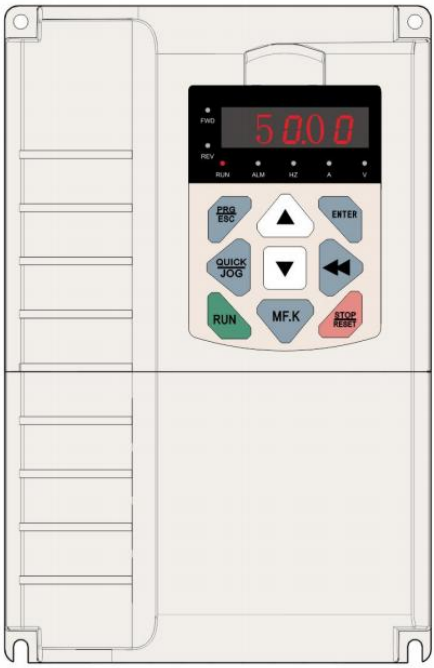
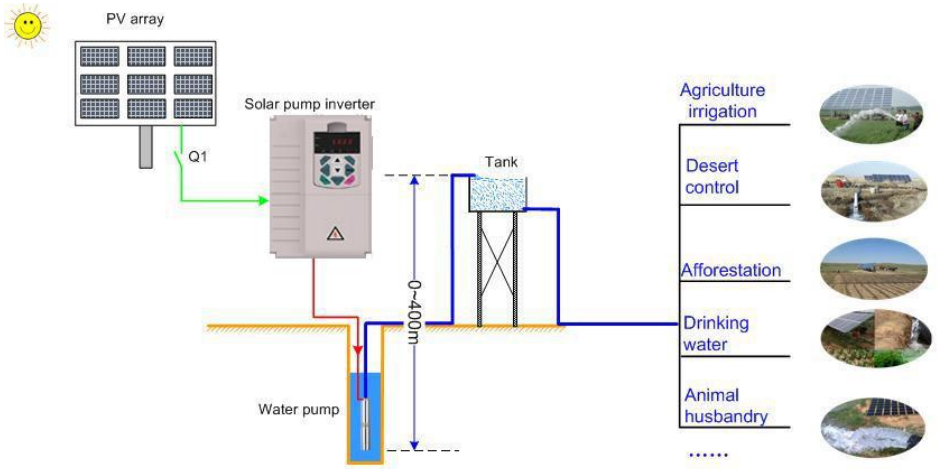
EPV300 Series Solar

Water Pump Inverter Manaul



User Manual

Solar pumping system application



New features:

1. One button control.
2. Faster and bigger memory chip.
3. Output 55HZ to match 50HZ pump with enough working space.
4. AC motor and PMSM Motor.

Preface

Thank you for purchasing EPV300 series solar pump inverter!

Based on the core control algorithm of the EPV300 series Solar pump inverter, and combined with the application control requirements of the solar water pump, EPV300 series inverter used for solar water pump is developed as a special inverter for the pump specially designed for outdoor solar in power supply. It has control and protection functions such as maximum power tracking, hibernated while light weaken, resumed while light strengthen, hibernated while with high water level, early warning while short of water and remote communication monitoring.

This manual introduces how to use EPV300 series inverter correctly. Before using (installation, operation, maintenance, inspection, etc.), be sure to read this instruction manual carefully. In addition, please read and understand the safety precautions of the product before use.

Notes
• When using this product, be sure to install the shell or cover in accordance with the regulations and operate according to the contents of the instructions. • The drawings in this instruction manual are only for illustration and may be different from the product you ordered. • Due to product upgrading or specification changes, and to improve the convenience and accuracy of the instructions, the contents of this specification will be changed in time without notice. • Please contact our regional agents or directly contact our company's customer service center for your needing of ordering the manual due to manual damage or loss.

Contents

Preface 2
Chapter 1 Safety information and warning notes 5
1.1 Safety information 5
1.1.1 Before installation 5
1.1.2 During installation 5
1.1.3 Wiring 6
1.1.4 Before power-on 6
1.1.5 After power-on 7
1.1.6 During operation 7
1.1.7 During maintenance 7
1.2 Waring notes 8
1.2.1 RCD request 8
1.2.2 Insulation checking of motors 8
1.2.3 Motor thermal protection 8
1.2.4 Operate above power frequency 8
1.2.5 The mechanical device resonance 8
1.2.6 Motor heat and noise 8
1.2.7 The output side prohibits installation of pressure sensitive devices or capacitors with improved power factor 9
1.2.8 Switching devices such as contactor for input/ output of the inverter 9
1.2.9 Using out of the range of rated voltage 9
1.2.10 Change from 3-phase to 2-phase 9
1.2.11 Protection against lightning strike 9
1.2.12 Altitude and derating use 9
1.2.13 Special usage 9
1.2.14 Warning of disposing unwanted inverter 9
1.2.15 Adaptable motor 9
Chapter 2 Product information 10
2.1 Naming rule 10
2.2 Nameplate sample 10
2.3 Electrical data 11
2.4 Technical specifications 12
2.5 Product appearance, installation hole position and size 12
2.5.1 The Outline drawing of the inverter 12
2.5.2 Inverter outline and installation hole position and size (mm) 13
2.5.3 Outline size of keyboard 14
2.5.4 Outline size of keyboard tray 14
2.6 Inverter daily maintenance and repairing 15
2.6.1 Daily maintenance 15
2.6.2 Regular check 15
2.6.3 Change of vulnerable parts of the inverter 16
2.6.4 Storage of inverter 16

Chapter 3 Debug guidance and control terminal 17
3.1 Debugging steps of solar panel in power supply 17
3.1.1 Wiring by reference to Figure 3.1, and check the wiring whether it is correct. If there's no mistake, Q2 can be closed. 17
3.1.2 The parameter setting of the motor 18
3.1.3 Water pump discharge test 18
3.1.4 Fault point setting and fault reset and time delay setting 18
3.1.5 Parameter setting after normal operation of the system 18
3.2 Debugging steps and electrical installation of electricity and solar panels when powered separately 18
3.3 Control terminal and wiring 20
3.3.1 The layout of the terminal of the control loop is shown as follows 20
3.3.2 Control terminal function description 20
3.3.3 Description of the control board wire jumper 21
3.3.4 Control terminal connection instructions 22
Chapter 4 Operation and display 23
4.1 Introduction of operation and display interface 23
4.1.1 Description of Indicators 23
4.1.2 Unit indicators 23
4.1.3 Digital display 23
4.2 Description of keys on the operation panel 24
4.3 Display mode and switching operation of parameter group 24
4.4 Instruction of viewing and modifying basic function codes 25
4.5 User modified function code 26
4.6 Definition and operation of the multifunction key 26
4.7 Method of viewing status parameters 26
Chapter 5 Function parameter table 27
5.1 Function parameter table of general ones 28
5.2 Function parameter table of inverter special for solar water pumps 44
5.3 Monitoring parameter brief table 48
Chapter 6 Faults diagnosis and solutions 50
6.1 Faults warning and solutions 50
6.2 Common faults and solutions 56
Guarantee Agreement 58
Product Warranty Card 59
Certificate 60

Chapter 1 Safety information and warning notes

Safety definition: In this manual, the notices are divided two types as follows:

 DANGER indicates that failure to comply with the notice will result in severe personal injury or even death.

 WARNING indicates that failure to comply with the notice will result in moderate or light injury, or equipment damage.

Users are supposed to read this chapter carefully when installing, debugging and maintaining the system. Please operate according to the safety precautions required in this chapter. Our company will assume no liability or responsibility for any injury or loss caused by improper operation.

1.1 Safety information

1.1.1 Before installation

 Danger
• Do not install the equipment if you find water in control system, component missing or damage upon unpacking. • Do not install the equipment if the packing list does not conform to the product you received.

 Danger
• Move the equipment with care during transportation to prevent damage to the equipment. • Do not use the inverter with damaged drive or missing components, or it will be in danger of injury. • Do not touch the components of the control system with your hands, otherwise it will result in static electricity damage.

1.1.2 During installation

 Danger
• Install the equipment on incombustible objects such as metal, and keep it away from combustible materials. Failure to comply may result in a fire. • Do not loosen the fixed screws of the components, especially the screws with red mark.

Warning

- Do not drop wire end or screw into the drive. Failure to comply will result in damage to the drive.
- Install the drive in places free of vibration and direct sunlight.
- Arrange the installation positions properly when more than two inverters are laid in the same cabinet to ensure the cooling effect.

1.1.3 Wiring

Danger

- Wiring must be performed only by qualified personnel under instructions described in this manual. Failure to comply may result in unexpected accidents.
- A circuit breaker must be used to isolate the inverter and power supply. Failure to comply may result in a fire.
- Ensure that the power supply is cut off before wiring. Failure to comply may result in electric shock.
- Tie the inverter to ground properly by standard. Failure to comply may result in electric shock.

Danger

- Never connect the power cables to the output terminals (U, V, W) of the inverter. Pay attention to the marks of the wiring terminals and ensure correct wiring. Failure to comply will result in damage to the drive.
- Ensure that the wiring is in line with the EMC requirements and the safety standards in the area. Failure to comply may result in accidents.
- Never connect the braking resistor between the DC bus terminals (+) and (-). Failure to comply may result in a fire.
- Use shielded cable for the encoder, and ensure that the shielding layer is reliably grounded.

1.1.4 Before power-on

Warning

- Ensure that the voltage class of the power supply is consistent with the rated voltage class of inverter. The power input terminals (R, S, T) and output terminals (U, V, W) are properly connected. No short-circuit exists in the peripheral circuit connected to the drive. The wiring is secured. Failure to comply will result in damage to the drive.
- Do not perform the voltage resistance test on any part of the inverter because such test has been done in the factory. Failure to comply will result in accidents.

Danger

- Cover the inverter properly before power-on to prevent electric shock.
- All peripheral devices must be connected properly under the instructions described in this manual. Failure to comply will result in accidents.

1.1.5 After power-on

Danger

- Do not open the cover after power-on. Failure to comply may result in electric shock.
- Do not touch the drive and peripheral circuit with wet hands. Failure to comply may result in electric shock.
- Do not touch any I/O terminal of the inverter. Failure to comply may result in electric shock.
- At the beginning of power-on, the inverter is checking the safety of its external circuit with strong electric, so please do not touch the drive's terminals U, V, W and the motor's terminals. Failure to comply may result in electric shock.

1.1.6 During operation

Danger

- Do not touch the fan or the discharging resistor to check the temperature. Failure to comply will result in personal burnt.
- Signal detection must be performed only by qualified personnel during operation. Failure to comply will result in personal injury or damage to the equipment.

Warning

- Avoid objects falling into the equipment when it is running. Failure to comply will result in damage to the equipment.
- Do not start/stop the drive by turning the contactor ON/OFF. Failure to comply will result in damage to the equipment.

1.1.7 During maintenance

Danger

- Do not repair or maintain the equipment when power-on. Failure to comply will result in electric shock.
- Ensure that the input power of the inverter is powered off for 10 minutes and the multimeter confirms that the voltage on the bus bar is less than 36V before the driver can be repaired or maintained, otherwise the residual voltage in the capacitor will result in personal injury.

- Repair or maintenance of the inverter may be performed only by qualified personnel. Failure to comply will result in personal injury or damage to the equipment.
- Set the parameters after the inverter is replaced. All the pluggable components must be plugged or removed only after power-off.



Warning

- The running motor could feed power to inverter, even though the motor stop and power off. So please make sure cut the connect between motor and inverter while repairing and maintaining the inverter.

1.2 Waring notes

1.2.1 RCD request

The running equipment could produce large leak current which passes the protecting grounding conductor, please install the B type RCD in the power supply side. Please consider the equipment could produce leak current to the earth with transient and steady state when it is started or in operation, please choose the special RCD with control higher harmonic function or general RCD with large aftercurrent.

1.2.2 Insulation checking of motors

If it is used for the first time, or a long time before re-use or during the regular check, the insulation of the motors must be checked. This is to reduce the risk of the inverter from being damaged by poor insulation of the motor. When checking, the motor wiring must be separated from the inverter. Please use 500V insulation tester to measure the insulating resistance, which should not be less than 5MΩ.

