4ch 24Bit Differencial
Up/Down Counter Board for PCI

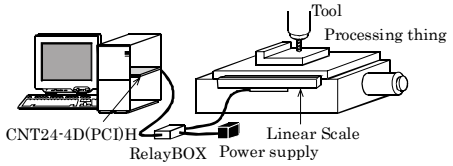
CNT24-4D(PCI)H

with Driver Library [API-PAC(W32)]

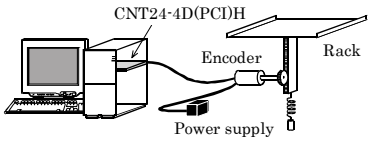
The CNT24-4D(PCI)H is a PCI bus-compliant interface board that counts input pulse signals from external devices.
The CNT24-4D(PCI)H has four channels of 24-bit up/down counters, allowing external devices such as a rotary encoder and a linear scale to be connected. Given below are examples of using the board for "detecting a position of the table of a machine tool" and "detecting a change in weight".
The pulse signal inputting interface is line receiver input or TTL-level input.
Using the bundled driver library [API-PAC(W32)], you can create Windows application software for this board in your favorite programming language supporting Win32 API functions, such as Visual Basic or Visual C/C++.

< Example >

- Detecting a position of the table of a machine tool



- Detecting a change in weight



Features

- This board is a PCI-compliant interface board for counting input pulse signals.
- It is equipped with four channels of 24-bit up/down counters.
- The board can count two-phase signals, which can be outputs of some rotary encoders and linear scales
- You can select either a line-receiver input or a TTL-level input for each channel by software command.
- Each channel can generate an interrupt request signal and a one-pulse output signal when the count data matches a pre-specified value.
- The board is equipped with a programmable timer to allow interrupts to be generated periodically according to a specified timer value.
- Each Channel is equipped with a general-purpose input signal (both line-receiver and TTL).
- Protective devices are equipped for line-receiver inputs.

Product Configuration List

- CNT24-4D(PCI)H ... 1
- First step guide ... 1
- CD-ROM *1 [API-PAC(W32)] ... 1

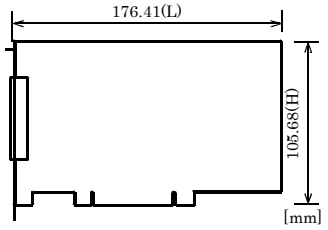
*1 The CD-ROM contains the driver software and User's Guide (this guide)

Specification

Item		Specification	
Counter Input			
	Number of Channels	4 Channels	
	Count system	Up/down counting	
	Max. count	FFFFFFH (binary data)	
	Counter input type	Line-receiver input or TTL-level input	
	Counter input signal	Phase-A/UP	1 x 4 channels
		Phase-B/DOWN	1 x 4 channels
		Phase-Z/CLR	1 x 4 channels
		General-purpose input	1 x 4 channels
	Line receiver input section	Element in use:	Equivalent to the AM26LS32(T.I)
		Terminating resistance:	100Ω(Can be disconnected by switch.)
		Receiver input sensitivity:	±200mV
		In-phase input voltage range:	±7V
		Signal extension distance:	1200m(dependent on wiring environment and input frequency)
	TTL level input section	Element in use:	Equivalent to the SN74LS541(T.I)
		Signal extension distance	1.5m(dependent on wiring environment)
	Response frequency	Line-receiver input	1MHz 50% duty(Max.)
		TTL-level input	1MHz 50% duty(Max.)
	Interrupt	One Generated when each channel count matches or the timer runs out of time.	
	Digital filter	0.1µsec - 1056.1µsec (can be independently set for each channel.)	
	Timer	1msec - 200sec	
Match signal output			
	Output point	1 x 4 channels	
	Output type	Photo coupler isolated open collector output	
	Output rating	35VDC, 50mA(Max.) (per 1 point)	
	Output signal width	0 - 104.45msec (All channels)	
	Output protection circuit	None	
	External power	5V - 12VDC±10%	
Common			
	I/O address	32 ports boundary	
	Power consumption	5VDC 500mA Max.	
	Operating condition	0 - 50°C, 10 - 90%RH (No condensation)	
	PCI bus specification	32bit, 33MHz, Universal key shapes supported *1	
	Dimension (mm)	176.41(L) x 105.68(H)	
	Weight	120g	

*1 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).

