

MV800 Ethernet/IP Communication Option

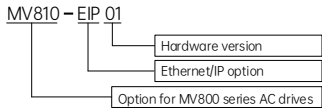
User Manual

BOM Code: R33011405

Version: V00

1 Product information

1.1 Designation rule



1.2 Functions and specifications

MV810-EIP01 option provides communication expansion for the MV800 drive series. Its functions and specifications are explained as below.

1.2.1 Key functions

- (1) PZD control of data exchange
- (2) PKW access to drive parameters
- (3) 100 Mbps full duplex
- (4) Linear network topology and star-type topology

1.2.2 Technical specifications

EIP connector	Interface	Two RJ45 ports
	Transmission mode	High-speed bus
	Transmission media	CAT5 shielded twisted pair cable
	Galvanic isolation	500 V DC
Communication	Network standard	EIP
	Transmission protocol	100BASE-TX (IEEE 802.3)
	Transmission distance	100 M
	Bus transmission	100 Mbps Auto-Defect

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Electrical specifications	speed	
	Module name	MV810-EIP01
	EDS file	MEGMEET_MV800_EthernetIP_V1.01.EDS
	Power voltage	3.3 V DC (provided by the drive)
	Insulation voltage	500 V DC
	Power consumption	1 W
Environment specifications	Weight	25 g
	Noise immunity	ESD (IEC 61800-5-1, IEC 61000-4-2) EFT (IEC 61800-5-1, IEC 61000-4-4) Surge test (IEC 61800-5-1, IEC 61000-4-5) Conducted susceptibility test (IEC 61800-5-1, IEC 61000-4-6)
	Operating/Storage environment	Operating: -10 to 50°C (temperature), 95% (humidity) Storage: -45 to 70°C (temperature), 95% (humidity)
	Vibration/Shock resistance	GB 4798.3-2007, GB 12668.501-2013 / IEC 61800-5-1 (IEC 60068-2-6)

1.3 Terminal description

1.3.1 Layout

The front and back views of MV810-EIP01 are illustrated in Fig. 1.

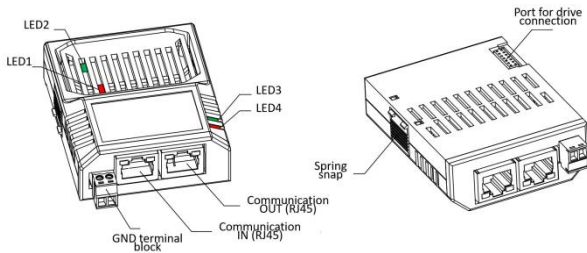


Fig. 1

The terminals of this option include the GND, two RJ45 ports, and the port for drive connection.

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1.3.2 Interface description

EIP communication adopts the standard RJ45 port. This option provides two RJ45 ports as illustrated in Fig. 2.

The pin definitions of the MV810-EIP01 connector are listed below:

Pin	Name	Description
1	TX+	Transmit Data+
2	TX-	Transmit Data-
3	RX+	Receive Data+
4	N/C	NOT CONNECTED
5	N/C	NOT CONNECTED
6	RX-	Receive Data-
7	N/C	NOT CONNECTED
8	N/C	NOT CONNECTED

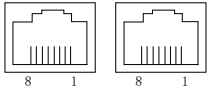


Fig. 2

1.3.3 Parameter settings for EIP network connection

To operate the MV800 drive using MV810-EIP01, it is necessary to set the operation command channel and the frequency source of the MV800 drive to the bus communication card, as shown in the following table.

Parameter	Value	Function description
P02.02	2	Set the operation command channel to communication control
P02.03	3	Set the communication command channel to Ethernet/IP
P02.05	8	Set the main frequency source to Ethernet/IP

Settings of IP address (IP, subnet mask, and gateway) are shown in the table below.

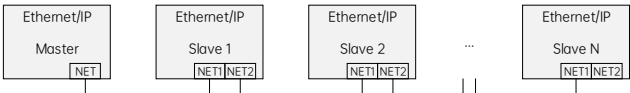
Drive parameter	Value	Function description
P40.02	0 to 255	IP address 1
P40.03	0 to 255	IP address 2
P40.04	0 to 255	IP address 3
P40.05	0 to 255	IP address 4
P40.06	0 to 255	Subnet mask 1

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Drive parameter	Value	Function description
P40.07	0 to 255	Subnet mask 2
P40.08	0 to 255	Subnet mask 3
P40.09	0 to 255	Subnet mask 4
P40.10	0 to 255	Gateway 1
P40.11	0 to 255	Gateway 2
P40.12	0 to 255	Gateway 3
P40.13	0 to 255	Gateway 4

1.3.4 Network topology

EIP network is generally composed of a master station and multiple slave stations. The network can be structured into a bus type, star type, tree type, etc., or a combination of several types, enabling flexible device connection and wiring. The bus-type network topology is shown in the figure below.



