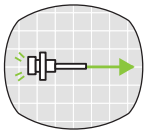
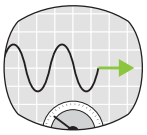
Analog I/O

ANALOG I/O

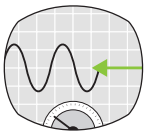
Interface modules that convert analog signals to digital data.
Converting analogue signals to data (digital signals) and feeding them to PC allows you to measure external events, whereas converting PC data to analogue signals for output allows you to control external devices.



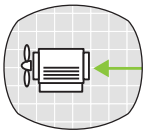
Application: Measurement of individual sensors
Description: Input of voltage/ current signals



Application: Measurement of voltage/ current value
Description: Input of voltage/ current signals



Application: Voltage/current output
Description: Output of voltage/ current signals



Application: Motor control
Description: Output of voltage/ current signals

Pictograms

Bus Specifications

PCI Express — Product is PCI Express standard compliant and can be used in the computer equipped with PCI Express bus expansion slot.

PCI — Product is PCI standard compliant and can be used in the computer equipped with PCI Bus slot.

USB 2.0 — Product is USB standard compliant and can be used in the computer equipped with USB 2.0/1.1 ports. Supports USB 2.0 high-speed mode (480 Mbps).

Card Bus — Product supports CardBus that is a 32-bit PC card standard bus and can be used in the notebook computer equipped with a CardBus-compliant PC card slot.

Board Size

Low Profile — Product is PCI standard/Low Profile compliant. A bracket for standard-size PCI slots is provided.

Supported Connectors

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

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

CONTEC provides a wide variety of cables and accessories to suit your needs.

Cables with connectors on both sides Accessories (Terminal Unit, etc.) N-03
Cables with a connector on one end Connector set N-11

I/O Channels/Points

Analog Input XX ch — Maximum number of channels of analog signals that can be input.

Analog Output XX ch — 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 XX ch — Maximum number of channels of counter signals that can be input.

Software

Windows Driver — API-TOOL Drivers for Windows are provided.
The license-free driver software (both development and runtime) provides commands to interface boards or cards using Windows standard Win32API function (DLL).

Linux Driver — API-TOOL Drivers for Linux are provided.
The license-free driver software (both development and runtime) provides commands to interface boards or cards using module-style device drivers and the shared library.

ActiveX Component Package — ActiveX Component Package ACX-PAC(W32) is supported.
ACX-PAC(W32) is a program development support tool for Windows. Standard ActiveX Component for Windows (OCX) provides software parts specialized for add-on module control as well as measurement, such as screen displays, analyses and operations, and file operations. The application program is included, so you can begin computer measurement right away without creating programs.

C-LOGGER — This supports data logging software "C-LOGGER."
C-LOGGER, is a Windows version of data logging software for CONTEC's analog I/O device products. C-LOGGER provides true data collection and monitoring function, such collected signal data graph drawing, zoom observation, file saving, and dynamic transfer to Excel (spreadsheet program). No additional programming is required. To be included successively in the driver CD-ROM "API-PAC(W32)" supplied with the product. C-LOGGER can be downloaded from our website.
For the details, please visit: http://www.contec.com/products/daq_util/logger.php

MATLAB
Available with MATLAB Data Acquisition Toolbox. However, the MATLAB-compliant data library [ML-DAQ] (this can be downloaded for free from our website) must be setup after installation ofthe driver [API-AIO(WDM)] supplied with our products.
For the details, please visit: http://www.contec.com/products/daq_util/mldaq.php

Points

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 (+/-0.125 V, 0 - 0.25 V). Sensor output that has a small surge can be sampled with high precision.

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

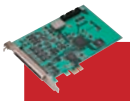
Bus Master — Large sampling data can be transferred promptly to PC memory without going through CPU.

Simultaneous Sampling — This allows for simultaneous sampling of all the channel with the AD converter of each channel.

Analog I/O

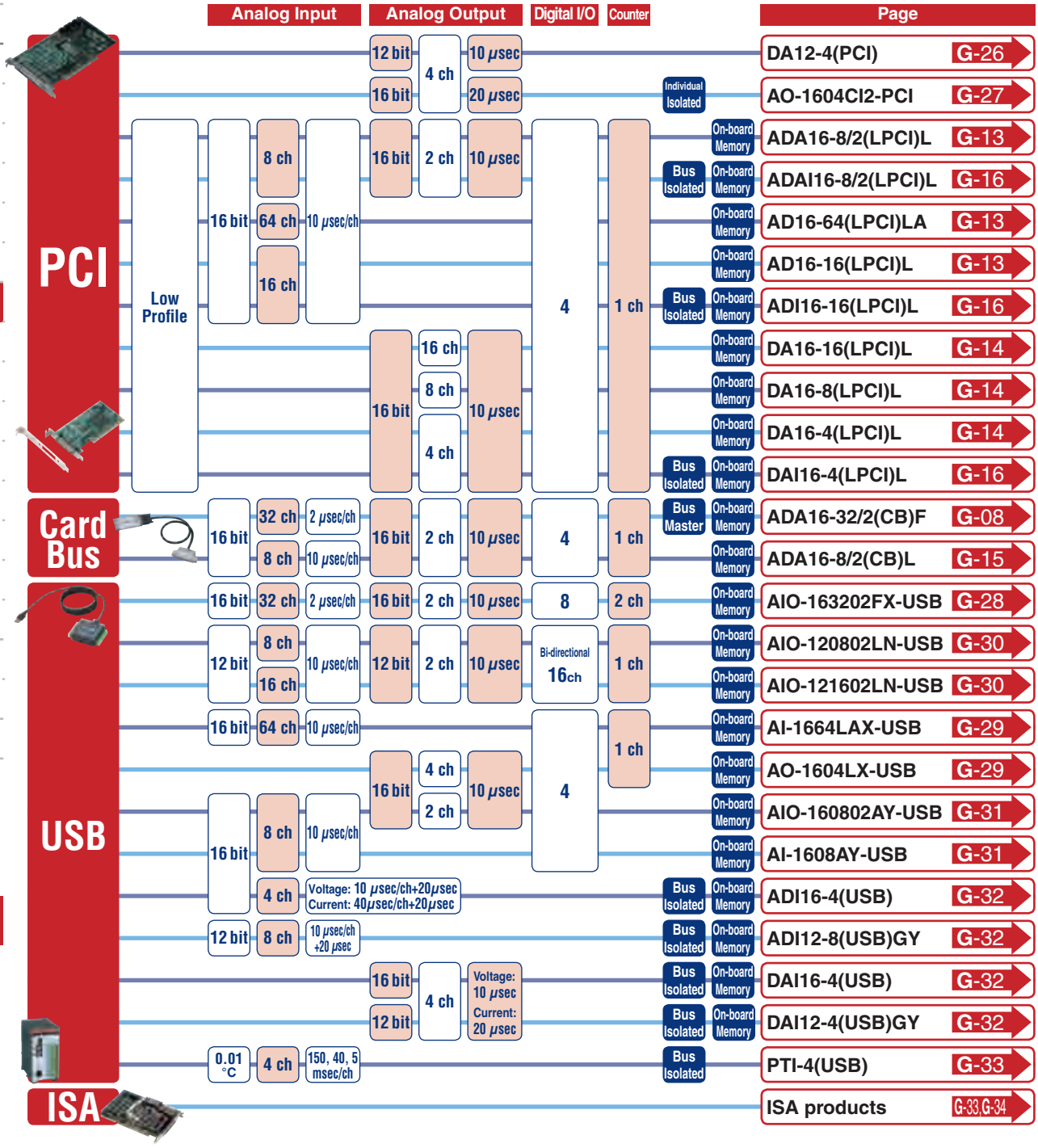
Product Lineup

You can choose from a variety of models according to your desired bus, I/O points, and on-board functions.



Analog Input			Analog Output			Digital I/O	Counter			Page	
PCI Express											
16 bit	32 ch	2 μsec/ch	16 bit	2 ch	10 μsec	8	2 ch	Bus Master	On-board Memory	AIO-163202F-PE	G-08
	16 ch	1 μsec/ch		1 ch		4	1 ch		On-board Memory	AIO-161601UE3-PE	G-18
		10 μsec/ch							On-board Memory	AIO-161601E3-PE	G-18
	8 ch			2 ch				Bus Isolated	On-board Memory	AIO-160802LI-PE	G-12
12 bit	16 ch							Bus Isolated	On-board Memory	AI-1616LI-PE	G-12
		1 μsec/ch	12 bit	1 ch	6 μsec				On-board Memory	AIO-121601E3-PE	G-18
									On-board Memory	AIO-121601UE3-PE	G-18
			16 bit	4 ch	10 μsec			Bus Isolated	On-board Memory	AO-1604LI-PE	G-12
Low Profile				2 ch					On-board Memory	AIO-160802L-LPE	G-10
16 bit	8 ch	10 μsec/ch							On-board Memory	AI-1616L-LPE	G-10
	16 ch								On-board Memory	AI-1664LA-LPE	G-10
	64 ch								On-board Memory	AO-1604L-LPE	G-11
			16 bit	4 ch	10 μsec				On-board Memory	AO-1616L-LPE	G-11
				16 ch					On-board Memory	AO-1608L-LPE	G-11
				8 ch							
PCI											
10 bit	2 ch	10 nsec							On-board Memory	DIG-100M1002-PCI	G-21
16 bit	32 ch	2 μsec/ch	16 bit	2 ch	10 μsec	8	2 ch	Bus Master	On-board Memory	ADA16-32/2(PCI)F	G-08
	16 ch	10 μsec/ch		1 ch		4			On-board Memory	AD16-16(PCI)EV	G-19
		1 μsec/ch							On-board Memory	AD16-16U(PCI)EV	G-19
	4 ch	20 μsec/ch						Individual Isolated		AI-1604CI2-PCI	G-27
		10 msec/ch						Individual Isolated		ADI16-4L(PCI)	G-27
12 bit		100 nsec				4		Bus Master	On-board Memory	AI-1204Z-PCI	G-20
	16 ch	1 μsec/ch	12 bit	1 ch	10 μsec				On-board Memory	AD12-16U(PCI)EV	G-19
		10 μsec/ch							On-board Memory	AD12-16(PCI)EV	G-19
		150 μsec/ch		2 ch			1 ch		On-board Memory	AIO-121602AL-PCI	G-23
		10 μsec/ch		1 ch		8	2 ch		On-board Memory	AIO-121602AH-PCI	G-23
									On-board Memory	AIO-121601M-PCI	G-22
		150 μsec/ch				4	1 ch		On-board Memory	AI-1216AH-PCI	G-24
		10 μsec/ch							On-board Memory	AI-1216AL-PCI	G-24
	64 ch									AD12-16(PCI)	G-25
										AD12-64(PCI)	G-25
	16 ch	20 μsec/ch				8				AI-1216B-RB1-PCI	G-25
										AI-1216B-RU1-PCI	G-25
						4		Bus Isolated	On-board Memory	ADI12-16(PCI)	G-27
5 1/2 digit	2 ch	0.67 msec							On-board Memory	DMM-552-PCI	G-21
			12 bit	16 ch	10 μsec					DA12-16(PCI)	G-26
				8 ch						DA12-8(PCI)	G-26

Analog I/O



Guide for Product Selection

Number of Channels

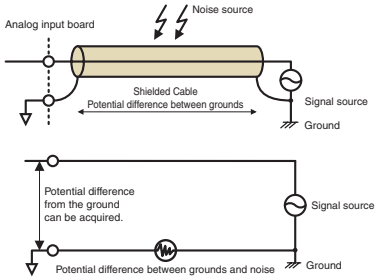
This indicates the number of available sensors (signal sources) and actuators (to be controlled). The following 2 input types are available for the analog input board. Please note that the number of available channels varies depending on input types.

●Single-ended Input

In this type, signal source voltage is measured through connection with 2 lines: 1 signal line and 1 ground line. (See drawing below.)

○Advantages

●2 lines per signal source are enough.
●It allows twice as many channels as the differential input.

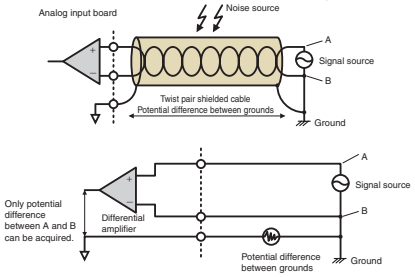


Differential input

In this type, signal source voltage is measured through connection with 2 signal lines and 1 ground line (3 lines in total). Measure the potential of the signal source between A and B by measuring the difference of the potentials between the ground and A, and the ground and B. (See drawing below.)

○Advantages

●The measurement result is not affected by any difference in potentials between the signal sources and the ground.
●This type is less affected by noise than single-ended input.



Resolution

Resolution of an analog input board refers to the fineness of approximation (quantization) for the input analog signals, while the resolution of an analog output board refers to the fineness of analog signals for the data (digital signals). As indicated below, the numbers of bits indicate their performances.

12 bit (general purpose) : 2^{12} (4096) resolution is possible. Ex: 10/4096 for input range 0 - 10 V → Approx. 2.44 mV is the minimum unit.
16 bit (high accuracy) : 2^{16} (65536) resolution is possible. Ex: 10/65536 for input range 0 - 10 V → Approx. 0.15 mV is the minimum unit.
* The difference shown by the "Conversion Accuracy" is included in the actual accuracy.

Conversion Speed

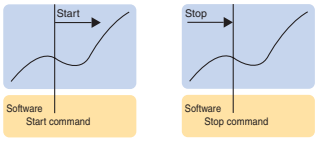
For analog input board, this indicates the time required to convert the input voltage or current into data (digital signal), and for analog output board on the contrary, this indicates the time required to output voltage or current in accordance with the specified data (digital signal). The actual minimum clock depends on OSs, drivers and firmware processing.
Memory installed products enable high-speed input / output to be executed independently of other processings.

Trigger

This indicates under which conditions conversion operation of analog I/O board can be started / stopped. Each indication shows that the corresponding function is available.

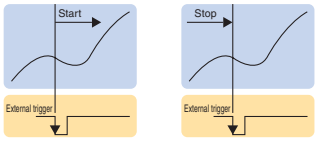
Software

Start/stop can be controlled by the software.



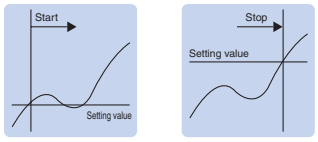
External

Start/stop can be controlled by the external signal (digital signal).



Level

Start/stop can be controlled by the signal change of specified channels (settings can be modified).

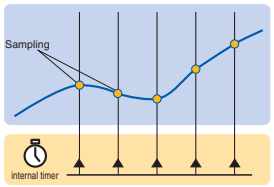


Clock

This indicates with which timing the conversion operation of the analog I/O board can be synchronized. Each indication shows that the corresponding function is available.

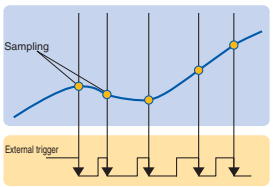
Internal

A timer available for cycle settings is equipped and conversion operations synchronized with this timer are possible. This is an essential function for the chronological processing.



External

The external clock input terminal allows for conversion operation synchronized with the pulse signals from outside. This is an essential function for synchronization with external device(s).

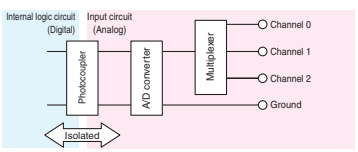


Isolation

This indicates the integral isolation circuit. Any board without indication shows that there is no integral isolation circuit.

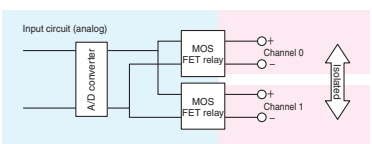
Bus isolation

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



Isolation between channels

I/O channels are isolated by a photocoupler or an isolation amplifier and interference between channels can be prevented in any board with this indication. This is used when the ground levels of devices connected to each channel are different.



about CONTEC
BOX Computers
Panel Computers
Flat Panel Displays
Options
Industrial PC VPC
BTO PCs Solution-ePC
Analog I/O
Digital I/O
Counter & Motion Controller
Serial Communications
GPIB Communications
Expansion Unit / Bus Adapter
Software
Accessories & Cables
Remote I/O
Wireless LAN FLEXLAN
Image Distribution Unit FlexNetViewer
Solutions / Services

G-04

Lineup
Measurement Products
Multi-function F series
PCI Express
PCI
PC Card
USB
Low-cost and Multi-function L series
PCI Express
PCI
PC Card
USB
Intelligent E series
PCI Express
PCI
Standard
PCI
USB
ISA
cTEST

Analog I/O

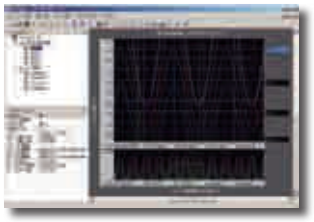
Right Purchase for Measurement, Analysis and Data Acquisition

Contec DAQ Solution Products

Ships with supported products
Free download

Graph observation and data acquisition are available from the first day.

Data Logging Software C-LOGGER

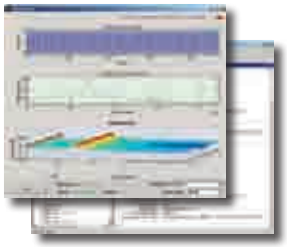


C-Logger is full-scale data logging software that is compatible with our analog I/O devices. It provides true data collection and monitoring function, such measured data graph drawing, zoom observation, file saving, and dynamic transfer to Excel (spreadsheet program). No additional programming is required.

Free download

Direct data acquisition with MATLAB

Data Acquisition Library ML-DAQ

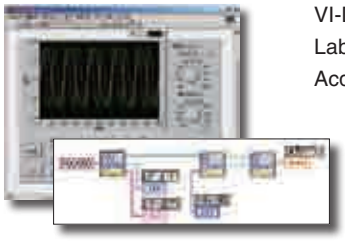


ML-DAC can be used as with DAQ board of MATLAB Data Acquisition Toolbox.

Free download

Data acquisition with LabVIEW

Data Acquisition Library VI-DAQ

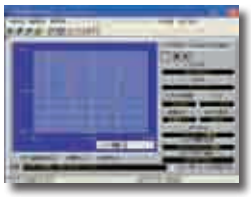


VI-DAQ can be used as with LabVIEW-Standard Data Acquisition VI.

Free download

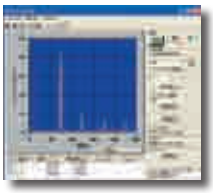
Easy-to-use PC measurement software

Practical Application Programs



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/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

Ships with supported products
Free trial download

Easy programming with Windows

ActiveX Component Package ACX-PAC(W32)

GUI for various graphs / switches / lamps, and software parts for technical calculation such as FFT(OCX) are integrated in one package. Measurement tools can be created easily with Visual Basic and Excel. A lot of ready-to-use samples (with source codes) and sample programs are included.

Analog I/O

In Contec's analog I/O board, various ready-to-use free measurement application programs that can be used for data logging and electric measurement with PC are provided. In addition, various kinds of middleware to improve program development productivity are provided.

