

F&IT Series Isolated Digital I/O Module 12 - 24VDC specification

DIO-8/8(FIT)GY



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

Features

Isolated I/O operations using an opto-coupler improves noise immunity.

This product can perform 8-point digital signal input and 8-point digital output, treating 8 points as a group.

Input section is ready to accept both the current sinking output and current source output.

The output section is a high sink current, open collector type
150mA/24VDC (par channel)(Max.)

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&IT 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.

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&IT series controller modules <CPU-CA10(FIT)GY, CPU-SB10(FIT)GY etc>. This product can be connected to the DIO-8/8(USB)GY to increase the number of I/O channels.

Since a 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 8 points of input and 8 points of output per module.

* 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.

* Visit the CONTEC website to check the latest details in the document.

* The information in the data sheets is as of January 2023.

Specification

Specifications

Item	Specifications
Input section	
Input format	Opto-isolated input (compatible with current sink output and current source output)
Input resistance	3k Ω
Input ON current	3.4mA (Min.)
Input OFF current	0.16mA (Max.)
Number of input signal points	8 points (8 points/common)
Response time	1msec (Max.)
External circuit power supply	12 - 24VDC ($\pm 15\%$) (4mA/12V - 8mA/24V par channel)
Output section	
Output format	Opto-isolated open collector output (current sink type)
Output rating	Output voltage: 12 - 24VDC ($\pm 15\%$) Output current: 150mA (par channel) (Max.)
Number of output signal points	8 points (8 points/common)
Response time	1msec (Max.)
External circuit power supply	12 - 24VDC ($\pm 15\%$)
Common section	
Internal current consumption	5VDC($\pm 5\%$) 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.)

*1 Allowable current for the stack connector: 3.0A (Max.)

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)

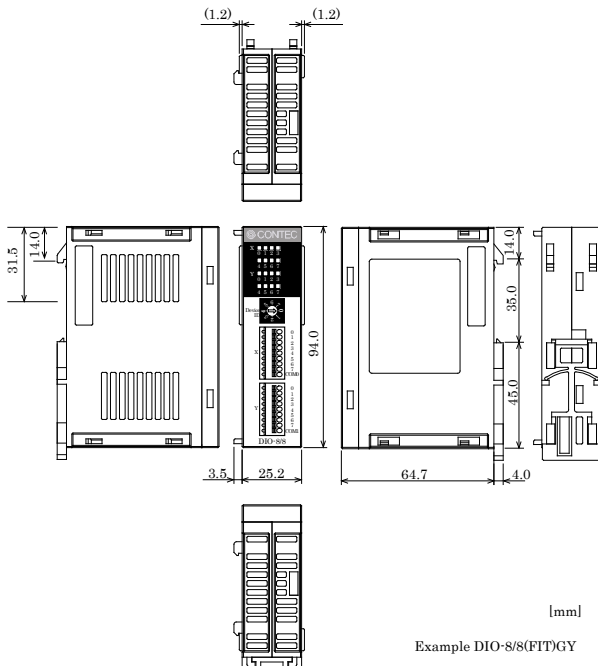
Standard	VCCI Class A, FCC Class A, CE Marking (EMC Directive Class A, RoHS Directive), UKCA
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*1 When using a POW-AD22GY

Packing List

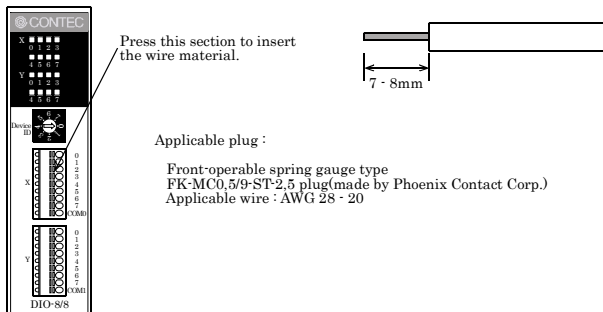
Module [DIO-8/8(FIT)GY] ... 1
Please read the following ... 1
Interface connector plugs... 2

Physical Dimensions



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.

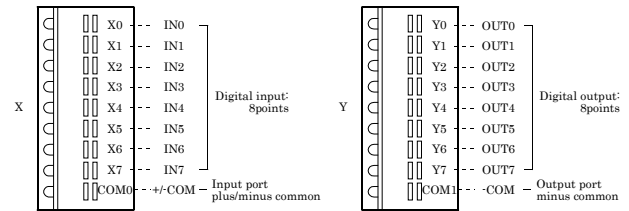


CAUTION

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 connector that is provided on the Module face.

