PCI EXPRESS INTERFACE

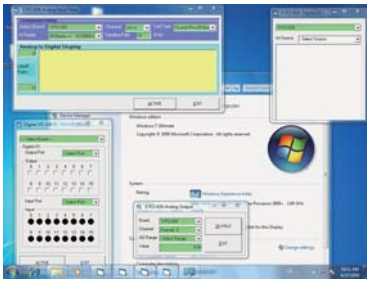
ICP DAS

New Members in I/O Cards

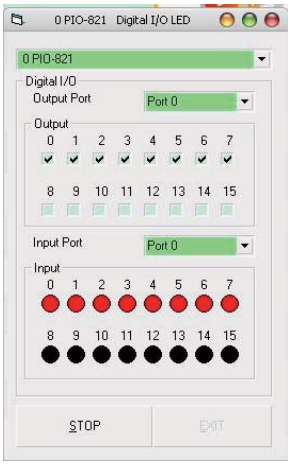
2011 Product Catalog Vol.IOC 1.1.00 (2011.July.15)

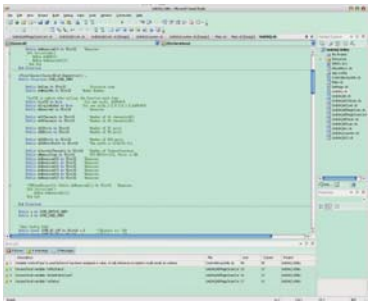
Software

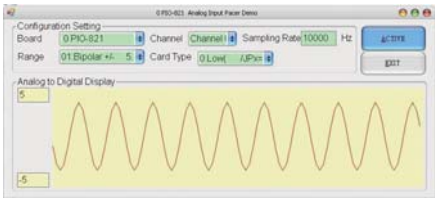
ICP DAS provides SDK and drivers for I/O cards to support various OS such as Linux, DOS, Windows 98/NT4/2000, and 32-/64-bit Windows XP/2003/2008/Vista/7. The Windows SDK for I/O cards contain DLL (Dynamic Link Library) file, ActiveX (OCX) control components and several sample programs with source code written in Microsoft Visual C++, Visual Basic, Borland C++ Builder, Delphi, VB.NET and C#.NET. By using the SDK and sample programs, no more complex hardware-register-based operations are required at all, and users can develop their application programs easily and quickly.



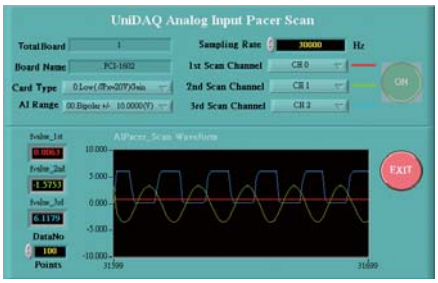
The UniDAQ is the new generation of Windows SDK that supports most I/O cards of ICP DAS, and users can then use the universal software interface to access these cards. The UniDAQ SDK supports 32-bit and 64-bit Windows, and also provides sample programs with source code for several programming languages.

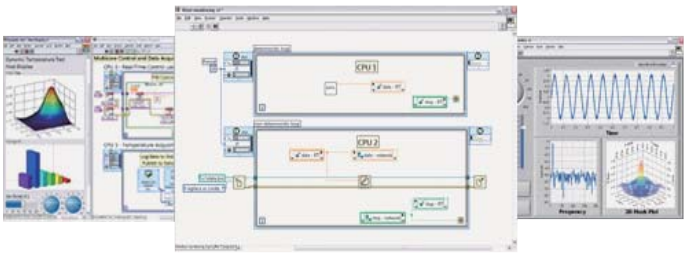






The NI LabVIEW is a graphical programming environment used to develop sophisticated measurement, test, and control systems using intuitive graphical icons and wires that resemble a flowchart. It is scalable across multiple operating systems and offers hundreds of built-in libraries. The ICP DAS UniDAQ SDK also supports a toolkit for LabVIEW platform. Users can develop their I/O card applications quickly and easily in LabVIEW with the UniDAQ LabVIEW toolkit and sample programs. The advantage of supporting most of the ICP DAS PCI I/O cards comes from the UniDAQ SDK also can help users to transfer their applications to different PCI I/O cards smoothly and quickly.





I/O Cards

PEX-D24/PEX-D56

PCI Express, 24/56-ch OPTO-22 Compatible DIO Board

Features

- PCI Express x1, Plug & Play
- DIO response time is about 2 us (500 kHz max.)
- Emulate two industrial-standard 8255 PPI ports (mode 0)
- D/O with higher driving capability
- Double side SMD, short card
- 24/56 buffered TTL digital I/O lines
- Three 8-bit bi-direction I/O ports
- 4 Interrupt sources
- Supports Card ID (SMD Switch)

Introduction

The PEX-D24/D56 is the new generation product that ICP DAS provides to meet RoHS compliance requirement, and is designed as easy replacement for the PIO-D24/PIO-D24U/PIO-D56/PIO-D56U. Users can replace the PIO-D24/PIO-D24U/PIO-D56/PIO-D56U by the PEX-D24/D56 directly without any software/driver modification.

The PEX-D24/D56 supports PCI Express bus and provides 24/56 TTL digital I/O lines. These lines are grouped into three 8-bit bi-direction ports that are named as port A (PA), port B (PB) and port C (PC). All ports are configured as inputs upon power-up or reset.
The PEX-D24/D56 adds a Card ID switch for users to recognize the board by the ID via software when using two or more PEX-D24/D56 cards in one computer.

Software

- DOS Lib and TC/BC/MSC sample program (with source codes)
- VB/VC/Delphi/BCB/VB.NET/C#.NET sample programs with source codes
- DLL and OCX SDK for 32-bit and 64-bit Windows XP/2003/ Vista/2008/7
- Supports LabVIEW and Linux

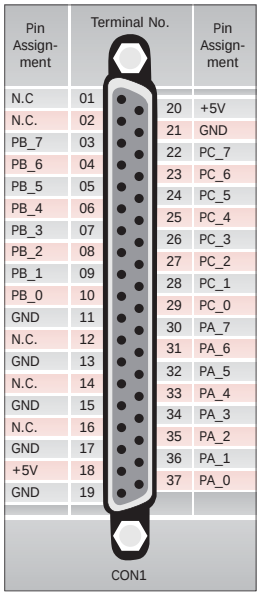
Hardware Specifications

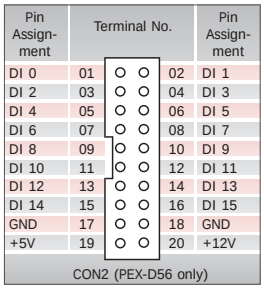
Models	PEX-D24	PEX-D56
Digital I/O		
I/O Channels	24-ch, 5 V TTL	56-ch, 5 V TTL
Input Logic Low	0.8 V max.	
Input Logic High	2.4 V min.	
Output Source Current	32 mA max.	
Output Sink Current	64 mA max.	
Programmable Interrupts	4	
General		
Bus Type	PCI Express x1	
Connectors	Female DB-37 x 1	Female DB-37 x 1, 20-pin Male box header x 2
Power Consumption	420 mA @ +5 V	580 mA @ +5 V
Operating Temperature	0 °C ~ +60 °C	
Storage Temperature	-20 °C ~ +70 °C	
Humidity	5 ~ 85% RH, non-condensing	

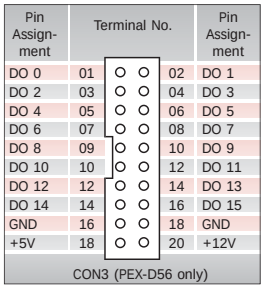
Ordering Information

PEX-D24 CR	PCI Express, 24-ch TTL DIO Board (RoHS)
PEX-D56 CR	PCI Express, 56-ch TTL DIO Board (RoHS)

Pin Assignments







PEX-D48

PCI Express, 48-ch OPTO-22 Compatible DIO Board

Features

- PCI Express x1, Plug & Play
- DIO response time is about 2 us (500 kHz max.)
- Emulate two industrial-standard 8255 PPI ports (mode 0)
- D/O with higher driving capability
- One 16-bit event counter
- Card ID function
- 48 buffered TTL digital I/O lines
- Six 8-bit bi-direction I/O ports
- D/I with pull-high and pull-low jumpers
- One 32-bit programmable internal timer
- 4 Interrupt sources

Introduction

The PEX-D48 is the new generation product that ICP DAS provides to meet RoHS compliance requirement, and is designed as easy replacement for the PIO-D48/PIO-D48U. Users can replace the PIO-D48/PIO-D48U by the PEX-D48 directly without any software/driver modification.