Extensive lineup ! Selectable high-performance analog I/O devices

10MHz sampling

G-20

4 - channel simultaneous sampling The Z series

C-LOGGER MATLAB LabVIEW

- PCI board type
- Various input range setting
- Simultaneous analog input 4 ch
- 100 nsec high speed conversion, 32 M data buffer

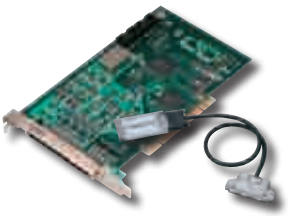
500 KHz sampling

G-07

Multi-function The F series

C-LOGGER MATLAB LabVIEW

- 4 types: PCI Express board, PCI board, PC card, and USB
- Multi-functions including 16 bit analog input 32 ch, 16 bit analog output 2 ch, digital I/O, and counter
- Various I/O range setting
- 2 µsec/ch high speed conversion, 64 K or 128 K data buffer (analog I/O)
- Event controller to allow I/O control interlocked with trigger conditions



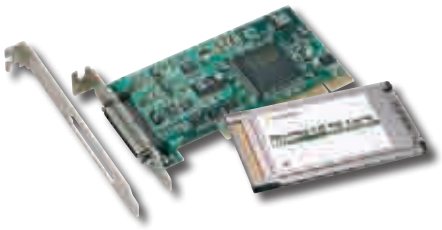
100 KHz sampling

G-09

Low-cost and Multi-function The L series

C-LOGGER MATLAB LabVIEW

- Low price
- 4 types: PCI Express, PCI board, PC card and, USB
- Channel configurations: 8 to 64ch for 16bit analog input, 2 to 16ch for 16bit analog output
- Multi-functions including digital I/O and counter
- Low Profile PCI slot available (PCI board type)



1 MHz / 100 KHz sampling

G-17

Intelligent The E series

C-LOGGER MATLAB LabVIEW

- 8 types of PCI Express / PCI board: 12 bit and 16 bit resolutions and 1 µsec/ch and 10 µsec/ch conversion
- Multi-functions including analog input 16 ch, analog output 1 ch, and digital I/O
- High-capacity 16 MB buffer memory (analog input)
- Various I/O range setting
- Extensive function expansion accessories such as + 16 ch additional sub boards and simultaneous sampling board

Analog I/O

Multi-function The F series

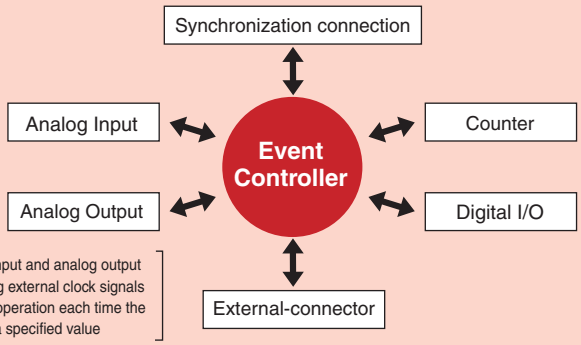
Features of Multi-function The F series

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 to 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 add-on boards.

6. Synchronous control connector (ADA16-32/2(PCI)F, ADA-163202F-PE)

CONTEC's ADA16-32/2(PCI)F and AIO-163202F-PE are equipped with a synchronous control connector capable of synchronizing control of multiple boards, enabling channel through an 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 units and cables to meet your demand

For combinations, see page N-03

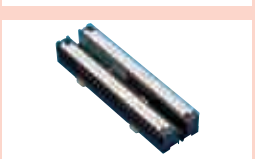
We provide a variety of analog input and relay terminal units [and cables] to suit for your specific application.

■ **BNC Terminal Unit**
ATP-32F

■ **Alligator Clip Cable**
BNC-W60

■ **BNC Cable**
BNC-B100 (1 m)
BNC-B200 (2 m)
BNC-B300 (3 m)

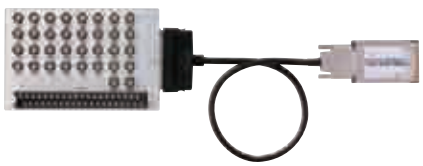
■ **Terminal Unit**
EPD-96



Example 1

ADA16-32/2(PCI)F +
PCB96PS-0.5P (Cable with connectors on both sides)
+ ATP-32F (BNC terminal)

Example 2



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

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

Multi-function The F series

Analog I/O

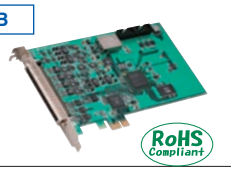
PCI Express

96-pin Half Pitch | Analog Input 32ch | Analog Output 2ch | Digital I/O 8 | Counter 2ch | F series | High Precision | High Speed | On-board Memory | Bus Master

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

High Speed 16-bit Multi-function A/D
AIO-163202F-PE

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



PCI

96-pin Half Pitch | Analog Input 32ch | Analog Output 2ch | Digital I/O 8 | Counter 2ch | F series | High Precision | High Speed | On-board Memory | Bus Master | CE

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

High Speed 16-bit 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
- 64 k data buffer memory enables background processing.

Card Bus

68-pin 0.8 mm Pitch | Analog Input 32ch | Analog Output 2ch | Digital I/O 4 | Counter 1ch | F series | High Precision | High Speed | On-board Memory | Bus Master | CE

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

High Speed 16-bit 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
- 64 k data buffer memory enables background processing.

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

*This card cannot be used simultaneously with another card if the PC has 2 TYPE Ⅱ PC card slots arranged in tandem. It can be used with other PC card, such as memory card, that does not use an external connector.

USB 2.0

For USB types, please see G-28 G-28

These products reduce signal-crosstalk and measurement errors arising from a wiring distance.

Buffer Amplifier Box (Input: 32 ch type)*
ATBA-32F

Buffer Amplifier Box (Input: 8 ch type)*
ATBA-8F

* Optional AC adapter POA200-20 is required.
AC adapter
POA200-20

(Input: 90 - 264 VAC, Output: 5 VDC 2.0 A)

Model		AIO-163202F-PE	ADA16-32/2(PCI)F	ADA16-32/2(CB)F
Analog Input	Channels	32 single-ended, 16 differential		
	Range	Bipolar: +/-10 V, +/-5 V, +/-2.5 V or Unipolar: 0 - +10 V, 0 - +5 V, 0 - +2.5 V		Bipolar: +/-10 V
	Impedance	1 MΩ or more		
	Resolution	16 bit		
	Conversion Speed	2 µsec/ch (Max.)		
	Conversion Accuracy*1	+/-5 LSB		
	Buffer Memory	64 k word FIFO or 64 k word RING		
Analog Output	Channels	2ch		
	Range	Bipolar: +/-10 V, +/-5 V, +/-2.5 V, +/-1.25 V or Unipolar: 0 - +10 V, 0 - +5 V, 0 - +2.5 V		Bipolar: +/-10 V
	Impedance	1 Ω or less		
	Resolution	16 bit		
	Conversion Speed	10 µsec (Max.)		
	Conversion Accuracy	+/-3 LSB		
	Buffer Memory	64 k word FIFO or 64 k word RING		
Digital I/O	Input	8 LVTTL level (positive logic)	8 TTL level (positive logic)	4 LVTTL level (positive logic)
	Output	8 LVTTL level (positive logic)	8 TTL level (positive logic)	4 LVTTL level (positive logic)
Counter	Number of Channels	2ch		1ch
	Counting System	32-bit Up count		
	Max. count	32-bit binary data		
Interrupts		1		
I/O Address		64 ports x1, 256 ports x1 occupation		
Power Consumption (Max.)		3.3 VDC 500 mA 12 VDC 300 mA	5 VDC 1100 mA	3.3 VDC 600 mA
Bus / Dimensions (mm)		PCI Express Base Specification Rev. 1.0a x1 / 169.33 (L) x 110.18 (H)	PCI (32 bit, 33 MHz, Universal key type supported *2) / 176.41 (L) x 105.68 (H)	PC Card Standard CardBus / TYPE Ⅱ
Connector		96-pin half-pitch connector [M type], PCR-96LMD [HONDA TSUSHIN KOGYO] or equivalent		68-pin 0.8 mm Pitch
Options	Software	ACX-PAC(W32)		
	Accessories	ATBA-32F*3*7, ATBA-8F*3*5*7, DTP-64A*3, EPD-96A*3*9, EPD-96*3, ATP-8*3*5*6, ATP-32F*3		ATBA-32F*4*7, ATBA-8F*4*5*7, DTP-64A*4, EPD-68A*8*9, EPD-96A*4*9, EPD-96*4, ATP-8*4*5*6, 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, PCB68PS-0.5P / 1.5P, ADC-68M/96F

Note:
*1: When using a signal source with a high-speed built-in operational amplifier *2: +5 V power must be supplied from PCI bus slot.
*3: Requires use of optional cable PCB96PS (0.5 m is recommended) *4: Requires use of optional cable ADC-68M/96F *5: Maximum of 8 analog input channels available
*6: Able to use up to 4 points digital inputs, 4 points digital outputs and 1 ch counter I/O input *7: Optional AC adapter POA200-20 is required.
*8: Optional cable PCB68PS is required (0.5 m is recommended). *9: "Spring-up terminal unit" is employed to retain terminal screws.

As shown on the side of product's images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.

As shown on the side of product's images, PbFree is a CONTEC original marking for lead-free products.

Analog I/O

Low-cost and Multi-function The L series

Features of The 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 superior cost performance.

For Desktop PC (PCI Express, PCI)

◎AIO-160802L-LPE		16-bit Analog Input	16-bit Analog Output	Digital I/O	Counter Input
◎ADA16-8/2(LPCI)L		16-bit Analog Input	16-bit Analog Output	Digital I/O	Counter Input
◎ADAI16-8/2(LPCI)L	Isolated	16-bit Analog Input	16-bit Analog Output	Digital I/O	Counter Input
◎AI-1616L-LPE		16-bit Analog Input		Digital I/O	Counter Input
◎AD16-16(LPCI)L		16-bit Analog Input		Digital I/O	Counter Input
◎AIO-160802LI-PE	Isolated	16-bit Analog Input	16-bit Analog Output	Digital I/O	Counter Input
◎AI-1616LI-PE	Isolated	16-bit Analog Input		Digital I/O	Counter Input
◎ADI16-16(LPCI)L	Isolated	16-bit Analog Input		Digital I/O	Counter Input
◎AI-1664LA-LPE		16-bit Analog Input		Digital I/O	Counter Input
◎AD16-64(LPCI)LA		16-bit Analog Input		Digital I/O	Counter Input
◎AO-1604-LPE			16-bit Analog Output	Digital I/O	Counter Input
◎AO-1608L-LPE			16-bit Analog Output	Digital I/O	Counter Input
◎AO-1616L-LPE			16-bit Analog Output	Digital I/O	Counter Input
◎DA16-4(LPCI)L			16-bit Analog Output	Digital I/O	Counter Input
◎DA16-8(LPCI)L			16-bit Analog Output	Digital I/O	Counter Input
◎DA16-16(LPCI)L			16-bit Analog Output	Digital I/O	Counter Input
◎AO-1604LI-PE	Isolated		16-bit Analog Output	Digital I/O	Counter Input
◎DAI16-4(LPCI)L	Isolated		16-bit Analog Output	Digital I/O	Counter Input

For Notebook PC (CardBus)

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

* ADA16-8/2(LPCI)L and ADA16-8/2(CB)L 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

On-board buffer memory is provided both for analog input and analog output (1 k word). This allows for background analog I/O that is independent of software and PC operation status, and enables delay 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. It can also recognize any adjustment information that is different from that set at the factory. This allows for optimum 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 for the prevention of chatter.

■ Variety of cables and terminal units to meet specific application needs

For combinations, see page N-04

Our compact terminal units provide excellent portability for a notebook PC data logger system.

■ Analog I/O BNC Terminal Unit
ATP-8L

■ Alligator Clip Cable
BNC-W60

■ BNC Cable
BNC-B100 (1 m)
BNC-B200 (2 m)
BNC-B300 (3 m)

■ Terminal Unit
EPD-50A

Example 1

ADA16-8/2(LPCI)L +
PCB50PS-0.5P (Cable with connectors on both sides) +
ATP-8L(BNC terminal)

Example 2

ADA16-8/2(CB)L +
ADC-68M/50M(68-pin to 50-pin conversion cable) +
EPD-50A(M3 terminal)

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

Low-cost and Multi-function The L series

Analog I/O

about CONTEC
BOX Computers
Panel Computers
Flat Panel Displays
Options
Industrial PC VPC
BTO PCs Solution-ePC
Analog I/O
Digital I/O
Counter & Motion Controller
Serial Communications
GPIB Communications
Expansion Unit / Bus Adapter
Software
Accessories & Cables
Remote I/O
Wireless LAN FLEXLAN
Image Distribution Unit FlexNetViewer
Solutions / Services

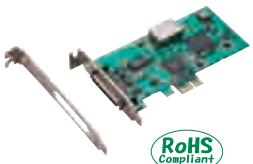
PCI Express | Low Profile | 50-pin Mini-Ribbon | Analog Input 8ch | Analog Output 2ch | Digital I/O 4 | Counter 1ch | L series | High Precision | On-board Memory | Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

Low-Cost 16-bit Multi-function A/D
AIO-160802L-LPE

- On-board control mechanism provides analog input / output, timed input / output and input / output that is synchronized with external clock.
- Buffer memory enables background processing to be executed independently of the software.
- Software for analog input / output correction
- Low Profile PCI - compliant (includes bracket for use in standard PCI slot)

RoHS Compliant

PCI Express | Low Profile | 50-pin Mini-Ribbon | Analog Input 16ch | Analog Output - | Digital I/O 4 | Counter 1ch | L series | High Precision | On-board Memory | Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB



Low-Cost 16-bit Multi-function A/D
AI-1616L-LPE

- On-board control mechanism provides analog input, timed input and input that is synchronized with external clock.
- Buffer memory enables background processing to be executed independently of the software.
- Software for analog input correction
- Low Profile PCI - compliant (includes bracket for use in standard PCI slot)

RoHS Compliant

PCI Express | Low Profile | 68-pin 0.8 mm Pitch | Analog Input 64ch | Analog Output - | Digital I/O 4 | Counter 1ch | L series | High Precision | On-board Memory | Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

100 KSPS 16-bit Resolution Analog Input Board
AI-1664LA-LPE

- Sampling start / stop can be selected from via software, by conversion data comparison, or external trigger, etc.
- Buffer memory (1 K data) compatible with FIFO or RING format
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board AD16-64(LPCI)LA.
- Both Low Profile and Standard PCI slots are supported by using the included bracket.

RoHS Compliant

USB 2.0

For USB types, please see G-30 G-30

Model		AIO-160802L-LPE	AI-1616L-LPE	AI-1664LA-LPE
Analog Input	Channels	8 single-ended	16 single-ended	64 single-ended, 32 differential
	Range	Bipolar: +/-10 V		
	Impedance	1 MΩ or more		
	Resolution	16 bit		
	Conversion Speed	10 µsec/ch (Max.)		
	Conversion Accuracy*1*2	+/-5 LSB		
	Buffer Memory	1 k Word		
Analog Output	Channels	2ch	-	
	Range	Bipolar: +/-10 V	-	
	Impedance	1 Ω or less	-	
	Resolution	16 bit	-	
	Conversion Speed	10 µsec (Max.)	-	
	Conversion Accuracy	+/-5 LSB	-	
	Buffer Memory	1 k Word	-	
Digital I/O	Input	4 LVTTL level (positive logic)		
	Output	4 LVTTL level (positive logic)		
Counter	Number of Channels	1 ch		
	Counting System	32-bit Up count		
	Max. count	32-bit binary data		
Interrupts		1		
I/O Address		Any 64-byte boundary		
Power Consumption (Max.)		3.3 VDC 400 mA, 12 VDC 200 mA	3.3 VDC 400 mA, 12 VDC 120 mA	3.3 VDC 620 mA
Bus / Dimensions (mm)		PCI Express Base Specification Rev. 1.0a x1 / 121.69 (L) x 67.90 (H)		
Connector		10250-52A2JL [3M] or equivalent		68-pin 0.8 mm pitch connector HDRA-E68W1LFDT-SL [HONDA TSUSHIN KOGYO] or equivalent
Options	Software	ACX-PAC(W32)		
	Accessories	ATBA-8L*3*4*5*6, ATBA-16L*3*4*5, EPD-50A*3*8, ATP-8L*3*7		DTP-64A*9*11, EPD-68A*8*10*11, EPD-96A*8*9*11, EPD-96*9*11, ATP-32F*9*11, ATP-8*9*11*12
	Cables / Connectors	PCB50PS-0.5P / 1.5P, PCA50PS-0.5P / 1.5P		PCA68PS-0.5P / 1.5P, PCB68PS-0.5P / 1.5P, ADC-68M/96F

Note:

*1: When using a signal source with a built-in high-speed operational amplifier
*2: The non-linearity error may deviate the maximum range by about +/-0.1%, when the operating temperature is 0°C or 50°C.
*3: Requires use of optional cable PCB50PS-0.5P or PCB50PS-1.5P *4: Only for AIO-160802L-LPE, AI-1616L-LPE *5: Optional AC adapter POA200-20 is required.
*6: Maximum of 8 analog input channels are available for AI-1616L-LPE. *7: Maximum of 8 analog input channels and 2 analog output channels available *8: "Spring-up terminal unit" is employed to retain terminal screws. *9: Requires use of optional cable ADC-68M/96F *10: Requires use of optional cable PCB68PS-0.5P or PCB68PS-1.5P
*11: Requires 2 cables and accessories each for 2 connectors (CNA and CNB) *12: It can be used among CNA channel 0 - 7 or CNB channel 32 - 39.

Driver Library [API-PAC(W32)] included

As shown on the side of product's images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.

Lineup
Measurement Products
Multi-function F series
PCI Express
PCI
PC Card
USB
Low-cost and Multi-function L series
PCI Express
PCI
PC Card
USB
Intelligent E series
PCI Express
PCI
Standard
PCI
USB
ISA
cTEST

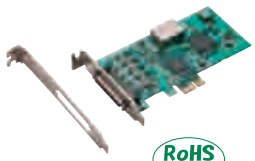
Analog I/O

Low-cost and Multi-function The L series

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

about CONTEC
BOX Computers
Panel Computers
Flat Panel Displays
Options
Industrial PC VPC
BTO PCs Solution-ePC
Analog I/O
Digital I/O
Counter & Motion Controller
Serial Communications
GPIB Communications
Expansion Unit / Bus Adapter
Software
Accessories & Cables
Remote I/O
Wireless LAN FLEXLAN
Image Distribution Unit FlexNetViewer
Solutions / Services

PCI Express | Low Profile | 50-pin Mini-Ribbon | Analog Input: - | Analog Output: 4 ch | Digital I/O: 4 | Counter: 1 ch | L series | High Precision | On-board Memory | Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB



RoHS Compliant

Low-Cost 16-bit Multi-function A/D

AO-1604L-LPE

- On-board control mechanism provides analog output, timed output and output that is synchronized with external clock.
- Buffer memory enables background processing to be executed independently of the software.
- Software for analog output correction
- Low Profile PCI-compliant (includes bracket for use in standard PCI slot)

PCI Express | Low Profile | 50-pin Mini-Ribbon | Analog Input: - | Analog Output: 8 ch | Digital I/O: 4 | Counter: 1 ch | L series | High Precision | On-board Memory | Windows Driver | Linux Driver | ActiveX Component Package | MATLAB

RoHS Compliant

100 KSPS 16-bit Resolution Analog Output

AO-1608L-LPE

- Sampling start / stop can be selected from via software or external trigger, etc.
- Adjusts output voltage to 0 V when the power supply is turned on
- Buffer memory (1 K data) compatible with FIFO or RING format
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board DA16-8(LPCI)L.
- Both Low Profile and Standard PCI slots are supported by using the included bracket.

PCI Express | Low Profile | 50-pin Mini-Ribbon | Analog Input: - | Analog Output: 16 ch | Digital I/O: 4 | Counter: 1 ch | L series | High Precision | On-board Memory | Windows Driver | Linux Driver | ActiveX Component Package | MATLAB

RoHS Compliant

100 KSPS 16-bit Resolution Analog Output

AO-1616L-LPE

- Sampling start / stop can be selected from via software or external trigger, etc.
- Adjusts output voltage to 0 V when the power supply is turned on
- Buffer memory (1 K data) compatible with FIFO or RING format
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board DA16-16(LPCI)L.
- Both Low Profile and Standard PCI slots are supported by using the included bracket.

