

Isolated Digital Input board
for PCI Express

DI-64L-PE



* Specifications, color and design of the products are subject to change without notice.

Features

Opto-coupler isolated input (supporting current sink output)

This product has the opto-coupler isolated input 64 channels (supporting current sink output) whose response speed is 200μsec.

Common terminal provided per 16 channels, capable of supporting a different external power supply Supporting driver voltages of 12 - 24 VDC for input

Opto-coupler bus isolation

As the PCI Express bus (PC) is isolated from the input interfaces by opto-couplers, this product has excellent noise performance.

You can use 32 channels of input signals as interrupt events.

You can use 32 channels of input signals as interrupt events and also disable or enable the interrupt in bit units and select the interrupt edge.

Windows/Linux compatible driver libraries are attached.

Using the attached driver library API-PAC(W32) makes it possible to create applications of Windows/Linux. In addition, a diagnostic program by which the operations of hardware can be checked is provided.

This product has a digital filter to prevent input signals from carrying noise or a chattering.

This product has a digital filter to prevent input signals from carrying noise or a chattering. All input terminals can be added a digital filter, and the setting can be performed by software.

Functions and connectors are compatible with PCI compatible board PI-64L(PCI)H.

The functions same with PCI compatible board PI-64L(PCI)H are provided.

In addition, as there is compatibility in terms of connector shape and pin assignments, it is easy to migrate from the existing system.

LabVIEW is supported by a plug-in of dedicated library VI-DAQ.

Using the dedicated library VI-DAQ makes it possible to create each application for LabVIEW.

This product is a PCI Express bus-compliant interface board that extends the digital signal input functions of a PC.

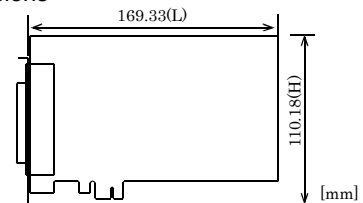
This product is a 12 - 24VDC opto-coupler isolated type with input 64 channels. You can use 32 channels of input signals as interrupt inputs. In addition, digital filter function to prevent wrong recognition of input signals is provided. Windows/Linux driver is bundled with this product.

Specification

Item	Specification
Input	
Input format	Opto-coupler isolated input (Compatible with current sink output) (Negative logic *1)
Number of input signal channels	64ch (32ch available for interrupts) (1 common in 16ch)
Input resistance	4.7kΩ
Input ON current	2.0mA or more
Input OFF current	0.16mA or less
Interrupt	32 interrupt input signals are arranged into a single output of interrupt signal INTA. An interrupt is generated at the rising edge (HIGH-to-LOW transition) or falling edge (LOW-to-HIGH transition).
Response time	Within 200μsec
Common	
I/O address	Any 32-byte boundary
Interruption level	1 level use
Max. board count for connection	16 boards including the master board
Isolated Power	5000Vrms
External circuit power supply	12 - 24VDC(±10%)
Power consumption	3.3VDC 350mA (Max.)
Operating condition	0 - 50°C, 10 - 90%RH (No condensation)
Allowable distance of signal extension	Approx. 50m (depending on wiring environment)
Bus specification	PCI Express Base Specification Rev. 1.0a x1
Dimension (mm)	169.33(L) x 110.18(H)
Connector	96 pin half pitch connector [F (female) type] PCR-E96LMD+[HONDA TSUSHIN KOGYO CO., LTD.] equivalent to it
Weight	215g

*1 Data "0" and "1" correspond to the High and Low levels, respectively.

Board Dimensions



The standard outside dimension (L) is the distance from the end of the board to the outer surface of the slot cover.

Support Software

Windows version of digital I/O driver

API-DIO(WDM)/API-DIO(98/PC)

[Stored on the bundled CD-ROM driver library API-PAC(W32)]

The API-DIO(98/PC) is the Windows version driver library software that provides products in the form of Win32 API functions (DLL). Various sample programs such as Visual Basic and Visual C++, etc and diagnostic program useful for checking operation is provided.

