Bi-Directional Digital I/O Board for PCI
DIO-48D2-PCI

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

This product is a PCI bus-compliant interface board that extends the input/output function of

bi-directional digital signal. This board has up to 48 unisolated TTL-level input/output channels that is powered by the equivalence to the mode 0 of i8255 chips, and you can use up to 48 channels of the input signals as interrupt inputs. You can select the input/output by the application software in eight signals units (in four signals unit for some inputs/outputs). Additionally, the digital filter function is equipped with this product. Windows/Linux driver is supported.

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

* 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 September, 2022.

Features

This board can be used to input/output 48 points bi-directional digital corresponding to the equivalence to the i8255 mode 0.
This board has up to 48 unisolated TTL-level input/output channels whose response speed is 200⊡sec that is powered by the equivalence to the mode 0 of i8255 device for general-purpose. You can select the input/output by the application software in eight signals units (in four signals unit for some inputs/outputs).

You can use up to 48channels of the input signals as interrupt events.
You can use up to 48channels of the input signals as interrupt events and also disable or enable the interrupt in bit units and select the edge of input signals, at which to generate an interrupt.

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

Windows/Linux compatible driver libraries are supported.
Using the digital I/O driver 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.

Connectors are compatible with PCI compatible board PIO-48D(PCI).
There is compatibility in terms of connector shape and pin assignments with PCI compatible board PIO-48D(PCI), 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.

Specifications

Item		Specification
I/O		
	I/O format	Unisolated TTL-level input (Positive logic)
	Number of I/O channels	48 channels (all available for interrupts)
	Pull-up resistance	10kΩ
	Interrupt	48 interrupt input signals are arranged into a single output of interrupt signal INTA. An interrupt is generated at the rising edge (LOW-to-HIGH transition).
	Response time	Within 200nsec
	Rated output current	I_{OL}=24mA (Max.) I_{OH}=-15mA (Max.)
Common		
	I/O address	Any 32-byte boundary (Common to I/O part)
	Power consumption (Max)	5VDC 600mA
	Operating condition	0 - 50℃, 10 - 90%RH (No condensation)
	Allowable distance of signal extension	Approx. 1.5m (depending on wiring environment)
	Bus specification	PCI (32bit, 33MHz, Universal key shapes supported *2)
	Dimension (mm)	121.69(L) x 105.68(H) *3
	Connector	
	CN1	96 pin half pitch connector [M (male) type] PCR-E96LMD+ [mfd. by HONDA TSUSHIN KOGYO CO., LTD.] or equivalent to it
	CN2,3	50 pin IC pitch pin header connector PS-50PE-D4T1-B1A [mfd.by JAE] or equivalent to it
	Weight	130g
	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.
*2 This board requires power supply at +5V from an expansion slot (it does not work on a machine with a +3.3V power supply alone).
*3 Board No.7388, for the board of the 7388A is the 176.41 (L) × 106.68 (H).

Board Dimensions

121.69(L)
105.68(H)
[mm]
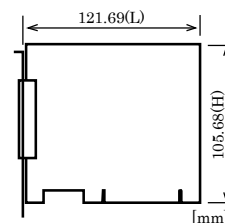
The standard outside dimension (L) is the distance from the end of the board to the outer surface of the slot cover.
[mm]

Support Software

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 useful 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.

Data acquisition VI 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

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

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

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

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

Accessories

Accessories (Option)

