MV820-DP03 Smart Operating Panel
User Manual

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Shenzhen Megmeet Electrical Co., Ltd. provides professional technical support for our customers. You can contact the local branch office or customer service center, or directly contact the company headquarters.

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Foreword

Thank you for purchasing MV820-DP03 smart operating panel produced by Shenzhen Megmeet Electrical Co., Ltd. MV820-DP03 is a newly designed debugging tool for AC drives, compatible with the full series of MV800 platform drives. Featuring enhanced functionality and information display, such as dual-line LED display, parameter setting, status monitoring, and operation switching, this operating panel facilitates the operation and maintenance of AC drives.
This manual mainly consists of installation, wiring, functions, daily maintenance and related matters. Please read this manual carefully before you install and use the panel so as to release its full potential, keep the manual properly and give it to the actual user when necessary.

Unboxing inspection

When you unbox the product, remember to check the following:

- whether there is any damage;
- whether the rated values on the nameplate are the same as what you ordered.

Our company has implemented strict inspection on the product's manufacturing and packaging. If there is still any error, please contact us or the local distributor.
We are engaged in the continuous improvement of products. The relevant manuals provided by us are subject to change without prior notice.

Safety precautions

DANGER	Indicates that failure to comply with the notice can result in death or severe personal injuries.
WARNING	Indicates that failure to comply with the notice may result in moderate or minor personal injuries or equipment damage.

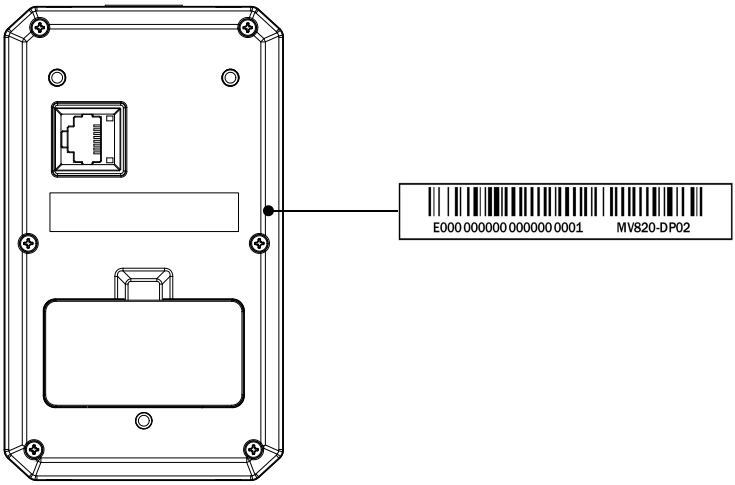
DANGER
● Do not install the product near combustible objects. Failure to comply will result in a fire. ● Do not install the product in places with explosive gases. ● The wiring work must be done by professional personnel. Otherwise, there will be an electric shock. ● To avoid electric shock, do not operate the drive with wet hands.

WARNING

- Ensure that the product is securely installed. Failure to comply will result in personal injuries or equipment damage.
- Do not install the drive near water pipes or other places with water splash. Otherwise, there will be equipment damage.
- Do not install the product in the place exposed to direct sunlight. Otherwise, there will be equipment damage.
- Do not connect operating panel terminals to 220 VAC. Otherwise, there will be equipment damage.

Chapter 1 Product Introduction

1.1 Product nameplate



1.2 Product dimensions

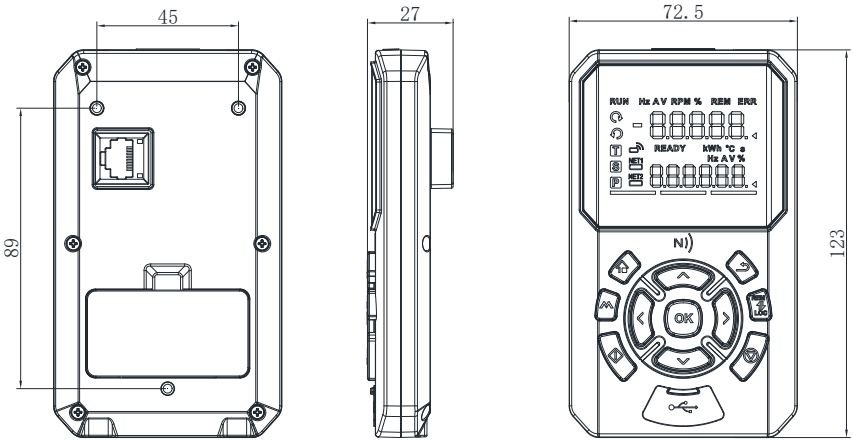
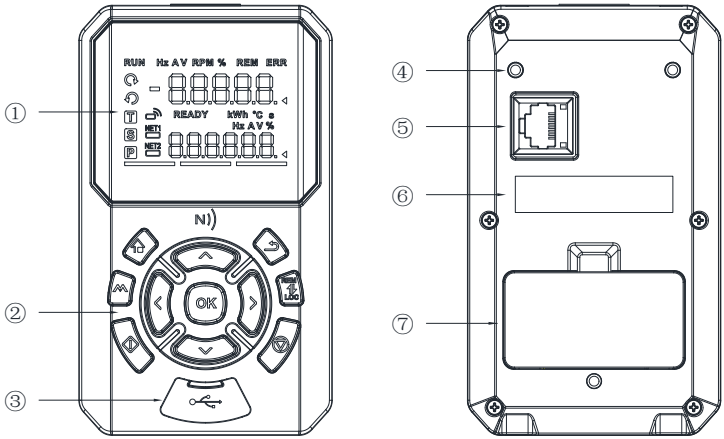


