CM800 Series

High Performance Vector Control VFD

USER MANUAL

V1.5

Power Range:

Single-phase 220V (3S) 0.4~4kW

Three-phase 380V (4T) 0.75~450kW

For safe use of this product, please be sure to read this user manual.

CONTENT

Chapter 1 Safety and Precautions 2

1.1 Safety Precautions 2

Chapter 2 Product Information 5

2.1 Naming Rules 5
2.2 Nameplate 5
2.3 CM800 Series VFD 6
2.4 CM800S Series VFD 7
2.5 Technical Specifications 8
2.6 Physical Appearance and Dimensions of Mounting Hole 11
2.7 Optional Parts 15

Chapter 3 Mechanical and Electrical Installation 16

3.1 Mechanical Installation 16
3.2 Electrical Installation 18

Chapter 4 Operation and Display 29

4.1 Operation and Display Interface Introduction 29
4.2 Instruction of Function Code Viewing and Modification Methods 31

Chapter 5 SVC Debugging Instructions 33

5.1 Configure Synchronization Type, Control Mode, And Motor Parameters. .. 33
5.2 Parameter Identification 33
5.3 The Non-Load Commissioning 33
5.4 Quick-Start Commissioning When Required Set; Otherwise, Skip This Operation 33
5.5 Loading Operation 33

Chapter 6 Commissioning 34

Chapter 7 Fault Shooting and Solutions 41

Appendix A Modbus Communication Protocol 47

Appendix B Function Parameter Table 57

Appendix C Version Change Record 106

Chapter 1 Safety and Precautions

Safety definition:

In this manual, safety precautions are divided into two types below:

Danger

Danger arising due to improper operations may cause severe hurt or even death.

Caution

Caution arising due to improper operations may cause moderate hurt or light hurt or equipment damage.

Please read the manual carefully before install, debug or maintain the system; following the safety rules that indicated in the detail. If any injury caused by rule-breaking operations, our company has no responsibility for it.

1.1 Safety Precautions

Status	Safety Level	Matters
Before installing	Danger	Do not install it if the control system is moistened, parts missing or components damaged. Do not install if the real objects are different from the packing list.
	Caution	It should be handled with care during moving, otherwise there is risk of damage the device. Don't use the damaged drive or VFD with missing parts or there is danger of hurt. Don't use your hand to touch the components of the control system or there is risk of static damage.
During installing	Danger	Install the VFD on incombustible surface like metal; stay away from combustible materials. Otherwise it may cause fire. Don't turn the screws without purpose, especially the bolts with red mark.
	Caution	Do not drop the lead wire stub or screw in the VFD. Otherwise it may damage the VFD. Install the VFD in the environment with less vibration and no direct sunlight. When more than two VFDs are to be installed in one cabinet, pay attention to the installation location to ensure the heat dissipation effect.

During wiring	Danger	The device must be installed by professional electric operator, or it will have unexpected danger. There must be breaker between the VFD and the power source, or it may have fire risk. Please make sure the power supply is off before wiring, or it has the risk of electric shock. Please earth the VFD in normative way, or it has the risk of electric shock.
	Caution	Don't connect the input power supply to the output terminals (U, V, W) of the VFD. Pay attention to the marks of the wiring terminals so as to avoid the wire misconnect. Or it will cause damage to the VFD. The brake resistance cannot be directly connected between the DC bus (+), (-) terminals. Otherwise it may cause fire. Please refer to the manual to choose right wire diameter, or it may have accident.
Before power-on	Caution	Please confirm whether the power voltage class is consistent with the rated voltage of the VFD; whether the wiring position of the input terminals (R, S, T) and the output terminals (U, V, W) are correct; Check carefully whether the external circuit is short circuited and whether the connecting line is firm. Otherwise it may damage the VFD. There is no need to do withstand voltage test on any part of the VFD, because it has been tested before the delivery, otherwise it may cause accident.
	Danger	It must have the cover plate ready on the machine before connect to the power, or it will cause electric shock. All the wiring of the peripheral device must follow the instruction of the manual which has provided the circuit illustration of the wiring way. Otherwise it may cause accident.
During power-on	Danger	Don't open the cover plate after connection to the power resource. Or it has danger of electric shock. Don't touch any terminals regardless of input or output side, or it has danger of electric shock.
	Caution	If you need to record the running parameter, pay attention that the running motor may have the risk to hurt people. Or it may cause accident.
During the operation	Danger	Detection of signals during the operation shall only be conducted by qualified technician. Otherwise, personal injury or equipment damage may be caused. Do not touch the fan or discharge resistor to sense the temperature, or you may get burnt.
	Caution	During the operation of the VFD, keep items from falling into the equipment, or it may damage the equipment. Do not start and shut down the VFD by connecting and disconnecting the contactor, or it may damage the equipment.

Maintenance	Danger	The VFD shall be repaired and maintained only by the qualified person who has been trained professionally, or it may cause personal injury or equipment damage. Do not repair and maintain the equipment with power-on, or there will be danger of electric shock. Only more than 10 minutes after you shut down the power supply on the input side can you start to repair or maintain the VFD, otherwise, the residual charge on the capacitor may cause personal injury.

Chapter 2 Product Information

2.1 Naming Rules

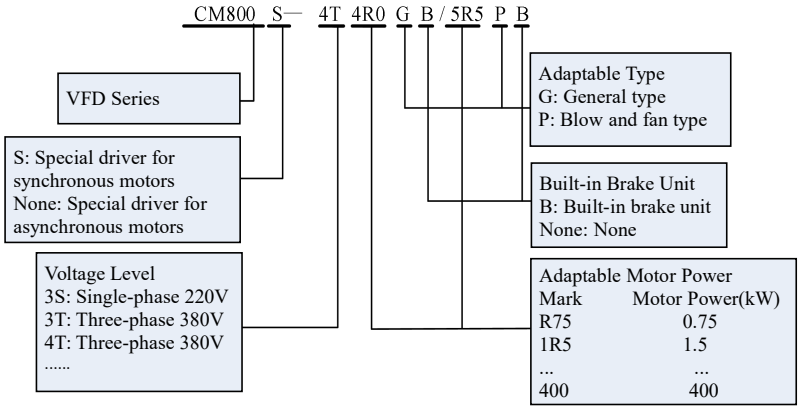


Fig.2-1 Naming Rules

Note:

1. Products of 9.0kW and below support both synchronous and asynchronous motor;

2. Three-phase 380V~440V, 160kW~400kW: optional external DC reactor;

3. Three-phase 380V~440V, 0.75kW~30kW: standard braking unit; 37kW~132kW: optional braking unit.

2.2 Nameplate

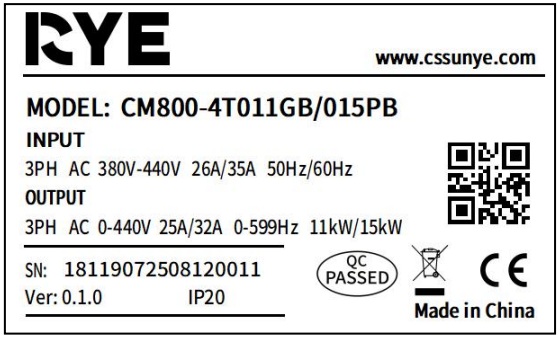


Fig.2-2 Nameplate

2.3 CM800 Series VFD

Tab.2-1 CM800 Series Models and Technical Data

Model	Input Current(A)	Output Current(A)	Matched Motor(kW)
Input voltage: Single-phase 220V Range: -15%~20%			
CM800-3SR4GB	5.4	2.3	0.4
CM800-3SR75GB	8.2	4.0	0.75
CM800-3S1R5GB	14.0	7.0	1.5
CM800-3S2R2GB	23.0	9.6	2.2
CM800-3S4R0GB	32.0	17.0	4.0
Input voltage: Three-phase 380V Range: -15%~20%			
CM800-4TR75GB/1R5PB	3.4/5.0	2.1/3.8	0.75
CM800-4T1R5GB/2R2PB	5.0/5.8	3.8/5.1	1.5/2.2
CM800-4T2R2GB/4R0PB	5.8/10.5	5.1/9.0	2.2/4.0
CM800-4T4R0GB/5R5PB	10.5/14.6	9.0/13.0	4.0/5.5
CM800-4T5R5GB/7R5PB	14.6/20.5	13.0/17.0	5.5/7.5
CM800-4T7R5GB/9R0PB	20.5/22.0	17.0/20.0	7.5/9.0
CM800-4T9R0GB/011PB	22.0/26.0	20.0/25.0	9.0/11.0
CM800-4T011GB/015PB	26.0/35.0	25.0/32.0	11.0/15.0
CM800-4T015GB/018PB	35.0/38.5	32.0/37.0	15.0/18.5
CM800-4T018GB/022PB	38.5/46.5	37.0/45.0	18.5/22.0
CM800-4T022GB/030PB	46.5/62.0	45.0/60.0	22.0/30.0
CM800-4T030GB/037PB	62.0/76.0	60.0/75.0	30.0/37.0
CM800-4T037G(B)/045P(B)	76.0/92.0	75.0/90.0	37.0/45.0
CM800-4T045G(B)/055P(B)	92.0/113.0	90.0/110.0	45.0/55.0
CM800-4T055G(B)/075P(B)	113.0/157.0	110.0/152.0	55.0/75.0
CM800-4T075G(B)/093P(B)	157.0/180.0	152.0/176.0	75.0/93.0
CM800-4T093G(B)/110P(B)	180.0/214.0	176.0/210.0	93.0/110.0
CM800-4T110G(B)/132P(B)	214.0/256.0	210.0/253.0	110.0/132.0
CM800-4T132G(B)/160P(B)	256.0/307.0	253.0/304.0	132.0/160.0
CM800-4T160G/185P	307.0/345.0	304.0/340.0	160.0/185.0
CM800-4T185G/200P	345.0/385.0	340.0/380.0	185.0/200.0
CM800-4T200G/220P	385.0/430.0	380.0/426.0	200.0/220.0
CM800-4T220G/250P	430.0/468.0	426.0/465.0	220.0/250.0
CM800-4T250G/280P	468.0/525.0	465.0/520.0	250.0/280.0

Model	Input Current(A)	Output Current(A)	Matched Motor(kW)
CM800-4T280G/315P	525.0/590.0	520.0/585.0	280.0/315.0
CM800-4T315G/355P	590.0/665.0	585.0/650.0	315.0/355.0
CM800-4T355G/400P	665.0/785.0	650.0/725.0	355.0/400.0
CM800-4T400G/450P	785.0/883.0	725.0/820.0	400.0/450.0

2.4 CM800S Series VFD

Tab.2-2 CM800S Series Models and Technical Data

Model	Input Current(A)	Output Current(A)	Matched Motor(kW)
Input voltage: Single-phase 220V Range: -15%~20%			
CM800-3SR4GB	5.4	2.3	0.4
CM800-3SR75GB	8.2	4.0	0.75
CM800-3S1R5GB	14.0	7.0	1.5
CM800-3S2R2GB	23.0	9.6	2.2
CM800-3S4R0GB	32.0	17.0	4.0
Input voltage: Three-phase 380V Range: -15%~20%			
CM800-4TR75GB/1R5PB	3.4/5.0	2.1/3.8	0.75
CM800-4T1R5GB/2R2PB	5.0/5.8	3.8/5.1	1.5/2.2
CM800-4T2R2GB/4R0PB	5.8/10.5	5.1/9.0	2.2/4.0
CM800-4T4R0GB/5R5PB	10.5/14.6	9.0/13.0	4.0/5.5
CM800-4T5R5GB/7R5PB	14.6/20.5	13.0/17.0	5.5/7.5
CM800-4T7R5GB/9R0PB	20.5/22.0	17.0/20.0	7.5/9.0
CM800-4T9R0GB/011PB	22.0/26.0	20.0/25.0	9.0/11.0
CM800S-4T011GB/015PB	26.0/35.0	25.0/32.0	11.0/15.0
CM800S-4T015GB/018PB	35.0/38.5	32.0/37.0	15.0/18.5
CM800S-4T018GB/022PB	38.5/46.5	37.0/45.0	18.5/22.0
CM800S-4T022GB/030PB	46.5/62.0	45.0/60.0	22.0/30.0
CM800S-4T030GB/037PB	62.0/76.0	60.0/75.0	30.0/37.0
CM800S-4T037G(B)/045P(B)	76.0/92.0	75.0/90.0	37.0/45.0
CM800S-4T045G(B)/055P(B)	92.0/113.0	90.0/110.0	45.0/55.0
CM800S-4T055G(B)/075P(B)	113.0/157.0	110.0/152.0	55.0/75.0
CM800S-4T075G(B)/093P(B)	157.0/180.0	152.0/176.0	75.0/93.0
CM800S-4T093G(B)/110P(B)	180.0/214.0	176.0/210.0	93.0/110.0
CM800S-4T110G(B)/132P(B)	214.0/256.0	210.0/253.0	110.0/132.0

Model	Input Current(A)	Output Current(A)	Matched Motor(kW)
CM800S-4T132G(B)/160P(B)	256.0/307.0	253.0/304.0	132.0/160.0
CM800S-4T160G/185P	307.0/345.0	304.0/340.0	160.0/185.0
CM800S-4T185G/200P	345.0/385.0	340.0/380.0	185.0/200.0
CM800S-4T200G/220P	385.0/430.0	380.0/426.0	200.0/220.0
CM800S-4T220G/250P	430.0/468.0	426.0/465.0	220.0/250.0
CM800S-4T250G/280P	468.0/525.0	465.0/520.0	250.0/280.0
CM800S-4T280G/315P	525.0/590.0	520.0/585.0	280.0/315.0
CM800S-4T315G/355P	590.0/665.0	585.0/650.0	315.0/355.0
CM800S-4T355G/400P	665.0/785.0	650.0/725.0	355.0/400.0
CM800S-4T400G/450P	785.0/883.0	725.0/820.0	400.0/450.0

2.5 Technical Specifications

Tab.2-3 CM800S Series Models and Technical Data

Project		Specifications
Main control performance	Highest frequency	Vector control: 0-599Hz;
	Carrier frequency	1k-10kHz; the carrier frequency can be automatically adjusted according to the load characteristics.
	Input frequency resolution	Digital setting: 0.01Hz Analog setting: maximum frequency × 0.1%
	Control mode	Open-loop vector control (SVC), V/F control
	Starting torque	G-type machine: 0.5Hz/180% (open-loop vector control) P-type machine: 0.5Hz/120% (open-loop vector control)
	Speed range	1: 200 (open-loop vector control)
	Accuracy of constant speed (Speed control accuracy)	Open-loop vector control: ±0.5% (rated synchronous speed)
	Stability of speed control	Open-loop vector control: ±0.3% (rated synchronous speed)
	Torque response	≤40ms (open-loop vector control)
	Overload capacity	G type machine: 150% rated current for 60 seconds; 180% rated current for 5 seconds P-type machine: 120% rated current for 60 seconds; 130% rated current for 10 seconds
	Torque boost	Automatic torque increase; manual torque increase of 0.1% ~ 30.0%
	V/F curve	Three methods: linear, multi-point, and square V/F curve

Project		Specifications
	Acceleration and deceleration curve	Acceleration and deceleration modes of straight line or S curve. Four acceleration and deceleration times. Acceleration and deceleration time range of 0.0s-3000.0s
	DC braking	DC braking frequency: 0.0Hz-maximum frequency, braking time: 0.0-36.0 seconds, braking activation current value: 0.0%-100.0%
	Jog control	Jogging frequency range: 0.00Hz-50.00Hz; jogging acceleration and deceleration time: 0.0s-3000.0s
	Simple PLC, multi-speed operation	It can achieve up to 16 speed segments through the built-in PLC or control terminal
	Built-in PID	Convenient to realize closed-loop control system for process control
	Automatic voltage regulation (AVR)	When the grid voltage changes, it can automatically maintain the output voltage constant
	Torque limitation and control	The “excavator” feature automatically limits torque during operation to prevent frequent overcurrent trips; closed-loop vector mode enables torque control
Personalized features	Power-on peripheral device safety self-test	It can perform safety testing on peripheral devices such as grounding and short circuit when powered on
	Common DC bus function	It can realize the function of sharing DC busbar by multiple VFDs
	JOG button	Programmable keys: forward and reverse operation/inching operation function selection
	Textile frequency control	Multiple triangular wave frequency control functions
	Fast current limiting function	Built-in fast current limiting algorithm reduces the probability of overcurrent reporting from the VFD and improves the overall anti-interference capability
	Timing control	Timing control function: Set the time range from 0h~65535h
	Standardization of keyboard extension cable	Customers can extend the keyboard using standard network cables.
Operation	Run command channel	Three channels: given by the operation panel, control terminal, and serial communication port. Switching can be done in various ways
	Main frequency source + auxiliary frequency source	Digital setting, analog voltage setting, analog current setting, pulse setting, communication setting, PID setting, multi-speed setting, simple PLC setting, etc., can be calculated or switched through various methods. Note: Pulse setting is not supported for 9kW and below.

Project		Specifications
	Terminal configuration	9kW and below: 5*DI, 1*Y, 1*AI, 1*AO, 1*relay output, 1*485 communication 11kW and above: 5*DI, 1*HDI, 2*Y (including one high-speed FM channel), 2*AI, 2*AO, 2*relay outputs, 1*485 communication
Display and keyboard operation	LED display	Display parameters
	LCD display	Optional, with Chinese/English prompts for operation content
	Copy LCD parameters	Using LCD can achieve rapid replication of parameters
	Key lock and function selection	Realize partial or full locking of keys, define the range of action of some keys, to prevent misuse
Protection & Accessories	Protective function	Short circuit detection of the power-on motor, input and output phase loss protection*, overcurrent protection, overvoltage protection, undervoltage protection, overheating protection, overload protection, etc.
	Accessories	LCD operation panel, brake components, etc.
Environment	Application place	Indoors, protected from direct sunlight, without dust, corrosive gases, flammable gases, oil mist, water vapor, dripping or salt
	Altitude	Below 1000 meters
	Ambient temperature	-10℃~+50℃ (when the ambient temperature is between 40℃~50℃, please use it with derating)
	Humidity	Less than 95% RH, no condensation
	Vibration	Less than 5.9 m/s^2 (0.6g)
	Storage temperature	-20℃~+60℃
	Pollution level	2
	Protection level	IP20
Product standards	Products are subject to safety standards	IEC61800-5-1:2007
	Product implements EMC standards	IEC61800-3:2005

2.6 Physical Appearance and Dimensions of Mounting Hole

2.6.1 Product Appearance and Dimensions of Mounting Hole

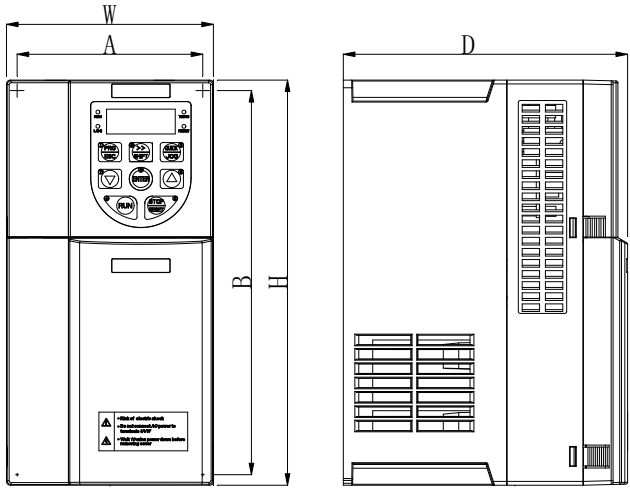


Fig.2-3 22 kW and Below VFD Plastic External and Installation Dimensions Diagram

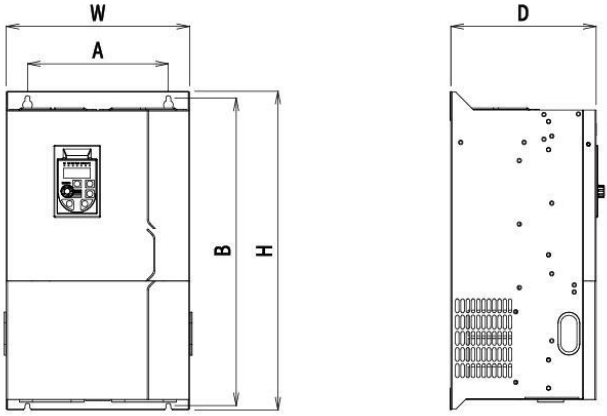


Fig.2-4 30~45 kW VFD Sheet Metal Chassis and Installation Dimensions Diagram

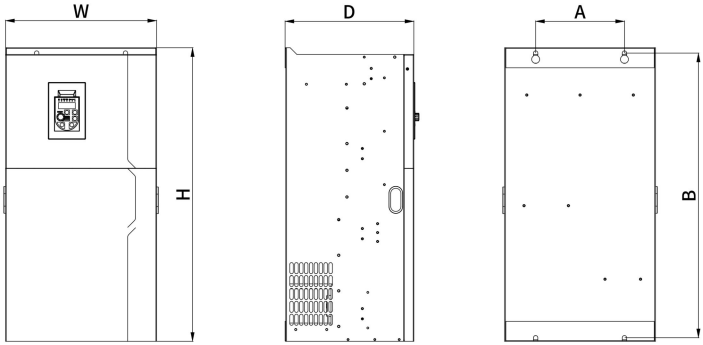


Fig.2-5 380V(4T) 55～315kW VFD External and Installation Dimensions Diagram

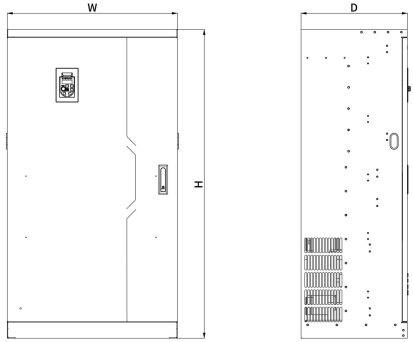


Fig.2-6 380V(4T) 355～400kW VFD External and Installation Dimensions Diagram

Tab.2-4 CM800 Series Opening Hole Size and Installation Mounting Hole Dimensions

Model	Mounting Hole		External Dimension			Dimension of Mounting Hole(mm)
	A (mm)	B (mm)	H (mm)	W (mm)	D (mm)	
CM800-3SR4GB	65	158	167	75	121	Φ4.5
CM800-3SR75GB						
CM800-3S1R5GB						
CM800-3S2R2GB	82	168	178	93	143.5	Φ5
CM800-3S4R0GB	96	201	212	107	147	Φ5.5
CM800-4TR75GB/1R5PB	65	158	167	75	121	Φ4.5
CM800-4T1R5GB/2R2PB						
CM800-4T2R2GB/4R0PB						
CM800-4T4R0GB/5R5PB	82	168	178	93	143.5	Φ5
CM800-4T5R5GB/7R5PB						

Model	Mounting Hole		External Dimension			Dimension of Mounting Hole(mm)
	A (mm)	B (mm)	H (mm)	W (mm)	D (mm)	
CM800-4T7R5GB/9R0PB	96	201	212	107	147	Φ5.5
CM800-4T9R0GB/011PB						
CM800-4T011GB/015PB	130	260.5	270	150	183	Φ6
CM800-4T015GB/018PB						
CM800-4T018GB/022PB	166	312	324	189	191	Φ6
CM800-4T022GB/030PB						
CM800-4T030GB/037PB	165	363	383	215	197.5	Φ6
CM800-4T037G(B)/045P(B)	200	426	449	260	207	Φ7
CM800-4T045G(B)/055P(B)						
CM800-4T055G(B)/075P(B)	180	480	500	256	268	φ10
CM800-4T075G(B)/093P(B)	180	540	560	290	268	Φ10
CM800-4T093G(B)/110P(B)						
CM800-4T110G(B)/132P(B)	200	640	660	340	290	Φ10
CM800-4T132G(B)/160P(B)						
CM800-4T160G/185P	165*2	740	760	390	320	Φ10
CM800-4T185G/200P						
CM800-4T200G/220P	180*2	820	850	470	350	Φ12
CM800-4T220G/250P						
CM800-4T250G/280P						
CM800-4T280G/315P	200*2	950	980	580	360	Φ12
CM800-4T315G/355P						
CM800-4T355G/400P	240*2	1130	1160	640	420	-（Vertical）
CM800-4T400G/450P						

Note: The external dimensions and installation dimensions of CM800S are the same as those of CM800.