2 Installation

2.1 Accessory list

Name	Specification	Quantity
MV810-EIP01 option (with an expansion box)	75 × 60 × 24 mm	1
User manual	A4 × 1	1

2.2 Installation method

The installation position, interface, and steps of MV810-EIP01 option are described as below.

2.2.1 Installation position

MV800 provides two installation positions for accessory cards/options, as shown in Fig. 3 (the following example is based on Enclosure B, and also serves as the reference for other enclosure types). Position 1 is for the installation of various PG cards; position 2 is for the installation of PN bus options, ECAT bus options, EIP bus options, I/O expansion options, etc.

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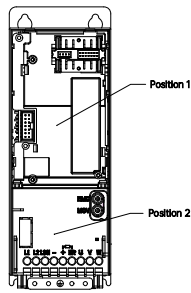


Fig. 3

2.2.2 Installation interface

The electrical interface of the EIP option for the MV810 drive and the corresponding installation interface of the MV810 drive are shown in Fig. 4.

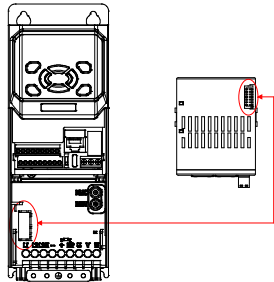


Fig. 4

2.2.3 Installation steps

Installation method: front side mounting for the EIP option.

- (1) When the drive is powered off, press the granulated area on the middle-upper part of the lower cover, slide it down with a certain amount of force to remove

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- the lower cover, as shown in Fig. 5-a.
- (2) Use a straight screwdriver to pry open the dust-proof cap, as shown in Fig. 5-b.
- (3) Install the EIP option: hold the expansion box (a bus card inside) upwards (indicators upwards), align the expansion box with the electrical bus interface in the installation position 2, and press down horizontally to buckle the spring snap of the expansion box into the groove at the lower part of the drive, as shown in Fig. 5-c and Fig. 5-d.
- (4) The bus option is successfully installed, as shown in Fig. 5-e.

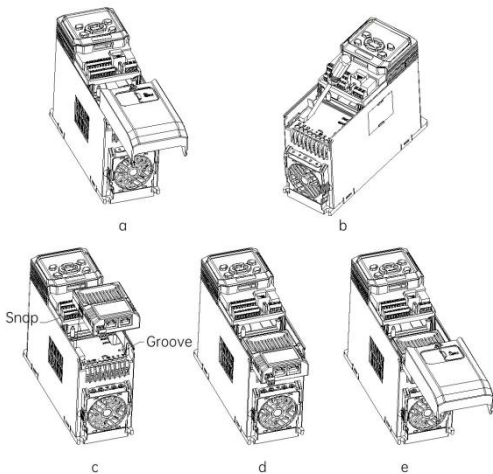


Fig. 5 EIP option installation steps

- (5) Grounding: MV810-EIP01 must be grounded during wiring. Users need to prepare and crimp the cable by themselves, as shown in Fig. 6.

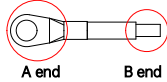


Fig. 6 Grounding terminal connection

Grounding method: connect the B end of the grounding cable to the option's grounding terminal block, and check the grounding cable diameter and torque by referring to Table 1; connect the A end of the grounding cable to the grounding rack

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PE (grounding mark, circled in Fig. 7) of the drive (the following example is based on Enclosure B, and also serves as the reference for other enclosure types), and check the grounding screw specifications and torque by referring to Table 2.



Fig. 7

Table 1 Recommended diameter and torque for the grounding cable

Accessory card	Screw	Diameter	Stripped part	Torque (±10%)
MV810-EIP01	M2.0	0.5 to 1.5 mm ² / (28 to 16 AWG)	5 to 6 mm	2 kg·cm / 1.7 lb.in / 0.2 N·m

Table 2 Recommended grounding screw and torque

Enclosure	Screw	Torque (±10%)
B	M3	7 kg·cm / 6.08 lb.in / 0.68 N·m
C	M4	15 kg·cm / 13.0 lb.in / 1.47 N·m
D		

3 EIP application

EIP communication protocol enables the PLC to read/write the PKW/PZD of the drive. The data format is described in the table below.