Fig. 1-1 MV820-DP03 dimensions (unit: mm)

1.3 Components



No.	Component	Description
①	Display area	Function codes, status display, and so on
②	Key	Parameter settings, panel start/stop, and so on
③	USB interface	For firmware upgrading by the manufacturer
④	Installation hole	Used to install the operating panel through three screws
⑤	RJ45 interface	Standard network interface, capable for expansions
⑥	Product nameplate	Product model, SN
⑦	Rear cover	Used to install or replace batteries, SD card, and so on

1.4 Technical specifications

Item	Specifications		
	Operation	Storage	Transportation
Ambient temperature	-10℃ to +50℃, air temperature change < 0.5℃/min (derating required if the ambient temperature is above 40℃)	-30℃ to +70℃, air temperature change < 1℃/min. Maximum 60℃ for long-time storage, 60℃ to 70℃ only for short-time storage.	-30℃ to +60℃
Altitude	⩽ 1000 m: derating not required; 1000 m < altitude < 3000 m: derated by 1% for every increase of 100 m; maximum altitude: 3000 m	-	-
Relative humidity	5% to 95%	5% to 95%	5% to 85%

Item	Specifications		
	Operation	Storage	Transportation
Pollution degree	3C2 (GB4798.3-2007/ISO 9223-2012); 3S6(GB4798.3-2007)		
Vibration	5 to 200 Hz, 0.01 (m/s^2) 2/Hz, 10 times	-	Vibration during transportation (with package): 2 to 3 Hz, 10 $(m/s^2)^2$/Hz; 10 to 20 Hz, 1 $(m/s^2)^2$/Hz; 50 to 500 Hz, 0.5$(m/s^2)^2$/Hz。
Shock	150 m/s^2, 11 ms, 20 times in each direction	-	Mechanical shock (with package): 100 m/s^2 half-sine pulse lasting 11 ms, 300 m/s^2 half-sine pulse lasting 6 ms
Free-fall drop	-	-	Drop test with package: M < 20 kg, drop height 0.25 m; 20 kg ≤ M < 100 kg, drop height 0.25 m; M ≥ 100 kg, drop height 0.1 m.
Protection degree	IP40 for the individual panel		
Electromagnetic compatibility	IEC 61800-3		

Chapter 2 Installation and Wiring

2.1 Connection between MV820-DP03 and AC drive

WARNING

① MV820-DP03 is compatible with MV800 series drives, such as MV810 and MV820. This section uses MV810 as an example for illustration. For connections with other drives, refer to the corresponding product manuals.

② When the MV810 drive is connected to the operating panel, the local panel displays "- - - - -".

Connect the AC drive's RJ45 port to MV820-DP03's RJ45 port using a standard Ethernet cable to enable extended display and control of the AC drive, as shown below.