1.2.3 Motor thermal protection

If selecting the motor that is not in compliance with rated capacity of the inverter, especially the inverter rated power is more than motor rated power, be sure to adjust the relevant parameter for protecting motor in the inverter or to install thermal relay in front of the motor to ensure the motor is properly protected.

1.2.4 Operate above power frequency

This inverter can provide 0Hz~3200Hz output frequency. If the users need to run the motor above 50hz frequency, please consider the affordability of mechanical devices.

1.2.5 The mechanical device resonance

At some output frequencies, the inverter may encounter mechanical resonance of the load device, which can be avoided by setting the frequency hopping parameter in the inverter.

1.2.6 Motor heat and noise

Because the output voltage of the inverter is PWM wave and it contains a certain harmonic, the temperature rise, noise and vibration of the motor will increase slightly compared with the power frequency operation.

1.2.7 The output side prohibits installation of pressure sensitive devices or capacitors with improved power factor

The output of the inverter is PWM wave. If the output side is equipped with, such as a capacitor of for improving the power factor or varistor the pressure sensitive resistance of for lightning protection, which is will easily to cause the transient overcurrent of the inverter and or even damage of the inverter. Please do not use it.

1.2.8 Switching devices such as contactor for input/ output of the inverter

If contactor is connected between power supply and input of the inverter, please don't use the contactor to control inverter start-stop. If it must be done, interval time should be not less than one-hour. If frequently charging and discharging, the life of the internal capacitance of the inverter will be reduced. If the switch device is equipped with a contactor between the output and the motor, it is necessary to ensure that the inverter operates on and off without output, otherwise it will easily cause the damage of the module in the inverter.

1.2.9 Using out of the range of rated voltage

It is unsuitable to use EPV300 series inverter out of the specified range of operation voltage; otherwise, it may result in components damage of the inverter. If needed, please use the corresponding step-up or step-down device for pressure adjustment.

1.2.10 Change from 3-phase to 2-phase

It is not recommended to change the inverter of EPV300 series from 3-phase input to 2-phase input. Otherwise, it will lead to failure or damaged.

1.2.11 Protection against lightning strike

Transient surge suppressor is set inside the inverter of this series which protects it against lighting strike, which has a certain self-protection ability for the inductive thunder. In the areas with frequent thunder and lightning, users should install protection at the front end of the inverter.

1.2.12 Altitude and derating use

Derating must be considered when the inverter is installed in the area at high altitude with more than 1000m. Because of the thin air, the cooling effect of inverter is deteriorated. Please contact our company for technical advice about this case.

1.2.13 Special usage

If is required to use the method other than the recommended wiring diagram provided in this manual, such as common DC bus, EPS power supply, etc., please consult our company.

1.2.14 Warning of disposing unwanted inverter

Electrolytic capacitors in main circuit and electrolytic capacitors on PCB may explode when they are burnt. Poisonous gas may be generated when the plastic parts like front covers are burnt. Please dispose the inverter as industrial waste.

1.2.15 Adaptable motor

(1) The standard adaptable motor is squirrel cage induction motor or permanent magnet synchronous motor.

(2) The cooling fan and rotor shaft of non-variable-frequency motor are coaxial, which results in reduced cooling effect when the rotational speed declines. Therefore, add a more powerful fan or replace it with variable-frequency motor in applications where the motor overheats easily.

(3) The standard parameters of the adaptable motor have been equipped inside the inverter. It is still necessary to perform motor auto-tuning or modify the default values based on actual conditions. Otherwise, the running result and protection performance will be affected.

(4) The inverter may alarm or even be damaged when short-circuit exists on cables or inside the motor. Therefore, perform insulation short-circuit test when the motor and cables are newly installed or during routine maintenance. During the test, make sure that the inverter is disconnected from the tested parts.

Chapter 2 Product information

2.1 Naming rule

Nameplate Definition (Sample)

EPV300 - 4T 2.2G

Product series: EPV300
4T: three phase 380~460V
Product power: 2.2kW

Figure 2-1 Name rule

2.2 Nameplate sample



Figure 2-2 Nameplate

The machine case structure of each type of EPV300 is as follows:

Voltage class	Three phase 380~460V
Model	Type of machine case
0.4～11kW	Plastic structure
15～450kW	Metal plate structure

2.3 Electrical data

Table 2-1 EPV300 Series Pump Inverter model and technical data

Pump Inverter model	Power capacity (kw)	Input current (A)	Output current (A)	Adopter motor (kw)
EPV300-4T0.75G	0.75	3.4	2.1	0.75
EPV300-4T1.5G	1.5	5.0	3.8	1.5
EPV300-4T2.2G	2.2	5.8	5.1	2.2
EPV300-4T3.7G	4.0	10.5	9	4.0
EPV300-4T5.5G	5.5	14.6	13	5.5
EPV300-4T7.5G	7.5	20.5	17	7.5
EPV300-4T11G	11	26.0	25	11
EPV300-4T15G	15	35.0	32	15
EPV300-4T18.5G	18.5	38.5	37	18.5
EPV300-4T22G	22	46.5	45	22
EPV300-4T30G	30	62.0	60	30
EPV300-4T37G	37	76.0	75	37
EPV300-4T45G	45	92	91	45
EPV300-4T55G	55	113	112	55
EPV300-4T75G	75	157	150	75
EPV300-4T90G	90	180	176	90
EPV300-4T110G	110	214	210	110
EPV300-4T132G	132	256	253	132
EPV300-4T160G	160	307	304	160
EPV300-4T185G	185	350	340	185
EPV300-4T200G	200	385	377	200
EPV300-4T220G	220	430	426	220

2.4 Technical specifications

380V voltage	
Maximum input DC voltage	900VDC
Recommended MPPT voltage range	260~750VDC
Recommended input voltage	620-750VDC
MPPT efficiency	99.99%
Number of Input	1
Rated output voltage	3AC 380~460V
Input frequency range	0~50/60Hz
Maximum efficiency of the whole machine	97%
Cooling mode	Forced air cooling
Protection grade	IP20
Altitude	Below 1000m, when the altitude exceeds 1000m, please reduce according to the ratio of 100m down 1%.
Standard of conformity	CE

2.5 Product appearance, installation hole position and size

2.5.1 The Outline drawing of the inverter

1. 0.4~11kW Outline and outer size of hanging inverter with plastic casing.



Figure 2-3

Figure 2-3 EPV300 series 0.4~11kW outline and outer size of hanging inverter with plastic casing

Note: In the situation of much dust, please set the random attached dust shied to the position of the heat emission hole to prevent the dust into the inverter inside.

2. 15~400kW Outline and outer size of hanging inverter with metal casing



Figure 2-4

Figure 2-4 EPV300 Series 15~400kW Outline and Outer Size of metal plate structure

2.5.2 Inverter outline and installation hole position and size (mm)

Tale 2-3 Outline and installation hole position and size

Inverter model	Outline size(mm)					Mounting aperture (mm)
	W1	H1	W	D	H	
EPV300-4T0.75G	106.6	175.3	118	156.7	185	ø4.5
EPV300-4T1.5G						
EPV300-4T2.2G						
EPV300-4T3.7G						
EPV300-4T5.5G	148	235	160	178	247	ø5.5
EPV300-4T7.5G						
EPV300-4T11G						
EPV300-4T15G	140	324	217	194	335	ø6
EPV300-4T18.5G						
EPV300-4T22G	139	349	228	203.5	361	ø6
EPV300-4T30G	235	447	285	224	463	ø6
EPV300-4T37G						

EPV300-4T45G	200	592	305	294	613	ø10
EPV300-4T55G						
EPV300-4T75G						
EPV300-4T90G	280	731.5	400	293	753	ø10
EPV300-4T110G						
EPV300-4T132G						
EPV300-4T160G	380	836.5	520	343	865	ø12
EPV300-4T185G						
EPV300-4T200G						
EPV300-4T220G						

2.5.3 Outline size of keyboard

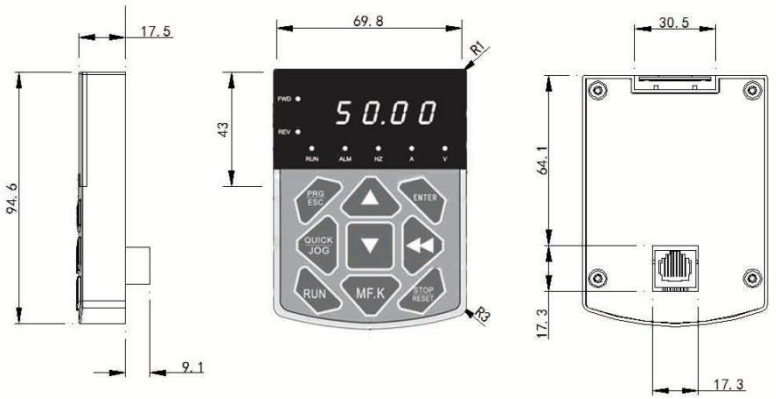
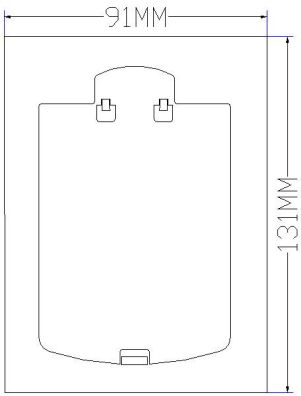


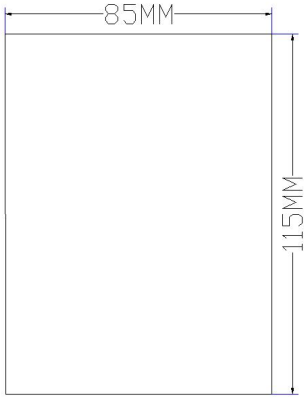
Figure 2-5 Outline size of external keyboard

2.5.4 Outline size of keyboard tray

When need to pull the keyboard outside to other cabinet doors or operating platforms, keyboard tray can be selected, and the opening hole size in the keyboard tray is shown in the following figure:



a) Outline size of keyboard tray



b) Opening hole size in the keyboard tray

Figure 2-6 Outline size of keyboard tray and opening hole size

2.6 Inverter daily maintenance and repairing

2.6.1 Daily maintenance

Due to the influence of temperature, humidity, dust and vibration of the environment, the aging of the devices inside the converter will lead to the potential failure of the frequency converter or reduce the service life of the frequency converter. Therefore, it is necessary to carry out routine and regular maintenance and repair for inverters.

Routine inspection items:

a) whether abnormal changes in the sound of the motor exist during operation

b) whether the motor has produced vibration in the operation of the motor

c) whether the installation environment of the inverter has changed

d) whether the fan is working normally

e) whether the inverter is overheated

Regular clean:

a) the inverter should always be kept in a clean state

b) dust on the upper surface of the inverter should be effectively removed so that to prevent dust from entering the inverter, especially the metal dust

c) oil stain should be effectively removed from inverter fan

2.6.2 Regular check

Please check regularly where it is difficult to check. Check the following items regularly:

a) check the air duct and clean it regularly

b) check whether the screw is loose

c) check the inverter whether it is corroded

d) check whether there is an arc trace on the terminal

e) main circuit insulation test

Note: when Mega ohmmeter (DC 500V mega ohmmeter) is used to measure insulation resistance, the main circuit must be separated from the inverter. Do not use insulation resistance meter to test the insulation of control loop. It is unnecessary to take voltage resistance test (it has been done in the factory).

2.6.3 Change of vulnerable parts of the inverter

Vulnerable parts of the inverter are mainly the cooling fan and the filter electrolytic capacitor. Their lifetime is closely related to the environment and maintenance of the use. The general lifetime is as follows:

Device name	Lifetime
Fan	2-3 years
Electrolytic capacitor	4-5 years

Users can determine change period according to the running time.

a) Cooling fan

The possible causes of damage: bearing wear and blade aging.

Criteria: whether there are cracks in fan blades, whether there is abnormal vibration when starting the machine.

b) Filter electrolytic capacitor

Possible causes of damage: poor quality of input power, high ambient temperature, frequent load jump and electrolyte aging.

