

Digital Output Board with Opto-Isolation for PCI Express DO-64L-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)
DO-64L-PE has the opto-coupler isolated open-collector output 64ch (supporting current sink output) whose response speed is 200μsec. 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.

Windows/Linux drivers are available

By using the digital I/O driver, each Windows/Linux application can be created. In addition, a diagnostic program by which the operations of hardware can be checked is provided.

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 ch.

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

DO-64L-PE : The functions same with PCI compatible board PO-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.

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

Packing List

Product [DO-64L-PE]...1
Setup Guide ... 1
Warranty Certificate ...1
Serial Number Label...1

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

DO-64L-PE is a 12 - 24VDC opto-coupler isolated type with open-collector output 64ch. Equipped with the output transistor protection circuit (surge voltage protection and overcurrent protection).

Windows/Linux drivers are available.

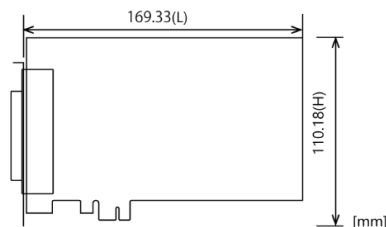
- * The contents in this document are subject to change without notice.
- * Visit the CONTEC website to check the latest details in the document.
- * The information in the data sheets is as of July, 2022.

Specification

Item	Specification
Output	
Output format	Opto-coupler isolated open collector output (current sink type) (Negative logic *1)
Number of output signal channels	64ch (1 common in 16ch)
Output rating	Output voltage 35VDC (Max.)
	Output current 100mA (per channel) (Max.)
Residual voltage with output on	0.5V or less (Output currents:50mA), 1.0V or less (Output currents:100mA)
Surge protector	Zener diode RD47FM(NEC) or equivalent to it
Response time	Within 200μsec
Common	
I/O address	Any 32-byte boundary
Interruption level	No 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 580mA (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
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.

Card Dimensions



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

Support Software & Service

You should use CONTEC support software according to your purpose and development environment.

The name of the documents	Contents	How to get
Digital I/O Driver software API-DIO(WDM)	Driver software of digital input and output for Windows.	Download (ZIP)
Digital I/O Driver software API-DIO(LNX)	Driver software of digital input and output for Linux.	Download (tgz)
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.	Download (ZIP)

* Download the software from the CONTEC website.

Option

Item	Model	Description
Cable	PCB96PS-0.5P (0.5m) PCB96PS-1.5P (1.5m) PCB96PS-3P (3m) PCB96PS-5P (5m)	Shield Cable with 96-Pin Half-Pitch Connectors at Both Ends
	PCB96P-1.5 (1.5m) PCB96P-3 (3m)	Flat Cable with 96-Pin Half-Pitch Connectors at Both Ends
	PCA96PS-0.5P (0.5m) PCA96PS-1.5P (1.5m) PCA96PS-3P (3m) PCA96PS-5P (5m)	Shield Cable with 96-Pin Half-Pitch Connectors at One End
	PCA96P-1.5 (1.5m) PCA96P-3 (3m)	Flat Cable with 96-Pin Half-Pitch Connectors at One End
	PCB96WS-1.5P (1.5m) PCB96WS-3P (3m) PCB96WS-5P (5m)	Distribution shield cable with 96-Pin Half-Pitch Connectors(96P→37P x 2)
Accessories	EPD-96A *1*2	Screw Terminal Unit (M3 x 96P)
	EPD-96 *1	Screw Terminal Unit (M3.5 x 96P)
	DTP-64A *1	Terminal Unit for Cables (M3 x 96P)
	CM-64L *1	Signal Monitor / Output Accessory for Digital I/O (64P)
	EPD-37A *3	Screw Terminal Unit (M3 x 37P)
	EPD-37 *3	Screw Terminal Unit (M3.5 x 37P)
	DTP-3C *3	General Purpose Terminal (M3 x 37P)
	DTP-4C *3	Screw Terminal (M2.6 x 37P)
	CM-32L *3	Signal Monitor Accessory for Digital I/O
	CCB-96 *4	Connector Conversion card (96-Pin→37-Pin x 2)

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

*2 "Spring-up" type terminal is used to prevent terminal screws from falling off.

