FC90 PLUS SERIES MANUAL BOOK

1.Preface

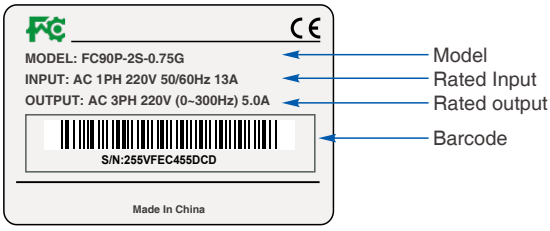
Thank you for choosing FC90 Plus series vector general purpose AC drive.（abbreviation：FC90P)

The actual picture in this operation manual is for convenience of explanation,and may be slightly different from the product. Due to product upgrades, it mayalso be slightly different. Please refer to the actual product.

Please pay attention to hand over this user manual to the end user, and keep it properly for future inspection and maintenance.

If you have any questions, please contact our company or our agent in time, and we will serve you wholeheartedly.

2.Nameplate



3.Model Description

FC90P-2S-0.75G

❶ ❷ ❸

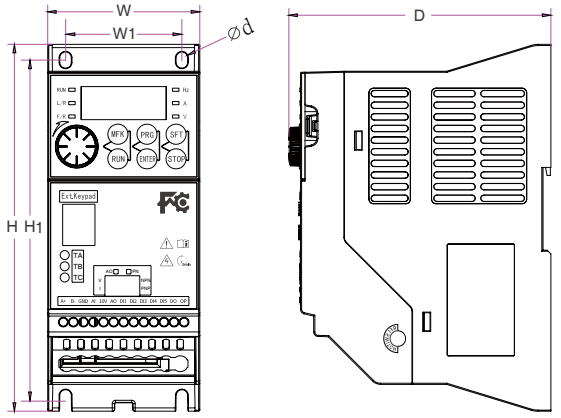
Name	Mark	Description	Detail
AC Drive series	❶	FC90P	Series Name
Voltage level	❷	Voltage level	2S:Single-phase 220V Range:-15% ~20% 4T:Three-phase 380V Range:-15% ~20%
Adaptable power	❸	Adaptable motor power(kW)	0.4~7.5kW

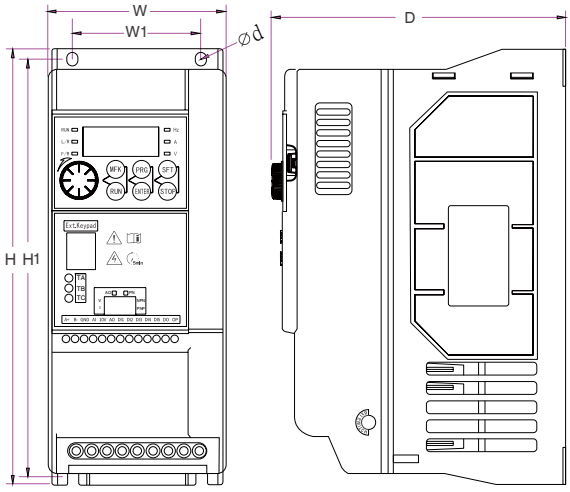
4.Model Description

Model	Adaptive Motor (kW)	Input Current (A)	Output Current (A)	Rate Capacity (kVA)
1 Phase Input and 3 Phase Output 220V (-15%~+15% Tolerance)				
FC90P-2S-0.4G	0.4	6.5	2.1	0.7
FC90P-2S-0.75G	0.75	8.2	4.0	1.5
FC90P-2S-1.5G	1.5	14	7.0	3.0
FC90P-2S-2.2G	2.2	23	9.6	4.0
3 Phase Input and 3 Phase Output 380V (-15%~+15% Tolerance)				
FC90P-2T-4.0G	4.0	14.6	13	5.9
3 Phase Input and 3 Phase Output 380V (-15%~+15% Tolerance)				
FC90P-4T-0.75G	0.75	3.4	2.1	1.5
FC90P-4T-1.5G	1.5	5.0	3.8	3.0
FC90P-4T-2.2G	2.2	5.8	5.1	4.0
FC90P-4T-4.0G	4.0	10.5	9.0	5.9
FC90P-4T-5.5G	5.5	14.6	13.0	8.9
FC90P-4T-7.5G	7.5	19	17	11

