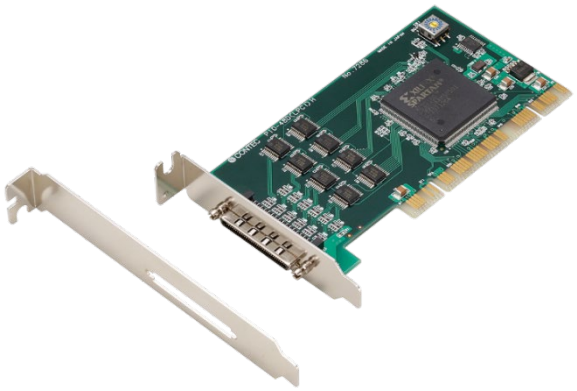
Bi-directional Digital I/O Board for Low Profile PCI

PIO-48D(LPCI)H



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

This product is a Low Profile size PCI bus-compliant interface board that extends the input/output function of bi-directional digital signal.

This product is equipped with 48 non-isolated TTL level inputs/outputs that operate equivalent to i8255 mode 0.

All input signals can be used 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). In addition, this product is equipped digital filtering.

Windows/Linux device driver is supported with this product.

* 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, 2023.

Features

Equipped with 48 bi-directional non-isolated TTL level inputs/outputs (positive logic) that support operation equivalent to i8255 mode 0

This product is equipped with 48 non-isolated TTL level inputs/outputs (positive logic) with a response time of 200 nsec.

It operates in the equivalent of mode 0 of an i8255 device for general-purpose I/O, and you can set the inputs/outputs in software in units of 8 signals (in units of 4 signals for some inputs/outputs).

All input signals can be used as interrupt request signals

You can use all 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.

Equipped with 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 support device driver

Using the device driver API-TOOL 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 CardBus compatible card PIO-48D(CB)H.

The functions same with CardBus compatible card PIO-48D(CB)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. When the DIO-68M/96F is used, connector shape and pin assignments is compatible with the PIO-48D(PCI).

Support for both of Low Profile and standard size slots

Support for both of Low Profile and standard size slots (interchangeable with a bundled bracket).

Included Items

Product [PIO-48D(LPCI)H] ...1
Standard Size Bracket...1
Please read the following ... 1

Specifications

Function specification

Item		Specifications
I/O	Type	Non-isolated TTL-level I/O (Positive logic) *1
	Number of Channels	48ch (all available for interrupts)
	Interrupts	Combine 48 interrupt signals to one interrupt request signal as the INTA. Either rising edge (LOW-to-HIGH transition) or falling edge (HIGH-to-LOW transition) of input signal can generate interrupt.
	Response time	200nsec within
	Rated output current	I_{OL}=24mA (Max.) I_{OH}=-15mA (Max.)
Common	Connecting distance	1.5m(Typ.) (depending on wiring environment)
	I/O address	Any 32-byte boundary
	Interruption level	1 level use
	Boards in one system	Maximum of 16 boards can be install in a same system.
	Power consumption	5VDC 600mA (Max.)
	PCI bus specification	32bit, 33MHz, Universal key shapes supported *2
	Dimension (mm)	121.69(L) x 63.41(H)
	Weight	60g

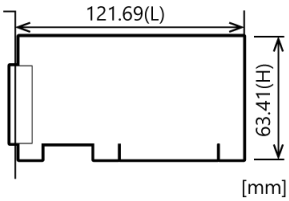
*1 Data "0" and "1" correspond to the Low and High levels, respectively.

*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).

Installation Environment Requirements

Item	Specifications
Operating ambient temperature	0 - 50°C
Operating ambient humidity	10 - 90%RH (No condensation)
Floating dust particles	Not to be excessive
Corrosive gases	None
Standard	VCCI Class A, CE Marking (EMC Directive Class A, RoHS Directive), UKCA

Physical Dimensions



[mm]

