Digital I/O Board for PCI

PIO-32/32T(PCI)H

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

This product is a PCI bus-compliant interface board for input/output of digital signals.
The product features 32 non-isolated TTL level inputs and 32 non-isolated open-collector outputs.
You can use all of input signals as interrupt inputs. In addition, the digital filter function to prevent wrong recognition of input signals is provided.
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 June, 2026.

Features

Non-isolated TTL level input, non-isolated open-collector output
The product has the 32ch of non-isolated TTL level input and 32ch of non-isolated open-collector output whose response speed is 200nsec.
The output rating is max. 30VDC, 40mA per ch.

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.

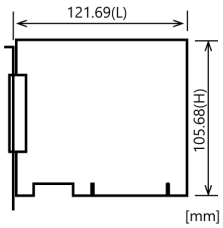
Equipped with digital filter to prevent wrong recognition of input signals from carrying noise or a chattering
This product has a digital filter to prevent wrong recognition of input signals from carrying noise or a chattering. All input terminals can be added a digital filter, and the setting can be 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.

Included Items

Product [PIO-32/32T(PCI)H] ...1
Please read the following ... 1

Physical Dimensions



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

Specifications

Function specification

Item		Specifications
Input	Type	Non-isolated TTL-Level Input (Negative logic *1)
	Number of Channels	32ch (All available for interrupts)
	Pull up resistance	10kΩ (1TTL load)
	Interrupt	Combine 32 interrupt signals to one interrupt request signal as the INTA. Either rising edge or falling edge of input signal can generate interrupt.
	Response time	200nsec within
Output	Type	Non-isolated Open collector output (Negative logic *1)
	Number of Channels	32ch
	Output rated voltage	30VDC (Max.)
	Output rated current	40mA (par/channel) (Max.)
	Response time	200nsec within
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 350mA (Max.)
	PCI bus specification	32bit, 33MHz, Universal key shapes supported *2
	Dimension (mm)	121.69(L) x 105.68(H)
	Weight	100g

*1 Data "0" and "1" correspond to the High and Low levels, respectively.
*2 This product requires power supply at +5 V from an expansion slot (it does not work on a machine with a +3.3-V power supply alone).

Installation Environment Requirements

Item	Specifications
Operating ambient temperature	0 - 50℃
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

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/

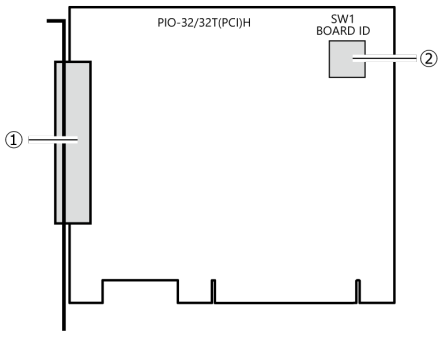
Optional Products

Product Name	Model type	Description
Shielded Cable with Two 96-Pin Half-Pitch Connectors	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
Shielded Cable with One 96-pin Half-Pitch Connector	PCA96PS-0.5P	0.5m
	PCA96PS-1.5P	1.5m
Flat Cable with One 96-pin Half-Pitch Connector	PCA96P-1.5	1.5m
Connection Conversion Shield Cable (96P→37P x 2)	PCB96WS-1.5P	1.5m
Screw Terminal (M3 * 96)	EPD-96A	*1 *2
Terminal Unit for Relay Terminal Banks	EPD-96	*2
Screw Terminal (M3 * 37P)	EPD-37A	*1 *3
Screw Terminal (M3.5 * 37)	EPD-37	*3
Screw Terminal	DTP-64A	*2
General Purpose Terminal	DTP-3C	*3
Screw Terminal	DTP-4C	*3
Signal monitor Accessory for Digital I/O (64bits)	CM-64L	*2
Signal monitor Accessory for Digital I/O (32bits)	CM-32L	*3
Connector Conversion Board (96pin→37pinx2)	CCB-96	*2

*1 "Spring-up" type terminal is used to prevent terminal screws from falling off.
*2 PCB96P or PCB96PS optional cable is required separately.
*3 PCB96WS optional cable is required separately.

* Information about the option products, see the Contec's website.

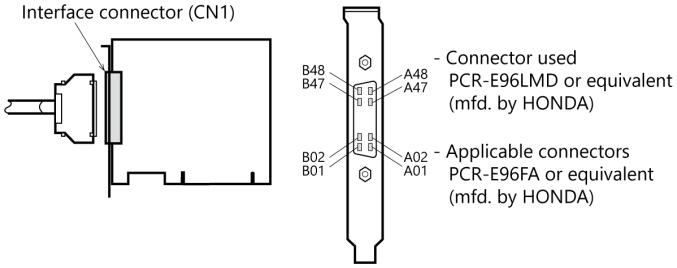
Component Name



No.	Name
1	Interface Connector
2	Board ID Setting Switch

Connecting an Interface Connector

To connect an external device to this product, plug the cable from the device into the interface connector (CN1) shown below.



