Virtec
Instruments Inc.

Manual

EM750 - Variable Frequency Drive
0.4KW-450KW

Preface

Thank you for choosing the VIRTEC EM750 series VFD.

Release time: 2025-03
Version: V1.0

EM750 series variable frequency drive(hereinafter referred to VFD) is a high reliability, small size general VFD launched by Virtec Instruments INC, USA. EM750 is applicable to both three-phase AC asynchronous motor and permanent magnet synchronous motor, in a variety of control modes - vectorized VF control technology (VVF) and speed sensor less vector control technology (SVC), speed or torque mode, supports Wi-Fi based keypad operation with specific debugging tool.

Salient features of EM750 series standard VFD:

- Support mobile phone APP debugging or monitoring VFD status;
- Support Wi-Fi module or serial port access;
- Permanent magnet synchronous and asynchronous motor drive two in one ;
- Equipped with high-frequency pulse input and output terminals;
- Equipped with two analog output terminals;
- 50℃ ambient temperature, no derating required ;
- Support "one-key shuttle" for fast and accurate speed adjustment;
- Complete protection functions: short circuit , overcurrent, overvoltage, overload, overheating and other multiple protections.

Before using the EM750 series VFD, please read this manual carefully and keep it properly. When the VFD is connected to the motor for the first time, please select the correct motor type (asynchronous motor or synchronous motor) and set the motor nameplate parameters: rated power, rated voltage, rated current, rated frequency, rated speed, motor connection method and rated power factor, etc.

As we are always committed to improving our products and product information, the information provided by our company is subject to change without prior notice.

For the latest changes and more information, please visit **www.virtec.us**

Safety precautions

Safety Definition: In this manual, safety precautions are divided into the following two categories;

Danger : Danger caused by failure to operate as required, which may result in serious injury or even death.

Note : Dangers caused by not following the requirements may result in moderate or minor injuries, and equipment damage. Please read this chapter carefully when installing, debugging and repairing this system, and be sure to follow the safety precautions required in this chapter. Any damage or loss caused by illegal operation will not be the responsibility of our company.

Safety Matters

Before installation:

Danger
1、 If you find that the packaging has been soaked in water, parts are missing or damaged when unpacking, please do not install it! 2、 If the outer packaging logo does not match the actual name, please do not install it!
Notice
1、 The device should be lifted and placed with care during transportation, otherwise there is a risk of damage to the equipment! 2、 Please do not use a damaged VFD or an VFD with missing parts, as there is a risk of injury! 3、 Do not touch the components of the control system with your hands, otherwise there is a risk of static electricity damage!

When installing:

Danger
1、Please install it on flame-retardant objects such as metal, and keep away from combustibles, otherwise it may cause a fire! 2、Do not arbitrarily twist the fixing bolts of equipment components, especially the bolts with red marks!

Notice
1、 Do not allow the wire ends or screws to fall into the VFD, otherwise it will cause damage to the VFD! 2、 Please install the VFD in a place with little vibration and avoid direct sunlight. 3、 When placing the VFD in a relatively closed cabinet or space, please pay attention to the installation gap to ensure the heat dissipation effect.

When wiring:

Danger
1、 The instructions in this manual must be followed and the work must be performed by professional electrical engineers; otherwise, unexpected dangers may occur! 2、 The VFD and power supply must be separated by a circuit breaker (it is recommended to use a specification greater than or equal to and closest to twice the rated current), otherwise a fire may occur! 3、 Please make sure the power supply is in zero energy state before wiring, otherwise there is a risk of electric shock! ! 4、 Never connect the input power to the output terminals (U, V, W) of the VFD. Pay attention to the markings on the terminals and do not connect the wrong wires! Otherwise, the VFD may be damaged! 5、 Please correctly, regularly and reliably ground the VFD according to the standards, otherwise there may be danger of electric shock and fire!
Notice
1、 Make sure the wiring complies with EMC requirements and the safety standards of the area. Please refer to the preferred recommendations for the wire diameters used. Otherwise, accidents may occur! 2、 Never connect the brake resistor directly to the DC bus ＋or －terminals. Otherwise, it may cause a fire! 3、 Please use a screwdriver with the specified torque to tighten the terminals, otherwise there is a risk of fire. 4、 Do not connect phase-shifting capacitors and LC/RC noise filters to the output circuit. 5、 Do not connect electromagnetic switches or electromagnetic contactors to the output circuit. Otherwise, the overcurrent protection circuit of the VFD will be activated, which may cause internal damage to the VFD in serious cases. 6、 Do not remove the connecting cables inside the VFD, otherwise the VFD may be damaged.

Before power on:

Danger
1、 Please confirm whether the voltage level of the input power supply is consistent with the rated voltage level of the VFD; whether the wiring position on the power input terminals (R, S, T) and output terminals (U, V, W) is correct; and pay attention to check whether there is a

short circuit in the peripheral circuit connected to the VFD and whether the connected lines are tight, otherwise it will cause damage to the VFD!

2、 No part of the VFD needs to undergo a withstand voltage test, as the product has already undergone this test before leaving the factory. Otherwise, an accident may occur!

Notice

1、 The VFD must be powered on after the cover is closed, otherwise it may cause electric shock!

2、 The wiring of all peripheral accessories must comply with the instructions of this manual and be correctly wired according to the circuit connection method provided in this manual. Otherwise, accidents may occur!

After power on:

Danger

1、 Do not touch the VFD and surrounding circuits with wet hands, otherwise there is a risk of electric shock!

2、 If the indicator light is off and the keyboard does not display after power-on, please turn off the power switch immediately. Do not touch the VFD R, S, T and any terminals on the wiring terminals with your hands or a screwdriver, otherwise there is a risk of electric shock. Contact our customer service staff immediately after turning off the power switch.

3、 When powered on, the VFD automatically performs a safety check on the external high-voltage circuit. At this time, you must not touch the VFD U, V, W terminals or the motor terminals, otherwise there is a risk of electric shock!

4、 Do not remove any part of the VFD when it is powered on.

Notice

1、 If parameter identification is required, please pay attention to the danger of injury from the rotating motor, otherwise it may cause an accident!

2、 Please do not change the VFD manufacturer's parameters at will, otherwise it may cause damage to the equipment!

Running:

Danger

1、 Do not touch the cooling fan, radiator and discharge resistor to test the temperature, otherwise it may cause burns!

2、 Non-professional technicians are not allowed to detect signals during operation, otherwise it may cause personal injury or equipment damage!

Notice

1、 When the VFD is running, avoid objects falling into the device, otherwise it may cause damage to the device!

2、 Do not use the contactor on-off method to control the start and stop of the VFD, otherwise it will cause equipment damage!

During maintenance:

Danger

1、 Do not repair or maintain the equipment while it is powered on, otherwise there is a risk of electric shock!

2、 Cut off the main circuit power supply and make sure the keyboard display interface is off for at least 10 minutes before performing maintenance and repair on the VFD, otherwise the residual charge on the capacitor may cause harm to people!

3、 Personnel without professional training are not allowed to repair and maintain the VFD, otherwise personal injury or equipment damage may occur!

4、 After replacing the VFD, parameters must be set and all pluggable interfaces must be plugged in and out when the power is off!

5、 The synchronous machine generates electricity when it rotates. In the event of a power outage, you must wait 10 minutes after the motor stops before performing maintenance and repairs on the VFD. Otherwise, there is a risk of electric shock!

Precautions

Motor insulation inspection

The motor insulation should be checked before the first use, before reuse after long-term storage, and during regular inspections to prevent damage to the VFD due to insulation failure of the motor winding. The motor connection must be separated from the VFD during insulation inspection. It is recommended to use a 500V voltage megohmmeter to ensure that the measured insulation resistance is not less than 5MΩ.

Thermal protection of motors

If the selected motor does not match the rated capacity of the VFD, especially when the rated power of the VFD is greater than the rated power of the motor, be sure to adjust the motor protection related parameter values in the VFD or install a thermal relay in front of the motor to protect the motor.

Operation above power frequency

This VFD can provide an output frequency of 0.00Hz～600.00Hz/0.0Hz～3000.0Hz. If the customer needs to operate the motor above the rated frequency, please consider the bearing capacity of the mechanical device.

About motor heating and noise

Because the VFD output voltage is a PWM wave, which contains certain harmonics, the temperature rise, noise and vibration of the motor will increase slightly compared with the industrial frequency operation.

When there is a varistor or capacitor to improve the power factor on the output side

The VFD output is PWM wave. If power factor improving capacitors or lightning protection varistors are installed on the output side, it may easily cause instantaneous overcurrent in the VFD or even damage the VFD. Please do not use them.

Use outside the rated voltage

It is not suitable to use the EM750 series open-loop vector VFD outside the allowable operating voltage range specified in the manual, which may easily cause damage to the components inside the VFD. If necessary, please use the corresponding step-up or step-down device for voltage conversion.

Lightning surge protection

This series of VFDs are equipped with lightning overcurrent protection devices, which have a certain self-protection ability against induced lightning. For areas where lightning occurs frequently, customers should also install protection at the front end of the VFD.

Altitude and derating

In areas with an altitude of more than 1000m, the heat dissipation effect of the VFD becomes poor due to the thin air, and it is necessary to reduce the rating (the rating is reduced by 1% for every 100m increase in altitude, and the maximum operating altitude is 3000m; when the temperature exceeds 50 ℃, the rating is reduced by 1.5% for every 1℃ increase in temperature, and the maximum operating temperature is 60 ℃). In this case, please consult our company for technical advice.

Note when scrapping the VFD

The electrolytic capacitors in the main circuit and on the printed circuit board may explode when burned. Plastic parts will produce toxic gases when burned. Please treat them as industrial waste.

Table of Contents

Chapter1 Overview

1.1 EM750 series VFD models and specifications

- Rated power supply voltage: three-phase AC 340 ~ 460 V, three-phase/single-phase AC 200V ~ 240V;
- Applicable motors: three-phase AC asynchronous motors and permanent magnet synchronous motors.

The models and rated output currents of the EM750 series VFDs are shown in Table 1-1 .

Table 1 -1 EM750 series VFD specifications

Rated power supply voltage	model	Applicable motor power (kW)	Rated output current (A)
Single-phase/three-phase AC 200V～240V	EM750-0R4 G/0R7P -2B	0.4 /0.75	2.8 /4.8
	EM750-0R7 G/1R5P -2B	0.75 /1.5	4.8/8.0
	EM750-1R5 G/2R2P -2B	1.5 /2.2	8.0/10.0
	EM750-2R2 G/3R0P -2B	2.2 /3.0	10.0/13.0
Three-phase AC 340 ~ 460V	EM750-0R7G/1R5P-3B	0.75/1.5	2.5/4.2
	EM750-1R5G/2R2P-3B	1.5/2.2	4.2/5.6
	EM750-2R2G/3R0P-3B	2.2/3.0	5.6/7.2
	EM750-4R0G/5R5P-3B	4.0/5.5	9.4/12
	EM750-5R5G/7R5P-3B	5.5/7.5	13/17
	EM750-7R5G/9R0P-3B	7.5/9.0	17/20
	EM750-011G/015P-3B	11/15	25/32
	EM750-015G/018P-3B	15/18 .5	32/38
	EM750-018G/022P-3B	18.5/22	38/44
	EM750-022G/030P-3B	22/30	45/59
	EM750-030G/037P-3/3B	30/37	60/73
	EM750-037G/045P-3/3B	37/45	75/87
	EM750-045G/055P-3	45/55	90/106
	EM750-055G/075P-3	55/75	110/145
	EM750-075G/090P-3	75/90	150/169
	EM750-090G/110P-3	90/110	176/208
	EM750-110G/132P-3	110/132	210/248

	EM750-132G/160P-3	132/160	253/298
	EM750-160G/185P-3	160/185	304/350

	EM750-185G - 3	185	350
	EM750-200 G- 3	200	380
	EM750-200P - 3	200	380
	EM750-220G - 3	220	426
	EM750-220P-3	220	426
	EM750-250G-3	250	4 65
	EM750-250P-3	250	465
	EM750-280G-3	280	5 20
	EM750-280P-3	280	5 20
	EM750-315G-3	315	5 85
	EM750-315P-3	315	5 85
	EM750-355G-3	355	6 50
	EM750-355P-3	355	6 50
	EM750-400G-3	400	7 25
	EM750-400P-3	400	7 25
	EM750-450G-3	450	8 20
	EM750-450 P- 3	450	8 20

★ The correct method for selecting a frequency converter is: the rated output current of the frequency converter ≥ the rated current of the motor, and the overload capacity is taken into consideration.

★ Since permanent magnet synchronous motors require a higher carrier frequency, the VFD needs to be used at a reduced rating. Please consult the company for the selection of high-power VFDs.

★ It is generally recommended that the difference between the rated power of the VFD and the motor should not exceed two power ranges.

★ When a large VFD is used with a small motor, the motor parameters must be entered accurately to avoid motor overload and damage.

The technical specifications of the EM750 series VFD are shown in Table 1-2 .

Table 1 -2 EM750 Series VFD Technical Specifications

Project		Specification
power supply	Rated power supply voltage	Three-phase 340V-10%～460V+10% , single-phase/three-phase 200V-10%～240V+10% ; 50～60Hz±5%, voltage unbalance rate<3%
Output	Maximum output voltage	The maximum output voltage is the same as the input supply voltage
	Output current rating	100% rated current continuous output
	Maximum overload current	150% heavy load rated current for 60s (185 kW -450 kW 140 % heavy load rated current for 60s) 120% light load rated current 60s
	Drive mode	V/F control (VVF); Speed sensorless vector control (SVC)

Basic control functions	Input method	Frequency (speed) input, torque input
	Start-stop control mode	Keyboard, control terminal (two-wire control, three-wire control), communication
	Frequency control range	0.00 ～ 600.00Hz / 0.0 ～ 3000.0HZ
	Input frequency resolution	Digital input: 0.01Hz /0.1Hz; Analog input : 0.1 % of maximum frequency
	Speed range	1:50 (VVF), 1:200 (SVC)
	Speed control accuracy	± 0.2 % rated synchronous speed
	Acceleration and deceleration time	0.01 sec ～ 600.00 sec/ 0.1 sec ～ 6000.0 sec / 1 sec ～ 60000 sec
	Voltage / Frequency Characteristics	Rated output voltage 20 %~100 % adjustable ; base frequency 1 Hz ~ 600 Hz /3000Hz adjustable
	Torque boost	Fixed torque boost curve; any V/F curve is optional
	Starting torque	150%/1 Hz (VVF); 150%/0.25Hz (SVC)
	Torque control accuracy	± 5 % rated torque (SVC)
	Output voltage self-adjustment	The input voltage changes, and the output voltage remains basically unchanged
	Automatic current limiting	Automatically limit output current to avoid frequent overcurrent tripping
	DC braking	Braking frequency: 0.01 ~ maximum frequency Braking time: 0 ～ 30S Braking current: 0% ~ 150% rated current
	Signal input source	Communication, multi-speed, analog, etc.
enter Output Function	Reference power supply	10V/ 20mA
	Terminal control power supply	24V/ 100mA
	Digital input terminal	5 digital multi-function inputs; X1 to X5 ; X5 can be used as high-speed pulse input (up to 100 kHz)
	Analog input terminal	2 analog inputs: 1 channel (AI1) voltage source -10 ~ 10V input; 1 channel (AI2) voltage source 0 ~ 10V input or current source 0 ~ 20mA input optional ;
	Digital output terminal	1 open collector multi-function output and 1 relay multi-function output. The maximum output current of the Y1 collector output is 50mA, and it supports high-frequency pulse output up to 100kHz; Relay contact capacity 250VAC/3A or 30VDC/1A, EA-EC normally open, EB-EC normally closed
	Analog output terminal	2-way multi-function analog terminal output, M1 /M2 : 0 ~ 10V /0~ 20mA multi - function analog output terminal
keyboard	LED Display	LED digital tube displays the relevant information of the VFD
Protect	Protection function	Short circuit, overcurrent, overvoltage, undervoltage, phase loss, overload, overheating, load drop and external protection, etc.
use	Installation location	Indoors, below 1 km above sea level, free from dust, corrosive gases and direct sunlight. When the altitude exceeds 1 km , the

condition		rating shall be derated by 1 % for every 100 m increase , and the maximum altitude is 3 km.
	Applicable environment	-10 ℃ ～+ 50 ℃,5 %～ 95 %RH(no condensation) . When the ambient temperature exceeds 50 ℃ , the rating should be derated, and the rating should be derated by 3 % for every 1℃ increase. The maximum ambient temperature is 60℃ .
	vibration	Less than 0.5 g
	Storage environment	-40 ℃ ～+ 70℃
	Installation	Wall-mounted, cabinet-mounted
Protection level		IP20 /IP21 (Plastic chassis is equipped with a top baffle, which needs to be removed when the ambient temperature exceeds 40℃)
Cooling method		Forced air cooling

Chapter 2 Install

2.1 Product Confirmation

Danger
● **Do not install a damaged VFD or an VFD with missing parts.** Risk of injury

When you receive the product, please confirm according to Table 2-1 .

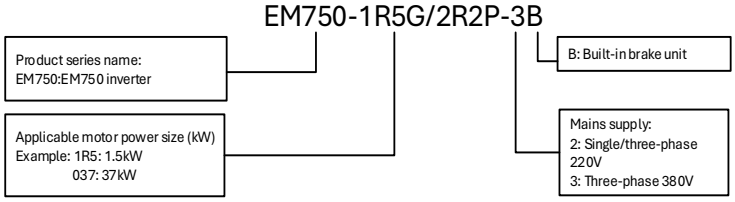
Table 2 -1 Confirmation items

Confirm Project	Confirmation method
Is it consistent with the ordere product?	Please check the nameplate on the side of the VFD.
Is there any damaged area?	Check the overall appearance to see if there is any damage during transportation.
Check whether the fastening parts suc as screws are loose.	If necessary, check with a screwdriver.

If there are any adverse situations, please contact the agent or our marketing department.

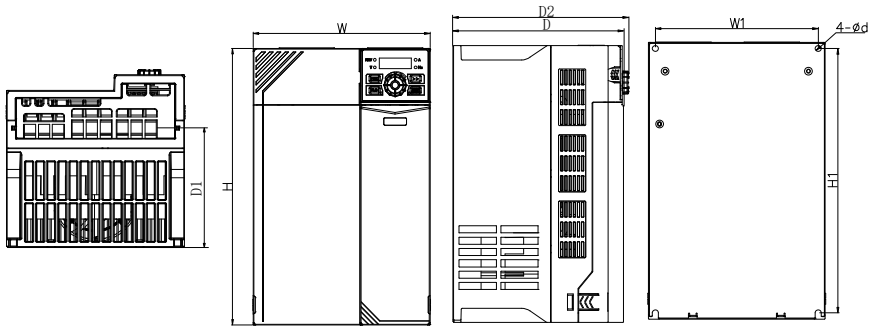
- **Nameplate**

- **VFD model description**

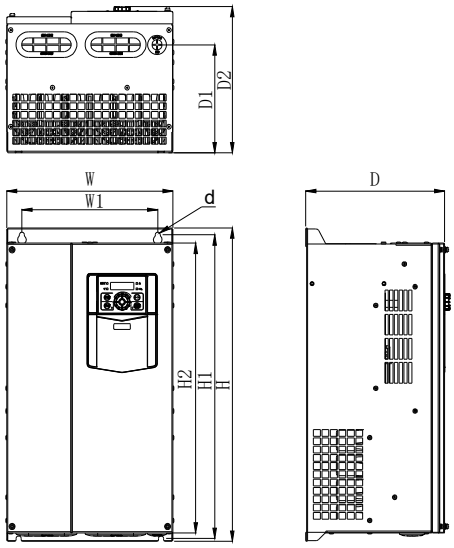


2.2 Overall dimensions and installation dimensions

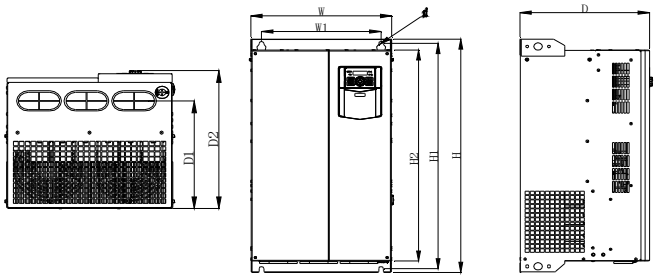
The EM750 series VFDs include 42 models, 7 types of appearance and 14 installation dimensions, as shown in Figure 2-1 and Table 2-2 .



