GC-2302

2-channel pulse output module
User manual
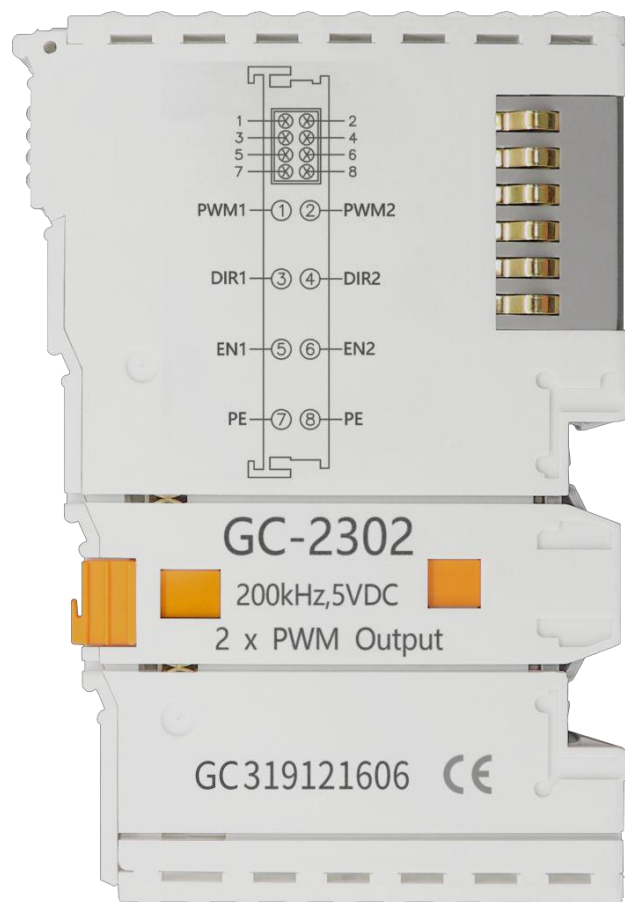
Revision History

Version	Date	Reason
V1.00	2015/09/16	Create
V2.01	2015/12/20	Modify device parameters
V3.01	2018/07/27	Add parameters
V3.02	2019/11/13	Amend the new version parameters
V3.03	2020/12/22	Modify product appearance

Contents

1. Introduction

1.1 Overview

The GC-2302 module has integrated 2 pulse output channels, which can send PWM signals and receive control signal from the GCAN-PLC-400/510 or GCAN-IO-8000 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

● 2 pulse output channels

● Output pulse: 5V

● Maximum output frequency: 100kHz

● Electrical isolation: 500 V(GC-bus)

● Eachpulseoutputthreesignals,includingpulsesignal,directionsignal,enable signal 32-bit pulse output register

● No address setting, configuration via plc or coupler

● Operating temperature: -40℃~+85℃

● Size:100mm*69mm*12mm

1.3 Typical application

● Used for pulse output control stepper, servomotor

● Used to output pulses of a certain frequency

2. Installation

This chapter will describe the installation method, wiring method, meaning of the indicator and meaning of the interface of the GC-2302 module.

2.1 Module fixing

The installation method of GC-2302 module as shown in Figure 2.1 and a flat-blade screwdriver is needed for auxiliary installation.
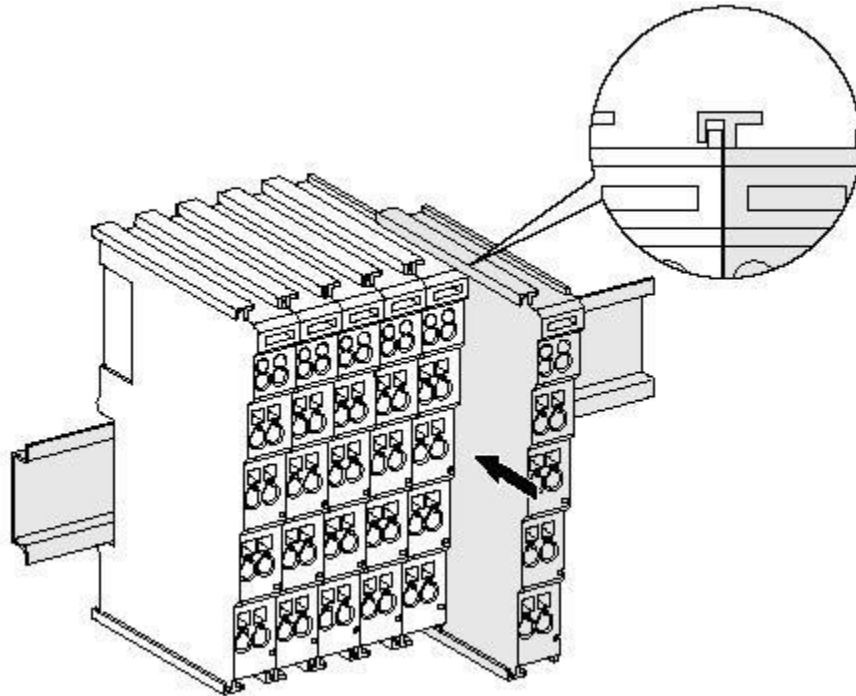
Figure 2.1 Installation of GC-2302 module

