

F&eIT Series
Isolated Counter Module
CNT24-2(FIT)GY



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

Features

This product can perform 24-bit up and down counting covering two channels.

This product can count two-phase signals, such as rotary encoders and linear gauges.

This product is equipped with general-purpose input signals, with one point per channel.

A rotary switch allows you to set device IDs to help you keep track of device numbers.

The system incorporates a screw less connector plug that allows you to easily attach and detach wires without using any special tools.

Similar to other F&eIT series products, the system, in the module itself, incorporates a 35mm DIN rail mounting mechanism as a standard item. A connection to a controller module can be effected on a lateral, stack basis in a unique configuration, which permits a simple, smart system configuration without the need for a backplane board.

Congratulations on your recent purchase of an Insulator Counter Module.

This product counts high-speed pulses so that the pulses can be processed within a F&eIT-series controller module <CPU-CAxx(FIT)GY, CPU-SBxx(FIT)GY etc>. As such, this product can be used for position alignment control in combination with an encoder. The insulation between external signals and the Controller Module permits the use of the Controller Module without compromising the communications features of the latter.

Specification

Specifications

Item	Specification
Counter input section	
Channel count	2
Counting system	Up/down counting
Max. count	FFFFFFH (binary data)
Input type	Opto-isolated input (for current sinking output)
Input signal	Phase A/UP Phase B/DOWN Phase Z/CLR General-purpose input
Internal resistance	220Ω and above
Input ON current	15 - 25mA
Input protection circuit	Not available
Response frequency	500kHz duty 50% (Max.)
External power	5V - 12VDC ±10% 400mA (Min.)
Digital filter	0.1μsec - 105.6μsec
Interrupt	IRQ5 or IRQ7 or IRQ9 *1
Programmable timer	1msec - 200sec *1
Match-signal output section *2	
Output count	One x 2 channels
Output type	Opto-isolated open collector output (current sinking type) (negative logic)
Rated output	35VDC 50mA (Max.)
Pulse width	0 - 104.45msec
Output signal width	Not available
External power	5V - 12VDC ±10%
Common section	
Internal power consumption	5VDC±5% 180mA (Max.)
Maximum distance of signal extension	30m
External dimensions (mm)	25.2 (W) x 64.7 (D) x 94.0 (H) (exclusive of protrusions)
Weight (module itself)	100g
Module connection method	Stack connection by the connector that is provided with the side of module
Module installation method	One-touch connection to 35mm DIN rails (standard connection mechanism provided in the system)
Applicable wire	AWG 28 - 20
Applicable plug	FK-MC 0.5/9-ST-2.5 plug (made by Phoenix Contact Corp.)

*1 Available only when the CNT24-2(FIT)GY is connected to the CPU-SBxx(FIT)GY.

*2 Not supported if connected to a CPU-CA10(USB)GY

⚠ CAUTION

When connecting the Module to a controller module, the internal power consumption should be taken into account. If the total current exceeds the capacity of the power supply unit, the integrity of the operation cannot be guaranteed. For further details, please see the Controller Module manual.

Depending upon the specific controller module that is used, some of the functions are not supported.

Installation Environment Requirements

Parameter	Requirement description
Operating temperature	0 - 50°C
Storage temperature	-10 - 60°C
Operating humidity	10 - 90% RH (No condensation)
Floating dust particles	Not to be excessive
Corrosive gases	None
Line-Noise resistance	AC line/2kV, Signal line/1kV (IEC1000-4-4Level 3, EN61000-4-4Level 3)
Static electricity resistance	Contact discharge/4kV (IEC1000-4-2Level 2, EN61000-4-2Level 2) Atmospheric discharge/8kV (IEC1000-4-2Level 3, EN61000-4-2Level 3)
Vibration resistance	Sweep resistance: 10 - 57Hz/semi-amplitude 0.15mm, 57 - 150Hz/2.0G 80minutes each in X, Y, and Z directions (JIS C0040-compliant, IEC68-2-6-compliant)
Impact resistance	15G, half-sine shock for 11ms in X, Y, and Z directions (JIS C004-compliant, IEC68-2-27-compliant)
Standard	FCC Class A, VCCI Class A, CE Marking (EMC Directive Class A, RoHS Directive), UKCA

