User Manual

ZQ200

Variable Frequency Drive

General Purpose

Safety Information and Precautions

This guide is packaged together with the product for ZQ200 Variable Frequency Drive. It contains basic information for quick start of the drive. For safety and more information, please refer to the ZQ200 VFD User Manual, which can be downloaded on website: http://www.zest-electric.com

■ **Electrical Safety**

Extreme care must be taken at all times when working with the VFD or within the area of the VFD. The voltages used in the VFD can cause severe electrical shock or burns and is potentially lethal. Only authorized and qualified personnel should be allowed to work on VFD.

■ **Machine/System Design and Safety of Personnel**

Machine/system design, installation, commissioning startups and maintenance must be carried out by personnel who have the necessary training and experience. They must read this safety information and the contents of this manual. If incorrectly installed, the VFD may present a safety hazard.

The VFD uses high voltages and currents (including DC), carries a high level of stored electrical energy in the DC bus capacitors even after power OFF. These high voltages are potentially lethal.

The VFD is NOT intended to be used for safety related applications/functions. The electronic "STOP &START" control circuits within the VFD must not be relied upon for the safety of personnel. Such control circuits do not isolate mains power voltages from the output of the VFD. The mains power supply must be disconnected by an electrical safety isolation device before accessing the internal parts of the VFD.

Safety risk assessments of the machine or process system which uses an VFD must be undertaken by the user and or by their systems integrator/designer. In particular the safety assessment/design must take into consideration the consequences of the VFD failing or tripping out during normal operation and whether this leads to a safe stop position without damaging machine, adjacent equipment and machine operators/users. This responsibility lies with the user or their machine/process system integrator.

The system integrator/designer must ensure the complete system is safe and designed according to the relevant safety standards. ZEST Technology and Authorized Distributors can provide recommendations related to the VFD to ensure long term safe operation.
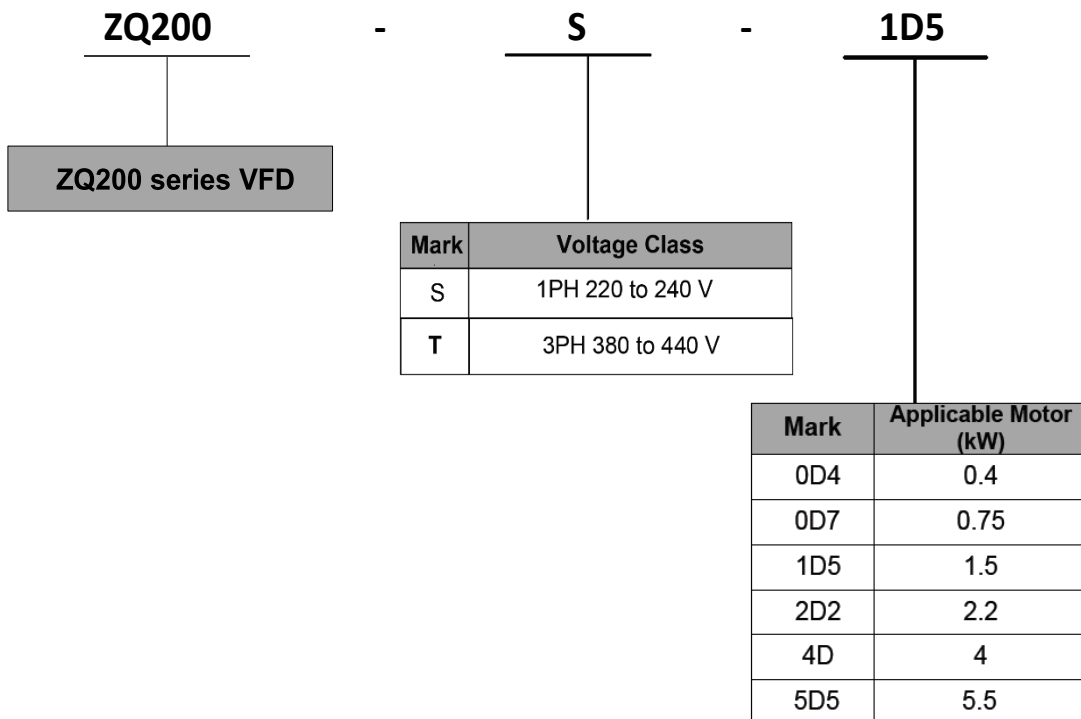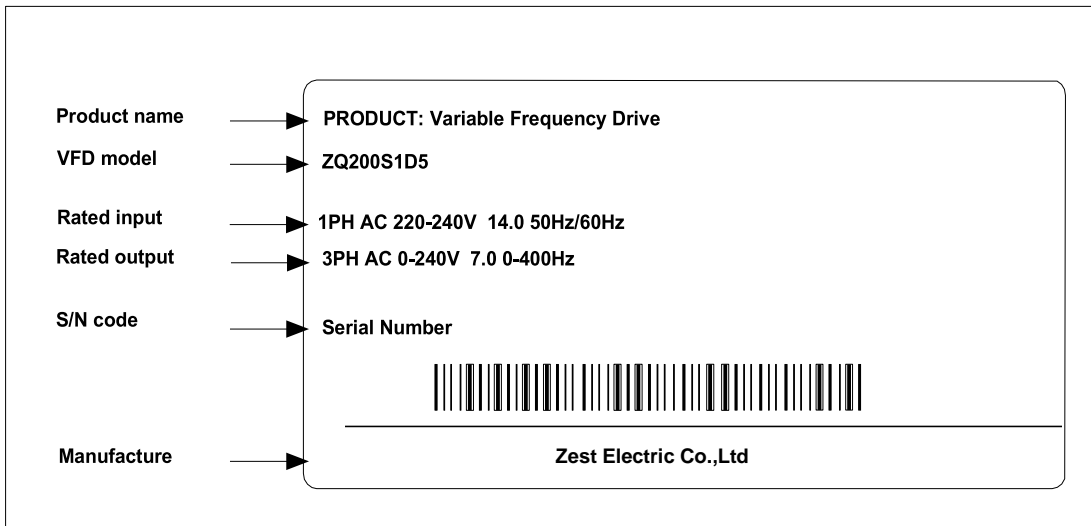
■ **Electrical Installation - Safety**