Criteria: whether there is leakage of liquid, whether the safety valve is bulged, the measurement of electrostatic capacitance, and the measurement of insulation resistance.

2.6.4 Storage of inverter

Users must pay attention to the following points when they purchase the inverter, for temporary storage and long-term storage: they should be loaded into the packaging box of the company as far as possible during storage.

Long time storage will lead to the deterioration of electrolytic capacitors, it is necessary to ensure that one power is passed within 2 years and the time of electricity is at least 5 hours. The input voltage must be slowly increased to the rated value with the voltage regulator.

Chapter 3 Debug guidance and control terminal

3.1 Debugging steps of solar panel in power supply

3.1.1 Wiring by reference to Figure 3.1, and check the wiring whether it is correct. If there's no mistake, Q2 can be closed.

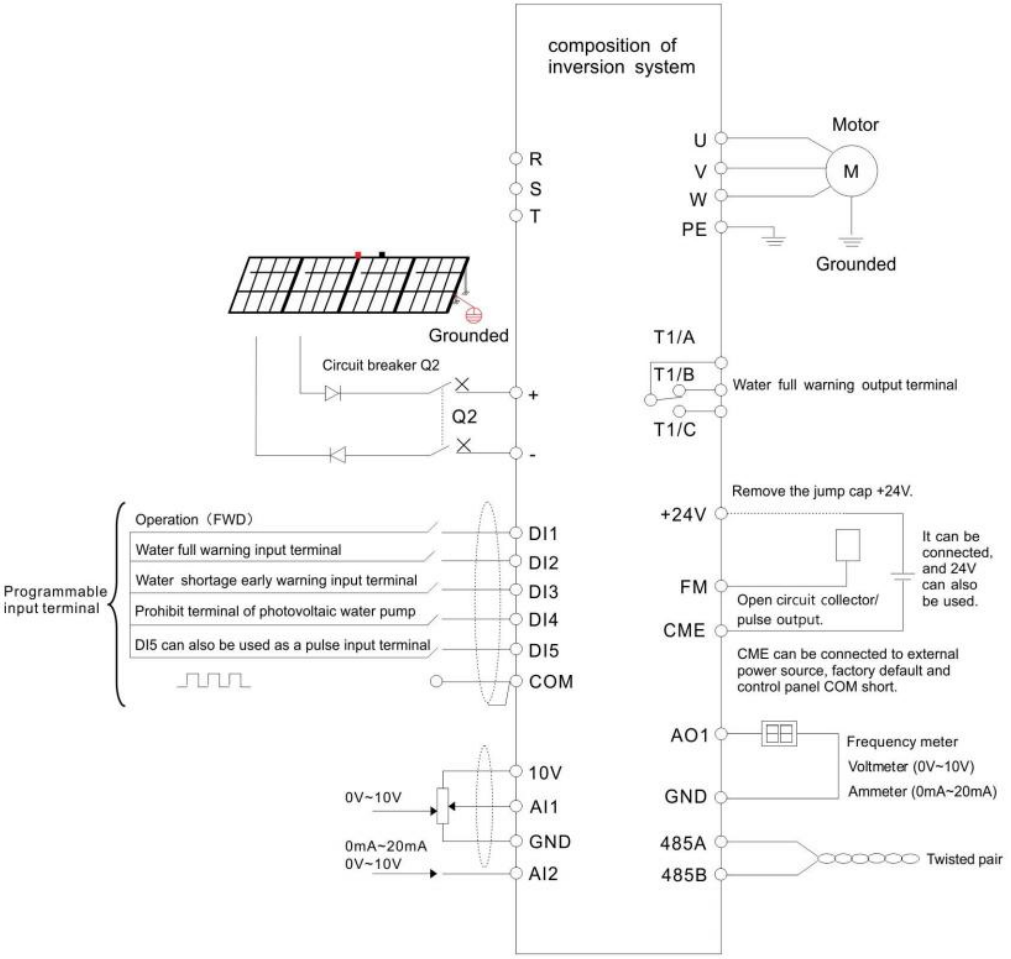


Figure 3-1 Reference wiring diagram for power supply of solar panels

3.1.2 The parameter setting of the motor

Set the motor nameplate parameters, namely P1-01 motor rated power, P1-02 motor rated voltage, P1-03 motor rated current, P1-04 motor rated frequency.

3.1.3 Water pump discharge test

1) set PP-01=10 to restore PV pump parameters and restore PV pump parameters.

2) set the P0-02=0 keyboard command channel.

3) click the running key, meanwhile observe the frequency and the water condition, if under normal light and the frequency is normal but the amount of water is less, it indicates that the motor line may be reverse, and the connection of two motors is needed to switch off.

3.1.4 Fault point setting and fault reset and time delay setting

If customers need to use dry pump warning, light and early warning, full water warning and water shortage early warning, failure detection points, reset time and delay time can be set up according to your needs.

3.1.5 Parameter setting after normal operation of the system

After the normal water output and stable operation of the system, debugging is completed. When PP-01=1 is set, it is a regular product and does not work according to the solar function. When setting PP-01=10, restore the PV pump outlet parameters (see table 4-1) and close the DI1 terminal automatically.

3.2 Debugging steps and electrical installation of electricity and solar panels when powered separately

(1) According to the wiring diagram, disconnect the Q2 first and then close the Q1, which is consistent with Figure 3.2.

(2) Set parameter the motor

(3) debug the system according to 3.1 debugging steps 2, 3, 4, 5.

(4) Close the DI4 terminal (or set up H3_00 =0)

(5) when converting to solar power supply, it is necessary to disconnect the Q1, the terminal DI4 is disconnected, and the Q2 is closed.

Note: Prohibit the closure of Q1 and Q2 at the same time, otherwise the PV panels will be damaged.

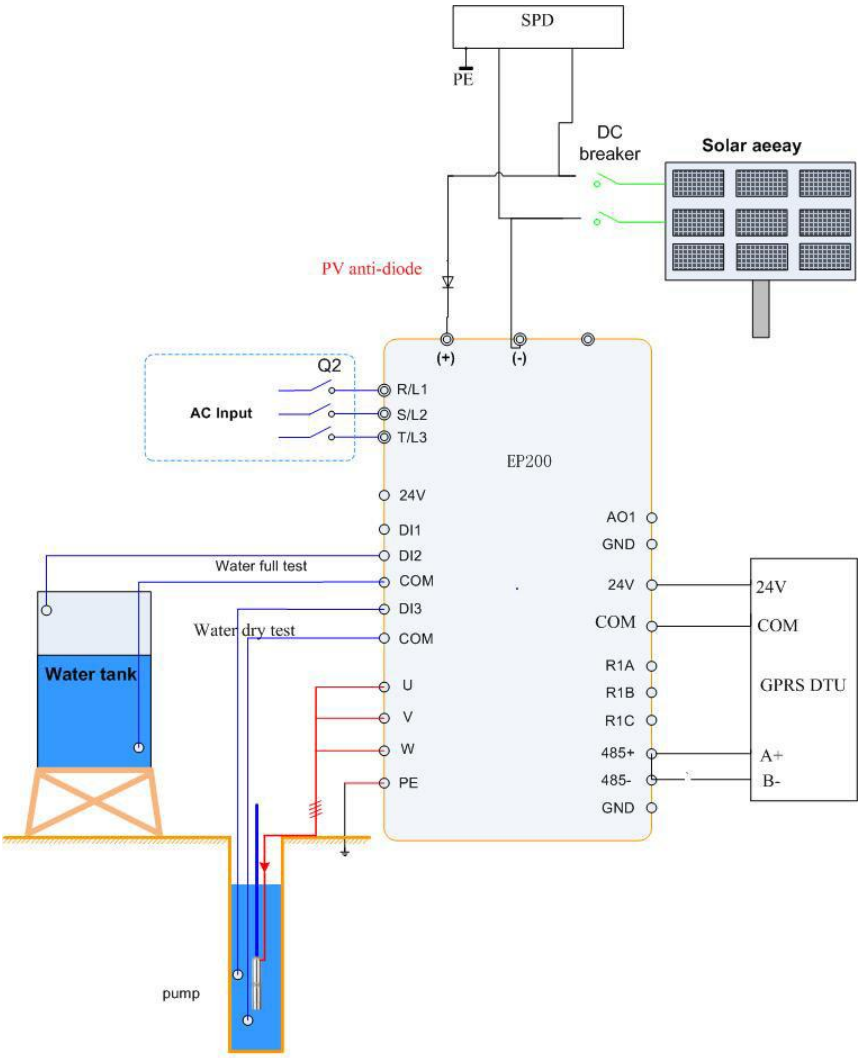


Figure 3-2 Reference wiring diagram for power supply and solar panels when powered separately

3.3 Control terminal and wiring

3.3.1 The layout of the terminal of the control loop is shown as follows

(Note: CANH, CANL port are without functional definition).

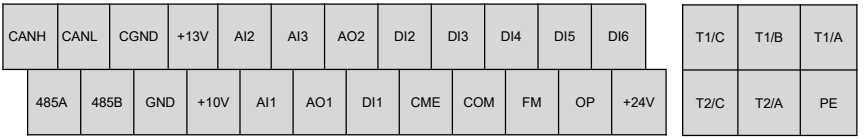


Figure 3-5 Terminal layout of control loop

3.3.2 Control terminal function description

Table 3-2 Function description of EPV300 inverter control terminal

Type	Terminal symbol	Terminal name	Functional description
power	10V-GND	10V power	10V power supply, the maximum output current: 10mA Used as external power supply potentiometer, potentiometer resistance range: 1kΩ～5kΩ.
	24V-COM	24V power	24V power is supplied outwards, generally used as a digital input and output terminal. Power supply and external sensor power supply Maximum output current: 200mA
	OP	External power input terminal	The default connection with 24V is that when the external power is used to drive DI1 to DI6, J15 jumps to OP1 and OP, and OP needs to connect to external power supply.
Analog input	AI1-GND	Analog input terminal 1	1. Input voltage range: DC 0V to 10V 2. Input impedance: 100k Omega
	AI2-GND	Analog input terminal 2	
	AI3-GND	Analog input terminal 3	1. Input range: DC 0V to 10V/4mA to 20mA, from control panel The selection of the JP4 jumper line is decided. 2, input impedance: voltage input 100k ohm, current input 500 ohm.
Digital input	DI1-COM	Digital input 1	1, optocoupler isolation, compatible bipolar input 2. Input impedance: 3.3k Omega 3. Voltage range of level input: 9V ~ 30V 4. DI6 can also be used as high-speed pulse input, the highest input frequency 100KHZ
	DI2-COM	Digital input 2	
	DI3-COM	Digital input 3	
	DI4-COM	Digital input 4	
	DI5-COM	Digital input 5	
	DI6-COM	Digital input 6	

Analog output	AO1	Analog output 1	The JP3 jumper is selected on the control board to decide the voltage or current output. Output voltage range: 0V ~ 10V Output current range: 0mA ~ 20mA
Analog output	A02	Analog output 2	Output voltage range: 0V ~ 10V
Digital output	FM-CME	Digital output 1	Open collector output / high speed pulse output is constrained by functional code P5-00; as high-speed pulse output, the maximum output frequency is 100KHZ. Output voltage range: DC 0V to 24V Maximum output current: 50mA Note: the digital output ground CME and the digital input land COM are internally isolated, and the CME and COM have been short connected by the terminal short connection (using the internal power supply by default) when out of the factory. When the external power is needed, the short connector is not connected, and the CME is connected to the external power source.
Relay output	T1/A-T1/B	Normally closed terminal	Contact drive capability: AC 250V，3A，COSø=0.4。 DC 30V，1A
	T1/A-T1/C	Normally open terminal	
	T2/A-T2/C	Normally open terminal	
	PE	Grounding terminal	Common ground with inverter
Auxiliary interface	J8	Functional PG card interface	PG card with differential rotation and PG card.
	J10	Display keyboard interface	External citation
Communication terminal	485- 485+	RS485 hardware circuit	Support standard MODBUS communication

3.3.3 Description of the control board wire jumper

Jump line number	Jump line position	Functional description
J15	Short connection OP1, OP	OP external power supply
	Short connection OP1, 24V (factory setting)	OP1 is connected to 24V, and DI and COM are short connected
J4	Short connection 2, 3 pin V (factory setting)	AI3 analog input selection - voltage V
	Short connection 1, 2 pin I	AI3 analog input selection - current I

J3	Short connection 2, 3 pin V (factory setting)	AO1 analog input selection - voltage V
	Short connection 1, 2 pin I	AO1 analog input selection - current I
JP6	Short connection 1, 2 Pin	485 communication impedance matching
	Short connection 2, 3 pin	485 communication unmatched impedance matching

3.3.4 Control terminal connection instructions

a) Analog input terminal:

Because the weak analog voltage signal is particularly vulnerable to external interference, the shielded cable is generally required and the wire distance is as short as possible. Do not exceed 20m, such as figure 3-7. In the case where some analog signals are seriously disturbed, filter capacitors or ferrite cores need to be added to the analog source side, as shown in Figure 3-8.