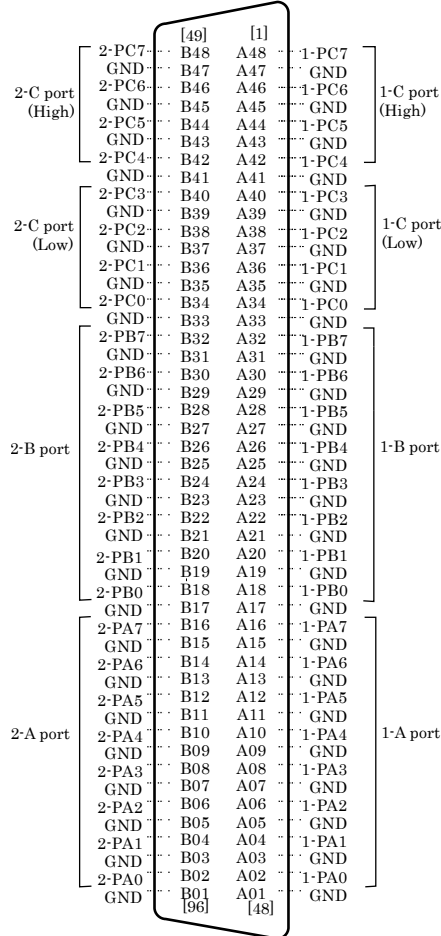|	
Screw Terminal	: EPD-96A *1*2
Screw Terminal	: EPD-96 *1
Digital I/O 64CH Series Terminal Panel	: DTP-64A *1

*1   A PCB96P or PCB96PS optional cable is required separately.
*2   "Spring-up" type terminal is used to prevent terminal screws from falling off.
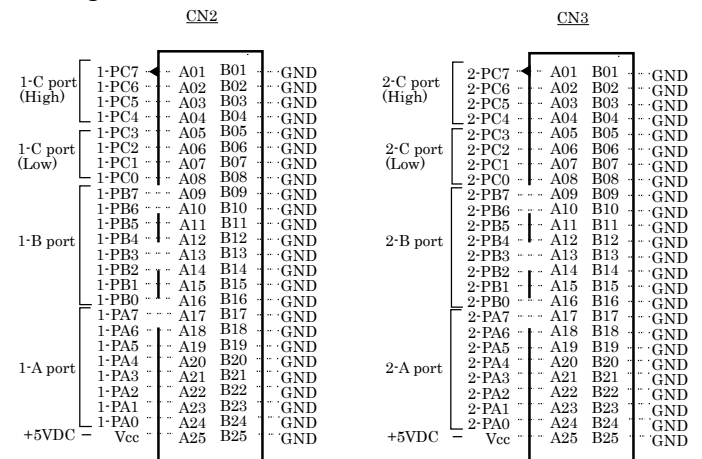*   Check the CONTEC's Web site for more information on these options.

Packing List

Board [DIO-48D2-PCI] ...1
Setup guide ... 1
Product Registration Card & Warranty Certificate ...1
Serial number label ...1

Connector Pin Assignment

Pin Assignments of Interface Connector (CN1)

2-C port (High)	B-pin	B signal	A signal	A-pin	1-C port (High)
	B48	2-PC7	1-PC7	A48	
	B47	GND	GND	A47	
	B46	2-PC6	1-PC6	A46	
	B45	GND	GND	A45	
	B44	2-PC5	1-PC5	A44	
	B43	GND	GND	A43	
	B42	2-PC4	1-PC4	A42	
	B41	GND	GND	A41	
2-C port (Low)	B40	2-PC3	1-PC3	A40	1-C port (Low)
	B39	GND	GND	A39	
	B38	2-PC2	1-PC2	A38	
	B37	GND	GND	A37	
	B36	2-PC1	1-PC1	A36	
	B35	GND	GND	A35	
	B34	2-PC0	1-PC0	A34	
	B33	GND	GND	A33	
2-B port	B32	2-PB7	1-PB7	A32	1-B port
	B31	GND	GND	A31	
	B30	2-PB6	1-PB6	A30	
	B29	GND	GND	A29	
	B28	2-PB5	1-PB5	A28	
	B27	GND	GND	A27	
	B26	2-PB4	1-PB4	A26	
	B25	GND	GND	A25	
	B24	2-PB3	1-PB3	A24	
	B23	GND	GND	A23	
	B22	2-PB2	1-PB2	A22	
	B21	GND	GND	A21	
	B20	2-PB1	1-PB1	A20	
	B19	GND	GND	A19	
	B18	2-PB0	1-PB0	A18	
	B17	GND	GND	A17	
2-A port	B16	2-PA7	1-PA7	A16	1-A port
	B15	GND	GND	A15	
	B14	2-PA6	1-PA6	A14	
	B13	GND	GND	A13	
	B12	2-PA5	1-PA5	A12	
	B11	GND	GND	A11	
	B10	2-PA4	1-PA4	A10	
	B09	GND	GND	A09	
	B08	2-PA3	1-PA3	A08	
	B07	GND	GND	A07	
	B06	2-PA2	1-PA2	A06	
	B05	GND	GND	A05	
	B04	2-PA1	1-PA1	A04	
	B03	GND	GND	A03	
	B02	2-PA0	1-PA0	A02	
	B01	GND	GND	A01	