Model		AO-1604L-LPE	AO-1608L-LPE	AO-1616L-LPE
Analog Input	Channels	-		
	Range	-		
	Impedance	-		
	Resolution	-		
	Conversion Speed	-		
	Conversion Accuracy*1	-		
	Buffer Memory	-		
Analog Output	Channels	4 ch	8 ch	16 ch
	Range	Bipolar: +/-10 V		
	Impedance	1 Ω or less		
	Resolution	16 bit		
	Conversion Speed	10 µsec (Max.)	10 µsec	
	Conversion Accuracy	+/-5 LSB		
	Buffer Memory	1 k Word		
Digital I/O	Input	4 LVTTL level (positive logic)		
	Output	4 LVTTL level (positive logic)		
Counter	Number of Channels	1 ch		
	Counting System	32-bit Up count		
	Max. count	32-bit binary data		
Interrupts		1		
I/O Address		Any 64-byte boundary		
Power Consumption (Max.)		3.3 VDC 400 mA, 12 VDC 250 mA	3.3 VDC 240 mA, 12 VDC 300 mA	3.3 VDC 280 mA, 12 VDC 380 mA
Bus / Dimensions (mm)		PCI Express Base Specification Rev. 1.0a x1 / 121.69 (L) x 67.90 (H)		
Connector		10250-52A2JL [3M] or equivalent		
Options	Software	ACX-PAC(W32)		
	Accessories	EPD-50A*2*4, ATP-8L*2*3	EPD-50A*2*4	
	Cables / Connectors	PCB50PS-0.5P / 1.5P, PCA50PS-0.5P / 1.5P		

*1: When using a signal source with a built-in high-speed operational amplifier
*2: Requires use of optional cable PCB50PS-0.5P or PCB50PS-1.5P
*3: Maximum of 8 analog input channels and 2 analog output channels available
*4: "Spring-up terminal unit" is employed to retain terminal screws.

Note: Driver Library [API-PAC(W32)] included

As shown on the side of product's images, RoHS compliant (RoHS Compliant) is a CONTEC original marking for RoHS-compliant products.

Lineup
Measurement Products
Multi-function F series
PCI Express
PCI
PC Card
USB
Low-cost and Multi-function L series
PCI Express
PCI
PC Card
USB
Intelligent E series
PCI Express
PCI
Standard
PCI
USB
ISA
cTEST

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

Low-cost and Multi-function The L series

Analog I/O

PCI Express

50-pin Mini-Ribbon | Analog Input 8 ch | Analog Output 2 ch | Digital I/O 4 | Counter 1 ch | L series | Bus Isolated | High Precision | On-board Memory

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

Isolated 16-bit Resolution Analog I/O

AIO-160802LI-PE

- Isolation between PC signal and external analog / digital signals
- Sampling start / stop can be selected from via software, by conversion data comparison, or external trigger, etc.
- Buffer memory (1 K data) compatible with FIFO or RING format
- Adjusts output voltage to 0 V when the power supply is turned on
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board ADAI16-8/2(LPCI)L.

PCI Express

50-pin Mini-Ribbon | Analog Input 16 ch | Analog Output - | Digital I/O 4 | Counter 1 ch | L series | Bus Isolated | High Precision | On-board Memory

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

Isolated 16-bit Resolution Analog Input

AI-1616LI-PE

- Isolation between PC signal and external analog / digital signals
- Sampling start / stop can be selected from via software, by conversion data comparison, or external trigger, etc.
- Buffer memory (1 K data) compatible with FIFO or RING format
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board ADI16-16(LPCI)L.

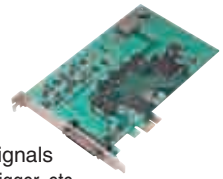
PCI Express

50-pin Mini-Ribbon | Analog Input - | Analog Output 4 ch | Digital I/O 4 | Counter 1 ch | L series | Bus Isolated | High Precision | On-board Memory

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

Isolated 16-bit Resolution Analog Output

AO-1604LI-PE



- Isolation between PC signal and external analog / digital signals
- Sampling start / stop can be selected from via software or external trigger, etc.
- Buffer memory (1 K data) compatible with FIFO or RING format
- Adjusts output voltage to 0 V when the power supply is turned on
- Functions, Connector pin and Signal assignment is compatible with the PCI-compliant board DAI16-4(LPCI)L.

Model		AIO-160802LI-PE	AI-1616LI-PE	AO-1604LI-PE	
Analog Input	Channels	8 single-ended	16 single-ended	-	
	Range	Bipolar: +/-10 V		-	
	Impedance	1 MΩ or more		-	
	Resolution	16 bit		-	
	Conversion Speed	10 µsec/ch		-	
	Conversion Accuracy*4	+/-16 LSB		-	
	Buffer Memory	1 k Word		-	
Analog Output	Channels	2 ch	-	4 ch	
	Range	Bipolar: +/-10 V	-	Bipolar: +/-10 V	
	Impedance	1 Ω or less	-	1 Ω or less	
	Resolution	16 bit	-	16 bit	
	Conversion Speed	10 µsec	-	10 µsec	
	Conversion Accuracy	+/-5 LSB	-	+/-5 LSB	
	Buffer Memory	1 k Word	-	1 k Word	
Digital I/O	Input	4 TTL level (positive logic)			
	Output	4 TTL level (positive logic)			
Counter	Number of Channels	1 ch			
	Counting System	32-bit Up count			
	Max. count	32-bit binary data			
Interrupts		1			
I/O Address		Any 64-byte boundary			
Power Consumption (Max.)		3.3 VDC 820 mA	3.3 VDC 580 mA	3.3 VDC 1150 mA	
Bus / Dimensions (mm)		PCI Express Base Specification Rev. 1.0a x1 / 169.33 (L) x 110.18 (H)			
Connector		10250-52A2JL [3M] or equivalent			
Options	Software	ACX-PAC(W32)			
	Accessories	EPD-50A *1*2, ATBA-8L *1*3*4*5, ATBA-16L *1*3*4, ATP-8L *1*6			
	Cables / Connectors	PCB50PS-0.5P / 1.5P, PCA50PS-0.5P / 1.5P			

Note:

*1: Requires use of optional cable PCB50PS-0.5P or PCB50PS-1.5P.
*2: "Spring-up terminal unit" is employed to retain terminal screws.
*3: Only for AIO-160802LI-PE, AI-1616LI-PE
*4: Optional AC adapter POA200-20 is required.
*5: Maximum of 8 analog input channels available for AI-1616LI-PE
*6: Maximum of 8 analog input channels and 2 analog output channels available

Driver Library [API-PAC(W32)] included

As shown on the side of product's images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.

Analog I/O

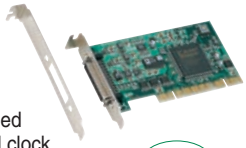
Low-cost and Multi-function The L series

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

about CONTEC
BOX Computers
Panel Computers
Flat Panel Displays
Options
Industrial PC VPC
BTO PCs Solution-ePC
Analog I/O
Digital I/O
Counter & Motion Controller
Serial Communications
GPIB Communications
Expansion Unit / Bus Adapter
Software
Accessories & Cables
Remote I/O
Wireless LAN FLEXLAN
Image Distribution Unit FlexNetViewer
Solutions / Services

PCI | Low Profile | 50-pin Mini-Ribbon | Analog Input 8 ch | Analog Output 2 ch | Digital I/O 4 | Counter 1 ch | L series | High Precision | On-board Memory | CE

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB



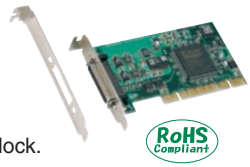
RoHS Compliant

Low-Cost 16-bit A/D
ADA16-8/2(LPCI)L

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

PCI | Low Profile | 50-pin Mini-Ribbon | Analog Input 16 ch | Analog Output - | Digital I/O 4 | Counter 1 ch | L series | High Precision | On-board Memory | CE

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB



RoHS Compliant

Low-Cost 16-bit A/D
AD16-16(LPCI)L

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

PCI | Low Profile | 68-pin 0.8 mm Pitch | Analog Input 64 ch | Analog Output - | Digital I/O 4 | Counter 1 ch | L series | High Precision | On-board Memory

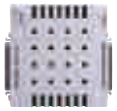
Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

RoHS Compliant

Low-Cost 16-bit A/D
AD16-64(LPCI)LA

- 64 ch single-ended input or 32 ch differential inputs
- On-board control mechanism provides analog input, timed input and input that is synchronized with external clock.
- Software for analog input correction
- Low Profile PCI-compliant (includes bracket for use in standard PCI slot)

Buffer Amplifier Box (Input: 16 ch type)*
ATBA-16L



Pb Free

Soon to be RoHS-compliant

Buffer Amplifier Box (Input: 8 ch type)*
ATBA-8L

RoHS Compliant

* Optional AC adapter POA200-20 is required.

AC adapter
POA200-20

(Input: 90 - 264 VAC, Output: 5 VDC 2.0 A)

Model		ADA16-8/2(LPCI)L	AD16-16(LPCI)L	AD16-64(LPCI)LA
Analog Input	Channels	8 single-ended	16 single-ended	64 single-ended, 32 differential
	Range	Bipolar: +/-10 V		
	Impedance	1 MΩ or more		
	Resolution	16 bit		
	Conversion Speed	10 µsec/ch (Max.)		
	Conversion Accuracy*1	+/-5 LSB		
	Buffer Memory	1 k Word		
Analog Output	Channels	2 ch	-	
	Range	Bipolar: +/-10 V	-	
	Impedance	1 Ω or less	-	
	Resolution	16 bit	-	
	Conversion Speed	10 µsec (Max.)	-	
	Conversion Accuracy	+/-3 LSB	-	
	Buffer Memory	1 k Word	-	
Digital I/O	Input	4 TTL level (positive logic)		
	Output	4 TTL level (positive logic)		
Counter	Number of Channels	1 ch		
	Counting System	32-bit Up count		
	Max. count	32-bit binary data		
Interrupts		1		
I/O Address		Any 64-byte boundary		
Power Consumption (Max.)		5 VDC 380 mA	5 VDC 260 mA	5 VDC 450 mA
Bus / Dimensions (mm)		PCI (32 bit, 33 MHz, Universal key type supported *2) / 121.69 (L) x 63.41 (H)		
Connector		10250-52A2JL [3M] or equivalent		HDRA-E68W1LFDT-SL [HONDA TSUSHIN KOGYO] or equivalent
Options	Software	ACX-PAC(W32)		
	Accessories	ATBA-8L*3, ATBA-16L*3, EPD-50A*3*8, ATP-8L*3	ATBA-16L*3, ATP-8L*3*4, EPD-50A*3*8, ATBA-8L*3*4	DTP-64A*5*6, EPD-68A*6*7*8, EPD-96A*5*6*8, EPD-96*5*6, ATP-32F*5*6, ATP-8*4*5*6
	Cables / Connectors	PCB50PS-0.5P / 1.5P, PCA50PS-0.5P / 1.5P		PCA68PS-0.5P / 1.5P, PCB68PS-0.5P / 1.5P, ADC-68M/96F

Note:
*1: When using a signal source with a built-in high-speed operational amplifier * 2 : +5 V power must be supplied from PCI bus slot.
*3: Requires use of optional cable PCB50PS-0.5P or PCB50PS-1.5P.
*4: Maximum of 8 analog input channels available *5: Requires use of optional cable ADC-68M/96F
*6: AD16-64(LPCI)LA requires two cables and accessories each for two connectors (CNA and CNB).
*7: Optional cable PCB68PS is required (0.5 m is recommended).
*8: "Spring-up terminal unit" is employed to retain terminal screws.

As shown on the side of product's images, RoHS compliant (RoHS Compliant) is a CONTEC original marking for RoHS-compliant products.

As shown on the side of product's images, PbFree (Pb Free) is a CONTEC original marking for lead-free products.

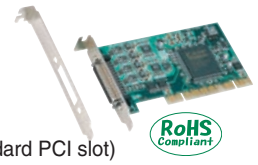
Lineup
Measurement Products
Multi-function F series
PCI Express
PCI
PC Card
USB
Low-cost and Multi-function L series
PCI Express
PCI
PC Card
USB
Intelligent E series
PCI Express
PCI
Standard
PCI
USB
ISA
cTEST

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

Low-cost and Multi-function The L series

Analog I/O

PCI | Low Profile | 50-pin Mini-Ribbon | Analog Input: - | Analog Output: 4 ch | Digital I/O: 4 | Counter: 1 ch | L series | High Precision | On-board Memory | CE
Windows Driver | Linux Driver | ActiveX Component Package | MATLAB

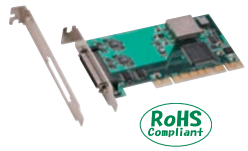


Low-Cost 16-bit Digital to Analog Output

DA16-4(LPCI)L

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

PCI | Low Profile | 50-pin Mini-Ribbon | Analog Input: - | Analog Output: 8 ch | Digital I/O: 4 | Counter: 1 ch | L series | High Precision | On-board Memory | CE
Windows Driver | Linux Driver | ActiveX Component Package | MATLAB

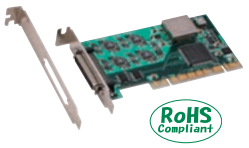


Low-Cost 16-bit Digital to Analog Output

DA16-8(LPCI)L

- On-board control mechanism provides analog output, timed output and output that is synchronized with external signals.
- Filtering for facilitation in the connection of external signals
- Software for analog output correction
- Low Profile PCI-compliant (includes bracket for use in standard PCI slot)
- Supports MATLAB and LabVIEW with plug-ins for the dedicated libraries

PCI | Low Profile | 50-pin Mini-Ribbon | Analog Input: - | Analog Output: 16 ch | Digital I/O: 4 | Counter: 1 ch | L series | High Precision | On-board Memory | CE
Windows Driver | Linux Driver | ActiveX Component Package | MATLAB



Low-Cost 16-bit Digital to Analog Output

DA16-16(LPCI)L

- On-board control mechanism provides analog output, timed output and output that is synchronized with external signals.
- Filtering for facilitation in the connection of external signals
- Software for analog output correction
- Low Profile PCI-compliant (includes bracket for use in standard PCI slot)
- Supports MATLAB and LabVIEW with plug-ins for the dedicated libraries

Model		DA16-4(LPCI)L	DA16-8(LPCI)L	DA16-16(LPCI)L
Analog Input	Channels	-		
	Range	-		
	Impedance	-		
	Resolution	-		
	Conversion Speed	-		
	Conversion Accuracy*1	-		
	Buffer Memory	-		
Analog Output	Channels	4 ch	8 ch	16 ch
	Range	Bipolar: +/-10 V		
	Impedance	1 Ω or less		
	Resolution	16 bit		
	Conversion Speed	10 µsec (Max.)		
	Conversion Accuracy	+/-3 LSB	+/-5 LSB	
	Buffer Memory	1 k Word		
Digital I/O	Input	4 TTL level (positive logic)		
	Output	4 TTL level (positive logic)		
Counter	Number of Channels	1 ch		
	Counting System	32-bit Up count		
	Max. count	32-bit binary data		
Interrupts		1		
I/O Address		Any 64-byte boundary		
Power Consumption (Max.)		5 VDC 440 mA	5 VDC 850 mA	5 VDC 1100 mA
Bus / Dimensions (mm)		PCI (32 bit, 33 MHz, Universal key type supported *2) / 121.69 (L) x 63.41 (H)		
Connector		10250-52A2JL [3M] or equivalent		
Options	Software	ACX-PAC(W32)		
	Accessories	EPD-50A*3*5, ATP-8L*3*4	EPD-50A*3*5	
	Cables / Connectors	PCB50PS-0.5P / 1.5P, PCA50PS-0.5P / 1.5P		

*1: When using a signal source with a built-in high-speed operational amplifier * 2 : +5 V power must be supplied from PCI bus slot.
*3: Requires use of optional cable PCB50PS-0.5P or PCB50PS-1.5P. *4: Maximum of 2 analog output channels available
*5: "Spring-up terminal unit" is employed to retain terminal screws.

Note:

As shown on the side of product's images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.

Analog I/O

Low-cost and Multi-function The L series

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

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Analog I/O
Digital I/O
Counter & Motion Controller
Serial Communications
GPIB Communications
Expansion Unit / Bus Adapter
Software
Accessories & Cables
Remote I/O
Wireless LAN FLEXLAN
Image Distribution Unit FlexNetViewer
Solutions / Services

Card Bus | 68-pin 0.8 mm Pitch | Analog Input 8 ch | Analog Output 2 ch | Digital I/O 4 | Counter 1 ch | L series | High Precision | On-board Memory

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

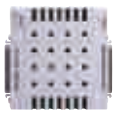
Pb Free
Soon to be RoHS-compliant

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 clock.
- 1 k data buffer memory enables background processing.
- Software for analog input / output correction

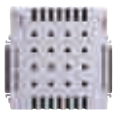
*This card cannot be used simultaneously with another card if the PC has 2 TYPE Ⅱ PC card slots arranged in tandem. It can be used with other PC card, such as memory card, that does not use an external connector.

Buffer Amplifier Box (Input: 16 ch type)* ATBA-16L



Pb Free
Soon to be RoHS-compliant

Buffer Amplifier Box (Input: 8 ch type)* ATBA-8L



RoHS Compliant

* Optional AC adapter POA200-20 is required.

AC adapter POA200-20

(Input: 90 - 264 VAC, Output: 5 VDC 2.0 A)

Lineup
Measurement Products
Multi-function F series
PCI Express
PCI
PC Card
USB
Low-cost and Multi-function L series
PCI Express
PCI
PC Card
USB
Intelligent E series
PCI Express
PCI
Standard
PCI
USB
ISA
cTEST

Model		ADA16-8/2(CB)L
Analog Input	Channels	8 single-ended
	Range	Bipolar: +/-10 V
	Impedance	1 MΩ or more
	Resolution	16 bit
	Conversion Speed	10 µsec/ch (Max.)
	Conversion Accuracy*1	+/-5 LSB
	Buffer Memory	1 k Word
Analog Output	Channels	2 ch
	Range	Bipolar: +/-10 V
	Impedance	1 Ω or less
	Resolution	16 bit
	Conversion Speed	10 µsec (Max.)
	Conversion Accuracy	+/-3 LSB
	Buffer Memory	1 k Word
Digital I/O	Input	4 LVTTL level (positive logic)
	Output	4 LVTTL level (positive logic)
Counter	Number of Channels	1 ch
	Counting System	32-bit Up count
	Max. count	32-bit binary data
Interrupts		1
I/O Address		Any 64-byte boundary
Power Consumption (Max.)		3.3 VDC 500 mA
Bus / Dimensions (mm)		PC Card Standard CardBus / TYPE Ⅱ
Connector		68-pin 0.8 mm Pitch
Options	Software	ACX-PAC(W32)
	Accessories	ATBA-8L*2, ATBA-16L*2, EPD-50A*2*4, EPD-68A*3*4, ATP-8L*2
	Cables / Connectors	PCA68PS-0.5P/1.5P, PCB68PS-0.5P/1.5P, ADC-68M/50M

*1: When using a signal source with a built-in high-speed operational amplifier *2: Requires use of optional cable ADC-68M/50M
*3: Optional cable PCB68PS is required (0.5 m is recommended). *4: "Spring-up terminal unit" is employed to retain terminal screws.

Note:

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As shown on the side of product's images, PbFree (Pb Free) is a CONTEC original marking for lead-free products.