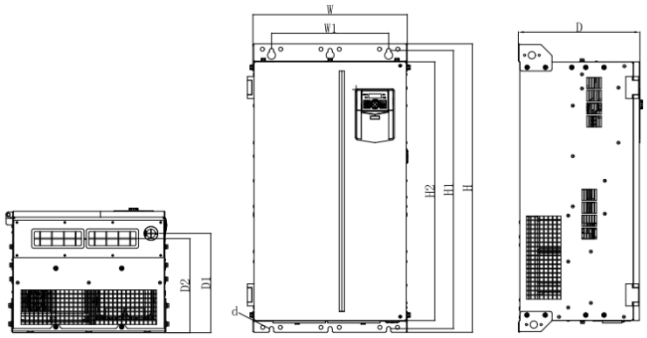
- EM750-0R7G/1R5P-3B ~ EM750-022G/030P-3B VFD appearance



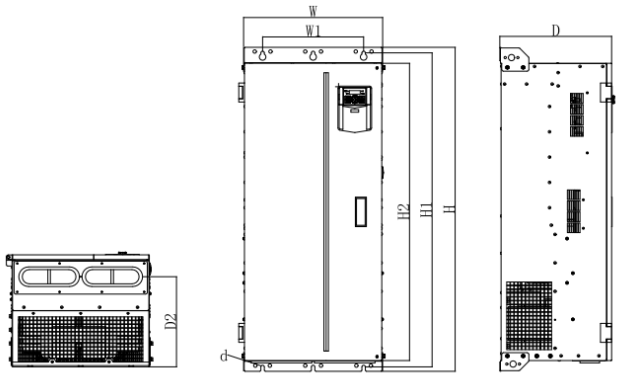
- EM750-030G /037P -3B～EM750-075G /090P -3 VFD Appearance



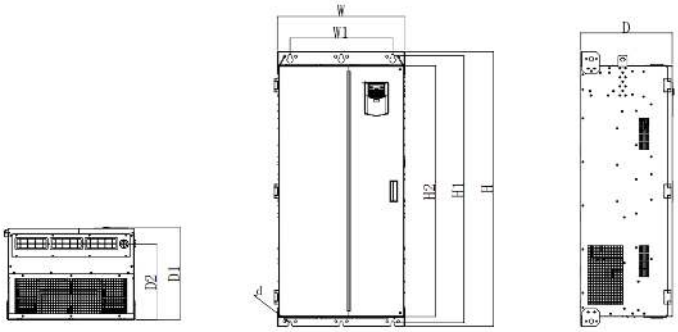
- EM750-0 9 0 G/110P -3B～EM750-160 G/185P -3 VFD Appearance



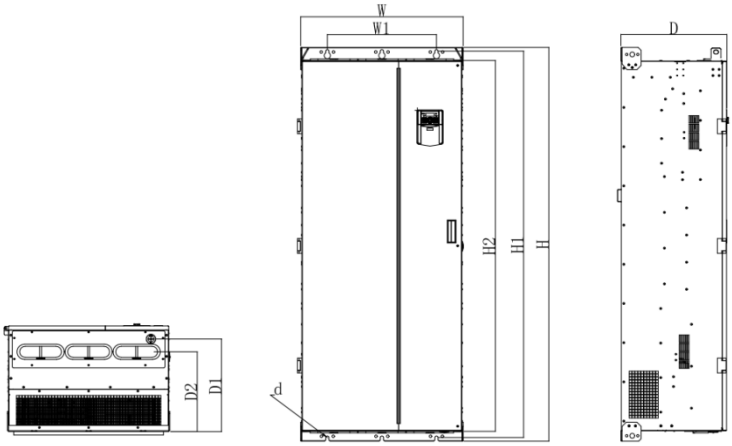
(d) EM750-185G-3 ~ EM750-220G-3 VFD appearance



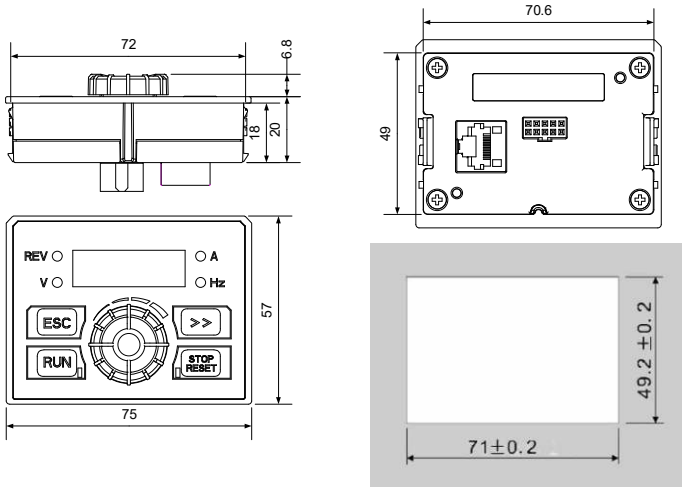
(e) EM750-250G - 3 VFD appearance



(f) EM750-280G-3 ~ EM750-315G-3 VFD appearance



(d) EM750-355G -3~EM750-450G - 3 VFD appearance



(e) EM750 keyboard appearance and keyboard opening size requirements

Figure 2 -1 EM750 series VFD and keyboard dimensions

Table 2 -2 EM750 series VFD dimensions and installation dimensions

model	W	W1	H	H1	H2	D	D1	D2	d
EM750-0R4G/0R7P-2B	75	65	142	132		1 46	67	1 52	4.5
EM750-0R7G/1R5P-2B									
EM750-1R5G/2R2P-2B	93	82	172	163		1 36	8 5	1 41	4.7
EM750-2R2G/3R0P-2B									
EM750-0R7G/1R5P-3B	75	65	142	132		1 46	67	1 52	4.5
EM750-1R5G/2R2P-3B									
EM750-2R2G/3R0P-3B	93	82	172	163		1 36	8 5	1 41	4.7
EM750-4R0G/5R5P-3B									
EM750-5R5G/7R5P-3B	109	98	207	196		1 54	103	1 60	5.5
EM750-7R5G/9R0P-3B									
EM750-011G/015P-3B	136	125	250	240		1 69	115	1 74	5.5
EM750-015G/018P-3B									
EM750-018G/022P-3B	190	175	293	280		18 4	145	18 9	6.5
EM750-022G/030P-3B									
EM750-030G/037P-3	245	200	454	440	420	205	156	212	7.5

EM750-030G/037P-3B									
EM750-037G/045P-3									
EM750-037G/045P-3B									
EM750-045G/055P-3	300	266	524	508	480	229	174	236	9
EM750-055G/075P-3									
EM750-075G/090P-3	3 35	2 86	5 80	5 63	5 36	2 28	1 77	2 35	9
EM750-090G/110P-3	335	286	63 0	60 8	570	310	247	317	11
EM750-110G/132P-3									
EM750-132G/160P-3	430	330	770	747	710	311	248	31 9	13
EM750-160G/185P-3									
EM750-1 85G /200P-3	4 22	3 20	786	7 58	709	335	2 71	256.4	1 1.5
EM750-200 G- 3	4 41	3 20	1025	9 89	9 42	3 57		2 85	1 1.5
EM750-200 P- 3									
EM750-220 G- 3									
EM750-220 P- 3									
EM750-250 G- 3									
EM750-250 P- 3									
EM750-280G - 3	5 60	4 50	120 4	1 170.5	1 100	4 00		3 33	1 3
EM750-280 P- 3									
EM750-315 G- 3									
EM750-315 P- 3									
EM750-355 G- 3	6 60	4 43	1 597	1 567	1 504	4 30	3 75.5	3 25.5	1 3
EM750-355 P- 3									
EM750-400 G- 3									
EM750-400 P- 3									
EM750-450 G- 3									
EM750-450 P- 3									

2.3Installation site requirements and management

2.3.1 Installation site

The installation site should meet the following conditions:

1、 The room is well ventilated.

2、 Temperature -10 · ℃ ~ 50 · ℃, when the ambient temperature of the plastic chassis exceeds 40 ℃, the top baffle needs to be removed.

3、 Avoid high temperature and humidity, humidity less than 90%RH, no rain or other liquid dripping.

4、 Please install it on flame-retardant objects such as metal, and never install it on flammable objects such as wood.

5、 Avoid direct sunlight.

6、 No flammable, corrosive gases and liquids.

7、 No dust, oily dust, floating fibers and metal particles.

8、 The installation foundation is solid and vibration-free.

2.3.2 Preventive measures

During installation, please take protective measures on the VFD to prevent metal fragments or dust generated by drilling, etc. from falling into the VFD. After installation, please remove the protective objects.

2.4 Installation direction and space

EM750-1R5-3B and above VFDs are equipped with cooling fans for forced air cooling. To achieve a good cooling cycle, the VFD must be installed in a vertical direction, and there must be enough space between it and adjacent objects or baffles (walls), please refer to Figure 2-2.

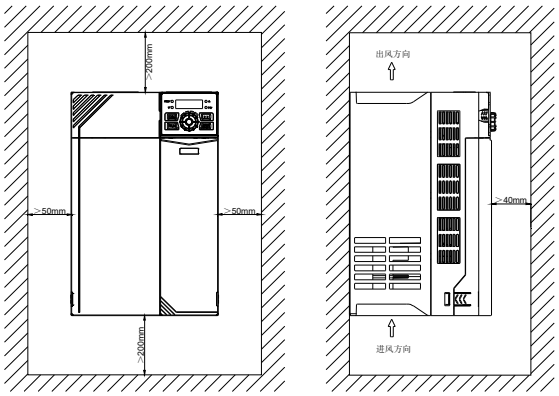


Figure 2 -2VFD installation direction and space

Chapter 3 wiring

3.1 Peripheral device connection

The standard connection diagram between the EM750 series VFD and peripheral devices is shown in Figure 3-1 -.

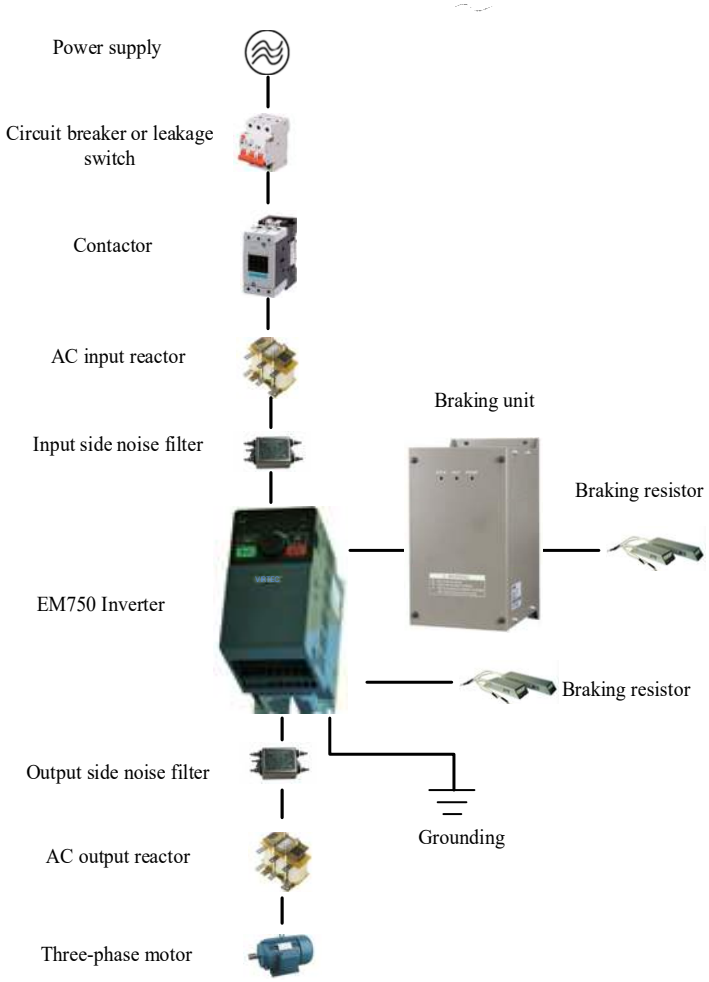
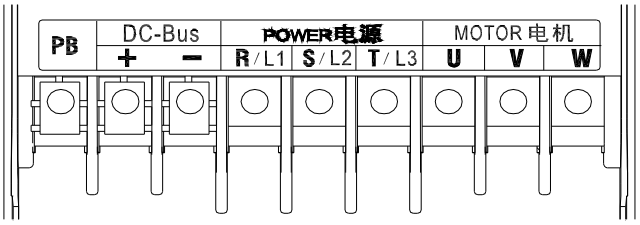


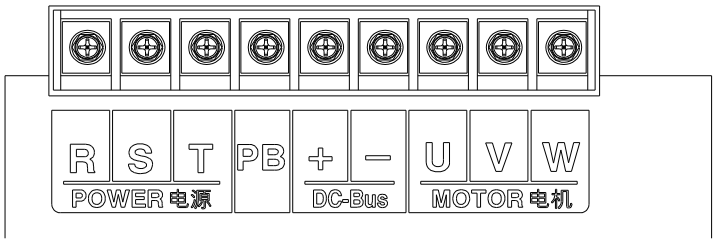
Figure 3 -1 Connection diagram of VFD and peripheral equipment

3.2 Main circuit terminal wiring

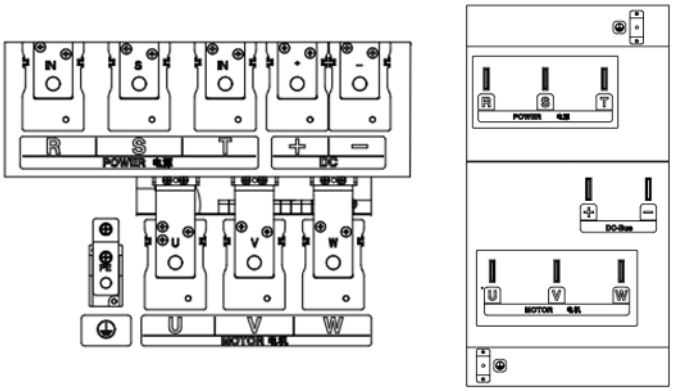
3.2.1 Main circuit terminal composition



a) 380V 0.75k W ~ 22k W terminal diagram



b) 380V 30kW～160kW terminal diagram



c) 185～250kW terminal diagram d) 280 ～ 450kW terminal diagram

Figure 3 Schematic diagram -of main circuit terminal arrangement

Note 1: 45-160kW has no PB terminal.

Note 2: 132-160kW VFDs have a P terminal for external DC reactors. 185-450kW VFDs have built-in DC reactors.

3.2.2 Main circuit terminal function

The functions of the main circuit terminals of the EM750 series VFD are shown in the following table. Please connect correctly according to the corresponding functions.

Terminal number	Functional Description
R /L1 、 **S** /L2 、 **T** /L3	AC power input terminal, connect to three-phase AC power. Fo single -phase power input , connect to any two terminals
U, V, W	VFD AC output terminal, connected to three-phase AC motor
⊕⊖	They are respectively the positive and negative terminals of th internal DC bus, connecting the external brake unit
⊕PB	Braking resistor connection terminal, one end of the braking resisto is connected ⊕, and the other end is connected to PB
P.⊕	DC reactor terminal, used when connecting an external DC reacto for 132 ~ 160kW
⏚	Ground terminal, for safety, please be sure to connect to th protective ground

3.2.3 Main circuit standard wiring diagram

The standard wiring diagram of the main circuit of the EM750 series VFD is shown in Figure 3-3 .

Wiring method of built-in braking unit

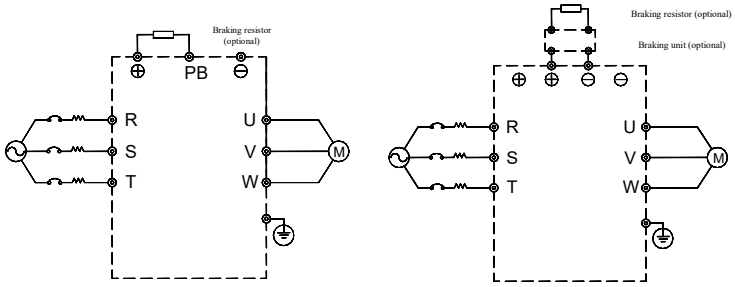


Figure 3 -3 Main circuit standard wiring

3.2.4 Main circuit input side wiring

3.2.4.1 Interference Countermeasures

The working principle of the VFD determines that it will generate external interference. Please configure the VFD peripheral equipment according to Figure 3-1 , install the filter and the VFD on the same iron plate, and shield the VFD and peripheral equipment with an iron box to reduce external interference, as shown in the figure below. For more detailed measures to reduce external interference, please refer to the user manual .

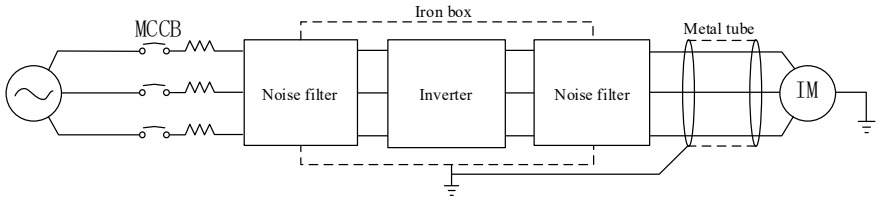


Figure 3 -4 Countermeasures to reduce external interference

3.2.5 Main circuit cable and screw sizes

For the main circuit cable and screw sizes, please refer to the EM750 VFD user manual.

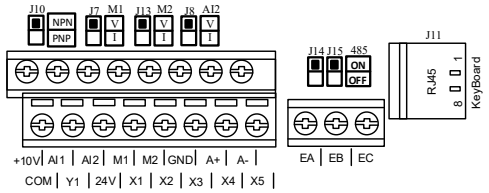
3.2.6 Installation and wiring of brake resistor and brake unit

For details on the selection and wiring methods of brake resistors and brake units, see Chapter 8 .

For models with built-in braking units, the braking resistor is connected between the + and PB terminals of the VFD. For VFDs without built-in braking units, the + and - terminals of the braking unit need to be connected to the + and - terminals of the VFD DC bus, and the braking resistor is connected to the PB+ and PB- terminals of the braking unit.

3.3 Control circuit terminal wiring

3.3.1 Control circuit terminal composition



3.3.2Control circuit terminal functions and wiring

category	Terminal number	Terminal name	Functional Description
power supply	24V	External power supply	Provides 24V power to the outside, with a maximum output current of 100mA
	COM	Power Ground	Power ground for external devices, common end for digital input terminals
Analog Input	10V	Analog terminal power supply	Provides 10V power supply to the outside, maximum output current: 10.5 ± 0.5V/ 20mA, generally used as external potentiometer working power supply
	GND	Analog power ground	Analog input and output ground
	AI1	Analog voltage input	-10 V～ 10V , input impedance 50kΩ, bipolar

			analog voltage input
	AI2	Analog current/voltage input	Configurable as current type and voltage type Input range 0/ 4 ~ 20mA or 0-10V
Analog Output	M1	Analog voltage/current output	Both analog outputs support 0~10V/0-20mA Output accuracy is ±2%
	M2		
Digital Input	X1	Multi-function input terminal	The corresponding terminals are programmed through function code setting to realize input control of the set function. The input terminal supports PNP and NPN input modes, and the factory configuration is NPN input mode. X5 can also be used as a high-frequency pulse input with a maximum input frequency of 100 kHz
	X2		
	X3		
	X4		
	X5		
Multi-function digital output	Y1	Open collector output terminal	Programmable output terminals with multiple functions Y1 supports high frequency pulse output, up to 100kHz output.
communication	A+	RS485 communication interface terminals	RS485 differential signal positive terminal
	A-		RS485 differential signal negative terminal
Relay Output	EA	Relay output terminals	EA-EC: Normally open EB-EC: Normally closed
	EB		
	EC		
External keyboard port	RJ45	External keyboard terminal	For external operation panel This port can also be used to connect to the host computer for background software debugging.