Packing List

Module ...1

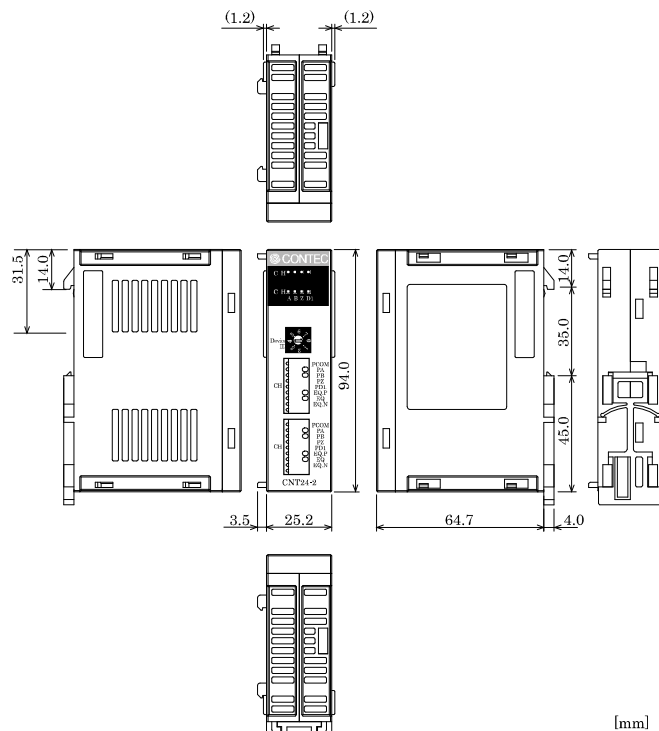
First Step Guide ...1

CD-ROM [F&EIT Series Setup Disk] *1 ...1

Interface connector plugs ...2

*1 The CD-ROM contains various software and User's Manual.

Physical Dimensions



[mm]

Functions and control method by controller connected

This product can be connected to a variety of controllers.

Micro Controller Unit	: CPU-SBxx(FIT)GY
I/O Controller Module	: CPU-CAxx(FIT)GY
Monitoring & Control Server Unit	: SVR-MMF2(FIT)
Monitoring & Control Server Unit	: SVR-MMF(FIT)GY
Isolated Counter Module for USB	: CNT24-2(USB)GY
I/O Controller Module with USB	: CPU-CA10(USB)GY

The functions and control of this product vary with the controller to which this product is connected.

	CPU-SBxx(FIT)GY	CPU-CAxx(FIT)GY	SVR-MMF2(FIT)	SVR-MMF(FIT)GY	CNT24-2(USB)GY	CPU-CA10(USB)GY
2-phase input: asynchronous clear, multiplication by 1/2/4	○	○			○	○
2-phase input synchronous clear, multiplication by 1/2/4	○	○			○	○
Single-phase input, asynchronous clear, multiplication by 1	○	○			○	○
Single-phase input with gate control, multiplication by 1/2	○	○	*1	*1	○	○
Digital filter	○	○			○	○
Interrupt function	○					
Programmable timer	○					
Count match pulse output	○	○			○	
General-purpose digital input	○	○			○	○
Device ID setting range	0·7	0·7	0·7	0·7	1·3	0·7

*1 For the function available, refer to the reference manual for the SVR-MMF2(FIT), SVR-MMF(FIT)GY

Control method by controller connected

	CPU-SBxx(FIT)GY	CPU-CAxx(FIT)GY	SVR-MMF2(FIT)	SVR-MMF(FIT)GY	CNT24-2(USB)GY	CPU-CA10(USB)GY
Control using the I/O address map	○					
Control using the memory address map		○				
Control via the Windows driver *						
FIT Protocol		○				
API-CAP(W32)		○				
API-SBP(W32)	○					
API-USB(WDM)					○	○
Control over the web			○	○		

* The API-SBP(W32) is included in the development kit DTK-SBxx(FIT)GY; the other drivers are bundled with each controller.