Parameter	Byte	Description
PKW0	Byte0	This is the EIP slave station (where the EIP communication option is installed). Byte0: Target station number
	Byte1	Byte1: Source station number (local station number) Slave response: Byte0: Target station number Byte1: Source station number (local station number)

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Parameter	Byte	Description
PKW1	Byte2	Function code read/write command (read/write one function code at a time) 0x03: Read one function code 0x06: Write one function code, and save to EEPROM 0x07: Write one function code; not save to EEPROM
	Byte3	Byte2: Command word high byte Byte3: Command word low byte Slave response: Byte2: 0 Byte3: 0x03, response to read operation 0x06 + 0x07, response to write operation 0x80 + command code, response error
PKW2	Byte4	Address of the function code to be read/written Byte4: Address high byte Byte5: Address low byte
	Byte5	Slave response: Byte4: Address high byte Byte5: Address low byte
PKW3	Byte6	For write operation, PKW3 refers to the written value; for read operation, PKW3 refers to the number of function codes to be read (fixed value: 1) Byte6: Parameter high byte Byte7: Parameter low byte
	Byte7	Slave response: Byte6: Function code value high byte (response to read operation), 0 (response to write operation), error code high byte (response error) Byte7: Function code value low byte (response to read operation), 0 (response to write operation), error code low byte (response error)
PZD1	Byte8	The master sends control command word: Bit0: FWD run Bit1: REV run Bit2: FWD jog Bit3: REV jog
	Byte9	0: Disable; 1: Enable 0: Disable; 1: Enable 0: Disable; 1: Enable 0: Disable; 1: Enable

Parameter	Byte	Description																		
		Bit4: Decelerate to stop 0: Disable; 1: Enable Bit5: Coast to stop 0: Disable; 1: Enable Bit6: Fault reset 0: Disable; 1: Enable Bit7: Emergency stop 0: Disable; 1: Enable Byte8: Command word high byte Byte9: Command word low byte Status word of slave response: Bit0: FWD running 0: Disable; 1: Enable Bit1: REV running 0: Disable; 1: Enable Bit2: Stop 0: Disable; 1: Enable Bit3: Fault 0: Disable; 1: Enable Bit4: Power failure 0: Disable; 1: Enable Bit5: Ready state 0: Disable; 1: Enable Bit6: Motor number 0: Motor 1; 1: Motor 2 Bit7: Motor type 0: Asynchronous; 1: Synchronous Bit8: Overload pre-alarm 0: Disable; 1: Enable Bit9 to Bit10: Control mode 0: Keypad; 1: Terminal; 2: Communication Byte8: Status word high byte Byte9: Status word low byte																		
PZD2	Byte10	The eleven words (PZD2 to PZD12) are used to read/write the drive internal parameters which include P43.02 to P43.23 (parameters P43.02 to P43.12 are used for write operation; P43.13 to P43.23 are used for read operation).																		
	Byte11																			
PZD3	Byte12																			
	Byte13																			
PZD4	Byte14	<table><tr><td>P43.02</td><td>PZD2 received</td><td>0: Disable</td></tr><tr><td></td><td></td><td>1: Frequency reference (0.00 to P02.10)</td></tr><tr><td>P43.03</td><td>PZD3 received</td><td>2: Drive torque upper limit reference (0.0 to 300.0% motor rated current)</td></tr><tr><td>P43.04</td><td>PZD4 received</td><td>3: Brake torque upper limit reference (0.0 to 300.0% motor rated current)</td></tr><tr><td>P43.05</td><td>PZD5 received</td><td></td></tr><tr><td>P43.06</td><td>PZD6</td><td></td></tr></table>	P43.02	PZD2 received	0: Disable			1: Frequency reference (0.00 to P02.10)	P43.03	PZD3 received	2: Drive torque upper limit reference (0.0 to 300.0% motor rated current)	P43.04	PZD4 received	3: Brake torque upper limit reference (0.0 to 300.0% motor rated current)	P43.05	PZD5 received		P43.06	PZD6	
P43.02	PZD2 received		0: Disable																	
		1: Frequency reference (0.00 to P02.10)																		
P43.03	PZD3 received	2: Drive torque upper limit reference (0.0 to 300.0% motor rated current)																		
P43.04	PZD4 received	3: Brake torque upper limit reference (0.0 to 300.0% motor rated current)																		
P43.05	PZD5 received																			
P43.06	PZD6																			
	Byte15																			
PZD5	Byte16																			
	Byte17																			
PZD6	Byte18																			
	Byte19																			
PZD7	Byte20																			
	Byte21																			
PZD8	Byte22																			
	Byte23																			