3.3.3Analog input terminal wiring

AI1 and AI2 terminals use analog voltage signal wiring method:

AI2 input terminal defaults to analog voltage signal input, which is configured by switch J8 and function code F 02.63 on the control board .

When the analog voltage input signal is a potentiometer, the wiring diagram of AI1 and AI2 terminals is shown in Figure 3-12.

In addition , F02.62 (AI1 input type selection) and F02.63 (AI2 input type selection) should be set according to actual needs (0: 0~10V; 1: 4~20mA; 2: 0~20mA; 4: 0~5V) .

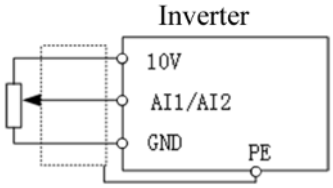
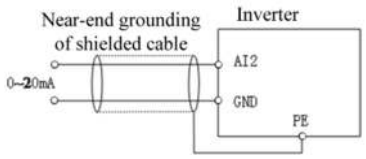


Figure 3 -12 AI1, AI2 terminal wiring diagram

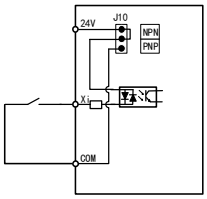
AI2 terminal input analog current signal wiring method:

When the AI2 terminal selects analog current signal input, the switch J8 on the terminal board is configured as current mode

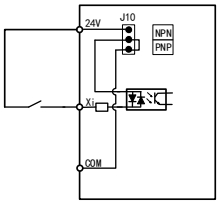


3.3.4 Multi-function input terminal wiring

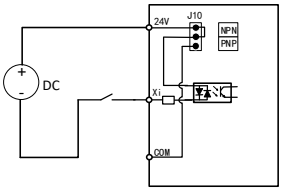
of the EM750 series VFD can support NPN or PNP mode access. The X1~X5 terminals are very flexible in connecting to the outside. The NPN or PNP mode can be selected through the jumper J10 on the control board (the factory default is NPN mode) . The wiring method of the multi-function input terminal in different modes is shown in the figure:



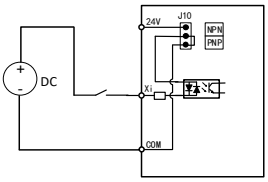
a: NPN mode uses internal power supply



b : PNP mode uses internal power supply



c: NPN mode using external power supply

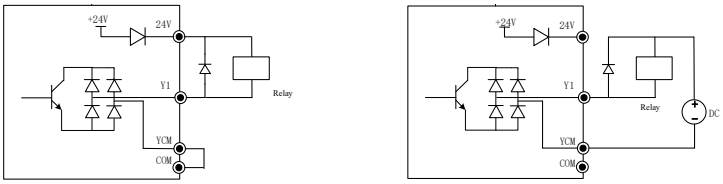


d : PNP mode uses external power supply

Figure 3-14 Multi-function input terminal wiring diagram

3.3.5 Multi-function output terminal wiring

The multi-function output terminal Y1 can be powered by the 24V power supply inside the VFD or an external power supply, as shown in Figure 3-15:



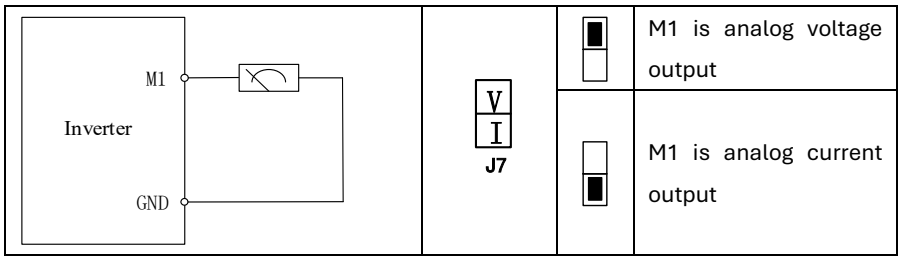
a : Use internal power supply NPN　　b: Use external power supply NPN

Figure 3 -15 multi-function output terminal wiring method

Note: (1) Anti-parallel diodes must be added to the relay coil, and the absorption circuit components must be installed near the ends of the relay or contactor coil.

3.3.6 Analog output terminal wiring

Analog output terminal M1 /M2 can be connected to an external analog meter to represent a variety of physical quantities. Jumper J7/J13 selects output current (0~ 20mA) or (0~10V), M1 corresponds to J7 . At the same time, F03.34 (M1)/F03.35 (M2) should be set to the corresponding value (0: 0~10V; 1: 4~20mA; 2: 0~20mA) as needed . Taking M1 as an example, the jumper and terminal wiring method are as follows:



3.3.7 485 communication terminal wiring

The communication terminals A+ and A- are the RS485 communication interface of the VFD. Connect A+ to the positive terminal of the host computer and A- to the negative terminal of the host computer to communicate with the host computer, so as to realize the network control between the host computer (PC or PLC controller) and the VFD. The connection between the host computer and the EM750 VFD is shown in the figure below.

Note: The communication terminal resistor jumper of the farthest VFD should be jumped to the ON position.

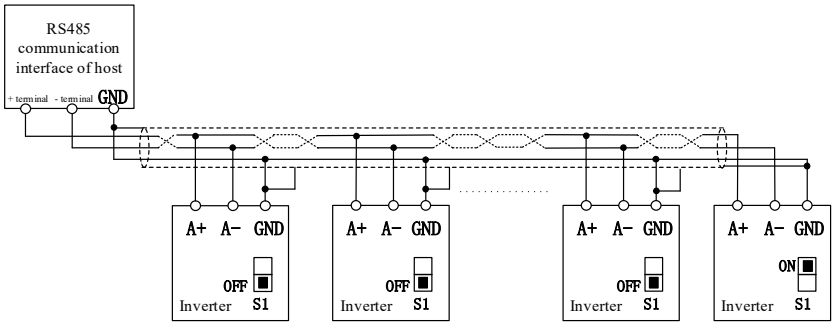


Figure 3 -1 7 Single / multiple VFD communication terminal wiring

3.3.8 Control circuit standard wiring diagram

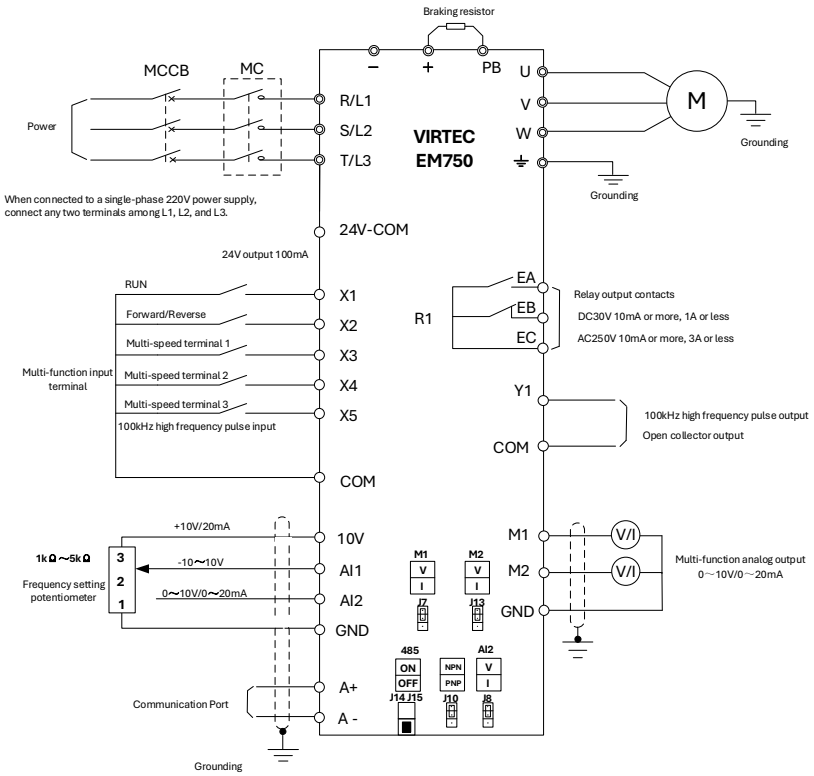


Figure 3 -1 9 Control circuit standard wiring diagram

wires with a diameter of 0.5~1mm2 for the control circuit wires .

Please use PH0 cross screwdriver to install the control circuit terminal, and the tightening torque is 0.5Nm

3.4 Extending the keyboard cable

The keyboard of this machine can be installed externally on the electric control cabinet or instrument panel, or it can be installed on an external keyboard bracket.

The external keyboard port uses an RJ45 interface, and the extension cable is an ordinary network cable (the plug connector complies with the EIA/TIA568B standard). The company has a 2-meter network cable option available.

Use an Ethernet cable to connect the keyboard RJ45 port and the control panel RJ45 port. The keyboard extension cable should not be longer than 3m .

Chapter 4 Keyboard Operation

4.1 Keyboard functions

4.1.1 LED keyboard structure

The EM750 series VFD control panel is a pluggable LED keyboard. The LED keyboard has a five-digit LED digital tube display, four operation buttons, a digital potentiometer, and six status and unit indicator lights. Users can use the keyboard to set parameters, monitor status, start and stop the VFD, and other operations.

4.1.2 LED keyboard buttons and indicator light functions

Buttons/Indicator Lights	name	Function
	Right Shift Key	Select the group number and function number of the function code currently being modified. Toggle monitoring parameters.
	Back key	Return to the previous menu level. Enter the menu mode selection level from the monitoring level Cancel the modification of the current parameters
	Run Key	When keyboard control is effective, press this key to start the VFD.
	Stop/Reset button	When keyboard control is effective, press this key to stop the VFD. In protection state, reset the protection.
	Potentiometer/confirm button	When rotating clockwise, the function code, menu group, or setting parameter value increases. Increase the current valid reference digital input data.
		When rotating counterclockwise, the function code, menu group, or setting parameter value decreases. Reduce the current valid reference number input data.
		Tap to enter the lower level menu. Confirm the parameter value modification, save it and enter the next function code.

Hz A V	Unit indicator light	Lights up when the current displayed parameter is frequency, current, or voltage.
REV	Running direction indicator	The light is on during reverse operation and off during forward operation. Lights up when the current monitoring or display of certain specific frequencies is negative.
(Green/Red)	Operation/fault indicator light	The green light is on when the VFD is in operation, flashes when it is stopping, and goes out when stopping is completed. The red light is on when the VFD is in fault/protection state.

4.2 Digital tube display keyboard operation mode

The LED keyboard menu is divided into monitoring level (level 0), menu mode selection level (level 1), function code selection level (level 2), and parameter value level (level 3) from low to high. The menu levels mentioned later in this manual are represented by numbers.

Common parameter display modes: Menu mode (--A--), used to display all function codes; non-factory value mode (--C--), used to display only function codes different from the factory values.

The keyboard displays the first monitoring parameter of level 0 by default when it is powered on. Press the ESC key ESC to enter the level 1 menu. In the level 1 menu, you can select different menu modes by rotating the keyboard potentiometer. The menu mode selection operation flow is shown in Figure 4 -1 .

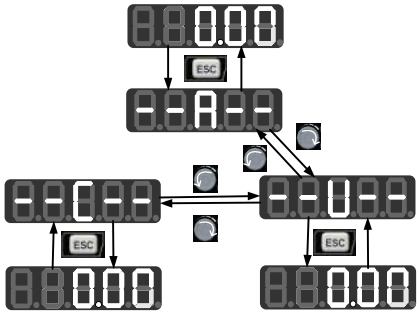


Figure 4 -1 Menu mode selection operation flow chart

4.2.1 Full menu mode (--A--)

In full menu mode, press ENTER key to enter level 2 menu and select any function code. Then press ENTER key to enter level 3 menu and view or modify function code. Except for a few special function codes, function codes that general users need to use can be modified.

In full menu mode, the entire operation process from the power-on initial state to changing the value of function code F03.28 to 5.28 is shown in Figure 4 -2 .

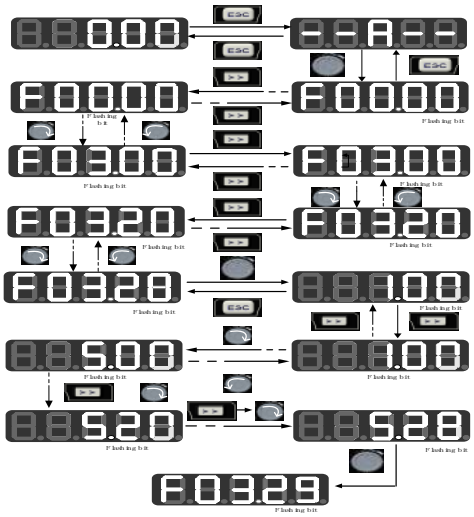


Figure 4 -2 Operation flow chart from power on to setting F03.28 = 5.28

In all menu modes, after the parameter modification is completed, press the ENTER key to save the parameter. The difference is that after saving the parameter: in the full menu mode, enter the next function code of the current successfully modified function code; in the non-factory value mode, enter the next non-factory value function code of the current successfully modified function code; in the 3rd level menu, press the ESC key to abandon the parameter modification.

4.2.2 Non-factory value mode (--C--)

In the non-factory value mode, press the ENTER key to enter the 2nd level menu to display the first parameter that is different from the VFD factory value starting from F00.00. In this mode, the 2nd level menu cannot be shifted by pressing the right shift key, and the function group and function code number cannot be modified arbitrarily by operating the keyboard increment key or decrement key, but will display the next/previous non-factory value function code of the current function code; if the current status of the corresponding displayed function code allows modification when entering the 3rd level menu, the lowest cursor position will flash. At this time, you can operate in the same way as the 3rd level menu in the full menu mode to modify the parameters. After the modification is completed, press the ENTER key to confirm and save the parameters and enter the next non-factory value parameter.

For example, we first change F00.03 to 1 and F00.07 to 40.00 in full menu mode. These two values are not the default factory values. Then enter the non-factory value mode and the first one will display F00.03. Rotate the potentiometer clockwise on the keyboard to switch to F00.07. Rotate the potentiometer counterclockwise on the keyboard to return to F00.03. The display is as follows:

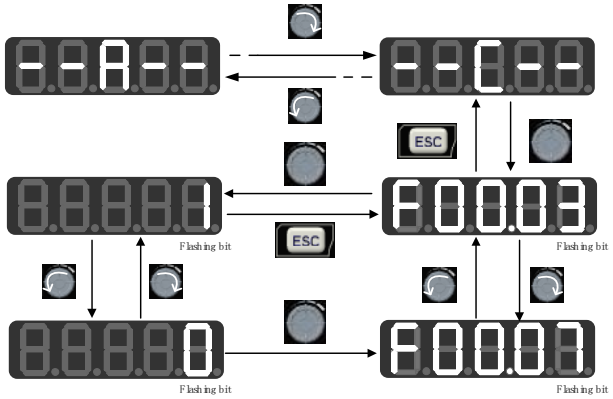


Figure 4 -3 Modification of function code in non-factory value mode

4.3 Protection monitoring

When the VFD is in protection state, you can directly switch the current protection category, output frequency during protection, output current during protection, output voltage during protection, operating state during protection and working time during protection by right shift key.

4.4 Operation monitoring

4.4.1 Normal monitoring

The monitoring mode 1 of EM750 allows you to select any function code you want to view in F12.33~F12.37. When F12.32=1, enter monitoring mode 1. When the menu displays the level 0 monitoring menu, you can switch the display in the order of the monitoring parameters set by each function code of F12.33~F12.37 by right shifting. When the VFD changes from the stop state to the running state, the monitoring parameter automatically jumps from the current value to the monitoring parameter indicated by F12.33. When the VFD changes from the running state to the stop state, the monitoring parameter automatically jumps from the current value to the monitoring parameter indicated by F12.34.

4.4.2 Edit Mode

Quick edit in watch mode:

the offset is modified directly by rotating the potentiometer ;

When F00.04 selects 8: Digital potentiometer, rotate the potentiometer to modify the F12.42 digital potentiometer frequency setting. At this time, the rotary potentiometer will enter the editing mode, and the second digit of the digital tube will be modified by default, and the digital tube of the modified digit will flash. When the right shift key is pressed , the modified digit will shift right by one digit. Press the ESC key to cancel the modification and return to the original value, or press

the ENTER key to confirm the modification and exit the editing mode without flashing. At this time, the right shift key function is normal monitoring mode: switch to the next monitoring parameter. As shown in Figure 4-6, the editing status processing in monitoring mode.

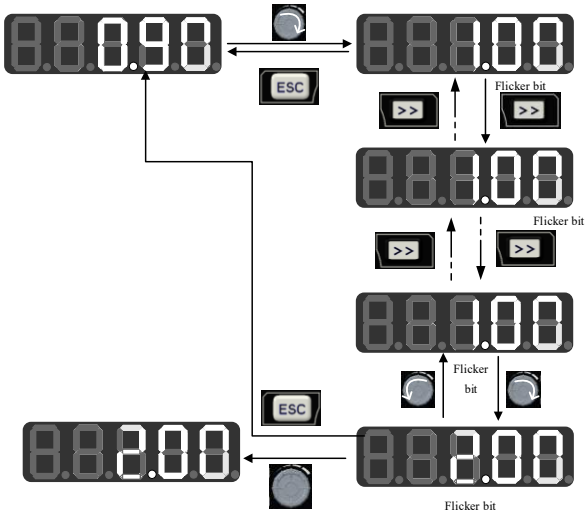


Figure 4-6 Editing status processing in monitoring mode

4.5 Running/Stop

After setting the parameters, press the RUN key and the VFD will run normally; press the STOP/RESET key to stop the VFD.

4.6 Other warnings

4.6.1 P.- ON Tip

The P.-on prompt is displayed during power-on initialization.

4.6.2 P.-OFF Tip

When the voltage drops to 250V (soft start has been disconnected), the power-off display is P.-OFF. At this time, any operation is performed on the keyboard, and the P.-OFF display is normal after exiting. When there is no keyboard operation for 5s, the display is restored to P. - OFF. When the voltage is restored and the soft start is engaged, the display is P.-on again.

4.6.3 SOFT.E Warning

When the soft start is not engaged, the VFD will report a SOFT.E warning when it is started. When the voltage is restored and the soft start is engaged, it will run normally.

Chapter 5 Trial run

5.1 VFD debugging process

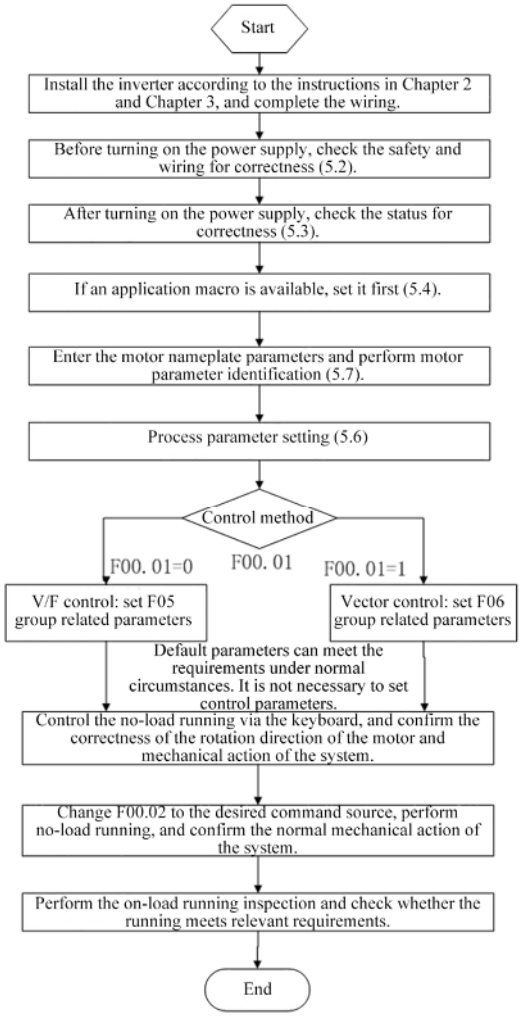


Figure 5-1 VFD debugging flow chart

5.2 Things to check before turning on the power

Be sure to check the following items before turning on the power:

Confirm Project	Confirm the content
Power wiring confirmation	Please confirm whether the input power voltage is consistent with the VFD requirements
	Confirm that the power supply circuit is connected to the circuit breaker and the power cord is correctly connected to the R, S, and T input terminals of the VFD.
	Confirm that the VFD and motor are properly grounded
Motor wiring confirmation	Confirm that the motor is correctly connected to the U, V, and W output terminals of the VFD and that the motor wiring is secure.
Braking unit and braking resistor confirmation	Confirm that the braking resistor and braking unit are wired according to Figure 3-3 (if dynamic braking is required during operation)
Control terminal wiring confirmation	Confirm whether the connection between the VFD control terminal and other control devices is correct and reliable.
Control terminal status confirmation	Confirm that the VFD control terminal circuits are in the disconnected state to prevent the VFD from running immediately after power-on.
Mechanical load confirmation	Confirm that the mechanical load is in a no-load state and will not cause danger after operation.