< Operating environment >

OS Windows Vista, Windows XP, Server 2003, 2000

Adaptation language Visual Basic, Visual C++, Visual C#, Delphi, C++ Builder

You can download the updated version from the CONTEC's Web site (<http://www.contec.com/apipac/>). For more details on the supported OS, applicable language and new information, please visit the CONTEC's Web site.

Linux version of digital I/O driver API-DIO(LNX)

[Stored on the bundled CD-ROM driver library API-PAC(W32)]

The API-DIO(LNX) is the Linux version driver software which provides device drivers (modules) by shared library and kernel version. Various sample programs of gcc are provided.

< Operating environment >

OS RedHatLinux, TurboLinux
(For details on supported distributions, refer to Help available after installation.)

Adaptation language gcc

You can download the updated version from the CONTEC's Web site (<http://www.contec.com/apipac/>). For more details on the supported OS, applicable language and new information, please visit the CONTEC's Web site.

Data acquisition VI library for LabVIEW VI-DAQ (Available for downloading (free of charge) from the CONTEC web site.)

This is a VI library to use in National Instruments LabVIEW. VI-DAQ is created with a function form similar to that of LabVIEW's Data Acquisition VI, allowing you to use various devices without complicated settings. See <http://www.contec.com/vidaq/> for details and download of VI-DAQ.

Cable & Connector

Cable (Option)

Shield Cable with 96-Pin Half-Pitch Connectors at Both Ends
: PCB96PS-0.5P (0.5m)
: PCB96PS-1.5P (1.5m)
: PCB96PS-3P (3m)
: PCB96PS-5P (5m)

Flat Cable with 96-Pin Half-Pitch Connectors at Both Ends
: PCB96P-1.5 (1.5m)
: PCB96P-3 (3m)
: PCB96P-5 (5m)

Shield Cable with 96-Pin Half-Pitch Connectors at One End
: PCA96PS-0.5P (0.5m)
: PCA96PS-1.5P (1.5m)
: PCA96PS-3P (3m)
: PCA96PS-5P (5m)

Flat Cable with 96-Pin Half-Pitch Connectors at One End
: PCA96P-1.5 (1.5m)
: PCA96P-3 (3m)
: PCA96P-5 (5m)

Distribution shield cable
with 96-Pin Half-Pitch Connectors(96P→37P x 2)
: PCB96WS-1.5P (1.5m)
: PCB96WS-3P (3m)
: PCB96WS-5P (5m)

Connector (Option)

Half Pitch 96P Female Connector Set (5 Pieces)
: CN5-H96F

Accessories

Accessories (Option)

Screw Terminal	: EPD-96A *1
Screw Terminal	: EPD-96 *1
Digital I/O 64CH Series Terminal Panel	: DTP-64(PC) *1
Signal Monitor for Digital I/O(64Bits)	: CM-64(PC)E *1
Screw Terminal (M3 x 37P)	: EPD-37A *2
Screw Terminal (M3.5 x 37P)	: EPD-37 *2
General Purpose Terminal	: DTP-3A *2
Screw Terminal	: DTP-4A *2
Signal Monitor for Digital I/O	: CM-32(PC)E *2
Connection Conversion Board (96-Pin → 37-Pin x 2)	: CCB-96 *3

*1 A PCB96P or PCB96PS optional cable is required separately.

*2 A PCB96WS optional cable is required separately.

*3 Option cable PCB96P or PCB96PS, and the cable for 37-pin D-SUB are required separately.