*3 A PCB96WS optional cable is required separately.

*4 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

Product [DO-64L-PE]...1

Setup Guide ... 1

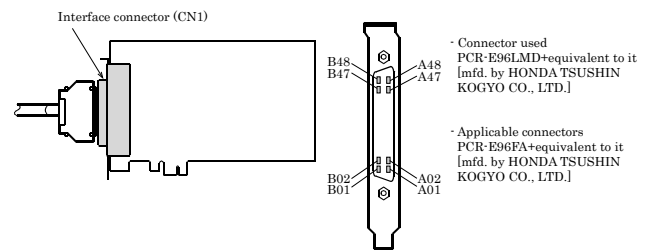
Warranty Certificate ...1

Serial Number Label...1

How to connect the connectors

Connector shape

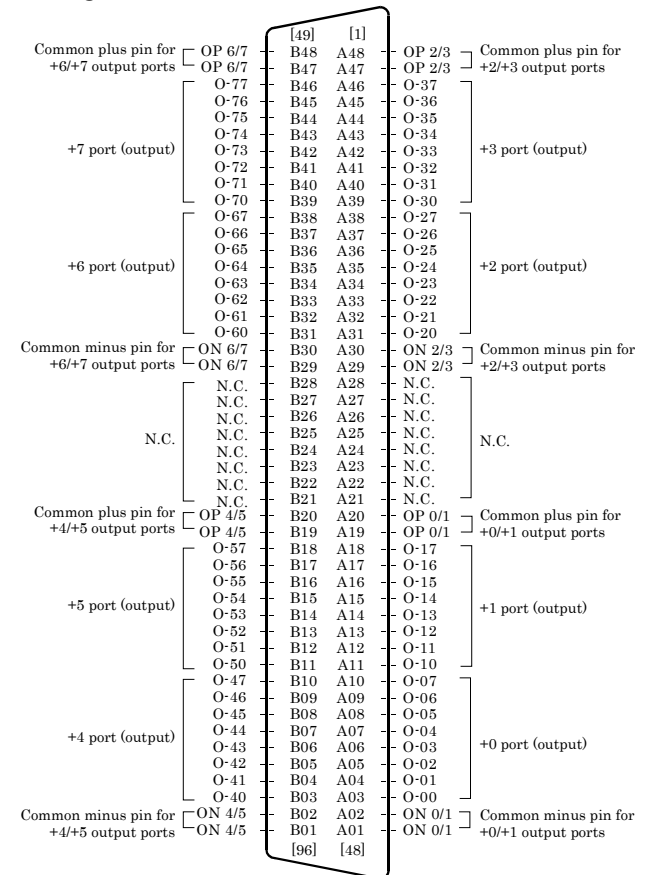
The on-board interface connector (CN1) is used when connecting this product and the external devices.



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

Connector Pin Assignment

Pin Assignments of Interface Connector (CN1)



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

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

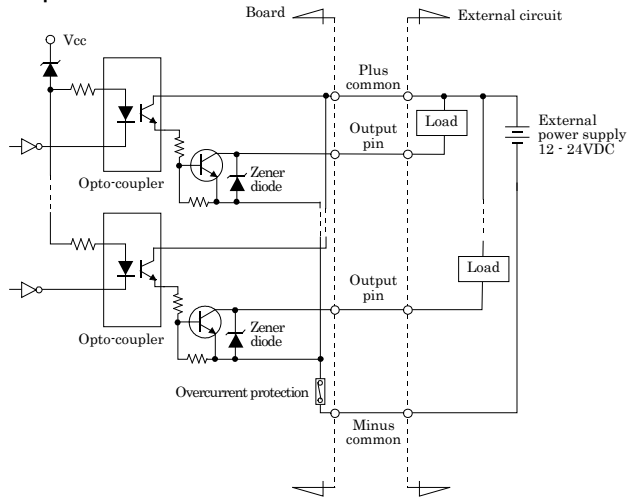
Connecting Output Signals

Connect the output signals to a current-driven controlled device such as a relay or LED.

