

Digital I/O Board for PCI Express  
DIO-6464T-PE



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

Features

**Unisolated TTL level input, unisolated open-collector output**

The products has the 64ch of unisolated TTL level input and 64ch of unisolated open-collector output whose response speed is 200nsec. The output rating is max. 30VDC, 40mA per ch.

**You can use all of the input signals as interrupt request signals**

You can use 16 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.

**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.

**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.

**Functions and connectors are compatible with PCI compatible board DIO-6464T2-PCI**

The functions same with PCI compatible board DIO-6464T2-PCI 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.

Included Items

- Board (DIO-6464T-PE) ...1
- Setup Guide ... 1
- Warranty Certificate ...1
- Serial Number Label ...1

This product is a PCI Express bus-compliant interface board used to provide a digital signal I/O function on a PC.

The product features 64 unisolated TTL level inputs and 64 unisolated open-collector outputs. You can use 16 input signals as interrupt inputs. In addition, the digital filter function to prevent wrong recognition of input signals is provided.

Windows/Linux drivers are available.

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

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\*Visit the CONTEC website to check the latest details in the document.

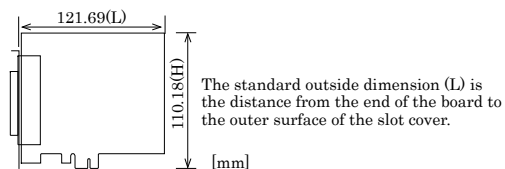
\*The information in the data sheets is as of October, 2022.

Specification

Item	Specification
<b>Input</b>	
Input format	Unisolated TTL level input (Negative logic *1)
Number of input signal channels	64ch (16ch available for interrupts) (1 common)
Input resistance	Pull up 10kΩ (1TTL load)
Interrupt	16 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 200nsec
<b>Output</b>	
Output format	Unisolated open-collector output (Negative logic *1)
Number of output signal channels	64ch (1 common)
Output rating	Output voltage 30VDC (Max.) Output current 40mA (par channel) (Max.)
Response time	Within 200nsec (change by pull-up resistor value)
<b>Common</b>	
External supply capable current (Max)	5VDC 350mA
Allowable distance of signal extension	Approx. 1.5m (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
Power consumption (Max)	3.3VDC 900mA
Operating condition	0 - 50°C, 10 - 90%RH (No condensation)
Bus specification	PCI Express Base Specification Rev. 1.0a x1
Dimension (mm)	121.69(L) x 110.18(H)
Connector	100-pin 0.8mm pitch connector [F (female) type] x 2 HDRA-E100W1LFD11EC-SL+ [HONDA TSUSHIN KOGYO CO, LTD.] or equivalent to it
Weight	120g
Certification	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



Support Software

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)

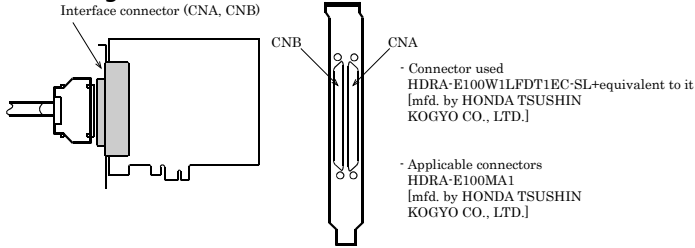
Option

Item	Model	Description	
Cable *1	PCB100PS-0.5 (0.5m)	Shielded Cable With Two 100pin Connector	
	PCB100PS-1.5 (1.5m)		
	PCB100/96PS-1.5 (1.5m)		Connection Conversion Shield Cable (100P → 96P)
	PCA100P-1.5 (1.5m)		Flat Cable with One 100-Pin Connector
Accessories	PCB100WS-1.5 (1.5m)	Connection Conversion Shield Cable (100P → 37P D-SUB x 2)	
	EPD-100A *2*4*7	Screw Terminal Unit (M3 x 100P)	
	EPD-96A *2*5*7	Screw Terminal Unit (M3 x 96P)	
	EPD-96 *2*5	Screw Terminal Unit (M3.5 x 96P)	
	DTP-64A *2*5	Terminal Unit for Cables (M3 x 96P)	
	CCB-96 *2*5	Connection Conversion Board (96-Pin → 37-Pin x 2)	
	EPD-37A *3*6*7	Screw Terminal Unit (M3 x 37P)	
	EPD-37 *3*6	Screw Terminal Unit (M3.5 x 37P)	
	DTP-3C *3*6	General Purpose Terminal (M3 x 37P)	
	DTP-4C *3*6	Screw Terminal (M2.5 x 37P)	
CM-64L *2*5	Signal Monitor / Output Accessory for Digital I/O (64P)		

