



| User's manual |

ZVF510 series vector inverter



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Ziri Electrical Technology Co., Ltd.

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ZVF510 series Simple user manual

1.Preamble

Thank you for using ZVF510 series inverter. The inverter uses high quality components, materials and fusion

Manufactured with the latest control technology.

This manual provides users with precautions related to installation, parameter setting, abnormal diagnosis, and troubleshooting.

In order to ensure the correct installation and operation of the frequency inverter, please read this simple manual carefully before installation, and keep it properly and give it to the user of the machine. For more detailed instructions, please refer to the relevant download from the company's website.

Special attention should be paid to the following:

- The implementation of wiring, be sure to turn off the power supply.
- The electronic components inside the frequency inverter are particularly sensitive to static electricity, so do not put foreign bodies into the frequency inverter or touch the main circuit board.
- After cutting off the AC power supply, the frequency inverter digital operator indicator light is not off, indicating that there is still a high voltage inside the frequency inverter is very dangerous, do not touch the internal circuit and parts.
- The inverter grounding terminal must be properly grounded.
- Never connect the output terminals U, V and W of the converter to the AC power supply.

2. Product introduction

2.1 Arrival inspection

This product has an excellent quality assurance system, and has been strictly inspected before leaving the factory, and anti-collision, shock-proof packaging processing, but it cannot be ruled out that the product in the process of transportation by strong collision or extrusion, resulting in damage to the product, so please immediately open the box when the product arrives to check and confirm the following matters:

- ①Whether the product shell is damaged and deformed, and whether the components are damaged and fall off;
- ②Check the nameplate of the converter to confirm that the product is consistent with your order requirements;
- ③Whether the items listed in the packing list are complete;

If you find any problem with the above content, please contact the supplier or our company immediately.

2.2 Product description

1、Model description

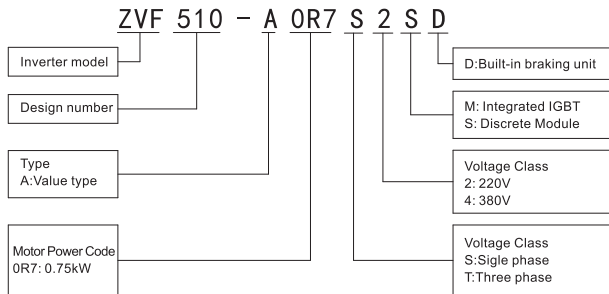


Figure 2-1 Frequency inverter models

2、Nameplate description

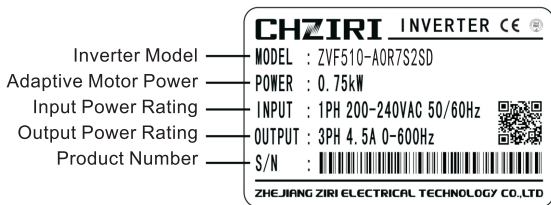


Figure 2-2 Inverter nameplate

3、Model style



Figure 2-3 Plastic shell wall mounted

2.3 Model and specification

Table 2-1 Frequency inverter model specification

Inverter Model (A: Economy Type)	Input Voltage (V)	Rated Output Current (A)	Adaptive motor Power (kW)
ZVF510-A0R4S2/T2	200-240	2.4	0.4
ZVF510-A0R7S2/T2	200-240	4.5	0.75
ZVF510-A1R5S2/T2	200-240	7.0	1.5
ZVF510-A2R2S2/T2	200-240	10	2.2
ZVF510-A3R0S2/T2	200-240	11	3.0
ZVF510-A4R0T2	200-240	16	4.0
ZVF510-A5R5T2	200-240	20	5.5
ZVF510-A0R7T4	360-440	2.1	0.75
ZVF510-A1R5T4	360-440	3.7	1.5
ZVF510-A2R2T4	360-440	5.0	2.2
ZVF510-A3R0T4	360-440	7.0	3.0
ZVF510-A4R0T4	360-440	9.0	4.0
ZVF510-A5R5T4	360-440	13	5.5
ZVF510-A7R5T4	360-440	17	7.5
ZVF510-A011T4	360-440	25	11

2.4 Technical Indications

Table 2-2 Description Summary for Technical Indications

Item		Item Description
Input	Rated voltage & Frequency	Single-phase/3 Phase 200-240VAC, 3 Phase 360-440VAC, 50/60Hz
	Allowable voltage working range	Voltage fluctuation range: $\pm 10\%$ Voltage unbalance rate: $< 3\%$, Frequency fluctuation: $\leq 5\%$
Output	Rated voltage	3 Phase 0 ~ Input voltage VAC
	Frequency	0.0 ~ 600Hz
	Overload capacity	110% long-term, 150% 1minute, 180 % 5 seconds
Control your performance	Control mode	V/F control, Simple vector control, Advanced vector control, Torque control
	Frequency resolution	Digital setting : 0.1Hz Analog setting: Maximum frequency $\times 0.1\%$
	Frequency accuracy	Digital setting : 0.1Hz Analog setting: within 0.2% of the maximum output frequency
	V/F Voltage frequency characteristic	Three modes: the first is a linear torque characteristic curve, the second is a square torque characteristic curve, and the third is a user-set V/F curve.
	Automatic limit current and limit voltage	No matter in the process of acceleration, deceleration or stable operation, it will automatically detect the motor stator current and voltage, and suppress it within the allowable range according to the unique algorithm, minimizing the possibility of system fault tripping.
	Vector voltage-frequency characteristics	Automatically adjust output voltage-frequency ratio according to motor parameters and unique algorithm
	Torque characteristics	Starting torque : 100% rated torque at 5.0Hz (VF control) 150% rated torque at 1.0Hz (vector control)
	Current and voltage suppression	Full current closed-loop control, completely avoid current impact, with perfect overcurrent and overvoltage suppression function

Table 2-2 Description Summary for Technical Indications(continued)

Item		Item Description
Control your performance	Undervoltage suppression during operation	Especially for users with low grid voltage and frequent grid voltage fluctuations, even if the voltage is lower than the allowable range, the system can maintain the longest possible running time according to the unique algorithm and residual energy allocation strategy
	Slip compensation	Setting range: 0~100%, can automatically adjust the output frequency of the inverter according to the motor load, and reduce the rotation speed change of the motor caused by the load change
	Carrier frequency	2.0 ~ 20.0KHz
	Automatic voltage regulation operation	Dynamic voltage stabilization, static voltage stabilization, and no voltage stabilization can be selected according to the need to obtain the most stable operation effect.
	Built-in PID	It can easily constitute a closed-loop control system, suitable for process control such as pressure control and flow control
Running	Acceleration and deceleration time	0.1 ~ 999.9s Continuous can be set
	Running command	Operation panel control, external terminal control, serial communication control
	Frequency setting	Panel potentiometer setting, panel ▲▼ key setting, external control terminal increase/decrease setting, analog voltage or current signal setting, terminal combination setting, serial communication setting, etc.
	Output signal	One programmable relay output, one analog output
Brake	Energy braking	Energy braking initial start voltage, return voltage and energy braking rate are continuously adjustable
	DC braking	Start and stop can be selected separately, action frequency 0.0~upper limit frequency, action current level 0~50%, action time 0~30s, continuous can be set

Table 2-2 Description Summary for Technical Indications(continued)

Item		Item Description
Other functions		Frequency upper and lower limit, reverse running limit, jog function, counter, skip frequency operation, instantaneous power failure restart, fault automatic reset, etc.
Protection function		Overcurrent, overload, overvoltage, undervoltage, overheating, short circuit, etc.
LED Display		Can display the real-time of inverter running status, monitoring parameters, function parameters, fault codes and other information
Optional Parts		Brake components, remote operation panel and connecting cable
Environment	Place of use	Indoors, free from direct sunlight, dust, corrosive gas, flammable and explosive gas, oil mist, water vapor, dripping water or salt
	Altitude	less than 1000 meters
	Ambient temperature	-10 ~ +45°C [bare metal as -10 ~ +50°C]
	Humidity	20 ~ 90%RH , no condensation
	Vibration	< 0.5G
	Storage temperature	-20°C ~ +60°C
Structure	Degree of protection	IP20
	Cooling method	Forced air cooling
	Installation method	Wall-mounted, rail-mounted

3. Wiring

3.1 Basic Wiring Diagram of Inverter

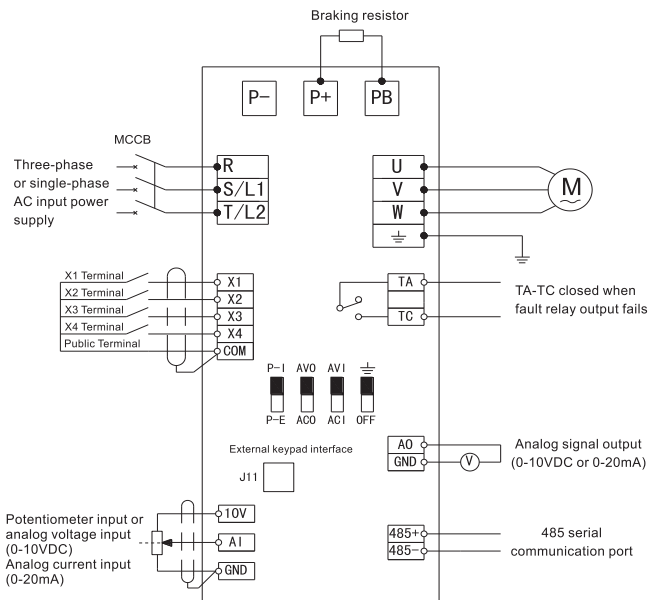


Table 3-1 Basic Wiring Diagram



TIP

- The signal mode of AI, AO, external keyboard potentiometer and ground can be selected through the DIP switch, see Table 3-2 for details