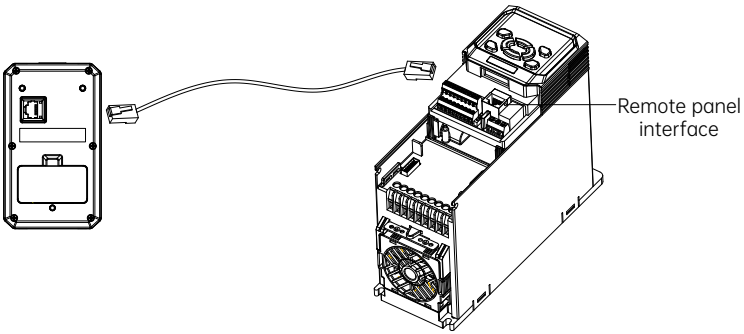


Fig. 2-1 Connection between MV820-DP03 and MV810

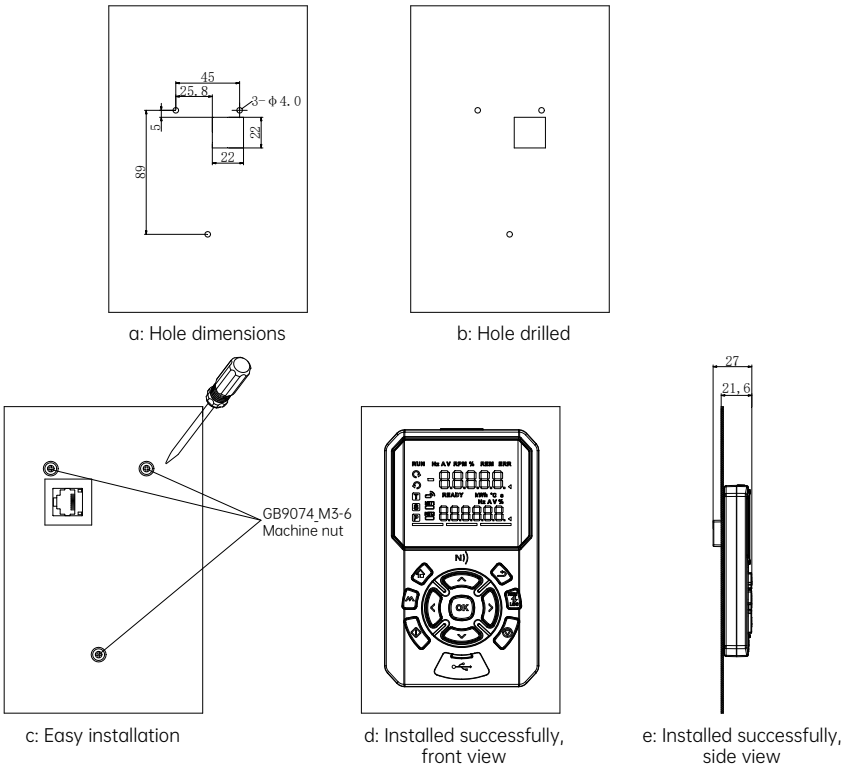
2.2 Installation of MV820-DP03

MV820-DP03 serves both as the standard operating panel for high-power drives (for example, MV820 90 kW and above) and as an optional extended operating panel for other drives (for example, MV810 full series, MV820 75 kW and below). When used as an option, there are two primary installation methods: one is easy installation; and the other is installation through a mounting base, as described below.

2.2.1 Easy installation

The operating panel can be fixed to the cabinet door/plate through the three internal thread holes provided on the back of the panel, as shown in the following figure. Hole dimensions (unit: mm).

This method requires drilling three small round holes and one square hole to accommodate the screw posts and the panel's RJ45 port respectively.



a: Hole dimensions b: Hole drilled

c: Easy installation d: Installed successfully, front view e: Installed successfully, side view

Fig. 2-2 Easy installation of remote large LED keypad/operating panel

2.2.2 Mounting base installation

For mounting base installation, users need to buy a large mounting base/tray additionally, MV820-JPT03, with dimensions shown below.

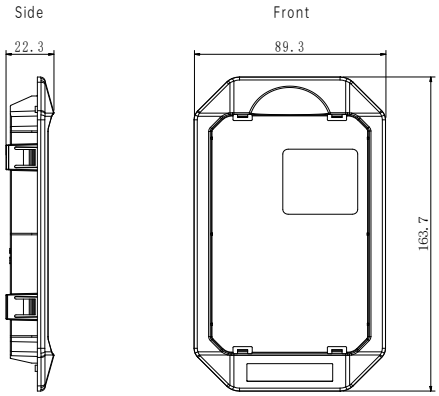


Fig. 2-3 MV820-JPT03 (unit: mm)

After drilling the holes, embed the panel base into the cabinet door. The base is secured with built-in buckles. Then, place the operating panel into the base/tray (Note: Tilt the operating panel slightly during installation to align with the bottom hooks before pressing it into place). The hole dimensions for the operating base/tray are shown below.