Electrical shock risk is always present within an VFD including the output cable leading to the motor terminals. Where dynamic brake resistors are fitted external to the VFD, care must be taken with regards to live contact with the brake resistors, terminals which are at high DC voltage and potentially lethal. Cables from the VFD to the dynamic brake resistors should be double insulated as DC voltages are typically 300 VDC to 800 VDC.

Mains power supply isolation switch should be fitted to the VFD. The mains power supply must be disconnected via the isolation switch before any cover of the VFD can be removed or before any servicing work is undertaken stored charge in the DC bus capacitors of the PWM VFD is potentially lethal after the AC supply has been disconnected. The AC supply must be isolated at least 10 minutes before any work can be undertaken as the stored charge will have been discharged through the internal bleed resistor fitted across the DC bus capacitors.

Whenever possible, it is good practice to check the DC bus voltage with a VDC meter before accessing the VFD bridge. Where the VFD input is connected to the mains supply with a plug and socket, then upon disconnecting the plug and socket, be aware that the plug pins may be exposed and internally connected to the DC bus capacitors (via the internal bridge rectifier in reversed bias). Wait 10 minutes to allow stored charge in the DC bus capacitors to be dissipated by the bleed resistors before commencing work on the VFD.
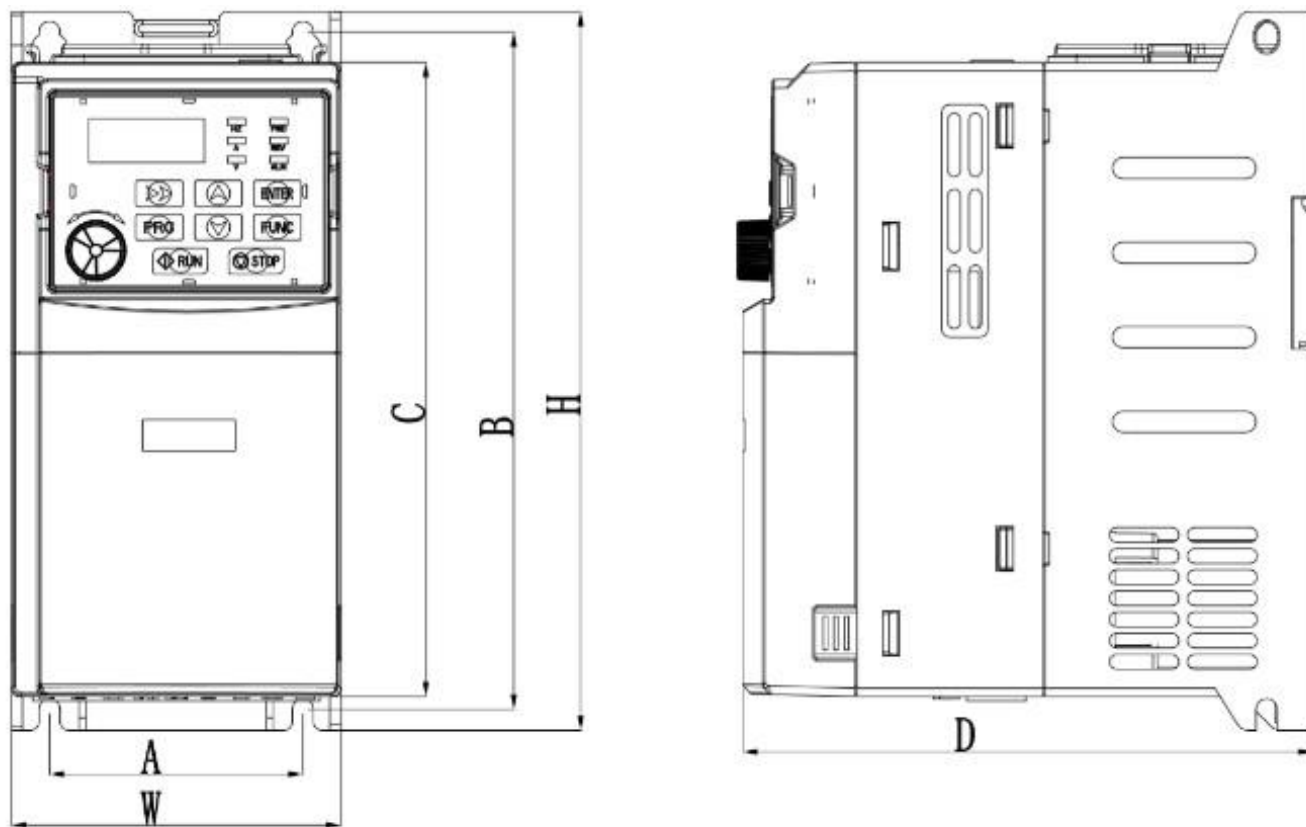
Nameplate

