EACON 易控

EC620 Solar Pump AC Drive

Quick Guide V1.0

Electronic instruction

EC620

Solar panel

Overhead tank

Agricultural irrigation

AC input

PV input

Ground level

Submersible pump

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1.Preface   V1.0

Thank you for using the EC620 Solar Pump AC drive. This AC drive is a special AC drive made by our company for PV water supply industry, and it is also suitable for other basic applications.

Please carefully read this manual before the installation in order to ensure the correct installation and operation of the AC drive, give full play to its superior performance, and ensure safety. Please keep this guide permanently for future maintenance, service and overhaul.

AC drive is a precise electric and electronic product, thus for the safety of the operators and the equipment, please ensure that the installation and parameters adjustment is done by professional motor engineers and the content marked as "Danger", "Notice", etc in this manual must be read carefully. If you have any questions, please contact with the agents of our company, and our technicians are ready to serve you.

The instructions are subject to change, without notice.

You can contact us with any product questions through the following ways.

E-mail
overseas@eacon.cc

Official website
www.eacon.cc

EACON WeChat
Subscription

✗ Dangerous and wrong use may cause casualties

✗ Danger
●The power supply must be turned off when laying the wires. ●When the AC power supply is cut off but the indicator light of the manipulator of AC drive is still on, there is still high voltage in the AC drive which is very dangerous, please do not touch the interior circuit and components. ●Do not check the components and signals on the circuit board during operation. ●The terminal of AC drive must be grounded correctly. ●Do not refit or replace the control board and parts without permission, otherwise, there are risks such as electric shock and explosion.

! Wrong use may cause damage to AC drive or mechanical system

! Notice
●Please do not test the voltage resistance of the interior components of AC drive, as the semiconductor of AC drive is easy to be punctured and damaged by high voltage. ●Never connect the main circuit output terminals U, V, and W directly to the AC main circuit power supply. ●The circuit board of the AC drive has CMOS IC which is extremely easy to be damaged by static electricity, thus please do not touch the circuit board with your hand before taking anti-static electricity measures. ●Only the qualified motor professionals can install the driver, lay the wire, repair and maintain the AC drive. ●The scrapping of AC drive shall be treated as industrial waste and burning is strictly prohibited.

2.Mechanical dimensions of AC drive
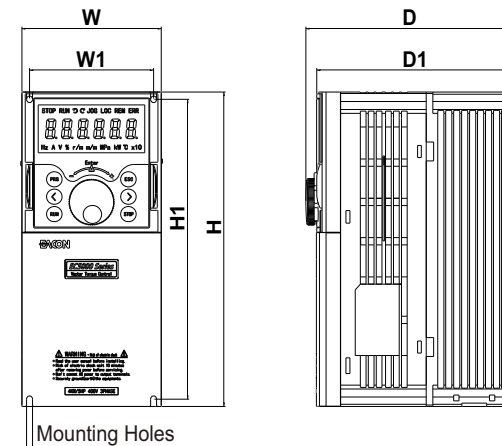
EC6211~EC6250 Enclosure Type

220V

Type	Rated KW	Rated A	W (mm)	W1	H	H1	D	D1	Screw Size
EC620D75-23	0.75	3.8	105	93.5	216	206	156.7	148.8	φ4.5
EC6201D5-23	1.5	7.0							
EC6202D2-23	2.2	9.0							
EC6204D0-23	4.0	13.0							

380V

Type	Rated KW	Rated A	W (mm)	W1	H	H1	D	D1	Screw Size
EC6201D5-43	1.5	4.8	105	93.5	216	206	156.7	148.8	φ4.5
EC6202D2-43	2.2	6.2							
EC6204D0-43	4	11.0							
EC6205D5-43	5.5	14.0							
EC6207D5-43	7.5	18.0	126	110	260	246	183	173.3	φ6
EC620011-43	11	27.0							
EC620015-43	15	34.0	153	137	341	327	203.3	193.6	φ7
EC6218D5-43	18.5	41.0							
EC620022-43	22	52.0	180	120	422.2	419.7	203.6	194	φ9
EC620030-43	30	65.0							
EC620037-43	37	80.0	191	120	471	450	241.1	231.6	φ9
EC620045-43	45	96.0							

3. Main Circuit Connection Functions

| Terminal	Type	Function Description
R/L1 S/L2 T/L3	Main circuit power supply input	Input end of commercial power supply
U/T1 V/T2 W/T3	AC drive output terminal	AC driver output connected with 3-phase induction motor.
⊕2 PR	External braking resistorconnection	≤37KW with braking component which is connected to terminal ⊕2, PR.To improve the brake moment of force, an external braking resistance is needed.
⊕2/⊕ ⊖	Braking unit or Dc Input connection	1:Machinery≥45KW without outside braking resistance component. To improve braking power, outside braking resistance and braking component is necessary(both are optional). 2:Pv Application as DC input terminal;
⊕2 ⊕1	DC reactor connection	Connect DC reactor to improve the power factor, reduce the DC bus AC pulse.
⏚	Grounding terminal	For safety and small noise, AC drive's ground terminal EG should be well grounded.

4.AC drive control terminal connections

Type	Terminal	Name	Function Description
Power supply	10V-GND	External+10V power supply	Provide +10V power supply for external unit, maximum output current: 10mA Generally, it provides power supply to external potentiometer with resistance range of 1kΩ.～5kΩ.
	24V-COM	External+24V power supply	Provide +24V power supply to external unit, generally, it provides power supply to DI/DO terminals and external sensors. Maximum output current: 200mA
	PLC	Input terminal of external power supply	Connect to +24V by default when S1～S8 need to be driven by external signal, PLC needs to be connected to external power supply and be disconnected from +24V power supply terminal.
Analog input	AI1-GND	Analog input termianl 1	1. Input voltage range: DC 0V～10V 2. Impedance: 22kΩ
	AI2-GND	Analog input termianl 2	1. Input range: DC 0V～10V/4mA-20mA, decided by selection of P5-00. 2. Impedance: 22kΩ(voltage input), 500Ω(current input)
	AI3-GND	Analog input termianl 3	
Digital input	S1-COM	Digital input 1	1. Optocoupler coupling isolation, compatible with dual polarity input 2. Impedance: 2.4kΩ 3. Voltage range for level input: 9V-30V 4. S4 can be used for high-speed pulse input. Maximum input frequency: 50kHz
	S2-COM	Digital input 2	
	S3-COM	Digital input 3	
	S4-COM	Digital input 4	
	S5-COM	Digital input 5	
	S6-COM	Digital input 6	
	S7-COM	Digital input 7	
	S8-COM	Digital input 8	

Type	Terminal	Name	Function Description
Analog output	AO1-GND	Analog output terminal 1	Voltage or current output is decided by P5-32. Output voltage range: 0V～10V Output current range: 0mA～20mA
	AO2-GND	Analog output terminal 2	
Digital output	Y3-YC	Digital output termianl 1	1.Optocoupler coupling isolation, dual polarity open collector output: 2.Output voltage range: 0～24 V 3.Output current range: 0～50 mA
	Y4-YC	Digital output termianl 2	4.Y4 is limited by F5-32 "HDO function enable". As high-speed pulse output, the maximum frequency is 50 kHz. When it is used as collector open circuit output, it is the same as Y3 specification. 5.Select whether YC terminal and COM terminal are electrically connected through SW1.
	Y1A/Y1B/Y1C	Relay digital output 1	Contact driving capacity: 250Vac, 3A, COSØ=0.4. 30Vdc, 1A
	Y2A/Y2C	Relay digital output 2	
Commun-ication	DA,DB	RS485 interface	1. Standard RS485 communication interface; 2. Select whether to connect 120Ω termination resistor through SW2.

5.Operation and display

5.1 LED operation panel(Factory standard panel is LED.)
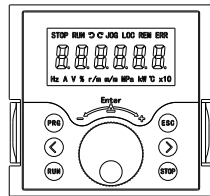
5.2 Description of LED operation panel indicators

Indicator	Description	Indicator	Description
STOP	motor STOP	RUN	motor RUN
↺	motor reverse rotation	↻	motor forward rotation
JOG	JOG state	LOC	control source as panel
REM	control mode set by the source of A03	ERR	AC drive has failure
Hz	monitoring interface is frequency	A	monitoring interface is current
V	monitoring interface is voltage	%	monitoring interface for percentage display
r/m	monitoring interface is motor speed	Kw	monitoring interface is power
MPa	monitoring interface is MPa under monitor mode setting	℃	monitoring interface is temperature

5.3 Description of Keys on the LED operation panel

Key	Function
PRG	Programming Set parameters
</>	Move left and right function keys
RUN	RUN key Forward RUN(FRD)
STOP	STOP key
◎	Number INCREASE/DECREASE and ENTER key
ESC	Exit and fault reset function

6.Faults and solutions

Display	Fault name	Possible causes	Solutions
Err01	Inverter unit protection	1: The output circuit is grounded or short circuited. 2: The power cable between the motor and the AC drive is too long. 3: The power module is overheated. 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.	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: Seek technical support. 6: Seek technical support. 7: Seek technical support.
Err02	Overcurrent during acceleration	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 input 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.	1: Eliminate external faults. 2: Perform the motor auto-tuning. 3: Increase the acceleration time. 4: Adjust the manual torque boost or V/F curve. 5: Adjust the voltage to the 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.
Err03	Overcurrent during deceleration	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 input voltage is too low. 5: A sudden load is added during deceleration. 6: The braking unit and braking resistor are not installed.	1: Eliminate external faults. 2: Perform the motor autotuning. 3: Increase the deceleration time. 4: Adjust the voltage to the normal range. 5: Remove the added load. 6: Install the braking unit and braking resistor.

Err04	Overcurrent at constant speed	1: The output circuit is grounded or short circuited. 2: Motor auto-tuning is not performed. 3: The input voltage is too low. 4: A sudden load is added during operation. 5: The AC drive model is of too small power class.	1: Eliminate external faults. 2: Perform the motor autotuning. 3: Adjust the voltage to the normal range. 4: Remove the added load. 5: Select an AC drive of higher power class.
Err05	Overvoltage during acceleration	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.	1: Adjust the voltage to normal range. 2: Remove the external force or install a braking resistor. 3: Increase the acceleration time. 4: Install the braking unit and braking resistor.
Err06	Overvoltage during deceleration	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.	1: Adjust the voltage to normal range. 2: Remove the external force or install a braking resistor. 3: Increase the deceleration time. 4: Install the braking unit and braking resistor.
Err07	Overvoltage at constant speed	1: The input voltage is too high. 2: An external force drives the motor during running.	1: Adjust the voltage to the normal range. 2: Remove the external force or install the braking resistor.
Err08	Control power supply fault	1: The input voltage is not within the allowable range.	1: Adjust the input voltage to the allowable range.
Err09	Undervoltage	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 DC-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.	1: Reset the fault. 2: Adjust the voltage to the normal range. 3: Contact technical support. 4: Contact technical support. 5: Contact technical support. 6: Contact technical support.
Err10	AC drive overload	1: The load is too heavy or locked rotor occurs on the motor. 2: The AC drive model is of too small power class.	1: Reduce the load and check the motor and mechanical condition. 2: Select an AC drive of higher power class.
Err11	Motor overload	1: P9-23 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.	1: Set it correctly. 2: Reduce the load and check the motor and the mechanical condition. 3: Select an AC drive of higher power class.
Err12	Power input phase loss	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.	1: Eliminate external faults. 2: Seek technical support. 3: Seek technical support. 4: Seek technical support.

Err13	Power output phase loss	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.	1: Eliminate external faults. 2: Check whether the motor three-phase winding is normal. 3: Seek technical support. 4: Seek technical support.
Err14	Module overheat	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.	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.
Err15	External equipment fault	1: External fault signal is input via S.	1:Reset the operation.
Err16	Communication fault	1: The host computer is in abnormal state. 2: The communication cable is faulty. 3: The communication parameters in group PB are set improperly.	1: Check the cabling of host computer. 2: Check the communication cabling. 3: Set the communication parameters properly.
Err17	Contactor faul	1: The drive board and power supply are faulty. 2: The contactor is faulty.	1: Replace the faulty drive board or power supply board. 2: Replace the faulty contactor.
Err18	Current detection fault	1: The HALL device is faulty. 2: The drive board is faulty.	1: Replace the faulty HALL device. 2: Replace the faulty drive board.
Err19	Motor auto-tuning fault	1: The motor parameters are not set according to the nameplate. 2: The motor auto-tuning times out.	1: Set the motor parameters according to the nameplate properly. 2: Check the cable connecting the AC drive and the motor.
Err20	Encoder fault	1: The encoder type is incorrect. 2: The cable connection of the encoder is incorrect. 3: The encoder is damaged. 4: The PG card is faulty.	1: Set the encoder type correctly based on the actual situation. 2: Eliminate external faults. 3: Replace the damaged encoder. 4: Replace the faulty PG card.
Err21	EEPROM readwrite fault	1: The EEPROM chip is damaged.	1: Replace the main control panel.
Err22	AC drive hardware fault	1: Overvoltage exists. 2: Overcurrent exists.	1: Handle based on over-voltage. 2: Handle based on over-current.
Err23	Short circuit to ground	1: The motor is short circuited to the ground.	1: Replace the cable or motor.
Err24	EEPORM Initialization fault	1: Abnormal user data.	1: Reinitialize data and set parameters.
Err26	Running time reached	1: Accumulative running time reaches setting.	1: Clear the record through the parameter initialization function.

