MEGMEET

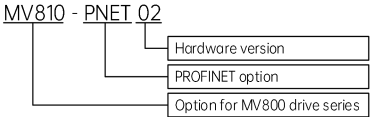
MV800 PROFINET Communication Option

User Manual

BOM Code: R33011122
Version: V00

1 Product information

1.1 Designation rule



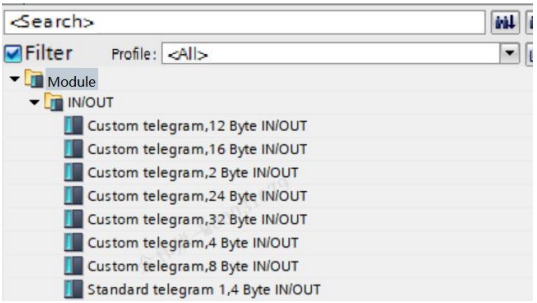
1.2 Functions and specifications

MV810-PNET02 option provides communication expansion for the MV800 drive series. Its functions and specifications are explained below:

1.2.1 Function features

(1) Transmission of process data through PZD
(2) Access to drive parameters through PKW
(3) 100 Mbps full duplex
(4) Compatible with bus topology and star topology
(5) Configure PZD data length

Click a slave device in TIA PORTAL, and the interface as shown in the following figure is displayed. You can configure the PZD data length as needed.



1.2.2 Technical specifications

PROFINET connector	Interface	Two RJ45 ports
	Transmission mode	High-speed bus
	Transmission media	CAT6 cables
	Galvanic isolation	500 V DC
Communication	Transmission type	Cyclic data transmission
	Module name	MV810-PNET02
	GSDML file	GSDML-V2.32-MEGMEET-MV800-20230830.xml
	Bus transmission speed	100 Mbps
Electrical specifications	Power voltage	3.3 V DC (provided by the drive)
	Insulation voltage	500 V DC
	Power consumption	1 W
	Weight	25 g
Environment specifications	Noise immunity	ESD (IEC 61800-5-1, IEC 6100-4-2) EFT (IEC 61800-5-1, IEC 6100-4-4) Surge Test (IEC 61800-5-1, IEC 6100-4-5) Conducted Susceptibility Test (IEC 61800-5-1, IEC 6100-4-6)
	Operating/Storage environment	Operating: -10 to 50℃ (temperature), 90% (humidity) Storage: -25 to 70℃

		(temperature), 95% (humidity)
	Vibration/Shock resistance	IEC 61131-2, IEC 68-2-6 (TEST FC) / IEC 61131-2 & IEC 68-2-27 (TEST Ea)

1.3 Terminal description

1.3.1 Layout

The front and back views of MV810-PNET02 are shown below.

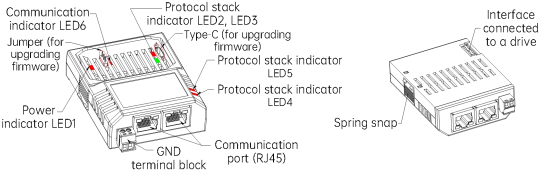


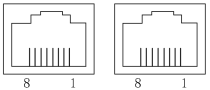
Fig. 1

The option has GND, two RJ45 ports and the interface connected to a drive.

1.3.2 Pin definitions

The pin definitions of the PROFINET connector for MV810-PNET02 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



1.3.3 LED indicator description and fault diagnosis

MV810-PNET02 has eight LED indicators: protocol stack indicators LED4 and LED5 on the light guide column of the expansion box; power indicator LED1, communication indicator LED6, and protocol stack indicators LED2 and LED3 on PCB; and the two communication port LED indicators. Refer to the following tables for LED description.

Description of LED1 and LED6:

LED	Status	Description	Action
LED1 (Red)	On	Normal power supply for the PN option	No need for actions
	Off	No power supply for the PN option	Check whether the PN option is properly connected to the drive
LED6 (Red)	On	No communication between the PN card and the master	Check whether the PN card is properly connected to the master
	Off	Communication established between the PN card and the master	No need for actions

Description of protocol stack LED indicators:

Protocol stack LED	Color	Status	Description
LED2	Red	Steady on	PROFINET diagnostic alarm with maintenance state required or demanded
		Off	No PROFINET diagnostic alarm with maintenance state required or demanded pending
LED3	Green	Off	TPS-1 has not started correctly
		Flashing	TPS-1 is waiting for the synchronization of the master CPU (hardware completely started)
		Steady on	TPS-1 has started correctly
LED4	Red	Steady on	PROFINET diagnostic exists
		Off	No PROFINET diagnostic
LED5	Red	Steady on	No link status available
		Flashing	Link status ok, no communication with the PROFINET I/O controller
		Off	Normal communication between the PROFINET I/O controller and the PROFINET I/O device

