

16Ch/12Bit Analog Input Card
for PCI
AD12-16(PCI)



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

Features

Multi-channel analog input

This product can perform an analog input of single-ended input 16 channels and differential input 8 channels. Selection of single-ended input and differential input can be set up by the software.

Input range setup by software

Input range can be selected for each channel from the following ranges and can be set up by the software.
±10V, ±5V, ±2.5V, ±1.25V, 0 - +10V, 0 - +5V, 0 - +2.5V, 0 - +1.25V

Sampling control function

This product can perform sampling either at arbitrary timings under control of software or periodically in synchronization with a sampling clock signal. The sampling clock signal can be selected between the internal one based on the on-board clock generator and the external one using a digital signal input from an external source.

Digital input/output function

This product has four digital input and four digital output pins for TTL-level signals, allowing an external device to be monitored and controlled.

Optional units

Using optional units facilitates connections.

For more details on the option, please refer to "Cable & Connector" or "Accessories (Option)".

Packing List

Board [AD12-16(PCI)] ...1
Please read the following ... 1

This product is PCI-compliant interface boards that convert analog input signals to digital equivalents (performing analog-to-digital conversion).

This product can perform A-D conversion at a conversion speed of 10μsec[100KSPS] per channel and a resolution of 12bit.

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++.

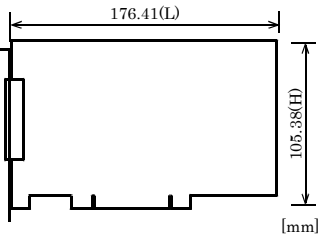
- * The contents in this document are subject to change without notice.
- * Visit the CONTEC website to check the latest details in the document.
- * The information in the data sheets is as of October, 2022.

Specifications

Item	AD12-16(PCI)
Analog input	
Isolated specification	Non-isolation
Input Type	Single-Ended Input or Differential Input (Software setup)
Number of input channels	16 channels (Single-Ended Input), 8 channels (Differential Input)
Input range	Bipolar ±10V, ±5V, ±2.5V, ±1.25V, or Unipolar 0 - +10V, 0 - +5V, 0 - +2.5V, 0 - +1.25V (Software setup per channel)
Absolute max. input voltage	±15V
Input impedance	1MΩ or more
Resolution	12bit
Non-Linearity error *1	±2LSB(±10V, ±5V, 0 - 10V, 0 - 5V), 4LSB(±2.5V, ±1.25V, 0 - 2.5V) ±8LSB(0 - 1.25V)
Conversion speed	10μsec [100KSPS]/ch (Max)
Sampling clock	Internal sampling clock: 10,000 - 1,073,741,824,000nsec (Settable in 250 nanoseconds) External sampling clock: TTL level falling edge
Digital I/O	
Number of output channels	4 TTL levels
Number of input channels	4 TTL levels
Programmable timer	
Setting period	500 - 1,073,741,824,000nsec (Settable in 250 nanoseconds)
Status	Count up, count up over run
Timer output signal	TTL-level 250nsec Low pulse, Low level output current I _{OL} = 24mA
External trigger input	
External trigger input signal	Non-isolated input 1 channel (TTL-level falling edge)
Status	Trigger input, trigger input overrun
I/O address	32 ports boundary
Interrupt level	1 level use
Operating condition	0 - 50°C, 10 - 90%RH (No condensation)
Current consumption *2	+5VDC 700mA (Max)
Bus specification	32bit, 33MHz, Universal key shapes supported *3*4
Connector	96-pin half pitch connector [M(male)type] PCR-E96LMD+ [HONDA TSUSHIN KOGYO CO., LTD.] or equivalence to it
Dimension (mm)	176.41(L) x 105.68(H) *5
Weight	150g
Standard	VCCI Class A, CE Marking (EMC Directive Class A, RoHS Directive), KC, UKCA

- *1 A linearity error approximately 0.1% of full-range may occur when operated at 0°C or 50°C ambient temperature. The error can be reduced by calibrating under the actual temperature conditions.
- *2 If an external device requires this AD12-16(PCI) product to supply +5VDC from the CN1 or CN2 connectors, the power consumption of this product will be bigger than what this specification has defined.
- *3 This product requires +5V power supply from expansion slots (it does not operate in the environment of only +3.3V power supply).
- *4 AD12-16(PCI): If the board No. is No.7150, PCI bus specification is 32bit, 33MHz, 5V
- *5 Boards with different board numbers are different in these specifications. See "Different in the specification" at the end of this document.

