

## PEX-DA4/DA8/DA16

PCI Express, 14-bit, 4/8/16-channel Analog Output Board

### Introduction

The PEX-DA4/DA8/DA16 series Analog Output boards utilize the PCI Express interface, and are equipped with 4, 8, or 16 Analog Output channels at 14-bit resolution with each DA channel featuring a double-buffered latch.

The voltage output for the PEX-DA series can range from -10 V to +10 V, and the current output range can be from 0 to 20 mA. In addition, the PEX-DA series also provides the following advantages:

- 1. Accurate and easy-to-use calibration:** ICP DAS provides a software calibration function, meaning that jumpers and trimpots are no longer required. The calibration data is saved in EEPROM for long-term use.
- 2. Individual channel configuration:** Each channel can be individually configured as either voltage or current output.
- 3. Card ID:** The PEX-DA series includes a Card ID switch that enables the board to be easily recognized via software if two or more cards are installed in the same computer.

The PEX-DA series is designed as an easy replacement for the PIO-DA series without requiring any modification to either the software or the driver.

### Pin Assignments

| Pin Assignment | Terminal No. | Pin Assignment |
|----------------|--------------|----------------|
| VO_0           | 01           | 20 IO_0        |
| VO_1           | 02           | 21 IO_1        |
| VO_2           | 03           | 22 IO_2        |
| VO_3           | 04           | 23 IO_3        |
| A.GND          | 05           | 24 N/A         |
| VO_4           | 06           | 25 IO_4        |
| VO_5           | 07           | 26 IO_5        |
| VO_6           | 08           | 27 IO_6        |
| VO_7           | 09           | 28 IO_7        |
| A.GND          | 10           | 29 N/A         |
| VO_8           | 11           | 30 IO_8        |
| VO_9           | 12           | 31 IO_9        |
| VO_10          | 13           | 32 IO_10       |
| VO_11          | 14           | 33 IO_11       |
| A.GND          | 15           | 34 IO_12       |
| VO_12          | 16           | 35 IO_13       |
| VO_13          | 17           | 36 IO_14       |
| VO_14          | 18           | 37 IO_15       |
| VO_15          | 19           |                |

| Pin Assignment | Terminal No. | Pin Assignment |
|----------------|--------------|----------------|
| DO 0           | 01           | 02 DO 1        |
| DO 2           | 03           | 04 DO 3        |
| DO 4           | 05           | 06 DO 5        |
| DO 6           | 07           | 08 DO 7        |
| DO 8           | 09           | 10 DO 9        |
| DO 10          | 11           | 12 DO 11       |
| DO 12          | 13           | 14 DO 13       |
| DO 14          | 15           | 16 DO 15       |
| GND            | 17           | 18 GND         |
| +5 V           | 19           | 20 +12 V       |

| Pin Assignment | Terminal No. | Pin Assignment |
|----------------|--------------|----------------|
| DI 0           | 01           | 02 DI 1        |
| DI 2           | 03           | 04 DI 3        |
| DI 4           | 05           | 06 DI 5        |
| DI 6           | 07           | 08 DI 7        |
| DI 8           | 09           | 10 DI 9        |
| DI 10          | 10           | 12 DI 11       |
| DI 12          | 12           | 14 DI 13       |
| DI 14          | 14           | 16 DI 15       |
| GND            | 16           | 18 GND         |
| +5 V           | 18           | 20 +12 V       |

### Features

- PCI Express x1 Interface
- 14-bit, 4/8/16-channel Analog Output
  - Software Calibration
  - Two Timer-triggered Interrupt Sources
  - Double-buffered DA Latch
- 16-channel 5 V/CMOS Digital Output
- 16-channel 5 V/TTL Digital Input
  - Pull-high and Pull-low Function for DI Channels
- Supports Card ID (SMD Switch)