First install the GCAN-PLC on the guide rail and plug the GC-2302 along GCAN-PLC's right side until the lock is stuck.

The GC-2302 module needs to be used with a GCAN-PLC-400/510 or GCAN-IO-8000 series coupler, and can be powered directly through the coupler, so there is no need for a separate additional power supply.

2.2 Wiring method

The power wiring as shown in figure 2.2. First, use a flat-blade screwdriver to insert into the square hole, hold the top edge of the metal sheet in the square hole, and press toward the hole. Then, insert the wire into the hole. After plugging in, pull out the screwdriver and the wire can be firmly locked in the hole.
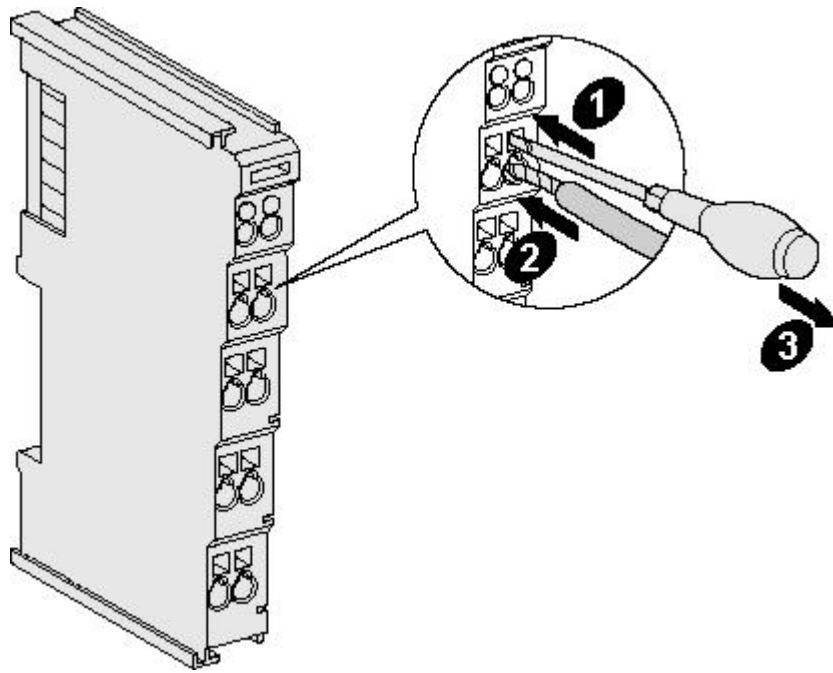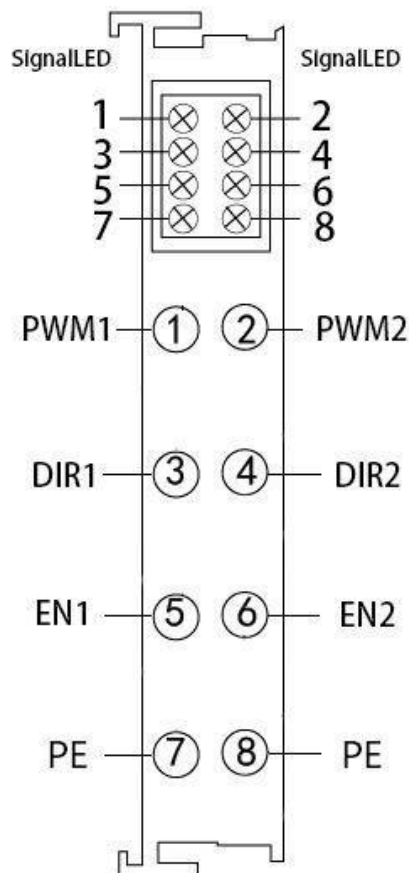
Figure 2.2 Wiring method of GC-2302 module