3.2 Main terminal description

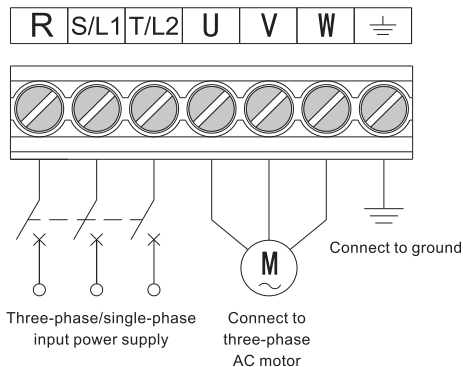


Table 3-2 Main circuit terminal diagram 1
 Applicable models: ZVF510-A0R4S2/T2~A2R2S2/T2
 ZVF510-A0R7T4~A3R0T4

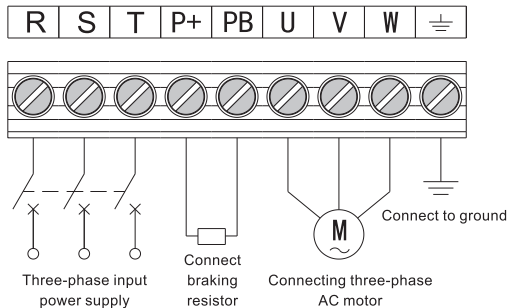


Table 3-3 Main circuit terminal diagram 2
 Applicable models: ZVF510-A3R0S2/T2~A5R5T2
 ZVF510-A4R0T4~A011T4

3.3 Description of control terminals

1、Control circuit terminals are shown in Figure 3-4

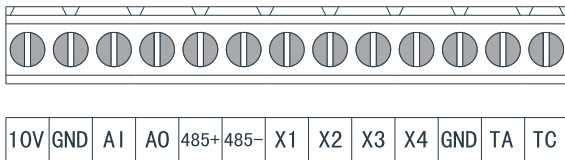


Table 3-4 Control circuit terminal

2、Description of control circuit terminals

Table 3-1 Control circuit terminal function description

Category	Terminal label	Function Description	Electrical Specifications
Analog power terminal	10V	External analog given power supply, and GND, AI terminals connected to potentiometers, frequency setting can be performed	OUTPUT, 10V/10mA DC voltage
Public end	GND	Signal common terminal	
Analog input terminal	AI	Analog voltage signal input, reference ground is GND	INPUT, 0~10V DC voltage
Analog output terminal	AO	Programmable analog voltage output, the function is set by parameter F2.10, the reference ground is GND	OUTPUT, 0~10V DC voltage Or 0~20mA DC current
communication terminal	485+	Positive end of communication signal	
	485-	Communication signal negative terminal	

Table 3-1 Control circuit terminal function description (continued)

Category	Terminal label	Function Description	Electrical Specifications
Multi-function input terminal	X1	It is valid when Xn (n=1, 2, 3, 4) - GND is short-circuited, and its functions are respectively set by parameters F2.13 ~ F2.16	INPUT, 0~5V level signal, Active low, 5mA
	X2		
	X3		
	X4		
Program mable output terminals	TA	Relay contact output, Normal: TA-TC disconnected; When in action: TA-TC is closed;	Contact Rating: NO: 240VAC-3A
	TC	The function is set by parameter F2.20	

Table 3-2 Description of DIP switch

J1	
 G	Indicates that the main control board is grounded
OFF	Indicates that the ground of the main control board is disconnected
J2	
AVO	Indicates analog AO output voltage signal, 0-10V
ACO	Indicates analog AO output current signal, 0-20mA
J4	
P-I	Indicates that the built-in keyboard potentiometer is selected
P-E	Indicates the selection of an external keyboard potentiometer
J5	
AVI	Indicates analog AI input voltage signal, 0-10V
ACI	Indicates the analog AI input current signal, 0-20mA

4. Operation panel and operation

4.1 Operation Panel Diagram

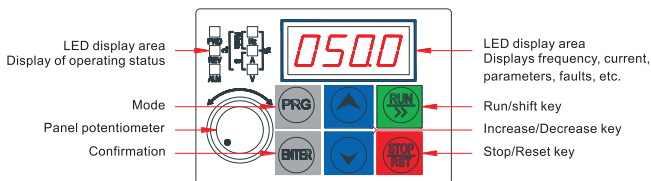
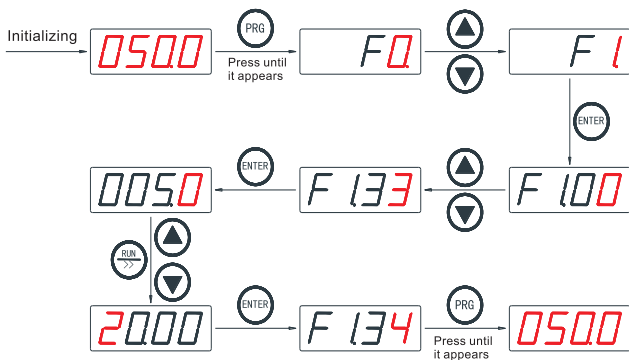


Figure 4-1 Schematic diagram of E-510A panel

4.2 Use of the operation panel

Change of function code parameter value (change the parameter value of F1.33 acceleration time 2 from 5.0s to 20.0s)



5. List of function parameters



TIP

- “√” means that the setting value of this parameter can be changed when the inverter is in stop or running state.
- “x” means that the setting value of this parameter can be changed when the inverter is in stop state, but cannot be changed in running state.
- “-” indicates that the parameter can only be displayed and cannot be changed.

5.1.1 F0 Basic Function Group

Code	Name	Parameter Description	Factory default	Change
F0.00	Function macro definition	0: Common Mode 1: Single pump constant pressure water supply mode 2~3: Reserved 4: Engraving machine mode 5~10: Reserved	0	x
F0.01	Motor control method	0: VF Control 1: Advanced VF Control 2: Simple vector control 3: Reserved 4: Reserved	0	x
F0.02	Run command channel selection	0: Panel run command channel 1: Terminal run command channel 2: Communication run command channel	0	√

5.1.1 F0 Basic function group (continued)

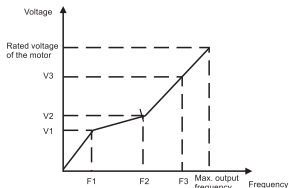
Code	Name	Parameter Description	Factory default	Change
F0.03	Frequency command selection	0: Panel potentiometer 1: Digital given 1, adjusted by ▲, ▼ keys on the operation panel 2: Digital given 2, terminal UP/DOWN adjustment 3: AI Analog given (0~10V/0~20mA) 4: Combination given 5: Reserve 6: Communication given 7: Reserve Note: When combined reference is selected, the combined reference method is in F1.15 choose.	0	√
F0.04	Maximum Output Frequency	Setting range: F0.05~999.9Hz The maximum output frequency is the highest frequency that the inverter allows to output, and it is the benchmark for acceleration and deceleration settings.	50.0Hz	×
F0.05	Running frequency upper limit	Setting range: F0.06~F0.04 The operating frequency cannot exceed this frequency	50.0Hz	×
F0.06	Running frequency lower limit	Setting range: 0.0~F0.05 The running frequency cannot be lower than this frequency	0.0Hz	×
F0.07	Lower limit frequency arrival processing	0: Zero speed running 1: Run at lower frequency limit 2: Shutdown	0	×
F0.08	Running frequency digital setting	Setting range: 0.0~F0.05 The set value is the initial value given by frequency digital	10.0Hz	√

5.1.1 F0 Basic function group (continued)

Code	Name	Parameter Description	Factory default	Change
F0.09	Digital frequency control	LED bits: power-down storage 0: Store 1: No storage LED ten bits: Stop holding 0: Hold 1: No hold LED hundred bits: UP/DOWN negative frequency adjustment 0: Invalid 1: Effective LED thousand bits: PID, PLC frequency superposition selection 0: Invalid 1: F0.03+PID 2: F0.03+PLC	0000	√
F0.10	Acceleration time	Setting range: 0.1~999.9s The required time to accelerate from zero frequency to the maximum output frequency.	Model Settings	√
F0.11	Deceleration time	Setting range: 0.1~999.9s Time required to decelerate from maximum output frequency to zero frequency	Model Settings	√
F0.12	Running direction setting	0: Forward 1: Reverse 2: Prohibited reverse	0	√
F0.13	V/F Curve setting	0: linear curve 1: Square curve 2: Multi-point VF curve	0	×
F0.14	Torque boost	Setting Range: 0.0~30.0% Manual torque boost, the setting is the percentage relative to the rated voltage of the motor	Model Settings	√