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

Low-cost and Multi-function The L series

Analog I/O

PCI | Low Profile | 50-pin Mini-Ribbon | Analog Input 8 ch | Analog Output 2 ch | Digital I/O 4 | Counter 1 ch | L series | Bus Isolated | High Precision | On-board Memory
Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

Isolated Low-Cost 16-bit Multi-function Analog I/O

ADAI16-8/2(LPCI)L

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

RoHS Compliant

PCI | Low Profile | 50-pin Mini-Ribbon | Analog Input 16 ch | Analog Output - | Digital I/O 4 | Counter 1 ch | L series | Bus Isolated | High Precision | On-board Memory
Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

Isolated Low-Cost 16-bit Analog Input

ADI16-16(LPCI)L

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

RoHS Compliant

PCI | Low Profile | 50-pin Mini-Ribbon | Analog Input - | Analog Output 4 ch | Digital I/O 4 | Counter 1 ch | L series | Bus Isolated | High Precision | On-board Memory
Windows Driver | Linux Driver | ActiveX Component Package | MATLAB

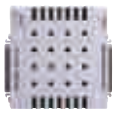
Isolated Low-Cost 16-bit Analog Output

DAI16-4(LPCI)L

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

RoHS Compliant

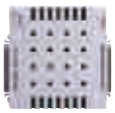
Buffer Amplifier Box (Input: 16 ch type)*
ATBA-16L



Pb Free

Soon to be RoHS-compliant

Buffer Amplifier Box (Input: 8 ch type)*
ATBA-8L



RoHS Compliant

* Optional AC adapter POA200-20 is required.

AC adapter
POA200-20

(Input: 90 - 264 VAC, Output: 5 VDC 2.0 A)

Model		ADAI16-8/2(LPCI)L	ADI16-16(LPCI)L	DAI16-4(LPCI)L	
Analog Input	Isolation type	Bus isolated			
	Channels	8 single-ended	16 single-ended	-	
	Range	Bipolar: +/-10 V		-	
	Impedance	1 MΩ or more		-	
	Resolution	16 bit		-	
	Conversion Speed	10 µsec/ch (Max.)		-	
	Conversion Accuracy*1	+/-16 LSB		-	
	Buffer Memory	1 k Word		-	
Analog Output	Channels	2 ch	-	4 ch	
	Range	Bipolar: +/-10 V	-	Bipolar: +/-10 V	
	Impedance	1 Ω or less	-	1 Ω or less	
	Resolution	16 bit	-	16 bit	
	Conversion Speed	10 µsec (Max.)	-	10 µsec (Max.)	
	Conversion Accuracy	+/-5 LSB	-	+/-5 LSB	
	Buffer Memory	1 k Word	-	1 k Word	
Digital I/O	Input	4 TTL level (positive logic)			
	Output	4 TTL level (positive logic)			
Counter	Number of Channels	1 ch			
	Counting System	32-bit Up count			
	Max. count	32-bit binary data			
Interrupts		1			
I/O Address		Any 64-byte boundary			
Power Consumption (Max.)		5 VDC 680 mA	5 VDC 400 mA	5 VDC 800 mA	
Bus / Dimensions (mm)		PCI (32 bit, 33 MHz, Universal key type supported *2) / 121.69 (L) x 63.41 (H)			
Connector		10250-52A2JL [3M] or equivalent			
Options	Software	ACX-PAC(W32)			
	Accessories	ATBA-8L*3, ATBA-16L*3, EPD-50A*3*6, ATP-8L*3	ATBA-8L*3*4, ATBA-16L*3, EPD-50A*3*6, ATP-8L*3*4	EPD-50A*3*6, ATP-8L*3*5	
	Cables / Connectors	PCB50PS-0.5P/1.5P, PCA50PS-0.5P/1.5P			

Note:
*1: When using a signal source with a high-speed built-in operational amplifier * 2 : +5 V power must be supplied from PCI bus slot.
*3: Requires use of optional cable PCB50PS-0.5P or PCB50PS-0.5P1.5P. *4: Maximum of 8 analog input channels available
*5: Maximum of 2 analog output channels available *6: "Spring-up terminal unit" is employed to retain terminal screws.

As shown on the side of product's images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.

As shown on the side of product's images, PbFree is a CONTEC original marking for lead-free products.

Analog I/O

Intelligent The E series

Features of "Analog The E series"

1. Bulk buffer memory

Data bulk buffer memory capable of storing up to 16 M is equipped, 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 (settings can be modified) 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. Board status can be monitored without additional load on the host computer.

4. Analog output

Independent 1-channel analog output (D/A conversion) function is equipped. External device can be controlled with this board.

5. Digital input / output

4 ch of TTL level digital input and 4 ch of digital outputExternal device can be monitored and controlled with this board.

Dedicated function upgrades

A variety of functions can be added with various dedicated options.
- Channel expansion : ATCH-16A(PCI), ATUH-16A(PCI)

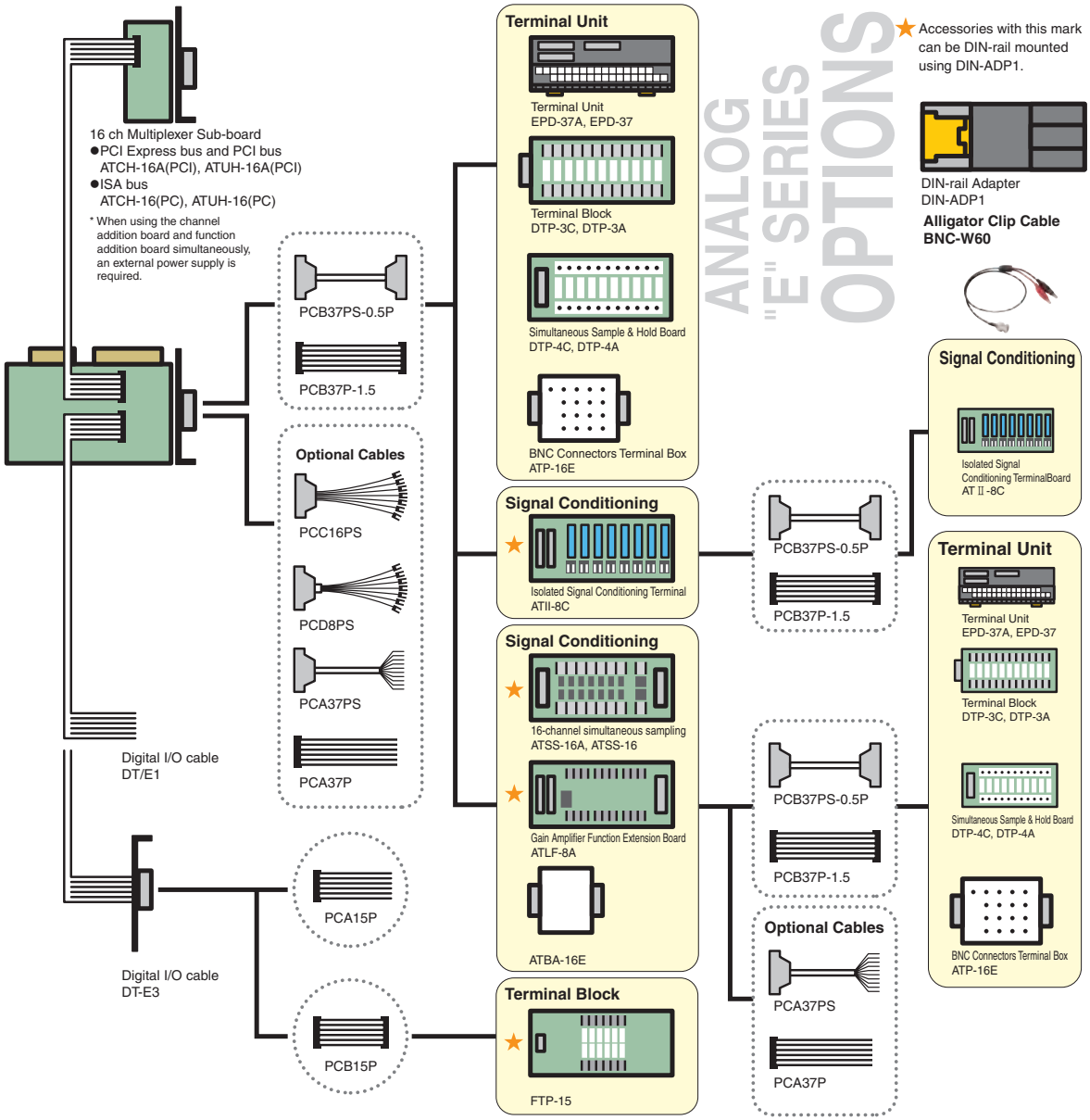
These channel expansion boards enable 16 ch (8 ch for differential input) analog E series board to be used as 32 ch (16 ch for differential input) bard.
- Isolation amplifier : ATII-8C

The isolation function extension board provides both bus isolation and channel-to-channel insulation.
- Simultaneous sampling : ATSS-16A, ATSS-16

With the simultaneous sample & hold, it is capable of sampling 16 channels at the same timing.
- Low Pass Filter : ATLF-8A

The low pass filter function addition board can lower commercial power frequency and provide simple anti-aliasing filtering (wide area filtering).

Accessories & Cables for The E series



Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

Intelligent The E series

Analog I/O

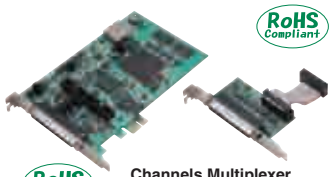
PCI Express — 1 MSPS 16 Bit Analog I/O

37-pin D-SUB | Analog Input 16 ch | Analog Output 1 ch | Digital I/O 4 | Counter 1 ch | E series | High Precision | High Speed | On-board Memory

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

AIO-161601UE3-PE

- High-capacity buffer memory (16 M data) compatible with FIFO or RING format is equipped.
- Extensive function expansion accessories are available.
- Sampling start / stop control can be selected from via software, by conversion data comparison, or external trigger, etc.



Channels Multiplexer Sub-Board ATUH-16A(PCI)

16 single-ended or 8 differential inputs can be added.

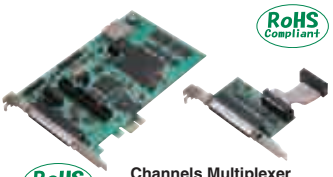
PCI Express — 1 MSPS 12 Bit Analog I/O

37-pin D-SUB | Analog Input 16 ch | Analog Output 1 ch | Digital I/O 4 | Counter 1 ch | E series | High Speed | On-board Memory

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

AIO-121601UE3-PE

- High-capacity buffer memory (16 M data) compatible with FIFO or RING format is equipped.
- Extensive function expansion accessories are available.
- Sampling start / stop control can be selected from via software, by conversion data comparison, or external trigger, etc.



Channels Multiplexer Sub-Board ATUH-16A(PCI)

16 single-ended or 8 differential inputs can be added.

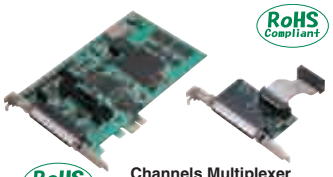
PCI Express — 100 KSPS 16 bit Analog I/O

37-pin D-SUB | Analog Input 16 ch | Analog Output 1 ch | Digital I/O 4 | Counter 1 ch | E series | High Precision | On-board Memory

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

AIO-161601E3-PE

- High-capacity buffer memory (16 M data) compatible with FIFO or RING format is equipped.
- Extensive function expansion accessories are available.
- Sampling start / stop control can be selected from via software, by conversion data comparison, or external trigger, etc.



Channels Multiplexer Sub-Board ATCH-16A(PCI)

16 single-ended or 8 differential inputs can be added.

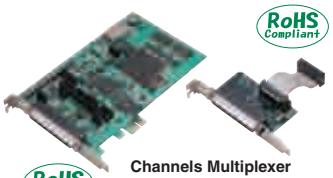
PCI Express — 100 KSPS 12 bit Analog I/O

37-pin D-SUB | Analog Input 16 ch | Analog Output 1 ch | Digital I/O 4 | Counter 1 ch | E series | On-board Memory

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

AIO-121601E3-PE

- High-capacity buffer memory (16 M data) compatible with FIFO or RING format is equipped.
- Extensive function expansion accessories are available.
- Sampling start / stop control can be selected from via software, by conversion data comparison, or external trigger, etc.



Channels Multiplexer Sub-Board ATCH-16A(PCI)

16 single-ended or 8 differential inputs can be added.

Model		AIO-161601UE3-PE	AIO-121601UE3-PE	AIO-161601E3-PE	AIO-121601E3-PE
Input Channels		16 single-ended, 8 differential			
Output Channels		1 ch			
Resolution		16 bit	12 bit	16 bit	12 bit
Analog Input	Range	Bipolar +/-10 V, +/-5 V, or Unipolar 0 - +10 V, 0 - +5 V (jumper setting)	Bipolar +/-10 V, +/-5 V, +/-2.5 V, or Unipolar 0 - +10 V, 0 - +5 V (jumper setting)	Bipolar +/-10 V, +/-5 V, or Unipolar 0 - +10 V, 0 - +5 V (jumper setting)	Bipolar +/-10 V, +/-5 V, +/-2.5 V, +/-1.25 V, or Unipolar 0 - +10 V, 0 - +5 V, 0 - +2.5 V, 0 - +1.25 V (Input range is set by both jumper setting and software setting.)
	Gain	-			
	Conversion Speed	1 µsec/ch (Max.)		10 µsec/ch (Max.)	
	Conversion Accuracy*1*2	+/-5 LSB*3	+/-3 LSB	+/-5 LSB*3	+/-2 LSB (+/-10 V, +/-5 V, 0 - +10 V, 0 - +5 V) voltage input, +/-4 LSB (+/-2.5 V, +/-1.25 V, 0 - +2.5 V, 0 - +1.25 V) voltage input
	Impedance	1 MΩ or more			
Analog Output	Range	Bipolar +/-10 V, Unipolar 0 - +10 V (jumper setting)	Bipolar +/-10 V, +/-5 V, Unipolar 0 - +10 V (jumper setting)	Bipolar +/-10 V, Unipolar 0 - +10 V (jumper setting)	Bipolar +/-10 V, +/-5 V, Unipolar 0 - +10 V (jumper setting)
	Rating	+/-5 mA			
	Conversion Speed	10 µsec (Max.)	6 µsec (Max.)	10 µsec (Max.)	6 µsec (Max.)
	Conversion Accuracy*1	+/-3 LSB	+/-1/2 LSB	+/-3 LSB	+/-1/2 LSB
	Impedance	1 Ω or less			
Trigger		Software / Conversion data comparison / TTL level external signal			
Isolation type		-			
Timer		-			
Interrupts		1			
Digital I/O		Non-isolated input 4 ch (selectable with counter output with TTL and jumper), Non-isolated output 4 ch (can be shared with counter output with TTL and jumper)			
I/O Address		Any 32-byte boundary			
Power consumption (Max.)*4		+3.3 V 2000 mA	+3.3 V 1200 mA	+3.3 V 1500 mA	+3.3 V 1500 mA
Bus / Dimensions (mm)		PCI Express Base Specification Rev. 1.0a x1 / 169.33 (L) x 110.18 (H)			
Connector		37-pin D-SUB [F type] screw lock #4-40UNC, DCLC-J37SAF-20L9E [JAE] or equivalent 16-pin header connector, PS-16SEN-D4P1-1C [JAE] or equivalent			
Options	Software (Attention)	ACX-PAC(W32)			
	Accessories	DTP-3C*5, DTP-4C*5, ATP-16E*5, ATBA-16E*5, FTP-15*6, EPD-37A*5*7, EPD-37*5, ATSS-16A*5*8, ATII-8C*5, ATLF-8A*5, ATCH-16A(PCI)*11, ATUH-16A(PCI)*12			
	Cables / Connectors	PCA37P-1.5, PCA37PS-0.5P / 1.5P, PCB37P-1.5, PCB37PS-0.5P / 1.5P, PCC16PS-1.5 / 3, PCD8PS-1.5 / 3, PCA15P-1.5*9, PCB15P-1.5*9*10, PCB15PS-0.5P / 1.5P*9*10, DT/E1, DT-E3, CN5-D37M			

Note:

*1: The non-linearity error may deviate the maximum range by about +/-0.1%, when the operating temperature is 0 °C or 50 °C. *2: When using a signal source with a high-speed built-in operational amplifier
*3: An error of about 0.02 % of the maximum range value may occur with a non-isolated bipolar setting of +/-5 V or a non-isolated unipolar setting of 0 to+5 V.
*4: Current consumption is increased when +5 V is supplied to outside through the connector. *5: Cable PCB37PS - xxP is required separately (0.5 m is recommended).
*6: Cable DT-E3 and PCB15P-1.5 are required separately. *7: "Spring-up terminal unit" is employed to retain terminal screws. *8: External power supply is required separately.
*9: DT-E3 is required. *10: Required only when FTP-15 is used *11: AIO-161601E3-PE, AIO-121601E3-PE only *12: AIO-161601UE3-PE, AIO-121601UE3-PE only

Attention: Direct I/O access from user applications is not supported. Please use the included Driver library or the optional software.

As shown on the side of product's images, RoHS compliant (RoHS Compliant) is a CONTEC original marking for RoHS-compliant products.

Analog I/O

Intelligent The E series

Please see page N-03 for optional accessories and cables/connectors, and page M-01 for software.

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Industrial PC VPC
BTO PCs Solution-ePC
Analog I/O
Digital I/O
Counter & Motion Controller
Serial Communications
GPIB Communications
Expansion Unit / Bus Adapter
Software
Accessories & Cables
Remote I/O
Wireless LAN FLEXLAN
Image Distribution Unit FlexNetViewer
Solutions / Services

High Speed 16-bit Multi-function A/D Input

AD16-16U(PCI)EV

PCI | 37-pin D-SUB | Analog Input 16 ch | Analog Output 1 ch | Digital I/O 4 | Counter - | E series | High Precision | High Speed | On-board Memory | CE | RoHS Compliant

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

- Equipped high-precision 16 bit A/D converter enables up to 1 µsec/ch high-speed sampling.
- Bulk data buffer memory of 16 M and diverse sampling control functions are equipped.

RoHS Compliant

Channel Multiplexer Sub-Board
ATUH-16A(PCI)

16 single-ended or 8 differential inputs can be added.

High Speed Multi-function A/D Input

AD12-16U(PCI)EV

PCI | 37-pin D-SUB | Analog Input 16 ch | Analog Output 1 ch | Digital I/O 4 | Counter - | E series | High Speed | On-board Memory | CE | RoHS Compliant

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

- Equipped 12 bit A/D converter enables up to 1 µsec/ch high-speed sampling.
- Bulk data buffer memory of 16 M and diverse sampling control functions are equipped.

RoHS Compliant

Channel Multiplexer Sub-Board
ATUH-16A(PCI)

16 single-ended or 8 differential inputs can be added.

16-bit Multi-function A/D Input

AD16-16(PCI)EV

PCI | 37-pin D-SUB | Analog Input 16 ch | Analog Output 1 ch | Digital I/O 4 | Counter - | E series | High Precision | On-board Memory | CE | RoHS Compliant

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

- Equipped high-precision 16 bit A/D converter enables up to 10 µsec/ch high-speed sampling.
- Bulk data buffer memory of 16 M and diverse sampling control functions are equipped.

RoHS Compliant

Channel Multiplexer Sub-Board
ATCH-16A(PCI)

16 single-ended or 8 differential inputs can be added.

12-bit Multi-Function A/D Input

AD12-16(PCI)EV

PCI | 37-pin D-SUB | Analog Input 16 ch | Analog Output 1 ch | Digital I/O 4 | Counter - | E series | On-board Memory | CE | RoHS Compliant

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

- Equipped 12 bit A/D converter enables up to 10 µsec/ch sampling.
- Bulk data buffer memory of 16 M and diverse sampling control functions are equipped.

RoHS Compliant

Channel Multiplexer Sub-Board
ATCH-16A(PCI)

16 single-ended or 8 differential inputs can be added.

