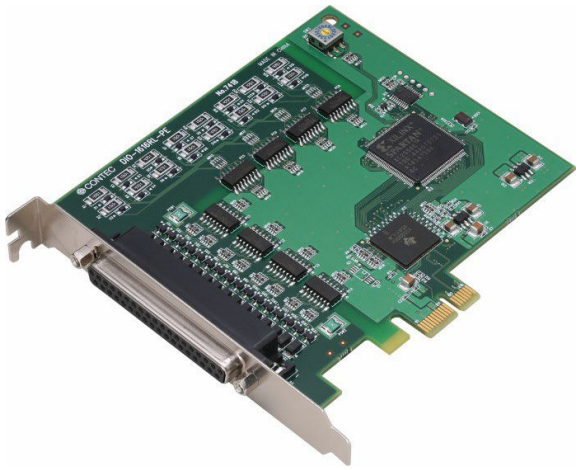
Negative-Common Opto-Isolated Digital I/O
for PCI Express 16ch type

DIO-1616RL-PE



This product is a negative-common typed PCI Express bus-compliant interface board used to provide a digital signal I/O function on a PC. This product can input and output digital signals at 12 - 24VDC.

DIO-1616RL-PE features 16 opto-coupler isolated inputs (compatible with current source output signals) and 16 opto-coupler isolated outputs (current source type). You can use 16 input signals as interrupt inputs. Equipped with the digital filter function to prevent wrong recognition of input signals is provided 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.

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

Features

Opto-coupler isolated input (compatible with current source output signals) and opto-coupler isolated output (current source type)
DIO-1616RL-PE has the opto-coupler isolated input 16channels (compatible with current source output signals) whose response speed is 200µsec and opto-coupler isolated output 16channels (current source type). Common terminal provided per 16channels, capable of supporting a different external power supply. Supporting driver voltages of 12 - 24 VDC for I/O
Opto-coupler bus isolation

As the 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, 100mA per channel.

Functions and connectors are compatible with PCI compatible board PIO-16/16RL(PCI)H.
DIO-1616RL-PE : The functions same with PCI compatible board PIO-16/16RL(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.
Using the dedicated library makes it possible to make a LabVIEW application.

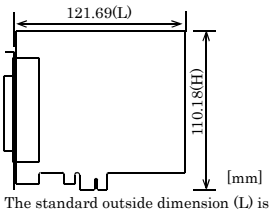
Specification

Function specification

Item			Specifications
Input			
	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
Output			
	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 (par channel) (Max.)
	Surge protector		Zener diode RD47FM(NEC) or equivalent to it
	Response time		Within 5µsec
Common			
	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), UKCA

*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)
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.

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

LabVIEW-support data acquisition library DAQfast for LabVIEW
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.

Data acquisition library for LabVIEW VI-DAQ
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.

Cable & Connector (Option)

Flat Cable with Two 37-pin D- SUB Connectors
: PCB37P-1.5 (1.5m)

Shielded Cable with Two 37-pin D- SUB Connectors
: PCB37PS-0.5P (0.5m)
: PCB37PS-1.5P (1.5m)
: PCB37PS-3P (3m)
: PCB37PS-5P (5m)

Flat Cable with One 37-pin D- SUB Connector
: PCA37P-1.5 (1.5m)
: PCA37P-3 (3m)

Shielded Cable with One 37-pin D- SUB Connector
: PCA37PS-0.5P (0.5m)
: CA37PS-1.5P (1.5m)
: PCA37PS-3P (3m)
: PCA37PS-5P (5m)

Accessories (Option)

Screw Terminal (M3 x 37P)	EPD-37A *1*2
Screw Terminal (M3.5 x 37P)	EPD-37 *1
General Purpose Terminal	DTP-3C *1
Screw Terminal	DTP-4C *1

*1 A PCB37P or PCB37PS optional cable is required separately.
*2 "Spring-up" type terminal is used to prevent terminal screws from falling off.
* Check the CONTEC's Web site for more information on these options.

Packing List

Board [DIO-1616RL-PE]...1
First step guide ... 1
Disk *1 [API-PAC(W32)] ...1
Warranty Certificate ...1
Serial Number Lable...1

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