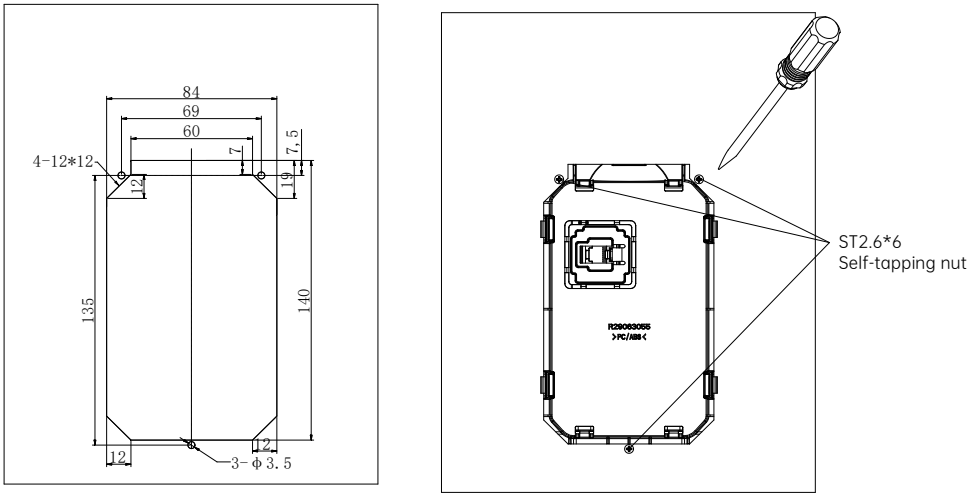


Fig. 2-4 Mounting hole dimensions for large operating base (unit: mm)

Chapter 3 Panel Functions

3.1 Panel overview

WARNING

This section uses MV810 as an example for illustration. For connections with other drives, refer to the corresponding product manuals.

3.1.1 Function areas

MV820-DP03 can be divided into the following areas:

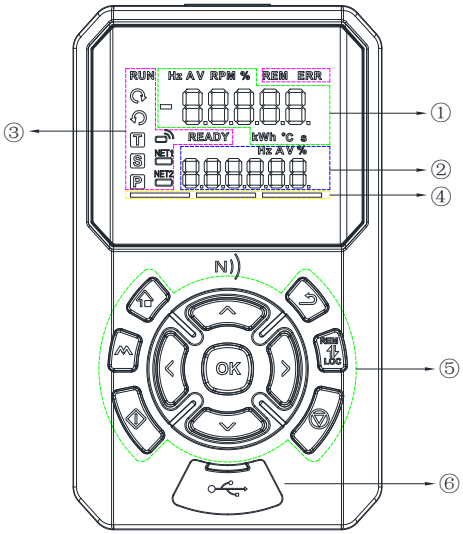


Fig. 3-1 MV820-DP03 function areas

Table 3-1 MV820-DP03 function areas

No.	Name	Description
①	Main display area	Function codes, fault codes, parameter unit, positive or negative
②	Auxiliary display area	Monitored parameter display and unit
③	State indication area	Power state, run/stop, FWD/REV, local/remote control, fault/alarm state, speed/torque/position mode, communication status and wireless NFC status
④	Menu mode area	Displays the current menu mode, such as quick menu, full menu, and changed memory menu modes
⑤	Key area	Function/data code input of drive
⑥	USB-Type C	Connected to the PC host controller for firmware upgrading

3.1.2 Indicators

Table 3-2 MV820-DP03 indicator description

Indicator		Name	Description	Color
Unit indicator	Hz	Frequency indicator	Flashing: The current parameter is the running frequency On: The current parameter is the frequency reference	White
	A	Current indicator	On: The current parameter is the current	White
	V	Voltage indicator	On: The current parameter is the voltage	White
	r/min	Speed indicator	On: The current parameter is the speed	White
	%	Percent indicator	On: The current parameter is the percent	White
	℃	Temperature indicator	On: The current parameter is the degree centigrade	White
	s	Time indicator	On: The current parameter is seconds	White
	kWh	Power indicator	On: The current parameter is electric quantity	White
Status indicator		Forward running indicator	Off: The drive is in standby or running reversely On: The drive is running forward Flashing: The drive is switching from FWD to REV	Green
		Reverse running indicator	Off: The drive is in standby or running forward On: The drive is running reversely Flashing: The drive is switching from REV to FWD	Green
	ERR	Alarm indicator	On: The drive enters the alarm status	Red
	RUN	Running indicator	On: Running Flashing: Stopping Off: Stopped	Green
	REM	Operation command channel indicator	Off: Local Flashing: Communication On: Terminal	White
	T	Torque control mode indicator	On: The drive is now in the torque control mode	White
	S	Speed control mode indicator	On: The drive is now in the speed control mode	White
	P	Position control mode indicator	On: The drive is now in the position control mode	White
		Wireless communication indicator	Flashing: Waiting for connection; On: Connection is successful; Off: Function is disabled	White
	NET1	Communication indicator 1	Reserved	
	NET2	Communication indicator 2	Reserved	

