INVERTER ZVF11-M/S Series
User's Manual

Foreword

● Thank you for your purchase of the ZVF11-M/S Series inverter

● This manual introduces the installation, operation, function setting, troubleshooting and etc. of the inverter ZVF11-M/S series.

● Incorrect installation or use may result in damage or other accidents. Do read all instructions in detail before installing or operating.

● Please forward this manual to the end user, and keep it handy for quick reference.

● If there are any doubts or questions, please contact the Technical Service Center of the Company.

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Chapter 1 Safety Instructions

1.1 Safety Symbols and Definitions

The safety instructions described in this manual are very important. To avoid any error that may result in damage to equipment, injury to personnel or loss of property, do read and clearly understand all of the safety symbols, symbol definitions and be sure to observe the indicated safety instructions below.

Safety Symbols	Symbol Definitions
HAZARD	This symbol indicates hazardous HIGH VOLTAGE. Any incorrect operation may result in serious damage to the equipment or death to personnel.
WARNING	This symbol indicates that any incorrect operation can result in damage to the equipment or minor to moderate injury to personnel.
CAUTION	This symbol calls your attention to follow the instructions while in operation or in use.
TIP	This symbol calls your attention to some useful messages for the user.

HAZARD

- Do not touch the circuit board or the parts when the power or the charge indicator is still on.
- Do not perform the work of wiring or inspecting the parts or signal of the circuit board unless the power supply is completely off.
- Do not dismount or change the connecting wires, circuits or parts inside the inverter by yourself.
- Do connect the inverter's earth terminal to the ground properly and tightly.

WARNING

- Do not perform withstand voltage test on the internal parts of the inverter because semiconduction parts can be easily damaged by the voltage.
- Do not connect the output terminal U, V or W of the inverter to the terminal L or N of AC power supply.
- Do not touch the main circuit board of the inverter because its CMOS and IC are vulnerable to static damage.

1.2 Cautions for Use

Before power transmission

WARNING

- Be sure the power supply and voltage selected should be equivalent to the input voltage of the inverter.

WARNING

- Be sure to install the inverter on metallic or other inflammable materials to avoid fire.
- Be sure to install a fan if several inverters are put in one cabinet, so that the temperature inside the cabinet is always below 40℃, thus overheat or fire can be prevented.
- Be sure not to dismount or install the operation panel and avoid failure or no display of the panel due to loose contact.

During power transmission

HAZARD

- DO NOT insert or pull the connecting lines of the inverter to avoid damage of the control panel caused by surge that enters the panel.

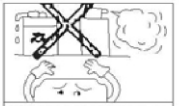
During operation

HAZARD

- DO NOT insert or isolate the motor during operation. Otherwise, it may cause overcurrent protection or even result in burnout of the main circuit of the inverter.
- KEEP CLEAR to avoid danger if self-priming (automatic start) is set which can restart automatically after the motor stops.
- DO NOT remove the terminal cover to prevent possible electric shock and injuries.

1.3 Cautions for Operating Ambient


direct exposure to sunlight

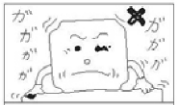

corrosive gas or liquid


oil or gas


Salt


high humidity (>90%) caused by rain or water drop


iron filings or powder


high vibration


extreme cold

Heat


EMI, ultrahigh pressure (i.e., electric welding line)


radioactive substances


inflammable substances

Chapter 2 Introduction to the Product and Installation

2.1 Unpacking and Inspection upon Arrival

This product is guaranteed a high level of quality with strict outgoing inspection, crush proof and shock proof packaging. But this does not preclude damage to the product due to heavy collision or strong extrusion. So it is necessary to unpack the inverter upon arrival and perform these steps:

①Check whether there is a deformed or damaged casing; or any shattered component.

②Check the nameplate of the inverter and make sure it matches the product part number you've ordered.

If there is any problem with the above-mentioned contents, please contact with the supplier or manufacturer immediately.