Description of communication port LED indicators:

Status	Description	Action
Green light on	Normal connection	No need for actions
Green light off	No connection	Check whether the cables are properly connected
Yellow light flashing	Normal data communication	No need for actions

Yellow light steady on / off	No data communication	Check whether the communication is established between the master and the slave

2 Installation

2.1 Accessory list

Name	Specifications	Quantity
MV810-PNET02 option	75 × 60 × 24 mm	1
User manual	A4 × 1	1

2.2 Installation method

The installation position, interface and steps of MV810-PNET02 are described below:

2.2.1 Installation position

The installation position of the PN option for the MV810 drive is shown in Fig. 2 (taking enclosure B as an example, similar for other enclosures).

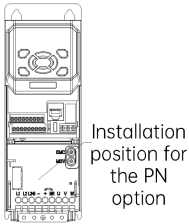


Fig. 2

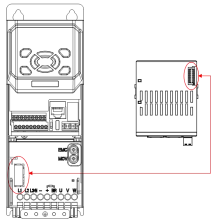


Fig. 3

2.2.2 Installation interface

The electrical interface of the PN option for the MV810 drive and the corresponding installation interface of the MV810 drive are shown in Fig. 3.

2.2.3 Installation steps

Installation method: PN option front side mounting

(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 the lower cover, as shown in Fig. 4-a.

(2) Use a straight screwdriver to pry open the dust-proof cap or remove the rubber plug, as shown in Fig. 4-b.

(3) Install the PN option: hold the expansion box (a bus card inside) upwards (indicators up), align the expansion box with the electrical bus interface in the installation position, 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. 4-c and Fig. 4-d.

(4) The bus option is successfully installed, as shown in Fig. 4-e.

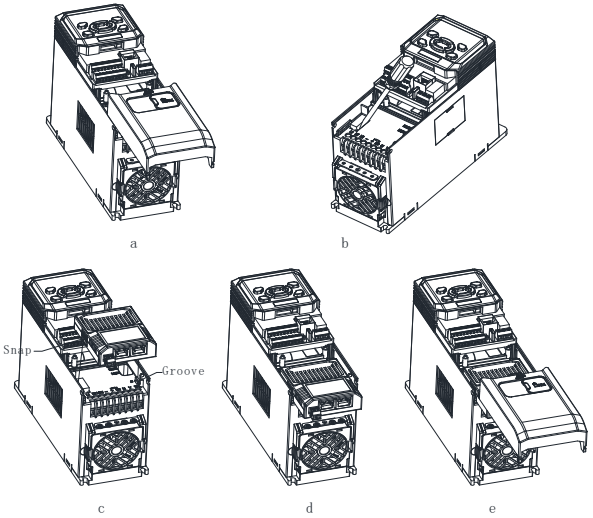


Fig. 4 PN option installation steps

(5) Grounding: MV810-PNET02 must be grounded during wiring as shown in Fig. 5. You need to prepare and crimp the cable by yourself.

Fig. 5 Grounding terminal connection

Grounding method: connect the B end of the grounding cable to the option's grounding terminal block, and you can check the grounding cable diameter and torque by referring to Table 1-1; connect the A end of the grounding cable to the grounding rack PE (grounding mark, circled in Fig. 6) of the drive (taking enclosure B as an example, similar for others), and you can check the grounding screw specifications and torque by referring to Table 1-2.

Fig. 6

Table 1-1 Recommended diameter and torque for the grounding cable

Option	Screw	Diameter	Stripped part	Torque (±10%)
MV810-PNET02	M2.0	0.5 to 1.5 mm² / 28 to 16 AWG	5 to 6 mm	2 kg-cm / 1.7 lb.in / 0.2 N·m

Table 1-2 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 PN user-defined protocol

The PN user-defined protocol of the MV810-PNET02 option is described in the table below:

Param-eter	Byte number	Description
	Byte0	This drive is the PN slave station (with PN option installed); it is also the 485 master station that transmits the PN master station message to other 485 slave stations. Byte0: Target station number (485 slave station) Byte1: Source station number (local station number, with PN option, setting through P15.02)
	Byte1	

		Slave response: Byte0: Target station number (485 master station); Byte1: Source station number (local station number)
PKW1	Byte2	Command to read/write the function code (only one function code for each command) 0x03: Read one code 0x06: Write one code, save to EEPROM 0x07: Write one code, not save to EEPROM Byte2: High byte of the command word Byte3: Low byte of the command word Slave response: Byte2: 0 Byte3: 0x03，response to reading; 0x06 and 0x07，response to writing; 0x80 + command code, response to error
	Byte3	
PKW2	Byte4	Address of the function code to be read/written Byte4: High byte of the address; Byte5: Low byte of the address Slave response: Byte4: High byte of the address; Byte5: Low byte of the address
	Byte5	
PKW3	Byte6	For writing, PKW3 defines the specific value that is written; for reading, PKW3 defines the number of codes which are read (fixed value: 1) Byte6: High byte of the parameter value Byte7: Low byte of the parameter value Slave response: Byte6: High byte of the function code value (response to reading), 0 (response to writing), high byte of the error code (response to error) Byte7: Low byte of the function code value (response to reading), 0 (response to writing), low byte of the error code (response to error)
	Byte7	