■ Board Dimensions



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

Support Software

You should use CONTEC support software according to your purpose and development environment.

■ Driver Library API-PAC(W32) (Bundled)

API-PAC(W32) is the library software that provides the commands for CONTEC hardware products in the form of Windows standard Win32 API functions (DLL). It makes it easy to create high-speed application software taking advantage of the CONTEC hardware using various programming languages that support Win32 API functions, such as Visual Basic and Visual C/C++.
It can also be used by the installed diagnosis program to check hardware operations.
CONTEC provides download services (at http://www.contec.com/apipac/) to supply the updated drivers and differential files.
For details, read Help on the bundled CD-ROM or visit the CONTEC's Web site.

< Operating environment >

OS	Windows XP, 2000, NT, Me, 98, etc..
Adaptation language	Visual C/C++, Visual Basic, Delphi, Builder, etc..
Others	Each piece of library software requires 50 megabytes of free hard disk space.

■ Linux version of general-purpose COUNT driver: API-CNT(LNX) (Supplied within the same CD-ROM of API-PAC(W32))

This driver is used to control CONTEC counter boards (PC Cards). You can control CONTEC counter boards easily using the shared library used by gcc, Kylix, the device driver (module) for each kernel version, and the board (PC Cards) configuration program (config).
CONTEC provides download services (at http://www.contec.com/apipac/) to supply the updated drivers and differential files.
For details, read Help on the bundled CD-ROM or visit the CONTEC's Web site.

< Operating environment >

OS	RedHatLinux, TurboLinux, etc.. (For details on supported distributions, refer to Help available after installation.)
Adaptation language	gcc, Kylix
Others	Each piece of library software requires 3 megabytes of free hard disk space.

■ Data acquisition VI library for LabVIEW VI-DAQ (Free download)

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.
See http://www.contec.co.jp/vidaq/ for details and download of VI-DAQ.

Cable & Connector

◆ Cable & Connector (Option)

Shield Cable with 96-Pin Half-Pitch Connector at Both Ends (Mold Type)
: PCB96PS-0.5P (0.5m)
: PCB96PS-1.5P (1.5m)
: PCB96PS-3P (3m)
: PCB96PS-5P (5m)

Flat Cable with 96-Pin Half-Pitch Connectors at Both Ends
: PCB96P-1.5 (1.5m)
: PCB96P-3 (3m)
: PCB96P-5 (5m)

Shield Cable with 96-Pin Half-Pitch Connector at One End (Mold Type)
: PCA96PS-0.5P (0.5m)
: PCA96PS-1.5P (1.5m)
: PCA96PS-3P (3m)
: PCA96PS-5P (5m)

Flat Cable with 96-Pin Half-Pitch Connector at One End
: PCA96P-1.5 (1.5m)
: PCA96P-3 (3m)
: PCA96P-5 (5m)

Distribution Shield Cable with 96-Pin Half-Pitch Connector (96Pin 37Pin x 2)
: CN5-H96F

Accessories

◆ Accessories (Option)

Screw Terminal	: EPD-96 *1
Screw Terminal	: DTP-64(PC) *1
Screw Terminal	: DTP-3(PC) *2
Screw Terminal	: DTP-4(PC) *2
Screw terminal (Screw Up type)	: EPD-37A *2
Screw Terminal	: EPD-37 *2
Connection Conversion Board (96-Pin 37-Pin x 2)	: CCB-96 *3

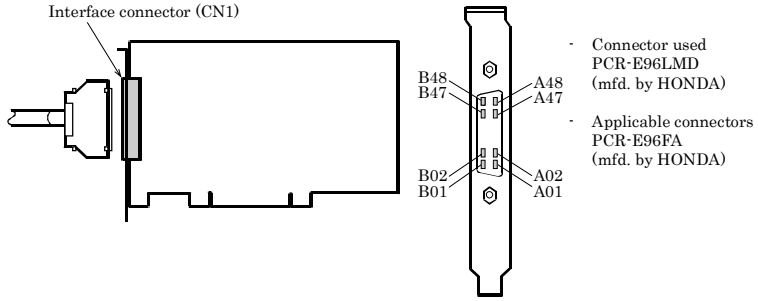
*1 A PCB96P or PCB96PS optional cable is required separately.
*2 A PCB96W or PCB96WS optional cable is required separately.
*3 Option cable PCB96P or PCB96PS, and the cable for 37-pin D-SUB are required separately.

