

Digital I/O Board for Low Profile PCI

PIO-16/16T(LPCI)H



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

Features

- Unisolated TTL-level input/output enabling fast response.
- Capable of receiving 16-channel TTL-level digital signals
- Capable of sending 16-channel open-collector digitals
- You can use all of the input signals as interrupt inputs. You can also select the interrupt trigger edge of the input signal.
- The board has a digital filter feature to prevent noise or chatter from causing erroneous inputs.
- Up to 30VDC, 40mA per signal, max. output.
- Support for both of low-profile and standard PCI slots (interchangeable with a bundled bracket).

This board is a Low Profile PCI-compliant interface board for input/output of digital signals. The board can input/output TTL-level digital signals. The board supports a low-profile PCI slot and, if replaced with the supplied bracket, supports a PCI slot, too. This board can input and output up to 16 channels. Using the bundled API function library package [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++.

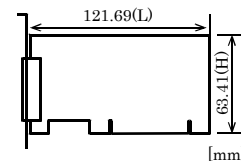
Specification

Item	Specification
Input	
Input format	TTL-level input (Negative logic *1)
Number of input signal channels	16 channels (all available for interrupts) (1 common)
Input resistance	10kΩ(1 TTL 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	200nsec within
Output	
Output format	Open-collector output (Negative logic*1)
Number of output signal channels	16 channels (1 common)
Output rating	30VDC (Max.)
Output voltage	40mA (par channel) (Max.)
Output current	
Response time	200nsec within (Variable with pull-up resistance)
Common	
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	5VDC 100mA(Max.)
Operating condition	0 - 50°C, 10 - 90%RH (No condensation)
Allowable distance of signal extension	Approx. 1.5m (depending on wiring environment)
PCI bus specification	32bit, 33MHz, Universal key shapes supported *2
Dimension (mm)	121.69(L) x 63.41(H)
Weight	60g
Certification	RoHS,CE,VCCI

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

*2 This board 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).

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

Driver Software Package API-PAC(W32) (Available for downloading (free of charge) from the CONTEC web site.)

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 to supply the updated drivers and differential files.

For details, read Help on the bundled Disk or visit the CONTEC's Web site.

Linux version of digital I/O driver API-DIO(LNX) (Supplied: Stored on the API-PAC(W32) Disk)

This driver is used to control CONTEC digital I/O boards (cards) from within Linux.

You can control CONTEC I/O boards easily using the shared library used by gcc and Kylix, the device driver (module) for each kernel version, and the board (card) configuration program (config).

CONTEC provides download services to supply the updated drivers and differential files.

For details, read Help on the bundled Disk or visit the CONTEC's Web site.

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.com/vidaq/> for details and download of VI-DAQ.

Packing List

Board [PIO-16/16T(LPCI)H] ...1
 First step guide ... 1
 Disk *1 [API-PAC(W32)] ...1
 Bracket for PCI...1
 Serial number label...1
 Product Registration Card & Warranty Certificate...1

*1 The Disk contains the driver software and User's Guide.

Cable & Connector

Cable (Option)

Shield Cable with Two 50-Pin Mini-Ribbon Connector
 : PCB50PS-0.5P(0.5m)
 : PCB50PS-1.5P(1.5m)

Shield Cable with One 50-Pin Mini-Ribbon Connector
 : PCA50PS-0.5P(0.5m)
 : PCA50PS-1.5P(1.5m)

Connection Conversion 0.5m Shield Cable
 (50-Pin Ribbon->37-Pin D-SUB) : PCE50/37PS-0.5P(0.5m)

Accessories

Accessories (Option)

Screw Terminal Unit (M3 terminal block, 50 points)	: EPD-50A *1
Screw Terminal Unit (M3 terminal block, 37 points)	: EPD-37A *2
Screw Terminal Unit (M3.5 terminal block, 37 points)	: EPD-37 *2
Termination Panel (M3)	: DTP-3(PC) *3
Termination Panel	: DTP-4(PC) *3
Signal Monitor for Digital I/O	: CM-32(PC)E *2

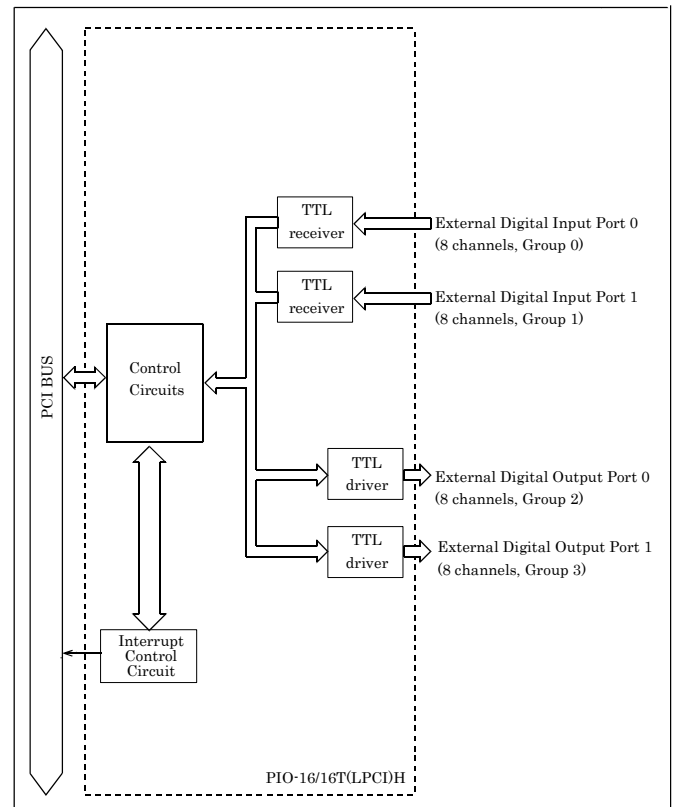
*1 PCB50PS-*P optional cable is required separately.