Model		AD16-16U(PCI)EV	AD12-16U(PCI)EV	AD16-16(PCI)EV	AD12-16(PCI)EV
Input Channels		16 single-ended, 8 differential			
Output Channels		1 ch			
Resolution		16 bit	12 bit	16 bit	12 bit
Analog Input	Range	+/-10 V, +/-5 V, 0 - +10 V, 0 - +5 V (jumper setting)	+/-10 V, +/-5 V, +/-2.5 V, 0 - +5 V, 0 - +10 V (jumper setting)	+/-10 V, +/-5 V, 0 - +10 V, 0 - +5 V (jumper setting)	+/-10 V, +/- 5, +/-2.5 V, +/-1.25 V, 0 - +10 V, 0 - +5 V, 0 - +2.5 V, 0 - +1.25 V[*9]
	Conversion Speed	1 µsec/ch (Max.)		10 µsec/ch (Max.)	
	Conversion Accuracy[*1*2]	+/-5 LSB[*3]	+/-3 LSB	+/-5 LSB[*3]	+/-2 LSB (+/-10 V, +/-5 V, 0 - +10 V, 0 - +5 V), +/-4 LSB (+/-2.5 V, +/-1.25 V, 0 - +2.5 V, 0 - +1.25 V)
	Impedance	1 MΩ or more			
Analog Output	Range	+/-10 V, 0 - +10 V (jumper setting)	+/-10 V, +/-5 V, 0 - +10V (jumper setting)	+/-10 V, 0 - +10 V (jumper setting)	+/-5 V, +/-10 V, 0 - 10 V (jumper setting)
	Rating	+/-5 mA			
	Conversion Speed	10 µsec (Max.)	6 µsec (Max.)	10 µsec (Max.)	6 µsec (Max.)
	Conversion Accuracy	+/-3 LSB[*1]	+/-1/2 LSB[*1]	+/-3 LSB[*1]	+/-1/2 LSB[*1]
	Impedance	1 Ω or less			
Trigger		Start Trigger: 3 modes; Stop Trigger: 4 modes			
Isolation type		-			
Timer		-			
Interrupts		1			
Digital I/O		General I/O: Input 4 ch, Output 4 ch (TTL level is switchable between counter output using jumper)			
I/O Address		Any 32-byte boundary			
Power consumption (Max.)[*4]		5 VDC 1000 mA			
Bus / Dimensions (mm)		PCI (32 bit, 33 MHz, Universal key type supported [*5]) / 176.41 (L) x 105.68 (H)			
Connector		For Analog: 37-pin D-SUB connector [F type], For Digital: 16-pin header connector [M type]			
Options	Software (Attention)	ACX-PAC(W32)			
	Accessories	DTP-3C[*6], DTP-4C[*6], ATP-16E[*6], ATBA-16E[*6], FTP-15[*7], EPD-37A[*6*10], EPD-37[*6], ATSS-16A[*6], ATSS-16[*6], ATII-8C[*6], ATLF-8A[*6], ATCH-16A(PCI)[*11], ATUH-16A(PCI)[*12]			
	Cables / Connectors	PCA37P-1.5, PCA37PS-0.5P / 1.5P, PCB37PS-0.5P / 1.5P, PCA15P-1.5, PCB15P-1.5[*8], PCB15PS-0.5P / 1.5P[*8], PCC16PS, PCD8PS, DT/E1, DT-E3, CN5-D37M			

Note:

*1: Nonlinear difference may deviate from the maximum range by about 0.1 % when the ambient temperature is 0 °C or 50 °C.
*2: When using a signal source with a high-speed built-in operational amplifier
*3: An error of about 0.02 % of the maximum range value may occur with a non-isolated bipolar setting of +/-5 V or a non-isolated unipolar setting of 0 to +5 V.
*4: Current consumption is increased when the PC power (+5 V) is supplied to outside through the connector.
*5: +5 V power must be supplied from PCI bus slot (it does not work on a machine with a +3.3 V power supply only).
*6: Requires use of optional cable PCB37P or PCB37PS *7: Cable DT-E3 and PCB15P are required separately. *8: Required only when FTP-15 is used
*9: The input range is set by both jumper and software.
*10: "Spring-up type terminal unit" is employed to retain terminal screws. *11: AD16-16(PCI) EV, AD12-16(PCI) EV only *12: AD16-16U(PCI) EV, AD12-16U(PCI) EV only

Attention: Direct I/O access from user applications is not supported. Please use the included Driver library or the optional software.

As shown on the side of product's images, RoHS compliant (RoHS Compliant) is a CONTEC original marking for RoHS-compliant products.

Lineup
Measurement Products
Multi-function F series
PCI Express
PCI
PC Card
USB
Low-cost and Multi-function L series
PCI Express
PCI
PC Card
USB
Intelligent E series
PCI Express
PCI
Standard
PCI
USB
ISA
cTEST

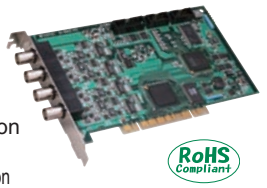
Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

Standard

Analog I/O

PCI | BNC | Analog Input 4 ch | Digital I/O 4 | High Speed | On-board Memory | Bus Master | Simultaneous Sampling | Windows Driver | ActiveX Component Package

10 MSPS 12 bit Analog Input
AI-1204Z-PCI



- 4 ch simultaneous sampling at the maximum conversion speed of 10 MSPS (100 nsec)
- Incorporates a synchronization control connector for synchronized operation
- Bulk memory buffer (32 M Word) and bus master transfer function allow for high-speed continuous data collection for an extended period of time.
- BNC connector is employed for analog input terminal.

Model		AI-1204Z-PCI
Analog Input	Channels	4 single-ended
	Range	(When 50 Ω terminal setting is disabled) Bipolar +/-10 V, +/-5 V, +/-2.5 V, +/-1.25 V or Unipolar 0 - +10 V, 0 - +5 V, 0 - +2.5 V (When 50 Ω terminal setting is enabled) Bipolar +/-5 V, +/-2.5 V, +/-1.25 V or Unipolar 0 - +5 V, 0 - +2.5 V
	Impedance	1 MΩ or more, 50 Ω+/-1 % (50 Ω terminal setting enabled)
	Resolution	12 bit
	Conversion Speed	100 nsec (Max.)
	Conversion Accuracy*1*2*4	Within +/-4 LSB (Range: +/-10 V) Within +/-6 LSB (Range: 0 - +10 V, +/-5 V) Within +/-8 LSB (Range: 0 - +5 V, +/-2.5 V) Within +/-10 LSB (Range: 0 - +2.5 V, +/-1.25 V)
	Buffer Memory	32 M data
Digital I/O	Input	4 LVTTL level (positive logic)
	Output	4 LVTTL level (positive logic)
Counter	Number of Channels	-
	Counting System	-
	Max. count	-
Interrupts		Error and other factors, 1 ch/INTA
I/O Address		64 ports x1, 256 ports x1 occupation
Power Consumption (Max.)		5 VDC 2500 mA
Bus / Dimensions (mm)		PCI (32 bit, 33 MHz, Universal key type supported*3) / 176.41 (L) x 105.68 (H)
Connector		For Analog: (CN1): BNC connector DB-414K [INSERT ENTERPRISE] or equivalent, CN2: For Digital (CN2): 16-pin header connector
Options	Software	ACX-PAC(W32)
	Accessories	FTP-15*5
	Cables / Connectors	(For Analog I/O) BNC-B100, BNC-B200, BNC-B300 (For Digital I/O) DT-E3, DT/E1, PCA15P-1.5*6, PCB15P-1.5*6*7

Note:
*1: The non-linearity error may deviate the maximum range by about +/-0.1%, when the operating temperature is 0 °C or 50 °C.
*2: When using a signal source with a high-speed built-in operational amplifier
*3: +5 V power must be supplied from PCI bus slot (it does not work on a machine with a +3.3 V power supply only).
*4: This accuracy is the accuracy measured in bipolar setting. In unipolar setting, the difference is twice as high as this accuracy (in case of AI-1216AH-PCI and AI-1216AL-PCI).
*5: Cable DT-E3 and PCB15P-1.5 are required separately. *6: DT-E3 is required. *7: Required only when FTP-15 is used

As shown on the side of product's images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.

Analog I/O

Standard

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

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G-21

Lineup
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PCI
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USB
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PCI Express
PCI
PC Card
USB
Intelligent E series
PCI Express
PCI
Standard
PCI
USB
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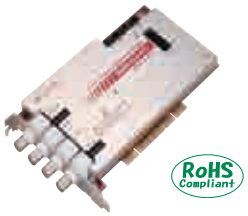
PCI | BNC | Analog Input 2 ch | High Precision | On-board Memory | Simultaneous Sampling | Windows Driver | Windows application software "Front Panel" included

5 1/2 Digits 2 ch Digital Multimeter

DMM-552-PCI

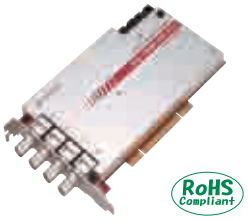


- This contributes to miniaturization and cost reduction of inspection devices, and high-precision digital multimeter functions are equipped in the expansion board for PC.
- Including Windows application software "Front Panel," which is ready-to-use for a measurement device of voltage/current/resistance
- Tact time for data communication is significantly reduced by direct control from PC.
- Up to 5 1/2 digits measurement regardless of the potential difference can be attained by 2 independent channels.
- Combination of our expansion board and synchronization function enables real-time control.

PCI | BNC | Analog Input 2 ch | High Speed | On-board Memory | Synchronization Sampling | Windows Driver | Windows application "Front Panel" included

Digitizer Board with Wave Pattern Judgment

DIG-100M1002-PCI



- Breakaway from visual inspection Automatic judgment of acceptance of subjects
- "Front Panel" application software is ready to be used as oscilloscope or wave pattern judgment.
- Diverse signal inputs and sampling start / end trigger settings are available.
- High-speed digitizing that enables up to 100 MHz, 2 ch simultaneous sampling
- BNC connector of 50 Ω characteristic impedance widely employed for high-speed analog signal transmission

Model		DMM-552-PCI	DIG-100M1002-PCI
Analog Input	Channels	2 single-ended	
	Range	DC voltage: 300 V, 100 V, 10 V, 1 V, 100 mV AC voltage: 300 V, 30 V, 3 V, 300 mV Resistance (CH1 only): 10 MΩ, 1 MΩ, 100 kΩ, 10 kΩ, 1 kΩ, 100 Ω DC current: 3 A, 1 A, 100 mA, 10 mA AC current: 3 A, 300 mA, 30 mA	<When input impedance is set to 1 MW> 40 mVpk [+/-20 mV], 100 mVpk [+/-50 mV], 200 mVpk [+/-100 mV], 400 mVpk [+/-200 mV], 1 Vpk [+/-500 mV], 2 Vpk [+/-1 V], 4 Vpk [+/-2 V], 10 Vpk [+/-5 V], 20 Vpk [+/-10 V], 40 Vpk [+/-20 V] <When input impedance is set to 50 W> 40 mVpk [+/-20 mV], 100 mVpk [+/-50 mV], 200 mVpk [+/-100 mV], 400 mVpk [+/-200 mV], 1 Vpk [+/-500 mV], 2 Vpk [+/-1 V], 4 Vpk [+/-2 V], 10 Vpk [+/-5 V]
	Impedance	<10 V, 1 V, 100 mV range> 10 MΩ +/-2 % or >10 GΩ (selectable) <300 V, 100 V range> 10 MΩ +/-2 % (fixing)	1 MΩ +/-1 % // 19 pF typ. or 50 Ω +/-2 % (selectable)
	Resolution	5 1/2 digits (when integral time is set to 100 ms) Equivalent to approx. 18 bit	10 bit
	Conversion Speed	Approx. 0.67 msec [1500 SPS] (Max.)	10 nsec [100 MSPS] (Max.)
	Conversion Accuracy	+/-0.01 % of reading +/- 10 digits (DCV10 V range)	Within +/-0.4 % (Input voltage range: 400 mVpk, 1 Vpk, 2 Vpk, 4 Vpk, 10 Vpk, 20 Vpk, 40 Vpk) Within +/-0.6 % (Input voltage range: 100 mVpk, 200 mVpk) Within +/-1 % (Input voltage range: 40 mVpk)
	Buffer Memory	4 k data	32 M data
Analog Output	Channels	-	
	Range	-	
	Impedance	-	
	Resolution	-	
	Conversion Speed	-	
	Conversion Accuracy	-	
	Buffer Memory	-	
Digital I/O	Input	4 LVTTL level (positive logic)	1 LVTTL level (common in I/O terminals)
	Output	4 open collector output (negative logic)	1 LVTTL level (common in I/O terminals)
	Rating	30 VDC 40 mA (per 1 ch)	-
Counter	Number of Channels	-	
	Counting System	-	
	Max. count	-	
Interrupts		Error and other factors, 1 ch/INTA	
I/O Address		64 ports x1 occupation	64 ports x1, 256 ports x1 occupation
Power Consumption (Max.)		5 VDC, 700 mA	5 VDC 1.9 A, 3.3 VDC 0.1 A
Bus / Dimensions (mm)		PCI (32 bit, 33 MHz, Universal key type supported*3) / 176.41 (L) x 105.68 (H)	PCI (32 bit, 33 MHz, Universal key type supported*4) / 176.41 (L) x 105.68 (H)
Connector		For measurement (CH0_V, CH0_I, CH1_V, CH1_I): BNC connector, B-901 (W) [INSERT ENTERPRISE] or equivalent For Digital (CN7): 16-pin header connector, PS-16PE-D4T1-B1 [JAE] or equivalent	BNC connector (Characteristic impedance 50 Ω)
Options	Software	-	
	Accessories	FTP-15*1	-
	Cables / Connectors	PCB15PS-0.5P / 1.5P*2, PCB15P-1.5*2, PCA15P-1.5, DT-E3, DT/E1, BNC-W60, BNC-B100, BNC-B200, BNC-300	BNC-B100, BNC-B200, BNC-300

Note: *1: Cable DT-E3 and PCB15P-1.5 are required separately. *2: DT-E3 is required. * 3 : +5 V power must be supplied from PCI bus slot.
*4: +5 V or +3.3 V power must be supplied from PCI bus slot.

As shown on the side of product's images, RoHS compliant is a CONTEC original marking for RoHS-compliant products.

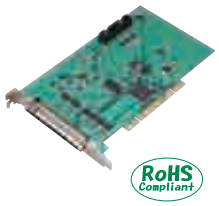
Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

Standard

Analog I/O

PCI | 96-pin Half Pitch | Analog Input 16 ch | Analog Output 1 ch | Digital I/O 8 | Counter 2 ch | On-board Memory

Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB



100 KSPS 12 bit Analog I/O
AIO-121601M-PCI

- Integrates the analog I/O, counter, and digital I/O functions into one board
- 256 k data buffer memory enables background processing.
- Sampling start / stop can be selected from via software, by external triggers, conversion data comparison, or count matching with comparative counter, etc.
- Single-phase and two-phase modes are supported for the counter functions.
- Enables synchronous operation with our boards equipped with a synchronous control connector
- Signal conditioner (signal conversion) SC Series is supported.

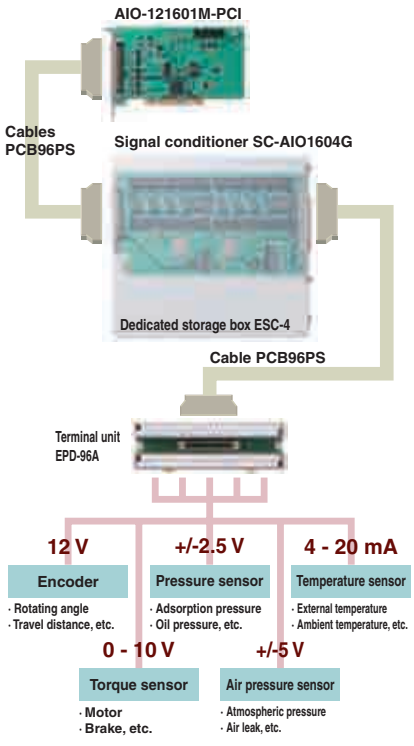
Signal conversion board for Analog I/O
SC-AIO1604G

Signal conversion board box (4 slots)
ESC-4

Model		AIO-121601M-PCI
Analog Input	Channels	16 single-ended
	Range	Bipolar: +/-10 V
	Impedance	1 MΩ or more
	Resolution	12 bit
	Conversion Speed	10 µsec [100 KSPS]/ ch (Max.)
	Conversion Accuracy*1	+/-2 LSB
	buffer memory	256 K data, FIFO or RING format
Analog Output	Channels	1 ch
	Range	Bipolar: +/-10 V
	Impedance	1 Ω or less
	Resolution	12 bit
	Conversion Speed	10 µsec [100 KSPS] (Max.)
	Conversion Accuracy*1	+/-1 LSB
	Buffer Memory	256 K data, FIFO or RING format
Digital I/O	Input	8 TTL level (positive logic)*3
	Output	8 TTL level (positive logic)
Counter	Number of Channels	2 ch
	Counting System	32-bit Up/Down count (2-phase/single-phase/single-phase with Gate Control)
	Max. count	32-bit binary data
Interrupts		Error and other factors, 1 ch/INTA
I/O Address		64 ports x1,256 ports x1 occupation
Power Consumption (Max.)		5 VDC 680 mA
Bus / Dimensions (mm)		PCI (32 bit, 33 MHz, Universal key type supported*2) / 176.41 (L) x 105.68 (H)
Connector		96-pin half pitch connector [M type] PCR-E96LMD+ [HONDA TSUSHIN KOGYO]
Options	Software	ACX-PAC(W32)
	Accessories	EPD-96A*4*6, EPD-96*4, SC-AIO1604G*4*5
	Cables / Connectors	PCA96PS-0.5P, PCA96PS-1.5P, PCB96PS-0.5P, PCB96PS-1.5P, PCA96P-1.5*7, PCB96P-1.5*7, CN5-H96F
Note:		*1: The non-linearity error may deviate the maximum range by about +/-0.1%, when the operating temperature is 0 °C or 50 °C. *2: +5 V power must be supplied from PCI bus slot. *3: It can be selected through software which points to be used for the 2 points, control input signal (CNT0 or CNT1 Control Input) and digital input (Digital Input 00 or 01). *4: Cable PCB96PS-xxP is required separately (0.5 m is recommended). *5: ESC-4 is required separately. *6: "Spring-up terminal unit" is employed to retain terminal screws. *7: The flat cable does not comply with VCCI ClassA. Shielded cables must be used in order to comply with VCCI Class A. (PCA96PS / PCB96PS)

Usage and Advantages of Signal Conditioners

Use of this board with the SC Series signal conditioner allows cost reduction of the system as shown below, even with different output ranges of sensors or different input ranges of actuators.



Please visit our website for the details of cables and accessories.

