ZQ310 Series

Variable Frequency Drive

High Performance Solar Inverter

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ZEST Electric

ZEST Electric Specialized in developing, manufacturing, selling of industrial automatic products, also committed to provide excellent integrated solutions!

ZEST taking up the mission of improving industry automation progress, upholding the design & development of Independent intellectual property rights, working hard at domestic market, established famous brand in this industry, and expanding our business in international market. ZEST Electric determined to be a reliable partner to constantly create value for customers & users.

Now the products are widely used in electric power, mining ,metallurgy ,petroleum, chemical, building materials, lifting, machine tools, textiles, paper, packaging, light-industry and various industrial automation products.

Customer first is what we always insist, ZEST is committed to becoming one of the leading providers of industrial automation control-products and system solutions.

Product introduction

ZQ310 is a high-performance VFD with ZEST ELECTRIC that integrates vector frequency conversion technology. With high-performance current vector technology, it can easily drive induction motors. The technical and performance problems encountered so far in equipment such as cables, machine tools, metal products, petrochemicals, natural gas, lifting equipment, pulp and paper, textiles, printing and dyeing, ceramics and other industries can be easily solved. High performance, high quality, high power density design, and significant improvements in ease of use, maintainability, environmental protection, installation space and design standards can further optimize the user experience.

