GC-1016

16-channel digital input module User manual





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1. Introduction

1.1 Overview

The GC-1016 module has integrated 16 digital input channels, which acquires digital signals in real-time and transmits them to the GCAN-PLC-400/510/511 or GCAN-IO- 8000/8100/8200/8300 coupler. This module can be used with any other GC Series IO module to capture and process digital data in industrial automation or distributed control systems.

1.2 Properties at a glance

- 16 input channels
- Nominal voltage: 24V DC(±20%)
- Signal voltage "1":11~30V
- Signal voltage "0":-3~+5V
- Maximum input current:3mA
- Electrical isolation: 500 V(GC-bus)
- Current consumption:100mA
- The bit width input in the process image is 2byte
- No address setting, configuration via bus coupler or controller
- Operating temperature: -40°C ~+85°C
- Size: 100mm*69mm*12mm

1.3 Typical application

- Distributed acquisition system collects digital quantity
- Industrial field acquisition switch quantity



2. Installation

This chapter will describe the installation method, wiring method, meaning of the indicator and meaning of the interface of the GC-1016 module.

2.1 Module fixing

The installation method of GC-1016 module as shown in Figure 2.1 and a flatblade screwdriver is needed for auxiliary installation.

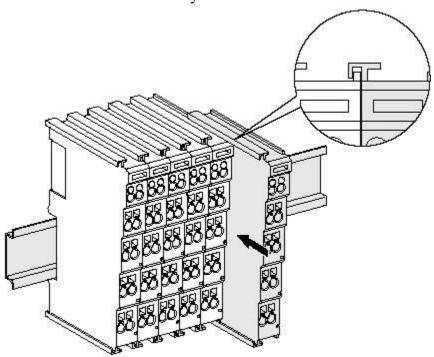


Figure 2.1 Installation of GC-1016 module

First you need to install the fieldbus coupler on the rail, then attach the GC-1016 module to the right side of the fieldbus coupler or other modules to join the assembly. Please insert the GC-1016 module inwards along the slot as shown in Figure 2.1, until the latch locks and makes a "click".

The GC-1016 module needs to be used with GCAN-PLC-400/510/511 or GCAN-IO-8000/8100/8200/8300 series couplers, and can be directly powered by the couplers, so there is no need for additional power supply separately.

2.2 Wiring method

For a cable using a flat-blade terminal connector, align the terminal connector with the round hole of the corresponding channel and insert it; when removing the wire, use a flat-head screwdriver, insert it into the corresponding square hole of the channel to be removed, and press down firmly (or Slight prying), at this time the clips in the corresponding round holes will loosen, and the cables can be pulled out easily

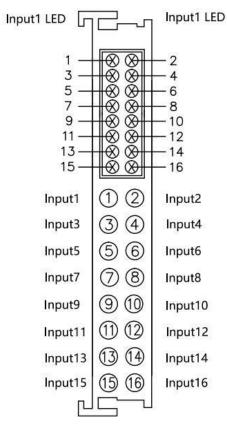


Figure 2.2 GC-1016 module wiring terminal block

The wiring terminal block of GC-1016 module is shown in Figure 2.2. GC-1016 can access up to 16 digital input signals. The definition of each terminal is shown in Table 2.1.

Terminal	Meaning
Input1	digital input1
Input2	digital input2
Input3	digital input3
Input4	digital input4
Input5	digital input5
Input6	digital input6
Input7	digital input7
Input8	digital input8
Input9	digital input9
Input10	digital input10
Input11	digital input11
Input12	digital input12
Input13	digital input13
Input14	digital input14
Input15	digital input15
Input16	digital input16

Table 2.1 GC-1016 module terminal definition



When using, please connect the digital input signal to the terminal of GC-1016, and connect the reference ground to the IO of GCAN-PLC-400/510/511 or GCAN-IO-8000/8100/8200/8300 series coupler The power supply is negative (corresponding to pins 5 and 6).

2.3 System status indicator

Indicators	Definition
1	Digital input1 is valid.
2	Digital input 2 is valid.
3	Digital input 3 is valid.
4	Digital input 4 is valid.
5	Digital input 5 is valid.
6	Digital input 6 is valid.
7	Digital input 7 is valid.
8	Digital input 8 is valid.
9	Digital input 9 is valid.
10	Digital input 10 is valid.
11	Digital input 11 is valid.
12	Digital input 12 is valid.
13	Digital input 13 is valid.
14	Digital input 14 is valid.
15	Digital input 15 is valid.
16	Digital input 16 is valid.

Table 2.2 Definition of GC-1016 module indicator lights

The GC-1016 module does not have an error indicator light, please judge Status of the GC-1016 module through the "IO RUN" and "IO ERR" indicators of the GCAN-PLC-400/510/511 or GCAN-IO-8000/8100/8200/8300 series couplers . If the "IO ERR" indicator of GCAN-PLC-400/510/511 or GCAN-IO-8000/8100/8200/8300 series couplers is on, it means that the IO module is not working properly, please check the installation of the module first



2.4 Combined with GCAN-PLC-400/510/511 series

When used with GCAN-PLC-400/510/511 equipment, GC series IO modules do not need to be configured in a fixed order, GCAN-PLC-400/510/511 devices will assign hardware addresses to the modules according to the user's installation sequence.

GCAN-PLC-400/510/511 supports five programming languages. The following takes ST language as an example to introduce how to use GCAN-PLC-400/510/511 to program and read the status of digital input of GC-1016 module.

In the process of ST programming definition, gc-1016 module needs to define variable type, input signal position, start character, delimiter and so on.