Product name	PRODUCT: Variable Frequency Drive
VFD model	ZQ200S1D5
Rated input	1PH AC 220-240V 14.0 50Hz/60Hz
Rated output	3PH AC 0-240V 7.0 0-400Hz
S/N code	Serial Number
Manufacture	Zest Electric Co.,Ltd

ZQ200 - **S** - **1D5**

ZQ200 series VFD

Mark	Voltage Class
S	1PH 220 to 240 V
T	3PH 380 to 440 V

Mark	Applicable Motor (kW)
0D4	0.4
0D7	0.75
1D5	1.5
2D2	2.2
4D	4
5D5	5.5

Type of Variable Frequency Drive

Type of Variable Frequency Drive			
Type	Power	Power Supply	Output Current
ZQ200S0D7	0.75KW	Single phase AC 220V-240V 50Hz/60Hz	4
ZQ200S1DR	1.5KW		7
ZQ200S2D2	2.2KW		9.5
ZQ200T0D7	0.75KW	Three phase AC 380V-440V 50Hz/60Hz	2.5
ZQ200T1D5	1.5KW		4.1
ZQ200T2D2	2.2KW		5.8
ZQ200T4D	4.0KW		9.4
ZQ200T5D5	5.5KW		12.6
ZQ200T7D5	7.5KW		16

External and mouting dimensions

Externaland mounting dimensions

Drive mode	H	W	D	A	B	C
ZQ200S0D7	170	78	135	60	160	150
ZQ200S1DR	170	78	135	60	160	150
ZQ200S2D2	170	78	135	60	160	150
ZQ200T0D7	170	78	135	60	160	150
ZQ200T1D5	170	78	135	60	160	150
ZQ200T2D2	170	78	135	60	160	150
ZQ200T4D	212	95	151	78	200	180
ZQ200T5D5	212	95	151	78	200	180
ZQ200T7D5	212	95	151	78	200	180

Operating Panel

Appearance of Keyboard panel

Item	Symbol	Function
Numeric display	8888	To display frequency or parameter etc using LED.
Indicator	HZ	The unit of data currently displayed is Hz.
	A	The unit of data currently displayed is current.
	V	The unit of data currently displayed is voltage.
	FWD	ON:Foreward
	REV	ON: Reverse
	ALM	On:Failt Off:No Fault

| Key name	Key	Function
Programme	PRG	Menu entry or exit, parameter modification
Enter	ENTER	Enter mode, view parameters, or confirm set values.
Increment	▲	To increase parameter number or parameter set value
Decrement	▼	To reduce parameter number or parameter set value
Shift	►►	In panel operation mode, select the parameter position and display the tenderness
Speed control knob		To adjust frequency
RUN	◇ RUN	Start the VFD when using the operating panel control mode.It is inactive when using the terminal or communication control mode.
STOP	⊘ STOP	Stop the VFD when the drive is in the RUNNING status. Perform a reset operation when the drive is in the FAULT status.
Multifunction	FUNC	Perform a function switchover as defined，for example to quickly switchcommand source or direction.

Note: After the inverter is powered on, the operation panel displays 50.0(output frequency)

2 Basic operation of panel
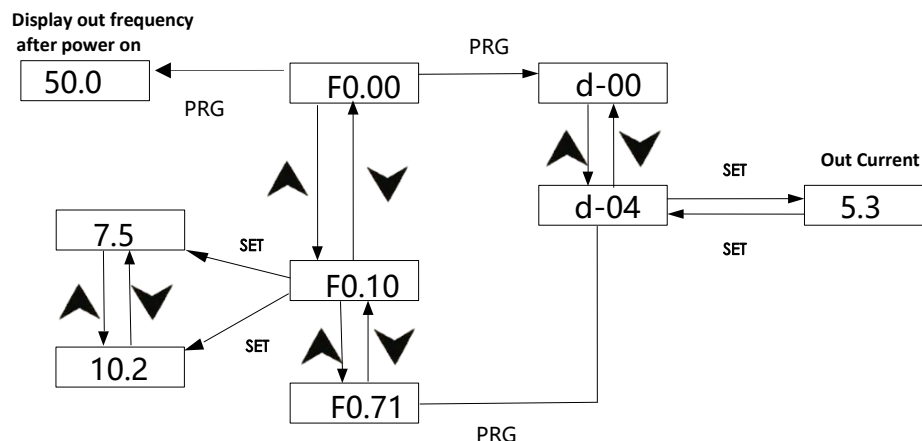
Return to the original interface method after setting parameters:

