EC-IO801 I/O Expansion Module User Manual

Preface

Thank you for choosing INVT EC-IO801 I/O expansion module.

The EC-IO801 I/O expansion module is used with the GD880 series VFD control box.

This manual describes the product overview, installation, wiring, and commissioning instructions. Before installing the VFD, read this manual carefully to ensure the proper installation and running with the excellent performance and powerful functions into full play.
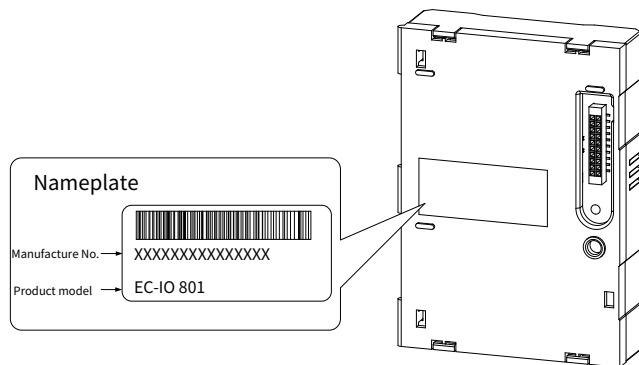
✎ Product features:

- Supports analog input detection in voltage mode and current mode: AI1, AI2
- Supports analog output detection in voltage mode and current mode: AO1, AO2
- Supports configurable digital inputs and relay output: DI1, DI2, DI3, RO1
- Provides power supply for DI: 24VDC
- Enables flexible configuration of filtering time of AI and DI, improving the detection stability of the module

1 Product overview

1.1 Model description

Figure 1-1 Product nameplate and model designation

1.2 Specifications

Table 1-1 Specifications

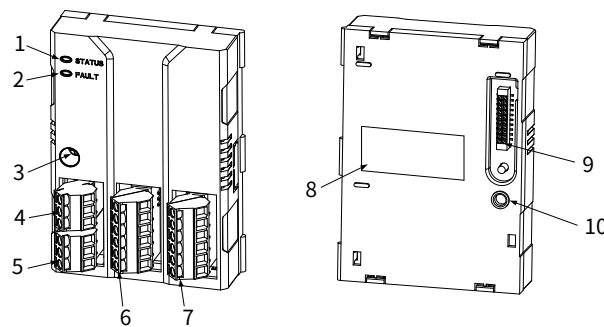| Parameters	Specification
Working temperature	-10–50°C
Storage temperature	-20–60.0°C
Relative humidity	5%–95% (No condensation)
Running environment	No corrosive gas
Installation method	Fixed with snap-fits and screws
Ingress protection (IP) rating	IP20
Heat dissipation method	Natural air cooling

1.3 Structure

Figure 1-2 Structural diagram

Table 1-2 Component description

No.	Name	Description
1	STATUS Status indicator (green)	On: The expansion module is connecting with the control board. Blinking (On: 500ms; Off: 500ms): The expansion module is connected with the control board. Off: The expansion module is disconnected from the control board.
2	FAULT Fault indicator (red)	On: The expansion module is faulty. Off: The expansion module works normally.
3	Installation fixing hole	To fix the expansion module and maintain a good connection of the PE layer.
4	X1 connection terminal	Relay output terminal
5	X2 connection terminal	External power port
6	X3 connection terminal	Terminal for digital input and analog input
7	X4 connection terminal	Terminal for analog input and analog output
8	Nameplate	Including the model and sequence number of the expansion module
9	Connection port	For electrical connection with the control box.
10	Positioning hole	To align the expansion module and control box for easy installation

2 Installation and wiring

2.1 Installation precautions

⚠️	Make sure the device has been powered off before installation.
Note	• There are three expansion module interfaces on the control box (expansion slot 1, expansion slot 2, expansion slot 3). You can use expansion slot 1 or expansion slot 2 according to the actual wiring. • It is recommended to install the I/O expansion module at expansion slot 2.

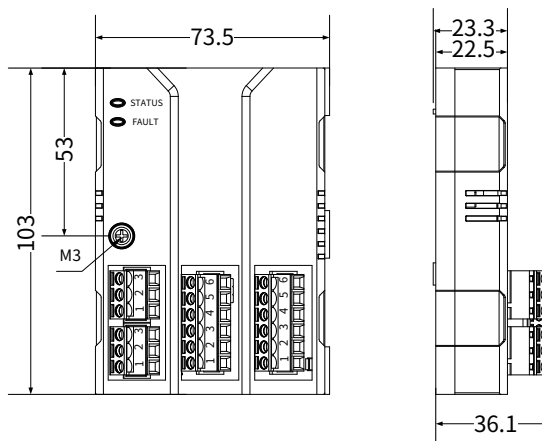Required tools: Phillips screwdriver PH1, straight screwdriver SL3

Table 2-1 Screw torque requirements

Screw size	Fastening torque
M3	0.55 N·m

2.2 Dimensions

The dimensions of the I/O expansion module is 73.5×103×36.1mm (W*H*D).

