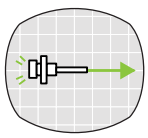
ANALOG INPUT / OUTPUT

ANALOG I / O

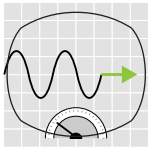
Interface modules that convert analog signals to digital data.

Converting analogue signals to data (digital signals) and feeding them to PC allows you to measure external events, whereas converting PC data to analogue signals for output allows you to control external devices.



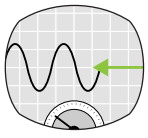
Application

Sensor Measurement through Voltage / Current input signals



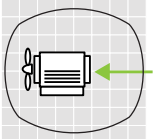
Application

Measurement of voltage / current values through their input signals



Application

Output of voltage / current signals



Application

Motor control through the output of voltage / current signals

Product Lineup

You can choose from a variety of models according to your needed bus specifications, number of I/O channels and onboard functions.

PCI

Analog Input			Analog Output			Digital I/O	Counter
16bit	32ch	2μsec/ch	16bit	2ch	10μsec	DI: 8 DO: 8	2ch
	16ch	1μsec/ch		1ch		DI: 4 DO: 4	
		10μsec/ch			13μsec		
	4ch	20μsec/ch					
		10msec/ch					
12bit	16ch	1μsec/ch	12bit	1ch	6μsec	DI: 4 DO: 4	
		10μsec/ch					
	64ch						
	16ch	20μsec/ch					
			16bit	4ch	20μsec		
			12bit	16ch	10μsec		
				8ch			
				4ch			

Low Profile PCI

16bit	8ch	10μsec/ch	16bit	2ch	10μsec	DI: 4 DO: 4	1ch
	16ch						
			16bit	4ch	10μsec		

Card Bus

16bit	32ch	2μsec/ch	16bit	2ch	10μsec	DI: 4 DO: 4	1ch
	8ch	10μsec/ch					

PCMCI

12bit	8ch	10μsec/ch	12bit	2ch	16μsec	DI: 4 DO: 4

USB

16bit	4ch	Voltage:10μsec/ch+20μsec Current:40μsec/ch+20μsec			
12bit	8ch	10μsec/ch +20μsec			
16bit	4ch		16bit	4ch	Voltage: 10μsec Current: 20μsec
12bit			12bit		
0.01 °C	4ch	150, 40, 5msec/ch			

ISA

Analog I/O

		Page	
Bus Master	Memory on Board	ADA16-32/2(PCI)F	G-06
	Memory on Board	AD16-16U(PCI)EH	G-10
	Memory on Board	AD16-16(PCI)E	G-10
Individual Isolated		ADI16-4C(PCI)	G-12
Individual Isolated	Small Signal	ADI16-4L(PCI)	G-12
	Memory on Board	AD12-16U(PCI)EH	G-10
	Memory on Board	AD12-16(PCI)E	G-10
		AD12-16(PCI)	G-11
		AD12-64(PCI)	G-11
Bus Isolated	Memory on Board	ADI12-16(PCI)	G-12
Individual Isolated		DAI16-4C(PCI)	G-13
		DA12-16(PCI)	G-13
		DA12-8(PCI)	G-13
		DA12-4(PCI)	G-13
	Memory on Board	ADA16-8/2(LPCI)L	G-08
	Memory on Board	AD16-16(LPCI)L	G-08
	Memory on Board	DA16-4(LPCI)L	G-08
Bus Master	Memory on Board	ADA16-32/2(CB)F	G-06
	Memory on Board	ADA16-8/2(CB)L	G-08
		AD12-8(PM)	G-14
Bus Isolated	Memory on Board	ADI16-4(USB)	G-15
Bus Isolated	Memory on Board	ADI12-8(USB)GY	G-15
Bus Isolated	Memory on Board	DAI16-4(USB)	G-15
Bus Isolated	Memory on Board	DAI12-4(USB)GY	G-15
Bus Isolated		PTI-4(USB)	G-14
		ISA	G-16

Pictograms

Bus Specifications

PCI — PCI standard compliant can be used in PC with available PCI bus expansion slot.

Low Profile PCI — PCI standard/Low Profile compliant PC board. A bracket for standard heightl slots is provided.

USB 2.0 — USB standard compliant Can be used with laptop PCs equipped with USB2.0/1.1 ports. Supports USB2.0 high-speed mode(480Mbps).

Card Bus — 32-bit Cardbus compliant PC card standard

PCMCIA — 16-bit bus compliant PC card standard.

Supported Connectors

96-pin Half Pitc | 50-pin Mini-Ribbon | 68-pin 0.8mm Pitch | 37-pin D-SUB

Indicates the number of pins and shapes of connectors used for external connection. The supported cables and accessories will vary depending on these specifications.

We provide a wide variety of cables and accessories to suit your needs.

Cables equipped with connectors on both ends Accessories (Terminal block, etc.) O-01

Cables equipped with a connector on one end Connector set O-05

I/O Points

Analog Input XXch — Maximum number of channels of analog signals that can be input

Analog Onput XXch — Maximum number of channels of analog signals that can be output

Digital I/O XX — Maximum number of points (bits) of digital signals that can be input / output

Counter XXch — Maximum number of channels of counter signals that can be input

Support software

Windows Driver — API-TOOLs for Windows is provided. License-free drivers (both development and runtime) that provide commands to add-on boards or cards in Windows using the standard Win32API function (DLL).

Linux Diver — API-TOOLs for Linux is provided. License-free drivers (both development and runtime) that provide commands to add-on boards or cards using module-style device drivers and the shared library

LabVIEW — VI-DAQ, VI Library for use with National Instruments' LabVIEW can be downloaded from our Web site. With its function and form similar to that of "Data Acquisition VI" of LabVIEW, VI-DAQ allows easy operation of devices without requiring complicated set-up.

MATLAB — ML-DAQ library software for use with MATLB can be downloaded from our Web site. ML-DAQ is library software which allows you to use CONTEC's analog input / output boards with The MathWorks' MATLAB software. This library along with MATLAB and MATLAB's Data Acquisition Toolbox, allows you to control CONTEC boards using MATLAB and to import measurement data directly into MATLAB's environment for analysis.

Points

F series — High-performance multi-function series equipped with analog input, analog output, digital I/O and counter functions. Includes event controller to associate the events of each function for synchronization, buffer memory and bus master transfer function.

Features of F Series Analog Devices G-05

L series — High-precision multi-function series equipped with digital I/O and counter functions. Cost effective boards that include a wide array of sampling functions that can respond to various triggers.

Features of L Series Analog Devices G-07

E series — Equipped with large-capacity buffer memory this highly intelligent series can carry out background sampling under a variety of triggers. A wide array of options are available including simultaneous sampling and independent insulation.

Features of E Series Analog Devices G-09

Bus Isolated — Photo-couplers and isolation amplifiers are used to isolate the PC from the external I/O circuit preventing electrical disturbances. Useful when wiring environment is susceptible to noise generation and there is concern about noise or malfunction of the host PC.

Individual Isolated — Bus isolation, photo-couplers and isolation amplifiers are used to isolate I/O channels from each other preventing interference between each channel. Implements correct sampling even when channel connection devices have different ground levels.

High Speed — Uses high-speed A/D converter (or D/A converter)for faster analog input (or output) than other products.

High Precision — Uses highly precise A/D converter (or D/A converter) for higher precision analog input (or output) than other products.

Small Signal — Input range can be set within a micro-signal range (¡À0.125V, 0-0.25V), Sensor output that has a small surge can be sampled with high precision.

Memory on Board — Product is equipped with data storage buffer memory for analog I/O. Allows for high-speed real-time sampling independent of the processing power of the PC.

Bus Master — Large sampling data can be transferred promptly to PC memory without going through CPU.

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G-02

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Intelligent E series
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High-Quality Hardware and Support Software Tailored for Your Needs

If you want to use a PC for measurement, CONTEC is your choice!

If you want to begin measuring right away but do not want to go through all the trouble...

PC Measurement Software

Free Download Service

We provide various free measurement software for Windows at our Web site. You can easily introduce a PC-based measurement system with a purpose-specific configuration and detailed implementation procedure.

