P Software

Development of Measurement/Control Systems Made Easy by Active X Components.

Active X Component Package for measurement system development

(Development software requires Japanese environment.)

NEW

WINDOWS Vist | WINDOWS XP | WINDOWS Server 2003 | WINDOWS 2000 | WINDOWS NT | WINDOWS Me | WINDOWS 98/95 | CD-ROM

Compliant with more than 200 types of our measurement control interface boards (cards), this software component package specialized for measurement contains a wide variety of ActiveX components including those for display (graphs, sliders, etc.), analysis and operation (FFT, filters, etc.) and file operation (data saving and reading). It achieves efficient and short-term development of application programs by allowing you to paste software components and describe the association in script. Furthermore, as the product contains actual samples (application programs) such as data logger and wave analysis tools, you can start PC measurement right away without the need for program development. Actual samples come with source codes (Visual Basic) to enable customization on the users side.

New Features
ACX-PAC(W32) Ver.4.11 supports:

- OS: Windows Vista
- Development environment: National Instruments LabVIEW 8.20
- High-performance digital I/O driver API-DIO (WDM)
- Latest CONTEC interface boards and USB terminals (Names of products newly added to the list are shown in blue letters on P-05.)

ACX-PAC Series is the optimum software for those who wish to develop measurement/control systems on Visual Basic and Excel. Windows Vista/XP/Server2003/2000/NT/Me/98/-based application programs can be created easily without the need for developing complicated programs.

Data scope sample

Display sample

Product Requirements:

●PC
・IBM PC/AT-compatible, DOS/V

●OS (Japanese Font is required for development system)
・Microsoft Windows Vista
・Microsoft Windows XP
・Microsoft Windows Server 2003
・Microsoft Windows 2000 Professional
・Microsoft Windows NT Ver.4.0 (SP3 or above) + IE4.01 or above
・Microsoft Windows Me
・Microsoft Windows 98
・Microsoft Windows 95 (SP1 or above) + IE4.01 or above
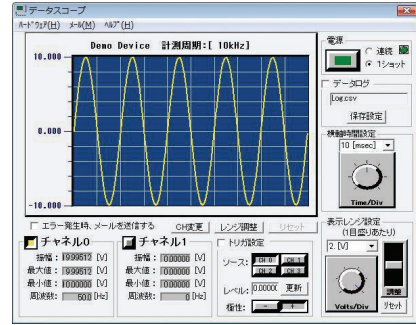　Please check our homepage for further details.

●Others
・Pentium100MHz or above is recommended for CPU.
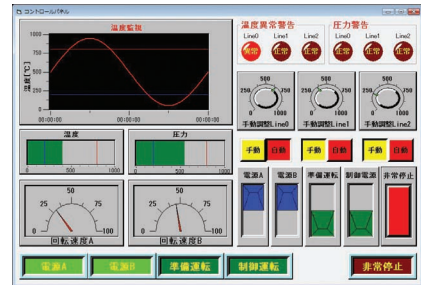・Environment in which programming languages (containers) can operate normally

●Compliant Development Environment
・Microsoft Visual Basic 2005
・Microsoft Visual Basic .NET 2003, 2002
・Microsoft Visual Basic Ver.6.0, 5.0
・Microsoft Visual C++ 2005
・Microsoft Visual C++ .NET 2003, 2002
・Microsoft Visual C# 2005
・Microsoft Visual C# .NET 2003, 2002
・Microsoft Visual C++ Ver.6.0, 5.0
・Microsoft Excel 2003(VBA 6.4), 2002(VBA 6.3),2000(VBA 6.0),97(VBA 5.0)
・Borland Delphi Ver.7 Ver.5, Ver.4
・National Instruments LabVIEM 8.20, 8, 7.0, 6.1, 6i

Note: As for *1 to *4, please check Product Requirements on Page-05.

Creating Displays for Measurement/Control Systems:

You can create displays such as the one shown above simply by pasting components onto the form. The following chart shows the advantages of using ActiveX Components over the conventional programming method.
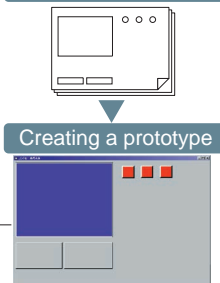
Development through programming

The common development process begins with a screen page designing by a designer, followed by prototype making by a programmer and the evaluation of user interface. In this method, screen page designing in the first stage is required to be at a level of perfection as changing design becomes more and more difficult as the development process moves forward.

Preparing a design plan

Creating a prototype

Going back to the design plan for modification takes time.

Modification will be even more difficult once the programming is started.

GUI must also be debugged.

Evaluation

Programming

Debugging

Development using ActiveX Component Package

By using ActiveX Component Package, a designer can actually paste the control to create a screen page. It is also easy to adjust the operability. Development time can be reduced substantially as modifying a screen page does not require any programming or outsourcing.

Preparing a design plan
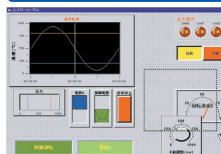
With ActiveX Component, you do not need to program for displaying. Easy to engineering and prototyping

Interface can be modified easily even after programming is started.

GUI need not be debugged

Evaluation

Programming

Debugging

Software

Shorter Development Time

Reutilizing the software you have created by yourself can be very costly as it requires modularization and documentation of the codes. On the other hand, ActiveX Component Package is optimal for such reutilization in the office as it can be used as software components and is also provided with documents (help). Thus, it allows you to develop a similar system over a short period of time.

Measurement in the Laboratory Using Excel

When conducting measurement in the laboratory or outside the office, you can use a PC card and Excel sample programs to achieve easy data collection. Since there is no need for low-level programming such as graphic drawing, file input/output and board control, you can freely modify samples to suit your purpose using VisualBasic and Excel.

Examples of Programming

With ActiveX, colors and values for control are set and acquired by "Property". Commanding the commencement of measurement and data acquisition is called "Method". A routine which is called to indicate the status such as alarm or end of measurement is called "Event". Property can normally be set by opening a dialogue called "Property Page" as shown below, thus eliminating the need for programming. Once you have set the appearance and the status, you need to describe a simple code for controlling the acquisition and setting of data and operation of components. The following example shows the programming using VisualBasic.

▲ Example of property page

* Color coding

● Black: Described code

● Blue: Event (Source code will be created automatically.)

● Green: Comment
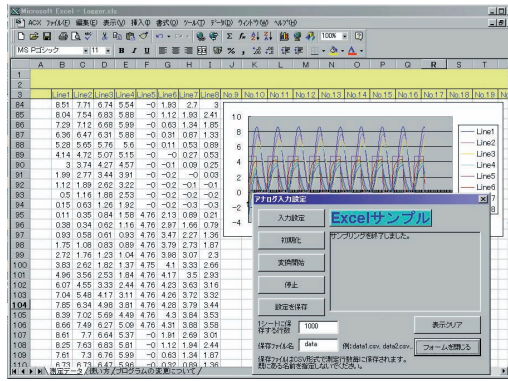
●Example of combination

(When using analog input)

Low-price high-precision analog I/O card
ADA16-8/2(CB)L

Shielded cable for analog I/O card
ADC-68M/50M

Analog I/O BNC terminal block
ATP-8L

ActiveX Component Package for measurement system development
ACX-PAC(W32) Ver.4.11

*PC cards for digital I/O, GPIB communication and counter input are also available.

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1 **Display Units (lamps, meters, etc.)**

With lamps, analogue meters and level meters, you substitute the desired value for Value Property.

```
AcxLamp1. Value = 1        '0:OFF, 1:ON
AcxMeter1. Value = 7.5      Desired value
```
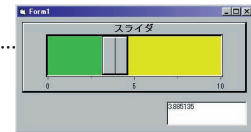
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2 **Operation Units (switches, sliders, etc.)**

If you change the values for switches, sliders or volume, ChangeValue event will be generated. At this time, the changed value (Value) will be given to the argument of this event.

```
Private Sub AcxSlide1_ChangeValue (ByVal Value Single)
    Text1. Text = Value        Display the changed value in the text
End Sub
```

---

3 **Displaying A/D Board Data in X-Y Graph**

You can display the data array acquired via analogue I/O board simply by passing it to the graph control. Thus, you can complete data passing more easily than using other vendors' graph components.

```
AcxAio1. GetAiData 1000, Buffer      Acquire 1000 data for buffer
AcxXY1.DisplayData Buffer, 1000      Display 1000 data stored in buffer
```

---

4 **Display Units (lamps, meters, etc.)**

You can easily conduct monitoring such as status watch by utilizing the graphs and alarm events provided in each meter. AlarmStatus consists of Normal Return, High Alarm and Low Alarm.
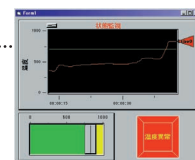
```
Private Sub AcxTrend1_AlarmEvent (ByVal AlarmStatus As Integer,
ByVal LineNumber As Integer)
    If AlarmStatus = 2 Then AcxLamp1. Value = 1    Activate warning light in the event of High Alarm
End Sub
```

Software

Compatible with Wide-Ranging Development Environments

ActiveX components will operate in a wide variety of development environments (containers). You can use CONTEC I/O boards and cards not only in the development environments such as Visual Basic, Visual C++, Visual C# and Borland Delphi, but also in the application environments such as National Instruments LabVIEW and Microsoft Excel. ACX-PAC Series also provides samples and help files to achieve flexible and trouble-free development environment.
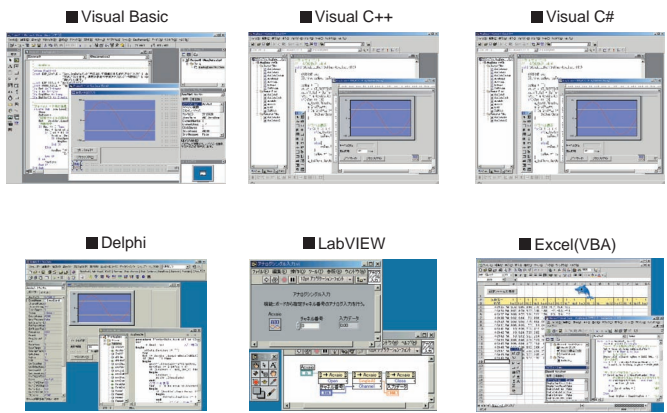
• **Verifying the component operation for supported containers**

Instead of relying on theoretical information, we verify the operation of all the methods, property and events of each control for the supported containers.