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Analog I/O

Standard

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

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Software
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Remote I/O
Wireless LAN FLEXLAN
Image Distribution Unit FlexNetViewer
Solutions / Services

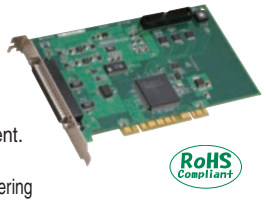
PCI | 37-pin D-SUB | Analog Input 16 ch | Analog Output 2 ch | Digital I/O 4 | Counter 1 ch | On-board Memory | Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

Analog I/O (High Gain)
AIO-121602AH-PCI

- Various input range settings allow for high-precision measurement.
- Buffer memory (1 K data) compatible with FIFO or RING format
- Digital filter function to prevent input error caused by external signal chattering
- Software for correction

PCI | 37-pin D-SUB | Analog Input 16 ch | Analog Output 2 ch | Digital I/O 4 | Counter 1 ch | On-board Memory | Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

Analog I/O (Low Gain)
AIO-121602AL-PCI



- Various input range settings allow for high-precision measurement.
- Buffer memory (1 K data) compatible with FIFO or RING format
- Digital filter function to prevent input error caused by external signal chattering
- Software for correction

Lineup
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PC Card
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Low-cost and Multi-function L series
PCI Express
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Intelligent E series
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PCI
Standard
PCI
USB
ISA
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Model		AIO-121602AH-PCI	AIO-121602AL-PCI
Analog Input	Channels	16 single-ended	
	Range	Bipolar +/-10 V, +/-1 V, +/-0.1 V, +/-0.01 V Unipolar 0 - 10 V, 0 - 1 V, 0 - 0.1 V, 0 - 0.01 V	Bipolar +/-10 V, +/-5 V, +/-2.5 V, +/-1.25 V Unipolar 0 - 10 V, 0 - 5 V, 0 - 2.5 V, 0 - 1.25 V
	Impedance	1 MΩ or more	
	Resolution	12 bit	
	Conversion Speed	150 µsec/ch (Max.)	10 µsec/ch (Max.)
	Conversion Accuracy*1*2*4	+/-2 LSB (when +/-10 V, +/-1 V, 0 - 10 V, 0 - 1 V, when range is used) +/-5 LSB (when +/-0.1 V and 0 - 0.1 V range is used) +/-10 LSB (when +/-0.01 V and 0 - 0.01 V, when range is used)	+/-2 LSB (when +/-10 V, +/-5 V, 0 - 10 V, 0 - 5 V, when range is used) +/-3 LSB (when +/-2.5V and 0 - 2.5V range is used) +/-5 LSB (when +/-1.25 V, 0 - 1.25 V, when range is used)
	Buffer Memory	1 K	
Analog Output	Channels	2 ch	
	Range	Bipolar: +/-10 V	
	Impedance	1 Ω or less	
	Resolution	12 bit	
	Conversion Speed	10 µsec (Max.)	
	Conversion Accuracy*1	+/-1 LSB	
	Buffer Memory	1 K	
Digital I/O	Input	4 TTL level (positive logic)	
	Output	4 TTL level (positive logic)	
Counter	Number of Channels	1 ch	
	Counting System	32-bit Up count	
	Max. count	32-bit binary data	
Interrupts		1	
I/O Address		Any 64-byte boundary	
Power Consumption (Max.)		5 VDC 600 mA	
Bus / Dimensions (mm)		PCI (32 bit, 33 MHz, Universal key type supported*3) / 176.41 (L) x 105.68 (H)	
Connector		CN1: 37-pin D-SUB connector [F type] DCLC-J37SAF-20L9E [JAE] or equivalent CN2: 30-pin pin header PS-30PE-D4TIPNI [JAE] or equivalent	
Options	Software	ACX-PAC(W32)	
	Accessories	EPD-37A *5*6, EPD-37 *5, DTP-3C *5, DTP-4C *5	
	Cables / Connectors	PCB37P-1.5, PCB37PS-0.5P, PCB37PS-1.5P, PCA37P-1.5, PCA37PS-0.5P, PCA37PS-1.5P, CN5-D37M	

Note:
*1: The non-linearity error may deviate the maximum range by about +/-0.1%, when the operating temperature is 0 °C or 50 °C. *2: When using a signal source with a high-speed built-in operational amplifier
*3: +5 V power must be supplied from PCI bus slot (it does not work on a machine with a +3.3 V power supply only).
*4: This accuracy is the accuracy measured in bipolar setting. In unipolar setting, the difference is twice as high as this accuracy. *5: Requires use of optional cable PCB37P-1.5 or PCB37PS-0.5P / 1.5P
*6: "Spring-up terminal unit" is employed to retain terminal screws.

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Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

Standard

Analog I/O

PCI | 37-pin D-SUB | Analog Input 16 ch | Digital I/O 4 | Counter 1 ch | On-board Memory | Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

Analog Input (High Gain)
AI-1216AH-PCI

- Various input range settings allow for high-precision measurement.
- Buffer memory (1 K data) compatible with FIFO or RING format
- Digital filter function to prevent input error caused by external signal chattering
- Software for correction

PCI | 37-pin D-SUB | Analog Input 16 ch | Digital I/O 4 | Counter 1 ch | On-board Memory | Windows Driver | Linux Driver | ActiveX Component Package | C-LOGGER | MATLAB

Analog Input (Low Gain)
AI-1216AL-PCI

- Various input range settings allow for high-precision measurement.
- Buffer memory (1 K data) compatible with FIFO or RING format
- Digital filter function to prevent input error caused by external signal chattering
- Software for correction

Model		AI-1216AH-PCI	AI-1216AL-PCI
Analog Input	Channels	16 single-ended	
	Range	Bipolar +/-10 V, +/-1 V, +/-0.1 V, +/-0.01 V Unipolar 0 - 10 V, 0 - 1 V, 0 - 0.1 V, 0 - 0.01 V	Bipolar +/-10 V, +/-5 V, +/-2.5 V, +/-1.25 V Unipolar 0 - 10 V, 0 - 5 V, 0 - 2.5 V, 0 - 1.25 V
	Impedance	1 MΩ or more	
	Resolution	12 bit	
	Conversion Speed	150 µsec/ch (Max.)	10 µsec/ch (Max.)
	Conversion Accuracy*1*2*4	+/-2 LSB (when +/-10 V, +/-1 V, 0 - 10 V, 0 - 1 V, when range is used) +/-5 LSB (when +/-0.1 V and 0 - 0.1 V range is used) +/-10 LSB (when +/-0.01 V and 0 - 0.01 V, when range is used)	+/-2 LSB (when +/-10 V, +/-5 V, 0 - 10 V, 0 - 5 V, when range is used) +/-3 LSB (when +/-2.5V and 0 - 2.5V range is used) +/-5 LSB (when +/-1.25 V, 0 - 1.25 V, when range is used)
	Buffer Memory	1 K	
Digital I/O	Input	4 TTL level (positive logic)	
	Output	4 TTL level (positive logic)	
Counter	Number of Channels	1 ch	
	Counting System	32-bit Up count	
	Max. count	32-bit binary data	
Interrupts		1	
I/O Address		Any 64-byte boundary	
Power Consumption (Max.)		5 VDC 450 mA	5 VDC 400 mA
Bus / Dimensions (mm)		PCI (32 bit, 33 MHz, Universal key type supported*3) / 176.41 (L) x 105.68 (H)	
Connector		CN1: 37-pin D-SUB connector [F type] DCLC-J37SAF-20L9E [JAE] or equivalent CN2: 30-pin pin header PS-30PE-D4TIPNI [JAE] or equivalent	
Options	Software	ACX-PAC(W32)	
	Accessories	EPD-37A *5*6, EPD-37 *5, DTP-3C *5, DTP-4C *5	
	Cables / Connectors	PCB37P-1.5, PCB37PS-0.5P, PCB37PS-1.5P, PCA37P-1.5, PCA37PS-0.5P, PCA37PS-1.5P, CN5-D37M	

Note:
*1: The non-linearity error may deviate the maximum range by about +/-0.1%, when the operating temperature is 0 °C or 50 °C.
*2: When using a signal source with a high-speed built-in operational amplifier
*3: +5 V power must be supplied from PCI bus slot (it does not work on a machine with a +3.3 V power supply only).
*4: This accuracy is the accuracy measured in bipolar setting. In unipolar setting, the difference is twice as high as this accuracy (in case of AI-1216AH-PCI and AI-1216AL-PCI).
*5: Requires use of optional cable PCB37P-1.5 or PCB37PS-0.5P / 1.5P
*6: "Spring-up terminal unit" is employed to retain terminal screws.

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Analog I/O

Standard

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Image Distribution Unit FlexNetViewer
Solutions / Services

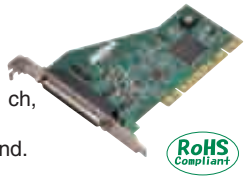
PCI | 37-pin D-SUB | Analog Input 16 ch | Digital I/O 8 | Windows Driver | Linux Driver

Analog to Digital Input
AI-1216B-RU1-PCI

- Analog input of 0 to 10 V range, 12 bit single-ended 16 ch, and conversion speed 20 µsec/ch
- A/D conversion is performed for each software command.
- 8 non-isolated TTL level digital I/Os for each
- Driver library for Windows is included

PCI | 37-pin D-SUB | Analog Input 16 ch | Digital I/O 8 | Windows Driver | Linux Driver

Analog to Digital Input
AI-1216B-RB1-PCI



- Analog input of +/-10 V range, 12 bit single-ended 16 ch, and conversion speed 20 µsec/ch
- A/D conversion is performed for each software command.
- 8 non-isolated TTL level digital I/Os for each
- Driver library for Windows is included

PCI | 96-pin Half Pitch | Analog Input 16 ch | Analog Output - | Digital I/O 4 | Counter - | CE | Windows Driver | Linux Driver | ActiveX Component Package

Analog to Digital Input
AD12-16(PCI)

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

PCI | 96-pin Half Pitch | Analog Input 64 ch | Analog Output - | Digital I/O 4 | Counter - | CE | Windows Driver | Linux Driver | ActiveX Component Package

Multichannel Analog Input
AD12-64(PCI)

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

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PC Card
USB
Low-cost and Multi-function L series
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PCI
PC Card
USB
Intelligent E series
PCI Express
PCI
Standard
PCI
USB
ISA
cTEST

Model		AI-1216B-RU1-PCI	AI-1216B-RB1-PCI	AD12-16(PCI)	AD12-64(PCI)
Channels		16 single-ended		16 single-ended, 8 differential	64 single-ended, 32 differential
Resolution		12 bit			
Input Specifications	Range	Unipolar: 0 - 10 V	Bipolar: +/-10 V	+/-10 V, +/-5 V, +/-2.5 V, +/-1.25 V, 0 - 10 V, 0 - 5 V, 0 - 2.5 V, 0 - 1.25 V (software is settable for each channel)	
	Gain	-			
	Conversion Speed	20 µsec/ch (Max.)		10 µsec/ch (Max.)*1	
	Conversion Accuracy*2*3	+/-3 LSB		+/-2 LSB at +/-10 V, +/-5V, 0 - +10 V, 0 - +5 V, +/-4 LSB at +/-2.5 V, +/-1.25 V, 0 - +2.5 V, +/-8 LSB at 0 - 1.25 V	
	Impedance	1 MΩ or more			
Trigger		-		TTL level 1 ch	
Isolation type		-			
Timer		-		0.5 µsec - approx. 17 min (the parameter can be set at the interval of 250 nsec)	
Digital I/O		8 TTL level output (positive logic), 8 TTL level input (positive logic)		General I/O: Input 4, Output 4 (TTL positive logic)	
Interrupts		1 level used		Request factors/8 kinds, interrupt level/1 ch	
I/O Address		8 bit x32 port occupation		Any 32-byte boundary	
Power Consumption (Max.)		+5 V 200 mA		5 VDC 700 mA	
Bus / Dimensions (mm)		PCI (32 bit, 33 MHz, Universal key type supported*4) / 121.69 (L) x 88.00 (H)		PCI (32 bit, 33 MHz, 5 V) / 176.41 (L) x 106.68 (H)	
Connector		CN1: 37-pin D-SUB (female) connector #4-40UNC		96-pin half pitch connector [M type] PCR-E96LMD [HONDA TSUSHIN KOGYO] or equivalent	
Options	Software	-		ACX-PAC(W32)	
	Accessories	EPD-37A *5*6, EPD-37 *5, DTP-3C *5, DTP-4C *5		EPD-96A*6*7, EPD-96*7	
	Cables / Connectors	PCA37P-1.5, PCA37PS-0.5P / 1.5P, PCB37P-1.5, PCB37PS-0.5P / 1.5P, CN5-D37M		PCA96P-1.5, PCB96P-1.5, PCA96PS-0.5P / 1.5P, PCB96PS-0.5P / 1.5P, CN5-H96F	

Note:

*1: The actual minimum clock depends on OSs and driver processing.
*2: The non-linearity error may deviate the maximum range by about +/-0.1%, when the operating temperature is 0 °C or 50 °C. (for AI-1216B-RU1-PCI and AI-1216B-RB1-PCI only).
*3: When using a signal source with a high-speed built-in operational amplifier *4: +5V power must be supplied from PCI bus slot (it does not work on a machine with a +3.3 V power supply only).
*5: Requires use of optional cable PCB37P-1.5 or PCB37PS-0.5P / 1.5P *6: "Spring-up type terminal unit" is employed to retain terminal screws.
*7: Requires use of optional cable PCB96P or PCB-96PS

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As shown on the side of product's images, Pbfree (Pb Reduced) is a CONTEC original marking for lead-free products.

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

Standard

Analog I/O

PCI | 37-pin D-SUB | Analog Input: - | Analog Output: 4 ch | Digital I/O: - | Counter: - | Windows Driver | Linux Driver | ActiveX Component Package

Digital to Analog Output
DA12-4(PCI)

- All channel output voltage can be set to be updated at once.
- Output voltage update can be synchronized with on-board timer or external clock.
- Output voltage reset function at start up

PCI | 37-pin D-SUB | Analog Input: - | Analog Output: 8 ch | Digital I/O: - | Counter: - | Windows Driver | Linux Driver | ActiveX Component Package

Digital to Analog Output
DA12-8(PCI)

- All channel output voltage can be set to be updated at once.
- Output voltage update can be synchronized with on-board timer or external clock.
- Output voltage reset function at start up

PCI | 37-pin D-SUB | Analog Input: - | Analog Output: 16 ch | Digital I/O: - | Counter: - | Windows Driver | Linux Driver | ActiveX Component Package

Digital to Analog Output
DA12-16(PCI)

- All channel output voltage can be set to be updated at once.
- Output voltage update can be synchronized with on-board timer or external clock.
- Output voltage reset function at start up

Model		DA12-4(PCI)	DA12-8(PCI)	DA12-16(PCI)	
Channels		4 ch	8 ch	16 ch	
Resolution		12 bit			
Analog Output	Range	+/-10 V, +/-5 V, 0 - 10 V (software is settable for each channel)			
	Rating	+/-5 mA			
	Conversion Speed*1	10 µsec (Max.)			
	Conversion Accuracy	+/-3 LSB			
	Impedance	10 Ω or less			
Trigger		TTL level 1 ch			
Isolation type		-			
Timer		0.5 µsec - approx. 17 min (the parameter can be set at the interval of 250 nsec)			
Digital I/O		-			
Interrupts		Request factor/8 kinds Request level/1 ch			
I/O Address		Any 32-byte boundary			
Power Consumption (Max.)		5 VDC 600 mA	5 VDC 800 mA	5 VDC 1400 mA	
Bus / Dimensions (mm)		PCI (32 bit, 33 MHz, 5 V) / 176.41 (L) x 106.68 (H)			
Connector		37-pin D-SUB connector [F type]			
Options	Software	ACX-PAC(W32)			
	Accessories	DTP-3C*2, DTP-4C*2, EPD-37A*2*3, EPD-37*2, ATP-16*2			
	Cables / Connectors	PCA37P-1.5, PCB37P-1.5, PCA37PS-0.5P / 1.5P, PCB37PS-0.5P / 1.5P, PCC16PS, CN5-D37M			

*1: The actual minimum clock depends on OSs and driver processing. *2: Requires use of optional cable PCB37P or PCB37PS
*3: "Spring-up type terminal unit" is employed to retain terminal screws.

Note:

Attention: Direct I/O access from user applications is not supported. Please use the included Driver library or the optional software.
As shown on the side of product's images, Pbfree is a CONTEC original marking for lead-free products.

Analog I/O

Standard

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

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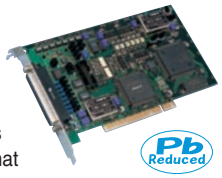
Isolated High Precision Analog Input
AI-1604CI2-PCI

PCI | 37-pin D-SUB | Analog Input 4 ch | Individual Isolated | High Precision | Windows Driver | Linux Driver | ActiveX Component Package

- Bus line with PC and channels are isolated in this independent isolation type.
- Sampling start / stop control can be selected from via software, by conversion data comparison, or external trigger, etc.

12-bit Isolated Analog Input
ADI12-16(PCI)

PCI | 37-pin D-SUB | Analog Input 16 ch | Analog Output - | Digital I/O 4 | Counter - | Bus Isolated | On-board Memory | CE | Windows Driver | Linux Driver | ActiveX Component Package



- Isolation between PC signal and external analog / digital signals
- Buffer memory (256 K data) compatible with FIFO or RING format
- Variety of triggers available for starting / stopping data input
- 16 single-ended or 8 differential inputs (Current input = 8 max)

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

PCI | 37-pin D-SUB | Analog Input 4 ch | Analog Output - | Digital I/O - | Counter - | Individual Isolated | High Precision | Small Signal | Windows Driver | Linux Driver | ActiveX Component Package

- High-precision independent isolation analog input board for small signals that allows for direct input from sensor
- Isolation / high-precision type for lower speed is realized at low price.
- On-board temperature sensor can be used for cold-junction reference during thermocouple measurement.

Isolated High Precision Analog Output
AO-1604CI2-PCI

PCI | 37-pin D-SUB | Analog Output 4 ch | Individual Isolated | High Precision | Windows Driver | Linux Driver | ActiveX Component Package

- Isolation of channels by bus line to PC and photocoupler
- Output voltage of specified channels or all channels can be output at once
- Sampling start / stop control can be selected from external trigger, etc.
- Relay to control voltage output