2.6.2 Installation Dimension Diagram of External Keyboard with Tray(mm)

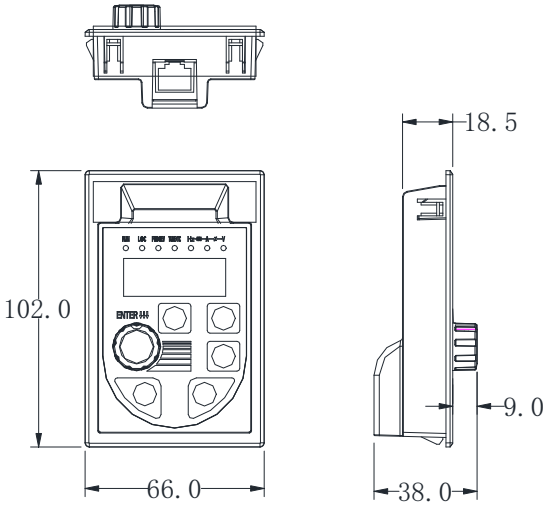


Fig.2-7 Installation Dimension of External Keyboard with Tray

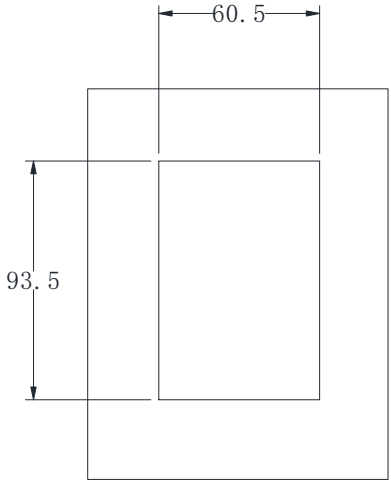


Fig.2-8 Mounting Hole Dimension of External Keyboard with Tray

2.7 Optional Parts

For detailed functions and usage instructions of the optional accessories, please refer to the relevant accessory descriptions.

If you need the above optional accessories, please specify when placing an order

Tab.2-5 VFD Optional Parts

Name	Model	Function	Remarks
Built-in brake unit	The letter “B” attached behind the product model	For energy consumption braking	Built-in as standard
External LED operating panel	CM800-LED	External LED display and keyboard	The RJ45 interface
Extended cable	CM-CAB	Standard 8-core cable, can be connected to the CM800-LED	For 1 meter, 3 meters, 5 meters, 10 meters 4 specifications
If you need other function module extensions (such as: I/O card, PG card, EPS card and so on), please use the other series VFD, specifying the order function module card when ordering.			

Chapter 3 Mechanical and Electrical Installation

3.1 Mechanical Installation

3.1.1 Installation Environment

1) Ambient temperature: The ambient temperature has a significant impact on the lifespan of the VFD. It is not allowed for the operating environment temperature of the VFD to exceed the allowable range (-10℃ to 50℃).

2) Install the VFD on the surface of a flame-retardant object, and there should be sufficient space around it for heat dissipation. A VFD is prone to generating a large amount of heat when in operation. And install it vertically on the installation support with screws.

3) Please install it in a place that is not prone to vibration. The vibration should not exceed 0.6G. Pay special attention to staying away from equipment such as punch presses.

4) Avoid installing in places exposed to direct sunlight, dampness or water droplets.

5) Avoid installing in places where there are corrosive, flammable or explosive gases in the air.

6) Avoid installing in places with oil stains, a lot of dust or metal dust.

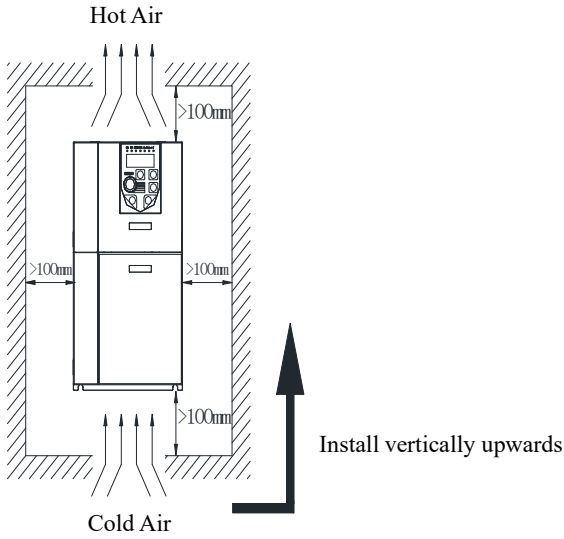


Fig.3-1 Single Installation Diagram

Note: When installing the VFD up and down, please install the heat insulation deflector plate as shown in the installation diagram.

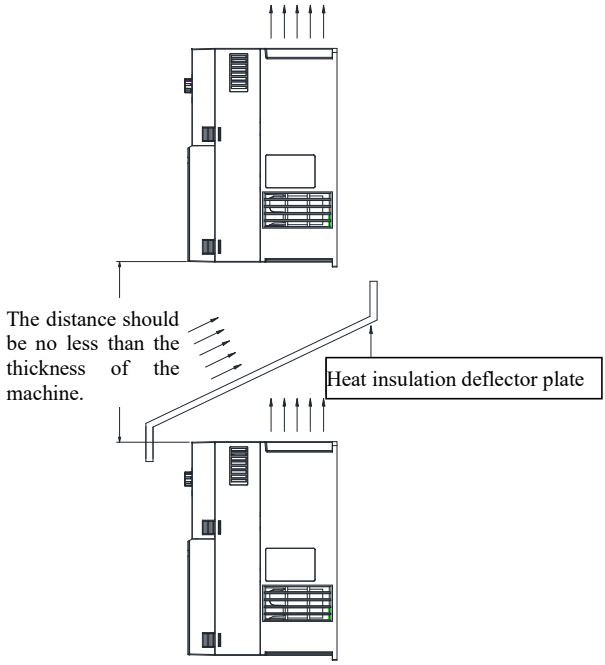


Fig.3-2 VFD Installation Diagram

3.1.2 The Main Concern during Installation is Heat Dissipation. Therefore, Please Note the Following:

1) Install the VFD vertically to facilitate heat dissipation upwards. Do not install it upside down. If there are multiple VFDs in the cabinet, it is best to install them side-by-side. In cases where vertical installation is necessary, please refer to Figure 3-2 for the diagram and install heat insulation guide plates.

2) The installation space should conform to Fig.3-1, ensuring sufficient space for the VFD's heat dissipation. However, please consider the heat dissipation of other components in the cabinet during layout.

3) The mounting bracket must be made of flame-retardant material.

4) For applications involving metal dust, it is recommended to use external cabinet mounting. In this case, the fully enclosed cabinet space should be as large as possible.

3.1.3 Terminal Cover Removal and Installation

The VFD uses a plastic housing. To remove the terminal cover of the plastic housing, refer to Fig.3-5. You can use a tool to push the hook of the terminal cover inward.

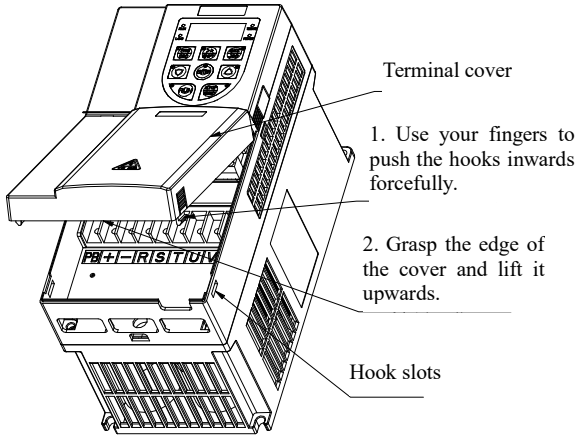


Fig.3-3 Disassembly Diagram of Plastic Housing Terminal Cover

3.2 Electrical Installation

3.2.1 External Electrical Components Selection Guide

Tab.3-1 CM800 Series External Electrical Components Selection Guide

VFD Model	Circuit Breaker (MCCB) (A)	Contactor (A)	Input Side Main Circuit Wire (mm²)	Output Side Main Circuit Wire (mm²)	Control Circuit Wire (mm²)	GND Wire (mm²)
CM800-3SR4GB	10	9	2.5	2.5	1.5	2.5
CM800-3SR75GB	16	12	2.5	2.5	1.5	2.5
CM800-3S1R5GB	25	18	2.5	2.5	1.5	2.5
CM800-3S2R2GB	32	25	2.5	2.5	1.5	2.5
CM800-3S4R0GB	50	40	4	4	1.5	4
CM800-4TR75GB/ 1R5PB	6	9	2.5	2.5	1.5	2.5
CM800-4T1R5GB/ 2R2PB	10	9	2.5	2.5	1.5	2.5
CM800-4T2R2GB/ 4R0PB	10	12	2.5	2.5	1.5	2.5
CM800-4T4R0GB/ 5R5PB	16	16	2.5	2.5	1.5	2.5
CM800-4T5R5GB/ 7R5PB	20	18	2.5	2.5	1.5	2.5
CM800-4T7R5GB/ 9R0PB	32	25	4.0	4.0	1.5	4

VFD Model	Circuit Breaker (MCCB) (A)	Contactor (A)	Input Side Main Circuit Wire (mm²)	Output Side Main Circuit Wire (mm²)	Control Circuit Wire (mm²)	GND Wire (mm²)
CM800-4T9R0GB/ 011PB	40	32	4.0	4.0	1.5	6
CM800-4T011GB/ 015PB	40	32	4.0	4.0	1.5	6
CM800-4T015GB/ 018PB	50	40	6.0	6.0	1.5	6
CM800-4T018GB/ 022PB	63	40	10	10	1.5	10
CM800-4T022GB/ 030PB	80	50	10	10	1.5	16
CM800-4T030GB/ 037PB	100	65	16	16	1.5	16
CM800-4T037G(B)/ 045P(B)	100	80	25	25	1.5	25
CM800-4T045G(B)/ 055P(B)	125	115	35	35	1.5	25
CM800-4T055G(B)/ 075P(B)	160	150	50	50	1.5	25
CM800-4T075G(B)/ 093P(B)	225	170	70	70	1.5	25
CM800-4T093G(B)/ 110P(B)	250	205	95	95	1.5	25
CM800-4T110G(B)/ 132P(B)	315	245	120	120	1.5	25
CM800-4T132G(B)/ 160P(B)	350	300	120	120	1.5	25
CM800-4T160G/185P	400	400	150	150	1.5	25
CM800-4T185G/200P	500	410	185	185	1.5	25
CM800-4T200G/220P	500	410	185	185	1.5	25
CM800-4T220G/250P	630	475	240	240	1.5	25
CM800-4T250G/280P	630	475	2×120	2×120	1.5	25
CM800-4T280G/315P	700	620	2×120	2×120	1.5	25
CM800-4T315G/355P	800	620	2×150	2×150	1.5	35
CM800-4T355G/400P	1000	800	2×185	2×185	1.5	35
CM800-4T400G/450P	1250	800	2×240	2×240	1.5	35

3.2.2 Using Instruction of External Electrical Components

Tab.3-2 Using Instruction of the External Electrical Components

Part Name	Installation Location	Function Description
Circuit breaker	The front-end of the input circuit	Disconnect the power supply in case of downstream equipment is over current.
Contactor	Between the circuit breaker and the VFD input side	Power-on and power-off operation of the VFD. Frequent power-on/power-off operation (more than 2 times per minute) on the VFD or direct start shall be avoided.
AC input reactor	Input side of the VFD	1) Improve the power factor of the input side. 2) Eliminate the high order harmonics of the input side effectively, and prevent other equipment from damaging due to voltage waveform deformation. 3) Eliminate the input current unbalance due to the unbalance among the phase of input.
DC reactor	CM800/CM800S Series VFD 380V voltage range: 160kW~400kW (optional, external)	1) Improve the power factor on the input side 2) Effectively eliminate high-order harmonics on the input side and prevent damage to other equipment caused by voltage waveform distortion.
EMC input filter	Input side of the VFD	1) Reduce the external conduction and radiation interference of the VFD; 2) Reduce the conduction interference flowing from the power end to the VFD, thus improving the anti-interference capacity of the VFD.
AC output reactor	Between the VFD output side and the motor, close to the VFD	The VFD output side generally has higher harmonic. When the motor is far from the VFD, since there are many capacitors in the circuit, certain harmonics will cause resonance in the circuit and bring in the following results: 1) Degrade the motor insulation performance and damage the motor for the long run. 2) Generate large leakage current and cause frequent VFD protection action. 3) In general, if the distance between the VFD and the motor exceeds 100 meters, output AC reactor shall be installed.

3.2.3 Wiring

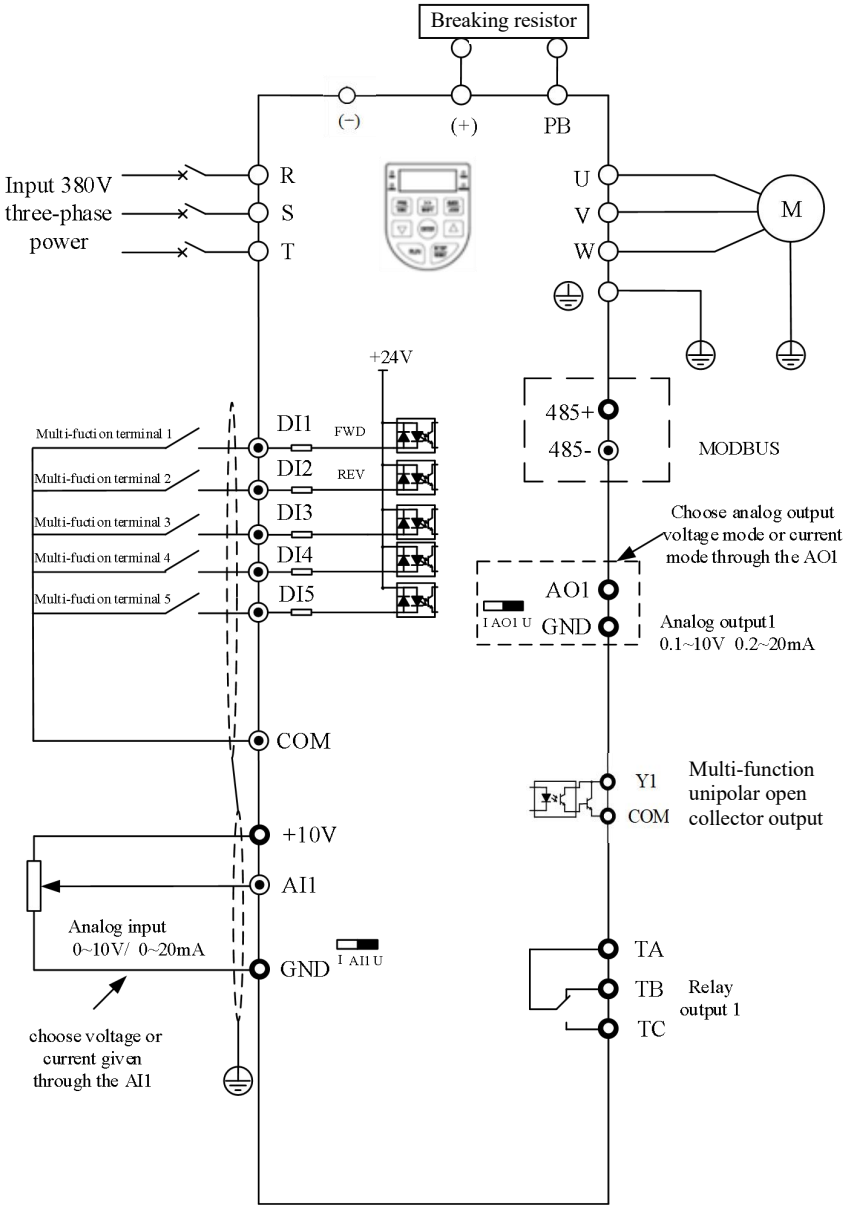


Fig.3-1 Three-phase (380V) VFD 9.0kW and Below

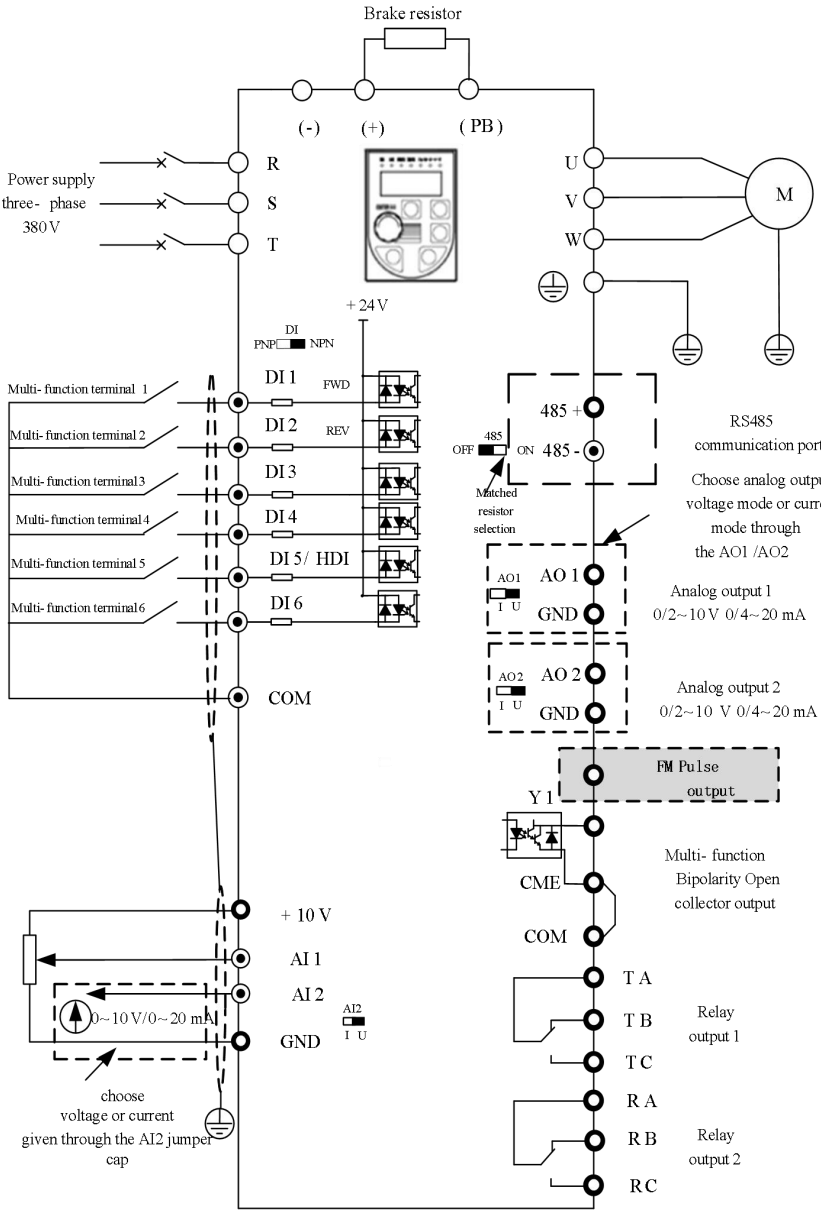


Fig.3-2 Three-phase (380V) VFD 11.0kW and Above

3.2.4 Main Circuit Terminals and Wiring

Main circuit terminals

Terminal	Terminal Name	Description
R, S, T	Three-phase power supply input terminals	Connect to the three-phase AC power supply.
L, N	Single-phase power supply input terminals	Connect to the single-phase 220 VAC power supply
P(+), (-)	Positive and negative terminals of DC bus	Common DC bus input point.
P(+), PB	Connecting terminals of braking resistor	Connect to the braking resistor for the AC drive of 4.0kW and below (220 V) and 22kW and below (other voltage classes).
U, V, W	Output terminals	Connect to a three-phase motor.
⏚	Grounding terminal	Must be grounded.

Wiring Precautions:

Input power supply L, N or R, S, T:

No phase sequence requirement in the input side wiring of the VFD.

DC bus P(+), (-):

Pay attention that there is remaining voltage on DC bus P(+), (-)just after a power failure, only wait until the power indicate LED is off and 10 minutes after the power off, can we start the wiring operation, or there is risk of electric shock.

The wire length of the brake unit should be no more than 10m, and we should use the twisted pair and tight wire for wiring.

Don’t connect the brake resistor to the DC bus directly, or it may damages the VFD and cause fire.

Connection terminals of brake resistor P(+), PB

How to choose the brake resistor refer to the recommended value and the wiring distance should be less than 5m, or it may damage the VFD.

Output side of the VFD U, V, W

The capacitor or surge absorber can’t be connected to the output side of the VFD, or it may damage the VFD.