Product Detail

Flame Retardant Plastic

Industrial Flame Retardant ABS Plastics

High Impact Resistance

High Heat Resistance

High Flame Retardant

Good Comprehensive Performance

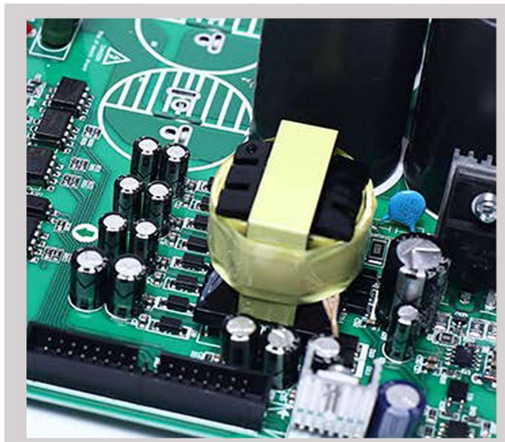
Intelligent Fan Control

Strong Cooling Fan-improve Machine Stability

Intelligent Start and Stop Control

Greatly Reduce The Field Noise

And Improve The Service Life Of The Fan



Low Loss High Frequency Transformer

Independent Bridge Wall

Power Supply Scheme

Power Abnormality Self-Check Function

Operation Panel

Human-Machine Interactive Button Panel Design

Intelligent Control

Convenient Operation

Intelligent High-End Motherboard

Automatic Coating

Thicken The Three Anti - Paint Coating

Resistant To Moisture, Corrosion

And Salt Spray

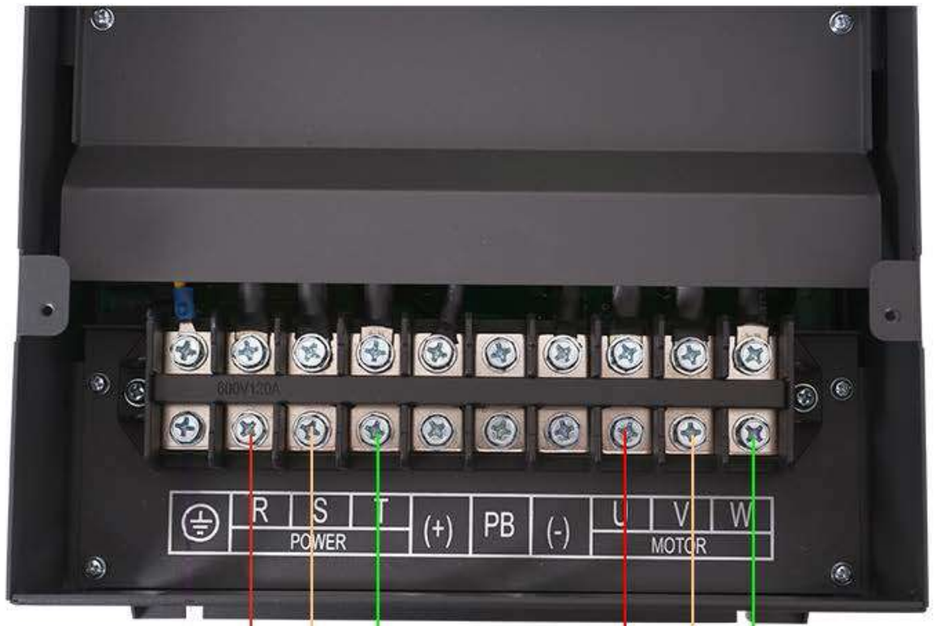
Appearance of Keyboard panel

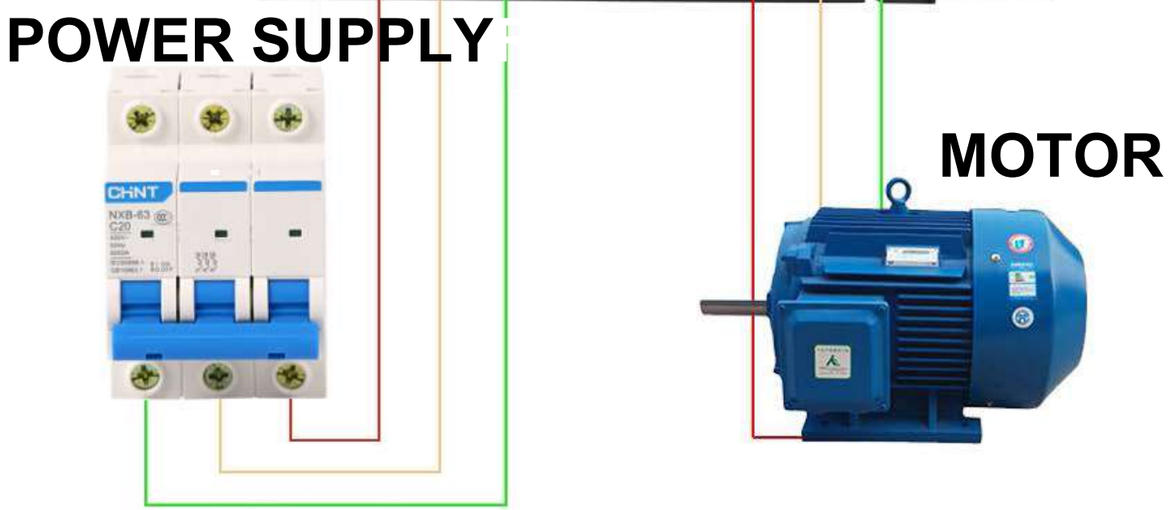
Key	Name	Function Description
PRG	Programming Escape key	Three-level menu operation mode: In the zero-level menu state, press this key to enter the level-1 menu. The non-zero level menu returns the previous level menu.
ENTER	Enter key	In level-1 and Level-2 menus, press this key to enter the next- level menu. Confirm setting parameters in three-level menu state.
▲	Increase key	Function code, menu group, or set parameter value increment
▼	Decrease key	Function code, menu group, or set parameter value decrement.
▶▶	Shift key	In zero-level menu state, the display param eters of operation/ shutdown monitoring are cyclically switched; When setting data in programming state, you can change the modification bit of setting data.
RUN	Run key	Enter into run mode under keypad model.
STOP	stop/reset key	Used for shutdown operation during operation; Reset operation key in fault alarm state.
FUNC	Function key	Switch functions based on P7-01 Settings.