• **Supplied with samples**

Sample programs for supported containers are also provided to show you the procedure for method calling, property reference, event processing, etc.

• **Easy embedding**

Help files describing the ActiveX control registration procedure are provided for each supported container. This allows you to embed the control to a container without having to refer to the help files of each container.

■ Visual Basic   ■ Visual C++   ■ Visual C#

■ Delphi   ■ LabVIEW   ■ Excel(VBA)

*1: We can also provide samples for unsupported containers although there are some restrictions regarding their usage. Please contact our sales office or distributors for further details.

Robust Component Lineup

● Analysis of frequency characteristic/ FFT operation

• Can perform FFT and reverse FFT analysis.
• Also supports DFT analysis without being bound by the power of 2 data score.

● Calibration operation including thermocouple data

• Supports JIS (JIS C 1602-1995)-compliant thermocouple calibration.
• Can perform calibration operation based on the one-dimensional/two-dimensional array data created by the user.

● 7-segment font

• Can display numeric data in a 7-segment display unit style.

● Protocol conversion for communicating with measurement devices

• Can convert character array-based communication data such as GPIB and RS-232C into numeric data where necessary.
• Provides drastically improved linkage.

● Statistics analysis for various operations

• Can perform average, maximum, minimum, standard deviation, summation and histogram operation for one-dimensional array data.

● High-precision timer event

• Achieves high-precision timer event when used in combination with CONTEC board equipped with timer function.

● Digital filter that passes data only through specified frequency band

• Can remove noise by performing filtering operation for input data.
• Supports low pass, high pass, band pass and band stop.
• Can perform smoothing operation using the moving average.

● Histogram display

• Can display statistics and analysis data using bar graphs.

| Components for creating screen page	
X-Y Graph	Can simultaneously display maximum 32 lines of one-dimensional and two-dimensional array data graphs. Mouse functions include size increase/reduction, cursor, moving and sub-axis.
Bar graph	Displays bar graphs optimum for histogram.
Trend graph	Can display maximum 8 lines of scrolled graph and is optimally suited for monitoring.
Lamp	Displays lamps optimally suited for indicating digital I/O status.
Switch	Switches optimally suited for indicating digital output and ON/OFF of various setting
Analogue meter	Displays the acquired data in analogue meter.
Level meter	Displays the acquired data in level meter.
Slider	Slider optimally suited for data setting
Volume	Volume optimally suited for data setting
Components for file operation	
Logging	Saves array data in a file. Can automatically save data in several different files by adding date and number to a filename.
Replay	Reads out data from a file and stores it in an array.

Components for board control	
Analogue I/O	Controls CONTEC analogue I/O board.
Digital I/O	Controls CONTEC digital I/O board.
GPIB communication	Controls CONTEC GPIB communication board.
Counter input	Controls CONTEC counter input board.
Switch	Switches optimally suited for indicating digital output and ON/OFF of various setting
Timer	High-precision timer control
Components for protocol conversion	
Protocol conversion	Converts character string data into numeric data where necessary.
Components for operation	
Calibration operation	Can perform JIS-compliant thermocouple calibration operation.
Digital filter	Can perform digital filtering of input data using FIR filter.
Frequency analysis	Supports FFT operation for analyzing frequency characteristic.
Statistics analysis	Supports statistics analysis such as average maximum, minimum and histogram operation.

Software

Practical application programs

The application program components include complete Visual Basic source code for easy customization. All the examples can save measurement/input values and arithmetic results into files. These application programs also feature mail alert functionality and point-and-click graph configuration. Programs are compatible with analog output. The code is compatible with Visual Basic 2005, Visual Basic .NET 2003, 2002, and English version Visual Basic 6.0, 5.0, Visual Basic .NET 2003, 2002 and Visual Basic 2005.

| Name	Detail	Visual Basic 6.0, 5.0	Visual Basic 2005 .NET 2003, 2002	English support*	Excel 2003, 2002, 2000
Hyper logger	High speed data collection for analog Input board	●	●	●	
Data scope	Oscilloscope for analog input board	●	●	●	
Digital monitor	Digital signal input/output for digital input/output board	●	●	●	
Pen recorder	Pen recorder for analog input board	●	●	●	
FFT analyzer	FFT/DFT analysis and power spectrum view	●	●	●	
Thermocouple measurement	Thermocouple temperature measurement	●	●	●	
Function generator	Waveform output for analog output board	●	●	●	
System Monitor	View CPU/Memory usage	●	●	●	
Counter Monitor	View count number and frequency for counter input board	●	●	●	
GP-IB viewer	Graph display and saving data from GPIB device	●			
RS-232C viewer	Graph display and saving data from RS-232C device	●			
Excel scope	High speed data collection, view and analysis using MS Excel				●

* Samples in English for Visual Basic 6.0, Visual Basic .NET are available.
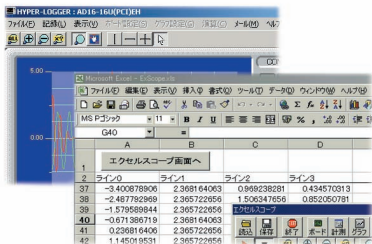
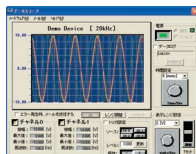You can download some of abobe executable application program bundled with ACX-PAC.

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

●Hyper Logger

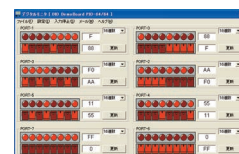Collecting data by CONTEC Analog Input Board.
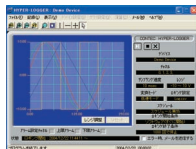
●Data Scope

Displaying the input of data with the format of the oscilloscope.

●Digital Monitor

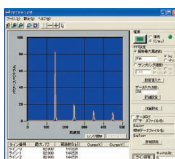Displaying the input & output of the data from CONTEC Digital I/O Boards.

●Pen Recorder

Displaying the input data from CONTEC Analog Input Boards with the format of the Pen Recorder.
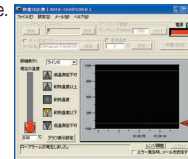

●FFT Analyzer

FFT/DFT analyse by FFT Analyzer.

●Thermocouple Measurement

By using the CONTEC Analog Input Board and ATII-8A, displaying the thermometer, graph and value of the temperature based on the electromotive force measured by thermocouple.

●Function Generator

Continuous output of wave pattern (sine wave, triangular wave, square wave, etc.) by using the CONTEC Analog Output Board.
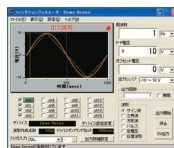
●System Monitor

With the bar graphs, Displaying the Heast Graph of the real-time data, average, maximum, minimum about the operating factor of PC CPU or memory.

●Counter Monitor

Displaying the accumulated count number or frequency by using CONTEC Counter Input Board.

●GPIB Viewer

Displaying the graph of the data from external equipment by GPIB communication through CONTEC GPIB board.
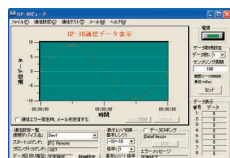
●RS232C Viewer

Displaying the graph of the data from external equipment by RS232C communication through CONTEC COM board.

●Excel Scope

Collecting data, displaying data wave, and filtering functions are realized on Microsoft Excel.

P-04

Software

■OPERATING ENVIRONMENT

●SUPPORTED OS *4
・Microsoft Windows Vista
・Microsoft Windows XP
・Microsoft Windows Server 2003
・Microsoft Windows 2000 Professional
・Microsoft Windows NT Ver.4.0 (SP3 upper) *1
・Microsoft Windows 4.01 upper
・Microsoft Windows Me
・Microsoft Windows 98 or 98 Second Edition
・Microsoft Windows 95 (SP1 upper) + Internet Explorer 4.01 upper
For further details, please visit our homepage.

●SUPPORTED PROGRAMMING LANGUAGES *2*3
・Microsoft Windows Basic 2005
・Microsoft Windows Basic .NET 2003, 2002
・Microsoft Windows Basic Ver.6.0, 5.0
・Microsoft Windows C++ 2005
・Microsoft Windows C++ .NET 2003, 2002
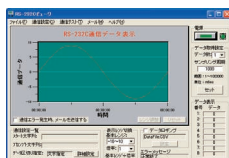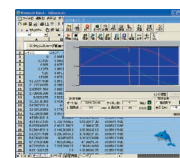・Microsoft Windows C# 2005
・Microsoft Windows C# .NET 2003, 2002
・Microsoft Windows C++ Ver.6.0, 5.0
・Microsoft Excel 2003 (VBA 6.4), 2002 (VBA 6.3)
・Borland Delphi Ver.7, Ver.5, Ver.4
・National Instruments LabVIEW 8.20/ 8 / 7.1 / 7.0 / 6.1 / 6i

●SUPPORTED PC
・IBM PC/AT compatible computer, DIS.V computer

●OTHERS
・Pentium 100MHz CPU is recommended
・The environment is an environment that the programming languages can run normally in.
*1: The programs and samples can be used under Microsoft Windows NT Server Ver.4.0, but cannot be developed under it.
*2: Exclusive of the programming environments that cannot support the OS and the ActiveX function.
*3: There also are some programming environments that can supply samples out of the following list.
*4: The component can be used in a English environment if it has already installed in the environment. But the helps and sample programs are Japanese version only.