Figure 2-1 Product dimensions (unit: mm)

2.3 Installation instructions

It is recommended to place the I/O expansion module at expansion slot 1 of the control box. The following is an example of the installation at slot 1.

Step 1　Place the module in the corresponding position of the control box expansion slot 2, align it with the slot, and then buckle it together.

Step 2　Align the expansion module positioning hole with the positioning stud.

Step 3　Fix with a M3 screw. The installation is complete.
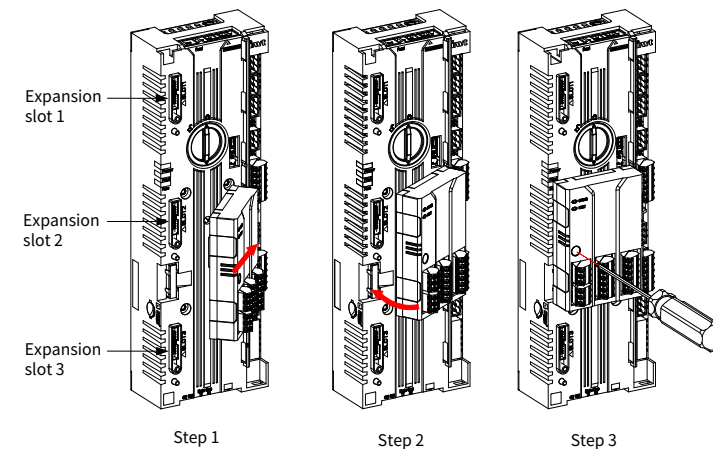
✎Note:

- The expansion module and control box are electrically connected through slots. Please install them in place.
- To ensure the reliable operation of the expansion module and meet EMC requirements, please tighten the screws according to the recommended torque for reliable grounding.

2.4 Disassembly instructions

You can disassembly the module by reversing the order of steps described in section 2.3 Installation instructions.

Step 1　Disconnect all power supplies and disassemble all cables connected to the expansion module.

Step 2　Use a Phillips screwdriver PH1 to remove the grounding screws of the module.

Step 3　Lift the module out of the control box positioning stud and pull it out to a suitable position. Disassembly is complete.

2.5 User's wiring terminal

Figure 2-2 Product appearance

Table 2-2 X terminal function definition

Category	X terminal	Terminal definition	Description	Specifications
Relay output	X1-1	RO1A	NO contact of relay	1. Contact capacity: 3A/AC250V, 1A/DC30V 2. Cannot used as high frequency switch output
	X1-2	RO1B	NC contact of relay	
	X1-3	RO1C	Common contact of relay	
Power supply	X2-1	COM	Digital reference ground	1. Used to provide input digital working power from the external to the internal 2. PW and +24V have been short connected. 3. Power supply: +24VDC
	X2-2	PW	Power supply	
	X2-3	+24V	Power supply	

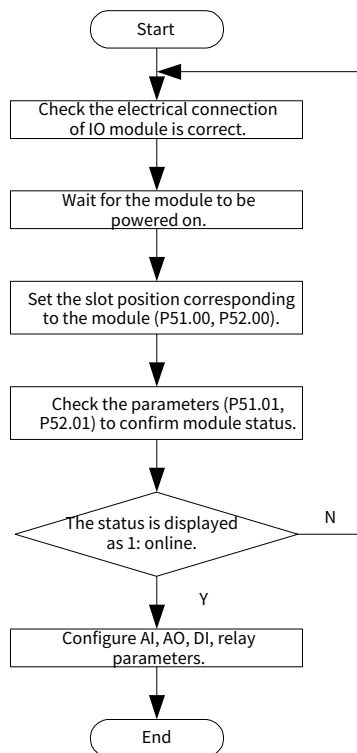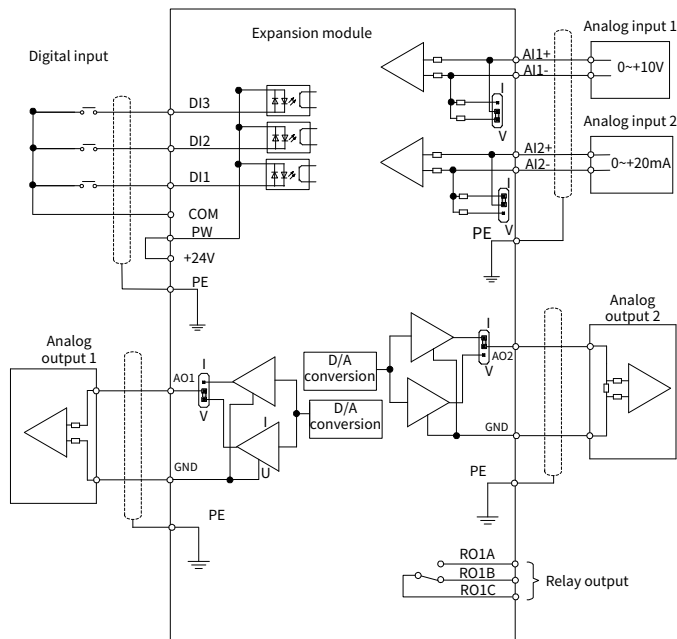| Category	X terminal	Terminal definition	Description	Specifications
Digital input	X3-1	DI1	Digital input 1	1. Internal impedance: 3.3kΩ 2. 12–30V voltage input is acceptable 3. Bi-direction input terminal 4. Max. input frequency: 1kHz
	X3-2	DI2	Digital input 2	
	X3-3	DI3	Digital input 3	
	X3-4	COM	Digital reference ground	
Analog input	X3-5	AI2+	Analog input 2	1. Input range: 0–10V or 0–20mA 2. Input impedance: 30KΩ for voltage input; 500Ω for current input 3. Whether voltage or current is used for input is set through the jumper J1, J2.
	X3-6	AI2-		
	X4-5	AI1+	Analog input 1	
	X4-6	AI1-		
Analog output	X4-1	AO1	Analog output 1	1. Output range: 0–10V or 0–20mA 2. Whether voltage or current is used for output is set through the jumper J3, J4. 3. Error: ±1% at 25°C
	X4-2	GND	Analog reference ground	
	X4-3	AO2	Analog output 2	
	X4-4	GND	Analog reference ground	

