Intelligent water pump frequency converter A simple manual

Safety information and precautions

1、 The wiring must be done by qualified professional electrical engineers, otherwise it may cause electric shock or damage to the inverter.

2、 Connect the wire when the power supply is disconnected, otherwise it may cause electric shock or fire.

3. Ground terminal⏚ It is necessary to be reliably grounded, otherwise the inverter housing is dangerous to be electrified (board and shell silk screen).

4、 Do not touch the main circuit terminal, and do not contact the main circuit terminal wiring of the inverter with the shell, otherwise it may cause electric shock.

5、 Do not use circuit breaker to control the stop and start of the inverter, otherwise it may cause damage to the inverter.

6、 The radiator is at a high temperature. Do not touch it, otherwise you may get burned.

7、 The preset parameters of the frequency converter can meet the requirements of most equipment. If not necessary, do not modify the parameters of the frequency converter at will. Even if some equipment has special requirements, only the necessary parameters can be modified. Otherwise, random modification of parameters may cause damage to the equipment.

8、 The company guarantees and repairs the product according to the Product Quality Management Law, and does not bear joint liability. If the motor is faulty or burned out after the user uses the product, the company does not take responsibility for the repair or compensation of the motor, and does not bear joint liability for the impact caused by the machine failure on the user.

Note: This parameter is not specified in some functions of the simple manual. If necessary, please call our company for consultation on the complete manual

◆ Operation panel description

1. Operation button description:

(1) Menu: Use when switching from fixed mode to parameter mode.

(2) Pressure/set: the shortcut key for setting water pressure and the key for determining parameters.

(3) Shift: Shift the cursor when switching the display content and modifying parameters. Press the "Shift" key in the running state to change the running frequency,
When switching back and forth between the output current, set pressure and feedback pressure, press the "shift" key to modify the parameter, and the flashing bit is the current modifyable bit.

(4) ▲▼ Key: Used to set the parameter value and modify the set pressure value.

(5) Operation: The start button is the start mode when the keyboard is used.

(6) Stop: Stop button and fault reset button when the start mode is keyboard.

2、 Indicator light description:

Operation: (always on) operation indicator; (flashing) sleep shutdown indicator;

Stop: shutdown indication (standby indication);

Online: the network of multiple pumps is always on when it is successful, and does not light up when there is an error or no network;

Alarm: frequency corverter protection alarm;

Frequency: When it is always on, the value of the display screen represents the operating frequency;

Current: when it is always on, it represents the value of the display screen as the operating current;

Voltage: when it is always on, it represents the value of the display screen as the DC bus voltage;

Set pressure: when the frequency and current lights are on at the same time, the value of the display screen represents the set pressure value;

Feedback pressure: When the frequency and voltage lights are on at the same time, the value of the display screen represents the feedback

★ Step 1: Set the sensor range, sensor feedback type, sensor voltage, etc.:

P0.08=16.0 Sensor range

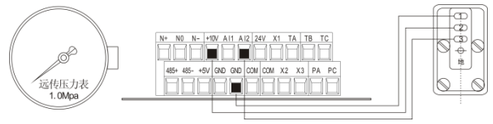
★ Step 2: Determine the pump direction:

A short trial run is used to observe whether the pump is turning in the right direction. The pump can be turned in the following two ways:

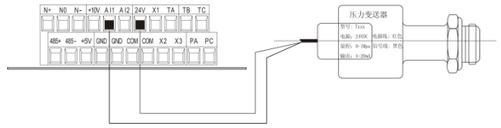
① Disconnect the input power supply, and wait for the inverter to display off, then switch any two phases of the inverter output power line U, V, W;

② Stop the inverter and modify the parameter P0.02

◆ Sensor wiring method (Note: there is a short connection between COM and GND when the sensor leaves the factory)



Remote pressure gauge wiring diagram



Two-wire pressure transmitter wiring diagram

◆ Macro parameter setting (multi-frequency converter online parameters)