The PEX-D48 supports PCI Express bus and provides 48 TTL digital I/O lines. These lines are grouped into six 8-bit bi-direction ports. Every three 8-bit ports are named as port A (PA), port B (PB) and port C (PC) in a connector, and the port C can be split into 2 nibble-wide (4-bit) parts. All ports are configured as inputs upon power-up or reset.

The PEX-D48 adds a Card ID switch for users to recognize the board by the ID via software when using two or more PEX-D48 cards in one computer. The pull-high/low jumpers allow user to predefine the DI status instead of floating when the DI channels are unconnected or broken.

Software

- DOS Lib and TC/BC/MSC sample program (with source codes)
- VB/VC/Delphi/BCB/VB.NET/C#.NET sample programs with source codes
- Supports 32-bit and 64-bit Windows XP/2003/Vista/7
- Supports LabVIEW and Linux

Hardware Specifications

Digital I/O	
I/O Channels	48-ch, 5 V TTL compatible
Input Logic Low	0.8 V max.
Input Logic High	2.4 V min.
Output Source Current	32 mA max.
Output Sink Current	64 mA max.
Programmable Interrupts	4
General	
Bus Type	PCI Express x1
Connectors	Female DB-37 x 1, 50-pin Male box header x 1
Power Consumption	900 mA @ +5 V
Operating Temperature	0 °C ~ +60 °C
Storage Temperature	-20 °C ~ +70 °C
Humidity	5 ~ 85% RH, non-condensing

Pin Assignments

Pin Assignment	Terminal No.		Pin Assignment
N.C	01	20	+5V
N.C.	02	21	GND
PB_7	03	22	PC_7
PB_6	04	23	PC_6
PB_5	05	24	PC_5
PB_4	06	25	PC_4
PB_3	07	26	PC_3
PB_2	08	27	PC_2
PB_1	09	28	PC_1
PB_0	10	29	PC_0
GND	11	30	PA_7
N.C.	12	31	PA_6
GND	13	32	PA_5
N.C.	14	33	PA_4
GND	15	34	PA_3
N.C.	16	35	PA_2
GND	17	36	PA_1
+5V	18	37	PA_0
GND	19		

CN1

Pin Assignment	Terminal No.		Pin Assignment
PC_7	01	02	GND
PC_6	03	04	GND
PC_5	05	06	GND
PC_4	07	08	GND
PC_3	09	10	GND
PC_2	11	12	GND
PC_1	13	14	GND
PC_0	15	16	GND
PB_7	17	18	GND
PB_6	19	20	GND
PB_5	21	22	GND
PB_4	23	24	GND
PB_3	25	26	GND
PB_2	27	28	GND
PB_1	29	30	GND
PB_0	31	32	GND
PA_7	33	34	GND
PA_6	35	36	GND
PA_5	37	38	GND
PA_4	39	40	GND
PA_3	41	42	GND
PA_2	43	44	GND
PA_1	45	46	GND
PA_0	47	48	GND
+5V	49	50	GND

CN2

Ordering Information

PEX-D48 CR	PCI Express, 48-ch TTL DIO board (RoHS)

PCI-D64HU

Universal PCI, 40 MB/s High-Speed 32-ch D/I and 32-ch D/O Board

Features

- Universal PCI (3.3 V/5 V) interface
- 32-ch 5 V TTL digital output
- Data transfer rate up to 40 MB/s for each DMA channel
- Onboard 1 k/2 k DWORD FIFO for DI/DO respectively
- DO FIFO supports ring buffer mode
- No bus loading in repetitive pattern generation application
- 32-ch 5 V TTL digital input
- 2-ch bus mastering scatter/gather DMA
- Data transfer modes:
  - Direct program control, Internal timer pacer
  - External clock (D/I only), Handshaking

Introduction

The PCI-D64HU is a high-speed digital I/O card consisting of 32 digital input channels and 32 digital output channels. High-performance designs make this card perfect for high-speed data transfer and pattern generation applications.

The PCI-D64HU performs high-speed data transfer by bus-mastering DMA via 32-bit PCI bus. The maximum data transfer rate can be up to 40 MB per second.

Several digital I/O transfer modes are supported, such as direct programmed I/O control, timer pacer control, external clock mode and handshaking mode. The PCI-D64HU also features programmable digital filter for all input signals including handshaking and trigger signals.

The PCI-D64HU is a reliable and cost-effective connection interface that works on your computer system to control high-speed peripherals.

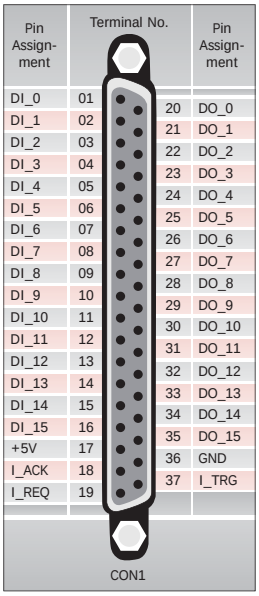
Software

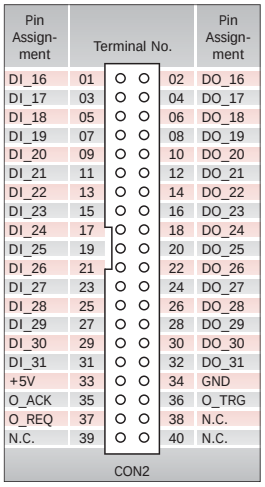
- Supports 32-bit Windows 2000/XP/2003/Visat/7
- VB/VC/BCB sample programs with source code

Hardware Specifications

Digital Input	
Channels	32-ch, 5V/TTL
Input Voltage	Logic 0: 0.8 V max.; Logic 1: 2.0 V min.
Handshaking Signals	I_REQ input , I_ACK output , I_TRG input
Digital Output	
Channels	32-ch, 5V/TTL
Output Voltage	Logic 0: 0.55 V max.; Logic 1: 2.0 V min.
Output Capability	Sink: 64 mA @ 0.55 V; Source: 32 mA @ 2.0 V
Handshaking Signals	O_REQ output, O_ACK input, O_TRG output
Transfer Speed	40 MB/sec for DI and DO simultaneously (max.)
On Board FIFO	
Size	1 k DWORD (32-bit) for DI; 2 k DWORD (32-bit) for DO
General	
Bus Type	Universal PCI, 32-bit, 33 MHz
Connectors	Female DB-37 x 1, 40-pin Box header x 1
Power Consumption	200 mA @ +5 V typical (output no load)
Operating Temperature	0 °C ~ +60 °C
Humidity	5 ~ 85% RH, non-condensing

Pin Assignments





Ordering Information

PCI-D64HU CR	Universal PCI, 40 MB/s High-speed 32-ch DI and 32-ch DO (RoHS). Includes one CA-4037W cable and two CA-4002 D-Sub connectors.

