DATENBLATT

CPU-CA10(USB)GY

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WÜNSCHEN SIE EIN INDIVIDUELLES ANGEBOT?
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I/O Controller Module with USB

CPU-CA10(USB)GY

This product is a compact and easy to use USB-mounted I/O control module. Module can be used to input and output a wide range of different signals by connecting F&eIT compatible device modules (sold separately).

- Input and output digital signals to an external device
- Convert external analog voltage signals to digital data
- Convert digital data to an analog voltage signal for output to an external device
- Count high-frequency pulse signals, or use in conjunction with an encoder for position control

As the CPU used to control the module is isolated from external signals by Optocoupler, disturbances on the external electrical circuit are not transmitted to the host computer.

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

Features

Digital input
Using a DI-16(FIT)GY or similar digital input module
The module can be used to input digital signals from an external device. Monitor the status of a switch, for example.

Digital output
Using a DO-16(FIT)GY or similar digital output module
The module can be used to output a digital signal to an external device. Can directly drive an LED display.

Analog input
Using a ADI12-8(FIT)GY or similar analog input module
The CPU on the module performs A/D sampling. The sampled and converted A/D data is sent to the PC via the USB interface.

Analog output
Using a DAI12-4(FIT)GY or similar analog output module
The CPU on the module can perform D/A conversion and output. The data for D/A conversion is received from the PC via the USB interface.

Count input
Using a CNT24-2(FIT)GY or similar count input module
The count method supports single-phase input, 2-phase input and single-phase input with gate control. Because it can be connected with a rotary encoder, using it can easily perform the position detection and revolution speed measurement.

Single-phase input
It can be used to keep track of the number of good products and inferior products on a product examination line.

2-phase input
It can be used to measure moving distance and to detect position. Detailed control can be effected by setting the count input multiplier to 2 or 4.

Single-phase input with gate control
Because the pulse count time can be controlled via external signal, it is very convenient to use the module to measure the revolution speed.

Can use either the internal or external power supply

Bus power (Power is supplied from the PC.)
This simply requires that the USB cable is connected. No external power supply is required.

Self power (Uses an AC adaptor)
If you are using a notebook or other battery-powered PC and wish to minimize the power consumption, you have the option of using an external power supply.

Designed for easy installation
The module includes an attachment for directly attaching to a 35mm DIN rail. This permits easy installation and removal.

Sample programs are supplied to help with application development
Sample programs are provided for Visual Basic, Visual C++, Delphi, and C++ Builder. General-purpose functions suitable for use in application development are also provided. For example, retrieving a list of the available modules.

Convenient utility

Hyper Logger
An easy way to operate the module without requiring programming. Various settings are available for data logging, graphing, and saving to file.

Digital monitor
An easy way to operate the module without requiring programming. This utility displays lamps indicating the current status of the device and allows output values to be set by clicking switches with the mouse.

Counter monitor
An easy way to operate the module without requiring programming. Various different counter modes can be set and the current count values displayed.

Restrictions for Each Utility

Hyper logger
Does not support the high-speed conversion mode setting. Use the low speed setting (this sampling mode uses a system timer to perform sampling at an interval of several hundred milliseconds or more.)

Digital monitor
No restrictions.

Counter monitor
Does not support notification of counter match events, output of a counter match pulse, or the function to generate an e-mail notification when a count match event occurs.

Diagnostic Program
Saves a file version check and the result of executing basic operations in a file. This is useful for fault diagnosis in the event of a problem.

Specification

Hardware Specification

Item	Specification
CPU	SH-3
Memory	Flash ROM: 512Kbyte(4Mbit) EDO DRAM: 2Mbyte(16Mbit)
USB transmission speed	12Mbps(full speed), 480Mbps(high speed) *1
Current consumption	+5VDC 300mA(Max.)
Number of device modules per controller	8 modules (Max.)
Number of I/O controllers	127 modules (Max.) *2
Use condition	0 - 50°C 10 - 90%RH (No condensation)
Physical dimensions (mm)	25.2(W) x 64.7(D) x 94.0(H) (No protrusions)
Weight	100g
Installation method	One-touch connection to 35mm DIN rails (standard connection mechanism provided in the system)

*1 Module executes API function by USB communication. The executing time of API function by USB communication is about several msec in practice (Depending on the contents handled by API function, it may be longer than that). The responding speed of USB module is based on the environment of the PC being used (OS, USB host controller).