■SUPPORTED BOARDS

●PCI Express
Analog I/O

AI-1616L-LPE	AIO-163202F-PE	AIO-160802L-LPE
AO-1604L-LPE		

Digital I/O

DI-128L-PE *1	**DI-32L-PE** *1	**DI-64L-PE** *1
DIO-1616B-PE *1	DIO-1616L-PE	**DIO-1616TB-PE**
DIO-1616T-LPE	DIO-1616T-PE	**DIO-3232B-PE** *1
DIO-3232F-PE *1	DIO-3232L-PE	DIO-48D-LPE
DIO-3232T-PE	**DIO-6464L-PE**	**DIO-6464T-PE** *1
DO-128L-PE *1	**DO-32L-PE** *1	**DO-64L-PE** *1

Counter Input
CNT3204MT-LPE

Serial Communication

COM-1C-LPE	COM-2C-LPE	COM-4C-LPE

●PCI
Analog I/O

AD12-16(PCI) *1	AD12-16(PCI)E	AD12-16(PCI)EV
AD12-16U(PCI)EH *1	AD12-16U(PCI)EV	AD12-64(PCI) *1
AD16-16(LPCI)L *1	AD16-16(PCI)E	AD16-16(PCI)EV
AD16-16U(PCI)EH *1	AD16-16U(PCI)EV	AD16-64(LPCI)LA
ADA16-32/2(PCI)F *1*3	ADA16-8/2(LPCI)L *1	ADAI16-8/2(LPCI)L *1
ADI12-16(PCI)	ADI16-16(LPCI)L *1	ADI16-4C(PCI) *1
ADI16-4L(PCI) *1	DA12-16(PCI) *1	DA12-4(PCI) *1
DA12-8(PCI) *1	DA16-4(LPCI)L *1	DA16-8(LPCI)L *1
DA16-16(LPCI)L *1	DAI16-4(LPCI)L *1	DAI16-4C(PCI) *1

Digital I/O

DI-128T2-PCI *1	**DIO-6464T2-PCI** *1	**DO-128T2-PCI** *1
PI-128L(PCI) *1	PI-128L(PCI)H *1	PI-32B(PCI) *1
PI-32B(PCI)H *1	PI-32L(PCI) *1	PI-32L(PCI)H *1
PI-64L(PCI)	PI-64L(PCI)H *1	PIO-16/16B(LPCI)H *1
PIO-16/16B(PCI) *1	PIO-16/16B(PCI)H *1	PIO-16/16H(PCI)H *1
PIO-16/16L(LPCI)H *1	PIO-16/16L(PCI)	PIO-16/16L(PCI)H *1
PIO-16/16RL(PCI)H *1	PIO-16/16RY(PCI) *1	PIO-16/16T(LPCI)H *1
PIO-16/16T(PCI)	PIO-16/16T(PCI)H *1	PIO-16/16TB(PCI)
PIO-16/16TB(PCI)H *1	PIO-32/32B(PCI)H	PIO-32/32B(PCI)V *1
PIO-32/32F(PCI)	PIO-32/32F(PCI)H *1	PIO-32/32F(PCI)H *1
PIO-32/32L(PCI)	PIO-32/32L(PCI)H *1	PIO-32/32RL(PCI)H *1
PIO-32/32T(PCI)	PIO-32/32T(PCI)H *1	PIO-48D(PCI) *1
PIO-48D(PCI)H *1	PIO-64/64L(PCI) *1	PIO-64/64L(PCI)H *1
PO-128L(PCI) *1	PO-128L(PCI)H *1	PO-32B(PCI) *1
PO-32B(PCI)H *1	PO-32L(PCI) *1	PO-32L(PCI)H *1
PO-64L(PCI)	PO-64L(PCI)H *1	RRY-16C(PCI)
RRY-16C(PCI)H *1	RRY-32(PCI)	RRY-32(PCI)H *1

GPIB Communication

GP-IB(LPCI)F *1*4	GP-IB(LPCI)FL *1	GP-IB(PCI) *4
GP-IB(PCI)F *1*4	GP-IB(PCI)FL *1	GP-IB(PCI)L *1

Serial Communication

COM-1(LPCI)H	COM-1PD(LPCI)H	COM-2(LPCI)H
COM-2(PCI)H	COM-2P(PCI)H	COM-2PD(LPCI)H
COM-2PD(PCI)H	COM-4(LPCI)H	COM-4(PCI)H
COM-4P(PCI)H	COM-4PD(PCI)	COM-8(PCI)H

Counter Input

CNT24-4(PCI) *1	CNT24-4(PCI)H *1	CNT24-4D(PCI) *1
CNT24-4D(PCI)H *1		

●Compact PCI
Digital I/O
PI-64L(CPCI) PO-64L(CPCI) PIO-32/32L(CPCI)

GPIB Communication
GP-IB(CPCI)F *1*4

●PC Card
Analog I/O

ADA16-32/2(CB)F *1*3	ADA16-8/2(CB)L *1*3	AD12-8(PM)

Digital I/O

PIO-16/16L(CB)H *1	PIO-48D(CB)H	PIO-24W(PM)
PIO-32D(PM)	PIO-16/16L(PM)	

GPIB Communication

GP-IB(CB)F *1*4	GP-IB(CB)FL *1	GP-IB(PM)

Serial Communication

COM-1(CB)H	COM-2(CB)H	COM-4(CB)H
COM-1PD(CB)H	COM-2(PM)	COM-1(PM)
COM-1D(PM)		

●ISA
Analog I/O

AD12-16(PC)EH	AD12-16U(PC)EH	AD16-16(PC)EH
AD12-16(PC)	AD12-16LG(PC)	ADI12-8CL(PC)H
ADI12-16(PC)	DA12-4(PC)	DA12-8L(PC)
DAI12-4C(PC)	DAI12-8C(PC)	

Digital I/O

PI-32L(PC)V	PI-32B(PC)H	PI-32T(PC)H
PI-32RL(PC)	PI-64L(PC)	PI-64T(PC)
PO-32L(PC)V	PO-32B(PC)H	PO-32TB(PC)
PO-32T(PC)H	PO-32RL(PC)	PO-64L(PC)
PO-64T(PC)	RRY-32(PC)	PRY-32(PC)
PIO-16/16L(PC)V	PIO-16/16B(PC)H	PIO-16/16TB(PC)
PIO-16/16T(PC)H	PIO-16/16RL(PC)	PIO-32/32L(PC)
PIO-32/32RL(PC)	PIO-32/32T(PC)	PIO-48W(PC)
PIO-48D(PC)		

GPIB Communication
GP-IB(PC)L *1

Serial Communication
COM-2(PC)F   COM-2PD(PC)H
*Please select the compatible mode when using MSComm.

Counter Input
CNT24-4(PC)

●USB
Analog I/O

AIO-160802AY-USB	ADI12-8(USB)GY	ADI16-4(USB)GY
AI-1608AY-USB	DAI12-4(USB)GY	DAI16-4(USB)GY

Digital I/O

DI-16(USB)GY	DI-32(USB)	DIO-0808LY-USB
DIO-16/16(USB)	DIO-24DY-USB	DIO-8/8(USB)GY
DO-16(USB)GY	DO-32(USB)	

Serial Communication

COM-1(USB)H	COM-1P(USB)H	COM-1PD(USB)H
COM-4(USB)		

Counter Input
CNT24-4(USB)GY

*1: These boards are supported in Timer component.
*2: Visual Basic Ver.6.0 or Ver.5.0 is required when using Serial Communication Boards.
*3: The following functions cannot be used.
  F series: ADA16-32/2(PCI)F, ADA16-32/2(CB)F
  ・Bus Master Transfer (Analog I/O) function
  ・In-range/Out-range function of Analog Input (Start/Stop in range or Start/Stop out range)
  ・Event Controller function (Synchronized with other functions)
  ADA16-32/2(PCI)F only
  ・Connector Synchronization function
*4: This board does not support Analyzer function

* The supported OS, Programming Languages, and borads can be addded according to the software version. Please visit our website for the latest information.
* All the supported borads use the newest drivers [API-PAC(W32)].

Website for ActiveX component: http://www.contec.com/acxpac/

CONTEC established the WEB site that is specialized in the ACX-PAC series in our homepage. The customers can download not only the latest information of the ACX-PAC series but also version-up files, samples and tools from it for free. Furthermore, CONTEC also can send the demo version of the ACX-PAC series to the customers that has already used or is thinking of using it.

Software

Data logging Software for Windows Vista / XP / 2000 / Server 2003
C-LOGGER

Available for free download from CONTEC website

What is "C-LOGGER"?

C-LOGGER is data logging software that is compatible with CONTEC analog I/O devices. C-LOGGER helps you to easily configure logging tasks, log the data and then export it to Microsoft Excel. No additional programming is required.
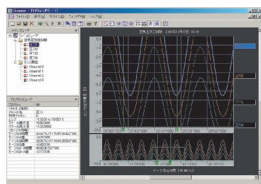
FEATURES

●HIGH-SPEED SAMPLING AND GRAPHING

CONTEC brought 30 years of professional expertise in pc-based controls into the development of its logging software. C-LOGGER's optimized data processing logic enables the user to fully realize the performance capabilities of their hardware. C-LOGGER provides high-speed graphing and quick response even when managing large amounts of data.

●DUAL-GRAPH DISPLAY OPTION FULL-SCALE AND ZOOM

C-LOGGER can display data in both full-scale and zoomed graphs. For example, while displaying the total data, a specific section of data can be expanded to check details.

●FILE SAVING AND EXCEL DYNAMIC TRANSFER

Data collected by C-LOGGER can be saved in either CSV or compact binary formats.