5.3 Confirmation of VFD status after power-on

After the power is turned on, the VFD operation panel (keyboard) displays as follows under normal conditions:

State	Show	illustrate
Normal	0.00	The factory default display is digital setting 0.00Hz
Protection	Protection code in character or Exx format	When protecting, the protection code is displayed. Please refer to Chapter 6 for protection measures.

5.4 Notes on setting application macros

F16.00 is the industry application macro selection. Select the application macro according to the specific application. After pressing Enter to confirm, the factory value will be automatically restored. For detailed information about the application macro, please refer to the EM750 User Manual Application Macro Introduction.

5.5 Start and stop control

Function code	Function code name	Parameter Description	Factory value	property
F00.02	Command source selection	0: Keyboard control 1: Terminal control	0	○

		2: Communication control		

F00.02=0: Keyboard control

The start and stop of the VFD are controlled by the RUN and STOP keys on the keyboard. In the case of no protection trip , press the RUN key to enter the running state. The green LED on the RUN key is always on to indicate that the VFD is in the running state, and flashing to indicate that the VFD is in the deceleration stop state.

F00.02=1: Terminal control

by function codes **F02.00** ~F02.04 control the start and stop of the VFD, and the terminal control method is determined by **F00.03** .

F00.02=2: Communication control

The host computer controls the start and stop of the VFD through the RS485 communication port.

Function code	Function code name	Parameter Description	Factory value	property
F04.00	Startup method	0: Direct start 1: Speed tracking start	0	○

F04.00=0: Direct star

When the VFD starts, it first performs DC braking (no DC braking when F04.04=0), then performs pre-excitation (no pre-excitation when F04.07 is set to 0), and then starts at the starting frequency. After the starting frequency holding time ends, it enters the given frequency operation.

F04.00=1: Speed tracking start

When the VFD starts, it first tracks the speed and then starts smoothly from the current actual rotation frequency of the motor.

Function code	Function code name	Parameter Description	Factory value	property
F04.19	Parking options	0: decelerate and stop 1: Free parking	0	○

F04.19=0: deceleration to stop

The motor decelerates and stops according to the set deceleration time [factory setting is according to F00.15 (deceleration time 1)].

F04.19=1: Free stop

When the stop command is valid, the VFD will stop output immediately and the motor will coast to stop. The stop time depends on the inertia of the motor and load.

5.5.1 Terminal control start and stop

Function code	Function code name	Parameter Description	Factory value	property
F00.03	Terminal control mode selection	0: Terminal RUN, FR forward/reverse 1: Terminal RUN, FR reverse 2: Terminal RUN, Xi stop, FR reverse 3: Terminal RUN, Xi stop, FR forward/reverse	0	○

Terminal RUN: Xi terminal is set to " 1: Run terminal RUN"

Terminal FR: Xi terminal is set to " 2: Running direction FR "

Terminal control can be divided into two types: two-wire control and three-wire control

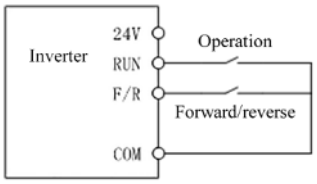
Two-wire control:

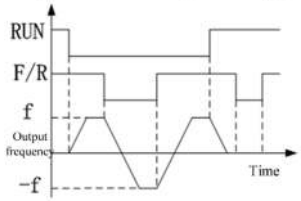
F00.03=0: Terminal RUN operation, FR control forward/reverse

The RUN terminal is valid/invalid to control the start and stop of the VFD, and the FR terminal is invalid/valid to control the forward/reverse rotation; if F00.21 is set to 1, the FR terminal is invalid when the reverse rotation is prohibited. When the parking mode is selected as deceleration parking, the logic diagram is shown in Figure 5-2 (b);

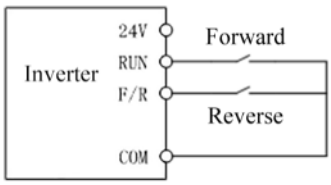
F00.03=1: Terminal RUN forward, FR reverse

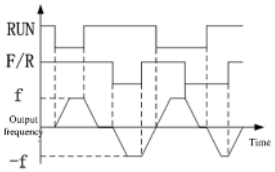
The RUN terminal is valid/invalid to control the VFD forward and stop, and the FR terminal is valid/invalid to control reverse and stop. When the RUN terminal and FR terminal are valid at the same time, the VFD stops. The FR terminal is invalid when reverse is prohibited. When the parking mode is selected as deceleration stop, the forward/reverse operation logic is shown in Figure 5-2 (d) ;





（a）F00.03=0 Two-wire control wiring diagram (b) F04.19=0, F00.03=0 Run forward/reverse logic





(c) F00.03 = 1 two-wire control wiring logic

(d) F04.19=0, F00.03=1 forward/reverse operation

Figure 5-2 Two-wire control

When the start/stop selection of F00.03 is 0 or 1, even if the RUN terminal status is valid, pressing the STOP key 

or the terminal external stop command can stop the VFD. At this time, the RUN terminal status must be invalidated once and then valid again before re-entering the running state.

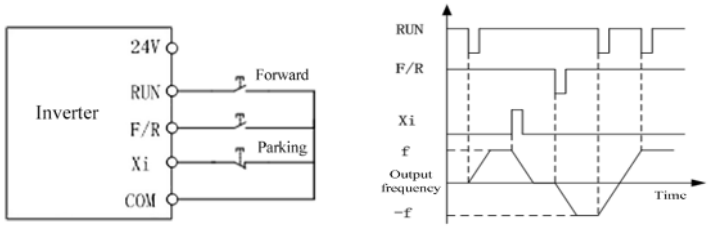
Three-wire control:

F00.03=2: Terminal RUN forward, Xi stop, FR reverse

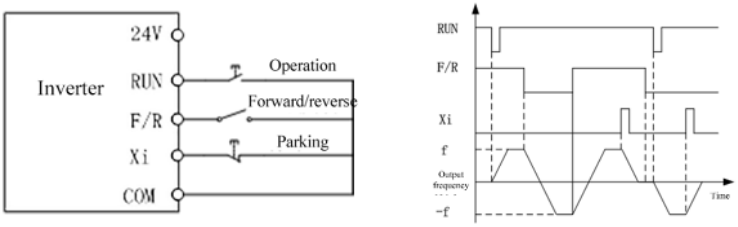
RUN is a normally open forward run button, and FR is a normally open reverse run button, both of which are effective on the pulse edge; Xi is a normally closed stop button, which is effective on the level. Pressing the Xi button in the running state will stop the car. When the stop mode is selected as F04.19=0 deceleration stop, the logic diagram is shown in Figure 5-3 (b). Xi is a terminal in X1~X5 that has been defined as 'three-wire operation stop control' by F02.00~F02.04;

F00.03=3: Terminal RUN, Xi, FR, forward/reverse

RUN is a normally open run button, which is effective on the pulse edge, FR is a forward/reverse switch (forward when open, reverse when closed), Xi is a normally closed stop button, which is effective on the level. When the stop mode is selected as F04.19=0 deceleration stop, the logic diagram is shown in Figure 5-3 (d).



(a) F00.03=2 three-wire control wiring diagram (b) F04.19=0, F00.03=2 forward/reverse operation logic



(c) F00.03=3 three-wire control wiring diagram (d) F04.19=0, F00.03=3 forward/reverse operation logic

Figure 5-3 Three-wire control

The three-wire control logic of the EM750 series VFD complies with the traditional electrical control method. The buttons and knob switches must be used correctly as shown in the schematic diagram. Otherwise, action errors may occur.

5.6 Common process parameters of frequency converter

Function code	Function code name	Parameter Description	unit	Factory value	property
F00.01	Motor 1 drive control mode	0 : V/F control (VVF) 1 : Speed sensorless vector control (SVC)		0	○
F00.04	Main frequency source A selection	0: Digital frequency given F00.07 1: AI1 2: AI2 5: High frequency pulse input (X5) 6: Main frequency communication percentage setting 7: Main frequency communication is directly given 8: Digital potentiometer setting		8	○
F00.07	Digital frequency setting	0.00～maximum frequency F00.16	Hz	0.00	●

F00.14	Acceleration time 1	0.00～650.00（F15.13=0）	s	15.00	●
F00.15	Deceleration time 1	0.00～650.00（F15.13=0）	s	15.00	●
F00.16	Maximum frequency	1.00～600.00	Hz	50.00	○
F00.18	Upper frequency	Lower limit frequency F00.19～ maximum frequency F00.16	Hz	50.00	●
F00.19	Lower frequency	0.00～Upper frequency limit F00.18	Hz	0.00	●
F00.21	Inversion of Control	0: Allow forward/reverse 1: Disable reverse		0	○

Note: Commonly used process parameters may also include input and output terminal function settings. Please refer to the function table F02 group and F03 group for settings.

5.7 Motor parameter identification

In order to achieve better control performance, motor parameter identification is necessary.

Identification method	Applicable situations	Identification effect
F01.34=01 Asynchronous motor static self-learning	The motor and the load are difficult to separate, and rotation self-learning is not allowed.	generally
F01.34=11 Synchronous machine static self-learning		
F01.34=02 Asynchronous motor rotation self-learning	The motor and the load can be easily separated. The motor shaft should be separated from the load before operation, and it is forbidden to perform rotation self-learning operation with the motor under load.	optimal
F01.34=12 Synchronous machine rotation self-learning		

- Before the self-identification operation, make sure that the motor is in a stopped state, otherwise the self-identification cannot be performed normally.

5.7.1 Parameter identification steps

- If the motor and load can be separated, completely separate the mechanical load from the motor when the power is off.
- After power on, set the VFD command source to keyboard control (set F00.02=0)
- Enter the motor nameplate parameters accurately.

Motor	Corresponding parameters
Motor 1	F01.00 Motor type F01.01 Motor rated power F01.02 Motor rated voltage F01.03 Motor rated current F01.04 Motor rated frequency F01.05 Motor rated speed F01.06 Motor winding connection method
Motor 2	F14.00 Motor type F14.01 Motor rated power F14.02 Motor rated voltage F14.03 Motor rated current F14.04 Motor rated frequency F14.05 Motor rated speed F14.06 Motor winding connection

- If the motor type is an asynchronous motor:
- Set F01.34=1 to confirm , then press the RUN key, and the VFD will start to perform static self-identification of the motor.

- Or set F01.34=2, then press the RUN key, the VFD will start to perform self-identification of the motor rotation.
- If the motor type is a synchronous motor:
- Set F01.34=11, press the RUN key, and the VFD will start to perform static self-identification of the motor.
- Or set F01.34=12, press the RUN key, and the VFD will start to self-identify the motor rotation.
- It takes about two minutes for the motor to complete self-identification and exit from the "tune" interface to the initial power-on state.
- If multiple motors are used in parallel, the rated power and rated current of the motors are the sum of the powers and currents of the connected motors;
- If two motors are switched, the parameters of motor 2 in group F14 need to be set separately, and the parameters of motor 2 need to be identified according to F14.34.

Chapter 6 Protection/fault countermeasures

6.1 Protection/fault content

When the VFD is abnormal, the digital tube display will display the corresponding protection/fault code and its parameters, the protection relay will be activated, the protection output terminal will be activated, and the VFD will stop output. When the protection occurs, if the motor is rotating, it will stop freely or decelerate to stop. The protection content and countermeasures of the EM750 series VFD are shown in the following table.

Protection Code	Protection Type	Reasons for protection	Protection measures
E01	Output short circuit protection	1. Phase-to-phase short circuit. 2. The external braking resistor is short-circuited. 3. The acceleration and deceleration time is too short. 4. The VFD module is damaged. 5. There is too much interference on site .	1. Check the wiring for short circuits. 2. Properly extend the acceleration and deceleration time. 3. Investigate the cause, implement appropriate countermeasures, and then reset. 4. Seek technical support.
E02	Instantaneous overcurrent	1. The acceleration and deceleration time is too short. 2. In V/F driving mode, the V/F curve setting is unreasonable. 3. The motor is in rotating state when starting. 4. Use a motor that exceeds the VFD capacity or the load is too heavy. 5. The motor parameters are not suitable and parameter identification is required. 6. There is a phase short circuit on the VFD output side. 7. VFD damage	1. Prolong the acceleration and deceleration time. 2. Set the V/F curve reasonably. 3. Set the speed tracking start to be effective or start DC braking. 4. Replace the motor or VFD with a suitable one. 5. Perform motor parameter identification 6. Check the wiring for short circuits. 7. Seek technical support.
E04	Steady-state overcurrent	Same as E02	Same as E02
E05	Overvoltage protection	1. The deceleration time is too short and the motor regenerative energy is too large. 2. The brake unit or brake resistor is open circuit. 3. The braking unit or braking resistor does not match. 4. The power supply voltage is too high. 5. The dynamic braking function is not enabled	1. Increase the deceleration time. 2. Check the wiring of the brake unit and brake resistor 3. Equipped with suitable brake unit/brake resistor. 4. Reduce the power supply voltage to within the specified range. 5. For models with built-in braking units, set F15.30 to 1 to enable the dynamic braking function.

E06	Undervoltage protection	1. Input power phase is missing. 2. The input power terminal is loose. 3. The input supply voltage drops too much. 4. The switch contacts on the input power supply are aged.	1. Check input power and wiring. 2. Tighten the input terminal screws. 3. Check the air switch and contactor.
E07	Input phase loss	1. Input power phase is missing. 2. Large input power fluctuation	1. Check input power. 2. Check input power wiring. 3. Check if the terminal blocks are loose. 4. Add a voltage stabilizer on the input side.
E08	Output phase loss	1. Output U, V, W phase is missing.	1. Check the connection between the VFD and the motor. 2. Check if the output terminals are loose. 3. Check whether the motor winding is broken.
E09	VFD overload	1. The acceleration and deceleration time is too short. 2. The V/F curve setting is inappropriate in V/F drive mode. 3. The load is too heavy. 4. The braking time is too long, the braking intensity is too large, and the DC braking is repeated.	1. Prolong the acceleration and deceleration time. 2. Set the V/F curve reasonably. 3. Replace the VFD with one that matches the load. 4. Reduce the braking time and braking intensity, and do not perform DC braking repeatedly.
E10	VFD overheating	1. The ambient temperature is too high. 2. The VFD is not properly ventilated. 3. Cooling fan failure.	1. The operating environment should meet the specification requirements. 2. Improve the ventilation environment and check whether the air duct is blocked 3. Replace the cooling fan.
E11	Parameter setting conflict	1. Parameter setting logic conflict.	1. Check whether there are any logical inconsistencies in the parameters set before protection.
E13	Motor overload	1. The acceleration and deceleration time is too short. 2. The V/F curve setting is inappropriate in V/F drive mode. 3. The load is too heavy.	1. Prolong the acceleration and deceleration time. 2. Set the V/F curve reasonably. 3. Replace the motor with one that matches the load.
E14	External fault input	1. The external device fault input terminal is activated.	1. Check external devices.
E15	VFD memory protection	1. Disturbance causes memory read and write errors. 2. The controller repeatedly writes to the internal memory, causing the memory to become corrupted .	1. Press the STOP/RESET button to reset and try again. 2. For parameters that need to be frequently modified, such as frequency setting, set F10.56 to 11 after debugging.

E16	Communication abnormality	1. In systems with non-continuous communication, communication timeout is enabled. 2. Communication disconnected.	1. In a non-continuous communication system, set F10.03 to 0.0. 2. Adjust F10.03 communication timeout. 3. Check whether the communication cable is disconnected.
E17	The VFD temperature sensor is abnormal.	The VFD temperature sensor is disconnected or short-circuited.	1. Check whether the VFD temperature sensor wiring is properly connected. 2. Seek technical support.
E18	Soft start relay is not energized	1. Power failure during operation. 2. Input power phase is missing. 3. The input power terminal is loose. 4. The input supply voltage drops too much. 5. The switch contacts on the input power supply are aged.	1. Cut off power after the VFD stops, or reset the protection directly. 2. Check input power and wiring. 3. Tighten the input terminal screws. 4. Check the air switch and contactor.
E19	Current detection circuit abnormality	The detection circuit of the driver board or control board is damaged.	1. Seek technical support.
E20	Stall protection	1. The deceleration time is set too short. 2. The energy-consuming braking during deceleration and parking is abnormal. 3. The load is too heavy.	1. Increase the deceleration time. 2. Check the dynamic braking condition. 3. Check whether the motor is being driven by other loads and cannot stop.
E21	PID feedback disconnection	1. The PID feedback is greater than the upper limit value F09.24 or less than the lower limit value F09.25, depending on the feedback sensor type.	1. Check if the feedback line is disconnected. 2. Check if the sensor is working abnormally. 3. Adjust the feedback disconnection detection value to a reasonable level.
E24	Self-recognition of abnormalities	1. Press the STOP/RESET key during parameter identification. 2. During the parameter identification process, the external terminal free stop action FRS=ON. 3. The motor is not connected. 4. The rotation self-learning motor is not disconnected from the load. 5. Motor failure.	1. Press the STOP/RESET key to reset. 2. During parameter identification, do not operate the external terminals. 3. Check the connection between the VFD and the motor. 4. Rotate the self-learning motor to disconnect the load. 5. Check the motor.
E26	Load drop protection	1. The motor is not connected or the motor does not match 2. A load drop occurred 3. The load drop protection parameter settings are unreasonable.	1. Check the wiring and replace the matching motor 2. Check the equipment 3. Change the off-load detection level F07.22 and detection time F07.23.

E27	Accumulated power-on time reached	1. The VFD maintenance time has arrived	1. Please contact your dealer to arrange technical support .
E28	Cumulative running time reached	1. The VFD maintenance time has arrived	1. Please contact your dealer to arrange technical support .
E43	Material cut protection	1. Material interruption during tension control	1. Check the cables/materials being processed
E44	Cable protection	1. The effective time of the cable detection terminal is too long. 2. The cable detection terminal is invalid for too long .	1. Check whether the sensor can operate normally. 2. Check whether the terminals can be normally judged as closed or open.
E57	Pipeline network overpressure	1. Excessive feedback pressure in water supply application.	1. Check if the sensor is abnormal. 2. Check whether the analog terminal can detect the analog input normally. 3. Check external devices.
E58	Pipeline network underpressure	1. The feedback pressure in the water supply application is too low.	1. Check if the sensor is abnormal. 2. Check whether the analog terminal can detect the analog input normally. 3. Check external devices.
E76	Short circuit to ground	1. Output is shorted to ground. 2. The VFD module is damaged.	1. Check whether the output cable is damaged or the motor is punctured . 2. Investigate the cause, implement appropriate countermeasures, and then reset. 3. Seek technical support.

When the VFD has the above protection, if you want to exit the protection state, you can press the STOP/RESET key to reset or use the protection/fault reset terminal. If the protection has been eliminated, the VFD returns to the function setting state; if the fault has not been eliminated, the digital tube will continue to display the current protection information.