*2 The USB interface can accommodate up to 127 devices on the bus. As a USB hub itself is counted as one device, however, 127 modules cannot be connected together.

Windows Driver Specification

Item	Specification
Support OS	Microsoft Windows Vista Microsoft Windows XP Professional, Home Edition Microsoft Windows 2000 Professional Microsoft Windows Me Microsoft Windows 98 or Second Edition
Support language	Microsoft Visual C++.NET Microsoft Visual C++ Ver 5.0, Ver 6.0 Microsoft Visual Basic.NET Microsoft Visual Basic Ver 5.0, Ver 6.0 Borland Delphi Ver 5.0, 6.0 Borland C++ Builder Ver 5.0, 6.0
System requirement	PC (IBM PC/AT compatibility, DOS/V) with USB port CD-ROM drive Recommend the environment on which the using language can run smoothly

* The supported API functions are different to other USB products (ADI12-8(USB)GY, etc.). Refer to the on-line help for the API function library for details.

Support Software

API Functions Library API-USBP(WDM) (Bundled)

It is the library software, and which supplies command of hardware produced by our company in the form of standard Win32 API function (DLL). Using programming languages supporting Win32API functions, such as Visual Basic and Visual C/C++ etc., you can develop high-speed application software with feature of hardware produced by our company. In addition, you can verify the operation of hardware using Diagnostic programs.
It also supplies the up-to-date driver and download service for missing files.
Further details may be found in the help within supplied CD-ROM or the homepage of our company.

< Operating Environment >
Primary corresponding OS
Windows Vista, XP, 2000, Me, 98
Primary corresponding language
Visual C++.NET, Visual C#.NET, Visual Basic.NET, Visual C++, Visual Basic, Delphi, Builder

CONTEC provides download services (at http://www.contec.com/apiusbp/) to supply the updated drivers and differential files.

Accessories

Accessories (Option)

Isolated digital I/O module (12 - 24VDC input:8-points, output:8-points) : DIO-8/8(FIT)GY

Isolated digital I/O module (12 - 24VDC input:16-points, 12 - 48VDC output 16-points) : DIO-16/16(FIT)GY

Isolated digital input module (12 - 24VDC input:16-points) : DI-16(FIT)GY

Isolated digital input module (12 - 24VDC input:32-points) : DI-32(FIT)GY

Isolated digital output module (12 - 48VDC output:16-points) : DO-16(FIT)GY

Isolated digital output module (12 - 48VDC output:32-points) : DO-32(FIT)GY

Isolated analog input module (12bit, 8ch) : ADI12-8(FIT)GY

Isolated analog input module (16bit, 4ch) : ADI16-4(FIT)GY

Isolated analog output module (12bit, 4ch) : DAI12-4(FIT)GY

Isolated analog output module (16bit, 4ch) : DAI16-4(FIT)GY

Isolation counter module (24bit, UP/DOWN 2ch counter) : CNT24-2(FIT)GY

Input Module for Pt100 Thermo-sensor (Pt100 temperature sensor input 4ch) : PTI-4(FIT)GY