5.1.1 F0 Basic function group (continued)

Code	Name	Parameter Description	Factory default	Change
F0.15	Torque boost cut-off frequency	Setting range: 0.0~50.0Hz This setting is the boost cut-off frequency point during manual torque boost	15.0Hz	×
F0.16	Carrier frequency setting	Setting range: 2.0~16.0KHz For occasions that require silent operation, the carrier frequency can be appropriately increased to meet the requirements, but increasing the carrier frequency will increase the heat generated by the inverter.	Model Settings	×
F0.17	V/F frequency value F1	F0.17 Setting range: 0.1~F0.18. F0.18 Setting range: 0.0~F0.20 F0.19 Setting range: F0.17~F0.21 F0.20 Setting range: F0.18~F0.22 F0.21 Setting range: F0.19~F4.03(Motor rated frequency) F0.22 Setting range: F0.20~100.0%(Motor rated voltage)	12.50Hz	×
F0.18	V/F Voltage value V1		25.00%	×
F0.19	V/F Frequency value F2		25.00Hz	×
F0.20	V/F Voltage value V2		50.00%	×
F0.21	V/F Frequency value F3		37.50Hz	×
F0.22	V/F Voltage value V3		75.00%	×
F0.23	User password	Setting range: 0~9999 If you set any non-zero number, you need to wait for 3 minutes or power off to take effect.	0	√



5.1.1 F0 Basic function group (continued)

Code	Name	Parameter Description	Factory default	Change
F0.24	Frequency display resolution selection	0: 0.1Hz 1: 1Hz Note: To set this parameter, be sure to check the maximum output frequency (F0.04), the upper frequency limit (F0.05), the rated frequency of the motor (F4.03) and other parameters related to frequency.	0	√

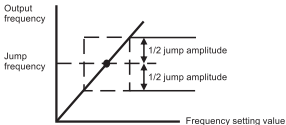
5.1.2 F1 Start-stop control group

Code	Name	Parameter Description	Factory default	Change
F1.00	Starting method	LED unit digits: Starting mode 0: Starting from starting frequency 1: DC braking first and then starting from the starting frequency 2: Reserved LED ten digits: power failure or abnormal restart mode 0: Invalid 1: Start from starting frequency LED hundreds digits: reserved LED thousand digits: reserved	--00	×
F1.01	Starting frequency	F1.01 Setting range: 0.0~50.0Hz F1.02 Setting range: 0.0~50.0% (Motor rated voltage) F1.03 Setting range: 0.0~30.0s	1.0Hz	√
F1.02	Starting DC braking voltage		0.0%	√
F1.03	Starting DC braking time		0.0s	√

5.1.2 F1 Start-stop control group (continued)

Code	Name	Parameter Description	Factory default	Change
F1.04	Stop mode selection	0: Deceleration stop 1: Free stop	0	×
F1.05	Start of DC braking at stop frequency	F1.05 Setting range: 0.00~F0.05 F1.06 Setting range: 0.0~50.0% (Motor rated voltage) F1.07 Setting range: 0.0~30.0s F1.08 Setting range: 0.00~99.99s	0.0Hz	√
F1.06	Stop DC braking voltage		0.0%	√
F1.07	Stop DC braking time		0.0s	×
F1.08	Stop DC brake waiting time		0.00s	×
F1.09	Forward jog running frequency	Setting range: 0.0~50.0Hz Set jog forward and reverse frequency	10.0Hz	√
F1.10	Reverse jog running frequency			
F1.11	Jog running acceleration time	Setting range: 0.1~999.9s Set jog acceleration and deceleration time	Model Settings	√
F1.12	Jog running deceleration time			

5.1.2 F1 Start-stop control group (continued)

Code	Name	Parameter Description	Factory default	Change
F1.13	Jump frequency	F1.13 Setting range: 0.00~F0.05 F1.14 Setting range: 0.0~10.0Hz By setting the jump frequency and range, the inverter can avoid the mechanical resonance point of the load.	0.0Hz	√
F1.14	Jump frequency amplitude		0.0Hz	√
F1.15	Frequency combination given mode	0: Potentiometer + digital frequency 1 1: Potentiometer + digital frequency 2 2: Potentiometer+AI 3: Digital Frequency 1+AI 4: Digital Frequency 2+AI 5: Digital frequency 1+ multi-speed 6: Digital frequency 2+ multi-speed 7: Potentiometer + multi-speed 8: AI+PLC (superposition) 9: Reserve	0	×

5.1.2 F1 Start-stop control group (continued)

Code	Name	Parameter Description	Factory default	Change
F1.16	Programmable operation control (simple PLC operation)	LED bits: PLC enable control 0: Invalid 1: valid LED ten bits: operation mode selection 0: Single cycle 1: Continuous cycle 2: Hold the final value after single cycle LED hundred bit: Starting method after interruption 0: Restarting from the first stage 1: Starting from the stage at the moment of stop 2: Start from the stage and frequency of the stopping moment LED thousands bit: Power-down storage option 0: No storage 1: Store	0000	×
F1.17	Multi-speed frequency 1	Setting range: -F0.05~F0.05 Set the frequency and running direction of each multi-stage speed, negative value means reverse running	5.0Hz	√
F1.18	Multi-speed frequency 2		10.0Hz	√
F1.19	Multi-speed frequency 3		15.0Hz	√
F1.20	Multi-speed frequency 4		20.0Hz	√
F1.21	Multi-speed frequency 5		25.0Hz	√

5.1.2 F1 start-stop control group (continued)

Code	Name	Parameter Description	Factory default	Change
F1.22	Multi-speed frequency 6	Setting range: -F0.05~F0.05 Set the frequency and running direction of each multi-stage speed, negative value means reverse running,	37.5Hz	√
F1.23	Multi-speed frequency 7		50.0Hz	√
F1.24	Stage 1 run time	Setting range: 0.0~999.9s (the unit is selected by F1.35) Set the running time of each multi-speed	10.0s	√
F1.25	Stage 2 run time		10.0s	√
F1.26	Stage 3 run time		10.0s	√
F1.27	Stage 4 run time		10.0s	√
F1.28	Stage 5 run time		10.0s	√
F1.29	Stage 6 run time		10.0s	√
F1.30	Stage 7 run time		10.0s	√
F1.31	Stage acceleration and deceleration time selection 1	LED bits: stage 1 acceleration and deceleration time 0 ~ 1 LED ten bits: stage 2 acceleration and deceleration time 0 ~ 1 LED hundred bits: stage 3 acceleration/deceleration time 0~1 LED thousand digits: stage 4 acceleration/deceleration time 0~ 1	0000	√

5.1.2 F1 start-stop control group (continued)

Code	Name	Parameter Description	Factory default	Change
F1.32	Stage acceleration and deceleration time selection 2	LED bits: stage 5 acceleration and deceleration time 0 to 1 LED ten bits: stage 6 acceleration and deceleration time 0 to 1 LED hundred bits: stage 7 acceleration and deceleration time 0 to 1 LED thousand digits: Reserve	-000	√
F1.33	Acceleration time 2	Setting range: 0.1~999.9s Set acceleration and deceleration time 2	10.0s	√
F1.34	Deceleration time 2		10.0s	√
F1.35	Time unit selection	LED digit: process PID time unit LED ten digits: simple PLC time unit LED hundreds: regular acceleration and deceleration time units LED thousands: reserved 0: the unit is 1 second 1: the unit is 1 minute 2: the unit is 0.1 seconds reserved	-000	×
F1.36	Forward and reverse dead time	Setting range: 0.0~999.9s During the transition from forward operation to reverse operation, or from reverse operation to forward operation, the transition time waiting at output zero frequency.	0.0s	√

5.1.3 F2 analog and digital control group

Code	Name	Parameter Description	Factory default	Change
F2.00	AI input lower limit voltage	F2.00 setting range: 0.00~F2.01 F2.01 setting range: F2.00~10.00V Set AI upper and lower limit voltage	0.0V	√
F2.01	AI input upper limit voltage		10.00V	√
F2.02	AI lower limit corresponding setting	Setting range: -100.0~100.0% Set the corresponding setting of the upper and lower limits of AI, which corresponds to the percentage of the upper limit frequency F0.05	0.0%	√
F2.03	AI upper limit corresponding setting		100.0%	√
F2.04 ~ F2.07	Reserve	-	-	-
F2.08	Analog input signal filtering time	Setting range: 0.1~5.0s This is used to filter the input signal of AI and panel potentiometer to eliminate the influence of interference	0.1s	√
F2.09	Analog input anti-shake deviation limit	Setting range: 0.00~0.10V When the analog input signal frequently fluctuates around the given value, this parameter can be set to suppress the frequency fluctuation caused by this fluctuation.	0.00V	√
F2.10	AO analog output terminal function selection	0: output frequency 1: output current 2: Motor speed 3: output voltage 4: AI 5: reserved	0	√

5.1.3 F2 Analog and digital control group (continued)

Code	Name	Parameter Description	Factory default	Change
F2.11	AO output lower limit	Setting range: 0.00~10.00V/20.00Ma	0.00V	√
F2.12	AO output upper limit	Set the upper and lower limits of AO output	10.00V	√
F2.13	Input terminal X1 function	0: The control terminal set aside 1: forward jog control 2: reverse jog control 3: Forward rotation control (FWD) 4: Reverse control (REV) 5: Three-wire operation control 6: Free stop control 7: External stop signal input (STOP) 8: External reset signal input (RST) 9: External fault normally open input	3	×
F2.14	Input terminal X2 function	10: Frequency increase command (UP) 11: Frequency decrease command (DOWN) 13: Multi-stage speed selection S1 14: Multi-stage speed selection S2 15: Multi-stage speed selection S3 16: The running command channel is forced to be a terminal 17: The running command channel is forced to communicate 18: Shutdown DC braking command	4	×