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 digital I/O driver API-AIO(WDM)

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.

For more details on the supported OS, applicable language and how to download the updated version, please visit the CONTEC's Web site.

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

The API-AIO(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.

For more details on the supported OS, applicable language and how to download the updated version, please visit the CONTEC's Web site.

LabVIEW VI Library for Data Acquisition DAQfast for LabVIEW

This is a data collection library to use our devices in the LabVIEW by National Instruments. With Polymorphic VI, our design enables a LabVIEW user to operate seamlessly. Our aim is for the customers to perform easily, promptly what they wish to do.

For more details on the library and download of DAQfast for LabVIEW, please visit the CONTEC's Web site.

Cable & Connector

Cable (Option)

Shield Cable with 96-Pin Half-Pitch Connectors at Both Ends
: 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)

Shield Cable with 96-Pin Half-Pitch Connectors at One End
: PCA96PS-0.5P (0.5m), PCA96PS-1.5P (1.5m)

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

Accessories

Accessories (Option)

- Terminal Unit for Cables (M3 x 96P) : DTP-64A *1
- Screw Terminal Unit (M3.5 x 96P) : EPD-96 *1
- Screw Terminal Unit (M3 x 96P) : EPD-96A *1*4

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

Different in the specification

The AD12-16(PCI) is different in specifications, depending on the board number as listed below.

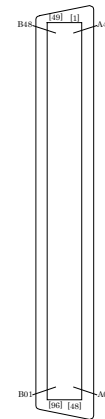
AD12-16(PCI)

Board No.	No.7150	No.7150A	No.7150C
Dimension (mm)	176.41(L)×106.68(H)	176.41(L)×106.68(H)	176.41(L)×105.68(H)

Connector Pin Assignment

Single-Ended Input

N.C	B48	A48	N.C
N.C	B47	A47	N.C
N.C	B46	A46	N.C
N.C	B45	A45	N.C
N.C	B44	A44	N.C
N.C	B43	A43	N.C
N.C	B42	A42	N.C
N.C	B41	A41	N.C
Analog Ground	B40	A40	Analog Ground
Analog Ground	B39	A39	Analog Ground
N.C	B38	A38	N.C
N.C	B37	A37	N.C
N.C	B36	A36	N.C
N.C	B35	A35	N.C
N.C	B34	A34	N.C
N.C	B33	A33	N.C
N.C	B32	A32	N.C
N.C	B31	A31	N.C
Analog Ground	B30	A30	Analog Ground
Analog Ground	B29	A29	Analog Ground
N.C	B28	A28	N.C
N.C	B27	A27	N.C
N.C	B26	A26	N.C
N.C	B25	A25	N.C
N.C	B24	A24	N.C
N.C	B23	A23	N.C
N.C	B22	A22	N.C
N.C	B21	A21	N.C
Analog Ground	B20	A20	Analog Ground
Analog Ground	B19	A19	Analog Ground
Analog Input 15	B18	A18	Analog Input 11
Analog Input 7	B17	A17	Analog Input 3
Analog Input 14	B16	A16	Analog Input 10
Analog Input 6	B15	A15	Analog Input 2
Analog Input 13	B14	A14	Analog Input 9
Analog Input 5	B13	A13	Analog Input 1
Analog Input 12	B12	A12	Analog Input 8
Analog Input 4	B11	A11	Analog Input 0
Analog Ground	B10	A10	Analog Ground
Analog Ground	B09	A09	Analog Ground
+5VDC from PC	B08	A08	External Sampling Clock Input
+5VDC from PC	B07	A07	Digital Ground
Sampling Busy Output	B06	A06	External Trigger Input
Timer Output	B05	A05	Digital Ground
Digital Output 3	B04	A04	Digital Input 3
Digital Output 2	B03	A03	Digital Input 2
Digital Output 1	B02	A02	Digital Input 1
Digital Output 0	B01	A01	Digital Input 0

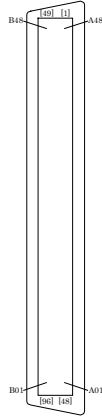


- The numbers in square brackets [] are pin numbers designated by HONDA TSUSHIN KOGYO CO.,