Parameter	Byte	Description																									
PZD9	Byte24	P43.07	received	4: Torque reference (-300.0 to 300.0% motor rated current)																							
	Byte25		PZD7																								
PZD10	Byte26	P43.08	received	5: FWD run frequency reference upper limit (0.00 to P02.10)																							
	Byte27		PZD8																								
PZD11	Byte28	P43.09	received	6: REV run frequency reference upper limit (0.00 to P02.10)																							
	Byte29		PZD9																								
PZD12	Byte30	P43.10	received	7: Voltage reference (V/F separation) (0 to 1000)																							
	Byte31		P43.11		received	8: Virtual input terminal command (0 to 0xFF are corresponding to DI8 to DI1)																					
							P43.12	PZD12 received	9: Output terminal bus command (the output terminal function is set to 39; 0 to 0xF are corresponding to RO, DO3, DO2, and DO1)																		
										P43.13	PZD2 feedback	10: AO1 output reference (0 to 100.0%)															
													P43.14	PZD3 feedback	11: HDO1 output reference (0 to 100.0%)												
																P43.15	PZD4 feedback	12: HDO2 output reference (0 to 100.0%)									
																			P43.16	PZD5 feedback	13: PID reference (0.0 to 100.0%)						
																						P43.17	PZD6 feedback	14: PID feedback (0.0 to 100.0%)			
																									P43.18	PZD7	15 to 30: Reserved
P43.14	PZD3 feedback	1: Frequency reference (0.01 Hz)																									
			P43.15	PZD4 feedback	2: Ramp frequency reference (0.01 Hz)																						
						P43.16	PZD5 feedback	3: Frequency output (0.01 Hz)																			
									P43.17	PZD6 feedback	4: Voltage output (1 V)																
												P43.18	PZD7	5: Current output (0.1 A)													
															P43.13	PZD2 feedback	6: Bus voltage (0.1 V)										
																		P43.14	PZD3 feedback	7: Motor power (0.1%)							
																					P43.15	PZD4 feedback	8: Torque output (0.1%)				
																								P43.16	PZD5 feedback	9: Excitation current (0.1 A)	
P43.17	PZD6 feedback																										
			P43.18	PZD7																							

Parameter	Byte	Description		
			feedback	10: Torque current (0.1 A)
		P43.19	PZD8 feedback	11: Status word (0 to 0xFFFF) 12: Fault code (0 to 46)
		P43.20	PZD9 feedback	13: DI1 to DI4 status (0 to 0xFFFF) 14: DI5 to DI8 status
		P43.21	PZD10 feedback	15: DO status (0 to 0xF) 16: AI1 input voltage (0 to 10.00 V)
		P43.22	PZD11 feedback	17: AI2 input voltage (-10.00 V to 10.00 V) 18: HD1 input frequency (0 to 50.000 kHz)
		P43.23	PZD12 feedback	19: AO output value (0 to 100.0%) 20: HDO1 output value (0 to 50.000 kHz)
				21: HDO2 output value (0 to 50.000 kHz) 22: PID reference (-100.0% to 100.0%)
				23: PID feedback (-100.0% to 100.0%) 24: PID deviation (-100.0% to 100.0%)
				25: PID output (-100.0% to 100.0%) 26 to 30: Reserved
Byte10: Parameter high byte Byte11: Parameter low byte (Similar with other bytes)				

4 Fault diagnosis

4.1 LED indicator description and fault removal

MV810-EIP01 has LED indicators on five locations (see Fig. 1), including the LED indicators on the PCBA of the expansion box for indicating the function status and the power status, and the LED indicators of the communication ports for indicating whether the communication connection status of MV810-EIP01 is normal.

Description of LED on the PCBA of the expansion box:

Description of LED on the PCBA of the expansion box:

LED4 (Red) status	Description	Action
Off	Normal	No need for actions
Steady on	Communication timeout between the master and the communication card	Check whether the EIP option is properly connected to the drive.

Description of LED on the communication port:

LED status	Description	Action
Yellow light flashing	Normal connection with data transmission	No need for actions
Green light steady on	Normal connection	No need for actions
Yellow light steady on	Normal connection without data transmission	Check whether there is communication between the master and the slave.
Green light off	Connection failed	Check whether the cable is properly connected.

Description of LED on the communication port:

LED status	Description	Action
Yellow light flashing	Normal connection with data transmission	No need for actions
Green light steady on	Normal connection	No need for actions
Yellow light steady on	Normal connection without data transmission	Check whether there is communication between the master and the slave.
Green light off	Connection failed	Check whether the cable is properly connected.

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MEGMEET Warranty Bill of Communication Option		MEGMEET Shenzhen Megmeet Electrical Co., Ltd. Certificate	Checker: _____ Manufacturing date: _____
Customer company: Detailed address: Contact: _____ Tel: _____ Option model: Option number: Purchase date: Service unit: Contact: _____ Tel: _____ Maintenance date:			The product has been tested in line with design standards and approved for leaving the factory.