Indicator		Name	Description	Color
	READY	Standby state indicator	On: In the stop state	White
	▬▬▬	Menu mode indicator	On: Current menu mode (quick menu, full menu and changed memory menu modes from left to right)	White
	▬	Negative sign indicator	On: The current data is negative; Off: The current data is positive	White
	◂	Main and auxiliary display area indicator	On: Indicates the current display area (main/auxiliary) that is being operated	White

3.1.3 Key functions

Table 3-3 MV820-DP03 key functions

Key	Name	Function
	Return key	To exit the programming state
	Right shift key	To select the data bit for change or switch the displayed parameter; switch the monitored variables or move the cursor in the right direction
	Left shift key	To select the data bit for change or switch the displayed parameter; switch the monitored variables or move the cursor in the left direction
	RUN key	Press this key in the operating panel mode, then the drive starts to run
	Stop/Reset key	Stop or fault reset
	Up Key	Increase of data or function code
	Down key	Decrease of data or function code
	Confirm key	To enter the next level menu, and confirm parameters
	Menu switchover key	Short press it to switch the menu modes, including quick menu, full menu and changed memory menu modes, same as P00.00. Long press it to switch between the main display area and the auxiliary display area
	Multi-function key	Functions specified by P00.04, such as JOG, FWD and REV switchover
	Operation command channel switchover key	To switch the operation command channels among local, terminal and communication.

Table 3-4 Multi-function key description

Multi-function key (hundreds place of P00.04)	Function	Function description
0	No function	The M key is disabled.
1	Forward JOG	The M key is used as a forward JOG key, effective in three command channels. Press and hold the key, then the drive will run in the forward JOG mode. Release the key, then the JOG stops.
2	Reverse JOG	The M key is used as a reverse JOG key, effective in three command channels. Press and hold the key, then the drive will run in the reverse JOG mode. Release the key, then the JOG stops.
3	FWD and REV switchover	The M key is used as the key for FWD and REV switchover, only available in the operating panel command channel, effective during both running and stop.
4	Command channel switchover 1	The M key is used as the key for operation command channel switchover, only effective during stop. The channel is cyclically switched from local, terminal to remote.

3.2 Status display

The display status of MV820-DP03 includes stop status parameter display, run status parameter display, function code parameter editing status display and fault status display.

3.2.1 Stop parameter display status

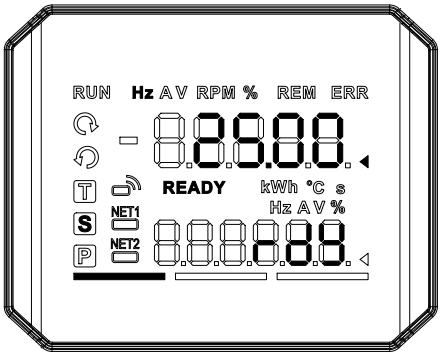


Fig. 3-2 MV820-DP03 stop status display

When the drive is in stop, the operating panel displays the stop status parameters, as shown in Fig. 3-2. The unit indicator indicates the unit of parameters.

When you choose the verification menu, only the function codes whose values are different from factory settings will be displayed on the main display area. Press "OK", and then press "∧" and "∨" to view all such function codes, and check which codes have been changed.

On the default main display area (triangle icon on the main display area is on), press " " and " " to display stop status parameters on the main display area cyclically (defined by P16.03 and P16.04, frequency reference and bus voltage by default).

Long press " " to switch to the auxiliary display area, then press " " and " " to display stop status parameters on the auxiliary display area cyclically (defined by P29.07 and P29.08, state machine status by default).

Table 3-5 State definition of state machine

No.	State machine code	Definition
0	rdy	Ready state
1	StArt	Start running state
2	run	Normal running state
3	JOG	Jog state
4	tUNE	Auto-tuning state
5	SHUNt	Coasting to stop (output locked) state
6	Hold	Frequency hold state
7	dC-br	DC braking state
8	dtrAC	Speed tracking state
9	StPdEC	Decelerating to stop state
10	StPbr1	Waiting for DC braking state during stopping
11	stPbr2	DC braking state during stopping
12	PoSIt	Spindle positioning state
13	Error	Fault state