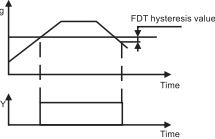
5.1.3 F2 Analog and digital control group (continued)

Code	Name	Parameter Description	Factory default	Change
F2.15	Input terminal X3 function	19: Frequency switch to AI 20: Frequency switching to digital frequency 1 21: Frequency switching to digital frequency 2 22: reserved 23: Counter clear signal	0	×
F2.16	Input terminal X4 function	24: Counter trigger signal 25: Timer clear signal 26: Timer trigger signal 27: Acceleration and deceleration time selection 28: Wobble frequency pause (stop at the current frequency) 29: Wobble frequency reset (back to center frequency)	0	×
F2.17	Reserve	30: External stop/reset input (STOP/RST)	-	-
F2.18	FWD/REV terminal control model	0: Two-wire control mode 1 1: Two-wire control mode 2 2: Three-wire control mode 1 3: Three-wire control mode 2 4: Three-wire control mode 3 5: reserved	0	×
F2.19	Terminal operation at power-on feature selection	0: Terminal run command is invalid when energize on 1: The terminal run command is valid when energize on	0	×

5.1.3 F2 analog and digital control group (continued)

Code	Name	Parameter Description	Factory default	Change
F2.20	R output setting	0: idle 1: Inverter ready for operation 2: The inverter is running 3: The inverter is running at zero speed 4: External fault shutdown 5: Inverter failure 6: Frequency/speed arrival signal (FAR) 7: Frequency/speed level detection signal (FDT) 8: The output frequency reaches the upper limit 9: The output frequency reaches the lower limit 10: Inverter overload pre-alarm 11: Timer overflow signal 12: Counter detection signal 13: Counter reset signal 14: Auxiliary motor 15: forward 16: reverse 17: Output indication Signal when the output frequency drops to the speed detection level	5	√
F2.21	Reserve		-	-
F2.22	R close delay	Setting range: 0.0~255.0s The delay from the change of the state of the relay R to the change of the output	0.0s	×
F2.23	R Disconnect Delay		0.0s	×
F2.24	Frequency arrival FAR detection amplitude	Setting range: 0.0Hz~15.0Hz When the output frequency is within the positive and negative detection width of the set frequency, the terminal outputs a valid signal (low level).	5.0Hz	√

5.1.3 F2 Analog and digital input and output (continued)

Code	Name	Parameter Description	Factory default	Change
F2.25	FDT level setting value	F2.25 setting range: 0.0Hz~F0.05 F2.26 setting range: 0.0~30.0Hz 	10.0Hz	√
F2.26	FDT hysteresis value		1.0Hz	√
F2.27	UP/DOWN modification rate	Setting range: 0.1Hz~99.9Hz/s This function code is to set the frequency modification rate when the UP/DOWN terminal sets the frequency, i.e., the size of the frequency change amount when the UP/DOWN terminal is shorted connected to the COM terminal for one second.	1.0Hz/s	√
F2.28	Input terminal pulse trigger Mode setting (X1~X4)	0: Indicates level trigger mode 1: Indicates pulse trigger mode Note: X1 to X4 correspond to 1H, 2H, 4H, 8H in hexadecimal.	0	√
F2.29	Input terminal valid logic Setting (X1~X4)	0: Indicates positive logic, That is, it is valid when the Xi terminal is connected to the common terminal, and it is invalid when it is disconnected. 1: Indicates anti-logic, That is, it is invalid when the Xi terminal is connected to the common terminal, and it is valid when it is disconnected. Note: X1 to X4 correspond to 1H, 2H, 4H, 8H in hexadecimal.	0	√

5.1.3 F2 Analog and digital input and output (continued)

Code	Name	Parameter Description	Factory default	Change
F2.30	X1 filter coefficient	Setting range: 0~9999 Used to set the sensitivity of the input terminal. If the digital input terminal is susceptible to interference and cause malfunction, this parameter can be increased to enhance the anti-interference ability, but if the setting is too large, the sensitivity of the input terminal will decrease. 1: Represents 2MS scan time unit	5	√
F2.31	X2 filter coefficient		5	√
F2.32	X3 filter coefficient		5	√
F2.33	X4 filter coefficient		5	√
F2.34	Reserve	-	-	-

5.1.4 F3 PID Control group

Code	Name	Parameter Description	Factory default	Change
F3.00	PID function setting	LED bits: PID regulation characteristics 0: Inactive 1: Positive effect When the feedback signal is higher than the given amount of PID, the inverter output frequency is required to decrease (i.e., reduce the feedback signal) 2: Negative role When the feedback signal is larger than the given amount of PID, the inverter output frequency is required to rise (i.e. reduce the feedback signal).	1010	×

5.1.4 F3 PID Control group(Continued)

Code	Name	Parameter Description	Factory default	Change
F3.00	PID function setting	LED ten bits: PID given input channel 0: Keypad potentiometer The PID feed quantity is given by the potentiometer on the operation panel. 1: Digital Setting F3.01 The PID given alue is given digitally and set by function code F3.01. 2: Pressure given amount F3.01 (MPa, Kg) Pressure is given by setting F3.01, F3.18. LED hundreds bits: PID feedback input channel 0: AI 1: Reserved LED thousand bits: PID sleep selection 0: invalid 1: Normal sleep 2: Disturb sleep The parameter setting as when sleep mode is selected as 0. If the PID feedback value is within the range of the F3.14 setting value, it will maintain the sleep delay time and then enter into disturbed sleep. If the feedback value is less than the wake-up threshold (PID polarity is positive characteristic), it will wake up immediately.	1010	×
F3.01	Given quantity digital setting	Setting range: 0.0~100.0% Use the keyboard to set the given amount of PID control, this function is valid only when the PID given channel selects digital given (the tens place of F3.00 is 1 or 2). If the tens place of F3.00 is 2, it is used as pressure setting, and this parameter is consistent with the unit of F3.18.	0.0%	√

5.1.4 F3 PID Control group(Continued)

Code	Name	Parameter Description	Factory default	Change
F3.02	Feedback channel gain	Setting range: 0.01~10.00 When the level of the feedback channel is inconsistent with the set channel level, this function can be used to adjust the gain of the feedback channel signal.	1.00	√
F3.03	Proportional gain (Kp)	F3.03 Setting range: 0.01~5.00 F3.04 Setting range: 0.1~50.0s F3.05 Setting range: 0.1~10.0s The speed of PID adjustment is set by the two parameters of proportional gain and integral time. If the adjustment speed is fast, the proportional gain should be increased and the integral time should be reduced. If the adjustment speed is slow, the proportional gain should be reduced and the integral time should be increased. Generally, the differential time is not set.	2.00	√
F3.04	Integration time (Ti)		1.0s	√
F3.05	Differential time (Td)		0.0s	√
F3.06	The sampling period (T)	Setting range: 0.1~10.0s The larger the sampling period, the slower the response, but the better the suppression effect on the interference signal, generally it is not necessary to set it.	0.0s	√
F3.07	PID control deviation limit	Setting range: 0.0~20.0% The deviation limit is the ratio of the absolute value of the deviation between the system feedback amount and the given amount to the given amount. When the feedback amount is within the range of the deviation limit, PID regulation will not act.	0.0%	√

5.1.4 F3 PID Control group(Continued)

Code	Name	Parameter Description	Factory default	Change
F3.08	Closed loop preset frequency	F3.08 Setting range: 0.0~F0.05 F3.09 Setting range: 0.1~999.9s The running frequency and running time of the inverter before the PID is put into operation	0.0Hz	√
F3.09	Preset frequency hold time		0.0s	×
F3.10	Wake Threshold Coefficient	Setting range: 0.0~150.0% If the actual feedback value is greater than the set value and the output frequency of the inverter reaches the lower limit frequency, the inverter will enter the sleep state (that is, running at zero speed) after the delay time defined by F3.12; the value is Percentage of PID setpoint.	100.0%	√
F3.11	Awakening Threshold Coefficient	Setting range: 0.0~150.0% If the actual feedback value is less than the set value, the inverter will leave the sleep state and start working after the delay time defined by F3.13; this value is the percentage of the PID set value.	90.0%	√
F3.12	Sleep Delay Time	F3.12 Setting range: 0.1~999.9s F3.13 Setting range: 0.1~999.9s Set sleep and wake delay times	100.0s	√
F3.13	Wake up delay time		1.0s	√
F3.14	Feedback when going to sleep Deviation from set pressure	Setting range: 0.0~10.0% This function parameter is only valid for disturbance sleep mode	0.5%	√