<table>
<tr><td rowspan="2">PZD1</td><td>Byte8</td><td rowspan="2">Master sends control command word:
Bit0: Forward running 0: Disabled 1: Enabled
Bit1: Reverse running 0: Disabled 1: Enabled
Bit2: Forward JOG 0: Disabled 1: Enabled
Bit3: Reverse JOG 0: Disabled 1: Enabled
Bit4: Decelerate to stop 0: Disabled 1: Enabled
Bit5: Coast to stop 0: Disabled 1: Enabled
Bit6: Fault reset 0: Disabled 1: Enabled
Bit7: Emergency stop 0: Disabled 1: Enabled
Byte8: High byte of the command word
Byte9: Low byte of the command word
Slave response status word:
Bit0: Forward running 0: Disabled 1: Enabled
Bit1: Reverse running 0: Disabled 1: Enabled
Bit2: Stop 0: Disabled 1: Enabled
Bit3: Fault 0: Disabled 1: Enabled
Bit4: Power failure 0: Disabled 1: Enabled
Bit5: Ready status 0: Disabled 1: Enabled
Bit6: Motor number 0: Motor 1 1: Motor 2
Bit7: Motor type 0: Asynchronous 1: Synchronous
Bit8: Overload warning 0: Disabled 1: Enabled
Bit9 - Bit10: Control mode 0: Keypad 1: Terminal 2: Communication
Byte8: High byte of the status word
Byte9: Low byte of the status word</td></tr>
<tr><td>Byte9</td></tr>
<tr><td rowspan="2">PZD2</td><td>Byte10</td><td rowspan="6">The eleven words from PZD2 to PZD12 are used to read/write the internal parameters of the drive. You can set the parameters through P43.02 to P43.23 (use P43.02 to P43.12 to set the parameters for writing, and P43.13 to P43.23 to set the parameters for reading)
<table><tr><td>P43.02</td><td>PZD2 receive</td><td>0: Disabled
1: Frequency reference (0.00 to P02.10)</td></tr></table></td></tr>
<tr><td>Byte11</td></tr>
<tr><td rowspan="2">PZD3</td><td>Byte12</td></tr>
<tr><td>Byte13</td></tr>
<tr><td rowspan="2">PZD4</td><td>Byte14</td></tr>
<tr><td>Byte15</td></tr>
<tr><td rowspan="2">PZD5</td><td>Byte16</td></tr>
<tr><td>Byte17</td></tr>
<tr><td rowspan="2">PZD6</td><td>Byte18</td></tr>
<tr><td>Byte19</td></tr>
</table>

PZD7	Byte20	P43.03	PZD3 receive	2: Drive torque upper limit reference (0.0 to 300.0%, rated motor current) 3: Braking torque upper limit reference (0.0 to 300.0%, rated motor current) 4: Torque reference (-300.0 to 300.0%, rated motor current) 5: FWD frequency upper limit reference (0.00 to P02.10) 6: REV frequency upper limit reference (0.00 to P02.10) 7: Voltage reference (VF separation) (0 to 1000) 8: Virtual input terminal command (0 to 0xFF corresponding to DI8 to DI1) 9: Output terminal bus command (set the output terminal function to No. 39, 0 to 0xF corresponding to RO, DO3, DO2, DO1) 10: AO1 output reference (0 to 100.0%) 11: HDO1 output reference (0 to 100.0%) 12: HDO2 output reference (0 to 100.0%) 13: PID reference (0.0 to 100.0%) 14: PID feedback (0.0 to 100.0%) 15 to 30: Reserved
	Byte21			
PZD8	Byte22	P43.04	PZD4 receive	
	Byte23			
PZD9	Byte24	P43.05	PZD5 receive	
	Byte25			
PZD10	Byte26	P43.06	PZD6 receive	
	Byte27			
PZD11	Byte28	P43.07	PZD7 receive	
	Byte29			
PZD12	Byte30	P43.08	PZD8 receive	
		P43.09	PZD9 receive	
	Byte31	P43.10	PZD10 receive	
		P43.11	PZD11 receive	
		P43.12	PZD12 receive	
		P43.13	PZD2 feedback	0: Disabled 1: Frequency reference (0.01 Hz) 2: Ramp reference (0.01 Hz) 3: Output frequency (0.01 Hz)
		P43.14	PZD3 feedback	