2.2 Demonstration of the Model

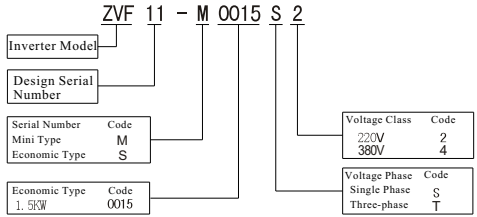


Figure 2-1 Inverter Model Demonstration

2.3 Demonstration of the Nameplate

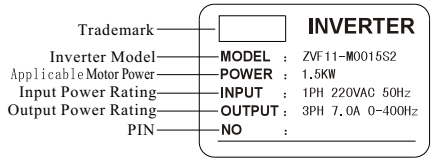


Figure 2-2 Specifications Label

2.4 Specifications and Technical Indications

Input VoltageClass			220V			
ZVF11-M/S_ _ _			0004S2	0075S2	0015S2	0022S2
Applicable Motor Power (KW)			0.4	0.75	1.5	2.2
Output	Output Current(A)		2.3	4.5	7.5	10.0
	Maximum Output Voltage(V)		Corresponding Three-phase Input Voltage			
	Range of Output Frequency(Hz)		0.01～400.00Hz			
Input	Range of Input Voltage		160～240V			
	Range of Input Power Frequency		50±5%Hz			
Control Characteristics	Control Mode		SAPWM Space Vector Control			
	Frequency Resolution		Figure Setting: 0.01Hz Analog Setting: Maximum Frequency*0.1%			
	Torque Characteristics		Adjustable from 0% to20%.			
	Overload Capacity		150% of the rated outputcurrent per minute			
	Acceleration/Deceleration time		Adjustable from 0.1 to999.9.			
	V/F Curve		Linear/ Quadratic			
Running Characteristics	Frequency Setting Signal	Panel Control	Set by the key▲▼ or the potentiometer on thepanel.			
		External Signal	Terminal 0~10V, 4~20mA, 0~10KHz, UP/DOWN, 485 COM etc.			
	Operation Setting Signal	Panel Control	Set by the keyRUN or STOP.			
		External Signal	External FWD, REV and JOGoperation, PLC operation and COM operation.			
	Multi-function Input Signal		Multi phase speed, counter, programrun, VI/CI shifting and etc.			
	Multi-function Output Signal		Failiure,running,counter arrival,frequency arrival program running			
	Analog Output Signal		Running frequency,output voltage , current,motor rotation			
Other Functions			AVR, overvoltage andcurrent stall prevention, no reversal andetc.			
Protecting Functions			Overvoltage, overcurrent, undervoltage, overload, overheat, short circuit protection and etc.			
Cooling Mode			Forced air cooling			
Ambient	Points of Use		Altitude < 1000m, indoor places without corrosive gas, liquid and etc.)			
	External Environment		Temperature: -10~+45℃; Humidity < 90%RH withoutcondensing			
	Vibration		< 0.5G			

2.5 Installation and Wiring

2.5.1 Operating Environment:

The Inverter mounting ambient have direct effect on the function and lifetime of inverter, So the ambient have to reach the followingsituation:
Altitude: Maximum 1000m above sea level
Ambient Temperature: -10~+45℃ [Bare Machine: -10~+50℃]
Humidity: 20~90% RH(Non-condensing)
Ambient: Indoor places free from direct exposure to sunlight, dust, corrosive gas, flammable gas, oil mist, steam, drip and salt.
Vibration: <0.5G

2.5.2 Installation Space and Direction

To get better cooling effect and for the convenience of maintenance, the inverter shall be installed vertically with enough space left (refer to Fig.2-3). When two or more inverters are fixed in the same cabinet, it is recommended to fix them in parallel and horizontally to reduce heat produced by them (refer to Fig.2-4). When there is a must to fix them up and down, please fix an insulating board between them so that the heat produced by the lower one could not have direct influence on the upper one (refer to Fig.2-5).

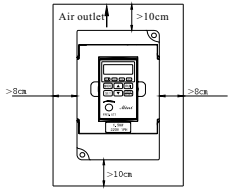


Fig.2-3 Diagram of Installation Space

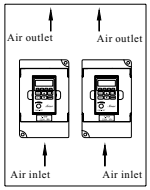


Fig.2-4 Diagram of Multi-piece Parallel Installation

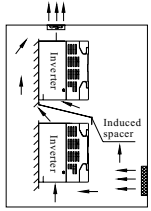


Fig.2-5 Diagram of Multi-piece Vertical Installation

WARNING

- Be sure the main loopterminals should be connected tothe cable tightly.Otherwise, the inverter may be damaged arisingfrom loose connection.
- Be sure the ground terminalsof the inverter and themotor must be properly grounded. Multi-piece inverter should be groundedat one shared point.
- Be sure to install anon-fuse circuit breaker or leakageprotective circuit breaker in the inverter's input port toprevent expanding of accident due to inverter problem.