Please refer to the P0.20 parameter table to debug the parameters of the main engine and auxiliary engine

System type	Main engine	1# auxiliary machine	2# auxiliary machine	3# auxiliary machine	4# auxiliary machine	5# auxiliary machine
Single pump water supply Set up	P0.20=1	\	\	\	\	\
Two networks Host setup	P0.20=2	P0.20=11	\	\	\	\
Three units are networked Host setup	P0.20=3	P0.20=11	P0.20=12	\	\	\
Four units are networked Host setup	P0.20=4	P0.20=11	P0.20=12	P0.20=13	\	\
Five units network Host setup	P0.20=5	P0.20=11	P0.20=12	P0.20=13	P0.20=14	\
Six units are networked Host setup	P0.20=6	P0.20=11	P0.20=12	P0.20=13	P0.20=14	P0.20=15
One drag two water supply mode	P0.20=7	\	\	\	\	\
One drag and multiple water supply mode	P0.20=8	\	\	\	\	\
Emergency water supply mode	P0.20=9	\	\	\	\	\

2. Common parameter group for a single machine

FC	Function code description	Set the scope	Minimum unit	Factory value	Change	Remarks
P0.00	Pressure setting	P4.01～P0.10	0.1 Bar	3.0 Bar	○	When using multi-link, only the host pressure value needs to be set
P0.01	Start	0.0 Bar～P0.00	0.1 Bar	2.4 Bar	○	Below the wake-up pressure value, wake up from sleep
P0.02	Motor steering	0: Forward 1: Reversal	1	0	●	You can change this parameter Change the pump direction
P0.03	Anti-freeze function	0: Off 1: Start, count in seconds 2: Turn it on and time it by minutes	1	0	○	The pump itself is frost-proof Rust function, please refer to P0.12-P0.14 for detailed Settings When there are multiple units, each changes The frequency converter should be set separately to prevent freezing.
P0.04	The leak is large Small coefficients	0.0s～100.0s	0.1s	5.0s	○	The bigger the leak, The smaller the coefficient
P0.05	Start/stop signal selection	0: Start and stop the keyboard 1: Terminal start and stop 2: Communication control start and stop	1	0	○	When there are multiple units, lay the machine It must be set to 2
P0.06	Autostart function	0～1	1	0	○	0: Off 1. Turn it on
P0.07	The delay starts	0.0s～100.0s	0.1s	5.0s	○	The delay time before automatic start
P0.08	Sensor range	0.0 Bar～200.0 Bar	0.1 Bar	16.0 Bar	○	Corresponding to the sensor Metre fullscale
P0.09	Sensor feedback Channel selection	0:AI1 1:AI2 2:Max(AI1,AI2) 3:Min(AI1,AI2)	1	2	○	AI1 defaults to power on Flow feedback; AI2 factory

3. Common parameter group for multi-pump linkage

FC	Envelop of function	Set the description	Minimum unit	Factory value	Change	Remarks
P1.00	Multiple pumps in series Postal address	0～5	1	0	◎	1～5 is the address of the paver; The host address is 0
P1.01	Multi-split unit Backup host action selection	0: Shutdown 1: Constant speed 2: Constant pressure	1	0	○	0: The slave machine stops after the host is lost 1: The multi-link standby host can select constant speed operation without connecting the sensor. 2: Suitable for the standby host connected with sensors, The network operates at constant pressure. (Assistance Settings)
P1.02	Multi-link network mode selection	0: From the machine 1: Host	1	0	◎	0: CAN are used as multi-processor slaves. (The slave can only be set to 0) 1: CAN as a multi-link host.
P1.03	Number of multi-link laying machines	0～5	1	0	◎	When 0 is selected, the host cancels the control function to the slave. Note: This parameter only works when the PID frequency source is used and the CAN is the host.
P1.04	Multi-achieve operation mode	0: Multi-pump main paving control 1: Multi-pump synchronous control 2: Control of multiple pumps with one in use and one in reserve	1	0	●	0: The control pressure of multiple pump main laying is insufficient The pump is put into operation for the first time. 1: The pressure of multi-pump synchronous control is insufficient The pump runs at the same frequency. 2: Control any time with one pump for one use and one backup Only one pump is in operation Ok, the rest of the pumps are in standby.