Board × Cable × Terminal Block

Recommended Combination

For Laptop PC

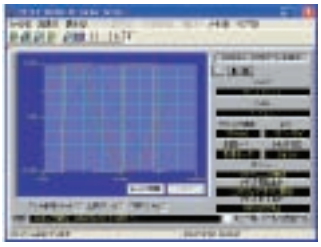
- 8-channel Analog input 16bit, 10µsec/ch
- 2-channel Analog output 16bit, 10µsec

PC card : ADA16-8/2(CB)L
Cable : ADC-68M/50M
BNC terminal unit : ATP-8L

G-08

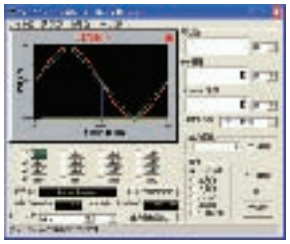
Analog I/O

Special Site http://www.contec.com/pcmeasure/



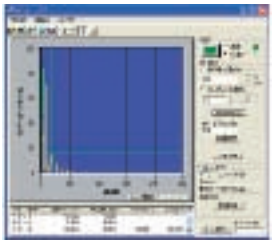
HYPER-LOGGER

High-speed sampling and historical file saving



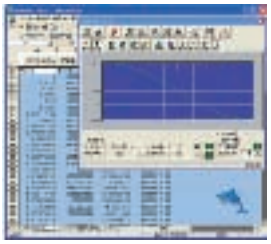
Function Generator

Outputs sine curve, triangular wave, square wave, low voltage and arbitrary wave form



FFT Analyzer

FFT Analyzer
FFT/DFT analysis and filtering
Graph display of power spectrum / amplitude spectrum and file saving



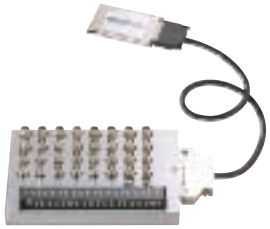
Excel Scope

Displays graphs, logs to Excel spreadsheets, operation and report output

For Laptops

High-speed / multiple channels

- 32-channel Analog input 16bit, 2μsec/ch
- 2-channel Analog output 16bit, 10μsec



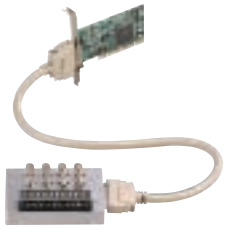
G-06

PC card : ADA16-32/2(CB)F
Cable : ADC-68M/96F
BNC terminal unit : ATP-32F

For Desktops (PCI)

High-speed / multiple channels

- 8-channel Analog input 16bit, 10μsec/ch
- 2-channel Analog output 16bit, 10μsec

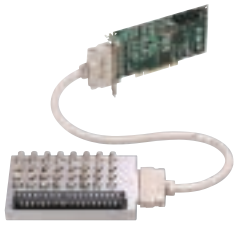


G-08

Low-profile PCI : ADA16-8/2(LPCI)L
Cable : PCB50PS
BNC terminal unit : ATP-8L

High-speed / multiple channels

- 32-channel Analog input 16bit, 2μsec/ch
- 2-channel Analog output 16bit, 10μsec



G-06

PCI board : ADA16-32/2(PCI)F
Cable : PCB96PS
BNC terminal unit : ATP-32F

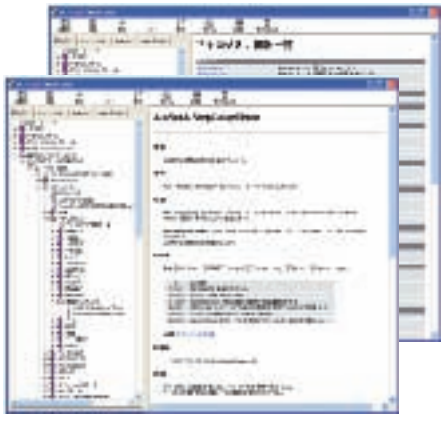
Provided with PCI boards and PC cards

If you want to create your own programs...

API Function Library

API-PAC(W32)

N-02



API-TOOLs for Windows

Commands to add-on boards (cards) are provided via Win32 API functions (DLL).

API-TOOLs for Linux

Commands to add-on boards (cards) are provided via module-style device drivers and the shared library.

Free Downloads

Run time is license free

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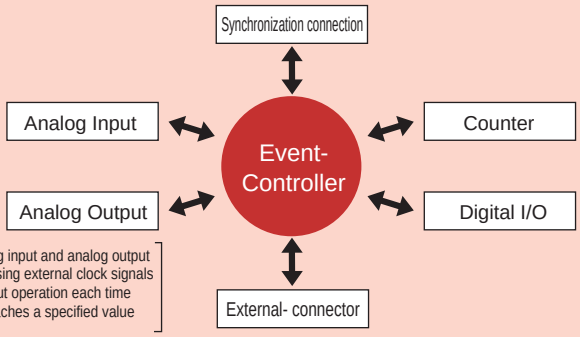
Features of CONTEC's F series

1. Multi-function

Analog input / output, digital input / output and counter functions, for computers with limited numbers of expansion slots to be used in configuring complicated systems.

2. Event controller for diverse sampling control

Provides central management (via hardware) for start/stop/clock control of analog input/output operations. Easily combines event functions and external control signal inputs for high level synchronous control that is independent of controlling software.
Individual operation of each function is also possible.



Arrows indicate the flow of control signals. Major control signals include operation start, operation stop and clock signals.

Ex.1: Conducting both analog input and analog output with the same timing using external clock signals
Ex.2: Starting the analog input operation each time the counter reading reaches a specified value

3. Bus master transfer and complex data input

Both analog input and output utilize bus master transfer (either individually or concurrently), allowing bulk data transfer between the host computer and the board with no additional load on the CPU. Simultaneous transfer is available for data using bus master transfer (analog & digital input, digital output and count data) if they are synchronized with the analog input clock signals. This function enables synchronization between various data in the system.

4. Buffer memory for software independent background processing

Both analog input and output feature onboard buffer memory for use when bus master transfer is not used. This function allows input/output in be performed in the background without depending on system operation status of either the host computer or the software.

5. Setup and adjustment performed via software

Setup and adjustment, such as those concerning the range of analog input and output is done via software, eliminating the need to change jumper settings. It can also recognize any adjustment information that is different from that set at the factory. This allows for optimum settings for individual applications.
Note: software range setting available only on PCI boards

6. Synchronous control connector (ADA16-32/2(PCI)F)

CONTEC's ADA16-32/2(PCI)F is equipped with a synchronous control connector capable of synchronizing control of multiple boards, enabling channel through a increase of the number of boards. This synchronous operation is easily configured.

7. Filtering for facilitation in the connection of external signals

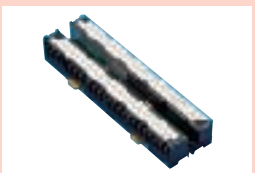
External analog input/output, digital input/output and counter input/output are equipped with a digital filter for the prevention of chatter.

8. Wide array of terminal blocks and cables to meet your demand

We provide a variety of analog input and relay terminal blocks [and cables] to suit for your specific application.

BNC terminal unit
ATP-32F

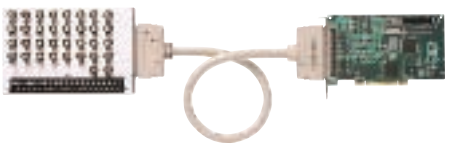
Terminal unit
EPD-96



Shielded cable
Connector on both sides

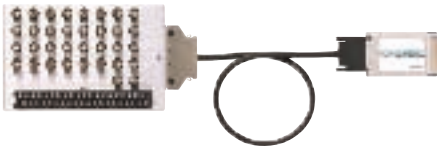
Flat cable
Connector on one side only

Example 1



ADA16-32/2(PCI)F + PCB96PS-0.5P + ATP-32F

Example 2



ADA16-32/2(CB)F + ADC-68M/96F + ATP-32F

Multi-function F series

Analog I/O

PCI | 96-pin Half Pitc | Analog Input 32ch | Analog Onput 2ch | Digital I/O 8 | Counter 2ch | F series | High Precision | High Speed | Memory on Board | Bus Master | CE

Windows Driver | Linux Diver | MATLAB | LabVIEW

High Speed Multi-function A/D

ADA16-32/2(PCI)F

- Event Controller for diverse sampling control
- Bus Master Transfer alleviates the load on host computer's CPU
- 64k data buffer memory enables background processing

PCI | 68-pin Half Pitc | Analog Input 32ch | Analog Onput 2ch | Digital I/O 4 | Counter 1ch | F series | High Precision | High Speed | Memory on Board | Bus Master | CE

Windows Driver | Linux Diver | MATLAB | LabVIEW

16-bit High Speed Multi-function A/D

ADA16-32/2(CB)F

- Event Controller for diverse sampling control
- Bus Master Transfer alleviates the load on host computer's CPU
- 64k data buffer memory enables background processing

* Optional cable ADC-68M/96F is required.

* This card cannot be used with another card requiring external connections when used on a PC with 2 TYPEII PC card slots. For simultaneous use, the other card must be a PC card (excluding memory card) which does not require an external connector.