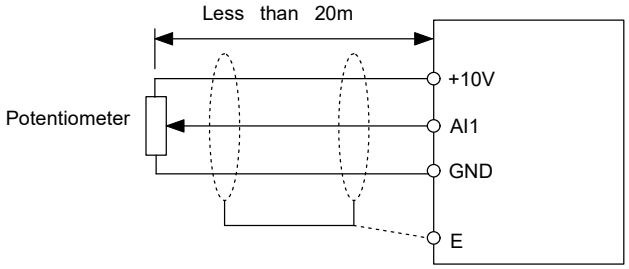


Figure 3-7 Diagram of analog input terminal connection

b) Digital input terminal:

Shielded cables are generally required and the wiring distance is as short as possible, not exceeding 20m. When active mode is used to drive, it is necessary to take necessary filtering measures for crosstalk of power supply. It is suggested that the contact control method be selected. In this way, the terminals are provided with low level connection (optocoupler conduction).

When an internal power supply is supplied, JP15 jumps to the 24V end.

When the external power is supplied, the JP15 jumps to the OP terminal, and the terminal OP needs an external power supply positive (+VCC).

When the terminal input is connected:

If the corresponding property set by P4-38 and P4-39 is positive logic, the corresponding terminal setting function is enabled.

If the corresponding attribute set by P4-38 and P4-39 is anti logic, the function of corresponding terminal setting is not enabled.

When the terminal input is not connected:

If the corresponding property set by P4-38 and P4-39 is positive logic, the function of corresponding terminal setting is not enabled.

If the corresponding property set by P4-38 and P4-39 is anti logic, the corresponding terminal setting function is enabled.

Chapter 4 Operation and display

4.1 Introduction of operation and display interface

Through the keyboard operation panel, we could modify the functional parameter to the frequency inverter, monitor the working condition of the frequency inverter and perform the operational control (start, stop) of frequency inverter, its outline and functional zone are as follows.

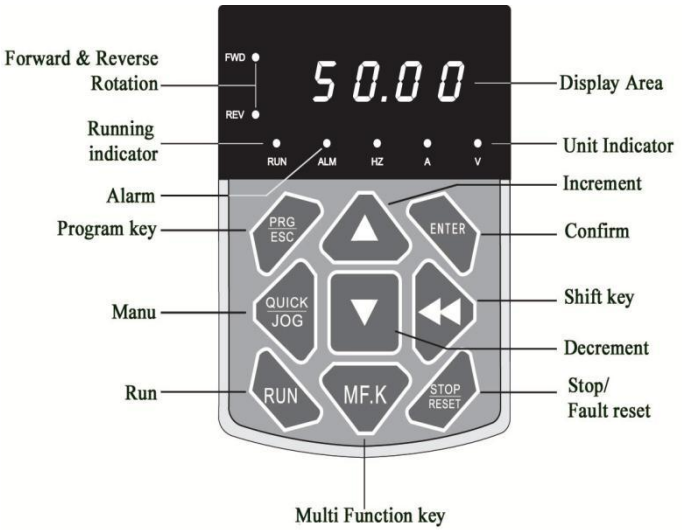


Figure 4-1 Diagram of the operation panel

4.1.1 Description of Indicators

RUN: ON indicates that the AC drive is in the running state, and OFF indicates that the AC drive is in the stop state.

FWD/REV: On indicates reverse rotation.

4.1.2 Unit indicators

Hz: unit of frequency

A: unit of current

V: unit of voltage

4.1.3 Digital display

The 5-digit LED display can display the set frequency, output frequency, monitoring data and fault codes.

4.2 Description of keys on the operation panel

Table 4-1 Key function menu

Key	Name	Function
PRG/ESC	Programming	Enter or exit Level I menu.
ENTER	Confirm	Enter the menu interfaces level by level, and confirm the parameter setting.
▲	Increment	Increase data or function code.
▼	Decrement	Decrease data or function code.
SHIFT	Shift	Select the displayed parameters in turn in the stop or running state, and select the digit to be modified when modifying parameters.
RUN	Run	Start the AC drive in the operation panel control mode.
STOP RESET	Stop/Reset	Stop the AC drive when it is in the running state and perform the reset operation when it is in the fault state. The functions of this key are restricted in F7-02.
MF.K	Multifunction	Perform function switchover (such as quick switchover of command source or direction) according to the setting of F7-01.
QUICK/JOG	Menu mode selection	Perform switchover between menu modes according to the setting of PP-03.

4.3 Display mode and switching operation of parameter group

The setting of parameter display mode is convenient for the user to check different function parameter, according to actual requirement. Three ways of parameter display as below.

Parameter group	Manu display	Description
Mode of function parameter	--P--	Display inverter function parameters: P0～PP、H0～PC、U function parameter groups
Mode of user customed parameter	--H--	User can set individual function parameters (maximum customed 32) and confirm display function parameter through PE group.
Mode of user changed parameter	--C--	Inverter auto arrange, if the parameter is different with the factory parameter.

The property of parameter group display is limited by PP-02 and PP-03. As follows;

PP-02	The property of parameter group display		Factory setting	11
	Setting range	The unit	U Group display selection	
		0	Not display	
		1	Display	
		Decade	H Group display selection	
		0	Not display	
		1	Display	
PP-03	Display selection of special parameter mode		Factory setting	0
	Setting range	The unit	User customs parameters display selection	
		0	Not display	
		1	Display (--u--)	
		Decade	User changes parameters display selection	
		0	Not display	
		1	Display(--c--)	

When display selection of special parameter mode (PP-03) have one display, we could use QUICK/JOG key switch in different parameter display mode.

4.4 Instruction of viewing and modifying basic function codes

Basic function code group is inverter's whole function code, after it is I grade menu.

The operation panel of the EPV300 adopts three-level menu. The three-level menu consists of function code group (Level I), function code (Level II), and function code setting value (level III)。 You can return to Level II menu from Level III menu by pressing MODE or ENTER. After you press ENTER, the system saves the parameter setting first, and then goes back to Level II menu and shifts to the next function code. After you press MODE, the system does not save the parameter setting, but directly returns to Level II menu and remains at the current function code.

In Level III menu, if the parameter has no blinking digit, it means that the parameter cannot be modified. This may be because:

(1) Such a function code is only readable, such as, actually detected, parameter and running record parameter.

(2) Such a function code cannot be modified in the running state and can only be changed at stop.

4.5 User modified function code

In you modified menu, only the parameters that are modified to a non-default value are displayed. The menu is generated by the AC drive automatically. After the mode is switched over to User modified function code, level II menu is displayed.

4.6 Definition and operation of the multifunction key

The function of MF.K Key can be defined by P7-01 function code, used as a switch for command source or switch direction of inverter. For details, please refer to the description of P7-01 function code.

4.7 Method of viewing status parameters

In the stop or running state, you can press “>>/SHIFT” on the operation panel to display status parameters. Whether parameters are displayed is determined by the binary bits of values converted from the values of P7-03 (running parameter 1), P7-04 (running parameter 2), and P7-05 (stop parameters) in the hexadecimal format.

In stop state, a total of 16 status parameters can be displayed, as listed in the following table.

To switchover and display the selected parameter by keyboard order.

P7-05	LED display stop parameters	Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02: S input status Bit03: DO output status Bit04: AI1voltage (V) Bit05: AI2voltage (V) Bit06: AI3voltage (V) Bit07: Count value Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PID setting Bit12: HDI Pulse setting frequency (kHz)	33

In running state, five running status parameters are displayed by default, and you can set whether other parameters are displayed by setting P7-03 and P7-04, as listed in the following table.

P7-03	LED display running parameters 1	0000～FFFF Bit00: Running frequency1 (Hz) Bit01: Set frequency (Hz) Bit02: Bus voltage Bit03: Output voltage Bit04: Output current (A) Bit05: Output power (KW) Bit06: Output torque (%) Bit07: DI input status Bit08: DO output status Bit09: AI1voltage (V) Bit10: AI2voltage (V)	1F

		Bit11: AI3voltage (V) Bit12: Count value Bit13: Length value Bit14: Load speed display Bit15: PID setting	
P7-04	LED display running parameters 2	Bit00: PID feedback Bit01: PLC stage Bit02: HDI input frequency Bit03: Running frequency 2 (Hz) Bit04: Residue running time Bit05: DI1 voltage before correction Bit06: DI2voltage before correction Bit07: DI3 voltage before correction Bit08: Linear speed Bit09: Current power-on time (Hour) Bit10: Current running time (Minute) Bit11: HDI input frequency Bit12: Communication setting value Bit13: Encoder feedback speed Bit14: Main frequency A display (Hz) Bit15:Auxiliary frequency B display (Hz)	0

When the inverter is powered on again after power failure, the parameters that are selected before power failure are displayed.

Select the required parameters by pressing. Set the values of the parameters by referring to the following example.

The user sets the parameters for the switch display such as: Running frequency, Bus voltage, Output voltage, Output current, Output frequency, Output torque, PID feedback, Encoder feedback speed, set binary data according to actual display data.

P7-03: 0000 0000 0111 1101B,

P7-04: 0010 0000 0000 0001B

Convert the binary data to hexadecimal data:

P7-03: 007DH,

P7-04: 2001H

The values displayed on the operation panel are respectively P7-03:H.007d，F7-04:H.2001

Chapter 5 Function parameter table

If HP - 00 is set to non-zero number, parameter protection is enabled. Under the situation of function parameter model and user change parameter model, you must enter the correct password to enter the parameter menu. If you want to cancel, please PP-00 is set to 0.

Customized parameters mode menu is not protected by password.