pressure value of the pipe network;

◆ **Pressure conversion relationship**

0.1MPa (megapascal) = 100kPa (kilopascal) = 1bar (bar) = 1kgf/cm² (kgf/cm²)

◆ **Control terminal identification and description**

Terminal symbol	Terminal name	Technical specifications
X1～X3	Multifunctional digital input terminal Son	1. The optocoupler isolates the single input 2. When connected to COM, it is ON; when open circuit, it is OFF 3. Input voltage range: 9~36VDC 4. Input impedance: 4k Ω
COM	Common port	Multifunctional digital input common terminal
AI1	Analog input terminal 1	Default 4~20mA input, set to select 0-10V input, default impedance 500 Ω;
AI2	Analog input terminal 2	The default input is 0-10V, and the setting can select 4~20mA input. The default impedance is 22k Ω;
24V	Simulate reference voltage	24V, ±5%, maximum output current 100mA
+10V	Simulate the reference voltage	10V, ±5%, maximum output current 50 mA
+5V	Simulate the reference voltage	5V, ±5%, maximum output current 30 mA
GND	Simulated ground end	To simulate the reference zero potential of the reference voltage
TA/TB/TC	Relay 1 output	TA-TB: normally closed terminal TA-TC: normally open terminal AC 250V/3A DC 30V/1A
PA/PC	Relay 2 output	PA-PC: Common starter AC 250V/3A DC 30V/1A
N+/N0/N-	CAN networking communication port	Standard CAN communication interface, when multi-connection control is used, please use twisted pair or shielded cable and connect N+, NO, N-
485+/485-	RS485 Upper computer Communication port	Standard RS485 Communication interface, please use twisted pair or shielded cable and connect

◆ **Quick debugging parameter setting**

Follow the following steps to complete debugging

◆ **Pump frequency converter parameter table**

Note: "○" indicates that the set value of this parameter can be changed in both standby and running states of the frequency converter.

"●" indicates that the set value of this parameter cannot be changed when the inverter is in operation.

"◎" Indicates that the value of this parameter is the actual test record value and cannot be changed.

1. Status panel display parameters (Note: press the "Shift" key to switch display)

Show	Name	Explain	Unit	Remarks
P	Current pressures	System real-time pressure	Bar	◎
H	Running frequency	Current running frequency	Hz	◎
d	Setting pressure	The system sets the pressure	Bar	◎
A	Running current	Machine output current	A	◎
U	Busbar voltage	Machine bus voltage	V	◎

						default voltage feedback
P 0.10	High alarm Set value	P0.00～P0.08	0.1 Bar	12.8 Bar	○	The feedback pressure is greater than or equal to When the set value is set, the alarm will stop after a delay of 0.1 seconds. Normal pressure is restored Over reset delay time The fault is automatically removed after that
P 0.12	Anti-freeze operating frequency	0.00Hz~ upper limit frequency P2.07	0.01Hz	10.00 Hz	○	The time for anti-freezing and rust prevention The unit can be seconds, You can also divide it by referring to the setting of P0.03. The interval is set as 0 At this time, it is always operated at the freezing prevention frequency.
P 0.13	Freeze-proofing Performance period	0s/min～65000s/min	1s/min	60s/min	○	
P 0.14	Run in freezing conditions Interval	0s/min～65000s/min	1s/min	300 s/min	○	
P 0.15	Frequency converter operating mode	0～1	1	0	○	0: Constant pressure control mode 1) General speed control mode
P 0.18	Acceleration time	0.0s～6500.0s	0.0s	5.0s	○	Distinguish by power segment
P 0.19	Deceleration time	0.0s～6500.0s	0.1s	5.0s	○	Distinguish by power segment
P 0.20	Multi-Linked Macro Debugging facility	0～15	1	0	●	