C-LOGGER also allows automatic file saves and dynamic transfer to Excel. This feature is convenient when handling large amounts of data collected over an extended period of time.

●MULTI-WINDOW INTERFACE

C-LOGGER can display two or more windows of both graphing (YT window) and numeric displays (numeric window). Individual windows can be customized as to their size and the number of channels displayed.
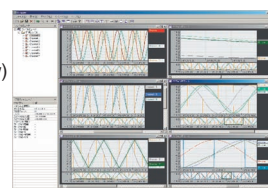
●FILE AND PROPERTY VIEWER

"File Viewer" displays collected data and data imported from file in a tree format for easy management. "Property Viewer" displays detailed information for each data item.
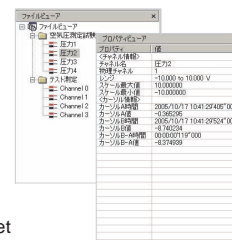
●OTHER FEATURES

・Wizard (interactive program) to easily set sampling conditions.
・Loads data from saved files.
・Customizable graph displays (line colors, background color, label, etc.)

■OPERATING ENVIRONMENT

●SUPPORTED OS
・Windows Vista
・Windows XP
・Windows Server 2003
・Windows 2000 Professional

●SUPPORTED VERSIONS OF EXCEL
・Excel 2000, Excel 2002, Excel 2003

●HARDWARE RECOMMENDATIONS
・Minimum 1.0GHz Intel® Pentium 4
 Minimum 512MB memory

●SUPPORTED DEVICES
・C-LOGGER supports CONTEC's analog I/O devices that are set up with CONTEC's API-AIO(WDM) device driver Ver. 1.90 or later.

■SUPPORTED BOARDS

●PCI Express
AIO-163202F-PE   AI-1616L-LPE   AIO-160802L-LPE

●PCI
ADA16-32/2(PCI)F   ADA16-8/2(LPCI)L   AD16-16(LPCI)L
AD16-64(LPCI)LA   ADAI16-8/2(LPCI)L   ADI16-16(LPCI)L
AD12-16(PCI)EV   AD12-16U(PCI)EV   AD16-16(PCI)EV
AD16-16U(PCI)EV

●PC Card
ADA16-32/2(CB)F   ADA16-8/2(CB)L

●USB
AI-1608AY-USB   AIO-160802AY-USB

For detailed information on C-LOGGER, please visit our website at
**h t t p : / / w w w . c o n t e c . c o m / c l o g g e r /**

Software

MATLAB®-compliant Data Acquisition Library
ML-DAQ

* Available for free download from CONTEC website

What is "ML-DAQ"?

ML-DAQ is library software which allows you to use CONTEC's analog input/output boards with The MathWorks? MATLAB software. This library allows you to control CONTEC boards with MATLAB and to import acquired measurement data directly into MATLAB for analysis.

MATLAB® Enabled

MathWorks Partner
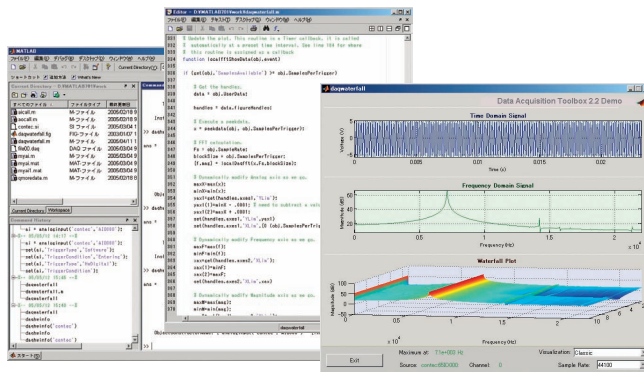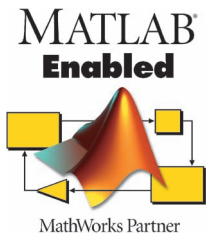
【Data collection command and signal from MATLAB】

Features

●Compliant with MATLAB standard interface
Allows you to use CONTEC's analog input/output boards with MATLAB's standard interface, offering both familiarity to MATLAB users and an easy transition when replacing boards from other manufacturers.

●Supports analog I/O functions
Both the analog input/output and digital input/output functions of CONTEC's analog I/O boards are supported.

●Direct data acquisition from MATLAB
Allows direct access of the measurement data by MATLAB and utilization of its sophisticated analysis functions.

●High-performance data acquisition
In addition to simple input/output, this software library enables cyclic measurement utilizing each trigger. It also allows the generation of events with a variety of conditions (i.e. "Termination of Data Acquisition").

LIBRARY CONFIGURATION

●The library serves as an interface which allows MATLAB to interact with existing device drivers.

●Simply install ML-DAQ and a device driver. New devices can be used by upgrading the drivers.

MATLAB Data Acquisition Toolbox
⇅
Data Acquisition Library ML-DAQ
⇅
Device Driver API-AIO(WDM)
⇅
Hardware
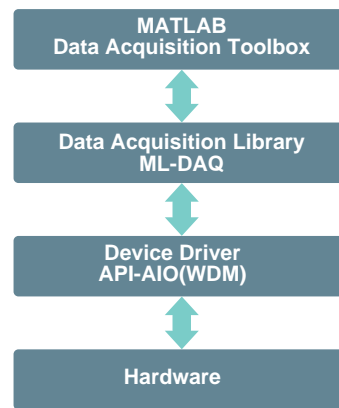
■OPERATING ENVIRONMENT

●SUPPORTED OS
・Windows® XP Professional
・Windows® XP Home Edition
・Windows® 2000 Professional

●SUPPORTED VERSIONS OF MATLAB
・MATLAB® R14 or upper
・Data Acquisition Toolbox 2.5 or upper

●SUPPORTED VERSIONS OF API-AIO(WDM)
API-AIO (WDM) Ver.1.90 or upper

■SUPPORTED BOARDS

●PCI Express

AI-1616L-LPE	AIO-163202F-PE	AIO-160802L-LPE	ADI16-16(LPCI)L	DA16-16(LPCI)L	DA16-4(LPCI)LA
			DA16-8(LPCI)L	DAI16-4(LPCI)L	

●PCI

AD12-16(PCI)EV	AD12-16U(PCI)EV	AD16-16(LPCI)L
AD16-16(PCI)EV	AD16-16U(PCI)EV	AD16-64(LPCI)LA
ADA16-32/2(PCI)F	ADA16-8/2(LPCI)L	ADAI16-8/2(LPCI)L

●PCI Card

ADA16-32/2(CB)F	ADA16-8/2(CB)L

●USB
AI-1608AY-USB

For detailed information on ML-DAQ, please visit our website at

http://www.contec.com/mldaq/

MATLAB related website

The MathWorks, Inc.: http://www.mathworks.com/

* MATLAB is a registered trade mark of The MathWorks, Inc.
* Other company names and product names which appear in this document are the trademarks (including registered ones) of their corresponding companies.

Software

Support Software for LabVIEW

National Instrument's LabVIEW is one of the most widely used software programs in the measurement field. CONTEC provides and recommends the use of the following support software enabling CONTEC add-on modules to operate under LabVIEW. Using these drivers will allow you use CONTEC's wide array of data acquisition products while you configure a LabVIEW-based measurement system at a lower cost.

● **When using CONTEC's digital, analog and counter add-on modules under LabVIEW**
⬇
VI-DAQ - LabVIEW-compliant data acquisition VI library

● **When using CONTEC's GPIB communication modules under LabVIEW**
⬇
API-GPLV(W32) - LabVIEW-compliant GPIB driver

● **When using CONTEC's serial communication modules under LabVIEW**
⬇
COM-DRV(W32) - Standard COM driver

When using LabVIEW-compliant VI-DAQ

VI-DAQ is a VI library which allows you to use CONTEC's wide variety of analog, digital and counter input devices with National Instrument's LabVIEW. Provided in a function form similar to that of LabVIEW Data Acquisition VI, it facilitates the use of each device without requiring complicated set-up.
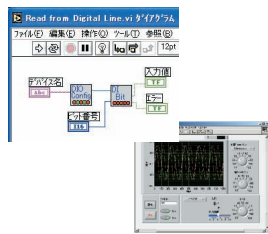
User-friendly interface
VI-DAQ is set-up with a function format similar to that of LabVIEW Data Acquisition VI, and, unlike similar software provided as a driver, does not require complicated setup. VI-DAQ enables simple and fast development and implementation of a system using CONTEC modules.
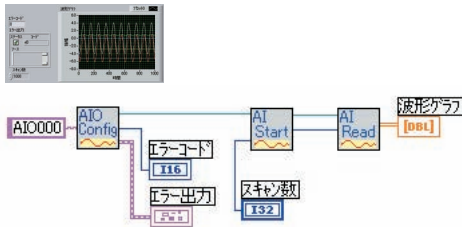
VI functions provided according to the application and the stage
Frequently-used functions are provided as 'Basic VI' whereas special functions such as condition setting are provided as 'Expansion VI'. This enables simple set-up with Basic VI and allows Expansion VI to be used as required by the application and the stage.

Practical samples provided to meet the desired application
A wide variety of simple and easy-to-understand samples utilizing VI are provided. For example for analog input application-specific samples such as "Easy input", "Using trigger" and "Consecutive sampling" are available. You can check the actual operation and make changes where needed providing assistance with system development.

Library not dependent on hardware
You can use the same VI for different devices such as PCI boards, PC cards or USB modules.