Model		AI-1604CI2-PCI	ADI12-16(PCI)	ADI16-4L(PCI)	AO-1604CI2-PCI
Channels		4 single-ended	16 single-ended, 8 differential	4 differential	-
Resolution		16 bit	12 bit	16 bit	-
Input Specifications	Range*1	Bipolar +/-10 V, +/-5 V, Unipolar 0 - +10 V, 0 - +5 V4 - 20 mA (Input range is set by both jumper setting and software setting.)	+/-10 V, +/-5, +/-2.5 V, +/-1.25 V, 0 - +10 V, 0 - +5 V, 0 - +2.5 V, 0 - +1.25 V, 4 - 20 mA	+/-0.125 V, +/-1.25 V, 0 - 2.5 V, 0 - 0.25 V	-
	Conversion Speed	20 µsec/ch (Max.)	20 µsec/ch (Max.)	10 msec/ch (Max.)*2	-
	Conversion Accuracy*3*4	+/-32 LSB (+/-10 V), +/-64 LSB (+/-5 V, 0 - +10 V) +/-64 LSB (0 - +5 V), +/-80 LSB (4 - 20 mA)	+/-2 LSB (+/-10 V, +/-5 V, 0 - +10 V, 0 - +5 V) +/-4 LSB (+/-2.5 V, +/-1.25 V, 0 - +2.5 V, 0 - +1.25 V) +/-3 LSB (4 - 20 mA)	+/-15 LSB	-
	Impedance	1 MW or more (voltage input, power ON), 1 kW or more (voltage input, power OFF)	Voltage input: 1 MΩ or more/Current input: 250 Ω	1 MΩ or more	-
Output Specifications	Range	-			Bipolar +/-10 V, Unipolar 0 - +10 V 0 - 20 mA (jumper setting for each channel)
	Rating	-			+/-5 mA (voltage output) +/-10 V, 0 - +10 V, 500 W (current output)
	Conversion Speed	-			20 µsec (Max.)
	Conversion Accuracy	-			+/-5 LSB (+/-10 V, 0 - +10 V), +/-15 LSB (0 - 20 mA)
	Impedance	-			10 Ω or less (voltage output)
External Interrupt Trigger		Opto-isolated input (current sink output-compatible)	1 opto-isolated input (one from the digital inputs is shared)	-	
Conversion Start Trigger		Software / External trigger	Software / Conversion data comparison / Isolated external input digital signal	-	
Conversion stop trigger		Specified trials complete / External trigger / Software	Storage complete / Software / conversion data comparison / isolated external input digital signal	-	
Trigger		-		1 opto-isolated input (for sink current output)	Opto-isolated input (sink output-compatible)
Isolation type		Isolation between channels	Bus isolated	Isolation between channels	
Timer		500 - 1,073,741,824,000 nsec (this parameter can be set at the interval of 250 nsec)	-	0.5 µsec - approx. 17 min (the parameter can be set at the interval of 250 nsec)	500 - 1,073,741,824,000 nsec (this parameter can be set at the interval of 250 nsec)
Digital I/O		-	4 opto-isolated input (for sink current output), 4 opto-isolated open collector output (current sink type)	-	
Interrupts		1	Request factor/13 kinds Request level/1 ch (Enable or Disable is selectable)	Request factor/8 kinds Request level/1 ch	1
I/O Address		Any 32-byte boundary	Any 16-byte boundary	Any 32-byte boundary	
Power Consumption (Max.)		+5 VDC 1100 mA	5 VDC 1200 mA		+5 VDC 2400 mA
Bus / Dimensions (mm)		PCI (32 bit, 33 MHz, Universal key type supported*5) / 176.41 (L) x 106.68 (H)	PCI (32 bit, 33 MHz, 5 V) / 176.41 (L) x 106.68 (H)		PCI (32 bit, 33 MHz, Universal key type supported*5) / 176.41 (L) x 106.68 (H)
Connector		37-pin D-SUB connector [F type] DCLC-J37SAF-20L9E [JAE] or equivalent	37-pin D-SUB connector [F type], 16-pin IC pitch header connector [M type]	37-pin D-SUB connector [F type]	37-pin D-SUB connector [F type] DCLC-J37SAF-20L9E [JAE] or equivalent
Options	Software (Attention)	ACX-PAC(W32)			
	Accessories	EPD-37A *6*7, EPD-37 *6, DTP-3C *6, DTP-4C *6	ATBA-16E*6, ATLF-8*5*8, ATII-8C*5*8, ATP-16*6, DTP-3C*6, DTP-4C*6, EPD-37A*6*7, EPD-37*6, FTP-15*9	EPD-37A*6*7, EPD-37*6, DTP-3C*6, DTP-4C*6	
	Cables / Connectors	PCA37P-1.5, PCA37PS-0.5P / 1.5P, PCB37P-1.5, PCB37PS-0.5P / 1.5P, CN5-D37M	PCA37P-1.5, PCB37P-1.5, PCA37PS-0.5P/1.5P, PCB37PS-0.5P/1.5P, PCA15P, PCB15P*10, PCB15PS-0.5P/1.5P*10, DT/E1, DT-E3, PCC16PS, PCD8PS, CN5-D37M	PCA37P-1.5, PCB37P-1.5, PCA37PS-0.5P / 1.5P, PCB37PS-0.5P / 1.5P, CN5-D37M	PCA37P-1.5, PCA37PS-0.5P / 1.5P, PCB37P-1.5, PCB37PS-0.5P / 1.5P, CN5-D37M
Note:		*1: The input range is set by both jumper setting and software setting. *2: The actual minimum clock depends on OSs and driver processing. *3: The non-linearity error may deviate the maximum range by about +/-0.1%, when the operating temperature is 0 °C or 50 °C (for AI-1604CI2-PCI only). *4: When using a signal source with a high-speed built-in operational amplifier *5: +5 V power must be supplied from PCI bus slot (it does not work on a machine with a +3.3 V power supply only). *6: Requires use of optional cable PCB37P or PCB37PS *7: "Spring-up type terminal unit" is employed to retain terminal screws. *8: External power supply is required. *9: Requires use of optional cable DT-E3 and PCB15P *10: Required only when FTP-15 is used			

Attention: Direct I/O access from user applications is not supported. Please use the included Driver library or the optional software.

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As shown on the side of product's images, Pbfree (Pb Reduced) is a CONTEC original marking for lead-free products.

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

Multi-function F series

Analog I/O

USB 2.0 | 96-pin Half Pitch | Analog Input 32 ch | Analog Output 2 ch | Digital I/O 8 | Counter 2 ch | F series | High Precision | On-board Memory

AC Adapter & USB Cable included

Windows Driver | ActiveX Component Package | C-LOGGER | MATLAB

500 KSPS 16 bit Resolution Analog I/O unit

AIO-163202FX-USB

- Event Controller for diverse sampling control
- 128 k data buffer memory enables background processing.
- USB hub function for connection with up to 4 our USB products
- Connector is compatible with ADA16-32/2(PCI)F and AIO-163202F-PE (Please see our user manual for specifications and signal assignment).

*Digital I/O types of the same series are also available. For digital I/O types, see page H-30.

USB I/O Unit Bracket for X series
BRK-USB-X

Model		AIO-163202FX-USB
Analog Input	Channels	32 single-ended or 16 differential inputs
	Range	Bipolar: +/-10 V, +/-5 V, +/-2.5 V or Unipolar: 0 - +10 V, 0 - +5 V, 0 - +2.5 V
	Impedance	1 MΩ or more
	Resolution	16 bit
	Conversion Speed	2 µsec [500 KSPS]/ ch (Max.)
	Conversion Accuracy*1	+/-5 LSB
	Buffer Memory	128 K data, FIFO or RING format
Analog Output	Channels	2 ch
	Range	Bipolar: +/-10 V, +/-5 V, +/-2.5 V, +/-1.25 V or Unipolar: 0 - +10 V, 0 - +5 V, 0 - +2.5 V
	Impedance	1 MΩ or less
	Resolution	16 bit
	Conversion Speed	10 µsec [100 KSPS] (Max.)
	Conversion Accuracy*1	+/-3 LSB
	Buffer Memory	128 K data, FIFO or RING format
Digital I/O	Input	8 LVTTL level (positive logic)
	Output	8 LVTTL level (positive logic)
Counter	Number of Channels	2 ch
	Counting System	32-bit Up count
	Max. count	32-bit binary data
USB speed		12 Mbps (Full Speed), 480 Mbps (High Speed)*2
Power supply		Self-powered*3
Included AC Adapter (POA200-20)		90 - 264 VAC 5.0 VDC+/-5 % 2.0 A (Max.) Cable Length: approx. 1.5 m, AC Cable Length: approx. 1.5 m
Power Consumption (Max.)		5 VDC 1200 mA
Bus / Dimensions (mm)		USB Specification 2.0/1.1 / 180 (L) x 140 (D) x 34 (H) (No protrusions)
Connector		96-pin half pitch connector [M type] PCR-96LMD+ [HONDA Tsushin Kogyo] or equivalent
Included cable length		USB cable 1.8 m
Options	Software	ACX-PAC(W32)
	Accessories	ATBA-32F*4*5, ATBA-8F*4*5*6, DTP-64A*4, EPD-96*4, EPD-96A*4*8, ATP-32F*4, ATP-8*4*6*7, BRK-USB-X
	Cables / Connectors	PCA96PS-0.5P, PCA96PS-1.5P, PCB96PS-0.5P, PCB96PS-1.5P, PCA96P-1.5*9, PCB96P-1.5*9, CN5-H96F

Note:

*1: The non-linearity error may deviate the maximum range by about +/-0.1%, when the operating temperature is 0 °C or 50 °C.
*2: The USB transfer speed depends on the PC environment used (OS and USB host controller).
*3: Please use the included AC adapter (POA200-20).
*4: Cable PCB96PS-xxP is required separately (0.5 m is recommended).
*5: Optional AC adapter POA200-20 is required.
*6: Maximum of 8 analog input channels available
*7: Able to use up to 4 digital inputs, 4 digital outputs and 1 counter I/O input
*8: "Spring-up type terminal unit" is employed to retain terminal screws.
*9: The flat cable does not comply with VCCI ClassA. Shielded cables must be used in order to comply with VCCI Class A. (PCA96PS / PCB96PS)

Please visit our website for the details of cables and accessories.

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Analog I/O

Standard

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

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Lineup
Measurement Products
Multi-function F series
PCI Express
PCI
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Low-cost and Multi-function L series
PCI Express
PCI
PC Card
USB
Intelligent E series
PCI Express
PCI
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PCI
USB
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USB 2.0 | 68-pin 0.8 mm Pitch | Analog Input 64 ch | Digital I/O 4 | Counter 1 ch | L series | High Precision | On-board Memory

Windows Driver | ActiveX Component Package | C-LOGGER | MATLAB

AC Adapter & USB Cable included

100 KSPS 16 bit Analog Input Unit

AI-1664LAX-USB

NEW

RoHS Compliant

- Sampling start / stop can be selected from via software, by conversion data comparison, or external trigger, etc.
- Buffer memory (1 K data) compatible with FIFO or RING format
- AD16-64(LPCI)LA, AI-1664LA-LPE, connector shape, pin assign are standardized

---

USB 2.0 | 50-pin Mini-Ribbon | Analog Output 4 ch | Digital I/O 4 | Counter 1 ch | L series | High Precision | On-board Memory

Windows Driver | ActiveX Component Package | C-LOGGER | MATLAB

AC Adapter & USB Cable included

High Precision Analog Output unit

AO-1604LX-USB

NEW

RoHS Compliant

- Buffer memory enables background processing to be executed independently of the software.
- Filtering for facilitation in the connection of external signals
- PCI bus board DA16-4(LPCI) L, PCI Express bus board AO-1604L-LPE, connector shape and pin assign are standardized

---

Model		AI-1664LAX-USB	AO-1604LX-USB
Analog Input	Channels	64 single-ended, 32 differential	–
	Range	Bipolar: +/-10 V	–
	Impedance	1 MΩ or more	–
	Resolution	16 bit	–
	Conversion Speed	10 µsec/ch (Max.)	–
	Conversion Accuracy	+/-5 LSB	–
	Buffer Memory	1 k Word	–
Analog Output	Channels	–	4 ch
	Range	–	Bipolar: +/-10 V
	Impedance	–	1 Ω or less
	Resolution	–	16 bit
	Conversion Speed	–	10 µsec (Max.)
	Conversion Accuracy	–	+/-5 LSB
	Buffer Memory	–	1 k Word
Digital I/O	Input	4 LVTTL level (positive logic)	
	Output	4 LVTTL level (positive logic)	
Counter	Number of Channels	1 ch	
	Counting System	32-bit Up count	
	Max. count	32-bit binary data	
USB speed		12 Mbps (Full Speed), 480 Mbps (High Speed)*2	
Power supply		Self-powered*3	
Included AC Adapter (POA200-20)		90 - 264 VAC 5.0 VDC+/-5 % 2.0 A (Max.) Cable Length: approx. 1.5 m, AC Cable Length: approx. 1.5 m	
Power Consumption (Max.)		5 VDC 700 mA	5 VDC 670 mA
Bus / Dimensions (mm)		180 (W) x 140 (D) x 34 (H) (no protrusions)	
Connector		68-pin 0.8 mm pitch connector HDRA-E68W1LFDT-SL [HONDA Tsushin Kogyo] or equivalent	50-pin Mini-Ribbon Connector 10250-52A2JL [3M] or equivalent
Included cable length		USB cable 1.8 m	
Options	Software	ACX-PAC(W32)	
	Accessories	DTP-64A*5*7, EPD-68A*6*8, EPD-96A*5*7*8, EPD-96*5*7, ATP-32F*5*7, ATP-8*6*7*10	EPD-50A*4*8, ATP-8L*4*9
	Cables / Connectors	PCA68PS-0.5P / 1.5P, PCB68PS-0.5P / 1.5P, ADC-68M/96F	PCB50PS-0.5P / 1.5P, PCA50PS-0.5P / 1.5P

Note:

*1: The non-linearity error may deviate the maximum range by about +/-0.1%, when the operating temperature is 0 °C or 50 °C.
*2: The USB transfer speed depends on the PC environment used (OS and USB host controller).
*3: Please use the included AC adapter (POA200-20-2).
*4: Requires use of optional cable PCB50PS-0.5P or PCB50PS-1.5P
*5: Requires use of optional cable ADC-68M/96F
*6: Requires use of optional cable PCB68PS-0.5P or PCB68PS-1.5P
*7: Requires 2 cables and accessories each for 2 connectors (CNA and CNB)
*8: "Spring-up type terminal unit" is employed to retain terminal screws.
*9: Maximum of 2 analog output channels available
*10: It can be used among CNA channel 0 - 7 or CNB channel 32 - 39.

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Please see page M-01 for software.

USB I/O unit The N series

Analog I/O

USB 2.0 | Analog Input 16 ch | Analog Output 2 ch | Digital I/O Bi-directional 16ch | Counter 1 ch | L series | On-board Memory

USB cable included

Windows Driver | ActiveX Component Package | C-LOGGER | MATLAB

Analog Input 16 ch type Multifunction DAQ unit

AIO-121602LN-USB

NEW

- On-board control mechanism provides analog input / output, timed input / output and input/output that is synchronized with external clock.
- Buffer memory enables background processing to be executed independently of the software.
- Filtering for facilitation in the connection of external signals

RoHS Compliant

DIN-rail installation image

USB 2.0 | Analog Input 8 ch | Analog Output 2 ch | Digital I/O Bi-directional 16ch | Counter 1 ch | L series | On-board Memory

USB cable included

Windows Driver | ActiveX Component Package | C-LOGGER | MATLAB

Analog Input 8 ch type Multifunction DAQ unit

AIO-120802LN-USB

NEW

- On-board control mechanism provides analog input / output, timed input / output and input/output that is synchronized with external clock.
- Buffer memory enables background processing to be executed independently of the software.
- Filtering for facilitation in the connection of external signals

RoHS Compliant

DIN-rail installation image

Model		AIO-121602LN-USB	AIO-120802LN-USB
Analog Input	Channels	16 single-ended or 8 differential inputs	8 single-ended or 4 differential inputs
	Range	+/-2.5 V, +/-5 V, +/-10 V, 0 - +10 V	
	Impedance	1 MΩ or more	
	Resolution	12 bit	
	Conversion Speed*1	2 us/ch [500 KSPS]	5 us/ch [200 KSPS]
	Conversion Accuracy*1	Within +/-20 LSB	
	Buffer Memory	1 k word	
Analog Output	Channels	2 ch	
	Range	+/-5 V, +/-10 V, 0 - +10 V, 0 - +5 V	
	Impedance	1 MΩ or less	
	Resolution	12 bit	
	Conversion Speed	12 us [83 KSPS]	
	Conversion Accuracy	Within +/-20 LSB	
	Buffer Memory	1 k word	
Digital I/O	Input	–	
	Output	–	
	I/O Points	Non-isolated I/O Bi-directional 16 ch (TTL level positive logic)	
Counter	Number of Channels	1 ch	
	Counting System	32-bit Up count	
	Max. count	32-bit binary data	
USB speed		12 Mbps (Full Speed), 480 Mbps (High Speed)*1	
Power supply		Bus-powered	
Included AC adapter		–	
Power Consumption (Max.)		5 VDC 450 mA	
Bus / Dimensions (mm)		USB Specification 2.0/1.1 / 180 (W) x 140 (D) x 34 (H) (no protrusions)	
Connector		20-pin (screw-terminal) plug header x5	
Included cable length		USB cable 1.8 m	
Options	Software	ACX-PAC(W32)	
	Accessories	–	
	Cables / Connectors	–	

*1: The USB transfer speed depends on the PC environment used (OS and USB host controller).

Note:

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Accessories & Cables
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Image Distribution Unit FlexNetViewer
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PCI Express
PCI
PC Card
USB
Intelligent E series
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Analog I/O

Standard

Please see page N-03 for optional accessories and cables / connectors, and page M-01 for software.

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Accessories & Cables
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Wireless LAN FLEXLAN
Image Distribution Unit FlexNetViewer
Solutions / Services

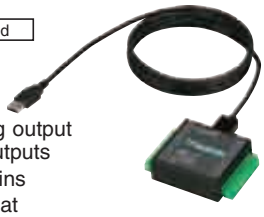
USB 2.0 | Analog Input: 8 ch | Analog Output: 2 ch | Digital I/O: 4 | Counter: - | High Precision | On-board Memory

Windows Driver | ActiveX Component Package | C-LOGGER | MATLAB

USB cable included

8 Channels 16-Bit USB Multifunction A/D Terminal

AIO-160802AY-USB



- Eight 16-bit analog input channels, 2 16-bit analog output channels, 4 LVTTL digital inputs, 4 LVTTL digital outputs
- Bus-powered for convenience and portability contains
- Buffer memory compatible with FIFO or RING format
- Analog I/O adjustment can be done via software.
- Screw-type connectors for easy wiring

RoHS Compliant

USB 2.0 | Analog Input: 8 ch | Analog Output: - | Digital I/O: 4 | Counter: - | High Precision | On-board Memory

Windows Driver | ActiveX Component Package | C-LOGGER | MATLAB

USB cable included

8 Channels 16-Bit USB A/D Terminal

AI-1608AY-USB

- Eight 16-bit analog input channels, 4 LVTTL digital inputs, 4 LVTTL digital outputs
- Bus-powered for convenience and portability Contains
- Buffer memory compatible with FIFO or RING format
- Analog input adjustment can be done via software.
- Screw-type connectors for easy wiring

RoHS Compliant

Bracket for USB I/O Terminal
BRK-USB-Y

RoHS Compliant

14 pin Screw-type Terminal Connector
terminal connector (6 in one)
CN6-Y14

RoHS Compliant

Model		AIO-160802AY-USB	AI-1608AY-USB
Analog Input	Channels	8 single-ended	
	Range	Bipolar: +/-10 V	
	Impedance	1 MΩ or more	
	Resolution	16 bit	
	Conversion Speed*1	10 µsec/ch (Max.)	
	Conversion Accuracy*4	+/-12 LSB	
	Buffer Memory	1 k Word*5	
Analog Output	Channels	2 ch	-
	Range	Bipolar: +/-10 V	-
	Impedance	1 Ω or less	-
	Resolution	16 bit	-
	Conversion Speed	10 µsec (Max.)	-
	Conversion Accuracy	+/-12 LSB	-
	Buffer Memory	1 k Word	-
Digital I/O	Input	4 LVTTL level (positive logic)*2*3	
	Output	4 LVTTL level (positive logic)	
Counter	Number of Channels	-	
	Counting System	-	
	Max. Count	-	
Interrupts		-	
I/O Address		-	
USB speed		12 Mbps (Full Speed), 480 Mbps (High Speed)*4	
Power Consumption (Max.)		5 VDC 450 mA	5 VDC 350 mA
Bus / Dimensions (mm)		USB Specification 2.0/1.1-compatible / 64 (W) x 62 (D) x 24 (H)	
Connector		14-pin (screw-terminal) plug header	
Included cable length		USB cable 1.8 m	
Options	Software	ACX-PAC(W32)	
	Accessories	BRK-USB-Y	
	Cables / Connectors	CN6-Y14	

Note:

*1: This numerical displays the conversion speed for A/D converter. The minimum executable sampling cycle depends on the operating condition.
*2: DI00/DI01/DI02 terminals of digital input function cannot be used simultaneously with the external start signal, external stop signal, or external clock input.
*3: Each input accept TTL (5VDC) level signals.
*4: The USB transfer speed depends on the PC environment used (OS and USB host controller).
*5: A part of buffer memory is used by internal status data. Valid analog input data region depends on the number of channels used.
*6: When using a signal source with a high-speed built-in operational amplifier

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Lineup
Measurement Products
Multi-function F series
PCI Express
PCI
PC Card
USB
Low-cost and Multi-function L series
PCI Express
PCI
PC Card
USB
Intelligent E series
PCI Express
PCI
Standard
PCI
USB
ISA
cTEST

Please see page M-01 for software.

