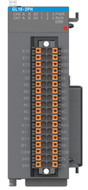
INOVANCE



GL10-2PH Series High-Speed Differential Pulse Positioning Module User Guide

19011285A07

Overview

Thank you for purchasing the GL10-2PH high-speed differential pulse positioning module developed and manufactured independently by Inovance.

This product is a 2-channel positioning output module used together with the H3U series PLC main module. It supports two channels of 1 MHz high-speed differential pulse outputs in multiple modes, including direction + pulse (required) and CW + CCW. It also supports homing, positioning, and left and right limiting. This product is a perfect solution for sophisticated manufacture industries which involves a large number of axes, such as mobile phone manufacture and TP.

This guide describes the specifications, characteristics and using methods of this module. Read this guide carefully before using to ensure more safe usage. You can download the latest user guide by visiting https://www.inovance.com/global.

General Safety Instructions

Safety disclaimer

- This chapter provides essential safety instructions for proper use of the product. Before using this product, read through the guide and comprehend all the safety instructions. Failure to comply with the safety instructions may result in death, severe injury, or equipment damage.
- "DANGER", "WARNING", and "CAUTION" signs in this guide are only supplements to the safety instructions, and do not reflect all safety instructions to be followed.
- Use this product according to the designated environment requirements. Damage caused by improper use is not covered by warranty.
- Inovance shall take no responsibility for any personal injury or property damage caused by improper use.

Safety levels and definitions

DANGER : Indicates that failure to comply with the notice will result in death or severe personal injuries.

WARNING : Indicates that failure to comply with the notice may result in severe personal injury or death.

CAUTION : Indicates that failure to comply with the notice may result in minor personal injury or damage to the equipment.

Safety precautions

- Drawings in the user guide are sometimes shown without covers or protective guards. Install the covers or protective guards as specified, and then perform operations in accordance with the instructions.
- The drawings in the guide are shown for illustration only and may be different from the product you purchased.
- Operators must take mechanical precautions to protect personal safety and wear protective equipment, such as anti-smashing shoes, safety clothing, safety glasses, protective gloves, and protective sleeves.

Unpacking

WARNING

- Do not install the product in case of any damage, rust, or signs of prior use on the product or its accessories upon unpacking.
- Do not install the product in case of water seepage into the product or missing or damaged components upon unpacking.
- Do not install the product in case of any discrepancy between the product you received and the product name on the packing list.

CAUTION

- Check whether the packing is intact and whether there is damage, water seepage, dampness, and deformation before unpacking.
- Unpack the package by following the unpacking sequence. Do not strike the package violently.
- Check for damage, rust, or dents on the surfaces of the product and accessories upon unpacking.
- After unpacking, check the contents against the packing list to ensure that the equipment and accessories are in the correct quantities, and that all documentation is complete.

Storage and transportation

WARNING

- Large or heavy equipment must be handled by qualified professionals using specialized hoisting equipment. Failure to comply could result in personal injury or equipment damage.
- Before hoisting the equipment, ensure that components such as the front cover and terminal blocks are secured firmly with screws. Loosely connected components may fall off and result in personal injury or equipment damage.
- Do not stand or stay below the product which is being hoisted.
- When hoisting the equipment with a steel rope, ensure the equipment is hoisted at a constant speed without suffering from vibration or shock. Do not turn the equipment over or let the equipment stay hanging in the air. Failure to comply could result in personal injury or equipment damage.

CAUTION

- Handle the equipment with care and mind your step during transportation to prevent personal injury or equipment damage.
- When carrying the equipment with bare hands, hold the equipment casing firmly with care to prevent parts from falling. Failure to comply could result in personal injury.
- Store and transport the equipment based on the storage and transportation requirements. Failure to comply could result in equipment damage.
- Do not store or transport the equipment in environments where the equipment may be exposed to splashing water or rain, direct sunlight, strong electric field, strong magnetic field, or strong vibration.
- Store the equipment for up to three months. Take stricter protective measures and carry out the necessary inspections for a longer storage time.
- Pack the equipment securely and properly before transportation. Use a fully enclosed container for long-distance transportation.
- Do not transport the equipment with other devices or items that may impact or cause harm to the equipment.