Figure 2.3 GC-2302 module terminal definition

GC-2302 contains 2 sets of pulse output, and the meaning of indicators are shown in table 2.1

No.	Definition
1	Module power indicator, the green light is always on to indicate that the power supply of the module is normal, if it is not on, the power supply is abnormal
2	Unused
3	No. 1 pulse initialization completed sign, the green light is on to indicate that the initialization is complete, if it is not on, it is not initialized
4	No. 2 pulse initialization completed sign, the green light is on to indicate that the initialization is complete, if it is not on, it is not initialized
5	No. 1 pulse output symbol, flashing green light means there is pulse output, if it is not on, there is no pulse output
6	No. 2 pulse output symbol, flashing green light means there is pulse output, if it is not on, there is no pulse output
7	Turn red when Motor 1 is not enabled
8	Turn red when Motor 2 is not enabled

Table 2.1 GC-2302 module indicator

2.3 System status indicator

GC-2302 module has no error indicator light. Please judge the status of GC-2302 module by "IORUN" and "IOERR" indicator lights of the GCAN-8000 series coupler. If the "IO ERR" indicator of the GCAN-8000 series coupler is on, please check the installation of the module.

2.4 Method ofuse

Work with GCAN-PLC
GC-2302 module has three working modes :(see gc-2302 module routine for details)
Speedmode
Locationmode
Pulse output mode

1. The working mode of speed and location are similar.

The variable declaration area of the program is defined as follows speed1 at%Q0.0:int; (*Define the 1st speed signal *)

pos1 at%Q2.0:dint; (*Define the 1st position signal *) speed2 at%Q6.0:int; (*Define the 2nd speed signal *)

pos2 at%Q8.0:dint; (*Define the 2nd position signal *)

(1) First call the motor pulse initialization function block in the program:

EXT_MOTOR_PWM_INIT

EN_IN: Function block enable signal

NETNUMBER: Number of GC-2302 modules from PLC

MOTOR_CH: the pulse output number of the gc-2302, 1 or 2 MOTOR_MODE: 1 speed mode; 2 location mode; 3 Pulse outputmode

MOTOR_PULSE: The number of pulses required for one turn of the motor

ACCTIME: Acceleration time of rotation (ms)

DECTIME: Deceleration time of rotation (ms) FLEX: Slope rating

EN_OUT: The value is 1 after successful initialization

ERROR: error value

② After the initialization function block is executed without error, call the motor enable function block: the input pin definition of the EXT_MOTOR_EN function block:

EN_IN: Function block enable signal

NETNUMBER: Which GC-2302 module from the PLC

MOTOR_CH: The pulse output of the GC-2302, the value is 1 or 2

ENABLE: Enable signal of the motor

The output pin definition of the function block:

EN_OUT: The value is 1 after the function block is executed successfully

ERROR: error value

In the EXT_MOTOR_EN function block, only the input ENABLE is 1 to enable the motor. After enabling, add the speed and position values to be defined: speed1, pos1, speed2, pos2

(Note: If the motor enable ENABLE is 0 and speed and pos are not 0, there will still be corresponding pulse output. Therefore, it is recommended to add the 0 statement when the motor is not enabled in the program: speed1:=0, speed2:= 0, pos1:=0, pos2:=0;)

2. The following describes the situation when the GC-2302 module is used for pure pulse output: The variable declaration area of the program is defined as follows:

Pwm_Duty1 at%Q0.0:int; (*Define the duty cycle of the first pulse output, unit %*)

Pwm_FQ1 at%Q2.0:dint; (*Define the frequency of the first pulse output, unit: Hz*)

Pwm_Duty2 at%Q6.0:int; (*Define the duty cycle of the second pulse output, unit %*)

Pwm_FQ2 at%Q8.0:dint; (*Define the frequency of the second pulse output, unit: Hz *)

First call the motor pulse initialization function block in the program: the input pin definition of the EXT_MOTOR_PWM_INIT function block:

EN_IN: Function block enable signal

NETNUMBER: Number of GC-2302 modules from PLC

MOTOR_CH: the pulse output number of the gc-2302, 1 or 2 MOTOR_MODE: 1 speed mode; 2 location mode; 3 Pulse output mode

The output pin definition of the function block:

EN_OUT: The value is 1 after successful initialization

ERROR: error value

Next, assign values for duty cycle and frequency,

E.g:

