

ZQ160 Micro Frequency Inverter User Manual

Thank you for purchasing our company's permanent magnet synchronous frequency inverter.

Please read this user manual before installing and using the product. Equipment manufacturers should send this user manual along with the equipment to end customers for their reference.

Precautions

When using this product, please be sure to install the casing or cover as required and operate it according to the user manual.

- It must be placed in a dust-free, dry place with an ambient temperature between -20°C and +60°C.
- The relative humidity of the storage environment should be within the range of 0% to 95% with no condensation;
- The storage environment does not contain corrosive gases or liquids;
- It is best to place it on a shelf and store it in appropriate packaging;
- It is best not to store the inverter for a long time, as long-term storage will cause aging of the electrolytic capacitor. If long-term storage is required, it must be powered on once a year for at least 5 hours. The voltage must be slowly increased to the rated voltage using a voltage regulator.
- Product standard specifications

Product nameplate

AC Drive

Model ← MODEL : ZQ160S0D4
Power ← POWER : 400W
Input ← INPUT : 1PH AC220V 50/60HZ
Output ← OUTPUT : 3PH AC220V 2.3A 0-600HZ

Product SN ← C4501425C0079

CAUTION Read the user manual before operation.
Don't touch components until 4Min. after disconnection.

ZQ160S0D4

ZQ160 series
S:single phase
Power:0.4kw

Product model

Product Model	Input voltage (V)	Output current(A)	Rated power (W)
ZQ160S0D2	1PH×200-240	1.2	200
ZQ160S0D4	1PH×200-240	2.3	400
ZQ160S0D7	1PH×200-240	4.0	750

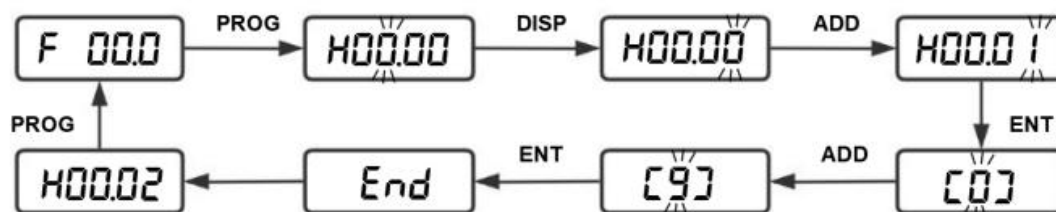
Note: To ensure safety, some parameters must be set when the motor is stopped, otherwise they cannot be set.

Keypad instruction

After the inverter is powered on, modify the command source and frequency setting selection, and then set the motor parameters.

The operation steps are as follows:

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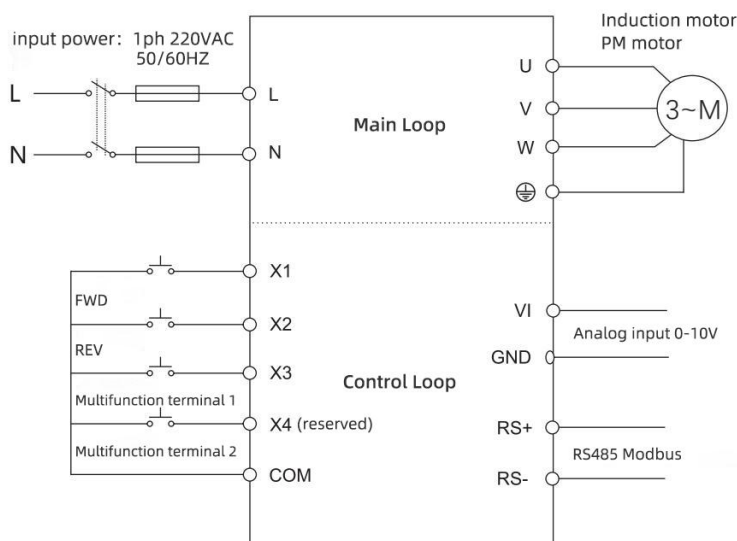


Technical specification

- ⊙ Output speed regulation ranges from a minimum of 100 rpm to a maximum of 3000 rpm, with a start/stop speed of 0.1 to 5 seconds, meeting general speed control requirements.
- ⊙ Equipped with a speed potentiometer, 485, external terminal control, external potentiometer, and external analog control.
- ⊙ Features an electronic thermal relay and other conventional motor protection devices.
- ⊙ Can be connected to an external LED indicator for convenient on-site operation.
- ⊙ User-friendly interface with clear and concise parameter settings enhances user convenience.
- ⊙ Configurable multi-speed control to meet special application requirements.
- ⊙ Use the shift key to view real-time parameters.
- ⊙ Comprehensive protection features.