### Software

#### Drivers

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

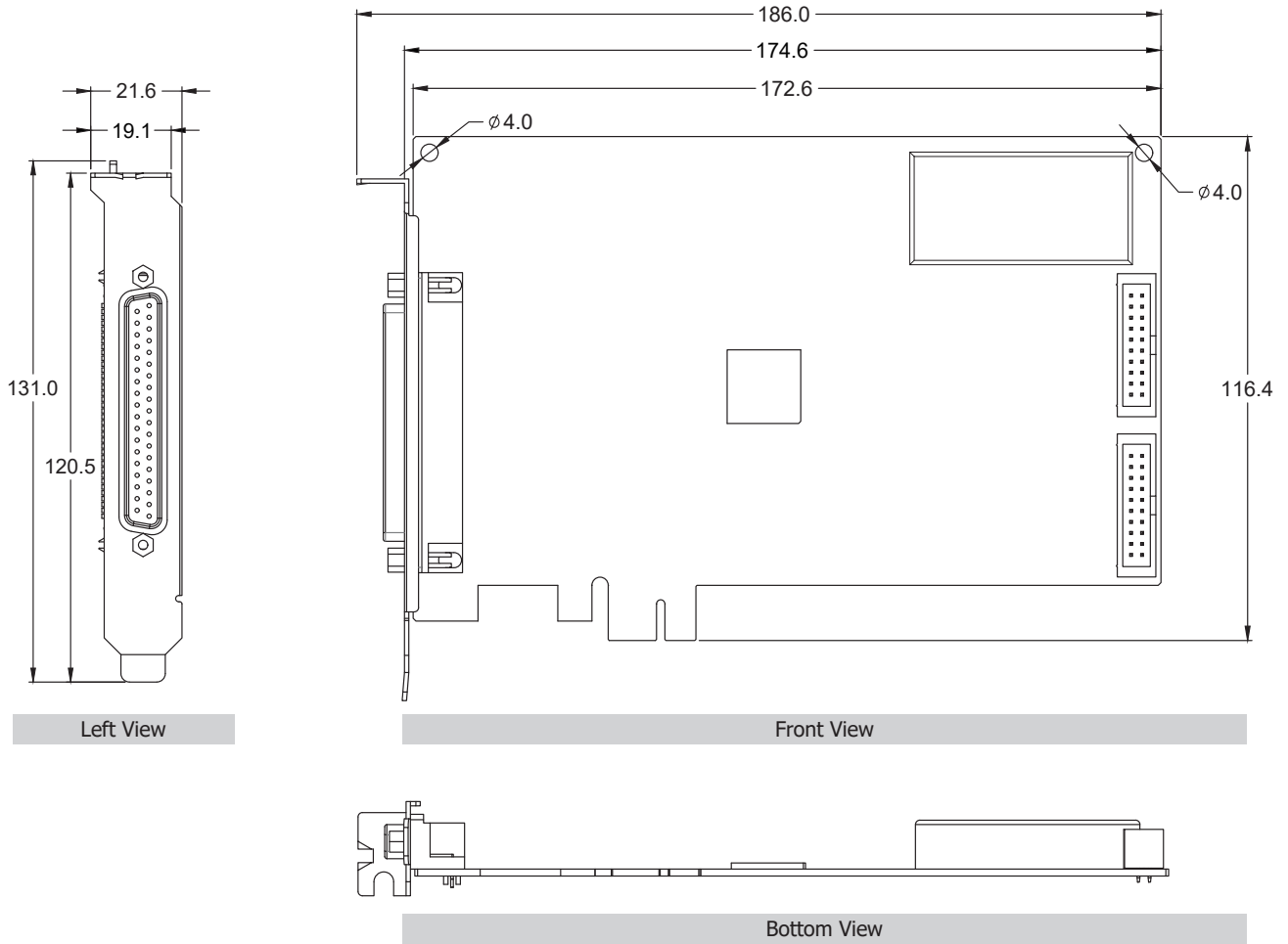
#### Simple Programs

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

### Hardware Specifications

| Model                  | PEX-DA4                                      | PEX-DA8       | PEX-DA16      |
|------------------------|--|---------------|---------------|
| <b>Analog Output</b>   |  |               |               |
| Channels               | 4  | 8             | 16            |
| Resolution             | 14-bit                                       |               |               |
| Accuracy               | 0.04% of FSR ±2 LSB @ 25°C, ±10 V            |               |               |
| Output Driving         | ±5 mA  |               |               |
| Output Range           | Voltage                                      | ±10 V         |               |
|                        | Current                                      | 0 ~ +20 mA    |               |
| Output Impedance       | 0.1 Ω Max.                                   |               |               |
| <b>Digital I/O</b>     |  |               |               |
| Channels               | DI   | 16, 5 V/TTL   |               |
|                        | DO   | 16, 5 V/CMOS  |               |
| Input Voltage          | Logic 0: 0.8 V Max.<br>Logic 1: 2.0 V Min.   |               |               |
| Output Voltage         | Logic 0: 0.1 V Max.<br>Logic 1: 4.4 V Min.   |               |               |
| Output Capability      | Sink: 6 mA @ 0.33 V<br>Source: 6 mA @ 4.77 V |               |               |
| <b>Timer/Counter</b>   |  |               |               |
| Channels               | 3  |               |               |
| Resolution             | 16-bit                                       |               |               |
| Input Frequency        | 10 MHz Max.                                  |               |               |
| Reference Clock        | Internal: 4 MHz                              |               |               |
| <b>General</b>         |  |               |               |
| Bus Type               | PCI Express x1                               |               |               |