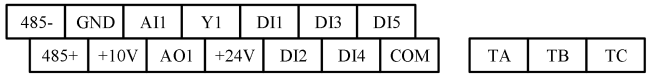
If the motor cable is too long, for the influence of the distribute capacitance, it’s easily to have electrical resonance, causing the damage of the insulation or large leakage current which make the VFD over-current protection. If the length of motor cable is more than 100m, a AC output reactor should be installed near the VFD.

Ground terminal ⏚	PE

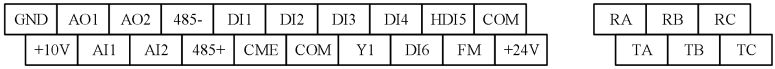
The terminal must be grounded reliably, and the resistance of the ground cable must be less than 0.1Ω. Otherwise, the device may work abnormally or even be damaged. Do not share the ground terminal ⏚ with the neutral N terminal of the power supply.

3.2.5 Control Circuit Terminals and Wiring

3.2.2.1 The control circuit terminals of 0.75kW~9.0kW are displayed as below:



Three-phase 380V 9.0kW and Below



Three-phase 380V 11.0kW and Above

Function Instruction of the Control Terminals

Tab.3-3 Control Interface Function Declaration

Category	Terminal	Terminal Name	Function Description
Power supplies	+10V-GND	External +10 V power supply	Provide +10 V power supply to external unit, maximum output current: 10 mA. Generally, it provides power supply to external potentiometer with resistance range of 1~5 kΩ.
	+24V-COM	External +24 V power supply	Provide +24 V power supply to external unit. Generally, it provides power supply to DI/DO terminals and external sensors. Maximum output current: 200 mA
Analog inputs	AI1-GND	Analog input 1	1) Input voltage range: DC0~10V 2) Input impedance: 100kΩ
	AI2-GND	Analog input 2	1) Input range: DC0~10 V/4~20mA, select from the corresponding AI2 jumper on the control board, and set it to voltage mode at the factory. 2) Impedance: voltage input is 100kΩ, current input is 500Ω

Category	Terminal	Terminal Name	Function Description
Digital inputs	DI1-COM	Digital input 1	1) Optical isolation, only support NPN mode. 2) Impedance: 3.3 kΩ. 3) Voltage range for level input: DC11～30V 4) HDI5 can be used as a high-speed input port.
	DI2-COM	Digital input 2	
	DI3-COM	Digital input 3	
	DI4-COM	Digital input 4	
	HDI5-COM	Digital input 5	
	DI6-COM	Digital input 6	
Analog output	AO1-GND	Analog output 1	Voltage or current output is decided by AO1 AO2 jumper cap on the control board. Output voltage range: 0.1–10 V Output current range: 0.2–20 mA
	AO2-GND	Analog output 2	
Digital output	Y1-COME	Digital output 1	Optical coupling isolation, bipolar open collector output. Output voltage range: 0–24 V. Output current range: 0–50 mA. Note: Digital output ground CME and digital input ground COM are internally isolated, but CME and COM are externally shorted at the factory (Y1 is driven by +24V by default). When Y1 is to be driven by an external power supply, the external shorting between CME and COM must be disconnected.
	FM-COM	High-speed pules output	Subject to function code F6-04 “FM terminal output mode selection”; when used as a high-speed pulse output, the maximum frequency is 100KHz.
Communication interface	485+,485-	Modbus communication terminal	The Modbus communication interface allows you to select whether a communication matching resistor is required via DIP switch CN4. For Profibus communication functionality, please select another series of frequency converters and use a Profibus DP card.
Relay output 1	TA-TB	NC terminal	Contact driving capacity: AC 250V, 3A, COSφ = 0.4 DC 30V, 1A.
	TA-TC	NO terminal	
Relay output 2	RA-RB	NC terminal	Contact driving capacity: AC 250V, 3A, COSφ = 0.4 DC 30V, 1A.
	RA-RC	NO terminal	
Keyboard extended line interface	CN6	External keyboard interface	LED or LCD operators can be introduced through standard network cables.

Signal Input Terminals Wiring Instruction:

A. AI Analog Input

Since the weak analog voltage signal is easy to suffer external interference, it needs to employ shielded cable generally and the length shall be no longer than 20 meters, as shown in Fig. 3-3. In case the analog signal is subject to severe interference, and analog signal source side shall be installed with filter capacitor or ferrite magnetic core.

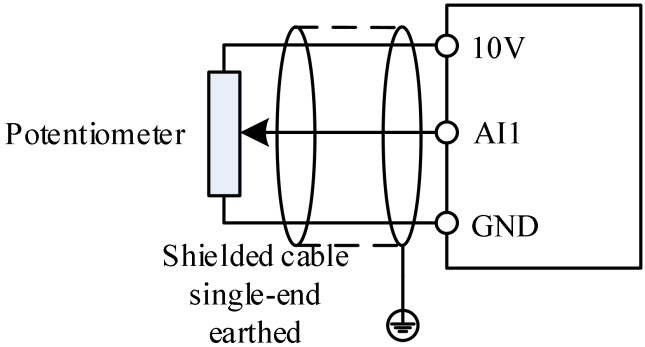


Fig.3-3 Schematic Diagram for Connection of Input Terminal of Analog Signal

B. Digital Input Terminal:

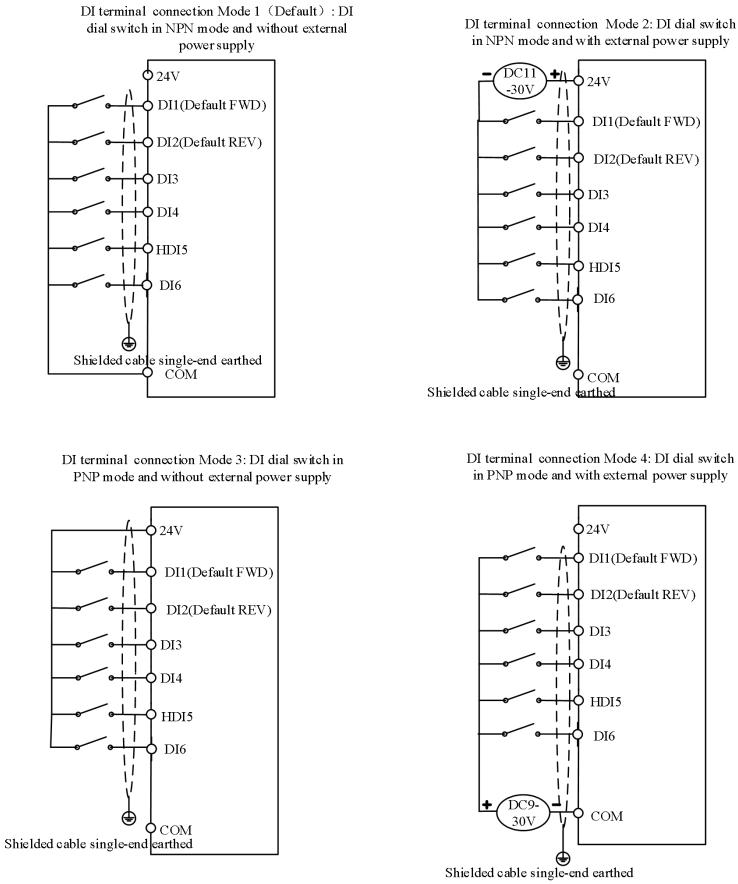
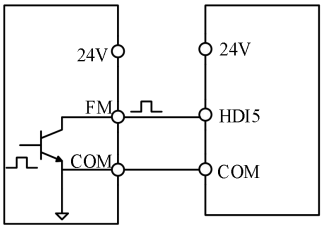


Fig 3-4 Four Different Wiring Diagram

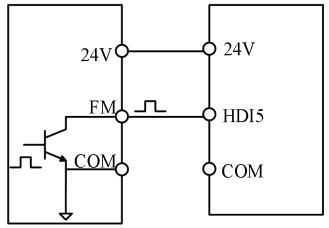
It needs to employ shielded cable generally, with cable length of no more than 20 meters. When active driving is adopted, necessary filtering measures shall be taken to prevent the interference to the power supply. It is recommended to use the contact control mode.

C. High-Speed Pulse Terminal

DI terminal connection Mode 1: DI dial switch in PNP mode and without external power supply



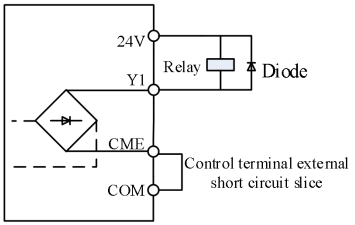
DI terminal connection Mode 2: DI dial switch in PNP mode and with external power supply



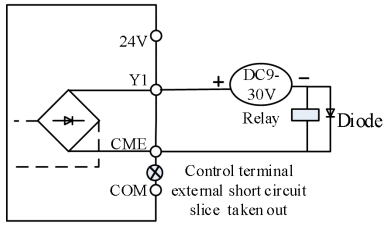
D. Digital Output Terminal:

When the digital output terminal needs the drive relay, absorption diode shall be installed at the two sides of the relay coil and the drive capacity should be no more than 50mA. Otherwise it may easily damage DC 24 power supply.

Caution: The absorption diode shall be installed with correct polarity, as shown in Fig.3-5, otherwise, when it has output on the digital output terminal, the DC 24V power supply will be damaged immediately.



Internal Power Supply



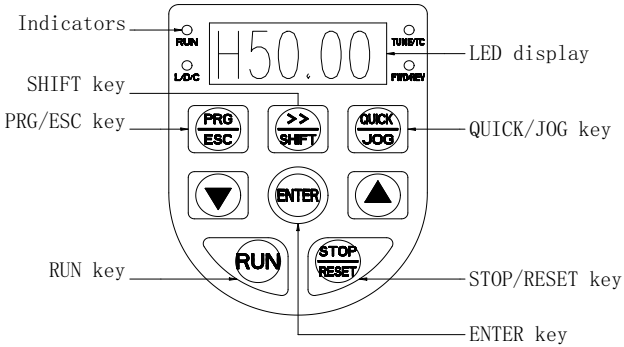
External Power Supply

Fig.3-5 Schematic Diagram for Digital Output Terminal Y1 Wiring

Chapter 4 Operation and Display

4.1 Operation and Display Interface Introduction

We can change the function parameter, monitor the working status and control (start up/stop) the running VFD through the operation panel. The appearance and function are like below:



LED Pure Buttons Keypad (Standard Configuration 9kW and Below)

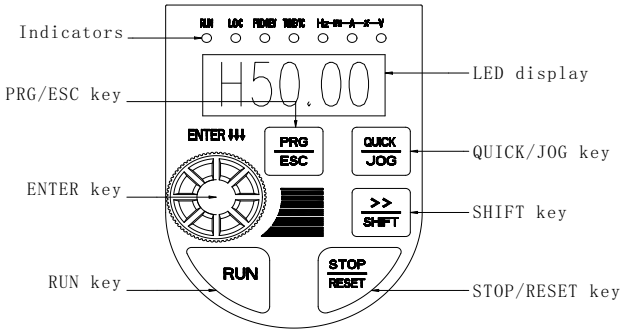


Fig.4-1 LED Knob Keyboard (Standard Configuration 11kW and Above)

4.1.1 Description of Function LED Indicator

Tab.4-1 Indication Light Description

LED Symbol		Unit	Implication	Color
Unit indication light (above11kW)	Hz	Freq. unit	On— current parameter is frequency value	Red
	A	Current unit	On— current parameter is current value	Red
	V	Voltage unit	On— current parameter is voltage value	Red
	RPM (Hz+A)	Speed unit	On —current parameter is rotation speed value	Red
	%(Hz+V)	Percentage	On—current parameter is percentage value	Red

LED Symbol		Unit	Implication	Color
Function indication (above 11kW)	RUN	Running status LED	On—in the status of running Off—in the status of stop Flash—in the status of sleep	Green
	L/D/C	Control mode LED	Off—in the status of keyboard control mode On—in the status of terminal control mode Flash—in the status of remote communication control mode	Red
	FWD/REV	Running direction LED	Off—in the status of forward rotation On—in the status of reverse rotation Flash—the target frequency is opposite to the actual frequency or in the status of reverse-run prohibition	Red
	TUNE/TC	tuning/ torque /fault LED	On—in the status of torque control Flash—tuning/fault	Red
Monitoring interface (below 9.0kW)	F	Moving frequency	F18.50 The current running frequency is 18.50Hz in the figure	
	H	Setting frequency	H45.00 The current running frequency is 45.00Hz in the figure	
	n	Rotation speed	n0900 The current running frequency is 900rpm in the figure	
	A	Electric current	A02.10 The current running frequency is 2.10A in the figure	
	V	Voltage	u420.5 The current running frequency is 420.5V in the figure	

4.1.2. Digital Display Area

The 5-digit LED display shows the set frequency, output frequency, various monitoring data, and alarm codes. Function codes are typically displayed in decimal; for example, function code F0-11 displays "50.00," representing the decimal number “50.00”. When the function code value is displayed in hexadecimal, the highest digit of the display shows "H.", indicating that the current function code value is displayed in hexadecimal mode. For example, function code F7-29 displays “H.003F”, meaning the value of F7-29 is the hexadecimal number “0x3f”.

Users can freely set the monitoring data for stop and run states using function codes F7-29/F7-30. See function codes F7-29/F7-30 for details.

4.1.3. Keyboard Button Instruction

Tab.4-2 keyboard Function Table

Key	Name	Function
PRG/ESC	Program/Exit	Entry or exit ,return to primary menu.

Key	Name	Function
>>/SHIFT	Shift key	Select the displayed parameters in turn on the stop display interface and running display interface, the specific content please refer to F7-29 and F7-30; when modifying parameters, select the modification digit of parameters.
QUICK/JOG	Direction / jog run	When F7-28 is set as 0, it's used as jog run key. When F7-28 is set as 1, it's used as direction key, press this key now, the direction will be reversed.
ENTER	ENTER	Entry into the menu interface ,confirm the setup parameters.
▲	Increase (+)	Increase in the data or function code.
▼	Decrease (-)	Decrease in the data or function code.
RUN	Run key	Used in running operation under keyboard control mode.
STOP/RESET	STOP/RESET	In the status of running, pressing it can stop the running operation; in fault alarm status, it can be used as reset. The characteristic of this key is limited by function code F7-27.

4.2 Instruction of Function Code Viewing and Modification Methods

Function code parameter of VFD adopts three-level menu, it can view and monitor the parameter by operation panel. The three-level menu includes function parameter set (level 1 menu) →Function code (level 2 menu) →Function code setup value (level 3 menu). Refer to Fig.4-2 for the operation procedure. In the state parameter interface, it can check the different status parameter by the ">>" key.

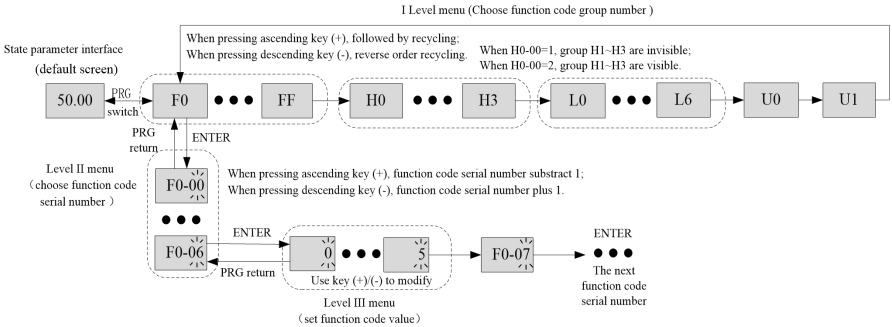


Fig.4-2 Three-Level Menu Operation Flow Chart

Tips: When operating with the three-level menu, you can press PRG or ENTER to return to the 2nd level menu. But it will save the present parameter data and move to the next function code if press ENTER, while it will give up the present parameter revising if press PRG.

For example: make function code F1-04 change from 0.00Hz to 5.00Hz.

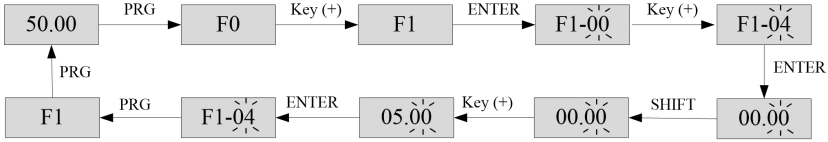


Fig.4-3 Parameter Setting Operation Flowchart

In the status of the 3rd menu, the value can't be modified if the parameter doesn't have the flashing digit. You can check the function code property description for the specific reasons.

Chapter 5 SVC Debugging Instructions

5.1 Configure Synchronization Type, Control Mode, And Motor Parameters.

1) The motor type be set to synchronous and control model of SVC: F0-03 = 11.

Remark: ten's digit is motor type selection and unit's digit is control mode for F0-03

Unit digit: 1:SVC 2: VF 3: close-loop vector (Reserve).

Ten digit: 1: synchronous motor 0: asynchronous motor.

Note:Only synchronous motors can be selected above 11kW VFD.

2) According to the actual motor parameters to set F4-01~F4-06.

5.2 Parameter Identification

1) Powered-on the motor, setting the F4-00 for 1 when it loads; Conversely, setting the F4-00 for 2 and the Digital tube will show TUNE. To ensure the control effect, you'd better set the F4-00 for 2 in the mode of non-load.

2) Press the RUN key to identify parameters and it will finish when the TUNE disappear.

3) Identification lasts about 1-min. and you can press the STOP to exit. The motor will produce current during the process of identification. Keep the motor in 60% rated frequency and observer if it is steady. Slow down to switch off when it is steady for a while or press the STOP to exit directly.

4) To check whether the F4-17 ~ F4-20 parameters is normal after finishing parameters Identification

5.3 The Non-Load Commissioning

1) Set the speed within smaller range, such as F0-11 = 20 HZ.

2) Press the RUN key to check whether motor can accelerate to the given frequency. The VFD is in normal if motor can accelerate to the given frequency with a small current. Similarly, set the frequency for rated frequency and check whether the motor can accelerate to it.

5.4 Quick-Start Commissioning When Required Set; Otherwise, Skip This Operation

Press the RUN key and check to see if the motor can accelerate quickly to given frequency when decrease the motor acceleration time (e.g., set to 1s) and change the speed loop, current loop PI parameter.

5.5 Loading Operation

Motor will be run normally in non-load after finishing above five steps .

Note:Adjust the parameters of F3-04 and F3-06 if the motor can't reach the desired effect when change the rotational inertia of the system. If change another type, please set the motor in a rated frequency and current before identify the parameter.

Chapter 6 Commissioning

6.1 Procedures Before Running

The flowchart in this chapter has tell us the basic procedures before start the VFD, please choose the corresponding flowchart according to the accrual application. We only introduce the basic settings in this section.

Flow Chart	Sub Flowchart	Content
A	-	Basic steps from installation, wiring to running
-	A-1	Running under open-loop vector (speed sensor less vector) control
-	A-2	Running under V/F control

◆Flowchart A (connecting to the motor by the least setting change).

Flowchart A explains the connection to the motor by the least setting. The setting will have some differences for the different use. Please use the initial set parameter of the VFD in the application which doesn't need precise control.

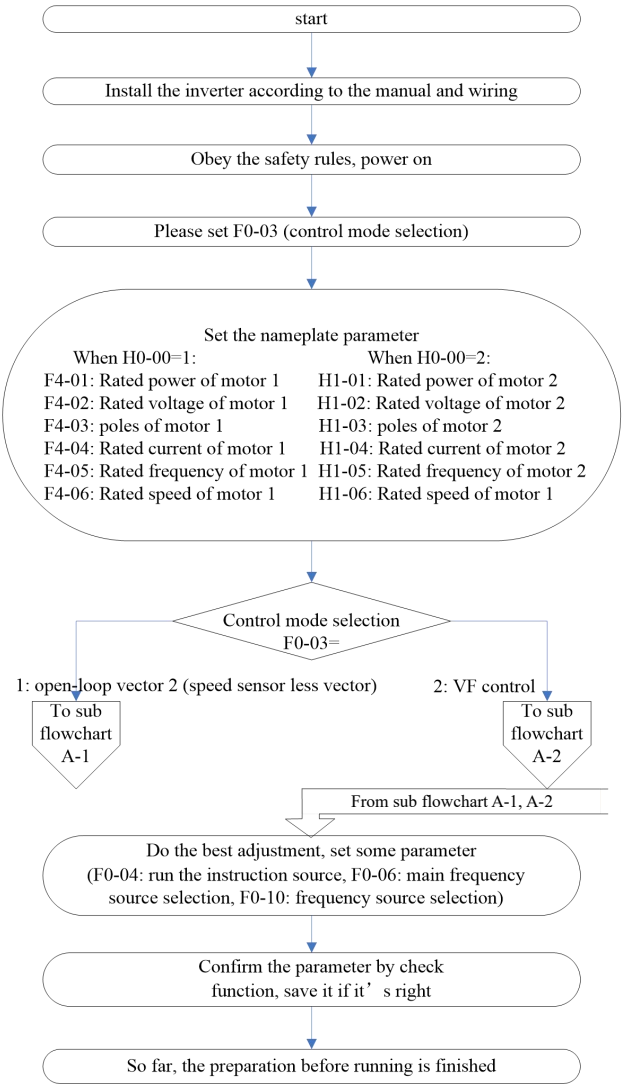


Fig. 6-1 Basic Steps Before Running

◆Sub flowchart A-1 (motor running with open-loop vector control mode).

Sub flowchart A-1 explains the startup steps in open-loop vector control mode. It's more effective for vector control when high starting torque, torque limitation etc are needed.