2.5.3 Inverter's Standard WiringDiagram

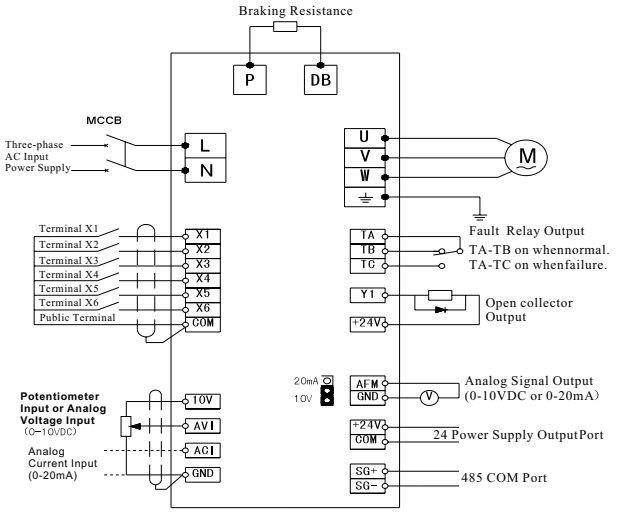


Fig. 2-6 Basic SystemDescription on Wiring

2.5.4 Instructions for Main Circuit Terminals

1、Diagram of Main CircuitTerminals

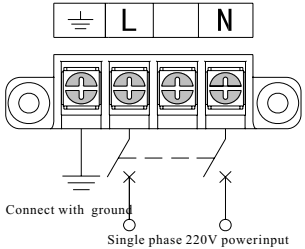


Fig.2-7 Input Terminals

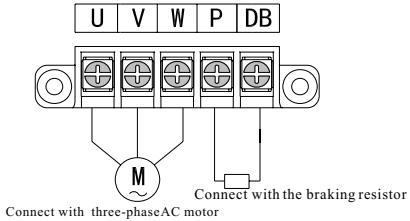


Fig.2-8 Output Terminals

2、Description on Main Circuit Terminals

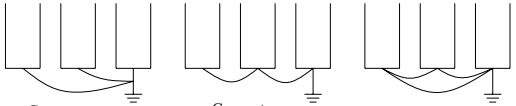
Terminal Symbol	Function Description
L、N	Power input terminals connecting tosingle-phase 220V ACpower supply
U、V、W	Inverter output terminals connectingto three-phase ACmotor
P、DB	External braking resistance terminals connectingto both ends of theexternal braking resistor.
⏚ G	Ground terminal or ground wire.

Tips

• The input power terminals donot differ on phasesequence and can be connectedarbitrarily.
• If the motor counter rotates(reverses) when the output terminalsU, V andW connect to three-phase motor, just exchangetwo phases of U,V and Warbitrarily.

WARNING

• The inverter's ground lead cannot connect to the groundtogether with other heavy current load, but connect tothe ground separately.The shorter of theground line is ,the better is.
• The ground terminal is requiredto have a tight groundcontact to avoid electric shockor fire and reduce noise. Donot form a loop ifseveral inverters connect to theground together. Refer to the figure below



WARNING

• The diameter of the ground line must conform to the state standards.

• Make sure the excellent connection, Please use the terminal with insulating pipe to connect the terminal with lead.
• After wiring is finished, check carefully if there is any foreign matter come into the inverter. Confirm all the connection lines are proper without any missing or wrong connection. Be sure there is no short circuit between terminals and connection lines, or short circuit to earth.

2.5.5 Description of Control Circuit Terminals

1、Diagram of Control Circuit Terminals

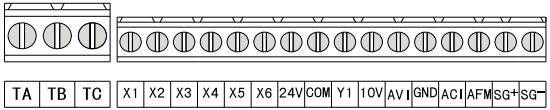


Fig.2-9 Control Terminals

2、Description of Control Circuit Terminals

Types	Terminal Symbols	Function Description	Electrical Specifications
Public Port	COM	Numeral Signal Public Terminal	
Multi-function Input Terminal	X1	Valid only when there is a short-circuit between Xn (n=1, 2, 3, 4,5, 6) and COM. The functions can be setby parameter F3.00~F3.05 separately.	INPUT, 0~24V power level, low level valid, 5mA
	X2		
	X3		
	X4		
	X5		
	X6		
Power Supply	24V	24VDC Power Output(Control Power)	24VCD/100mA
Multi-function Output Terminal	Y1	Multi-function open-collector output is defined as on-off output terminal, whose function is set by theparameter F3.09 with reference ofCOM	OUTPUT Maximm load current≤50mA
Public Port	GND	Analog Signal Public Terminal	
Analog Input Terminal	10V	External analog preset power supply	OUTPUT，10VDC Voltage
	AVI	Analog voltage signal input, with referenceof GND.	INPUT，0∽10VDC Voltage
	ACI	Analog current signal input, with reference of GND	INPUT，0∽20mA DC Current
Analog Output Terminal	AFM	Analog voltage currentoutput with reference of GND.	OUTPUT，0∽10V（0∽20mA）