Design

DANGER

- Provide a safety circuit and include an error handling program in the software to ensure that the product remains in a safe state in case of an external power failure or an internal fault.
- If a sustained overcurrent occurs due to overload or load short circuit, the product may smoke or catch fire. An external safety device (such as a fuse or circuit breaker) must be installed.

WARNING

- If an output component (such as a relay or transistor) in this product is damaged, the corresponding output may become uncontrolled and remain permanently ON or OFF.
- The product design must comply with the overvoltage category requirements specified in the environmental specifications. A system-level lightning protection device must be installed on the power supply to ensure that lightning-induced overvoltages do not reach the product's power input, signal input, or control output terminals, thereby preventing damage to the product.
- Ensure that appropriate actions have been taken to prevent product malfunction caused by a communication fault between the product and related devices. Failure to comply could cause personal injury or equipment damage.

CAUTION

- Switches that could cause personal injury or equipment damage must not be configured on the touch screen. Use independent switches for performing critical operations. Failure to comply could result in accidents caused by wrong outputs or faults.

Installation

WARNING

- This equipment must be operated only by trained and qualified electrical personnel. Operations can be performed by professionals only.

DANGER

- Read through the guide and safety instructions before installation.
- Do not install this equipment in places with strong electric or magnetic field.
- Before installation, check that the mechanical strength of the installation site can bear the weight of the equipment. Failure to comply may result in mechanical hazards.
- Do not wear loose clothes or accessories during installation. Failure to comply may result in an electric shock.
- When installing the equipment in an enclosed environment (such as a cabinet or case), use cooling devices (such as fans or air conditioners) to cool the space and meet the installation environment requirements. Failure to do so could result in equipment overheating or fire.
- Do not retrofit the equipment.
- Do not fiddle with the bolts used to fix equipment components or the bolts marked in red.
- When the equipment is installed in a cabinet or terminal device, appropriate guard devices (guards for fire, electrical, and mechanical protection) meeting applicable IEC standards and local laws and regulations must be provided.
- Before installing devices with strong electromagnetic interference, such as a transformer, install a shielding device for the equipment to prevent malfunction.
- Install the equipment onto a non-combustible object such as metal. Keep the equipment away from combustible objects. Failure to comply could result in fire.
- For products not supporting hot swapping, disconnect all external power supplies of the system before installing/removing the product. Failure to comply could result in electric shock, product failure, or malfunction.

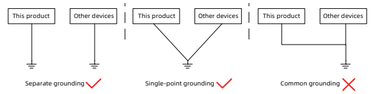
CAUTION

- Cover the top of the equipment with a piece of cloth or paper during installation. This is to prevent unwanted objects such as metal chippings, oil, and water from falling into the product and causing faults. After installation, remove the cloth or paper on the top of the equipment to prevent the ventilation holes from being blocked, which could cause overheating due to poor heat dissipation.
- During installation, ensure the equipment is connected to the respective connector securely and hook the equipment firmly. Improper installation may result in malfunction, failure, or detachment.

Wiring

DANGER

- This equipment must be operated only by trained and qualified electrical personnel. Non-professionals must not operate this equipment.
- Before wiring, disconnect all the power supplies of the equipment. Wait for at least the time designated on the warning label before further operations because residual voltage still exists after power-off. After waiting for the designated time, measure the DC voltage in the main circuit to ensure the DC voltage is within the safe voltage range. Failure to comply could result in electric shock.
- Do not perform wiring, remove the equipment cover, or touch the circuit board with power ON. Failure to comply could result in electric shock.
- Ensure that the equipment is grounded properly. Failure to comply could result in electric shock. Separate grounding or single-point grounding, other than common grounding, is recommended.



- Insulate the cable terminals properly to ensure the insulation distance between cables will not be shortened after cables are connected to the terminal block. Failure to comply could result in electric shock or equipment damage.
- Install the terminal cover attached to the equipment before power-on or operation after wiring is completed. Failure to comply could result in electric shock.