PEX-P8R8i/PEX-P16R16i

PCI Express, 8/16-channel Isolated Digital Input, 8/16-channel Relay Output Board

Features

- PCI Express x1, Plug & Play
- 8/16-ch Relay output, 8/16-ch isolated digital input
- AC signal input with filter
- 7 ms relay release time
- Supports Card ID (SMD Switch)
- Selectable DC signal input filter
- 2000 V_{DC} photo-isolation protection

Introduction

The PEX-P8R8i/PEX-P16R16i is a PCI Express card with programmable digital I/O interface. It provides 8/16 photocoupler digital inputs with 2000 V_{DC} isolation protection, allows the input signals to be completely floated to prevent the ground loops. It is also equipped with 8/16 relay outputs for controlling ON/OFF of external devices, driving external relays or small power switches, and activating alarms... etc.

The PEX-P8R8i/PEX-P16R16i is designed as easy replacement for the PISO-P16R16U, and users can replace the PISO-P16R16U with the PEX-P8R8i/PEX-P16R16i directly without any software/driver modification.

Software

- DOS Lib and TC/BC/MSC sample program (with source codes)
- DLL and OCX SDK for 32-bit and 64-bit Windows XP/2003/ Vista/2008/7
- VB/VC/Delphi/BCB/VB.NET/C#.NET sample programs with source codes
- Supports LabVIEW and Linux

Pin Assignments

Pin Assignment	Terminal No.		Terminal No.	Pin Assignment
NO_0	01		20	NO_3
COM_0	02		21	COM_3
NC_0	03		22	NC_3
NO_1	04		23	NO_4
COM_1	05		24	COM_4
NC_1	06		25	NO_5
NO_2	07		26	COM_5
COM_2	08		27	NO_6
NC_2	09		28	COM_6
NO_7	10		29	GND
COM_7	11		30	DIB_0
DIA_0	12		31	DIB_1
DIA_1	13		32	DIB_2
DIA_2	14		33	DIB_3
DIA_3	15		34	DIB_4
DIA_4	16		35	DIB_5
DIA_5	17		36	DIB_6
DIA_6	18		37	DIB_7
DIA_7	19			

CON1

Pin Assignment	Terminal No.		Terminal No.	Pin Assignment
NO_8	01		02	NO_11
COM_8	03		04	COM_11
NC_8	05		06	NC_11
NO_9	07		08	NO_12
COM_9	09		10	COM_12
NC_9	11		12	NO_13
NO_10	13		14	COM_13
COM_10	15		16	NO_14
NC_10	17		18	COM_14
NO_15	19		20	GND
COM_15	21		22	DIB_8
DIA_8	23		24	DIB_9
DIA_9	25		26	DIB_10
DIA_10	27		28	DIB_11
DIA_11	29		30	DIB_12
DIA_12	31		32	DIB_13
DIA_13	33		34	DIB_14
DIA_14	35		36	DIB_15
DIA_15	37		38	N/A
N/A	39		40	N/A

CON2 (PEX-P16R16i only)

Hardware Specifications

Models	PEX-P8R8i	PEX-P16R16i
Digital Input		
Isolation Voltage	2000 V_{DC} (Photo-couple)	
Channels	8	16
Input Voltage	Logic 1: AC/DC 5 ~ 24 V (AC 50 ~ 1 kHz) Logic 0: AC/DC 0 ~ 1 V	
Response Speed	Without Filter: 50 kHz (Typical) With Filter: 0.455 kHz (Typical)	
Relay Output		
Channels	8	16
Relay Type	4 SPDT, 4 SPST	8 SPDT, 8 SPST
Contact Rating (Voltage)	120 V_{AC}/24 V_{DC}	
Contact Rating (Current)	1 A	
Operate Time	1 ms (typical)	
Release Time	7 ms (typical)	
Life	Mechanical: 5,000,000 ops. Electrical: 100,000 ops.	
Insulation Resistance	1000 MΩ	
General		
Bus Type	PCI Express x1	
Card ID	Yes (4-bit)	
Connectors	Female DB-37 x 1	Female DB-37 x 1, 40-pin box header x 1
Power Consumption	800 mA @ +5 V	
Operating Temperature	0 °C ~ +60 °C	
Humidity	5 ~ 85% RH, non-condensing	

Ordering Information

PEX-P8R8i CR	PCI Express, 8-ch Isolated Digital Input, 8-ch Relay Output Board Includes one CA-4002 D-Sub connector.
PEX-P16R16i CR	PCI Express, 16-ch Isolated Digital Input, 16-ch Relay Output Board Includes one CA-4037W cable and two CA-4002 D-Sub connectors.

PEX-P8POR8i/PEX-P16POR16i

PCI Express, 8/16-channel Isolated Digital Input, 8/16-channel PhotoMos Relay Output Board

Features

- PCI Express x1, Plug & Play
- Supports DO status Readback (Register Level)
- Selectable DC signal input filter
- 2000 V_{DC} photo-isolation protection
- LED power indicator
- Low leakage current when PhotoMos relay is off
- High speed DIO operation
- Supports Card ID (SMD Switch)
- 8/16-ch PhotoMos Relay output, 8/16-ch isolated digital input
- AC signal input with filter
- 0.05 ms release time
- Long life and high reliability PhotoMos relay
- No contact bounce, no sparking

Introduction

The PEX-P8POR8i/PEX-P16POR16i is a PCI Express card with programmable digital I/O interface. It provides 8/16 photocouple digital inputs with 2000 V_{DC} isolation protection, allows the input signals to be completely floated to prevent the ground loops. It is also equipped with 8/16 PhotoMos relay outputs for controlling ON/OFF of external devices, driving external relays or small power switches, and activating alarms... etc.

The PEX-P8POR8i/PEX-P16POR16i is designed as easy replacement for the PCI-P8POR8/P16POR16, and users can replace the PCI-P8POR8/P16POR16 with the PEX-P8POR8i/PEX-P16POR16i directly without any software/driver modification.

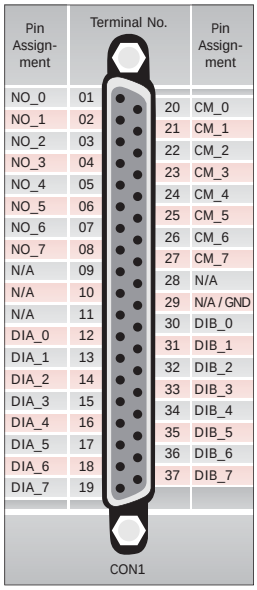
Hardware Specifications

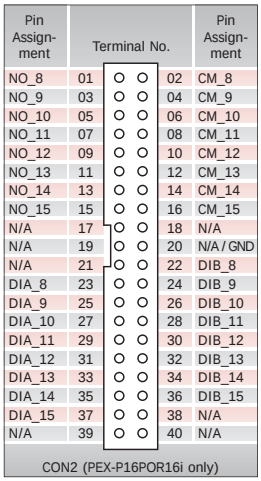
Models	PEX-P8POR8i	PEX-P16POR16i
Digital Input		
Isolation Voltage	2000 V_{DC} (Photo-couple)	
Channels	8	16
Input Voltage	Logic 1: AC/DC 5 ~ 24 V (AC 50 ~ 1 kHz) Logic 0: AC/DC 0 ~ 1 V	
Response Speed	Without Filter: 50 kHz (Typical) With Filter: 0.455 kHz (Typical)	
Relay Output		
Channels	8	16
Relay Type	PhotoMos, Form A	
Contact Rating (Voltage)	300 V (AC peak or DC)	
Contact Rating (Current)	130 mA	
Operate Time	0.7 ms (typical)	
Release Time	0.05 ms (typical)	
On-state Resistance	24 Ω Max.	
Off-state Leakage Current	1 uA Max.	
General		
Bus Type	PCI Express x1	
Card ID	Yes (4-bit)	
Connectors	Female DB-37 x 1	Female DB-37 x 1, 40-pin box header x 1
Power Consumption	800 mA @ +5 V	
Operating Temperature	0 °C ~ +60 °C	
Humidity	5 ~ 85% RH, non-condensing	