Group P and Group H are standard function parameter, Group U are monitoring function parameters. The symbols in the function code table are described as follows:

"√": The parameter settings can be modified when the INVERTER is either stop or running state;

"×": The parameters settings cannot be modified when the INVERTER is in the running state;

"○": Parameter value is the actual testing records; it cannot be modified;

5.1 Function parameter table of general ones

Function Code	Parameter Name	Setting Range	Factory Default	Property
P0 Standard Function Group				
P0-00	GP Type selection	1: G Type (Constant torque load) 2: P Type (variable torque load e.g.Fan and water pump load models)	1	×
P0-01	Motor 1control mode	0: Speed sensorless vector control (SVC) 1: Speed sensor vector control (FVC) 2:V/F control	0	×
P0-02	Command source Selection	0: Operation panel command channel (LED off) 1: Terminal command channel (LED on) 2: Communication command channel (LED blinking)	0	√
P0-03	Main frequency source A selection	0: Digital setting (preset frequency P0-08，UP/DOWN can be modified，non-retentive at power failure) 1: Digital setting (preset frequency P0-08，UP/DOWN can be modified，retentive at power failure) 2: AI1 3: AI2 4: AI3 5: HDI pulse setting (D16) 6: Multi-reference 7: Simple PLC 8: PID 9: Communication setting 10: Keyboard potentiometer setting	0	×
P0-08	preset frequency	0.00Hz~maximum frequency (P0-10)	50.00Hz	√
P0-10	Maximum frequency	50.00Hz~320.00Hz	50.00Hz	×
P0-12	Frequency upper limit	Frequency lower limit P0-14~maximum frequency P0-10	50.00Hz	√
P0-15	Carrier frequency	0.5kHz~16.0kHz	Model dependent	√
P0-17	Acceleration time 1	0.00s~65000s	Model dependent	√
P0-18	Deceleration time 1	0.00s~65000s	Model dependent	√

P0-23	Retentive of digital setting frequency upon power failure	0: Not retentive 1: Retentive	0	√
P1 Motor 1 Parameters				
P1-00	Motor type selection	0: Common asynchronous motor 1: Variable frequency asynchronous motor 2: Permanent magnetic synchronous motor	0	×
P1-01	Rated motor power	0.1kW~1000.0kW	Model dependent	×
P1-02	Rated motor power	1V~2000V	Model dependent	×
P1-03	Rated motor current	0.01A~655.35A (AC drive power <=55kW) 0.1A~6553.5A (AC drive power >55kW)	Model dependent	×
P1-04	Rated motor frequency	0.01Hz~maximum frequency	Model dependent	×
P1-05	Rated motor rotational speed	1rpm~65535rpm	Model dependent	×
P1-06	Stator resistance (asynchronous motor)	0.001Ω~65.535Ω (AC drive power <=55kW) 0.0001Ω~6.5535Ω (AC drive power >55kW)	Tuning parameters	×
P1-07	Rotor resistance (asynchronous motor)	0.001Ω~65.535Ω (AC drive power <=55kW) 0.0001Ω~6.5535Ω (AC drive power >55kW)	Tuning parameters	×
P1-08	Leakage inductive reactance (asynchronous motor)	0.01mH~655.35mH (AC drive power <=55kW) 0.001mH~65.535mH (AC drive power >55kW)	Tuning parameters	×
P1-09	Mutual inductive reactance (asynchronous motor)	0.1mH~6553.5mH (AC drive power <=55kW) 0.01mH~655.35mH (AC drive power >55kW)	Tuning parameters	×
P1-10	No-load current (asynchronous motor)	0.01A~P1-03(inverter power <=55kW) 0.1A~P1-03 (inverter power >55kW)	Tuning parameters	×
P1-37	Auto-tuning selection	0: No auto-tuning 1: Asynchronous motor static auto-tuning 2: Asynchronous motor complete auto-tuning 11: Synchronous motor with-load auto-tuning 12: Synchronous motor no-load auto-tuning	0	×

P3 Group V/F Control parameter				
P3-00	V/F curve setting	0: Linear V/F 1: Multi-point V/F 2: Square V/F 3: 1.2 -power V/F 4: 1.4 -power V/F 6: 1.6 -power V/F 8: 1.8 -power V/F 9: Reserved 10: VF complete separation 11: VF half separation	0	×
P3-01	Torque boost	0.0%: (Automatic torque boost) 0.1%~30.0%	Model dependent	√
P3-02	Cut-off frequency of torque boost	0.00Hz~maximum frequency	50.00Hz	×
P3-03	Multi-point VF frequency 1	0.00Hz~P3-05	0.00Hz	×
P3-04	Multi-point VF voltage 1	0.0%~100.0%	0.0%	×
P3-05	Multi-point VF frequency 2	P3-03~P3-07	0.00Hz	×
P3-06	Multi-point VF voltage 2	0.0%~100.0%	0.0%	×
P3-07	Multi-point VF frequency 3	P3-05~rated motor frequency (P1-04)	0.00Hz	×
P3-08	Multi-point VF voltage 3	0.0%~100.0%	0.0%	×
P3-09	VF slip compensation gain	0.0%~200.0%	0.0%	√
P3-10	VF over-excitation gain	0~200	64	√
P3-11	VF oscillation suppression gain	0~100	Model dependent	√
P3-18	Overcurrent stall current	50～200	160	
P3-19	Overflow stall	0：forbidden 1：enabled	1	
P3-20	Overflow stall inhibition gain	0～100	20	
P3-21	Current compensation coefficient of overcurrent stall	50～200	50	
P3-22	Overvoltage stall voltage	6500～8000	7700	
P3-23	Overvoltage stall	0：forbidden 1：enabled	1	

P3-24	Overvoltage stall suppression frequency gain	0～100	30	
P3-25	Overvoltage stall suppression voltage gain	0～100	30	
P3-26	Maximum rise frequency limit of overvoltage stall	0～50	1	
P3-27	Deviation compensation time constant	1～100	5	
P4 Group Input Terminals				
P4-00	DI1 Terminal function selection	0: No function 1: Forward RUN (FWD) 2: Reverse RUN (REV) (When setting to 1, 2, it needs to be used with P4-11) 3: Three-line running control 4: Forward JOG (FJOG) 5: Reverse JOG (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Coast to stop 9: Fault reset (RESET) 10: Run pause 11: Normally open (NO) input of external fault 12: Multi-reference terminal 1 13: Multi-reference terminal 2 14: Multi-reference terminal 3 15: Multi-reference terminal 4 16: Terminal 1 for acceleration/deceleration time selection 17: Terminal 2 for acceleration/deceleration time selection 18: Frequency source switchover 19: UP and DOWN setting clear (terminal, operation panel) 20: Command source switchover terminal 1 21: Acceleration/Deceleration prohibited 22: PID pause 23: PLC status reset 24: Swing pause 25: Counter input 26: Counter reset 27: Length count input 28: Length reset 29: Torque control prohibited 30: HDI (pulse)frequency input (enabled only for S5) 31: Reserved ed	1	×
P4-01	DI2 Terminal function selection		4	×
P4-02	DI3 Terminal function selection		9	×
P4-03	DI4 Terminal function selection		12	×
P4-04	DI5Terminal function selection		13	×

P4-05	DI6 Terminal function selection	32: Immediate DC braking 33: Normally closed (NC) input of external fault 34: Frequency modification 35: Reverse PID action direction 36: External STOP terminal 11 37: Command-source-switch-over terminal 2 38: PID integral pause 39: Switchover between frequency source A and preset frequency 40: Switchover between frequency source Band preset frequency 41: Motor selection terminal 1 42: Reserved 43: PID parameter switchover 44: User-defined fault 1 45: User-defined fault 2 46: Speed control/Torque control switchover 47: Emergency stop 48: External STOP terminal 2 49: Deceleration DC braking 50: Clear the current running time 51-59: Reserve	0	×
P4-08	Brake voltage operation point	100%-160%;	120%	
P4-09	AVR auto stabilizer function selection	0: Invalid 1: Valid during the whole process 2: Invalid only in deceleration	0	
P4-10	DI input terminal filter time	0.000s~1.000s	0.010s	√
P4-11	Terminal command mode	0: Two-line mode 1 1: Two-line mode 2 2: Three-line mode 1 3: Three-line mode 2	0	×
P4-12	Terminal UP/DOWN change rate	0.001Hz/s~65.535Hz/s	1.00Hz/s	√
P4-13	AI curve 1 minimum input	0.00V~P4-15	0.00V	√
P4-14	Corresponding setting of AI Curve 1 minimum input	-100.0%~+100.0%	0.0%	√
P4-15	AI curve 1 maximum input	P4-13~+10.00V	10.00V	√
P4-16	Corresponding setting of AI Curve 1 maximum input	-100.0%~+100.0%	100.0%	√
P4-17	AI1 filter time	0.00s~10.00s	0.10s	√

P4-18	AI curve 2 minimum input	0.00V~P4-20	0.00V	√
P4-19	Corresponding setting of AI Curve 2 minimum input	-100.0%~+100.0%	0.0%	√
P4-20	AI curve 2 maximum input	P4-18~+10.00V	10.00V	√
P4-21	Corresponding setting of AI Curve 1 maximum input	-100.0%~+100.0%	100.0%	√
P4-22	AI2 filter time	0.00s~10.00s	0.10s	√
P4-23	AI Curve 3 minimum input	-10.00V~P4-25	-10.00V	√
P4-24	Corresponding setting of AI Curve 3 minimum input	-100.0%~+100.0%	-100.0%	√
P4-25	AI Curve 3 maximum input	P4-23~+10.00V	10.00V	√
P4-26	Corresponding setting of AI Curve 3 maximum input	-100.0%~+100.0%	100.0%	√
P4-27	AI3 filter time	0.00s~10.00s	0.10s	√
P4-28	HDI minimum input	0.00kHz~P4-30	0.00kHz	√
P4-29	Corresponding setting of HDI minimum input	-100.0%~100.0%	0.0%	√
P4-30	HDI maximum input	P4-28~100.00kHz	50.00kHz	√
P4-31	HDI maximum input setting	-100.0%~100.0%	100.0%	√
P4-32	HDI filter time	0.00s~10.00s	0.10s	√
P4-33	AI Analog input curve selection	Unit's digit: AI1 curve selection 1: Curve 1 (2 points, see P4-13~P4-16) 2: Curve 2 (2 points, see P4-18~P4-21) 3: Curve 3 (2 points, see P4-23~P4-26) 4: Curve 4 (4 points, see H6-00~H6-07) 5: Curve 5 (4 points, see H6-08~H6-15) Ten's digit: AI2 curve selection, same as the above. Hundred's digit: AI3 curve selection, the same as the above.	321	√
P4-34	Setting for AI less than minimum input	Unit's digit: AI1 set below the minimum input selection. 0: Corresponding to the minimum input set. 1: 0.0%	000	√

		Ten's digit: AI2 set below the minimum input selection, the same as the above Hundred's digit: AI3 set below the minimum input selection, the same as the above		
P4-35	DI1 delay time	0.0s~3600.0s	0.0s	×
P4-36	DI2 delay time	0.0s~3600.0s	0.0s	×
P4-37	DI3 delay time	0.0s~3600.0s	0.0s	×
P4-38	DI input terminal valid mode selection 1	0: Positive logic 1: Negative logic Unit's digit: DI1 Ten's digit: DI2 Hundred's digit: DI3 Thousand's digit: DI4 Ten thousand's digit: DI5	00000	×
P4-39	DI input terminal valid mode selection 2	0: Positive logic 1: Negative logic Unit's digit: DI6 Ten's digit: DI7 Hundred's digit: DI8 Thousand's digit: Reserved Ten thousand's digit: Reserved	00000	×
P5 Group output terminal				
P5-00	FM terminal output mode selection	0: Pulse output (HDO) 1: Open collector output (FM)	0	√
P5-01	Control board FM open collector output function selection	0: No output 1: Inverter running 2: Fault output (downtime) 3: Frequency-level detection FDT1 output 4: Frequency reached 5: Zero-speed running (no output at stop) 6: Motor overload pre-warning 7: Inverter overload pre-warning 8: Set count value reached 9: Designated count value reached 10: Length reached 11: PLC cycle complete 12: Accumulative running time reached 13: Frequency limited 14: Torque limited 15: Ready for RUN 16: AI1>AI2 17: Frequency upper limit reached 18: Frequency lower limit reached (Run-related) 19: Undervoltage state output 20: Communication setting 21: Positioning completed (Reserved) 22: Positioning completed (Reserved)		

		23: Zero-speed running 2 (having output at stop) 24: Accumulative power-on time reached 25: Frequency level detection FDT2 output 26: Frequency 1 reached output 27: Frequency 2 reached output 28: Current 1 reached output 29: Current 2 reached output 30: Timing reached output 31: AI1 input limit exceeded 32: Load becoming zero 33: Reverse running 34: Zero current state 35: Module temperature reached 36: Output current limit exceeded 37: Frequency lower limit reached (having output at stop) 38: Alarm output (Continue to run) 39: Motor overheat warning 40: Current running time reached 41: Fault output (There is no output if it is the coast to stop fault and under voltage occurs 42. Multi section speed terminal closing sign		
P5-02	Control board relays 1 function selection (T1/A-T1/B-T1/C)		2	√
P5-03	Extension card relay 2 output function selection (T2/A-T2/C)		0	√
P5-06	HDO High speed pulse output function selection	-100.0%～+100.0%, 0.01kHz～100.00kHz. 0: Running frequency 1: Set frequency 2: Output current 3: Output torque (absolute value) 4: Output power 5: Output voltage 6: HDI High-speed pulse input (DI5 terminal，100.% corresponding to 100.0kHz) 7: AI1 8: AI2 9: AI3 (Extension card) 10: Extension card 11: Count value 12: Communication setting 13: Motor rotational speed 14: Output current (100.0% corresponding to 1000.0A) 15: corresponding to (100.0% corresponding to 1000.0V)	0	√
P5-07	AO1 Analog output function selection		0	√
P5-08	AO2 Extension card A02 analog output function selection		1	√