■ **Supported OS**
Windows Vista/XP/2000/Me/98SE/98
■ **Supported LabVIEW versions**
National Instruments LabVIEW 8.20 / 8 / 7.1 / 7.0 / 6.1 / 6i

For further details concerning LabVIEW-compliant data acquisition VI library VI-DAQ, visit:
## http://www.contec.com/vidaq/

For further details and free downloading of LabVIEW-compliant GPIB driver software API-GPLV(W32), visit:
## http://www.contec.com/gplv/

When using LabVIEW-compliant API-GPLV(W32)

API-GPLV(W32) allows CONTEC's GPIB communication modules to be operated under National Instrument's LabVIEW. Installation of this software allows you to develop and operate programs with LabVIEW using our GPIB communication devices.
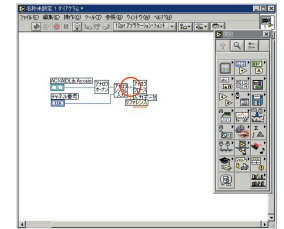
This driver is set-up similar to National Instrument's API function and can also be used on other programming languages such as Microsoft's Visual Basic.
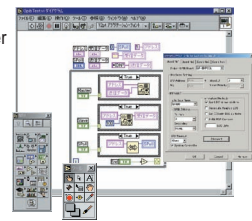
Configuration Program
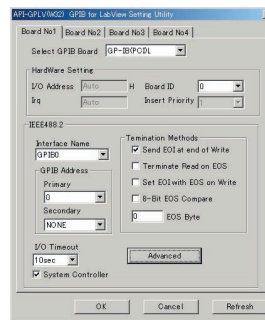
LabVIEW GPIB device library

GPIB device library provided with LabVIEW GPIB can be used.

The board's hardware and its parameters (IEEE488.2) can be set up using the attached utility. The diagnostic utility for performing simple operation checks is also included.

■**SUPPORTED OPERATING SYSTEMS**
Windows XP Professional, Windows XP HomeEdition, Windows 2000 Professional, Windows NTWorkstation 4.0 + SP3 or upper, Windows Me/98SE/98/95

■**SUPPORTED PROGRAMMING LANGUAGES**
National Instruments   LabVIEW 8 / 7.1 / 7.0 / 6.1 / 6i / 5.1 / 5.0
Microsoft   Visual C++ 2005 / Visual Basic 2005
Visual Basic 6.0 / 5.0 / 4.0
Visual C++ 6.0 / 5.0 / 4.x / 2.0
Visual Basic .NET 2003 / 2002
Visual C++ .NET 2003 / 2002
Visual C# .NET 2003 / 2002
Borland   C++ Builder 6.0 / 5.0, Delphi 6.0 / 5.0 / 4.0

■**SUPPORTED BOARDS**
USB Converter
GP-IB(USB)FL*[1]
Compact PCI
GP-IB(CPCI)F*[1]
PCI
GP-IB(LPCI)F*[1],   GP-IB(LPCI)FL*[1],   GP-IB(PCI),
GP-IB(PCI)F*[1],   GP-IB(PCI)FL*[1],   GP-IB(PCI)L
ISA
GP-IB(PC)L
PC Card
GP-IB(CB)F*[1],   GP-IB(CB)FL*[1],   GP-IB(PM)

*[1]: The required OS is Windows 98, Windows 2000 or upper.
*: Cannot be used simultaneously with National Instruments drivers for CPIB communication boards.
*: Not compatible with CONTEC driver library for GPIB communication boards/cards API-GPIB(98/PC).
* A program using this software can not be executed simultaneously with a program using API-GPIB (98/PC) on the same hardware.

Software

API-PAC(W32)

| WINDOWS Vista | WINDOWS XP | WINDOWS Server 2003 | WINDOWS 2000 | WINDOWS NT | WINDOWS Me | WINDOWS 98/95 | Linux |

* Provided free of charge

What is API-PAC(W32)?

This software provides commands for CONTEC I/O boards by using the Win32 API function for Windows (DLL) format, .

Useful in the development of high-speed applications that utilize the special features of CONTEC boards, these drivers provide convenient and uniformly integrated functions in a variety of programming languages such as Visual Basic and Visual C/C++.

SETUP PROGRAM INCLUDED FOR EASY INSTALLATION IN WINDOWS®
Vista / XP / 2000 / NT / Me / 98 / 95

The API-PAC setup program can be used to install the library of DLL commands in Windows Vista/XP/2000/NT/Me/98/95 simply by selecting the CONTEC board that will be used. The API functions of each board chosen in the series then become usable.
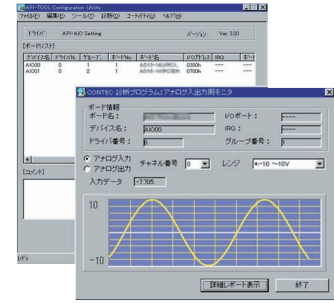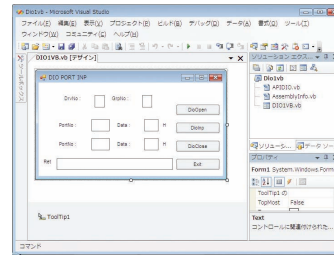

Features of API-PAC(W32)

1. Unified API
   This unified DLL classifies boards by their I/O communication method (RS-232, Analog, Digital). It enables programming of high-appropriation applications that can continue to be used (with no reprogramming) when the I/O hardware is changed by using the board re-registration feature.

2. Data Collection in the Foreground/Background
   Event-driven control functions are supported. Data collection can be performed in the foreground while continuing on in the background (in the inactive window or as an icon on Windows) as required.

3. Logical Device Access
   Programming can be produced for each logical device without having to access I/O ports and boards.

4. Intuitive function names
   Each API is named according to their function for easier use while programming.

Diagnosis Program

A diagnosis program is included with each API function library for easy to find information on the status of the I/O board and installed software. It can determine whether or not the setup and driver software are functioning normally. The diagnostic program can be executed from the "API-TOOL Configuration" screen.

Multi-function drive
[API-xxx(WDM)]

Conventional Products
[API-xxx(98/PC)]

Sample Programs

API-PAC(W32) includes a number of sample programs for each of the driver libraries using the various compatible programming languages. These not only show how to use the functions, but demonstrate the performance of the boards helping in their application development.
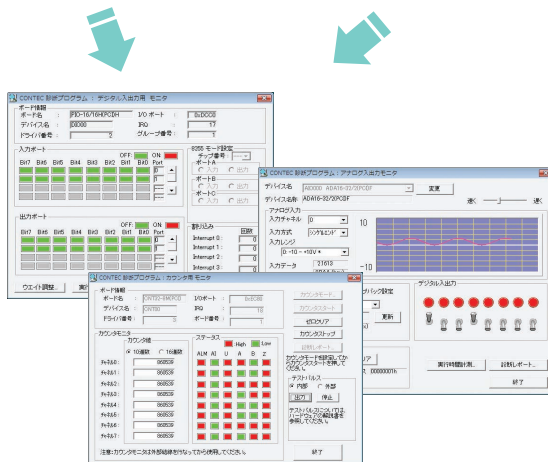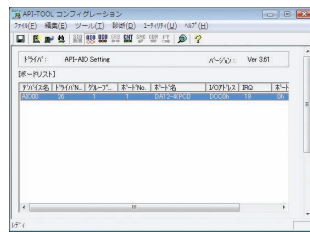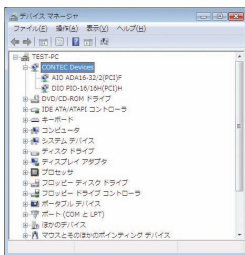
Added in & Supporting Development Environment

If you choose a driver, the software will register the library of the add-on board/card in the projects.
It supports Visual Basic, Visual C++, Visual C# of Microsoft Visual Studio 2005, .NET 2003, .NET 2002.
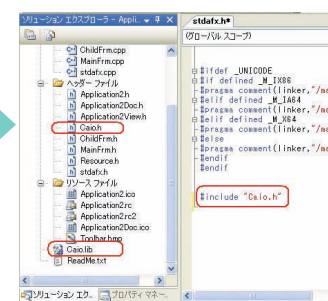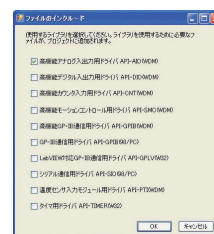
Software

Website for driver library: http://www.contec.com/apipac/

A library of drivers "API-TOOL Developer's Site" can be found through CONTEC's global portal. There you can download the latest versions of each driver library along with sample program sets.

■ Software Upgrades
● Downloads of the latest driver library software are provided free of charge.

Included with PCI Express, PCI Boards and PC Cards

CONTEC's driver library API-PAC(W32) along with sample programs, is included when purchasing PCI boards and PC card products.

◎ The library to be used varies depending on the I/O product purchased.

■ API-PAC(W32) Specifications

■ SUPPORTED OPERATING SYSTEMS

| Library Name		Corresponding Operating Systems							
		Windows Vista	Windows XP Professional, Home Edition	Windows Server 2003	Windows 2000 Professional	Windows NT Server *1, Windows NT Workstation 4.0	3.51	Windows Me / 98	Windows 95
Serial Communication	API-SIO(98/PC)NT	O	O	O	O	O	O		
	API-SIO(98/PC)W95							O	O
GPIB Communication	API-GPIB(98/PC)NT	O	O	O	O	O	O		
	API-GPIB(98/PC)W95							O	O
	API-GPLV(W32)	O	O	O	O			O	O
Analog I/O	API-AIO(WDM)	O	O	O	O			O	
	API-AIO(98/PC)NT	O	O	O	O	O	O		
	API-AIO(98/PC)W95							O	O
Digital I/O	API-DIO(WDM)	O	O	O	O				
	API-DIO(98/PC)NT	O	O	O	O	O	O		
	API-DIO(98/PC)W95							O	O
Counter	API-CNT(WDM)	O	O	O	O				
	API-CNT(98/PC)NT	O	O	O	O	O	O		
	API-CNT(98/PC)W95							O	O
Motor Control	API-SMC(WDM)	O	O	O	O				
	API-SMC(98/PC)NT	O	O	O	O	O	O		
	API-SMC(98/PC)W95							O	O
Timer	API-TIMER(W32)	O	O	O	O	O	O*2	O	O

*1: Only program execution is possible.   *2: ActiveX control cannot be used.