- \*1 If using both the CNA and CNB connectors, two cable sets are required.
- \*2 If using both the CNA and CNB connectors, two each of the accessories and cable sets are required.
- \*3 If using both the CNA and CNB connectors, two cable sets are required. You will also require sufficient terminal blocks for the number of I/O points you are using.
- \*4 PCB100PS-0.5, 1.5 optional cable is required separately.
- \*5 PCB100/96PS-1.5 optional cable is required separately.
- \*6 PCB100WS-1.5 optional cable is required separately.
- \*7 "Spring-up" type terminal is used to prevent terminal screws from falling off.

Using the On-board Connectors

Connecting a Device to a Connector



Connector Pin Assignment

CNB					CNA									
Function	Signal name	Pin No.	Pin No.	Signal name	Function	Function	Signal name	Pin No.	Pin No.	Signal name	Function			
+5V	Vcc	100	50	Vcc	+5V	Signal Common	GND	1	51	GND	Signal Common			
	Vcc	99	49	Vcc			GND	2	52	GND				
+F port (Output)	O-F7	98	48	O-B7	+B port (Output)	Signal Common	GND	3	53	GND	Signal Common			
	O-F6	97	47	O-B6			GND	4	54	GND				
	O-F5	96	46	O-B5			GND	5	55	GND				
	O-F4	95	45	O-B4			GND	6	56	GND				
	O-F3	94	44	O-B3			+0 port (Input)	Signal Common	*I-00	7		57	I-40	+4 port (Input)
	O-F2	93	43	O-B2					*I-01	8		58	I-41	
+E port (Output)	O-F1	92	42	O-B1	+A port (Output)	Signal Common	*I-02	9	59	I-42	+5 port (Input)			
	O-F0	91	41	O-B0			*I-03	10	60	I-43				
	O-E7	90	40	O-A7			*I-04	11	61	I-44				
	O-E6	89	39	O-A6			*I-05	12	62	I-45				
	O-E5	88	38	O-A5			*I-06	13	63	I-46				
	O-E4	87	37	O-A4			*I-07	14	64	I-47				
Signal Common	O-E3	86	36	O-A3	+1 port (Input)	Signal Common	*I-10	15	65	I-50	+5V			
	O-E2	85	35	O-A2			*I-11	16	66	I-51				
	O-E1	84	34	O-A1			*I-12	17	67	I-52				
	O-E0	83	33	O-A0			*I-13	18	68	I-53				
	GND	82	32	GND			*I-14	19	69	I-54				
	GND	81	31	GND			*I-15	20	70	I-55				
+5V	GND	80	30	GND	+2 port	Signal Common	*I-16	21	71	I-56	Signal Common			
	GND	79	29	GND			*I-17	22	72	I-57				
	GND	78	28	GND			Vcc	23	73	Vcc				
	GND	77	27	GND			Vcc	24	74	Vcc				
	N.C.	76	26	N.C.			N.C.	25	75	N.C.				
	N.C.	75	25	N.C.			N.C.	26	76	N.C.				
+5V	Vcc	74	24	Vcc	+9 port (Output)	Signal Common	GND	27	77	GND	Signal Common			
	Vcc	73	23	Vcc			GND	28	78	GND				
	O-D7	72	22	O-97			GND	29	79	GND				
	O-D6	71	21	O-96			GND	30	80	GND				
	O-D5	70	20	O-95			GND	31	81	GND				
	O-D4	69	19	O-94			GND	32	82	GND				
+D port (Output)	O-D3	68	18	O-93	+2 port	Signal Common	I-20	33	83	I-60	+6 port			