When using communication to read the fault/protection type, the protection number corresponds to the number after the letter "E", and the number corresponding to "EXX" is "XX", such as E01 corresponds to 1, and E10 corresponds to 10.

The prompt information codes and descriptions during VFD operation are as follows:

Prompt code	describe
P.- on	The VFD is powered on.
P.- o FF	The VFD is in power-off state
SoF t .E	When the soft start is not engaged, the VFD will report SOFT.E when it is started. When the voltage is restored, the soft start will be engaged and it will run normally.

6.2 Protection analysis

After the VFD is powered on, if the motor fails to operate as expected due to incorrect function settings and external control terminal wiring, refer to the analysis content in this section to implement corresponding countermeasures. If the display shows a protection code, refer to Section 6.1 .

6.2.1 Function code parameters cannot be set

- The parameter display remains unchanged when the digital potentiometer is rotated forward or reverse

  When the VFD is running, some code parameters are not allowed to be modified and must be stopped before modification.

- Forward or reverse rotation digital potentiometer, the parameter display is variable, but the storage is invalid

  Some function setting code parameters are locked and cannot be modified.

  When F12.02 is set to 1 or 2, parameter changes may be restricted. Please set F12.02 to 0. The same situation may occur when a user password is set.

6.2.2 Abnormal motor rotation

- Press the RUN key on the keyboard 

, the motor does not rotate
  - Start and stop are controlled by terminals: check the setting of function code F00.02.
  - The free stop terminal FRS is closed to COM: the free stop terminal FRS is disconnected to COM.
  - The running command is switched to the terminal and is effective. At this time, the running command can only be controlled by the terminal: modify it to make it invalid.
  - The status combination of the running command channel is terminal control: changed to keyboard control.
  - The reference input frequency is set to 0: Increase the reference input frequency.
  - The input power is abnormal or the control circuit is faulty.
- Control terminal RUN, FR = ON, the motor does not rotate
  - The external terminal start-stop function setting is invalid: Check the setting of function setting code F00.02.
  - Free stop terminal FRS=ON: Make the free stop terminal FRS=OFF.
  - Control switch failure: Check the control switch.
  - The reference input frequency is set to 0: Increase the reference input frequency.
- The motor can only rotate in one direction

Reverse prohibition is valid: When the reverse prohibition code parameter F00.21 is set to 1, the VFD is not allowed to reverse.

- Motor rotation direction is opposite

The output phase sequence of the VFD is inconsistent with the motor input terminal: In the power-off state, the rotation direction of the motor can be changed by arbitrarily swapping the two motor wires.

6.2.3 Motor acceleration time is too long

- The current limit level parameter is set too low . Please check whether the current limit level of the VFD is set too low.

- The set acceleration time is too long. Please confirm the acceleration time code parameter.
- If the motor is rotating before running, please use starting DC braking or speed tracking start.

6.2.4 The motor deceleration time is too long

- When dynamic braking is effective
  - The set deceleration time is too long. Please confirm the deceleration time code parameter.
  - The resistance of the braking resistor is too large and the energy-consuming braking power is too small, which prolongs the deceleration time.
  - The braking rate setting value (F15.32) is too small, which prolongs the deceleration time. Increase the braking rate setting value.
- When stall protection is effective
  - Overvoltage stall protection is activated. When the DC bus voltage exceeds the overvoltage stall voltage (F07.07), the output frequency remains unchanged. When the DC bus voltage is lower than F07.07, the output frequency continues to decrease, thus extending the deceleration time.
  - The set deceleration time is too long. Please confirm the deceleration time code parameter.

6.2.5 EMI and RFI

- When the VFD is running, since it works in a high-frequency switching state, it will generate electromagnetic interference and radio frequency interference to the control equipment. The following measures can be taken:
  - Reduce the carrier frequency of the VFD (F00.23).
  - Install a noise filter on the input side of the VFD.
  - Install a noise filter on the output side of the VFD.
  - The cable is covered with a metal tube. The VFD is installed in a metal chassis.
  - The VFD and motor must be reliably grounded.
  - The main circuit wiring and control circuit wiring are routed separately. The control circuit uses shielded wires and connects the shielded wires according to the method shown in Chapter 3 .

6.2.6 Leakage circuit breaker action

- **When the VFD is powered on, the leakage protector is activated.**

  A) Loosen the EMC screws inside the VFD and disconnect the internal Y capacitor;

  B) Please use a special VFD leakage circuit breaker with a current sensitivity of 30mA or above;

- **When the VFD is running, the leakage circuit breaker operates**

  A) Please ground the VFD and motor reliably.

  B) Please use a special VFD leakage circuit breaker with a current sensitivity of 30mA or above;

6.2.7 Mechanical vibration

- The natural frequency of the mechanical system resonates with the carrier frequency of the VFD

  There is no problem with the motor, but when the machine produces a sharp sound resonance, it is because the natural frequency of the mechanical system resonates with the carrier frequency of the VFD. Please adjust the F00.23 carrier frequency to avoid the resonance frequency.

- The natural frequency of the mechanical system resonates with the VFD output frequency

  The natural frequency of the mechanical system resonates with the VFD output frequency, which will generate mechanical noise. Please use the oscillation suppression function (F05.13), or install anti-vibration rubber and other anti-vibration measures on the motor base plate.

- PID Control Oscillation

  The adjustment parameters P, Ti, and Td of the PID controller do not match. Please reset the PID parameters.

6.2.8 The motor still rotates when the VFD stops outputting

- Parking DC braking is insufficient
  - The parking DC braking torque is too small. Please increase the parking DC braking current setting value (F04.21).
  - The parking DC braking time is too short. Please increase the parking DC braking time setting value (F04.22). In general, please give priority to increasing the parking DC braking current.

6.2.9 The output frequency does not output according to the given frequency

- The given frequency exceeds the upper limit

  When the given frequency exceeds the upper frequency setting value, the output frequency is output according to the upper frequency. Reset the given frequency to make it within the upper frequency range; or check whether F00.16, F00.17 and F00.18 are appropriate.

Chapter 7 Care and maintenance

7.1 Daily care and maintenance of frequency converter

According to the usage, customers should conduct regular inspections on the VFD to eliminate faults and potential safety hazards. When inspecting, be sure to cut off the power supply and wait for 10 minutes after the keyboard LED goes out before conducting the inspection. The inspection contents are as follows.

Inspection items	Check content	Abnormal countermeasures
Main circuit terminal, control circuit terminal screws	Are the screws loose?	Tighten with a screwdriver
Heat sink	Is there any dust or foreign matter?	Blow off with dry compressed air at a pressure of ^{4}to 6 kg / cm2
PCB Printed Circuit Board		
Cooling fan	Is there any abnormal sound or vibration? Is the cumulative running time up to 20,000 hours?	Replacing the cooling fan
Electrolytic Capacitors	Whether there is discoloration, odor, or bubbling	Replace the electrolytic capacitor

In order to ensure the normal operation of the VFD for a long time, regular maintenance and replacement of the VFD's internal components are required according to their service life.

Part Name	Standard replacement years
Cooling fan	2-3 years
Electrolytic capacitors	4-5 years
Printed Circuit Board	5-8 years

The conditions for the replacement time of the VFD components listed in the table above are: Ambient temperature: annual average 30°C. Load factor: less than 80%. Operating time: less than 12 hours per day.

7.2 VFD warranty information

The company will provide warranty service if the VFD has the following situations:

The warranty covers only the VFD itself. If the VFD fails or is damaged within twelve months during normal use, the company will be responsible for the warranty. If the VFD fails or is damaged within twelve months, the company will charge a reasonable maintenance fee.

Within one year, if the following situations occur, a certain maintenance fee should also be charged:

- Failure to operate and use the VFD correctly according to the instructions in this manual may result in damage to the VFD.
- VFD damage caused by flood, fire, voltage abnormality, etc.
- VFD damage caused by wiring errors, etc.
- VFD damage caused by self-modification, etc.

The relevant service fees are calculated based on actual costs; if there is another agreement, the agreement will take precedence.

Chapter 8 Optional accessories

8.1 Braking resistor

When the braking performance does not meet customer requirements, an external braking unit and braking resistor are required to achieve timely energy release.

The power of the braking resistor can be calculated according to the following formula:

Resistor power Pb = VFD power P × braking frequency D

D - Braking frequency. This is an estimated value, which should be selected according to the working conditions of the load. The values of D in common situations are as follows:

Generally, D = 10%

Occasional braking load D = 5%

Centrifuge D = 5% ~ 20%

Oilfield kowtow machine D = 10% ~ 20%

Unwinding and winding D = 50% ~ 60%, preferably calculated according to system design indicators

The following table shows the recommended braking resistor power and resistance value for the EM750 series VFD. The recommended resistor power is calculated based on a braking utilization rate of 10% to 20% and is for reference only . If the VFD is used in situations where frequent acceleration and deceleration or continuous braking occurs, the braking resistor power needs to be increased . Depending on the load, the user can change the value appropriately, but it must meet the required range.

VFD Model	Motor (kW)	Resistor value (Ω)	Resistor power (W)	Wire connecting resistor (mm^2)
EM750-0R4 G/0R7P -2B	0.4	≧ 30	≧200	1
EM750-0R7 G/1R5P -2B	0.75	≧ 30	≧400	1
EM750-1R5 G/2R2P -2B	1.5	≧ 30	≧400	1
EM750-2R2 G/3R0P -2B	2.2	≧ 25	≧800	1.5
EM750-0R7G/1R5P-3B	0.75	≧ 60	≧200	1
EM750-1R5G/2R2P-3B	1.5	≧ 60	≧400	1
EM750-2R2G/3R0P-3B	2.2	≧ 60	≧400	1
EM750-4R0G/5R5P-3B	4	≧ 60	≧800	1
EM750-5R5G/7R5P-3B	5.5	≧ 60	≧1000	1
EM750-7R5G/9R0P-3B	7.5	≧ 60	≧1 000	1
EM750-011G/015P-3B	11	≧ 25	≧2 000	2
EM750-015G/018P-3B	15	≧ 18	≧20 00	2
EM750-018G/022P-3B	18.5	≧ 18	≧2 000	2
EM750-022G/030P-3B	22	≧ 12	≧4000	4
EM750-030G/037P-3B	30	≧ 7.5	≧4000	4
EM750-037G/045P-3B	37	≧ 7.5	≧ 6 000	4

8.2 Braking unit

EM750 series VFDs EM750-045-3 and above need to be equipped with our BR100 series brake units. The models and specifications of our brake units are as follows:

model	Use occasions	Minimum resistance (Ω)	Average braking current I_{av} (A)	Peak current I_{max} (A)	Applicable VFD power (kW)
BR100-045	Dynamic braking	10	45	75	18.5～45
BR100-160	Dynamic braking	6	75	150	55～160
BR100-200	Dynamic braking	5	1 00	2 00	185～200
BR100-315	Dynamic braking	3.5	120	300	220～315
BR100-400	Dynamic braking	2.5	200	400	355～400
BR100-500	Dynamic braking	2	250	4 50	450～500
BR100-450-6	Dynamic braking	3.5	250	450	1 10～450

（b）When BR100 uses the minimum resistance, the braking unit can work continuously when the braking frequency D=33%;

When D>33%, intermittent operation is required, otherwise over-temperature protection will occur.

8.2.1 Selection of connecting wires

Since all brake units and brake resistors operate at high voltage >400VDC and are in a non-continuous working state, please select appropriate wires.

model	Average braking current I_{av} (A)	Peak braking current I_{max} (A)	Copper core cable section (mm^2)
BR100-045	45	75	10
BR100-160	75	150	16
BR100-200	100	200	25
BR100-315	120	300	25
BR100-400	200	400	35

Soft cables have better flexibility. Because the cables may come into contact with high-temperature equipment, it is recommended to use copper core, heat-resistant soft cables or flame-retardant cables. The distance between the brake unit and the VFD should be as close as possible, and the maximum distance should not exceed 2 meters. Otherwise, the DC side cable connection should be twisted and covered with a magnetic ring to reduce radiation and inductance.

Chapter 9 Function code table

9.1 Function code table description

The function codes (referred to as "function codes") of the EM750 series VFD are 21 groups as shown in the following table, and each group has several function codes. Among them, group F18 is the monitoring parameter group, which is used to view the VFD status; group F19 is the protection record group, which is used to view the details of the last three protections; the other groups are parameter setting groups, which are used to meet different functional requirements.

F00	Basic function parameter group	F01	Motor 1 parameter group
F02	Input terminal function group	F03	Output terminal function group
F04	Start-stop control parameter group	F05	V/F control parameter group
F06	Vector control parameter group	F07	Protection function setting group
F08	Multi-speed and simple PLC	F09	PID function group
F10	Communication function group	F11	User-selected parameter groups
F12	Keyboard and display function group	F13	Torque control parameter group
F14	Motor 2 parameter group	F15	Accessibility Group
F16	Customized Function Group	F17	Virtual I/O function group
F18	Monitoring Parameter Group	F19	Protect Record Group
F27	Rewinding and unwinding application macro parameter group	F 45	Mod bus free mapping parameter group

- Some invisible parameters are reserved parameters. Changing them may cause the VFD to operate abnormally. Please avoid operating such parameters.
- Parameter attributes: ● Parameters that can be changed in any state; ○ Parameters that cannot be changed in the running state; ×Read-only parameters;

9.2 Function parameter table

Function code	Function code name	Parameter Description	unit	Factory value	property
F00	**Basic function parameter group**				
F00.01	Motor 1 drive control mode	0: V/F control (VVF) 1: Speed sensorless vector control (SVC)		0	○
F00.02	Command source selection	0: Keyboard control 1: Terminal control 2: Communication control		0	○
F00.03	Terminal control mode selection	0: Terminal RUN, FR forward/reverse 1: Terminal RUN, FR reverse 2: Terminal RUN, Xi stop, FR reverse 3: Terminal RUN, Xi stop, FR forward/reverse		0	○

F00.04	Main frequency source A selection	0: Digital frequency given F00.07 1: AI1 2: AI2 5: High frequency pulse input (X5) 6: Main frequency communication given (percentage) 7: Main frequency communication given (direct frequency) 8: Digital potentiometer given		8	○
F00.05	Auxiliary frequency source B selection	0: Digital frequency given F00.07 1: AI1 2: AI2 5: High frequency pulse input (X5) 6: Auxiliary frequency communication given (percentage) 7: Auxiliary frequency communication given (direct frequency) 8: Digital potentiometer given 10: Process PID 11: Simple PLC		0	○
F00.06	Frequency source selection	0: Main frequency source A 1: Auxiliary frequency source B 2: Main and auxiliary operation results 3: Switch between main frequency source A and auxiliary frequency source B 4: Switch between main frequency source A and main and auxiliary operation results 5: Switch between auxiliary frequency source B and main and auxiliary operation results 6: Auxiliary frequency source B + feedforward operation (winding application)		0	○
F00.07	Digital frequency setting	0.00～maximum frequency F00.16	Hz	0.00	●
F00.08	Primary and secondary operation selection	0: Main frequency source A + auxiliary frequency source B 1: Main frequency source A - auxiliary frequency source B 2: The maximum value of the main and auxiliary 3: The minimum value of the main and auxiliary 4: The result of main frequency source A - auxiliary frequency source B is greater than or equal to zero 5: The result of main frequency source A + auxiliary frequency source B is greater than or equal to zero		0	○
F00.09	Auxiliary frequency source B reference selection during main and auxiliary operation	0: relative to the maximum frequency 1: relative to the main frequency source A		0	○
F00.10	Main frequency source gain	0.0～300.0	%	100.0	●
F00.11	Auxiliary frequency	0.0～300.0	%	100.0	●

	source gain				
F00.12	Synthesized gain of main and auxiliary frequency sources	0.0～300.0	%	100.0	●
F00.13	Analog adjustment of synthetic frequency	0: Main and auxiliary channel synthesis frequency 1: AI1*main and auxiliary channel synthesis frequency 2: AI2*main and auxiliary channel synthesis frequency 5: high frequency pulse (PULSE)*main and auxiliary channel synthesis frequency		0	○
F00.14	Acceleration time 1	0.00～650.00（F15.13=0） 0.0～6500.0（F15.13=1） 0～65000（F15.13=2）	s	15.00	●
F00.15	Deceleration time 1	Same as above	s	15.00	●
F00.16	Maximum frequency	1.00～600.00 /1.0 ～3000.0	Hz	50.00	○
F00.17	Upper frequency control selection	0: Set by F00.18 1: AI1 2: AI2 5: High-frequency pulse input (X5) 6: Communication setting (percentage) 7: Communication setting (direct frequency setting)		0	○
F00.18	Upper frequency	Lower limit frequency F00.19～maximum frequency F00.16	Hz	50.00	●
F00.19	Lower frequency	0.00～Upper frequency limit F00.18	Hz	0.00	●
F00.20	Running direction	0: The direction is consistent 1: Opposite direction		0	●
F00.21	Inversion of Control	0: Allow forward/reverse 1: Disable reverse		0	○
F00.22	Forward and reverse dead time	0.00～650.00	s	0.00	●
F00.23	Carrier frequency	1.0～16.0 (rated power 0.75～4.00kW) 1.0～10.0 (rated power 5.50～7.50kW) 1.0～8.0 (rated power 11.00～45.00kW) 1.0～4.0 (rated power 55.00～90.00kW) 1.0～3.0 (rated power 110.00 and above)	kHz	4.0	●
F00.24	Automatic adjustment of carrier frequency	0: Invalid 1: Valid 1 2: Valid 2		1	○
F00.25	Carrier frequency noise suppression	0: Invalid 1: Carrier frequency noise suppression mode 1 2: Carrier frequency noise suppression mode 2		0	○
F00.26	Noise suppression width	1～20		1	●
F00.27	Noise suppression strength	0~10: Carrier frequency noise suppression mode 1 0~4: Carrier frequency noise suppression mode 2 0: Carrier frequency noise suppression is invalid	%	2	●
F00.28	Motor parameter group	0 : Motor 1 parameter group 1 : Motor 2		0	○

	selection	parameter group			
F00.29	User Password	0～65535		0	○
F00.30	G/P selection	0 : Heavy duty(G) 1: Normal duty(P)		0	○
F00.31	Frequency resolution	0:0.01Hz 1:0.1Hz (speed unit is 10rpm)		0	○
F00.35	Supply voltage selection	0:380V 1:440V		0	○
F01	**Motor 1 parameter group**				
F01.00	Motor Type Selection	0 : Ordinary asynchronous motor 1 : variable frequency asynchronous motor 2 : permanent magnet synchronous motor		0	○
F01.01	Motor rated power	0.10～650.00	kW	Model confir mation	○
F01.02	Motor rated voltage	50～2000	V	Model confir mation	○
F01.03	Motor rated current	0.01～600.00 (rated motor power ≤75kW) 0.1～6000.0 (rated motor power>75kW)	A	Model confir mation	○
F01.04	Motor rated frequency	0.01～600.00	Hz	Model confir mation	○
F01.05	Motor rated speed	1～60000	rpm	Model confir mation	○
F01.06	Motor winding connection	0: Y 1: Δ		Model confir mation	○
F01.07	Motor rated power factor	0.600～1.000		Model confir mation	○
F01.08	Motor efficiency	30.0～100.0	%	Model confir mation	○
F01.09	Stator resistance of asynchronous motor	1～60000 (rated motor power ≤75kW) 0.1～6000.0 (rated motor power>75kW)	mΩ	Model confir mation	○
F01.10	Asynchronous motor rotor resistance	Same as above	mΩ	Model confir mation	○
F01.11	Asynchronous motor leakage inductance	0.01～600.00 (rated motor power ≤75kW) 0.001～60.000 (rated motor power>75kW)	mh	Model confir mation	○
F01.12	Asynchronous motor mutual inductance	Same as above	mh	Model confir mation	○
F01.13	Asynchronous motor no-load excitation current	0.01～600.00 (rated motor power ≤75kW) 0.1～6000.0 (rated motor power>75kW)	A	Model confir mation	○
F01.14	Asynchronous motor field weakening coefficient 1	10.00～100.00	%	87.00	○
F01.15	Asynchronous motor field	10.00～100.00	%	80.00	○

	weakening coefficient 2				
F01.16	Asynchronous motor field weakening coefficient 3	10.00～100.00	%	75.00	○
F01.17	Asynchronous motor field weakening coefficient 4	10.00～100.00	%	72.00	○
F01.18	Asynchronous motor field weakening coefficient 5	10.00～100.00	%	70.00	○
F01.19	Synchronous motor stator resistance	1～60000 (rated motor power ≤75kW) 0.1～6000.0 (rated motor power>75kW)	mΩ	Model confir mation	○
F01.20	Synchronous motor d-axis inductance	0.01～600.00 (motor rated power ≤75kW) 0.001～60.000 (motor rated power>75kW)	mh	Model confir mation	○
F01.21	Synchronous motor q-axis inductance	Same as above	mh	Model confir mation	○
F01.22	Synchronous Motor Back EMF	10.0～2000.0（Back electromotive force at rated speed）	V	Model confir mation	○
F01.23	Synchronous motor initial electrical angle	0.0～359.9 (valid for synchronous machine)			○
F01.34	Motor parameter self-learning	00 : No operation 01 : Asynchronous motor static self-learning 02 : Asynchronous motor rotating self-learning 11 : Synchronous motor static self-learning 12 : Synchronous motor rotating self-learning		0 0	○
F02	**Input terminal function group**				
F02.00	X1 digital input function selection	0: No function 1: Run terminal RUN 2: Running direction FR 11: Multi-speed terminal 1 12: Multi-speed terminal 2 13: Multi-speed terminal 3 For the rest, see Table 9-1 Digital Input Terminal Functions		1	○
F02.01	X2 digital input function selection			2	○
F02.02	X3 digital input function selection			11	○
F02.03	X4 digital input function selection			12	○
F02.04	X5 digital input function selection			13	○
F02.07	AI1 digital input function selection			0	○
F02.08	AI2 digital input function selection			0	○
F02.15	Digital input terminal positive and negative logic 1	D7 D6 D5 D4 D3 D2 D1 D0 * * * X5 X4 X3 X2 X1 0: Positive logic closing is valid/disconnection is invalid 1: Negative logic closing is invalid/disconnection is valid		00000	○
F02.16	Digital input terminal positive and negative logic 2	D7 D6 D5 D4 D3 D2 D1 D0 * * * * * * AI2 AI1 0: Positive logic closing is valid/disconnection is invalid		00	○