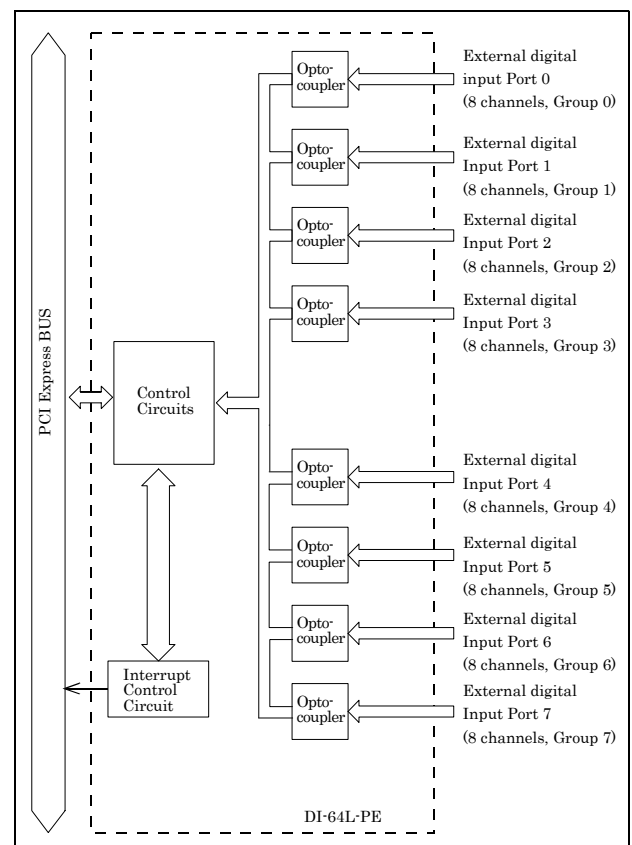
* Check the CONTEC's Web site for more information on these options.

Packing List

Board [DI-64L-PE] ...1
First step guide ... 1
CD-ROM *1 [API-PAC(W32)] ...1

*1 The CD-ROM contains the driver software and User's Guide

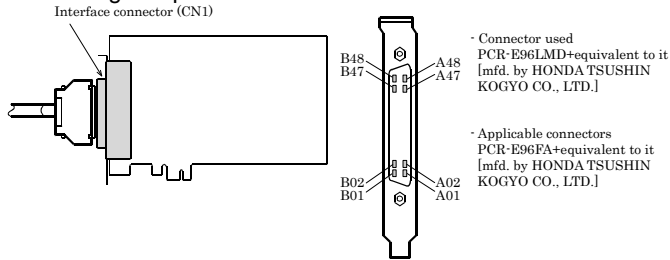
Block Diagram



How to connect the connectors

Connector shape

The on-board interface connector (CN1) is used when connecting this product and the external devices.



* Please refer to page 2 for more information on the supported cable and accessories.

Connector Pin Assignment

Pin Assignments of Interface Connector (CN1)

Common plus pin for +6/+7 input ports	IP 6/7 IP 6/7	[49] B48 B47	[1] A48 A47	IP 2/3 IP 2/3	Common plus pin for +2/+3 input ports
+7 port (input)	I-77	B46	A46	I-37*	+3 port (input)
	I-76	B45	A45	I-36*	
	I-75	B44	A44	I-35*	
	I-74	B43	A43	I-34*	
	I-73	B42	A42	I-33*	
	I-72	B41	A41	I-32*	
	I-71	B40	A40	I-31*	
	I-70	B39	A39	I-30*	
+6 port (input)	I-67	B38	A38	I-27*	+2 port (input)
	I-66	B37	A37	I-26*	
	I-65	B36	A36	I-25*	
	I-64	B35	A35	I-24*	
	I-63	B34	A34	I-23*	
	I-62	B33	A33	I-22*	
	I-61	B32	A32	I-21*	
	I-60	B31	A31	I-20*	
N.C.	N.C.	B30	A30	N.C.	N.C.
	N.C.	B29	A29	N.C.	
	N.C.	B28	A28	N.C.	
	N.C.	B27	A27	N.C.	
	N.C.	B26	A26	N.C.	
	N.C.	B25	A25	N.C.	
	N.C.	B24	A24	N.C.	
	N.C.	B23	A23	N.C.	
	N.C.	B22	A22	N.C.	
	N.C.	B21	A21	N.C.	
Common plus pin for +4/+5 input ports	IP 4/5 IP 4/5	B20 B19	A20 A19	IP 0/1 IP 0/1	Common plus pin for +0/+1 input ports
+5 port (input)	I-57	B18	A18	I-17*	+1 port (input)
	I-56	B17	A17	I-16*	
	I-55	B16	A16	I-15*	
	I-54	B15	A15	I-14*	
	I-53	B14	A14	I-13*	
	I-52	B13	A13	I-12*	
	I-51	B12	A12	I-11*	
	I-50	B11	A11	I-10*	
+4 port (input)	I-47	B10	A10	I-07*	+0 port (input)
	I-46	B09	A09	I-06*	
	I-45	B08	A08	I-05*	
	I-44	B07	A07	I-04*	
	I-43	B06	A06	I-03*	
	I-42	B05	A05	I-02*	
	I-41	B04	A04	I-01*	
	I-40	B03	A03	I-00*	
N.C.	N.C.	B02	A02	N.C.	N.C.
	N.C.	B01	A01	N.C.	

