F&eIT
Series Isolated Digital Input Module
DI-16(FIT)GY 12 - 24VDC specification

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

Features

- Isolated input operations using an opto-coupler improves noise immunity.
- This product can perform 16-point digital signal input, treating 8 points as a group and handling two groups per operation.
- Input section is ready to accept both the current sinking output and current source output.
- A rotary switch allows you to set device IDs to help you keep track of device numbers.
- The system incorporates a screwless connector plug that allows you to easily attach and detach wires without using any special tools.
- 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.

Included Items

Module [DI-16(FIT)GY] ...1
Please read the following ... 1
Interface connector plugs...2

Specifications

Function specification

Item		Specifications
Input section		
	Input format	Opto-isolated input (compatible with both current sink output and current source output)
	Input resister	3kΩ
	Input ON current	3.4mA (Min.)
	Input OFF current	0.16mA (Max.)
	Number of input signal points	16 points (8 points/common)
	Response time	1msec (Max.)
	External circuit power supply	12 - 24VDC (±15%) (4mA/12V - 8mA/24V par channel)
Common section		
	External circuit power supply	12 - 24VDC (±15%)
	Internal current consumption	5VDC (±5%) 150mA(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 that is provided in the system as a standard item
	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-MC0,5/9-ST-2,5 (made by Phoenix Contact Corp.) 2.5 mm-pitch, nominal current: 4A (Max.)

The Module, which is an interface module that sends and receives digital signals to and from external devices, can be used by connecting it to F&eIT series controller modules <CPU-CA10(FIT)GY, CPU-SB10(FIT)GY etc>. This product can be connected to the DI-16(USB)GY respectively, to increase the number of input channels.

Since an opto-coupler is used to insulate the CPU controlling the Module and external signals, it does not produce external electric effects directly on the host computer.

This product can perform a maximum of 16 points of input per module.

*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 January, 2023.

⚠CAUTION

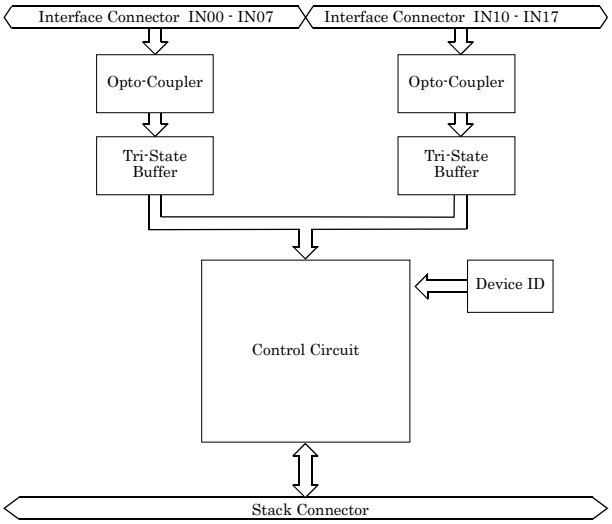
When connecting one of the modules to a controller module, the internal power consumption should be taken into account. If the total current exceeds the capacity of the power supply unit, the integrity of the operation cannot be guaranteed. For further details, please see the Controller Module manual.