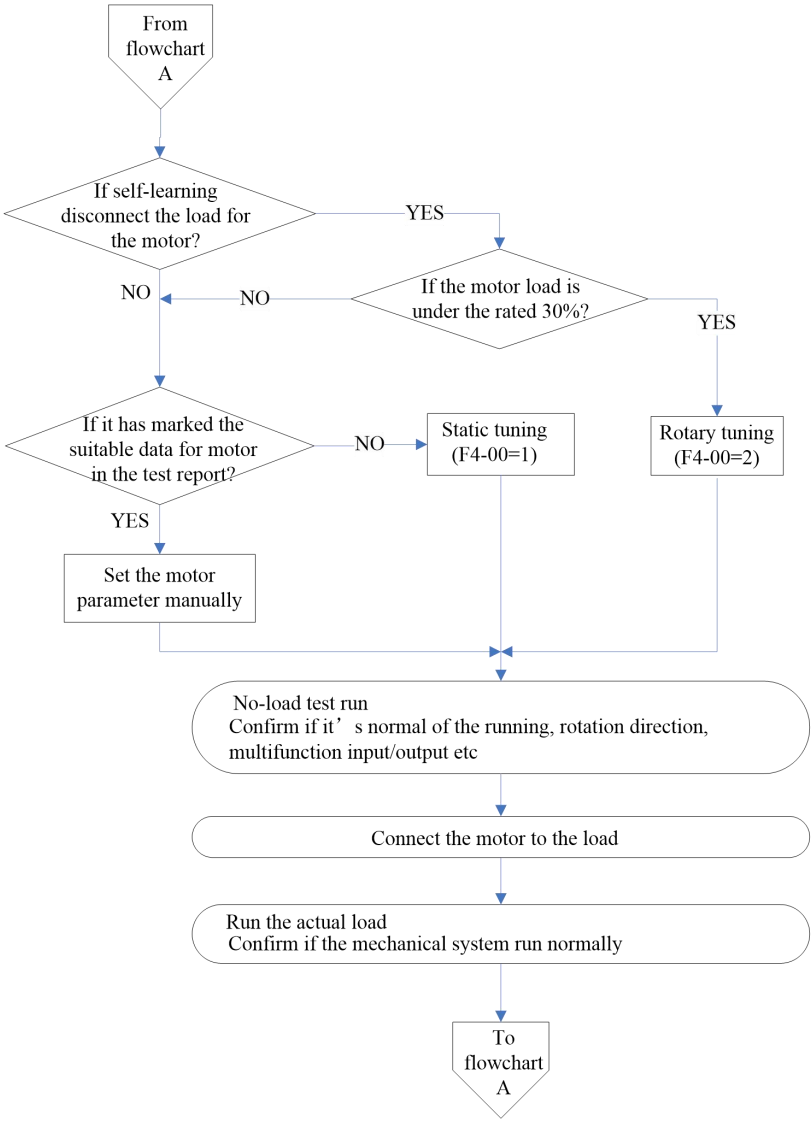


Fig.6-2 Open-Loop Vector Control Running Steps

◆Sub flowchart A-2 (simple motor running with V/F control mode).

When running with V/F control mode, please set the parameter according to below flowchart. It is more effective of V/F control in fan or pump application.

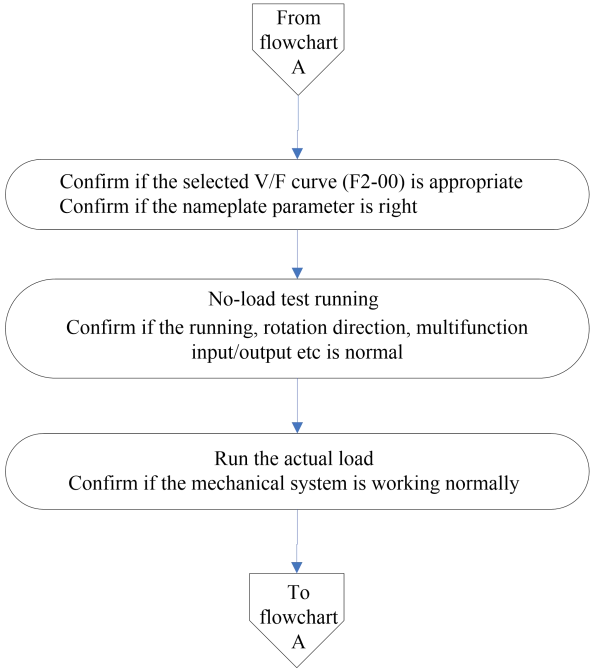


Fig.6-3 V/F Control Mode Running Steps

6.1.1 State Parameter Check

It can display various of state parameter through the key ">>" either the machine is stopped or running. It's function code F7-29 (running parameter) and F7-30 (stop parameter) choose the parameter display when it's stop or running according to the binary bit. It has totally sixteen run/stop state parameter for choosing to display, more details please refer to the F7-29 and F7-30 description in chapter five.

6.2 Start-stop Control of the VFD

6.2.1 Source Selection of the Start/Stop Signal

There are three source of the start-stop control command of the VFD, respectively are operate panel control, terminal control and communication control, you can choose it by function code F0-04.

	Set Running Command Source		Default Value	Explanation
F0-04	Setting range	0	Operate panel command channel (LED off)	Press RUN, STOP to start-stop
		1	Terminal command channel (LED on)	Define DI as the start-stop command terminal
		2	Communication command channel (LED flicker)	Use MODBUS-RTU protocol

6.2.1.1 Operate Panel Start-Stop Control

When operate the panel to make the function code F0-4=0, it's panel star-stop control mode. Press the "Run" button then the VFD starts to run (LED on); press "STOP" button on the run status, then the VFD stops (LED off).

6.2.1.2 Terminal Start-Stop Control

VFD provides several of terminal control ways, it can use function code F5-11 to confirm what control way does the terminal uses. Function code F5-00~F5-04 determine the input port of the start-stop control signal. For the specific setting ways, please refer to the detail explanation of function code F5-11, F5-00~F5-04 etc.

Example 1: It's require to use toggle switch as the start-stop switch of the VFD, connect the forward running switch signal to DI2 port, connect the reverse running switch signal to DI4 port. The way how to use and set is as follows:

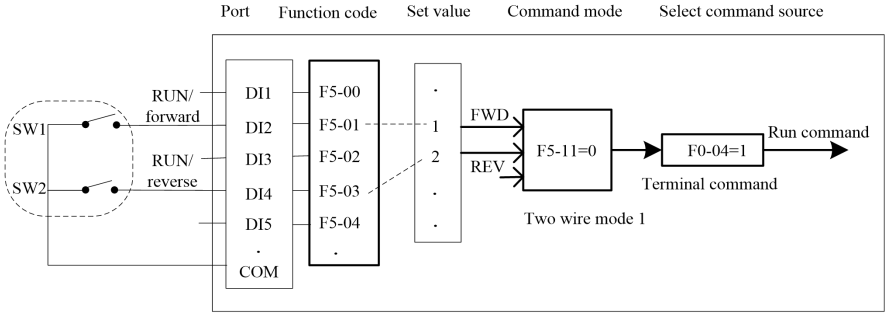


Fig.6-4 Illustration of Terminal Control Start-Stop Mode

The control mode showed in the picture above: when SW1 is closed, the VFD runs in forward; when SW1 is open, the VFD is stopped. Similarly, when SW2 is closed, the VFD runs in reverse; when SW2 is open, the VFD is stopped. Whatever both SW1 and AW2 are closed or open, the VFD will be stopped.

Example 2: It's requiring to use electromagnetic push button switch as the start-stop switch of the VFD, connect the start signal to DI2 port, connect the stop signal to DI4 port. The way how to use and set is as follows:

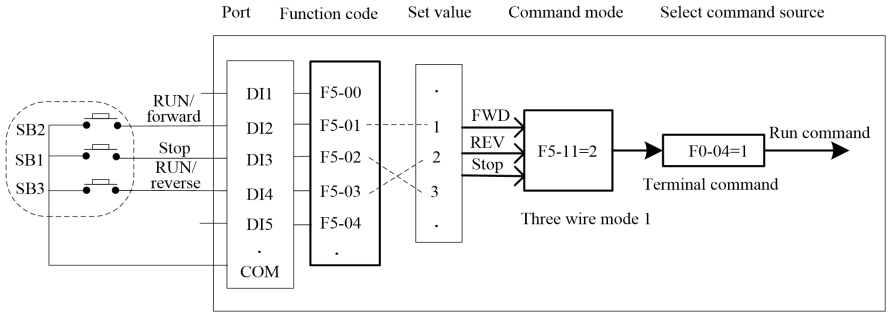


Fig.6-5 Illustration of Terminal Control Start-Stop Mode

The control mode showed in the picture above: SB1 must keep closed on the normal running, otherwise the VFD will be stopped. The commands of SB2 and SB3 are effective when the buttons are pressed down. The running status of the VFD is determined by the final actions of these 3 buttons.

6.2.1.3 Communication Start-Stop Control

The upper computer uses RS485 communication mode to control the VFD application. Choosing communication mode (F0-04=2) as control command source, then the start-stop of the VFD can be controlled by communication mode. The setting of the related function code is as follows:

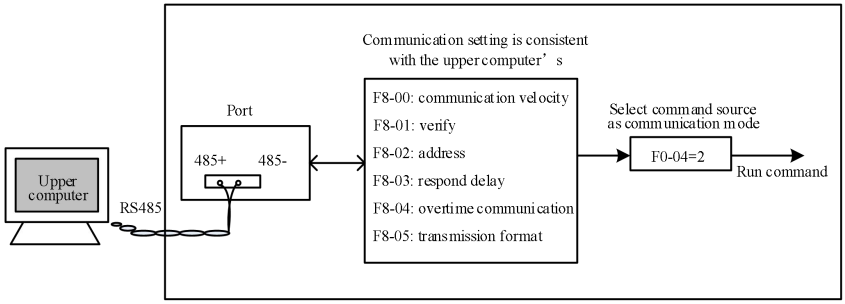


Fig.6-6 Illustration of Communication Control Start-Stop Mode

6.2.2 Start Mode

There is 3 modes of the VFD, respectively are direct start, fast track start and asynchronous machine pre-excited magnetic start, it can be selected by function parameter F1-00.

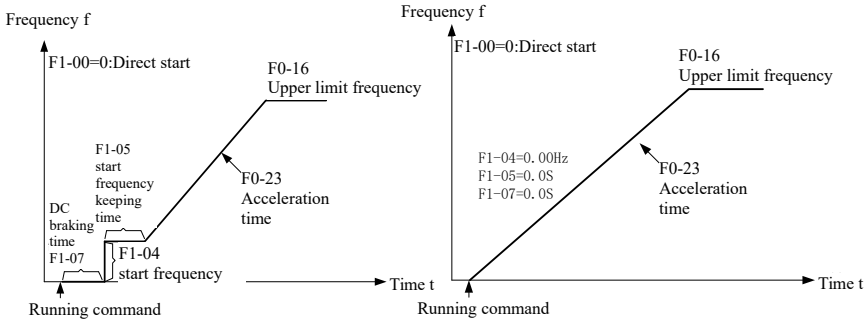


Fig.6-7 Direct Start Diagram

6.2.3 Stop Mode

There are 2 kinds of stop mode of VFD, respectively are deceleration stop and free stop. It can be selected by function code F1-13.

6.2.4 Jog Running

In many occasions, the VFD need to run in slow speed so as to test the equipment or other function, so it's convenient to run in jog.For the relevant parameters of Jog t running, please refer to F7-00~F7-02

Chapter 7 Fault Shooting and Solutions

7.1 Fault Warning and Solutions

If faults happened on the running process, the VFD will stop to output immediately to protect the motor, and the corresponding fault relay of the VFD has contact action at the same time so the panel will display the fault code. The fault types and regular solutions that corresponding to the fault code are listed below in the table. Details in below form is only for reference, so please don't fix or change it by yourself. If you can't clear out the fault please contact us or the local agent for technical support.

Tab.7-1 Fault Warning and Solutions

Display	Fault Name	Fault Shooting	Solutions
Err01	VFD unit protection	1: Whether the connecting ends U, V and W of the motor have phase or ground short circuit. 2: The module overheats. 3: The internal connections become loose. 4: The main control board is faulty, drive board or module is faulty.	1: Eliminate external faults. 2: Check the air filter and the cooling fan. 3: Connect all cables properly. 4: Contact the agent or the manufacturer for help.
Err04	Over current during acceleration	1: The output circuit is grounded or short circuited. 2: Motor parameter is not right. 3: The acceleration time is too short. 4: Manual torque boost or V/F curve is not appropriate. 5: The voltage is too low. 6: The startup operation is performed on the rotating motor. 7: A sudden load is added during acceleration. 8: The AC drive model is of too small.	1: Eliminate external faults. 2: Perform the motor auto-tuning. 3: Increase the acceleration time. 4: Adjust the manual torque boost or V/F curve. 5: Adjust the voltage to normal range. 6: Select rotational speed tracking restart or start the motor after it stops. 7: Remove the added load. 8: Select an AC drive of higher power class.

Display	Fault Name	Fault Shooting	Solutions
Err05	Over current during deceleration	1: The output circuit is grounded or short circuited. 2: Motor parameter is not right. 3: The deceleration time is too short. 4: The voltage is too low. 5: A sudden load is added during deceleration. 6: The braking unit and braking resistor are not installed. 7: Magnetic flux brake gain too much.	1: Eliminate external faults. 2: Perform the motor auto-tuning. 3: Increase the deceleration time. 4: Adjust the voltage to normal range. 5: Remove the added load. 6: Install the braking unit and braking resistor. 7: Decrease the over- magnetic flux brake gain.
Err06	Over current at constant speed	1: The output circuit is grounded or short circuited. 2: Motor parameter is not right. 3: The voltage is too low. 4: A sudden load is added during operation. 5: The AC drive model is of too small.	1: Eliminate external faults. 2: Perform the motor auto-tuning. 3: Adjust the voltage to normal range. 4: Remove the added load. 5: Select an AC drive of higher power class.
Err08	Overvoltage during acceleration	1: The input voltage is too high. 2: An external force drives the motor during acceleration. 3: The acceleration time is too short. 4: The braking unit and braking resistor are not installed. 5: Motor parameter is wrong.	1: Adjust the voltage to normal range. 2: Cancel the external force or install a braking resistor. 3: Increase the acceleration time. 4: Install the braking unit and braking resistor. 5: Perform the motor auto-tuning.
Err09	Overvoltage during deceleration	1: The input voltage is too high. 2: An external force drives the motor during deceleration. 3: The deceleration time is too short. 4: The braking unit and braking resistor are not installed.	1: Adjust the voltage to normal range. 2: Cancel the external force or install a braking resistor. 3: Increase the deceleration time. 4: Install the braking unit and braking resistor.
Err10	Overvoltage at constant speed	1: The input voltage is too high. 2: An external force drives the motor during acceleration.	1: Adjust the voltage to normal range. 2: Cancel the external force or install a braking resistor.

Display	Fault Name	Fault Shooting	Solutions
Err12	Undervoltage	1. Instantaneous power failure occurs. 2. The input voltage exceeds the allowed range. 3. The DC bus voltage is too low. 4. The rectifier bridge and Buffer resistor are faulty. 5. The drive board is faulty. 6. The control board is faulty.	1. Reset the fault 2. Adjust the input voltage to within the allowed range. 3. Seek for maintenance.
Err13	Drive overload	1. The load is too heavy or the rotor is locked. 2. The drive is of too small power class.	1: Reduce the load, or check the motor, or check the machine whether it is locking the rotor. 2: Select a drive of higher power class.
Err14	Motor overload	1: F9-01 is too small. 2: The load is too heavy or the rotor is locked. 3: The drive is of too small power class.	1: Set F9-01 correctly. 2: Reduce the load,or check the motor, or check the machine whether it is locking the rotor. 3: Select a drive of higher power class.
Err15	Drive overheat	1: The ambient temperature is too high. 2: The air filter is blocked. 3: The cooling fan is damaged. 4: The thermally sensitive resistor of the module is damaged. 5: The VFD module is damaged.	1: Lower the ambient temperature. 2: Clean the air filter. 3: Replace the damaged fan. 4: Replace the damaged thermally sensitive resistor. 5: Replace the VFD module.
Err17	Current detection fault	1: The internal connections become loose. 2: The HALL device is faulty. 3: The control or drive board is faulty.	1: Connect all cables properly. 2: Seek for maintenance.
Err20	Short circuit to ground	The motor is short circuited to the ground.	Replace the cable or motor.
Err23	Power input phase loss	1: The three-phase power input is abnormal. 2: The drive board is faulty. 3: The lightening board is faulty. 4: The main control board is faulty.	1: Eliminate external faults. 2: Seek for maintenance.

Display	Fault Name	Fault Shooting	Solutions
Err24	Power output phase loss	1: The cable connecting the AC drive and the motor is faulty. 2: The AC drive's three-phase outputs are unbalanced when the motor is running. 3: The drive board is faulty. 4: The module is faulty.	1: Eliminate external faults. 2: Check whether the motor three-phase winding is normal. 3: Seek for maintenance.
Err25	EEPROM read-write fault	The EEPROM chip is damaged.	Replace the main control board.
Err27	Communication fault	1: The host computer is in abnormal state. 2: The communication cable is faulty. 3: The communication parameters in group F8 are set improperly.	1: Check cabling of the host computer. 2: Check the communication cabling. 3: Set the communication parameters properly.
Err28	External equipment fault	External fault normally closed or normally open signal is input via DI.	Reset the fault
Err29	Too large speed deviation	1: The load is too heavy and the acceleration time is too short. 2: F9-31 and F9-32 are set incorrectly.	1: Increase the acceleration and deceleration time. 2: Set F9-31 and F9-32 correctly based on the actual situation.
Err30	User-defined fault 1	The user-defined fault 1 signal is input via DI.	Reset
Err31	User-defined fault 2	The user-defined fault 2 signal is input via DI.	Reset
Err32	PID feedback lost during running	The PID feedback is lower than the setting of FA-13.	Check the PID feedback signal or set FA-26 to a proper value.
Err33	Fast current limit fault	1: The load is too heavy or the rotor is locked. 2: The acceleration time is too short.	1: Reduce the load, or change the VFD with larger power. 2: Increase the acceleration time.
Err34	Load becoming 0	The detection is reached. Get more details form F9-28 to F9-30.	Reset the fault or reset F9-28 to F9-30 value
Err35	Control power supply fault	1: The input voltage is not within the allowable range. 2: The power on and off is too frequently.	1: Adjust the input voltage to the allowable range. 2: Extension of power on cycle.

Display	Fault Name	Fault Shooting	Solutions
Err36	Function board communication failure	1: Function board is in poor contact or abnormal 2: Hardware communication is faulty	1. Contact dealers 2. Contact the technical support of the manufacturer
Err37	Data storage fault	Communication between DSP and EEPROM fault.	1: Replace the main control board. 2: Contact the agent or the manufacturer for help.
Err39	Current running time reached	Current running time of AC driver is larger than .F7-38 value.	Reset
Err40	Accumulative running time reached	The accumulative running time reaches the setting value of F7-20.	Clear the record through the parameter initialization function or set F7-20 to a new value.
Err42	Motor switchover fault during running	Change the selection of the motor via terminal during running of the AC drive.	Perform motor switchover after the AC drive stops.
Err44	DSP board communication is faulty	1: The DSP board is in poor contact or abnormal 2: Hardware communication is faulty	1. Contact dealers 2. Contact the technical support of the manufacturer
Err46	Master slave control communication disconnection	1: There is no set host but set the slave machine 2: The communication cable is faulty or communication parameter setting not correct.	1: Set host and reset the fault 2: Check the communication cabling and communication parameters F8.

7.2 Common Faults and Troubleshooting Methods

The following faults may occur during the use of VFD. Please refer to the following methods for simple fault analysis.

Tab.7-2 Common Faults and Troubleshooting Methods

No.	Fault Name	Possible causes	Solutions
1	No display upon power-on	1. Mains voltage is insufficient or too low. 2. Switching power supply failure on the inverter drive board. 3. Rectifier bridge damage. 4. Inverter buffer resistor failure. 5. Control board or keyboard failure. 6. Disconnection between control board, drive board, and keyboard.	1. Check input power supply. 2. Check bus voltage. 3. Reconnect and reconnect the keyboard and 30-pin ribbon cable. 4. Contact manufacturer service.

No.	Fault Name	Possible causes	Solutions
2	Power-on display of “Err20” alarm	1. Short circuit to ground in the motor or output line 2. VFD malfunction.	1. Use a megohmmeter to measure the insulation of the motor and output lines. 2. Contact the manufacturer for service.
3	Frequent Err15 (module overheating) fault reports	1. Carrier frequency setting too high 2. Fan damage or blocked air duct 3. Damaged internal components of the VFD (thermocouple or other)	1. Reduce carrier frequency (F0-26) 2. Replace fan and clean air duct 3. Contact manufacturer service
4	Motor stop rotation after VFD running	1.Motor and motor cable 2.VFD parameters setting error(motor parameters) 3.Poor contact between the drive board and control board 4.Drive board fault	1. Reconfirm the wiring between the inverter and the motor. 2. Replace the motor or resolve the mechanical fault. 3. Check and reset the motor parameters.
5	DI Terminal Failure	1. Incorrect parameter settings 2. External signal error 3. Incorrect DI DIP switch position 4. Control board malfunction.	1. Check and reset relevant parameters for group F5 2. Reconnect external signal lines 3. Reconfirm DI DIP switch position is consistent with wiring method 4. Contact manufacturer for service.
6	The VFD frequently reports overcurrent and overvoltage faults	1. Incorrect motor parameter settings 2. Inappropriate acceleration/deceleration times 3. Load fluctuations	1. Resetting motor parameters or performing motor tuning 2. Setting appropriate acceleration/deceleration times 3. Seeking manufacturer service.

Appendix A Modbus Communication Protocol

VFD can provide RS232/RS485 communication interface, and use MODBUS communication protocol. The user can realize the central control through computer or PLC. Also it can set the running commands, modify or read the function code parameter, read the working status and fault information of the VFD according to the protocol.

1. Communication Protocol Content

This serial communication protocol has defined the content and the working format in serial communication, including master machine polling format (or broadcast) and master machine encoding method. The content includes the function code of the requested action, data transmission, error checking, etc. Same structure is used on the slave machine response, which includes action confirmation, data returning, error checking, etc. If the slave machine has an error in receiving information or cannot complete the requirements from the master machine, it will send a fault signal back as a response to the master machine.

2. Application Mode

The VFD connect PC/PLC network with RS232/RS485 bus and single master but multiple slave machines.

3. Bus Structure

(1) Interface mode

RS232/RS485 hardware interface

(2) Transmission mode

It's asynchronous serial and half-duplex transmission mode. For master machine and slave machine, only one can send data and another one receive it at the same time. In the process of serial asynchronous communication, the data is transmitted frame by frame in the form of message.

(3) Topological structure

In single master machine and multiple slave machines system, the setup range of slave address is "1~247", and "0" is the broadcast communication address. The address of the slave machine in net work must be unique.

4. Protocol Specification

VFD communication protocol is a asynchronous serial and master-slave Modbus communication protocol, only one facility (master machine) in network can set up protocol (called "query/command"), other facilities (slave machines) can only response to the "query/ command" of master machine according to the data provided, or make relevant action by "query/ command" from the master machine. The master machine here means personal computer (PC), industrial controlled

facility or programmable logic controller (PLC), etc., the slave machine means VFD. The master machine can not only communicate with one slave machine separately, but also broadcast information to all the slave machines. For the separate access to "query/command" of master machine, the slave machine will return information (called response). For the broadcast information from the master machine, the slave machines need not to response to the master machine.