1. After the power is cut off, reconnect the power.
2. Select parameter D-00, then press PRG key.
3. Long press SET for 3S

VFD frequency setting method selection

The frequency setting mode of the inverter is set by parameter F0.02. When F0.02=0, the operating frequency is set by the potentiometer; when F0.02=2, the operating frequency is input by AVI (0-5V can be connected to an external potentiometer, J1 DIP switch to the upper position); when F0.02=2 , The operating frequency is input by ACI (4-20Ma, J1 DIP switch to the lower position); when F0.02=3, it is controlled by the external terminal (the switch value is set to frequency increase/decrease).

Terminal wiring diagram
Main Control Board Terminals
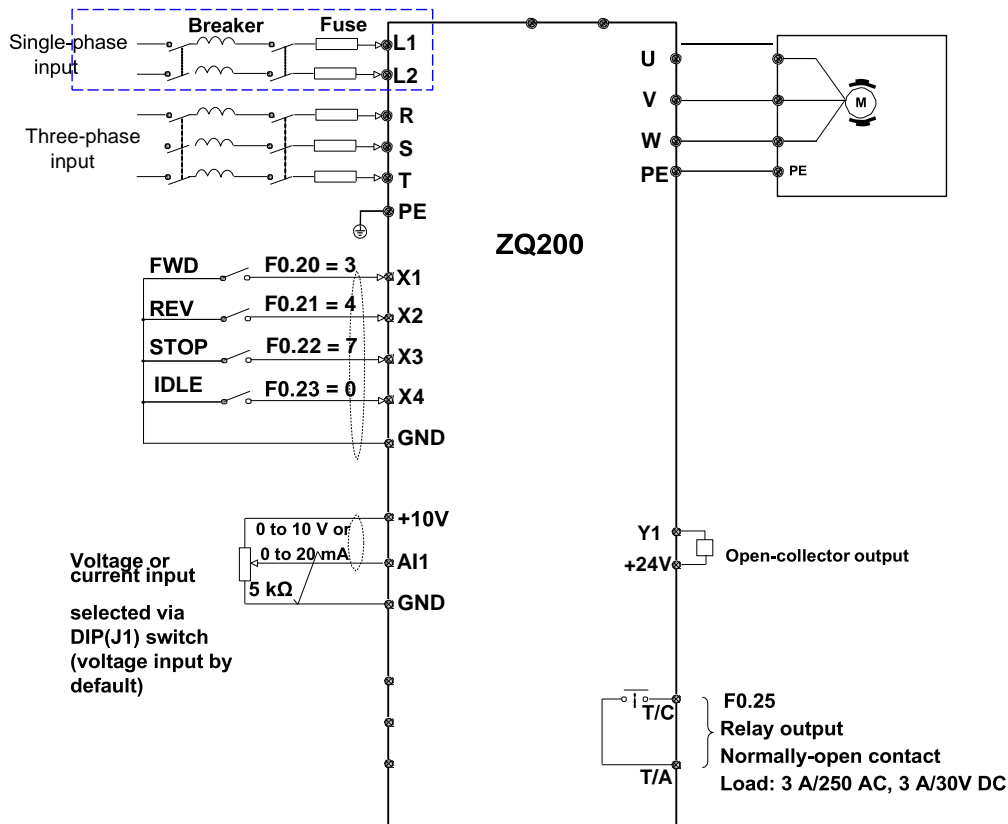
Description of Main Control Board Terminals		
Terminal Name	**Function**	
GND	Analog ground	COM Terminal
5V	5 V analog voltage output	10V ± 10%, up to 10 mA
24V	24 V power supply	24V ± 10%, up to 10 mA
AI1	Voltage/Current Analog input	(0 to 10V) / (0 to 20 mA) input,
X1	Multi-functional input terminal	Set according to parameter F0.19, and factory set defaults tobe FWD.
X2		Set according to parameter F0.20, and factory set defaults tobe REV.
X3		Set according to parameter F0.21, and factory set defaults tobe STOP.
X4		Set according to parameter F0.22, and factory set defaults tobe IDLE.
TA-TC	Relay output	TA-TC: Normally open; Load: 3 A/250 VAC 3 A/30 VDC Set according to parameter F0.26
Y1	Open-collector output	Set according to parameter F0.25