Err27	User-defined fault 1	1: The user-defined fault 1 signal is input via DI.	1: Reset the operation.
Err28	User-defined fault 2		
Err29	Power-on time reached	1: Accumulative power-ontime reaches the setting.	1: Clear the record through the parameter initialization function.
Err30	Load becoming 0	1: The AC drive running current is lower than P9-38.	1: Check that the load is disconnected or the setting of P9-38 and P9-39 is correct.
Err31	PID feedback lost during running	1: The PID feedback is lower than the setting of PA-27.	1: Check the PID feedback signal or set PA-27 to a proper value.
Err40	Pulse-by-pulse current limit fault	1: The load is too heavy or lockedrotor occurs on the motor. 2: The AC drive model is of too small power class.	1: Reduce the load and check the motor and mechanical condition. 2: Select the AC drive of higher power class.
Err42	Too large speed deviation	1: The encoder parameters are set incorrectly. 2: The motor auto-tuning is not performed. 3: P9-42 and P9-43 are set incorrectly.	1: Set the encoder parameters properly. 2: Perform the motor autotuning. 3: Set F9-69 and F9-70 correctly based on the actual situation.
Err43	Motor over-speed	1: The encoder parameters are set incorrectly. 2: The motor auto-tuning is not performed. 3: P9-40 and P9-41 are set incorrectly	1: Set the encoder parameters properly. 2: Perform the motor autotuning. 3: Set P9-40 and P9-41 correctly based on the actual situation.
Err45	Motor overheat	1: The cabling of the temperature sensor becomes loose. 2: The motor temperature is too high.	1: Check the temperature sensor cabling and eliminate the cabling fault. 2: Lower the carrier frequency or adopt other heat radiation measures.
Err51	Pole position detection failed	1: The deviation between the motor parameters and the actual value is too large.	1: Reconfirm whether the motor parameters are correct, and focus on whether the rated current is set too small.

7. Function Code Table

P0 Standard Parameter group

Function Code	Parameter Name	Setting Range	Default	Address
P0-00	AC drive rated G/P type selection	0: Heavy load rating (G) → Constant torque application 1: Light load rating (P) → Decreasing torque application	1	0000H
P0-01	Motor control mode	0: V/F control (direction LED is on) 1: Sensorless flux vector control(SVC) (direction LED slow blinking)	0	0001H
P0-02	Command source selection	0: Operation panel control (LOC LED on) 1: Terminal control (REM LED on) 2: RS485 Communication control (REM LED blinking) 3. PV Auto-control (LOC REM on) 4: Terminal switchover (REM LOC LED blinking)	3	0002H
P0-03	Main frequency source X selection	0: Operation panel digital setting frequency 1: AI1 2: AI2 3: AI3 4:Terminal pulse HDI setting 5: RS485 communication setting 6: UP/DW setting 7: PID control setting 8: PLC mode operation setting 9: reserved 10: reserved 11: Option card 12: Terminal switchover	9	0003H
P0-04	Main source X Gain	0.000～5.000	1.000	0004H
P0-05	Auxiliary frequency source Y selection	Same as P0-03	0	0005H
P0-06	Auxiliary source Y Gain	0.000～5.000	1.000	0006H
P0-07	Main and Auxiliary frequency source combination mode	0: Main frequency source X is valid 1: Auxiliary frequency source Y is valid 2: X+Y 3: X-Y 4: MAX (|X|, |Y|) 5: MIN (|X|, |Y|) 6: X*Y 7: Any non-zero value of the main frequency source X and auxiliary frequency source Y is valid, and the primary channel takes precedence.	0	0007H
P0-08	Digital setting of main source X frequency	0.01～Maximum output frequency	50.00Hz	0008H
P0-09	Digital setting of auxiliary source Y frequency	0～Maximum output frequency	50.00Hz	0009H

P0-10	Maximum output frequency	0.00~320.00Hz That is to say, the maximum frequency limit allowed by the AC drive is also the acceleration and deceleration time reference	50.00Hz	000AH
P0-11	Source of frequency upper limit selection	0: Set by P0-12 1: AI1　　　2: AI2　　　3: AI3 4: Terminal pulse setting 5: RS485 Communication setting	0	000BH
P0-12	Source of frequency upper limit digital setting	Frequency lower limit~100.0%	100.0%	000CH
P0-13	Source of frequency lower limit digital setting	0~Frequency upper limit	0.0%	000DH
P0-14	Frequency lower limit run mode	0: Stop 1: Run at frequency lower limit 2: Run at zero speed	1	000EH
P0-15	Acceleration time 1	0.1~6500.0s	Model dependent	000FH
P0-16	Deceleration time 1	0.1~6500.0s	Model dependent	0010H
P0-17	Acceleration/ Deceleration time unit	0: 0.1s 1: 0.01s	1	0011H
P0-18	Stopping method	0: Ramp to stop 1: Coast to stop	0	0012H
P0-19	Rotation direction selection	BIT0: 0: Forward direction operation 1: Reverse direction operation BIT1: 0: Reverse operation enable 1: Reverse operation disable	0	0013H
P0-20	Carrier frequency	1.0~15.0KHz If the carrier frequency is set higher than the factory value, it will cause the temperature rise of the AC drive to increase. At this time, the user needs to use the AC drive derating, otherwise the AC drive will have the danger of overheating alarm.	Model dependent	0014H
P0-21	Carrier frequency accuracy unit	0: 0.1Hz 1: 0.01Hz	2	0015H
P0-22	Reserved	0: Invalid 1: Effective in the whole process 2: Invalid in deceleration, valid in other states	2	0016H
P0-23	Restore default setting	0: No operation 1: Data locked 2: Reset Error message	0~210	0017H

P0-23	Restore default setting	3~6: Undefined 7: Initialization setting—User data reset 10: Back up current user parameters 210: Restore user backup parameters	0~210	0017H

P1 Motor parameters

Function Code	Parameter Name	Setting Range	Default	Address
P1-00	Motro Auto-tuning selection	In order to obtain better VF or vector control performance, it is necessary to tune the motor parameters, and the accuracy of the adjustment results is closely related to the correct setting of the motor nameplate parameters. 0: No auto-tuning 1: Asynchronous motor stationary auto-tuning 2: Asynchronous motor (rotational)complete auto-tuning	0	0100H
P1-01	Motor type	0: Common asynchronous motor 1: Variable frequency asynchronous motor 2: Permanent magnetic synchronous motor	0	0101H
P1-02	Motor rated power	0.1kW~1000.0kW　　Set rated power	Model dependent	0102H
P1-03	Motor rated voltage	0.1V~2000V　　Set rated voltage	Model dependent	0103H
P1-04	Motor rated current	0.01~655.35A (AC Drive≤55kW) 0.1~6553.5A (AC Drive>55kW)	Model dependent	0104H
P1-05	Motor rated frequency	0.01Hz~maximum frequency	Model dependent	0105H
P1-06	Motor rated rotational speed	1rpm~65535rpm	Model dependent	0106H
P1-07	Stator resistance (asynchronous motor)	0.001Ω~65.535Ω (AC Drive≤55kW)	Model dependent	0107H
P1-08	Rotor resistance (asynchronous motor)	0.0001Ω~6.5535Ω (AC Drive>55kW)	Model dependent	0108H
P1-09	Leakage inductive reactance (asynchronous motor)	0.01mH~655.35mH (AC Drive≤55kW)	Model dependent	0109H
P1-10	Mutual inductive reactance (asynchronous motor)	0.001mH~65.535mH (AC Drive>55kW)	Model dependent	010AH
P1-11	No-load current (asynchronous motor)	0.01A~P1-04 (AC Drive≤55kW) 0.1A~P1-04 (AC Drive>55kW)	Model dependent	010BH

P2 Vector Control Parameters

Function Code	Parameter Name	Setting Range	Default	Address

Function Code	Parameter Name	Setting Range	Default	Address
P2-00	Vector control mode	BIT0: SFVC optimization mode selection 0: No optimization 1: Optimization mode 1 BIT1: Reserved BIT2: Reserved BIT3: Reserved	0001	0200H
P2-01	Speed loop proportional gain 1	It is only valid for vector control and invalid for VF control. Running at different frequencies, different PI parameters of speed loop can be selected. When the operating frequency is less than the switching frequency 1, the PI adjustment parameters of the speed loop are P2-01 and P2-02. When the operating frequency is greater than the switching frequency 2, the PI adjustment parameters of the speed loop are P2-04 and P2-05. The PI parameters of speed loop between switching frequency 1 and switching frequency 2 are linear switching of two groups of PI parameters. By setting the proportional coefficient and integral time of the speed regulator, the dynamic response characteristics of the vector control can be adjusted. The dynamic response of the speed loop can be accelerated by increasing the proportional gain and reducing the integration time. However, if the proportional gain is too large or the integration time is too small, the system may oscillate.	30	0201H
P2-02	Speed loop integral time 1		0.50s	0202H
P2-03	Switchover frequency 1		5.00Hz	0203H
P2-04	Speed loop proportional gain 2		20	0204H
P2-05	Speed loop integral time 2		1.00s	0205H
P2-06	Switchover frequency 2		10.00Hz	0206H
P2-07	Slip compensation factor	50~200% For the speed sensorless vector control, this parameter is used to adjust the speed stability accuracy of the motor. When the speed of the motor is low when it is loaded, this parameter will be increased, and vice versa. For vector control with speed sensor, this parameter can adjust the output current of inverter under the same load.	100%	0207H
P2-08	Time constant of speed loop filter	0.000~0.100s This parameter is used to filter the torque command. Generally, there is no need to adjust. When the speed fluctuates or the vibration of the motor is large, the filtering time can be increased properly. If the motor vibrates, the parameter should be reduced properly.	0.010	0208H
P2-09	Vector control over-excitation gain	0~200 During the deceleration process of AC drive, the overexcitation control can restrain the rise of bus voltage and avoid over-voltage fault. The larger the overexcitation gain, the stronger the suppression effect.	64	0209H

Function Code	Parameter Name	Setting Range	Default	Address
P2-10	Torque upper limit source in speed control mode	0: P2-11 function code setting 1: AI1　　2: AI2　　3: AI3 4: Pulse setting 5: Communication setting 6: MIN(AI1,AI2)　　7: MAX(AI1,AI2) The full range of option 1-7 corresponds to P5-11. In the speed control mode, the maximum output torque of the converter is controlled by the upper limit torque source.	0	020AH
P2-11	Digital setting of torque upper limit	0.0~200.0%	150.0%	020BH
P2-12	Reserved	-	-	020CH
P2-13	Reserved	-	-	020DH
P2-14	Current loop of M-axis Kp	0~60000 The current loop PI parameter of vector control can be obtained automatically after the asynchronous machine is fully tuned or the synchronous machine is no-load tuned, which generally does not need to be modified. If the current loop PI gain setting is too large, the whole control loop may oscillate. Therefore, when the current oscillation or torque fluctuation is large, the PI proportional gain or integral gain can be reduced manually.	2000	020EH
P2-15	Current loop of M-axis Ki		1300	020FH
P2-16	Current loop of T-axis Kp		2000	0210H
P2-17	Current loop of T-axis Ki		1300	0211H
P2-18	Speed loop integral property	0: Invalid 1: Valid	0	0212H

P3 V/F Control Parameters

Function Code	Parameter Name	Setting Range	Default	Address
P3-00	V/F curve selection	0: linear V / F is suitable for common constant torque load 1: set P3-03~P3-06 parameters to obtain any VF relation curve. 2: Square V / F is suitable for centrifugal loads such as fans and pumps. 3: 1.2 power V / F 4: 1.4 power V / F 6: 1.6 power V / F 8: 1.8-power V / F sets the VF relation curve between linear VF and square VF. 9: Reserved 10: In VF full separation mode, the output frequency and voltage of the AC drive are independent of each other.	0	0300H
P3-01	Multi-point V/F frequency1 (F1)		1.00Hz	0302H
P3-02	Multi-point V/F voltage1 (V1)		3.0%	0301H
P3-03	Multi-point V/F frequency2 (F2)	The output frequency is determined by the frequency source, and the output voltage is determined by P3-15 (VF separation voltage source). Generally used in induction heating, inverter, torque motor control and other occasions.	25.00Hz	0303H
P3-04	Multi-point V/F voltage2 (V2)		50.0%	0304H