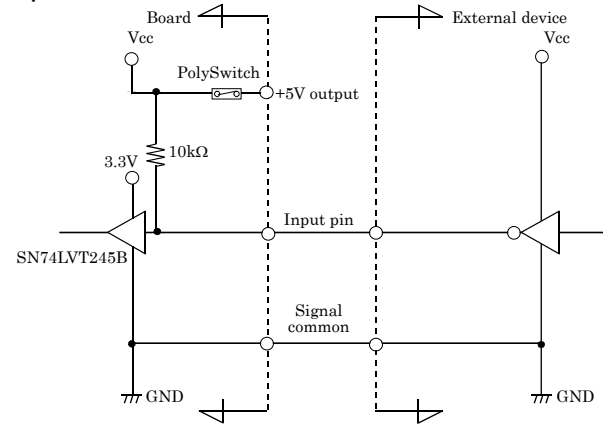
+C port (Output)	O-D2	67	17	O-92	+8 port (Output)	Signal Common	(Input)	I-21	34	84	I-61	+7 port (Input)
	O-D1	66	16	O-91			I-22	35	85	I-62		
	O-D0	65	15	O-90			I-23	36	86	I-63		
	O-C7	64	14	O-87			I-24	37	87	I-64		
	O-C6	63	13	O-86			I-25	38	88	I-65		
	O-C5	62	12	O-85			I-26	39	89	I-66		
	O-C4	61	11	O-84			I-27	40	90	I-67		
	O-C3	60	10	O-83			I-30	41	91	I-70		
	O-C2	59	9	O-82			I-31	42	92	I-71		
	O-C1	58	8	O-81			I-32	43	93	I-72		
Signal Common	O-C0	57	7	O-80	+3 port (Input)	Signal Common	+5V	I-33	44	94	I-73	+5V
	GND	56	6	GND				I-34	45	95	I-74	
	GND	55	5	GND				I-35	46	96	I-75	
	GND	54	4	GND				I-36	47	97	I-76	
	GND	53	3	GND				I-37	48	98	I-77	
	GND	52	2	GND				Vcc	49	99	Vcc	
	GND	51	1	GND	Vcc	50	100	Vcc				

\* I-00 - I-17 can be used as interrupt signal.

Signal name	Description
I-00 - I-77	64ch input signal. Connect output signals from the external device to these pins.
O-80 - O-F7	64ch output signal. Connect input signals from the external device to these pins.
Vcc	Output +5V. Max. electrical current is 350mA. The permitted current per connector pin is 0.3A. Connect the number of pins required to supply the total current.
GND	This pin is connected to GND in the slot. The permitted current per connector pin is 0.3A. Connect the number of pins required to supply the total current for the 64 outputs.
N.C.	This pin is left unconnected.

Connecting Input Signals

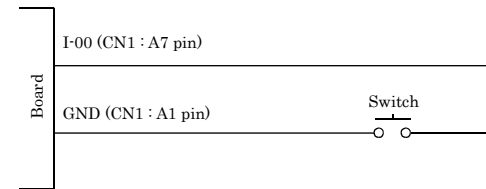
Input Circuit



\* I-xx represents an input pin.

External digital signals given to signal inputs are TTL levels. The individual input signals are passed to the personal computer as negative logic signals. As each of the signal inputs is pulled up internally, the output of a relay contact or semiconductor switch can be connected directly between the signal input and the signal common pin.

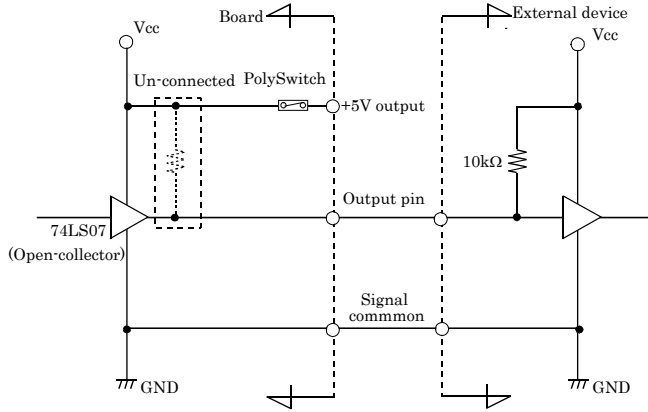
Connecting a Switch



When the switch is ON, the corresponding bit contains 1.  
When the switch is OFF, by contrast, the bit contains 0.

## Connecting Output Signals

### Output Circuit



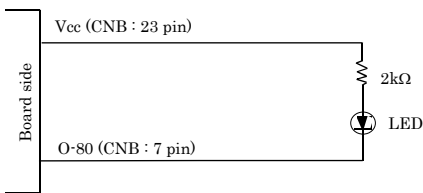
\* O-xx represents an output pin.  
One polyswitch is connected for Vcc(+5V) terminal.

Signal outputs are open-collector outputs; individual output signals are sent to the external device as negative logic signals. Note that each signal output must be pulled up at the external device as it is not pulled up internally.

### 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.