Figure 2-3 External wiring diagram when using EC-IO801 expansion module

2.6 Wiring precautions

Figure 2-4 I/O module analog input/output signal connection diagram
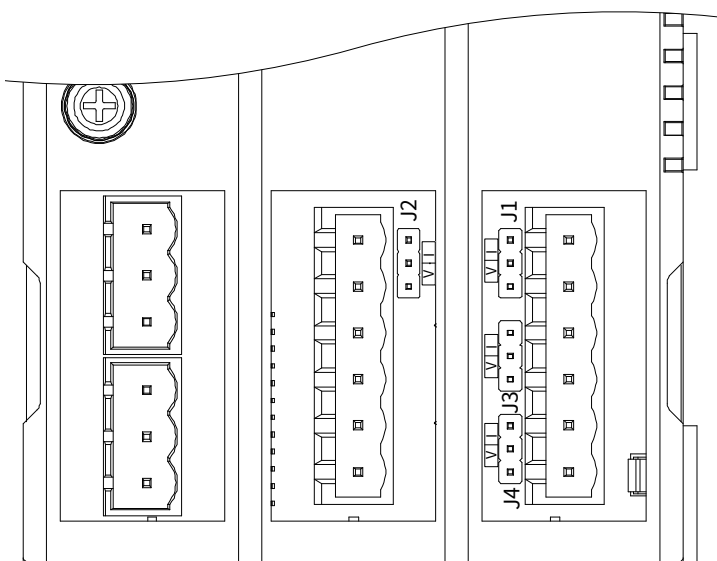
- Analog input should not exceed the range: 0–10V, 0–20mA.
- Analog input/output type selection: The jumper selection signal (voltage or current) must be consistent with the input method of the user interface.

- As shown in Figure 2-4, J1/J2 are used to select the analog input signal type and J3/J4 are used to select the analog output signal type. For voltage signal input/output, short circuit the two adjacent terminals at the upper part. For current signal input/output, short circuit the two adjacent terminals at the lower part.

3 Commissioning instruction

Figure 3-1 I/O expansion module configuration flowchart

Table 3-1 Function code parameters related to I/O expansion module

Function code	Name	Description	Setting range	Default
P51.00 (P52.00)	Module slot selection	The system allows installing modules of the same type in multiple slots and this function code is used to select the expansion slot at which the module is enabled (P51.00 and P52.00 cannot be set to the same value). 0: SLOT1 1: SLOT2 2: SLOT3 3: SLOT2-1 4: SLOT2-2 5: SLOT2-3 6: SLOT3-1 7: SLOT3-2 8: SLOT3-3 9: Invalid	0–9	9
P51.01 (P52.01)	Module online status	Bit0: Online status of SLOT1 module Bit1: Online status of SLOT2 module Bit2: Online status of SLOT3 module Bit3: Online status of SLOT2-1 module Bit4: Online status of SLOT2-2 module Bit5: Online status of SLOT2-3 module Bit6: Online status of SLOT3-1 module Bit7: Online status of SLOT3-2 module Bit8: Online status of SLOT3-3 module Online status 0: Offline 1: Online	0x00–0x1FF	0x00

✎**Note:** For other parameter settings of the I/O expansion module, see software manuals of the GD880 series products.