P3-05	Multi-point V/F frequency3 (F3)	11: In VF semi separation mode, V and F are proportional, but the proportional relation-ship can be set through voltage source P3-15, and the relationship between V and F is also related to the rated voltage and rated frequency of P1 group motor.	50.00Hz	0305H
P3-06	Multi-point V/F voltage3 (V3)		100%	0306H
P3-07	V/F Torque boost	0.1~30.0% In order to compensate the low-frequency torque characteristics of V / F control, the output voltage of the AC drive at low-frequency is increased and compensated. But the torque lifting setting is too large, the motor is easy to overheat, and the AC drive is easy to overcurrent. When the torque rise is set to 0.0, the AC drive is the automatic torque rise. At this time, the AC drive automatically calculates the required torque rise value according to the motor stator resistance and other parameters.	6.0%	0307H
P3-08	Cut-off frequency of torque boost	0.00~maximum frequency Torque lifting torque cut-off frequency: under this frequency, the torque lifting torque is effective. If the set frequency is exceeded, the torque lifting fails.	50.00Hz	0308H
P3-09	V/F slip compensation	0~200.0% This parameter is only valid for asynchronous motor. It can compensate the motor speed deviation when the load increases, and keep the motor speed stable when the load changes.	0.0%	0309H
P3-10	Over-excitation gain	0~2.00 During the deceleration process of AC drive, the overexcitation control can restrain the rise of bus voltage and avoid over-voltage fault. The larger the overexcitation gain, the stronger the suppression effect.	0.64	030AH
P3-11	V/F oscillation suppression gain	0~100 The selection method of the gain is to minimize the vibration under the premise of effective suppression, so as to avoid adverse impact on VF operation. When the motor has no oscillation, please select the gain as 0. Only when the motor oscillates obviously, it is necessary to increase the gain properly. The larger the gain is, the more obvious the suppression of the oscillation is. When using the vibration suppression function, the motor rated current and no-load current parameters shall be accurate, otherwise the VF vibration suppression effect is not good.	Model dependent	030BH
P3-12	Reserved	-	-	030CH
P3-13	Reserved	-	-	030DH

P3-14	Voltage source for V/F separation selection	0: Digital setting (P3-15) 1: AI1 2: AI2 3: AI3 4: Pulse setting (DI5) 5: Multi-reference 6: Simple PLC 7: PID 8: Communication setting Note: 100.0% corresponds to the rated voltage of the motor.	0	030EH
P3-15	Voltage digital setting for V/F separation	0V~Rated motor voltage	0V	030FH
P3-16	Voltage acceleration time of V/F separation	0.0~1000.0s It refers to the time required for the output voltage to accelerate from 0 to the rated voltage of the motor.	10.0s	0310H
P3-17	Voltage deceleration time of V/F separation	0V~Rated motor voltage It refers to the time required for the output voltage to decelerate from the rated voltage of the motor to 0.	10.0s	0311H
P3-18	Reserved	-	-	0312H

P4 Input Terminals function

Function Code	Parameter Name	Setting Range	Default	Address
P4-00	S1 terminal function	0: No function 1: Forward RUN (FWD) 2: Reverse RUN (REV) 3: Three-Wire control 4: Forward JOG (FJOG) 5: Reverse JOG (RJOG) 6: Coast to stop 7: Emergency stop 8: Fault reset (RESET) 9: External fault input	1	0400H
P4-01	S2 terminal function	10: Terminal UP 11: Terminal DOWN 12: UP and DOWN setting clear 13: Speed control/Torque control switchover 14: Speed search start enable 15: Reserved 16: Multi-reference terminal 1	2	0401H
P4-02	S3 terminal function	17: Multi-reference terminal 2 18: Multi-reference terminal 3 19: Multi-reference terminal 4 20: Terminal 1 for acceleration/deceleration time selection 21: Terminal 2 for acceleration/deceleration time selection	8	0402H
P4-03	S4 terminal function	22: Acceleration/Deceleration prohibited 23: PID control cancel 24: PID control pause 25: PID integral pause 26: PID characteristic switching 27: PID parameter switchover 28: PID target value switchover terminal1	53	0403H

P4-04	S5 terminal function	29: PID target value switchover terminal2 30: PID target value switchover terminal3 31: PID feedback value switchover terminal1 32: PID feedback value switchover terminal2 33: PID feedback value switchover terminal3 34: PLC pause 35: PLC status reset 36: Swing enable 37: Swing pause	54	0404H
P4-05	S6 terminal function	38: Swing reset 39: Frequency source switchover terminal1 40: Frequency source switchover terminal2 41: Frequency source switchover terminal3 42: Frequency source switchover terminal4 43: Command source switchover terminal 1 44: Command source switchover terminal 2	55	0405H
P4-06	S7 terminal function	45: Counter input terminal 46: Counter reset terminal 47: Counter clock input terminal 48: Counter reset 49: DC braking command	10	0406H
P4-07	S8 terminal function	50: Terminal pre-excitation 51: User-defined fault1 52: User-defined fault2 53: Full water level signal terminal 54: Zero water level signal terminal 55: Forced switch to power frequency(closed switch to power frequency, open input mode controlled by operation panel)	11	0407H
P4-08	Characteristic selection of terminal S1-S4	BIT0: S1 terminal 0: Effective closing 1: Effective opening BIT1: S2 terminal 0: Effective closing 1: Effective opening BIT2: S3 terminal 0: Effective closing 1: Effective opening BITE: S4 terminal 0: Effective closing 1: Effective opening	0000	0408H
P4-09	Filter time of terminal S1-S4	0.000~60.00s This parameter is defined as the size of filtering the input signal to eliminate the interference signal. The longer the filtering time is, the stronger the anti-interference ability is, but the slower the response speed is; the shorter the filtering time is, the weaker the anti-interference ability is, but the faster the response speed is.	0.10s	0409H
P4-10	Characteristic selection of terminal S5-S8	BIT0: S5 terminal 0: Effective closing 1: Effective opening BIT1: S6 terminal 0: Effective closing 1: Effective opening BIT2: S7 terminal 0: Effective closing 1: Effective opening BIT3: S8 terminal 0: Effective closing 1: Effective opening	0000	040AH

P4-11	Filter time of terminal S5-S8	0.000~60.00s Same as P4-08	0.01s	040BH
P4-12	Terminal command mode	0: Two-line mode 1 Terminal set as 1 is forward running, terminal set as 2 is reverse running 1: Two-line mode 2 Terminal set as 1 is start running, terminal set as 2 is switch forward and reverse running 2: Three-line mode 1 Terminal set as 1 is forward running, terminal set as 2 is reverse running, terminal set as 3 is stop running 3: Three-line mode 2 Terminal set to 1 is start running, terminal set as 2 is switch forward reverse, terminal set as 3 is Stop running	0	040CH
P4-13	Terminal action mode selection	BIT0: Terminal of coast to stop recovery mode 0: Restore the original instruction after invalidation 1: Do not restore the original instruction after invalidation BIT1: Terminal of emergency stop recovery mode 0: Restore the original instruction after invalidation 1: Do not restore the original instruction after invalidation BIT2: Select the terminal operation mode after fault reset 0: The terminal operation command is valid immediately 1: The terminal operation command is valid only after it is canceled	0111	040DH
P4-14	Reserved	-	-	040EH
P4-15	Reserved	-	-	040FH
P4-16	Terminal protection function selection	BIT0: 0: Invalid terminal operation command when power on 1: Valid terminal operation command when power on BIT1: When the run command setting channel terminal switching, selection of run command is valid 0: The running command is valid after stopping during switching 1: The run command is valid immediately when switching	0000	0410H
P4-17	UP/DW frequency value	0.0~100.0% P4-23*maximum frequency=actual output frequency	0.0%	0411H
P4-18	UP /DW frequency adjustment selection	0: Retentive at power failure 1: Non-retentive at power failure 2: Valid operation, stop and reset	0	0412H

P4-19	Speed of UP/DW frequency increase and decrease	0.01~50.00Hz/s This function defines the change rate of the given frequency when the UP/DW terminal is adjusted.	1.0%/s	0413H
P4-20	Y1 terminal function	0: No output 1: Forward running 2: Reverse running 3: Fault output1 (no output at auto-reset period) 4: Fault output2 (output at auto-reset period) 5: Ready for RUN 6: Frequency reached 7: Frequency-level detection FDT1 output 8: Frequency-level detection FDT2 output 9: Frequency upper limit reached	1	0414H
P4-21	Y2 terminal function	10: Frequency lower limit reached 11: Current 1 reached 12: Current 2 reached 13: Zero current output 14: Output current out of limit 15: Torque limited 16: OL1 motor overload pre-warning 17: OL2 AC drive overload pre-warning 18: Zero-speed running (no output at stop) 19: Acceleration running	2	0415H
P4-22	Y3 terminal function	20: Deceleration running 21: Dc breaking 22: PLC step completed 23: PLC cycle completed 24: Reserved 25: Accumulative running time reached 26: Timing reached 27: Maximum count value reached 28: Set count value reached 29: AI1 input out of limit	3	0416H
P4-23	Y4 terminal function	30: Module temperature Reached 31: Fan running 32: Data output 1 from transfer(DO function) 33: Data output 2 from transfer(DO function) 34: Data output 3 from transfer(DO function) 35: Data output 4 from transfer(DO function) 36:Power frequency input of solar energy control is effective 37: PV input of solar energy control is effective	6	0417H

P5 Analog terminal parameters

Function Code	Parameter Name	Setting Range	Default	Address
P5-00	AI123 input signal selection	Bit0: Reserved Bit1: AI2 signal selection 0: 0~10V 1: 0~20.00ma	0000	0500H

P5-00	AI123 input signal selection	BIT2: AI3 signal selection 0: 0~10V 1: 0~20.00ma BIT3: S8 enable HDI function 0: General switch function 1: HDI high speed pulse input function	0010	0500H
P5-01	AI1 input voltage minimum value	0.00~10.00V Define the signal accepted by the analog input terminal AI1, and the voltage signal lower than this value will be processed by the AC drive according to the lower limit value of AI1.	0.00V	0501H
P5-02	AI1 input voltage lower limit corresponding setting	0.00~100.00% Define the signal accepted by the analog input terminal AI1. If the voltage signal exceeds this value, the AC drive will process it according to the upper limit value of AI1.	0.00%	0502H
P5-03	AI1 input voltage maximum value	0.00~10.00V Same as P5-01	10.00V	0503H
P5-04	AI1 input voltage upper limit corresponding setting	0.00~100.00% Same as P5-02	100.00%	0504H
P5-05	AI1 filter time	0.00~10.00s This parameter is defined as the size of filtering the input analog signal of AI1 to eliminate the interference signal. The longer the filtering time is, the stronger the anti-interference ability is, but the slower the response speed is; the shorter the filtering time is, the weaker the anti-interference ability is, but the faster the response speed is.	0.10s	0505H
P5-06	AI2 input voltage minimum value	0.00~10.00V Same as P5-01	0.00V	0506H
P5-07	AI2 input voltage lower limit corresponding setting	0.00~100.00% Same as P5-02	0.00%	0507H
P5-08	AI2 input voltage maximum value	0.00~10.00V Same as P5-03	10.00V	0508H
P5-09	AI2 input voltage upper limit corresponding setting	0.00~100.00% Same as P5-04	100.00%	0509H
P5-10	AI2 filter time	0.00~10.00s Same as P5-05	0.10s	050AH
P5-11	AI3 input voltage minimum value	0.00~10.00V Same as P5-01	0.00V	050BH
P5-12	AI3 input voltage lower limit corresponding setting	0.00~100.00% Same as P5-02	0.00%	050CH

P5-13	AI3 input voltage maximum value	0.00~10.00V Same as P5-03	10.00V	050DH
P5-14	AI3 input voltage upper limit corresponding setting	0.00~100.00% Same as P5-04	100.00%	050EH
P5-15	AI3 filter time	0.00~10.00s Same as P5-05	0.10s	050FH
P5-16	HDI minimum input frequency	0.00~50.00KHz This function defines the minimum frequency accepted by the pulse input terminal HDI. If the frequency signal is lower than this value, the AC drive will process it according to the input minimum frequency.	0.00KHz	0510H
P5-17	Corresponding setting of HDI minimum input frequency	0.00~100.00% It is used to set the percentage of the setting value corresponding to the minimum input frequency of HDI.	0.00%	0511H
P5-18	HDI maximum input frequency	0.00~50.00KHz Same as P5-16	50.00KHz	0512H
P5-19	Corresponding setting of HDI maximum input frequency	0.00~100.00% Same as P5-17	100.00%	0513H
P5-20	HDI filter time	0.00~10.00s Same as P4-11	0.10s	0514H
P5-21 ~ P5-28	Reserved	–	–	0515H ~ 051CH
P5-29	A01 output selection	0: Set frequency 1: Output frequency 2: Output current 3: Output voltage 4: Mechanical speed 5: Set torque 6: Output torque 7: PID setting	0	051DH
P5-30	A02 output selection	8: PID feedback 9: Output power 10: Bus voltage 11: Output flow 12: AI1 input value 13: AI2 input value 14: AI3 input value 15: PUL input value	1	051EH
P5-31	HDO output selection	16: Module temperature 17: Internal temperature 18: Excitation quantity 19: RS485 communication settings	2	051FH
P5-32	Analog output signal selection	BIT0: A01 signal selection 0: 0~10V 1: 4.00~20.00mA 2: 0.00~20.00mA BIT1: A02 signal selection 0: 0-10V 1: 4.00-20.00mA 2: 0.00-20.00mA BIT2: HDO function enable 0: Ordinary switching value Y4 function 1: HDO high speed pulse output function BIT3: Reserved	0000	0520H