P 1.05	Multi-axial rotation interval time	0 min ~ 3600 min	1 min	120 min	○	The main mowers are rotated at regular intervals Set the interval time When it is 0, cancel the main Pump rotation function.
P 1.06	Address setting of multi-split small pump	1 ~ 6	1	6	○	When a small pump is needed, set the corresponding small pump address to this parameter, Set it to 1, and it will be number 1 The paver is a small pump; if so The value is greater than the auxiliary machine address, Then the function of the small pump is invalid.
P 1.07	Delay time for multi-split pump	0.0s ~ 100.0s	0.1s	5.0s	○	Insufficient online pressure Time, Delay in adding the pump Interim.
P 1.08	One drag two work mode	0: Fixed variable frequency pump 1: Alternating frequency pump	1	0	●	Set it to rotation mode At this time, the rotation time is set by P1.05 (using the one-to-two function, default end Start up) Please refer to the electronic version of the system electrical diagram for details
P 1.17	The standby host is started Command control	0: controlled by the original start signal of the standby host 1: Automatic start when powered on	1	1	○	When the standby host is enabled After that, it can be repaired Change this parameter and select The way to start the command
P 1.18	The communications are activated Command	0: Upper computer start control 1: Multi-	1	1	○	When the host is installed, it can be modified This parameter

	control	serial communication control				is selected as by The host directly controls the start and stop of the machine
P 1.19	Start Coeffcient of proportionality	50.0%～95.0%	0.1%	90.0%	○	You can change this value Change the percentage of start-up pressure deviation

4、 Debug parameter group

FC	Function declaration	Set the scope	Minimum unit	Factory value	Change	Remarks
P2.00	AI1 channel feedback type selection	0:4-20mA 1:0-10V 2:0.5-4.5V 3:0-5V	1	0	○	AI1 is factory default for current feedback 4-20 mA type
P2.02	AI2 channel feedback type selection	0:4-20mA 1:0-10V 2:0.5-4.5V 3:3:0-5V	1	1	○	AI2 is factory default for voltage feedback type 0-10V
P2.05	Frequency source selection	0: The digital setting up and down keys and pulse knob are adjusted (Drop power and do not remember) 1: The digital setting is adjusted by the up and down keys and the pulse knob (Drop memory) 2: AI1 3: AI2 5: Emergency water supply 8: PID 9: Communication given	1	8	●	Select 8 auxiliary machines, select 9 auxiliary machines, and select 1 emergency water supply (Sensorless water supply mode)
P2.10	Carrier frequency setting	0.5 ~ 15.0	0.1kHz	Type Confirm	○	This value can be adjusted to adjust motor noise
P2.12	Halt Mode select	0: Slow down and stop 1: Free parking	1	0	○	Frequency converter shutdown mode The alternative is to deal with a drag Two and one drag is a free parking method
P2.13	The fault is automatically restored Position selection	0 ~ 5	1	3	○	Select 1 ~ 5 to open The fault is automatically reset Functionality. Runtime In case of failure, it will reset automatically after 10S, such as water shortage, line breakage, high and low Pressure, burst pipe, external Fault, time arrived The fault is not affected by this function code.
P2.15	Backup host	0.0 ~ 100.0	0.1%	80.0%	○	The standby host runs at