Software

- DOS Lib and TC/BC/MSC sample program (with source codes)
- DLL and OCX SDK for 32-bit and 64-bit Windows XP/2003/ Vista/2008/7
- Supports LabVIEW and Linux
- VB/VC/Delphi/BCB/VB.NET/C#.NET sample programs with source codes

Pin Assignments





Ordering Information

PEX-P8POR8i CR	PCI Express, 8-ch Isolated Digital Input, 8-ch PhotoMos Relay Output Board Includes one CA-4002 D-Sub connector.
PEX-P16POR16i CR	PCI Express, 16-ch Isolated Digital Input, 16-ch PhotoMos Relay Output Board Includes one CA-4037W cable and two CA-4002 D-Sub connectors.

PEX-DA4/PEX-DA8/PEX-DA16

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

Available soon

Features

- PCI Express x1 interface
- Voltage output: +/- 10 V
- Double-buffered D/A latch
- D/I with pull-high and pull-low jumpers
- 4-, 8- or 16-ch 14-bit analog output
- Current output: 0 ~ 20 mA (sink)
- 16-ch 5 V TTL D/I, 16-ch 5 V TTL D/O
- Card ID function

Introduction

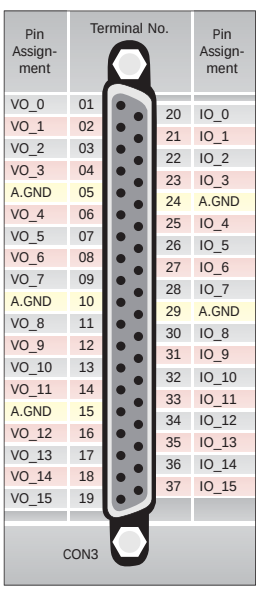
The PEX-DA4/DA8/DA16 series analog output board supports PCI Express interface. It is equipped with 14-bit 4/8/16 analog output channels, and each of the D/A channels features double-buffered latch.

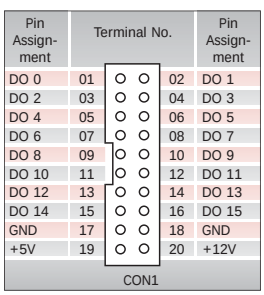
For the PEX-DA series, its voltage output range is from -10 V to +10 V, and the current output range is from 0 to 20 mA. In addition, PEX-DA series also features the following advantages:

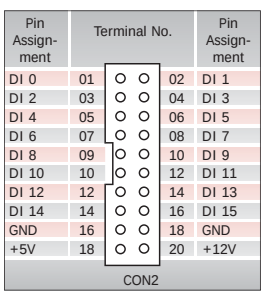
Accurate and easy-to-use calibration: ICP DAS provides the software calibration, so that no jumpers and trim-pots are required anymore. The calibration data is saved in EEPROM for long-term use.
Individual channel configuration: Each channel can be individually configured as voltage output or current output.
Card ID: The PEX-DA series adds a Card ID switch for users to recognize the board by the ID via software when using two or more PEX-DA cards in one computer.

The PEX-DA series is designed as easy replacement for the PIO-DA series, and users can replace the PIO-DA series by PEX-DA series directly without any software/driver modification.

Pin Assignments







Software

- DOS Lib and TC/BC/MSC sample program (with source codes)
- Supports 32-bit and 64-bit Windows XP/2003/Vista/7
- VB/VC/Delphi/BCB/VB.NET/C#.NET sample programs with source codes
- Supports LabVIEW and Linux

Hardware Specifications

Models	PEX-DA4	PEX-DA8	PEX-DA16
Analog Outputs			
Channels	4	8	16
Resolution	14-bit		
Accuracy	0.01% of FSR ± 2 LSB @ 25 °C, ± 10 V		
Output Range	+/- 10 V, 0 ~ 20 mA		
Output Driving	+/- 5 mA		
Slew Rate	0.71 V/μs		
Digital Inputs			
Channels	16-ch, 5 V/TTL		
Input Voltage	Logic 0: 0.8 V max., Logic 1: 2.0 V min.		
Response Speed	400 kHz (Typical)		
Digital Outputs			
Channels	16-ch, 5 V/TTL		
Output Voltage	Logic 0: 0.4 V max., Logic 1: 2.4 V min.		
Output Capability	Sink: 2.4 mA @ 0.8 V, Source: 0.8 mA @ 2.0 V		
Response Speed	400 kHz (Typical)		
General			
Bus Type	PCI Express x1		
Card ID	Yes (4-bit)		
Connectors	Female DB-37 x 1, 20-pin box header x 2		
Power Consumption	600 mA @ +5 V	800 mA @ +5 V	1400 mA @ +5 V
Operating Temperature	0 °C ~ +60 °C		
Humidity	5 ~ 85% RH, non-condensing		

Ordering Information

PEX-DA4 CR	PCI Express, 4-ch Analog Output board (RoHS) Includes one CA-4002 D-Sub connector
PEX-DA8 CR	PCI Express, 8-ch Analog Output board (RoHS) Includes one CA-4002 D-Sub connector
PEX-DA16 CR	PCI Express, 16-ch Analog Output board (RoHS) Includes one CA-4002 D-Sub connector

PEX-1002L/PEX-1002H

PCI Express, 32-ch, 12-bit, 110 or 44 kS/s Multi-function Board

Available soon

Features

- PCI Express x1, Plug & Play
- 110 or 44 kS/s A/D sampling rate
- 16-ch 5V TTL D/I
- Supports Card ID (SMD Switch)
- 12-bit, 32 S.E/16 Diff. analog inputs
- Internal pacer trigger
- 16-ch 5V TTL D/O
- D/I with pull-high and pull-low jumpers

Introduction

The PEX-1002L/H is the new generation product that ICP DAS provides to meet RoHS compliance requirement, and is designed as easy replacement for the PCI-1002 series. Users can replace the PCI-1002 series by the PEX-1002L/H directly without any software/driver modification.

The PEX-1002L/H supports PCI Express bus and provides 12-bit 32 single-ended or 16 differential analog inputs, 16 TTL digital input and 16 TTL digital output channels.

The PEX-1002L/H adds a Card ID switch for users to recognize the board by the ID via software when using two or more PEX-1002L/H cards in one computer. The pull-high/low jumpers allow user to predefine the DI status instead of floating when the DI channels are unconnected or broken.