Types	Terminal Symbols	Function Description	Electrical Specifications
Multi-function Relay Output Terminal	TA	Set by the parameterF3.08. Normal: TA-TB closed Failure: TA-TC closed	Contact capacity: NO 250VAC/5A NC 250VAC/3A
	TB		
	TC		
COM Terminal	SG+	Communication Signal Positive Terminal	
	SG-	Communication Signal Negative Terminal	

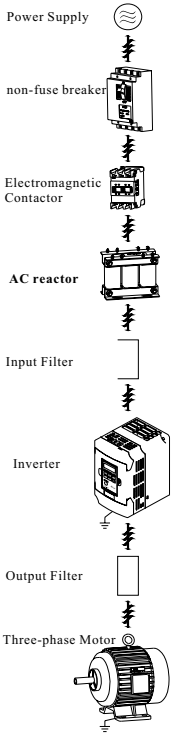
Tips

• The connecting wire of controlcircuit must be STP(shielded twisted pair wire) which should be separated from themain circuit and strong currentcircuit. If the connecting wireof the control circuit had topass through the main circuitand other control wires, theymust intersect at an angle of90o.
• The control circuit is liableto external interferences. So thelength of the wire shouldbe short as possible. Usually, it can not exceed30m. When used foranalog voltage, current or potentiometer input, the wire shouldnot exceed 20m in length.
• To avoid loosecontact, a tight contact isrecommended when taking a jointas input.
• To remove malfunctionof surge voltage onthe inverter's control circuit andperipheral equipment, a surge absorbershould be installed to connecttwo ends of the magneticcoil that has generated surge voltage.
• The diameter of the controlcircuit wire is recommended tobe 0.75mm^2.

2.5.6 Schedule of Matching ElectricalProducts

Model ZVF11	Maximum Applicable Motor （KW）	Main Circuit Diameter mm^2	Circuit Breaker (A)	Contactor (A)
-M/S0004S2	0.4	2.5	10	10
-M/S0007S2	0.75	2.5	10	10
-M/S0015S2	1.5	4.0	16	16
-M/S0022S2	2.2	4.0	20	25

2.5.6 Diagram of Wiringfor Inverter System &Cautions for Wiring



Power Supply:
• Be sure the voltageclass is proper toavoid damage tothe inverter.
• A non-fuse breakermust be installed betweenthe AC power supply and the inverter.

non-fuse breaker
• Be sure to usea non-fuse breaker whichmatches the rated voltage and current ofthe inverter. Itis used as anOn/Off switch between the inverterand the power supply, and a protector for the inverter.
• Do not use thenon-fuse breaker to startor stop the inverter.

Electromagnetic Contactor
• A contactor isnot used generally.But it must be installed when certain functions, i.e., externalcontrol, restart are performed.
• Do not use the electromagneticcontactor to start or stopthe inverter.

AC reactor
• When large capacity power supply (>600KVA) is used, an extra AC reactor can be installed to improve the power.

Input Filter
• An input filter should bemounted if there isinductive load around the inverter.

Inverter
• The power can be connectedto the terminal L or N arbitrarily.
• The output port can beconnected to the terminal U,V and W. If themotor reverses when theinverter forwards, just exchange two phases of U,V and W arbitrarily.
• Do not connect output terminalto AC powersupply. Otherwise, it may cause damageto the inverter.
• The ground terminal should beproperly grounded.