P5-33	A01 output gain	25.0~200.0% Used to adjust the value of analog output of (A01) terminal.	100.0%	0521H
P5-34	A01 output offset coefficient	-10.0~10.0% Used to adjust the zero point of the (A01) terminal output signal.	0.0%	0522H
P5-35	A02 output gain	25.0~200.0% Used to adjust the value of analog output of (A02) terminal.	100.0%	0523H
P5-36	A02 output offset coefficient	-10.0~10.0% Used to adjust the zero point of the (A02) terminal output signal.	0.0%	0524H
P5-37	HDO pulse output lower limit	0.00~50.00KHz When the pulse is output, the lower frequency value of the output signal.	0.20KHz	0525H
P5-38	HDO pulse output upper limit	0.00~50.00KHz When the pulse is output, the upper frequency value of the output signal.	50.00KHz	0526H

P6 Start/Stop Control parameters

Function Code	Parameter Name	Setting Range	Default	Address
P6-00	Start mode	BIT0: Start mode 0: Direct start 1: First braking and then start by startup frequency 2: Rotational speed tracking RESTART	0	0600H
P6-01	Minimum output frequency	0.00~60.00Hz Define the minimum output frequency of the AC drive. When it is less than this frequency, the AC drive outputs 0.00hz.	0.50Hz	0601H
P6-02	Startup pre-excited current	Set the time for pre excitation of asynchronous motor at startup. This parameter can be established before starting the motor magnetic field can effectively improve the starting performance of the motor and reduce the starting current and starting time.	30%	0602H
P6-03	Startup pre-excited time		Model dependent	0603H
P6-04	Startup frequency	0.00~60.00Hz It refers to the initial output frequency when the frequency converter is started. Setting a suitable starting frequency can have a higher starting torque, and for some static loads with larger static friction, some impulse can be obtained at the moment of starting. However, if the set value is too large, OC1 and other faults may occur sometimes.	0.50Hz	0604H
P6-05	Startup frequency holding time	0.00~50.00s It refers to the time that the AC drive keeps running under the starting frequency.	0.0s	0605H

P6-06	Startup DC braking current	0~150% When DC braking, the braking current sent by converter to motor. This value is based on the rated output current of the AC drive. Only when [P6-00] is selected as "1", it will have DC braking function when starting.	0%	0606H
P6-07	Startup DC braking time	0.0~300.0s The duration of DC braking current at start-up, and no DC braking process at braking time of 0.0s.	0.0s	0607H
P6-08	Initial frequency of stop DC braking	0.00~50.00Hz When the AC drive decelerates to this frequency, it will stop the output and start the DC braking function; when it stops, it will start the DC braking function when the output frequency is less than the start frequency of DC braking.	0.00Hz	0608H
P6-09	Stop DC braking current	0~150% It refers to the braking current sent by the converter to the motor during DC braking. This value is based on the rated output current of the AC drive.	0%	0609H
P6-10	Waiting time of stop DC braking	0.00~60.00s The waiting time between the AC drive decelerates to the stop DC braking start frequency and the start DC braking.	0.0s	060AH
P6-11	Stop DC braking holding time	0.00~600.0s The duration of DC braking current when stopping. When the braking time is 0.0s, there is no DC braking process, that is, DC braking function is invalid.	0.0s	060BH
P6-12	Zero speed holding current	0~150% It refers to the braking current sent by the AC drive to the motor when the zero speed remains effective. This value is based on the rated output current of the AC drive.	0%	060CH
P6-13	Acceleration mode selection	BIT0: Acceleration/Deceleration time frequency base 0: Base:50.00Hz 1: Maximum frequency BIT1: S-curve selection 0: Straight line 1: Curve	0	060DH
P6-14	Start of S-curve acceleration time	0.01~20.00s Set the S-word characteristic time at 4 places to reduce the vibration when the machine starts/stops. After setting the S-word characteristic time, the acceleration and deceleration time will only extend 1/2 of the S-word characteristic time at the beginning and the end.	0.50	060EH
P6-15	End of S-curve acceleration time		0.50	060FH
P6-16	Start of S-curve deceleration time		0.50	0610H
P6-17	End of S-curve deceleration time		0.50	0611H

P6-18	Rotational speed tracking mode	0: From frequency at stop 1: From zero speed 2: From maximum frequency	0	0612H
P6-19	Waiting time of rotational speed tracking	0.0~600.0s When speed tracking, the time that the converter waits before starting speed tracking after receiving the operation command. At the end of this period, the AC drive outputs according to the detected frequency and direction, and runs to the given frequency according to the set acceleration and deceleration time. For the load with large inertia, the impulse current at the moment of speed tracking can be reduced by prolonging the waiting time of speed tracking properly.	1.0s	0613H
P6-20	Tracking speed of rotational speed	0~100 The larger the parameter, the faster the tracking speed. But setting too large may lead to unreliable tracking effect.	20	0614H

P7 System configuration parameters

Function Code	Parameter Name	Setting Range	Default	Address
P7-00	Parameter and key lock selection	BIT0: 0: Not locked 1: Function parameter locking 2: Function parameters and key locking (except RUN/STOP/JOG) 3: Function parameters and keys are fully locked	0	0700H
P7-01	User password	0~9999	0000	0701H
P7-02	STOP key function	BIT0: 0: invalid for terminal command 1: valid for terminal command BIT1: 0: invalid for communication command 1: valid for communication command BIT2: 0: invalid for expansion card command 1: valid for expansion card command	0000	0702H
P7-03	MF.K Key function selection	BIT0: Panel digital potentiometer setting selection 0: Invalid 1: Main frequency 2: Auxiliary frequency 3: Upper frequency 4: V/F separated voltage 5: PID setting 6: PID feedback 7: Torque setting BIT1: 0: Directly valid after the knob is modified 1: Press the Enter key to be valid after the knob is modified	1	0703H

P7-04	Copy of function parameters	0: Read data into keyboard 1: Proofread data 2: Write keyboard data to AC drive	-	0704H
P7-05	Display speed factor	0.000～50.000	1.000	0705H
P7-06	First line run display	BIT0: The first group displays BIT1: The second group displays BIT2: The third group displays	3210	0706H
P7-07	First line stop display	BIT3: The fourth group displays 0: Given frequency 1: Output frequency 2: Output current 3: Output voltage	3210	0707H
P7-08	Second line run display	4: Output voltage 5: Mechanical speed 6: Bus voltage 7: Output power 8: Model temperature 9: Actual frequency	3210	0708H
P7-09	Second line stop display	A: Target torque B: Output torque C: Output excitation D: Power factor E: PID setting F: PID feedback	3210	0709H
P7-10	Multi-function expansion card selection	0～7	-	070AH
P7-11	operation panel display item selection	Led BIT0: LCD keyboard display language Set LCD keyboard display language, only valid when using LCD keyboard. 0: Chinese 1: English BIT1: Output frequency display selection 0: Target frequency displays the target frequency of the current control motor. 1: Synchronous frequency displays the output frequency after converting operation. BIT2: Mechanical speed display selection 0: Target speed displays the target speed of the current control motor. 1: Actual speed displays the motor speed actually detected by the AC drive. BIT3: Reserved	0	070BH
P7-12	Accumulated power-on days	0～65535	Read-only	070CH
P7-13	Accumulated power-on hours	0.0～24.0	Read-only	070DH
P7-14	Accumulated running days	0～65535	Read-only	070EH
P7-15	Accumulated running hours	0.0～24.0	Read-only	070FH
P7-16	Accumulative power consumption (10000 kWh)	0～655.35 million kWh	Read-only	0710H
P7-17	Accumulative power consumption	0～9999kWh	Read-only	0711H
P7-18	AC drive status before power off	BIT0: 0: Stop 1: Run BIT1: 0: Forward RUN 1: Reverse RUN BIT2: Reserved BIT3: Reserved	Read-only	0712H

P8 Auxiliary Functions

Function Code	Parameter Name	Setting Range	Default	Address
P8-00	Forward JOG running frequency(FJOG)	0.00Hz～Maximum frequency	5.00Hz	0800H
P8-01	Reverse JOG running frequency(RJOG)	0.00Hz～Maximum frequency	5.00Hz	0801H
P8-02	JOG acceleration time		10.0s	0802H
P8-03	JOG deceleration time		10.0s	0803H
P8-04	Acceleration time 2		10.0s	0804H
P8-05	Deceleration time 2		10.0s	0805H
P8-06	Acceleration time 3	0.1～6500.0s	10.0s	0806H
P8-07	Deceleration time 3		10.0s	0807H
P8-08	Acceleration time 4		10.0s	0808H
P8-09	Deceleration time 4		10.0s	0809H
P8-10	Emergency stop deceleration time		10.0s	080AH
P8-11	Forward/Reverse rotation dead-zone time	0.0～360.00s This function is defined as the transition time for the AC drive to wait at 0Hz in the process of turning from positive to reverse or from reverse to forward. The dead time of positive and reverse rotation is mainly set for the equipment with large inertia load and mechanical dead time when changing the steering.	0.0s	080BH
P8-12	Jump frequency 1	0.00Hz～Maximum frequency When the frequency converter operates with load, in order to make the output frequency of the AC drive avoid the resonance frequency point of the mechanical load, the jump frequency can be used to avoid the resonance point. The AC drivecan set one jumping point to perform jumping. After setting the jumping frequency parameter, even if the given frequency of the AC drive is within the resonance frequency point of the mechanical load, the output frequency of the AC drive will be automatically adjusted outside the resonance frequency point of the mechanical load to avoid running on the resonance point.	0.00Hz	080CH
P8-13	Jump frequency 2		0.00Hz	080DH
P8-14	Jump frequency amplitude		0.00Hz	080EH

P8-15	Frequency detection value (FDT1)	0~Maximum frequency When the output frequency of the AC drive is within the range of positive and negative detection amplitude of any frequency detection value, the multi-functional Y output on signal.	30.00Hz	080FH
P8-16	Detection range of FDT1		0.00Hz	0810H
P8-17	Frequency detection value (FDT2)		50.00Hz	0811H
P8-18	Detection range of FDT2		0.00Hz	0812H
P8-19	Detection range of frequency consistent		0.30Hz	0813H
P8-20	current reaching 1 detection value	Enable y terminal after current output reaches set condition	100.0%	0814H
P8-21	current reaching 1 detection range		5.0%	0815H
P8-22	current reaching 2 detection value		150.0%	0816H
P8-23	Current reaching 2 detection range		5.0%	0817H
P8-24	Zero current detection level	The rated current of the motor is 100%. When the output current of the AV drive is less than or equal to the zero current detection level and the duration exceeds the zero current detection delay time, the Ac drive multi-function y outputs the on signal.	5.0%	0818H
P8-25	Zero current detection delay time		0.20s	0819H
P8-26	Output overcurrent threshold	0.0%~600.0% 0.0% (no detection); the rated current of the motor is 100%. When the output current of the AC drive is greater than or over the limit detection point and the duration exceeds the software over-current point detection delay time, the AC drive multi-function Y output on signal,	5.0%	081AH
P8-27	Output overcurrent detection delay		0.20s	081BH
P8-28	Timing operation function	BIT0: Timing function selection 0: Invalid 1: Valid BIT1: Timing operation time selection 0: P8-29 setting 1: AI1 2: AI2 3: AI3 Analog input range 100% corresponds to P8-28 BIT2: Reserved BIT3: Reserved	0000	081CH
P8-29	Timing duration setting	0.0~6500.0 Min	0.0Min	081DH
P8-30	Timer time unit	0: Second 1: Minute 2: Hour	0	081EH