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

Support Software

Name	Contents	How to get
Windows Version Digital I/O Driver software API-DIO(WDM)	The Windows device driver is provided as a form of Windows API functions. Various sample programs such as C# and Visual Basic .NET , Visual C++, Python etc. and diagnostic program useful for checking operation is provided.	Download from the CONTEC website *1
Linux Version Digital I/O Driver software API-DIO(LNX)	The Linux device driver is provided as a shared library. The software includes various sample programs such as gcc (C, C++) and Python programs, as well as a configuration tool to configure the device settings.	Download from the CONTEC website *1
Software Development Tool Kits (SDK) and Support Software	In addition to the device drivers, we offer many software programs for using CONTEC devices in an easier manner.	Download from the CONTEC website *2

*1 Download the files from the following URL.
https://www.contec.com/download/

*2 For supported software, search the CONTEC website for this product and view the product page.
https://www.contec.com/

Optional Products

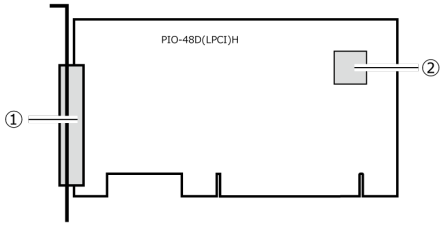
Product Name	Model type	Description
Shielded Cable for CardBus Digital I/O Card	DIO-68M/96F	0.5m
Shielded Cable With Two 68pin Connector	PCB68PS-0.5P	0.5m
	PCB68PS-1.5P	1.5m
Shield Cable with One 68-Pin Connector	PCA68PS-0.5P	0.5m
	PCA68PS-1.5P	1.5m
Screw Terminal (M3 * 68)	EPD-68A	*1 *3
Screw Terminal (M3 * 96)	EPD-96A	*2 *3
Terminal Unit for Relay Terminal Banks	EPD-96	*2
Screw Terminal	DTP-64A	*2

*1 PCB68PS-0.5P or PCB68PS-1.5P optional cable is required separately.

*2 DIO-68M/96F optional cable is required separately.

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

Component Name

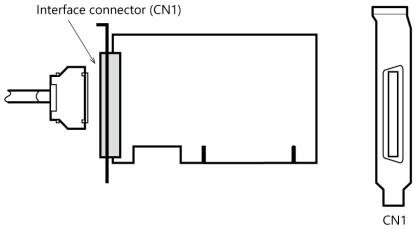


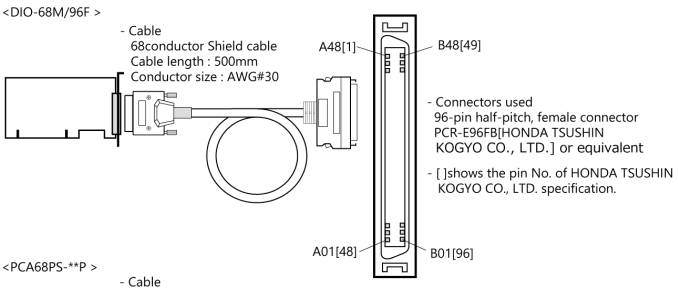
No.	Name
1	Interface Connector
2	Board ID Setting Switch

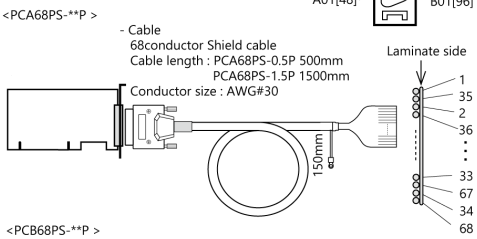
Connecting an Interface Connector

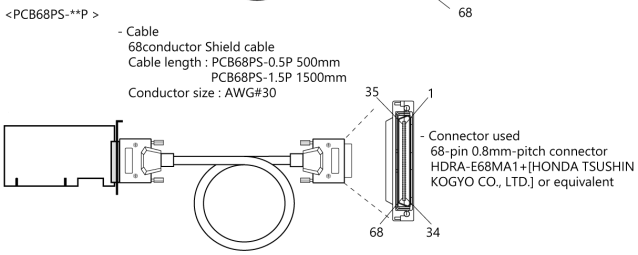
The optional connector cable (DIO-68M/96F or PCA68PS-**P, PCB68PS-**P) is used to connect the board to external devices.

The cable is used together with a terminal block to connect external devices.