Layout on the Interface Connector(CN1)

+5V	Vcc	B48	[49] [1]	A48	Vcc	+5V
	Vcc	B47	B48 A48	A47	Vcc	
+7 port (Output)	O-77	B46	B47 A47	A46	I-37	+3 port (Input)
	O-76	B45	B46 A46	A45	I-36	
	O-75	B44	B45 A45	A44	I-35	
	O-74	B43	B44 A44	A43	I-34	
	O-73	B42	B43 A43	A42	I-33	
	O-72	B41	B42 A42	A41	I-32	
	O-71	B40	B41 A41	A40	I-31	
	O-70	B39	B40 A40	A39	I-30	
+6 port (Output)	O-67	B38	B39 A39	A38	I-27	+2 port (Input))
	O-66	B37	B38 A38	A37	I-26	
	O-65	B36	B37 A37	A36	I-25	
	O-64	B35	B36 A36	A35	I-24	
	O-63	B34	B35 A35	A34	I-23	
	O-62	B33	B34 A34	A33	I-22	
	O-61	B32	B33 A33	A32	I-21	
	O-60	B31	B32 A32	A31	I-20	
Signal common	GND	B30	B31 A31	A30	GND	Signal common
	GND	B29	B30 A30	A29	GND	
Unconnected	N.C.	B28	B29 A29	A28	N.C.	Unconnected
	N.C.	B27	B28 A28	A27	N.C.	
	N.C.	B26	B27 A27	A26	N.C.	
	N.C.	B25	B26 A26	A25	N.C.	
	N.C.	B24	B25 A25	A24	N.C.	
	N.C.	B23	B24 A24	A23	N.C.	
	N.C.	B22	B23 A23	A22	N.C.	
	N.C.	B21	B22 A22	A21	N.C.	
+5V	Vcc	B20	B21 A21	A20	Vcc	+5V
	Vcc	B19	B20 A20	A19	Vcc	
+5 port (Output)	O-57	B18	B19 A19	A18	I-17	+1 port (Input))
	O-56	B17	B18 A18	A17	I-16	
	O-55	B16	B17 A17	A16	I-15	
	O-54	B15	B16 A16	A15	I-14	
	O-53	B14	B15 A15	A14	I-13	
	O-52	B13	B14 A14	A13	I-12	
	O-51	B12	B13 A13	A12	I-11	
	O-50	B11	B12 A12	A11	I-10	
+4 port (Output)	O-47	B10	B11 A11	A10	I-07	+0 port (Input))
	O-46	B09	B10 A10	A09	I-06	
	O-45	B08	B09 A09	A08	I-05	
	O-44	B07	B08 A08	A07	I-04	
	O-43	B06	B07 A07	A06	I-03	
	O-42	B05	B06 A06	A05	I-02	
	O-41	B04	B05 A05	A04	I-01	
	O-40	B03	B04 A04	A03	I-00	
Signal common	GND	B02	B03 A03	A02	GND	Signal common
	GND	B01	B02 A02	A01	GND	
			B01 A01 [96] [48]			

* I-00 - I-37 can be used as interrupt signal.
* The numbers in square brackets [ ] are pin numbers designated by HONDA TSUSHIN KOGYO CO., LTD.

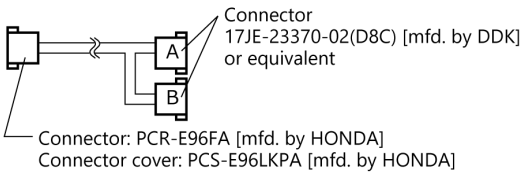
Signal name	Description
I-00 - I-37	32 input signal pins. Connect output signals from the external device to these pins.
O-40 - O-77	32 output signal pins. Connect these pins to the input signal pins of the external device.
Vcc	These pins output power at +5 V.
GND	These pins are connected to the slot's GND.
N.C.	These pins are left unconnected.

⚠ 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.