P8-31	Timer set value	0~65000 This parameter is used to set the timing time of the AC drive. The start-up of the timer is completed by the external timer trigger terminal of the timer. The timing starts from the reception to the external trigger signal. After the timing time arrives, the corresponding output terminal outputs a pulse signal with a width of 1 second. If the external trigger signal is always in the trigger state, the corres-ponding output terminal will output a pulse signal every [P8-28] set time. When the trigger terminal is invalid, the timer keeps the existing timing value, and continues to accumulate the timing after the trigger terminal is valid. The timer clearing terminal can clear the timing value at any time.	0	081FH
P8-32	Counter Max	0~65000 When the counter reaches the value speci-fied in the parameter [P4-30], an effective signal with the width equal to the external clock period will be output at the corres-ponding output terminal. That is to say, when the next counting signal is input, the output terminal stops outputting the effec-tive signal.	1000	0820H
P8-33	Counter set value	0~65000 When the count value of the external clock of the counter reaches the value specified in parameter [P4-31]. Select the output effective signal at the corresponding output terminal, continue counting until the value specified in the parameter [P4-29] is exceeded, leading to the cancellation of the output effective signal when the counter is cleared.	500	0821H
P8-34	AI1 Voltage Protection Value Lower Limit	When the value of the analog input AI1 is greater than F8-46, or the AI input is less than F8-45, the AC drive multi-function y outputs the "AI1 input overrun" on signal to indicate whether the input voltage of AI1 is within the set range.	31.0%	0822H
P8-35	AI1 voltage protection value upper limit		68.0%	0823H
P8-36	Module temperature reached	0~100℃ When the AC drive radiator temperature reaches this temperature, the AC drive multi-function Y outputs the "module temperature reaches" on signal.	75℃	0824H

P9 Fault and protection parameters

Function Code	Parameter Name	Setting Range	Default	Address

P9-00	Protection function selection 1	BIT0: Motor overload protection selection 0: Invalid 1: Valid BIT1: Ground fault duringpower-on 0: Invalid 1: Valid BIT2: Input phase loss protection selection 0: Invalid 1: Valid BIT3: Output phase loss protection selection 0: Invalid 1: Valid	1011	0900H
P9-01	Protection function selection 2	BIT0: Output load loss protection selection 0: Invalid 1: Deceleration 2: Ramp to stop BIT1: Instantaneous power failure action selection 0: Invalid 1: Valid BIT2: Continue operation frequency selection in case of failure 0: Operate at current operation frequency 1: Operate at set frequency 2: Operate at the upper limit frequency 3: Operate at the lower limit frequency 4: Operation at abnormal standby frequency BIT3: Action selection of fault "DO" during fault automatic reset 0: No action 1: Action	0000	0901H
P9-02	Fault auto reset times	0: OFF Automatic reset function is turned off, only manual reset is allowed. 1-20: ON This function is on, 1-20 is the number of times of self recovery after failure (defined as the maximum number of times of auto reset after each failure)	0	0902H
P9-03	Time interval of fault auto reset	0.1~100.0s The waiting time from the fault of AC drive to each reset.	1.0s	0903H
P9-04	1st fault type	1 -- ERROR_INVERTER UNIT 2 -- ERROR_OC_DURING_ACC 3 -- ERROR_OC_DURING_DEC 4 -- ERROR_OC_AT_CONST_SPEED 5 -- ERROR_OV_DURING_ACC 6 -- ERROR_OV_DURING_DEC 7 -- ERROR_OV_AT_CONST_SPEED 8 -- ERROR_CONTROL POWER SUPPLY 9 -- ERROR_UV 10 -- ERROR_OL_AC DRIVE 11 -- ERROR_OL_MOTOR 12 -- ERROR_LOSE_PHASE_INPUT 13 -- ERROR_LOSE_PHASE_OUTPUT 14 -- ERROR_OH_MODULE 15 -- ERROR_EXTERNAL EQUIPMENT 16 -- ERROR_COMMUNICATE 17 -- ERROR_CONTACTOR	Read-only	0904H

P9-05	2nd fault type	18 -- ERROR_CURRENT_DETECTION 19 -- ERROR_AUTO-TUNING 20 -- ERROR_ENCODER 21 -- ERROR_EEPROM_READWRITE 22 -- ERROR_HARDWARE_AC DRIVE 23 -- ERROR_MOTOR_SHORT_TO_GND 24 -- ERROR_ERRPROM_INITIALIZETE 26 -- ERROR_RUNNING TIME_REACHED 27 -- ERROR_USER-DEFINED_1	Read-only	0905H
P9-06	3rd fault type	28 -- ERROR_USER-DEFINED_2 29 -- ERROR_POWER-ON_TIME_REACHED 30 -- ERROR_LOAD_0 31 -- ERROR_PID_FDB_LOSE 40 -- ERROR_PBP_CURRENT_LIMIT 41 -- ERROR_SWITCH_MOTOR_WHEN_RUN 42 -- ERROR_TOO_LARGE_SPEED_DEVIATION 43 -- ERROR_MOTOR_OS 45 -- ERROR_MOTOR_OH 51 -- ERROR_POLE_POSITION_DETECTION	Read-only	0906H
P9-07	Failure operation frequency	0.00~maximum frequency	Read-only	0907H
P9-08	Failure output current	0.1~2000.0A	Read-only	0908H
P9-09	Failure DC-bus voltage	0~3000V	Read-only	0909H
P9-10	Failure AC drive status	BIT0: Direction of operation 0: FWD 1: REV BIT1: Running state 0: STOP 1: CONST 2: ACC 3: DEC BIT2: RESERVED BIT3: RESERVED	Read-only	090AH
P9-11	Failure S terminal status	See input terminal status diagram	Read-only	090BH
P9-12	Failure Y terminal status	See input terminal status diagram	Read-only	090CH
P9-13	Failure power on time	Failure power on time	Read-only	090DH
P9-14	Failure running time	Failure running time	Read-only	090EH
P9-15	Frequency upon 2nd fault	Same as P9-05	Read-only	090FH
P9-16	Current upon 2nd fault	Same as P9-06	Read-only	0910H
P9-17	Output voltage upon 2nd fault	Same as P9-07	Read-only	0911H
P9-18	AC drive status upon 2nd fault	Same as P9-09	Read-only	0912H
P9-19	S terminal status upon 2nd fault	Same as P9-10	Read-only	0913H

P9-20	Y terminal status upon 2nd fault	Same as P9-11	Read-only	0914H
P9-21	Power-on time upon 2nd fault	Same as P9-12	Read-only	0915H
P9-22	Running time upon 2nd fault	Same as P9-13	Read-only	0916H
P9-23	Frequency upon 3rd fault	Same as P9-05	Read-only	0917H
P9-24	Current upon 3rd fault	Same as P9-06	Read-only	0918H
P9-25	Output voltage upon 3rd fault	Same as P9-07	Read-only	0919H
P9-26	AC drive status upon 3rd fault	Same as P9-09	Read-only	091AH
P9-27	S terminal status upon 3rd fault	Same as P9-10	Read-only	091BH
P9-28	Y terminal status upon 3rd fault	Same as P9-11	Read-only	091CH
P9-29	Power-on time upon 3rd fault	Same as P9-12	Read-only	091DH
P9-30	Running time upon 3rd fault	Same as P9-13	Read-only	091EH
P9-31	Backup frequency upon abnormality	0.0～100.0% When the abnormal standby frequency is selected for operation, the value set by P9-31 is a percentage of the maximum frequency.	100.0%	091FH
P9-32	Motor overload protection gain	0.20～10.00 At this time, the frequency converter judges whether the motor is overloaded according to the inverse time limit curve of motor overload protection. P9-33=overload multiple*overload time/2.2 (overload time: minute)	1.00	0920H
P9-33	Motor overload warning coefficient	50～100% This function is used to give a warning signal to the control system through y before the motor overload fault protection. The early warning coefficient is used to determine the degree of early warning before motor overload protection. The larger the value is, the smaller the alert advance is.	80%	0921H
P9-34	Recognize voltage at instantaneous stop action	This function refers to that when the power is cut off or the voltage is suddenly reduced, the AC drive will reduce the output speed and compensate the load feedback energy to reduce the DC bus voltage of the AC drive, so as to maintain the continuous operation of the AC drive. If P9-01 BIT1=1, the AC drive will slow down when the power is cut off or the voltage drops suddenly. When the bus voltage	80%	0922H
P9-35	Recognize voltage at instantaneous stop action		90%	0923H

P9-36	Recognize time at instantaneous rise action	returns to normal, the AC drive will accelerate to the set frequency. The basis for judging whether the bus voltage returns to normal is that the bus voltage is normal and the duration exceeds the F9-61 setting time. If P9-01 is BIT1=2, when the power is cut off or the voltage is suddenly reduced, the AC drive will slow down until it stops.	0.50s	0924H
P9-37	Instantaneous stop deceleration gain		100	0925H
P9-38	Detection level of load becoming 0	If the load shedding protection function is effective, when the output current of the AC drive is less than the load shedding detection level P9-38 and the duration is greater than the load shedding detection time P9-39, the output frequency of the AC drive will automatically reduce to 7% of the rated frequency. During the off load protection period, if the load is recovered, the AC drive will automatically return to operate at the set frequency.	10.0%	0926H
P9-39	Detection time of load becoming 0		1.0s	0927H
P9-40 ～ P9-43	Reserved		–	0928H ～ 092BH
P9-44	Overvoltage stall gain	0～100 In the process of converter deceleration, when the DC bus voltage exceeds the overvoltage stall protection voltage, the AC drive stops deceleration and maintains the current operation frequency, and continues deceleration after the bus voltage drops. Overvoltage stall gain is used to adjust the AC drive's ability to suppress overvoltage during deceleration. The larger the value is, the stronger the ability of restraining overvoltage is. Without overvoltage, the smaller the gain setting is, the better.	0%	092CH
P9-45	Overvoltage stall protective voltage	120～150% The base value of overvoltage stall protection voltage setting 100% is as follows: AC220V: DC290V AC380V: DC530V AC480V: DC620V	130%	092DH
P9-46	Overcurrent stall gain	0～100 When the output current of the AC drive reaches the set overcurrent stall protection current P9-47, the output frequency of the AC drive will be reduced when the speed is accelerated; when the speed is constant, the output frequency will be reduced; when the speed is reduced, the speed will be slowed down until the current is less than the overcurrent stall protection current P9-47, the operation frequency will return to normal.	20	092EH

P9-47	Overcurrent stall protective current	100～200% This value is a percentage of the rated current of the motor	150%	092FH
P9-48	Input phase loss protection level	In the specification of no hardware detection input phase failure, the input phase failure is detected by the change amplitude of bus voltage. When the change amplitude of bus voltage is greater than P9-48 and the time reaches P9-49, it is judged as input phase failure. This function is invalid when the motor is no load or the AC drive is not connected to the motor.	20%	0930H
P9-49	Input phase loss protection delay		8s	0931H
P9-50	Protection action selection 1	BIT0: Motor overload (Err11) action selection 0: Immediately-stop, fault alarm 1: Emergency stop, fault alarm 2: Only warning, AC drive continues to operate BIT1: Input phase loss (Err12) action selection Same as BIT0 BIT2: Output phase loss (Err13) action selection Same as BIT0 BIT3: External fault (Err15) action select Same as BIT0	0	0932H
P9-51	Protection action selection 2	BIT0: Abnormal communication (Err16) action selection Same as P9-50 BIT0 BIT1: Reserved 0: Immediately-stop, fault alarm 1: Emergency stop, fault alarm 2: Switch to VF, continue operation BIT2: Function code reading and writing abnormal (Err21) action selection 0: Immediately-stop, fault alarm 1: Emergency stop, fault report BIT3: Motor overheating (Err25) action select Same as BIT0	0	0933H
P9-52	Protection action selection 3	BIT0: User defined fault 1 (Err27) action selection Same as P9-50 BIT0 BIT1: User defined fault 2 (Err28) action selection Same as BIT0 BIT2: Power on time arrival (Err29) action selection Same as BIT0 BIT3: Load loss (Err30) action selection 0: Immediately-stop, fault alarm 1: Emergency stop, fault alarm 2: Directly jump to 7% of the rated frequency of the motor to continue operation, and automatically return to the set frequency operation during noload operation.	0	0934H

P9-53	Protection action selection 4	BIT0: Loss of PID feedback during operation (Err31) action selection Same as PB-01 BIT0 BIT1: Reserved BIT2: Reserved BIT3: Reserved	0	0935H
P9-54	Protection action selection 5	BIT0: Reserved BIT1: Reserved BIT2: Reserved BIT3: Reserved	0	0936H

