

F&eIT Series
Isolated Digital Input Module
DI-32(FIT)GY



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

Features

A different external power supply can be used for each common pin as it is shared by 16 signal points.

This product can perform 32-points digital signal input. Input section is ready to accept both the current sinking output and current source output.

Isolated input operations using an optocoupler improves noise immunity.

This product has a digital filter to prevent input signals from carrying noise or a chattering.

A rotary switch allows you to set device IDs, making it easy to keep track of device numbers.

Like other F&eIT series products, the module has a 35mm DIN rail mounting mechanism as standard. 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.

You can use all of the input signals as interrupt inputs. You can also select the interrupt trigger edge of the input signal.

Included Items

- Module [DI-32(FIT)GY] ... 1
- Please read the following ... 1
- Interface connector plug ... 1

This product is an expansion module (device module) that adds digital signal I/O interfaces to one of various types of controllers. The product is used in combination with the I/O controller module < CPU-CAxx(FIT)GY > (*1) or BOX-PC < BX-300-DC5xxx > (*1) or microcontroller unit

< CPU-SBxx(FIT)GY > (*1) in the F&eIT Series.

This product can perform a maximum of 32 points of opto-isolated input per module. (Input: 12 - 24 VDC specified)

*1 This module is available in different product models. "x" in each model number represents a blank or one alphanumeric character. This is applicable to the rest of this document.

- * The contents in this document are subject to change without notice.
- * Visit the CONTEC website to check the latest details in the document.
- * The information in the data sheets is as of July, 2024.

Specifications

Function specification

Item	Specifications
Input section	
Input format	Opto-isolated input (compatible with current sink output and current source output)
Input resistance	3kΩ
Input ON current	3.4 mA or more
Input OFF current	0.16 mA or less
Number of input signal points	32 points (16 points/common)
Response time	Within 1msec
External circuit power supply	12 - 24 VDC (±15%) (4 mA/12V - 8 mA/24V per channel)
Common section	
Interrupt level	Using BX-300-DC5xxx or CPU-SBxx(FIT)GY: IRQ 5, 7, or 9
External circuit power supply	12 - 24 VDC (±15%)
Internal current consumption	5 VDC(±5%) 150 mA(Max) *1
Allowable distance of signal extension	Approx. 50m (depending on wiring environment)
Physical dimensions (mm)	25.2(W) x 64.7(D) x 94.0(H) (exclusive of protrusions)
Weight of the module itself	100g
Module connection method	Stack connection by means of a connection mechanism standard with the system
Module installation method	One-touch connection to 35mm DIN rails (standard connection mechanism provided in the system)
Applicable wire	AWG24 - 16
Applicable plug	FMC 1.5/18-ST-3.5(made by Phoenix Contact Corp.)

*1 The stack connector accepts currents of up to 3.0A (Max).

Installation Environment Requirements

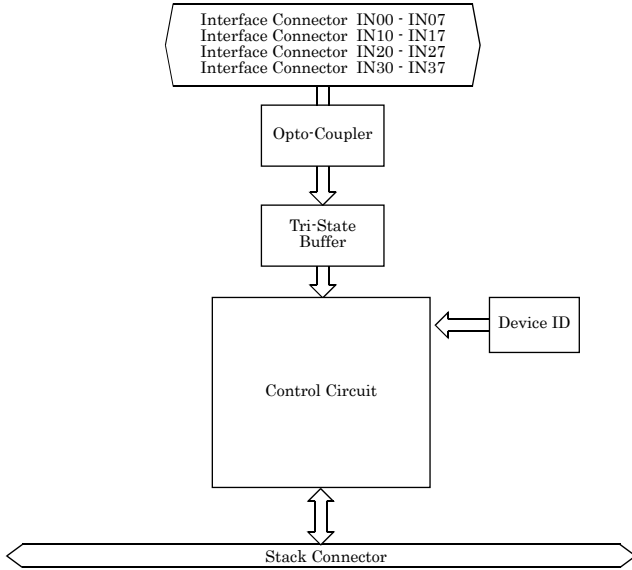
Item	Requirement description
Operating temperature	0 - 50°C
Storage temperature	-10 - 60°C
Operating humidity	10 - 90%RH (No condensation)
Floating dust particles	Not to be excessive
Corrosive gases	None
Noise immunity	Line-noise *1 AC line/2kV, Signal line/1kV (IEC1000-4-4Level 3, EN61000-4-4Level 3)
	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 C0041-compliant, IEC68-2-27-compliant)
Standard	FCC Class A, VCCI Class A, CE Marking (EMC Directive Class A, RoHS Directive), UKCA