■ SUPPORTED PROGRAMMING LANGUAGES

Library Name		Corresponding Programming Languages									
		Visual C++ 2005 Visual C++.NET 2003/2002	Visual C# 2005 Visual C#.NET 2003/2002	Visual Basic 2005 Visual Basic.NET 2003/2002	Visual C++ Ver.6.0/5.0	Visual C++ Ver.4.x/2.0	Visual Basic Ver.6.0/5.0	Visual Basic Ver.4.0	Borland C++ Builder 6.0/5.0	Borland Delphi 6.0	LabVIEW 8/7.1/7.0/ 6i/5.0/5.1
Serial Communication	API-SIO(98/PC)NT	O	O	O	O	O	O	O	O	O	
	API-SIO(98/PC)W95										
GPIB Communication	API-GPIB(98/PC)NT	O	O	O	O	O	O	O	O	O	
	API-GPIB(98/PC)W95										
	API-GPLV(W32)	O	O	O	O	O	O	O	O	O	O
Analog I/O	API-AIO(WDM)	O	O	O	O		O		O	O	
	API-AIO(98/PC)NT				O	O	O	O			
	API-AIO(98/PC)W95										
Digital I/O	API-DIO(WDM)	O	O	O	O	O	O	O	O	O	
	API-DIO(98/PC)NT	O	O	O	O	O	O	O	O	O	
	API-DIO(98/PC)W95										
Counter	API-CNT(WDM)	O	O	O	O	O	O	O	O	O	
	API-CNT(98/PC)NT	O	O	O	O	O	O	O	O	O	
	API-CNT(98/PC)W95										
Motor Control	API-SMC(WDM)				O		O				
	API-SMC(98/PC)NT	O	O	O	O	O	O	O	O	O	
	API-SMC(98/PC)W95										
Timer	API-TIMER(W32)	O	O	O	O	O*1	O	O			

*1: ActiveX control cannot be used in Visual C++ Ver.2.0.

Software

Windows Environment

The drivers for Windows supply the former drivers [API-xxx(98/PC)] that can be compatible with C-BUS, ISA buses, and the High-performance drivers [API-xxx(WDM)] that also can be compatible with USB devices. Both the above two drivers are compatible with PCI Express, PCI bus board, CardBus.
Please use the former drivers if your application uses the API functions from the former drivers [API-xxx(98/PC)] to access the devices. When you want to develop a new application, we recommend the High-performance drivers [API-xxx(WDM)].

High-performance Analog I/O API Function Library

API-AIO(WDM)

- A maximum of 16 boards are controllable.
- Functions are grouped according to their application.
- Programming can focus on application groups - functions don't need to be considered individually.
- Once analog I/O board setup parameters are programmed as a default, they can be used without further setting of parameters.
- The information of boards can be acquired.
- The callback procedure to accept Interrupt/Trigger notice is provided for applications without window, such as DLL or Resident Program.
- With the integrated function calls, add-on boards and USB devices can be used by same function call.

■**SUPPORTED BOARDS**

● **PCI Express**
AI-1616L-LPE	AIO-163202F-PE	AIO-160802L-LPE
AO-1604L-LPE		

● **PCI**
AD12-16(PCI)	AD12-16(PCI)E	AD12-16(PCI)EV
AD12-16U(PCI)E	AD12-16U(PCI)EH	AD12-16U(PCI)EV
AD12-64(PCI)	AD16-16(LPCI)L	AD16-16(PCI)E
AD16-16(PCI)EV	AD16-16U(PCI)EH	AD16-16U(PCI)EV

AD16-64(LPCI)LA	ADA16-32/2(PCI)F	ADA16-8/2(LPCI)L
ADAI16-8/2(LPCI)L	ADI12-16(PCI)	ADI16-16(LPCI)L
ADI16-4C(PCI)	ADI16-4L(PCI)	DA12-16(PCI)
DA12-4(PCI)	DA12-8(PCI)	DA16-16(LPCI)L
DA16-4(LPCI)L	DA16-8(LPCI)L	DAI16-4(LPCI)L
DAI16-4C(PCI)		

● **PC Card**
AD12-8(PM)	ADA16-32/2(CB)F	ADA16-8/2(CB)L

Analog I/O Driver

API-AIO(98/PC)NT, API-AIO(98/PC)W95

- A maximum of 64 boards are controllable.
- Analog input / output can be performed from specified channels.
- Analog input can be performed at arbitrary fixed intervals using the internal sampling clock on the board or an external sampling clock signal.
- In addition to software control, the start and stop of sampling can be controlled by the analog signal level or by an external TTL level signal.
- Multiple interrupt conditions can be monitored simultaneously, including completion of analog input sampling, buffer memory usage status and error detection.
- Commands for the digital I/O or counter are supported in those boards that have digital I/O or counter functions.
- A "Demo-board" function is provided in order to monitor application operations even when no board is installed.

■**SUPPORTED BOARDS**

● **PCI**
AD12-16(PCI)	AD12-16(PCI)E	AD12-16(PCI)EV
AD12-16U(PCI)E	AD12-16U(PCI)EH	AD12-16U(PCI)EV
AD12-64(PCI)	AD16-16(PCI)E	AD16-16(PCI)EV
AD16-16U(PCI)EH	AD16-16U(PCI)EV	ADI12-16(PCI)
ADI16-4C(PCI)	ADI16-4L(PCI)	DA12-16(PCI)
DA12-4(PCI)	DA12-8(PCI)	DAI16-4C(PCI)

● **PC Card**
AD12-8(PM)

● **ISA**
AD12-16(PC)EH	AD12-16U(PC)EH	AD16-16(PC)EH
AD12-16(PC)E	AD12-16U(PC)E	ADI12-8CL(PC)H
DA12-8L(PC)	DA12-4(PC)	DAI12-8C(PC)
DAI12-4C(PC)		

High-performance Digital I/O API Function Library

API-DIO(WDM)

- A maximum of 16 boards are controllable.
- Digital input/output can be performed from the specified ports.
- Digital input/output can be performed from the specified bits.
- Hardware chattering can be prevented by using the digital filter.
- The information of boards can be acquired.
- The callback procedure to accept Interrupt/Trigger notice is provided for applications without window, such as DLL or Resident Program.
- With the integrated function calls, add-on boards and USB devices can be used by same function call.

■**SUPPORTED BOARDS**

● **PCI Express**
DI-128L-PE	DI-32L-PE	DI-64L-PE
DIO-1616B-PE	DIO-1616L-PE	DIO-1616TB-PE
DIO-1616T-LPE	DIO-1616T-PE	DIO-3232B-PE
DIO-3232F-PE	DIO-3232L-PE	DIO-48D-LPE
DIO-3232T-PE	DIO-6464L-PE	DIO-6464T-PE
DO-128L-PE	DO-32L-PE	DO-64L-PE

● **PCI**
DI-128T2-PCI	DIO-6464T2-PCI	DO-128T2-PCI
PI-128L(PCI)	PI-128L(PCI)H	PI-32B(PCI)
PI-32B(PCI)H	PI-32L(PCI)	PI-32L(PCI)H
PI-64L(PCI)	PI-64L(PCI)H	PIO-16/16B(LPCI)H
PIO-16/16B(PCI)	PIO-16/16B(PCI)H	PIO-16/16H(PCI)H
PIO-16/16L(LPCI)H	PIO-16/16L(PCI)	PIO-16/16L(PCI)H
PIO-16/16RL(PCI)H	PIO-16/16RY(PCI)	PIO-16/16T(LPCI)H

PIO-16/16T(PCI)	PIO-16/16T(PCI)H	PIO-16/16TB(PCI)
PIO-16/16TB(PCI)H	PIO-32/32B(PCI)	PIO-32/32B(PCI)H
PIO-32/32B(PCI)V	PIO-32/32F(PCI)	PIO-32/32F(PCI)H
PIO-32/32H(PCI)H	PIO-32/32L(PCI)	PIO-32/32L(PCI)H
PIO-32/32RL(PCI)H	PIO-32/32T(PCI)	PIO-32/32T(PCI)H
PIO-32DM(PCI)	PIO-48D(LPCI)H	PIO-48D(PCI)
PIO-64/64L(PCI)	PIO-64/64L(PCI)H	PO-128L(PCI)
PO-128L(PCI)H	PO-32B(PCI)	PO-32B(PCI)H
PO-32L(PCI)	PO-32L(PCI)H	PO-64L(PCI)
PO-64L(PCI)H	RRY-16C(PCI)	RRY-16C(PCI)H
RRY-32(PCI)	RRY-32(PCI)H	

● **PC Card**
PIO-16/16L(CB)H	PIO-48D(CB)H

Software

Digital I/O Driver

API-DIO(98/PC)NT, API-DIO(98/PC)W95

● A maximum of 64 boards are controllable.

● Digital input/output can be performed from the specified ports.

● Digital input/output can be performed from the specified bits.

● Hardware chattering can be prevented by using the digital filter.