3.2.2 Run parameter display status

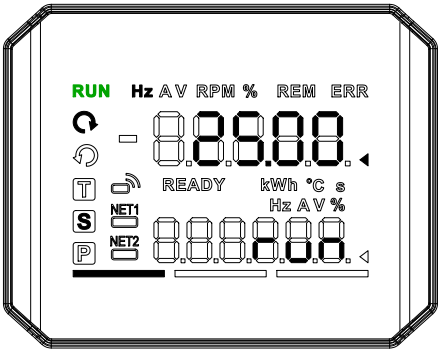


Fig. 3-3 MV820-DP03 run status display

When the drive receives a valid operation command, it will start to run. The operating panel will display the running status parameters, and the RUN indicator becomes on. The on/off of forward running or reverse running indicator depends on the current running direction. As shown in Fig. 3-3, the unit indicator indicates the unit of parameters.

On the default main display area (triangle icon on the main display area is on), press " " and " " to display running status parameters on the main display area cyclically (defined by P16.00–P16.02, ramp frequency reference, output frequency, output voltage, output current and motor speed by default).

Long press " " to switch to the auxiliary display area, then press " " and " " to display running status parameters on the auxiliary display area cyclically (defined by P29.07 and P29.08, state machine status by default, currently "run" at display).

3.2.3 Fault parameter display status

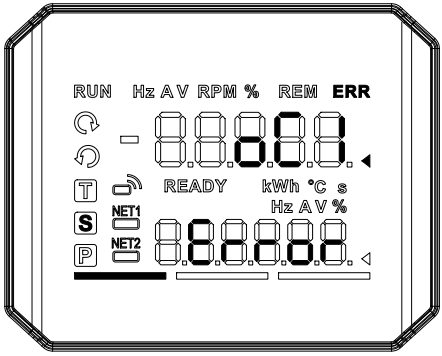


Fig. 3-4 MV820-DP03 fault status display

When the drive detects a fault signal, it will immediately enter the fault display status and display the fault code, as shown in Fig. 3-4.

On the default main display area (triangle icon on the main display area is on), press " " and " " to display stop status parameters on the main display area cyclically (defined by P16.03 and P16.04, frequency reference and bus voltage by default). Through " ", control terminal or communication command, you can reset the fault. If the fault still exists, the fault code will not disappear.

You can also choose the stop mode or choose to keep the drive running during certain fault through P97.15–P91.19.

Long press " " to switch to the auxiliary display area, then press " " and " " to display fault status parameters on the auxiliary display area cyclically (defined by P29.07 and P29.08, state machine status by default, currently "Error" at display).

3.2.4 Symbols displayed on LED

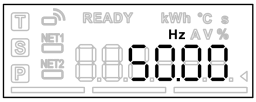
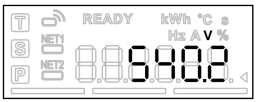
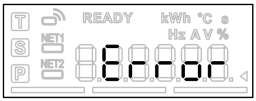
The LED display symbols correspond to the following figures/letters:

Table 3-6 Meanings of LED symbols

LED display	Meaning	LED display	Meaning	LED display	Meaning	LED display	Meaning
0	0	A	A	I	I	S	S
1	1	b	b	J	J	T	T
2	2	C	C	L	L	t	t
3	3	c	c	n	N	U	U

LED display	Meaning	LED display	Meaning	LED display	Meaning	LED display	Meaning
4	4	d	d	n	n	U	V
5	5	E	E	O	O	y	y
6	6	F	F	o	o	-	-
7	7	G	G	P	P	.	.
8	8	H	H	q	q		
9	9	h	h	r	r		

LED panel display example:

LED display of main display area	Unit indicator	Displayed data/code	Meaning of data/code
	Steady on	Flashing	Frequency reference
	Flashing	Steady on	Output frequency
	Steady on	Flashing	Bus voltage
	Steady on	Steady on	Bus voltage
	Steady on	Steady on	Overcurrent during acceleration
LED display of auxiliary display area	**Unit indicator**	**Displayed data/code**	**Meaning of data/code**
	Steady on	Flashing	Frequency reference
	Flashing	Steady on	Output frequency
	Steady on	Flashing	Bus voltage
	Steady on	Steady on	Bus voltage
	Steady on	Steady on	Fault

WARNING

When the drive is in stop or standby state, the panel value is flashing; and when the drive is in the running or fault state, the panel value is steady on.

3.3 Operation examples

In this section, the stop display parameter is the set frequency and its factory setting is 50.00 Hz. The black parts in the figures indicate the current editing status.