Model		ADA16-32/2(PCI)F	ADA16-32/2(CB)F
Analog Input	Channels	32 single-ended, 16 differential	
	Range	Bipolar: ±10V, ±5V, ±2.5V or Unipolar: 0~+10V, 0~+5V, 0~+2.5V	Bipolar: ±10V
	Impedance	1MΩ or more	
	Resolution	16bit	
	Conversion Speed	2μsec/ch (Max.)	
	Conversion Accuracy *1	±5LSB	
	Buffer Memory	64k-word FIFO or 64k-word RING	
Analog Output	Channels	2	
	Range	Bipolar: ±10V, ±5V, ±2.5V, ±1.25V or Unipolar: 0~+10V, 0~+5V, 0~+2.5V	Bipolar: ±10V
	Impedance	1Ω or less	
	Resolution	16bit	
	Conversion Speed	10μsec/ch (Max.)	
	Conversion Accuracy	±3LSB	
	Buffer Memory	64K-word FIFO or 64K-word RING	
Digital I/O	Input	8 TTL-level (positive logic)	4 LVTTL-level (positive logic)
	Output	8 TTL-level (positive logic)	4 LVTTL-level (positive logic)
Counter	Channels	2	
	Counting System	32-bit Up count	
	Max. count	32-bit (binary data)	
Interrupts		1 interrupt	
I/O Address		64 ports, 256 ports × 1 occupation	64 ports, 256 ports × 1 occupation
Power Consumption (Max.)		5VDC 1100mA	3.3VDC 600mA
Bus / Dimensions (mm)		PCI (32bit, 33MHz, 5V or 3.3V*2) / 176.41(L) × 105.68(H)	PC Card Standard correspondent CardBus / TYPE II
Connector		PCR-96LMD [HONDA Tsushin Kogyo] or equivalent	68-pin 0.8mm Pitch
Options	Software	-	
	Accessories	DTP-64(PC)*3, EPD-96*3, ATP-8*3, ATP-32F*3	DTP-64(PC)*4, EPD-96*4, ATP-8*4, ATP-32F*4
	Cables / Connectors	PCA96PS-0.5P/1.5P, PCB96PS-0.5P/1.5P, PCA96P-1.5, PCB96P-1.5, CN5-H96F	PCA68PS-0.5P/1.5P, ADC-68M/96F

Note:
*1: When using a signal source with a high-speed built-in operational amplifier
*2: +5V power must be supplied from PCI bus slot.
*3: Requires use of optional cable PCB96PS. (0.5m is recommended)
*4: Requires use of optional cable ADC-68M/96F.

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Low-cost Multi-function L series

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Features of L Series - Low-Cost and Multi-Functional

Low-cost and multi-function

Contec's L Series consists of low-cost / high-precision multi-function analog boards / cards. Available in 4 different models to meet specific applications, they allow you to set up an analog I/O system with high cost performance.

For Desktop PC (Low Profile PCI/PCI)

◎ADA16-8/2(LPCI)L	16-bit Analog Input	16-bit Analog output	Digital I/O	Counter
◎AD16-16(LPCI)L	16-bit Analog Input		Digital I/O	Counter
◎DA16-4(LPCI)L		16-bit Analog output	Digital I/O	Counter

For Note PC (CardBus)

◎ADA16-8/2(CB)L	16-bit Analog Input	16-bit Analog output	Digital I/O	Counter

* ADA16-8/2(LPCI) and ADA-16-8/2(CB) are compatible with one another both in their functions and pin-out. Due to their high versatility, a system created on a desktop PC can be replaced by a system created on a laptop with no modifications.

Wide array of sampling functions

Software / conversion data comparison (level comparison) and external triggers (6 points of analog I/O control) are supported for analog I/O start / stop conditions, allowing for the control of sampling start / stops at optimal timing.

Buffer memory

Onboard buffer memory is provided both for analog input and analog output (1k word). This allows for background analog I/O that is independent of software and PC operation status, and enables delay sampling, sampling which is implemented after the stop condition has been established.

Setup and adjustment via software

Setup and adjustment, such as those concerning the range of analog input and output is done via software, eliminating the need to change jumper settings. It can also recognize adjustment information that is different from that which was set at the factory. This allows for optimal settings for individual applications.

Filtering for facilitation in the connection of external signals

External analog input / output, digital input / output and counter input / output are equipped with a digital filter to prevent chatter.

Variety of cables and terminal blocks to meet specific application needs

Our compact terminal blocks provide excellent portability for a laptop data logger system.

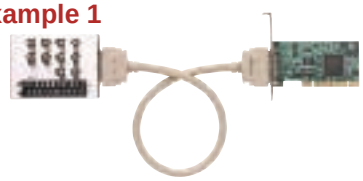
BNC terminal unit
ATP-8L

M3 terminal unit
EPD-50A

Shielded cable
Connector on both sides

Flat cable
Connector on one side only

Example 1



ADA16-8/2(LPCI)L +
PCB50PS-0.5P(Shielded cable) +
ATP-8L(BNC terminal unit)

Example 2

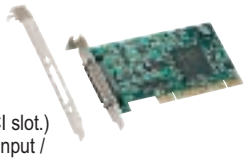
ADA16-8/2(CB)L +
ADC-68M/50M(Shielded cable) +
EPD-50A(M3 Terminal unit)

Low-cost Multi-function L series

Analog I/O

Low Profile PCI | 50-pin Mini-Ribbon | Analog Input 8ch | Analog Onput 2ch | Digital I/O 4 | Counter 1ch | L series | High Precision | Memory on Board | CE
Windows Driver | Linux Diver | MATLAB | LabVIEW

Low-cost 16-bit Multi-function A/D
ADA16-8/2(LPCI)L



- Low Profile PCI -compliant (includes bracket for use in standard PCI slot.)
- On-board control mechanism provides analog input / output, timed input / output and input/output that is synchronized with external signals
- 1k data buffer memory enables background processing
- Software for analog input / output correction

Low Profile PCI | 50-pin Mini-Ribbon | Analog Input 16ch | Analog Onput — | Digital I/O 4 | Counter 1ch | L series | High Precision | Memory on Board | CE
Windows Driver | Linux Diver | MATLAB | LabVIEW

Low-Cost 16-Bit Analog to Digital Input
AD16-16(LPCI)L

- Low Profile PCI -compliant (includes bracket for use in standard PCI slot.)
- On-board control mechanism provides analog input / output, timed input / output and input/output that is synchronized with external signals
- 1k data buffer memory enables background processing.
- Software for analog input / output correction

Low Profile PCI | 50-pin Mini-Ribbon | Analog Input — | Analog Onput 4ch | Digital I/O 4 | Counter 1ch | L series | High Precision | Memory on Board | CE
Windows Driver | Linux Diver | MATLAB | LabVIEW

Low-Cost 16-Bit Digital to Analog Output
DA16-4(LPCI)L

- Low Profile PCI -compliant (includes bracket for use in standard PCI slot.)
- On-board control mechanism provides analog input / output, timed input / output and input/output that is synchronized with external signals
- 1k data buffer memory enables background processing
- Software for analog input / output correction

Card Bus | 68-pin 0.8mm Pitch | Analog Input 8ch | Analog Onput 2ch | Digital I/O 4 | Counter 1ch | L series | High Precision | Memory on Board | CE
Windows Driver | Linux Diver | MATLAB | LabVIEW

Low-cost 16-bit Multi-function A/D
ADA16-8/2(CB)L

- On-board control mechanism provides analog input / output, timed input / output and input/output that is synchronized with external signals
- 1k data buffer memory enables background processing
- Software for analog input / output correction

* This card cannot be used with another card requiring external connections when used on a PC with 2 TYPEII PC card slots. For simultaneous use, the other card must be a PC card (excluding memory card) which does not require an external connector.

Model		ADA16-8/2(LPCI)L	AD16-16(LPCI)L	DA16-4(LPCI)L	ADA16-8/2(CB)L
Analog Input	Channels	8 single-ended	16 single-ended	-	8 single-ended
	Range	Bipolar: ±10V		-	Bipolar: ±10V
	Impedance	1MΩ or more		-	1MΩ or more
	Resolution	16bit		-	16bit
	Conversion Speed	10µsec/ch (Max.)		-	10µsec/ch (Max.)
	Conversion Accuracy *1	±5LSB		-	±5LSB
	Buffer Memory	1k-word		-	1k-word
Analog Output	Channels	2	-	4	2
	Range	Bipolar: ±10V	-	Bipolar: ±10V	
	Impedance	1Ω or less	-	1Ω or less	
	Resolution	16bit	-	16bit	
	Conversion Speed	10µsec/ch (Max.)	-	10µsec/ch (Max.)	
	Conversion Accuracy *1	±3LSB	-	±3LSB	
	Buffer Memory	1k-word	-	1k-word	
Digital I/O	Input	4 TTL-level (positive logic)			4 LVTTL-level (positive logic)
	Output	4 TTL-level (positive logic)			4 LVTTL-level (positive logic)
Counter	Channels	1			
	Counting System	32-bit Up count			
	Max. count	32-bit (binary data)			
Interrupts		1 interrupt			
I/O Address		Any 64-byte boundary			
Power Consumption (Max.)		5VDC 380mA	5VDC 260mA	5VDC 440mA	3.3VDC 500mA
Bus / Dimensions (mm)		PCI (32bit, 33MHz, 5V or 3.3V*2) / 176.41(L) × 105.68(H)			PC Card Standard correspondent CardBus / TYPE II
Connector		10250-52A2JL [3M] or equivalent			68-pin 0.8mm Pitch
Options	Software	-			
	Accessories	EPD-50A*3, ATP-8L*3	EPD-50A*3, ATP-8L*3*4	EPD-50A*3, ATP-8L*3*5	EPD-50A*6, ATP-8L*6
	Cables / Connectors	PCB50PS-0.5P/1.5P, PCA50PS-0.5P/1.5P			PCA50PS-0.5P/1.5P, ADC-68M/50M

Note:
*1: When using a signal source with a high-speed built-in operational amplifier
*2: +5V power must be supplied from PCI bus slot.
*3: Requires use of optional cable PCB50PS-0.5P/1.5P.
*4: Maximum of 8 analog input channels available
*5: Maximum of 2 analog output channels available
*6: Requires use of optional cable ADC-68M/50M.