Standard

Analog I/O

USB 2.0 | Analog Input: 4 ch | Analog Output: - | Digital I/O: - | Counter: - | Bus Isolated | On-board Memory | CE

Windows Driver | ActiveX Component Package

AC Adapter & USB Cable included

RoHS Compliant

Isolated Analog Input
ADI16-4(USB)

- On-board 256K data memory
- 2 Screw-less connectors for easy wiring - No special tools needed
- Additional input channels through use of extension modules (Max. 3 sets)
- Sample development and utility debugging software included

USB 2.0 | Analog Input: 8 ch | Analog Output: - | Digital I/O: - | Counter: - | Bus Isolated | On-board Memory | CE

Windows Driver | ActiveX Component Package

AC Adapter & USB Cable included

RoHS Compliant

Isolated Analog Input
ADI12-8(USB)GY

- On-board 256K data memory
- Voltage and current input compatible
- Additional input channels through use of extension modules (Max. 3 sets)
- Sample development and utility debugging software included

USB 2.0 | Analog Input: - | Analog Output: 4 ch | Digital I/O: - | Counter: - | Bus Isolated | On-board Memory | CE

Windows Driver | ActiveX Component Package

AC Adapter & USB Cable included

RoHS Compliant

Isolated Digital Input
DAI16-4(USB)

- Able to store 256K of conversion data and output desired wave form cyclically.
- 2 Screw-less connectors for easy wiring - No special tools needed
- Additional output channels through use of extension modules (Max. 3 sets)
- Sample development and utility debugging software included

USB 2.0 | Analog Input: - | Analog Output: 4 ch | Digital I/O: - | Counter: - | Bus Isolated | On-board Memory | CE

Windows Driver | ActiveX Component Package

AC Adapter & USB Cable included

RoHS Compliant

Isolated Analog Output
DAI12-4(USB)GY

- Able to store 256K of conversion data and output desired wave form cyclically.
- 2 Screw-less connectors for easy wiring - No special tools needed
- Additional output channels through use of extension modules (Max. 3 sets)
- Sample development and utility debugging software included

Model		ADI16-4(USB)	ADI12-8(USB)GY	DAI16-4(USB)	DAI12-4(USB)GY
Isolation type		Bus isolation	Bus isolated voltage input	-	
Channels		4 differential	8 differential	-	
Channels		-		4 ch	
Resolution		16 bit	12 bit	16 bit	12 bit
Range	Voltage	Bipolar: +/-10 V	Bipolar: +/-10 V, +/-5 V Unipolar: 0 - 10 V, 0 - 5 V (common range setting for all channels)	-	
	Current	0 - 20 mA	-		
Output type		-		Bus isolated voltage / current output	
Range	Voltage	-		Bipolar: +/-10 V	Bipolar: +/-10 V, +/-5 V Unipolar: 0 - 10 V, 0 - 5 V (output current 5 mA)
	Current	-		0 - 20 mA	
Conversion Accuracy		Voltage range: +/-8 LSB, Current range: +/-20 LSB	+/-3 LSB	Voltage range: +/-18 LSB Current range: +/-18 LSB	Voltage range: +/-3 LSB Current range: +/-5 LSB
Conversion Speed		Voltage input: 10 µsec/ch + 20 µsec*3 Current input: 40 µsec/ch + 20 µsec*3	10 µsec/ch + 20 µsec*3	Voltage range: 10 µsec*4, Current range: 20 µsec*4	
Buffer Memory		256 K data (262,144 data)			
Sampling Timer		10 µsec - 1,073,741,824 µsec			
Connector		FRONT-MC1,5/12-STF-3,81 [PHOENIX CONTACT]	FK-MC0.5/12-ST-2.5 [PHOENIX CONTACT]	FRONT-MC 1,5/12-STF-3,81 [PHOENIX CONTACT]	FRONT-MC 1,5/12-ST-3,81 [PHOENIX CONTACT]
USB speed		12 Mbps (Full Speed), 480 Mbps (High Speed)			
Power Consumption (Max.)		5 VDC 600 mA*1	5 VDC 650 mA*1	5 VDC 800 mA*1	5 VDC 700 mA*1
Dimensions (mm)		50.4 (W) x 64.7 (D) x 94.0 (H)			
Weight (main unit)		100 g			
Included AC Adapter (POA200-20)		AC 90 - 264 V, DC 5.0 V +/-5%, 2.0 A (Max.), Cable Length: approx. 1.5 m, AC Cable Length: approx. 1.5 m			
Included Cable		USB cable 1.8 m			
Options	Software	ACX-PAC(W32)			
	Applicable modules*2	ADI16-4(FIT)GY	ADI12-8(FIT)GY	DAI16-4(FIT)GY	DAI12-4(FIT)GY
	Applicable Power Supplies*2	POA200-20, POW-AD13GY, POW-AD22GY, POW-DD10GY, POW-DD43GY			

Note:

*1: Please use the attached AC adapter or optional power supply unit.
*2: Visit our website for the details of Applicable Modules and Power supplies.
*3: This numerical displays the conversion speed for A/D converter. The minimum executable sampling cycle is from approx. 200 µsec (single channel sampling) to 1 msec (16 channel sampling), depending on the internal processing time of this module. (The actual cycle may be longer depending on the USB load status)
*4: This numerical indicates the settling time of D/A converter. The minimum executable output cycle is from approx. 200 µsec (single channel sampling) to 1 msec (16 channel sampling), depending on the internal processing time of this module. (The actual cycle may be longer depending on the USB load status)

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Analog I/O

Standard

Please see page M-01 for software.

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GPIB Communications
Expansion Unit / Bus Adapter
Software
Accessories & Cables
Remote I/O
Wireless LAN FLEXLAN
Image Distribution Unit FlexNetViewer
Solutions / Services

USB 2.0 | Analog Input 4 ch | Analog Output - | Digital I/O - | Counter - | Bus Isolated | CE

Windows Driver | AC Adapter & USB Cable included

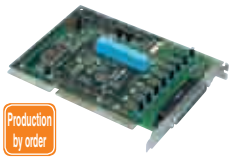
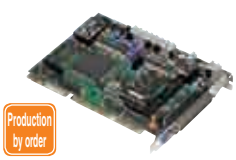
Pt100 Temperature Sensor Input Module
PTI-4(USB)

- Allows use of IEC/JIS-compliant platinum resistance temperature detector (Pt100, JPt100)
- Supports acquisition of resistance and temperature, averaging and alarm output for temperature measurement
- Additional input channels through use of extension modules (Max. 5 sets)
- Development and utility debugging software included

1 opto-isolated input (share 1 of digital inputs)

Model		PTI-4(USB)
Number of 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: -200 - 510 °C
Accuracy	Operating temperature: 0 - 50°C	+/-0.3 °C *1
	Operating temperature: 15 - 35°C	+/-0.15 °C *1
Resolution		0.01 °C
Conversion Speed		Selectable from 150mS/40mS/5mS per channel
Output Current for Temperature Detection		1 mA
Isolation type		Between platinum RTD and power supply: Photocoupler isolation Between platinum RTD input channel: Non-isolation
Connector		FK-MC0.5/9-ST-2.5 [PHOENIX CONTACT]
USB speed		12 Mbps (Full Speed), 480 Mbps (High Speed)
Power Consumption (Max.)		5 VDC 800 mA*2
Dimensions (mm)		50.4 (W) x 64.7 (D) x 94.0 (H) (no protrusions)
Weight (main unit)		200 g
Included AC Adapter (POA200-20)		AC 90 - 264 V, DC 5.0 V +/-5%, 2.0 A (Max.), Cable Length: approx. 1.5 m, AC Cable Length: approx. 1.5 m
Included Cable		USB cable 1.8 m
Options	Software	–
	Applicable modules*3	PTI-4(FIT)GY
	Applicable Power Supplies*3	POA200-20, POW-AD13GY, POW-AD22GY, POW-DD10GY, POW-DD43GY
Note:		*1: At the conversion speed of 150 mS *2: Please use the attached AC adapter or optional power supply unit. *3: Visit our website for the details of Applicable Modules and Power supplies.

ISA

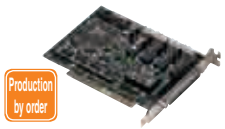
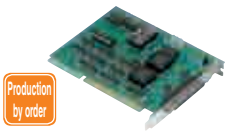
Model	Individual Isolation Analog to Digital Input	12-bit Multi-Function A/D		16-bit Multi-function A/D Input
	ADI12-8CL(PC)H	AD12-16(PC)EH	AD12-16U(PC)EH	AD16-16(PC)EH
	 Production by order	 Production by order	 Production by order	 Production by order
Specifications				
Input Channels	8 ch	16 single-ended, 8 differential		
Output Channels	-	1 ch		
Resolution	12 bit			16 bit
Input Specifications: Range	0 - 5 V, 1 - 5 V, 0 - 20 mA, 4 - 20 mA	+/-10 V, 0 - 10 V	+/-2.5 V, +/-5 V, 0 - 5 V, 0 - 10 V	+/-5 V, +/-10 V, 0 - 5 V, 0 - 10 V
Input Specifications: Gain	-	x 1, x 2, x 4, x 8 (software selectable)	-	
Input Specifications: Conversion Speed	1200 µsec/ch	10 µsec/ch (Max.)	1 µsec/ch (Max.)	10 µsec/ch (Max.)
Input Specifications: Conversion Accuracy*1	+/-3 LSB	+/-2 LSB (x 1, x 2) +/-4 LSB (x 4, x 8)	+/-3 LSB	+/-5 LSB
Input Specifications: Impedance	1 MΩ or more (Current input = 250Ω max)	1 MΩ or more		
Output Specifications: Range	-	+/-5 V, +/-10 V, 0 - 10 V		+/-10 V, 0 - 10 V
Output Specifications: Rating	-	Output current +/-5 mA (Max.)		
Output Specifications: Conversion Speed	-	6 µsec/ch		13 µsec/ch
Output Specifications: Conversion Accuracy*1	-	+/-1/2 LSB		+/-2 LSB
Output Specifications: Impedance	-	1 Ω or less		
Trigger	1 opto-isolated input (one from the digital inputs is shared)	Start trigger: 3 modes; Stop trigger: 4 modes		
Isolation type	Isolation between channels	-		
Timer	-	2 - approx. 7 x 10^{13} µsec		
Digital I/O	2 opto-isolated input, negative logic Opto-isolated open collector output 4, negative logic	General I/O: Input 4, output 4 (I/O TTL positive logic) Sampling control I/O: Input 3, output 1 (input TTL positive logic)		
Interrupts: Interrupt factors	External trigger / Conversion complete	16 kinds including Operation complete		
Interrupts: Interrupt Level	One from IRQ 3 - 7, 9 - 12, 14, 15	One from IRQ 5, 7, 9, 11, 12, 15		
I/O Address	Any 4-byte boundary	Any 16-byte boundary		
Power Consumption (Max.)	5 VDC 500 mA	5 VDC 800 mA	5 VDC 1700 mA	5 VDC 1000 mA
Bus / Dimensions (mm)	ISA AT Bus / 163.0 (L) x 122.0 (H)	ISA AT Bus / 163.0 (L) x 122.0 (H)	ISA AT Bus / 174.0 (L) x 122.0 (H)	ISA AT Bus / 163.0 (L) x 122.0 (H)
Connector	37-pin D-SUB connector [F type]	37-pin D-SUB connector [F type] (analog) 16-pin IC pitch header connector [M type] (digital)		
Options: Software (Attention)	ACX-PAC(W32), API-PAC(W32)			
Options: Accessories	DTP-3C*2, DTP-4C*2, EPD-37A*2*6, EPD-37*2	DTP-3C*2, DTP-4C*2, ATCH-16(PC), ATP-16E*5, FTP-15*3, EPD-37A*2*6, EPD-37*2, ATSS-16A*2, ATSS-16*2, ATII-8C*2, ATLF-8*2	DTP-3C*2, DTP-4C*2, ATUH-16(PC), ATP-16E*5, FTP-15*3, EPD-37A*2*6, EPD-37*2, ATSS-16A*2, ATSS-16*2, ATII-8C*2, ATLF-8*2	DTP-3C*2, DTP-4C*2, ATCH-16(PC), ATP-16E*5, FTP-15*3, EPD-37A*2*6, EPD-37*2, ATSS-16A*2, ATSS-16*2, ATII-8C*2, ATLF-8*2
Options: Cables / Connectors	PCA37P, PCB37P, PCA37PS, PCB37PS	PCA37P, PCB37P, PCA37PS, PCB37PS, PCA15P*4, PCB15P*4, PCC16PS, PCD8PS, DT/E1, DT-E3		
CE marking-compliant	-	○	○	○

*1: Conversion Accuracy: Value is linearity error at 25°C. *2: Requires use of optional cable PCB37P or PCB37PS *3: Requires use of optional cable DT-E3 and PCB15P
*4: Required only when FTP-15 is used *5: Requires use of optional cable PCB37PS-0.5P or PCB37PS-1.5P *6: "Spring-up terminal unit" is employed to retain terminal screws.

Attention: Direct I/O access from user applications is not supported. Please use the optional software.

G-33

Lineup
Measurement Products
Multi-function F series
PCI Express
PCI
PC Card
USB
Low-cost and Multi-function L series
PCI Express
PCI
PC Card
USB
Intelligent E series
PCI Express
PCI
Standard
PCI
USB
ISA
cTEST

ISA Model	Opto-Isolated Digital to Analog Board **DA12-4(PC)**	Digital to Analog Output Board **DA12-8L(PC)**
	 Production by order	 Production by order
Specifications		
Input Channels	-	
Output Channels	4 ch	8 ch
Resolution	12 bit	
Output Specifications – Range	+/-5 V, +/-10 V, 0 - 10 V	+/-5 V, +/-10 V, 0 - 10 V, 4 - 20 mA (1 ch only)
Output Specifications – Rating	+/-5 mA	
Output Specifications – Conversion Speed	5 µsec/ch	10 µsec/ch
Output Specifications – Conversion Accuracy*1	+/-1 LSB	
Output Specifications – Impedance	1 Ω or less	1 Ω or less (voltage output)
Trigger	TTL level 1 ch	
Isolation type	-	
Timer	2 - approx. 7 x 10^{13} µsec	
Digital I/O	1 TTL level input, 1 TTL level output (negative logic)	Input 4, Output 4 (TTL positive logic)
Interrupts – Interrupt factors	External trigger / Timer	
Interrupts – Interrupt Level	One from IRQ 3 - 7, 9,	
I/O Address	Any 16-byte boundary	Any 4-byte boundary
Power Consumption (Max.)	5 VDC 1200 mA	5 VDC 830 mA
Bus / Dimensions (mm)	XT / 143.0 (L) x 107.0 (H)	ISA AT Bus / 163.0 (L) x 122.0 (H)
Connector	37-pin D-SUB connector [F type]	
Options – Software	ACX-PAC(W32), API-PAC(W32)	
Options – Accessories	DTP-3C*2, DTP-4C*2, EPD-37A*2*3, EPD-37*2	
Options – Cables / Connectors	PCA37P, PCB37P, PCA37PS, PCB37PS	
CE marking-compliant	○	○

*1: Conversion Accuracy: Value is linearity error at 25°C.
*2: Requires use of optional cable PCB37P or PCB37PS
*3: "Spring-up terminal unit" is employed to retain terminal screws.

Options (sold separately)

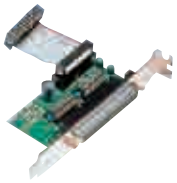
Channel addition board

The 16 ch (8 ch for differential input) analog E series can be used as 32 ch (16 ch for differential input) board.

* Occupies adjacent 1 slot

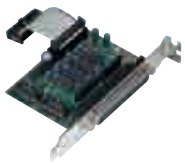
ATCH-16(PC) Production by order

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



ATUH-16(PC) Production by order

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



cTEST for PC-based Inspection and Measurement

Facilitates software development of inspection system

Inspection System Development Support Software cTEST Studio

"Anyone" can "easily" solve the problems of cost reduction, streamlining, and standardizing "on-site"

cTEST Studio is a packaged software specialized in solving the problems of cost reduction, streamlining, and standardizing in inspection system development.
It does not require knowledge of programming languages. Desired inspection system can easily be developed by registering and setting a series of inspection methods from an intuitive and easy-to-use user interface such as dialogs and spread sheets.

This software is the best solution for...

- The customers who want to automatize the manual inspection processes using testers and measurement equipments.
- The customers who do not have time to learn BASIC or C language programming.
- The customers who want to boost efficiency and quality by standardizing different systems for each product model.
- The customers who are having difficulties to catch up with the latest programming languages. Or having trouble to continue the task.

Advantages

Anyone

It does not require knowledge of programming languages. Assembly processes from the setting of expansion board to the final acceptance test can be easily performed using dialogs and Office-like user interfaces.

Easy

It is hard job to create an excellent tool from the scratch. An inspection system can be easily built by utilizing pre-installed practical samples such as disconnection and noise inspections, and standard parts such as operation patterns of high-frequency expansion boards.

On-site

It is typical for on-site operation to make changes to the setting such as adjusting on-site or substituting equipments. The corresponding editor tool can be started to immediately handle the system modification.

Product Name	Model	Configuration
cTEST Studio 2.0 Development Environment	CTEST-STUDIO-DEV-V20	Installation CD Development environment license x1 Execution environment license x1
cTEST Studio 2.0 Execution Environment	CTEST-STUDIO-RT	Execution environment license x1

■Workflow of cTEST Studio

Inspection sequence

Register the inspection components required for inspection, and edit the sequence.

List registration

Inspection component

Create the inspection components by editing the inspection processing using calculation, comparison, and branching.

New customization

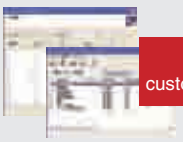
Basic component diversion

Basic components

Customized components

Device control

Associate with variables and edit operational conditions using device variable registration tool and device configurator.



New customization

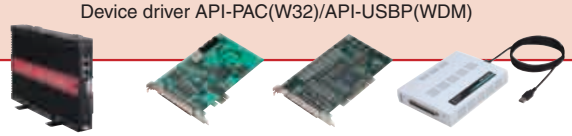
Device variable

Device variable

Device variable

Device driver API-PAC(W32)/API-USBP(WDM)

External DLL



cTEST controller CX100n Expansion board for measurement control

Miniaturization of inspection equipment and cost reduction. High-precision measurement without using measurement equipment

High-precision Digital Multimeter

- **High-precision, 5-1/2 digit, completely independent 2ch simultaneous measurement**
  AC voltage / DC voltage / AC current / DC current / resistance*
  * Resistance measurement is for 1 ch only. Please see the manual for other details.
- **Calibration certificate (requires extra payment)**
  Calibration service is available at our designated
- **Digital multimeter software included**
  Ready-to-use as a measurement equipment

5 1/2 Digits 2ch Digital Multimeter
DMM-552-PCI

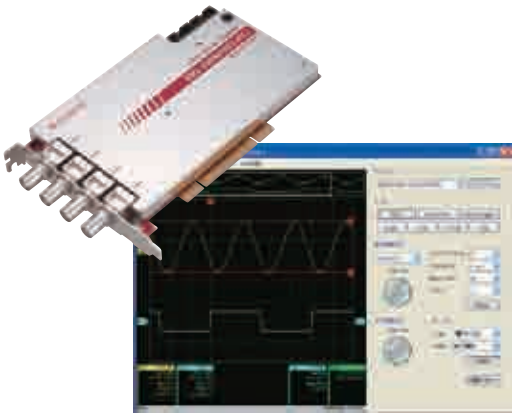
Digital multimeter software "Front Panel"

No more visual inspection. Automatic judgment of acceptance of subjects

High-speed Digitizer Board

- **Up to 100MHz* of 2 channel simultaneous sampling**
  * The maximum conversion speed when using 2 channels is 50 MHz (in the data logger mode).
- **High-capacity 32 MB buffer memory, bus master transfer function**
- **3 operation modes: "wave pattern judgment / oscilloscope / data logger"**

Digitizer Board with Wave Pattern Judgment
DIG-100M1002-PCI


Digitizer software "Front Panel"

NI LabVIEW-compliant

Oscilloscope / data logger / wave pattern judgment are all available in LabVIEW standard VI function style.

More than 160 kinds of expansion boards can be used with LabVIEW.

*** Data acquisition library VI-DAQ (free download available) must be installed.**

Price value and performance beyond specialized devices

cTEST Controller CX100n Series

- **Energy-saving platform mounted with Intel® Atom™ processor**
- **The slitless and fanless design to reduce the maintenance and inspection workload**
- **Analog I/O, digital I/O, and counter as standard equipment**
  Capability equivalent to 3 expansion boards for measurement control

Multi-signal I/O Controller for Inspection and Measurement Systems
CX-100n-DC5311-C02