Pwm_Duty1:=30; (*Duty cycle is 30%*)

Pwm_FQ1:=30000; (* frequency is 30kHz*)

Pwm_Duty2:=50; (* Duty cycle is 50%*)

Pwm_FQ2:=50000; (*Frequency is 50kHz*)

B. GC2302 is used in connection with GCAN-IO-8000 controller:

1. Motor initialization: CANopen main index: 0x3000

CANopen sub-index: 0

Send frame data: PDO parameter + main index + sub index + device number (the number of GC2302 modules) + channel number

(Corresponding to the channel number of GC2302, channel 1 or channel 2) + pulse value (the number of pulses required for 1 revolution of the motor) For example:

Device number: 1, channel number: 1, pulse: 5000

send pdo: 0x601 23 00 30 00 01 01 88 13

Device number: 1, channel number: 2, pulse: 5000

send pdo: 0x601 23 00 30 00 01 02 88 13

Device number: 2, channel number: 1, pulse: 5000

send pdo: 0x601 23 00 30 00 02 01 88 13

Device number: 2, channel number: 1, pulse: 5000

send pdo: 0x601 23 00 30 00 02 02 88 13

2. Motor enable:

CANopen main index=0x3001

CANopen subindex=0

Send frame data: PDO parameter + main index + sub index + device number + channel number + enable signal (0 or 1) + 00

For example:

Device number: 1, channel number: 1, enable: 1

send pdo: 0x601 23 01 30 00 01 01 01 00

Device number: 1, channel number: 1, enable: 0

send pdo: 0x601 23 01 30 00 01 01 00 00

Device number: 1, channel number: 2, enable: 1

send pdo: 0x601 23 01 30 00 01 02 01 00

Device number: 1, channel number: 2, enable: 0

send pdo: 0x601 23 01 30 00 01 02 00 00

3. Speed control:

Send PDO to control the motor speed. The speed value (2 bytes) needs to be multiplied by a factor of 0.1. For example, if the speed value is set to 1000, the actual motor speed is

：1000*0.1=100rad/min

For example: GCAN-8000 is connected to a GC2302 module, CANopenID is 1, the speed of the first channel is 1000, and the speed of the second channel is 2000

Send PDO data: 0x201 E8 03 D0 07 00 00 00 00

If you need to shut down the first motor, send the PDO value as 0: 0x201 00 00 D0 07 00 00 00 00

3. Technical Specifications

Interface characteristics	
Number of inputs	2
Pulse voltage	5V
Electrical isolation	500 V （GC-bus/ Signal voltage）
Counter bit	32-bit
Installation position	In sequential order
Power supply	Powered by GCAN-PLC series, current consumption 50mA
Environmental testing	
Operating temperature	-40℃~+85℃
Permissible relative Humidity	95%RH，no condensation
EMC test	EN 55024:2011-09 EN 55022:2011-12
Vibration/shock Resistance	EN 60068-2-6/EN 60068-2-27/29
EMC resistance burst/ ESD	EN 61000-6-2 /EN 61000-6-4
Protection class	IP 20
Basic information	
Dimensions	100mm *69mm *12mm
Weight	50g

4. Disclaimer

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5. Module selection table

GCAN-PLC-400 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 in Table 5.1.

I/O	Type	Characteristic	Signal	Channel
PLC Control module	GCAN-PLC-400	CPU:168M	-	-
	GCAN-PLC-510	CPU:400M	-	-
	GCAN-PLC-511	CPU:400M (2CAN)	-	-
Digital input	GC-1008	Digital input (PNP)	24V DC	8-channel
	GC-1018	Digital input (NPN)	24V DC	8-channel
	GC-1502	Counter（200kHz max）	-	2-channel
Digital output	GC-2008	Digital output (PNP)	24V DC	8-channel
	GC-2018	Digital output (NPN)	24V DC	8-channel
	GC-2204	relay output	-	4-channel
	GC-2302	PWM （20Hz~200kHz）	-	2-channel
Analog input	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
	GC-3654	Current input, 16 bits	4-20mA	4-channel
	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-3844/3854/3864	K type / S type / T type thermocouple	Thermocouple	4-channel
Analog output	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
	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
Special module	GC-6101	RS232/RS485 extension	-	-
	GC-6201	GPRS extension	-	-
	GC-6221	4G extension	-	-
	GC-6501	WiFi extension	-	-

Table 5.1 Selection table

Sales and service

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