AC-DC power supply unit (input: 90 - 264VAC, output: 5VDC 2.0A) : POA200-20

AC-DC power supply unit (input: 85 - 132VAC, output: 5VDC 3.0A) : POW-AC13GY

AC-DC power supply unit (input: 85 - 264VAC, output: 5VDC 2.0A) : POW-AD22GY

DC-DC power supply unit (input: 10 - 30VDC, output: 5VDC 3.0A) : POW-DD10GY

DC-DC power supply unit (input: 30 - 50VDC, output: 5VDC 3.0A) : POW-DD43GY

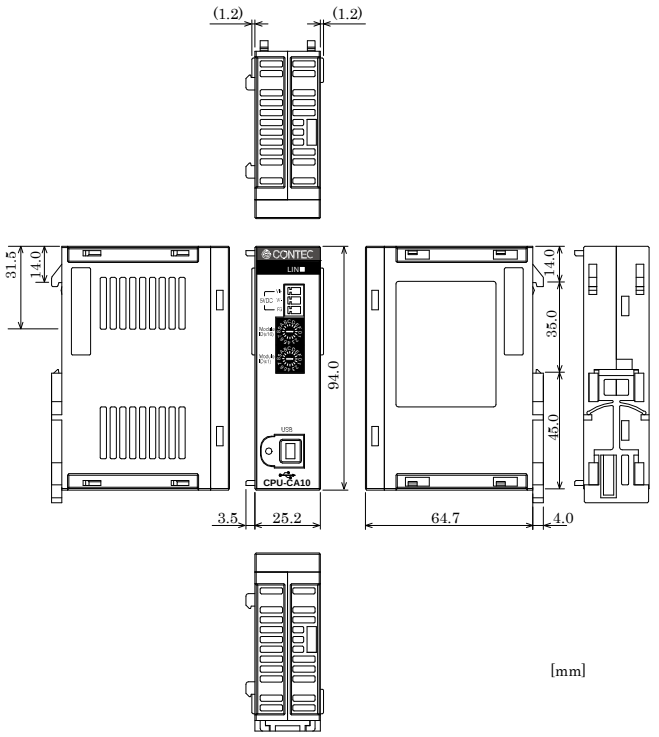
* Further details of the accessories may be verified in the homepage of our company.

Packing List

Module [CPU-CA10(USB)GY]…1
First step guide…1
CD-ROM *1 [API-USBP(WDM)]…1
AC adapter (1.5m)…1
AC cable (1.5m)…1
USB cable (1.8m)…1
Rubber feet…4
Magnet…2

*1 The CD-ROM contains the driver software and User's Guide.

Physical Dimensions



Connecting with Device Modules

Model	Input channel	Output channel	Current consumption	Function
DIO-8/8(FIT)GY	8	8	+5VDC 150mA(Max.)	Isolated digital I/O module
DIO-16/16(FIT)GY	16	16	+5VDC 150mA(Max.)	Isolated digital I/O module
DI-16(FIT)GY	16	None	+5VDC 150mA(Max.)	Isolated digital input module
DI-32(FIT)GY	32	None	+5VDC 150mA(Max.)	Isolated digital input module
DO-16(FIT)GY	None	16	+5VDC 150mA(Max.)	Isolated digital output module
DO-32(FIT)GY	None	32	+5VDC 150mA(Max.)	Isolated digital output module
ADI12-8(FIT)GY	8	None	+5VDC 350mA(Max.)	Isolated analog input module
ADI16-4(FIT)GY	4	None	+5VDC 300mA(Max.)	Isolated analog input module
DAI12-4(FIT)GY	None	4	+5VDC 400mA(Max.)	Isolated analog output module
DAI16-4(FIT)GY	None	4	+5VDC 500mA(Max.)	Isolated analog output module
CNT24-2(FIT)GY	2	None	+5VDC 150mA(Max.)	Isolation counter module
PTI-4(FIT)GY	4	None	+5VDC 500mA(Max.)	Input Module for PT100 Thermo-sensor
Reference CPU-CA10(USB)GY	-	-	+5VDC 300mA(Max.)	I/O Controller Module

Up to 8 modules can be connected.

Points

Up to 8 modules can be connected.

The maximum capacity of the power supply from the stack connector used to connect between modules is DC5.0V, 3A. Although a maximum of 8 modules can be connected, ensure that the combined current consumption of each unit does not exceed 3A.

If the combined current consumption of the I/O controller module and device modules exceeds 500mA, an external power supply such as the supplied AC adapter (2A max.) is required.

Different types of modules (such as digital inputs and analog inputs) can be connected at the same time.

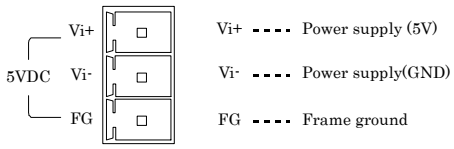
Connecting an External Power Supply

This product can be used via only USB cable if it uses bus power. In this situation, the external power supply is not required.

