MV[illegible]20E Series Elevator AC Drive

Simple Commissioning Manual

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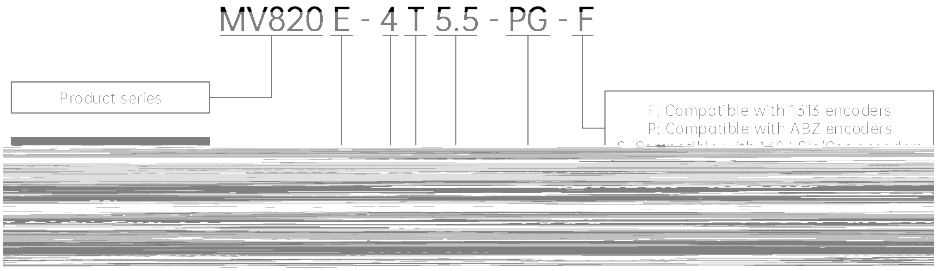
1 Product Introduction

This manual briefly introduces MV820E series AC drive, including models, accessory cards & options, operating panel, terminal wiring, main circuit and control circuit terminals, quick setup, frequently-used function codes, common faults and solutions, etc. For more information, refer to the complete version of user manual.

1.1 Naming rule



1.2 Product components

Fig. 1-1

2 Accessory Cards/Options

The options and accessories introduced in this manual include accessory cards, bus options, IO options and others. You can purchase them individually or purchase the AC drive with attached options and accessories by consulting the local distributor. During installation and use, follow the corresponding steps to avoid damage to the drive.

To clarify, the options in this manual refer to IO, CAN and the like with an expansion box (refer to Fig. 1-1) while the accessory cards refer to independent PCBA boards without an expansion box, such as encoder cards.

The entire MV820E series supports a wide range of expansions, such as CANopen, Modbus, I/O and encoder expansions, capable for scenarios requiring excellent control performance and multi-unit network.

MV820E provides three kinds of PG cards, as shown in the following table.

Table 2-1 Encoder card description

Encoder card	Function
MV820E-PG-P ABZ encoder card with frequency-division output	Supports differential ABZ input and open-collector input; Supports pulse frequency-division output; Applicable for FVC of asynchronous motors.
MV820E-PG-S Sin/Cos encoder card with frequency-division output	Supports Sin/Cos encoder signal input; Supports pulse frequency-division output; Applicable for FVC of synchronous motors.
MV820E-PG-F Serial communication encoder card with frequency-division output	Supports serial communication signal input; Supports pulse frequency-division output; Applicable for FVC of synchronous motors.

2.1 Installation of accessory cards/options

2.1.1 Installation position

MV820E provides two positions for accessory cards and options: position 1 and position 2 (taking enclosure B as an example, similar for other enclosures), where position 1 is for the installation of various PG cards and position 2 is for the installation of various bus options, I/O options, and so on.

Fig. 2-1

2.1.2 Installation interfaces

The electrical interfaces of accessory cards/options connected to the drive are shown below.

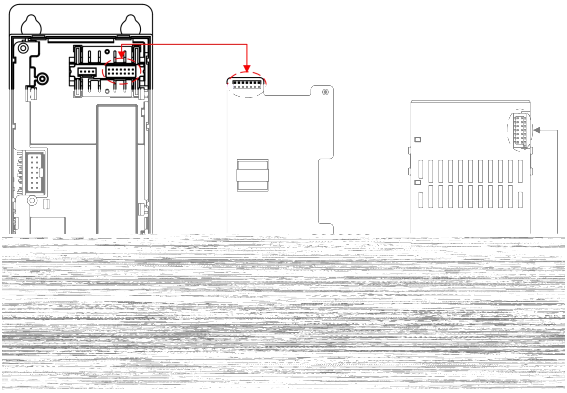


Fig. 2-2

2.1.3 Installation steps for accessory cards at position 1

Installation method: rear-side mounting for the accessory card (PG card)

(1) When the drive is powered off, press the granulated part on the middle-upper of the lower cover, slide it down firmly to take down the cover as shown in Fig. 2-3 a.

(2) Use a straight screwdriver to pry open the two snap-fit joints between the control box and the drive, and then remove the control box upwards, as shown in Fig. 2-3 b and c.

(3) Install the PG card: hold the PG card with its terminal block downwards, then align the

2.1.4 Installation steps for options at position 2

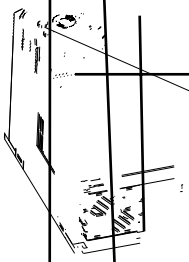
Installation method: front side mounting for the option (IO options)

(1) When the drive is powered off, press the granulated part on the middle-upper of the lower cover, slide it down firmly to take down the cover, as shown in Fig. 2-4 a.

(2) Use a straight screwdriver to pry open the dustproof cap, as shown in Fig. 2-4 b.

(3) Install the IO option: hold the expansion box (with the IO card inside) upwards (terminals upwards), then align the expansion box with the electrical interface of 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. 2-4 c and d.

(4) The IO card is successfully installed, as shown in Fig. 2-4 e.



2.2 MV810-IO01: Simple IO option

2.2.1 Product appearance

Fig. 2-5 Components and terminals

2.2.2 Terminal description

Table 2-2 MV810-IO01 terminal functions

Name	Terminal Mark	Specifications
Simple IO option	DI1 to DI3	Multi-function input terminals, set by P41.00~ P41.02; Support NPN/PNP input, set by P41.03, active level: 9 V to 30 V; Power supplied by the option's terminal (24 VDC) or external 24 VDC (for wiring details, see the MV820E complete user manual); Support filter and switch-on/off delay.
	RO1, RO2	Multi-function output terminals, set by P41.13~ P41.14; RO1 contains one TA1/TB1 (normally closed), one TA1/TC1 (normally open), contact capacity: 250 VAC / 3 A, 30 VDC / 3 A; RO2 contains one TA2/TC2 (normally open), contact capacity: 250 VAC / 3 A, 30 VDC / 3 A; Support output polarity and switch-on/off delay. For wiring details, see the MV820E complete user manual.
	24V, GND	Power output: +24 VDC, ¤ 5%, < 200 mA

2.3 MV820E-PG-P: Incremental ABZ encoder card with frequency-division output

MV820E supports the simple incremental PG card. Pay close attention to the drive model you ordered.

For wiring details of the incremental PG card, see the MV820E complete user manual.

2.3.1 Function description

MV820E-PG-P is an accessory card of MV820E series, which provides encoder interfaces, supports differential ABZ input and open-collector input, and serves as the speed or position feedback.

2.3.2 Product appearance

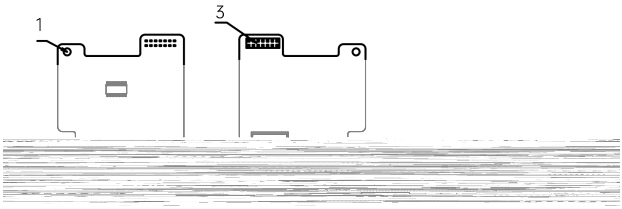


Fig. 2-6 Components and terminals

2.3.3 Terminal description

The following figure shows the terminal marks on MV820E-PG-P.

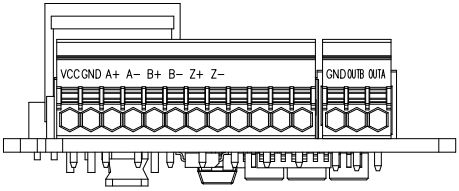


Fig. 2-7 Terminal mark

The following table lists the terminal functions of MV820E-PG-P.

Table 2-3 PG-P terminal functions

Type	Mark	Name	Function	Specifications
Encoder card	A+, A-	Encoder phase A signal	Encoder phase A differential input signal	Maximum input frequency Ů 250 kHz
	B+, B-	Encoder phase B signal	Encoder phase B differential input signal	
	Z+, Z-	Encoder phase Z signal	Encoder phase Z differential input signal	
	VCC, GND	Encoder power supply	Provides power supply for external encoders (reference ground GND) 5 V or 12 V set by P04.04	Output voltage: +5 V/12 V Maximum output current: 200 mA/150 mA

Table 2-4 Frequency-division output terminal functions

Type	Mark	Function	Specifications
Encoder card	OUTA	Frequency-division output A signal	NPN-type OC output
	OUTB	Frequency-division output B signal	
	GND	Frequency-division output signal GND	/

2.4 MV820E-PG-S: Sin/Cos encoder card with frequency-division output

MV820E supports the Sin/Cos encoder card with frequency-division output. Pay close attention to the drive model you ordered. For wiring details of the Sin/Cos encoder card with frequency-division output, see the MV820E complete user manual.

2.4.1 Function description

MV820E-PG-S is an accessory card of MV820E series, which provides encoder interfaces, supports Sin/Cos encoder signal input, and serves as the speed or position feedback.

2.4.2 Product appearance

Fig. 2-8 Components and terminals

2.4.3 Terminal description

The following figure shows DB15 terminals of MV820E-PG-S.

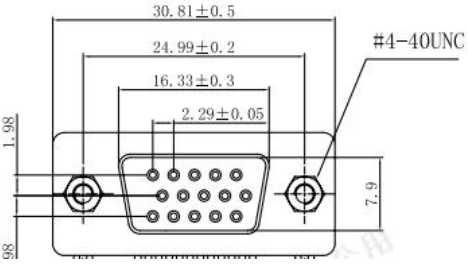


Fig. 2-9 DB15 of MV820E-PG-S

The following table lists DB15 terminal functions of MV820E-PG-S.

Table 2-5 PG-S terminal functions

No.	Name	Function	Note
9	VCC	Encoder power supply	/
7	GND		

No.	Name	Function	Note
5	A+	Encoder A+ input signal	/
6	A-	Encoder A- input signal	/
8	B+	Encoder B+ input signal	/
1	B-	Encoder B- input signal	/
10	C+	Encoder C+ input signal	/
11	C-	Encoder C- input signal	/
12	D+	Encoder D+ input signal	/
13	D-	Encoder D- input signal	/
3	R+	Encoder R+ input signal	/
4	R-	Encoder R- input signal	/

Table 2-6 Frequency-division output terminal functions

Type	Mark	Function	Specifications
Encoder card	OUTA	Frequency-division output A signal	NPN-type OC output
	OUTB	Frequency-division output B signal	
	GND	Frequency-division output GND signal	/

For the AC drive equipped with MV820E-PG-S, PG terminals (DB15 and frequency-division output terminals) are extended out through cables for wiring.

2.5 MV820E-PG-F: Serial communication encoder card with frequency-division output

MV820E supports the serial communication encoder card with frequency-division output. Pay close attention to the drive model you ordered. For wiring details of the serial communication encoder card with frequency-division output, see the MV820E complete user manual.

2.5.1 Function description

MV820E-PG-F is an accessory card of MV820E series, which provides encoder interfaces, supports serial communication encoder signal input, and serves as the speed or position feedback.