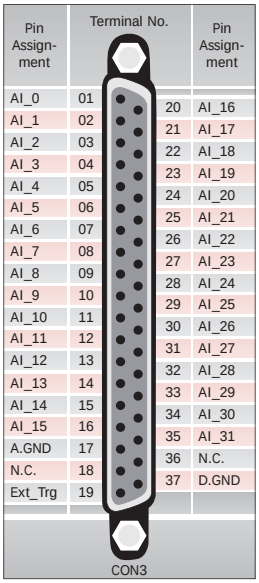
Software

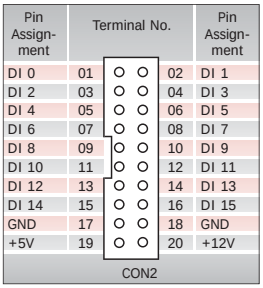
- DOS Lib and TC/BC/MSC sample program (with source codes)
- DLL and OCX SDK for 32-bit and 64-bit Windows XP/2003/Vista/2008/7
- VB/VC/Delphi/BCB/VB.NET/C#.NET sample programs with source codes
- Supports LabVIEW and Linux

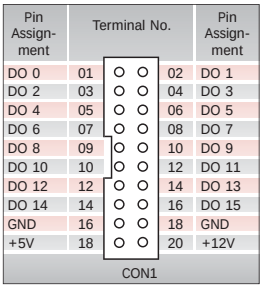
Hardware Specifications

Models	PEX-1002L	PEX-1002H
Analog Input		
Channels	32 S.E/16 Diff.	
Resolution	12-bit	
Accuracy	0.01% of FSR ± 2 LSB @ 25 °C, ± 10 V	
Sampling Rate	110 kS/s	44 kS/s
Digital Inputs		
Channels	16-ch, 5 V/TTL	
Input Voltage	Logic 0: 0.8 V max., Logic 1: 2.0 V min.	
Response Speed	500 kHz (Typical)	
Digital Outputs		
Channels	16-ch, 5 V/TTL	
Output Voltage	Logic 0: 0.4 V max., Logic 1: 2.4 V min.	
Output Capability	Sink: 2.4 mA @ 0.8 V, Source: 0.8 mA @ 2.0 V	
Response Speed	500 kHz (Typical)	
General		
Bus Type	PCI Express x1	
Card ID	Yes (4-bit)	
Connectors	Female DB-37 x 1, 20-pin box header x 2	
Power Consumption	800 mA @ +5 V	
Operating Temperature	0 °C ~ +60 °C	
Humidity	5 ~ 85% RH, non-condensing	

Pin Assignments







Ordering Information

PEX-1002L CR	PCI Express, 32-ch, 12-bit, 110 kS/s. Low Gain Multi-function DAQ Board (Rohs) Includes one CA-4002 D-Sub cable.
PEX-1002H CR	PCI Express, 32-ch, 12-bit, 44 kS/s. High Gain Multi-function DAQ Board (Rohs) Includes one CA-4002 D-Sub cable.

PCI-822LU/PCI-826LU

Universal PCI, 250 kS/ s, 32-ch 12-bit or 16-bit A/D, 2-ch 16-bit D/A and 32-ch Programmable DIO Multi-function Board

Features

- Universal PCI (3.3 V/5 V) interface
- 12-bit 250 kS/s high-speed A/D for PCI-822LU
- Programmable low gain: 1, 2, 4, 8
- 32-ch programmable DIO
- Card ID function
- 32-ch S.E./16-ch Diff. analog input
- 16-bit 250 kS/s high-speed A/D for PCI-826LU
- Built-in MagicScan controller
- D/I with pull-high and pull-low jumpers
- 8K-sample hardware FIFO
- Supports software-trigger and pacer-trigger
- 2-ch 16-bit analog output
- DO with status read back function

Introduction

The PCI-822LU/826LU is a multi-function card that providing high-speed analog and digital I/O functions. It features a continuous, 250 kS/s 12-bit or 16-bit resolution A/D converter, 8K-sample hardware FIFO, 2-ch 16-bit D/A converter, and 32-ch programmable digital I/O with DO read back. The PCI-822LU/826LU provides either 32-CH single-ended or 16-CH differential analog inputs which are jumper selectable, and is equipped with a high speed PGA featuring programmable gain (1, 2, 4 or 8).

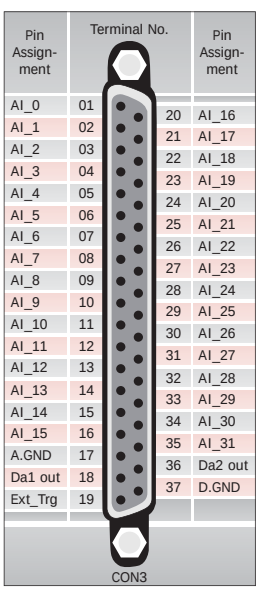
The PCI-822LU/826LU has a Card ID switch for users to recognize the board by the ID via software when using two or more PCI-822LU/826LU cards in one computer. The pull-high/low jumpers of the card allow user to predefine the DI status instead of floating when the DI channels are unconnected or broken.

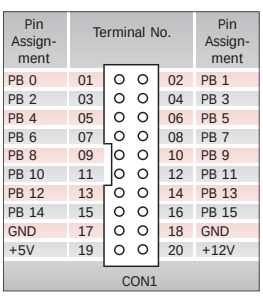
The A/D channel scan function of the PCI-822LU/826LU is so amazing, we call it MagicScan. The MagicScan controller takes out most works of getting A/D value such as selecting channel, setting gain, settling time, triggering ADC and getting data. With the built-in MagicScan and interrupt features, it is effectively off-loading your system CPU from the job. Even in channel scan mode, it can have different gain code for each channel, and the sampling rate can still reach 250 kS/s totally. The PCI-822LU/826LU is suitable for high end applications.

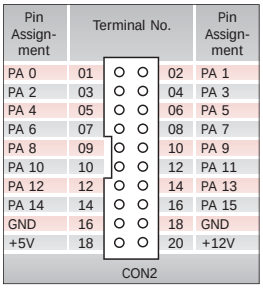
Software

- DOS Lib and TC/BC/MSC sample program (with source codes)
- Supports 32-bit and 64-bit Windows XP/2003/Vista/7
- VB/VC/Delphi/BCB/VB.NET/C#.NET sample programs with source codes

Pin Assignments







Hardware Specifications

Models	PCI-822LU	PCI-826LU
Analog Input		
Channels	32 S.E/ 16 Diff.	
Resolution	12-bit	16-bit
Sampling Rate	250 kS/s. max.	
FIFO Size	8192 samples	
Accuracy	0.1 % of FSR ±1 LSB @ 25 °C, ± 10 V	
Analog Output		
Channels	2	
Resolution	16-bit	
Accuracy	± 6 LSB	
Output Driving	± 5 mA	
Output Range	±5 V, ±10 V, 0 ~ 10 V, 0 ~ 5 V	
Slew Rate	8.33 V/μs	
Programmable Digital I/O		
Channels	32	
Compatibility	5 V/TTL	
Output Capability	Sink: 2.4 mA @ 0.8 V; Source: 0.8 mA @ 2.0 V	
General		
Bus Type	3.3 V/5 V Universal PCI, 32-bit	
Card ID	Yes (4-bit)	
Connectors	Female DB-37 x 1, 20-pin box header x 2	
Power Consumption	800 mA @ +5 V	
Operating Temperature	0 °C ~ +60 °C	
Humidity	5 ~ 85% RH, non-condensing	

Ordering Information

PCI-822LU CR	Universal PCI, 250 kS/ s, 32-ch 12-bit Analog Input, 2-ch 16-bit Analog Output and 32-ch Programmable DIO (RoHS) Includes one CA-4002 D-Sub connector
PCI-826LU CR	Universal PCI, 250 kS/ s, 32-ch 16-bit Analog Input, 2-ch 16-bit Analog Output and 32-ch Programmable DIO (RoHS) Includes one CA-4002 D-Sub connector

VEX-112/VEX-112i/VXC-112AU/ VXC-112iAU

PCI Express/Universal PCI, 2-Port RS-232 Communication Board

Features

- VXC versions supports 3.3 V/5 V PCI bus
- Built-in COM-Selector
- 128-byte hardware FIFO for each port
- +/-4 kV ESD protection for i version
- VEX versions supports PCI Express bus
- Provides 2 RS-232 ports
- 2500 V_{DC} Isolation for i version
- Short Card Design

Introduction

The VEX-112/VEX-112i/VXC-112AU/VXC-112iAU communication card provides 2 RS-232 serial ports. Each port supports for speed up to 115200 bps and can work for full-duplex communication. Users may specify a COM port number manually by setting COM-Selector (DIP switch), or let the driver choose an available number automatically. The driver provides a maximum of 128 KB software buffer for each COM port under Windows. It's practical for large file transmission.