		1: Negative logic closing is invalid/disconnection is valid			
F02.17	Digital input terminal filtering times	0～100, 0 means no filtering, n means sampling every n ms		2	○
F02.18	X1 effective delay time	0.000～30.000	s	0.000	●
F02.19	X1 invalid delay time	0.000～30.000	s	0.000	●
F02.20	X2 effective delay time	0.000～30.000	s	0.000	●
F02.21	X2 invalid delay time	0.000～30.000	s	0.000	●
F02.22	X3 effective delay time	0.000～30.000	s	0.000	●
F02.23	X3 invalid delay time	0.000～30.000	s	0.000	●
F02.24	X4 effective delay time	0.000～30.000	s	0.000	●
F02.25	X4 invalid delay time	0.000～30.000	s	0.000	●
F02.26	Minimum input pulse frequency	0.00～Maximum input pulse frequency F02.28	kHz	0.00	●
F02.27	Minimum input corresponding setting	–100.0～+100.0	%	0.0	●
F02.28	Maximum input pulse frequency	0.01～100.00	kHz	50.00	●
F02.29	Maximum input corresponding setting	–100.0～+100.0	%	100.0	●
F02.30	Pulse input filter time	0.00～10.00	s	0.10	●
F02.31	Analog input function selection	Units: AI1 0: Analog input 1: Digital input (0 for values below 1V, 1 for values above 3V, the same as the previous result) Tens: AI2 0: Analog input 1: Digital input (same as above)		00B	○
F02.32	Analog input curve selection	Units: AI1 curve selection 0: Curve 1 1: Curve 2 2: Curve 3 3: Curve 4 Tens: AI2 curve selection same as units option		01D	○
F02.33	Curve 1 minimum input	-10.00～F02.35	V	0.10	●
F02.34	Curve 1 minimum input corresponds to the given	–100.0～+100.0	%	0.0	●
F02.35	Curve 1 Maximum Input	F02.33～10.00V	V	9.90	●
F02.36	Curve 1 Maximum input corresponds to given	–100.0～+100.0	%	100.0	●
F02.37	Curve 2 minimum input	-10.00V～F02.39	V	0.10	●
F02.38	Curve 2 minimum input corresponds to the given	–100.0～+100.0	%	0.0	●
F02.39	Curve 2 Maximum Input	F02.37～10.00V	V	9.90	●
F02.40	Curve 2 maximum input corresponds to given	–100.0～+100.0	%	100.0	●
F02.41	Curve 3 minimum input	-10.00~F02.43	V	0.10	●
F02.42	Curve 3 minimum input corresponds to the given	–100.0～+100.0	%	0.0	●

F02.43	Curve 3 inflection point 1 input	F02.41～F02.45	V	2.50	●
F02.44	Curve 3 inflection point 1 input corresponds to the given	–100.0～+100.0	%	25.0	●
F02.45	Curve 3 inflection point 2 input	F02.43～F02.47	V	7.50	●
F02.46	Curve 3 inflection point 2 input corresponds to the given	–100.0～+100.0	%	75.0	●
F02.47	Curve 3 Maximum Input	F02.45～10.00	V	9.90	●
F02.48	Curve 3 maximum input corresponds to given	–100.0～+100.0	%	100.0	●
F02.49	Curve 4 minimum input	-10.00～F02.51	V	-9.90	●
F02.50	Curve 4 minimum input corresponds to the given	–100.0～+100.0	%	-100.0	●
F02.51	Curve 4 inflection point 1 input	F02.49～F02.53	V	-5.00	●
F02.52	Curve 4 inflection point 1 input corresponds to the given	–100.0～+100.0	%	-50.0	●
F02.53	Curve 4 inflection point 2 input	F02.51～F02.55	V	5.00	●
F02.54	Curve 4 inflection point 2 input corresponds to the given	–100.0～+100.0	%	50.0	●
F02.55	Curve 4 Maximum Input	F02.53～10.00	V	9.90	●
F02.56	Curve 4 Maximum input corresponds to given	–100.0～+100.0	%	100.0	●
F02.57	AI1 filter time	0.00～10.00	s	0.10	●
F02.58	AI2 filter time	0.00～10.00	s	0.10	●
F02.61	AD hysteresis code	2～50		2	○
F02.62	Analog input AI1 type selection	0: 0～10V 3: -10～10V 4: 0～5V		0	○
F02.63	Analog input AI2 type selection	0: 0～10V 1: 4～20mA 2: 0～20mA 4: 0～5V		0	○
F02.66	AI2 current input impedance selection	0: 500 Euro 1: 250 Euro		0	○
F03	**Output terminal function group**				
F03.00	Y1 output function selection	0: No output 1: The VFD is running (RUN) For the rest, see Table 9-2 Digital Output Terminal Functions		1	○
F03.02	R1 output function selection (EA-EB-EC)			7	○
F03.05	Output signal type selection	D7 D6 D5 D4 D3 D2 D1 D0 * * * * * R1 * Y1 0: Level 1: Single pulse		0*0	○
F03.06	Digital output positive/negative logic	D7 D6 D5 D4 D3 D2 D1 D0 * * * * * R1 * Y1		0*0	○

		0: Positive logic closed valid/open invalid 1: Negative logic closing is invalid/opening is valid			
F 03.07	Y1 output type selection	0 : Normal digital output 1: High frequency pulse output		1	○
F03.08	Output state control during jog	D7 D6 D5 D4 D3 D2 D1 D0 * * * REV FDT 2 FDT 1 FAR RUN 0: Valid when inching 1: Invalid when jogging		00000	○
F03.09	Y1 effective delay time	0.000～30.000	s	0.000	●
F03.10	Y1 invalid delay time	0.000～30.000	s	0.000	●
F03.13	R1 effective delay time	0.000～30.000	s	0.000	●
F03.14	R1 invalid delay time	0.000～30.000	s	0.000	●
F03.17	Y1 output single pulse time	0.001～30.000	s	0.250	●
F03.19	R1 output single pulse time	0.001～30.000	s	0.250	●
F03.21	Analog output M1 selection	0: operating frequency (absolute value) 1: Set frequency (absolute value) For the rest, see Table 9-3 Analog output terminal functions		0	○
F 03.22	Analog output M2 selection	0: operating frequency (absolute value) 1: Set frequency (absolute value) 2 : Output torque (absolute value) 4 : Output current For the rest, see Table 9-3 Analog output terminal functions		2	○
F03.23	Y1 high frequency pulse output function selection	0: operating frequency For the rest, see Table 9-3 Analog output terminal functions		0	○
F0.3.24	Y1 high frequency pulse output 100% corresponding frequency	0.00 ～ 100.00	k Hz	1.00	●
F0 3.25	Y1 high frequency pulse output 0% corresponding frequency	0.00 ～ 100.00	k Hz	0.00	●
F0.3.26	Y1 high frequency pulse output filter time	0.00～10.00	s	0.10	●
F03.27	M1 output bias	-100.0～100.0	%	0.0	●
F03.28	M1 output gain	-10.000～10.000		1.000	●
F03.29	M2 output bias	-100.0～100.0	%	0.0	●
F03.30	M2 output gain	-10.0 0 0～10 . 0 0 0		1.00 0	●
F03.31	PLC output terminal control logic selection	D7 D6 D5 D4 D3 D2 D1 D0 * * * * * R1 * Y1 0: No output 1: Output		00000	●

F03.34	Analog output M1 type selection	0: 0～10V 1: 4～20mA 2: 0～20mA		0	○
F03.35	Analog output M 2 type selection	0: 0 ~ 10V 1: 4～ 20mA 2: 0 ～20mA		0	○

Table 9 -1 Digital input terminal functions

Settings	Function	Settings	Function
0	No function	30	Motor 1/Motor 2 switch
1	Run terminal RUN	31	Simple PLC status reset (run from the first stage, run time reset)
2	Running direction FR	32	Simple PLC running time pause (keep the current segment running)
3	Stop control for three-line operation	34	Count input (≤250Hz)
4	Forward jog (FJOG)	35	High-speed counting input (≤100kHz, only valid for X5)
5	Reverse jog (RJOG)	37	Length counting input (≤250Hz)
6	Terminal UP	38	High-speed length counting input (≤100kHz, only valid for X5)
7	Terminal DOWN	39	Length reset (meter reset)
8	UP/DOWN offset clear	40	Pulse input (≤100kHz, only valid for X5)
9	Free parking	41	Process PID Pause
10	Fault reset	42	Process PID integration pause
11	Multi-speed terminal 1	43	PID parameter switching
12	Multi-speed terminal 2	44	PID positive/reverse switching
13	Multi-speed terminal 3	45	Stop and DC brake
14	Multi-speed terminal 4	46	DC braking during shutdown
15	Multi-stage PID terminal 1	47	Immediate DC braking
16	Multi-stage PID terminal 2	48	Fastest deceleration stop
17	Multi-stage torque terminal 1	50	External parking
18	Multi-stage torque terminal 2	51	The main frequency source is switched to digital frequency setting
19	Acceleration/deceleration time terminal 1	52	The main frequency source is switched to AI1
20	Acceleration/deceleration time terminal 2	53	The main frequency source is switched to AI2
21	Acceleration and deceleration prohibited	55	The main frequency source is switched to high frequency pulse input
22	Run Pause	56	The main frequency source is switched to communication reference
23	External fault input	57	VFD enable
24	Run command to switch to keyboard	68	Disable reverse enable
25	Run command to switch to communication	69	Reverse prohibition
26	Frequency source switching	70	Input terminal expansion
27	Timer running time reset	121	External material cut-off signal
28	Speed control/torque control switching	122	Cable detection signal
29	Torque control inhibit	123	Brake reset terminal
36	Counter clear		

Table 9 -2 Digital output terminal functions

Settings	Function	Settings	Function
0	No output	20	PID feedback reaches the lower limit
1	The VFD is running (RUN)	21	Analog level detection ADT1
2	Output frequency arrival (FAR)	22	Analog level detection ADT2
3	Output frequency detection FDT1	24	Undervoltage status
4	Output frequency detection FDT2	26	Set time reached
5	Reverse operation (REV)	27	Zero speed operation
6	Inching operation	38	Downloading
7	VFD fault/protection action	40	Current reaches
8	The VFD is ready to run (READY)	41	Torque reached
9	Upper frequency limit reached	42	Speed reached
10	Lower frequency limit reached	47	PLC Output
11	Current limit reached	59	Sleep Indicator
12	Reaching overvoltage stall voltage	67	Brake control
13	Simple PLC cycle completed	68	Material break detection output
14	Set count value reached	69	FDT1 lower bound (pulse)
15	The specified count value has been reached	70	FDT2 lower bound (pulse)
16	Length arrival (meter arrival)	71	FDT1 lower limit (invalid in pulse and JOG)
17	Motor overload warning	72	FDT2 lower limit (invalid in pulse and JOG)
18	VFD overheating warning	73	Output current exceeds limit
19	PID feedback reaches the upper limit		

Table 9 -3 Analog output terminal/high frequency pulse output terminal functions

Settings	Function	Settings	Function
0	Operating frequency (absolute value)	15	Length value
1	Set frequency (absolute value)	16	PID output percentage
2	Output torque (absolute value)	18	PID Feedback
3	Set torque (absolute value)	19	PID setting
4	Output Current	21	Output frequency (actual value)
5	Output voltage	22	Set frequency (actual value)
6	Bus voltage	23	Output current (actual value)
7	Output Power	24	Output torque (actual value)
8	AI1	25	Set torque (actual value)
9	AI2	27	Estimated feedback frequency (actual value)
12	High frequency pulse input (100% corresponds to 100.00kHz)	28	Synchronous frequency (actual value)
13	Communication given 1	29	Acceleration and deceleration output frequency (actual value)
14	Count value	30	Communication given 2

F04	Start-stop control parameter group				
F04.00	Startup method	0: Direct start 1: Speed tracking start		0	○
F04.01	Start frequency	0.00～10.00	Hz	0.00	○
F04.02	Start frequency holding time	0.00～60.00, 0.00 is invalid	s	0.00	○
F04.03	Starting DC braking current	0.0～100.0 (100.0=motor rated current)	%	100.0	○
F04.04	Start DC braking time	0.00～30.00 0.00: Invalid	s	0.00	○

F04.06	Pre-excitation current	50.0～500.0（100.0=no-load current）	%	100.0	○
F04.07	Pre-excitation time	0.00～10.00	s	0.10	○
F04.08	Speed tracking method	Units: Tracking start frequency 0: Maximum frequency 1: Stop frequency 2: Power frequency Tens: Search direction selection 0: Search only in the command direction 1: Search in the reverse direction if the speed cannot be found in the command direction		0	○
F04.10	Speed tracking deceleration time	0.1～20.0	s	2.0	○
F04.11	Speed tracking current	30.0～150.0（100.0=VFD rated current）	%	50.0	○
F04.12	Speed tracking compensation gain	0.00～10.00		1.00	○
F04.14	Acceleration and deceleration method	0: Linear acceleration/deceleration 1: Continuous S-curve acceleration/deceleration 2: Intermittent S-curve acceleration/deceleration		0	○
F04.15	S curve start time during acceleration	0.00～30.00（F15.13=0） 0.0～300.0（F15.13=1） 0～3000（F15.13=2）	s	1.00	●
F04.16	S curve end time during acceleration	Same as above	s	1.00	●
F04.17	S curve start time during deceleration	Same as above	s	1.00	●
F04.18	S curve end time during deceleration	Same as above	s	1.00	●
F04.19	Parking options	0: decelerate and stop 1: Free parking		0	○
F04.20	Stop DC braking starting frequency	0.00Hz～maximum frequency F00.16	Hz	0.00	○
F04.21	Parking DC braking current	0.0～100.0 (100.0=motor rated current)	%	50.0 %	○
F04.22	Stop DC braking time	0.00～30.00 0.00: Invalid	s	0.00	○
F04.23	Parking DC brake demagnetization time	0.00～30.00	s	0.50	○
F04.24	Flux braking gain	100～150 (100: no flux braking)		100	○
F04.26	Protection/free stop after starting mode	0: Start according to the setting method of F04.00 1: Start by speed tracking		0	○
F04.27	Terminal start command reconfirmation	0: Not confirmed 1: Confirmed 2: Not confirmed mode 2 (fault reset is not confirmed either)		0	○
F04.28	Minimum effective output frequency	0.00～50.00 (0.00: function disabled)	Hz	0.00	○
F04.29	Zero speed judgment frequency	0.00～5.00	Hz	0.25	●
F04.30	Synchronous machine initial magnetic pole search method	0: Invalid 1: Method 1		0	●
F05	**V/F control parameter group**				

F05.00	V/F curve setting	0: Straight line V/F 1: Multi-point broken line V/F 2: 1.3 power V/F 3: 1.7 power V/F 4: Square V/F 5: VF complete separation mode (Ud=0, Uq=K*t=separation voltage source voltage) 6: VF semi-separation mode (Ud=0, Uq=K*t=FFe*2*separation voltage source voltage)		0	○
F05.01	Multi-point VF frequency point F1	0.00～F05.03	Hz	0.50	●
F05.02	Multi-point VF voltage point V1	0.0～100.0（100.0=rated voltage）	%	1.0	●
F05.03	Multi-point VF frequency point F2	F05.01～F05.05	Hz	2.00	●
F05.04	Multi-point VF voltage point V2	0.0～100.0	%	4.0	●
F05.05	Multi-point VF frequency point F3	F05.03～Motor rated frequency (reference frequency)	Hz	5.00	●
F05.06	Multi-point VF voltage point V3	0.0～100.0	%	10.0	●
F05.07	VF Split Mode Voltage Source	0: VF separation voltage digital setting 1: AI1 2: AI2 4: High frequency pulse (X5) 5: PID 6: Communication setting Note: 100% is the rated voltage of the motor		0	○
F05.08	VF separation voltage digital setting	0.0～100.0 (100.0=rated voltage of motor)	%	0.0	●
F05.09	VF separation voltage rise time	0.00～60.00	s	2.00	●
F05.10	V/F stator voltage drop compensation gain	0.00～200.00	%	100.00	●
F05.11	V/F slip compensation gain	0.00～200.00	%	100.00	●
F05.12	V/F slip filter time	0.00～10.00	s	1.00	●
F05.13	Oscillation suppression gain	0～10000		100	●
F05.14	Oscillation suppression cutoff frequency	0.00～600.00	Hz	55.00	●
F05.15	Droop control frequency	0.00～10.00	Hz	0.00	●
F05.16	Energy saving rate	0.00～50.00	%	0.00	●
F05.17	Energy saving action time	1.00～60.00	s	5.00	●
F05.18	Synchronous machine flux compensation gain	0.00～500.00	%	0.00	●
F05.19	Synchronous machine flux compensation filter time constant	0.00～10.00	s	0.50	●
F05.20	VF separation power supply set change rate	–500.0～+500.0	%	0.0	●
F06	**Vector control parameter group**				