* Check the CONTEC's Web site for more information on these options.

Using the On-board Connectors

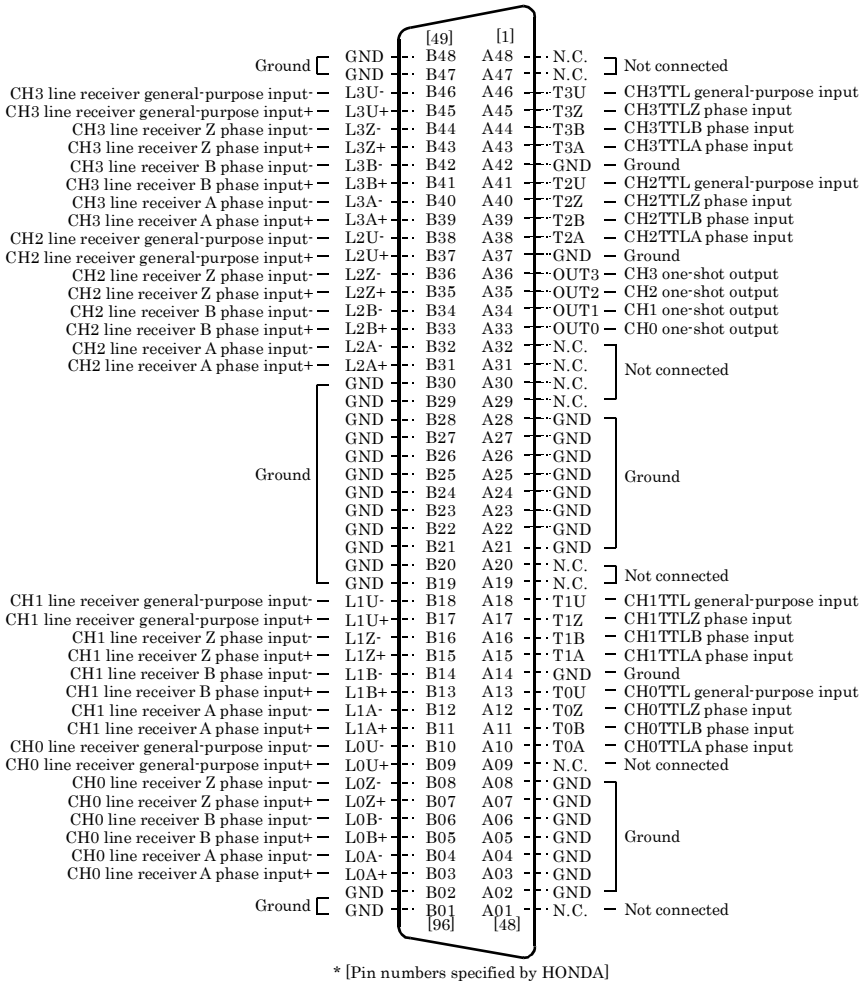
◆ Connecting the Interface Connector

To connect an external device to this board, plug the cable from the device into the interface connector shown below.



◆ Connector Pin Assignment

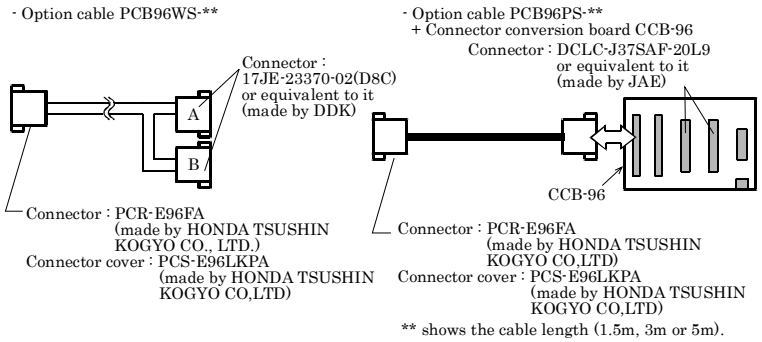
Pin Assignments of Interface Connector < CNT24-4D(PCI)H >