[49] = B48, [1] = A48, [96] = B01, [48] = A01

Pin Assignments of Interface Connector (CN2, CN3)

CN2

	A-pin	A signal	B-pin	B signal
1-C port (High)	A01	1-PC7	B01	GND
	A02	1-PC6	B02	GND
	A03	1-PC5	B03	GND
	A04	1-PC4	B04	GND
1-C port (Low)	A05	1-PC3	B05	GND
	A06	1-PC2	B06	GND
	A07	1-PC1	B07	GND
	A08	1-PC0	B08	GND
1-B port	A09	1-PB7	B09	GND
	A10	1-PB6	B10	GND
	A11	1-PB5	B11	GND
	A12	1-PB4	B12	GND
	A13	1-PB3	B13	GND
	A14	1-PB2	B14	GND
	A15	1-PB1	B15	GND
	A16	1-PB0	B16	GND
1-A port	A17	1-PA7	B17	GND
	A18	1-PA6	B18	GND
	A19	1-PA5	B19	GND
	A20	1-PA4	B20	GND
	A21	1-PA3	B21	GND
	A22	1-PA2	B22	GND
	A23	1-PA1	B23	GND
	A24	1-PA0	B24	GND
+5VDC	A25	Vcc	B25	GND

CN3

	A-pin	A signal	B-pin	B signal
2-C port (High)	A01	2-PC7	B01	GND
	A02	2-PC6	B02	GND
	A03	2-PC5	B03	GND
	A04	2-PC4	B04	GND
2-C port (Low)	A05	2-PC3	B05	GND
	A06	2-PC2	B06	GND
	A07	2-PC1	B07	GND
	A08	2-PC0	B08	GND
2-B port	A09	2-PB7	B09	GND
	A10	2-PB6	B10	GND
	A11	2-PB5	B11	GND
	A12	2-PB4	B12	GND
	A13	2-PB3	B13	GND
	A14	2-PB2	B14	GND
	A15	2-PB1	B15	GND
	A16	2-PB0	B16	GND
2-A port	A17	2-PA7	B17	GND
	A18	2-PA6	B18	GND
	A19	2-PA5	B19	GND
	A20	2-PA4	B20	GND
	A21	2-PA3	B21	GND
	A22	2-PA2	B22	GND
	A23	2-PA1	B23	GND
	A24	2-PA0	B24	GND
+5VDC	A25	Vcc	B25	GND

Differences between DIO-48D2-PCI and PIO-48D(PCI)

The DIO-48D2-PCI is connector-pin compatible with the conventional PIO-48D(PCI) but has the following differences from it:

	PIO-48D(PCI)	DIO-48D2-PCI Board No.: 7388, 7388A	DIO-48D2-PCI Board No.: 7388B or later
Digital filter function	None	Have	
Selecting the Interrupt Edge	None	Have	
Dimension (mm)	176.41(L) x 106.68(H)		121.69(L) x 105.68(H)