Wiring diagram

Control circuit wiring diagram

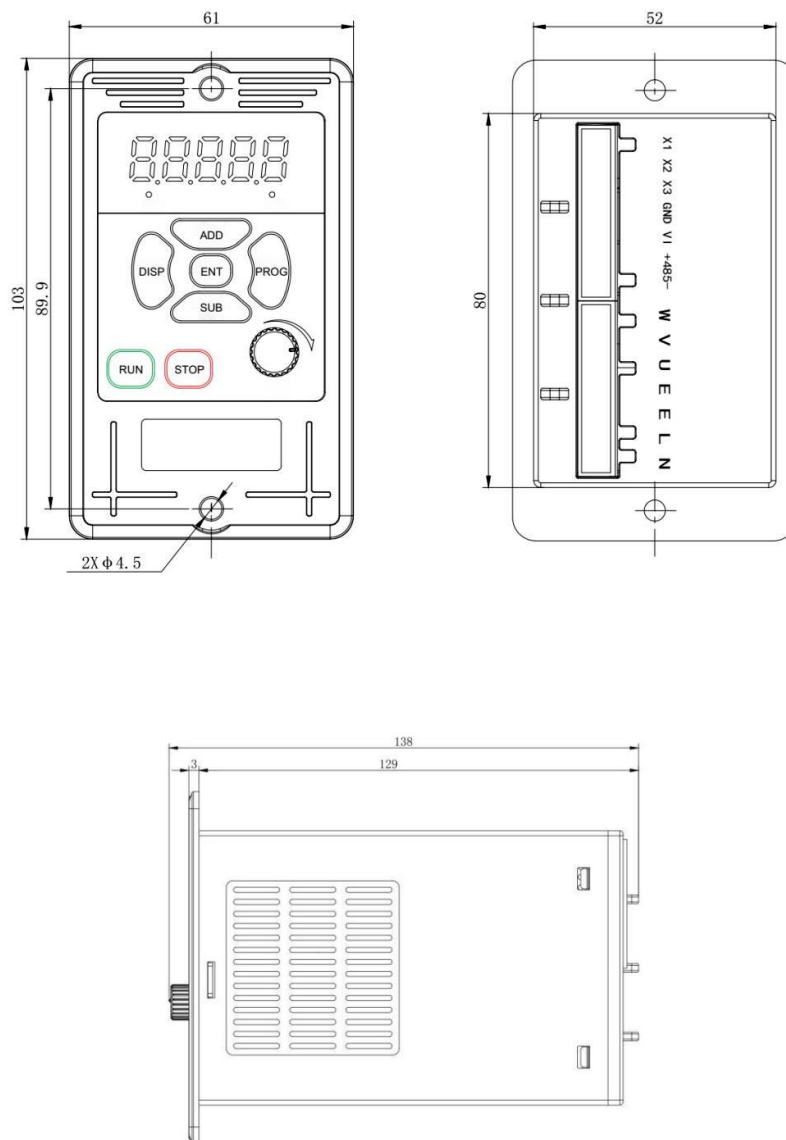


Z0160 Diagram

Category	Terminal symbols	Terminal name	Functional Description
Analog input	VI,GND	Analog input	Input voltage range: DC 0-10V
Digital Input	X1,COM	Forward operation	Forward operation control
	X2,COM	Reverse operation	Reverse operation control
	X3,COM	Multi-speed 2 terminals	Multi-speed function 2
	X4,COM	Reserve	Reserve
Analog input	RS-,RS+	485 interface	-

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Appearance and installation diagram



1.Function indicator light description

Running indicator light	It is always on during operation.
Forward/reverse indicator light	It is always on when reversed.

2.Button Function Description

PROG	Used to enter or return to the menu
DISP	It is used to display data cyclically on the main interface; or to select the modification position of the parameter when modifying the parameter.
ENT	Used to enter a menu or confirm data.
ADD	Up key, data setting up key
SUB	Down key, data setting down key.
RUN	Start button.
STOP	Stop button: Fault reset button.
Speed knob	Used to adjust the speed of the speed regulator

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Basic Function Parameters List				
Parameter	Name	Setting Range	Default	Unit
H0	Basic function parameters			
H00.00	Command selection	0: Operating panel 1: Terminal 2: Communication	0	-
H00.01	Main frequency source X selection	0: Digital setting (H00.02) 1: Control panel knob(potentiometer) 2: VI 4: Control panel knob(encoder)) 6: Multi-speed 9: Communication setting	1	-
H00.02	Preset reference value	-100~100% (H00.01=0)	0	%
H00.03	Maximum frequency	0-655.35Hz	50.0	Hz
H00.04	Carrier frequency	2-16	5	KHz
H00.05	Lower frequency	0-H00.03	0.0	Hz
H00.06	Running direction selection	0: Default direction 1: Default direction opposite	0	-
H00.07	Reverse operation prohibited	0: Invalid 1: Valid	1	-
H00.08	Acceleration time 1	0.01-65535s	10.0	s
H00.09	Deceleration time 1	0.01-65535s	10.0	s
H00.10	X1 input	0: Invalid 1: Forward running 2: Reverse running 3: Forward/reverse switch 4: JOG FWD 5: JOG REV 8: Decelerate to stop 9: Free stop 10: Reset + free stop (inverse logic)) 11: Reset 14: Multi-speed setting value bit0 15: Multi-speed setting value bit1 20: Pulse start 21: Pulse reverse 34: External fault	1	-
H00.11	X2 input		2	-
H00.12	X3 input		14	-
H00.13	Local address		1	-
H00.14	Communication baud rate	5: 9600	5	bit/s
H00.15	Communication data format	0: No parity 1: Even parity 2: Odd parity 3: No parity (2stop bits)	0	-
H00.16	Run key start times setting	1—2	1	times
H00.49	Software version	-	According to model	-