* [Pin numbers specified by HONDA]

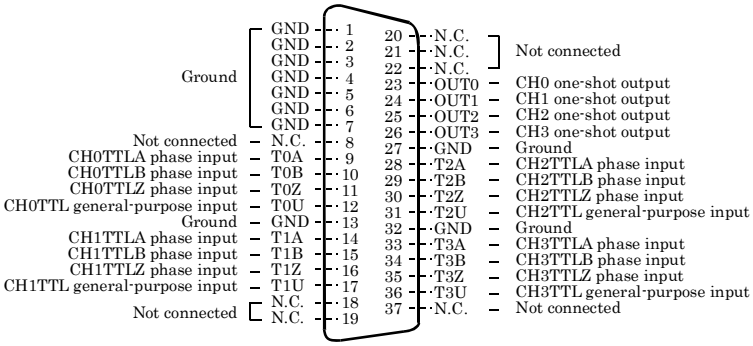
◆ PCB96WS and CCB-96 Signal Assignment

This board can be connected to the PCB96WS and CCB-96. (But the GND's pin will be decreased.)
For the optional cable and each signal, please refer to the following parts.

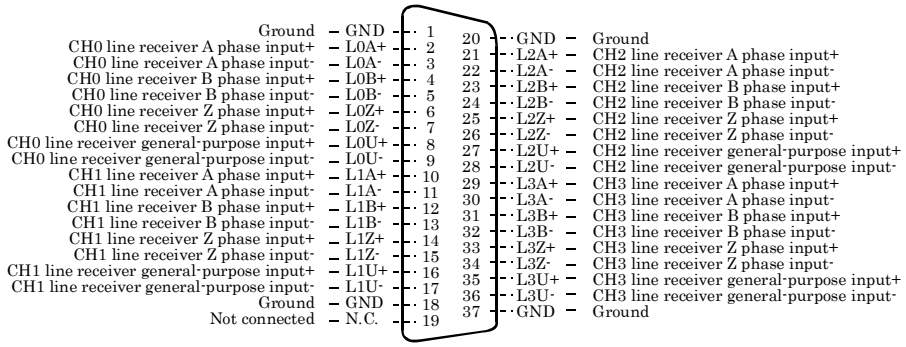


PCB96WS and CCB-96 signal assignment

PCB96WS's CNA and CCB96's CN3 (CNA)



PCB96WS's CNB and CCB96's CN4 (CNB)

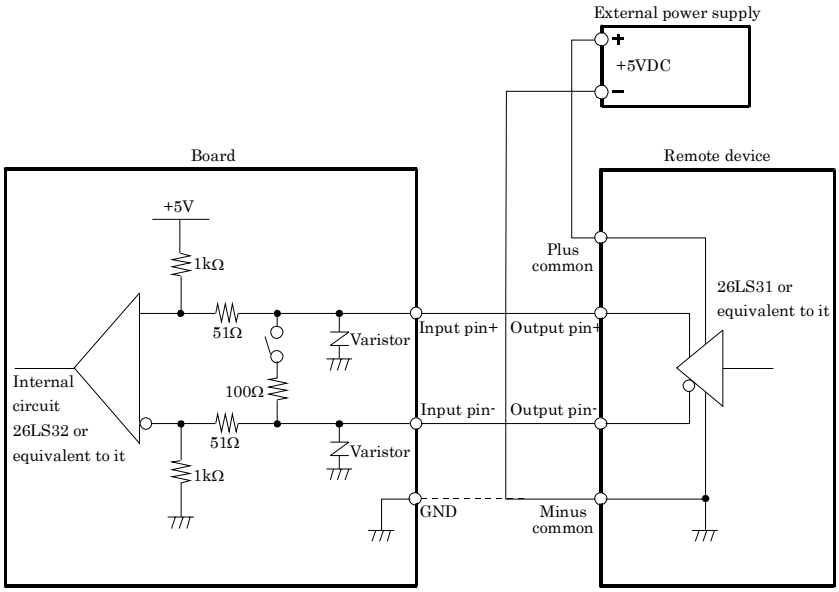


External Connection-Line Receive Input

◆ Line Receiver Input Circuit

Use the line receiver input to connect to the line receiver output circuit of a rotary encoder or linear scale. The maximum input frequency is 1 MHz.
For a two-phase input, connect both phase A and phase B. For a single phase input, connect to either phase A or phase B. If not using the Z phase, this does not need to be connected.
You can select whether to use the terminator in case of the line receiver input.