The connection requires an external power supply to feed currents.

The board controls turning on/off the current-driven controlled device using a digital value.

Output Circuit



* O-xx represents the output pin.

The output circuits of interface blocks of this product is illustrated in the image above. The signal output section is an opto-coupler isolated, open-collector output (current sink type). Driving the output section requires an external power supply.

The rated output current per channel is 100 mA at maximum.

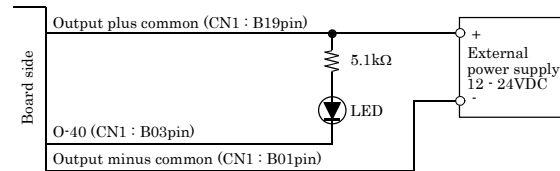
The output section can also be connected to a TTL level input as it uses a low-saturated transistor for output. The residual voltage (low-level voltage) between the collector and emitter with the output on is 0.5 V or less at an output current within 50 mA or at most 1.0 V at an output current within 100 mA.

A zener diode is connected to the output transistor for protection from surge voltages. A PolySwitch-based overcurrent protector is provided for every eight output transistors. When the overcurrent protector works, the output section of the board is temporarily disabled. If this is the case, turn off the power to the PC and the external power supply and wait for a few minutes, then turn them on back.

CAUTION

When the PC is turned on, all output are reset to OFF.

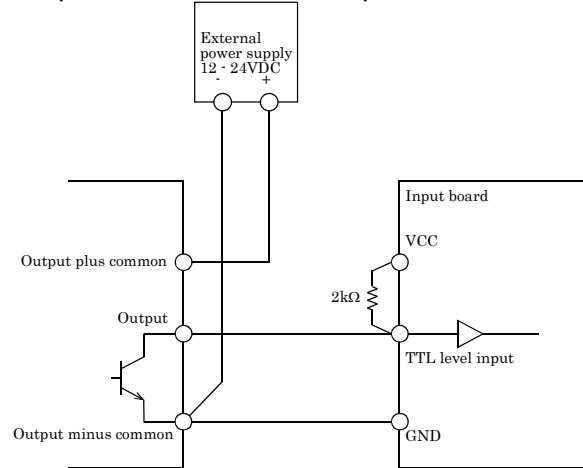
Connection to the LED



When "1" is output to a relevant bit, the corresponding LED comes on.

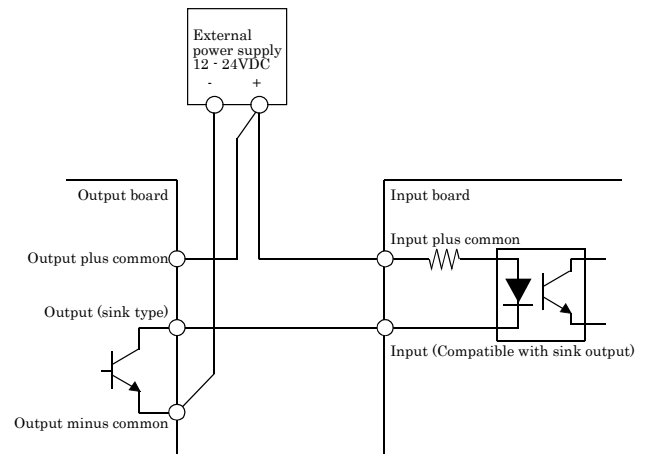
When "0" is output to the bit, in contrast, the LED goes out.

Example of Connection to TTL Level Input



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.



Block Diagram