WARNING

- Never connect the power cable to output terminals of the equipment. Failure to comply could cause equipment damage or even fire.
- Cables used for wiring must comply with the requirements for the cross-sectional area and shielding. The shielding layer of the shielded cable must be reliably grounded at one end.
- Tighten the terminal screws with the torque specified in the user guide. Insufficient or excessive torque may cause overheating and damage to the joint, which could result in fire.
- After wiring, be sure that all cables are connected properly with no screws, gaskets, or exposed cables inside the product, or it may result in an electric shock or equipment damage.

CAUTION

- During wiring, follow the proper electrostatic discharge (ESD) procedures, and wear an antistatic wrist strap. Failure to comply may result in damage to the equipment or internal circuits.
- Use the shielded twisted pair cable to wire the control circuit, and connect the shield to the grounding terminal of the equipment. Failure to comply may result in equipment malfunction.

Power-on

DANGER

- This equipment must be operated only by trained and qualified electrical personnel. Non-professionals must not operate this equipment.
- Before power-on, check that the equipment is installed properly with secure wiring and the motor can be restarted.
- Before power-on, make sure that the power supply meets equipment requirements to prevent equipment damage or even a fire.
- After power-on, do not open the cabinet door or protective cover of the equipment. Do not touch any terminals, or remove any part of the equipment at power-on. Failure to comply will result in an electric shock.

WARNING

- Perform a trial run after wiring to ensure the equipment operates safely. Failure to comply could result in personal injury or equipment damage.

Operation

DANGER

- The equipment must be operated only by professionals. Failure to comply can result in injury or death.
- Do not touch any connecting terminals or disassemble any unit or component of the equipment during operation. Failure to comply could result in electric shock.

WARNING

- Do not touch the enclosure, fan, or resistor with bare hands. Failure to comply may result in burns.
- Prevent metal or other objects from falling into the equipment during operation. Failure to comply may result in a fire or equipment damage.
- During operation, do not bring live parts into contact with the metal enclosure of the equipment. Failure to comply may result in a fire or product damage.

CAUTION

- Operate the equipment within the specified environmental conditions. Failure to comply could result in equipment failure or damage.
- Touch the HMI panel with hands only. Failure to comply could cause panel damage, which is out of the warranty range.

Safety recommendations

- In positions where the operator directly touches the mechanical parts, for example, where a mechanical device is loaded/unloaded, or where a machine runs automatically, manually-operated devices or other alternative means must be carefully designed so that they are independent of the equipment to start or stop the automatic operation of the system.
- If you need to modify the program while the system is running, use the lock function or other protective measures. Ensure that only authorized personnel can make the necessary modifications.

Battery usage

WARNING

- Do not use batteries that do not meet the product requirements. Failure to comply could result in death, personal injury, explosion, or fire.
- Do not throw batteries into fire or hot ovens. Do not crush or cut the battery. Failure to comply could result in death, personal injury, explosion, or fire.
- Do not expose the battery to extremely high temperatures. Failure to comply could result in death, personal injury, explosion, or fire.
- Do not swallow batteries. Failure to comply could result in chemical burns.
- Seek for medical treatment immediately if a button battery is swallowed by accident, because this may cause severe internal burns within two hours and even death.

CAUTION

- Keep batteries out of reach of children.
- If the battery compartment is not securely closed, stop using the product immediately and keep it out of reach of children.

Maintenance

DANGER

- Maintenance must be performed only by trained and qualified electrical personnel.
- Do not maintain the equipment with power ON. Failure to comply could result in electric shock.
- Before maintenance, disconnect all the power supplies of the equipment and wait for at least the time specified on the warning label.
- Disconnect all external power supplies of the system before cleaning the equipment or re-tightening screws on the terminal block or screws for connector installation. Failure to comply could result in electric shock.
- Disconnect all external power supplies of the system before removing or installing the product, or connecting or disconnecting cables. Failure to comply may result in electric shock or malfunctions.

WARNING

- Perform routine and periodic inspection and maintenance on the equipment according to maintenance requirements and keep a maintenance record.

Repair

DANGER

- Repair must be performed only by trained and qualified electrical personnel.
- Do not maintain the equipment with power ON. Failure to comply could result in electric shock.
- Before inspection or repair, disconnect all the power supplies of the equipment and wait for at least the time specified on the warning label.