5. Communication Frame Structure

The Modbus protocol data format of VFD of frequency convert is as follows:

If use RTU mode, the message must be sent with a pause of at least 3.5 characters time. Different character time is very easy to get under the circumstance of varieties of network baud rates. The first domain of the message transmission is the equipment address, the usable transmissive characters are hexadecimal 0~9, A~F. Network equipment continuously detect the network trunk line, including the pause time. Once the first domain (address domain) is received, all the facilities will decode to make out if it's sent to their own. After the last characters sent, a pause with at least 3.5 character time buckets indicates the end the message. A new message can be started after the pause.

The entire message frames must be sent as a continuous flow. If there was a pause over 1.5-character time before the frame completed, the receiving equipment will update the incomplete message and assume the next byte as address domain of a new message. Likewise, if a new message was sent following with the previous one during less than 3.5-character time, the receiving equipment will regard it as the extension of the previous message. This will lead to an error, because the result is impossible to be right with the value of CRC domain at last.

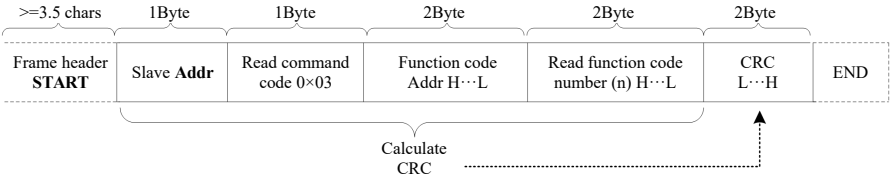
RTU Frame Format:

<table>
<tr><td>Frame header START</td><td>3.5 characters time</td></tr>
<tr><td>Slave address ADR</td><td>Contact address: 1~247(Set by F8-02)</td></tr>
<tr><td>The command code CMD</td><td>03: Read the parameter of the slave machine
06: Write the parameters of the slave machine</td></tr>
<tr><td>The content of the data DATA(N-1)</td><td rowspan="4">The content of the DATA:
The address of function code parameters;
The quantity of function code parameters;
The value of function code parameters;</td></tr>
<tr><td>The content of the data DATA(N-2)</td></tr>
<tr><td>.....</td></tr>
<tr><td>The content of the data DATA0</td></tr>
<tr><td>CRC CHK Low order</td><td rowspan="2">Detection value: CRC16 verified value. low byte is sent previous than High byte.</td></tr>
<tr><td>CRC CHK High order</td></tr>
<tr><td>END</td><td>3.5 characters time</td></tr>
</table>

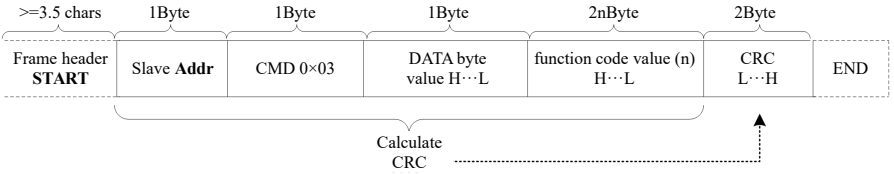
Command Instruction (CMD) and Data Description (DATA)

Command code: 03H, read N words (Word), it can read at most 12 words and N = 1 ~ 12 words. Specific format is as below:

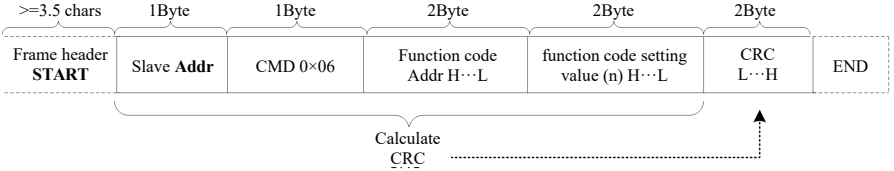
Frame of reading command from the master:



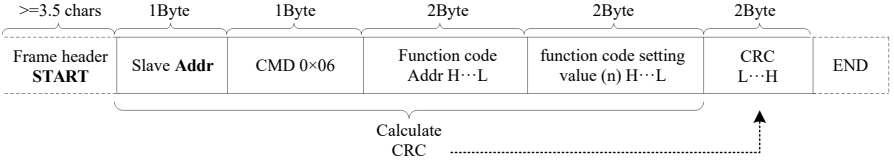
Frame of reading response command from the slave:



Frame of writing command from the master:

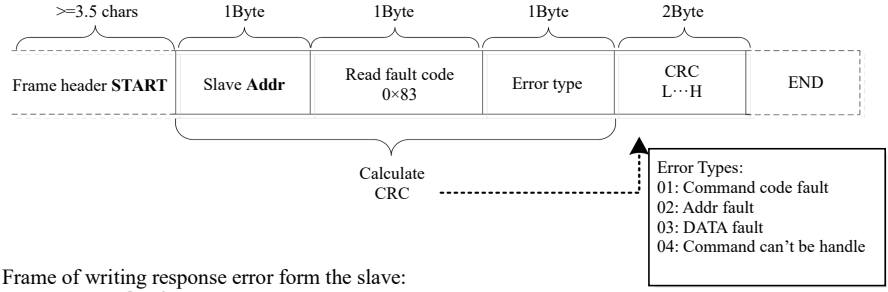


Frame of writing response command from the slave:

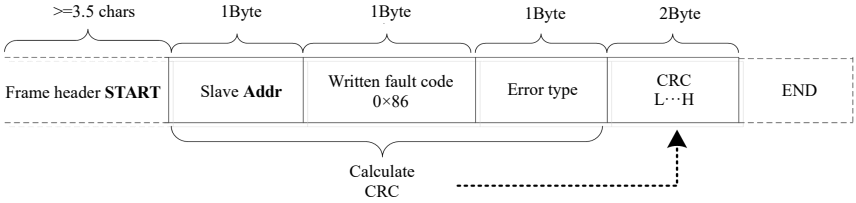


Note: If the slave detects a communication frame error or reading/writing failure is caused by other reasons, an error frame will be returned as follows:

Frame of reading response error from the slave:



Frame of writing response error form the slave:



Example: reading continuous 2 parameters from frequency convert F0~03 whose slave machine address F8-02= 01.

Command from the master machine:

Frame Header >=3.5 chars	Slave **Addr** 0×01	Read function code 0×03	Function code Addr 0×F0 0×03	Read function code value 0×00 0×03	**CRC** 0×07 0×0B	END

Reply form the slave machine:

Frame Header >=3.5 chars	Slave **Addr** 0×01	Read function code 0×03	DATA byte value 0×04	F0-03 parameter value 0×00 0×00	F0-04 parameter value 0×00 0×00	**CRC** 0×FA 0×33	END

Note: If the write command fails, the reason for the failure will be replied.

6. Verification Mode (CRC Verification Mode)

CRC (Cyclical Redundancy Check) use RTU frame format, the message includes error checking domain based on CRC method. CRC domain checked the content of the entire message. CRC domain is 2 bytes, containing a 16-bit binary value. It's added to the message after calculated by transmission equipment. The receiving device recalculates the CRC message after the information received, and compare with the value in the received CRC. If the two CRC values are not equal, it indicates that errors happened on transmission.

CRC saves 0xFFFF firstly, and then call a process to deal continuous 8-bit bytes in the message with the value in current register. Only 8 bit data in each character is effective to CRC, start bit, stop bit and the parity bit are ineffective.

During the process of CRC, each 8- bit character individually exclusive or the content in the register (XOR), the result shifts to the least significant bit while the most significant bit is filled with a "0". The LSB is picked out to test, if the LSB is 1, the register exclusive or the preset value, if the LSB is 0, no action taken. The whole process will be repeated 8 times. When the last bit (the 8th bit) is done, the next 8-bit character separately exclusive or the current value in the register again. The final value in the register is the CRC value after all the bytes in the message have been dealt with.

When adding CRC to message, the lower bytes are add previous than the higher bytes. The simple CRC function is as follow:

```
unsigned int crc_chk_value(unsigned char *data_value, unsigned char length)
{
        unsigned int crc_ value=0xFFFF;
        int i;
        While(length--)                 {
            crc_value^=*data_value++;
            For(i=0;i<8;i++)                    {
                If(crc_value&0x0001)                        {
                    crc_value=(crc_value>>1)^0xa001;
                }
                else
                {
                    crc_value=crc_value>>1;
                }
            }
        }
        Return(crc_value);
}
```

7. The Definition of Communication Parameter Address

This part is the content about communication, which used for controlling the running and working status of the frequency convert, and set relevant parameter.

Parameter of read and write function code (some function code can't be changed, only for supplier and monitor usage):

Labeling rule of function code address:

Use the group number and mark number of the function code as parameter address rule:

The high bytes: F0~FF (group F), H0~HF (group H), L0~LF (group L), n0~nF (group N), 70~7F (group U) the low byte: 00~FF

For example: F0-11, the address indicated as F00B.

Attention:

Group FF: The parameter can neither be read nor be altered.

Group U: The parameter can only be read, but not be altered.

Some parameter can't be changed when the frequency convert is on running status; some parameter can't be changed regardless of any status of the frequency convert; please pay attention to the range, unit and relevant instruction when changing the function code parameter.

Group Number of Function Code	Access Address of Communication	Function Code Address of Communication Revise the RAM(Write-only)
Group F0~FE	0xF000~0xFEFE	0x0000~0x0EFF
Group H0~HF	0xA000~0xAFFF	0x4000~0x4FFF
Group L0~LF	0xB000~0xBFFF	0x5000~0x5FFF
Group n0~nF	0xC000~0xCFFF	0x6000~0x6FFF
Group U0, U1	0x70xx, 0x71xx	

Pay attention that if the EEPROM is stored continuously, the service life will be reduced. So there is no need to store some function code on the communication mode, just need to change the value in RAM.

If it's group F of the parameter to realize this function, just need to change high byte from F to 0 on the function code address.

If it's group A of the parameter to realize this function, just need to change high byte from A to 4 on the function code address.

The relevant function code address indicated as below:

High byte: 00~0F (group F), 40~4F (group A) the low byte: 00~FF

For example: function code F0-11 doesn't store in EEPROM, the address indicated as 000B; this address means that it only can write RAM, but can't use the read action, if it's being read, the address is ineffective.

Stop/Run Parameter

Parameter Address (HEX)	Parameter Description
0x1000/9000	1000: *Communication set value (-1000~1000) (decimal) (readable and writable) (minimum unit: 0.01%), Read/Write
	9000: range (0HZ~F0-14) (minimum unit:0.01Hz), Read/Write
0x1001	Set frequency (minimum unit:0.01Hz), Read-only
0x1002	Running frequency (minimum unit:0.01Hz), Read-only
0x1003	Busbar voltage (minimum unit: 0.01V), Read-only
0x1004	Output voltage (minimum unit: 0.1V), Read-only
0x1005	Output current (minimum unit: 0.1A), Read-only
0x1006	Output power (minimum unit: 0.1kW), Read-only
0x1007	DI input flag (minimum unit: 1), Read-only
0x1008	DO output flag (minimum unit: 1), Read-only
0x1009	PID set (minimum unit: 1), Read-only
0x100A	PID feedback (minimum unit:1), Read-only
0x100B	AI1 voltage (minimum unit: 0.01V), Read-only
0x100C	AI2 voltage (minimum unit: 0.01V), Read-only
0x100D	AO1 output voltage (minimum unit: 0.01V), Read-only
0x100E	PLC step (minimum unit: 1), Read-only
0x100F	Rotate speed (minimum unit: 1rpm), Read-only
0x1010	Count value input (minimum unit: 1), Read-only
0x1011	Pulse frequency input (minimum unit: 0.01kHz), Read-only
0x1012	Feedback speed (minimum unit: 0.1Hz), Read-only
0x1013	The remaining run time (minimum unit: 0.1 min), Read-only
0x1014	Voltage before AI1 revised (minimum unit: 0.001V), Read-only
0x1015	Voltage before AI2 revised (minimum unit: 0.001V), Read-only
0x1016	The actual linear speed (minimum unit: 1m/min), Read-only
0x1017	Load speed (minimum unit: user-defined, refer to F7-31), Read-only
0x1018	present power-on time (minimum unit: 1min), Read-only
0x1019	Present run time (minimum unit: 0.1min), Read-only
0x101A	Pulse frequency input (minimum unit: 1Hz), Read-only
0x101B	Main frequency X display (minimum unit: 0.01Hz), Read-only
0x101C	Auxiliary frequency Y display (minimum unit: 0.01Hz), Read-only
0x101D	Target torque (minimum unit: 0.1%), regard motor rated torque as 100%, Read-only

0x101E	Output torque (minimum unit: 0.1%), regard motor rated torque as 100%, Read-only
0x101F	Output torque (minimum unit: 0.1%), regard VFD rated current as 100%, Read-only
0x1020	Upper limit torque (minimum unit: 0.1%), regard VFD rated current as 100%, Read-only
0x1021	VF separate target voltage (minimum unit: 1V), Read-only
0x1022	VF separate output voltage (minimum unit: 1V), Read-only
0x1023	Reserved, Read-only
0x1024	Motor 1/2 direction (minimum unit: 1), Read-only
0x1025	Length value input (minimum unit: 1), Read-only
0x1026	AO2 output voltage (minimum unit: 0.1V), Read-only
0x1027	Status of the invert (minimum unit: 1), Read-only
0x1028	Present malfunction (minimum unit: 1), Read-only

Example 1: Read the run frequency of the first machine: 0x01, 0x03, 0x10, 0x02, 0x00, 0x01, 0x21, 0x0A, 0x10, 0x02, (1002) run frequency address, 0x00, 0x01 (0001) one data 0x21, 0x0A (210A) CRC verified value.

Example 2: Read the busbar voltage, output voltage, output current of the first machine at the same time: 0x01, 0x03, 0x10, 0x03, 0x00, 0x03, CRC verified value, the meaning of the data is similar to example 1.

Attention: Communication set value is a relative percentage value, 10000 correspond to 100.00% and -10000 correspond to -100.00%

For the data of frequency dimension, this percentage is the percentage of the relative maximum frequency (F0-14); for the data of torque, this percentage is F3-21, F3-23, H3-21, H3-23.

Control Command Input to the Frequency Convert: (Write Only)

Command Word Address (HEX)	Command Word Function
0x2000	0001: Forward operation
	0002: Reverse operation
	0003: Forward jog
	0004: Reverse jog
	0005: Free stop
	0006: Slow-down stop
	0007: Fault reset

Example 3: give command forward rotating to the second machine: 0x02 0x06 0x20 0x00 0x00 0x01 CRC verified value

Status Word Address (HEX)	Status Word Function
0x3000	0001: Forward operation
	0002: Reverse operation
	0003: Stop

Read the Status of the Frequency Convert: (Read Only)

Digital Output Terminal Control: (Write Only)

Command Address (HEX)	Command Content
0x2001	BIT0: RELAY1 output control BIT1: RELAY2 output control BIT2: DO1 output control

Attention: D0 output terminal need to choose 16 (communication control) function.

Analog AO1 control: (write only)

Command Address (HEX)	Command Content
0x2002	0~7FFF represent 0%~100%

Analog AO2 control: (write only)

Command Address (HEX)	Command Content
0x2003	0~7FFF represent 0%~100%

Attention: AO output need to choose 7 (communication control output) function.

Fault Descriptions of the Frequency Convert:

The Fault Address (HEX)	The Fault Detail Information
0x8000	0000: Fault free 0001: Reserve 0002: Reserve 0003: Reserve
0x8000	0004: Accelerated over current 0005: Decelerated over current 0006: Constant over current 0007: Over current on stop 0008: Accelerated over voltage 0009: Decelerated over voltage 000A: Constant over voltage 000B: Over voltage on stop 000C: Undervoltage fault 000D: Frequency convert overload 000E: Motor overloading 000F: Module over heat 0010: Reserve

The Fault Address (HEX)	The Fault Detail Information
	0011: Current detection fault 0012: Reserve 0013: Reserve 0014: Earth short circuit of the motor 0015: Tuning fault of the motor 0016: Reserve 0017: Shortage- phase on input 0018: Shortage- phase on output 0019: Abnormal read and write on EEPROM 001A: Enter the password more than the limit times 001B: Abnormal communication 001C: External fault 001D: Over speed deviation 001E: Fault 1 that user defined 001F: Fault 2 that user defined 0020: Lost the PID feedback on running 0021: Limit current fault of the hardware 0022: Off load 0023: Overload on the buffer resistance 0024: Abnormal contactor 0025: The agent running time is up 0026: Over temperature of the motor 0027: Present running time is up 0028: Accumulated running time is up 0029: Power-on time is up 002A: Fault on switching the motor 002B: Over speed of the motor 002C: Reserve 002D: Reserve 002E: Reserve 002F: Fault on point- to- point communication of slave machine

When it has fault on communication, the return address is: reading fault 83XX, writing fault 86XX.

Appendix B Function Parameter Table

Function Code Group	Function Description	Explanation
F0~FF	Basic function parameter group	Basic function code
H0~H3	Motor 2 parameter group	Motor 2 parameter, acceleration and deceleration time, control method, all can be set independently.
L0~L6	Enhancement function parameter group	System parameter set, custom-made user function code, optimization control, AI/AO revising, master-slave control, mechanical brake function and sleep function.
N0~NF	Professional VFD function selection group	Choose to use different professional VFD function
U0~U1	Monitoring parameter group	U0 is the fault record parameter group; U1 is the user monitoring parameter group, for the convenience to check the relevant output status.

The symbols in the function code table are described as follows:

"☆":The parameter can be modified when the AC drive is in either stop or running state.

"★":The parameter cannot be modified when the AC drive is in the running state.

"○":The parameter is factory parameter and can be set only by the manufacturer

"●":The parameter is the actually measured value and cannot be modified.

Enhancement code: group H0~group H3, group L0~group L6, are started by function code parameter F7-75.

The Shaded Part in the Function Parameter List is the Special Parameter of Synchronous Motor.

Function Code	Name	Content	Factory Value	Change	Comm. Address
Group F0: Standard Function Parameters					
F0-00	Product model	Product model: 5 digital display, 2 decimal point	80#.#	●	F000
F0-01	VFD G/P type display	0: G type 1: P type	0	●	F001
F0-02	Rated current	0.1A~3000.0A	Model dependent	●	F002

Function Code	Name	Content	Factory Value	Change	Comm. Address
F0-03	Control mode	Unit's digit: Motor control mode 1: Sensor-less vector control(SFVC) 2: Voltage/Frequency(V/F) 3: Vector control(FVC) Ten's digit: Motor type selecting (only synchronous motors can be selected above 11kW) 0: Induction motor 1: PMSM	2	★	F003
F0-04	Running command source selection	0: Operation keypad control (LED off) 1: Terminal control (LED on) 2: Communication control (LED blinking)	0	★	F004
F0-05	Base frequency for modification during running	0: Running frequency 1: Set frequency	1	★	F005
F0-06	Main frequency source X selection	0: UP/ DOWN setting (non-recorded after close down) 1: UP/ DOWN setting (retentive after power down) 2: AI1 3: AI2 4: Multi-speed 5: Simple PLC 6: PID 7: Communication setting 8: Pulse setting 9: UP/ DOWN setting(retentive after close down,non-recorded after power down)	1	★	F006
F0-07	Auxiliary frequency source Y selection	0: UP/ DOWN setting (non-recorded after close down) 1: UP/ DOWN setting (retentive after power down) 2: AI1 3: AI2 4: Multi-reference 5: Simple PLC 6: PID 7: Communication setting 8: Pulse setting 9: UP/DOWN setting (retentive after close down,non-recorded after power down)	0	★	F007

Function Code	Name	Content	Factory Value	Change	Comm. Address
F0-08	Range of auxiliary frequency Y selection	0: Relative to maximum frequency 1: Relative to main frequency X	0	☆	F008
F0-09	Range of auxiliary frequency Y	0%~100%	100%	☆	F009
F0-10	Frequency source selection	Unit digit (frequency source selection). 0: Main frequency source X. 1: X and Y operation result. 2: Switchover between X and Y (by DI terminal). 3: Switchover between X and "X and Y superposition" (by DI terminal). 4: Switchover between Y and "X and Y superposition" (by DI terminal). Ten digit :frequency source main-auxiliary arithmetic relationship 0: X+Y 1: X-Y 2: Max (X,Y) 3: Min (X,Y)	00	☆	F00A
F0-11	Preset frequency	0.00Hz~maximum frequency F0-14	50.00Hz	☆	F00B
F0-13	Rotation direction	0: Same with current motor direction 1: Reverse with current motor direction 2: Reverse forbidden	0	☆	F00D
F0-14	Maximum output frequency	50.0Hz–599.00 Hz (F0-20=2)	50.00Hz	★	F00E
F0-15	Frequency source upper limit	0: Set by F0-16 1: AI1 2: AI2 3: Communication setting 4: Pulse setting	0	★	F00F
F0-16	Frequency upper limit	Frequency lower limit (F0-18)~maximum frequency (F0-14)	50.0Hz	☆	F010
F0-17	Frequency upper limit offset	0.00 Hz~maximum frequency (F0-14)	0.00Hz	☆	F011

Function Code	Name	Content	Factory Value	Change	Comm. Address
F0-18	Frequency lower limit	0.00 Hz~frequency upper limits (F0-16)	0.00Hz	☆	F012
F0-19	Command source binding select	Unit's digit: Binding operation keypad command to frequency source. 0: No Binding 1: Digital setting 2: AI1 3: AI2 4: Multi-speed 5: Simple PLC 6: PID 7: Communication setting. 8: Pulse setting (HDI5). Ten's digit: Binding operation terminal command to frequency source. Hundred's digit: Binding operation communication command to frequency source. Thousand's digit: Reserved.	000	☆	F013
F0-20	Frequency fractional selection	1: 0.1Hz 2: 0.01Hz	2	★	F014
F0-21	Acceleration / Deceleration time unit	0: 1s 1: 0.1s 2: 0.01s	1	★	F015
F0-22	Acceleration / Deceleration time base frequency	0: Maximum frequency (F0-14) 1: Set frequency 2: Rated motor frequency	0	★	F016
F0-23	Acceleration time 1	0s~30000s (F0-21 = 0) 0.0s~3000.0s (F0-21 = 1) 0.00s~300.00s (F0-21 = 2)	10.0s	☆	F017
F0-24	Deceleration time 1	0s~30000s (F0-21 = 0) 0.0s~3000.0s (F0-21 = 1) 0.00s~300.00s (F0-21 = 2)	10.0s	☆	F018
F0-25	Over modulation voltage boost	0%~10%	3%	★	F019
F0-26	Carrier frequency	0.5kHz~16.0kHz	Model dependent	☆	F01A