Chapter 3 Instructions for use of the product and specification for parameters

3.1 Specification for Operation Panel

3.1.1 Operation Panel Outlay

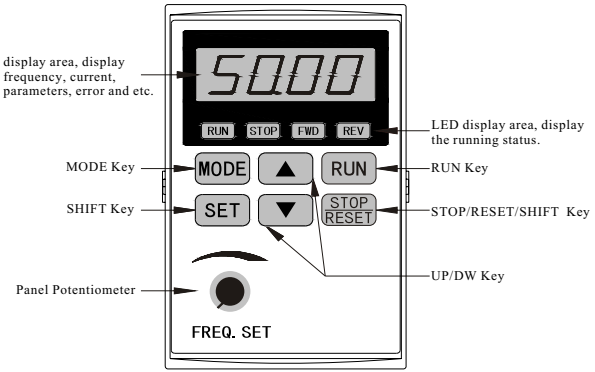


Fig.3-1 Diagram for ZVF11-M/S Operation Panel

Chapter 3 Instructions for use of the product and specification for parameters

3.1.1 Description on Keys

Symbol	Key Name	Function Description
MODE	Mode key.	Press this key to enter intothe function programming mode. Once parameters are modified, press this keyto exit the function programming mode.
SET	Confirm key.	In the state of programming, pressthis key to confirm the functioncode. After parameters are modified, press thiskey to save modified data. Inan operation or hold mode, press thiskey to shift the displaying content,such as output frequency,current ,revolution.
▲	Up key.	In the state of programming, thefunction code and parameter value will go up by pressing this key In an operation or holdmode, press this key to increase the operation frequency.
▼	Down key.	In the state of programming,Pressingthis key, the functioncodes and parameter value will go down. Inan operation or hold mode, pressthis key to decrease the operation frequency
RUN	Run key.	Pressing this key, theinverter begins to run. If "F0.02"is set to "External Terminal Control", then itis invalid to press this key
STOP RESET	Stop/Reset key.	Press this key to stop theinverter. If "F0.02" is setto "External Terminal Control", then it is invalid topress this key. Whenfailure alarm occurs, press this key to reset thesystem. In the state of programming,press this key to realize data traverse.

3.1.2 Description on LED IndicatorLights

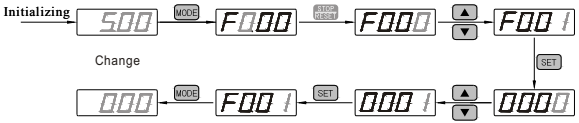
LED Symbol	Name	Description
RUN	Run Indicator	This Light turns ONwhen the inverter runs.
STOP	Stop Indicator	This Light turns ONwhen the inverter stops.
FWD	Forward Indicator	This Light turns ONwhen the inverter forwards.
REV	Reverse Indicator	This Light turns ONwhen the inverter reverses.

Tips

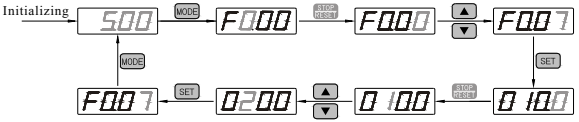
The LED displays -VF-when the inverter isenergized.
• In the operation orhold mode, pressing▲▼, the frequency valuecan be modified when it is set byUp/Down key▲▼ on the panel (F0.01=1).
• In the operation orhold mode, pressing SET ,the display can shiftto the output frequency, current, rotatingspeed and etc
• In the state ofoperation, the stop functionof STOP RESET key is priorto the reset function, i.e., to modifya parameter when theinverter is in operation,pressing this key,the inverter will stop running.(Note: The operation modeis set to "PanelControl".)

3.1.2 Use of the Operation Panel

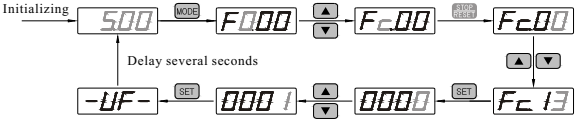
1、Change the frequency set mode from ▲▼ control to external voltage (0~10V) control.



2、Change the acceletion time from 10.0s to 20.0s.



3、Restore all the parameters to Factory Default Settings



Notes

- 0 indicates the data tube flickers; 0 indicates the tube doesn't flicker.
- To modify parameters when the inverter is in operation, the inverter will stop running when pressing the STOP RESET key. (Note: The operation mode is set to "Panel Control".)
- To modify parameters when the inverter is in operation, please pay attention to the modification right because some parameters can not be modified in the operation mode.
- If parameters cannot be modified in the hold mode, please check whether the parameters are locked or not(Fc.12=1).