For example: "DI0 AT%I0.0:BOOL;"Among them, DI0 is the variable name of this hardware address variable"0.0"represents the position of the input point, and "0.0"~"1.7" respectively define the 1-16 input points in the first GC-1016 module. When the user uses more than one GC-1016 module, the second GC-1016 shall be defined from "2.0" to "3.7", and so on."%" (percent sign) is the direct variable starter; ":" (colon) is the variable or type separator. The Boolean is read from the %I0.0 address using the symbol variable DI0. AT represents the address of the variable access and the additional attribute of the variable.

2.5 Combined with GCAN-8000 series

The state of digital input is represented by 2 bytes, channel 8 is in the high position of the first byte, channel 1 is in the low position of the first byte, channel 16 is in the high position of the second byte, and channel 9 is in the low position of the second byte.

For example: the node number of GCAN-IO-8000 module is 1, the input status of channel 8 and channel 4 of the first GC-1016 module is logic "1", and the input status of other channels is logic "0", then GCAN- The CAN data frame ID sent by the IO-8000 module is 0x181, the data length (DLC) is 8, and the frame data is 0x88, 0x22, 0x00, 0x00, 0x00, 0x00, 0x00, 0x00. Please note that when only one GC-1016 module is inserted, only the first 2 bytes in the frame data are valid. The following table lists two common DI states and their corresponding state data.

DI status								
Channel	8	7	6	5	4	3	2	1
Status	1	0	0	0	1	0	0	0
Channel	16	15	14	13	12	11	10	9
Status	0	0	1	0	0	0	1	0
CAN bus data	BYTE1	BYTE2	вутез	BYTE4	BYTE5	ВУТЕ6	BYTE7	BYTE8
	0x88	0x22	00	00	00	00	00	00



DI status								
Channel	8	7	6	5	4	3	2	1
Status	0	1	0	1	1	0	1	0
Channel	8	7	6	5	4	3	2	1
Status	1	0	1	0	0	1	0	1
CAN bus data	BYTE1	BYTE2	вутез	BYTE4	BYTE5	вуте6	BYTE7	BYTE8
	0x5A	0xA5	00	00	00	00	00	00

3. Technical Specifications

Interface characteristi	ics
Number of inputs	16
Signal voltage "1"	11~30V
Signal voltage "0"	-3~+5V
Input current (Max.)	3mA
Electrical isolation	500 V (GC-bus/ Signal voltage)
Bit width	Input 2 byte
in the process image	input 2 byte
Installation position	Automatic configuration in sequence
Power supply	Powered by GCAN-PLC, current consumption
100mA	
Environmental testing	
Operating temperature	-40°C∼+85°C
Permissible relative	95%RH, no condensation
humidity	7570X11, no condensation
EMC test	EN 55024:2011-09
	EN 55022:2011-12
Vibration/shock	EN 60068-2-6/EN 60068-2-27/29
resistance	EN 00000-2-0/EN 00000-2-27/29
EMC resistance burst/	EN 61000-6-2 /EN 61000-6-4
ESD	EIV 01000-0-2 /EIV 01000-0-4
Protection class	IP 20
Basic information	
Dimensions	100mm *69mm *12mm
Weight	50g



4. Disclaimer

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5. Module selection table

GCAN-PLC series products consist of a programmable main control module, several GC series IO modules and a terminal resistance module.

GC series IO modules currently include five categories: digital input, digital output, analog input, analog output, and communication extension. The specific selection table is shown below

I/O	Туре	Characteristic	Signal	Channel
	GCAN-PLC-400	CPU:168M	-	-
PLC Control module	GCAN-PLC-510	CPU:400M	-	-
	GCAN-PLC-511	CPU:400M (2CAN)	-	-
	GC-1008	Digital input (PNP)	24V DC	8-channel
Digital input	GC-1018	Digital input (NPN)	24V DC	8-channel
1	GC-1502	Counter (200kHz max)	-	2-channel
	GC-2008	Digital output (PNP)	24V DC	8-channel
Digital	GC-2018	Digital output (NPN)	24V DC	8-channel
output	GC-2204	relay output	-	4-channel
	GC-2302	PWM (20Hz~200kHz)	-	2-channel
	GC-3604	Voltage input, 16 bits	-5~+5V	4-channel
	GC-3624	Voltage input, 16 bits	10V~+10V	4-channel
	GC-3644	Current input, 16 bits	0-20mA	4-channel
Analog	GC-3654	Current input, 16 bits	4-20mA	4-channel
input	GC-3664	Voltage input, 16 bits	0~+5V	4-channel
	GC-3674	Voltage input, 16 bits	0~+10V	4-channel
	GC-3804	2-wire PT100, 16 bits	Thermal resistance	4-channel
	GC-3822	3-wire PT100, 16 bits	Thermal resistance	2-channel



	GC-3844/3854/3 864	K type / S type / T type thermocouple	Thermocouple	4-channel
	GC-4602	Voltage output, 16 bits	-5V~+5V	2-channel
	GC-4622	Voltage output, 16 bits	-10V~+10V	2-channel
	GC-4642	Current output, 16 bits	0-20mA	2-channel
Analog output	GC-4652	Current output, 16 bits	4-20mA	2-channel
	GC-4662	Voltage output, 16 bits	0~5V	2-channel
	GC-4672	Voltage output, 16 bits	0~10V	2-channel
	GC-4674	Voltage output, 12 bits	0~10V	4-channel
	GC-6101	RS232/RS485 extension	-	-
Special module	GC-6201	GPRS extension	-	-
	GC-6221	4G extension	-	-
	GC-6501	WiFi extension	-	-



Sales and service



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