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Features of E series

1. Bulk buffer memory

Data bulk buffer memory (FIFO or ring buffer) capable of storing up to 262,144 bits of data, enabling high speed sampling to be executed independently of the processing power of the PC. Either FIFO or ring format can be selected as memory type.

2. Diverse sampling control

Sampling start / stop can be controlled via software, by using the signal change of specified channels or by utilizing external digital signals as a trigger. Consecutive samplings can be synchronized with the onboard timer or with external pulse signals.

3. Interrupt events

Interrupt events can be generated by factors such as sampling termination, changes in external signal or sampling errors allowing board status to be monitored with no additional load on the host computer,

4. Analog output

Independent 1-channel analog output (digital to analog conversion)

5. Digital input / output

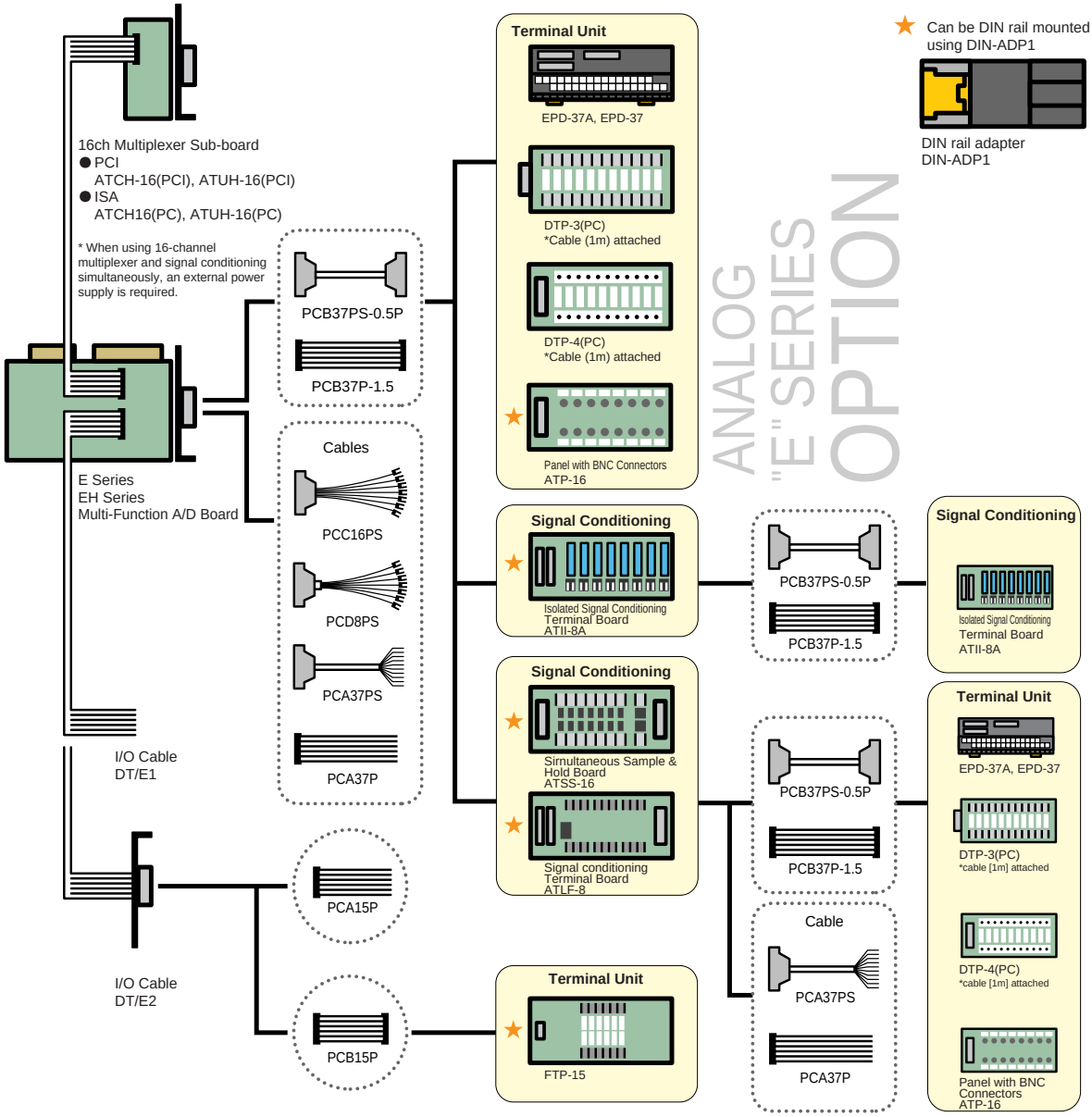
4 points of TTL level digital input and 4 points of digital output

Dedicated function upgrades

A variety of functions can be added by using available add-on function boards

- **Channel expansion**
  Allows an analogue E Series 16 channel single-ended / 8 channel differential board to provide 32 single-ended channels / 16 differential channels
- **Insulation Amplifier**
  Provides both bus and channel-to-channel insulation
- **Concurrent sampling**
  Allows 16 channels to be sampled in the same timing
- **Low Pass Filter**
  Can lower commercial power frequency and provide wide area filtering (antialiasing)

Accessories & Cables for E series



Intelligent E series

Analog I/O

PCI | 37-pin D-SUB | Analog Input 16ch | Analog Onput 1ch | Digital I/O 4 | Counter — | E series | High Speed | Memory on Board | CE
Windows Driver | Linux Diver | LabVIEW

High Speed Multi-function A/D
AD12-16U(PCI)EH

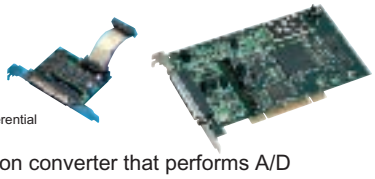
16ch Multiplexer Sub-Board ATUH-16(PCI)
16 single-ended or 8 differential inputs can be added

- 1µsec/ch(1MHz) A/D conversion speed
- 16MB data buffer memory (FIFO or ring buffer) enables sampling to be executed independently of the processing power of the PC
- Basic function is compatible with AD12-16U(PC)E

PCI | 37-pin D-SUB | Analog Input 16ch | Analog Onput 1ch | Digital I/O 4 | Counter — | E series | High Precision | High Speed | Memory on Board | CE
Windows Driver | Linux Diver | LabVIEW

16-bit High Speed Multi-function A/D
AD16-16U(PCI)EH

16ch Multiplexer Sub-Board ATUH-16(PCI)
16 single-ended or 8 differential inputs can be added

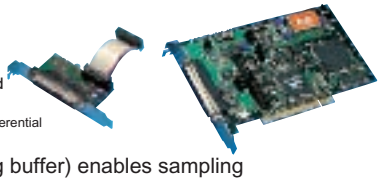


- Equipped with a high-speed, high precision converter that performs A/D conversion at 1 microsecond per channel (max) with a 16-bit resolution
- 16MB data buffer memory (FIFO or ring buffer) enables sampling to be executed independently of the processing power of the PC

PCI | 37-pin D-SUB | Analog Input 16ch | Analog Onput 1ch | Digital I/O 4 | Counter — | E series | Memory on Board | CE
Windows Driver | Linux Diver | LabVIEW

Multi-function A/D
AD12-16(PCI)E

16ch Multiplexer Sub-Board ATUH-16(PCI)
16 single-ended or 8 differential inputs can be added

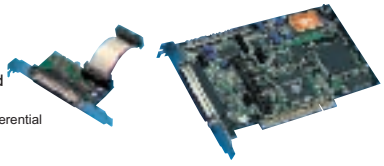


- 256KB data buffer memory (FIFO or ring buffer) enables sampling to be executed independently of the processing power of the PC
- Variety of triggers available for starting/stopping data input

PCI | 37-pin D-SUB | Analog Input 16ch | Analog Onput 1ch | Digital I/O 4 | Counter — | E series | High Speed | Memory on Board | CE
Windows Driver | Linux Diver | LabVIEW