5.1.4 F3 PID Control group(Continued)

Code	Name	Parameter Description	Factory default	Change
F3.15	Burst pipe detection delay time	Setting range: 0.1~130.0s Set pipe burst detection delay time	0.0s	√
F3.16	High pressure detection threshold	Setting range: 0.0~200.0% When the feedback pressure is greater than or equal to the set value, the squib fault "EPA0" will be reported after the squib delay of F3.15, and the squib fault "EPA0" will be automatically reset when the feedback pressure is lower than the set value; The threshold value is a percentage of the given pressure.	150.0%	√
F3.17	Low pressure detection threshold	Setting range: 0.0~200.0% When the feedback pressure is lower than the set value, the squib fault "EPA0" will be reported after the squib delay of F3.15, and the squib fault "EPA0" will be automatically reset when the feedback pressure is greater than or equal to the set value; The threshold value is a percentage of the given pressure.	50.0%	√
F3.18	Sensor range	Setting range: 0.00~99.99 (MPa、Kg) Set the maximum range of the sensor	10.00 MPa	√

5.1.5 F4 Motor parameter group

Code	Name	Parameter Description	Factory default	Change
F4.00	Motor rated power	F4.00 setting range: 0.0~2000.0kW F4.01 setting range: 0~250V (220V) /500V (380V) F4.02 setting range: 0.1~999.9A F4.03 setting range: 1.0~999.9Hz F4.04 setting range: 0~9999rpm F4.05 setting range: 0.1~F4.01 Motor parameter setting: After changing the motor rated power F4.00, F4.02, F4.05, F4.17~F4.20 are automatically updated to the motor default parameters of the corresponding power.	Model Settings	×
F4.01	Motor rated voltage		Model Settings	×
F4.02	Motor rated current		Model Settings	×
F4.03	Motor rated frequency		50.0Hz	×
F4.04	Motor rated rotation speed		Model Settings	√
F4.05	Motor no-load current		Model Settings	×
F4.06	AVR function	0: invalid 1: Valid throughout 2: Invalid only when deceleration	0	×
F4.07	Cooling Fan Control	0: automatic control mode 1: Running when energize on	0	√
F4.08	Fault automatic reset times	Setting range: 0~10 When the number of fault resets is set to 0, there is no automatic reset function, and only manual reset is possible. 10 means that the number of times is not limited, that is, countless times.	0	×
F4.09	Fault automatic reset interval time	Setting range: 0.5~25.0s Set the fault automatic reset interval time	3.0s	×

5.1.5 F4 Motor parameter group(Continued)

Code	Name	Parameter Description	Factory default	Change
F4.10	Dynamic braking start voltage	F4.10 Setting range: 330~380V/660-800V F4.11 Setting range: 10~100% If the internal DC side voltage of the inverter is higher than the initial voltage of dynamic braking, the built-in braking unit will act. If a braking resistor is connected at this time, the rising voltage energy inside the inverter will be released through the braking resistor, causing the DC voltage to fall back.	350 /780V	√
F4.11	Energy consumption braking action ratio		100%	√
F4.12	Overmodulation function selection	0: invalid 1: valid	0	×
F4.13	PWM mode	0: Full frequency seven stages 1: Full frequency five stages 2: Seven stages to five stages	0	×
F4.14	Slip compensation coefficient	Setting range: 0~200% After the asynchronous motor is loaded, the speed will drop, and the use of slip compensation can make the motor speed close to its synchronous speed, so that the motor speed control accuracy is higher. This coefficient is only valid for common V/F and simple vector.	100%	×
F4.15	Slip compensation mode	0: invalid 1: low frequency compensation Note: This parameter is only valid for advanced V/F	0	×
F4.16	Motor parameter self-learning	0: invalid 1: static self-learning STAR will be displayed immediately when starting, and END will be displayed for 1s after the end, and then go out.	0	×

5.1.5 F4 Motor parameter group(Continued)

Code	Name	Parameter Description	Factory default	Change
F4.17	Motor stator resistance	F4.17 setting range: 0.001~20.000Ω F4.18 setting range: 0.00~200.00Ω F4.19 setting range: 0.00~200.00mH F4.20 setting range: 0.00~200.00mH After changing the motor rated power F4.00, F4.17~F4.20 are automatically updated to the motor default parameters of the corresponding power.	Model Settings	√
F4.18	Motor rotor resistance		Model Settings	√
F4.19	Motor stator and rotor inductance		Model Settings	√
F4.20	Motor stator and rotor mutual inductance		Model Settings	√
F4.21	Speed loop (ASR1) ratio gain	F4.21 Setting range: 1~100 F4.22 Setting range: 0.01~10.00s F4.23 Setting range: 0.0~10.0Hz F4.24 Setting range: 1~100 F4.25 Setting range: 0.01~10.00s F4.26 Setting range: F4.23~320.0Hz Function codes F4.21~F4.26 are valid in vector control mode. By setting proportional gain P and integral time I, the speed response characteristic of vector control can be changed.	30	×
F4.22	Speed loop (ASR1) integral time		0.50s	√
F4.23	Switching the low point frequency		5.0Hz	×
F4.24	Speed loop (ASR2) proportional gain		20	×
F4.25	Speed loop (ASR2) integral time		1.00	√
F4.26	Switching the high point frequency		10.0Hz	×

5.1.5 Motor parameter group(Continued)

Code	Name	Parameter Description	Factory default	Change
F4.27	Vector slip compensation	Setting range: 50%~200% In the vector control mode, this parameter is used to adjust the steady speed accuracy of the motor. When the motor is heavily loaded and the speed is low, increase this parameter, otherwise decrease this parameter.	100%	√
F4.28	Speed loop filter time constant	Setting range: 0.000~1.000s Set the speed loop filter time constant	0.010s	√
F4.29	Reserve	-	-	
F4.30	Speed loop torque limit	Setting range: 0.0%~200.0% The setting value is the percentage of the rated current of the motor	150.0%	√
F4.31	Torque command selection	0: keyboard digital given 1: AI 2: Reserve	0	×
F4.32	Torque digital given	Setting range: 0.0%~200.0%Motor rated current The setting value is the percentage of the rated current of the motor	150.0%	√
F4.33	Torque control forward maximum frequency	Setting range: 0.0~3200.0Hz It is used to set the forward or reverse maximum operating frequency of the inverter in the torque control mode.	50.0Hz	√
F4.34	Torque Control Reverse Max frequency		50.0Hz	√
F4.35	Torque rise time	Setting range: 0.00~1.00s The torque rise/fall time defines the time when the torque rises from 0 to the maximum value or falls from the maximum value to 0.	0.00s	√
F4.36	Torque drop time		0.00s	√

5.1.6 F5 Protection Function Groups

Code	Name	Parameter Description	Factory default	Change
F5.00	Protection settings	LED unit bits: motor overload protection selection 0: Invalid 1: Valid LED ten bits: PID feedback disconnection protection 0: Invalid 1: Protect the action and free stop LED hundred bits: 485 communication failure handling 0: Protect the action and free stop 1: Alarm but maintain the status quo 2: Alarm and stop in the set way LED thousand bits: Oscillation suppression selection 0: Invalid 1: Valid	0001	×
F5.01	Motor overload protection coefficient	The setting range: 30%~110% The motor overload protection coefficient is the percentage of the rated current value of the motor to the rated output current value of the inverter.	100%	×
F5.02	Undervoltage protection level	The setting range: 50~280V/50~480V This function code specifies the allowable lower limit voltage of the DC bus when the inverter is working normally.	180/360V	×
F5.03	Deceleration voltage limiting coefficient	The setting range: 0: closed, 1~255 This parameter is used to adjust the ability of the frequency inverter to suppress overvoltage during deceleration.	1	×

5.1.6 F5 Protection Function Group (continued)

Code	Name	Parameter Description	Factory default	Change
F5.04	Overvoltage limit level	The setting range: 350~400V/660~850V This parameter defines the operating voltage during overvoltage stall protection	375/ 700V	×
F5.05	Acceleration current limit coefficient	The setting range: 0: closed, 1~99 This parameter is used to adjust the ability of the frequency inverter to suppress overcurrent during acceleration.	10	×
F5.06	Constant speed current limit coefficient	The setting range: 0: closed, 1~10 This parameter is used to adjust the ability of the frequency inverter to suppress overcurrent during constant speed.	0	×
F5.07	Current limiting level	The setting range: 50%~200% The current limiting level defines the current threshold for automatic current limiting action, which is set as a percentage of the rated current of the inverter.	160%	×
F5.08	Feedback broken wire detection value	The setting range: 0.0~100.0% This value is the percentage of the PID given value, when the PID feedback value is continuously less than the feedback break detection value, the corresponding protection action will be made according to the setting of F5.00, and it will be invalid when F5.08=0.0%.	1.0%	×