Installation Environment Requirements

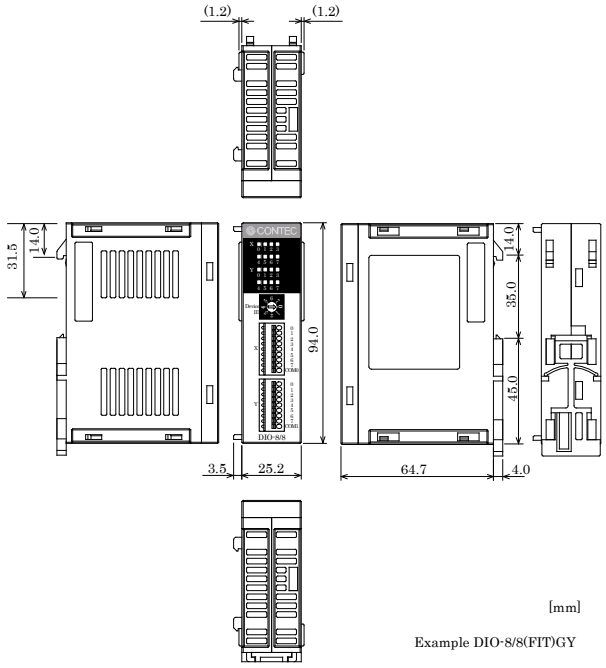
Parameter		Requirement description
Operating temperature		0 - 50°C
Storage temperature		-10 - 60°C
Humidity		10 - 90%RH (No condensation)
Floating dust particles		Not to be excessive
Corrosive gases		None
Line-Noise resistance	Line-noise *1	AC line/2kV, Signal line/1kV (IEC1000-4-4Level 3, EN61000-4-4Level 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 C004-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

Block Diagram



Physical Dimensions

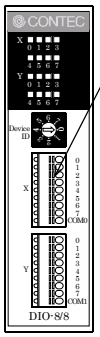


[mm]

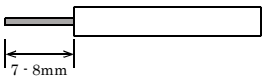
Example DIO-8/8(FIT)GY

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 fixes the cable. Compatible wires are AWG 28 - 20.



Press this section to insert the wire material.

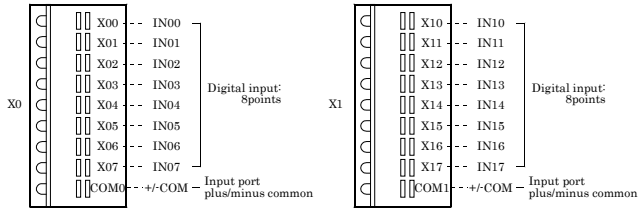


Applicable plug :

Front-operable spring gauge type
FK-MC0,5/9-ST-2,5 plug(made by Phoenix Contact Corp.)
Applicable wire : AWG 28 - 20

Signal Layout on the Interface Connector

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



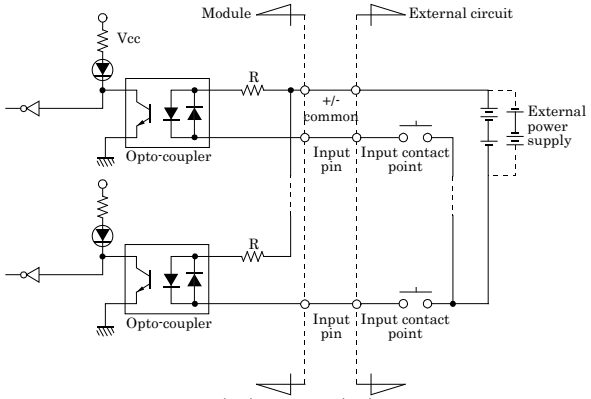
External Input Circuits

Input section

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

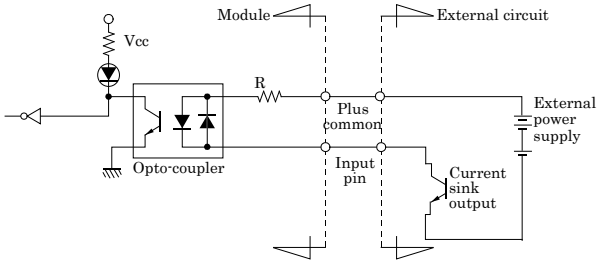
The signal input section consists of an opto-isolated input (compatible with both current sink output and current source output). The power requirement for this product is about 8mA per input channel at 24VDC (about 4mA at 12VDC).