Control using the I/O address map

When connected to the CPU-SBxx(FIT)GY, this product can receive I/O instructions directly from the controller module. For details, see the manual, chapter 4 "Using the I/O Address Map".

Control using the memory address map

When connected to the CPU-CAxx(FIT)GY, this product can be accessed from the host computer over the network.

This product is assigned with its device ID in the memory managed by the controller module. The application running on the host computer controls the module by reading/writing the memory managed by the controller module. For details, see the manual, Chapter 5 "Using the Memory Address Map".

Control via the Windows driver

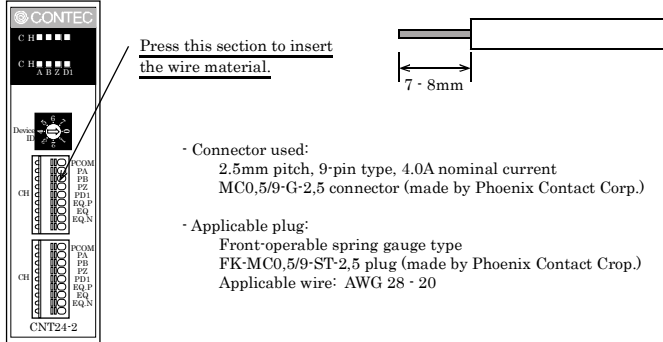
For the functions and settings available when using the Windows driver, refer to the reference manual and online help for each module.

Control over the web

You can monitor collected data and manage the log over the web. You can use your familiar browser to easily make various settings. For details, refer to the reference manual for the SVR-MMF2(FIT), SVR-MMF(FIT)GY.

How to Connect an Interface Connector

When connecting the Module to an external device, you can use the supplied connector plug. When wiring the Module, strip off approximately 7 - 8 mm of the covering for the cable, and insert the bare wire by pressing the orange button on the connector plug. Releasing the orange button after the wire is inserted to fix the cable. Compatible wires are AWG 28 - 20.

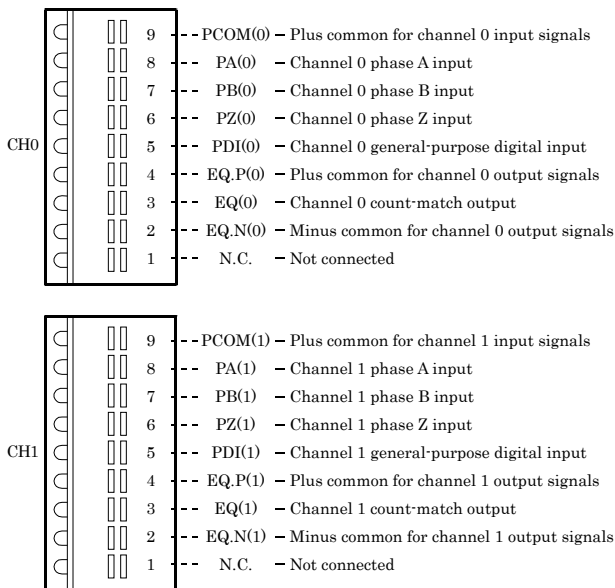


CAUTION

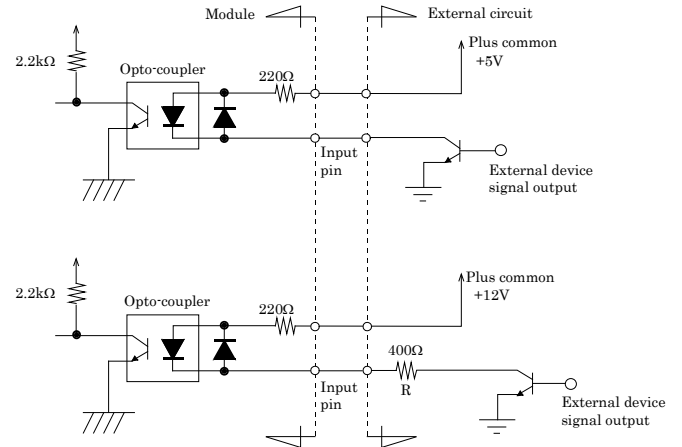
Removing the connector plug by grasping the cable can break the wire.