High Speed Multi-function A/D
AD16-16(PCI)E

16ch Multiplexer Sub-Board ATUH-16(PCI)
16 single-ended or 8 differential inputs can be added



- High-precision 16-bit A/D converter
- 256KB data buffer memory (FIFO or ring buffer) enables sampling to be executed independently of the processing power of the PC

Model		AD12-16U(PCI)EH	AD16-16U(PCI)EH	AD12-16(PCI)E	AD16-16(PCI)E
Input channels		16 single-ended, 8 differential			
Output channels		1			
Resolution		12bit	16bit	12bit	16bit
Analog Input	Range	±10V, ±5V, ±2.5V, 0~+10V, 0~+5V	±10V, ±5V, 0~+10V, 0~+5V	±10V, 0~+10V	±10V, ±5V, 0~+10V, 0~+5V
	Gain	-		×1, ×2, ×4, ×8	-
	Conversion Speed	1µsec/ch (Max.)		10µsec/ch (Max.)	
	Conversion Accuracy *3	±3LSB*1	±5LSB*1*4	±2LSB (Gain: ×1, ×2), ±4LSB (Gain: ×4, ×8) *2	±5LSB*2
	Impedance	1MΩ or more			
Analog Output	Range	±10V, ±5V, 0~+10V	±10V, 0~+10V	±10V, ±5V, 0~+10V	±10V, 0~+10V
	Rating	±5mA			
	Conversion Speed	6µsec/ch (Max.)	10µsec/ch (Max.)	6µsec/ch (Max.)	13µsec/ch (Max.)
	Conversion Accuracy	±1/2LSB*1	±3LSB*1	±1/2LSB*2	±2LSB*2
	Impedance	1Ω or less			-
Trigger		Start Trigger: 3 modes, Stop Trigger: 4 modes			
Isolation		-			
Timer		2~7 × 10^{13} µsec			
Digital I/O		General I/O: Input 4, Output 4 (TTL positive logic)			
Interrupts		One interrupt request signal as INTA		Request Events: A total of 15 types are available including the one used for terminating the operation. Request Levels: One interrupt (Enable or Disable is selectable)	
I/O Address		Any 32-byte boundary		Any 16-byte boundary	
Power Consumption (Max.) *5		5VDC 1200mA	5VDC 1400mA	5VDC 1100mA	5VDC 1300mA
Bus / Dimensions (mm)		PCI (32bit, 33MHz, 5V) / 176.41(L) × 106.68(H)			
Connector		CN1(AIO): 37-pin female D-type, CN2(DIO): 16-pin male Header			
Options	Software	-			
	Accessories	DTP-3(PC), DTP-4(PC), ATP-16*6, FTP-15*7, EPD-37A*6, EPD-37*6, ATSS-16*6, ATII-8A*6, ATLF-8*6, ATUH-16(PCI)		DTP-3(PC), DTP-4(PC), ATP-16 *8, FTP-15 *7, EPD-37A *8, EPD-37 *8, ATSS-16 *8, ATII-8A *8, ATLF-8 *8, ATUH-16(PCI)	
	Cables / Connectors	PCA37P-1.5, PCA37PS-0.5P/1.5P, PCB37PS-0.5P/1.5P, PCA15P-1.5, PCB15P-1.5*9, PCC16PS, PCD8PS, DT/E1, DT/E2, CN5-D37M			

Note:
*1: When operating temperature is close to 0°C or 50°C (operating extremes) the non-linearity error may increase. A ±0.1% LSB non-linearity error (max) is possible.
*2: Linearity error when operating in 25°C environment *3: When using a signal source with a high-speed built-in operational amplifier
*4: An error of about 0.02% of the maximum range value may occur with an un-isolated bipolar setting of ±5V or an un-isolated unipolar setting of 0~+5V.
*5: If an external device requires the board to supply +5VDC from the CN1 or CN2 connectors, the power consumption of the board will be larger.
*6: Requires use of optional cable PCB37PS-*P (0.5m is recommended)
*7: Requires use of optional cable DT/E2 and PCB15P *8: Requires use of optional cable PCB37P or PCB37PS
*9: PCB15P is a cable for FTP-15 terminal panel.

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PCI | 96-pin Half Pitch | Analog Input 16ch | Analog Onput — | Digital I/O 4 | Counter — | CE

Windows Driver | Linux Diver | LabVIEW

Analog to Digital
AD12-16(PCI)

- Sampling Control function enables data input via onboard program timer or an external clock
- Independent programmable timer and TTL-level external trigger

PCI | 96-pin Half Pitch | Analog Input 64ch | Analog Onput — | Digital I/O 4 | Counter — | CE

Windows Driver | Linux Diver | LabVIEW

Analog to Digital
AD12-64(PCI)

- Sampling Control function enables data input via onboard program timer or an external clock
- Independent programmable timer and TTL-level external trigger

Model		AD12-16(PCI)	AD12-64(PCI)
Input channels		16 single-ended, 8 differential	64 single-ended, 32 differential
Resolution		12bit	
Analog Input	Range	±10V, ±5V, ±2.5V, ±1.25V, 0~+10V, 0~+5V, 0~+2.5V, 0~+1.25V (each channel is settable by software)	
	Gain	-	
	Conversion Speed *1	10µsec/ch (Max.)	
	Conversion Accuracy *2	±10V, ±5V, 0~+10V, 0~+5V: ±2LSB ±2.5V, ±1.25V, 0~+2.5V: ±4LSB, 0~+1.25V: ±8LSB	
	Impedance	1MΩ or more	
Trigger		1 TTL level input	
Isolation		-	
Timer		0.5µsec~17min (selectable in 250nsec intervals)	
Digital I/O		General I/O: Input 4, Output 4 (TTL positive logic)	
Interrupts		Request Events: 8 modes Request Levels: One interrupt request signal as INTA	
I/O Address		Any 32-byte boundary	
Power Consumption (Max.)		5VDC 700mA	
Bus / Dimensions (mm)		PCI (32bit, 33MHz, 5V) / 176.41(L) × 106.68(H)	
Connector		PCR-E96LMD [HONDA Tsushin Kogyo] or equivalent	
Options	Software	-	
	Accessories	EPD-96*3	
	Cables / Connectors	PCA96P-1.5, PCB96P-1.5, PCA96PS-0.5P/1.5P, PCB96PS-0.5P/1.5P, CN5-H96F	

*1: Actual conversion speed depends upon operating system and drivers.
*2: When using a signal source with a high-speed built-in operational amplifier
*3: Requires use of optional cable PCB96P or PCB96PS

Note:

Standard

Analog I/O

PCI | 37-pin D-SUB | Analog Input 16ch | Analog Onput — | Digital I/O 4 | Counter — | Bus Isolated | Memory on Board | CE

Windows Driver | Linux Diver | LabVIEW

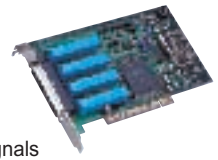
12-bit Isolated Analog to Digital
ADI12-16(PCI)

- Isolation between PC signal and external analog / digital signals
- 256KB data buffer memory (FIFO or ring buffer)
- Variety of triggers available for starting/stopping data input.
- 16 single-ended or 8 differential inputs (Current input = 8 max)

PCI | 37-pin D-SUB | Analog Input 4ch | Analog Onput — | Digital I/O — | Counter — | Individual Isolated | High Precision

Windows Driver | Linux Diver | LabVIEW

16-bit Isolated Analog to Digital
ADI16-4C(PCI)

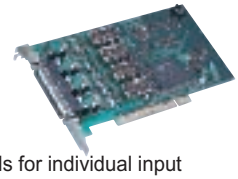


- Isolation between PC signal and external analog / digital signals
- Small FIFO available in Windows environment for imporved sampling speed
- Each channel's input range can be set independently

PCI | 37-pin D-SUB | Analog Input 4ch | Analog Onput — | Digital I/O — | Counter — | Individual Isolated | High Precision | Small Signal

Windows Driver | Linux Diver | LabVIEW

16-bit Isolated Analog to Digital (Sensor Input)
ADI16-4L(PCI)



- Independent isolated channels allow different ground levels for individual input
- Measures low level voltage with discontinuity detection circuit for thermocouple input
- Onboard temperature sensor can be used for cold-junction reference during thermocouple measurement