P5-09	HDO Output the maximum frequency	16: Output torque (actual value) (100.0% corresponding to 1000.0V) 17: Output torque (actual value)	50kHz	√
P5-10	AO1 offset coefficient		0.0%	√
P5-11	A01 gain	-10.00～+10.00-100.0%+100.0%-10.00～+10.00	1.00	√
P5-12	Extension card A02 offset coefficient		0.0%	√
P5-13	Extension card A02 gain		1.00	√
P5-17	FM open collector output delay time	0.0s~3600.0s	0.0s	√
P5-18	Control board relay 1 T1/A-T1/B-T1/C output delay time	0.0s~3600.0s	0.0s	√
P5-19	Extension card relay2 T2/A-T2/C output delay time	0.0s~3600.0s	0.0s	√
P5-22	DO output terminal valid state selection	0: Positive logic 1: Negative logic Unit's digit: FM Ten's digit: T1/A-T1/B-T1/C Hundred's digit: T2/A-T2/C Thousand's digit: - Ten thousand's digit: -	00000	√
Group P6 Start/stop control				
P6-00	Start mode	0: Direct start 1: Rotational speed tracking restart 2: Pre-excited start (asynchronous motor)	0	√
P6-01	Rotational speed Tracking mode	0: From frequency at stop 1: From zero speed 2: From maximum frequency	0	×
P6-02	Rotational speed Tracking speed	1~100	20	√
P6-03	Startup frequency	0.00Hz~10.00Hz	0.00Hz	√
P6-04	Startup frequency holding time	0.0s~100.0s	0.0s	×
P6-05	Startup DC braking current/Pre-excited current	0%~100%	0%	×
P6-06	Startup DC braking time/ Pre-excited time	0.0s~100.0s	0.0s	×
P6-07	Acceleration/ Deceleration mode	0: Linear acceleration/deceleration 1: S-curve acceleration/deceleration A 2 S-curve acceleration/deceleration B	0	×

P6-08	Time proportion of S-curve start segment	0.0%~ (100.0%-P6-09)	30.0%	×
P6-09	Time proportion of S-curve end segment	0.0%~ (100.0%-P6-08)	30.0%	×
P6-10	Stop mode	0: Decelerate to stop 1: Coast to stop	0	√
P6-11	Initial frequency of stop DC braking	0.00Hz~maximum frequency	0.00Hz	√
P6-12	Waiting time of stop DC braking	0.0s~100.0s	0.0s	√
P6-13	Stop DC braking current	0%~100%	0%	√
P6-14	Stop DC braking time	0.0s~100.0s	0.0s	√
P6-15	Stop DC braking time	0%~100%	100%	√
Group P7 Operation panel and display				
P7-01	MF.K Key function selection	0: MF.K key disabled 1: Switchover between operation panel control and remote command control (terminal or communication) 2: Switchover between forward rotation and reverse rotation 3: Forward JOG 4: Reverse JOG	0	×
P7-02	STOP/RESET key function	0: STOP/RESET key enabled only in operation panel control 1: STOP/RESET key enabled in any operation mode	1	√
P7-03	LED display running parameter 1	0000~FFFF Bit00: Running frequency 1 (Hz) Bit01: Set frequency (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (kW) Bit06: Output torque (%) Bit07: D input terminal state Bit08: DO output terminal state Bit09: AI1 voltage (V) Bit10: AI2 voltage (V) Bit11: AI3 voltage (V) Bit12: Count value Bit13: Length value Bit14: Load speed display Bit15: PID setting	1F	√
P7-04	LED running display parameter 2	0000~FFFF Bit00: PID feedback Bit01: PLC Stage Bit02: HDI input(S5 terminal) pulse frequency (kHz)	0	√

		Bit03: Running frequency 2 (Hz) Bit04: Remaining running time Bit05: AI1 voltage before correction (V) Bit06: AI2 voltage before correction (V) Bit07:AI3 voltage before correction (V) Bit08: Linear speed Bit09: Current power-on time (Hour) Bit10: Current running time (Min) Bit11: HDI input pulse frequency (Hz) Bit12: Communication setting value Bit13: Encoder feedback speed (Hz) Bit14: Main frequency A display (Hz) Bit15: Auxiliary frequency B display		
P7-05	LED drive stop parameter display	0000~FFFF Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02: DI terminal input status Bit03:DO terminal output status Bit04: AI1voltage (V) Bit05: AI2 voltage (V) Bit06: AI3 voltage (V) Bit07: Count value Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PID setting Bit12: HDI input pulse frequency (kHz)	33	√
P7-06	Load speed display coefficient	0.0001~6.5000	1.0000	√
P7-07	Heat sink temperature of inverter module	0.0℃~100.0℃	-	○
P7-09	Accumulative running time	0h~65535h	-	○
P7-11	Software version	-	-	○
P7-12	Number of decimal places for load speed display	0: 0 decimal place 1: 1 decimal place 2: 2 decimal place 3: 3 decimal place	1	√
P7-13	Accumulative power-on time	0h~65535 h	-	○
P7-14	Accumulative power consumption	0kW~65535 kWh	-	○
Group P8 Auxiliary function				
P8-00	JOG running frequency	0.00Hz~maximum frequency	2.00Hz	√
P8-14	Running mode when set frequency lower than frequency lower limit	0: Run at frequency lower limit 1: Stop 2: Run at zero speed	0	√

P8-18	Startup protection selection	0: No 1: Yes	0	√
P8-47	Module temperature threshold	0℃~100℃	75℃	√
P8-48	Cooling fan control	0: Fan rotating during drive running 1: Fan keeping running	0	√
Group P9 Fault and protection				
P9-00	Motor overload protection selection	0: Disabled 1: Enabled	1	√
P9-01	Motor overload protection gain	0.20~10.00	1.00	√
P9-02	Motor overload warning coefficient	50%~100%	80%	√
P9-03	Overvoltage stall gain	0~100	0	√
P9-04	Overvoltage stall protective voltage	120%~150%	130%	√
P9-05	Overcurrent stall gain	0~100	20	√
P9-06	Overcurrent stall protective current	100%~200%	180%	√
P9-07	Short-circuit to ground upon power-on protection function	0: invalid 1: valid	1	√
P9-09	Fault auto reset times	0~20	0	√
P9-10	during fault auto reset, fault DO action output terminal selection	0: No act 1: Act	0	√
P9-11	Time interval of fault auto reset	0.1s~100.0s	1.0s	√
P9-12	Input phase loss protection/contactor energizing protection selection	0: Disabled 1: Enabled	11	√
P9-13	Output phase loss protection selection	0: Disabled 1: Enabled	1	√
P9-14	First fault type	0: No fault 1: Reserved 2: Overcurrent during acceleration 3: Overcurrent during deceleration 4: Overcurrent at constant speed 5: Overvoltage during acceleration 6: Overvoltage during deceleration 7: Overvoltage at constant speed 8: Buffer resistance overload 9: Undervoltage	—	○

		10: AC drive overload 11: Motor overload 12: Power input phase loss 13: Power output phase loss 14: Module overheat 15: External equipment fault 16: Communication fault 17: Contactor fault 18: Current detection fault 19: Motor auto-tuning fault 20: Encoder/PG card fault 21: parameter read-write fault 22: Inverter hardware fault 23: Short circuit to ground 24: Reserved 25: Reserved 26: Running time reached 27: User-defined fault 1 28: User-defined fault 2 29: Power-on time reached 30: Load becoming 0 31: PID feedback lost during running 40: Rapid current-limited overtime		
P9-15	Second fault type		—	○
P9-16	Third (latest) fault type		—	○
P9-17	Frequency upon 3rd (latest)fault	—	—	○
P9-18	Current upon 3rd (latest) fault	—	—	○
P9-19	Bus voltage upon 3rd (latest) fault	—	—	○
P9-20	Input terminal status upon 3rd fault(latest)	—	—	○
P9-21	Output terminal status upon 3rd fault(latest)	—	—	○
P9-22	Inverter status upon 3rd (latest) fault	—	—	○
P9-23	Power-on time upon 3rd(latest) fault	—	—	○
P9-24	Running time upon 3rd fault (latest)	—	—	○
P9-27	Frequency upon 2nd fault	—	—	○
P9-28	Current upon 2nd fault	—	—	○
P9-29	Bus voltage upon 2nd fault	—	—	○

P9-30	Input terminal status upon 2nd fault(latest)	—	—	○
P9-31	Output terminal status upon 2nd fault(latest)	—	—	○
P9-32	AC drive status upon 2nd (latest)	—	—	○
P9-33	Power-on time upon 2nd(latest)	—	—	○
P9-34	Running time upon 2nd fault (latest)	—	—	○
P9-37	Frequency upon 1st (latest)fault	—	—	○
P9-38	Current upon 1st fault	—	—	○
P9-39	Bus voltage upon 1st fault	—	—	○
P9-40	Input terminal status upon 1st fault	—	—	○
P9-41	Output terminal status upon 1st fault	—	—	○
P9-42	Inverter status upon 1st fault(latest)	—	—	○
P9-43	Power-on time upon 1st (latest)	—	—	○
P9-44	Running time upon 1st fault (latest)	—	—	○
P9-47	Fault protection action selection 1	Unit's digit: Motor overload (11) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run Ten's digit: Power input phase loss (12) Hundred's digit: Power output phase loss (13) Thousand's digit: External equipment fault (15) Ten thousand's digit: Communication fault (16)	00000	√
P9-48	Fault protection action selection 2	Unit's digit:(Encoder/PG card fault (20) 0: Coast to stop Ten's digit: Function code read-write fault (21) 0: Coast to stop 1: Stop according to the stop mode Hundred's digit: Reserved Thousand's digit: Motor overheat (25) Ten thousand's digit: Running time reached (26)	00000	√

P9-49	Fault protection action selection 3	Unit's digit: User-defined fault 1 (27) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run Ten's digit: User-defined fault 2 (28) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run Hundred's digit: power-on time reached (29) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run Thousand's digit: Load becoming 0 (30) 0: Coast to stop 1: Speed reducing stop 2: Continue to run at 7% of rated motor frequency and resume to the set frequency if the load recovers Ten thousand's digit: PID feedback lost during running (31) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run	00000	√
P9-50	Fault protection action selection 4	Unit's digit: Too large speed deviation (42) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run Ten's digit: Motor over-speed (43) Hundred's digit: Initial position fault (51)	00000	√
P9-54	Frequency selection for continuing to run upon fault	0: Running as Current running frequency 1: Running as setting frequency 2: Running as frequency upper limit 3: Running as frequency lower limit 4: Running as Backup frequency upon abnormality	0	√
P9-55	Backup frequency upon abnormality	0.0%~100.0% (100.0% Corresponding to the maximum frequency P0-10)	100.0%	√
		Group PA PID function		
PA-00	PID setting source	0: PA-01 setting 1: AI1 2: AI2 3: AI3 4: HDI pulse setting (S5) 5: Communication setting 6: Multi-reference setting	0	√
PA-01	PID digital setting	0.0%~100.0%	50.0%	√
PA-02	PID feedback source	0: AI1 1: AI2 2: AI3	0	√

		3: AI1-AI2 4: HDI pulse setting (S5) 5: Communication setting 6: AI1+AI2 7: MAX (|AI1|, |AI2|) 8: MIN (|AI1|, |AI2|)		
PA-03	PID action direction	0: Forward action 1: Reverse action	0	√
PA-04	PID setting feedback range	0~65535	1000	√
PA-05	Proportional gain Kp1	0.0~100.0	20.0	√
PA-06	Integral time Ti1	0.01s~10.00s	2.00s	√
PA-07	Derivative time Td1	0.000s~10.000s	0.000s	√
PA-08	PID Cut-off frequency of PID reverse rotation	0.00~maximum frequency	2.00Hz	√
Group PP Function Code Management				
PP-00	User password	0~65535	0	√
PP-01	Parameter initialization	0: No operation 01: Restore factory settings except motor parameters 02: Clear records 04: Backup user current parameters 05: Restore the user 10: Special parameters of solar water pump	0	×
PP-02	Function parameter group display selection	Unit's digit: Group U display selection 0: Not display 1: Display Ten's digit: Group P display selection 0: Not display 1: Display	11	×
PP-03	Individualized parameter display selection	Unit's digit: User-defined parameter display selection 0: Not display 1: Display (--u—Group) Ten's digit: User-modified parameter group display selection 0: Not display 1: Display (--p—group)	00	√
PP-04	Parameter modification property	0: Modifiable 1: Not modifiable	0	√