Function Code	Name	Content	Factory Value	Change	Comm. Address
F0-27	Carrier frequency adjustment with temperature	0: No 1: Yes	1	☆	F01B
F0-28	Initialization parameters	0:No operation. 1: Restore factory parameters, except motor parameters, record information and F0-20. 2: Clear the record information. 3: Backup the current user parameters. 4: User parameter backup recovery. 5: Restore factory parameters, including motor parameters.	0	★	F01C
F0-29	LCD upload or download parameter selection	0: No function 1: Download parameter to LCD 2: Only upload F4 function parameters 3: Upload parameters except the F4 group 4: Upload all the parameters	0	☆	F01D
Group F1: Start/ Stop Control					
F1-00	Start mode	0: Direct start. 1: Rotational speed tracking restart. 2: Pre-excited start(asynchronous motor).	0	☆	F100
F1-01	Rotational speed tracking mode	0: From frequency at stop 1: From zero speed 2: From maximum frequency	0	★	F101
F1-02	Max current of rotational speed tracking	30%~150%	100%	★	F102
F1-03	Rotational speed tracking speed	1~100	20	☆	F103
F1-04	Startup frequency	0.00Hz~10.00Hz	0.50Hz	☆	F104
F1-05	Startup frequency holding time	0.0s~100.0s	0.0s	★	F105

Function Code	Name	Content	Factory Value	Change	Comm. Address
F1-06	Startup DC braking current/ Pre-excited current	0%~100%	0%	★	F106
F1-07	Startup DC braking time/ Pre-excited time	0.0s~100.0s	0.0s	★	F107
F1-08	Acceleration/ Deceleration mode	0: Linear Acceleration/Deceleration mode 1: S-curve Acceleration/Deceleration mode A 2: S-curve Acceleration/Deceleration mode B	0	★	F108
F1-09	Acceleration time proportion of S-curve start segment	0.0%~100.0%	20.0%	★	F109
F1-10	Deceleration time proportion of S-curve start segment	0.0%~100.0%	20.0%	★	F10A
F1-11	Acceleration time proportion of S-curve end segment	0.0%~100.0%	20.0%	★	F10B
F1-12	Deceleration time proportion of S-curve end segment	0.0%~100.0%	20.0%	★	F10C
F1-13	Stop mode	0: Decelerate to stop 1: Coast to stop	0	☆	F10D
F1-14	Initial frequency of stop DC braking	0.00Hz~maximum frequency (F0-14)	0.00Hz	☆	F10E
F1-15	Waiting time of stop DC braking	0.0s~100.0s	0.0s	☆	F10F
F1-16	Stop DC braking current	0%~100%	0%	☆	F110
F1-17	Stop DC braking time	0.0s~38.0s	0.0s	☆	F111
F1-21	Demagnetization time	0.01s~3.00s	0.50s	★	F115

Function Code	Name	Content	Factory Value	Change	Comm. Address
F1-23	Nonstop at instantaneous stop (when power fail) mode selection	0: Ineffective 1: Automatic start at power fluctuation 2: Decelerate to stop.	0	★	F117
F1-24	Deceleration time of nonstop at instantaneous stop	0.0s~100.0s	10.0s	★	F118
F1-25	Effective voltage of nonstop at instantaneous stop	60%~85%	80%	★	F119
F1-26	Recovery voltage of nonstop at instantaneous stop	85%~100%	90%	★	F11A
F1-27	Detection time of instantaneous stop nonstop recovery voltage	0.0s~300.0s	0.3s	★	F11B
F1-28	Auto-regulation gain of nonstop at instantaneous stop	0~100	40	☆	F11C
F1-29	Auto-regulation integral time of nonstop at instantaneous stop	1~100	20	☆	F11D
Group F2:V/F Control Parameters					
F2-00	V/F curve setting	0: Linear V/F. 1: Multi-point V/F. 2: Square V/F. 3: 1.8-power V/F. 4: 1.5-power V/F. 5: 1.3-power V/F. 6: Voltage and frequency complete separation. 7: Voltage and frequency half separation.	0	★	F200
F2-01	Torque boost	0.0%~30.0%	0.0%	☆	F201

Function Code	Name	Content	Factory Value	Change	Comm. Address
F2-02	Cut-off frequency of torque boost	0.00 Hz~maximum output frequency (F0-14).	25.00Hz	★	F202
F2-03	Multi-point V/F frequency 1 (F1)	0.00Hz~F2-05	1.30Hz	★	F203
F2-04	Multi-point V/F voltage 1 (V1)	0.0%~100.0%	5.2%	★	F204
F2-05	Multi-point V/F frequency 2 (F2)	F0-05~F2-07	2.50Hz	★	F205
F2-06	Multi-point V/F voltage 2 (V2)	0.0%~100.0%	8.8%	★	F206
F2-07	Multi-point V/F frequency 3 (F3)	0.00Hz~50.00Hz	15.00Hz	★	F207
F2-08	Multi-point V/F voltage 3 (V3)	0.0%~100.0%	35.0%	★	F208
F2-09	Slip compensation ratio	0.0%~200.0%	50.0%	☆	F209
F2-10	V/F magnetic flux brake gain	0~200	100	☆	F20A
F2-11	Oscillation suppression gain	0~100	Model dependent	☆	F20B
F2-13	VF slip compensation time constant	0.02s~1.00s	0.30s	☆	F20D
F2-14	Oscillation suppression mode selection	0: Oscillation suppression mode 0 1: Oscillation suppression mode 1 2: Oscillation suppression mode 2	0	☆	F20E
F2-15	Output voltage source for voltage and frequency separation	0: Digital setting (F2-16). 1: AI1 2: AI2 3: Multi-reference 4: Simple PLC 5: PID 6: Communication setting. 7: Pulse setting (DI5). 100.0% corresponds to the rated.	0	☆	F20F

Function Code	Name	Content	Factory Value	Change	Comm. Address
F2-16	Voltage digital setting for V/F separation	0V~rated motor voltage	0V	☆	F210
F2-17	Voltage rise time of V/F separation	0.0s~3000.0s	1.0s	☆	F211
F2-18	Voltage decline time of V/F separation	0.0s~3000.0s	1.0s	☆	F212
F2-19	Stop mode selection upon V/F separation	0: Frequency and voltage declining independently. 1: Frequency declining after voltage declines to 0.	0	☆	F213
Group F3:Vector Control Parameters					
F3-00	Switchover frequency 1	0.00~F3-02	5.00Hz	☆	F300
F3-02	Switchover frequency 2	F3-00~F0-14	10.00Hz	☆	F302
F3-04	Speed loop proportional gain at low frequency	0.1~10.0	4.0	☆	F304
F3-05	Speed loop integral time at low frequency	0.01s~10.00s	0.50s	☆	F305
F3-06	Speed loop proportional gain at high frequency	0.1~10.0	2.0	☆	F306
F3-07	Speed loop integral time at high frequency	0.01s~10.00s	1.00s	☆	F307
F3-08	Speed loop integral property	0: Integral take effect 1: Integral separation	0	★	F308
F3-11	Torque adjustment proportional gain Kp	0~30000	2200	☆	F30B
F3-12	Torque adjustment integral gain Ki	0~30000	1500	☆	F30C

Function Code	Name	Content	Factory Value	Change	Comm. Address
F3-13	Excitation adjustment proportional gain Kp	0~30000	2200	☆	F30D
F3-14	Excitation adjustment integral gain Ki	0~30000	1500	☆	F30E
F3-15	Flux braking gain	0~200	0	☆	F30F
F3-16	Field weakening torque correction ratio	50%~200%	100%	☆	F310
F3-17	Slip compensation gain	50%~200%	100%	☆	F311
F3-18	Speed loop feedback filter time	0.000s~1.000s	0.015s	☆	F312
F3-19	Speed loop output filter time	0.000s~1.000s	0.000s	☆	F313
F3-20	Source of power-driven torque upper limit	0: F3-21 1: AI1 2: AI2 3: Communication setting 4: Pulse setting (DI5) (Analog range corresponds toF3-21)	0	☆	F314
F3-21	Power-driven torque upper limit	0.0%~200.0%	150.0%	☆	F315
F3-22	Upper limit source of braking torque	0: F3-23 1: AI1 2: AI2 3: Communication setting 4: Pulse setting (DI5) (Analog range corresponds to F3-23)	0	☆	F316
F3-23	Braking torque upper limit	0.0%~200.0%	150.0%	☆	F317
F3-24	PMSM magnetic current at low speed	0..0%~80.0%	25.0%	★	F318

Function Code	Name	Content	Factory Value	Change	Comm. Address
F3-25	PMSM magnetic current cutoff frequency	0%~100%	10%	★	F319
F3-26	Time of Pre-excitation	0.00s~5.00s	0.1s	★	F31A
F3-27	PMSM initial position identification selecting	0: Disable 1: The first Identify ways 2: The second Identify way	1	★	F31B
Group F4: Motor 1 Parameters					
F4-00	Auto-tuning selection	0: No auto-tuning 1: Static auto-tuning 2: Complete auto-tuning	0	★	F400
F4-01	Rated motor 1 power	0.1kW~1000.0kW	Model dependent	★	F401
F4-02	Rated motor 1 voltage	1V~1500V	380V	★	F402
F4-04	Rated motor 1 current	0.01A~600.00 A (motor rated power ≤30 kW). 0.1A~6000.0 A (motor rated power >30kW).	F4-01 dependent	★	F404
F4-05	Rated motor frequency	0.01Hz~F0-14	50.00Hz	★	F405
F4-06	Rated motor 1 rotational speed	0rpm~20000rpm	F4-01 dependent	★	F406
F4-07	Motor 1 no-load current	0.01A~F4-04 A (motor rated power ≤30 kW). 0.1A~F4-04 A (motor rated power >30kW).	Model dependent	★	F407
F4-08	Motor 1 stator resistance	0.001Ω~65.535Ω	Model dependent	★	F408
F4-09	Motor 1 rotor resistance	0.001Ω~65.535Ω	Model dependent	★	F409
F4-10	Motor 1 mutual inductive	0.1mH~6553.5mH	Model dependent	★	F40A
F4-11	Motor 1 leakage inductive	0.01mH~655.35mH	Model dependent	★	F40B
F4-12	Acceleration time of complete auto-tuning	1.0s~6000.0s	10.0s	☆	F40C

Function Code	Name	Content	Factory Value	Change	Comm. Address
F4-13	Deceleration time of complete auto-tuning	1.0s~6000.0s	10.0s	☆	F40D
F4-17	PMSM stator resistance	0.001Ω~65.535Ω	Model dependent	★	F411
F4-18	PMSM d-axis inductance	0.01Mh~655.35Mh	Model dependent	★	F412
F4-19	PMSM q-axis inductance	0.01Mh~655.35Mh	Model dependent	★	F413
F4-20	PMSM BEMF	1V~65535V	Model dependent	★	F414
F4-21	PMSM no-load current	0.0%~50.0%	10.0%	★	F415
Group F5: Input Terminals					
F5-00	DI1 function selection	0: No function 1: Forward run (FWD) 2: Reverse run (REV) 3: Three-wire control 4: Forward jog (FJOG) 5: Reverse jog (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Coast to stop 9: Fault reset (RESET) 10: Run pause 11: External fault normally open input. 12: Constant speed 1 13: Constant speed 2 14: Constant speed 3 15: Constant speed 4 16: Terminal 1 for acceleration/ deceleration time selection 17: Terminal 2 for acceleration/ deceleration time selection 18: Frequency source switchover 19: UP/DOWN setting clear (terminal, keypad)	1	★	F500
F5-01	DI2 function selection		2	★	F501
F5-02	DI3function selection		9	★	F502

Function Code	Name	Content	Factory Value	Change	Comm. Address
F5-03	DI4 function selection	20: Command source switchover terminal 1 21: Acceleration/deceleration prohibited 22: PID disable (pause) 23: PLC status reset 24: Swing frequency pause 25: Timer trigger input 26: Immediate DC injection braking 27: External fault normally closed input 28: Counter input 29: Counter reset 30: Length counting input 31: Length counting reset 32: Torque control disable 33: PULSE frequency input 34: Frequency modification disable. 35: PID action direction inversion 36: External STOP terminal 1. 37: Control command switch terminal 2 38: PID integral pause terminal 39: Frequency source X / preset frequency switching terminal 40: Frequency source Y / preset frequency switching terminal 41: Motor 1/Motor 2 switching 42: Reserved 43: PID parameter switching terminal 44: Speed control/torque control switching 45: Emergency stop 46: External STOP terminal 2 47: Deceleration DC braking 48: Current running time clear 49: Two-wire / three-wire control switching 50: Reverse rotation prohibited 51: User-defined fault 1 52: User-defined fault 2 53: Sleep input	12	★	F503
F5-04	DI5 function selection		13	★	F504
F5-05	DI6 function selection		0	★	F505

Function Code	Name	Content	Factory Value	Change	Comm. Address
F5-10	DI filter time	0.000~1.000s	0.010s	☆	F50A
F5-11	Terminal command mode	0: Two-line mode 1 1: Two-line mode 2 2: Three-line mode 1 3: Three-line mode 2	0	★	F50B
F5-12	Terminal UP/DOWN rate	0.01Hz/s~100.00Hz/s	1.00Hz/s	☆	F50C
F5-13	Terminal effective mode 1	0: High level 1: Low level Unit's: DI1, Ten's:DI2, Hundred's: DI3; Kilobit:DI4; Myriabit: DI5	00000	★	F50D
F5-15	AI1 minimum input	0.00V~10.00V	0.00V	☆	F50F
F5-16	Corresponding setting of AI1 minimum input	-100.0%~100.00%	0.0%	☆	F510
F5-17	AI1 maximum input	0.00V~10.00V	10.00V	☆	F511
F5-18	Corresponding setting of AI1 maximum	-100.0%~100.00%	100.0%	☆	F512
F5-19	AI1 filter time	0.00s~10.00s	0.10s	☆	F513
F5-20	AI2 minimum input	0.00V~10.00V	0.00V	☆	F514
F5-21	Corresponding setting of AI2 minimum input	-100.0%~100.00%	0.0%	☆	F515
F5-22	AI2 maximum input	0.00V~10.00V	10.00V	☆	F516
F5-23	Corresponding setting of AI2 maximum	-100.0%~100.00%	100.0%	☆	F517
F5-24	AI2 filter time	0.00s~10.00s	0.10s	☆	F518
F5-30	Pulse minimum input	0.00KHz~100.00KHz	0.00KHz	☆	F51E
F5-31	Corresponding setting of pulse minimum input	-100.0%~100.00%	0.0%	☆	F51F
F5-32	Pulse maximum input	0.00KHz~100.00KHz	50.00KHz	☆	F520

Function Code	Name	Content	Factory Value	Change	Comm. Address
F5-33	Corresponding setting of pulse maximum input	-100.0%~100.00%	100.0%	☆	F521
F5-34	Pulse filter time	0.00s~10.00s	0.10s	☆	F522
F5-35	DI1 on delay time	0.0s~3600.0s	0.0s	☆	F523
F5-36	DI1 off delay time	0.0s~3600.0s	0.0s	☆	F524
F5-37	DI2 on delay time	0.0s~3600.0s	0.0s	☆	F525
F5-38	DI2 off delay time	0.0s~3600.0s	0.0s	☆	F526
F5-41	AI1 function selection as DI terminal	0~53 as DI terminal function.	0	★	F529
F5-42	AI2 function selection as DI terminal	0~53 as DI terminal function.	0	★	F52A
F5-44	AI effective mode selection as DI terminal	Unit's digit (AI1). 0: High level effective. 1: Low level effective. Ten's digit (AI2). 0: High level effective. 1: Low level effective. Hundred's digit: reserved	0×00	☆	F52C

Function Code	Name	Content	Factory Value	Change	Comm. Address
Group F6: Output Terminals					
F6-00	Relay 1 function	0: No output 1: VFD running single(RUN) 2: Fault output 3: Frequency level detection FDT1 reached 4: Frequency arrival(FAR) 5: Zero-speed operation 6: Motor overload pre-alarm 7: AC drive overload pre-alarm 8: PLC cycle completion 9: Cumulative running time reached 10: Frequency limiting active 11: Run ready 12: AI1>AI2 13: Upper limit frequency reached 14: Lower limit frequency reached 15: Undervoltage status output 16: Communication setting 17: Timer output 18: Reverse running 19: Reserved 20: Set length reached 21: Torque limited active 22: Current 1 reached 23: Frequency 1 reached 24: Module temperature reached 25: Load shedding active 26: Cumulative power-on time reached 27: Clocking reached output 28: Current running time reached 29: Set count value reached 30: Specified count value reached 31: Motor 1/motor 2 indication 32: Brake control output 33: Zero-speed running 2 34: Frequency level detection FDT2 output 35: Zero current status 36: Software current over limit 37: Lower limit frequency reached (output even during stop)	2	☆	F600
F6-01	Relay 2 function		1	☆	F601
F6-02	Y1 function		1	☆	F602

Function Code	Name	Content	Factory Value	Change	Comm. Address
		38: Warning output 39: Reserved 40: AI1 input over limit 41: Reserved 42: Reserved 43: Frequency arrival 2 44: Current arrival 2 45: Fault output			
F6-04	FM terminal output selection	0: Pulse output (FMP) 1: Open loop collector switch value output (FMR)	0	☆	F604
F6-05	FMR output selection	Same as Y1 output selection	0	☆	F605
F6-09	AO1 output function selection	0: Running frequency 1: Set frequency 2: Output current 3: Output power 4: Output voltage 5: Analog AI1 input 6: Analog AI2 input 7: Communication setting 8: Output torque 9: Length 10: Count value 11: Motor rotational speed 12: Output bus voltage(0~3 times of driver rated) 13: Pulse input 14: Output current 15:Output voltage(100.0% corresponds to 1000.0V) 16: Output torque (actual value: -2~2 times of the rated value)	0	☆	F609
F6-10	AO2 output function selection		0	☆	F60A
F6-11	FMP output function selection		0	☆	F60B
F6-12	FMP output max-frequency	0.01KHz~100.00KHz	50.00	☆	F60C
F6-13	AO1 minimum output	-100.0%~F6-15	0.0%	☆	F60D
F6-14	Minimum corresponds to AO1 output	0.00V~10.00V	0.00v	☆	F60E

Function Code	Name	Content	Factory Value	Change	Comm. Address
F6-15	AO1 maximum output	F6-13~100.0%	100.0%	☆	F60F
F6-16	Maximum corresponds to AO1 output	0.00V~10.00V	10.00V	☆	F610
F6-17	AO2 minimum output	-100.0%~F6-19	0.0%	☆	F611
F6-18	Minimum corresponds to AO2 output	0.00V~10.00V	0.00v	☆	F612
F6-19	AO2 maximum output	F6-17~100.0%	100.0%	☆	F613
F6-20	Maximum corresponds to AO2 output	0.00V~10.00V	10.00V	☆	F614
F6-26	Relay 1 output delay	0.0s~3600.0s	0.0s	☆	F61A
F6-27	Relay 2 output delay	0.0s~3600.0s	0.0s	☆	F61B
F6-28	Y1 high level output delay	0.0s~3600.0s	0.0s	☆	F61C
F6-29	FMR/Y2 high level output delay	0.0~3600.0S	0.0s	☆	F61D
Group F7: Auxiliary Functions and Keypad Display					
F7-00	JOG running frequency	0.00 Hz~maximum frequency	6.00Hz	☆	F700
F7-01	JOG acceleration time	0.0s~3000.0s	10.0s	☆	F701
F7-02	JOG deceleration time	0.0s~3000.0s	10.0s	☆	F702
F7-03	Acceleration time 2	0.0s~3000.0s	10.0s	☆	F703
F7-04	Deceleration time 2	0.0s~3000.0s	10.0s	☆	F704
F7-05	Acceleration time 3	0.0s~3000.0s	10.0s	☆	F705
F7-06	Deceleration time 3	0.0s~3000.0s	10.0s	☆	F706
F7-07	Acceleration time 4	0.0s~3000.0s	10.0s	☆	F707

Function Code	Name	Content	Factory Value	Change	Comm. Address
F7-08	Deceleration time 4	0.0s~3000.0s	10.0s	☆	F708
F7-09	Jump frequency 1	0.00 Hz~maximum frequency	0.00Hz	☆	F709
F7-10	Jump frequency 1 amplitude.	0.00 Hz~maximum frequency	0.00Hz	☆	F70A
F7-11	Jump frequency 2	0.00 Hz~maximum frequency	0.00Hz	☆	F70B
F7-12	Jump frequency 2 amplitude.	0.00 Hz~maximum frequency	0.00Hz	☆	F70C
F7-15	Forward/Reverse rotation dead-zone time.	0.0s~3000.0s	0.0s	☆	F70F
F7-16	Keypad knob accuracy	0: Default mode 1: 0.1Hz 2: 0.5Hz 3: 1Hz 4: 2Hz 5: 4Hz 6: 5Hz 7: 8Hz 8: 10Hz	0	☆	F710
F7-17	Running mode when set frequency lower than frequency lower limit.	0: Run at frequency lower limit 1: Stop 2: Run at zero speed	0	☆	F711
F7-18	Droop ration	0.0%~100.0%	0.0%	☆	F712
F7-19	Delay time of stopping mode when set frequency lower than frequency lower limit.	0.0s~600.0s	0.0s	☆	F713
F7-20	Setting accumulative running time.	0h~65000h	0h	☆	F714
F7-21	JOG preferred Mode	0: Invalid 1: JOG preferred Mode 1 2: JOG preferred Mode 2 1) User fault or loss of PID, point is still valid 2) Can set the stop mode and DC brake	1	☆	F715
F7-22	Frequency detection value (FDT1)	0.00 Hz~maximum frequency	50.00Hz	☆	F716

Function Code	Name	Content	Factory Value	Change	Comm. Address
F7-23	Frequency detection hysteresis (FDT hysteresis 1)	0.0%~100.0%	1.0%	☆	F717
F7-24	Detection range of frequency reached	0.0%~100.0%	1.0%	☆	F718
F7-25	Reserved		0	●	F719
F7-26	Cooling fan control	0: Fan working continuously. 1: Fan working during running. (Fan working after stopping when temperature is higher than 40℃).	1	★	F71A
F7-27	STOP/RESET key function	0: STOP/RESET key enabled only in operation keypad control. 1: STOP/RESET key enabled in any operation mode.	0	☆	F71B
F7-28	Quick/JOG function selection	0: Forward JOG. 1: Switchover between forward rotation and reverse rotation. 2: Reverse JOG. 3: Switchover between operation keypad control and remote command control.	0	★	F71C
F7-29	LED display running parameters	0000~0xffff Bit00: Running frequency 0001 Bit01: Set frequency 0002 Bit02: Bus voltage (V) 0004 Bit03: Output voltage 0008 Bit04: Output current 0010 Bit05: Output power (kW) 0020 Bit06: DI input status 0040 Bit07: DO output status 0080 Bit08: AI1 voltage (V) 0100 Bit09: AI2 voltage (V) 0200 Bit10: PID setting 0400 Bit11: PID feedback 0800 Bit12: Count value 1000 Bit13: Length value 2000 Bit14: Load speed display 4000 Bit15: PLC stage 8000	H.441F	☆	F71D