6.2 Terminals of Main Circuits
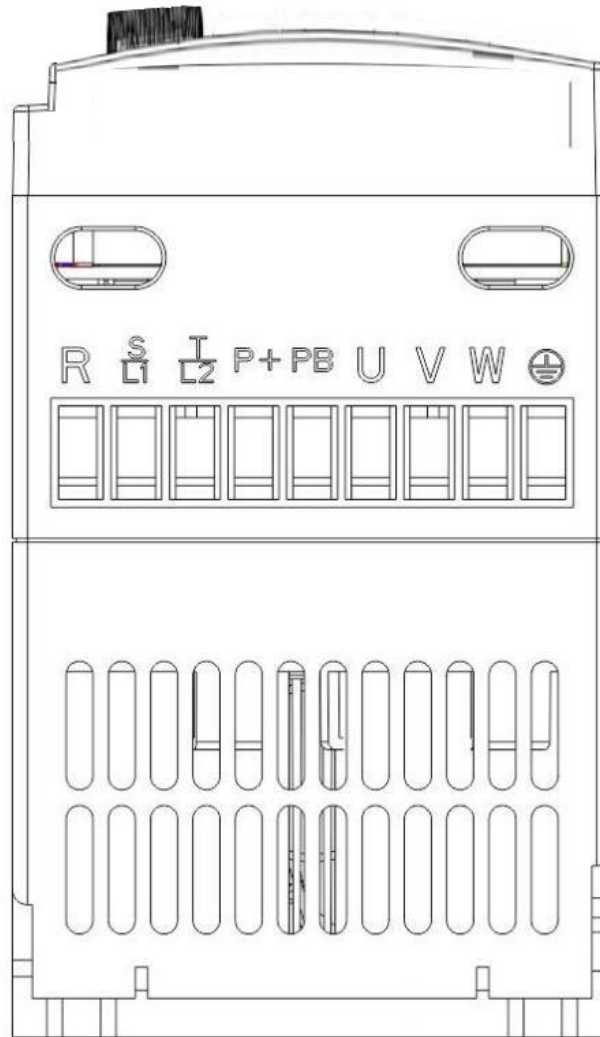
Description of main circuit terminals		
Terminal Name	Description	Function
R S/L1 T/L2	Supply input	R/S/T Connect to the three-phase AC power supply., 380V, 50Hz/60Hz L1/L2 220V Model connect terminals
U V W	Output terminal	Connect to a three-phase motor.
PA/+ PB	Braking resistor connection	Connected to external braking resistor.
⏚	Ground(PE)	Grounding connection. 400V level: grounding resistance is 4Ω or below.

7 Parameter Description

7.1 Basic operating parameters group

○—Parameters that can be modified in any state
×—Parameters that cannot be modified in the operating state
◆—Parameters that are actually detected and cannot be modified
◇—Manufacturer's parameter, limited to the manufacturer to modify it, the user is prohibited to modify it

Code	Name	Description	Settings Range	Default	Change
F0.00	Motor control mode	0: VF control 1: Simple vector control	0-1	0	×
F0.01	Selection of run command	0: Panel run command 1: Operation command by the terminal	0-1	0	○
F0.02	Frequency given selection	0: Panel potentiometer 1: Digital Given 1, adjustable by the▲ and▼ keys on the operating panel 2: AVI Simulation Given (0-5V/0- 20mA) 3 : Digital Given 2, terminalUP/DOWN adjustment 4: The two multi-speed terminals are connected and run, and the terminals adjusts the frequency 5: Two multi - speed terminals trigger given and run	0-5	0	○
F0.03	Digital setting of the operating frequency	The set value is the initial value of the frequency digit.	0.0-Upper limiting frequency	50.0Hz	○
F0.04	Digital frequency control	LED units digit: power-off storage 0: Storage 1: No storage Ten's digit: Hold shutdown 0: Hold 1: No hold LED hundreds digit:Reserved LED thousand digit: Reserved	0011	00	○
F0.05	Setting of the running direction	0: Forward 1: Reverse	0-1	0	○
F0.06	Maximum output frequency	The maximum output frequency is the highest frequency that the frequency converter is allowed to output and is the reference for acceleration and deceleration	MAX {50.0, [F0.06]} -999.9Hz	50.0Hz	×
F0.07	Upper limiting frequency	The operating frequency must not exceed this frequency.	MAX {0.1, [F0.07]}– [F0.06]	50.0Hz	×