■ SUPPORTED BOARDS

● **PCI Express**

The same as High-performance Digital I/O API Function Library [API-DIO(WDM)] (Please see page P-11)

● **PCI**

The same as High-performance Digital I/O API Function Library [API-DIO(WDM)] (Please see page P-11)

● **Compact PCI**

| PI-64L(CPCI) | PO-64L(CPCI) | PIO-32/32L(CPCI) |

● **PC Card**

| PIO-16/16L(CB)H | PIO-48D(CB)H | PIO-24W(PM) |
| PIO-32D(PM) | PIO-16/16L(PM) | |

● **ISA**

PI-64L(PC)	PI-64T(PC)	PO-64L(PC)
PO-64T(PC)	PIO-32/32L(PC)	PIO-32/32RL(PC)
PIO-32/32T(PC)	PI-32L(PC)V	PI-32B(PC)H
PI-32T(PC)H	PI-32RL(PC)	PO-32L(PC)V
PO-32B(PC)H	PO-32T(PC)H	PO-32RL(PC)
RRY-32(PC)	PRY-32(PC)	PIO-16/16T(PC)H
PIO-16/16RL(PC)	PIO-16/16L(PC)V	PIO-16/16B(PC)H
PIO-48D(PC)		

GPIB Communication Driver for LabVIEW

API-GPLV(W32)

This newly added driver for CONTEC's GPIB boards is compatible with National Instrument's LabVIEW. By using this software, the programs that are used with CONTEC's GPIB communication boards / cards can be developed in LabVIEW, for use with CONTEC's boards.

■ SUPPORTED PROGRAMMING LANGUAGES

National Instruments	LabVIEW 8 / 7.1 / 7.0 / 6.1 / 6i / 5.1 / 5.0
Microsoft	Microsoft Visual C++ 2005 / Visual Basic 2005
	Visual Basic 6.0 / 5.0 / 4.0
	Visual C++ 6.0 / 5.0 / 4.x / 2.0
	Visual Basic .NET 2003 / 2002
	Visual C++ .NET 2003 / 2002
Borland	C++ Builder 6.0 / 5.0, Delphi 6.0 / 5.0 / 4.0

■ SUPPORTED BOARDS

・USB	GP-IB(USB)FL[1]
・Compact PCI	GP-IB(CPCI)F[1]
・PCI Express	GPIB-F-LPE[1], GPIB-FL-LPE[1]
・PCI	GP-IB(LPCI)F[1], GP-IB(LPCI)FL[1], GP-IB(PCI), GP-IB(PCI)F[1], GP-IB(PCI)FL[1], GP-IB(PCI)L
・PC Card	GP-IB(CB)F[1], GP-IB(CB)FL[1], GP-IB(PM)
・ISA	GP-IB(PC)L

[1]: It can be used only under Windows 98, Windows 2000 or above.

GPIB Communication Driver

API-GPIB(98/PC)NT, API-GPIB(98/PC)W95

● A maximum of 4 boards are controllable

● IEEE-488-compliant

● Supports IEEE-488.2- compliant commands

● Allows easy software setting of master mode, slave mode, and interrupt level

● 3-line handshaking for reliable data transfer between devices with different rates

● Supports Bus Master, DMA and FIFO functions

● Can monitor control lines of GPIB Bus such as IFC and SQR.
(Note: GP-IB(PC) cannot do this)

● The status of data and signals flowing on the line can be monitored via bundled GPIB ANALYZER.

■ SUPPORTED BOARDS

● **PCI Express**

| GPIB-F-LF[1] | GPIB-FL-LPE[1] |

● **USB**

GP-IB(USB)FL[1]

● **Compact PCI**

GP-IB(CPCI)F[1]

● **PC**

GP-IB(LPCI)F[1]	GP-IB(LPCI)FL[1]
GP-IB(PCI)	GP-IB(PCI)F[1]
GP-IB(PCI)FL[1]	GP-IB(PCI)L

● **PC Card**

| GP-IB(CB)F[1] | GP-IB(CB)FL[1] |
| GP-IB(PM) | |

● **ISA**

| GP-IB(PC), | GP-IB(PC)F, | GP-IB(PC)L |

[1]: It can be used only under Windows 98, Windows 2000 or upper.

Software

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Serial Communication Driver
API-SIO(98/PC)NT, API-SIO(98/PC)W95

● A maximum of 256 ports are controllable. [1]
● Timer surveillance of the completion of both transmission and reception can be performed.
● Reception buffer size can be set independently for each channel (256-65535 bytes).
● The flow control of XON/XOFF signals can be utilized so that when the available reception buffer is reduced to a pre-set level, an XOFF code will be sent to the other end requesting a temporary suspension of transmission.

■ SUPPORTED BOARDS

● **PCI Express** [3]
COM-1C-LPE	COM-2C-LPE
COM-4C-LPE	

● **PCI**
COM-1(LPCI)H	COM-1PD(LPCI)H
COM-2(LPCI)H	COM-2(PCI)H
COM-2P(PCI)H	COM-2PD(LPCI)H
COM-2PD(PCI)H	COM-4(LPCI)H
COM-4(PCI)H	COM-4P(PCI)H
COM-4PD(PCI)H	COM-8(PCI)H

● **PC Card**
COM-1(CB)H	COM-2(CB)H
COM-4(CB)H	COM-1PD(CB)H
COM-1(PM)	COM-1D(PM)
COM-2(PM)	

● **PC on board Port**
RS-232C Port [2]

● **ISA**
COM-2(PC)F	COM-2PD(PC)H

[1]: The number of channels available will very depending on the combination of boards.
[2]: It cannot be used under Windows Vista/XP/Server 2003/2000.
[3]: It cannot be used under Windows Me/98/95/NT.

High-performance Counter Input Driver
API-CNT(WDM)

● A maximum of 16 boards are controllable
● The current count values of specified channels can be read.
● The current count values of the status register of specified channels can be read.
● Sets of preset values can be set for specified channels.
● Timer can wait for a pre-specified period
● An event message can be generated whena time-up, timer halt, or count match occurs

● Output width of a one-shot pulse can be specified when a counter match occurs
● The callback to receive Interrupt/Trigger notice is enabled by using an application that has no windows, such as DLL, Resident Program.
● With the integrated function calls, add-on boards and USB devices can be used by same function call.

■ SUPPORTED BOARDS

● **PCI Express**
CNT-3204MT-LPE	CNT-3208M-PE

● **PCI**
CNT24-4(PCI)	CNT24-4(PCI)H
CNT24-4D(PCI)	CNT24-4D(PCI)H
CNT32-4MT(LPCI)	CNT32-8M(PCI)

● **PC Card**
CNT32-4MT(CB)

Counter Input Driver
API-CNT(98/PC)NT, API-CNT(98/PC)W95

● A maximum of 16 boards are controllable
● The current count value can be read for a specified channel
● The current value of the status register can be read for a specified channel
● A preset value can be set for a specified channel

● Timer can wait for a pre-specified period
● An event message can be generated when a time-up, timer halt, or count match occurs
● Output width of a one-shot pulse can be specified when a counter match occurs

■ SUPPORTED BOARDS

● **PCI Express**
CNT-3204MT-LPE	CNT-3208M-PE

● **PCI**
CNT24-4(PCI)	CNT24-4(PCI)H
CNT24-4D(PCI)	CNT24-4D(PCI)H
CNT32-4MT(LPCI)	CNT32-8M(PCI)

● **PC Card**
CNT32-4MT(CB)

● **ISA**
CNT24-4(PC)

High-performance Motor Controller Control Driver
API-SMC(WDM)

- A maximum of 16 boards are controllable.
- The positioning of the stepping motor and servomotor can easily be set and controlled in Windows®.
- Initial parameters that was used to be set in initial utilities of API-SMC(98/PC) can be set through API.
- Basic motor operations, such as PTP transfer and Jogging, are easily set and performed.

- A variety of modes are provided for a move to origin, which makes the complicated movement to origin be set/operated more simply.
- A variety of event functions are available.
- Synchronization control allows continuous interpolation along N axis on multiple boards.

■ SUPPORTED BOARDS

● PCI
SMC-4DF-PCI
SMC-8DF-PCI
SMC-4DL-PCI
SMC-8DL-PCI

Motor Controller Control Driver
API-SMC(98/PC)NT, API-SMC(98/PC)W95

- A maximum of 16 boards are controllable.
- The positioning of the stepping motor and servomotor can easily be set and controlled in Windows®.
- Setup Utility allows initial board values to be easily set with the setup wizard.
- Diagnostic Utility distinguishes between software and hardware problems to help achieve smooth application development and debug.

- Basic motor operations, such as PTP motion and JOGGING, are easily setup and performed.
- A variety of modes are provided for a move to origin.
- Bank Motion allows easy setup and high-speed control when controlling the motor with an already designed operating pattern.
- A variety of event functions are available.
- Synchronization control allows continuous interpolation along N axis on multiple boards.

■ SUPPORTED BOARDS

● PCI
SMC-2P(PCI)
SMC-4P(PCI)

● ISA
SMC-3(PC)

Timer Control Driver
API-TIMER(W32)

API-TIMER(W32) is a device driver (API function) that, when using CONTEC boards, provides precise timer function in a Windows environment.

- Even when there is no board, this driver can be used as an interval timer that exhibits higher precision than the Visual Basic timer control.
- Function execution time can be measured with micro second accuracy.
- Using the wait function, program processing can be suspended for a specified length of time.
- With the attached ActiveX Control "CONTEC ACX Timer Control", you can use the timer function without relying on API function.