3.2 List of Function Parameters

F0 series Basic Parameters

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F0.00	Keyboard setting frequency	0.0～400.0Hz	0.1Hz	5.0Hz	
F0.01	Frequency setting mode	0: Keyboard or terminal settingby pressing UP/DOWN 1: Keyboard potentiometer setting 2: External analog voltage setting 3: External analog current setting 4: Combined multi-stage speed setting 5: External terminal high/low speed setting (AVI) 6: External impulse input setting 7: PID setting 8: 485 COM setting 9: Terminal AVI/ACI setting	1	1	
F0.02	Operation command selection	0: Keyboard control 1: Terminal control 2: Multi-stage speed control 3: External analog voltage input control 4: External analog current input control 5: 485 COM control	1	0	
F0.03	Stop mode	0: Free stop 1: Decelerated stop	1	1	
F0.04	Basic frequency	40.0-400.0Hz	0.1Hz	50.0Hz	
F0.05	upper limiting frequency	0.0-400.0Hz	0.1Hz	50.0Hz	
F0.06	lower limiting frequency	0.0-400.0Hz	0.1Hz	0.0Hz	
F0.07	Acceleration time	0.1-999.9s	0.1s	10.0s	
F0.08	Deceleration time	0.1-999.9s	0.1s	10.0s	
F0.09	Starting frequency	0.0-40.0Hz	0.1Hz	0.5Hz	
F0.10	Starting holding time	0.0-60.0s	0.1s	0.0s	
F0.11	Shutdown frequenc	0.0-40.0Hz	0.1Hz	0.0Hz	
F0.12	Frequency fine tuning	0.00-0.09Hz	0.01Hz	0.00Hz	

F0 series Basic Parameters(Continued)

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F0.13	Jog frequency	0.5-400.0Hz	0.1Hz	5.0Hz	
F0.14	Jog acceleration time	0.1-999.9s	0.1s	10.0s	
F0.15	Jog Deceleration time	0.1-999.9s	0.1s	10.0s	

F1 series Control Parameters(Continued)

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F1.00	FWD/REV command selection	0: No reversing 1: Keyboard selection 2: External terminal selection 3: 485 COM selection	1	0	
F1.01	Keyboard operating direction	0: Forward 1: Reverse	1	0	
F1.02	FWD/REV shifting time	0.0-60.0s	0.1s	0.0s	
F1.03	V/F curve setting	0: Linear type (constant torqueload) 1: Square type (fan, pump) 2: Polygonal type (F1.04, F1.05)	1	0	
F1.04	IF setting	10.0Hz-40.0Hz (Valid whenF1.03=2)	0.1Hz	30.0Hz	
F1.05	IF output voltage setting	20.0Hz-100.0% (Valid whenF1.03=2)	0.1%	60.0%	
F1.06	Acceleration S curve setting	0-7 (Validwhen acceleration time<10s)	1	0	
F1.07	Deceleration S curve setting	0-7 (Validwhen deceleration time<10s)	1	0	
F1.08	Leap frequency range	0.0-10.0Hz	0.1Hz	0.0Hz	
F1.09	1st leap frequency	0.0-400.0Hz	0.1Hz	0.0Hz	
F1.10	2nd leap frequency	0.0-400.0Hz	0.1Hz	0.0Hz	
F1.11	3rd leap frequency	0.0-400.0Hz	0.1Hz	0.0Hz	
F1.12	Carrier frequency	1000-9999Hz	1Hz	5000Hz	

F1 series Control Parameters(Continued)

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F1.13	Torque lifting	0.0-20.0%	0.1%	8.0%	
F1.14	Output voltage regulating	50%-100%	1%	100%	

F2 series Braking andBraking Displaying Parameters

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F2.00	Starting DC braking time	0.0-100.0s	0.1s	0.0s	
F2.01	Starting DC braking voltage	0-100V	1V	20V	
F2.02	Shutdown DC braking time	0.0-100.0s	0.1s	0.0s	
F2.03	Shutdown DC braking voltage	0-100V	1V	20V	
F2.04	Braking enable	0: Invalid 1: Valid	1	1	
F2.05	Braking inception voltage coefficient	100%-170%	1%	140%	
F2.06	Braking termination retard coefficient	0%-20%	1%	5%	
F2.07	Display mode 1	0: Frequency display 5: Count input value 1: Output current 6: AVI feedback value 2: Input voltage 7: ACI feedback value 3: Output voltage 8: PID setting value 4: Motor rotating speed 9: PID feedback value	1	0	
F2.08	Display mode 2			1	
F2.09	Display mode 3			2	

F3 Series Multi-function portparameters

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F3.00	Terminal X1 function selection	0: Invalid 1: Combined multi-stage speed 1 2: Combined multi-stage speed 2	1	1	
F3.01	Terminal X2 function selection			2	

