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



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

#### **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. 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 TTLlevel 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.

## Specifications

ltem	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	10κΩ		
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 <sub>OL</sub> =24mA (Max.) I <sub>OH</sub> =-15mA (Max.)		
Common			
I/O address Any 32-byte boundary (Common to I/O part)			
Power consumption (Max) 5VDC 600mA			
Operating condition	0 - 50°C, 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**



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

DIO-48D2-PCI

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## 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.

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#### 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)

\*2

#### Accessories

### Accessories (Option)

Screw Terminal	: EPD-96A *1
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 Assi	anment

#### Pin Assignments of Interface Connector (CN1)

	[10]	[1]		
	- 2. PC7 [49]		1 0.05	_
	CND	5 A46 "	T-PC7	
	2-PCC D4	A47	GND	
2-C port	CND B40	A46 "	-1-PC6	1-C port
(High)	2-PC5	A40	GND	(High)
	CND D44	4 A44	1-PC5	
	2-PC4	) A45	GND	
	GND D4	2 A42	1-PC4	_
	C 2-PC3 D4	A41 ~	GND	7
	GND Date	) A40	T-PU3	
2-C port	2-PC2 D3	9 A39	GND	1-C port
(Low)	GND B3	5 A36 7 A27	1-PC2	(Low)
	2-PC1 D2		GND	
	GND P2	5 A35	T-PUT	
	2-PC0 D2	A30	GND	
	GND B3	+ A04 > A99	T-PC0	_
	9-PB7 P3	) A30	GND	٦
	GND ···· B3	A02 -	TTD1	
	2-PB6 D2	A31	GND	
	GND B20	A30	1-F D0	
	2-PB5 B2	Δ28		
	GND B2	7 427	T CND	
0.Dt	2-PB4 B2	3 426	"1-PRA	1-B port
2-D port	GND ···· B2	5 A25	··· GND	1 D port
	2-PB3 B2	1 A24	T-PR3	
	GND ···· B2	A23	GND	
	2-PB2 B2	A22	"1-PR9	
	GND ···· B2	A21 -	GND	
	2-PB1 " B20	) A20 "	1-PB1	
	GND B19	A19 "	GND	
	2-PB0 B18	3 A18 "	1-PB0	
	GND B1	7 A17 "	GND	
	2-PA7 B10	3 A16 "	· 1-PA7	٦
	GND T B1	5 A15 "	GND	
	2-PA6 B14	4 A14 "	1-PA6	
	GND TT B1	3 A13 "	GND	
	2-PA5 B1	2 A12 "	1 PA5	
	GND "" B1	A11 "	· · GND	
2-A port	2-PA4 " B10	) A10 "	· 1-PA4	1-A port
	GND " BOS	) A09 "	GND	
	2-PA3 " " B08	8 A08 "	1 PA3	
	GND " B0'	7 A07 "	GND	
	2-PA2 " " B06	3 A06 "	<sup>-</sup> 1-PA2	
	GND "" B0	5 A05 "	· · GND	
	2-PA1 B04	4 A04 "	1 PA1	
	GND BO	3 A03 "	· · GND	
	2-PA0 B02	2 A02 "	1-PA0	1
	GND BO	L A01 "	GND	
	190	[46]		
		$\sim$	,	

#### Pin Assignments of Interface Connector (CN2, CN3)

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$ \begin{array}{c} 1\text{-C port} \\ (High) \\ 1\text{-PC5} & - & A01 \\ 1\text{-PC5} & - & A03 \\ 1\text{-PC4} & - & A04 \\ 1\text{-PC5} & - & A03 \\ 1\text{-PC4} & - & A04 \\ 1\text{-PC3} & - & A05 \\ 1\text{-PC4} & - & A06 \\ 1\text{-PC1} & - & A08 \\ 1\text{-PC1} & - & A08 \\ 1\text{-PC1} & - & A09 \\ 1\text{-PC3} & - & A01 \\ 1\text{-PC3} & - & A14 \\$	B01 GND B02 GND B03 GND B04 GND B05 GND B06 GND B08 GND B08 GND B09 GND B10 GND B11 GND B12 GND B13 GND B13 GND B14 GND	2-C port (High) 2-PC5 2-PC5 2-PC3 2-C port (Low) 2-PC3 2-PC4 2-PC3 2-PC4 2-PC3 2-PC4 2-PC3 2-PC4 2-PC3 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5 2-PC4 2-PC5	<ul> <li>A01</li> <li>A02</li> <li>A03</li> <li>A04</li> <li>A04</li> <li>A05</li> <li>A06</li> <li>A07</li> <li>A08</li> <li>A08</li> <li>A09</li> <li>A10</li> <li>A11</li> <li>A12</li> <li>A14</li> </ul>	B01 - B02 - B03 - B04 - B05 - B06 - B07 - B08 - B09 - B10 - B11 - B12 - B13 - B13 - B13 - B14 - B13 - B14 - B13 - B14 - B13 - B14 + B14 - B14 +	- GNI - GNI
$\begin{array}{c} 1 - PB1 & - 1 - A5 \\ - 1 - PB0 & A16 \\ 1 - PA7 & A16 \\ - 1 - PA7 & A17 \\ 1 - PA7 & A17 \\ 1 - PA5 & A19 \\ 1 - PA5 & A19 \\ 1 - PA3 & A21 \\ 1 - PA2 & A21 \\ 1 - PA2 & A22 \\ 1 - PA1 & A22 \\ 1 - PA1 & A22 \\ + 5VDC & - Vcc & A25 \end{array}$	B15	2-PB1 2-PB1 2-PA6 2-PA5 2-PA5 2-PA5 2-PA4 2-PA3 2-PA4 2-PA3 2-PA4 2-PA3 2-PA4 2-PA5 2-PA4 2-PA5 2-PA4 2-PA5 2-PA7 2-PA5	$\begin{array}{c} A14 \\ A15 \\ A16 \\ A17 \\ A18 \\ A19 \\ A20 \\ A21 \\ A22 \\ A22 \\ A23 \\ A24 \\ A24 \\ A25 \end{array}$	B15 B16 B17 B18 B19 B20 B21 B22 B23 B24 B25	GNI - GNI

## 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)

Ver.<u>1.05</u>