Pin Assignments of Optional Connector PCB96WS

* Optional cable PCB96WS-**



** represents the cable length (1.5m).

CNA for PCB96WS

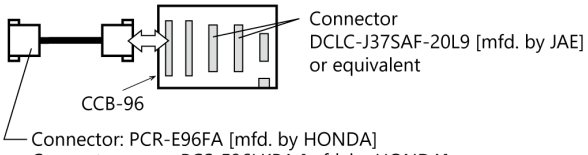
Signal common	GND	1		20	GND	Signal common
	I-00	2		21	I-20	
	I-01	3		22	I-21	
	I-02	4		23	I-22	
+0 port (Input)	I-03	5		24	I-23	+2 port (Input)
	I-04	6		25	I-24	
	I-05	7		26	I-25	
	I-06	8		27	I-26	
	I-07	9		28	I-27	
	I-10	10		29	I-30	
	I-11	11		30	I-31	
	I-12	12		31	I-32	
+1 port (Input)	I-13	13		32	I-33	+3 port (Input)
	I-14	14		33	I-34	
	I-15	15		34	I-35	
	I-16	16		35	I-36	
	I-17	17		36	I-37	
+5V	Vcc	18		37	Vcc	+5V
	N.C.	19				

CNB for PCB96WS

Signal common	GND	1		20	GND	Signal common
	O-40	2		21	O-60	
	O-41	3		22	O-61	
	O-42	4		23	O-62	
+4 port (Output)	O-43	5		24	O-63	+6 port (Output)
	O-44	6		25	O-64	
	O-45	7		26	O-65	
	O-46	8		27	O-66	
	O-47	9		28	O-67	
	O-50	10		29	O-70	
	O-51	11		30	O-71	
	O-52	12		31	O-72	
+5 port (Output)	O-53	13		32	O-73	+7 port (Output)
	O-54	14		33	O-74	
	O-55	15		34	O-75	
	O-56	16		35	O-76	
	O-57	17		36	O-77	
+5V	Vcc	18		37	Vcc	+5V
	N.C.	19				

Pin Assignments of Optional Connector CCB-96

* Optional cable PCB96PS-** + connector conversion board CCB-96



** represents the cable length (0.5, or 1.5m).

CN3(CNA) for CCB96

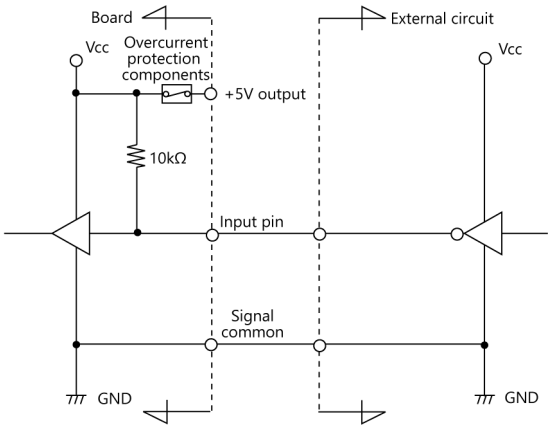
Signal common	GND	1		20	GND	Signal common
	I-00	2		21	I-20	
	I-01	3		22	I-21	
	I-02	4		23	I-22	
+0 port (Input)	I-03	5		24	I-23	+ 2 port (Input)
	I-04	6		25	I-24	
	I-05	7		26	I-25	
	I-06	8		27	I-26	
	I-07	9		28	I-27	
	I-10	10		29	I-30	
	I-11	11		30	I-31	
	I-12	12		31	I-32	
+1 port (Input)	I-13	13		32	I-33	+3 port (Input)
	I-14	14		33	I-34	
	I-15	15		34	I-35	
	I-16	16		35	I-36	
	I-17	17		36	I-37	
+5V	Vcc	18		37	Vcc	+5V
	N.C.	19				

CN4(CNB) for CCB-96

Signal common	GND	1		20	GND	Signal common
	O-40	2		21	O-60	
	O-41	3		22	O-61	
	O-42	4		23	O-62	
+4 port (Output)	O-43	5		24	O-63	+6 port (Output)
	O-44	6		25	O-64	
	O-45	7		26	O-65	
	O-46	8		27	O-66	
	O-47	9		28	O-67	
	O-50	10		29	O-70	
	O-51	11		30	O-71	
	O-52	12		31	O-72	
+5 port (Output)	O-53	13		32	O-73	+7 port (Output)
	O-54	14		33	O-74	
	O-55	15		34	O-75	
	O-56	16		35	O-76	
	O-57	17		36	O-77	
+5V	Vcc	18		37	Vcc	+5V
	N.C.	19				

Connecting Input and Output Signal

Input Circuit

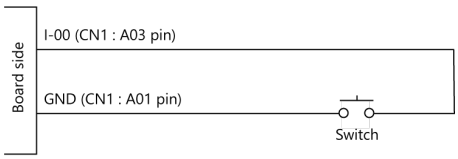


* I-xx represent an input pin.