Signal Layout on the Interface Connector

The Module can be connected to an external device using a 9-pin (1 group) connector that is provided on the Module face.



Connecting to a Opto-Isolated Input Circuit



CAUTION

The general-purpose input signal also has a similar circuit configuration.

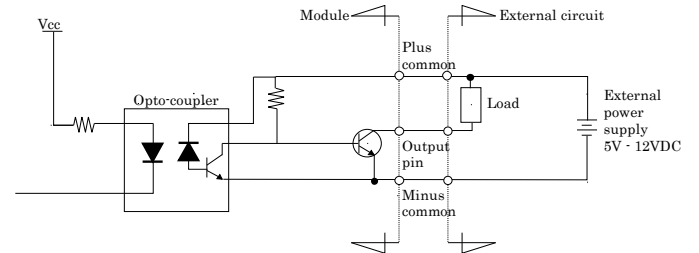
When an external power supply other than 5V is used, insert a current-limiting resistor at position R. If PV denotes an external power supply, the current-limiting resistor R can be calculated as follows:

$$\frac{P \cdot 5}{20} < Rk\Omega < \frac{P \cdot 5}{15}$$

For example, P = 12V will require the following resistance:
350Ω < R < 470Ω

Output Circuit and an Example Connection

When there is a match between a channel count and a specified value, a one-shot (one pulse) match signal is output to the outside. The signal output section has an open collector configuration based on opto-isolation. Driving the output of this module requires an external power supply.

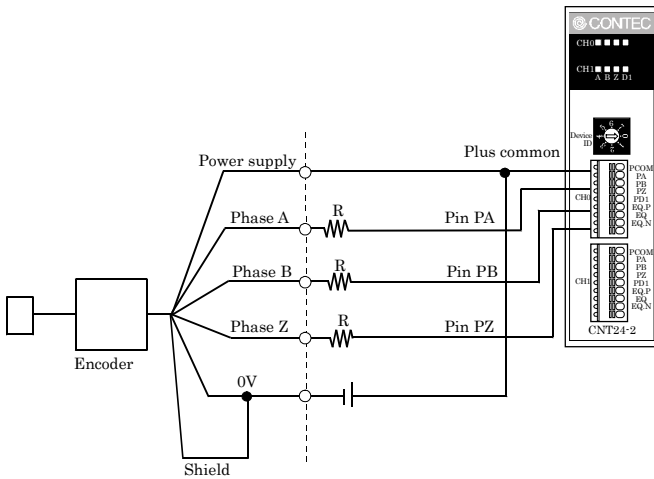


CAUTION

A surge voltage protection circuit is not provided on the output transistors for this Module. Therefore, when driving relays, lamps, and other induction loads using this Module, a surge voltage countermeasure should be provided on the load side.

For details, see the manual, chapter 3 "Surge Voltage Countermeasures".

Connecting to a Rotary Encoder



* A 400Ω resistor is required at position R when used at 12V, but not at 5V.

Setting a Device ID

The controller module distinguishes and keeps track of the modules that are connected to it by assigning device IDs to them.

Each module, therefore, should be assigned a unique ID.

A Device ID can be assigned in a 0 - 7 range, so that a maximum of eight modules can be distinguished.

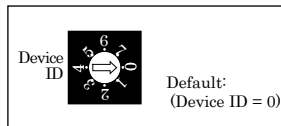
To connect this product to the CNT24-2(USB)GY, assign a device ID between 1 and 3.

The factory setting for the Device ID is [0].

Setup Method

A Device ID can be set by turning the rotary switch that is located on the module face.

A Device ID can be assigned by turning the switch.



Block Diagram

