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PCI EXPRESS
INTERFACE



New Members in I/O Cards

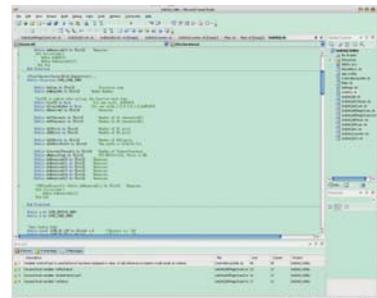
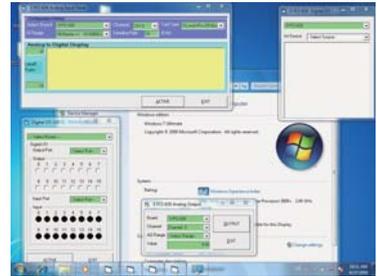
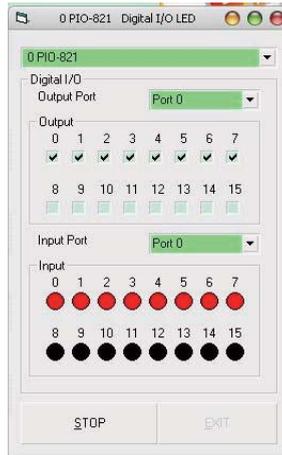
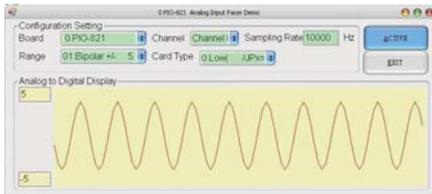
2011 Product Catalog

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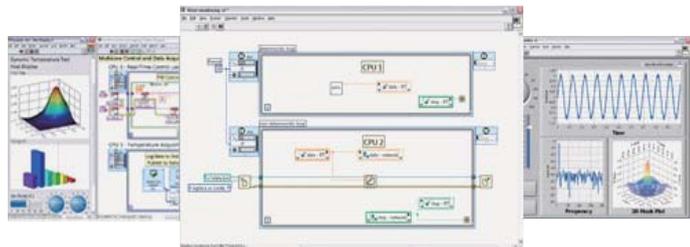
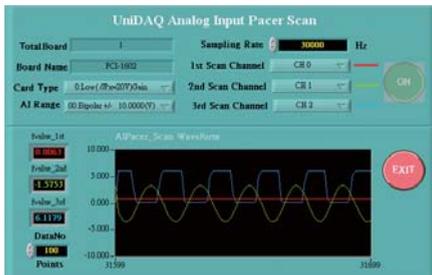
Software

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

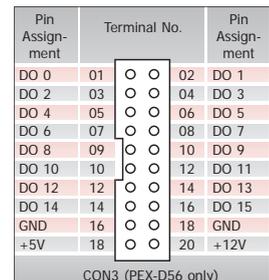
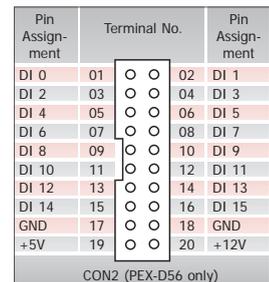
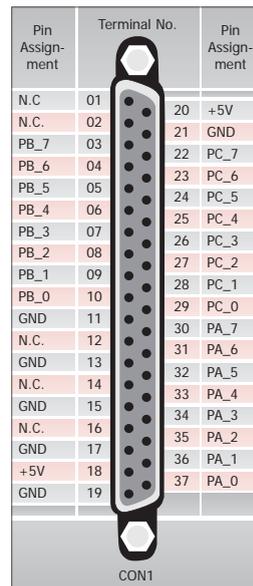
Hardware Specifications

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	

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

Ordering Information

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

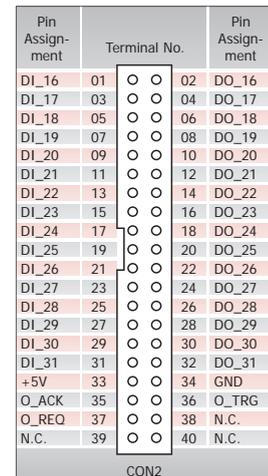
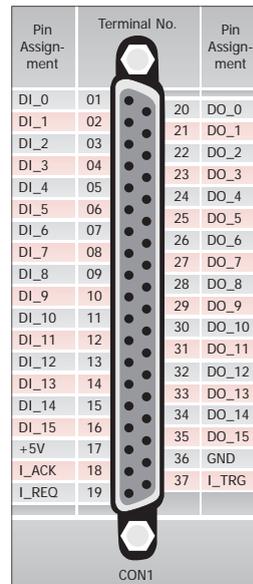
Software

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

Pin Assignments

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



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.
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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

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	

Pin Assignments

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

CON1

Pin Assignment	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)

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_{bc} 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_{bc} 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 _{bc} (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

Pin Assignment	Terminal No.	Pin Assignment
NO_0	01	20 CM_0
NO_1	02	21 CM_1
NO_2	03	22 CM_2
NO_3	04	23 CM_3
NO_4	05	24 CM_4
NO_5	06	25 CM_5
NO_6	07	26 CM_6
NO_7	08	27 CM_7
N/A	09	28 N/A
N/A	10	29 N/A / GND
N/A	11	30 DIB_0
DIA_0	12	32 DIB_2
DIA_1	13	31 DIB_1
DIA_2	14	32 DIB_2
DIA_3	15	33 DIB_3
DIA_4	16	34 DIB_4
DIA_5	17	35 DIB_5
DIA_6	18	36 DIB_6
DIA_7	19	37 DIB_7

CON1

Pin Assignment	Terminal No.	Pin Assignment
NO_8	01	02 CM_8
NO_9	03	04 CM_9
NO_10	05	06 CM_10
NO_11	07	08 CM_11
NO_12	09	10 CM_12
NO_13	11	12 CM_13
NO_14	13	14 CM_14
NO_15	15	16 CM_15
N/A	17	18 N/A
N/A	19	20 N/A / GND
N/A	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-P16POR16i only)

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



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

Available soon



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.