◆ Detailed Line Receiver Input Circuit



▼ CAUTION

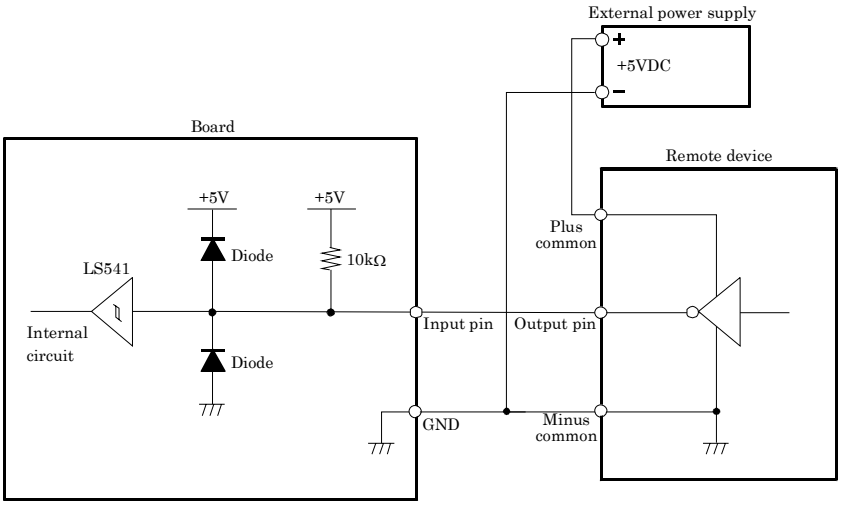
The general input signal uses the same circuit structure.

External Connection-TTL-level Input

◆ TTL-level Input Circuit

Use the TTL-level input to connect to the TTL-level output circuit of a rotary encoder or linear scale. The maximum input frequency is 1 MHz.
For a two-phase input, connect both phase A and phase B. For a single phase input, connect to either phase A or phase B. If not using the Z phase, this does not need to be connected.
You can select whether to use the terminator in case of the line receiver input.

◆ Detailed TTL-level Input Circuit



▼ CAUTION

- The general input signal uses the same circuit structure.
- The cable should be 1.5m or less.
- To prevent malfunction caused by noise, separate the circuit as much as possible from other signal cables and noise sources.

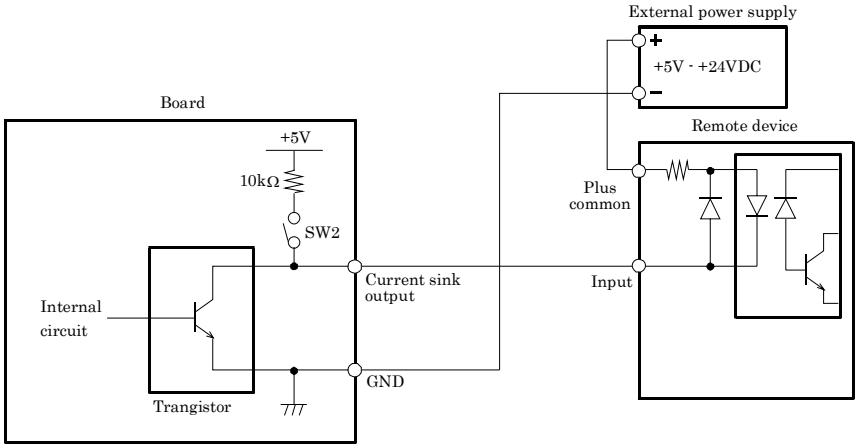
Output Circuit and an Example Connection