*1 When using a POW-AD22GY

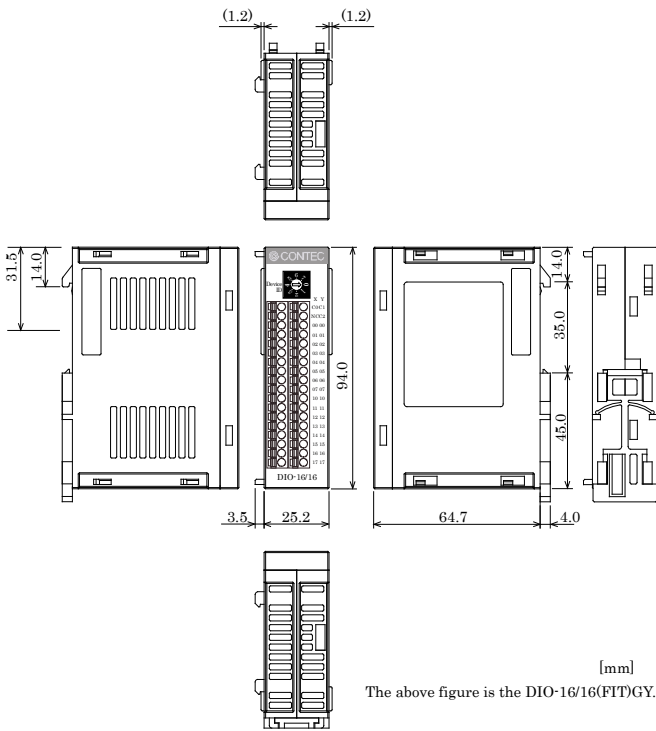
CAUTION

When connecting one of the modules to a controller module, the internal current 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.

Block Diagram



Physical Dimensions



Functions and control method by controller connected

This product can be connected to a variety of controllers.

Supported controllers

- BOX-PC : BX-300-DC5xxx
- Microcontroller Unit : CPU-SBxx(FIT)GY
- I/O Controller Module : CPU-CAxx(FIT)GY
- Monitoring & Control Server Unit : SVR-MMF2(FIT)

Check each controller to which the module can be connected as well as the method of controlling the module when connected to that controller.

Connections to controllers

O: Permitted
×: Not permitted

	BX-300-DC5xxx	CPU-SBxx(FIT)GY	CPU-CAxx(FIT)GY	SVR-MMF2(FIT)	SVR-MMF2(FIT)GY
DIO-16/16(FIT)GY	O	O	O	O	×
DI-32(FIT)GY	O	O	O	O	×
DO-32(FIT)GY	O	O	O	O	×
Device ID setting range	0 - 7	0 - 7	0 - 7	0 - 7	0 - 7

Control method by controller connected

	BX-300-DC5xxx	CPU-SBxx(FIT)GY	CPU-CAxx(FIT)GY	SVR-MMF2(FIT)	SVR-MMF2(FIT)GY
Control using the I/O address map	O	O			
Control using the memory address map			O		
Control via the Windows driver * FIT Protocol			O		
	API-CAP(W32)			O	
	API-SBP(W32)		O	O	
	API-USBP(WDM)				
Control over the web (as set from within the browser)				O	

* 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 BX-300-DC5xxx, the CPU-SBxx(FIT)GY, the module can receive I/O instructions directly from the controller module.

Control using the memory address map

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

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.

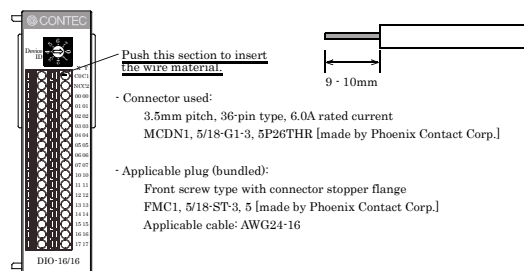
Control over the web – Connecting to the SVR-MMF2(FIT)

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).

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 9 - 10mm 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 fixes the cable. Compatible wires are AWG 24 - 16.



CAUTION

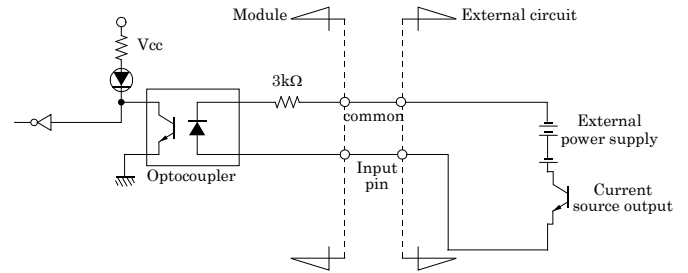
Removing the connector plug by grasping the cable can break the wire.