Code	Name	Description	Settings Range	Default	Change
F0.08	Lower limit frequency	The operating frequency must not fall below this frequency.	0.0-Upper limiting frequency	0.0Hz	×
F0.09	Acceleration time	Time required for the frequency converter to accelerate from zero frequency to maximum output frequency.	0.1-999.9S 0.4-4.0KW 7.5S 5.5-7.5KW 15.0S	Varies by Mode	○
F0.10	Deceleratio n time	The time it takes for the frequency converter to decelerate from the			○
F0.11	Torque magnification	Manual torque magnification, this setting is a percentage relative to the rated voltage of the motor.	0.0-30.0%	Model Dependent	○
F0.12	The cut-off frequency of torque magnification	This setting is the frequency point for the boost cut-off for manual torque magnification.	0.0-50.0Hz	15.0Hz	×
F0.13	Setting of the carrier frequency	For applications requiring silent operation, the carrier frequency can be increased appropriately to meet the requirements, but the increased carrier frequency will increase the heat generation of the inverter.	2.0-16.0KHz 0.4-3.0KW 4.0KHz 4.0-7.5KW 3.0KHz	Model Dependent	×
F0.14	Halt mode	0: Deceleration stop 1: Free stop	0-1	0	×
F0.15	Setting of inversion inching frequency	The set frequency of the inching	0.0-50.0Hz	10.0Hz	○
F0.16	Lower limit voltage of AI1 input	Set AI1 upper and lower limit voltage	0.00-5.00V/ 0.00-20.00mA	0.00	○
F0.17	Upper limit voltage of AI1 input		[0.16]-5.00V/ [0.16]-20.00mA	5.00	○
F0.18	Setting corresponding to AI1 lower limit	Set the setting corresponding to the AI1 upper and lower limits, which corresponds to the percentage of the upper limit frequency [F0.06].	-100.0%--100.0%	0.0%	○
F0.19	Setting corresponding to AI1upper limit			100.0%	○

Code	Name	Description	Settings Range	Default	Change
F0.20	Input terminal X1 function	0: Idle at the control 1:Point-action control for forward rotation 2: Point-action control for reverse rotation 3: Control of forward rotation (FWD) 4: Control of reversing rotation (REV) 5: Three-wire operation control	0-26	3	×
F0.21	Input terminal X2 function	6: Free stop control 7: External stop signal input (STOP) 8: External reset signal input (RST) 9: Normally open input for external fault 10: Incremental frequency command (UP)	0-26	4	×
F0.22	Input terminal X3 function	11: Decreasing frequency command (DOWN) Terminal frequency reset 13:Multi-band speed selection S1 14: Multi-speed selection S2 15:Multi-speed selection S3	0-26	7	×
F0.23	Input terminal X4 function	16:Run command channel is forced to terminal 17: Reserved18:Reserved 19: Reserved 20:Frequency switch to digital frequency 1 21:Frequency switch to digital frequency 2 22: Reserved 23:Relay out	0-26	0	×
F0.24	Reserved	24: Select Multi-Speed 1 and run 25: Select Multi-Speed 2 and run 26: Multi-Speed stop(Only for 24 and25 function effectively)	-	0	
F0.25	Y output setting	0:Idle 1:Inverter in operation 2:Failure of the inverter 3: F020-F023=23(The relay R and Y out) 4:Frequency/speed arrival signal (FAR) 5: Level detection signal of frequency/speed	0-20	0	○
F0.26	R output setting	(FDT) 6: Pre-alarm of inverter overload 7: Pre-alarm of inverter overload delay 8~20: Reserved	0-20	2	○
F0.27	R closed delay time	A change in the state of relay R causes a change in the delay time of the output	0.0-255.0s	0.0s	×
F0.28	R open delay time				
F0.29	Frequency arrival FAR detection amplitude	The output frequency is within the positive and negative detection width of the set frequency, and the terminal outputs a valid signal (low level).	0.0Hz-15.0Hz	5.0Hz	○

Code	Name	Description	Settings Range	Default	Change
F0.30	FDT level setting value	FDT level setpoint / FDT hysteresis value / Time / Y / Time	0.0Hz-upper limiting frequency	10.0Hz	○
F0.31	FDT hysteresis value		0.0-30.0Hz	1.0Hz	○
F0.32	UP/DOWN Modification rate of the terminals	This function code is the frequency modification rate when setting the set frequency of the UP/DOWN terminal, i.e. the magnitude of the frequency change when the UP/DOWN terminal is shorted to the COM terminal for one second.	0.1Hz-50.0Hz/s	10.0Hz/s	○
F0.33	Setting of the pulse trigger method for the input terminals (X1- X4)	0: indicates the trigger method of level 1: indicates the trigger method of pulse	0-1FH	0	○
F0.34	Digital terminal filter coefficient	Used to set the sensitivity of the input terminals. If the digital input terminals are susceptible to interference and cause malfunction, this parameter can be increased to increase the resistance to interference. However, setting it too high will result in a reduction in the sensitivity of the input terminals. 1: represents the unit of 2MS scan time	0-9999	10	○
F0.35	Setting of the valid logic for the input terminals	0: indicates positive logic, i.e. the Xi terminal is connected to the common terminal and is valid, disconnection is not valid 1: indicates anti-logic, i.e. the Xi terminal is connected to the common terminal and is not valid, disconnection is valid	0-1FH	0	○
F0.36	Control mode of FWD/REV terminal	0: 2-wire control mode 1 1: Two-wire control mode 2 2: Three-wire control mode 1 3: Three-wire control mode 2	0-3	0	×
F0.37	Selection of terminal function detection at power-on	0:The terminal operation command is invalid when power is applied 1:The terminal operation command is valid when power is applied	0-1	0	×