◆ One-shot Pulse Output Connection

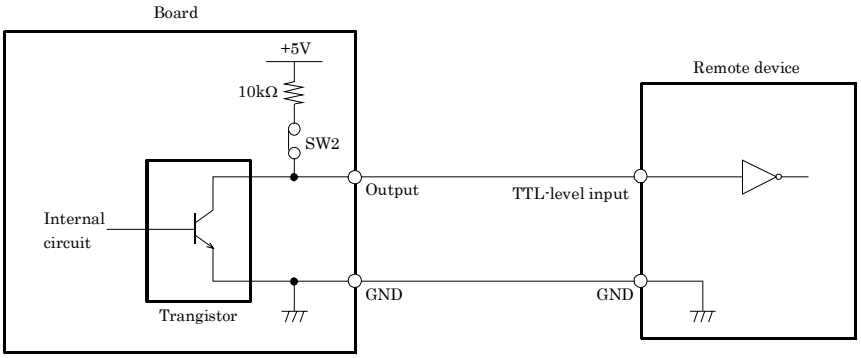
When the count value of each channel matches any specified value, the board outputs a one-shot match signal (for one pulse). The SW2 allows you to select either open-collector output or TTL-level output for the signal output section. If you opt for open-collector output, you need an external power supply source.

◆ Output Circuit and an Example Connection

Open Collector Output Circuit



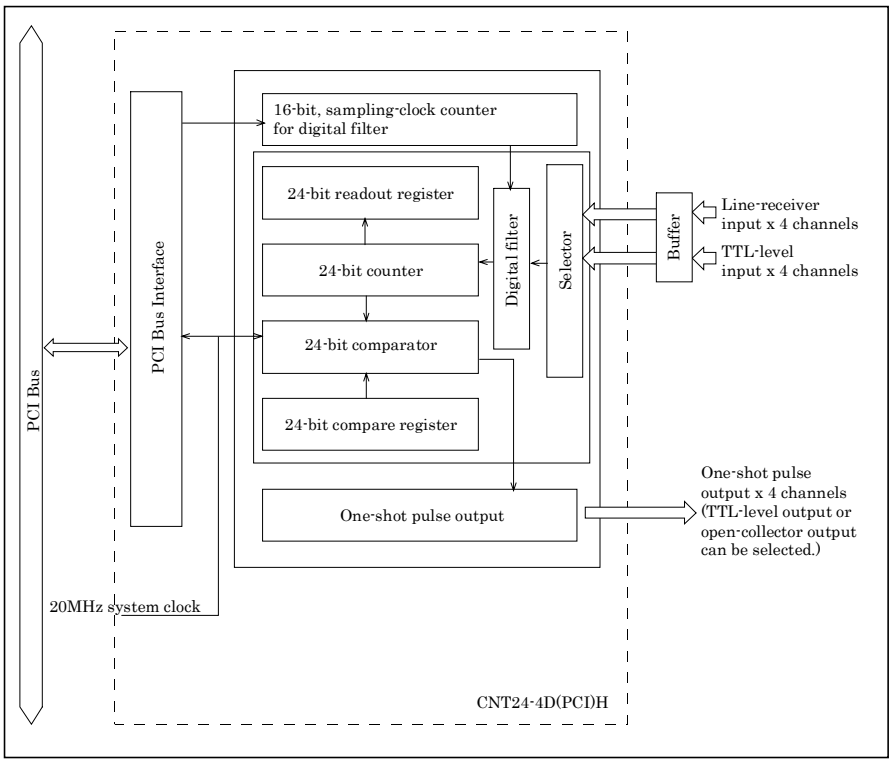
TTL-level Output Circuit



▼ CAUTION

The output of this board has no surge voltage protector. To drive an inductive load such as a relay or lamp using this board, apply surge voltage protection to the load side. For surge voltage protection, see "Surge Voltage Countermeasures" in the next section.

Block Diagram



Differences between the CNT24-4D(PCI)H and CNT24-4D(PCI)

The CNT24-4D(PCI)H partially enhanced version of the conventional products of CNT24-4D(PCI) and it is upper compatible with CNT24-4D(PCI).

(1) There are difference in the board's external dimension

CNT24-4D(PCI) : 176.41(L) x 106.68(H) mm
CNT24-4D(PCI)H : 176.41(L) x 105.68(H)mm

The specification, color, and design of a product may be changed without a preliminary announcement.