Model		ADI12-16(PCI)	ADI16-4C(PCI)	ADI16-4L(PCI)
Input channels		16 single-ended, 8 differential	4 single-ended	4 differential
Resolution		12bit	16bit	
Analog Input	Range	±10V, 0~+10V, 4~20mA *1	±10V, ±5V, 0~+10V, 0~+5V, 4~20mA	±1.25V, ±0.125V, 0~+2.5V, 0~+0.25V
	Gain	×1, ×2, ×4, ×8 (software selectable)	-	
	Conversion Speed	20µsec/ch (Max.)	20µsec/ch (Max.) *3	10msec/ch (Max.) *3
	Conversion Accuracy	±2LSB (input gain: ×1, ×2) at voltage input *2 ±4LSB (input gain: ×4, ×8) at voltage input *2 ±3LSB (input gain: ×1) at current input *2	±10V: ±32LSB, ±5V, 0~+10V: ±64LSB, 0~+5V: ±128LSB, 4~20mA: ±160LSB	±15LSB
	Impedance	Voltage input: 1MΩ or more, Current input: 250Ω	Voltage input: 1MΩ or more, Current input: 1kΩ	1MΩ or more
Digital trigger		1 opto-isolated input (share one of digital input)	-	
Conversion start trigger		Software command, Analog level, External digital input	-	
Conversion stop trigger		Storage complete/Software/Converted data comparison/Insulated external input digital signal	-	
Trigger		-	1 opto-isolated input (for high sink current output)	
Isolation		Bus isolation	Individual isolation	
Timer		-	0.5µsec~17min (selectable in 250nsec intervals)	
Digital I/O		4 opto-isolated input (for high sink current output), 4 Opto-isolated Open Collector Output (Current sinking type)	-	
Interrupts		Request Events: 13 modes Request Levels: One interrupt (Enable or Disable is selectable)	Request Events: 9 modes Request Levels: One interrupt request signal as INTA	Request Events: 8 modes Request Levels: One interrupt request signal as INTA
I/O Address		Any 16-byte boundary	Any 32-byte boundary	
Power Consumption (Max.)		5VDC 1200mA	5VDC 1100mA	5VDC 1200mA
Bus / Dimensions (mm)		PCI (32bit, 33MHz, 5V) / 176.41(L) × 106.68(H)		
Connector		CN1(AIO): 37-pin female D-type CN2(DIO): 16-pin male Header	37-pin female D-type	
Options	Software	-		
	Accessories	DTP-3(PC), DTP-4(PC), EPD-37A*5, EPD-37*5, FTP-15*6, ATLF-8*4*5, ATII-8A*4*5, ATP-16*5	DTP-3(PC), DTP-4(PC), EPD-37A*5, EPD-37*5	
	Cables / Connectors	PCA37P-1.5, PCB37P-1.5, PCA37PS-0.5P/1.5P, PCB37PS-0.5P/1.5P, PCA15P, PCB15P*7, PCC16PS, PCD8PS, DT/E1, DT/E2, CN5-D37M	PCA37P-1.5, PCA37PS-0.5P/1.5P, PCB37P-1.5, PCB37PS-0.5P/1.5P, CN5-D37M	

Note: *1: At 4~20mA current loop mode, ×1 input gain can be used. *2: When using a signal source with a high-speed built-in operational amplifier
*3: Actual conversion speed depends upon operating system and drivers. *4: External power supply is required. *5: Requires use of optional cable PCB37P or PCB37PS
*6: Requires use of optional cable DT/E2 and PCB15P *7: PCB15P is a cable for FTP-15 terminal panel.

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PCI | 37-pin D-SUB | Analog Input — | Analog Onput 4ch | Digital I/O — | Counter — | CE | Windows Driver | Linux Diver | LabVIEW

Digital to Analog Output
DA12-4(PCI)

- 4 channels for converting digital signals to analog voltages
- Updates output voltage through use of sampling clock
- Independent, TTL-level external trigger input function

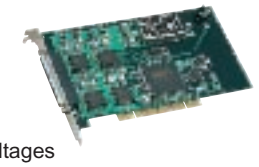
PCI | 37-pin D-SUB | Analog Input — | Analog Onput 8ch | Digital I/O — | Counter — | CE | Windows Driver | Linux Diver | LabVIEW

Digital to Analog Output
DA12-8(PCI)

- 8 channels for converting digital signals to analog voltages
- Updates output voltage through use of sampling clock
- Independent, TTL-level external trigger input function

PCI | 37-pin D-SUB | Analog Input — | Analog Onput 16ch | Digital I/O — | Counter — | CE | Windows Driver | Linux Diver | LabVIEW

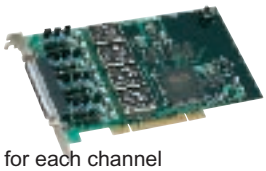
Digital to Analog Output
DA12-16(PCI)



- 16 channels for converting digital signals to analog voltages
- Updates output voltage through use of sampling clock
- Independent, TTL-level external trigger input function

PCI | 37-pin D-SUB | Analog Input — | Analog Onput 4ch | Digital I/O — | Counter — | CE | Windows Driver | Linux Diver | LabVIEW

16-bit Isolated Digital to Analog Output
DAI16-4C(PCI)



- Independent high-precision digital to analog converter for each channel
- Small FIFO available
- Input range for each channel can be set independently

Model		DA12-4(PCI)	DA12-8(PCI)	DA12-16(PCI)	DAI16-4C(PCI)
Output channels		4	8	16	4
Resolution		12bit			16bit
Analog Output	Range	±10V, ±5V, 0~+10V (each channel software selectable)			±10V, 0~+10V, 0~20mA
	Rating	±5mA			Voltage output: ±5mA, Current output: Max. 500Ω
	Conversion Speed	10μsec/ch (Max.)			20μsec/ch (Max.)
	Conversion Accuracy *1	±3LSB			±5LSB (±15LSB only when current is 0~20mA)
	Impedance	10Ω or less			Voltage output: 10Ω or less
Trigger		1 TTL level input			1 opto-isolated input (for high sink current output)
Isolation		-			Individual isolation
Timer		0.5μsec~17min (selectable in 250nsec intervals)			
Digital I/O		-			
Interrupts		Request Events: 8 modes, Request Levels: One interrupt request signal as INTA			Request Events: 9 modes, Request Levels: One interrupt request signal as INTA
I/O Address		Any 32-byte boundary			
Power Consumption (Max.)		5VDC 600mA	5VDC 800mA	5VDC 1400mA	5VDC 2200mA
Bus / Dimensions (mm)		PCI (32bit, 33MHz, 5V) / 176.41(L) × 106.68(H)			
Connector		37-pin female D-type			
Options	Software	-			
	Accessories	DTP-3(PC), DTP-4(PC), EPD-37A*2, EPD-37*2, ATP-16*2			DTP-3(PC), DTP-4(PC), EPD-37A*2, EPD-37*2
	Cables / Connectors	PCA37P-1.5, PCB37P-1.5, PCA37PS-0.5P/1.5P, PCB37PS-0.5P/1.5P, PCC16PS, CN5-D37M			PCA37P-1.5, PCB37P-1.5, PCA37PS-0.5P/1.5P, PCB37PS-0.5P/1.5P, CN5-D37M

*1: Actual conversion speed depends upon operating system and drivers.
*2: Requires use of optional cable PCB37P or PCB37PS

Note:

Standard

Analog I/O

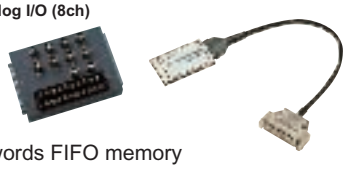
PCMCIA | 37-pin D-SUB | Analog Input 8ch | Analog Onput 2ch | Digital I/O 4 | Counter — | Memory on Board | CE

Windows Driver | LabVIEW

8 Channels 12-bit Multi-function Card
AD12-8(PM)

- 8 single-ended analog input, and 16,384 words FIFO memory
- Sampling Clock selectable between internal and external clock

BNC Terminal Unit for Analog I/O (8ch)
ATP-8
* Please visit our website for more



USB 2.0 | Analog Input 4ch | Analog Onput — | Digital I/O — | Counter — | Bus Isolated

Windows Driver

Pt100 Temperature Sensor Input Module (AC adapter & USB cable included)
PTI-4(USB)

NEW

- EC/JIS-compliant platinum resistance temperature sensor (Pt100, JPt100)
- Supports acquisition of resistance and temperature, averaging and alarm output for temperature measurement
- Expansion of input channels possible with use of extension modules (5 sets max)
- Sample development and utility debugging software included

Model		AD12-8(PM)
Analog Input	Channels	8 single-ended
	Range	-10V~+10V
	Impedance	20kΩ or more
	Resolution	12bit
	Conversion Speed	10μsec/ch (Max.)
	Buffer Memory	16,384 words (FIFO type)
	Internal Clock	10,000nsec~104,857,600nsec (selectable in 100nsec intervals)
	External Clock Input	1 TTL level (falling edge)
	Simultaneous Sampling	1 TTL level
	Control Output	1 TTL level
Analog Output	Channels	2
	Range	0V~+4.095V
	Resolution	12bit
	Conversion Speed	16μsec/ch (Max.)
	Maximum Drive	5mA
Digital I/O	Input	4 TTL (positive logic)
	Output	4 TTL (positive logic)
Interrupts		One of IRQ 3~7, 9~12, 14 or 15
I/O Address		Any 16-byte boundary
Power Consumption (Max.)		5VDC 100mA
Bus / Dimensions (mm)		PCMCIA Rel.2.0/JEIDA 4.1 upper / Type II
Connector		37-pin female D-type
Options	Software	-
	Accessories	DTP-3(PC), DTP-4(PC), EPD-37A*1, EPD-37*1, ATP-8
	Cables / Connectors	PCA37P-1.5, PCB37P-1.5, PCA37PS-0.5P/1.5P, PCB37PS-0.5P/1.5P, CN5-D37M
Note:		*1: Requires use of optional cable PCB37P or PCB37PS

