F&eIT
Series Isolated Digital Output Module

DO-16(FIT)GY   12 - 48VDC specification

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

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 DO-16(USB)GY respectively, to increase the number of output 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 output 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.

Features

Isolated output operations using an opto-coupler improves noise immunity.

This product can perform 16-point digital signal output, treating 8 points as a group and handling two groups per operation.

The output section is a high sink current, open collector type using high-capacitance transistors.
  150mA/24VDC (par channel)(Max.),
  50mA/48VDC (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&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.

Specification

Specifications

Item		Specifications
Output section		
Output format		Opto-isolated open collector output (current sinking type)
Output rating	Output voltage	12 - 48VDC (±15%)
	Output current	12 - 24V: 150mA (Max.)(par channel) , 36 - 48V: 50mA(Max.)(par channel)
Number of output signal points		16 points (8 points/common)
Response time		1msec (Max.)
Common section		
External circuit power supply		12 - 48VDC (±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.)

*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

*1   When using a POW-AD22GY

Packing List

Module [DO-16(FIT)GY] …1
First step guide … 1
CD-ROM [F&eIT Series Setup Disk] *1…1
Interface connector plugs...2

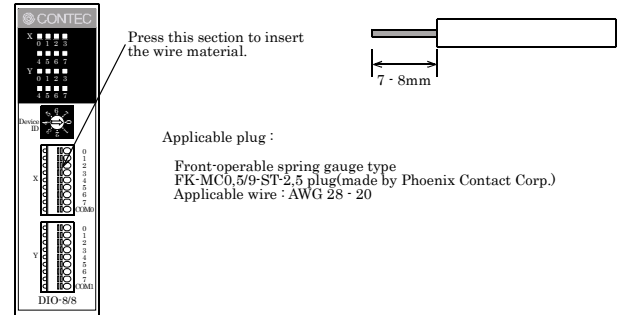*1   The CD-ROM contains various software and User's Guide.

Block Diagram

Physical Dimensions

[mm]

Example DIO-8/8(FIT)GY
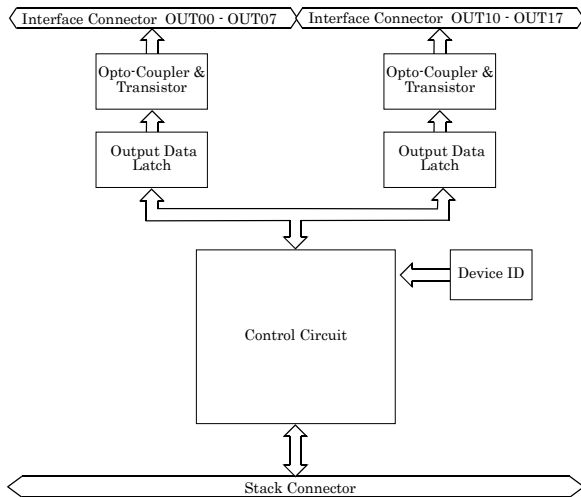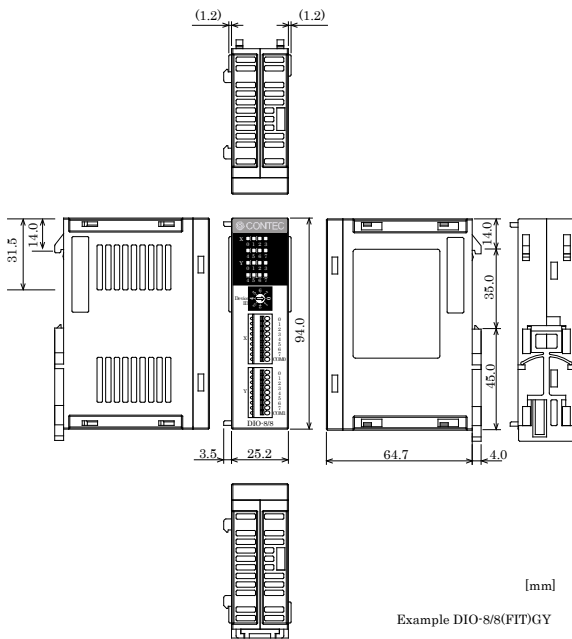
How to Connect an Interface Connector

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.

7 - 8mm

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

⚠ 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.
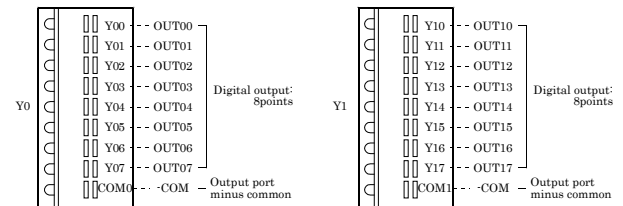
External Output Circuits
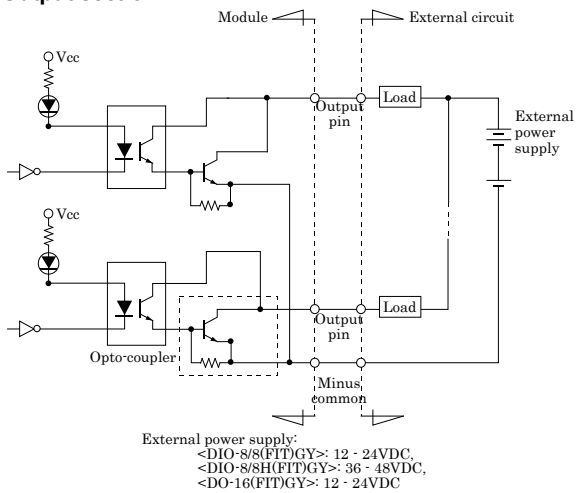
Output section

Figure below 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) or 50mA for this product (at 36 - 48VDC).

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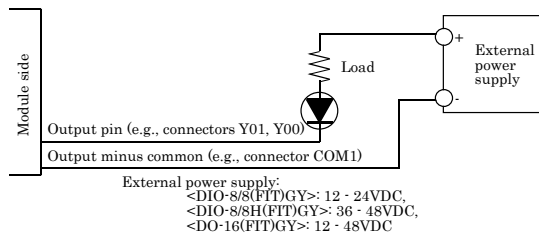
⚠ CAUTION
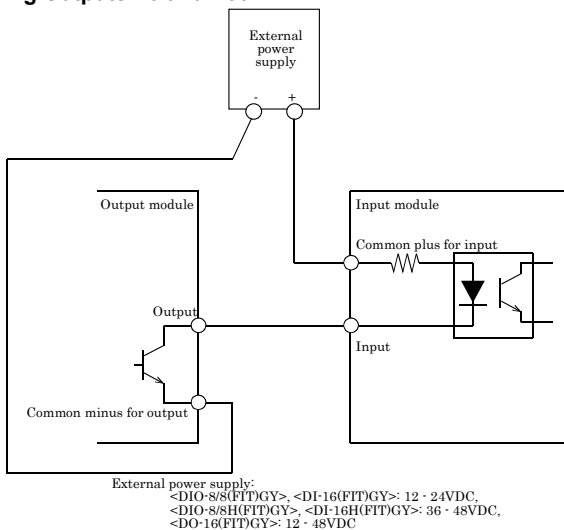When the power is turned on, all output will be OFF.

Output section

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

Connection example:

Using Outputs Y0 and Y00

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

Device ID   Factory setting:
(Device ID = 0)