In harsh industrial environments, the on board ESD protection component diverts the potentially damaging charge away from sensitive circuit and protects the computer and equipment from being damaged by high potential voltage.

The VEX-112i/VXC-112iAU offers photo isolation to protect your computer and equipment against damages in harsh environment. The built-in photo coupler can help cutting down on ground loops, common mode voltages and block voltage spikes, provide electrical isolation, and offer significant protection from serious over-voltage conditions in one circuit affecting the other.

The serial communication card are designed for use with intelligent devices like bar code reader, serial printers, intelligent sensors, instrumentation equipment, computers and almost any device with an RS-232 port.

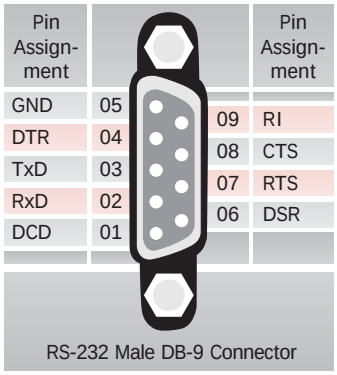
Hardware Specifications

Models	VEX-112	VEX-112i	VXC-112AU	VXC-112iAU
Serial Port				
COM1/2	9-Wire RS-232			
UART	16C950 compatible			
Baud Rate	50 ~ 115200 bps			
Data Bit	5, 6, 7, 8			
Stop Bit	1, 1.5, 2			
Parity	None, Even, Odd, Mark, Space			
FIFO	Internal 128 bytes			
ESD Protection	–	+/- 4 kV	–	+/- 4 kV
Isolation	–	2500 V_{DC}	–	2500 V_{DC}
General				
Bus Type	PCI Express x1		3.3 V/5 V, 33 MHz, 32-bit	
COM-Selector	Yes			
Connectors	Male DB-9 x 2			
Power Consumption	120 mA @ 5 V	440 mA @ 5 V	100 mA @ 5 V	480 mA @ 5 V
Operating Temperature	0 °C ~ +60 °C			
Humidity	0 ~ 90% RH, non-condensing			

Software

- Driver for 32-bit and 64-bit Windows XP/2003/Vista/7
- Driver for Linux

Pin Assignments



RS-232 Male DB-9 Connector

Ordering Information

VEX-112 CR	PCI Express Bus, Serial Communication Board with 2 RS-232 ports (RoHS)
VEX-112i CR	PCI Express Bus, Serial Communication Board with 2 Isolated RS-232 ports (RoHS)
VXC-112AU CR	Universal PCI Bus, Serial Communication Board with 2 RS-232 ports (RoHS)
VXC-112iAU CR	Universal PCI Bus, Serial Communication Board with 2 Isolated RS-232 ports (RoHS)

VEX-142/VEX-142i/VXC-142AU/ VXC-142iAU

PCI Express/Universal PCI, 2-Port RS-422/485 Communication Board

Features

- VXC versions supports 3.3 V/5 V PCI bus
- Built-in COM-Selector
- 128-byte hardware FIFO for each port
- +/-4 kV ESD protection for i version
- VEX versions supports PCI Express bus
- Provides 2 RS-422/485 ports
- 2500 V_{DC} Isolation for i version
- Short Card Design

Introduction

The VEX-142/VEX-142i/VXC-142AU/VXC-142iAU communication card provides 2 RS-232 serial ports. Each port supports for speed up to 115200 bps and can work for full-duplex communication. Users may specify a COM port number manually by setting COM-Selector (DIP switch), or let the driver choose an available number automatically. The driver provides a maximum of 128 KB software buffer for each COM port under Windows. It's practical for large file transmission.

In harsh industrial environments, the on board ESD protection component diverts the potentially damaging charge away from sensitive circuit and protects the computer and equipment from being damaged by high potential voltage.

The VEX-142i/VXC-142iAU offers photo isolation to protect your computer and equipment against damages in harsh environment. The built-in photo coupler can help cutting down on ground loops, common mode voltages and block voltage spikes, provide electrical isolation, and offer significant protection from serious over-voltage conditions in one circuit affecting the other.

The serial communication card are designed for use with intelligent devices like bar code reader, serial printers, intelligent sensors, instrumentation equipment, computers and almost any device with an RS-422/485 port.

Hardware Specifications

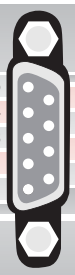
Models	VEX-142	VEX-142i	VXC-142AU	VXC-142iAU
Serial Port				
COM1/2	Selectable 8-Wire RS-422 or 2-Wire RS-485			
UART	16C950 compatible			
Baud Rate	50 ~ 115200 bps			
Data Bit	5, 6, 7, 8			
Stop Bit	1, 1.5, 2			
Parity	None, Even, Odd, Mark, Space			
FIFO	Internal 128 bytes			
ESD Protection	–	+/- 4 kV	–	+/- 4 kV
Isolation	–	2500 V_{DC}	–	2500 V_{DC}
General				
Bus Type	PCI Express x1		3.3 V/5 V, 33 MHz, 32-bit	
COM-Selector	Yes			
Connectors	Male DB-9 x 2			
Power Consumption	120 mA @ 5 V	440 mA @ 5 V	100 mA @ 5 V	480 mA @ 5 V
Operating Temperature	0 °C ~ +60 °C			
Humidity	0 ~ 90% RH, non-condensing			

Software

- Driver for 32-bit and 64-bit Windows XP/2003/Vista/7
- Driver for Linux

Pin Assignments

Pin Assignment			Pin Assign-ment
GND/VEE	05		
RxD-(A)	04	09	CTS-(A)
RxD+(B)	03	08	CTS+(B)
TxD+(B)/Data+(B)	02	07	RTS+(B)
TxD-(A)/Data-(A)	01	06	RTS-(A)



RS-422/485 Male DB-9 Connector

Ordering Information

VEX-142 CR	PCI Express Bus, Serial Communication Board with 2 RS-422/485 ports (RoHS)
VEX-142i CR	PCI Express Bus, Serial Communication Board with 2 Isolated RS-422/485 ports (RoHS)
VXC-142AU CR	Universal PCI Bus, Serial Communication Board with 2 RS-422/485 ports (RoHS)
VXC-142iAU CR	Universal PCI Bus, Serial Communication Board with 2 Isolated RS-422/485 ports (RoHS)

VEX-114/VEX-114i/VXC-114U/ VXC-114iAU

PCI Express/Universal PCI, 4-Port RS-232 Communication Board

Features

- VXC versions supports 3.3 V/5 V PCI bus
- Built-in COM-Selector
- 128-byte Hardware FIFO for Each Port
- 2500 VDC Isolation for VEX-114i/VXC-114iAU
- VEX versions supports PCI Express bus
- Provides 4 RS-232 ports
- +/-4 kV ESD Protection for VEX-114i/VXC-114iAU
- Short Card Design

Introduction

The VEX-114/VEX-114i/VXC-114U/VXC-114iAU communication card provides 4 RS-232 serial ports. Each port supports for speed up to 115200 bps and can work for full-duplex communication.

