Digital Input Board for PCI Express

DI-32T-PE

This product is a PCI Express bus-compliant interface board used to provide a digital signal input function on a PC.
The < DI-32T-PE > features 32 unisolated TTL level inputs.
You can use 32 input signals as interrupt inputs. In addition, the digital filter function to prevent wrong recognition of input signals is provided.
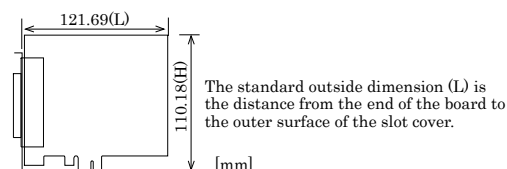Windows/Linux driver is bundled with this product.
Possible to be used as a data recording device for LabVIEW, with dedicated libraries.

Features

Unisolated TTL level input
The < DI-32T-PE > has the 32ch of unisolated TTL level input whose response speed is 200nsec.

You can use all of the input signals as interrupt request signals.
You can use all of the 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 compatible driver libraries are attached.
Using the attached driver library API-PAC(W32) makes it possible to create applications of Window/Linux. 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 DI-32T2-PCI.
The functions same with PCI compatible board DI-32T2-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 VI-DAQ.
Using the dedicated library VI-DAQ makes it possible to make a LabVIEW application.

Specifications

Item		Specification
Input		
	Input format	Unisolated TTL level input (Negative logic *1)
	Number of input signal channels	32channels (All of them are available for interrupts) (1 common)
	Input resistance	Pull up 10kΩ (1TTL load)
	Interrupt	32 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
Common		
	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
	Interrupt Level	1 level use
	Max. board count for connection	16 boards including the master board
	Power consumption (Max.)	3.3VDC 300mA
	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	37 pin D-SUB connector [F (female) type] DCLC-J37SAF-20L9E [mfd. by JAE] equivalent to it
	Weight	100g
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

121.69(L)
110.18(H)

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

[mm]

Support Software

Windows version of digital I/O driver API-DIO(WDM)

The API-DIO(WDM) / API-DIO(98/PC) is the Windows version driver library software that provides products in the form of Win32 API functions (DLL).   Various sample programs such as Visual Basic and Visual C++, etc and diagnostic program useful for checking operation is provided.
You can download the updated version from the CONTEC's Web site.   For more details on the supported OS, applicable language and new information, please visit the CONTEC's Web site.

Linux version of digital I/O driver API-DIO(LNX)

The API-DIO(LNX) is the Linux version driver software which provides device drivers (modules) by shared library and kernel version.   Various sample programs of gcc are provided.
You can download the updated version from the CONTEC's Web site.   For more details on the supported OS, applicable language and new information, please visit the CONTEC's Web site.

Data acquisition VI library for LabVIEW   VI-DAQ

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 CONTEC's Web site for details and download of VI-DAQ.

Cable & Connector

Flat Cable with 37-Pin D-sub Connectors at either Ends
                                      : PCB37P-1.5 (1.5m)
Shield Cable with 37-Pin D-sub Connector
at either Ends (Mold Type)   : PCB37PS-0.5P (0.5m)
                                      : PCB37PS-1.5P (1.5m)

Flat Cable with 37-Pin D-sub Connector at One End
                                      : PCA37P-1.5 (1.5m)
Shield Cable with 37-Pin D-sub Connector
at One End (Mold Type)   : PCA37PS-0.5P (1.5m)
                                      : PCA37PS-1.5P (1.5m)

Accessories

Screw Terminal Unit (M3 x 37P)	: PCB37P-1.5 (1.5m)
Screw Terminal Unit (M3.5 x 37P)	: EPD-37 *1
General Purpose Terminal (M3 x 37P)	: DTP-3C *1
Screw Terminal (M2.5 x 37P)	: DTP-4C *1
Signal Monitor / Output Accessory for Digital I/O (32P)	: CM-32L *1

*1   A PCB37P-1.5 or PCB37PS-0.5P, 1.5P optional cable is required separately.
*2   "Spring-up" type terminal is used to prevent terminal screws from falling off.