2.5.2 Product appearance

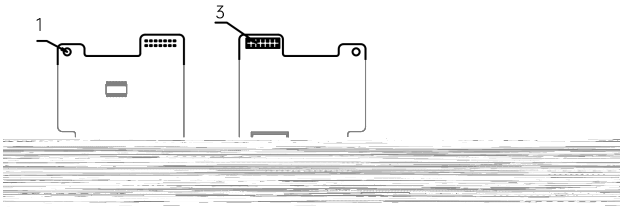


Fig. 2-10 Components and terminals

2.5.3 Terminal description

The following figure shows DB15 terminals of MV820E-PG-F.

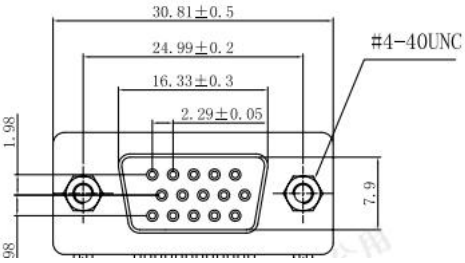


Fig. 2-11 DB15 of MV820E-PG-F

The following table lists DB15 terminal functions of MV820E-PG-F.

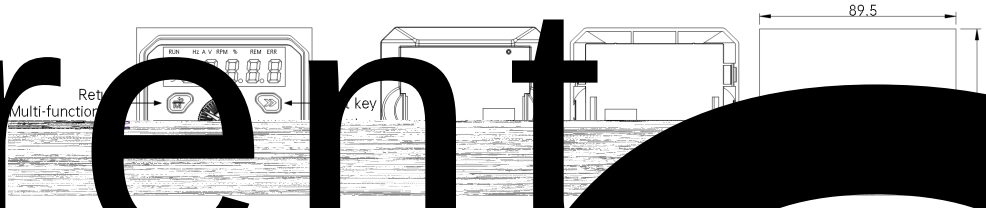
Table 2-7 PG-F terminal functions

No.	Name	Function	Note
9	VCC	Encoder power supply	/
7	GND		
5	A+	Encoder A+ input signal	/
6	A-	Encoder A- input signal	/
8	B+	Encoder B+ input signal	/
1	B-	Encoder B- input signal	/
10	CLK+	Encoder C+ input signal	/
11	CLK-	Encoder C- input signal	/
12	DATA+	Encoder D+ input signal	/
13	DATA-	Encoder D- input signal	/

3 Operating panel

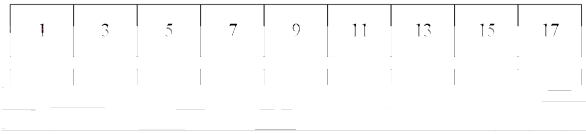
MV820E has two kinds of operating panels/keypads. One is the small operating panel/keypad, MV820-DP01, as the standard configuration for drives of 55 kW and below; the other is the large operating panel/keypad, MV820-DP02, as the standard configuration for drives of 75 kW.

This part takes the small operating panel/keypad as the example. For the large operating panel/keypad, see the complete version of user manual.

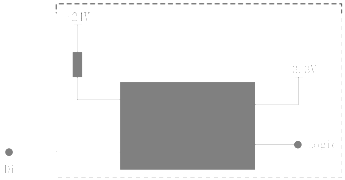


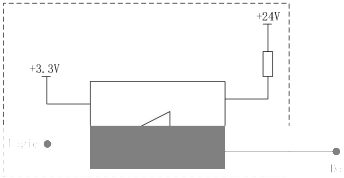
Indicator/Key		Name	Description
Unit LED	Hz	Frequency LED	Flashing: The parameter is the running frequency On: The parameter is the frequency reference
	A	Current LED	On: The parameter is the current
	V	Voltage LED	On: The parameter is the voltage
	RPM	RPM LED	On: The parameter is the revolutions per minute
	%	Percent LED	On: The parameter is the percent
Status LED		Forward running LED	On: During stop, there is a forward running command for the drive During running, the drive runs forward Flashing: The drive is changing from FWD to REV
		Reverse running LED	On: During stop, there is a reverse running command for the drive During running, the drive runs reverse Flashing: The The

4 Control Circuit Terminals



Type	Mark	Name	Function	Specifications
			4	
	1			
Communication		RS485		

<table>
<tr><th>Type</th><th>Mark</th><th>Name</th><th>Function</th><th>Specifications</th></tr>
<tr><td></td><td>15</td><td>Differential input current return terminal AI2_RE</td><td>Used as the current return terminal during analog current differential input. If the analog current input is single-ended, you need to connect this terminal to GND.</td><td>Input current: 0 mA to 20 mA (input impedance: 10 ß), resolution: 1/4000, supporting differential input</td></tr>
<tr><td>Analog output</td><td>11</td><td>Analog output AO1</td><td>Provides analog voltage/current output, with 28 kinds available. You can choose voltage or current analog output through the function code P09.02 (reference ground: GND).</td><td>Output voltage: 0 to 10 V, ¤ 5%
Output current: 0 to 20 mA</td></tr>
<tr><td rowspan="6">Multi-function input terminals</td><td>4</td><td>Multi-function DI1</td><td rowspan="6">You can set the multi-function DI, HDI and thermosensitive signal input through the function codes P09.00 and P09.01. For more explanations, refer to P09.03~ P09.10 for input functions and P09.14 for two/three-wire control functions (reference point: GND).</td><td rowspan="2">For multiple input circuit function selection, refer to the multi-function input/output terminal wiring below:
 
Example:<table><tr><td>P09.00</td><td>Terminal 5</td><td>Terminal 4</td></tr><tr><td>0x00</td><td>DI2</td><td>DI1</td></tr><tr><td>0x21</td><td>HDO2</td><td>DO1</td></tr><tr><td>...</td><td>...</td><td>...</td></tr></table></td></tr>
<tr><td>5</td><td>Multi-function DI2</td></tr>
<tr><td>6</td><td>Multi-function DI3</td><td rowspan="2">The terminals can only be used as digital inputs DI3 and DI4, and cannot be defined for other signal functions through function codes.</td></tr>
<tr><td>8</td><td>Multi-function DI4</td></tr>
<tr><td>7</td><td>Multi-function DI5 or for thermal sensitivity</td><td>The terminal can be used as digital input DI5 through the function code P09.01, and be defined as the thermosensitive element input with PT1000 supported.</td></tr>
<tr><td>10</td><td>Multi-function DI6 or HDI</td><td>The terminal can be used as digital input DI6 or digital pulse HDI input through the function code P09.01 with pulse 0 to 50 kHz.</td></tr>
</table>

<table>
<tr><th>Type</th><th>Mark</th><th>Name</th><th>Function</th><th>Specifications</th></tr>
<tr><td rowspan="2"></td><td>12</td><td>Multi-function DI7</td><td rowspan="2"></td><td>The terminal can only be used as digital input DI7, and cannot be defined for other signal functions through function codes.</td></tr>
<tr><td>16</td><td>Multi-function AI1</td><td>The terminal can be used as digital input DI8 or analog input AI1 through the function code P09.01.</td></tr>
<tr><td rowspan="3">Multi-function output terminals</td><td>4</td><td>Open-collector output terminal Y1/ DO1 output terminal/ HDO1 pulse output terminal</td><td rowspan="2">In addition to being used as ordinary multi-function terminals (same as 4, 5, 6, 8, 7, 10, 12, 16), 4 and 5 can also be programmed as DO/HDO output terminals. Refer to P09.00~ P09.02 for specific terminal selection (reference point: GND).</td><td>For multiple output circuit function selection, refer to the multi-function input/output terminal wiring below:
 

Example'
<table><tr><td>P09.00</td><td>Terminal 5</td><td>Terminal 4</td></tr><tr><td>0x21</td><td>HDO2</td><td>DO1</td></tr><tr><td>0x22</td><td>HDO2</td><td>HDO1</td></tr><tr><td>...</td><td>...</td><td>...</td></tr></table>Maximum operating voltage: 30 V
Maximum output current: 50 mA</td></tr>
<tr><td>5</td><td>Open-collector output terminal Y2/ DO2 output terminal/ HDO2 pulse output terminal</td></tr>
<tr><td rowspan="2">11</td><td rowspan="2">DO3 output terminal</td><td rowspan="2">The terminal can be programmed as multi-function DO or AO. Refer to P09.02 for specific terminal selection (reference point: GND).</td><td>The terminal can be used as digital output DO3 through the function code P09.02.
Maximum output current: 50 mA</td></tr>
<tr><td>The terminal can also be used as analog output AO1 through the function code P09.02. Refer to the AO1 description in the table.</td></tr>
<tr><td rowspan="3">Relay output terminal RO1</td><td>RA</td><td rowspan="3">Relay output</td><td rowspan="3">The terminal can be programmed as multi-function RO. Refer to P10.03 for specific function selection.</td><td rowspan="3">RA-RB: normally closed, RA-RC: normally open
Contact capacity:
250 VAC / 3 A
30 VDC / 3 A
Refer to P10 for usage instructions. The overvoltage level of the input voltage of the relay output terminal is overvoltage level II.</td></tr>
<tr><td>RB</td></tr>
<tr><td>RC</td></tr>
</table>

(1) Most multi-function terminals can be set with multiple IO functions through function codes, such as DI, DO, HDI, HDO, AI, AO and the thermocouple input.

(2) The internal circuit diagram of the drive is not specifically illustrated in the multi-function DI/DO wiring diagram, only represented by the symbol "▷".