PA Process PID control parameters

Function Code	Parameter Name	Setting Range	Default	Address
PA-00	PID setting source	0: PID setting source 1: AI1 2: AI2 3: AI3 4: Terminal pulse setting(PUL) 5: Communication setting 6: Terminal multi segment speed setting 7: UP/DW control 8: Terminal selection	0	0A00H
PA-01	PID digital setting	0.00～100.0%	50.0%	0A01H
PA-02	PID control feedback signal source	0: PID setting source 1: AI1 2: AI2 3: AI3 4: AI1 – AI2 5: Communication feedback 7: AI1 + AI2 7: MAX(|AI1|, |AI2|) 8: MIN(|AI1|, |AI2|) 9: Option card	2	0A02H
PA-03	PID digital feedback	0.00～100.0%	100.0%	0A03H
PA-04	Feedback signal gain	0.00～10.000	1.000	0A04H
PA-05	Feedback signal range	0～655.35	1.00	0A05H
PA-06	PID control selection 1	BIT0: Feedback feature selection 0: Positive characteristic when the feedback signal of PID is less than the given value, the output frequency of AC drive will rise. 1: Negative characteristic when the feedback signal of PID is less than the given value, the output frequency of AC drive will decrease. BIT1: PID parameter switching condition 0: No switching 1: Switching through DI terminal 2: Switch automatically according to deviation BIT2: Integral separation 0: Invalid 1: Valid When the multi-functional digital terminal integration pause is effective, the PID	0000	0A06H

PA-06	PID control selection 1	integration stops operation, and at this time, the PID only has the proportional and differential functions. BIT3: Stop integration after output to limit value 0: Continue integral 1: Stop integral After the PID operation output reaches the maximum or minimum value, you can choose whether to stop the integration. If stop integral is selected, then PID integral stops calculation at this time, which may help to reduce PID overshoot.	0000	0A06H
PA-07	PID control selection 2	BIT0: PID shutdown operation 0: Shutdown without calculation 1: Operation when shutdown BIT1: Constant pressure water supply sleep function 0: Invalid 1: Valid BIT2: Reserved BIT3: Reserved	0	0A07H
PA-08	Proportional gain Kp1	0.00~100.00 It determines the regulation intensity of the whole PID regulator, the greater KP1 is, the greater the regulation intensity is.	20.00	0A08H
PA-09	Integral time Ti1	0.00~10.00s It determines the intensity of integral regulation of PID regulator. The shorter the integration time, the greater the intensity of regulation.	2.00s	0A09H
PA-10	Differential time Td1	0.00~10.000s The strength of PID regulator to adjust the rate of variation of deviation is determined, and the longer the time is, the greater the strength is.	0.000s	0A0AH
PA-11	Cut-off frequency of PID reverse rotation	0.00~maximum frequency In some cases, when the output frequency is negative, that is, when the motor reverses, it is possible to control the given quantity and the feedback quantity to the same state to determine the upper limit of the inversion frequency.	2.00Hz	0A0BH
PA-12	PID deviation limit	0.0~100.0% When the deviation between the given quantity and the feedback quantity of PID is this parameter, the PID stops adjusting action. In this way, the output frequency is stable when the deviation from the feedback is small.	0.0%	0A0CH
PA-13	PID differential limit	0.0~100.00% The function of differential is sensitive and easy to cause system oscillation. Therefore, the function of differential is generally limited to a small range. This parameter is used to set the range of differential output.	0.10%	0A0DH

PA-14	PID setting change time	0.00~650.00s PID given change time refers to the time required for PID given value to change from 0.0% to 100.0%.	0.00s	0A0EH
PA-15	PID feedback filter time	0.00~60.00s It is used to filter the feedback quantity, which is beneficial to reduce the influence of the disturbance on the feedback quantity, but it will lead to the degradation of the response performance of the process closed-loop system.	0.00s	0A0FH
PA-16	PID output filter time	0.00~60.00s It is used to filter the output frequency. The filter will weaken the sudden change of the output frequency of the converter, but it will also lead to the decrease of the response performance of the process closed-loop system.	0.00s	0A10H
PA-17	Reserved	-	-	0A11H
PA-18	Proportional gain Kp2	0.00~100.00	20.00	0A12H
PA-19	Integral time Ti2	0.00~10.00s	2.00s	0A13H
PA-20	Differential time Td2	0.00~10.000s	0.000s	0A14H
PA-21	PID parameter switchover deviation 1	0.0~PA-22	20.0%	0A15H
PA-22	PID parameter switchover deviation 2	PA-21~100.0%	80.0%	0A16H
PA-23	PID initial value	0.0~100.0% When the frequency converter is started, the PID output is fixed to the preset frequency. When the preset frequency operation time is exceeded, the PID starts the closed-loop adjustment operation.	0%	0A17H
PA-24	PID initial value running time		0.0s	0A18H
PA-25	Maximum deviation between two PID outputs in forward direction	0.00~100.00% This function is used to limit the difference between two beats (2ms/beat) of PID output, so as to restrain the too fast change of PID output and make the inverter run stably. The two parameters correspond to the maximum absolute value of the output deviation in the forward and reverse directions respectively.	1.00%	0A19H
PA-26	Maximum deviation between two PID outputs in reverse direction		1.00%	0A1AH
PA-27	Detection value of disconnection alarm	0.0~100.0% When the PID feedback is less than the feedback loss detection value and the duration is longer than the PID feedback loss detection time, the AC drive will alarm the fault and handle it according to the selected fault handling method.	0.0%	0A1BH
PA-28	Feedback disconnection detection time		1.0s	0A1CH

Function Code	Parameter Name	Setting Range	Default	Address
PA-29	Dormant judgment benchmark	0.1～100.0% If the sleep function of PA-07 is effective and (feedback value > given value * PA-29), the sleep judgment will start	95.0%	0A1DH
PA-30	Dormant base duration	0.0～6500.0S If (feedback value > given value * PA-29) and the time exceeds PA-30, the frequency will be reduced to PA-32	30.0s	0A1EH
PA-31	Enter dormant deceleration time	0.0～6500.0S Deceleration time to PA-32,	60.0s	0A1FH
PA-32	Sleep low holding frequency	0.00～20.00Hz Sleep judgment low speed operation frequency	10.00Hz	0A20H
PA-33	Low frequency operation time	0.0～6500.0S If the output frequency is less than or equal to PA-32 and the time exceeds pa-33, then the output frequency is 0 and it will enter the sleep state	10.0s	0A21H
PA-34	Wake-up base	0.1～100.0% If (feedback value < given value * PA-34), start to wake up judgment	50.0%	0A22H
PA-35	Wake-up base duration	0.0～6500.0S If (feedback value < given value * PA-34) and the time exceeds PA-35, it will exit the sleep state	30.0s	0A23H

PB Communication control function parameters

Function Code	Parameter Name	Setting Range	Default	Address
PB-00	Master-slave selection	Master-slave selection 0:Slave 1:Master	0	0B00H
PB-01	Address	1～247	1	0B01H
PB-02	Baud rate selection	0: 1200bps 1: 2400bps 2: 4800bps 3: 9600bps 4: 19200bps 5: 38400bps 6: 57600bps 7: 115200bps	3	0B02H
PB-03	Data format	0: (N,8,1)No check,data format:8, stop bit:1 1: (E,8,1)Even parity check,data format:8, stop BIT:1 2: (O,8,1)Odd Parity check,data format:8, stop BIT:1 3: (N,8,2)No check,data format:8, stop bit:2 4: (E,8,2)Even parity check,data format:8, stop BIT:2 5: (O,8,2)Odd Parity check,data format:8, stop BIT:2	3	0B03H
PB-04	Communication proportion setting	0.000～5.000	1.000	0B04H
PB-05	Communication response delay	0～0.500s	0.000s	0B05H

PB-06	Communication timeout failure time	0.0～100.0s	1.0s	0B06H
PB-07	Transmission response processing	0: Write response 1: Write no response	0	0B07H
PB-08	Master send selection	BIT0: The first set of transmission frame selection 0: Invalid 1: Run command setting 2: Master set frequency 3: Master output frequency 4: Master upper limit frequency 5: Master set torque (reserved) 6: Master output torque 7: Limit of forward speed of master torque control (reserved) 8: Limit of reserved speed of master torque control (reserved) 9: PID set by the mater A:master feedback PID BIT1: Second set of transmission frame selection Ditto BIT2: The third set of transmission frame selection Ditto BIT3: Selection of the fourth set of transmission frames Ditto	0031	0B08H

PC Optimization Parameters

Function Code	Parameter Name	Setting Range	Default	Address
PC-00	Carrier frequency characteristic selection	BIT0: 0: Temperature independent 　　　1:Temperature related BIT1: 0:Asynchronous modulation 　　　1: Synchronous modulation BIT2: 0: Random PWM invalid 　　　1-A:Random PWM BIT3: Reserved	0000	0C00H
PC-01	DPWM switchover frequency upper limit	0～15.00Hz	12.00Hz	0C01H
PC-02	Cooling fan control	0: The operation of the fan isjust related to the temperature 1: The operation is related to the temperature, and during run, the fan is operating.	0	0C02H
PC-03	Rapid current limit enable	0～1	1	0C03H
PC-04	Dead zone compensation mode	0～2	1	0C04H

PC-05	Current detection compensation	0～100	10	0C05H
PC-06	Action voltage of energy consumption braking	115.0～140.0%	100%	0C06H
PC-07	Overvoltage threshold	0～2500.0V	810.0V	0C07H
PC-08	Undervoltage threshold	50～100%	60%	0C08H
PC-09	Solution of undervoltage fault	0: Fault 1: Continue to operate within the allowable time of undervoltage recovery 2: Continue to operate after the power supply returns to normal	0	0C09H
PC-10	Allowable time of undervoltage recovery	0.1～60.0s	2.0s	0C0AH
PC-11	Restart method after power failure	0: Invalid 1: Valid	0	0C0BH
PC-12	Waiting time for restart after power failure	0.0～120.00s	3.00S	0C0CH

PD Internal control PLC Function and frequency parameters

Function Code	Parameter Name	Setting Range	Default	Address
PD-00	Multi-frequency 1	0～100.0% Multi segment instruction can be used in three situations: as frequency source, as voltage source separated by VF, as setting source of process PID. As a frequency source, it is the percentage of relative maximum frequency; As VF separated voltage source, it is the percentage of rated voltage relative to motor; As the relative value of PID, it does not need dimension conversion.	0.0%	0D00H
PD-01	Multi-frequency 2		0.0%	0D01H
PD-02	Multi-frequency 3		0.0%	0D02H
PD-03	Multi-frequency 4		0.0%	0D03H
PD-04	Multi-frequency 5		0.0%	0D04H
PD-05	Multi-frequency 6		0.0%	0D05H
PD-06	Multi-frequency 7		0.0%	0D06H
PD-07	Multi-frequency 8		0.0%	0D07H
PD-08	Multi-frequency 9		0.0%	0D08H
PD-09	Multi-frequency 10		0.0%	0D09H
PD-10	Multi-frequency 11		0.0%	0D0AH

PD-11	Multi-frequency 12	Multi segment instructions need to be selected according to different states of multi-functional digital S. Please refer to P4 group for details.	0.0%	0D0BH
PD-12	Multi-frequency 13		0.0%	0D0CH
PD-13	Multi-frequency 14		0.0%	0D0DH
PD-14	Multi-frequency 15		0.0%	0D0EH
PD-15	PLC running mode	BIT0: Circulation mode 0: Stop after the AC drive runs one cycle 1: Repeat after the AC drive runs one cycle 2: Keep final values after the AC drive runs one cycle BIT1:Chronograph unit 0: Second 1: Minute 2: Hour BIT2: Power down storage mode 0: No 1: Yes BIT3: Start-up mode 0: Rerun from stage one 1: Rerun from downtime 2: Continue operation with the rest of the downtime phase	0000	0D0FH
PD-16	Running time of PLC reference 1	0.0～6500.0 (s/m/h)	10.0	0D10H
PD-17	Running time of PLC reference 2		10.0	0D11H
PD-18	Running time of PLC reference 3		10.0	0D12H
PD-19	Running time of PLC reference 4		10.0	0D13H
PD-20	Running time of PLC reference 5		10.0	0D14H
PD-21	Running time of PLC reference 6		10.0	0D15H
PD-22	Running time of PLC reference 7		10.0	0D16H
PD-23	Running time of PLC reference 8		10.0	0D17H
PD-24	Running time of PLC reference 9		10.0	0D18H
PD-25	Running time of PLC reference 10		10.0	0D19H
PD-26	Running time of PLC reference 11		10.0	0D1AH
PD-27	Running time of PLC reference 12		10.0	0D1BH
PD-28	Running time of PLC reference 13		10.0	0D1CH
PD-29	Running time of PLC reference 14		10.0	0D1DH

PD-30	Running time of PLC reference 15		10.0	0D1EH
PD-31	Running direction and acceleration/ deceleration time of PLC reference 1	BIT0: Operation direction of this section 0: Forward 1: Reverse BIT1: Acceleration and deceleration time of this section 0: Acceleration and deceleration time 1 1: Acceleration and deceleration time 2 2: Acceleration and deceleration time 3 3: Acceleration and deceleration time 4 BIT2: Reserved BIT3: Reserved	0000	0D1FH
PD-32	Running direction and acceleration/ deceleration time of PLC reference 2		0000	0D20H
PD-33	Running direction and acceleration/ deceleration time of PLC reference 3		0000	0D21H
PD-34	Running direction and acceleration/ deceleration time of PLC reference 4		0000	0D22H
PD-35	Running direction and acceleration/ deceleration time of PLC reference 5		0000	0D23H
PD-36	Running direction and acceleration/ deceleration time of PLC reference 6		0000	0D24H
PD-37	Running direction and acceleration/ deceleration time of PLC reference 7		0000	0D25H
PD-38	Running direction and acceleration/ deceleration time of PLC reference 8		0000	0D26H

