

Unisolated Analog Input Board for PCI

AI-1216B-RB1-PCI



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

Features

Equipped with analog inputs in a range of $\pm 10V$, 12-bit single-end input x 16ch, conversion speed: 20 μ sec/ch

AI-1216B-RB1-PCI is a unisolated analog input board equipped with functions such as bipolar $\pm 10V$, 12-bit resolution, single-end input x 16ch and a conversion speed of 20 μ sec/ch.

Unisolated TTL level digital input / output 8ch for each

Windows compatible driver libraries are attached.

Using the attached driver library API-PAC(W32) makes it possible to create applications of Windows. In addition, a diagnostic program by which the operations of hardware can be checked is provided.

A/D conversion enabled for a specified channel or multiple channels by software command

Setting a channel by software enables analog input for the specified channel or multiple channels (consecutive channels starting from channel 0). A/D conversion is performed for each software command.

This product is a unisolated, PCI-bus-compatible analog input board with a limited input range of bipolar $\pm 10V$. With a sole focus on the basic analog input function, the product offers high cost-effectiveness.

AI-1216B-RB1-PCI has an input range of bipolar $\pm 10V$, 12-bit resolution, 16 channels of single-end input as well as analog input at a conversion speed of 20 μ sec/ch. In addition, it comes with digital input/output (unisolated TTL level: 8 each).

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++.

Specification

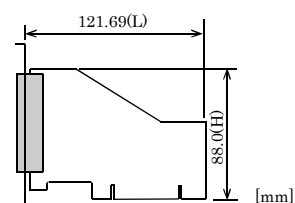
Item	Specification
Analog input	
Isolated specification	Unisolated
Type	Single-Ended Input
Number of input channels	16 channels
Input range	Bipolar $\pm 10V$
Absolute max. input voltage	$\pm 12V$
Input impedance	1M Ω or more
Resolution	12-bit
Non-Linearity error *1*2	$\pm 3LSB$
Conversion speed	20 μ sec/ch (Max.)
Buffer memory	No buffer memory
Conversion start trigger	Software
Conversion stop trigger	Software
Digital I/O	
Number of output channels	Un-Isolated output 8ch (TTL level positive logic)
Number of input channels	Un-Isolated input 8ch (TTL level positive logic)
I/O address	Any 32-byte boundary
Interrupt level	1 level use
Power consumption	+5V 200 mA (Max.)
Operating condition	0 - 50°C, 10 - 90%RH (No condensation)
Bus specification	PCI(32-bit, 33MHz, Universal key shapes supported *3)
Dimension (mm)	121.69mm(L) x 88.00mm(H)
Interface connectors	
CN1	D-SUB 37-Pin female connector #4-40UNC
Weight	80g

*1: When the environment temperature is near 0°C or 50°C, the non-linearity error may become larger.

*2: At the time of the source use of a signal which built in the high-speed operational amplifier.

*3: This board requires +5V power supply from expansion slots (it does not operate in the environment of only +3.3V power supply).

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

Windows version of analog I/O driver API-AIO(WDM) [Stored on the bundled CD-ROM driver library API-PAC(W32)]

The API-AIO(WDM) 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.

< Operating environment >

OS Windows Vista, XP, 2000
Adaptation language Visual C++ .NET, Visual C# .NET, Visual Basic .NET, Visual C++, Visual Basic, Delphi, C++Builder, etc.

You can download the updated version from the CONTEC's Web site (<http://www.contec.com/apipac/>). For more details on the supported OS, applicable language and new information, please visit the CONTEC's Web site.

Cable & Connector

Cable (Option)

Flat Cable with Two 37-pin D- SUB Connectors
: PCB37P-1.5 (1.5m)
Shielded Cable with Two 37-pin D- SUB Connectors
: PCB37PS-0.5P (0.5m)
: PCB37PS-1.5P (1.5m)
Flat Cable with One 37-pin D- SUB Connector
: PCA37P-1.5 (1.5m)
Shielded Cable with One 37-pin D- SUB Connector
: PCA37PS-0.5P (0.5m)
: PCA37PS-1.5P (1.5m)

Connector (Option)

D-SUB37P Male Connector Set (5pieces)
: CN5-D37M

Accessories

Accessories (Option)

Screw Terminal (M3 x 37P) : EPD-37A *1*2
Screw Terminal (M3.5 x 37P) : EPD-37 *1
General Purpose Terminal : DTP-3A *1
Screw Terminal : DTP-4A *1

*1 PCB37P or PCB37PS 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

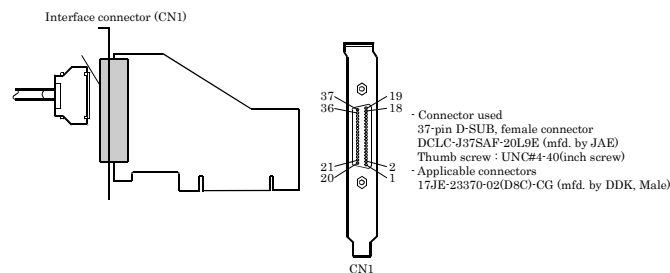
- Board [AI-1216B-RB1-PCI] ... 1
- First step guide ... 1
- CD-ROM *1 [API-PAC(W32)] ... 1

*1 The CD-ROM 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.