One overcurrent protection components is connected for Vcc(+5V) terminal.

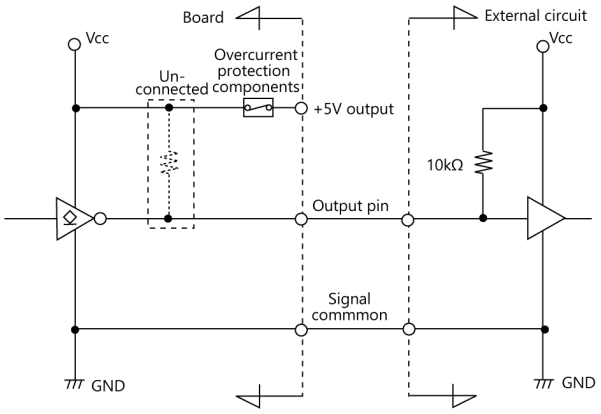
External digital signals given to signal inputs are TTL levels.
The individual input signals are passed to the personal computer as active low signals.
As each of the signal inputs is pulled up internally, the output of a relay contact or semiconductor switch can be connected directly between the signal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

Connecting a Switch (An Example to use Input I-00)



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

Output Circuit



* O-xx represent an output pin.

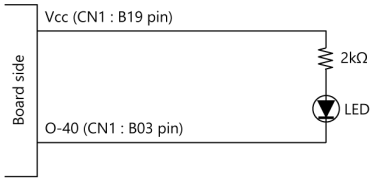
One overcurrent protection components is connected for Vcc(+5V) terminal.

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

⚠ CAUTION

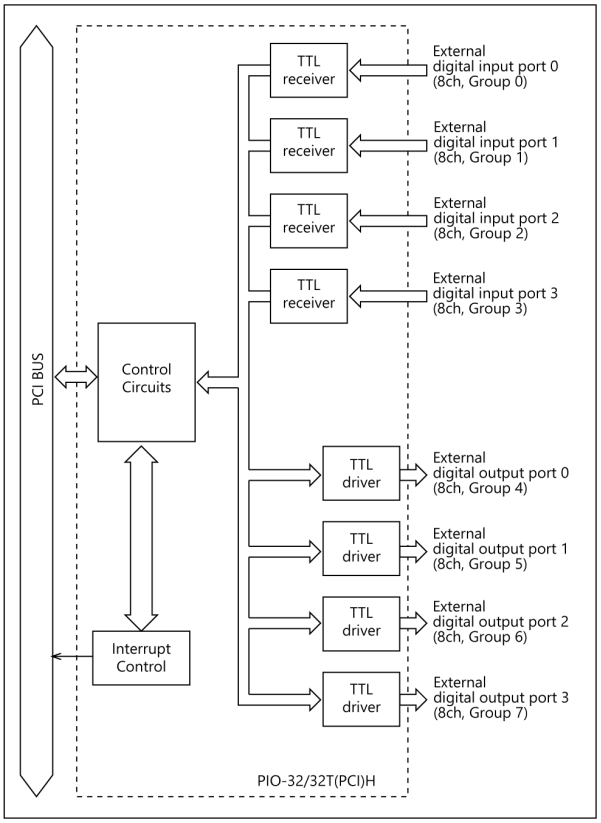
When the PC is turned on, all outputs are reset to OFF.

Connection to the LED (An Example to use Output O-40)



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.

Block Diagram



Differences from Conventional Products

Differences between the PIO-32/32T(PCI)H and PIO-32/32T(PCI)

The PIO-32/32T(PCI)H is connector-pin compatible with the conventional PIO-32/32T(PCI) but has the following differences from it:

(1) Different in the number of input signals available to interrupt requests
PIO-32/32T(PCI)H : All of 32 channels
PIO-32/32T(LPCI) : 4 channels

(2) Different in the expression to calculate the digital filter time
(n: setting value)
PIO-32/32T(PCI)H : $2^n / (8 \times 10^6)$
PIO-32/32T(PCI) : $2^n / (16 \times 10^6)$

(3) Different in interrupt level resource allocation
PIO-32/32T(PCI)H : Automatically allocates on interrupt level.
PIO-32/32T(PCI) : Uses a jumper switch to select whether to allocate interrupt levels.

(4) The external dimensions of the board differ.
PIO-16/16T(LPCI)H : 121.69(L) x 105.68(H) mm
PIO-16/16T(LPCI) : 121.69(L) x 106.68(H) mm

(5) Different in current consumption (Max.)
PIO-32/32T(PCI)H : 5VDC 350mA (Max.)
PIO-32/32T(PCI) : 5VDC 500mA (Max.)