5.2 Function parameter table of inverter special for solar water pumps

Group H3 solar pump parameters (when PP-01=10 is set, the following table is the default parameter after initialization).				
P0-02	Command source selection	1: Terminal command channel (LED on)	1	√
P0-10	Maximum frequency	50.00Hz～320.00Hz	55.00Hz	×
P0-12	Frequency upper limit	Frequency lower limit P5-14~maximum frequency P5-10	55.00Hz	√
P0-17	Acceleration time 1	0.00s～65000s	2.0s	√
P0-18	Deceleration time 1	0.00s～65000s	2.0s	√
P3-00	VF curve setting	2: Square V/F	2	×
P4-09	AVR Auto stabilizer function selection	1: valid during the whole process	1	
P6-10	Stop mode	1: Coast to stop	1	√
P7-03	LED running display parameters 1	0000～FFFF Bit00: Running frequency 1 (Hz) Bit02: Bus voltage (V) Bit04: Output current (A)	0015	√
P7-05	LED drive stop display parameter 3	0000～FFFF Bit01: Bus voltage (V)	02	√
P8-18	Startup protection selection	0: No protection	1	√
P9-09	Fault auto reset times	0～20	10	√
P9-11	Time interval of fault auto	0.1s～100.0s	5.0s	√
P4-00	DI1 Terminal function selection	1: Forward RUN (FWD) 101: water full warning: accept the signal of water level early warning device; 102: water shortage warning: accept the signal of water level early warning device; 100: solar pump prohibition: Prohibition of solar pump power. The use of external power supply;	1	×
P4-01	DI2 Terminal function selection		101	×
P4-02	DI3 Terminal function selection		102	×
P4-03	DI4 Terminal function selection		100	×
P5-00	FM terminal output mode selection	1: Open collector output (FM)	1	√

P5-01	Control board SP1 open collector output function selection	100: Total warning of solar pumps: water full, water shortage, light and weak, dry pump early warning combined output signal 101: Water full warning (A-tF): when receiving water tank full signal, output ON signal 102: Water shortage early warning (A.tL): when receiving water shortage signal, output ON signal 103: Weak light early warning (A-LS): when the light intensity is not enough (weak light), output the ON signal 104: Dry pump early warning (A-LL): when detecting pump Idling (no load), output ON signal	103	√
P5-02	Control board relays 1 function selection (T1/A-T1/B-T1/C)		101	√
P5-03	Extension card relay 2 output function selection (T2/A-T2/C)		102	√
H3-00	Solar inverter selection	0: Invalid 1: Enabled When enabled, auto tracking maximum output power (MPPT).	1	√
H3-01	Detection and selection of water shortage in water source	0: Invalid 1: AI1 2: AI2 3: AI3 4: DI terminal	4	√
H3-02	Water shortage threshold	0.0%～100.0% When the detection level of the water level control is larger than H3.02, this state is maintained after the delay time of H3.03, and is reported to be short of water warning (A.tL) and dormant.	75.0%	√
H3-03	Water shortage alarm delay	0～3600s	10s	√
H3-04	Water shortage delay time delay	0～3600s	300s	√
H3-05	Selection of water full test	0: Invalid 1: AI1 2: AI2 3: AI3 4: DI terminal	4	√
H3-06	Water full threshold	0.0%～100.0% When the detected water level control analog signal is less than H3-06, and continues this state after H3.07's delay time, it reports full water warning (A-tF) and dormancy.	25.0%	√
H3-07	Water full alarm delay	0 ～ 3600s	10s	√
H3-08	Water full reset delay	0 ～ 3600s	300s	√

H3-09	Damage monitoring threshold of hydraulic probe for storage tank	0 ～ 100.0% 0.0%：means invalid； When the water level control analog signal is greater than H3_09, the hydraulic probe failure (tSF) stops at 0% hours	0.0%	√
H3-10	Dry pump testing enabled	0: Forbidden 1: Enabled	0	√
H3-11	Dry pump current threshold	0.0～100.0%	50.0%	√
H3-12	Frequency threshold of dry pump	0.00～50.00Hz	30.00Hz	√
H3-13	Dry pump early warning delay	0～3600s When the motor current is less than H3-11 and the motor running frequency is greater than H3-12, the duration of this state is greater than H3.13, which is reported to be dry pump early warning (A-LL) and dormant.	60s	√
H3-14	Dry pump reset delay	0～3600s	120s	√
H3-15	Light weak judgment frequency	0.00～50.00Hz	10.00Hz	√
H3-16	Light weak warning delay	0～3600s When the output frequency is less than or equal to H3-15, and the duration is longer than H3-16, the reporting light is weak warning and dormant. Note: when the bus voltage is lower than the light weak voltage (H3-26), the A-LS will not be delayed.	100s	√
H3-17	Light weak reset delay	0～3600s	300s	√
H3-18	Frequency given	0: Maximum frequency 1: Given based on the frequency source parameters	0	√
H3-19	MPPT Mode acceleration and deceleration time	0.1 ～ 6500.0s The shorter the time, the faster the response speed and the worse the stability The longer the time, the slower the response speed, the better the stability. But too large and too small can cause system concussion	50.0	√
H3-20	MPPT frequency adjustment amplitude	0.01～ 10.00Hz The smaller the frequency, the slower the response speed, the better the stability The larger the frequency is, the faster the responding speed is, the worse the stability is.	0.25Hz	√

		But too large and too small can cause system concussion		
H3-21	MPPT Control cycle	0.0s ～ 5.00s The smaller the time, the faster the response, the better the stability. The greater the time, the slower the response speed, the worse the stability. But too big and too small can cause shock.	0.50s	√
H3-22	MPPT Minimum operating voltage	0.0V～500.0V When the bus voltage is less than H3-22, frequency reduction will be performed until voltage recovery is allowed.	220V：180.0 380V：350.0	√
H3-26	Light weak voltage	0～500	300V	√
H3-27	Auto Reset After Fault	0：Disabled 1：Enabled	1	√
H3-28	Force Start Frequency	0.00Hz～P0-12	5.00	√
H3-29	Display frequency filter depth setting	10～400	20	√
H3-30	Reserved	-	-	×
H3-31	Reserved	-	-	×
H3-32	Mppt Control Mode Selection	0：Normal VF mode 1：CVT mode 2：MPPT mode	2	×
H3-33	Vmpp Voltage Keypad Set	0.0～3000.0V	550.0	×
H3-34	Mppt Search Voltage Step	0.1～30.0V	1.0V	×
H3-35	Mppt Search Period	0.2～8.0s	1.0	×
H3-36	Voltage Closed Loop PI Control Deviation Limit	0.0%～100.0%	0.0%	×
H3-37	PID Max. Output Frequency	0.0%～100.0%	100.0%	×
H3-38	PID Min. Output Frequency	0.0%～100.0%	0.0%	×
H3-39	KP1	102～20000	8192	√
H3-40	KI1	102～20000	256	√
H3-41	KP2	102～20000	1024	√

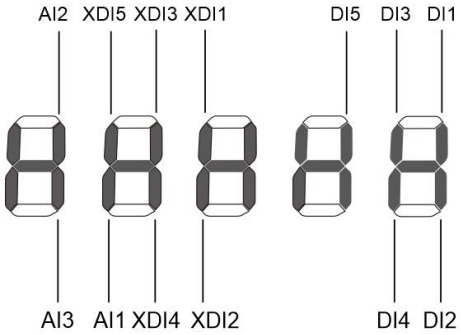
H3-42	KI2	102～20000	1024	√
H3-43	Voltage Closed-loop PI Control Gain Switching Point	0～1000	500	√
H3-44	Mppt Reference Voltage Max. Value	0.0～3000.0V	750.0	×
H3-45	Mppt Reference Voltage Min. Value	100.0～3000.0V	350.0	×
H3-46	MPPT Control Algorithm Selection	0：mpptAlgorithm0 1：mpptAlgorithm1 (New Version)	1	×
H3-47	MPPT Output Acc Time	0.1～6500.0s	20.0s	√
H3-48	Bus Undervoltage Suppression Function Enable	0：Disabled 1：Enabled	1	√
H3-49	Bus Undervoltage Suppression Protection Point	180.0V～500.0V	430.0V	√
H3-50	Bus Undervoltage Suppression Protection Gain	0.1～500.0	100.0	√
H3-52	Voltage Light Weak Reset Delay Time	0～3600s	30s	√

5.3 Monitoring parameter brief table

Function Code	Parameter Name	Minimum Unit	Communication Address
Group d0 Basic monitoring parameters			
U0-00	Running frequency (Hz)	0.01Hz	7000H
U0-01	Set frequency (Hz)	0.01Hz	7001H
U0-02	Bus voltage (V)	0.1V	7002H
U0-03	Output voltage (V)	1V	7003H
U0-04	Output current (A)	0.01A	7004H
U0-05	Output power (kW)	0.1kW	7005H
U0-06	Output torque (%)	0.1%	7006H
U0-07	DI terminal input state	1	7007H
U0-08	DO terminal output state	1	7008H
U0-09	AI1 voltage (V)	0.01V	7009H
U0-10	AI2 voltage (V)	0.01V	700AH

U0-11	AI3 voltage (V)	0.01V	700BH
U0-14	Load speed display	1	700EH
U0-15	PID setting	1	700FH
U0-16	PID feedback	1	7010H
U0-18	HDI Input pulse frequency (Hz)	0.01kHz	7012H
U0-21	AI1voltage before correction	0.001V	7015H
U0-22	AI2 voltage before correction	0.001V	7016H
U0-23	AI3 voltage before correction	0.001V	7017H
U0-24	Linear speed	1m/Min	7018H
U0-25	current power-on time	1Min	7019H
U0-26	Current running time	0.1Min	701AH
U0-27	HDI Pulse input frequency	1Hz	701BH
U0-28	Communication setting value	0.01%	701CH
U0-34	Motor temperature	1℃	7022H
U0-41	DI terminal input state visual display	1	7029H
U0-42	DO terminal output state visual display	1	702AH
U0-43	DI terminal function state visual display 1 (function 01-function 40)	1	702BH
U0-44	DI terminal function state visual display 2 (function 41- function 80)	1	702CH

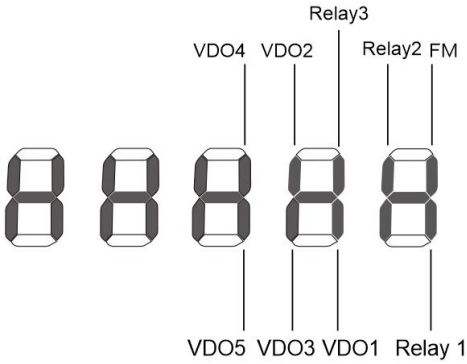
Input terminal state and means:



Display corresponding input terminal:The display tube bright means input valid

Diagram 6-34 Multifunction input terminal valid input diagram

Output terminal state and means:



Display corresponding D0 output terminal:The display tube bright means output valid

Diagram 6-35 Multifunction input terminal valid output diagram

Chapter 6 Faults diagnosis and solutions

6.1 Faults warning and solutions

The EPV300 provides pieces of fault information and protective functions. After a fault occurs, the inverter implements the protection function, and displays the fault code on the operation panel. Before contacting company for technical support, you can first determine the fault type, analyze the causes, and perform troubleshooting according to the solutions in this chapter. If the faults belong to the reason mentioned in the dashed box, please seek service, contact with the agent you purchased, or contact directly with our company.

In the 21 warning messages, E022 is the inverter hardware overcurrent or overvoltage signal. In most situations, hardware overvoltage fault causes E022.