■ SUPPORTED BOARDS

● PCI Express

AI-1616L-LPE	AIO-163202F-PE	AIO-160802L-LPE	AO-1604L-LPE
CNT3204MT-LPE	CNT3208MT-PE	DA16-16(LPCI)L	DA16-8(LPCI)L
DI-128L-PE	**DI-32L-PE**	**DI-64L-PE**	**DIO-1616B-PE**
DIO-1616L-PE	**DIO-1616TB-PE**	DIO-1616T-LPE	DIO-1616T-PE
DIO-3232B-PE	**DIO-3232F-PE**	DIO-3232L-PE	DIO-3232T-PE
DIO-48D-LPE	**DIO-6464L-PE**	**DIO-6464T-PE**	**DO-128L-PE**
DO-32L-PE	**DO-64L-PE**	GPIB-FL-LPE	GPIB-F-LPE

● Compact PCI
GP-IB(CPCI)F

● PCI

AD12-16(PCI)	AD12-16(PCI)EV	AD12-16U(PCI)EH	AD12-16U(PCI)EV
AD12-64(PCI)	AD16-16(LPCI)L	AD16-16(PCI)EV	AD16-16U(PCI)EH
AD16-16U(PCI)EV	AD16-64(LPCI)LA	ADA16-32/2(PCI)F	ADA16-8/2(LPCI)L
ADAI16-8/2(LPCI)L	ADI16-16(LPCI)L	ADI16-4C(PCI)	ADI16-4L(PCI)
CNT24-4(PCI)H	CNT24-4D(PCI)	CNT24-4D(PCI)H	CNT32-4MT(LPCI)
CNT32-8M(PCI)	DA12-16(PCI)	DA12-4(PCI)	DA12-8(PCI)
DA16-4(LPCI)L	DAI16-4(LPCI)L	DAI16-4C(PCI)	DI-128T2-PCI
DIO-6464T2-PCI	**DO-128T2-PCI**	GP-IB(LPCI)F	GP-IB(LPCI)FL
GP-IB(PCI)F	GP-IB(PCI)FL	GP-IB(PCI)L	PI-128L(PCI)
PI-128L(PCI)H	PI-32B(PCI)	PI-32B(PCI)H	PI-32L(PCI)
PI-32L(PCI)H	PI-64L(PCI)H	PIO-16/16B(LPCI)H	PIO-16/16B(PCI)
PIO-16/16B(PCI)H	PIO-16/16H(PCI)H	PIO-16/16L(LPCI)H	PIO-16/16L(PCI)H
PIO-16/16TB(PCI)H	PIO-16/16RY(PCI)	PIO-16/16T(LPCI)H	PIO-16/16T(PCI)H
PIO-32/32L(PCI)H	PIO-32/32B(PCI)V	PIO-32/32F(PCI)H	PIO-32/32H(PCI)H
PIO-48D(LPCI)H	PIO-32/32RL(PCI)H	PIO-32/32T(PCI)H	PIO-32DM(PCI)
PO-128L(PCI)	PIO-48D(PCI)	PIO-64/64L(PCI)	PIO-64/64L(PCI)H
PO-32L(PCI)	PO-128L(PCI)H	PO-32B(PCI)	PO-32B(PCI)H
RRY-32(PCI)H	PO-32L(PCI)H	PO-64L(PCI)H	RRY-16C(PCI)H

● PC Card

ADA16-32/2(CB)F	ADA16-8/2(CB)L	CNT32-4MT(CB)	GP-IB(CB)F
GP-IB(CB)FL	PIO-16/16L(CB)H	PIO-48D(CB)H	

● ISA
GP-IB(PC)L

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Software

Linux Environment

This Linux-compliant software provides a group of functions for controlling CONTEC hardware by means of module drivers and a shared library.
◎ With the Help file, the description of each function can be checked on the screen while working on the program development.
◎ Using the sample programs compatible with each supported language, the usage of each function as well as the operation of the board can be checked for improved development efficiency.
◎ With Configuration, you can output a setup file that facilitates the transfer to execution environment as well as the driver startup and stop script.
◎ The attached user interrupt source code can be built into the drivers for execution.

■ Supported Programming Languages

gcc

■ Kernel (Operations Checked) / Distribution

2.4.21 / RedHat Linux Professional Workstation	2.2.14/ RedHat Linux 6.2
2.4.20 / RedHat Linux 9	2.4.18/ Turbo Linux 8
2.4.18 / RedHat Linux 8.0	2.4.5/ Turbo Linux 7.0
2.4.18 / RedHat Linux 7.3	2.2.13/ Turbo Linux 6.0
2.4.7 / RedHat Linux 7.2	2.6.9-5EL / Red Hat Enterprise Linux 4 *
2.4.2 / RedHat Linux 7.1	2.6.8/ Turbo Linux 10 Server
2.2.16 / RedHat Linux 7.0	* The language can be used in API-DIO(LNX), IO-LIB(LNX)

Digital I/O Driver

API-DIO(LNX)

● Provides a group of functions for controlling CONTEC digital I/O boards through module drivers and a shared library.

● Equipped with user interrupt processing source code that can be built into the driver for execution.
● Equipped with basic functions including I/O, interrupt and trigger monitoring via timer.

■ SUPPORTED BOARDS

● PCI Express

DI-128L-PE	**DI-32L-PE**	**DI-64L-PE**
DIO-1616B-PE	DIO-1616L-PE	**DIO-1616TB-PE**
DIO-1616T-LPE	DIO-1616T-PE	
DIO-3232F-PE	DIO-3232L-PE	DIO-3232T-PE
DIO-48D-LPE	**DIO-6464L-PE**	**DIO-6464T-PE**
DO-128L-PE	**DO-32L-PE**	**DO-64L-PE**

● PCI

DI-128T2-PCI	**DIO-6464T2-PCI**	**DO-128T2-PCI**
PI-128L(PCI)	PI-128L(PCI)H	PI-32B(PCI)
PI-32B(PCI)H	PI-32L(PCI)	PI-32L(PCI)H
PI-64L(PCI)	PI-64L(PCI)H	PIO-16/16B(LPCI)H
PIO-16/16B(PCI)	PIO-16/16B(PCI)H	PIO-16/16H(PCI)H
PIO-16/16L(LPCI)H	PIO-16/16L(PCI)	PIO-16/16L(PCI)H

PIO-16/16RL(PCI)H	PIO-16/16RY(PCI)	PIO-16/16T(LPCI)H
PIO-16/16T(PCI)	PIO-16/16T(PCI)H	PIO-16/16TB(PCI)
PIO-16/16TB(PCI)H	PIO-32/32B(PCI)H	PIO-32/32B(PCI)V
PIO-32/32F(PCI)	PIO-32/32F(PCI)H	PIO-32/32H(PCI)H
PIO-32/32L(PCI)	PIO-32/32L(PCI)H	PIO-32/32RL(PCI)H
PIO-32/32T(PCI)	PIO-32/32T(PCI)H	PIO-32DM(PCI)
PIO-48D(LPCI)H	PIO-48D(PCI)	PIO-64/64L(PCI)
PIO-64/64L(PCI)H	PO-128L(PCI)	PO-128L(PCI)H
PO-32B(PCI)	PO-32B(PCI)H	PO-32L(PCI)
PO-32L(PCI)H	PO-64L(PCI)	PO-64L(PCI)H
RRY-16C(PCI)	RRY-16C(PCI)H	RRY-32(PCI)
RRY-32(PCI)H		

● PC Card

PIO-16/16L(CB)H	PIO-48D(CB)H

Analog I/O Driver

API-AIO(LNX)

● Provides a group of functions for controlling CONTEC analog I/O boards through module drivers and a shared library.
● Provides basic analog I/O functions.
● Programming can focus on application groups, individual functions don't need to be considered.

● Once analog I/O board setup parameters are programmed as a default, they can be used without further setting of parameters
● Allows the output of a setup file that facilitates the transfer to execution environment as well as driver startup and stop script

■ SUPPORTED BOARDS

● PCI Express

AI-1616L-LPE	AIO-163202F-PE	AIO-160802L-LPE
AO-1604L-LPE		

● PCI

AD12-16(PCI)	AD12-16(PCI)E	AD12-16(PCI)EV
AD12-16U(PCI)E	AD12-16U(PCI)EH	AD12-16U(PCI)EV
AD12-64(PCI)	AD16-16(LPCI)L	AD16-16(PCI)E
AD16-16(PCI)EV	AD16-16U(PCI)EH	AD16-16U(PCI)EV

AD16-64(LPCI)LA	ADA16-32/2(PCI)F	ADA16-8/2(LPCI)L
ADAI16-8/2(LPCI)L	ADI12-16(PCI)	ADI16-16(LPCI)L
ADI16-4C(PCI)	ADI16-4L(PCI)	DA12-16(PCI)
DA12-4(PCI)	DA12-8(PCI)	DA16-16(LPCI)L
DA16-4(LPCI)L	DA16-8(LPCI)L	DAI16-4(LPCI)L
DAI16-4C(PCI)		

● PC Card

ADA16-32/2(CB)F	ADA16-8/2(CB)L

Software

GPIB Communication Driver

API-GPIB(LNX)

● Provides a group of functions for controlling CONTEC GPIB boards through module drivers and a shared library.

● IEEE-488 compliant
● The selection of Master Mode or Slave Mode, etc. can be set up via software simply.

■ SUPPORTED BOARDS

● **PCI Express**
GPIB-F-LPE   GPIB-FL-LPE

● **PC Card**
GP-IB(CB)F   GP-IB(CB)FL

● **PCI**
GP-IB(PCI)F   GP-IB(LPCI)F   GP-IB(LPCI)FL
GP-IB(PC)F   GP-IB(PCI)FL

Counter Input Driver

API-CNT(LNX)

● Provides a group of functions for controlling CONTEC counter boards through module drivers and a shared library.

● Equipped with basic functions including mode setting, count value acquisition, count identity interrupt and timer interrupt.

■ SUPPORTED BOARDS

● **PCI**   CNT24-4(PCI)   CNT24-4(PCI)H   CNT24-4D(PCI)   CNT24-4D(PCI)H

General I/O Driver

IO-LIB(LNX)

● Capable of accessing a desired I/O port address at 1/2/4 bytes
● Capable of acquiring resource information of PCI / Compact PCI bus (Plug and Play-compliant)
● Capable of interrupt event processing

● Complete with console and X-Window (Kylix) sample programs
● HTML function reference
● Includes driver and source code of shared libraries

■ SUPPORTED BOARDS

CONTEC PCI / ISA / Compact PCI bus instrument and control interface boards.
* Applicable only to boards with which I/O port map is disclosed.
If you want I/O port map for development, please contact our sales office or distributors.

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ActiveX Component

Data Logger Software

MATLAB

LabVIEW

Driver Software Library