Users may specify a COM port number manually by setting COM-Selector (DIP switch), or let the driver choose an available number automatically. The driver provides a maximum of 128 KB software buffer for each COM port under Windows. It's practical for large file transmission.

In harsh industrial environments, the on board ESD protection component diverts the potentially damaging charge away from sensitive circuit and protects the computer and equipment from being damaged by high potential voltage.

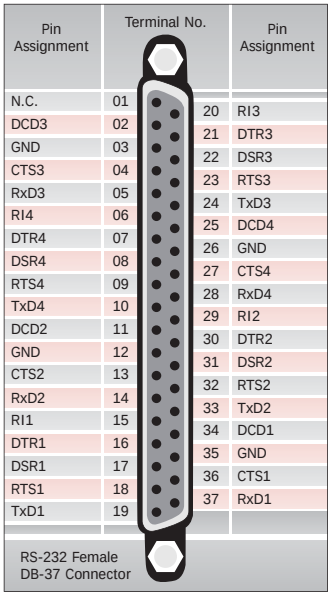
The VEX-114i/VXC-114iAU offers photo isolation to protect your computer and equipment against damages in harsh environment. The built-in photo coupler can help cutting down on ground loops, common mode voltages and block voltage spikes, provide electrical isolation, and offer significant protection from serious over-voltage conditions in one circuit affecting the other.

The serial communication card are designed for use with intelligent devices like bar code reader, serial printers, intelligent sensors, instrumentation equipment, computers and almost any device with an RS-232 port.

Software

- Drivers for 32-bit Windows 2000 XP/2003/Vista/7
- Drivers for 64-bit Windows XP/2003/Vista/7

Pin Assignments



Hardware Specifications

Models	VEX-114	VEX-114i	VXC-114U	VXC-114iAU
Serial Port				
COM1 ~ 4	9-Wire RS-232			
UART	16C950 compatible			
Baud Rate	50 ~ 115200 bps			
Data Bit	5, 6, 7, 8			
Stop Bit	1, 1.5, 2			
Parity	None, Even, Odd, Mark, Space			
FIFO	Internal 128 bytes			
ESD Protection	–	+/- 4 kV	–	+/- 4 kV
Isolation	–	2500 VDC	–	2500 VDC
General				
Bus	PCI Express x1		3.3 V/5 V, 33 MHz, 32-bit	
COM-Selector	Yes (8-bit DIP switch)			
Connector	Female DB-37 x 1			
Power Consumption	120 mA @ 5 V	880 mA @ 5 V	120 mA @ 5 V	880 mA @ 5 V
Operating Temperature	0 °C ~ +60 °C			
Humidity	0 ~ 90% RH, non-condensing			

Ordering Information

VEX-114 CR	PCI Express, 4-Port RS-232 Communication Board (RoHS)
VEX-114i CR	PCI Express, 4-Port Isolated RS-232 Communication Board (RoHS)
VXC-114U CR	Universal PCI, 4-Port RS-232 Communication Board (RoHS)
VXC-114iAU CR	Universal PCI, 4-Port Isolated RS-232 Communication Board (RoHS)

Accessories

CA-9-3705	DB-37 Male (D-sub) to 4-Port DB-9 Male (D-sub) cable. 0.3 M (90°)
CA-9-3715D	DB-37 Male (D-sub) to 4-Port DB-9 Male (D-sub) cable. 1.5 M (180°)

VEX-144/VEX-144i/VXC-144U/ VXC-144iU

PCI Express/Universal PCI, 4-Port RS-422/485 Communication Board

Features

- VXC versions supports 3.3 V/5 V PCI bus
- Built-in COM-Selector
- 128-byte Hardware FIFO for Each Port
- 2500 VDC Isolation for VEX-144i/VXC-144iU
- VEX versions supports PCI Express bus
- Provides 4 RS-422/485 ports
- +/-4 kV ESD Protection for VEX-144i/VXC-144iU
- Short Card Design

Introduction

The VEX-144/VEX-144i/VXC-144U/VXC-144iU communication card provides 4 RS-422/485 serial ports. Each port supports for speed up to 115200 bps and can work for full-duplex communication.

Users may specify a COM port number manually by setting COM-Selector (DIP switch), or let the driver choose an available number automatically. The driver provides a maximum of 128 KB software buffer for each COM port under Windows. It's practical for large fi le transmission.

In harsh industrial environments, the on board ESD protection component diverts the potentially damaging charge away from sensitive circuit and protects the computer and equipment from being damaged by high potential voltage.

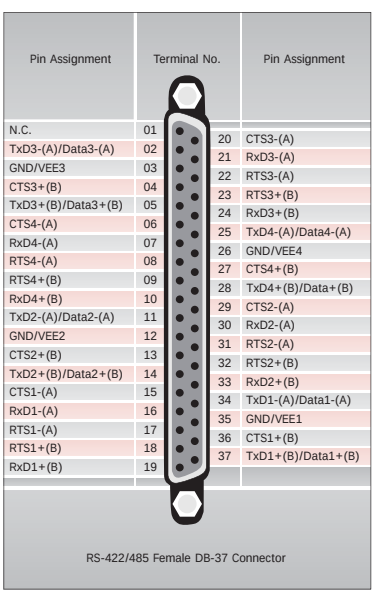
The VEX-144i/VXC-144iU offers photo isolation to protect your computer and equipment against damages in harsh environment. The built-in photo coupler can help cutting down on ground loops, common mode voltages and block voltage spikes, provide electrical isolation, and offer signifi cant protection from serious over-voltage conditions in one circuit affecting the other.

The serial communication card are designed for use with intelligent devices like bar code reader, serial printers, intelligent sensors, instrumentation equipment, computers and almost any device with an RS-422/485 port.

Software

- Drivers for 32-bit Windows 2000 XP/2003/Vista/7
- Drivers for 64-bit Windows XP/2003/Vista/7

Pin Assignments



RS-422/485 Female DB-37 Connector

Hardware Specifications

Models	VEX-144	VEX-144i	VXC-144U	VXC-144iU
Serial Port				
COM1 ~ 4	Selectable 8-Wire RS-422 or 2-Wire RS-485			
UART	16C950 compatible			
Baud Rate	50 ~ 115200 bps			
Data Bit	5, 6, 7, 8			
Stop Bit	1, 1.5, 2			
Parity	None, Even, Odd, Mark, Space			
FIFO	Internal 128 bytes			
ESD Protection	–	+/- 4 kV	–	+/- 4 kV
Isolation	–	2500 VDC	–	2500 VDC
General				
Bus	PCI Express x1		3.3 V/5 V, 33 MHz, 32-bit	
COM-Selector	Yes (8-bit DIP switch)			
Connector	Female DB-37 x 1			
Power Consumption	120 mA @ 5 V	880 mA @ 5 V	120 mA @ 5 V	880 mA @ 5 V
Operating Temperature	0 °C ~ +60 °C			
Humidity	0 ~ 90% RH, non-condensing			

Ordering Information

VEX-144 CR	PCI Express, 4-Port RS-422/485 Communication Board (RoHS)
VEX-144i CR	PCI Express, 4-Port Isolated RS-422/485 Communication Board (RoHS)
VXC-144U CR	Universal PCI, 4-Port RS-422/485 Communication Board (RoHS)
VXC-144iU CR	Universal PCI, 4-Port Isolated RS-422/485 Communication Board (RoHS)

Accessories

CA-9-3705	DB-37 Male (D-sub) to 4-Port DB-9 Male (D-sub) cable. 0.3 M (90°)
CA-9-3715D	DB-37 Male (D-sub) to 4-Port DB-9 Male (D-sub) cable. 1.5 M (180°)

PIO-D168U/D144U/D96U/D64U/D48U/D56U/D24U

Universal PCI, 168-/144-/96-/64-/56-/48-/24-ch 5 V TTL DIO Board

- Universal PCI (3.3 V/5 V) interface
- Emulate Industrial standard 8255 PPI port (mode 0) (PIO-D168U/D144U/D96U/D48U/D56U/D24U)
- High output driving capability (PIO-D168U/D144U/D96U/D48U/D56U/D24U)
- 168-/144-/96-/64-/56-/48-/24-ch 5V TTL DIO
- Interrupt handing capability
- Card ID function
- Drop-in replacement for PIO-DIO series
- DIO response time is about 1 us (1 MHz max.)