5.1.6 F5 Protection Function Group (continued)

Code	Name	Parameter Description	Factory default	Change
F5.09	Feedback break detection time	The setting range: 0.1~999.9s After feedback disconnection occurs, Protect the delay time before the action.	10.0s	×
F5.10	Inverter overload pre-alarm level	The setting range: 0%~150% The current threshold of the inverter overload pre-alarm action, which is set as a percentage of the inverter rated current.	120%	√
F5.11	Inverter overload pre-alarm delay	The setting range: 0.0~15.0s The delay time between the inverter output current is continuously bigger than the amplitude of overload pre-alarm level (F5.10) to the output of the overload pre-alarm signal.	5.0s	×
F5.12	Jog priority enable	0: Invalid 1: Jogging priority is the highest when the inverter is running.	0	×
F5.13	Oscillation suppression coefficient	F5.13 The setting range: 0~200 F5.14 The setting range: 0~12 F5.15 The setting range: 0.0~ F5.16 F5.16 The setting range: F5.15~F0.05 When motor oscillation occurs, F5.00 thousand bits need to be set effectively. Turn on the oscillation suppression function, and then adjust it by setting the oscillation suppression coefficient. Under normal circumstances, the oscillation amplitude is large, increase the oscillation suppression coefficient F5.13, do not need to be set F5.14~F5.16; For special occasions, F5.13~F5.16 is required to use together.	30	√
F5.14	Amplitude suppression coefficient		5	√
F5.15	Oscillation suppression lower limit frequency		5.0Hz	√
F5.16	Oscillation suppression upper limit frequency		45.0Hz	√

5.1.6 F5 Protection Function Group (continued)

Code	Name	Parameter Description	Factory default	Change
F5.17	Wave-by-wave current limit selection	LED unit bits: Acceleration selection 0: Invalid 1: Valid LED Ten bits: Deceleration selection 0: Invalid 1: Valid LED hundred bits: constant speed selection 0: Invalid 1: Valid LED thousand bits: Reserve	-011	×
F5.18	The output phase loss protection detection coefficient	The setting range: 0.00~20.00 When the ratio of the maximum to minimum value in the three-phase output current is bigger than this coefficient, and the duration exceeds 6 seconds, the inverter reports the output current imbalance fault EPLI; The output phase loss protection is invalid when F5.18=0.00.	2.00	√
F5.19	The frequency of instantaneous power loss decreases coefficient	The setting range: 0: Invalid, 1~9999 Set the instantaneous power-drop frequency drop factor	0	√
F5.20	Instantaneous power drop and frequency reduction point	The setting range: 220V: 180~330V The setting range: 380V: 300~550V Set the instantaneous power-drop and frequency reduction point	Depend on the model	×

5.1.7 F6 Communication function group

Code	Name	Parameter Description	Factory default	Change
F6.00	The local address	The setting range: 0~247 Set the local address, 0 is the broadcast address.	1	×
F6.01	MODBUS communication configuration	LED units bits: Baud rate selection 0: 9600BPS 1: 19200BPS 2: 38400BPS LED Ten Bit: Data format 0: no parity 1: Even Parity 2: odd parity LED Hundred bits: communication response mode 0: Normal response 1: Respond only to slave addresses 2: No response 3: The slave-to-host free shutdown command in broadcast mode does not response LED Thousand bit: Reserve	0000	×
F6.02	Communication timeout checkout time	The setting range: 0.1~100.0s If the machine does not receive the correct data signal within the time interval defined by this function code, the machine believes that the communication is faulty. The inverter will determine whether to protect or maintain the current operation according to the setting of the communication failure operation mode. When this value is set to 0.0, RS485 communication timeout is not checked.	0.0s	×

5.1.7 F6 Communication function group(continued)

Code	Name	Parameter Description	Factory default	Change
F6.03	Local answer delay	The setting range: 0~200ms This function code defines the interval between the receiving end of the data frame in the frequency inverter and the sending of the response data frame to the up-machine. If the response time is less than the system processing time, the system processing time shall prevail.	5ms	×
F6.04	Proportional linkage coefficient	The setting range: 0.01~10.00 This function code is used to set the weight coefficient of the frequency instruction received by the inverter as the slave through the RS485 interface, and the actual operating frequency of the machine is equal to the value of this function code multiplied by the frequency setting instruction value received through the RS485 interface.	1.00	√
F6.05	Reserve	-	-	

5.1.8 F7 Supplement function group

Code	Name	Parameter Description	Factory default	Change
F7.00	The counting and timing mode	LED unit bit: counting arrival processing 0: Single cycle counting, stop output 1: Single cycle counting, continue output 2: Cycle counting, stop output 3: Cycle counting, continue output LED ten bits: reset LED hundred bits: Timing arrival processing 0: Single cycle timing, stop output 1: Single cycle timing, continue output 2: Cycle timing, stop output 3: Cycle timing, continue output LED Thousand bits: Reserve	-103	×
F7.01	The counter reset value setting	The setting range: F7.02~9999 Set the counter reset value	1	√
F7.02	The counter detection value setting	The setting range: 0~F7.01 Set the counter detection value	1	√
F7.03	Timing time setting	The setting range: 0~9999 Set the timing time	0	√
F7.04 ~ F7.07	Reserve	-	-	-
F7.08	Swing frequency control	0: Forbid 1: Valid	0	×

5.1.8 F7 Supplement function group (continued)

Code	Name	Parameter Description	Factory default	Change
F7.09	Swing control	0: Fixed swing The swing reference value is the maximum output frequency (F0.04) 1: Variable swing The swing reference value is the given channel frequency	0	×
F7.10	Swing frequency stop start mode selection	0: Start according to the state of memory before shutdown 1: Restart	0	×
F7.11	Swing frequency amplitude	The setting range: 0.0~100.0% Swing amplitude is a percentage relative to F0.04	0.0%	√
F7.12	Skip frequency	The setting range: 0.0~50.0% This function code refers to the amplitude of rapid decrease when the frequency reaches the upper limit frequency of swing frequency in the process of swing frequency. Of course, it also refers to the frequency reached the lower limit of the swing frequency, the rapid rise of the amplitude. The value is a percentage relative to F7.11, there is no skip frequency if set to 0.0%.	0.0%	√
F7.13	Swing frequency rise time	The setting range: 0.1~3600.0s The running time from the lower limit frequency to the upper limit frequency of the swing frequency.	5.0s	√

5.1.8 F7 Supplement function group (continued)

Code	Name	Parameter Description	Factory default	Change
F7.14	Swing frequency decline time	The setting range: 0.1~3600.0s The running time from the upper limit frequency to the lower limit frequency of the swing frequency.	5.0s	√
F7.15	Swing frequency upper limit frequency delay	The setting range: 0.1~3600.0s Set the upper and lower limit frequency delay of the swing frequency.	5.0s	√
F7.16	Swing frequency lower limit frequency delay		5.0s	√

5.1.9 F8 Displays and manage function groups

Code	Name	Parameter Description	Factory default	Change
F8.00	Run monitoring master parameter item selection	The setting range: 0~31 Example: F8.00=2, that is, select the output voltage (d-02), then the default display item of the main monitoring interface is the current output voltage value.	0	√
F8.01	Shutdown monitoring master parameter item selection	The setting range: 0~31 Example: F8.01=3, that is, select the bus voltage (d-03), then the default display item of the main monitoring interface is the current bus voltage value.	1	√

5.1.9 F8 Displays and manage function groups(continued)

Code	Name	Parameter Description	Factory default	Change
F8.02	Run auxiliary display (Valid for dual displays only)	The setting range: 0~31 Example: F8.02=4, that is, select the output current (d-02), then the default display item of the main monitoring interface is the current output voltage value.	4	√
F8.03	Shutdown auxiliary display (valid for dual displays only.)	The setting range: 0~31 Example: F8.03=3, that is, select the bus voltage (d-03), then the default display item of the main monitoring interface is the current bus voltage value.	3	√
F8.04	Motor speed display the coefficient	The setting range: 0.01~99.99 It is used to correct the speed scale display error, and has no effect on the actual speed.	1.00	√
F8.05	Parameter initialization	0: No operation The inverter is in normal parameter reading and writing state. Whether the function code setting value can be changed is related to the setting state of the user password and the current working state of the inverter. 1: Restore factory Settings All user parameters are restored to factory settings according to the model. 2: Clear the fault record Clear the fault record (d-19~d-24). this function code is automatically cleared to 0 after the operation is completed.	0	×
F8.06	Reserve	-	-	-

5.1.10 d Monitor parameter groups

Code	Name	Parameter Description	Factory default	Change
d-00	The output frequency(Hz)	0.0~999.9Hz	0.1Hz	-
d-01	The setting frequency (Hz)	0.0~999.9Hz	0.1Hz	-
d-02	The output voltage(V)	0~999V	1V	-
d-03	The busbar voltage (V)	0~999V	1V	-
d-04	The output current(A)	0.0~999.9A	0.1A	-
d-05	The motor speed (rpm)	0~60000rpm	1rpm	-
d-06	The analog input AI(V/mA)	0.00~10.00V/20.00mA	0.01V/0.01mA	-
d-07	Reserve	-	-	-
d-08	The analog output AO(V/mA)	0.00~10.00V/20.00mA	0.01V/0.01mA	-
d-09	Reserve	-	-	-
d-10	PID pressure setting value	0.00~10.00V/0.00~99.99(MPa、Kg)	0.01V/ (MPa、Kg)	-
d-11	PID pressure feedback value	0.00~10.00V/0.00~99.99(MPa、Kg)	0.01V/ (MPa、Kg)	-
d-12	The current count value	0~9999	1	-
d-13	The current timing value (s)	0~9999s	1s	-
d-14	the input terminal status (X1-X4)	0~FH	1H	-

5.1.10 d Monitor parameter groups (continued)

