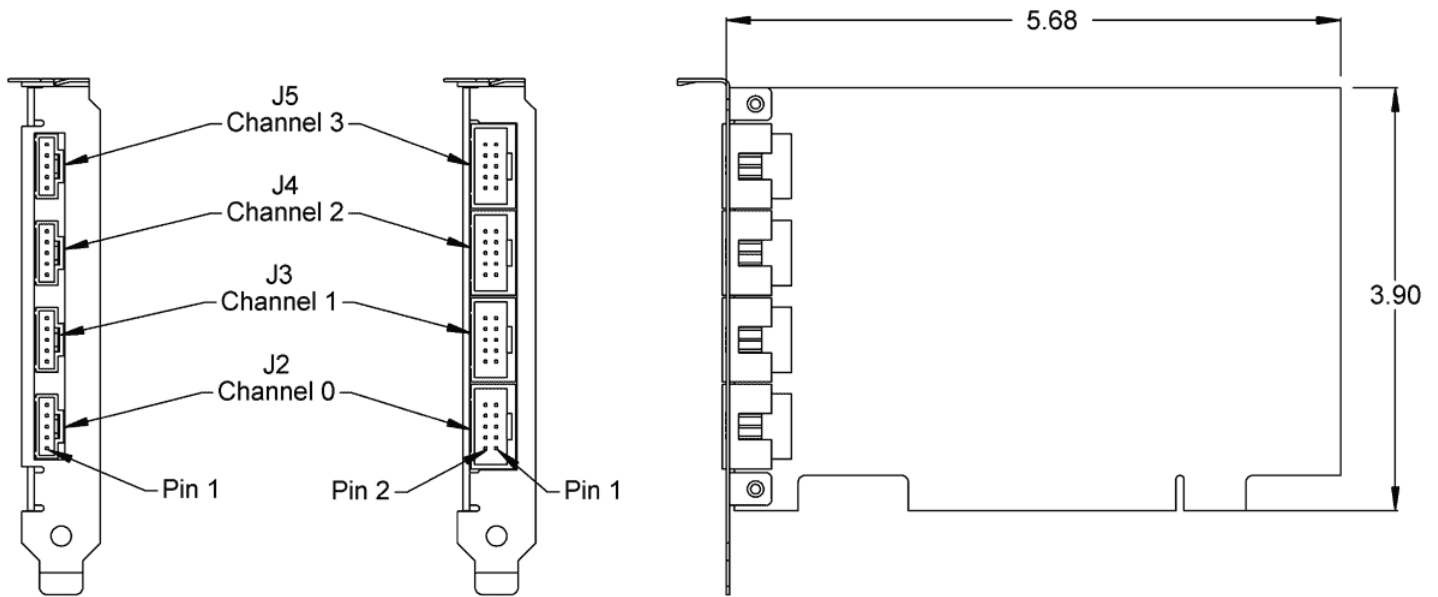
- ▶ [www.usdigital.com/support/software/pci-4e](http://www.usdigital.com/support/software/pci-4e)
- ▶ [www.usdigital.com/assets/USDProducts.zip](http://www.usdigital.com/assets/USDProducts.zip) (.zip file with installer)

## Mechanical Drawing



## Features

- ▶ up to 4 million encoder cycles per second (up to 16 million quadrature states per second)
- ▶ Handles 4 channel quadrature encoders with index
- ▶ Interfaces to all US Digital incremental encoders and inclinometers
- ▶ Interfaces to encoders with open-collector outputs (pull-up resistors are on-board).
- ▶ Fast real time response
- ▶ Provides a 33 MHz timestamp
- ▶ Preloadable up/down 24 bit counters
- ▶ Available with single-ended or differential encoder inputs
- ▶ x1, x2, x4 resolution multiplier
- ▶ PCI compliant



## Environmental

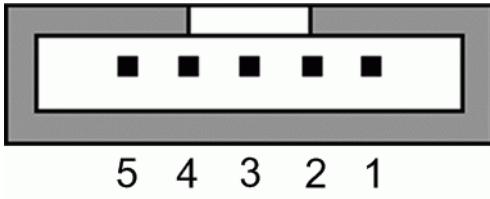
Parameter	Min.	Max.	Units
Storage Temperature	-40	100	C
Operating Temperature	0	70	C
Humidity (non-condensing)	0	95	%

## Electrical

Parameter	Min.	Max.	Units
Encoder Voltage (+5V from PCI bus)	4.75	5.25	V
Encoder Input Frequency (cycles per second)	-	4	MHz
Encoder Input Frequency (quadrature codes per second)	-	16	MHz
Current (+5V consumed by card)	-	135	mA
Current (+5V current available for each encoder)	-	190	mA
Current (+5V total current available for all encoders)	-	760	mA

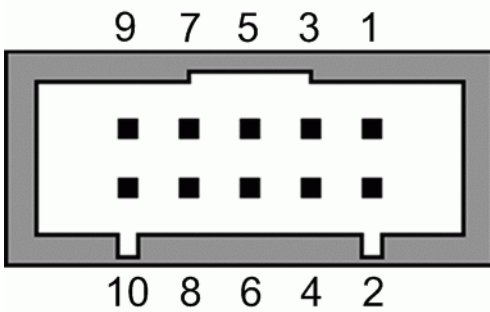
## Pin-Outs (J2 / J3 / J4 / J5)

5-pin Single-ended (PCI-4E-S):



Pin	Description
1	Ground
2	Index
3	A channel
4	+5VDC power
5	B channel

### 10-pin Differential (PCI-4E-D):



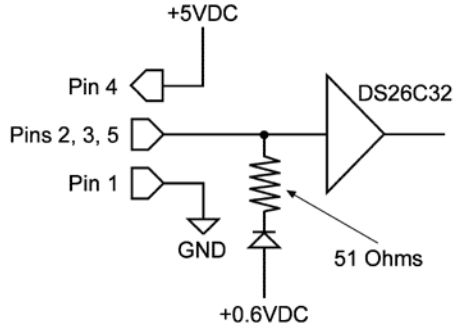
Pin	Description
1	No connection
2	Ground
3	Index-
4	Index+
5	A- channel
6	A+ channel
7	+5VDC power
8	No connection
9	B- channel
10	B+ channel

### Attention:

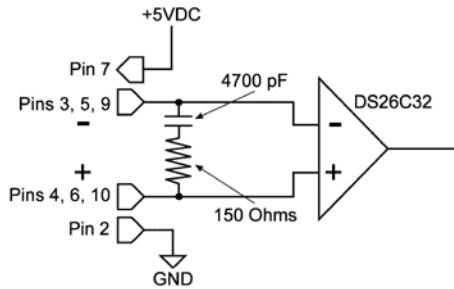
For wire descriptions see the 5-pin Finger-latching or 10-pin Finger-latching Cables / Connectors page.

 Encoder Channel Input Circuit (J2 / J3 / J4 / J5)

Single-ended



Differential



**Ordering Information**

PCI-4E -

Input

S

D

**Notes**

- US Digital warrants its products against defects in materials and workmanship for two years. See complete warranty for details.

**Base Pricing**

Quantity	Price
1	\$368.00
10	\$330.75
50	\$299.25
100	\$268.00

▸ Add \$10.00 per unit for **Input** of D