Signal Layout on the Interface Connector

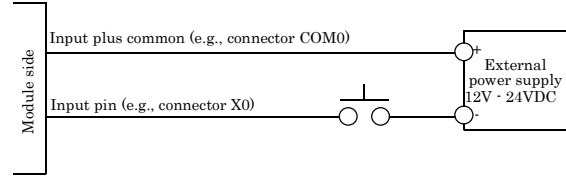
The Module can be connected to an external device using two 18-pin connectors that is provided on the Module face.

Pin No.	Signal name	Meaning	Pin No.	Signal name	Meaning
C0 C1	COM	Common for Input+0, +1 group	C1	COM	Common for Input+2, +3 group
00 20	NC	Unconnected	20	IN20	Input+2 group
01 21	IN01	Input+0 group	21	IN21	
02 22	IN02				
03 23	IN03				
04 24	IN04				
05 25	IN05	Input+1 group	25	IN25	
06 26	IN06				
07 27	IN07				
10 30	IN10				
11 31	IN11	Input+3 group	31	IN31	
12 32	IN12				
13 33	IN13				
14 34	IN14				
15 35	IN15		35	IN35	
16 36	IN16		36	IN36	
17 37	IN17		37	IN37	

Example of a Connection to Current Source Output



Connection example: Using Inputs X0



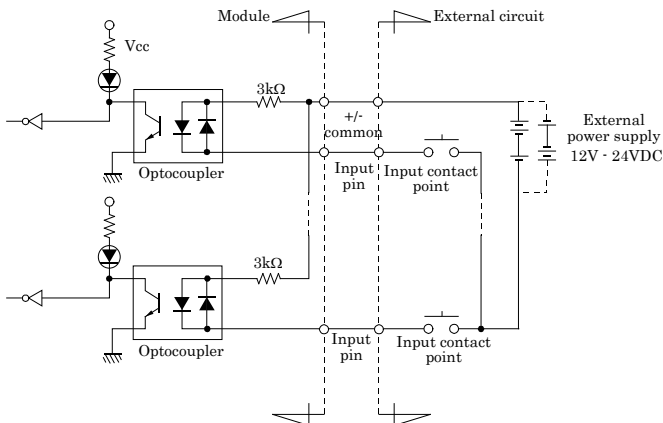
External Input Circuits

Input section

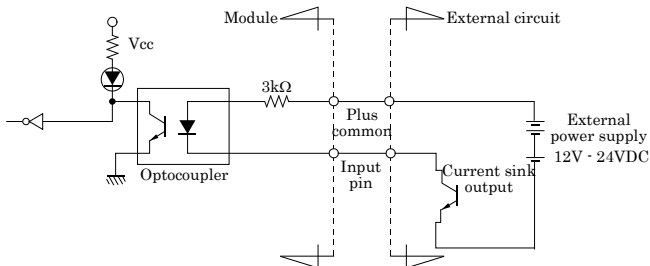
Figure below shows the input equivalent circuit for the interface section of this product.

The signal input section consists of an opto-isolated input (compatible with both current sink output and current source output). An external power supply is therefore required to drive the input section of this module. The power requirement for this product is about 8 mA per input channel at 24 VDC (about 4 mA at 12 VDC).

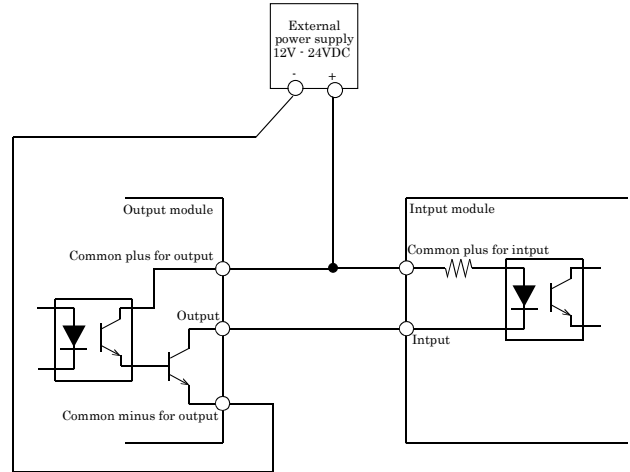
Input Circuit



Example of a Connection to Current Sink Output



Example of Connecting Outputs and Inputs



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.

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.