Code	Name	Parameter Description	Factory default	Change
d-15	the output status (R)	0~1H	1H	-
d-16	The module temperature (°C)	0.0~132.3°C	0.1°C	-
d-17	The Software Upgrade Date (Year)	2010~2026	1	-
d-18	The software upgrade date (month, day))	0~1231	1	-
d-19	The second failure code	0~19	1	-
d-20	The most recent fault code	0~19	1	-
d-21	The output frequency of the most recent fault (Hz)	0.0~999.9Hz	0.1Hz	-
d-22	The output current of the most recent fault (A)	0.0~999.9A	0.1A	-
d-23	The bus voltage of the most recent fault (V)	0~999V	1V	-
d-24	The module temperature of the most recent fault (°C)	0.0~132.3°C	0.1°C	-
d-25	The inverter running cumulative time (h)	0~9999h	1h	-

5.1.10 d Monitor parameter groups (continued)

Code	Name	Parameter Description	Factory default	Change
d-26	Inverter status	0~FFFFH BIT0: Running/Stop BIT1: Reverse/forward BIT2: Jog BIT3: DC braking BIT4: Reserve BIT5: Overvoltage limit BIT6: Constant speed lower the frequency BIT7: Overcurrent limit BIT8~9: 00-Zero speed/01- acceleration /10- Deceleration / 11- Constant speed BIT10: Overload pre-alarm BIT11: Reserve BIT12~13 Running command channel: 00-Keypad/01-Teminal/10- Reserve BIT14~15 Busbar voltage status: 00-Normal/01- Low voltage protection /10- Overvoltage protection	1H	-
d-27	Software version	1.00~99.99	0.01	-
d-28	Power model	0.10~99.9kW	Depends on the model	-
d-29	The motor estimates the frequency	0.0~F0.04	0.1Hz	-
d-30	Output torque	-200~+200%	1%	-
d-31	Input Voltage(V)	0~999V	1V	-

6. Common faults and Solution

Table 6-1 Common faults code and Solution

Fault Code	Fault Name	Possible Reason	Solution
EOC1	Overcurrent when acceleration running	①The acceleration time is too short ②The power of the inverter is small ③The V/F curve or torque boost is not set properly	①Extend the acceleration time ②Select a bigger size frequency inverter ③Adjust the V/F curve or torque lift
EC02	Overcurrent when decelerate running	①The deceleration time is too short ②The power of the inverter is small	①Extend the deceleration time ②Select a bigger size frequency inverter
EC03	Overcurrent in constant speed operation	①The power grid voltage is low ②Sudden or abnormal load ③The power of the inverter is small	①Check the input power ②Check for the sudden load changes or decrease load ③Choose a bigger power frequency inverter
EHU1	Overvoltage when acceleration running	①The input voltage is abnormal ②Re-start the rotating motor	①Check the input power ②Set to start after DC braking
EHU2	Overvoltage when decelerate running	①The deceleration time is too short ②The input voltage is abnormal	①Extend the deceleration time ②Check the input power
EHU3	Overvoltage in constant speed operation	①The input voltage is abnormal	①Check the input power
EHU4	Undervoltage when stop	①The input voltage is abnormal	①Check the power supply voltage

Table 6-1 Common faults code and Solution(continued)

Fault Code	Fault Name	Possible Reason	Solution
ELUO	Undervoltage in running	①The input voltage is abnormal or the relay is not engaged	①Check the supply voltage or ask for the service from the manufacturer
ESC1	Power module fault	①The inverter output is shorted or grounded ②The control board is abnormal or interferes badly ③The power device is damaged	①Check the motor wiring ②Ask for the service from the manufacturer ③Ask for the service from the manufacturer
E-OH	The radiator is overheating	①The ambient temperature is too high ②The fan is damaged ③The air duct is blocked	①Lower the ambient temperature ②Replace the fan ③Drain the ventilation duct
EOL1	The frequency inverter is overloaded	①The V/F curve or torque boost is not set properly ②The power grid voltage is too low ③The acceleration time is too short ④The motor is overloaded	①Adjust the V/F curve and torque boost ②Check the power grid voltage ③Extend the acceleration time ④Choose a bigger power frequency inverter
EOL2	The motor converter is overloaded	①The V/F curve or torque boost is not set properly ②The power grid voltage is too low ③The motor stalls or the load changes abruptly ④The motor overload protection factor is set incorrectly	①Adjust the V/F curve and torque boost ②Check the power grid voltage ③Check the load ④Set the motor overload protection factor correctly

Table 6-1 Common faults code and Solution(continued)

Fault Code	Fault Name	Possible Reason	Solution
E-EF	The External devices is fault	①External device fault input terminal closed	①Disconnect the external device fault input terminal And clear the fault (pay attention to the reason for checking)
EPOF	Dual CPU communication failure	①CPU communication failure	①Ask for the service from the manufacturer
EPID	PID feedback is disconnected	①The PID feedback wire is loose ②The feedback value is less than the broken wire detection value	①Check the feedback connection ②Adjust the detection input threshold
E485	RS485 communication failure	①Does not match the baud rate of the host computer	①Adjust the baud rate
		①RS485 signal channel interference	①Check whether the communication connection is shielded and wiring ②Whether it is reasonable or not, if necessary, needs to be considered and Connect the filter capacitor
		①Communication timeout	①Try again
ETUN	Motor tuning failure	①The motor parameters are set incorrectly	①Reset the motor parameters

Table 6-1 Common faults code and Solution(continued)

Fault Code	Fault Name	Possible Reason	Solution
ECCF	Current detection fault	①Current sampling circuit failure ②Auxiliary power failure	①Ask for the service from the manufacturer
EEEP	EEPROM read and write errors	①EEPROM Fault	①Ask for the service from the manufacturer
EPLI	Output phase loss protection	①The outputs U, V, and W are phase missing	①Check the output wiring
EPAO	Burst pipe failure	①The feedback pressure is less than the low pressure detection threshold or bigger than or equal to the high pressure detection threshold	①Detect feedback wiring or adjust high and low pressure thresholds

7.Outline Dimension&Mounting Dimension

7.1 Inverter Outline Dimension& Mounting Dimension

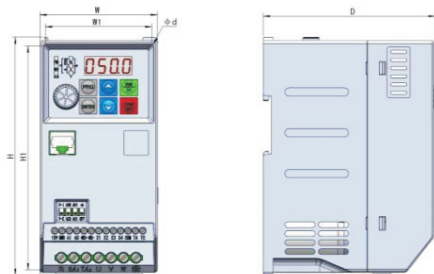
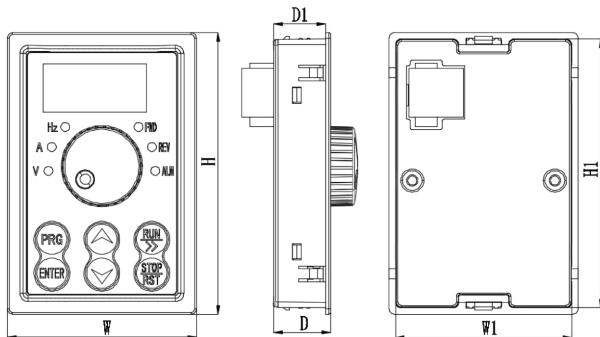


Fig.7 - 1 Inverter Outline Dimension

Inverter Model	Power (kW)	Dimension(MM)						Figure	Weight (kg)
		H	H1	W	W1	D	d		
ZVF510-A0R4S2/T2	0.4	146	136.5	72	63	105	Φ4.5	Fig.7-1	
ZVF510-A0R7S2/T2	0.75								
ZVF510-A1R5S2/T2	1.5								
ZVF510-A2R2S2/T2	2.2								
ZVF510-A0R7T4	0.75								
ZVF510-A1R5T4	1.5								
ZVF510-A2R2T4	2.2								
ZVF510-A3R0T4	3.0	182	172.5	87	78	127	Φ4.5	Fig.7-1	
ZVF510-A3R0S2/T2	3.0								
ZVF510-A4R0T4	4.0								
ZVF510-A5R5T4	5.5	240	229	118	106	155	Φ5.5	Fig.7-1	
ZVF510-A4R0T2	4.0								
ZVF510-A5R5T2	5.5								
ZVF510-A7R5T4	7.5								
ZVF510-A011T4	11								

7.2 Keypad Outline Dimension& Mounting holes Dimension



Dimensions of keypad base holes				Keypad thickness	
W	W1	H	H1	D	D1
53mm	49.4mm	79mm	75.4mm	15.9mm	14.5mm

Figure 7-2 E-510 Keypad Dimension



TIP

- It needs to be equipped with an external display panel, When the ZVF510 series operation panel is led out.
- The opening size of the external display panel is: width 49.4mm× height 75.4mm.

8. Quality Assurance

8.1 Quality Assurance of Inverter

1. Quality assurance shall be handled in accordance with the following regulations:

- If the product has quality problems within one month from the date of purchase by the user from the manufacturer, return, replacement and repair will be guaranteed (except for non-standard machines);

- This product has quality problems within three months from the date of purchase by the user from the manufacturer, and replacement and repair are guaranteed;

- This product will be repaired within 12 months from the date of purchase by the user if there is a quality problem;

2. If the date of purchase cannot be confirmed, the warranty period shall be within 18 months of the factory date of the inverter, and the paid service shall be paid beyond the warranty period. No matter when and where the inverter of the company is used, it shall enjoy the paid service for life.