Main loop wiring diagram

Input R S T Three phase 380V

Output U V W Three phase 380V



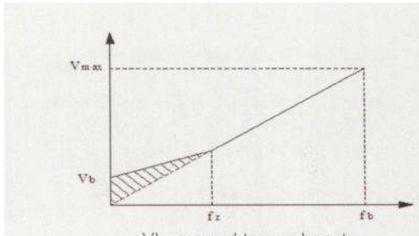


Product Parameter

Voltage	Model	Power (KW)	Rated Current	G.W. (KG/PC)	Product Size (MM)	
220V Single Phase	ZQ310S0D7	0.75	4	1.4	151*100*133	
	ZQ310S1D5	1.5	7			
	ZQ310S2D2	2.2	9.6			
	ZQ310S4D	4	17	3.8	249*143*177	
	ZQ310S5D5	5.5	25			
380V Three Phase	ZQ310T0D7	0.75	2.1	1.4	151*100*133	
	ZQ310T1D5	1.5	3.8			
	ZQ310T2D2	2.2	5.1			
	ZQ310T4D	4	8.5	2.4	215*120*154	
	ZQ310T5D5	5.5	13			
	ZQ310T7D5	7.5	16	3.8	249*143*177	
	ZQ310T11D	11	24			
	ZQ310T15D	15	32	6.5	320*205*205	
	ZQ310T18D5	18.5	36			
	ZQ310T22D	22	44			
	ZQ310T30D	30	58	12	408*288*210	
	ZQ310T37D	37	70			
	ZQ310T45D	45	90	24	510*320*248	
	ZQ310T55D	55	110			
	ZQ310T75D	75	152	45	655*377*367	
	ZQ310T90D	90	172			
	ZQ310T110D	110	205			
	ZQ310T132D	132	253	73	750*495*325	
	ZQ310T160D	160	304			
	ZQ310T185D	185	340			
	ZQ310T200D	200	380	117	1005*632*440	
	ZQ310T220D	220	426			
	ZQ310T250D	250	465			
	ZQ310T280D	280	520			
	ZQ310T315D	315	585	175	1250*800*450	
	ZQ310T355D	355	650			
	ZQ310T400D	400	725			
	ZQ310T450D	450	820			
	ZQ310T500D	500	935			

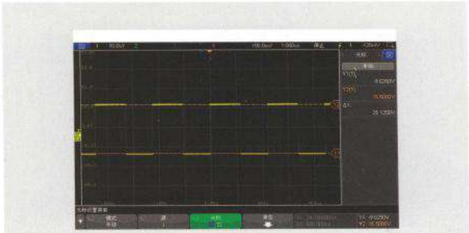
Product characteristics

Diagram of torque boost

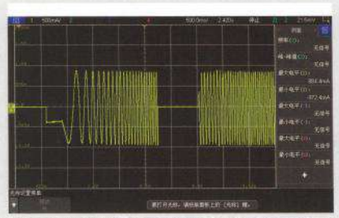


Vb- manual torque boost
Fz- Cut-off frequency of torque boost

Drive waveform

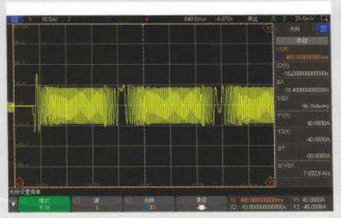


Speed tracking



The inverter can track the speed during the stopping process when it is restarted after an instantaneous power failure during operation, then adjust frequency and start the inverter to match the current running frequency of the motor.

Forward & reversal waveform



0Hz->30Hz forward->30Hz reversal->30Hz forward->30Hz reversal

Superior performance at low frequency

Vector control algorithm can realize high start torque and stable low-speed torque output

Wide voltage range input

Works well at voltage instability condition

Wide range of applications

The integration of various kinds of industry application software functions can meet all on-site control needs

Built-in brake unit

Compact structure design, built-in brake unit (22kw and below)

RS485 Modbus Communication

This series is equipped with standard RS485 serial communication interface and adopts standard Modbus communication protocol

Comprehensive protection

Comprehensive protection function is easy to deal with load variations and harsh working environment

High security

This series adopts high flame-retardant materials and high-reliability main circuit connection to ensure the safety

Industry application

Widely used in electric power, mining ,metallurgy ,petroleum, chemical, building materials, lifting, machine tools, textiles, paper, packaging, light-industry and various industrial automation products.