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H1	Motor Parameters			
H01.00	Motor type	0: Asynchronous motors 1: Surface-mount synchronous motor 2: Non-saturated inline synchronous motor 3: Saturated inline synchronous motor	0	-
H01.01	Motor rated power	0.00: 60W 0.02: 120W 0.03: 200W 0.05: 400W 0.06: 550W 0.07: 750W	0.00-0.07	
H01.02	Motor rated voltage	According to motor voltage	Model	V
H01.03	Motor rated frequency	According to motor frequency	Model	Hz
H01.04	Motor rated current	According to motor current	Model	A
H01.05	Motor rated RPM	According to motor RPM	Model	rpm
H01.06	Motor rated torque	According to motor torque	Model	N.m
H01.07	Stator resistance	According to motor data	Tuning parameters	Ω
H01.08	D-axis inductance	According to motor data	Tuning parameters	mH
H01.09	Q-axis inductance	According to motor data	Tuning parameters	mH
H01.10	Number of motor poles	According to motor data	Model	pole
H01.11	Back EMF	According to motor data	Model	V
H01.12	System inertia	According to motor data	Tuning parameters	-
H01.13	Motor parameter self-learning	0: Invalid 1: Full parameter self-learning 2: Stator resistance self-learning	0	-
H01.14	Synchronous motor starting method	0: Initial position detection start(IPD) 1: Magnetic start(PARKING)	1	-
H01.15	Synchronous motor magnetic starting current	0-150%	40	%
H01.16	Synchronous motor magnetization time	0.1-60s	1.000	s
H01.17	Low speed motor min current	0~120	40	%

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Fault codes and solutions			
Warning	Fault	Fault name	Solutions
-	E.01	Output short circuit	Check the wiring of motor or the insulation inside the motor
A.02	E.02	Accelerated overcurrent	1.Troubleshooting peripheral faults 2.Cancel sudden load 3.Increase acceleration time and improve torque 4.Motor parameter self-learning 5.Choose a larger speed regulator
A.03	E.03	Deceleration overcurrent	1.Troubleshooting peripheral faults 2.Increase deceleration time 3.Motor parameter self-learning 4.Cancel sudden load
A.04	E.04	Constant overcurrent	1.Troubleshooting peripheral faults 2.Motor parameter self-learning 3.Cancel sudden load 4.Choose a larger speed regulator
A.05	E.05	Acceleration overvoltage	1.Check the power supply and adjust the voltage to the normal range 2.Increase acceleration time 3.Cancel sudden load 4. motor parameter identification or select a larger speed regulator
A.06	E.06	Deceleration overvoltage	1.Adjust the voltage to the normal range 2.Cancel this additional power 3.Increase deceleration time 4.Free stop
A.07	E.07	Constant speed overvoltage	1.Adjust the voltage to the normal range 2.Cancel sudden load 3.Identify motor parameters or select a larger speed regulator
A.09	E.09	Undervoltage protection	Check the input voltage to ensure the grid voltage is normal
A.10	E.10	Speed regulator overload	1.Check the rationality of parameter settings 2.Mechanical abnormality 3.Choose a higher power product
A.12	E.12	Input phase loss	Check the input power cord connection
-	E.13	Output phase loss	1.Check whether the motor wiring is connected normally or there is leakage. 2.Check whether the motor is missing a phase
A.14	E.14	Speed regulator overheating	1.Check the installation location and clean the air duct 2.Check the fan condition or replace the fan
-	E.16	Internal alarm	Return to factory to repair
-	E.19	AMA Failure	1.Correctly set motor parameters 2.Check the cables and re-learn the motor parameters
-	E.23	Ground alarm	1.Motor short circuit to ground 2.Replace the motor wire or motor
A.24	E.24	Torque limit	Check the load conditions and set the motor parameters correctly
A.25	E.25	Current limit	Check the load conditions and set the motor parameters correctly
A.27	E.27	External alarm	Correctly set terminal parameters
	E.30	AMA detects that the motor is not connected	1.Check motor wiring 2.Replace the motor
A.45	E.45	Motor overload	Choose a higher power product or set the correct value according to the motor nameplate
-	E.48	Accumulated working time reaches failure	Use parameter initialization function to clear record information
-	E.89	Button Disable	Correctly set the button limit parameters according to actual needs
	E.91	Parameter error	Parameters are not set correctly as specified
A.95	E.95	Power alarm	Check the grid voltage
A.96	E.96	Disconnection alarm	Check whether the terminal analog wiring or signal is normal
A.97	E.97	Communication control word timeout	1.Check the host computer program 2.Check the communication cable 3.Correctly set communication parameters 4.Use shielded wire
-	E.98	Factory restore	Press "STOP"