5 Main Circuit Terminals

Type 1: Enclosure B (applicable power: 2S0.4 to 1.5)

Enclosure B (applicable power: 4T0.75 to 2.2)

Type 2: Enclosure C (applicable power: 4T3.7/5.5)

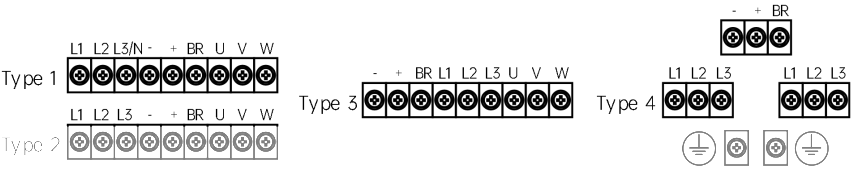
Enclosure D (applicable power: 2T3.7/5.5; 4T7.5/11)

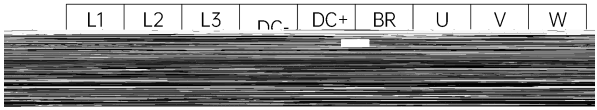
Type 3: Enclosure E (applicable power: 4T15/18.5)

Type 4: Enclosure F (applicable power: 4T22/30)

Type 5: Enclosure G (applicable power: 4T37/45/55)

Type 6: Enclosure H (applicable power: 4T75)





Terminal name	Function description
L1, L2, L3 (L3/N)	Three-phase 380 VAC or three-phase 220 VAC input terminals
L1, L3/N	2S models: single-phase 220 VAC input terminals
+, BR	Connect the external braking resistor
+, - (DC+, DC-)	DC bus terminals
U, V, W	Three-phase AC output terminals
⏚	PE connection terminal

6 Applications & Commissioning

6.1 Multi-speed control wiring

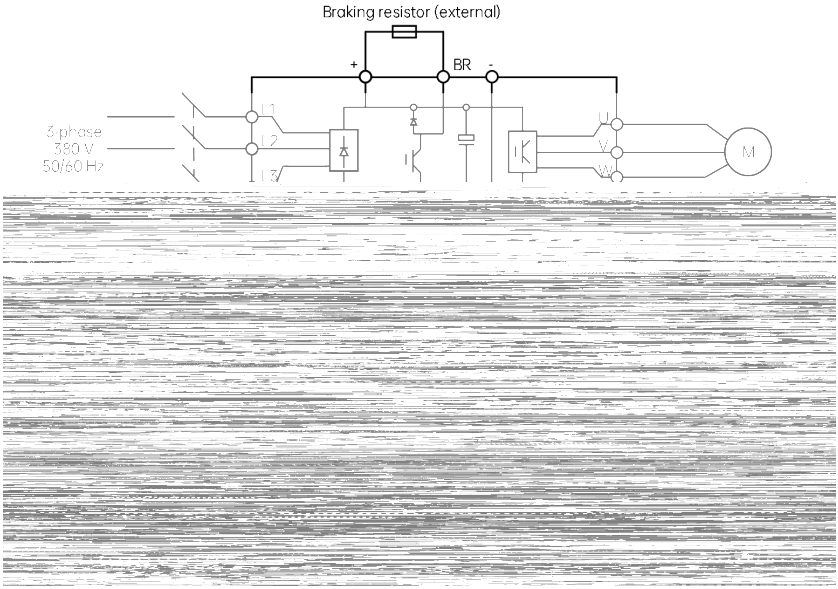


Fig. 6-1 Multi-speed control wiring diagram

6.2 Analog control wiring

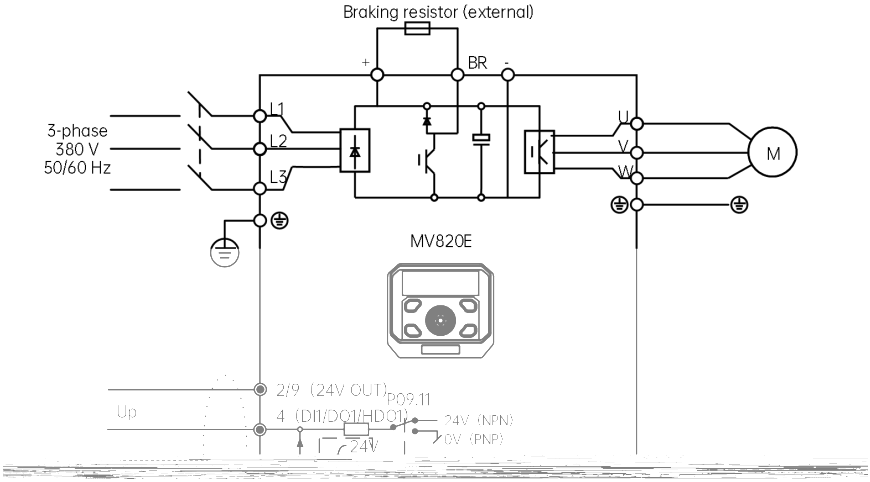


Fig. 6-2 Analog control wiring diagram

The GND terminal of AC drive shall be connected to the 0 V of an external device.

6.3 Quick setup

Related function codes

Function code	Name	Description	Range	Default	Change
P03.01	Asynchronous motor rated power	0.1 to 3000.0 kW	0.1 to 3000.0 kW	Model dependent	×
P03.02	Asynchronous motor rated voltage	0 to 1200 V	0 to 1200 V		×
P03.03	Asynchronous motor rated current	0.8 to 6000.0 A	0.8 to 6000.0 A		×
P03.04	Asynchronous motor rated frequency	0.01 Hz to P02.10	0.01 Hz to P02.10	50.00 Hz	×
P03.05	Asynchronous motor rated speed	1 to 36000 rpm	1 to 36000 rpm	Model dependent	×
P03.15	Synchronous motor rated power	0.1 to 3000.0 kW	0.1 to 3000.0 kW		×
P03.16	Synchronous motor rated voltage	0 to 1200 V	0 to 1200 V		×
P03.17	Synchronous motor rated current	0.8 to 6553.5 A	0.8 to 6553.5 A		×
P03.18	Synchronous motor rated frequency	0.01 Hz to P02.10	0.01 Hz to P02.10		×
P03.19	Number of synchronous motor pole pairs	1 to 128	1 to 128	2	×
P04.00	Encoder PPR	1 to 65535	1 to 65535	1024	×
P04.02	A/B phase sequence of ABZ incremental encoder	0: Forward 1: Reverse	0 to 1	0	×

Inspection running

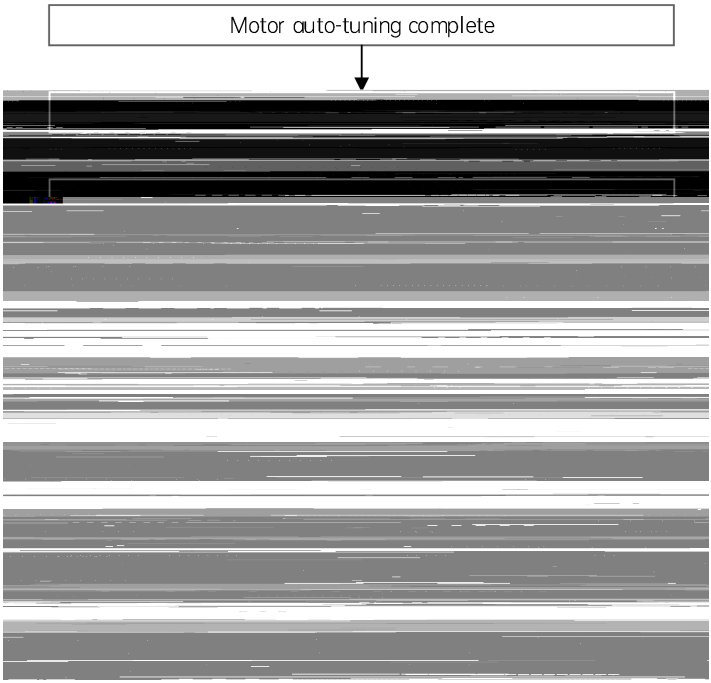


Fig. 6-4 Inspection running diagram

Inspection running: Observe whether the motor runs normally. If a fault is reported during running, try to invert the AB phase sequence through P04.02.

Related function codes

Function code	Name	Description	Range	Default	Change
P09.11	Terminal open-circuit voltage	0: Digital terminal open-circuit voltage 0 V 1: Digital terminal open-circuit voltage 24 V	0 to 1	1	○
P09.03	DI1 function selection	0: No function 1: Forward RUN	0 to 81	1	○

Function code	Name	Description	Range	Defa	Cha e
P09.04	DI2 function selection	2: Reverse RUN 6: Multi-reference terminal 1	0	2	○
P09.05	DI3 function selection	7: Multi-reference terminal 2 8: Multi-reference terminal 3	0 to 81	6	○
P09.06	DI4 function selection	9: Multi-reference terminal 4 16: External fault NO input	0 to 81	7	○
P09.07	DI5 function selection	17: External fault NC input 22: External reset (RESET) input	0 to 81	71	○
P09.08	DI6 function selection	23: Coast to stop input (FRS) 60: Emergency stop	0 to 81	0	○
P09.09	DI7 function selection	73: Emergency running input (UPS) 74: RUN contactor feedback input	0 to 81	0	○
P09.10	DI8 function selection	75: Brake feedback input 76: Motor overheat input (OH)	0 to 81	0	○
P41.00	DI9	77: Up slow-down speed input (UPF) 78: Down slow-down speed input (DNF) 79: Overspeed governor feedback input (OSG)			

Normal running

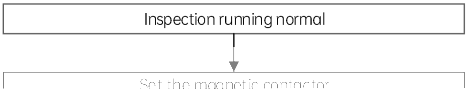


Fig. 6-5 Normal running diagram

1. Adjust the timing sequence of the brake and motor operation during startup and stop by P28.06 to P28.13 to ensure smooth motor operation without vibration.

2. Perform leveling accuracy adjustment. The multi-speed control method can achieve basic leveling by adjusting acceleration/deceleration time, and then fine-tune the leveling accuracy by adjusting the creeping speed.

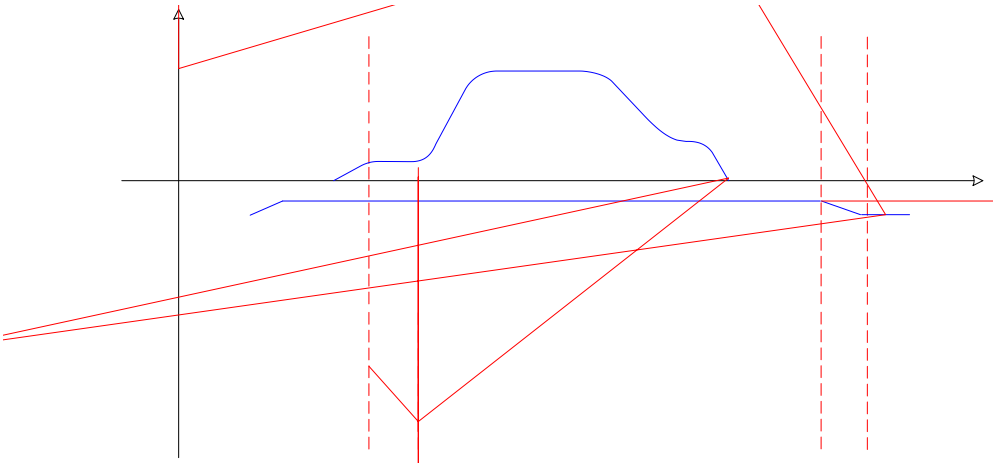
3. Improve riding comfort according to the section "Elevator riding comfort adjustment".