Layout on the Interface Connector(CN1)

	GND	1		35	GND	
	GND	2		36	GND	
1-A port	1-PA0	3		37	2-PA0	2-A port
	1-PA1	4		38	2-PA1	
	1-PA2	5		39	2-PA2	
	1-PA3	6		40	2-PA3	
	1-PA4	7		41	2-PA4	
	1-PA5	8		42	2-PA5	
	1-PA6	9		43	2-PA6	
	1-PA7	10		44	2-PA7	
	GND	11		45	GND	
	GND	12		46	GND	
1-B port	1-PB0	13		47	2-PB0	2-B port
	1-PB1	14		48	2-PB1	
	1-PB2	15		49	2-PB2	
	1-PB3	16		50	2-PB3	
	1-PB4	17		51	2-PB4	
	1-PB5	18		52	2-PB5	
	1-PB6	19		53	2-PB6	
	1-PB7	20		54	2-PB7	
	GND	21		55	GND	
	GND	22		56	GND	
1-C port (Low)	1-PC0	23		57	2-PC0	2-C port (Low)
	1-PC1	24		58	2-PC1	
	1-PC2	25		59	2-PC2	
	1-PC3	26		60	2-PC3	
	GND	27		61	GND	
	GND	28		62	GND	

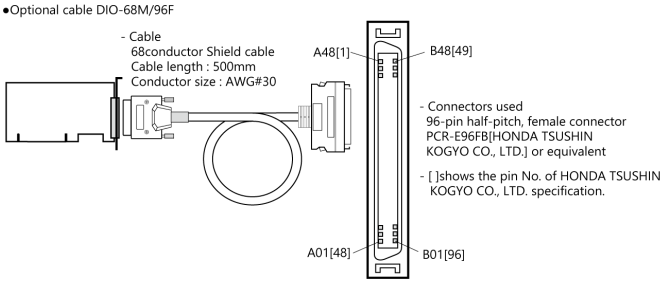
1-C port (High)	1-PC4	29		63	2-PC4	2-C port (High)
	1-PC5	30		64	2-PC5	
	1-PC6	31		65	2-PC6	
	1-PC7	32		66	2-PC7	
	GND	33		67	GND	
	GND	34		68	GND	

* 1-PA0 - 2-PC7 can be used as all of interrupt signal.

Signal name	Description
1-PA0 - 2-PC7	48 input/output signal pins. Connect the signals from an external device to these signal pins.
GND	These pins are connected to the slot's GND.

Pin Assignments of Optional Connector DIO-68M/96F

●Optional cable DIO-68M/96F



1-C port (High)	1-PC7	A48		B48	2-PC7	2-C port (High)
	GND	A47		B47	GND	
	1-PC6	A46		B46	2-PC6	
	GND	A45		B45	GND	
	1-PC5	A44		B44	2-PC5	
	GND	A43		A43	GND	
	1-PC4	A42		B42	2-PC4	
	GND	A41		B41	GND	
1-C port (Low)	1-PC3	A40		B40	2-PC3	2-C port (Low)
	GND	A39	[1] A48 [49] B48	B39	GND	
	1-PC2	A38		B38	2-PC2	
	GND	A37		B37	GND	
	1-PC1	A36		B36	2-PC1	
	GND	A35		B35	GND	
	1-PC0	A34		B34	2-PC0	
	GND	A33		B33	GND	
1-B port	1-PB7	A32		B32	2-PB7	2-B port
	GND	A31		B31	GND	
	1-PB6	A30		B30	2-PB6	
	GND	A29		B29	GND	
	1-PB5	A28		B28	2-PB5	
	GND	A27		B27	GND	
	1-PB4	A26		B26	2-PB4	
	GND	A25		B25	GND	
	1-PB3	A24		B24	2-PB3	
	GND	A23		B23	GND	
	1-PB2	A22		B22	2-PB2	
	GND	A21		B21	GND	
	1-PB1	A20		B20	2-PB1	
	GND	A19		B19	GND	
	1-PB0	A18		B18	2-PB0	
	GND	A17		B17	GND	
1-A port	1-PA7	A16		B16	2-PA7	2-A port
	GND	A15		B15	GND	
	1-PA6	A14		B14	2-PA6	
	GND	A13		B13	GND	
	1-PA5	A12	A01 [48] B01 [96]	B12	2-PA5	
	GND	A11		B11	GND	
	1-PA4	A10		B10	2-PA4	
	GND	A09		B09	GND	
	1-PA3	A08		B08	2-PA3	
	GND	A07		B07	GND	
	1-PA2	A06		B06	2-PA2	
	GND	A05		B05	GND	
	1-PA1	A04		B04	2-PA1	
	GND	A03		B03	GND	
	1-PA0	A02		B02	2-PA0	
	GND	A01		B01	GND	