Model		PTI-4(USB)
Channels		4
Compatible Platinum RTD		Pt100 (JIS C1604-1997, IEC 751 1983), JPt100 (JIS C1604-1989)
Wiring Method		3-lead type, 4-lead type
Temperature Measurement Range		Pt100: -200~850°C JPt100: 510°C
Accuracy	Temperature 0~50°C	±0.3°C*1
	Temperature 15~35°C	±0.15°C*1
Resolution		0.01°C
Conversion Speed		Selectable from 150 ms/40 ms/5 ms per channel
Output Current for Temperature Detection		1mA
Isolation Method		Across platinum RTD & power supply: Photocoupler isolation Across platinum RTD input channel: No isolation
Connector		FK-MC0.5/9-ST-2.5 [PHOENIX CONTAT]
Max. Number of Writes to Flash ROM		100,000
USB Speed		12Mbps (Full Speed), 480Mbps (High Speed)
Power Consumption (Max.)		5VDC(±5%) 800mA *2
Dimensions (mm)		50.4(W) × 64.7(D) × 94.0(H) (Exclusive of any protrusions)
Weight (main unit)		200g
Included AC adapter (POA-AD22)		AC90~264V, DC5.0V±5% 2.0A (Max.), Cable length: 1.4m
Included Cable		an 1.8m USB cable
Options	Software	-
	Applicable Module *3	PTI-4(FIT)GY
	Applicable Power Supply *3	POA-AD22, POW-AD13GY, POW-AD22GY, POW-AD25GY, POW-DD10GY, POW-DD43GY
Note:		*1: When conversion speed is set to 150ms *2: Please use attached AC adapter or optional power supply unit. *3: Please refer to P-04 or visit our web site for the details of the Applicable Module.

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USB 2.0 | Analog Input 4ch | Analog Onput — | Digital I/O — | Counter — | Bus Isolated | Memory on Board | Windows Driver | LabVIEW

Isolated Analog to Digital (USB cable & AC adapter included)

ADI16-4(USB) NEW

- Onboard 256K data memory
- Voltage input and current input are both supported.
- Expansion of input channels possible with use of extension modules (3 sets max)
- Sample development and utility debugging software included

USB 2.0 | Analog Input 8ch | Analog Onput — | Digital I/O — | Counter — | Bus Isolated | Memory on Board | CE | Windows Driver | LabVIEW

Isolated Analog to Digital (USB cable & AC adapter included)

ADI12-8(USB)GY

- Onboard 256K data memory
- Screwless connectors for easy wiring - no special tools needed
- Expansion of input channels possible with use of extension modules (3 sets max)
- Sample development and utility debugging software included

USB 2.0 | Analog Input — | Analog Onput 4ch | Digital I/O — | Counter — | Bus Isolated | Memory on Board | Windows Driver | LabVIEW

Isolated Digital to Analog (USB cable & AC adapter included)

DAI16-4(USB) NEW

- Able to store 256K of conversion data and output desired wave form cyclically.
- Screwless connectors for easy wiring - no special tools needed
- Expansion of output channels possible with use of extension modules (3 sets max.)
- Sample development and utility debugging software included

USB 2.0 | Analog Input — | Analog Onput 4ch | Digital I/O — | Counter — | Bus Isolated | Memory on Board | CE | Windows Driver | LabVIEW

Isolated Digital to Analog (USB cable & AC adapter included)

DAI12-4(USB)GY

- Able to store 256K of conversion data and output desired wave form cyclically.
- Screwless connectors for easy wiring - no special tools needed
- Expansion of output channels possible with use of extension modules (3 sets max.)
- Sample development and utility debugging software included

Model		ADI16-4(USB)	ADI12-8(USB)GY	DAI16-4(USB)	DAI12-4(USB)GY
Input channels		4 differential	8 differential	-	
Output channels		-		4	
Resolution		16bit	12bit	16bit	12bit
Input Type		Voltage / Current (bus signal isolated)	Voltage (bus signal isolated)	-	
Input Range	Voltage	Bipolar: ±10V	Bipolar: ±10V, ±5V Unipolar: 0~+10V, 0~+5V (common range setting of all channels)	-	
	Current	0~20mA	-		
Output Type		-		Voltage / Current (bus signal isolated)	
Output Range	Voltage	-		Unipolar: 0~+10V, 0~+5V (Current output: ±5mA)	Bipolar: ±10V, ±5V Unipolar: 0~+10V, 0~+5V (Current output: 5mA) (common range setting of all channels)
	Current	-		0~20mA	
Conversion Accuracy		Voltage Range: ±8LSB (±0.012% of FSR) Current Range: ±20LSB (±0.030% of FSR)	±3LSB	Voltage Output: ±3LSB, Current Output: ±5LSB	
Conversion Speed (Max.)		Voltage Input: Channels × 10μsec + 20μsec Current Input: Channels × 40μsec + 20μsec	Channels × 10μsec + 20μsec	Voltage Output: 10μsec/ch, Current Output: 20μsec/ch	
Buffer Memory		256K data (262,144 data)			
Sampling Timer		10μsec~1,073,741,824μsec			
Connector		FK-MC1,5/12-ST-3,81 [PHOENIX CONTAT]	FK-MC0.5/12-ST-2.5 [PHOENIX CONTAT]	FK-MC1,5/12-ST-3,81 [PHOENIX CONTAT]	FK-MC0.5/12-ST-2.5 [PHOENIX CONTAT]
USB Speed		12Mbps (Full Speed), 480Mbps (High Speed)			
Power Consumption (Max.)		5VDC 600mA *1	5VDC 650mA *1	5VDC 800mA *1	5VDC 700mA *1
Dimensions (mm)		50.4(W) × 64.7(D) × 94.0(H)			
Weight (main unit)		100g			
Included AC adapter (POA-AD22)		AC90~264V, DC5.0V±5%, 2.0A(Max.), Cable length: approx. 1.4m			
Included Cable		USB cable 1.8m			
	Software	-			
	Applicable Module *2	ADI16-4(FIT)GY	ADI12-8(FIT)GY	DAI16-4(FIT)GY	DAI12-4(FIT)GY
	Applicable Power Supply *2	POA-AD22, POW-AD13GY, POW-AD22GY, POW-AD25GY, POW-DD10GY, POW-DD43GY			

Note:
*1: Please use attached AC adapter or optional power supply unit.
*2: Please refer to P-04 or visit our web site for the details of the Applicable Module.

Analog I/O

ISA

Model	12-bit Multi-Function A/D		16-Bit Multi-Function A/D
	AD12-16(PC)EH	AD12-16U(PC)EH	AD16-16(PC)EH



SPECIFICATIONS

Input channels		16 single-ended or 8 differential		
Output channels		1		
Resolution		12bit		
Input specifications	Range	±10V, 0~10V	±2.5V, ±5V, 0~5V, 0~10V	±5V, ±10V, 0~5V, 0~10V
	Gain	×1, ×2, ×4, ×8 (software selectable)	-	
	Conversion speed	10µsec/ch (Max.)	1µsec/ch (Max.)	10µsec/ch (Max.)
	Conversion accuracy *1	±2LSB (×1, ×2), ±4LSB (×4, ×8)	±3LSB	±5LSB
	Impedance	1MΩ or more		
Output specifications	Range	±5V, ±10V, 0~10V		±10V, 0~10V
	Rating	Drive current ± 5mA (Max.)		
	Conversion speed	6µsec/ch		13µsec/ch
	Conversion accuracy *1	±1/2LSB		±2LSB
	Impedance	1Ω or less		
Trigger		Start Trigger: 3 modes, Stop Trigger: 4 modes		
Isolation		-		
Timer		2~7 × 10^{13}µsec		
Digital I/O		General Digital I/O: Input 3, Output 4 (TTL-level) Sampling Control DIO: Input 3, Output 1 (TTL-level)		
Interrupts	Request Events	Up to16 events		
	Request Levels	One of IRQ 5, 7, 9, 10, 11, 12 or 15		
I/O address		Any 16-byte boundary		
Power consumption		5VDC 800mA (max)	5VDC 1700mA (max)	5VDC 1000mA (max)
Bus / Dimensions (mm)		AT Bus / 163.0(L) × 122.0(H)	AT Bus / 174.0(L) × 122.0(H)	AT Bus / 163.0(L) × 122.0(H)
Connectors		CN1(AIO): 37-pin female D-type CN2(DIO): 16-pin male header		
Options	Software	API-PAC(W32)		
	Accessories	DTP-3(PC), DTP-4(PC), ATUH-16(PC),ATP-16 *2, FTP-15 *3, EPD-37 *2, ATSS-16 *2, ATII-8A *2, ATLF-8 *2		
	Cables / Connectors	PCA37P, PCB37P, PCA37PS, PCB37PS, PCA15P *4, PCB15P *4, PCC16PS, PCD8PS, DT/E1, DT/E2		
CE mark		○	○	○

*1: Conversion Accuracy: Value is linearity error at 25ºC.
*2: Requires use of optional cable PCB37P or PCB37PS
*3: Requires use of optional cable DT/E2 and PCB15P
*4: Optional PCB15P cable is required when using FTP-15 terminal panel

Options

16ch Multiplexer Sub-Board

When used with CONTEC's Intelligent E Series Analog boards, these multiplexers can double the number of available channels to 32 single-ended or 16 differential

* Multiplexers occupy one chassis slot.