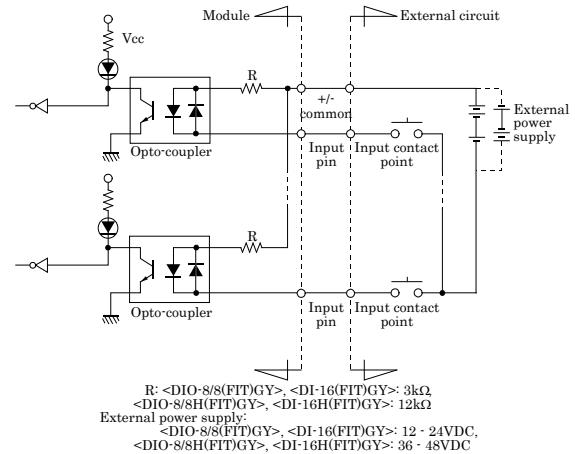


External I/O Circuits

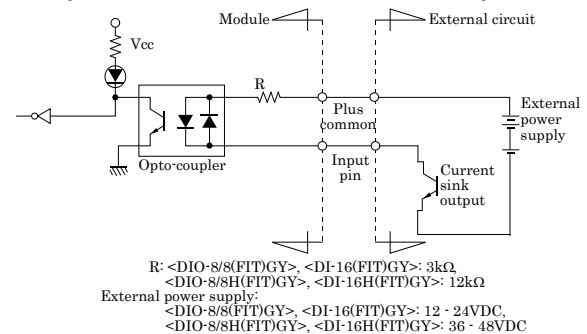
Input section

The below figure 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).

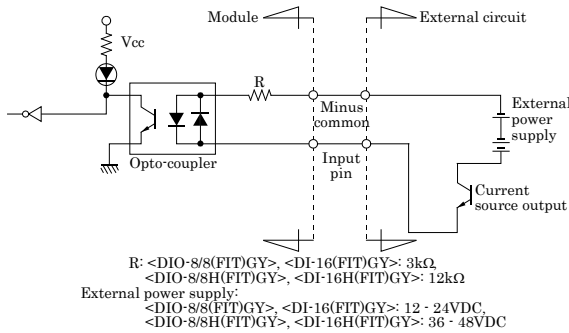
Input Circuit



Example of a Connection to Current Sink Output



Example of a Connection to Current Source Output



Output section

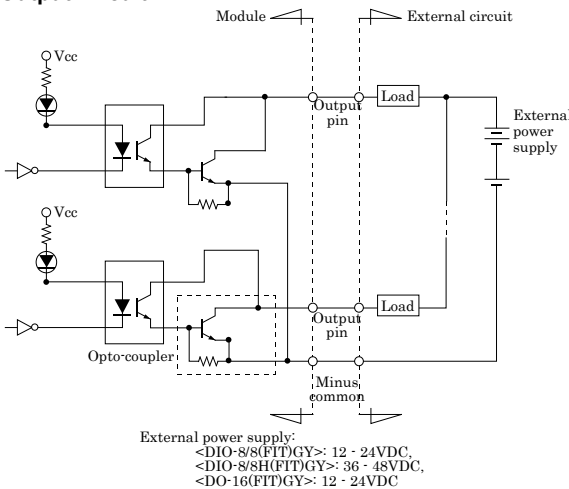
The below figure shows the output circuit for the interface section of this product. The signal output section consists of an opto-isolated open collector method (current sink type). The maximum output current rating per channel is 150mA for this product (at 12 - 24VDC).

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

CAUTION

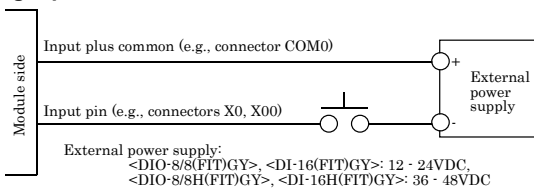
When the power is turned on, all output will be OFF.

Output Circuit

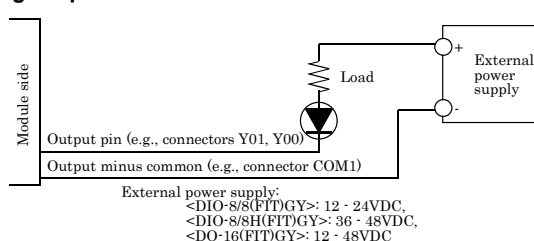


Connection example:

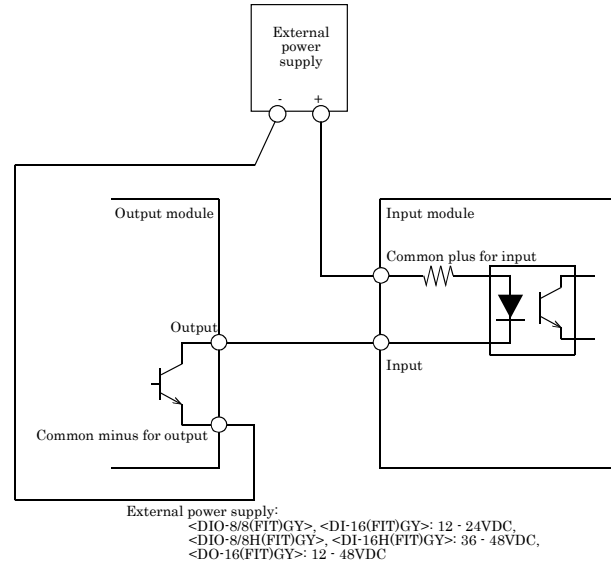
Using Inputs X0 and X00



Using Outputs Y0 and Y00



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.

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.



Block Diagram