F3 Series Multi-function portparameters (Continued)

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F3.02	Terminal X3 function selection	3: Combined multi-stage speed 3 4: Combined accelerating/decelerating time 1 5: Combined accelerating/decelerating time 2 6: Forward operation (FWD) 7: Reverse operation (REV) 8: RUN 9: Running direction selection (forward or reverse) 10: JOG forward 11: JOG reverse 12: Reset (RST) 13: Counter reset 14: Counter Up input 15: Counter Down input 16: External impulse input 17: Pulse enable 18: Frequency increasing (UP) 19: Frequency decreasing (DOWN) 20: External fault 21: PLC pulse start 22: PLC pulse stop 23: Three-wire FWD control 24: Three-wire REV control 25: Three-wire NO shutdown control 26: Three-wire NC shutdown control 27: External free shutdown input 28: External decelerated shutdown input 29: Analog frequencycommand selection (AVI/ACI) 30: Terminal high/lowspeed selection	1	3	
F3.03	Terminal X4 function selection			6	
F3.04	Terminal X5 function selection			7	
F3.05	Terminal X6 function selection			12	
F3.06	Output target frequency setting	0.2–400.0Hz	0.1Hz	50.0Hz	
F3.07	Frequency detection range	0.0–50.0Hz	0.1Hz	0.0Hz	

F3 Series Multi-function portparameters (Continued)

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F3.08	Relay function selection	0: Invalid 1: Fault output 2: Targetfrequency arrived 3: Set frequency arrived 4: Operation output 5: Counter arrived 6: upper limiting frequency arrived 7: lower limiting frequency arrived 8: Program operating indication	1	0	
F3.09	Y1 function selection			0	

F4 Series Multi-stage SpeedParameters

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F4.00	Multi-stage speed 1	0.0–400.0Hz	0.1Hz	10.0Hz	
F4.01	Multi-stage speed 2	0.0–400.0Hz	0.1Hz	20.0Hz	
F4.02	Multi-stage speed 3	0.0–400.0Hz	0.1Hz	30.0Hz	
F4.03	Multi-stage speed 4	0.0–400.0Hz	0.1Hz	40.0Hz	
F4.04	Multi-stage speed 5	0.0–400.0Hz	0.1Hz	50.0Hz	
F4.05	Multi-stage speed 6	0.0–400.0Hz	0.1Hz	60.0Hz	
F4.06	Multi-stage speed 7	0.0–400.0Hz	0.1Hz	70.0Hz	
F4.07	1st accelerating time	0.1–999.0s	0.1s	10.0s	
F4.08	1st decelerating time	0.1–999.0s	0.1s	10.0s	
F4.09	2nd accelerating time	0.1–999.0s	0.1s	10.0s	
F4.10	2nd decelerating time	0.1–999.0s	0.1s	10.0s	
F4.11	3rd accelerating time	0.1–999.0s	0.1s	10.0s	

F4 Series Multi-stage SpeedParameters

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F4.12	3rd decelerating time	0.1-999.0s	0.1s	10.0s	
F4.13	4th accelerating time	0.1-999.0s	0.1s	10.0s	
F4.14	4th decelerating time	0.1-999.0s	0.1s	10.0s	
F4.15	Acceleration/Deceleration source selection	0: Keyboard setting 1: Terminal selection	1	0	

F5 Series Protection FunctionParameters

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F5.00	Undervoltage protection	0: Disabled 1: Enabled	1	1	
F5.01	Undervoltage Protection Voltage Proportion	50%-100%	1%	60%	
F5.02	Over-voltage protection Function	0: Disabled 1: Enabled	1	1	
F5.03	Over-voltage protection voltage proportion	100%-150%	1%	135%	
F5.04	Over-voltage stall function	0: Disabled 1: Enabled	1	1	
F5.05	Over-voltage stall voltage proportion	100%-150%	1%	125%	
F5.06	Over-current stall function	0: Disabled 1: Enabled	1	1	
F5.07	Stall current proportion	100%-150%	1%	150%	
F5.08	Overload protection	0: Disabled 1: Enabled	1	1	
F5.09	Overload current proportion	10%-200%	1%	150%	
F5.10	Overload protection time	0-120s	1s	60.0s	
F5.11	Overheat function	0: Disabled 1: Enabled	1	1	
F5.12	OP trip function	0: Disabled 1: Enabled	1	0	