		P43.15	PZD4 feedback	4: Output voltage (1 V) 5: Output current (0.1 A) 6: Bus voltage (0.1 V) 7: Motor power (0.1%) 8: Output torque (0.1%) 9: Exciting current (0.1 A) 10: Torque current (0.1 A) 11: Status word (0 to 0xFFFF) 12: Fault code (0 to 46) 13: DI1 to DI4 state (0 to 0xFFFF) 14: DI5 to DI8 state 15: DO state (0 to 0xF) 16: AI1 input voltage (0 to 10.00 V) 17: AI2 input voltage (-10.00 V to 10.00 V) 18: HDI input frequency (0 to 50.000 kHz) 19: AO output (0 to 100.0%) 20: HDO1 output (0 to 50.000 kHz) 21: HDO2 output (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
		P43.16	PZD5 feedback	
		P43.17	PZD6 feedback	
		P43.18	PZD7 feedback	
		P43.19	PZD8 feedback	
		P43.20	PZD9 feedback	
		P43.21	PZD10 feedback	
		P43.22	PZD11 feedback	
		P43.23	PZD12 feedback	
		Byte10: High byte of the parameters Byte11: Low byte of the parameters (similar for other bytes)		

4 Example of PN parameter setting

The PN user-defined message has two modes.

Conventional PN communication:

This is the conventional communication mode between the controller and the PN device. Each drive shall be equipped with a PN option. The address of the first two bytes in the user-defined protocol is not required. You can set the function code as below:

P02.02 = 2 (communication control)
P02.03 = 3 (PN communication mode)
P02.05 = 8 (frequency reference channel set to PN)
P15.00 ones place = 0 (non PN-to-485 function)
P40.01 = 3.0 s (detection for expansion card identification timeout, can be modified to other values)
P43.01 = 1 (0 is the standard message 1, and 1 is the user-defined message)
P43.02 to P43.12 are used to set the parameters which the controller can change.
P43.13 to P43.23 are used to set the parameters which the controller can read.

PN to 485 (one PN option controls up to five drives):

In this mode, only one drive is installed with the PN option, which transmits the controller message to other drives through 485. The frame header and the frame tail is not included during transmission, which makes the length of the transmitted message to 33 bytes. Only user-defined messages are allowed in this mode. The controller uses the first two bytes (485 station number) to visit the corresponding drive. The function code setting can be further divided into two types:

(1) 485 master
P02.02 = 2 (communication control)
P02.03 = 3 (PN communication mode)
P02.05 = 8 (frequency reference channel set to PN)
P15.00 ones place = 1 (PN to 485 function enabled)
P15.02 is used to set the local 485 station number
P40.00 = 1 (PN to 485 master function enabled)
P40.01 = 3.0 s (detection for expansion card identification timeout, can be modified to other values)
P43.01 = 1 (only user-defined message is supported)
P43.02 to P43.12 are used to set the parameters which the controller can change.
P43.13 to P43.23 are used to set the parameters which the controller can read.

(2) 485 slave
P02.02 = 2 (communication control)
P02.03 = 3 (PN communication mode)
P02.05 = 8 (frequency reference channel set to PN)
P15.00 ones place = 1 (PN to 485 function enabled)
P15.02 is used to set the local 485 station number
P40.00 = 0 (PN to 485 slave function enabled)
P40.01 = 3.0 s (detection for expansion card identification timeout, can be modified to other values)
P43.01 = 1 (only user-defined message is supported)
P43.02 ~ P43.12 are used to set the parameters which the controller can change.
P43.13 ~ P43.23 are used to set the parameters which the controller can read.
Note: the present PN-485 baud rate is set at 200 k; the interval between the master sending messages and receiving the slave response is less than 5 ms; the master transmits one PN message every 50 ms (this cycle shall be larger than the overall time needed for the sending and response of one message); while the sending frequency of the controller is higher, it is possible that the corresponding data and response may be received only after several rounds of reading/writing of the controller, which makes it applicable only in scenarios with lower real-time requirements.

Shenzhen Megmeet Electrical Co., Ltd.
Address: 5th Floor, Block B, Unisplendour Information Harbor, Langshan Road, Shenzhen, 518057, China
Tel: +86-755-86600500
Fax: +86-755-86600562
Website: www.megmeet.com
Service email: driveservice@megmeet.com

MEGMEET

Warranty bill of communication option

Customer company:	
Detailed address:	
Contact:	Tel:
Option model:	
Option number:	
Purchase date:	
Service unit:	
Contact:	Tel:
Maintenance date:	

MEGMEET

Shenzhen Megmeet Electrical Co., Ltd.

Certificate

Checker:_____
Manufacturing date:
_____

The product has been tested in line with design standards and approved for leaving the factory.