



## PEX-D64

PCI Express, 64-ch Digital I/O Board with Timer/Counter

### Features

- PCI Express x1 Interface
- 32-channel Digital Input
- 32-channel Digital Output
- Interrupt Trigger via Event/Timer Trigger
- 3 Independent Programmable 16-bit Down Counters
- Supports Card ID (SMD Switch)
- Programmable Interrupt Handling



### Introduction

The PEX-D64 board utilizes the PCI Express bus and is designed as an easy replacement for the PIO-D64/PIO-D64U series without requiring any modification to either the software or the driver. The PEX-D64 provides 32 Digital Input channels and 32 Digital Output channels that consist of two 16-bit input ports and two 16-bit output ports. The PEX-D64 also includes a 6-channel counter/timer that can use four clock sources, 250 kHz, 500 kHz, 1 MHz, and 2 MHz, which can be sourced from the soldering pad. Three of the six channels can be used for general purposes, such as frequency measurement, event counting or pulse generation, while the remaining channels are for interrupt functions. The PEX-D64 card also includes an onboard Card ID switch that enables the board to be recognized via software if two or more boards are installed in the same computer.

### Hardware Specifications

| Digital Input         |                                                          |
|-----------------------|----------------------------------------------------------|
| Channels              | 32                                                       |
| Compatibility         | 5 V/TTL                                                  |
| Input Voltage         | Logic 0: 0.8 V Max.; Logic 1: 2.0 V Min.                 |
| Response Speed        | 500 kHz (Typical)                                        |
| Digital Output        |                                                          |
| Channels              | 32                                                       |
| Compatibility         | 5 V/TTL                                                  |
| Output Voltage        | Logic 0: 0.4 V Max.; Logic 1: 2.4 V Min.                 |
| Output Capability     | Sink: 24 mA @ 0.8 V;<br>Source: 15 mA @ 2.0 V            |
| Response Speed        | 500 kHz (Typical)                                        |
| Timer/Counter         |                                                          |
| Channels              | 6 (Independent x 3/EVTIRQ x 1/<br>TMRIRQ x 1/EXTIRQ x 1) |
| Resolution            | 16-bit                                                   |
| Input Frequency       | 10 MHz Max.                                              |
| Reference Clock       | Internal: 4 MHz                                          |
| General               |                                                          |
| Bus Type              | PCI Express x1                                           |
| Card ID               | Yes (4-bit)                                              |
| Connectors            | 20-pin Box Header x 5                                    |
| Power Consumption     | 200 mA @ +3.3 V<br>180 mA @ +12 V                        |
| Operating Temperature | 0°C to +60°C                                             |
| Humidity              | 5 to 85% RH, Non-condensing                              |

### Software

#### Drivers

- ☒ 32/64-bit Windows XP/2003/2008/7/8/10
- ☒ Linux
- ☒ DASYLab

#### Sample Programs

- ☒ DOS Lib and TC Demo
- ☒ LabVIEW Toolkit
- ☒ VB/VC/Delphi/BCB/VB.NET/C#.NET/VC.NET/MATLAB Demo

## Pin Assignments

| Pin Assignment | Terminal No. | Pin Assignment |
|----------------|--------------|----------------|
| DO 0           | 01           | DO 1           |
| DO 2           | 03           | DO 3           |
| DO 4           | 05           | DO 5           |
| DO 6           | 07           | DO 7           |
| DO 8           | 09           | DO 9           |
| DO 10          | 10           | DO 11          |
| DO 12          | 12           | DO 13          |
| DO 14          | 14           | DO 15          |
| GND            | 16           | GND            |
| +5 V           | 18           | +12 V          |

CON1

| Pin Assignment | Terminal No. | Pin Assignment |
|----------------|--------------|----------------|
| DO 0           | 01           | DO 1           |
| DO 2           | 03           | DO 3           |
| DO 4           | 05           | DO 5           |
| DO 6           | 07           | DO 7           |
| DO 8           | 09           | DO 9           |
| DO 10          | 11           | DO 11          |
| DO 12          | 13           | DO 13          |
| DO 14          | 15           | DO 15          |
| GND            | 17           | GND            |
| +5 V           | 19           | STROBE1        |

CON2

| Pin Assignment | Terminal No. | Pin Assignment |
|----------------|--------------|----------------|
| DO 16          | 01           | DO 17          |
| DO 18          | 03           | DO 19          |
| DO 20          | 05           | DO 21          |
| DO 22          | 07           | DO 23          |
| DO 24          | 09           | DO 25          |
| DO 26          | 10           | DO 27          |
| DO 28          | 12           | DO 29          |
| DO 30          | 14           | DO 31          |
| GND            | 16           | GND            |
| +5 V           | 18           | +12 V          |