Related function codes

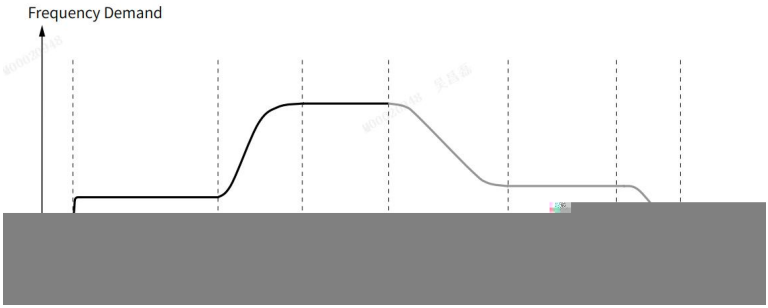
Function code	Name	Description	Range	Default	Change
P08.02	Startup frequency	0.00 to 50.00 Hz	0.00 to 50.00 Hz	0.00	×
P08.03	Startup frequency hold time	0.0 to 50.0 s	0.0 to 50.0 s	0.0	×
P27.00	S-curve 1 acceleration time		0.0 to 100.0%	30	○
P27.01	S-curve 1 deceleration time		0.0 to 100.0%	20	○
P27.02	S-curve 1 stop time		0.0 to 100.0%	30	○
P27.03	S-curve 1 switchover frequency	Generally equal to creeping speed frequency	0.0 to 100.0%	20	○
P27.04	Time proportion of S-curve 1 acceleration start segment		0.0 to 100.0%	40	○
P27.05	Time proportion of S-curve 1 acceleration end segment		0.0 to 100.0%	40	○

Function code	Name	Description	Range	Default	Change
P27.06	Time proportion of S-curve 1 deceleration start segment		0.0 to 100.0%	40	○
P27.07	Time proportion of S-curve 1 deceleration end segment		0.0 to 100.0%	40	○
P27.08	Time proportion of S-curve 1 stop start segment		0.0 to 100.0%	40	○
P27.09	Time proportion of S-curve 1 stop end segment		0.0 to 100.0%	40	○

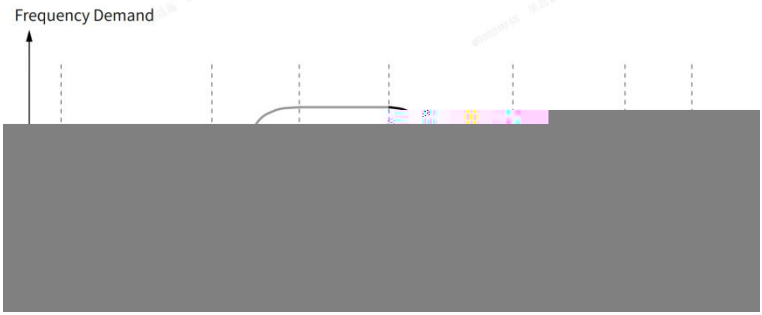
6.4 Time sequence for normal travel



6.5 Elevator riding comfort adjustment



Stage	Symptom	Possible cause	Solution
Start	Rollback	The brake is released too early	Increase P28.06, ranging from 0 to 0.5 s
		Startup frequency is too low	Increase P08.02, ranging from 0 to 1.5 Hz
	Starting jerk	The brake is released too late	Decrease P28.06, ranging from 0 to 0.5 s
Acceleration	Jerk when acceleration starts	Acceleration too fast in start segment	Increase P11.07, ranging from 0 to 80%; or increase P02.13, ranging from 0 to 20 s
	Jerk when acceleration ends	Acceleration too fast in end segment	Increase P27.05, ranging from 0 to (95~ P27.04)%; or increase P27.00, ranging from 0 to 20 s
	Overshoot when acceleration ends	Speed loop PI gains too large	Decrease P05.03, ranging from 1 to 100; or increase P05.04, ranging from 0.01 to 10.00 s
	Vibration	Too small margin between P05.05 and P05.02	Make sure P05.05 - P05.02 > 3 Hz (usually increase P05.05, ranging from P05.02 to 7 Hz)
Nominal speed	Vibration	Speed loop PI gains too large	Decrease P05.00 or P05.03, ranging from 1 to 100; or increase P05.01 or P05.04, ranging from 0.01 to 10.00 s
		Current loop PI gains too large	Double check the motor parameters and then perform motor auto-tuning once more



Stage	Symptom	Possible cause	Solution
Deceleration	Jerk when deceleration starts	Deceleration too fast in start segment	Increase P27.06, ranging from 0 to 80%; or increase P27.01, ranging from 0 to 20 s
	Jerk when deceleration ends	Deceleration too fast in end segment	Increase P27.07, ranging from 0 to 80%; or increase P27.01, ranging from 0 to 20 s
Creeping speed	Move much slower than expected	Creeping speed too low	Increase relevant multi-reference speed
Stop	Jerk	Deceleration too fast	Increase P27.07, ranging from 0 to 80%; or increase P27.01, ranging from 0 to 20 s; Set P27.02 (S-curve 1 stop time) to make P27.02 > P27.01, ranging from 0 to 20 s, then set P27.03=creeping frequency
		The brake is applied too early	Make sure P28.14=0.5 Hz, then increase P28.08, ranging from 0 to 0.5 s
	Slip	The brake is applied too late	Make sure P28.14=0.5 Hz, then decrease P28.08, ranging from 0 to 0.5 s
	Inaccurate leveling position	Deceleration too slow	If P27.02 is not applied, then decrease P27.01, ranging from 0 to 20 s If P27.02 is applied, firstly decrease P27.02, ranging from P27.01 to 20 s, then set P27.03=creeping frequency
		Slip occurs	Refer to the solution for “Slip”.

6.6 Inspection running

The main difference of time sequence between inspection running and normal running lies in the stopping process.

During the stopping process, if the inspection input signal is removed first, the AC drive decelerates to zero according to the deceleration time of curve 2 until the forward or reverse command is canceled. As shown in the figure below, the deceleration process can be set with a very short deceleration time, such as 1 second, ensuring a quick stop.

Fig. 6-7 Stop sequence for removal of inspection signal

If the forward or reverse command is canceled during inspection running, the AC drive will immediately stop output, as shown in the figure below.

Fig. 6-8 Stop sequence for cancellation of running direction command during inspection running

Related function codes

Function code	Name	Description	Set value	Default
P28.00	Inspection speed selection	Select multi-speed 2 as the inspection speed segment	2	0
P28.01	Inspection running curve selection	Select curve 2 for inspection running	2	2
P27.10	S-curve 2 acceleration time		3.0	3.0
P27.11	S-curve 2 deceleration time	The value should be set small enough to ensure the speed is reduced to a minimal value before the brake closes.	1.0	3.0
P27.13	S-curve 2 switchover frequency	Set to 0, no creeping during inspection running	0	0

6.7 Emergency stop

Configure DI function 60 for emergency stop. When the emergency stop input signal is active, the AC drive will decelerate to stop according to the time set in P08.33.

Function code	Name	Description	Set value	Default
P08.33	Deceleration time for			

Time sequence

The time sequence below takes the UP direction as the example:

When the main power fails, K1 opens and the elevator controller outputs an emergency running command (UPS), causing the drive to enter emergency running mode.

In emergency running mode, the controller does not detect input phase loss.

Function code	Name	Description	Range	Default	Change
P09.10	DI8 function selection	73: Emergency running input	-	73	○
P28.24	Emergency running speed		P02.12 to P02.10	0	○
P28.26	Light load direction search	0: Disabled 1: Direction based on output current 2: Direction based on elevator control board and output current When only the upward signal is given by the elevator control board, the AC drive runs upward. When only the downward signal is	0 to 2	0	○

Function code	Name	Description	Range	Default	Change
		given by the elevator control board, the AC drive runs downward. When both upward and downward signals are given by the elevator control board, the AC drive selects the light load direction based on the output current.			
P28.27	Light load direction search time		0.0 to 5.0 s	1	○

6.9 Running curve switchover

When P02.02=1 (Terminal control), you can switch running curves by the DI combinations of acceleration/deceleration time terminals 1 and 2.

Table 6-1 Curve selection method

Terminal 2	Terminal 1	Curve
OFF	OFF	Curve 1 (P27.00 to P27.09)
OFF	ON	Curve 2 (P27.10 to P27.19)
ON	OFF	Curve 3 (P27.20 to P27.29)
ON	ON	Curve 4 (P27.30 to P27.39)

6.10 STO function

The STO function disables the control signals of the power semiconductors at the drive output, preventing the drive from generating torque at the motor side.

Both STO1 and STO2 terminal input signals must be in the active state (“H”) to enable normal operation of the drive.

The STO function is as follows:

STO1 input	STO2 input	PWM signal
H	H	Enable
L	H	Disable
H	L	Disable
L	L	Disable

When the STO function is activated, the panel displays “STO” fault.

STO response

The STO function blocks PWM signal output to the drive power stage through external redundant hardware terminals STO1 and STO2, thereby preventing motor movement.

Both STO1 and STO2 terminal input signals must be in the active state (“H”) to enable normal drive operation.

If either or both are set to a low level, the PWM signal will be blocked within 30 ms.

Function code	Name	Description	Range	Default	Change
P28.30	STO function selection	Bit0: STO enable selection 0: Disable 1: Enable		0	○

7 Monitoring Mode

Through P16.00, P16.01, P16.02 and P16.03, you can choose the parameters to be displayed on the operating panel during running and standby, such as set frequency, output frequency, current, bus voltage, DI, DO, AI and so on (for details, refer to Group P16). Then, you can view the chosen parameters through the " " key on the operating panel. The following shows the parameter display switchover during running with P16.00=0xF0, P16.01=0x1 and P16.02=4.

The following shows the parameter display switchover during standby with P16.03=0x03 and P16.04=0.

8 Fault Types and Solutions

Fault code	Fault type	Possible cause	Solution
OC1	Overcurrent during acceleration	The acceleration time is too short.	Prolong the acceleration time
		The motor parameters are incorrect.	Perform auto-tuning of motor parameters
		When instantaneous stop happens, the rotating motor is restarted.	Set the startup mode P08.00 to startup after speed tracking
		Coded disc fault occurs when PG is running.	Check the coded disc and its wiring
		The drive power is too low.	Use a drive with higher power
		The V/F curve is improper.	Adjust the V/F curve and manual torque boost
OC2	Overcurrent during deceleration	The deceleration time is too short.	Prolong the deceleration time
		There is potential energy load or the load inertial torque is large.	Add additional appropriate dynamic braking components
		Encoder fault occurs when PG is running.	Check the encoder and its wiring
		The drive power is too low.	Use a drive with higher power
OC3	Overcurrent at a constant speed	The acceleration/deceleration time is too short.	Prolong the acceleration/deceleration time appropriately
		Sudden load change or abnormal load	Check the load
		Low grid voltage	Check the input power supply
		Encoder fault occurs when PG is running.	Check the encoder and its wiring
		The drive power is low.	Use a drive with higher power
OV1	Overvoltage during acceleration	Abnormal input voltage	Check the input power supply
		The acceleration time is too short.	Prolong the acceleration time appropriately
		When instantaneous stop happens, the rotating motor is restarted.	Set the startup mode P08.00 to startup after speed tracking
OV2	Overvoltage during deceleration	The deceleration time is too short (compared with the regenerative energy).	Prolong the deceleration time