F6 series Communication andFault Parameters

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F6.00	485 COM Mode	0: 8-N-1, 8-bit data, 1 bit stop, no parity RTU 1: 8-E-1, 8-bit data, 1 bit stop, even parity RTU 2: 8-0-1, 8-bit data, 1 bit stop, odd parity RTU 3: 8-N-2, 8-bit data, 2-bit stop, no parity, RTU 4: 8-E-2, 8-bit data, 2-bit stop, even parity, RTU 5: 8-0-1, 8-bit data, 2-bits stop, odd parity, RTU 6: 7-N-1, 8-bit data, 1-bit stop, no parity, ASCII 7: 7-E-1, 8-bit data, 1-bit stop, even parity, ASCII 8: 7-0-1, 8-bit data, 1-bit stop, odd parity, ASCII 9: 7-N-2, 8-bit data, 2-bit stop, no parity, ASCII 10: 7-E-2, 8-bit data, 2-bit stop, even parity, ASCII 11: 7-0-2, 8-bit data, 2-bit stop, odd parity, ASCII 12: 8-N-1, 8-bit data, 1-bit stop, no parity, ASCII 13: 8-E-1, 8-bit data, 1-bit stop, even parity, ASCII 14: 8-0-1, 8-bit data, 1-bit stop, odd parity, ASCII 15: 8-N-2, 8-bit data, 2-bit stop, no parity, ASCII 16: 8-E-2, 8-bit data, 2-bit stop, even parity, ASCII 17: 8-0-2, 8-bit data, 2-bit stop, odd parity, ASCII	1	0	

F6 series Communication andFault Parameters (Continued)

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F6.01	485 COM baud rate selection	0: 1200bps 3: 9600bps 1: 2400bps 4: 19200bps 2: 4800bps 5: 38400bps	1	0	
F6.02	485 COM local address	1-127	1	1	
F6.03	Communication error report	0: Disabled 1: Enabled	1	0	
F6.04	Error-recoverable times	0-5	1	0	
F6.05	Error recovering time	5-600s	1s	60s	
F6.06	Last error type	0-14	1	For search	
F6.07	Next-to-last error type	0-14	1	For search	
F6.08	Antepenultimate error type	0-14	1	For search	

F7 Series PID FunctionParameters

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F7.00	PID setting source selection	0: Keyboard set, AVI feedback 1: Keyboard set, ACIfeedback 2: Keyboard potentiometer set, AVI feedback 3: Keyboard potentiometer set, ACI feedback 4: AVIset, ACI feedback 5: ACI set, AVI feedback	1	0	
F7.01	PID digital set	00.0-100.0	0.1	50.0	
F7.02	PID upper limiting frequency	10.0-400.0	0.1Hz	50.0Hz	
F7.03	PID lower limiting frequency	10.0-400.0	0.1Hz	10.0Hz	

F7 Series PID FunctionParameters (Continued)

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F7.04	PID feedback selection	0: Positive feedback 1: Negative feedback	1	0	
F7.05	Proportional gain Kp	00.0-100.0	0.1	1.0	
F7.06	Integral time Ki	0.0-100.0s	0.1s	0.0s	
F7.07	Differential time Kd	0.0-100.0s	0.1s	0.0s	
F7.08	PID tolerance range	0.0-20.0%	0.1%	1.0%	
F7.09	PID detection time	0.1-60.0s	0.1s	1.0s	
F7.10	Sleep time	0.0-60.0s	0.1s	0.0s	
F7.11	Frequency wake-up threshold	1.0-100.0Hz	0.1Hz	10.0Hz	
F7.12	Encoder speed setting	1-9999	1	2400	
F7.13	Encoder impulse times per week	1-2000	1	1024	
F7.14	Reserved function				

F8 Series AnalogInput/Output Parameters

Function Code	Name	Range of setting	Minimum Unit	Factory Default Setting	Note
F8.00	Maximum voltage value for analog voltage input	0.0-10.0V	0.1V	10.0V	
F8.01	Minimal voltage value for analog voltage input	0.0-10.0V	0.1V	0.5V	
F8.02	Frequency that corresponds to the maximum voltage for analog input	0.0-400.0Hz	0.1Hz	50.0Hz	
F8.03	Frequency that corresponds to the minimal voltage for analog input	0.0-400.0Hz	0.1Hz	0.0Hz	
F8.04	Maximum current value for analog current input	0.0-20.0mA	0.1mA	20.0mA	
F8.05	Minimal current value for analog current input	0.0-20.0mA	0.1mA	4.0mA	