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		

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 A.GND
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 A.GND
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
+5V	19	20 +12V

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
+5V	18	20 +12V

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

Pin Assignment	Terminal No.	Pin Assignment
AI_0	01	20 AI_16
AI_1	02	21 AI_17
AI_2	03	22 AI_18
AI_3	04	23 AI_19
AI_4	05	24 AI_20
AI_5	06	25 AI_21
AI_6	07	26 AI_22
AI_7	08	27 AI_23
AI_8	09	28 AI_24
AI_9	10	29 AI_25
AI_10	11	30 AI_26
AI_11	12	31 AI_27
AI_12	13	32 AI_28
AI_13	14	33 AI_29
AI_14	15	34 AI_30
AI_15	16	35 AI_31
A.GND	17	36 N.C.
N.C.	18	37 D.GND
Ext_Trig	19	

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	11	12 DI 11
DI 12	13	14 DI 13
DI 14	15	16 DI 15
GND	17	18 GND
+5V	19	20 +12V

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	10	12 DO 11
DO 12	12	14 DO 13
DO 14	14	16 DO 15
GND	16	18 GND
+5V	18	20 +12V

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 A_{0c} 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

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	

Pin Assignments

Pin Assignment	Terminal No.	Pin Assignment
AI_0	01	20 AI_16
AI_1	02	21 AI_17
AI_2	03	22 AI_18
AI_3	04	23 AI_19
AI_4	05	24 AI_20
AI_5	06	25 AI_21
AI_6	07	26 AI_22
AI_7	08	27 AI_23
AI_8	09	28 AI_24
AI_9	10	29 AI_25
AI_10	11	30 AI_26
AI_11	12	31 AI_27
AI_12	13	32 AI_28
AI_13	14	33 AI_29
AI_14	15	34 AI_30
AI_15	16	35 AI_31
A.GND	17	36 Da2 out
Da1 out	18	37 D.GND
Ext_Trg	19	

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

CON1

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

CON2

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_{bc} 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.

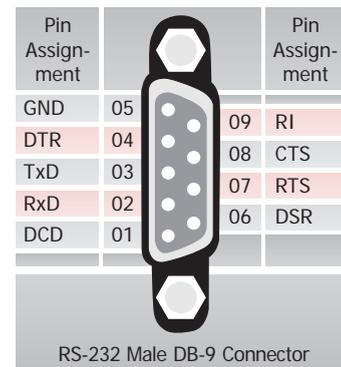
Hardware Specifications

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 _{bc}	-	2500 V _{bc}
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



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



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 V_{dc} 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

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 V _{dc}	-	2500 V _{dc}
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			

Pin Assignments

Pin Assignment	Terminal No.	Pin Assignment
N.C.	01	20 RI3
DCD3	02	21 DTR3
GND	03	22 DSR3
CTS3	04	23 RTS3
RxD3	05	24 TxD3
RI4	06	25 DCD4
DTR4	07	26 GND
DSR4	08	27 CTS4
RTS4	09	28 RxD4
TxD4	10	29 RI2
DCD2	11	29 DTR2
GND	12	30 DSR2
CTS2	13	32 RTS2
RxD2	14	33 TxD2
RI1	15	34 DCD1
DTR1	16	35 GND
DSR1	17	36 CTS1
RTS1	18	37 RxD1
TxD1	19	

RS-232 Female DB-37 Connector

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 V_{dc} 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 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-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 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.

Software

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

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 V _{dc}	-	2500 V _{dc}
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)

Pin Assignments

Pin Assignment	Terminal No.	Pin Assignment
N.C.	01	
TxD3-(A)/Data3-(A)	02	20 CTS3-(A)
GND/VEE3	03	21 RxD3-(A)
CTS3+(B)	04	22 RTS3-(A)
TxD3+(B)/Data3+(B)	05	23 RTS3+(B)
RxD4-(A)	06	24 RxD3+(B)
RxD4-(A)	07	25 TxD4-(A)/Data4-(A)
RTS4-(A)	08	26 GND/VEE4
RTS4+(B)	09	27 CTS4+(B)
RxD4+(B)	10	28 TxD4+(B)/Data+(B)
TxD2-(A)/Data2-(A)	11	29 CTS2-(A)
GND/VEE2	12	30 RxD2-(A)
CTS2+(B)	13	31 RTS2-(A)
TxD2+(B)/Data2+(B)	14	32 RTS2+(B)
CTS1-(A)	15	33 RxD2+(B)
RxD1-(A)	16	34 TxD1-(A)/Data1-(A)
RTS1-(A)	17	35 GND/VEE1
RTS1+(B)	18	36 CTS1+(B)
RxD1+(B)	19	37 TxD1+(B)/Data1+(B)

RS-422/485 Female DB-37 Connector

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 V_{oc} 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 V_{oc} 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 V_{oc} isolation voltage
- Input range up to 30 V_{oc}
- 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 V_{oc} 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 V_{oc} 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 V_{oc} 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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