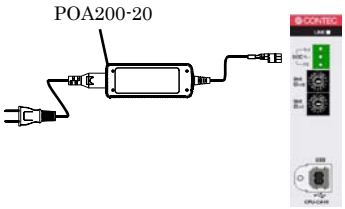
The module must be used with an external power supply connected (in self-powered mode) either when the module is connected to a battery-powered computer, such as a notebook, whose power consumption should be saved or when the total current consumption by the module and other device modules exceeds 500 mA.

To use the module in self-powered mode, connect the external power supply to the +5 VDC input terminal.

When you use self-power, please use +5VDC input terminal.



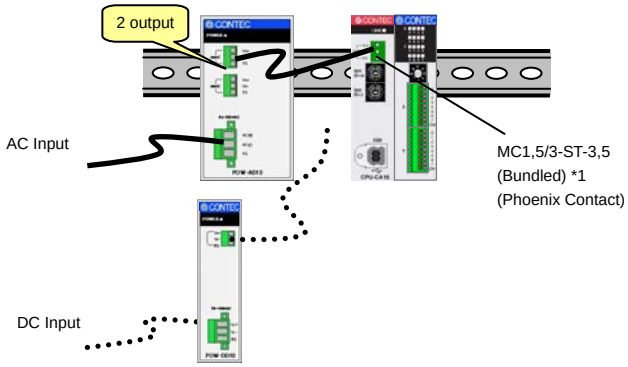
When using the supplied AC adapter [POA200-20], please connect directly to the input terminals.



*1 When you use the module in a noisy environment or are nervous about noise, ground the module(using a M3 screw).
*2 When you use the module in a noisy environment or are nervous about noise, connect the AC adapter's connector plug to the ground.

Beside the AC adapter, a power supply for installation on a DIN rail is also available (as an option). Use the appropriate power supply depending on the operating environment and application.

Category	Model	Input	Output	Physical dimensions(mm)	DIN rail
AC adapter	POA200-20	90 - 264VAC	5.0VDC±5% 2.0A(Max.)	40.0(W)x105.0(D)x30.0(H) (No protrusions)	No
AC-DC power	POW-AD13GY	85 - 132VAC	5.0VDC±5% 3.0A(Max.)	52.4(W)x64.7(D)x94.0(H) (No protrusions)	Yes
AC-DC power	POW-AD22GY	85 - 264VAC	5.0VDC±5% 2.0A(Max.)	52.4(W)x64.7(D)x94.0(H) (No protrusions)	Yes
DC-DC power	POW-DD10GY	10 - 30VDC	5.0VDC±5% 3.0A(Max.)	25.2(W)x64.7(D)x94.0(H) (No protrusions)	Yes
DC-DC power	POW-DD43GY	30 - 50VDC	5.0VDC ±5% 3.0A (Max.)	25.2(W) x 64.7(D) x 94.0(H) (No protrusions)	Yes



*1 When you use the module in a noisy environment or are nervous about noise, connect the power plug MC1,5/3-ST-3,5 to the ground.

When using the power supply installable on DIN rail, please use the connector MC1,5/3-ST-3,5(Phoenix Contact).

Connecting method

To connect the external power supply and USB cable to the unit, take the steps below:

(1) Connect the external power connector to supply power for the module.
(2) Connect the module with computer using USB cable.

To remove the external power supply and USB cable from the unit, take the steps below:

(1) Remove USB cable.
(2) Remove external power connector, stop power supplying to the module.

⚠ CAUTION

To use the AC adapter, connect it to the module first, then plug the AC adapter's connector into a wall outlet.

When the module is not used, leave the AC adapter unplugged.

Continuously using the AC adapter heated affects its life.

Use the AC adapter not in a closed place but in a well-ventilated place not to be heated. The AC adapter heats up itself when loaded heavily. If the AC adapter is exposed to high temperature or used continuously, you should keep the load at about 80% of the maximum load (at 1.6 A for the POA200-20).