

## Digital I/O Board with High-Speed Opto-Isolation for PCI Express

### DIO-3232F-PE



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

### Features

#### Opto-coupler isolated input (supporting current sink output) and opto-coupler isolated open-collector output (current sink type)

This product has the opto-coupler isolated input 32ch (supporting current sink output) whose high speed response speed is 5μsec and opto-coupler isolated open-collector output 32ch (current sink type). Common terminal provided per 16ch, capable of supporting a different external power supply. Supporting driver voltages of 12 - 24 VDC for I/O

#### Opto-coupler bus isolation

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

#### You can use all of the input signals as interrupt request signals.

You can use all of the input signals as interrupt request signals and also disable or enable the interrupt in bit units and select the edge of the input signals, at which to generate an interrupt.

#### 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 wrong recognition of input signals from carrying noise or a chattering.

This product has a digital filter to prevent wrong recognition of 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.

#### The output circuit, has a built-in Zener diode and the overcurrent protection circuit of the surge voltage protection.

Zener diodes are connected to the output circuits to protect against surge voltages. In addition, the output circuit, it attaches the overcurrent protection circuit at the output 8-channel unit. The output rating is max. 35VDC, 50mA per ch.

#### Functions and connectors are compatible with PCI compatible board PIO-32/32F(PCI)H.

The functions same with PCI compatible board PIO-32/32F(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.

This product is a PCI Express board used to provide a digital signal I/O function on a PC. It is a 12 - 24VDC opto-coupler isolated type for which the response speed of 5μsec can be realized by using a high-speed opto-coupler with input 32ch and open-collector output 32ch equipped. You can use all of the input signals as interrupt inputs. Equipped with the digital filter function and output transistor protection circuit (surge voltage protection and overcurrent protection). Windows/Linux driver is bundled with this product.

Possible to be used as a data recording device for LabVIEW, with dedicated libraries.

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

Using the dedicated library makes it possible to make a LabVIEW application.

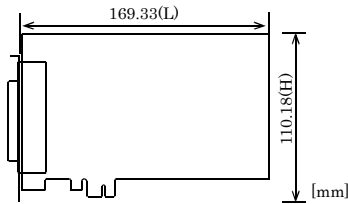
### Specification

#### Function specification

Item	Specifications
<b>Input</b>	
Input format	Opto-coupler isolated input (Compatible with current sink output) (Negative logic *1)
Number of input signal channels	32ch (all available for interrupts) (1 common in 16ch)
Input resistance	2.2kΩ
Input ON current	4.9mA or more
Input OFF current	0.66mA 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 5μsec
<b>Output</b>	
Output format	Opto-coupler isolated open collector output (current sink type) (Negative logic *1)
Number of output signal channels	32ch (1 common per 16ch)
Output rating	Output voltage 35VDC (Max) Output current 50mA (per channel) (Max)
Surge protector	Zener diode RD47FM(NEC) or equivalent to it
Response time	Within 5μsec
<b>Common</b>	
Built-in power	None
Allowable distance of signal extension	Approx. 50m (depending on wiring environment)
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	500Vrms
External circuit power supply	12 - 24VDC(±10%)
Power consumption (Max)	3.3VDC 550mA
Operating condition	0 - 50°C, 10 - 90%RH (No condensation)
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 [M (male) type] PCR-E96LMD+[HONDA TSUSHIN KOGYO CO., LTD.] equivalent to it
Weight	160g
Standard	VCCI Class A, CE Marking (EMC Directive Class A, RoHS Directive)

\*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 & Service

### Windows version of digital I/O driver API-DIO(WDM)/API-DIO(98/PC) [Stored on the bundled disk driver library API-PAC(W32)]

The API-DIO(WDM) 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 \*1useful for checking operation is provided.

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

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

#### [Stored on the bundled disk 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.

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

### LabVIEW-support data acquisition library DAQfast for LabVIEW (Available for downloading (free of charge) from the CONTEC web site.)

This is a data collection library to use in the LabVIEW by National Instruments. With Polymorphic VI, our design enables a LabVIEW user to operate seamlessly. Our aim is that the customers to perform easily, promptly what they wish to do.

See [https://www.contec.com/products/daq\\_util/daqfast.php](https://www.contec.com/products/daq_util/daqfast.php) for details and download of DAQfast for LabVIEW.

### Data acquisition 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 (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)

\* Information about the option products, see the Contec's website.

## Accessories (Option)

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

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

\*2 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 [DIO-3232F-PE]...1  
 First step guide ... 1  
 Disk \*1 [API-PAC(W32)] ...1  
 Warranty Certificate ...1  
 Serial Number Label...1

\*1 The bundled disk contains the driver software and User's Guide.