PD-39	Running direction and acceleration/ deceleration time of PLC reference 9	BIT0: Operation direction of this section 0: Forward 1: Reverse BIT1: Acceleration and deceleration time of this section 0: Acceleration and deceleration time 1 1: Acceleration and deceleration time 2 2: Acceleration and deceleration time 3 3: Acceleration and deceleration time 4 BIT2: Reserved BIT3: Reserved	0000	0D27H
PD-40	Running direction and acceleration/ deceleration time of PLC reference 10		0000	0D28H
PD-41	Running direction and acceleration/ deceleration time of PLC reference 11		0000	0D29H
PD-42	Running direction and acceleration/ deceleration time of PLC reference 12		0000	0D2AH
PD-43	Running direction and acceleration/ deceleration time of PLC reference 13		0000	0D2BH
PD-44	Running direction and acceleration/ deceleration time of PLC reference 14		0000	0D2CH
PD-45	Running direction and acceleration/ deceleration time of PLC reference 15		0000	0D2DH

PF User-defined parameters

Function Code	Parameter Name	Setting Range	Default	Address
PF-00	PF parameter group function	BIT0: 0: Normal display parameter group 1: Only display PF parameter group BIT1: 0: PF group function mode 1: PF group programming mode	0000	0F00H

Function Code	Parameter Name	Setting Range	Default	Address
PF-01	PF macro parameter selection	0: According to the user programming mode 1-100: Call the application macro defined by the manufacturer	0	0F01H
PF-02	PF parameter group length	3～66	18	0F02H
PF-03 ～ PF-40	Edit definition by user	－	－	0F03H ～ 0F28H

AO Constant pressure water supply parameters

Function Code	Parameter Name	Setting Range	Default	Address
A0-00	PV Water Supply control mode	0x0000～0x0021 LED BIT0: MPPT Control mode 0: A0-03 Set value control 1: Automatic searching MPPT voltage for control LED BIT1: Automatic start-stop control logic 0: A0-01～02 control start-stop 1: Liquid level sensor and A0-01～02 control start-stop 2: Running by liquid level sensor 3: Running by terminal and liquid level sensor LED BIT2: Reserved LED BIT3: Reserved	1	1000H
A0-01	Auto Start Voltage	0～800.0Vdc The minimum PV input value allowed to start, below which the run command in invalid.	300.0/550.0	1001H
A0-02	Auto Stop Voltage	0～800.0Vdc The minimum PV voltage value in operation, below which the AC drive enters the shutdown state.	200.0/300.0	1002H
A0-03	Upper limit of output power	0.10～100.00kW The maximum output power in operation, if the value is exceeded, the AC drive will reduce the power operation.	Model dependent	1003H
A0-04	MPPT maximum voltage value	0.1～750.0 When BIT A0-00 is set to 0, follow the voltage to control the water pump.	250.0/480.0	1004H
A0-05	MPPT Downtest Step	The higher the value is, the faster the search speed is. When the parameter is set too large, it is easy to cause vibration near the maximum power point.	1.5	1005H
A0-06	MPPT Uptest Step		0.6	1006H
A0-07	MPPT control cycle	0.01～60.00S Set the interval time of each tracking step, the shorter the tracking time is, the faster the speed is; too short the tracking speed may also lead to vibration.	0.20	1007H
A0-08	MPPT control starting voltage	100.0～800.0Vdc By setting local parameters to prevent: when it is cloudy or in the evening(morning), the output voltage of the solar panel is very low, so the normal MPPT tracking method will make the DC bus voltage too low, which may cause the system under voltage shutdown.	240.0/440.0	1008H

Function Code	Parameter Name	Setting Range	Default	Address
A0-09	Minimum Error KP1	It determines the regulation intensity of the whole PID regulator. The greater the P value is, the greater the regulation intensity is, and the smaller the I value is, the greater the regulation intensity is. A0-07～A0-10 these two groups of parameters set the upper and lower limits of PID parameters, which are automatically given according to the linear proportional relationship between the error value of the feedback value and the given value.	20.0	1009H
A0-10	Minimum Error KI1		0.12	100AH
A0-11	Maximum Error KP2		100.00	100BH
A0-12	Maximum Error KI2		2.00	100CH
A0-13	Reserved	－	－	100DH
A0-14	PID control deviation limit	0.0～100.0% When the deviation value of actual voltage and reference voltage is the ratio percentage of reference voltage, i.e. ABS (actual voltage-reference voltage)* 100.0%/ reference voltage, and the value is greater than the deviation limit value of A0-03, PI regulation will be carried out, otherwise PI treatment will not be carried out. The default is 0.0%. ABS: absolute value.	0.0%	100EH
A0-15	PID output upper frequency limit	A0-05～100.0% A0-15 is used to limit the maximum value of the target frequency, 100% Corresponding to P0-10 Maximum frequency. After PI adjustment, the final target frequency is limited to the set upper limit.	100.0%	100FH
A0-16	Sleep frequency	0.00Hz～Maximum frequency This function can realize sleep and wake-up functions. After the start command is issued, if it is in sleep state, when the set frequency exceeds A0-18 (wake-up voltage) and the duration exceeds A0-19 (wake-up delay time), the system will wake up and run. When the system is running, if the set frequency is less than A0-16 (sleep frequency), the system will enter the sleep state (shutdown) if the duration exceeds A0-17 (sleep delay time). If set to A0-16 (sleep frequency) and A0-18 (wake-up voltage) to 0, the sleep and wake-up functions will be invalid.	0.00	1010H
A0-17	Sleep delay time		20.00	1011H
A0-18	Wake-up voltage		0.00	1012H
A0-19	Wake-up delay time		20.00	1013H
A0-20	Under load detection time of water pump	0.00～1000.0s Setting of under load detection time of water pump. Under the condition of continuous under load, the under load alarm ERR60 will be given when the operation time reaches.	60.0s	1014H
A0-21	Detection value of under load current	0.00～100.0% When it is 0.0%, it is determined by the under load detection of the pump inverter itself. When it is not 0.0%, it is determined by the set value.	0.0%	1015H

A0-21	Detection value of under load current	100.0% corresponds to the rated current of the motor. When the current value is continuously less than the set value, after the A0-20 water pump underload operation time, the under load alarm fault will be reported, otherwise, it will operate normally. In the non continuous case, the delay time will be automatically cleared.	0.0%	1015H
A0-22	Under load reset delay	0.0～1000.0s Under load reset delay setting. After the under load alarm is given, the fault will be reset automatically after A0-0 time. If the operation signal is valid, the water pump will automatically enter the operation state.	100.0s	1016H
A0-23	Water level control selection	0～3 0: Water level control switch value input, stop when full water or empty water signal is valid 1: Stop when the signal AI1 of full water or signal AI2 of empty water is higher than the threshold value 2: Water level control switch value input, empty water signal effective start, full water signal effective stop 3: Start when AI2 is lower than the empty water threshold, and stop when AI1 is higher than the full water threshold. 4: It is controlled by the AI1 liquid level signal, start when it is lower than the empty water threshold, and stop when it is higher than the full water threshold.	0	1017H
A0-24	Full water level detection value	0.0～100.0% When the detection requirements of A0-23 water level control selection meet the empty water conditions and continue this state, after the delay time of A0-28, alarm full water early warning (A-tF), and sleep. In the full water alarm state, if the signal does not meet the full water condition, it starts to delay the timing. After a delay time of A0-29, the full water alarm will be cleared and it will return to the operation state.	25.0%	1018H
A0-25	Empty water level detection value	0.0～100.0% According to the detection requirements selected by A0-23 water level control, after meeting the empty water condition and continuing this state for a delay time of A0-28, an empty water early warning (A-tE) will be reported. In the empty water alarm state, the signal does not hide enough empty water conditions. After the delay time of A0-29, the empty water alarm will be cleared and restored to the operation state.	75.0%	1019H
A0-26	Full water level detection delay	0～60000s Full water delay time setting. (the function	5s	101AH

A0-26	Full water level detection delay	code is still valid when the switch value is full of water).	5s	101AH
A0-27	Wake up delay at full water level	0～60000s Setting of wake up delay at full water level. (the function code is still valid when the switch value is full of water).When set to 0, the function of wake up delay at full water level is invalid, and the operation state can only be resumed by disconnecting and closing the operation instruction again.	20s	101BH
A0-28	Empty water level delay	0～60000s Setting of empty water delay. (the function code is still valid when switching the water empty signal)	5s	101CH
A0-29	Wake up delay at empty water level	0～60000s Setting of wake-up delay at empty water level. (the function code is still valid when switching the water empty signal).When set to 0, the function of wake up delay at empty water level is invalid, and the operation state can only be resumed by disconnecting and closing the operation instruction again.	20s	101DH
A0-30	Sensor Error of detection value	0.0～100.0% 0.0% is invalid. When parameter A0-23 is set to 4, the function is effective. When the sensor error of detection value is less than the damage point of A0-23 liquid level probe, it will directly report (Err61) fault and stop the machine.	0.0%	101EH
A0-31	PV and power frequency input function	0～2 0: Auto switch mode 1: Power frequency input mode 2: PV input mode This function code selects 0, and the system automatically switches between PV and power frequency according to the detected PV voltage value and switching value. Select 1 for this function code, and the system will forcibly switch to power frequency input. Select 2 for this function code, and the system will forcibly switch to PV input. Note: 1. When the terminal input No.55 function is valid, the function code is invalid. 2. It is necessary to apply the EC620-EXT01 expansion board to cooperate with this function effectively.	2	101FH
A0-32	Switch to power frequency value setting	When A0-31 is set to 0, when PV input voltage is lower than A0-32, it will be output through A0-33 delay relay and switched to power frequency input.	70.0V	1020H
A0-33	Switch to power frequency delay		5S	1021H

| A0-34	Switch to PV value setting	A0-30~400.0V When A0-31 is set to 0, when PV voltage is higher than the value, the system can switch to PV input through relay output after A0-35 delay. To avoid switching back and forth, this value is a little higher than the A0-32 value.	100.0V	1022H
A0-35	Switch to PV delay		5S	1023H
A0-36	Pump efficiency	30~90% The ratio of pump input power to shaft power. In order to accurately calculate the actual flow, please set the correct value.	65%	1024H
A0-37	Pump head	0.1~1000.0M The height from the water pump to the water outlet, in order to accurately calculate the actual flow, please set the correct value.	3.0M	1025H
A0-38	High value of accumulated flow	Read-only Display the total flow of water pump, unit: 10000 cubic meters	read-only	1026H
A0-39	Low value of accumulated flow	Read-only Shows the total flow of the water pump, in cubic meters	read-only	1027H
A0-40	PV voltage check gain	50.0~150.0 Adjust the input voltage of EC620-EXT01 expansion board.	100.0	1028H

AE Scheduled operation Parameters

Function Code	Parameter Name	Setting Range	Default	Address
AE-00	Timing time 1	The three sets of passwords work as follows: The timing time can be set when the timing password is invalid. After the timing password is set to a non-0 parameter, the timing time cannot be modified. The frequency converter will count down according to the mode set by AE-06. The remaining timing time can be viewed through the timing time. When the timing time countdown is 0, the frequency converter will be in the operation instruction blocking state; the blocking state can only be unlocked by entering the same value as the previous time in the timing password, and if the latter group password is valid, the countdown will continue to 0, and then the machine will stop; the value of any timing password in the valid state AE-06 cannot be modified;	0.0	1E00H
AE-01	Timed password 1		0	1E01H
AE-02	Timing time 2		0.0	1E02H
AE-03	Timed password 2		0	1E03H
AE-04	Timing time 3		0.0	1E04H
AE-05	Timed password 3		0	1E05H
AE-06	Timed operation mode	BIT0: 0: time unit is minute 1: The unit of time is hour 2: Time in days BIT1: 0: power on and running time 1: Running state timing only BIT2: reserved BIT3: reserved	0001	1E06H