Analog Input 0 - Analog Input 15	Analog input signal at the time of Single-Ended Input. The numbers correspond to channel numbers.
Analog Ground	Common analog ground for analog input signals.
Digital Input 0 - Digital Input 3	Digital input signal.
Digital Output 0 - Digital Output 3	Digital output signal.
External Trigger Input	External trigger input signal.
External Sampling Clock Input	External Sampling Clock Input signal.
Timer Output	Programmable timer output signal.
Sampling Busy Output	Output signal indicating that the board is performing AD conversion
+5VDC from PC	Output +5V. The total current-carrying capacity that can be supplied from two pins is 1A
Digital Ground	Digital ground common to those signals other than analog input signals, such as digital I/O signals and external sampling clock input signals, and "+5V DC from PC"
N.C	No connection to this pin.

Differential Input

N.C	B48	A48	N.C
N.C	B47	A47	N.C
N.C	B46	A46	N.C
N.C	B45	A45	N.C
N.C	B44	A44	N.C
N.C	B43	A43	N.C
N.C	B42	A42	N.C
N.C	B41	A41	N.C
Analog Ground	B40	A40	Analog Ground
Analog Ground	B39	A39	Analog Ground
N.C	B38	A38	N.C
N.C	B37	A37	N.C
N.C	B36	A36	N.C
N.C	B35	A35	N.C
N.C	B34	A34	N.C
N.C	B33	A33	N.C
N.C	B32	A32	N.C
N.C	B31	A31	N.C
Analog Ground	B30	A30	Analog Ground
Analog Ground	B29	A29	Analog Ground
N.C	B28	A28	N.C
N.C	B27	A27	N.C
N.C	B26	A26	N.C
N.C	B25	A25	N.C
N.C	B24	A24	N.C
N.C	B23	A23	N.C
N.C	B22	A22	N.C
N.C	B21	A21	N.C
Analog Ground	B20	A20	Analog Ground
Analog Ground	B19	A19	Analog Ground
Analog Input 7 [-]	B18	A18	Analog Input 3 [-]
Analog Input 7[+]	B17	A17	Analog Input 3 [+]
Analog Input 6 [-]	B16	A16	Analog Input 2 [-]
Analog Input 6[+]	B15	A15	Analog Input 2 [+]
Analog Input 5 [-]	B14	A14	Analog Input 1 [-]
Analog Input 5[+]	B13	A13	Analog Input 1 [+]
Analog Input 4 [-]	B12	A12	Analog Input 0 [-]
Analog Input 4[+]	B11	A11	Analog Input 0 [+]
Analog Ground	B10	A10	Analog Ground
Analog Ground	B09	A09	Analog Ground
+5VDC from PC	B08	A08	External Sampling Clock Input
+5VDC from PC	B07	A07	Digital Ground
Sampling Busy Output	B06	A06	External Trigger Input
Timer Output	B05	A05	Digital Ground
Digital Output 3	B04	A04	Digital Input3
Digital Output 2	B03	A03	Digital Input2
Digital Output 1	B02	A02	Digital Input1
Digital Output 0	B01	A01	Digital Input0



- The numbers in square brackets [] are pin numbers designated by HONDA TSUSHIN KOGYO CO,

Analog Input 0 [+]	Analog input signal at the time of Differential Input.
Analog Input 7 [+]	The numbers correspond to channel numbers.
Analog Input 0 [-]	Analog input signal at the time of Differential Input.
Analog Input 7 [-]	The numbers correspond to channel numbers.
Analog Ground	Common analog ground for analog input signals.
Digital Input 0 - Digital Input 3	Digital input signal.
Digital Output 0 - Digital Output 3	Digital output signal.
External Trigger Input	External trigger input signal.
External Sampling Clock Input	External Sampling Clock Input signal.
Timer Output	Programmable timer output signal.
Sampling Busy Output	Output signal indicating that the board is performing AD conversion
+5VDC from PC	Output +5V. The total current-carrying capacity that can be supplied from two pins is 1 A
Digital Ground	Digital ground common to those signals other than analog input signals, such as digital I/O signals and external sampling clock input signals, and "+5V DC from PC"
N.C	No connection to this pin.