WARNING

- Submit a request for repair based on the warranty agreement.
- When the fuse is blown or the circuit breaker or earth leakage circuit breaker (ELCB) trips, wait for at least the time designated on the equipment warning label before power-on or further operations. Failure to comply could result in equipment damage, personal injury, or death.
- Troubleshooting and repair of faulty or damaged equipment must be performed by professionals in accordance with the repair instructions, and proper repair records must be kept.
- Replace quick-wear parts of the equipment according to the replacement instructions.
- Do not use damaged equipment. Failure to comply could result in death, personal injury, or severe equipment damage.
- Recheck the wiring and reset the parameters after equipment replacement.

Disposal

WARNING

- Dispose of the retired equipment in accordance with applicable national regulations and standards. Failure to comply could result in property damage, personal injury, or death.
- Recycle retired equipment in accordance with industry waste disposal standards to avoid environmental pollution.
- Treat the scrapped equipment as industrial waste. Dispose of the batteries according to local laws and regulations.

Safety labels

To ensure safe operation, comply with safety labels on the equipment and do not damage or remove the labels. The following table describes the meanings of the safety labels.

Safety Labels	Description
	• Before using the equipment, read the guide and safety precautions carefully. Failure to comply could result in personal injury, death, or equipment damage. • Do not touch the terminals or remove the cover with power-on or within 10 min after power-off. Failure to comply could result in electric shock. • The surface of the product may become very hot during operation. Do not touch these hot areas, as this may cause burns!

Product Information

■ Model and nameplate

GL10 - 2PH

Sign	Description
G	General module
L	Local module

Sign	Description
10	10 series

Sign	Module Type
PH	High-speed differential output pulse positioning

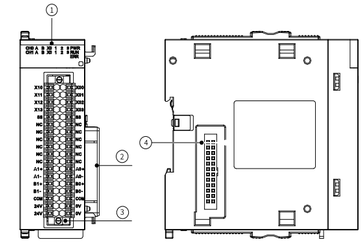
Sign	Number of Outputs
2	2



Figure 1 Description of model and nameplate

Model	Category	Description	Applicable Model
GL10-2PH	Local I/O module	Local bus expansion module featuring 2-channel high-speed differential pulse outputs for positioning (1 MHz output frequency) and 8-channel standard inputs	H3U series

■ External interfaces



No.	Interface	Description			
①	Status indicator	PWR	Power supply indicator	Green	ON when power supply is switched on
		RUN	Normal operation indicator	Green	ON when power supply is switched on
		ERR	Fault indicator	Red	ON when the module is faulty
	Signal indicator	CH0/1	Indicator	Green	ON when channel 0/1 is ready to output
		A/B	Pulse+direction indicator	Green	--
		X0 to X3	Digital input indicator	Green	ON when the input signal is active
②	Local expansion module back-end interface	Used to connect back-end modules. Hot swapping is not supported.			
③	User terminal	Pulse output terminal, see "Electrical Design Reference".			
④	Local expansion module front-end interface	Used to connect front-end modules. Hot swapping is not supported.			

■ General specifications

Item	Specification
Rated operating voltage	24 VDC (20.4 VDC to 28.8 VDC) (-15% to +20%)
Number of output channels	2
User terminal	36-pin leaf spring terminal, for both I/O and power supply
Internally consumed current	Approx. 150 mA
Output short-circuit protection	Supported
System program upgrade method	USB firmware upgrade
Positioning	Supports absolute pulse positioning, relative pulse positioning, speed control, and multiple homing methods.
Operating temperature	-5° C to 55° C
Storage temperature	-25° C to 70° C
Humidity	10% to 95%, non-condensing

■ Input/Output specifications

Input Item	Specification	Output Item	Specification
Input type	Sink/Source input	Output type	5 V differential output
Input voltage	24 VDC	Insulation	Optocoupler isolation
Input impedance	3.3 kΩ	Max. output frequency	1 MHz
Input is ON	Input current > 2.0 mA	Output mode	Pulse+direction or CW/CCW
Input is OFF	Input current < 1.0 mA	Number of channels	2