U Monitoring Parameters

Function Code	Parameter Name	Setting Range	Default	Address
U-00	Set frequency	–	–	2110H
U-01	Output frequency	–	–	2111H
U-02	Output current	–	–	2112H
U-03	Output flow	–	–	2113H
U-04	Output voltage	–	–	2114H
U-05	PV input voltage	–	–	2115H
U-06	Bus voltage	–	–	2116H
U-07	Output power	–	–	2117H
U-08	Module temperature reached	–	–	2118H
U-09	Actual output frequency	–	–	2119H
U-10	Target torque	–	–	211AH
U-11	Output torque	–	–	211BH
U-12	Output excitation	–	–	211CH
U-13	Power factor angle	–	–	211DH
U-14	PID setting	–	–	211EH
U-15	PID feedback	–	–	211FH
U-16	Terminal S Status	–	–	2120H
U-17	Terminal Y Status	–	–	2121H
U-18	AI1 input value	–	–	2122H
U-19	AI2 input value	–	–	2123H
U-20	AI3 input value	–	–	2124H
U-21	HDI input value	–	–	2125H
U-22	A01 output value	–	–	2126H
U-23	A02 output value	–	–	2127H
U-24	HDO output value	–	–	2128H
U-25	Counter count value	–	–	2129H
U-26	Power-on time	–	–	212AH
U-27	power-on operation time	–	–	212BH
U-28	Accumulated time	–	–	212CH
U-29	Maximum current	–	–	212DH
U-30	Maximum voltage	–	–	212EH
U-31	Maximum temperature	–	–	212FH
U-32	Miniamum voltage	–	–	2130H
U-33	Rated power	–	–	2131H
U-34	Rated voltage	–	–	2132H

U-35	Rated current	–	–	2133H
U-36	Software version	–	–	2134H
U-37	Communication frequency	–	–	2135H
U-38	Main frequency X value	–	–	2136H
U-39	Auxiliary frequency Y value	–	–	2137H
U-40	Remaining running time	–	–	2138H
U-41	VF separation V	–	–	2139H
U-42	VF separation F	–	–	213AH
U-43	PV reference voltage	MPPT maximum power reference voltage	–	213BH
U-44	Current flow of water pump	Q=QN*f/FN unit:m³/h	–	213CH
U-45	High level of total flow of water pump	This function code shows the high level of the total flow of the water pump. Unit: 10000 cubic meters	–	213DH
U-46	Low level of total flow of water pump	This function code shows the low level of the total flow of the water pump. Unit: 0.1m³	–	213EH

*Press PRG key for 2 seconds continuously to enter the U monitoring parameter group item.

8. Standard wiring diagram
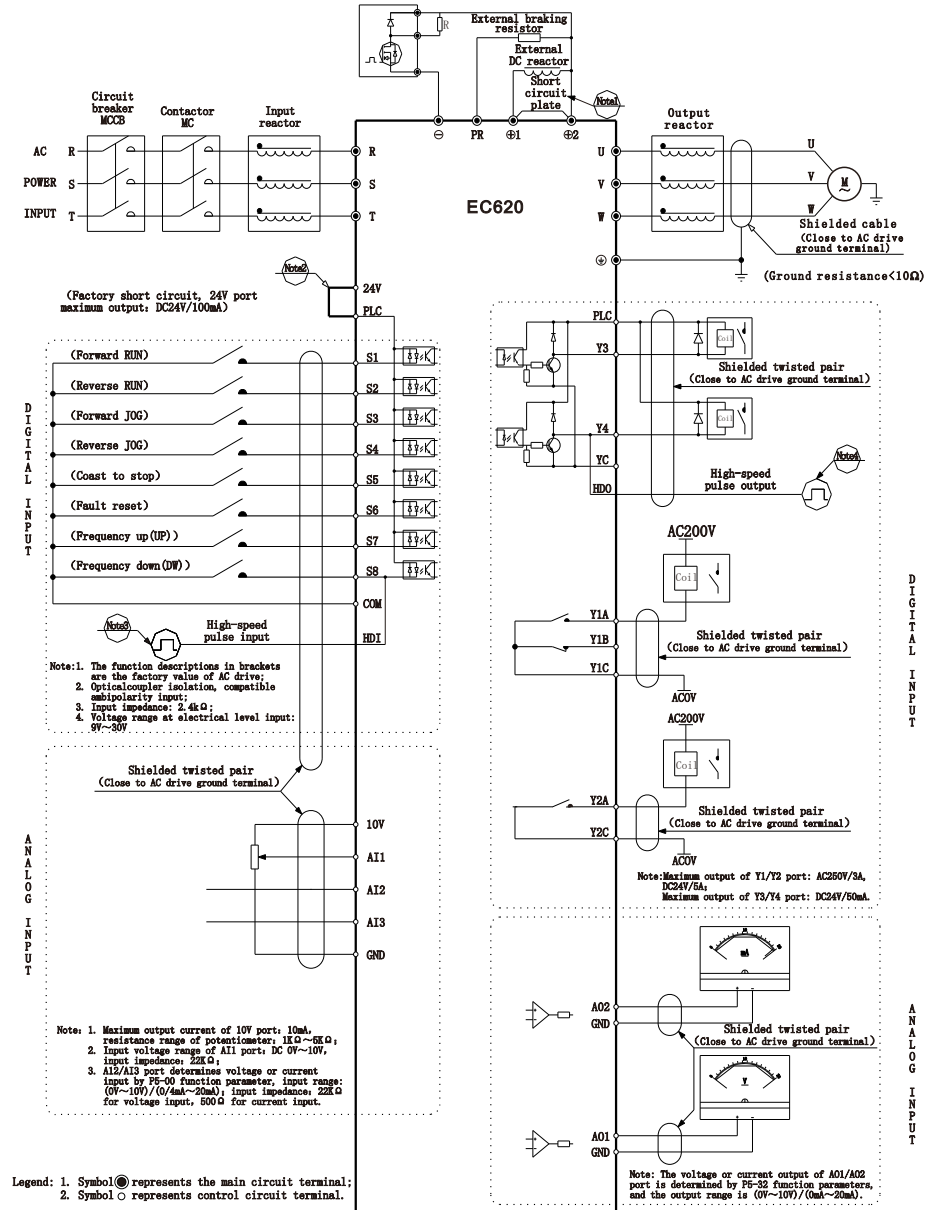
Note：1、When installing DC reactor, be sure to remove the short connector between terminals⊕1 and⊕2；

2、The internal power supply (24V port) or external power supply (PLC port) can be selected for S1～S8 port bias voltage, and the factory value 24V port and PLC port are short circuited；

3、Port S8 is restricted by function parameter P5-00, which can be used as high-speed pulse input channel with maximum input frequency of 50KHz；
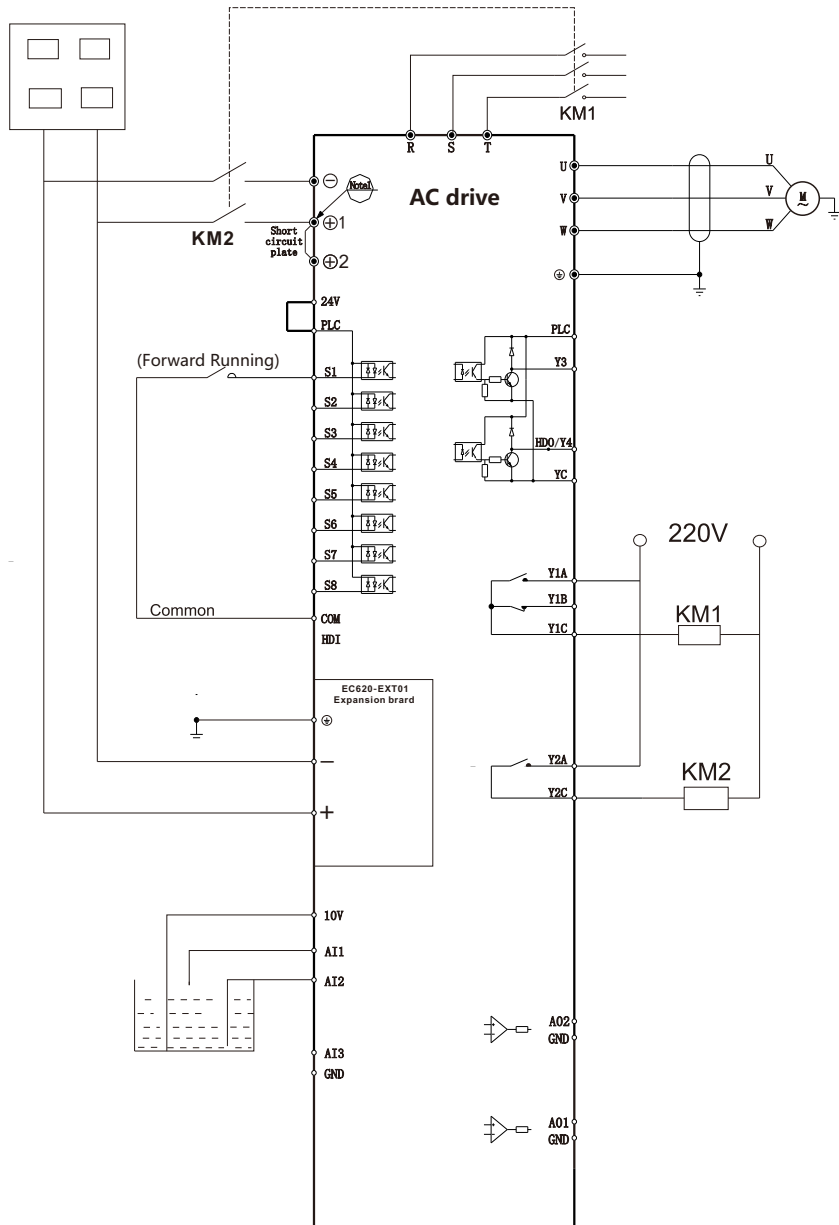
4、Port Y4 is restricted by function parameter P5-32, which can be used as high-speed pulse input channel with maximum input frequency of 50KHz.

8.1 PV Water supply wiring diagram
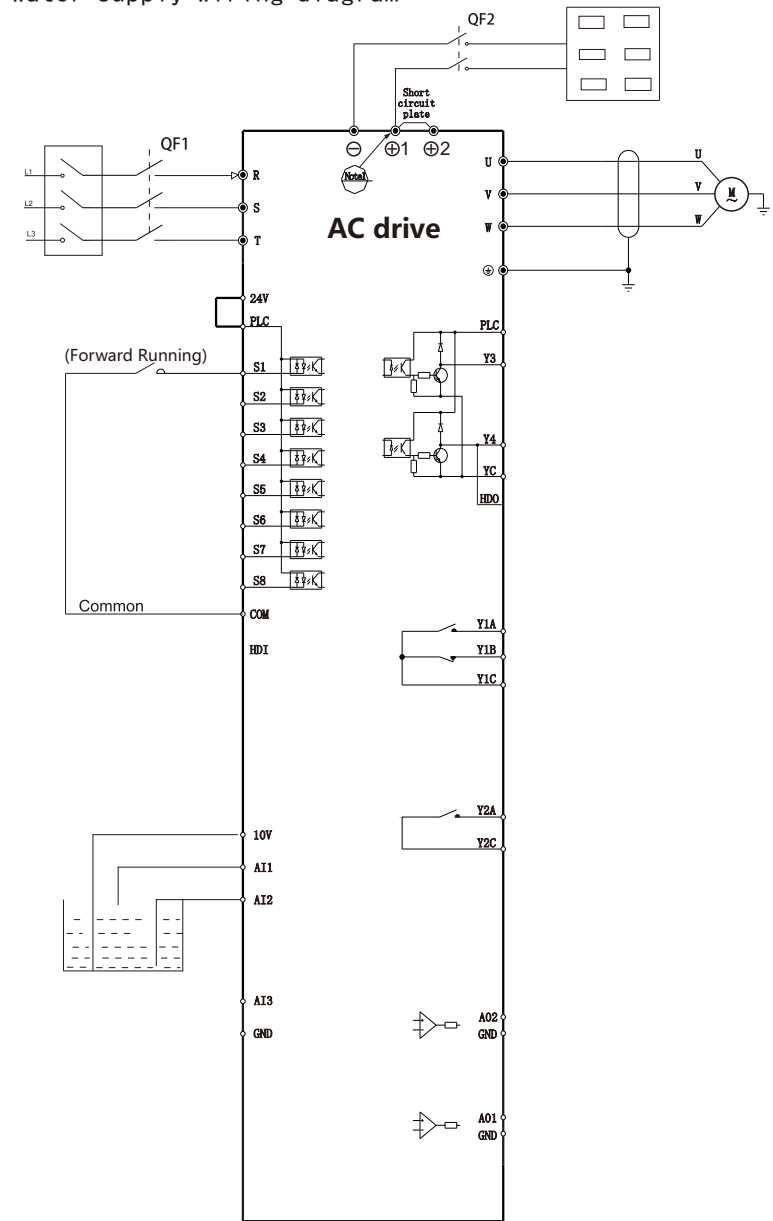
Note 1:When the AC drive is ≤ 5.5Kw, use ⊕.

8.2 PV Water supply wiring diagram

Note 1:When the AC drive is ≤ 5.5Kw, use ⊕.

9. Warranty Service

EACON
Manufacturer of high quality inverter

Warranty Card

User Name			
User Address			
User Contact		Tel	
Specification		Number	
Distributor			
Contacts		Date of delivery	

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