F06.00	Speed proportional gain ASR_P1	0.00～100.00		12.00	●
F06.01	Speed integral time constant ASR_T1	0.000～30.000 0.000: No points	s	0.200	●
F06.02	Speed proportional gain ASR_P2	0.00～100.00		8.00	●
F06.03	Speed integral time constant ASR_T2	0.000～30.000 0.000: No points	s	0.300	●
F06.04	Switching frequency 1	0.00～Switching frequency 2	Hz	5.00	●
F06.05	Switching frequency 2	Switching frequency 1 to maximum frequency F00.16	Hz	10.00	●
F06.06	No-load current gain	50.0～300.0	%	100.0	●
F06.07	Speed loop output filter time constant	0.000～0.100	s	0.001	●
F06.08	Vector control slip gain	50.00～200.00	%	100.00	●
F06.09	Speed control torque upper limit source selection	0: Set by F06.10 and F06.11 1: AI1 2: AI2 5: Communication setting (percentage) 6: AI1 and AI2 take the maximum value 7: AI1 and AI2 take the minimum value		0	○
F06.10	Speed control electric torque upper limit	0.0～250.0	%	165.0	●
F06.11	Speed control braking torque upper limit	0.0～250.0	%	165.0	●
F06.12	Excitation current proportional gain ACR-P1	0.00～100.00		0.50	●
F06.13	Excitation current integral time constant ACR-T1	0.00～600.00 0.00: No points	ms	10.00	●
F06.14	Torque current proportional gain ACR-P2	0.00～100.00		0.50	●
F06.15	Torque current integration time constant ACR-T2	0.00～600.00 0.00: No points	ms	10.00	●
F06.17	SVC zero frequency processing method	0: Brake 1: No processing 2: Sealing the tube		2	○
F06.18	SVC zero-frequency brake current	50.0～400.0 (100.0 is the motor no-load current)	%	100.0	○
F06.20	Voltage feed-forward gain	0～100	%	0	●
F06.21	Field weakening control selection	0: Invalid 1: Direct calculation 2: Automatic adjustment		2	○
F06.22	Field weakening voltage	70.00～100.00	%	95.00	●
F06.23	Maximum field weakening current of synchronous motor	0.0～150.0 (100.0 is the rated current of the motor)	%	100.0	●
F06.24	Field weakening regulator proportional gain	0.00～10.00		0.50	●

F06.25	Field weakening regulator integration time	0.01～60.00	s	2.00	●
F06.26	MTPA control options for synchronous motors	0: Invalid 1: Valid		1	○
F06.27	Initial position self-learning gain	0～200	%	100	●
F06.28	Injection current low frequency	0.00～100.00 (100.00 is the rated frequency of the motor)	%	10.00	●
F06.29	Low frequency injection current	0.0～60.0 (100.0 is the rated current of the motor)	%	20.0	●
F06.30	Injection current low-band regulator gain	0.00～10.00		0.50	●
F06.31	Injection current low frequency regulator integration time	0.00～300.00	ms	10.00	●
F06.32	Injection current high frequency	0.00～100.00 (100.00 is the rated frequency of the motor)	%	20.00	●
F06.33	High frequency injection current	0.0～30.0 (100.0 is the rated current of the motor)	%	8.0	●
F06.34	Injection current high frequency band regulator gain	0.00～10.00		0.50	●
F06.35	Injection current high frequency regulator integration time	0.00～300.00	ms	10.00	●
F06.36	Magnetic saturation coefficient of synchronous machine	0.00～1.00		0.75	○
F06.37	Speed ring stiffness coefficient	0～20		12	●
F06.38	Synchronous machine sliding mode gain coefficient	1.00～3.70		3.50	○
F06.39	Synchronous machine sliding mode error width	0.005～0.100		0.100	○
F06.40	Amplitude of reactive current injected by synchronous machine	0.0～20.0	%	10.0	○
F06.41	Synchronous machine open loop low frequency processing method	0:VF 1:IF 2:Use IF when starting and VF when stopping		0	○
F06.42	Synchronous machine open loop low frequency processing range	0.0～50.0	%	8.0	○
F06.43	IF injection current	0.0～600.0	%	50.0	○
F06.44	Magnetic pole pull-in current time constant	0.0～6000.0	ms	1.0	○
F06.45	Initial magnetic pole advance angle	0.0～359.9	°	30.0	○
F06.46	Synchronous machine speed tracking proportional gain	0.00～10.00		1.00	○

F06.47	Synchronous machine speed tracking integral gain	0.00～10.00		1.00	○
F06.48	Synchronous machine speed tracking filter time constant	0.00～10.00	ms	0.40	○
F06.49	Synchronous machine speed tracking control intensity	1.0～100.0		5.0	○
F06.50	Synchronous machine speed tracking control threshold	0.00～10.00		0.20	○
F06.51	Synchronous machine injected active current rise time	0.010～1.000	s	0.020	○
F06.76	Low-speed correction factor of asynchronous motor stator resistance	10.0 ～ 500.0	%	100.0	●
F06.77	Low-speed correction factor of asynchronous motor rotor resistance	10.0 ～ 500.0	%	100.0	●
F06.78	Asynchronous motor slip gain switching frequency point	0.10 ～ Fmax	Hz	5.00	○
F06.82	Udc filter time constant	0～1500.0	m s	2.0	●
F07	**Protection function setting group**				
F07.00	Protection Shield	E20 * E13 E06 * E04 E07 E08 0: Protection is enabled 1: Protection is blocked		0*0 0*000	○
F07.01	Motor overload protection gain	0.20～10.00		1.00	●
F07.02	Motor overload warning factor	50～100	%	80	●
F07.06	Bus voltage control selection	Units: Instantaneous stop without stopping function selection 0: Invalid 1: Deceleration 2: Deceleration stop Tens place: Overvoltage stall function selection 0: Invalid 1: Valid		10	○
F07.07	Overvoltage stall control voltage	110.0～150.0 (380V, 100.0=537V)	%	131.0 (703V)	○
F07.08	Instantaneous power failure voltage	60.0～Instantaneous power failure recovery voltage (100.0=standard bus voltage)	%	76.0	○
F07.09	Momentary power failure without stopping to restore voltage	Instantaneous power failure without stopping action voltage ~100.0	%	86.0	●
F07.10	Instantaneous power failure without stopping voltage recovery judgment time	0.00～100.00	s	0.50	●
F07.11	Current limit control	0: Invalid		2	○

		1: Limiting mode 1 2: Limiting mode 2			
F07.12	Current limit level	20.0～180.0(100.0=VFD rated current)	%	150.0	●
F07.13	Fast current limiting selection	0: Invalid 1: Valid		0	○
F07.14	Protection retry times	0～20, 0: Disable protection retry		0	○
F07.15	Digital output action selection during protection retry	0: No action 1: Action		0	○
F07.16	Protection retry interval	0.01～30.00	s	0.50	●
F07.17	Protection retry times recovery time	0.01～30.00	s	10.00	●
F07.18	Protect retry selection	E08 * E07 * E02 E06 E05 E04 0: Allow protection retry 1: Disable protection retry		0 *0 *0000	○
F07.19	Protection action selection 1	E21 E16 E15 E14 E13 * E08 E07 0: Free parking 1: Parking according to parking mode		000 00*00	○
F07.20	Protection action selection 2	E28 E27 * E23 0: Free parking 1: Parking according to parking mode		00*0	○
F07.21	Load drop protection option	0: Invalid 1: Valid		0	●
F07.22	Load drop detection level	0.0～100.0	%	20.0	●
F07.23	Load drop detection time	0.0～60.0	s	1.0	●
F07.24	Load drop protection action selection	0: Trip protection, free stop 1: Trip protection, stop according to the parking mode 2: Continue to run, DO status output		1	○
F07.25	Motor overspeed detection level	0.0～50.0 (Based on the maximum frequency F00.16)	%	20.0	●
F07.26	Motor overspeed detection time	0.0～60.0, 0.0: Cancel motor overspeed protection	s	1.0	●
F07.27	AVR Features	0: Invalid 1: Valid 2: Automatic		1	○
F07.28	Stall protection detection time	0.0～6000.0 (0.0 does not detect stall protection)	s	0.0	○
F07.29	Stall control strength	0～100	%	2 0	○
F07. 30	Momentary stop and non-stop action deceleration time	0.00～300.00	s	20.00	○
F07.32	Protection retry option 2	E10 E13 E15 E16 * E19 E20 * 0: Allow protection retry 1: Disable protection retry		000 00000	○
F07.36	Protection retry option 3	* * * * * * E09 E17 0: Allow protection retry 1: Disable protection retry		***** 00	○
F07. 37	Save the starting point voltage after power failure	60.0～100.0	%	76.0	○
F07.38	Power on and read the	60.0～100.0	%	86.0	○

	judgment voltage				
F07.39	Power-on reading judgment delay time	0～100.00	S	5.00	○
F07.40	Steady-state undervoltage judgment delay time	5～6000	ms	20	○
F07.42	Ground short circuit judgment current setting value	0.0～100.0	%	20	○
F08	**Multi-speed and simple PLC**				
F08.00	Multi-speed 1	0.00～maximum frequency F00.16	Hz	0.00	●
F08.01	Multi-speed 2	0.00～maximum frequency F00.16	Hz	5.00	●
F08.02	Multi-speed 3	0.00～maximum frequency F00.16	Hz	10.00	●
F08.03	Multi-speed 4	0.00～maximum frequency F00.16	Hz	15.00	●
F08.04	Multi-speed 5	0.00～maximum frequency F00.16	Hz	20.00	●
F08.05	Multi-speed 6	0.00～maximum frequency F00.16	Hz	25.00	●
F08.06	Multi-speed 7	0.00～maximum frequency F00.16	Hz	30.00	●
F08.07	Multi-speed 8	0.00～maximum frequency F00.16	Hz	35.00	●
F08.08	Multi-speed 9	0.00～maximum frequency F00.16	Hz	40.00	●
F08.09	Multi-speed 10	0.00～maximum frequency F00.16	Hz	45.00	●
F08.10	Multi-speed 11	0.00～maximum frequency F00.16	Hz	50.00	●
F08.11	Multi-speed 12	0.00～maximum frequency F00.16	Hz	50.00	●
F08.12	Multi-speed 13	0.00～maximum frequency F00.16	Hz	50.00	●
F08.13	Multi-speed 14	0.00～maximum frequency F00.16	Hz	50.00	●
F08.14	Multi-speed 15	0.00～maximum frequency F00.16	Hz	50.00	●
F08.15	Simple PLC operation mode	0: Stop after single operation 1: Stop after limited cycles 2: Run according to the last section after limited cycles 3: Continuous cycle		0	●
F08.16	Limited number of cycles	1～10000		1	●
F08.17	Simple PLC memory selection	Units: Stop memory selection 0: No memory (starting from the first stage) 1: Memory (starting from the stop moment) Tens: Power-off memory selection 0: No memory (starting from the first stage) 1: Memory (starting from the power-off moment)		0	●
F08.18	Simple PLC time unit	0: s (seconds) 1: min (minutes)		0	●
F08.19	Section 1 Settings	Units: Running direction selection 0: Forward 1: Reverse Tens: Acceleration/Deceleration Time Selection 0: Acceleration/Deceleration Time 1 1: Acceleration/Deceleration Time 2 2: Acceleration/Deceleration Time 3 3: Acceleration/Deceleration Time 4		0	●
F08.20	The first period of operation	0.0～6000.0	s/min	5.0	●
F08.21	2nd paragraph settings	The setting range is the same as F08.19		0	●
F08.22	Second segment running time	0.0～6000.0	s/min	5.0	●

F08.23	Section 3 Settings	The setting range is the same as F08.19		0	●
F08.24	Running time of the third segment	0.0～6000.0	s/min	5.0	●
F08.25	Section 4 Settings	The setting range is the same as F08.19		0	●

F08.26	Running time of the 4th segment	0.0～6000.0	s/min	5.0	●
F08.27	Section 5 Settings	The setting range is the same as F08.19		0	●
F08.28	Segment 5 running time	0.0～6000.0	s/min	5.0	●
F08.29	Segment 6 Settings	The setting range is the same as F08.19		0	●
F08.30	Segment 6 running time	0.0～6000.0	s/min	5.0	●
F08.31	Segment 7 Settings	The setting range is the same as F08.19		0	●
F08.32	Segment 7 running time	0.0～6000.0	s/min	5.0	●
F08.33	Segment 8 Settings	The setting range is the same as F08.19		0	●
F08.34	Segment 8 running time	0.0~6000.0	s/min	5.0	●
F08.35	Segment 9 Settings	The setting range is the same as F08.19		0	●
F08.36	Segment 9 running time	0.0～6000.0	s/min	5.0	●
F08.37	Section 10 Settings	The setting range is the same as F08.19		0	●
F08.38	Segment 10 running time	0.0～6000.0	s/min	5.0	●
F08.39	Section 11 Settings	The setting range is the same as F08.19		0	●
F08.40	Segment 11 running time	0.0～6000.0	s/min	5.0	●
F08.41	Section 12 Settings	The setting range is the same as F08.19		0	●
F08.42	Segment 12 running time	0.0～6000.0	s/min	5.0	●
F08.43	Section 13 Settings	The setting range is the same as F08.19		0	●
F08.44	Segment 13 running time	0.0～6000.0	s/min	5.0	●
F08.45	Section 14 Settings	The setting range is the same as F08.19		0	●
F08.46	Segment 14 running time	0.0～6000.0	s/min	5.0	●
F08.47	Section 15 Settings	The setting range is the same as F08.19		0	●
F08.48	Segment 15 running time	0.0～6000.0	s/min	5.0	●
F09	**PID function group**				
F09.00	PID given source	0: Digital PID given 1: AI1 2: AI2 5: PULSE high frequency pulse (X5) 6: Communication given		0	○
F09.01	Digital PID setting	0.0～PID given feedback range F09.03		0.0	●
F09.02	PID feedback source	1: AI1 2: AI2 5: PULSE high frequency pulse (X5) 6: Communication setting		1	○
F09.03	PID given feedback range	0.1～6000.0		100.0	●
F09.04	PID positive and negative action selection	0: Positive effect 1: Counteraction		0	○
F09.05	Proportional gain 1	0.00～100.00		0.40	●
F09.06	Integration time 1	0.000～30.000, 0.000: no points	s	2.000	●
F09.07	Derivative time 1	0.000～30.000	ms	0.000	●
F09.08	Proportional Gain 2	0.00～100.00		0.40	●
F09.09	Integration time 2	0.000～30.000, 0.000: no points	s	2.000	●
F09.10	Derivative time 2	0.000～30.000	ms	0.000	●
F09.11	PID parameter switching conditions	0: No switching 1: Switching via digital input terminal 2: Automatic switching based on deviation 3: Automatic switching based on frequency		0	●
F09.12	PID parameter switching deviation 1	0.00～F09.13	%	20.00	●

F09.13	PID parameter switching deviation 2	F09.12～100.00	%	80.00	●
F09.14	PID initial value	0.00～100.00	%	0.00	●
F09.15	PID initial value holding time	0.00～650.00	s	0.00	●
F09.16	PID output upper limit	F9.17～+100.0	%	100.0	●
F09.17	PID output lower limit	–100.0～F9.16	%	0.0	●
F09.18	PID deviation limit	0.00～100.00, (0.00 is invalid)	%	0.00	●
F09.19	PID differential limiting	0.00～100.00	%	5.00	●
F09.20	PID integral separation threshold	0.00～100.00, (100.00%=integral separation is invalid)	%	100.00	●
F09.21	PID given change time	0.000～30.000	s	0.000	●
F09.22	PID feedback filter time	0.000～30.000	s	0.000	●
F09.23	PID output filter time	0.000～30.000	s	0.000	●
F09.24	PID feedback disconnection upper limit detection value	0.00～100.00 100.00=Feedback disconnection is invalid	%	100.00	●
F09.25	PID feedback line break lower limit detection value	0.00～100.00 0.00=Feedback disconnection is invalid	%	0.00	●
F09.26	PID feedback disconnection detection time	0.000～30.000	s	0.000	●
F09.27	PID sleep control selection	0: Invalid 1: Zero speed sleep 2: Lower frequency limit sleep 3: Sealed tube hibernation		0	●
F09.28	Sleep action point	0.00～100.00 (100.00 corresponds to PID given feedback range)	%	100.00	●
F09.29	Sleep delay time	0.0～6500.0	s	0.0	●
F09.30	Wake-up action point	0.00～100.00 (100.00 corresponds to PID given feedback range)	%	0.00	●
F09.31	Wake-up delay time	0.0～6500.0	s	0.0	●
F09.32	Multi-segment PID setting 1	0.0～PID given feedback range F09.03		0.0	●
F09.33	Multi-segment PID setting 2	0.0～PID given feedback range F09.03		0.0	●
F09.34	Multi-segment PID setting 3	0.0～PID given feedback range F09.03		0.0	●
F09.35	Feedback voltage upper limit	Feedback voltage lower limit ~10.00	V	10.00	●
F09.36	Feedback voltage lower limit	0.00~Feedback voltage upper limit	V	0.00	●
F09.37	Selection of integral action within PID given change time	0. Always calculate the integral item 1. Start calculating the integral item after the time set in F09.21 is reached 2. Start calculating the integral item when the error is less than F09.38		0	●
F09.38	Deviation value of integral action input within given PID change time	0.00~100.00	%	0	●

F09.39	Wake-up method selection	0: Target pressure F09.01*wake-up action point coefficient 1: Wake-up action point (F09.30)		0	○
F09.40	Wake-up action point coefficient	0.0～100.0 (100% corresponds to PID setting)	%	90.0	●
F09.41	Pipeline network overpressure alarm pressure	0.0～Pressure sensor range F09.03	bar	6.0	●
F09.42	Overpressure protection action time	0～3600 (0 is invalid)	s	3	●
F09.43	PID reverse limit	0: No limit 1: Limitations		1	○
F10	**Communication function group**				
F10.00	Modbus communication address of this machine	1～247, 0 is the broadcast address		1	○
F10.01	Modbus communication baud rate	0: 4800 1: 9600 2: 19200 3: 38400 4: 57600 5: 115200		1	○
F10.02	Modbus Data Format	0: 1-8-N-1 (1 start bit + 8 data bits + 1 stop bit) 1: 1-8-E-1 (1 start bit + 8 data bits + 1 even parity + 1 stop bit) 2: 1-8-O-1 (1 start bit + 8 data bits + 1 odd parity + 1 stop bit) 3: 1-8-N-2 (1 start bit + 8 data bits + 2 stop bits) 4: 1-8-E-2 (1 start bit + 8 data bits + 1 even parity + 2 stop bits)		0	○
		5: 1-8-O-2 (1 start bit + 8 data bits + 1 odd parity + 2 stop bits)			
F10.03	485 Communication timeout	0.0s～60.0s, 0.0: invalid (also valid for master-slave mode)	s	0.0	●
F10.04	Modbus reply delay	1～20	ms	2	●
F10.05	Master-slave communication function selection	0: Invalid 1: Valid		0	○
F10.06	Master-slave selection	0: Slave 1: Host (Modbus protocol broadcast transmission)		0	○
F10.07	Host sends data	0: Output frequency 1: Set frequency 2: Output torque 3: Given torque 4: PID setting 5: Output current		1	○
F10.08	Slave receives the scaling factor	0.00～10.00 (multiple)		1.00	●
F10.09	Host sending interval	0.000～30.000	s	0.200	●
F10.10	Communication protocol selection	0: Modbus-RTU protocol		0	×
F10.56	485 write EEPROM processing selection	0~10: Default operation (used during debugging) 11: Never trigger write operation (can be used after debugging is completed)		0	○

F10.57	SCI transmit timeout reset enable	0: Reset invalid 1: Reset is valid		1	●
F10.58	SCI send timeout reset delay time	110～10000	mxD	150	●
F10.61	SCI Response Selection	0 : Both read and write commands are replied 1 : Read replies, write no replies 2 : Read and write no replies		0	○
F11	**User selectable parameter group (please refer to the EM750 user manual or complete function table)**				
F12	**Keyboard and display function group**				
F12.01	STOP button stop function selection	0: Only valid for keyboard control 1: Valid for all command channels		1	○
F12.02	Parameter Lock	0: Unlock 1: Reference input is not locked 2: All except this function code are locked		0	●
F12.03	Parameter copy (option)	0: No operation 1: Parameter upload keyboard 2: Parameter download to VFD (F01 and F14 groups are not downloaded) 3: Parameter download to VFD		0	○
F12.09	Load speed display factor	0.01～600.00		30.00	●
F12.10	UP/DOWN acceleration/deceleration rate	0.00: Automatic rate 0.05～500.00Hz/s		5.00Hz/s	○
F12.11	UP/DOWN offset clear selection	0: No clearing 1: Clearing in non-operating state 2: Clearing by releasing the UP/DOWN button 3: Clearing once in non-operating state		0	○
F12.12	UP/DOWN offset power-off storage selection	0: Do not store 1: Store (Offset is valid only after it is modified)		1	○
F12.13	Reset the meter	0: Do not clear 1: Clear		0	●
F12.14	Restore factory settings	0: No operation 1: Restore factory settings (excluding motor parameters, VFD parameters and factory parameters, running and power-on time records)		0	○
F12.15	Cumulative power-on time h	0～65535	h	XXX	×
F12.16	Cumulative power-on time min	0～59	min	XXX	×
F12.17	Cumulative running time h	0～65535	h	XXX	×
F12.18	Cumulative running time min	0～59	min	XXX	×
F12.19	VFD rated power	0.40～650.00	kW	Model confirmation	×
F12.20	VFD rated voltage	60～690	V	Model confirmation	×