Mechanical Design Reference

■ Mounting dimensions

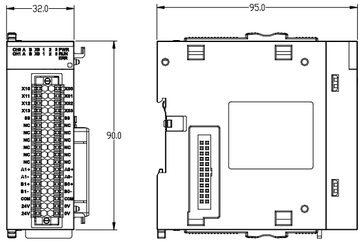


Figure 2 Mounting dimensions (in mm)

Electrical Design Reference

■ Cable selection

Material	Model	Cable Diameter		Manufacturer	Crimping Tool
		MM²	AWG		
Wire ferrule	GTVE07512	0.75	21	Suzhou Yuanli	YAC-5

■ Cable preparing procedures

- Strip the insulation layer to expose 11 mm to 14 mm of the conductor. Pass the cable through the cable marking sleeve.
- Insert the exposed conductor into the hole of the cable lug, and then crimp it with a recommended crimping tool.

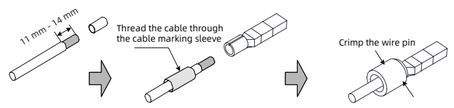


Figure 3 Diagram of cable preparing

■ Terminal arrangement

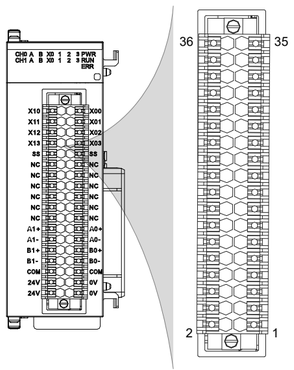
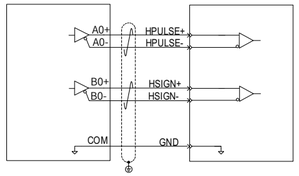


Figure 4 Terminal arrangement

■ External wiring

Ext. Wiring	Signal Name	Terminal No.		Signal Name	Ext. Wiring
	Column B			Column A	
	CH1 POS limit（X10）	36	35	CH0 NEG limit（X00）	
	CH1 NEG limit（X11）	34	33	CH0 POS limit（X01）	
	CH1 home SW（X12）	32	31	CH0 home SW（X02）	
	CH1 in. signal（X13）	30	29	CH0 in. signal（X03）	
	CH1 in. COM（SS）	28	27	CH0 in. COM（SS）	
	Not connected（NC）	26	25	Not connected（NC）	
	Not connected（NC）	24	23	Not connected（NC）	
	Not connected（NC）	22	21	Not connected（NC）	
	Not connected（NC）	20	19	Not connected（NC）	
	Not connected（NC）	18	17	Not connected（NC）	
	Not connected（NC）	16	15	Not connected（NC）	
A1	CH1 DIFF out. A（A1+）	14	13	CH0 DIFF out. A（A0+）	A0
	CH1 DIFF out. A（A1-）	12	11	CH1 DIFF out. A（A0-）	
B1	CH1 DIFF out. B（B1+）	10	9	CH1 DIFF out. B（B0+）	B0
	CH1 DIFF out. B（B1-）	8	7	CH1 DIFF out. B（B0-）	
	Out. COM（COM）	6	5	Out. COM（COM）	
	24V power +（24V）	4	3	Power GND（0V）	
	24V power +（24V）	2	1	Power GND（0V）	

■ Internal equivalent circuit:



*1: 4-core shielded twisted pair cables are used for differential output to reduce noise interference.

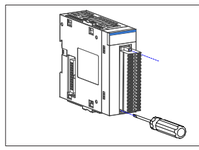
*2: The common GND for differential output must be connected to the GND terminal of the servo drive to reduce noise interference.

*3: Ensure that the metal spring piece at the bottom the of the module is securely installed. Mount the module on a well-grounded metal bracket, and ensure that the spring piece is in good contact with the bracket.

*4: To reduce noise interference, the module must be powered by 24 V voltage from a switching power supply or PLC, rather than a servo drive or AC drive.

■ Precautions of connection

After the I/O terminal block is mounted to CN1, fix it with 0.2 N·m to 0.25 N·m torque, as shown in the following figure:



Do not bundle the terminal connection cables together with power cables (high voltage, large current) which produce strong interference signals. Separate it from other cables and avoid cabling in parallel.