Petroleum

Water Treatment

Plastic Industry

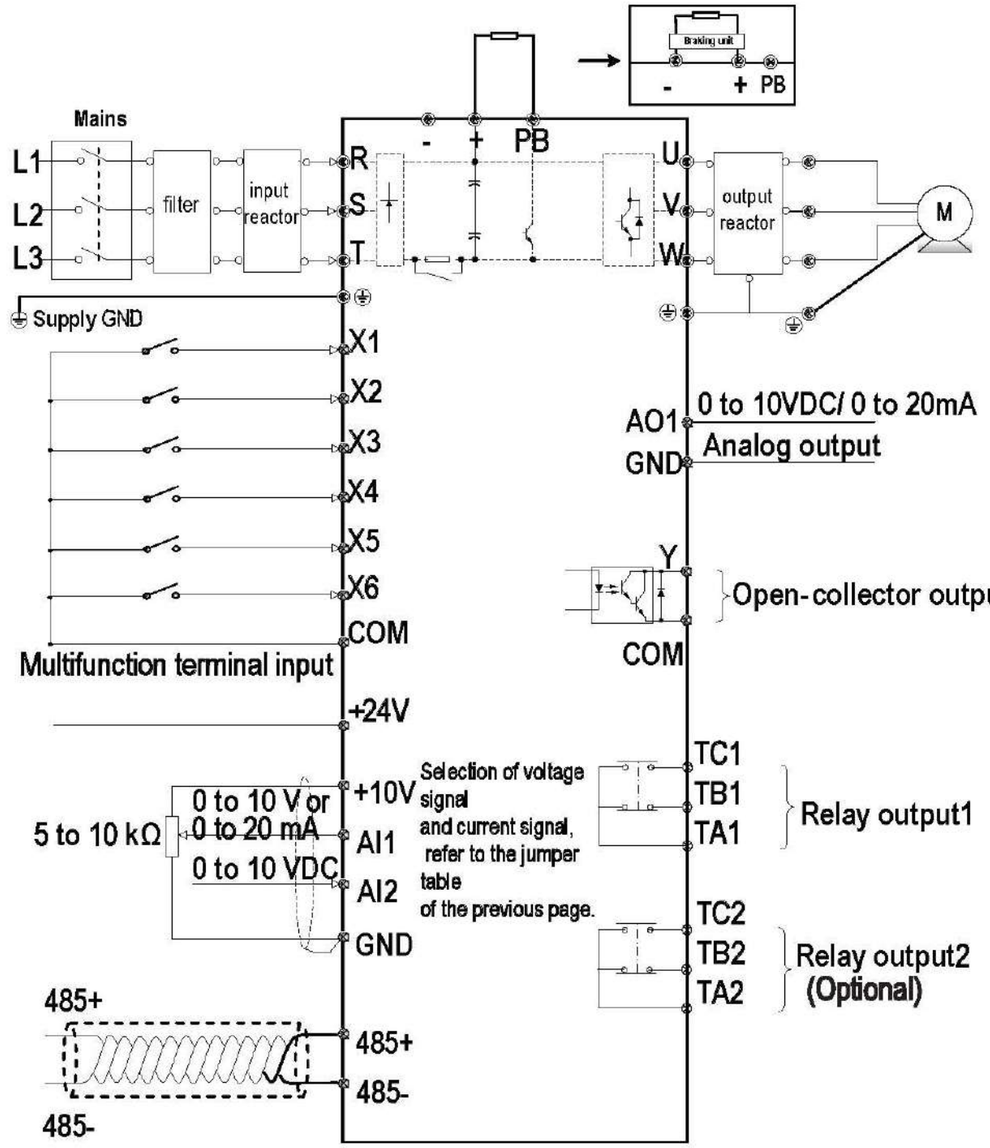
Lifting Gear

Machine Tools

Transmission

System wiring diagram

The wiring parts of VFD include major loop and control loop. Open the cover of I/O terminals, users can see the major loop terminal and control loop terminal, and must conduct the wiring according to the following diagram.