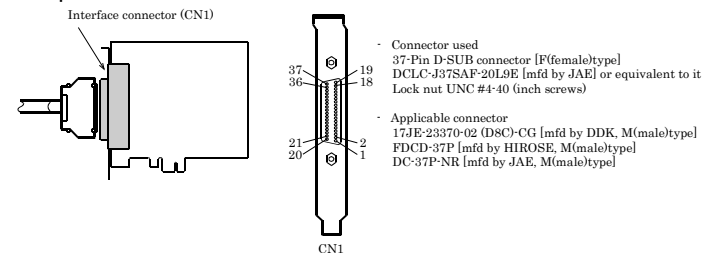*   Check the CONTEC's Web site for more information on these options.

Packing List

Board [DI-32T-PE] …1
First step guide … 1
Disk *1 [API-PAC(W32)] …1
Serial number label…1
Product Registration Card & Warranty Certificate…1
*1   The Disk contains the driver software and User's Guide.

How to connect the connectors

Connector shape
The on-board interface connector (CN1) is used when connecting this product and the external devices.

- Connector used
  37-Pin D-SUB connector [F(female)type]
  DCLC-J37SAF-20L9E [mfd by JAE] or equivalent to it
  Lock nut UNC #4-40 (inch screws)

- Applicable connector
  17JE-23370-02 (D8C)-CG [mfd by DDK, M(male)type]
  FDCD-37P [mfd by HIROSE, M(male)type]
  DC-37P-NR [mfd by JAE, M(male)type]

*   Please refer to page 2 for more information on the supported cable and accessories.

Connector Pin Assignment
Pin Assignments of Interface Connector (CN1)

| I-00 - I-37	32 input signal pins. Connect output signals from the external device to these pins.
Vcc	Output +5V. Max. electrical current is 350mA.
GND	This pin is connected to GND in the slot.
N.C.	This pin is left unconnected.

How to Connect Input Signals

The input circuit of interface is illustrated in the below figure. 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.

Input Circuit
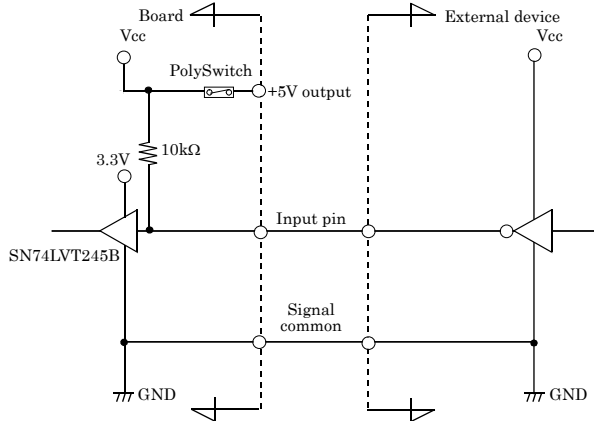
*   I-xx represents an input pin.
One polyswitch is connected for Vcc(+5V) terminal.

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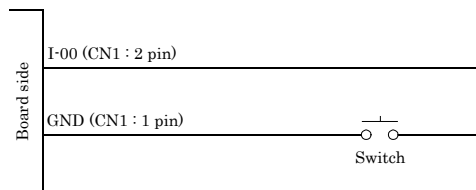
When the switch is ON, the corresponding bit contains 1.
When the switch is OFF, by contrast, the bit contains 0.

A Protection Function of the +5V Outputs

A protection function, which prevents excessive current flow from the +5V outputs, is attached to this board. In case of accidental short of the +5V output and GND, for example, the function works, and the board operation may become impossible temporarily. In such a case, you should turn the PC off and wait for several minutes before you use the board again.

Block Diagram