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

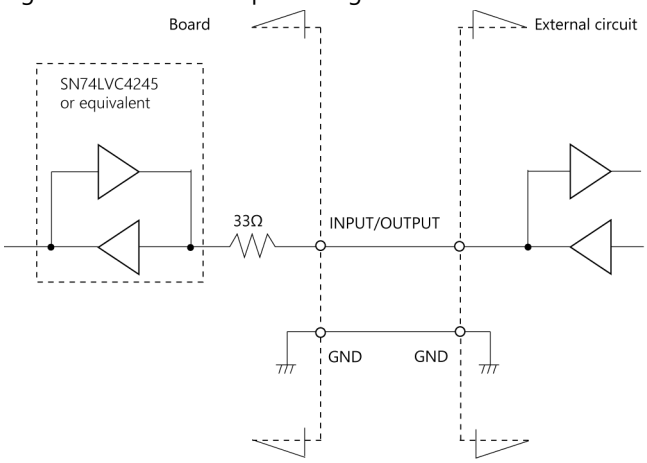
⚠ CAUTION

To perform input/output using this product with the CONTEC device driver, specify logical ports and logical bits when calling each function. For details, refer to the "Relationships between API-TOOL Logical Ports/Bits and Connector Signal Pins" of Reference Manual.

Connecting Input and Output Signals

I/O Circuit

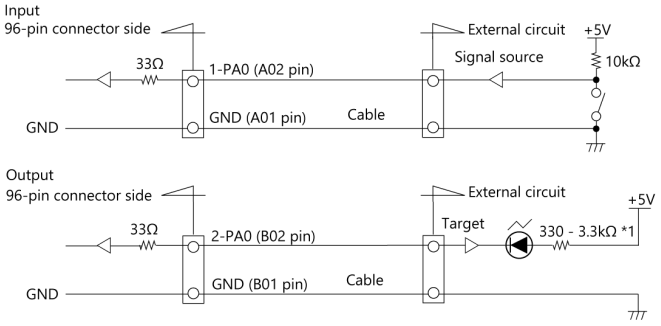
Signals are TTL levels and positive logic.



⚠ CAUTION

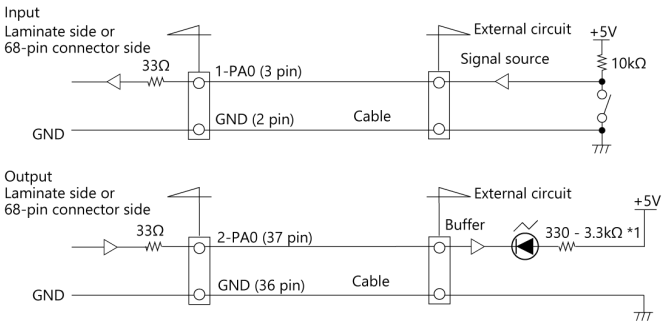
- When used for output, do not short the outputs to digital ground. Doing so may lead to malfunctions.
- When used for output and a pull-up resistor is connected externally, use a 5 V power source and a resistance of approximately 10 kΩ for the pull-up.
- When used for input, use an external 5 V power source and a resistance of approximately 10 kΩ for the pull-up. If input voltage levels are not fixed, the input value will fluctuate.

Example Connection 1
Connection Example Using 1-PA0 for Input and 2-PA0 for Output (Using DIO-68M/96F)



*1 Resistor value should be adjusted according to the specification of the LED to use and the desired intensity level.

Example Connection 2
Connection Example Using 1-PA0 for Input and 2-PA0 for Output (Using PCA68PS-**P)



*1 Resistor value should be adjusted according to the specification of the LED to use and the desired intensity level.

Circuit Block Diagram