6、 Pump protection parameter group

FC	Function declaration	Set the scope	Minimum unit	Factory value	Change	Remarks
P 4.00	Water shortage protection function	0 ~ 2	1	2	○	0: Off 1: Start, judge by frequency and current 2: Turn on and let the water out The pressure of the mouth is judged
P 4.01	Water shortage fault Detection threshold	0.0 Bar ~ P0.00	0.1 Bar	0.5 Bar	○	When the feedback pressure is less than This setting value is used to determine whether there is water shortage.
P 4.02	Excessive low water level protection Frequency of detection	0.00Hz~ upper limit frequency P2.07	0.00Hz	48.00 Hz	○	Determine whether there is a shortage of water Compare frequencies, when in motion The frequency of the carrier is greater than this frequency When the rate is high, start judging the lack of water.
P 4.03	Excessive low water level protection Test time	0.0s ~ 200.0s	0.1s	60.0s	○	Meet the water shortage conditions, After this time, the water shortage fault is reported.
P 4.04	Excessive low water level protection Detect the percentage of current	0.0% ~ 100.0%	0.1%	40.0%	○	It is only valid when P 4.00 = 1, and the percentage of the rated current of the motor. When the running current is less than this current, it is judged as water shortage.
P 4.05	Water conservation is self-preserved Motion restart delay	0min ~ 9999 min	1min	15min	○	Set to 0: Use P4.07 and P 4.08 to reset the water shortage fault. Set to non-0: the time for automatic reset after the system detects water shortage.
P 4.06	Water conservation is self-preserved Number of dynamic repositions	0 ~ 9999	1	100	○	After the water shortage fault, after P 4.05 time, the inverter is automatic Reset operation, reset

8、 Protection and fault parameter groups

FC	Function declaration	Set the scope	Minimum unit	Factory value	Change	Remarks
P 6.00	Motor overload Protection options	0: Prohibited 1: Allowed	1	1	○	0: No protection 1: Protection
P 6.01	Motor overload Protect the gain	0.20~10.00	0.01	1 . 00	○	The motor overload protection is reverse Timeline
P 6.02	Motor overload Warning coefficient	50% ~ 100%	1%	80%	○	The reference value of this value is the motor overload current
P 6.08	Enter phase loss protection	0: Prohibited 1: Allowed	1	1	○	Select whether to input a missing value The situation is protected
P 6.09	Output phase loss protection	0: Prohibited 1: Allowed	1	1	○	Select whether to output a defect The situation is protected

9、 Terminal parameter group

FC	Function declaration	Set the scope	Minimum unit	Factory value	Change	...
P 7.00	X1 Input terminal function selection	0、1、2、7、11、12、13、18	Not have	1	●	0: No function 1: Forward operation (FWD) 2: Reverse operation (REV) 7: Fault reset 11: Water shortage protection is always open input Pump 12:1 is faulty Pump 13:2 is faulty 18: Emergency water shortage manual automatic switch Note: The function data not listed in this table is prohibited for setting!
P 7.01	X2 Input terminal function selection			11	●	
P 7.02	X3 terminals FS			2	●	output 3: One drag two FM/TB/TC functions (for variable frequency pump Control output 4: Motor running 5: Fault
P 7.08	Relay TA/TB/TC output function Select	0、1、2、3、4	1	1	●	0: No output 1: One drag two PPC functions

12、 Fault record parameter group

FC	Function declaration	FC	Function declaration
E0.00	The most recent type of failure	E0.01	Frequency of the most recent failure
E0.02	The last time there was a fault, the current was	E0.03	Bus voltage at last failure
E0.04	The status of the input terminal is shown in the last failure	E0.05	Output on last failure Terminal status
E0.06	Status of the inverter during last failure	E0.07	Time of last failure (power on)
E0.08	Time (of operation) of last failure	E0 ~ E2 before 3 times Failure logging	

