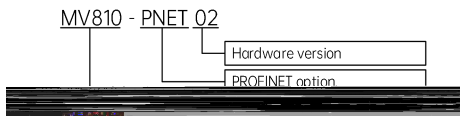


1 Product information

1.1 Designation rule

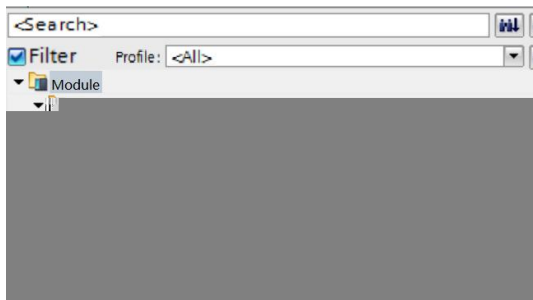


1.2 Functions and specifications

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 s o



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-MV800-2 0230830.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.



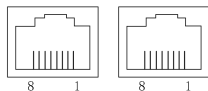
Fig. 1

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.

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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

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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 (indicator 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 plate is successfully installed, as shown in Fig. 4-e.

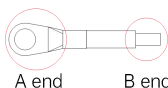


Fig. 5 Grounding terminal connection

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.

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

| Option | Screw | Diameter | Stripped part | Torque ($\pm 10\%$) |
|--------------|-------|--|---------------|----------------------------------|
| MV810-PNET02 | 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 1-2 Recommended grounding screw and torque

| Enclosure | Screw | Torque ($\pm 10\%$) |
|-----------|-------|----------------------------------|
| 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 |

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| | | |
|------|-------|---|
| | | 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 |
| | Byte3 | 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 |
| PKW2 | Byte4 | Address of the function code to be read/written Byte4: High byte of the address; Byte5: Low byte of the address |
| | Byte5 | Slave response: Byte4: High byte of the address; Byte5: Low byte of the address |
| 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 |
| | Byte7 | 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) |

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

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

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(2) 485 slave

P02.02 = 2 (communication control)

P02.03 = 0 (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 sound

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| | |
|---------------------------------------|------|
| 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 | Checker: _____ Manufacturing date: _____ |
| Shenzhen Megmeet Electrical Co., Ltd. | The product has been tested in line with design standards and approved for leaving the factory. |
| Certificate | |