F12.21	VFD rated current	0.1～1500.0					A	Model confirmation	×
F12.22	Performance Software Serial Number 1	XXX.XX						XXX.XX	×
F12.23	Performance Software Serial Number 2	XX.XXX						XX.XXX	×
F12.24	Function software serial number 1	XXX.XX						XXX.XX	×
F12.25	Function software serial number 2	XX.XXX						XX.XXX	×
F12.28	Product serial number 1	XX.XXX						XX.XXX	×
F12.29	Product serial number 2	XXXX.X						XXXX.X	×
F12.30	Product serial number 3	XXXXX						XXXXX	×
F12.33	Mode 1 running status display parameter 1 (LED stop status display parameter 5)	0.00～99.99						18.00	●
F12.34	Mode 1 running status display parameter 2 (LED stop status display parameter 1)	0.00～99.99						18.01	●
F12.35	Mode 1 running status display parameter 3 (LED stop status display parameter 2)	0.00～99.99						18.06	●
F12.36	Mode 1 running status display parameter 4 (LED stop status display parameter 3)	0.00～99.99						18.08	●
F12.37	Mode 1 running status display parameter 5 (LED stop status display parameter 4)	0.00～99.99						18.09	●
F12.41	UP/DOWN zero-crossing selection	0: Invalid 1: Valid						0	○
F12.42	Digital potentiometer frequency setting	0.00～maximum frequency F00.16					Hz	0.00	×
F12.43	Digital potentiometer torque setting	0.00～|Digital torque setting F13.02|					%	0.0	×
F12.45	Keyboard UP/DOWN function selection	communication	High speed pulse	Analog	Digital Frequency	Multi-speed		00000	○
		0	0	0	0	0			
		0: Invalid 1: Valid							
F12.48	Output frequency display	0: Absolute value 1: Positive/Negative						1	●

F13	Torque control parameter group				
F13.00	Speed/torque control selection	0: Speed control 1: Torque control		0	○
F13.01	Torque reference source selection (The full scale of items 1-6 corresponds to F13.02 digital torque setting)	0: Digital torque given F13.02 1: AI1 2: AI2 5: High frequency pulse input (X5) 6: Communication given 8: Digital potentiometer setting		0	○
F13.02	Digital torque setting	-200.0～200.0	%	100.0	●
F13.03	Multi-stage torque 1	-200.0～200.0	%	0.0	●
F13.04	Multi-stage torque 2	-200.0～200.0	%	0.0	●
F13.05	Multi-stage torque 3	-200.0～200.0	%	0.0	●
F13.06	Torque control acceleration and deceleration time	0.00～120.00	s	0.00	●
F13.08	Upper frequency limit selection for torque control	0: Set by F13.09 1: AI1 2: AI2 5: High-frequency pulse input (X5) 6: Communication setting (percentage) 7: Communication setting (direct frequency setting)		0	○
F13.09	Torque control positive upper limit frequency	0.50～maximum frequency F00.16	Hz	50.00	●
F13.10	Upper frequency offset	0.00～maximum frequency F00.16	Hz	0.00	●
F13.11	Static friction torque compensation	0.0～100.0	%	0.0	●
F13.12	Static friction compensation frequency range	0.00～50.00	Hz	1.00	●
F13.13	Dynamic friction torque compensation	0.0～100.0	%	0.0	●
F13.18	Reverse speed limit selection	0～100	%	100	●
F13.19	Reverse torque control selection	0～1		0	●
F14	Motor 2 parameter group (please refer to the EM750 user manual or complete function table)				
F15	Accessibility Group				
F15.00	Jog frequency	0.00～maximum frequency F00.16	Hz	5.00	●
F15.01	Jog acceleration time	0.00～650.00（F15.13=0） 0.0～6500.0（F15.13=1） 0～65000（F15.13=2）	s	5.00	●
F15.02	Jog deceleration time		s	5.00	●
F15.03	Acceleration time 2		s	15.00	●
F15.04	Deceleration time 2		s	15.00	●
F15.05	Acceleration time 3		s	15.00	●
F15.06	Deceleration time 3		s	15.00	●
F15.07	Acceleration time 4		s	15.00	●
F15.08	Deceleration time 4		s	15.00	●
F15.09	Acceleration/deceleration time reference frequency	0: Maximum frequency F00.16 1: 50.00Hz 2: Set frequency		0	○

F15.10	Automatic switching of acceleration and deceleration time	0: Invalid 1: Valid		0	○
F15.11	Switching frequency between acceleration time 1 and time 2	0.00～maximum frequency F00.16	Hz	0.00	●
F15.12	Switching frequency between deceleration time 1 and time 2	0.00～maximum frequency F00.16	Hz	0.00	●
F15.13	Acceleration and deceleration time unit	0:0.01s 1:0.1s 2:1s		0	○
F15.14	Jump frequency point 1	0.00～600.00	Hz	600.00	●
F15.15	Jump range 1	0.00～20.00, 0.00: Invalid	Hz	0.00	●
F15.16	Jump frequency point 2	0.00～600.00	Hz	600.00	●
F15.17	Jump Range 2	0.00～20.00, 0.00: Invalid	Hz	0.00	●
F15.18	Jump frequency point 3	0.00～600.00	Hz	600.00	●
F15.19	Jump range 3	0.00～20.00, 0.00: Invalid	Hz	0.00	●
F15.20	Output frequency arrival (FAR) detection width	0.00～50.00	Hz	2.50	○
F15.21	Output frequency detection FDT1	0.00～maximum frequency F00.16	Hz	30.00	○
F15.22	FDT1 hysteresis	-(Fmax-F15.21)～F15.21	Hz	2.00	○
F15.23	Output frequency detection FDT2	0.00～maximum frequency F00.16	Hz	20.00	○
F15.24	FDT2 hysteresis	-(Fmax-F15.23)～F15.23	Hz	2.00	○
F15.25	Analog level detection ADT selection	0: AI1 1: AI2		0	○
F15.26	Analog level detection ADT1	0.00～100.00	%	20.00	●
F15.27	ADT1 hysteresis loop	0.00～F15.26 (one-way downward valid)	%	5.00	●
F15.28	Analog level detection ADT2	0.00～100.00	%	50.00	●
F15.29	ADT2 hysteresis	0.00～F15.28 (one-way downward valid)	%	5.00	●
F15.30	Dynamic braking function selection	0: Invalid 1: Valid		0	○
F15.31	Dynamic braking action voltage	110.0～140.0 (380V, 100.0=537V)	%	125.0	○
F15.32	Braking rate	20～100 (100 means the duty cycle is 1)	%	100	●
F15.33	The set frequency is lower than the lower limit frequency operation mode	0: Run at the lower frequency limit 1: Stop 2: Zero speed operation		0	○
F15.34	Fan control	Units: Fan control mode 0: Run when power is on 1: Run at startup 2: Temperature control intelligent operation Tens: Power-on fan control 0: Run for 1 minute first and then run in fan control mode		1 01	○

		1: Directly run according to the fan control mode Hundreds digit: Fan low speed operation mode enabled (above 280kw) 0: Low speed operation is invalid 1: Low speed operation is effective			
F15.35	Overmodulation intensity	1.00～1.10		1.05	●
F15.36	PWM modulation mode switching selection	0: Invalid (7-segment PWM modulation) 1: Valid (5-segment PWM modulation)		0	○
F15.37	PWM modulation switching frequency	0.00～maximum frequency F00.16	Hz	15.00	●
F15.38	Dead zone compensation mode selection	0: No compensation 1: Compensation mode 1 2: Compensation mode 2		1	○
F15.39	Terminal jog priority	0: Invalid 1: Valid		0	○
F15.40	Rapid stop deceleration time	0.00～650.00（F15.13=0） 0.0～6500.0（F15.13=1） 0～65000（F15.13=2）	s	1.00	●
F15.44	Current reaches the detection value	0.0～300.0 (100.0% corresponds to the rated current of the motor)	%	1 00.0	●
F15.45	Current reaches hysteresis	0.0 ～F 15.44	%	5.0	●
F15.46	Torque reaches detection value	0.0～300.0 (100.0% corresponds to the rated torque of the motor)	%	1 00.0	●
F15.47	Torque arrival hysteresis	0.0～F 15.46	%	5.0	●
F15.62	PG card feedback frequency display filter time	0～20000	ms	300	●
F15.63	Speed reaches the rising limit	0.00 ～ Fmax	H	3 0.00	●
F15.64	Speed arrival filter time	0～6 0000	ms	5 00	●
F15.65	Speed reaches the drop limit	0.00 ～ Fmax	Hz	0.00	●
F15.66	Overcurrent detection level	0.1 ~ 300.0 (0.0 is not detected, 100.0% corresponds to the rated current of the motor)	%	200.0	●
F15.67	Overcurrent detection delay time	0.00～600.00	s	0.00	●
F15.68	Market electricity price	0.00～100.00		1.00	○
F15.69	Power frequency load factor	30.0～200.0	%	90.0	○
F16	Customized Function Group				
F16.00	Industry Applications	0: General machine 1: Water supply application 2: Air compressor application 3: Winding and unwinding application 4: Fan 5: Machine tool spindle 6: Polishing machine 7: High-speed motor application 8: Extruder		0	○

		9: EM100 communication macro 10: EM303B communication macro			
F16.01	Set length	1～65535（F16.13=0） 0.1～6553.5（F16.13=1） 0.01～655.35（F16.13=2） 0.001～65.535（F16.13=3）	m	1000	●
F16.02	Pulses per meter	0.1～6553.5		100.0	●
F16.03	Set the count value	F16.04～65535		1000	●
F16.04	Specifying count value	1～F16.03		1000	●
F16.05	Timing operation setting time	0.0～6500.0， 0.0：invalid	min	0.0	●
F16.06	Agent Password	0～65535		0	●
F16.07	Set the cumulative power-on arrival time	0～65535，0：Prohibit power-on time arrival protection	h	0	●
F16.08	Set the cumulative running arrival time	0～65535，0：Prohibit run time arrival protection	h	0	●
F16.09	Factory password	0～65535		XXXX	●
F16.10	The analog output percentage when the count value is 0	0.00～100.00	%	0.00	○
F16.11	The analog output percentage when the count value is the set value	0.00～100.00	%	100.00	○
F16.13	Set length resolution	0:1m 1:0.1m 2:0.01m 3:0.001m		0	○
F17	Virtual I/O function group (please refer to the EM750 user manual or the complete function table)				
F18	Monitoring parameter group				
F18.00	Output frequency	0.00～Upper frequency	Hz	XXX	×
F18.01	Setting frequency	0.00～Maximum frequency F00.16	Hz	XXX	×
F18.03	Estimating feedback frequency	0.00～Upper frequency	Hz	XXX	×
F18.04	Output torque	-200.0～200.0	%	XXX	×
F18.05	Torque setting	-200.0～200.0	%	XXX	×
F18.06	Output Current	0.00～650.00 (Motor rated power ≤75kW) 0.0～6500.0 (Motor rated power >75kW)	A	XXX	×
F18.07	Output current percentage	0.0～300.0 (100.0 = rated current of VFD)	%	0	×
F18.08	Output voltage	0.0～690.0	V	XXX	×
F18.09	DC bus voltage	0～1200	V	XXX	×
F18.10	Simple PLC running times	0～10000		XXX	×
F18.11	Simple PLC operation stage	1～15		XXX	×
F18.12	Current stage PLC running time	0.0～6000.0		XXX	×
F18.14	Load speed	0～65535	rpm	XXX	×
F18.15	UP/DOWN offset frequency	0.00～2*maximum frequency F00.16	Hz	XXX	×
F18.16	PID setting	0.0～PID maximum range		XXX	×
F18.17	PID Feedback	0.0～PID maximum range		XXX	×
F18.18	Electricity meter: MWh	0～65535	MWh	XXX	×

F18.19	Electricity meter: kWh	0.0～999.9					kWh	XXX	×
F18.20	Output Power	-650.00～650.00					kW	XXX	×
F18.21	Output power factor	-1.000～1.000						XXX	×
F18.22	Digital input terminal status 1	X5	X4	X3	X2	X1		XXX	×
		0/1	0/1	0/1	0/1	0/1			
F18.23	Digital input terminal status 2	*	AI2	AI1	*	*		XXX	×
		*	0/1	0/1	*	0/1			
F18.25	Output terminal status	*	*	R1	*	Y1		XXX	×
		*	*	0/1	*	0/1			
F18.26	AI1	0.0～100.0					%	XXX	×
F18.27	AI2	0.0～100.0					%	XXX	×
F18.31	High frequency pulse input frequency: kHz	0.00～100.00					kHz	XXX	×
F18.32	High frequency pulse input frequency: Hz	0～65535					Hz	XXX	×
F18.33	Count value	0～65535						XXX	×
F18.34	Actual length	0～65535					m	XXX	×
F18.35	Remaining time of scheduled operation	0.0～6500.0					min	XXX	×
F18.36	Synchronous machine rotor position	0.0～359.9°						XXX	×
F18.39	VF separation target voltage	0～690					V	XXX	×
F18.40	VF separation output voltage	0～690					V	XXX	×
F18.45	Set speed	0～65535					rpm	XXX	×
F18.46	Output frequency sign	0～65535						XXX	×
F18.51	PID output	-100.0~100.0					%		×
F18.60	VFD temperature	-40～200					℃	0	×
F18.67	Electricity saved MWH	Cumulative electricity saving MWH					0～65535	MWh	×
F18.68	Electricity saved KWH	Cumulative energy saving KWH					0.0～999.9	kWh	×
F18.69	Electricity bills saved in thousands of yuan	Cumulative electricity cost savings (*1000)					0～65535		×
F18.70	Electricity bill saved	Cumulative savings on electricity bills					0.0～999.9		×
F18.71	Power frequency power consumption MWh	Power frequency power consumption MWH					0～65535	MWh	×
F18.72	Power frequency power consumption KWh	Power frequency power consumption KWH					0.0～999.9	kWh	×
F19	**Protect Record Group**								
F19.00	The most recent protection category	0: No protection. For fault protection codes, see Chapter 6.						0	×
F19.01	Output frequency during protection	0.00～Upper frequency limit					Hz	0.00	×
F19.02	Output current during protection	0.00～650.00 (motor rated power ≤75kW) 0.0～6500.0 (motor rated power＞75kW)					A	0.00	×
F19.03	Bus voltage during protection	0～1200					V	0	×
F19.04	Protection running status	0: Not running 1: Forward acceleration						0	×

		2: Reverse acceleration 3: Forward deceleration 4: Reverse deceleration 5: Forward constant speed 6: Reverse constant speed			
F19.05	Protection working hours		h	0	×
F19.06	Previous protection category	Fault protection codes refer to Chapter 6		0	×
F19.07	Output frequency during protection		Hz	0.00	×
F19.08	Output current during protection		A	0.00	×
F19.09	Bus voltage during protection		V	0	×
F19.10	Protection running status	Same as F19.04 parameter description		0	×
F19.11	Protection working hours		h	0	×
F19.12	First secondary protection category	Fault protection codes refer to Chapter 6		0	×
F19.13	Output frequency during protection		Hz	0.00	×
F19.14	Output current during protection		A	0.00	×
F19.15	Bus voltage during protection		V	0	×
F19.16	Protection running status	Same as F19.04 parameter description		0	×
F19.17	Protection working hours		h	0	×
F27	**Rewinding and unwinding application macro parameter group**				
F27.00	Application Macros	0: Rewinding mode 1: Unwinding mode 2: Wire drawing mode 3: Straight wire drawing machine mode		0	○
F27.01	Feedforward gain action channel	0: Feedforward gain * given source B 1: Feedforward gain * given source A 2: Feedforward gain * 10V		1	○
F27.02	Feedforward gain input mode	0: Feedforward gain unchanged 1: 0.00~Feedforward gain upper limit 2: -Feedforward gain upper limit~+Feedforward gain upper limit		1	○
F27.03	Feedforward control	Units: Feedforward reset selection 0: Automatic reset 1: Terminal reset Tens: Feedforward power failure stop selection 0: Save during power failure 1: Do not save during power failure Hundreds: Whether to continue feedforward calculation selection 0: Do not calculate 1: Calculate		10	○
F27.04	Feedforward gain upper limit	0.00~500.00	%	500.00	○
F27.05	Feedforward start gain	0.00~500.00	%	50.00	●
F27.06	Feedforward gain filter time	0~1000	ms	0	●

F27.07	Feedforward range 0	0.00~Feedforward range 1	%	4.00	●
F27.08	Feedforward range 1	Feedforward range 0~feedforward range 2	%	12.00	●
F27.09	Feedforward range 2	Feedforward range 1~Feedforward range 3	%	23.00	●
F27.10	Feedforward range 3	Feedforward range 2~Feedforward range 4	%	37.00	●
F27.11	Feedforward range 4	Feedforward range 3~Feedforward range 5	%	52.00	●
F27.12	Feedforward range 5	Feedforward range 4~100.00	%	72.00	●
F27.13	Soft start increment	0.00~50.00	%/S	0.60	●
F27.14	Feedforward increment 1	0.00~50.00	%/S	0.11	●
F27.15	Feedforward Increment 2	0.00~50.00	%/S	0.30	●
F27.16	Feedforward Increment 3	0.00~50.00	%/S	0.75	●
F27.17	Feedforward Increment 4	0.00~50.00	%/S	1.55	●
F27.18	Feedforward increment 5	0.00~50.00	%/S	4.00	●
F27.19	Feedforward increment 6	0.00~50.00	%/S	11.00	●
F27.20	Cut-off control method	Units: Wire break detection mode 0: Automatic detection 1: External signal Tens: Material break detection control 0: Output greater than lower limit of material break detection 1: No detection Hundreds: Material break handling mode 0: Only protection terminal action 1: Delayed stop and trip protection 2: Material break protection 3: Protection stop automatic reset 4: Only output material break detection terminal 5: Material break detection terminal automatic reset Thousands: Brake mode 0: Mode 0 1: Mode 1 Ten thousandths: Unwinding reverse mode 0: No speed limit 1: Reverse speed limit according to F27.24		01201	○
F27.21	Material break detection delay	0.0~10.0	S	6.0	●
F27.22	Lower limit of material cut-off detection during parking	0.00~60.00	Hz	5.00	●
F27.23	Continuous operation time after material failure	0.0~60.0	S	10.0	●
F27.24	Frequency of continued operation after material cut-off	0.00~Fmax	Hz	5.00	●
F27.25	Braking signal output frequency	0.00~FUP	Hz	2.50	●
F27.26	Brake signal duration	0.0~100.0	S	5.0	●
F27.27	Minimum frequency of cable detection	0.00~20.00	Hz	10.00	●
F27.28	Invalid judgment time of wiring signal	0.1~20.0	S	10.0	●

F27.29	Wiring signal effective judgment time	0.1~20.0	S	2.0	●
F27.30	Material break detection filter time	1~100	ms	5	●
F27.36	Feedforward gain current value	-500.0~500.0	%		×
F45	**Communication free mapping parameter group**				
F45.00	Modbus communication free mapping enabled	0: Invalid 1: Valid	-	0	●
F45.01	Source Address 1	0～65535	-	0	●
F45.02	Destination address 1	0～65535	-	0	●
F45.03	Mapping coefficient 1	0.00～100.00	-	1.00	●
• Source address 2 to 29 • Destination address 2 to 29 • Mapping coefficient 2 to 29		同上	-	Same as above	●
F45.88	Source address 30	0～65535	-	0	●
F45.89	Destination address 30	0～65535	-	0	●
F45.90	Mapping factor 30	0.00～100.00	-	1.00	●

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