CON3

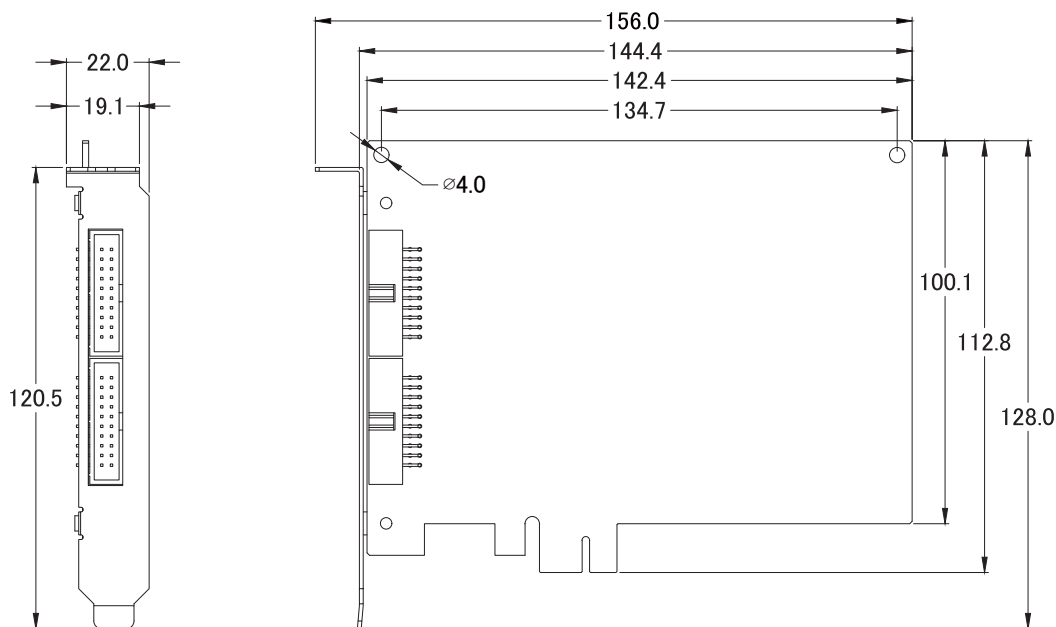
| Pin Assignment | Terminal No. | Pin Assignment |
|----------------|--------------|----------------|
| DO 16          | 01           | DO 17          |
| DO 18          | 03           | DO 19          |
| DO 20          | 05           | DO 21          |
| DO 22          | 07           | DO 23          |
| DO 24          | 09           | DO 25          |
| DO 26          | 11           | DO 27          |
| DO 28          | 13           | DO 29          |
| DO 30          | 15           | DO 31          |
| GND            | 17           | GND            |
| +5 V           | 19           | STROBE2        |

CON4

| Pin Assignment | Terminal No. | Pin Assignment |
|----------------|--------------|----------------|
| CLK 2          | 01           | CLK 1          |
| OUT 2          | 03           | OUT 1          |
| GATE 2         | 05           | GATE 1         |
| CLK 3          | 07           | CLK 0          |
| OUT 3          | 09           | OUT 0          |
| GATE 3         | 10           | GATE 0         |
| GATE 4         | 12           | CLK 4          |
| -              | 14           | OUT 4          |
| GND            | 16           | GND            |
| +5 V           | 18           | -              |

CON5

## Dimensions (Units: mm)



## Ordering Information

|                   |                                                        |
|-------------------|--------------------------------------------------------|
| <b>PEX-D64 CR</b> | PCI Express, 64-ch DIO Board with Timer/Counter (RoHS) |
|-------------------|--------------------------------------------------------|

## Accessories

|                                                                                    |               |                                                  |
|------------------------------------------------------------------------------------|---------------|--------------------------------------------------|
|   | CA-2002 CR    | 20-pin flat cable, 20 cm x 2 (RoHS)              |
|   | CA-2010 CR    | 20-pin flat cable, 1 M (RoHS)                    |
|   | CA-2020 CR    | 20-pin flat cable, 2 M (RoHS)                    |
|   | DB-24PR CR    | 24-channel power relay board (RoHS)              |
|   | DB-24POR CR   | 24-channel of PhotoMos Relay output board (RoHS) |
|   | DB-24SSR CR   | 24-channel Photo Mos relay output board (RoHS)   |
|   | DN-20 CR      | Two 20-pin header DIN-rail terminal board (RoHS) |
|   | DN-20/N CR    | DN-20 without DIN-Rail mount (RoHS)              |
|   | DB-16P CR     | Isolated Digital Input Daughter Board (RoHS)     |
|   | DB-16R CR     | Relay Output Daughter Board (RoHS)               |
|  | ADP-20/PCI CR | 20-pin extender (RoHS)                           |