All function parameter operations can only be performed on the main display area. The main display has four function menu levels:

Level 0 menu: Power-on display interface
Level 1 menu: Function parameter groups, for example, P00
Level 2 menu: Function parameters, for example, P00.00
Level 3 menu: Function parameter values, for example, 00000

3.3.1 Password setting

To protect the parameters, the drive offers the password protection function. It requires the user to input the correct password before entering the function code editing status.

Function code P00.01 can be used to set the user password.

Assuming that the valid user password is "1368", the drive is currently locked and no operation can be performed. You can unlock the drive by entering the user password through the following steps.

(1) Press "OK" in the locked status, and then the LED will enter the password verification status 00000;

(2) Change 00000 to 01368;

(3) Press "OK" to confirm and pass the password verification, then the LED displays P00.

The steps are shown below:

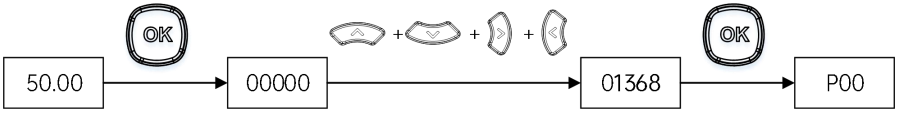


Fig. 3-5 Unlock the drive with a user password

You can conduct various operations on the drive after passing the password verification.

WARNING

If there is no key-pressing operation in 30 sec after the correct user password is entered, the password protection will be triggered again to lock the drive.

3.3.2 Restore to factory settings

For example, to restore the parameter values to factory settings, set P00.05 to 2.

(1) In the stop parameter display status, press "OK" to enter the first level menu P00;

(2) Press "OK" to enter the second level menu P00.00;

(3) Press "▲" five times to change P00.00 to P00.05;

(4) Press "OK" to enter the third level menu;

(5) Press "▲" two times to change 0 to 2;

(6) Press "OK" to confirm the change and return to the second level menu. The change is successful.

The steps are shown below:

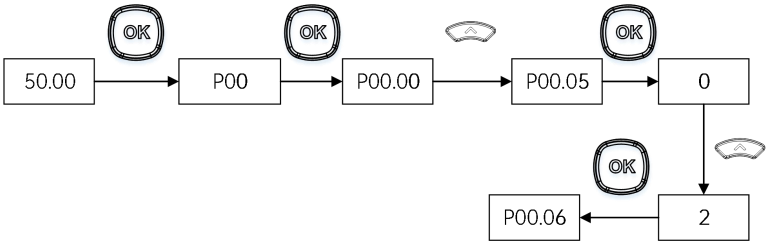


Fig. 3-6 Restore to factory settings

3.3.3 Frequency setting

For example, set P02.09=25.00 Hz.

Example: Change the function code P02.09 from 50.00 Hz to 25.00 Hz.

(1) In the stop parameter display status, press "OK" to enter the first level menu P00;

(2) Press "▲" twice to enter the first level menu P02;

(3) Press "OK" to enter the second level menu P02.00;

(4) Press "▲" nine times to enter the second level menu P02.09;

(5) Press "OK" to enter the third level menu 50.00;

(6) Press "◀" to move the cursor and choose the thousands place and the hundreds place;

(7) Press "▲" and "▼" to change 50.00 to 25.00;

(8) Press "OK" to confirm the change and return to the second level menu. The change is successful.

(9) Press "↩" twice to return to the zero level menu displaying 25.00.

The steps are shown below:

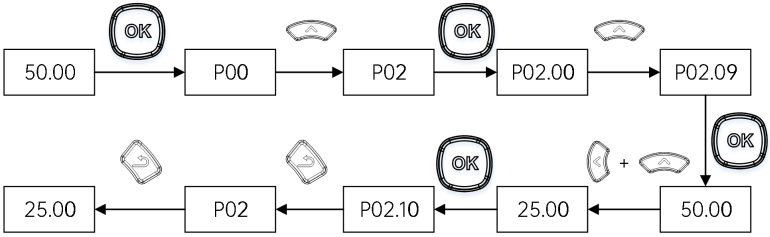


Fig. 3-7 Frequency setting

3.3.4 Parameter monitoring

Through P16.00, P16.01 and P16.02, you can choose the drive parameters to be displayed on the main display area during running, such as set frequency, output frequency, bus voltage DI, DO, AI and so on (for details, refer to Group P16). Then, you can view the chosen parameters through "▶" and "◀" on the operating panel.

The following figure shows the parameter display switchover during running with P16.00=0xF0, P16.01=0xF and P16.02=4.