PISO-P32C32U

Universal PCI, 32-ch Optically Isolated D/I and 32-ch Optically Isolated Open Collector output Board (Sink, NPN)

- Universal PCI (3.3 V/5 V) interface
- 32-ch optically isolated open collector output (Current Sinking, NPN type)
- DIO response time is about 250 us (4 kHz max.)
- 32-ch optically isolated digital input
- 3000 VDC isolation voltage
- Card ID function
- Drop-in replacement for PISO-P32C32

PISO-P32A32U

Universal PCI, 32-ch Optically Isolated D/I and 32-ch Optically Isolated Open Emitter output Board (Source, PNP)

- Universal PCI (3.3 V/5 V) interface
- 32-ch optically isolated open emitter output (Current Sourcing, PNP type)
- DIO response time is about 250 us (4 kHz max.)
- 32-ch optically isolated digital input
- 3000 VDC isolation voltage
- Card ID function
- Drop-in replacement for PISO-P32A32

ISO-P32S32W/PISO-P32S32WU

Universal PCI, 32-ch Optically Isolated D/I and 32-ch Optically Isolated Open Collector output Board

- Universal PCI (3.3 V/5 V) interface for PISO-P32S32WU
- 32-ch optically isolated digital output
- 3750 VDC isolation voltage
- Input range up to 30 VDC
- Card ID function
- ISA bus for ISO-P32S32W
- 32-ch optically isolated open collector output
  - 500 mA (8-ch) high driving
  - 100 mA (24-ch) driving
  - Current Sinking (NPN)
- DIO response time is about 250 us (4 kHz max.)

PIO-DA16U/DA8U/DA4U

Universal PCI, 14-bit 16/8/4-ch Analog Output Board

- Universal PCI (3.3 V/5 V) interface
- Voltage output: ±10 V
- Two pacer timer interrupt sources
- 16-ch 5V TTL D/I
- D/I with pull-high and pull-low jumpers
- Card ID function
- 16-/8-/4-ch, 14-bit analog output
- Current output: 0 ~ 20 mA (sink)
- Double-buffered D/A latch
- 16-ch 5V TTL D/O
- Software calibration
- Drop-in replacement for the PIO-DA16/DA8/DA4

PISO-DA16U/DA8U/DA4U

Universal PCI, 14-bit 16/8/4-ch Bus-type Isolated Analog Output Board

- Universal PCI (3.3 V/5 V) interface
- 3000 VDC power isolation protection
- Voltage output: ±10 V
- Two pacer timer interrupt sources
- 16-ch 5V TTL D/I
- D/I with pull-high and pull-low jumpers
- Card ID function
- 2500 VDC bus-type isolation protection
- 16-/8-/4-ch, 14-bit analog output
- Current output: 0 ~ 20 mA (sink)
- Double-buffered D/A latch
- 16-ch 5V TTL D/O
- Software calibration
- Drop-in replacement for the PIO-DA16/DA8/DA4

PISO-DA2U

Universal PCI, 14-bit 2-ch Isolated Analog Output Board

- Universal PCI (3.3 V/5 V) interface
- 3000 VDC isolation protection (Bus-Type and CH-CH)
- Unipolar or bipolar analog output
- Software calibration
- Drop-in replacement for the PISO-DA2
- 2-ch, 12-bit analog output
- Two pacer timer interrupt sources
- Double buffered D/A batch
- Card ID function

PCI-M512U

Universal PCI, 512 KB Memory Board with DI/DO

- Universal PCI (3.3 V/5 V) interface
- Two Li-batteries for battery-backup the data of SRAM
- 16-ch 5 V TTL D/O
- On-board 512 KB SRAM
- LED indicators for low- and bad-battery status
- 12-ch 5 V TTL D/I
- Drop-in replacement for the PCI-M512

PCI-1002LU/1002HU

Universal PCI, 32-ch, 12-bit, 110 or 44 kS/s Multi-function Board

- Universal PCI (3.3 V/5 V) interface
- 110 or 44 kS/s A/D sampling rate
- 16-ch 5 V TTL D/I
- D/I with pull-high and pull-low function
- 12-bit, 32 S.E./16 Diff. analog inputs
- Internal trigger
- 16-ch 5 V TTL D/O
- Drop-in replacement for the PCI-1002L/ 1002H

PCI-1202LU/1202HU

Universal PCI, 32-ch, 12-bit, 110 or 44 kS/s Multi-function Board

- Universal PCI (3.3 V/5 V) interface
- 32 S.E./16 Diff. analog inputs
- 1 k-sample hardware FIFO
- Internal: Software-trigger and Pacer-trigger
- 16-ch 5 V TTL D/I
- Data transfer rate is up to 2.1 M words/s (max.)
- Two 12-bit independent programmable DAC, 2 MHz throughput
- 12-bit, 110 or 44 kS/s A/D converter
- Built-in MagicScan controller
- External: Post-trigger, Pre-trigger and Middle-trigger
- 16-ch 5 V TTL D/O
- D/I with pull-high and pull-low function
- Drop-in replacement for the PCI-1202L/1202H

PCI-1602U/1602FU

Universal PCI, 32-ch, 16-bit, 100 or 200 kS/s Multi-function Board

- Universal PCI (3.3 V/5 V) interface
- 32 S.E./16 Diff. analog inputs
- 8 k-sample hardware FIFO
- Internal: Software-trigger and Pacer-trigger
- 16-ch 5 V TTL D/I
- Data transfer rate is up to 2.1 M words/s (max.)
- Two 12-bit independent programmable DAC, 2 MHz throughput per channel (max.)
- 16-bit, 100 or 200 kS/s A/D converter
- Built-in MagicScan controller
- External: Post-trigger, Pre-trigger and Middle-trigger
- 16-ch 5 V TTL D/O
- D/I with pull-high and pull-low function
- Drop-in replacement for the PCI-1602/1602F

PCI-1800LU/1800HU/1802LU/1802HU

Universal PCI, 16/32-ch, 12-bit, 330 or 44 kS/s Multi-function Board

- Universal PCI (3.3 V/5 V) interface
- 32 S.E./ 16 Diff. analog inputs for PCI-1802LU/1802HU
- 16 S.E./8 Diff. analog inputs for PCI-1800LU/1800HU
- 1 k-sample hardware FIFO for PCI-1800LU/1800HU
- External: Post-trigger, Pre-trigger and Middle-trigger
- 16-ch 5 V TTL D/O
- D/I with pull-high and pull-low function
- 12-bit, 330 or 44 kS/s A/D converter
- Built-in MagicScan controller
- 8k-sample hardware FIFO for PCI-1802LU/1802HU
- Internal: Software-trigger and Pacer-trigger
- 16-ch 5 V TTL D/I
- Data transfer rate is up to 2.1 M words/s (max.)
- Two 12-bit independent programmable DAC, 2 MHz throughput per channel (max.)
- Drop-in replacement for the PCI-1800LU/1800HU/1802LU/1802HU

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