13. Common fault codes and countermeasures

Fault code	Fault type	Possible causes of failure	The way to deal with a situation
E002	Accelerate the operation over current	1. It's going too fast 2. The voltage of the grid is low 3. The power of the frequency converter is too small	1. Increase acceleration time 2. Check the input power supply 3. Select a frequency converter with a higher power
E003	Slow down to run over current	1. The speed was too slow 2 The power of the frequency converter is too small	1. Increase the deceleration time 2 Increase the power of the frequency converter
E005	Accelerate the operation over voltage	1. The input voltage is abnormal 2. After a sudden power failure, the motor in rotation is restarted	1. Check the input power supply 2. Avoid shutting down and restarting
E006	Slow down to avoid overvoltage	1. The speed was too slow 2. The load inertia is large 3. The input voltage is abnormal	1. Increase the deceleration time 2. Increase the energy consumption braking component 3. Check the input power supply
E009	Busbar under voltage	1. The voltage of the grid is low	1. Check the power input to the grid
E010	Frequency converter overload	1. It's going too fast 2. Restart the motor in rotation 3. The voltage of the grid is too low 4. The load is too large	1. Increase acceleration time 2. Avoid shutting down and restarting 3. Check the grid voltage 4. Choose a more powerful inverter
E011	Motor overload	1. The voltage of the grid is too low 2. The rated current of the motor is not set correctly 3. Motor blockage or load sudden change is too large 4. Big horse and small car	1. Check the grid voltage 2. Reset the motor rated current 3. Check the load and adjust the torque increase 4. Choose the right motor
E012	Phase is missing on the input side	Enter R, S, T to have a missing phase	1. Check the input power supply 2. Check the assembly line
E013	Phase loss on the output side	U, V, W phase missing output (or load three-phase serious asymmetry)	1. Check the output wiring 2. Check motors and cables
E014	Module overheating	1. Instantaneous overcurrent in the frequency converter 2. Output three-phase short circuit between phases or ground 3. Air duct blockage or fan damage 4. The ambient temperature is too	1. See the flow countermeasure 2. Redraw the wiring 3. Open the air duct or replace the fan 4. Lower ambient temperature 5. Check and reconnect 6. Seek services

	Standby frequency					a constant speed, for example: The maximum frequency is 50.00Hz, then the standby frequency is 40.00Hz。

5、 PID and sleep parameter group

FC	Function declaration	Set the scope	Minimum unit	Factory value	Change	Remarks
P 3.05	PID gives the source selection		1	0	○	0: The keyboard is given 1: AI1 given 2: AI2 given
P 3.07	PID feedback is disconnected Test time	0.0s ~ 100.0s	0.1s	30.0s	○	When the PID feedback value is still 0 after the detection time has elapsed, the feedback fault is reported. This function is invalid when set to 0.
P 3.09	PID wake-up detection delay	0.0s ~ 100.0s	0.1s	3.0s	○	PID wake-up detection delay
P 3.12	PID The sleep maintenance frequency	0.00Hz ~ P3.13	0.01Hz	20.00Hz	○	The PID runs at the sleep maintenance frequency. After the sleep maintenance time, the PID enters the sleep state
P 3.13	Sleep detection frequency	P3.12~ Upper frequency	0.01Hz	25.00Hz	○	The system determines the hibernation bar The frequency with which the item is satisfied.
P 3.15	Pressure holding test Periodic intervals	0.0s ~ 120.0s	0.1s	60.0s	○	Every time this test cycle is completed Test the pressure holding state
P 3.18	PID feedback break line detection value	0.00V ~ 1.00V	0.01V	0.20V	○	Feedback disconnects the detection valve
						times are limited by this parameter, and reset is reached After a certain number of times, the water shortage fault cannot be automatically cleared, and the fault should be reset manually by pressing REST. Setting it to 9999 can reset the water shortage fault infinitely.
P 4.07	Check the incoming water pressure	0.0 Bar ~ P0.00	0.1 Bar	1.0 Bar	○	If the system reports water shortage fault (E027), the inverter detects the pressure after water comes in Greater than or equal to set incoming water Test pressure and time Greater than the water inflow detection time After that, the system automatically resets the E 027 fault. It is suitable for the inlet with pressure The pressurization system. This pressure Value is the outlet pressure value.
P 4.08	Water arrival test time	0.0s ~ 100.0s	0.1s	20.0s	○	