Code	Name	Description	Settings Range	Default	Change
F0.38	Multi-speed frequency 1	Set the frequency of speed 1	0- upper limiting frequency	5.0Hz	O
F0.39	Multi-speed frequency 2	Set the frequency of speed 2	0- upper limiting frequency	10.0Hz	O
F0.40	Multi-speed frequency 3	Set the frequency of speed 3	0-upper limiting frequency	15.0Hz	O
F0.41	Multi-speed frequency 4	Set the frequency of speed 4	0-upper limiting frequency	25.0Hz	O
F0.42	Multi-speed frequency 5	Set the frequency of speed 5	0- upper limiting frequency	35.0Hz	O
F0.43	Multi-speed frequency 6	Set the frequency of speed 6	0- upper limiting frequency	45Hz	O
F0.44	Multi-speed frequency 7	Set the frequency of speed 7	0 - upper limiting frequency	50.0Hz	O
F0.45	Acceleration time 2	Set acceleration and deceleration time 2	0.1-999.9s 0.4-4.0KW 10.0s 5.5-7.5KW 15.0s	10.0s	O
F0.46	Deceleration time 2				
F0.47	Setting of corotation inching frequency	The acceleration and deceleration time of the set inching	0.1-255.0S 0.4-4.0KW 10.0S 5.5-7.5KW 15.0S	Model Dependent	O
F0.48	Setting of inversion inching frequency				
F0.49	Rated voltage of the motor	Setting of motor parameters	0-500V: 380V 0-250V: 220V	Model Dependent	×
F0.50	Rated frequency of the motor		1.0-999.9Hz	Model Dependent	×
F0.51	Rated speed of the motor		0-60000Krpm	Model Dependent	×
F0.52	Rated current of the motor		0.1-999.9A	50.0Hz	×

Code	Name	Description	Settings Range	Default	Change
F0.53	No-load current of the motor	Setting of motor parameters	0.1-999.9A	Model Dependent	×
F0.54	Stator resistance of the motor	Set the motor's stator resistance	0.001-20.000Ω	Model Dependent	O
F0.55	Slip compensation mode	0: Invalid 1: valid	0-1	0	×
F0.56	Protection factor in case of motor overload	The protection factor for motor overload is the percentage of the rated current value of the motor to the rated output current value of the frequency converter.	0%-200%	100%	×
F0.57	Undervoltage protection level	This function code specifies the lower limit voltage allowed on the DC bus when the frequency converter is operating normally.	50-280/ 50-480V	180/360 V	×
F0.58	Limiting factor for voltage at speed reduction	This parameter is used to regulate the inverter's ability to suppress overvoltages during deceleration.	0:close 1-255	1	×
F0.59	Limiting level of overvoltage	The limit level of overvoltage defines the action voltage in case of protection due to overvoltage stall	350-400/ 660-850V	375/790 V	×
F0.60	Limiting factor for accelerating current	This parameter is used to regulate the ability of the frequency converter to suppress overcurrents during acceleration.	0:close 1-99	10	×
F0.61	Limiting factor for constant speed currents	This parameter is used to regulate the inverter's ability to suppress overcurrent during constant speed.	0:close 1-10	0	×
F0.62	Limiting level of current	The current limiting level defines the current threshold for the automatic current limiting action, which is set as a percentage relative to the rated current of the frequency converter.	50%-200%	180%	×
F0.63	Initialization of parameters	0: no operation The frequency converter is in the normal state of reading and writing of parameters. The set value of the function code. The possibility of changing it is related to the setting state of the user code and the current operating state of the frequency converter. 1: Restore the factory settings All user parameters are restored to their factory settings according to the model.	0-1	0	X

Code	Name	Description	Settings Range	Default	Change
F0.64	Selection of the main parameters for operational monitoring	LED unit digit: running status monitoring parameters selection. By changing the setting value of this function code, the monitoring item of the ainmonitoring interface can be changed, such as: F0.62 unit digit set 4, that is, select the output current d-04, then the default display item on the main monitoring interface is the current output current value during operation. LED ten digit: By changing the setting value of the function code, the monitoring items of the main monitoring interface can be changed, such as: F0.62 10 set 8, that is, select module temperature D-08, when shutdown, the silent display item on the main monitoring interface is the current module temperature. LED hundred digit: Reserved LED thousand digit: Reserved	00-FFH	10	○
F0.65	Auxiliary display	LED unit digit: running status monitoring parameters selection LED ten digit: stop status monitoring parameters selection LED hundred digit: Reserved LED thousand digit: Reserved	0-FFH	34	○
F0.66	Voltage compensation mode	0: Invalid 1: valid	0-1	0	○
F0.67	Detection factor for open-phase protection	If the ratio of the maximum value to the minimum value of the output current in the three phases is greater than this coefficient and lasts for more than 6 seconds, the inverter will alarm the fault ETUN for unbalanced output current.	0.00-20.00	2.00	○
F0.68	Overload of the frequency converter	The current threshold for the pre-alarm action of the inverter's overload is set as a percentage relative to the rated current of the inverter.	0-150%	120%	○
F0.69	Level of pre-alarm	The delay time between the output current of the frequency converter being continuously greater than the horizontal amplitude of the pre-alarm for overload (F5.10) and the signal for the pre-alarm for	0.0-15.0s	5.0s	×
F0.70	Self-learning of motor parameters	0: Invalid 1: Static self-learning (STAR is displayed immediately at start, END is displayed at end 1S and then goes out)	0-1	0	×
F0.71	User password	Set any non-zero number and wait 3 minutes or power down for it to take effect.	0-9999	0	○