Fault Name	Inverter unit protection
Display	E-01
Possible Causes	1. The output circuit is grounded or short circuited. 2. The connecting cable of the motor is too long. 3. The module overheats. 4. The internal connections become loose. 5. The main control board is faulty. 6. The drive board is faulty. 7. The inverter module is faulty.
Solutions	1. Eliminate external faults. 2. Install a reactor or an output filter. 3. Check the air filter and the cooling fan. 4. Connect all cables properly. 5. Contact the agent or company 6. Contact the agent or company 7. Contact the agent or company

Fault Name	Overcurrent during acceleration
Display	E-02
Possible Causes	1. The output circuit is grounded or short circuited. 2. Motor auto-tuning is not performed. 3. The acceleration time is too short. 4. Manual torque boost or V/F curve is not appropriate. 5. The voltage is too low. 6. The startup operation is performed on the rotating motor. 7. A sudden load is added during acceleration. 8. The AC drive model is of too small power class.
Solutions	1. Eliminate external faults. 2. Perform the motor autotuning. 3. Increase the acceleration time. 4. Adjust the manual torque boost or V/F curve. 5. Adjust the voltage to normal range. 6. Select rotational speed tracking restart or start the motor after it stops. 7. Remove the added load. 8. Select an AC drive of higher power class.

Fault Name	Overcurrent during deceleration
Display	E-03
Possible Causes	1. The output circuit is grounded or short circuited. 2. Motor auto-tuning is not performed. 3. The deceleration time is too short. 4. The voltage is too low. 5. A sudden load is added during deceleration. 6. The braking unit and braking resistor are not installed.
Solutions	1. Eliminate external faults. 2. Perform the motor autotuning. 3. Increase the deceleration time. 4. Adjust the voltage to normal range. 5. Remove the added load. 6. Install the braking unit and braking resistor.

Fault Name	Overcurrent at constant speed
Display	E-04
Possible Causes	1. The output circuit is grounded or short circuited. 2. Motor auto-tuning is not performed. 3. The voltage is too low. 4. A sudden load is added during operation. 5. The AC drive model is of too small power class.
Solutions	1. Eliminate external faults. 2. Perform the motor autotuning. 3. Adjust the voltage to normal range. 4. Remove the added load. 5. Select an AC drive of higher power class

Fault Name	Overvoltage during acceleration
Display	E-05
Possible Causes	1. The input voltage is too high. 2. An external force drives the motor during acceleration. 3. The acceleration time is too short. 4. The braking unit and braking resistor are not installed.
Solutions	1. Adjust the voltage to normal range. 2. Cancel the external force or install a braking resistor. 3. Increase the acceleration time. 4. Install the braking unit and braking resistor.

Fault Name	Overvoltage during deceleration
Display	E-06
Possible Causes	1. The input voltage is too high. 2. An external force drives the motor during deceleration. 3. The deceleration time is too short. 4. The braking unit and braking resistor are not installed.
Solutions	1. Adjust the voltage to normal range. 2. Cancel the external force or install the braking resistor. 3. Increase the deceleration time. 4. Install the braking unit and braking resistor.

Fault Name	Overvoltage at constant speed
Display	E-07
Possible Causes	1. The input voltage is too high. 2. An external force drives the motor during deceleration.
Solutions	1. Adjust the voltage to normal range. 2. Cancel the external force or install the braking resistor.

Fault Name	Control power supply fault
Display	E-08
Possible Causes	1. The input voltage is not within the allowable range.
Solutions	2. Adjust the input voltage to the allowable range.

Fault Name	Undervoltage
Display	E-09
Possible Causes	1. Instantaneous power failure occurs on the input power supply. 2. The AC drive's input voltage is not within the allowable range. 3. The bus voltage is abnormal. 4. The rectifier bridge and buffer resistor are faulty. 5. The drive board is faulty. 6. The main control board is faulty.
Solutions	1. Reset the fault. 2. Adjust the voltage to normal range. 3. Contact the agent or company. 4. Contact the agent or company 5. Contact the agent or company 6. Contact the agent or company

Fault Name	AC drive overload
Display	E-10
Possible Causes	1. The load is too heavy or locked rotor occurs on the motor. 2. The AC drive model is of too small power class.
Solutions	1. Reduce the load and check the motor and mechanical condition. 2. Select an AC drive of higher power class.

Fault Name	Motor overload
Display	E-11
Possible Causes	1. F9-01 is set improperly. 2. The load is too heavy or locked rotor occurs on the motor. 3. The AC drive model is of too small power class.
Solutions	1. Set correctly. 2. Reduce the load and check the motor and the mechanical condition. 3. Select an AC drive of higher power class.

Fault Name	Power input phase loss
Display	E-12
Possible Causes	1. The three-phase power input is abnormal. 2. The drive board is faulty. 3. The lightening board is faulty. 4. The main control board is faulty.
Solutions	1. Eliminate external faults. 2. Contact the agent or company. 3. Contact the agent or company 4. Contact the agent or company

Fault Name	Power output phase loss
Display	E-13
Possible Causes	1. The cable connecting the AC drive and the motor is faulty. 2. The AC drive's three-phase outputs are unbalanced when the motor is running. 3. The drive board is faulty. 4. The module is faulty.
Solutions	1. Eliminate external faults. 2. Check whether the motor three-phase winding is normal. 3. Contact the agent or company. 4. Contact the agent or company

Fault Name	Module overheat
Display	E-14
Possible Causes	1. The ambient temperature is too high. 2. The air filter is blocked. 3. The fan is damaged. 4. The thermally sensitive resistor of the module is damaged. 5. The inverter module is damaged.
Solutions	1. Lower the ambient temperature. 2. Clean the air filter. 3. Replace the damaged fan. 4. Replace the damaged thermally sensitive resistor. 5. Replace the inverter module.

Fault Name	External equipment fault
Display	E-15
Possible Causes	1. External fault signal is input via S. 2. External fault signal is input via virtual I/O.
Solutions	1. Reset the operation. 2. Reset the operation.

Fault Name	Communication fault
Display	E-16
Possible Causes	1. The host computer is in abnormal state. 2. The communication cable is faulty. 3. P5-28 is set improperly. 4. The communication parameters in group FD are set improperly.
Solutions	1. Check the cabling of host computer. 2. Check the communication cabling. 3. Set P5-28 correctly. 4. Set the communication parameters properly.

Fault Name	Contactor fault
Display	E-17
Possible Causes	1. The drive board and power supply are faulty. 2. The contactor is faulty.
Solutions	1. Replace the faulty drive board or power supply board. 2. Replace the faulty contactor.

Fault Name	Current detection fault
Display	E-18
Possible Causes	1. The HALL device is faulty. 2. The drive board is faulty.
Solutions	1. Replace the faulty HALL device. 2. Replace the faulty drive board.

Fault Name	EEPROM read or write fault
Display	E-21
Possible Causes	1. The EEPROM chip is damaged.
Solutions	1. Replace the main control board.

Fault Name	AC drive hardware fault
Display	E-22
Possible Causes	1. Overvoltage exists. 2. Overcurrent exists.
Solutions	1. Handle based on overvoltage. 2. Handle based on overcurrent.

Fault Name	Short circuit to ground
Display	E-23
Possible Causes	1. The motor is short circuited to the ground.
Solutions	1. Replace the cable or motor.

6.2 Common faults and solutions

You may come across the following faults during the use of the inverter. Refer to the following table for simple fault analysis.

Table 8-1 Troubleshooting to common faults of the inverter

SN	Fault	Possible Causes	Solutions
1	There is no display at power-on.	1: There is no power supply to the inverter or the power input to the inverter is too low. 2: The power supply of the switch on the drive board of the inverter is faulty. 3: The rectifier bridge is damaged. 4: Inverter buffer resistance is damaged. 5: The control board or the operation panel is faulty. 6: The cable connecting the control board and the drive board and the operation panel breaks.	1: Check the power supply. 2: Check the bus voltage. 3: Contact the agent or company for technical support.
2	“HC” is displayed at power-on.	1: The cable between the drive board and the control board is in poor contact. 2: Related components on the control board are damaged. 3: The motor or the motor cable is short circuited to the ground. 4: The HALL device is faulty. 5: The power input to the inverter is too low.	1: Re-connect the 8-core and 34-core cables. 2: Contact the agent or company for technical support.
3	“E023” is displayed upon power-on.	1: The motor or the motor output cable is short-circuited to the ground. 2: The AC drive is damaged.	1: Measure the insulation of the motor and the output cable with a megger. 2: Contact the agent or company for technical support.
4	The AC drive display is normal upon power-on. But “HC” is displayed after running and ops immediately.	1: The cooling fan is damaged or locked-rotor occurs. 2: The external control terminal cable is short circuited.	1: Replace the damaged fan. 2: Eliminate external fault.
5	E-14 (module overheat) fault is reported frequently.	1: The setting of carrier frequency is too high. 2: The cooling fan is damaged, or the air filter is blocked. 3: Components inside the inverter are damaged (thermal coupler or others).	1: Reduce the carrier frequency (P0-15). 2: Replace the fan and clean the air filter. 3: Contact the agent or company for technical support.

6	The motor does not rotate after the AC drive runs.	1: Check the motor and the motor cables. 2: The inverter parameters are set improperly (motor parameters). 3: The cable between the drive board and the control board is in poor contact. 4: The drive board is faulty.	1: Ensure the cable between the AC drive and the motor is normal. 2: Replace the motor or clear mechanical faults. 3: Check and re-set motor parameters.
7	The input terminals are disabled.	1: The parameters are set incorrectly. 2: The external signal is incorrect. 3: The jumper bar across OP and 24V becomes loose. 4: The control board is faulty.	1: Check and reset the parameters in group H4. 2: Re-connect the external signal cables. 3: Re-confirm the jumper bar across OP and 24 V. 4: Contact the agent or company for technical support.
8	The AC drive reports overcurrent and overvoltage frequently.	1: The motor parameters are set improperly. 2: The acceleration/deceleration time is improper. 3: The load fluctuates.	1: Re-set motor parameters or re-perform the motor autotuning. 2: Set proper acceleration/ deceleration time. 3: Contact the agent or company for technical support.
9	E-17 is reported upon power-on or running.	The soft startup contactor is Not picked up.	1: Check whether the contactor cable is loose. 2: Check whether the contactor is faulty. 3: Check whether 24V power supply of the contactor is faulty. 4: Contact the agent or company for technical support.
10	 Is displayed upon power-on.	Related component on the control board is damaged.	Replace the control board.

Guarantee Agreement

Warranty of the company products executes in accordance with “The Quality Assurance” in instructions.

1. Warranty period is 12 months from the date of purchasing the product

2. Even within 12 months, maintenance will also be charged in the following situations:

A. Incorrect operation (according to the manual) or the problems are caused by unauthorized repair or transformation.

B. Fire, water disaster, abnormal voltage or other accompanied natural disasters cause the damage.

C. After purchase, loss is caused by falling damage or improper transportation.

D. Problems are caused by exceeding the requirements of standards specifications to use the drive.

E. Failure and damage caused by obstacles other than machines (such as external equipment).

3. When the product is broken down or damaged, please fill in the contents of the ***Product Warranty Card*** correctly and in detail.

4. The maintenance cost will be charged according to the revised ***Price List*** of our company.

5. This warranty card is not re-issued under normal circumstances. Please keep this card and show it to the maintenance personnel when it is guaranteed.

6. If there are any problems in the course of service, please contact our agent or our company in time.

Product Warranty Card

User Information	Company Name			
	Company Address			
	Contact		Telephone	
	Zip Code		Fax	
Product Information	Product Model			
	Body Bar Code			
	Agency			
Fault Information	Maintenance Information： Repairman：			

Certificate

Inspector：_____

Date of Manufacture：_____

The product is inspected by the company’s quality control and quality assurance department, and its performance parameters are in line with the factory standards.

Shenzhen Epsivo Technology Co., Ltd.

Tel: 0086-769-8886 0169/0086-755-8419 0900

Website: www.epsivodrive.com/www.szepsivo.com

E-mail: overseas@szepsivo.com

Office address: 1st Floor, Hongqin Building, Dabao Road No. 47,Xin'an, Baoan District, Shenzhen, China