I-00 - I-37 can be used as interrupt signal.

* The numbers in square brackets [] are pin numbers designated by HONDA TSUSHIN KOGYO CO., LTD.

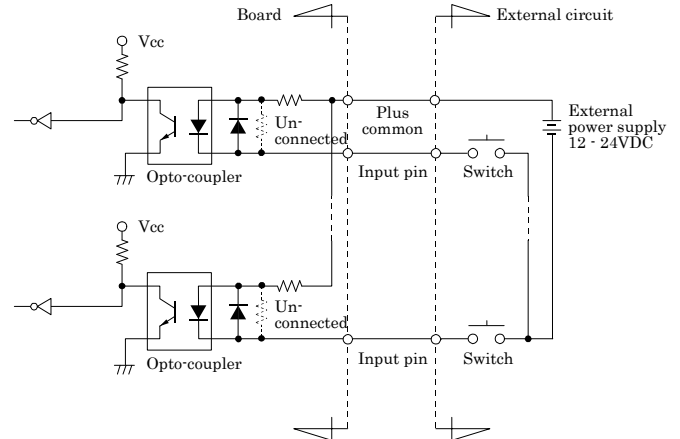
I-00 - I-77	64 input signal pins. Connect output signals from the external device to these pins.
IP 0/1 - IP 6/7	Connect the positive side of the external power supply. These pins are common to 16 input signal pins.
N.C.	This pin is left unconnected.

Connecting Input Signals

Connect the input signals to a device which can be current-driven, such as a switch or transistor output device. The connection requires an external power supply to feed currents.

The board inputs the ON/OFF state of the current-driven device as a digital value.

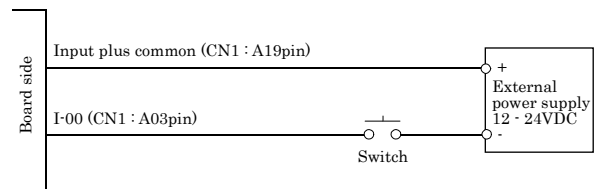
Input Circuit



* Input pin represent input signals.

The input circuits of interface blocks of this product is illustrated in the image above. The signal inputs are isolated by opto-couplers (ready to accept current sinking output signals). The board therefore requires an external power supply to drive the inputs. The power requirement for each input pin is about 5.1 mA at 24 VDC (about 2.6 mA at 12 VDC).

Connecting a Switch



When the switch is ON, the corresponding bit contains 1.

When the switch is OFF, by contrast, the bit contains 0.

Connecting the Sink Type Output and Sink Output Support Input

The following example shows a connection between a sink type output (output board) and a sink output support input (input board). Refer to this connection example when you connect such boards to each other.