Input Circuit



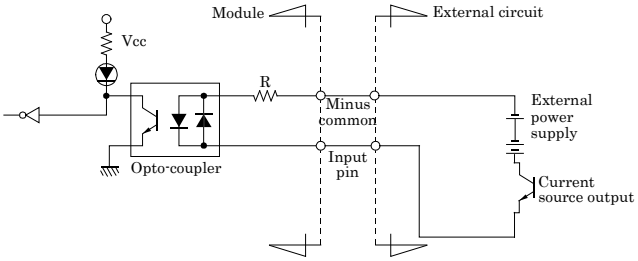
R: <DIO-8/8(FIT)GY>, <DI-16(FIT)GY>: 3kΩ
<DIO-8/8H(FIT)GY>, <DI-16H(FIT)GY>: 12kΩ
External power supply:
<DIO-8/8(FIT)GY>, <DI-16(FIT)GY>: 12 - 24VDC,
<DIO-8/8H(FIT)GY>, <DI-16H(FIT)GY>: 36 - 48VDC

Example of a Connection to Current Sink Output



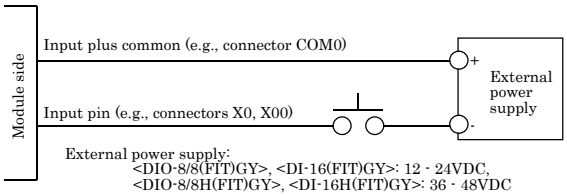
R: <DIO-8/8(FIT)GY>, <DI-16(FIT)GY>: 3kΩ
<DIO-8/8H(FIT)GY>, <DI-16H(FIT)GY>: 12kΩ
External power supply:
<DIO-8/8(FIT)GY>, <DI-16(FIT)GY>: 12 - 24VDC,
<DIO-8/8H(FIT)GY>, <DI-16H(FIT)GY>: 36 - 48VDC

Example of a Connection to Current Source Output



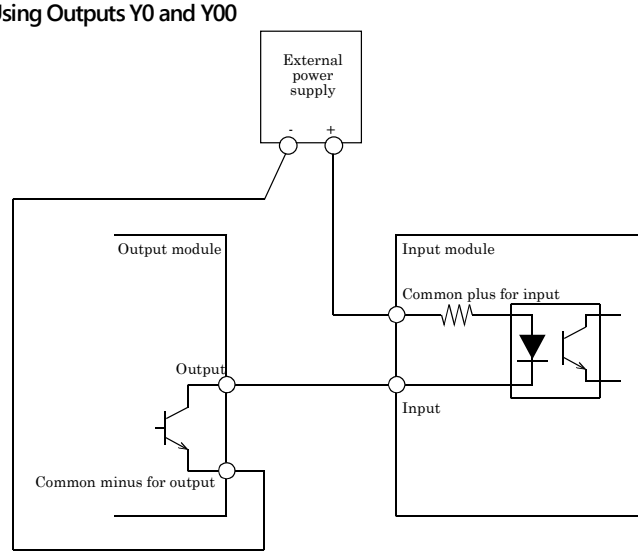
R: <DIO-8/8(FIT)GY>, <DI-16(FIT)GY>: 3kΩ
<DIO-8/8H(FIT)GY>, <DI-16H(FIT)GY>: 12kΩ
External power supply:
<DIO-8/8(FIT)GY>, <DI-16(FIT)GY>: 12 - 24VDC,
<DIO-8/8H(FIT)GY>, <DI-16H(FIT)GY>: 36 - 48VDC

Connection example:
Using Inputs X0 and X00



External power supply:
<DIO-8/8(FIT)GY>, <DI-16(FIT)GY>: 12 - 24VDC,
<DIO-8/8H(FIT)GY>, <DI-16H(FIT)GY>: 36 - 48VDC

Using Outputs Y0 and Y00



External power supply:
<DIO-8/8(FIT)GY>, <DI-16(FIT)GY>: 12 - 24VDC,
<DIO-8/8H(FIT)GY>, <DI-16H(FIT)GY>: 36 - 48VDC,
<DO-16(FIT)GY>: 12 - 48VDC

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 the module to the USB module, 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.