Detailed technical specifications

Item		Description	
Output	**Output voltage**	0V to the input voltage	
	Output frequency	0.00 Hz to 500.00 Hz	
	Carrier frequency	0.8khz to 8.0khz (automatic adjustment according to the load)	
	Overload capacity	G machine :110% long term; 150% / 1 min P machine :105% long term; 120% / 1 min	
Input	**Voltage/Frequency**	3-phase: 380V;50/60Hz 1-phase: 220V;50/60Hz	
	the fluctuation of voltage	3-phase: -15% to 10%, allowable range: 323V AC to 528V AC 1-phase: -15% to 10%, allowable range: 170V AC to 264V AC	
	Frequency range	G type: 110% for long-term, 120% for 22 min, 150% for 1min P type: 105% for long-term, 120% for 8 min, 150% for 1min	
Control Character	**Frequency Setting Resolution**	Analog Input	0.025% of maximum output frequency
		Digital Setting	0.01 Hz
	Control Mode	Voltage/Frequency (V/F) control, Sensorless vector control (SVC) and Feedback vector control (FVC) MPPT	
	Startup torque	SVC	0.25 Hz/150%
		FVC	0 Hz/180%
	Speed range	SVC	1：200
		FVC	1：1000
	Speed stability accuracy	SVC	±0.5% (SVC)
		FVC	±0.02% (FVC)
	Torque boost	Customized boost 0.0 % to 30.0 %	
	V/F curve	Straight-line V/F curve, Multi-point V/F curve, Complete V/Fseparation and Half V/F separation	
	Wave current limit	In V/F mode, to achieve fast response and ensure the normal operation of the inverter	
	Ramp mode	Straight-line ramp, S-curve ramp Four separate acceleration/deceleration time: 0.1s to 6500s	
	Automatic voltage regulation (AVR)	The system maintains a constant output voltage automatically when the grid voltage changes through the permissible range.	
	DC injection braking	DC injection braking frequency: 0 Hz to max frequency DC injection braking active time: 0.0s to 100.0s Current level of DC injection braking: 0% to 100%	
	Jog running	Frequency range of jog running: 0.00 to 50.00 Hz Acceleration/ Deceleration time of jog running:0.0s to 6500.0s	
	Onboard multiple preset speeds	The system implements up to 16 speeds by using simple PLC function or by using digital input signals.	
	Overvoltage and overcurrent stall control	Overvoltage and overcurrent stall control	
	Torque limit and control	The system limits the torque automatically. Torque control is applied in vector control.	

Detailed technical specifications

Item		Description	
(continued)	**Undervoltage Restrain during Running**	Specially for users with a low or unsteady voltage power grid: even lower than the allowable voltage range, the system can maintain the longest possible operating time based on its unique algorithm and residual energy allocation strategy	
Control input and output signals	**Command source**	Allows different methods of switching between command sources: Operating panel (keypad & display), Terminal I/O control and Serial communication	
	Main frequency reference setting channel	Allows different methods of switching between frequency reference setting channels: Digital setting, Analog voltage reference, Analog current reference, Pulse reference, Communication reference	
	Auxiliary frequency reference setting channel	Allows fine tuning of the auxiliary frequency and main & auxiliary calculation.	
	Input terminals	0 to 5V keyboard potentiometer input Six digital input (X) terminals, one of which supports up to 50 kHz high-speed pulse inputs. Two analog input (AI) terminals, one of which supports only 0 to10 V input, and the other supports 0 to 10 V and 4 to 20 mA current input.	
	Output terminals	Single high-speed pulse output terminal (open-collector) for a square-wave signal Single relay output terminal Single extra AO terminal	
	serial communication interface	RS-485 interface	
Protective Function		Overcurrent, overvoltage, undervoltage, module fault, electric thermal relay, overheat, short circuit, default phase of input and output, motor parameter adjustment abnormality, internal memory fault, etc.	
Display	**Five digit digital display (LED) and Status indicator light**	Parameter setting: Display parameter number and value.	Function code, Data, status
		Running state display: Display operation frequency, current, etc.	
		Fault display: Display the fault code.	
Environment	**Installation location**	Install the inverter where it is indoors and protected from direct sunlight, dust and corrosive or combustible gases. Running in derated capacity above 1000m.	
	Ambient Temperature	-10℃ to +40℃ (please run the VFD in derated capacity when ambient temperature is 40℃ to 50℃)	
	Ambient Humidity	20% to 95%RH, without condensing drops	
	Operation temperature	–10°C to +50°C	
	Vibration	Less than 0.5 g	
	Storage temperature	–25°C to +65℃	
	Installation Method	Wall-hanging type, cabinet type	
Structure	**Protection Level**	IP20	
	Cooling Method	Air cooling with fan control	