Fault code	Fault type	Possible cause	Solution
		There is potential energy load or the load inertial torque is large.	Select appropriate dynamic braking components
OV3	Overvoltage at a constant speed	In vector control, the ASR parameters are not set properly.	Refer to the ASR parameter setting of Group P05
		The acceleration/deceleration time is too short.	Prolong the acceleration/deceleration time appropriately
		Abnormal input voltage	Check the input power supply
		Abnormal fluctuation of input voltage	Install an input reactor
		Large load inertia	Adopt dynamic braking components
Uv	Undervoltage	The bus voltage of the drive is too low (lower than 350 VDC).	Check the input power voltage Check the bus voltage of the drive Seek for technical support
SPI	Input phase loss	There is phase loss in input R, S, T.	Check the installation wiring Check the input voltage
SPO	Output phase loss	There is phase loss in output U, V, W.	Check the output wiring Check the motor and the cables
drv	Power module protection	There is interphase short circuit or grounding short circuit in three phases output.	Rewire and check the motor insulation
		Instantaneous overcurrent of the drive	Refer to the overcurrent solutions
		The duct is blocked or the fan is damaged.	Unblock the duct or replace the fan
		The ambient temperature is too high.	Lower the ambient temperature
		Wires or plug-in units of the control board are loose.	Check them and rewire
		Abnormal current waveform caused by output loss or other reasons	Check the wiring
		The auxiliary power supply is damaged, and the drive voltage is insufficient.	Seek for technical support
		Inverter module shoot-through	Seek for technical support
		Abnormal control board	Seek for technical support
		Braking pipe damaged	Seek for technical support

Fault code	Fault type	Possible cause	Solution
OH1	Inverter module heatsink overheat	The ambient temperature is too high.	Lower the ambient temperature
		The duct is blocked.	Clean the duct
		The fan is damaged.	

Fault code	Fault type	Possible cause	Solution
CE	Abnormal remote serial port communication	The baud rate is set improperly.	Set the baud rate properly
		Serial port communication error	Reset by pressing the STOP/RESET key, and seek for technical support
		The fault alarm parameters are set improperly.	Modify the P15.03 setting
		The host device does not work.	Check if the host device is working and if the wiring is correct
		Wires or plug-in units of the control board are loose.	Check them and rewire
ItE	Current detection circuit abnormal	The auxiliary power supply is damaged.	Seek for technical support
		The Hall device is damaged.	Seek for technical support
		The amplifying circuit is abnormal.	Seek for technical support
bCE	Board level communication error	Incorrect connection of board detection signals	Seek for technical support
rCr	Contactor fault	(1) The contactor feedback signal is valid before startup.	Check whether the contactor's contacts (feedback contacts included) are normal
		(2) No feedback signal is received after the contactor is closed.	Check whether the drive's input functions are set correctly
			Check whether the control circuit power for the contactor is normal
bCr	Brake fault	The inconsistency between brake output and feedback signals exceeds 2 seconds.	Check whether the brake coil and feedback contacts are normal
			Check the signal features of feedback contacts (NO, NC)
			Check whether the control circuit power for the brake coil is normal
OH4	Motor overheat	The motor overheat signal is valid.	Check whether the motor is used properly, or is damaged
			Improve the heat dissipation
SLr	Over		

Fault code	Fault type	Possible cause	Solution
		The detection threshold for speed deviation is set too small.	Change the detection threshold for speed deviation
		The load fluctuation is severe.	Eliminate load fluctuation
STO	STO fault	STO input terminals are invalid.	Check STO1 and STO2 input

9 Function Codes

○: means the function code can be changed during running;

×: means the function code can be changed during stop;

*: means the function code can be read only and can not be changed.

Function code	Name	Description	Range	Default	Change
P00: System management parameters					
P00.00	Menu mode selection	0: Quick menu mode Only quick commissioning related parameters are displayed. 1: Full menu mode All function parameters are displayed. 2: Changed memory menu mode Only parameters that are different from factory settings are displayed.	0 to 2	1	○
P00.01	User password	0: No password Others: Password protection	0 to 65535	0	○
P00.03	Parameter protection setting	0: All data can be changed. 1: Only main frequency reference digital setting P02.09 and this function code can be changed. 2: Only this function code can be changed.	0 to 2	0	○
P00.05	Parameter initialization	0: Parameters rewritable 1: Clear fault records 2: Restore to factory settings 3: Restore some parameters to factory settings (motor parameters not restored)	0 to 3	0	×
P00.06	Power board upgrading command	0: Disabled 1: Enabled	0 to 1	0	×
P00.07	Parameter copy	0: No operation 1: Drive's parameters uploaded to the keypad 2: Keypad's parameters downloaded to the drive (all) 3: Keypad's parameters downloaded to the drive (excluding motor parameters) 4: Keypad's parameters downloaded	0 to 4	0	×

Function code	Name	Description	Range	Default	Change
		to the drive (only motor parameters)			
P01: Status display parameters					
P01.00	Main frequency channel	Refers to P02.05	0 to 8	0	*
P01.01	Main frequency reference	Displays the main frequency reference.	0.00 to P02.10	0	*
P01.03	Frequency reference	Displays the frequency reference after frequency source calculation.	0.00 to P02.10	0	*
P01.04	Ramp reference frequency	Displays the ramp reference frequency.	0.00 to P02.10	0	*
P01.05	Output frequency	Displays the actual output frequency.	0.00 to P02.10	0	*
P01.06	Output voltage	Displays the output voltage.	0 to 65535 V	0	*
P01.07	Output current	Displays the output current.	0.0 to 6553.5 A	0	*
P01.08	Torque current	Displays the drive's current torque current as a percentage of the motor's rated current.	-300.0 to 300.0%	0	*
P01.09	Exciting current	Displays the drive's current exciting current as a percentage of the motor's rated current.	-300.0 to 300.0%	0	*
P01.13	Measured frequency of motor	Displays the actual output frequency of the motor.	-P02.10 to P02.10	0	*
P01.16	Bus voltage	Displays the bus voltage.	0.0 to 6553.5 V	0	*
P01.17	Operation status of the drive	Bit0: 0: Stop; 1: Run Bit1: 0: FWD; 1: REV Bit2: Zero speed running Bit3: Accelerating Bit4: Decelerating Bit5: Running at constant speed Bit6: Pre-excitating Bit7: Tuning Bit8: Overcurrent limiting Bit9: Bus overvoltage limiting Bit10: Torque limiting Bit11: Speed reached (speed mode) / Speed limiting (torque mode) Bit12: Drive in fault Bit13: Speed control Bit14: Torque control Bit15: Reserved	0 to 0xFFFF	0	*

Function code	Name	Description	Range	Default	Change
P01.18	DI1 to DI4 state	0: Invalid 1: Valid	0 to 0x1111	0	*
P01.19	DI5 to DI8 state	0: Invalid 1: Valid	0 to 0x1111	0	*
P01.20	DO state	0: Invalid 1: Valid	0 to 0x1111	0	*
P01.21	AI1 input voltage	Displays the AI1 input voltage.	0.00 to 10.00 V	0	*
P01.22	AI2 input voltage	Displays the AI2 input voltage.	-10.00 to 10.00 V	0	*
P01.23	AI1 input current	Displays the AI1 input current.	0.00 to 20.00 mA	0	*
P01.24	AI2 input current	Displays the AI2 input current.	0.00 to 20.00 mA	0	*
P01.25	AO1 output	0.00 to 100.00%	0.00 to 100.00%	0	*
P01.36	Current AD of AI1	0 to 4095	0 to 4095	0	*
P01.37	Current AD of AI2	0 to 4095	0 to 4095	0	*
P01.38	Current AD of motor temperature	0 to 4095	0 to 4095	0	*
P01.39	Motor temperature	-40 to 200℃	-40 to 200	0	*
P01.65	Encoder card software version		0 to 65535	0	*
P01.66	Function software sub-version		0 to 65535	0	*
P01.67	Drive software sub-version		0 to 65535	0	*
P02: Basic function parameters					
P02.00	Control mode selection	0: SVC1 1: SVC2 (only for asynchronous motors) 2: V/F control (only for asynchronous motors) 3: FVC	0 to 3	2	×
P02.02	Operation command channel selection	0: Keypad control 1: Terminal control 2: Communication control	0 to 2	0	×
P02.03	Communication command channel selection	0: Modbus channel / Modbus TCP channel 1, 2: Reserved 3: EtherCAT channel / PROFINET channel / CANopen channel	0 to 3	0	×
P02.04	Running direction	0: Same direction 1: Opposite direction	0 to 1	0	○

Function code	Name	Description	Range	Default	Change
P02.05	Main frequency source selection	0: Digital setting P02.09 1: AI1 2: AI2 3: High-speed pulse HDI reference 4: Simple PLC programming reference 5: Multi-speed running reference 6: PID control 7: Modbus / Modbus TCP 8: PROFINET / EtherCAT	0 to 8	0	×
P02.09	Frequency digital setting	0.00 Hz to P02.11	0.00 Hz to P02.11	50.00 Hz	○
P02.10	Maximum output frequency	P02.11 to 599.00 Hz Note: The maximum frequency is at least 50.00 Hz	P02.11 to 599.00 Hz	50.00 Hz	×
P02.11	Upper limit frequency	P02.12 to P02.10	P02.12 to P02.10	50.00 Hz	×
P02.12	Lower limit frequency	0.00 Hz to P02.11	0.00 Hz to P02.11	0.00 Hz	×
P02.13	Acceleration time 1	0.0 to 6000.0 s	0.0 to 6000.0 s	4.0 s	○
P02.14	Deceleration time 1	0.0 to 6000.0 s	0.0 to 6000.0 s	4.0 s	○
P02.16	Carrier frequency	2.0 to 12.0 kHz	2.0 to 12.0 kHz	4.0 kHz	○
P03: Motor 1 parameters					
P03.00	Motor type selection	0: Asynchronous motor 1: Synchronous motor	0 to 1	0	×
P03.01	Asynchronous motor rated power	0.1 to 3000.0 kW	0.1 to 3000.0 kW	Model dependent	×
P03.02	Asynchronous motor rated voltage	0 to 1200 V	0 to 1200 V	Model dependent	×
P03.03	Asynchronous motor rated current	0.8 to 6000.0 A	0.8 to 6000.0 A	Model dependent	×
P03.04	Asynchronous motor rated frequency	0.01 Hz to P02.10	0.01 Hz to P02.10	50.00 Hz	×
P03.05	Asynchronous motor rated speed	1 to 36000 rpm	1 to 36000 rpm	Model dependent	×
P03.06	Asynchronous motor stator resistance	0.001 to 65.535 ß	0.001 to 65.535 ß	Model dependent	×
P03.07	Asynchronous motor rotor resistance	0.001 to 65.535 ß	0.001 to 65.535 ß	Model dependent	×
P03.08	Asynchronous motor leakage inductive reactance	0.01 mH to 655.35 mH (drive power Ů 55 kW) 0.001 mH to 65.535 mH (drive	Model dependent	Model dependent	×

