9.2.2 Extension I/O Card (MD38IO1)

■ Overview

MD38IO1 is developed by Inovance and is designed for extension of input and output terminals of the MD500 drive.

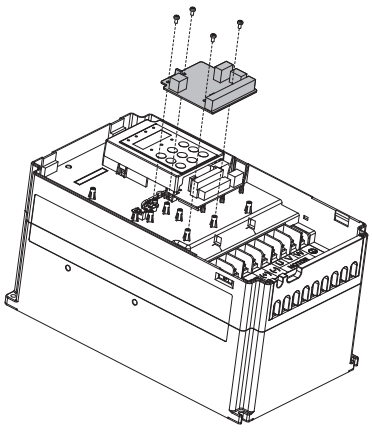
Item	Specification	Description
Input terminals	Five digital input (DI) terminals	**Supports 9 to 30 V dual-polarity input.**
	One analog input (AI) terminal that supports voltage input	Supports -10 to 10 V input.
Output terminals	One relay output terminal	250 VAC, 3 A; 30 VDC, 1 A
	One digital output (DO) terminal	0 to 24 V, 0 to 50 mA, Optically-coupled isolation
	One analog output (AO) terminal	0 to 10 V, 0 to 20 mA
Communication	RS485 communication interface	Supports the Modbus-RTU communication protocol (see Appendix I: MD500 Modbus Communication Protocol for details).
	CAN communication interface	Supports the CANlink communication protocol.

■ Physical Appearance

■ Mechanical Installation

The MD38IO1 an embedded extension card. Power off the drive and wait for a period of 10 minutes until the charging indicator goes off before starting the installation work.

As shown in the following figure, insert the MD38IO1 card into the drive and fix it with the prepared screws.



Note

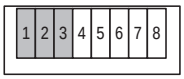
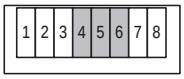
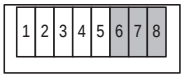
Never install or remove the MD38IO1 card at power-on. In dry season, touch the nearest grounding body to discharge before contacting the extension card so as to prevent damage to components of the card caused by human static electricity.

■ Description of Terminals and Jumpers

The following table describes the terminals of the MD38IO1.

Type	Terminal	Terminal Name	Function Description
Power supply	+24V-COM	External +24V power supply	Provide a +24 V power supply to an external unit. **Generally used to supply DI/DO terminals and external sensors.** Max. output current: 200 mA
	OP1	Digital input power terminal	**Connect to +24V by the jumper J8 by default.** When applying an external power supply, remove **the jumper J8 to disconnect the OP1 from +24V and** connect the OP1 to the external power supply.
Analog input	AI3-PGND	Analog input 3	Optically-coupled isolation input, supporting differential voltage input and temperature detection resistance input Input voltage range: -10 to 10 VDC Connect the PT100 or PT1000 temperature sensor Input mode determined by DIP switch S1, multiple functions not supported simultaneously
Digital inputs	DI6-OP1	Digital input 6	Optically-coupled isolation compatible with dual-polarity inputs **Input resistance: 2.4 kΩ** **Voltage range for inputs: 9 to 30 V**
	DI7-OP1	Digital input 7	
	DI8-OP1	Digital input 8	
	DI9-OP1	**Digital input 9**	
	DI10-OP1	Digital input 10	
Analog output	AO2-GND	Analog output 2	Output voltage range: 0 to 10 V Output current range: 0 to 20 mA **Output current with resistance range: 0 to 500 Ω**
Digital output	DO2-CME	Digital output 2	Optically-coupled isolation, dual-polarity open-collector output Output voltage range: 0 to 24 V Output current range: 0 to 50 mA Note that CME1 and COM are internally insulated, but are **shorted by the jumper J7 internally. Remove the jumper** J7 if you need to apply external power to DO2.
Relay outputs (RELAY2)	PA- PB	Normally-closed (NC) terminal	Contact driving capacity: 250 VAC, 3 A, Cos f = 0.4 30 VDC, 1 A
	PA- PC	Normally-closed (NC) terminal	
RS485 communication	**485+/485-/** COM	Communication interface	Modbus-RTU communication input and output terminal, isolated input
CAN communication	**CANH/CANL/** COM	Communication interface	CANlink communication input terminal, isolated input

The following table describes the jumpers of the MD38IO1.

Jumper	Description	Meaning	Setting
J3	AO2 output selection: voltage or current	Voltage	
		Current	
J4	CAN terminal resistor matching selection	Matching the terminal resistor	
		Not matching the terminal resistor	
S2	RS485 terminal resistor matching selection	Matching the terminal resistor	DIP switch set to ON
		Not matching the terminal resistor	DIP switch set to OFF
J7	CME1 connecting mode selection	CME1 connected to COM	
		CME1 connected to +24V	
J8	OP1 connecting mode selection	If DI connected in SINK mode, OP1 connected to +24V	
		If DI connected in SOURCE mode, OP1 connected to COM	
S1	AI3, PT100, PT1000 selection	AI3: 1, 2, 3 set to ON	
		PT1000: 4, 5, 6 set to ON	
		PT100: 6, 7, 8 set to ON	

Note

The setting of the jumpers takes the top view with the main terminals at the bottom of the card as the visual angle. The jumpers are silk-screened on the card.

■ Terminal Wiring

- For wiring of DI, DO, AI and AO terminals, see section 3.3 Control Circuit Wiring.
- For the Modbus communication, see section C.6.2 Modbus Communication Protocol.
- For the CAN communication, see section C.3 Extension CANlink Card (MD38CAN1).

When using the CANlink or Modbus protocol for communication, connect a terminal resistor to the end AC drive (via jumper J4 or S2) for long-distance communication or multi-node communication. COM is the ground terminal of the CANlink or Modbus communication.