| Card ID                | Yes (4-bit)                                  |               |               |
| Connectors             | Female DB37 x 1, 20-pin Box Header x 2       |               |               |
| PCB Dimensions (L x H) | 172.6 mm x 116.4 mm                          |               |               |
| Power Consumption      | 350 mA @ +12V                                | 400 mA @ +12V | 550 mA @ +12V |
| Operating Temperature  | 0°C to +60°C                                 |               |               |
| Humidity               | 5 to 85% RH, Non-condensing                  |               |               |









## Dimensions (Units: mm)











## Ordering Information

|                    |  |
|--------------------|--|
| <b>PEX-DA4 CR</b>  | PCI Express, 4-channel DA Board (RoHS). Includes one CA-4002 D-sub Connector.  |
| <b>PEX-DA8 CR</b>  | PCI Express, 8-channel DA Board (RoHS). Includes one CA-4002 D-sub Connector.  |
| <b>PEX-DA16 CR</b> | PCI Express, 16-channel DA Board (RoHS). Includes one CA-4002 D-sub Connector. |

## Accessories

|  |  |
|--|--|
|  <b>CA-2002</b>     | 20-pin flat cable, 20cm x 2                                      |
|  <b>CA-2010</b>     | 20-pin flat cable, 1M  |
|  <b>CA-2020</b>     | 20-pin flat cable, 2M  |
|  <b>CA-3710</b>     | DB-37 Male-Male D-sub cable 1M (Cable for Daughter Board (45°))  |
|  <b>CA-3710D</b>    | DB-37 Male-Male D-sub cable 1M (Cable for Daughter Board (180°)) |
|  <b>CA-3715DM-H</b> | DB-37 Male-Male Cable, 1.5M, 180° (RoHS)                         |
|  <b>CA-3730DM-H</b> | DB-37 Male-Male Cable, 3M, 180° (RoHS)                           |
|  <b>CA-3750DM-H</b> | DB-37 Male-Male Cable, 5 M, 180° (RoHS)                          |

|   |  |
|---|--|
|  <b>CA-4002</b>  | 37-pin Male D-sub connector with plastic cover   |
|  <b>DB-16P</b>   | 16-channel Isolated Digital Input Daughter Board |
|  <b>DB-16R</b>   | 16-channel Relay Output Daughter Board           |
|  <b>DB-24PR</b>  | 24-channel Power Relay Board                     |
|  <b>DB-24POR</b> | 24-channel PhotoMos Relay Output Board           |
|  <b>DB-24C</b>   | 24-channel Open-collector Output Board           |
|  <b>DN-20</b>    | 20-pin Din-Rail Mounting I/O Connector Board     |
|  <b>DN-37</b>    | 37-pin Din-Rail Mounting I/O Connector Board     |