Function code	Name	Description	Range	Default	Change
		power > 55 kW)			
P03.09	Asynchronous motor mutual inductive reactance	0.1 mH to 6553.5 mH (drive power Ů 55 kW) 0.01 mH to 655.35 mH (drive power > 55 kW)	Model dependent	Model dependent	×
P03.10	Asynchronous motor no-load current	0.1 to 6553.5 A	0.1 to 6553.5A	Model dependent	×
P03.11	Asynchronous motor iron core magnetic saturation coefficient 1	0.0 to 100.0%	0.0 to 100.0%	80.0%	×
P03.12	Asynchronous motor iron core magnetic saturation coefficient 2	0.0 to 100.0%	0.0 to 100.0%	68.0%	×
P03.13	Asynchronous motor iron core magnetic saturation coefficient 3	0.0 to 100.0%	0.0 to 100.0%	57.0%	×
P03.14	Asynchronous motor iron core magnetic saturation coefficient 4	0.0 to 100.0%	0.0 to 100.0%	40.0%	×
P03.15	Synchronous motor rated power	0.1 to 3000.0 kW	0.1 to 3000.0 kW	Model dependent	×
P03.16	Synchronous motor rated voltage	0 to 1200 V	0 to 1200 V	Model dependent	×
P03.17	Synchronous motor rated current	0.8 to 6553.5 A	0.8 to 6553.5 A	Model dependent	×
P03.18	Synchronous motor rated frequency	0.01 Hz to P02.10	0.01 Hz to P02.10	Model dependent	×
P03.19	Number of synchronous motor pole pairs	1 to 128	1 to 128	2	×
P03.20	Synchronous motor stator resistance	0.001 to 65.535 ß (drive power Ů 55 kW) 0.0001 to 6.5535 ß (drive power > 55 kW)	Model dependent	Model dependent	×
P03.21	Synchronous motor axis-D inductance	0.01 to 655.35 mH (drive power Ů 55 kW)	Model dependent	Model dependent	×

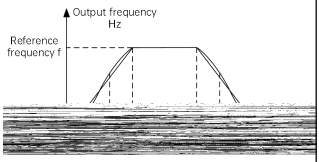
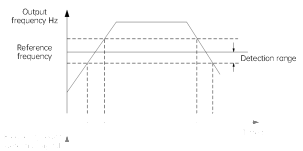
Function code	Name	Description	Range	Default	Change
		0.001 to 65.535 mH (drive power > 55 kW)			
P03.22	Synchronous motor axis-Q inductance	0.01 to 655.35 mH (drive power Ů 55 kW) 0.001 to 65.535 mH (drive power > 55 kW)	Model dependent	Model dependent	×
P03.23	Synchronous motor back EMF	0.0 to 6553.5 V	0.0 to 6553.5 V	Model dependent	×
P03.27	Motor auto-tuning	0: No operation 1: Partial parameter auto-tuning in the static status	0 to 3	0	×
P04: Motor encoder parameters					
P04.00	Encoder PPR	1 to 65535	1 to 65535	1024	×
P04.01	Encoder type	0: ABZ incremental encoder	0	0	×
P04.02	A/B phase sequence of ABZ incremental encoder	0: Forward 1: Reverse	0 to 1	0	×
P04.04	PG card voltage class selection	0: 5 V 1: 12 V	0 to 1	0	×
P04.05	Motor control function selection	Bit0: Z signal correction enable Bit1: CD signal correction enable Bit2: Zero servo enable Bit3: Sin/Cos AB disconnection detection Bit4: Sin/Cos CD disconnection detection Bit5: Encoder disconnection detection Bit6: Excessive speed deviation detection Bit7: Full-range subdivision speed measurement Bit8: Full-range encoder card speed measurement Bit9: Zero servo fast speed loop Bit10: Reserved Bit11: Zero servo feedforward control enable	0 to 0xFFFF	0x0BFF	×
P04.06	Magnetic pole angle		0 to 359.9	0	*
P04.07	PG card frequency	0: No frequency division	0 to 6	0	*

Function code	Name	Description	Range	Default	Change
	division factor	1: Divide-by-2 2: Divide-by-4 3: Divide-by-8 4: Divide-by-16 5: Divide-by-32 6: Divide-by-64			
P05: Motor vector control parameters					
P05.00	Speed loop proportional gain 1	1 to 100	1 to 100	10	○
P05.01	Speed loop integral time 1	0.01 to 10.00 s	0.01 to 10.00 s	0.50 s	○
P05.02	Switchover frequency 1	0.00 Hz to P02.11	0.00 Hz to P02.11	5.00 Hz	○
P05.03	Speed loop proportional gain 2	1 to 100	1 to 100	10	○
P05.04	Speed loop integral time 2	0.01 to 10.00 s	0.01 to 10.00 s	1.00 s	○
P05.05	Switchover frequency 2	0.00 Hz to P02.11	0.00 Hz to P02.11	10.00 Hz	○
P05.06	Slip compensation coefficient	50 to 200%	50 to 200%	100%	○
P05.07	Speed loop filter time constant	0.00 to 20.00 s	0.00 to 20.00 s	0.02 s	○
P08: Startup/Stop control parameters					
P08.02	Startup frequency	0.00 to 50.00 Hz	0.00 to 50.00 Hz	0.00	×
P08.03	Startup frequency hold time	0.0 to 50.0 s	0.0 to 50.0 s	0.0	×
P08.07	Stop frequency	0.00 to 3.00 Hz	0.00 to 3.00 Hz	0.50	×
P09: Terminal input parameters					
P09.00	Function selection of terminals 4, 5, 6, 8	Ones: 0: Terminal 4 as DI1 1: Terminal 4 as DO1 2: Terminal 4 as HDO1 Tens: 0: Terminal 5 as DI2 1: Terminal 5 as DO2 2: Terminal 5 as HDO2 Hundreds: Reserved Thousands: Reserved Note:	0 to 0x22	0	○

Function code	Name	Description	Range	Default	Change
		Terminal 6 can only be set as DI3. Terminal 8 can only be set as DI4.			
P09.01	Function selection of terminals 7, 10, 12, 16	Ones: 0: Terminal 7 as DI5 1: Terminal 7 as thermosensitive signal input Tens: 0: Terminal 10 as DI6 1: Terminal 10 as HDI Hundreds: Reserved Thousands: 0: Terminal 16 as DI8 1: Terminal 16 as AI1 voltage input 2: Terminal 16 as AI1 current input Note: Terminal 12 can only be set as DI7	0 to 0x2011	0	○
P09.02	Function selection of terminals 13, 11	Ones: 0: Terminal 13 as AI2 voltage input 1: Terminal 13 as AI2 current input Tens: 0: Terminal 11 as DO3 1: Terminal 11 as AO1 voltage output 2: Terminal 11 as AO1 current output Hundreds: Reserved Thousands: Reserved	0 to 0x21	0	○
P09.03	DI1 function selection	0: No function 1: Forward RUN 2: Reverse RUN 6: Multi-reference terminal 1 7: Multi-reference terminal 2 8: Multi-reference terminal 3 9: Multi-reference terminal 4 10: Acceleration/Deceleration time terminal 1 11: Acceleration/Deceleration time terminal 2 16: External fault NO input 17: External fault NC input 18 to 19: Reserved 20: Frequency reference source switchover from A to B	0 to 81	1	○
P09.04	DI2 function selection		0 to 81	2	○
P09.05	DI3 function selection		0 to 81	6	○
P09.06	DI4 function selection		0 to 81	7	○
P09.07	DI5 function selection		0 to 81	71	○
P09.08	DI6 function selection		0 to 81	0	○
P09.09	DI7 function selection		0 to 81	0	○
P09.10	DI8 function selection		0 to 81	0	○

Function code	Name	Description	Range	Default	Change
		21: Frequency reference source switchover from combination to A 22: External reset (RESET) input 23: Coast to stop input (FRS) 24: Acceleration/Deceleration inhibition 25: DC braking input at stop 33: PID regulating feature switchover 43: Drive running inhibition 60: Emergency stop 71:Controller enable (EN) 72:Inspection input (INS) 73: Emergency running input (UPS) 74: RUN contactor feedback input 75: Brake feedback input 76: Motor overheat input (OH) 77: Up slow-down speed input (UPF) 78: Down slow-down speed input (DNF) 79: Overspeed governor feedback input (OSG)			
P09.11	Terminal open-circuit voltage	0: Digital terminal open-circuit voltage 0 V 1: Digital terminal open-circuit voltage 24 V	0 to 1	1	○
P09.12	DI1 to DI4 active mode	Ones: 0: DI1 positive logic active 1: DI1 negative logic active Tens: 0: DI2 positive logic active 1: DI2 negative logic active Hundreds: 0: DI3 positive logic active 1: DI3 negative logic active Thousands: 0: DI4 positive logic active 1: DI4 negative logic active	0 to 0×1111	0	○
P09.13	DI5 to DI8 active mode	Ones: 0: DI5 positive logic active 1: DI5 negative logic active	0 to 0×1111	0	○

Function code	Name	Description	Range	Default	Change
		Tens: 0: DI6 positive logic active 1: DI6 negative logic active Hundreds: 0: DI7 positive logic active 1: DI7 negative logic active Thousands: 0: DI8 positive logic active 1: DI8 negative logic active			
P09.25	AI1 lower limit	0.00 V to P09.27	0.00 to P09.27	0.00 V	○
P09.26	Percentage corresponding to AI1 lower limit	0.0% to 100.0%	0.0 to 100.0%	0.0%	○
P09.27	AI1 upper limit	P09.25 to 10.00 V	P09.25 to 10.00 V	10.00 V	○
P09.28	Percentage corresponding to AI1 upper limit	0.0 to 100.0%	0.0 to 100.0%	100.0%	○
P09.29	AI1 filter time	0.000 to 10.000 s	0.000 to 10.000 s	0.030 s	○
P10: Terminal output parameters					
P10.00	DO1 function selection	0: Disabled 1: AC drive in running 2: Forward running 3: Reverse running 4: Frequency reach signal (FAR) 5: Frequency-level detection signal (FDT1) 6: Frequency-level detection signal (FDT2) 16: Accumulated running duration reach 17: AC drive ready to run (RDY) 18: AC drive fault 20: Motor overheat 48: RUN contactor output control 49: Brake output control 50: Advance door opening signal output	0 to 47	1	○
P10.01	DO2 function selection		0 to 47	4	○
P10.02	DO3 function selection		0 to 47	0	○
P10.03	Relay RO1 output selection		0 to 50	18	○
P11: Auxiliary function parameters					
P11.00	Acceleration/ Deceleration mode	0: Straight-line acceleration/deceleration	0 to 1	1	○