Select recommended cables and pinboards for connection. It is recommended that shielded cables be used as terminal connection cables to enhance capacity of resisting interference.

Programming Reference

■ Supported H3U instructions

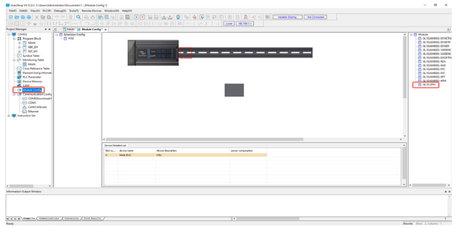
Instruction	Parameter Description					
PMDRVA	S1	S2	S3	S4	D1	D2
Absolute positioning	Module bit number (1 to 8)	Channel number (0 to 1)	Position (absolute position)	Speed	Positioning completed	Fault code
PMDRVI	S1	S2	S3	S4	D1	D2
Relative positioning	Module bit number (1 to 8)	Channel number (0 to 1)	Position (relative position)	Speed	Positioning completed	Fault code
PMPLSV2	S1	S2	S3	D1	D2	-
Speed mode motion	Module bit number (1 to 8)	Channel number (0 to 1)	Speed	Speed reached	Fault code	-
PMHOME	S1	S2	S3	D1	D2	-
Homing	Module bit number (1 to 8)	Channel number (0 to 1)	Position (target position after homing)	Homing completed	Fault code	-

Instruction	Parameter Description					
PMSETPOS	S1	S2	S3	D1	D2	-
Set current position	Module bit number (1 to 8)	Channel number (0 to 1)	Position (target position setpoint)	Completed	Fault code	-
PMESTOP	S1	S2	D1	D2	-	-
Stop output immediately	Module bit number (1 to 8)	Channel number (0 to 1)	Completed	Fault code	-	-
PMWRPARA	S1	S2	S3	S4	D1	D2
Write special function parameters	Module bit number (1 to 8)	Channel number (0 to 1)	Parameter address	Parameter data	Completed	Fault code

■ Programming example:

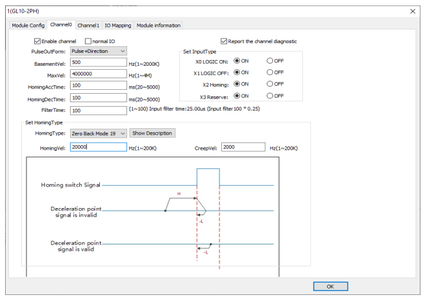
This module is used with the H3U series main module. For example, it can call the relative positioning instruction, which sends 10,000 pulses in "pulse + direction" mode at a frequency of 10 K through channel CH0. The instruction uses a trapezoid profile with the acceleration/deceleration time both set to 100 ms. Upon reaching the target position, the current enabling signal is disabled and the next relative positioning instruction is enabled. The instruction sends -20,000 pulses same as those of the previous command. Upon completion, CH0 stops output.

① Start AutoShop. Double-click "Module Config" and double-click "GL10-2PH" to add the module.



② Double-click the added "GL10-2PH" module to configure it.

Select the channel to be used. Configure the pulse output mode, input signal positive/negative logic, and speed parameters for each output channel.



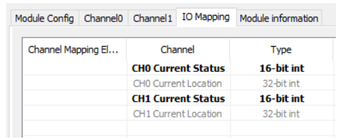
- Enable channel: Check to use the current channel.
- PulseOutForm: Provides two pulse output modes – CW/CCW and pulse+direction.
- BasementVel: Limits the minimum speed of the pulse module.
- MaxVel: Limits the maximum pulse output frequency of the current module.
- HomingAccTime: Defines the pre-set time for the base speed to reach the target speed, in ms.

- HomingDecTime: Defines the pre-set time for the target speed to decelerate to the base speed, in ms.
- Set HomingType:

  Four homing modes are available. The user can input positive limit, negative limit, homing and other signals according to the actual mechanical structure to achieve expected homing. As shown in the figure above, when you select "Zero Back Mode 19", there are two types of homing actions depending on the current position.
- HomingVel: Defines the pre-set value of high-speed homing speed.
- CreepVel: Defines the pre-set speed to approach the target position.
- FilterTime: Used to reduce interference with signals such as positive limit, negative limit, and homing.
- Set InputType:

  Configure the input signal logic according to the contactor type of the input terminal. The NO contact is defined as positive logic and the NC contact is defined as negative logic. Note: The default contact type is normally open (positive logic).