*2 PCE50/37PS-0.5P and PCB37P or PCB37PS optional cable is required separately.

*3 PCE50/37PS-0.5P optional cable is required separately.

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

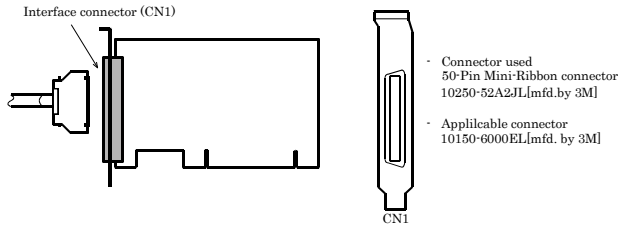
Block Diagram



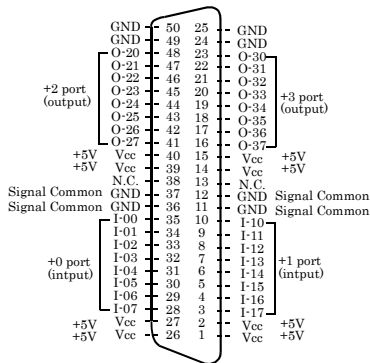
Using the On-board Connectors

Connecting a Device to a Connector

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



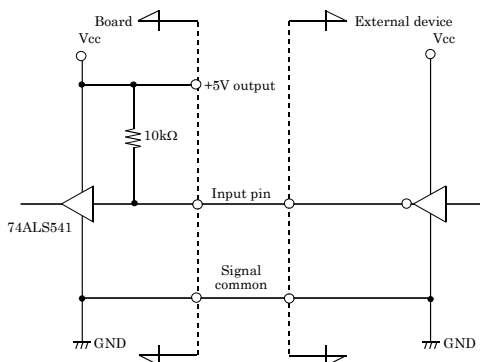
Pin Assignments of Interface Connector



I-00 - I-17	16 input signal pins. Connect output signals from the external device to these pins.
O20 - O37	16 output signal pins. Connect these pins to the input signal pins of the external device.
Vcc	This pin outputs power at +5 V.
GND	This pin is connected to the slot's GND.
N.C.	This pin is left unconnected.

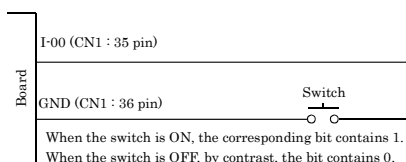
Connecting Input Signals

Input Circuit



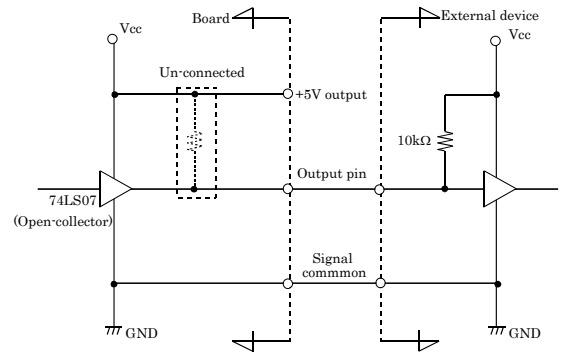
The input circuit of interface is illustrated in the image above. External digital signals given to signal inputs are TTL levels. The individual input signals are passed to the personal computer as active low signals. As each of the signal inputs is pulled up internally, the output of a relay contact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

Connecting a Switch



Connecting Output Signals

Output Circuit

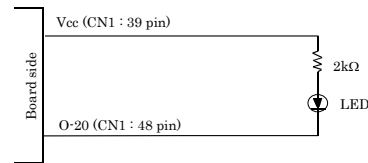


The output circuit of interface is illustrated in the image above. Signal outputs are open-collector outputs; individual output signals are sent to the external device as active low signals. Note that each signal output must be pulled up at the external device as it is not pulled up internally.

CAUTION

When the PC is turned on, all 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.

Differences between the PIO-16/16T(LPCI)H and PIO-16/16T(PCI)

The PIO-16/16T(LPCI)H is connector-pin compatible with the conventional PIO-16/16T(PCI) but has the following differences from it:

- Different in connector shape and pin assignment
PIO-16/16T(LPCI)H : 50-Pin Mini-Ribbon connector
PIO-16/16T(PCI) : 37-pin D-SUB
- Different in board dimensions
PIO-16/16T(LPCI)H : 121.69(L) x 63.41(H) mm
PIO-16/16T(PCI) : 121.69(L) x 106.68(H) mm
- Different in the number of input signals available to interrupt requests
PIO-16/16T(LPCI)H : All of 16 signals
PIO-16/16T(PCI) : 4 signals
- Different in the expression to obtain digital filter time. (n: Set value)
PIO-16/16T(LPCI)H : $2^n / (8 \times 10^6)$
PIO-16/16T(PCI) : $2^n / (16 \times 10^6)$
- Different in interrupt-level resource acquisition
PIO-16/16T(LPCI)H : Acquires one interrupt level automatically.
PIO-16/16T(PCI) : Set a jumper switch to select whether to acquire interrupt levels.