3. If the inverter is damaged due to the following reasons, even within the warranty period, it will be repaired for a fee;

- ☐ Damage caused by failure to operate and use in accordance with the user manual;

- ☐ Damage caused by use exceeding the inverter standard and technical requirements;

- ☐ Damage caused by natural disasters such as fire, flood, and abnormal voltage;

- ☐ Man-made damage caused by self-repair or modification;

- ☐ Device aging or failure caused by bad environment;

- ☐ Failure to pay off the purchase price on time according to the purchase agreement;

- ☐ The nameplate, logo and date of manufacture of the frequency inverter are unrecognizable;

- ☐ Damage caused by improper handling or storage after purchase;

- ☐ The installation, wiring, operation and maintenance cannot be objectively and realistically described;

- ☐ For return, replacement or repair services, the product must be returned to the company, and the responsibility can only be returned or repaired after the attribution of responsibility is confirmed;

4. In the event of quality problems or product accidents of this product, the company only bears the responsibility for the above-mentioned content. If the user needs more liability guarantees, please purchase insurance from the insurance company by yourself.

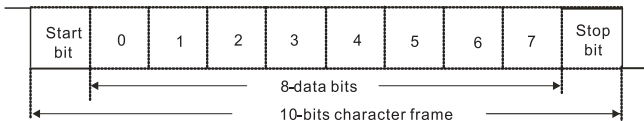
Appendix 1 RS485 Communication Protocol

ZVF510 series inverter adopts the popular MODBUS communication protocol in RS485 communication control. Before using RS485 communication, the address, communication baud rate and data format of the inverter must be manually set, and these parameters cannot be modified during the communication process.

The MODBUS communication protocol adopts the RTU encoding format, and the character structure is as follows:

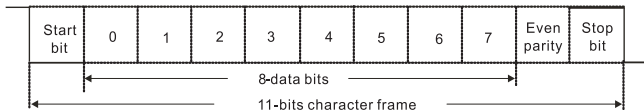
10-bit character box (for 8-bit characters without parity):

(8, N, 1)

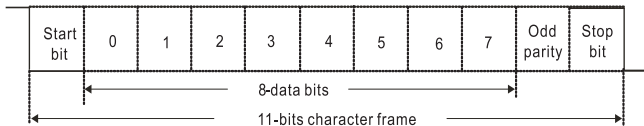


11-bit character box (for 8-bit characters with parity):

(8, E, 1)



(8, O, 1)



Communication Data Structure

Correspondence format box:

RTU model:

START	More than 10 ms inactivity time or 3.5 byte transfer time
ADR	Communication address: 8-bit address
CMD	Command code: 8-bit command
DATA (n-1)	Data content: N×8-bit data, n≤32
.....	
DATA 0	
CRC CHK Low	CRC check value: The 16-bit checksum consists of two 8-bit characters
CRC CHK High	
END	More than 10 ms inactivity time or 3.5 byte transfer time

ADR (mailing address)

Legal mailing addresses range from 1 to 247. A communication address of 0 means broadcasting to all inverters, in this case the inverter will not respond to any information to the host.

For example: To communicate with the inverter whose communication address is 16 (decimal):

RTU mode: (ADR) = 10H

Function code (Function) and data content (Data Characters)

03: Read out the contents of the inverter register

06: Write a WORD to the inverter register

Command code: 03H, read the contents of the inverter register.

For example: read 2 words continuously from address 01H to start address 2102H of the inverter. RTU model

Command message:

Address	01H
Function	03H
Starting address	21H
	02H
Number of data (count by word)	00H
	02H
CRC CHK Low	6FH
CRC CHK High	F7H

Response message:

Address	01H
Function	03H
Number of data (count by byte)	04H
Content of data address 2102H	13H
	88H
Content of data address 2103H	00H
	00H
CRC CHK Low	7EH
CRC CHK High	9DH

Command code: 06H, write a word to the inverter register

For example: write 6000 (1770H) to the address 0004H of the inverter whose address is 01H

RTU mode

Command message:

Address	01H
Function	06H
Data address	00H
	04H
Data content	17H
	70H
CRC CHK Low	C6H
CRC CHK High	1FH

Response message:

Address	01H
Function	06H
Data address	00H
	04H
Data content	17H
	70H
CRC CHK Low	C6H
CRC CHK High	1FH

Definition of communication data address

This part is the address definition of the communication data, which is used to control the operation of the inverter, obtain the status information of the inverter and set the relevant function parameters of the inverter, etc.

Function code parameter address representation rules:

Use the function code serial number as the parameter to correspond to the register address, but it needs to be converted into hexadecimal. For example, F5.12 uses hexadecimal to indicate that the function code address is 050CH. For details, see Appendix Table 1-1 and Appendix Table 1-2

In addition, because the EEPROM is frequently stored, the service life of the EEPROM will be reduced. For the user, some function codes do not need to be stored in the communication mode, and only need to change the value in the on-chip RAM to meet the use requirements. To realize this function, just change the highest bit of the corresponding function code address from 0 to 1. For example: the function code F0.08 is not stored in the EEPROM, only the value in the RAM is modified, and the address can be set to 8008H; this address can only be used for writing to the on-chip RAM, and cannot be used for reading, such as reading is an invalid address.

Appendix Table 1-1 Register address

Register function	Register address
Communication Control Command	2000H
Communication frequency setting	2001H
Monitoring parameter reading (d-00~d-31)	1000H~001FH
User parameter setting (F0.00~F8.06)	0000H~0806H
Factory parameter setting (F9.00~F9.10)	0900H~090AH

Appendix Table1-2 Parameter address definition of communication protocol

Definition	Parameter address	Function Description		Attributes
Control instruction	2000H	0001H	Shutdown	W
		0012H	Forward run	
		0013H	Forward jog	
		0022H	Run in reverse	
		0023H	Reverse jog	
Communication settings	2001H	Communication setting value range (-10000~10000) Note: Communication setting value is a percentage of relative value (-100.00%~100.00%), which can be used for communication write operation.		W
Control instruction	2002H	0001H	External fault input	W
		0002H	Fault reset	
Run/stop parameter	2102H	Set frequency (two decimal places)		R
	2103H	Output frequency (two decimal places)		R
	2104H	Output current (one decimal place)		R
	2105H	Bus voltage (one decimal place)		R
	2106H	Output voltage (one decimal place)		R
	2107H	Analog input AI (two decimal places)		R
	2108H	Reserve		R
	2109H	Current count value		R
	210AH	Motor speed		R
	210BH	Analog output AO (two decimal places)		R
	210CH	Reserve		R
	210DH	Inverter temperature (one decimal place)		R
	210EH	PID feedback value (two decimal places)		R
	210FH	PID set value (two decimal places)		R
	2110H	Reserve		R
	2111H	Pulse input frequency		R

Appendix Table1-2 Parameter address definition of communication protocol

Definition	Parameter address	Function Description	Attributes
Run/stop parameter	2112H	Current failure	R
	2113H	Current timing value	R
	2114H	Input terminal status	R
	2115H	Output terminal state	R
	2116H	BIT0: Run/Stop BIT1: Forward /Reverse BIT2: Jog BIT3: DC braking BIT4: Reserve BIT5: Overvoltage limit BIT6: Constant Speed Downclocking BIT7: Overcurrent limit BIT8~9: 00-zero speed/01-acceleration/10-deceleration/11-uniform speed BIT10: Overload pre-alarm BIT11: Reserve BIT12~13: Running command channel: 00-panel/01-terminal/10-communication BIT14~15: Bus voltage status: 00-normal/01-low voltage protection/10-overvoltage protection	R
	2101H	BIT0: Run BIT1: Stop BIT2: Jog BIT3: Forward BIT4: Reverse BIT5~7: Reserve BIT8: Communication given BIT9: Analog signal input BIT10: Communication run command channel BIT11: Parameter lock BIT12: Running BIT13: Jog command BIT14~15: reserve	R

Appendix Table1-2 Parameter address definition of communication protocol

Definition	Parameter address	Function Description	Attributes
Error code	2100H	00: No abnormality 01: module failure 02: Overvoltage 03: temperature fault 04: Inverter overload 05: Motor overload 06: external failure 07~09: reserve 10: Overcurrent during acceleration 11: Overcurrent during deceleration 12: Overcurrent in constant speed 13: reserve 14: Undervoltage 15: reserve 16: RS485 communication failure 17: squib failure 18: reserve 19: Dual CPU communication failure 20: reserve 21: reserve 22: Current sense failure 23: reserve 24: reserve 25: Output phase loss	R

Appendix 2 User Warranty

User situation

Name of Distributor		Date of purchase	
Inverter model		Serial number	
Equipment Name		Motor power	
Date of installation		Date of use	

Records of repair

Fault:	
Solution:	
The date of repair:	The name of repair worker:

Fault:	
Solution:	
The date of repair:	The name of repair worker:



TIP



The user should keep this warranty bill

Inverter User's Warranty Bill

Company Name		Phone	
Address		Post Code	
Contact Person		Department	

Name of Distributor		Address /Phone	
Date of purchase		Invoice number	
Inverter model		Serial number	
Equipment Name		Motor power	
Date of installation		Date of use	

Usage description:

Description of parameter modification:



TIP

The user should fill in the contents of this link truthfully and carefully, and send it back to our company quickly, so that we can provide you with better service.