* Please refer to chapter 1 for more information on the supported cable and accessories.

- Connector Pin Assignment

<Pin Assignments of Interface Connector>

AI-1216B-RB1-PCI,
AI-1216B-RU1-PCI

CN1	
Digital Output 0	37
Digital Output 1	36
Digital Output 2	35
Digital Output 3	34
Digital Output 4	33
Digital Output 5	32
Digital Output 6	31
Digital Output 7	30
Analog Ground	29
Analog Input 8	28
Analog Input 10	27
Analog Input 12	26
Analog Input 14	25
Analog Ground	24
Analog Input 0	23
Analog Input 2	22
Analog Input 4	21
Analog Input 6	20
Digital Ground	19
Digital Input 0	18
Digital Input 1	17
Digital Input 2	16
Digital Input 3	15
Digital Input 4	14
Digital Input 5	13
Digital Input 6	12
Digital Input 7	11
Analog Ground	10
Analog Input 9	9
Analog Input 11	8
Analog Input 13	7
Analog Input 15	6
Analog Ground	5
Analog Input 1	4
Analog Input 3	3
Analog Input 5	2
Analog Input 7	1

Analog Input 0 - Analog Input 15	Analog input signals in single-ended input mode. The numbers correspond to channel numbers.
Analog Ground	Analog ground common to analog input signals.
Digital Input 0 - Digital Input 7	Digital input signal. The numbers correspond to input bit numbers.
Digital Output 0 - Digital Output 7	Digital output signal. The numbers correspond to output bit numbers.
Digital Ground	Digital ground common to digital I/O signals

⚠ CAUTION

Do not connect any of the outputs and power outputs to the analog or digital ground. Neither connect outputs to each other. Doing either can result in a fault.

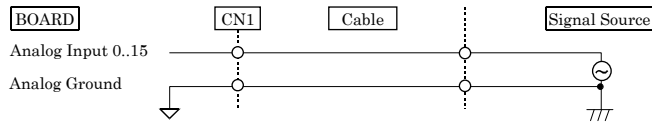
Analog Input Signal Connection

Analog signal input types are divided into single-ended input and differential input. This board uses single-ended input fixed. The following examples show how to connect analog input signals using a flat cable and a shielded cable.

Single-ended Input

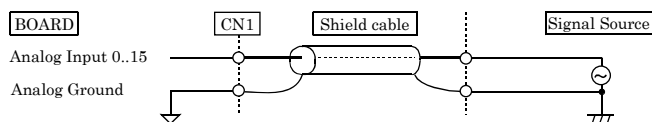
The following figure shows an example of flat cable connection. Connect separate signal and ground wires for each analog input channel on CN1.

Single-ended Input Connection (Flat Cable)



The following figure shows an example of shield cable connection. Use shielded cable if the distance between the signal source and board is long or if you want to provide better protection from noise. For each analog input channel on CN1, connect the core wire to the signal line and connect the shielding to ground.

Single-ended Input Connection (Shield Cable)



CAUTION

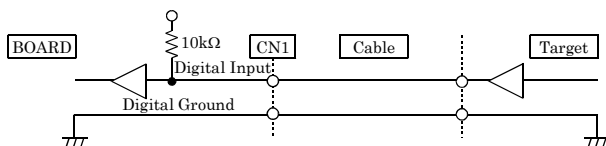
- If the signal source contains over 50 kHz signals, the signal may effect the cross-talk noise between channels.
- If the board and the signal source receive noise or the distance between the board and the signal source is too long, data may not be input properly.
- An input analog signal should not exceed the maximum input voltage (relate to the board analog ground). If it exceeds the maximum voltage, the board may be damaged.
- Connect all the unused analog input channels to analog ground.

Digital I/O signals Connection

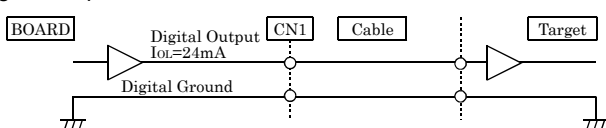
The following sections show examples of how to connect digital I/O signals.

All the digital I/O signals and control signals are TTL level signals.

Digital Input Connection



Digital Output Connection



Block Diagram