Function Code	Name	Content	Factory Value	Change	Comm. Address
F7-30	LED display stop parameters	1~0x1fff Bit00: Set frequency 0001 Bit01: Bus voltage (V) 0002 Bit02: DI input status 0004 Bit03: DO output status 0008 Bit04: AI1 voltage (V) 0010 Bit05: AI2 voltage (V) 0020 Bit06: PID setting 0040 Bit07: PID feedback 0080 Bit08: Count value 0100 Bit09: Length value 0200F Bit10:Load speed display 0400 Bit11:PLC stage 0800 Bit12: Pulse input frequency 1000 Bit13~Bit15: Reserved	H.0043	☆	F71E
F7-31	Load speed display coefficient	0.001~65.500	1.000	☆	F71F
F7-32	Temperature of VFD module	12℃~100℃	Measured value	●	F720
F7-33	Accumulative power-on time	0h~65535h	Measured value	●	F721
F7-34	Accumulative running time	0h~65535h	Measured value	●	F722
F7-36	Current running time function	0: Disable 1: Enable	0	★	F724
F7-37	Current running time source	0: Digital setting F7-38 1: AI1 2: AI2 (100% of analog input corresponds to F7-38)	0	★	F725
F7-38	Setting of current running time	0.0min~6500.0min	0.0min	☆	F726
F7-39	High level timing	0.0s~~6000.0s	2.0s	☆	F727
F7-40	Low level timing	0.0s~6000.0s	2.0s	☆	F728
F7-41	Startup protection	0: No 1: Yes	1	☆	F729
F7-43	Frequency reached detection value 1	0.00Hz~F0-14	50.00Hz	☆	F72B

Function Code	Name	Content	Factory Value	Change	Comm. Address
F7-44	Frequency reached detection duration 1	0%~100%	0%	☆	F72C
F7-45	Current detection level 1	0%~300%	100%	☆	F72D
F7-46	Current reached detection duration 1	0%~300%	0%	☆	F72E
F7-49	User code	0~65535	0	☆	F731
F7-50	Jump frequency during acceleration and deceleration	0:Disable 1:Enable	0	☆	F732
F7-51	Setting power-on reached time	0h~65530h	0h	☆	F733
F7-53	Frequency switchover point between acceleration time 1 and acceleration time 2	0.00Hz~maximum frequency(F0-14)	0.00Hz	☆	F735
F7-54	Frequency switchover point between deceleration time 1 and deceleration time 2	0.00Hz~maximum frequency(F0-14)	0.00Hz	☆	F736
F7-55	Frequency detection value (FDT2)	0.00 Hz~maximum frequency	50.00Hz	☆	F737
F7-56	Frequency detect FDT2 hysteresis value	0.0%~100.0%	1.0%	☆	F738
F7-57	Frequency reached detection value 2	0.00Hz~F0-14	50.00Hz	☆	F739
F7-58	Frequency reached detection duration 2	0%~100%	0%	☆	F73A

Function Code	Name	Content	Factory Value	Change	Comm. Address
F7-59	Zero current detection level	0%~300%	10.0%	☆	F73B
F7-60	Zero current detection delay time	0%~300%	1.0s	☆	F73C
F7-61	Current output detection amplitude	20.0%~400.0%	200.0%	☆	F73D
F7-62	Current output detection amplitude delay time	0.00s~300.00s	0.00s	☆	F73E
F7-63	Current detection level 2	20%~300%	100%	☆	F73F
F7-64	Current reached detection duration 2	0.0%~300.0%	0.0%	☆	F740
F7-65	LED display running parameters 2	0x0~0x1FF Bit00: Target torque 0001 Bit01: Output torque 0002 Bit02: Pulse input frequency (KHz) 0004 Bit03: HDI input liner speed(m/min) 0008 Bit04: Motor rotation speed0010 Bit05: AC line current 0020 Bit06: Accumulative running time(h) Bit07: The current running time(min) Bit08: Accumulative power consumption (kW/h) Bit09~Bit15: reserved	H.010	☆	F741
F7-67	AI1 input voltage lower limit	0.00V~F7-68	2.00V	☆	F743
F7-68	AI1 input voltage upper limit	F7-67~11.00V	8.00V	☆	F744
F7-69	Module temperature threshold	0°C~90°C	70°C	☆	F745

Function Code	Name	Content	Factory Value	Change	Comm. Address
F7-70	Output power correction coefficient	0.001~3.000	1.000	☆	F746
F7-71	Linear speed display coefficient	Linear speed = F-71 * HDI1 pulse number per second /Fb-07	1.000	☆	F747
F7-72	Accumulative power consumption	0kW~65535kW	Measured value	●	F748
F7-73	Performance software version		#.#	●	F749
F7-74	Function software version		#.#	●	F74A
F7-75	Improve function parameter display selecting	0:Hide improvement function parameter:H0~H3,L0~L5 1:Display improvement function parameter:H0~H3,L0~L5	0	☆	F74B
F7-76	Motor rotational display correction coefficient	0.0010~3.0000	1.0000	☆	F74C
F7-77	LCD software version	LCD software version	#.#	●	F74D
Group F8: Communication Parameters					
F8-00	Baud rate	0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS	5	☆	F800
F8-01	Data format	0: No check <8, N, 2> 1: Even parity check 2 <8, E, 1> 2: Odd parity check <8, O, 1> 3: No check1 <8, N, 1>	0	☆	F801
F8-02	Local address	0~247 (0 is broadcast address)	1	☆	F802
F8-03	Response delay	0ms~30ms	2ms	☆	F803
F8-04	Communication timeout	0.0s~30.0s	0.0s	☆	F804

Function Code	Name	Content	Factory Value	Change	Comm. Address
F8-05	Communication data format selection	0: Standard MODBUS-RTU protocol 1: Nonstandard MODBUS-RTU protocol	0	☆	F805
F8-06	Background software monitoring function	0: Prohibit, the default 485 communication function 1: Open the background software monitoring function , the 485 communication function be used at this time	0	☆	F806
Group F9: Fault and Protection					
F9-00	Motor overload protection selection.	0: Disable 1: Enable	1	☆	F900
F9-01	Motor overload protection gain.	0.02~10.00	1.00	☆	F901
F9-02	Motor overload warning coefficient.	50%~100%	80%	☆	F902
F9-03	Overvoltage stall gain	0~100	030	☆	F903
F9-04	Overvoltage stall protective voltage	200.0V~850.0V	760.0V	★	F904
F9-05	V/F overcurrent stall gain	0~100	20	☆	F905
F9-06	V/F overcurrent stall protective current	50%~200%	150%	★	F906
F9-07	VF weak magnetic current stall protection coefficient.	50%~200%	100%	★	F907
F9-08	Overvoltage stalling allowed to rise limit value	0%~50%	10%	☆	F908
F9-11	Fault auto reset times	0 to 20	0	☆	F90B
F9-12	Fault relay action selection during fault auto reset	0: Not act 1: Act	0	☆	F90C

Function Code	Name	Content	Factory Value	Change	Comm. Address
F9-13	Time interval of fault auto reset	0.1s~100.0s	1.0s	☆	F90D
F9-14	Input phase loss protection selection	0: Disable 1: Enable	1	☆	F90E
F9-15	Output phase loss protection selection	0: Disable 1: Enable	1	☆	F90F
F9-16	Short-circuit to ground upon power-on	0: Disable 1: Enable	1	☆	F910
F9-17	Undervoltage fault auto reset selection	0: Manual reset fault after the under voltage fault. 1: Auto reset fault according to the bus voltage after the fault.	0	☆	F911
F9-18	Overvoltage inhibition mode selection	0: Ineffective 1: Overvoltage inhibition mode 1 2: Overvoltage inhibition mode 2	1	★	F912
F9-19	Over excitation force state selection	0: Ineffective 1:Effective during running at constant speed or deceleration 2: Effective during running at deceleration	2	★	F913
F9-20	Threshold of over-voltage inhibition mode 2	1.0%~150.0%	100.0%	★	F914
F9-21	The VFD software overcurrent error report was enabled	0: Disable 1: Enable,when detects that the current exceeds the current and time set by F7-61 and F7-62, fault code is Err16	1	☆	F90F
F9-22	Fault protection action selection 1	0~22202 Unit's digit: Motor over load–Err14 0: Coast to stop 1: Stop according to stop mode 2: Continue to run Ten's digit: Reserved Hundred's digit: Input phase loss-Err23 Thousand's digit: Output phase loss-Err24 Ten thousand's digit: Parameter read-write fault – Err25	00000	☆	F916

Function Code	Name	Content	Factory Value	Change	Comm. Address
F9-23	Fault protection action selection 2	0~22222 Unit's digit: Communication fault – Err27 0: Coast to stop 1: Stop according to stop mode 2: Continue to run Ten's digit: External equipment fault – Err28 Hundred's digit: Too large speed deviation – Err29 Thousand's digit: User-definedfault1 – Err30 Ten thousand's digit: User-definedfault1 – Err31	00000	☆	F917
F9-24	Fault protection action selection 3	0~22022 Unit's digit: PID feedback lost during running – Err32 0: Coast to stop 1: Stop according to stop mode 2:Continue to run Ten's digit: Load becoming 0 – Err34 Hundreds place: reserved Thousands place: Current running time reached – Err39 Ten thousand's digit: Accumulative running time reached – Err40	00000	☆	F918
F9-26	Frequency selection for continuing to run upon fault	0: Current running frequency 1: Set frequency 2: Frequency upper limit 3: Frequency lower limit 4: Backup frequency(F9-27)	1	☆	F91A
F9-27	Backup frequency upon abnormality	0.0%~100.0%	100.0%	☆	F91B
F9-28	Protection upon load becoming 0	0: Disable 1: Enable	0	☆	F91C
F9-29	Detection level of load becoming 0	0.0%~80.0%	20.0%	★	F91D
F9-30	Detection time of load becoming 0	0.0s~100.0s	5.0%	☆	F91E

Function Code	Name	Content	Factory Value	Change	Comm. Address
F9-31	Detection value of too large speed deviation	0.0%~100.0%	20.0%	☆	F91F
F9-32	Detection time of too large speed deviation	0.0s~100.0s	0.0s	☆	F920
F9-33	Over-speed detection value	0.0%~100.0%	20.0%	☆	F921
F9-34	Over-speed detection time	0.0s~100.0s	2.0s	☆	F922
F9-35	Motor overload protection current coefficient	100%~200%	100%	☆	F923
Group FA: PID Function					
FA-00	PID setting source	0: Keypad 1: AI1 2: AI2 3: Communication setting 4: Pulse setting (DI5) 5: Multi-reference 6:Up/Down change FA-01(valid when F0-06=6)	0	☆	FA00
FA-01	PID digital setting	0.0%~100.0%	50.0%	☆	FA01
FA-02	PID setting change time	Response time:0.00s~650.00s	0.00s	☆	FA02
FA-03	PID feedback source	0: AI1 1: AI2 2: AI1 - AI2 3: Communication setting 4: Pulse setting (DI5) 5: AI1 + AI2 6: MAX (|AI1|,|AI2|) 7: MIN (|AI1|,|AI2|)	0	☆	FA03
FA-04	PID action direction	0: Forward action 1: Reverse action	0	☆	FA04
FA-05	PID feedback range setting	0~65535	1000	☆	FA05
FA-06	Proportional gain Kp	0.0~100.0	20.0	☆	FA06

Function Code	Name	Content	Factory Value	Change	Comm. Address
FA-07	Integral time Ti1	0.01s~10.00s	2.00s	☆	FA07
FA-08	Differential time Td1	0.000s~10.000s	0.000s	☆	FA08
FA-09	Cut-off frequency of PID reverse rotation	0.00Hz~maximum frequency(F0-14)	0.00Hz	☆	FA09
FA-10	Deviation limit	0.0%~100.0%	0.0%	☆	FA0A
FA-11	Differential limit	0.00%~100.00%	0.10%	☆	FA0B
FA-12	PID feedback filter time	0.00s~60.00s	0.00s	☆	FA0C
FA-13	Detection value of PID feedback loss	0.0%~100.0%	0.0%	☆	FA0D
FA-14	Detection time of PID feedback loss	0.0s~3600.0s	0.0s	☆	FA0E
FA-18	Proportional gain Kip2	0.0~100.0	20.0	☆	FA12
FA-19	Integral time Ti2	0.01s~10.00s	2.00s	☆	FA13
FA-20	Differential time Td2	0.000s~10.000s	0.000s	☆	FA14
FA-21	PID parameter switchover condition	0: No switchover 1: Switchover via DI 2: Automatic switchover based on deviation	0	☆	FA15
FA-22	PID parameter switchover deviation 1	0.0%~FA-23	20.0%	☆	FA16
FA-23	PID parameter switchover deviation 2	FA-22~100.0%	80.0%	☆	FA17
FA-24	PID initial value	0.0%~100.0%	0.0%	☆	FA18
FA-25	PID initial value holding time	0.00~650.00s	0.00s	☆	FA19

Function Code	Name	Content	Factory Value	Change	Comm. Address
FA-26	Maximum deviation between two PID outputs in forward direction	0.00%~100.00%	1.00%	☆	FA1A
FA-27	Maximum deviation between two PID outputs in reverse direction	0.00%~100.00%	1.00%	☆	FA1B
FA-28	PID integral property	Unit's digit: Integral separated 0: Effective 1: Ineffective Ten's digit: integral selection when output reached limit 0: Continue 1: Stop	00	☆	FA1C
FA-29	PID operation at stop	0: No PID operation at stop 1: PID operation at stop	0	☆	FA1D
Group Fb: Swing Frequency, Fixed Length and Count					
Fb-00	Swing frequency setting mode	0: Relative to the central frequency 1: Relative to the maximum frequency	0	☆	FB00
Fb-01	Swing frequency amplitude	0.0%~100.0%	0.0%	☆	FB01
Fb-02	Jump frequency amplitude	0.0%~50.0%	0.0%	☆	FB02
Fb-03	Swing frequency cycle	0.1s~3000.0s	10.0s	☆	FB03
Fb-04	Triangular wave rising time coefficient	0.1%~100.0%	50.0%	☆	FB04
Fb-05	Set length	0m~65535m	1000m	☆	FB05
Fb-06	Actual length	0m~65535m	0m	☆	FB06
Fb-07	Number of pulses per meter	0.1~6553.5	100.0	☆	FB07
Fb-08	Set count value	1~65535	1000	☆	FB08
Fb-09	Designated count value	1~65535	1000	☆	FB09

Function Code	Name	Content	Factory Value	Change	Comm. Address
Group FC: Multi-Reference and Simple PLC Function					
FC-00	Multi-segment frequency 0	-100.0%~100.0%	0.0%	☆	FC00
FC-01	Multi-segment frequency 1	-100.0%~100.0%	0.0%	☆	FC01
FC-02	Multi-segment frequency 2	-100.0%~100.0%	0.0%	☆	FC02
FC-03	Multi-segment frequency 3	-100.0%~100.0%	0.0%	☆	FC03
FC-04	Multi-segment frequency 4	-100.0%~100.0%	0.0%	☆	FC04
FC-05	Multi-segment frequency 5	-100.0%~100.0%	0.0%	☆	FC05
FC-06	Multi-segment frequency 6	-100.0%~100.0%	0.0%	☆	FC06
FC-07	Multi-segment frequency 7	-100.0%~100.0%	0.0%	☆	FC07
FC-08	Multi-segment frequency 8	-100.0%~100.0%	0.0%	☆	FC08
FC-09	Multi-segment frequency 9	-100.0%~100.0%	0.0%	☆	FC09
FC-10	Multi-segment frequency 10	-100.0%~100.0%	0.0%	☆	FC0A
FC-11	Multi-segment frequency 11	-100.0%~100.0%	0.0%	☆	FC0B
FC-12	Multi-segment frequency 12	-100.0%~100.0%	0.0%	☆	FC0C
FC-13	Multi-segment frequency 13	-100.0%~100.0%	0.0%	☆	FC0D
FC-14	Multi-segment frequency 14	-100.0%~100.0%	0.0%	☆	FC0E
FC-15	Multi-segment frequency 15	-100.0%~100.0%	0.0%	☆	FC0F
FC-16	Simple PLC running mode	0: Stop after the AC drive runs one cycle 1: Keep final values after the AC drive runs one cycle 2: Repeat after the AC drive runs one cycle	0	☆	FC10

Function Code	Name	Content	Factory Value	Change	Comm. Address
FC-17	Simple PLC retentive selection	0: Non-retentive neither at power off nor after stop. 1: Retentive at power off but non-retentive after stop. 2: Non-retentive at power off but retentive after stop. 3: Retentive at power off and after stop.	0	☆	FC11
FC-18	Running time of simple PLC reference 0	0.0~6500.0	0.0	☆	FC12
FC-19	Acceleration/ Deceleration time of simple PLC reference 0	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC13
FC-20	Running time of simple PLC reference 1	0.0~6500.0	0.0	☆	FC14
FC-21	Acceleration/ Deceleration time of simple PLC reference 1	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC15
FC-22	Running time of simple PLC reference 2	0.0~6500.0	0.0	☆	FC16
FC-23	Acceleration/ Deceleration time of simple PLC reference 2	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC17
FC-24	Running time of simple PLC reference 3	0.0~6500.0	0.0	☆	FC18
FC-25	Acceleration/ Deceleration time of simple PLC reference 3	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC19
FC-26	Running time of simple PLC reference 4	0.0~6500.0	0.0	☆	FC1A
FC-27	Acceleration/ Deceleration time of simple PLC reference 4	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC1B

Function Code	Name	Content	Factory Value	Change	Comm. Address
FC-28	Running time of simple PLC reference 5	0.0~6500.0	0.0	☆	FC1C
FC-29	Acceleration/ Deceleration time of simple PLC reference 5	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC1D
FC-30	Running time of simple PLC reference 6	0.0~6500.0	0.0	☆	FC1E
FC-31	Acceleration/ Deceleration time of simple PLC reference 6	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC1F
FC-32	Running time of simple PLC reference 7	0.0~6500.0	0.0	☆	FC20
FC-33	Acceleration/ Deceleration time of simple PLC reference 7	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC21
FC-34	Running time of simple PLC reference 8	0.0~6500.0	0.0	☆	FC22
FC-35	Acceleration/ Deceleration time of simple PLC reference 8	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC23
FC-36	Running time of simple PLC reference 9	0.0~6500.0	0.0	☆	FC24
FC-37	Acceleration/ Deceleration time of simple PLC reference 9	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC25
FC-38	Running time of simple PLC reference 10	0.0~6500.0	0.0	☆	FC26
FC-39	Acceleration/ Deceleration time of simple PLC reference 10	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC27

Function Code	Name	Content	Factory Value	Change	Comm. Address
FC-40	Running time of simple PLC reference 11	0.0~6500.0	0.0	☆	FC28
FC-41	Acceleration/ Deceleration time of simple PLC reference 11	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC29
FC-42	Running time of simple PLC reference 12	0.0~6500.0	0.0	☆	FC2A
FC-43	Acceleration/ Deceleration time of simple PLC reference 12	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC2B
FC-44	Running time of simple PLC reference 13	0.0~6500.0	0.0	☆	FC2C
FC-45	Acceleration/ Deceleration time of simple PLC reference 13	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC2D
FC-46	Running time of simple PLC reference 14	0.0~6500.0	0.0	☆	FC2E
FC-47	Acceleration/ Deceleration time of simple PLC reference 14	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC2F
FC-48	Running time of simple PLC reference 15	0.0~6500.0	0.0	☆	FC30
FC-49	Acceleration/ Deceleration time of simple PLC reference 15	0~3 (means acceleration/deceleration time 1~4 respectively)	0	☆	FC31
FC-50	Time unit of simple PLC	0: s 1: h	0	☆	FC32
FC-51	Multi-Reference priority selection	0: No 1: Yes	1	☆	FC33

Function Code	Name	Content	Factory Value	Change	Comm. Address
FC-52	Acceleration/ Deceleration time of multi-reference	0: Acceleration/Deceleration time 1 1: Acceleration/Deceleration time 2 2: Acceleration/Deceleration time 3 3: Acceleration/Deceleration time 4	0	☆	FC34
FC-53	FC - 00 - FC - 15 units selection of multi-segment speed	0: % 1: Hz	0	☆	FC35
FC-55	Reference 0 source	0: Keypad 1: AI1 2: AI2 3: Pulse setting 4: PID 5: Set by preset frequency (F0-11, modified via terminal UP/DOWN	0	☆	FC37
Group Fd: Torque Control					
Fd-00	Torque setting source in torque control	0: Keypad 1: AI1 2: AI2 3: Pulse setting 4: Communication setting 5: MAX (|AI1|, |AI2|) 6: MIN (|AI1|, |AI2|) (Full range of 1~6 corresponds to Fd-01)	0	★	FD00
Fd-01	Torque digital setting	-200.0%~200.0%	150.0%	☆	FD01
Fd-03	Forward maximum frequency in torque	0.00Hz~maximum frequency (F0-14)	50.00Hz	☆	FD03
Fd-04	Reverse maximum frequency in torque	0.00Hz~maximum frequency (F0-14)	50.00Hz	☆	FD04
Fd-06	Torque setting filter time	0.00s~10.00s	0.00s	☆	FD06
Fd-07	Acceleration time in torque control	0.0s~1000.0s	10.0s	☆	FD07

Function Code	Name	Content	Factory Value	Change	Comm. Address
Fd-08	Deceleration time in torque control	0.0s~1000.0s	10.0s	☆	FD08
Fd-10	Speed/Torque control	0: Speed control 1: Torque control	0	★	FD0A
Group FE: AI Curve Setting					
FE-00	AI curve 1 minimum input	-10.00V~FE-02	0.00V	☆	FE00
FE-01	Corresponding setting of AI curve 1 minimum input	-100.0%~100.0%	0.0%	☆	FE01
FE-02	AI curve 1 inflexion 1 input	FE-00~FE-04	3.00V	☆	FE02
FE-03	Corresponding setting of AI curve 1 inflexion 1 input	-100.0%~100.0%	30.0%	☆	FE03
FE-04	AI curve 1 inflexion 2 input	FE-02~FE-06	6.00V	☆	FE04
FE-05	Corresponding setting of AI curve 1 inflexion 2 input	-100.0%~100.0%	60.0%	☆	FE05
FE-06	AI curve 1 maximum input	FE-06~10.00V	10.00V	☆	FE06
FE-07	Corresponding setting of AI curve 1 maximum input	-100.0%~100.0%	100.0%	☆	FE07
FE-08	AI curve 2 minimum input	-10.00V~FE-10	0.00V	☆	FE08
FE-09	Corresponding setting of AI curve 2 minimum input	-100.0%~100.0%	0.0%	☆	FE09
FE-10	AI curve 2 inflexion 1 input	FE-08~FE-12	3.00V	☆	FE0A
FE-11	Corresponding setting of AI curve 2 inflexion 1 input	-100.0%~100.0%	30.0%	☆	FE0B