ATCH-16(PC)

For use with
AD12-16(PC)EH
AD16-16(PC)EH

ATUH-16(PC)

For use with
AD12-16U(PC)EH
AD16-16U(PC)EH

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ISA

Model	Analog to Digital Input Board AD12-16(PC)	Opto-Isolated Analog to Digital Input Board AD12-16LG(PC)
		

SPECIFICATIONS

Input channels		16 single-ended or 8 differential	16 single-ended
Resolution		12bit	
Input specification	Input range	±5V, 0~5V, 0~10V	±5V
	Input gain	-	×1, ×2, ×4, ×8, ×16 (software selectable)
	Conversion speed	20µsec/ch	15µsec/ch
	Conversion Accuracy *1	±2LSB	±3LSB
	Input Impedance	1MΩ or more	100MΩ or more
Trigger		1 TTL-level	
Isolation		-	
Timer		2~7 × 10^{13}µsec	
Digital I/O		1 TTL-level input/output (Negative logic)	8 TTL-level input/output (Positive logic)
Interrupt	Interrupt Request Causes	External trigger / Timer / Conversion end	Conversion end
	Interrupt Request Level	One of IRQ 3~7, 9	
I/O address		Any 16-byte boundary	Any 8-byte boundary
Power consumption (Max.)		5VDC 700mA	5VDC 400mA, ±12VDC 25mA
Bus / Dimension (mm)		XT Bus / 143.0(L) × 107.0(H)	
Connector		37-pin female D-type	37-pin male D-type
Option	Software	API-PAC(W32)	
	Accessories	DTP-3(PC), DTP-4(PC), EPD-37A *2, EPD-37 *2	DTP-3(PC) *3, DTP-4(PC) *3, EPD-37A *3, EPD-37 *3
	Cables / Connector	PCA37P, PCB37P, PCA37PS, PCB37PS	DT-6, DT-11
CE marking		○	○

*1: Conversion Accuracy: A value in the table is linearity error at 25°C. *2: Requires use of optional cable DT-6.
*3: Requires use of optional cable PCB37P or PCB37PS.

ISA

Model	Isolated Analog to Digital Input Board ADI12-8CL(PC)H	Opto-Isolated Analog to Digital Input Board ADI12-16(PC)
		

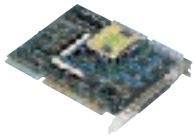
SPECIFICATIONS

Input channels		8ch	16 single-ended or 8 differential
Resolution		12bit	
Input specification	Input range	0~5V, 1~5V, 0~20mA, 4~20mA	±10V, ±5V, 0~10V, 4~20mA
	Input gain	-	
	Conversion speed	1200µsec/ch	25µsec/ch
	Conversion Accuracy *1	±3LSB	
	Input Impedance	1MΩ or more (Current input: 250Ω)	
Trigger		1 opto-isolated input (share 1 of digital input)	1 opto-isolated input (shared signal of Rising-edge or digital input)
Isolation		Individual isolation	Bus isolation
Timer		-	
Digital I/O		2 opto-isolated input (Negative logic) 4 opto-isolated Open Collector Output (Negative logic)	2 opto-isolated inpout, 4 opto-isolated output (Negative logic)
Interrupt	Interrupt Request Causes	External trigger / Conversion end	External trigger or A/D Conversion end
	Interrupt Request Level	One of IRQ 3~7, 9~12, 14 or 15	
I/O address		Any 4-byte boundary	
Power consumption (Max.)		5VDC 500mA	5VDC 850mA
Bus / Dimensions (mm)		AT Bus / 163.0(L) × 122.0(H)	
Connector		37-pin female D-type	
Option	Software	API-PAC(W32)	
	Accessories	DTP-3(PC), DTP-4(PC), EPD-37A *2, EPD-37 *2	
	Cables / Connector	PCA37P, PCB37P, PCA37PS, PCB37PS	
CE marking		-	○

*1: Conversion Accuracy: A value in the table is linearity error at 25°C.
*2: Requires use of optional cable PCB37P or PCB37PS.

Analog I/O

ISA

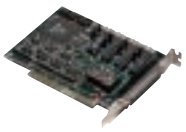
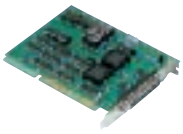
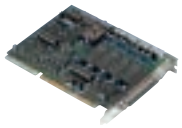
Model	Opto-Isolated Digital to Analog Board DAI12-4C(PC)	Opto-Isolated Digital to Analog Board DAI12-8C(PC)
		

SPECIFICATIONS

Input channels		-	
Output channels		4ch	8ch
Resolution		12bit	
Output specification	Output range	0~5V, 4~20mA	
	Output rating	±5mA (voltage output)	
	Conversion speed	24µsec/ch	
	Conversion Accuracy *1	± 2LSB	
	Output Impedance	1Ω or less (voltage output)	
Trigger		-	
Isolation		Bus isolation	
Timer		-	
Digital I/O		2 opto-isolated inpout, 4 opto-isolated output (Negative logic)	
Interrupt	Request Causes	-	
	Request Level	-	
I/O address		Any 4-byte boundary	
Bus / Dimensions (mm)		5VDC 1200mA	5VDC 1600mA
Bus / Dimension (mm)		AT Bus / 163.0(L) × 122.0(H)	
Connector		37-pin female D-type	
Option	Software	API-PAC(W32)	
	Accessories	DTP-3(PC), DTP-4(PC), EPD-37A *2, EPD-37 *2	
	Cables / Connector	PCA37P, PCB37P, PCA37PS, PCB37PS	
CE marking		○	○

*1: Conversion Accuracy: A value in the table is linearity error at 25℃.
*2: Requires use of optional cable PCB37P or PCB37PS.

ISA

Model	Digital to Analog Output Board DA12-4(PC)	Digital to Analog Output Board DA12-8L(PC)	16-Bit Digital to Analog Output Board DA16-4D(PC)
			

SPECIFICATIONS

Input channels		-		
Output channels		4ch	8ch	4ch
Resolution		12bit		
Output specification	Output range	±5V, ±10V, 0~10V	±5V, ±10V, 0~10V, 4~20mA (1ch)	±10V, 0~10V
	Output rating	±5mA	±5mA (voltage output)	
	Conversion speed	5µsec/ch	10µsec/ch	13µsec/ch
	Conversion Accuracy *1	±1LSB	±3LSB	
	Output Impedance	1Ω or less	1Ωor less (voltage output)	1Ω or less
Trigger		1 TTL-level input	-	
Isolation		-		
Timer		2~7 × 10^{13}µsec	-	
Digital I/O		1 TTL-level input/output (Negative logic)	4 TTL-level input/output (Negative logic)	-
Interrupt	Request Causes	External trigger / Timer	-	DMA Transmission end
	Request Level	One of IRQ 3~7, 9	-	One of IRQ 3~7, 9~12, 14 or 15
I/O address		Any 16-byte boundary	Any 4-byte boundary	Any 8-byte boundary
Power consumption (Max.)		5VDC 1200mA	5VDC 830mA	5VDC 980mA
Bus / Dimensions (mm)		XT Bus / 143.0(L) × 107.0(H)	AT Bus / 163.0(L) × 122.0(H)	
Connector		37-pin female D-type		
Option	Software	API-PAC(W32)		-
	Accessories	DTP-3(PC), DTP-4(PC), EPD-37A *2, EPD-37 *2		
	Cables / Connector	PCA37P, PCB37P, PCA37PS, PCB37PS		
CE marking		○	○	○

*1: Conversion Accuracy: A value in the table is linearity error at 25℃.
*2: Requires use of optional cable PCB37P or PCB37PS.

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Multi-Programmable Display
Remote Monitoring Solution
Service & Products

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Features
Low Profile PCI
PC Card
Intelligent E series
Features
PCI
Standard
PCI
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