Function code	Name	Description	Range	Default	Change
		1: S-curve acceleration/deceleration			
P11.01	Acceleration time 2	0.0 to 6000.0 s	0.0 to 6000.0 s	4.0	○
P11.02	Deceleration time 2	0.0 to 6000.0 s	0.0 to 6000.0 s	4.0	○
P11.07	Time proportion of S-curve start segment	In the below figure, t1 is defined by P11.07, in which the output frequency slope gradually increases;	0.0 to 100.0%	30.0%	○
P11.08	Time proportion of S-curve end segment	t2 is defined by P11.08, in which the output frequency slope gradually decreases; and the segment between t1 and t2 is straight-line acceleration/deceleration. They are relative to the current acceleration/deceleration time.  Note: P11.07+P11.08 Ů 100.0%	0.0 to 100.0%	30.0%	○
P11.09	Switchover frequency of acceleration/ deceleration time 1 and 2	0.00 Hz to P02.10	0.00 Hz to P02.10	0.00 Hz	○
P11.26	Frequency reach (FAR) detection range	 When the running frequency of the drive is within the P11.26 percentage range of maximum frequency, the multi-function DO terminal outputs an ON signal.	0.0 to 100.0%	0.0%	○
P11.27	FDT1 frequency detection value	When the running frequency is higher than P11.27 or P11.29, the	0.00 Hz to P02.11	0.00 Hz	○
P11.28	FDT1 frequency	multi-function DO terminal outputs	0.0 to 100.0%	0.0%	○

Function code	Name	Description	Range	Default	Change
	detection hysteresis	an ON signal; when the running frequency is lower than the P11.28 or P11.30 percentage range of the frequency detection value, the DO terminal cancels the ON signal.			
P11.29	FDT2 frequency detection value		0.00 Hz to P02.11	0.00 Hz	○
P11.30	FDT2 frequency detection hysteresis		0.0 to 100.0%	0.0%	○
P11.31	Auto start temperature of fan	40.0 to 80.0℃	40.0 to 80.0	55.0	○
P11.44	Cooling fan control	0: Auto running (based on the inverter temperature) 1: Always running after power-on 2: Controlled by start/stop commands (on during operation, off during stop)	0 to 2	2	×
P13: Multi-speed and simple PLC parameters					
P13.01	Multi-speed reference 0	The frequency range for reference 0 to 15 is 00.00 to P02.12.	00.00 to P02.12	0.0	○
P13.02	Multi-speed reference 1		00.00 to P02.12	0.0	○
P13.03	Multi-speed reference 2		00.00 to P02.12	0.0	○
P13.04	Multi-speed reference 3		00.00 to P02.12	0.0	○
P13.05	Multi-speed reference 4		00.00 to P02.12	0.0	○
P13.06	Multi-speed reference 5		00.00 to P02.12	0.0	○
P13.07	Multi-speed reference 6		00.00 to P02.12	0.0	○
P13.08	Multi-speed reference 7		00.00 to P02.12	0.0	○
P13.09	Multi-speed reference 8		00.00 to P02.12	0.0	○
P13.10	Multi-speed reference 9		00.00 to P02.12	0.0	○
P13.11	Multi-speed reference 10		00.00 to P02.12	0.0	○
P13.12	Multi-speed reference 11		00.00 to P02.12	0.0	○
P13.13	Multi-speed reference 12		00.00 to P02.12	0.0	○

Function code	Name	Description	Range	Default	Change
P13.14	Multi-speed reference 13		00.00 to P02.12	0.0	○
P13.15	Multi-speed reference 14		00.00 to P02.12	0.0	○
P13.16	Multi-speed reference 15		00.00 to P02.12	0.0	○
P15: Communication parameters					
P15.00	Communication format	Ones: 0: Modbus protocol 1: Expansion card to 485 protocol Tens: 0: 1-8-2-N format 1: 1-8-1-E format 2: 1-8-1-O format 3: 1-8-1-N format	0 to 0x31	0x30	○
P15.01	Baud rate	0: 4800 BPS 1: 9600 BPS 2: 19200 BPS 3: 38400 BPS 4: 57600 BPS 5: 115200 BPS 6: 125000 BPS	0 to 6	1	○
P15.02	Local address	0 to 247, 0 is the broadcast address	0 to 247	1	○
P15.03	Communication timeout detection time	0.0 to 60.0 s The function code is disabled when set to 0.0. When the function code is set to a non-zero value, if the interval between the current communication and next communication exceeds the timeout detection time, the system will report “485 communication error” (CE).	0.0 to 60.0 s	0.0 s	○
P15.04	Response delay of the drive	0 to 200 ms	0 to 200 ms	5 ms	○
P15.05	Communication action	Ones: 0: Response to write operation 1: No response to write operation Tens: 485 mapping function 0: Disable	0 to 0x11	0	○

Function code	Name	Description	Range	Default	Change
		1: Enable Note: Only control parameters starting with 0x64 can decide whether there is a response for the write operation. For writing of function codes, it is sure to have response.			
P16: Keypad display setting parameters					
P16.00	LED display parameter selection 1 during running	0: No display; 1: Display Used to set whether a parameter displays on the zero level of the keypad menu during running. The related bits are listed below: 0: Main frequency channel 1: Main frequency reference 2: Auxiliary frequency reference 3: Reference frequency 4: Ramp reference frequency 5: Output frequency 6: Output voltage 7: Output current 8: Torque current 9: Exciting current 10: Reserved 11: Motor power 12: Estimated motor frequency 13: Actual motor frequency 14: HIWORD of the drive's accumulated power consumption 15: LOWORD of the drive's accumulated power consumption	0 to 0xFFFF	0xF0	○
P16.01	LED display parameter selection 2 during running	0: No display; 1: Display Used to set whether a parameter displays on the zero level of the keypad menu during running. The related bits are listed below: 0: Bus voltage 1: Drive running status 2: DI1 to DI4 state 3: DI5 to DI8 state 4: DO state	0 to 0xFFFF	0x1	○

Function code	Name	Description	Range	Default	Change
		5: AI1 voltage 6: AI2 voltage 7: AI1 current 8: AI2 current 9: AO1 voltage 10: HDI frequency 11: HDO1 frequency 12: HDO2 frequency 13: Process PID reference 14: Process PID feedback 15: Process PID deviation			
P16.02	LED default parameter display during running	Used to set the default parameter number displayed on the zero level of the keypad menu during running after power-on. 0-31 represent the 32 parameters listed in P16.00 and P16.01. Note: When you press the shift key, the function code displays the switched parameter number, only RAM modified and not saved to EEPROM.	0 to 31	4	○
P16.03	LED parameter display selection at stop	Binary setting: 0: No display; 1: Display Used to set whether a parameter is displayed on the zero level of the keypad menu at stop. Bit0 to bit15 correspond to 16 parameters listed in P16.04. Note: If all is set to 0, the reference frequency will be displayed.	0 to 0xFFFF	0x3	○
P16.04	LED default parameter display at stop	Used to set the default parameter number displayed on the zero level of the keypad menu at stop after power-on. 0: Reference frequency 1: Bus voltage 2: DI input status 1 3: DI input status 2 4: DO output status 5: AI1 input voltage	0 to 15	0	○

Function code	Name	Description	Range	Default	Change
		6: AI2 input voltage 7: AO1 output percentage 8: HDI reference frequency 9: HDO1 output 10: HDO2 output 11: Length 12: Simple PLC current step 13: Line speed 14: PID reference 15: Torque reference Note: When you press the shift key, the function code only displays the switched parameter number, only RAM modified and not saved to EEPROM.			
P27: Multi-speed curve parameters					
P27.00	S-curve 1 acceleration time	0.0 to 6000.0 s	0.0 to 6000.0 s	3.0 s	○
P27.01	S-curve 1 deceleration time	0.0 to 6000.0 s	0.0 to 6000.0 s	3.0 s	○
P27.02	S-curve 1 stop time	0.0 to 6000.0 s	0.0 to 6000.0 s	15.0 s	○
P27.03	S-curve 1 switchover frequency	0.00 to 0 Hz	0.00 to 0 Hz	0.00 Hz	○
P27.04	Time proportion of S-curve 1 acceleration start segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.05	Time proportion of S-curve 1 acceleration end segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.06	Time proportion of S-curve 1 deceleration start segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.07	Time proportion of S-curve 1 deceleration end segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.08	Time proportion of	0.0 to 100.0%	0.0 to 100.0%	40.0%	○

Function code	Name	Description	Range	Default	Change
	S-curve 1 stop start segment				
P27.09	Time proportion of S-curve 1 stop end segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.10	S-curve 2 acceleration time	0.0 to 6000.0 s	0.0 to 6000.0 s	3.0 s	○
P27.11	S-curve 2 deceleration time	0.0 to 6000.0 s	0.0 to 6000.0 s	3.0 s	○
P27.12	S-curve 2 stop time	0.0 to 6000.0 s	0.0 to 6000.0 s	15.0 s	○
P27.13	S-curve 2 switchover frequency	0.00 to 0 Hz	0.00 to 0 Hz	0.00 Hz	○
P27.14	Time proportion of S-curve 2 acceleration start segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.15	Time proportion of S-curve 2 acceleration end segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.16	Time proportion of S-curve 2 deceleration start segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.17	Time proportion of S-curve 2 deceleration end segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.18	Time proportion of S-curve 2 stop start segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.19	Time proportion of S-curve 2 stop end segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.20	S-curve 3 acceleration time	0.0 to 6000.0 s	0.0 to 6000.0 s	3.0 s	○
P27.21	S-curve 3 deceleration time	0.0 to 6000.0 s	0.0 to 6000.0 s	3.0 s	○
P27.22	S-curve 3 stop time	0.0 to 6000.0 s	0.0 to 6000.0 s	15.0 s	○
P27.23	S-curve 3 switchover	0.00 to 0 Hz	0.00 to 0 Hz	0.00 Hz	○

Function code	Name	Description	Range	Default	Change
	frequency				
P27.24	Time proportion of S-curve 3 acceleration start segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.25	Time proportion of S-curve 3 acceleration end segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.26	Time proportion of S-curve 3 deceleration start segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.27	Time proportion of S-curve 3 deceleration end segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.28	Time proportion of S-curve 3 stop start segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.29	Time proportion of S-curve 3 stop end segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○