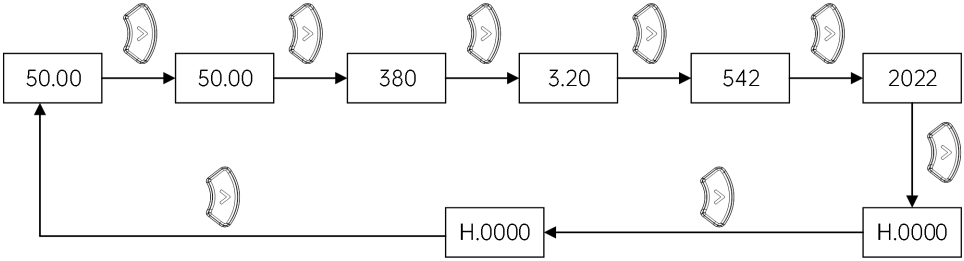


Fig. 3-8 Parameter monitoring

3.3.5 Parameter display switchover

Through P16.03 and P16.04, you can choose the drive parameters to be displayed on the main display area during stop, such as set frequency, bus voltage, DI, DO, AI and so on (for details, refer to Group P16). Then, you can view the chosen parameters through " " and " " on the operating panel.

The following figure shows the parameter display switchover during stop, with P16.03=0xFF.

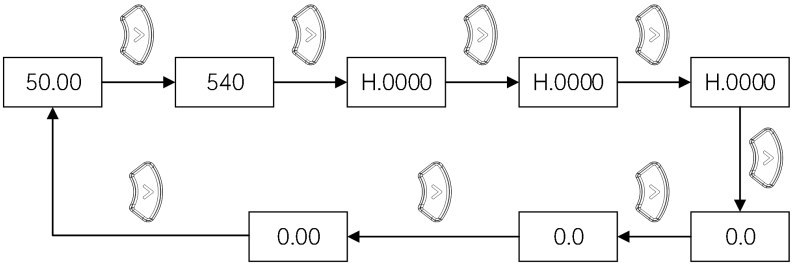


Fig. 3-9 Parameter display switchover

WARNING

Similarly, you can choose the drive parameters to be displayed on the auxiliary display area through P29.07 and P29.08 (during running, stop or fault), such as set frequency, output frequency, bus voltage DI, DO, AI, and so on (refer to Group P29 of "MV810 High-Performance Vector Control Drive User Manual").

After the setting, you can press " " to switch to the auxiliary display area (triangle icon on the auxiliary display area is on), then press " " and " " to view chosen parameters cyclically (as the default setting of Group P29, only the state machine status is displayed).

Chapter 4 Inspection and Maintenance

4.1 Inspection and maintenance

The ambient temperature, humidity, dust and vibration may affect the normal operation of the panel. Thus, it is necessary to carry out periodical maintenance.

Table 4-1 Inspection tables

Inspection			Records
Item	Cycle	Means	
Temperature and humidity	Any time	Temperature meter and hygrometer	
Dust, water, dripping and leaking		Watch	
Odor		Smell	
Vibration and heat		Touch	
Noise		Hear	
LED display		Watch	
Operating panel base loose?	One year	Watch, touch	
RJ45 port loose?		Watch, touch	
Keys		Touch	

Chapter 5 Warranty and Service

Shenzhen Megmeet Electrical Co., Ltd. manufactures motor drive products strictly according to the ISO9001:2008 standard. In case of any product abnormalities, please contact the distributor or the headquarters. Our company will provide full technical support for you.

5.1 Warranty period

The product is warranted for 18 months from the purchase date, however, the warranty date shall not exceed 24 months after the manufacturing date on the nameplate.

5.2 Warranty scope

During the warranty period, any product abnormalities incurred due to our company can be freely repaired or replaced by our company. In case of the following situations, maintenance fees will also be charged even if the product is still in the warranty period.

(1) The damages are caused by fire, flood, strong lightning strike, etc.

(2) The damages are caused by users' unauthorized modifications.

(3) The product is damaged due to drop or in transmission after the purchase.

(4) The product is damaged because the standard requirements are not obeyed in actual use.

(5) The product is damaged because the user does not follow the instructions of the user manual.

5.3 After-sales service

(1) If there are specific requirements for drive installation and trial operation, please contact the distributor or Shenzhen Megmeet Electrical Co., Ltd.

(2) In case of any abnormality, contact the distributor or Shenzhen Megmeet Electrical Co., Ltd. immediately for help.

(3) During the warranty period, our company will repair any drive abnormality incurred due to the product manufacturing and design free of charge.

(4) If the product is out of the warranty period, our company can provide paid repairing service according to the customers' needs.

(5) The service charge is calculated by actual costs. If there is an agreement, the agreement shall prevail.

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