Function Code	Name	Content	Factory Value	Change	Comm. Address
FE-12	AI curve 2 inflexion 2 input	FE-10~FE-14	6.00V	☆	FE0C
FE-13	Corresponding setting of AI curve 2 inflexion 2 input	-100.0%~100.0%	60.0%	☆	FE0D
FE-14	AI curve 2 maximum input	FE-12~10.00V	10.00V	☆	FE0E
FE-15	Corresponding setting of AI curve 2 maximum input	-100.0%~100.0%	100.0%	☆	FE0F
FE-24	Jump point of AI1 input corresponding setting	-100.0%~100.0%	0.0%	☆	FE18
FE-25	Jump amplitude of AI1 input corresponding setting	0.0%~100.0%	0.5%	☆	FE19
FE-26	Jump point of AI2 input corresponding setting	-100.0%~100.0%	0.0%	☆	FE1A
FE-27	Jump amplitude of AI2 input corresponding setting	0.0%~100.0%	0.5%	☆	FE1B
Group FF: Factory Parameters					
FF-00	User code	0~65535	*****	☆	FF00
Group H0: Motor 2 Parameters Setting					
H0-00	Motor selection	1: Motor 1 2: Motor 2	1	★	A000
H0-01	Motor 2 control mode	1: Open loop flux vector control (Speed-sensorless vector control) 2: Voltage/Frequency (V/F) control	2	★	A001
H0-02	Motor 2 acceleration/ deceleration time	0: Same as motor 1 1: Acceleration/Deceleration time 1 2: Acceleration/Deceleration time 2 3: Acceleration/Deceleration time 3 4: Acceleration/Deceleration time 4	0	☆	A002

Function Code	Name	Content	Factory Value	Change	Comm. Address
Group H1: Motor 2 Parameters					
H1-00	Auto-tuning selection	0: No auto-tuning 1: Static auto-tuning 2: Complete auto-tuning	0	★	A100
H1-01	Rated motor 2 power	0.1kW~1000.0kW	Model dependent	★	A101
H1-02	Rated motor 3 voltage	1V~1500V	380V	★	A102
H1-04	Rated motor 2 current	0.01A~600.00 A (motor rated power ≤30 kW) 0.1A~6000.0 A (motor rated power >30 kW)	H1-01 dependent	★	A104
H1-05	Rated motor 2 frequency	0.01Hz~F0-14	50.00Hz	★	A105
H1-06	Rated motor 2 rotational speed	0rpm~20000rpm	H1-01 dependent	★	A106
H1-07	Motor 2 no-load current	0.01A~H1-04 A (motor rated power ≤30 kW) 0.1A~H1-04 A (motor rated power >30 kW)	H1-01 dependent	★	A107
H1-08	Motor 2 stator resistance	0.001Ω~65.535Ω	Model dependent	★	A108
H1-09	Motor 2 rotor resistance	0.001Ω~65.535Ω	Model dependent	★	A109
H1-10	Motor 2 mutual inductive	0.1mH~6553.5mH	Model dependent	★	A10A
H1-11	Motor 2 leakage inductive	0.01mH~655.35mH	Model dependent	★	A10B
H1-12	Acceleration time of complete auto-tuning	1.0s~600.0s	10.0s	☆	A10C
H1-13	Deceleration time of complete auto-tuning	1.0s~600.0s	10.0s	☆	A10D
Group H2: Motor 2 V/F Control Parameters					
H2-00	Torque boost	0.0%~30.0%	0.0%	☆	A200
H2-02	Oscillation suppression gain	0~100	Model dependent	☆	A202
Group H3: Motor 2 Vector Control Parameters					
H3-00	Switchover frequency 1	1.00Hz~H3-02	5.00Hz	☆	A300

Function Code	Name	Content	Factory Value	Change	Comm. Address
H3-02	Switchover frequency 2	H3-00~F0-14	10.00Hz	☆	A302
H3-04	Speed loop proportional gain at low frequency	0.1~10.0	4.0	☆	A304
H3-05	Speed loop integral time at low frequency	0.01s~10.00s	0.50s	☆	A305
H3-06	Speed loop proportional gain at high frequency	0.1~10.0	2.0	☆	A306
H3-07	Speed loop integral time at high frequency	0.01s~10.00s	1.00s	☆	A307
H3-08	Speed loop integral property	0: Integral effect 1: Integral separation	0	★	A308
H3-11	Torque adjustment proportional gain Kp	0~30000	2000	☆	A30B
H3-12	Torque adjustment integral gain Ki	0~30000	1300	☆	A30C
H3-13	Excitation adjustment proportional gain Kp	0~30000	2000	☆	A30D
H3-14	Excitation adjustment integral gain Ki	0~30000	1300	☆	A30E
H3-15	Flux braking gain	100~200	110	☆	A30F
H3-16	Field weakening torque correction ratio	50%~150%	100%	☆	A310
H3-17	Slip compensation gain	50%~200%	100%	☆	A311
H3-18	Speed loop feedback filter time	0.000s~1.000s	0.015s	☆	A312

Function Code	Name	Content	Factory Value	Change	Comm. Address
H3-19	Speed loop output filter time	0.000s~1.000s	0.000s	☆	A313
H3-20	Source of power-driven torque upper limit	0: F3-21 1: AI1 2: AI2 3: Communication setting 4: Pulse setting	0	☆	A314
H3-21	Power-driven torque upper limit	0.0%~200.0%	150.0%	☆	A315
H3-22	Source of braking torque upper limit	0: F3-23 1: AI1 2: AI2 3: Communication setting 4: Pulse setting	0	☆	A316
H3-23	Braking torque upper limit	0.0%~200.0%	150.0%	☆	A317
Group L0: System Parameters					
L0-00	Parameters only for reading	0: Disable 1: Enable	0	☆	B000
L0-01	LCD top menu setting	0x000~0xBBB Unit's digit: the first line Ten's digit: the second line Hundred's digit: the third line 0: Setting frequency 1: Running frequency 2: Bus voltage 3: Output voltage 4: Output current 5: Output power 6: PID giving 7: PID feedback 8: Load speed 9: PLC stage A: Output torque B: Motor rotation speed	0x241	☆	B001
L0-02	LCD language selection	0: Chinese 1: English	0	☆	B002

Function Code	Name	Content	Factory Value	Change	Comm. Address
L0-03	LED menu switching selection	0: Prohibition 1: Enable	0	☆	B003
L0-04	Vector running frequency display selection	0: Real-time frequency 1: Setting frequency	0	☆	B004
L0-05	UP/Down regulation display selection	0: Display the setting value 1: Display the current variable value	0	☆	B005
Group L1: User - defined Parameters					
L1-00	Clear user-defined parameters	0: Disable 1: Enable	0	☆	B100
L1-01	User-defined parameters 1	uF0-00~uU1-xx	uF0-03	☆	B101
L1-02	User-defined parameters 2	uF0-00~uU1-xx	uF0-04	☆	B102
L1-03	User-defined parameters 3	uF0-00~uU1-xx	uF0-06	☆	B103
L1-04	User-defined parameters 4	uF0-00~uU1-xx	uF0-23	☆	B104
L1-05	User-defined parameters 5	uF0-00~uU1-xx	uF0-24	☆	B105
L1-06	User-defined parameters 6	uF0-00~uU1-xx	uF4-00	☆	B106
L1-07	User-defined parameters 7	uF0-00~uU1-xx	uF4-01	☆	B107
L1-08	User-defined parameters 8	uF0-00~uU1-xx	uF4-02	☆	B108
L1-09	User-defined parameters 9	uF0-00~uU1-xx	uF4-04	☆	B109
L1-10	User-defined parameters 10	uF0-00~uU1-xx	uF4-05	☆	B10A
L1-11	User-defined parameters 11	uF0-00~uU1-xx	uF4-06	☆	B10B
L1-12	User-defined parameters 12	uF0-00~uU1-xx	uF4-12	☆	B10C
L1-13	User-defined parameters 13	uF0-00~uU1-xx	uF4-13	☆	B10D
L1-14	User-defined parameters 14	uF0-00~uU1-xx	uF5-00	☆	B10E

Function Code	Name	Content	Factory Value	Change	Comm. Address
L1-15	User-defined parameters 15	uF0-00~uU1-xx	uF5-01	☆	B10F
L1-16	User-defined parameters 16	uF0-00~uU1-xx	uF5-02	☆	B110
L1-17	User-defined parameters 17	uF0-00~uU1-xx	uF6-00	☆	B111
L1-18	User-defined parameters 18	uF0-00~uU1-xx	uF6-01	☆	B112
L1-19	User-defined parameters 19	uF0-00~uU1-xx	uF0-00	☆	B113
L1-20	User-defined parameters 20	uF0-00~uU1-xx	uF0-00	☆	B114
L1-21	User-defined parameters 21	uF0-00~uU1-xx	uF0-00	☆	B115
L1-22	User-defined parameters 22	uF0-00~uU1-xx	uF0-00	☆	B116
L1-23	User-defined parameters 23	uF0-00~uU1-xx	uF0-00	☆	B117
L1-24	User-defined parameters 24	uF0-00~uU1-xx	uF0-00	☆	B118
L1-25	User-defined parameters 25	uF0-00~uU1-xx	uF0-00	☆	B119
L1-26	User-defined parameters 26	uF0-00~uU1-xx	uF0-00	☆	B11A
L1-27	User-defined parameters 27	uF0-00~uU1-xx	uF0-00	☆	B11B
L1-28	User-defined parameters 28	uF0-00~uU1-xx	uF0-00	☆	B11C
L1-29	User-defined parameters 29	uF0-00~uU1-xx	uF0-00	☆	B11D
L1-30	User-defined parameters 30	uF0-00~uU1-xx	uF0-00	☆	B11E
L1-31	User-defined parameters 31	uF0-00~uU1-xx	uF0-00	☆	B11F
Group L2: Optimization Parameters					
L2-00	Dead zone compensation selection	0: No compensation 1: Compensation	1	☆	B200
L2-01	PWM modulation mode	0: Asynchronous modulation 1: Synchronous modulation	0	☆	B201

Function Code	Name	Content	Factory Value	Change	Comm. Address
L2-02	PWM seven phase/five phase selection	0: Seven phase in whole course 1: Seven phase/five phase auto switchover	0	☆	B202
L2-03	CBC current limit	0: Disable 1: Enable	1	☆	B203
L2-04	Braking threshold	350.0V~780.0V	360.0V 690.0V	☆	B204
L2-05	Under voltage threshold	200.0V~500.0V	200.0V 350.0V	☆	B205
L2-06	Random PWM depth	0~6	0	☆	B208
L2-07	0Hz running way	0: No current output 1: Normal operation 2: Output with DC braking current F1-16	0Hz	☆	B207
L2-08	Limitation of low frequency carrier	0: Limitation mode 0 1: Limitation mode 1 2: Unlimited (the carrier waves are in accordance in every frequency ranges)	1	☆	B208
Group L3: AI/AO Correction					
L3-00	AI1 displayed voltage 1	-9.999V~10.000V	3.000V	☆	B300
L3-01	AI1 measured voltage 1	-9.999V~10.000V	3.000V	☆	B301
L3-02	AI1 displayed voltage 2	-9.999V~10.000V	8.000V	☆	B302
L3-03	AI1 measured voltage 2	-9.999V~10.000V	8.000V	☆	B303
L3-04	AI2 displayed voltage 1	-9.999V~10.000V	3.000V	☆	B304
L3-05	AI2 measured voltage 1	-9.999V~10.000V	3.000V	☆	B305
L3-06	AI2 displayed voltage 2	-9.999V~10.000V	8.000V	☆	B306
L3-07	AI2 measured voltage 2	-9.999V~10.000V	8.000V	☆	B307
L3-12	AO1 target voltage 1	-9.999V~10.000V	3.000V	☆	B30C

Function Code	Name	Content	Factory Value	Change	Comm. Address
L3-13	AO1 measured voltage 1	-9.999V~10.000V	3.000V	☆	B30D
L3-14	AO1 target voltage 2	-9.999V~10.000V	8.000V	☆	B30E
L3-15	AO1 measured voltage 2	-9.999V~10.000V	8.000V	☆	B30F
L3-16	AO2 target voltage 1	-9.999V~10.000V	3.000V	☆	B310
L3-17	AO2 measured voltage 1	-9.999V~10.000V	3.000V	☆	B311
L3-18	AO2 target voltage 2	-9.999V~10.000V	8.000V	☆	B312
L3-19	AO2 measured voltage 2	-9.999V~10.000V	8.000V	☆	B313
Group L4: Master-slave Control Parameters					
L4-00	Master-slave control selection	0: Disable 1: Enable	0	★	B400
L4-01	Master-slave selection	0: Master 1: Slave	0	★	B401
L4-02	Master sending frequency selection	0: Running frequency 1: Target frequency	0	★	B402
L4-03	Command source selection of slave followed the master	0: Non-follow 1: Follow	0	★	B403
L4-04	Slave received frequency coefficient	0.00%~600.00%	100.00% <1>	☆	B404
L4-05	Slave received torque coefficient	-10.00~10.00	1.00	☆	B405
L4-06	Slave received torque offset	-50.00%~50.00%	0.00%	☆	B406
L4-07	Frequency offset threshold	0.20%~10.00%	0.50%	☆	B407
L4-08	Master-slave communication offline detection time	0.00s~10.00s	0.10S	☆	B408

Function Code	Name	Content	Factory Value	Change	Comm. Address
Group L5: Braking Function Parameters					
L5-00	Braking control selection	0: Disable 1: Enable	0	★	B500
L5-01	Braking loosen frequency	0.00Hz~20.00Hz	2.50Hz	★	B501
L5-02	Braking loosen frequency holding time	0.0s~20.0s	1.0s	★	B502
L5-03	Braking period current threshold	50.0%~200.0%	120.0%	★	B503
L5-04	Braking actuation frequency	0.00Hz~20.00Hz	1.50Hz	★	B504
L5-05	Braking actuation delay time	0.0s~20.0s	0.0s	★	B505
L5-06	Braking actuation frequency holding time	0.0s~20.0s	1.0s	★	B506
Group L6: Sleep Wake-up Function Parameters					
L6-00	Sleep selection	0:Sleep function ineffective 1:DI terminal control 2:PID setting and feedback control 3: Running frequency control	0	☆	B600
L6-01	Sleep frequency	0.00Hz~50.00Hz	0.00Hz <1>	☆	B601
L6-02	Sleep delay time	0.0s~3600.0s	20.0s	☆	B602
L6-03	Wake-up deviation	0.0%~100.0%	10.0%	☆	B603
L6-04	Wake-up delay time	0.0s~3600.0s	0.5s	☆	B604
L6-05	Dormant delay time Frequency output selection	0:PID auto-adjustment 1: Dormant frequency L6-01	0	☆	B605

Function Code	Parameter Name		Min. Unit	Change	Comm. Address
Group U0: Error Recording Parameters					
U0-00	Latest fault type	00: No fault Err01: VFD unit protection Err04: Overcurrent during acceleration Err05: Overcurrent during deceleration Err06: Over current at constant speed Err08: Overvoltage during acceleration Err09: Overvoltage during deceleration Err10: Overvoltage at constant speed Err12: Under voltage Err13: Drive overload Err14: Motor overload Err15: Drive overheat Err17: Current detection fault Err20: Short circuit to ground Err23: Power input phase loss Err24: Power output phase loss Err25: EEPROM read-write fault Err27: Communication fault Err28: External equipment fault Err29: Too large speed deviation Err30: User-definedfault1 Err31: User-definedfault2 Err32: PID feedback lost during running Err33: Fast current limit fault Err34: Load becoming 0 Err35: Control power supply fault Err36: Function board communication failure Err37: Control power supply fault Err39: Current running time reached Err40: Accumulative running time reached Err42: Motor switchover fault during running Err44:DSP board communication failure Err46: Master slave control communication disconnection	1	●	7000
U0-01	Previous fault type		1	●	7001
U0-02	Second to-last fault type		1	●	7002

Function Code	Parameter Name	Min. Unit	Change	Comm. Address
U0-03	Frequency upon the latest fault	0.01Hz	●	7003
U0-04	Current upon the latest fault	0.01A	●	7004
U0-05	Bus voltage upon the latest fault	0.1V	●	7005
U0-06	DI status upon the latest fault	1	●	7006
U0-07	Output terminal status upon the latest fault	1	●	7007
U0-08	AC drive status upon the latest fault	1	●	7008
U0-09	Power-on time upon the latest fault	1min	●	7009
U0-10	Running time upon the latest fault	1min	●	700A
U0-13	Frequency upon the previous fault	0.01Hz	●	700D
U0-14	Current upon the previous fault	0.01A	●	700E
U0-15	Bus voltage upon the previous fault	0.1V	●	700F
U0-16	DI status upon the previous fault	1	●	7010
U0-17	Output terminal status upon the previous fault	1	●	7011
U0-18	AC drive status upon the previous fault	1	●	7012
U0-19	Power-on time upon the previous fault	1min	●	7013
U0-20	Running time upon the previous fault	1min	●	7014
U0-21	Reserved variable		●	7015
U0-22	Reserved variable		●	7016
U0-23	Frequency upon the second to-last fault fault	0.01Hz	●	7017
U0-24	Current upon the second to-last fault	0.01A	●	7018
U0-25	Bus voltage upon the second to-last fault	0.1V	●	7019
U0-26	DI status upon the second to-last fault	1	●	701A
U0-27	Output terminal status upon the second to-last fault	1	●	701B
U0-28	AC drive status upon the second to-last fault	1	●	701V
U0-29	Power-on time upon the second to-last fault	1min	●	701D
U0-30	Running time upon the second to-last fault	1min	●	701E
Group U1: Application Monitoring Parameters				
U1-00	Running frequency	0.01Hz	●	7100
U1-01	Setting frequency	0.01Hz	●	7101
U1-02	Bus voltage	0.1V	●	7102
U1-03	Output voltage	1v	●	7103
U1-04	Output current	0.1A	●	7104
U1-05	Output power	0.1kW	●	7105

Function Code	Parameter Name	Min. Unit	Change	Comm. Address
U1-06	DI input status, hexadecimal	1	●	7106
U1-07	DO output status, hexadecimal	1	●	7107
U1-08	AI1 voltage after correction	0.01V	●	7108
U1-09	AI2 voltage after correction	0.01V	●	7109
U1-10	PID setting, PID setting (percentage)×FA-05	1	●	710A
U1-11	PID feedback, PID feedback (percentage)×FA-05	1	●	710B
U1-12	Count value	1	●	710C
U1-13	Length value	1	●	710D
U1-14	Motor speed	1rpm	●	710E
U1-15	PLC stage, current segment when multi-segment speed is running	1	●	710F
U1-16	Input pulse frequency	0.01kHz	●	7110
U1-17	Feedback speed, actual operating frequency of motor	0.1Hz	●	7111
U1-18	Remaining running time of F7-38 setting	0.1min	●	7112
U1-19	AI1 voltage before correction	0.001v	●	7113
U1-20	AI2 voltage before correction	0.001v	●	7114
U1-21	HDI5 high speed pulse sampling linear speed, refer to F7-71	1m/min	●	7115
U1-22	Load speed display (set the load speed during shutdown), refer to F7-31	user-defined	●	7116
U1-23	Current power-on time	1min	●	7117
U1-24	Current running time	0.1min	●	7118
U1-25	Pulse input frequency,U1-16 is just different in units	1Hz	●	7119
U1-26	Communication setting value	0.01%	●	711A
U1-27	Main frequency X	0.01Hz	●	711B
U1-28	Auxiliary frequency Y	0.01Hz	●	711C
U1-29	Target torque, motor rated torque is 100%	0.1%	●	711D
U1-30	Output torque, motor rated torque is 100%	0.1%	●	711E
U1-31	Output torque, VFD rated current is 100%	0.1%	●	711F
U1-32	Torque upper limit, VFD rated current is 100%	0.1%	●	7120
U1-33	Target voltage upon V/F separation	1V	●	7121
U1-34	Output voltage upon V/F separation	1V	●	7122
U1-35	Reserved		●	7123
U1-36	Current motor number	1	●	7124
U1-37	AO1 target voltage	0.01V	●	7125

Function Code	Parameter Name	Min. Unit	Change	Comm. Address
U1-38	AO2 target voltage	0.01V	●	7126
U1-39	AC drive running status: 0: Stop 1: Forward 2: Reverse 3: Fault	1	●	7127
U1-40	AC drive current fault	1	●	7128
U1-41	Agent remaining limited time	1h	●	7129
U1-42	AC input current	0.1A	●	712A
U1-43	PLC current stage remaining time	0.1	●	712B
U1-47	Accumulative running time 1 (Accumulative running time=U1-47+U1-48)	1h	●	712F
U1-48	Accumulative running time 2 (Accumulative running time=U1-47+U1-48)	1min	●	7130

Appendix C Version Change Record

Date	New Version	Changed Contents
2020.10	V1.0	This is the first edition
2020.12	V1.1	1) Added “Modbus Communication Protocol”; 2) Optimization of wiring diagram and control terminal diagram; 3) Corrected the size of 22kW 4) Added the version change history
2021.12	V1.2	1) Added Function board communication failure-Err36 and DSP board communication failure -Err44 . 2) Added special parameters of synchronous motor: F3-24~F3-28, F4-17~F4-21
2023.6	V1.3	Add 30kW~75kW data
2024.10	V1.4	Added technical parameters for 3S5R5B, and corrected some parameters.
2025.12	V1.5	1) Added P-type unit and improved CM800S synchronous machine product information; 2) Changed product naming and model to a unified G_P naming convention; 3) Improved technical specifications, such as overload capacity, protection level, and terminal configuration for P-type units; 4) Power expanded to 400kW, 55~75kW structural shape and dimensions changed; 5) 30~45kW structure changed to riveted structure, appearance changed, dimensions unchanged; 6) Keyboard bracket dimensions changed; 7) Added braking unit and DC reactor selection instructions, product's built-in braking unit expanded to 132kW; Function code parameter F0-01 range changed to 0~1, change method changed from “●” to “★”.

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