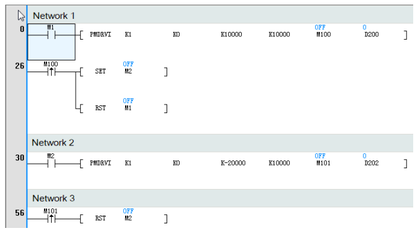
③ After configuring the channel parameters according to the actual application scenario, select the "IO Mapping" tab to map the D component and R component to the corresponding channel position and state.



The data of each channel position is a 32-bit signed integer, and the channel state is 16-bit (as shown in the figure above, D1000 is mapped to the current state of CH0, D1003 to CH1, and so on). The meaning of each bit is as shown in the following table [data format: BOOL-(1bit)].

Bit	Buff Definition	Bit	Buff Definition
Bit0	Pulse output completion flag	Bit9	Reserved input
Bit1	Pulse output ongoing flag	Bit10	Homing completed
Bit2	Accelerating	Bit11	Reserved
Bit3	Running at constant speed	Bit12	Fault code. For details, see "Fault Codes and Solutions" below.
Bit4	Decelerating	Bit13	
Bit5	Pulse output direction	Bit14	
Bit6	Positive limit signal input		
Bit7	Negative limit signal input	Bit15	
Bit8	Home switch signal input		

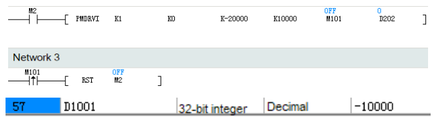
④ Write a PLC program.



- Use the PMDRVI relative positioning instruction. Set the module number to 1, channel to CH0, pulse count to 10000, target speed to 10000 Hz, fault flag to D200, and positioning completion flag to M100.



- Enable M1. After 10000 pulses are output, M100 turns ON, which means the instruction is completed. The position of CH0 is 10000. At this time, M1 will be reset and M2 will be set, which enables the next relative positioning instruction, with the pulse count being -20000, target speed being 10000 Hz, fault flag being D202, and positioning completion flag being M101. After the instruction is completed, the enabling signal is disconnected, CH0 stops outputting, and the position of CH0 is -10000.



Fault Codes and Solutions

By checking Bit12 to Bit15 of the channel mapping component (configured in "Module Config", as introduced in the step ③ above), you can determine the module fault type and check the fault code information of the PLC program through the software to determine the host/module fault type.

Type	Fault Code	Description
Module reported faults	1	The module cannot run because the 24 V power supply is disconnected. Check whether the 24 V power supply is normal.
	2	Reserved
	3	Reserved
	4	Reserved
	5	Positive limit fault. Pulse output stops and forward pulse positioning cannot continue because the positive limit is unexpectedly reached.
	6	Negative limit fault. Pulse output stops and backward pulse positioning cannot continue because the negative limit is unexpectedly reached.
	7	Channel output conflict. A new output instruction is received while pulse positioning output is in progress.
	8	Reserved
	9	Reserved
	10	Position out of range. The received position parameter exceeds the minimum or maximum allowable range.
	11	Speed out of range. The received speed parameter exceeds the minimum or maximum allowable range.
	12	Reserved
	13	Reserved
	14	Reserved
	15	Reserved
Host reported faults	1000	Positioning module instruction fault: Incorrect module bit number or channel, or module is not a positioning type.
	1001	Positioning module instruction fault: Position parameter value is out of range.
	1002	Positioning module instruction fault: Speed parameter value is out of range.
	1003	Positioning module instruction fault: Channel output conflict – a new output positioning instruction is triggered while the channel is in pulse output positioning.
	1004	Positioning module instruction fault: No I/O mapping soft element set for the current channel.
	1005 to 1099	Reserved
	1100	Positioning module instruction fault: Unsupported output mode or instruction.
	1101 to 1199	Reserved

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