7、 Motor parameter group

FC	Function declaration	Set the scope	Minimum unit	Factory value	Change	Remarks
P 5.01	Rated power of motor	0.1kW ~ 400.0kW	0.1kW	The model is determined	●	Set according to the motor nameplate
P 5.02	Rated voltage of motor	1 V ~ 440 V	1V	The model is determined	●	Set according to the motor nameplate
P 5.03	Rated motor current	0.01A ~ 655.35A (<= 55 kW) 0.1A ~ 6553.5A (> 55 kW)	0.01A/ 0.1A	The model is determined	●	Set according to the motor nameplate
P 7.09	Relay PA/PC output function Select		1	2	●	co (used for industrial frequency pump control) are prohibited from being set unless the function code is listed

10、 Agent parameter group

FC	Function declaration	Set the scope	Unit	Factory value	Modification level	Remarks
Pd. 00	User password	0000 ~ 9999	Not have	0000	○	User password
Pd. 01	Parameter is restored to factory value	0 ~ 2	Not have	0	●	0: No operation 1. Restore factory value 2: The fault record is cleared
Pd. 02	Lock the parameters	0 ~ 1	Not have	0	○	0: Unlock 1: Lock

11、 Monitoring parameter group

FC	Name	Unit
L0.00	Running frequency (Hz)	0.01Hz
L0.01	Set frequency (Hz)	0.01Hz
L0.02	Busbar voltage (V)	0.1V
L0.03	Output voltage (V)	1V
L0.04	Output (A)	0.01A (>55Kw, 0.1A)
L0.05	Output power (kW)	0.1kW
L0.06	Output torque (%)	0.1%
L0.07	DI input mode	1
L0.08	DO output state	1
L0.09	AI1 Voltage (V)	0.01V
L0.10	AI2 voltage (V)	0.01V
L0.11	Cumulative on-line time	1H
L0.12	Cumulative running time	1H
L0.13	Total power consumption	1 linear measure
L0.14	Load speed (RPM)	1RPM
L0.15	PID Settings (Bar)	0.1 Bar
L0.16	PID feedback (Bar)	0.1 Bar

		high 5. The wiring or plug of the control panel is loose 6. The power circuit is not normal 7. Board is abnormal	
E015	External faults	External fault input terminal action	1 Check external device input
E016	Communication failure	1. The baud rate is not set properly 2. Communication error using serial communication 3. The communication was intermittently interrupted	1. Set the appropriate baud rate 2. Press RUN/STOP, key reset, seek service 3. Check the communication interface wiring
E017	Connect the power relay Hitch	1. The relay is not engaged	1. Replace the power on relay or seek technical support
E023	Ground short circuit fault	1. Check if the motor is short circuit to ground	1. Replace the cable or motor 2. Seek services
E024	Feedback line fault	1. Sensor is disconnected or has poor contact 2. The disconnection detection time is too short 3. Sensor damage or no feedback signal from the system	1. Check sensor installation and wiring 2. Adjust the wire break detection time 3. Replace the sensor
E027	Water shortage alarm	1. Abnormal water pressure / water level. 2. The sensor is disconnected or the contact is poor, and the system has no feedback signal. 3. The water shortage protection detection time is too short 4. The frequency of water shortage protection detection is too low 5. The water shortage protection detects the current as too high	1. Check whether the water inlet pressure of the pump is abnormal 2. Check sensor installation and wiring 3. Check the relevant parameter Settings
E028	High water pressure alarm	1. The sensor feedback signal is abnormal 2. The high alarm value is too low	1. Connect the detection sensor 2. Set relevant parameters for detection
E050	Multi-split Communication error	1. Multi-serial communication is abnormal 2. The network address of the multi-split unit is duplicated	1. Re-energize 2. Check the CAN networking address Settings 3. Seek services
E100 E110	The keyboard communication is faulty	1. Check that the keyboard communication wiring is normal 2. Check that the control panel is normal 3. Check that the keyboard is working properly	1. Replace the keyboard cable 2. Replace the control panel or keyboard 3. Seek services

P 5.04	Rated frequency of motor	0.01Hz~ maximum frequency	0.01Hz	The model is determined	●	Set according to the motor nameplate
P 5.05	Rated speed of motor	1rpm ~ 36000rpm	1rpm	The model is determined	●	Set according to the motor nameplate