Function code	Name	Description	Range	Default	Change
	deceleration start segment				
P27.37	Time proportion of S-curve 4 deceleration end segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.38	Time proportion of S-curve 4 stop start segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P27.39	Time proportion of S-curve 4 stop end segment	0.0 to 100.0%	0.0 to 100.0%	40.0%	○
P28: Elevator function parameters					
P28.00	Inspection speed selection	Used to select the multi-speed during inspection.	0 to 15	0	○
P28.01	Inspection running curve selection	Used to select the curve for inspection running.	0 to 15	0	○
P28.02	Up speed detection level	0.00 Hz to maximum frequency	0.00 Hz to P02.10	0.00 Hz	○
P28.03	Down speed detection level	0.00 Hz to maximum frequency	0.00 Hz to P02.10	0.00 Hz	○
P28.04	Deceleration time at abnormality	Used to set the deceleration time from the maximum frequency to 0 Hz upon drive abnormality.	0.0 s to 300.0 s	0.500 s	○
P28.05	Advance door opening detection level	0.00 Hz to maximum frequency	0.00 Hz to P02.10	0 Hz	○
P28.06	Brake release delay	0.20 to 10.00 s	0.00 to 10.00 s	0.20 s	○
P28.08	Brake apply delay	0.00 to 10.00 s	0.00 to 10.00 s	0.20 s	○
P28.09	Apply delay upon stop	0.00 to 10.00 s	0.00 to 10.00 s	0.30 s	○
P28.10	RUN contactor open delay	0.00 to 10.00 s	0.00 to 10.00 s	0.00 s	○
P28.11	Zero-speed hold time at start	0.000 to 2.000 s	0.000 to 20.000 s	0.000 s	○
P28.12	Zero-speed hold time upon stop	0 ms to 9999 ms	0 ms to 9999 ms	0 ms	○
P28.13	Current cancellation time upon stop	0 to 9999 s	0 to 9999 s	300 ms	○
P28.14	Brake apply	0 to 10.00	0 to 10.00	0 Hz	○

Function code	Name	Description	Range	Default	Change
P28.28	STO function selection	Bit0: STO enable selection 0: Disable 1: Enable	0x0000 to 0xFFFF	0	○
P41: IO option parameters					
P41.00	DI9 function selection	0: No function 1: Forward RUN 2: Reverse RUN 6: Multi-reference terminal 1 7: Multi-reference terminal 2 8: Multi-reference terminal 3 9: Multi-reference terminal 4 10: Acceleration/Deceleration time terminal 1 11: Acceleration/Deceleration time terminal 2 16: External fault NO input 17: External fault NC input 18 to 19: Reserved 20: Frequency reference source switchover from A to B 21: Frequency reference source switchover from combination to A 22: External reset (RESET) input 23: Coast to stop input (FRS) 24: Acceleration/Deceleration inhibition 43: Drive running inhibition 60: Emergency stop 71:Controller enable (EN) 72:Inspection input (INS) 73: Emergency running input (UPS) 74: RUN contactor feedback input 75: Brake feedback input 76: Motor overheat input (OH) 77: Up slow-down speed input (UPF) 78: Down slow-down speed input (DNF) 79: Overspeed governor feedback input (OSG)	0 to 81	0	○
P41.01	DI10 function selection		0 to 81	0	○
P41.02	DI11 function selection		0 to 81	0	○
P41.03	Terminal open-circuit voltage	0: Digital terminal open-circuit voltage 0 V	0 to 1	1	○

Function code	Name	Description	Range	Default	Change
		1: Digital terminal open-circuit voltage 24 V			
P41.04	DI9 to DI11 active mode	Ones: 0: DI9 positive logic active 1: DI9 negative logic active Tens: 0: DI10 positive logic active 1: DI10 negative logic active Hundreds: 0: DI11 positive logic active 1: DI11 negative logic active Thousands: Reserved	0 to 0x111	0	○
P41.05	Reserved				
P41.06	DI filter time	Used to set the filter time for DI terminal sampling. It is recommended to increase the parameter when there is strong interference to avoid misoperation.	0.000 to 1.000	0.010 s	○
P41.07	DI9 switch-on delay time	Used to set the delay time for level jump upon switch-on/off of digital input terminals.	0.0 to 600.0 s	0.0 s	○
P41.08	DI9 switch-off delay time		0.0 to 600.0 s	0.0 s	○
P41.09	DI10 switch-on delay time		0.0 to 600.0 s	0.0 s	○
P41.10	DI10 switch-off delay time		0.0 to 600.0 s	0.0 s	○
P41.11	DI11 switch-on delay time		0.0 to 600.0 s	0.0 s	○
P41.12	DI11 switch-off delay time		0.0 to 600.0 s	0.0 s	○
P41.13	Relay RO2 output selection	0: Disabled 1: AC drive in running	0 to 50	0	○
P41.14	Relay RO3 output selection	2: Forward running 3: Reverse running 4: Frequency reach signal (FAR) 5: Frequency-level detection signal (FDT1) 6: Frequency-level detection signal (FDT2) 16: Accumulated running duration	0 to 50	0	○

Function code	Name	Description	Range	Default	Change
		reach 17: AC drive ready to run (RDY) 18: AC drive fault 20: Motor overheat 48: RUN contactor output control 49: Brake output control 50: Advance door opening signal output			
P41.15	Output terminal polarity selection	Ones: 0: RO2 positive logic active 1: RO2 negative logic active Tens: 0: RO3 positive logic active 1: RO3 negative logic active Hundreds: Reserved Thousands: Reserved	0 to 0x11	0	○
P41.16	RO2 switch-on delay time	Used to set the delay time for level jump upon switch-on/off of output terminals.	0.0 to 600.0 s	0.0 s	○
P41.17	RO2 switch-off delay time		0.0 to 600.0 s	0.0 s	○
P41.18	RO3 switch-on delay time		0.0 to 600.0 s	0.0 s	○
P41.19	RO3 switch-off delay time		0.0 to 600.0 s	0.0 s	○
P41.20 to P41.50	Reserved				
P50: Option status parameters					
P50.00	Option card 1 type	0: No communication option 1: PROFINET option 2: EtherCAT option 3: IO option 4: Modbus TCP	0 to 4	0	*
P50.03	DI status of the IO option	0: Disabled 1: Enabled	0 to 0x111	0	*
P50.04	DO status of the IO option	0: Disabled 1: Enabled	0 to 0x11	0	*
P50.05	Software version of option 1	0.00 to 99.99	0.00 to 99.99	0.00	*
P50.07	OP state of the option	0 to 65535	0 to 65535	0	*

Function code	Name	Description	Range	Default	Change
P97: Fault and protection parameters					
P97.32	Current fault type	0: No fault	0 to 61	0	*
P97.33	Latest fault type	1: Overcurrent during acceleration (OC1)	0 to 61	0	*
P97.34	Second latest fault type	2: Overcurrent during deceleration (OC2) 3: Overcurrent during operation at constant speed (OC3) 4: Overvoltage during acceleration (OV1) 5: Overvoltage during deceleration (OV2) 6: Overvoltage during operation at constant speed (OV3) 7: Undervoltage fault (Uv) 8: Input phase loss (SPI) 9: Output phase loss (SPO) 10: Power module protection (drv) 11: Inverter overheat (OH1) 12: Rectifier bridge overheat (OH2) 13: AC drive overload (OL1) 14: Motor overload (OL2) 15: External fault (EF) 16: EEPROM read/write fault (EEP) 17: 485 communication error (CE) 18: EtherCAT communication timeout (E-CAt) 19: Current detection error (ItE) 20: CANopen communication timeout (E-CAN) 21: PID feedback loss (FbL) 22: Reserved 23: Braking resistor overcurrent (brOC) 24: Auto-tuning fault (tUN) 25: Reserved 26: PROFINET communication timeout (E-Pn) 27: IO card communication timeout (E-Io) 28: Modbus TCP communication	0 to 61	0	*

Function code	Name	Description	Range	Default	Change
		timeout (E-TCP) 29 to 32: Reserved 33: Short-to-ground fault (GdF) 34: Speed deviation fault (dEv) 35 to 38: Reserved 39: Motor overheat (OH3) 40: Reserved 41: 24 V power supply overload (24OL) 42 to 45: Reserved 46: Board-level communication error (bCE) 47: Reserved 48: BootLoader failure (bLt) 49: Power board software version mismatching (vEr) 50: Parameter upload and download timeout (UPdnE) 51: AI1 current input overcurrent (AIOC) 52: Reserved 53: FAN locked-rotor (FAn) 54: Pre-overload (POL1) 55: IO option 24 V overload (IO-OL) 56: Hardware input phase loss (HSPI) 57: DI zero positioning failed (POFL)			
P97.35	Bus voltage upon the current fault	0.0 to 6553.5 V	0.0 to 6553.5 V	0.0 V	*
P97.36	Actual current upon the current fault	0.0 to 999.9 A	0.0 to 999.9 A	0.0 A	*
P97.37	Running frequency upon the current fault	0.00 to 655.35 Hz	0.00 to 655.35 Hz	0.00 Hz	*
P97.38	AC drive status upon the current fault	0 to 0xFFFF	0 to 0xFFFF	0	*
P97.39	Inverter bridge temperature upon the current fault	-40.0 to 150.0℃	-40.0 to 150.0	0.0	*
P97.40	Current fault subcode	1901 Encoder card communication abnormal 1902 Z signal correction abnormal	0 to 65535	0	*

Function code	Name	Description	Range	Default	Change
		1903 Z signal loss 1904 CD signal correction abnormal 1905 AB signal abnormal 1907 CD signal abnormal 1909 Pulse count abnormal 1920 PG card type error			
P97.41	Input terminal state upon the current fault	0 to 0xFF	0 to 0xFF	0	*
P97.42	Output terminal state upon the current fault	0 to 0xF	0 to 0xF	0	*
P97.43	Running duration upon the current fault	0.Ø			

Function code	Name	Description	Range	Default	Change
	upon the second latest fault				
P97.56	AC drive status upon the second latest fault	0 to 0xFFFF	0 to 0xFFFF	0	*
P97.57	Inverter bridge temperature upon the second latest fault	0.0 to 150.0℃	0.0 to 150.0	0.0	*
P97.58	Fault subcode of the second latest fault	0 to 65535	0 to 65535	0	*
P97.59	Input terminal state upon the second latest fault	0 to 0xFF	0 to 0xFF	0	*
P97.60	Output terminal state upon the second latest fault	0 to 0xF	0 to 0xF	0	*
P97.61	Running duration upon the second latest fault	0.0 to 6553.5 s	0.0 to 6553.5 s	0.0 s	*
P98: Drive parameters					
P98.00	Serial No.	0 to 1000	0 to 1000	0	*
P98.01	Software version No.	0.00 to 99.99	0.00 to 99.99	0.00	*
P98.02	Performance software current version No.	0.00 to 99.99	0.00 to 99.99	0.00	*
P98.03	Performance software burning version No.	0.00 to 99.99	0.00 to 99.99	0.00	*
P98.04	Rated capacity	Output power, 0 to 999.9 kW (automatically set according to the model)	0 to 999.9 kW	Model dependent	*
P98.05	Rate voltage	0 to 999 V (automatically set according to the model)	0 to 999 V	Model dependent	*
P98.06	Rated current	0 to 999.9A (automatically set according to the model)	0 to 999.9 A	Model dependent	*

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10 Warranty and Service

1. Warranty period

The product is wÞ ب

Warranty Bill

Customer company:	
Detailed address:	
Contact:	Tel:
Machine model:	
Machine No.:	
Purchase date:	
Service unit	
Contact:	Tel:
Maintenance date	

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.