7.2 Manufacturer'sparameters group

Code	Name	Description	Settings Range	Default	Change
F1.00	Manufacture's code		1-9999	****	◇

7.3 Parameter group for monitoring

Code	Name	Range	Default	Change
d-00	Output frequency (Hz)	0.0-999.9Hz	0.0Hz	◆
d-01	Set frequency(Hz)	0.0-999.9Hz	0.0Hz	◆
d-02	Output voltage(V)	0-999V	0V	◆
d-03	Bus voltage(V)	0-999V	0V	◆
d-04	Output current(A)	0.0-999.9A	0.0A	◆
d-05	Status of the input terminals (X1-X4)	0-1FH	0H	◆
d-06	Status of the output (Y/R)	0-FH	0H	◆
d-07	Analogue input AI1 (V/mA)	0.00-5.00V/20.00mA	0.00V	◆
d-08	Temperature of the module (°C)	0.0-132.3C	0.0	◆
d-09	Upgrade date of the software (year)	2010-2026	2020	◆
d-10	Upgrade date of the software (month, day)	0-1231	0907	◆
d-11	Second fault code	0-14	0	◆
d-12	Current fault code	0-14	0	◆
d-13	Output frequency at last fault (Hz)	0.0-999.9Hz	0.0Hz	◆
d-14	Output current at time of latest fault (A)	0.0-999.9A	0.0V	◆
d-15	Busbar voltage at time of latest fault (V)	0-999V	0V	◆
d-16	Version of the software	1.00-99.99	2.00	◆
d-17	Model of power	0.10-99.9KW	Model Dependent	◆
d-18	Speed of motor (Krpm)	0-60000Krpm	Model Dependent	◆

7.3 Fault code, cause and Countermeasures

Codes	Name	Possible Causes of Failure	Countermeasures for Faults
E0C1	Overcurrent in accelerated operation	The acceleration time is too short	Extend acceleration times
		Low power of the frequency converter	Select a frequency converter with a large power rating
		Improper setting of V/F curve or torque boost	Adjust the V/F curve or torque boost
E0C2	Overcurrent in decelerating operation	Deceleration time too short	Extend the deceleration time
		Low power of the frequency converter	Select a frequency converter with a high power rating
E0C3	Overcurrent in constant speed operation	Low voltage on the grid	Check the input power supply
		Sudden or abnormal load changes	Check the load or reduce the load
		Low power of the frequency converter	Select a frequency converter with a high power rating
EHU1	Overpressure during accelerated operation	Abnormal input voltage	Check the input power supply
		Re-starting of rotatingmotor	Set it to start after DC braking
EHU2	Overpressure in decelerating operation	Deceleration time too short	Extend the deceleration time
		Abnormal input voltage	Check the input power supply
EHU3	Overpressure in constant speed operation	Abnormal input voltage	Check the input power supply
EHU4	Overvoltage at standstill	Abnormal input voltage	Check the voltage of the power supply
ELU0	Undervoltage during operation	Input voltage abnormality or relay not activated	Check the voltage of the power supply or ask the manufacturer for service
E-OH1	Heat sink overheating	High ambient temperature	Reduce ambient temperature
		Damage to the fan	Replace the fan
		Blockage of the air duct	Unclog air ducts
EOL1	Inverter overload	Improper setting of V/F curve or torque boost	Adjust V/F curve and torque boost
		Low voltage on the grid	Check grid voltage
		Acceleration time too short	Extend acceleration times
		Excessive load on the motor	Select a more powerful inverter

Codes	Name	Possible Causes of Failure	Countermeasures for Faults
EOL2	Overloading of motors	Improper setting of V/F curve or torque boost	Adjust the V/F curve and torque boost
		Low voltage on the grid	Check the grid voltage
		Excessive motor blocking or sudden load changes	Check the load
		Incorrect setting of Smotor overload protection factor	Correctly set the protection factor in case of motor overload
E-EF	Failure of external equipment	Ault in external equipment, input terminals closed	Disconnect the external device fault input terminals and clear the fault (take care to check the cause)
ECCF	Current detection fault	Fault in current sampling circuit	Seek service from the manufacturer
		Fault in auxiliary power supply	
EEEP	EEPROM read/write error	EEPROM failure	Seek service from the manufacturer
E-LP	Output open-phase protection	Outputs U, V, W are out-phase	Check output wiring

Zest Electric Co.,Ltd

Address: No.121 Suixi Road ,Suixi,China

E-mail:info@zest-electric.com

http//: www.zest-electric.com