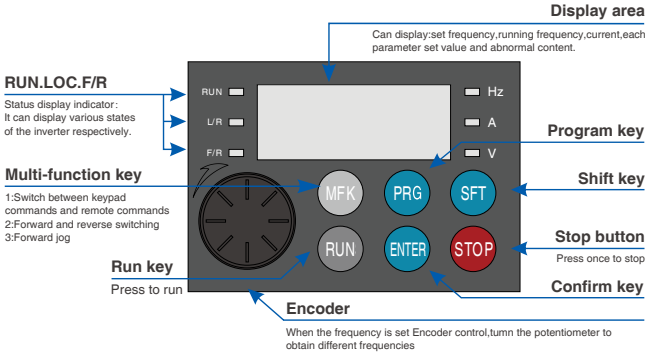
5.Product outline drawing

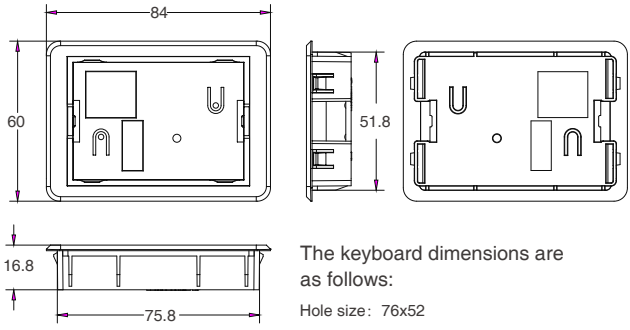
W	H	D	W1	H1	kg	ød
FC90P-2S-0.4~1.5G FC90P-4T-0.75~2.2G						
68mm	164mm	111mm	53mm	151mm	1	M4
FC90P-2S-2.2G FC90P-2T-4.0G FC90P-4T-4.0~7.5G						
89mm	217mm	146mm	64mm	206mm	2.5	M5.3





6.Keyboard Description





The keyboard dimensions are as follows:

Hole size：76x52

7.Description of the main circuit terminals of the inverter

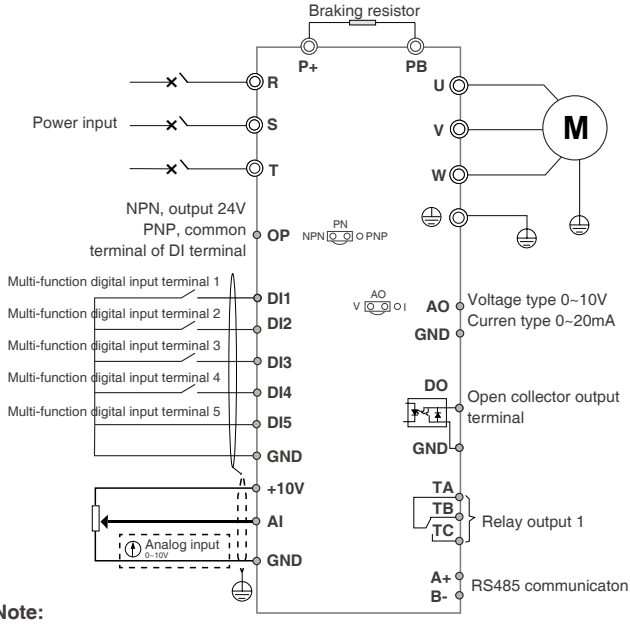
Mark	Name	Description
R、S、T	Power input terminal	R,S : single-phase 220V AC input power supply R,S,T : three-phase 380V AC input power supply
P+、PB	Brake resistor connection terminal	Connect to the braking resistor
U、V、W	VFD output terminal	Connect to a three-phase motor
⏚	Ground terminal	Ground terminal

8.Product Specifications

Electrical Specification	
Input Voltage	Single Phase 200-240V,Three Phase 380~440V. Fluctuate no more than±10%,Imbalance Rate <3%.
Input Frequency	50/60Hz ± 5%
Output Voltage	0V~Input Voltage
Output Frequency	V/F Control: 0~500Hz Vector control: 0~3200Hz
Performance	
Overload Capacity	150% rated output current for 1 minute, 180% rated output current for 2 seconds.
Control Method	V/F control, Open loop vector control.
Run Command Setting Method	Operation Panel Setting, External Terminal Setting,Communication Setting.
Speed Setting Method	Digital setting, analog setting, communication setting.
Speed Setting Resolution	Digital setting: 0.01Hz Analog setting: 1% × maximum frequency
Special Feature	
Programmable Input & Output Terminals	Input& Output terminal function can be edited
Process PID Adjustment Function	Built-in process PID module
Simple PLC Function	Built-in simple PLC module, which can realize timing and multi-segment frequency output.
Motor group parameters	Two sets of motor parameters (motor parameter 1 and motor parameter 2), switch between them at will
Protective function	
Automatic Current Limiting Protection	Output current is automatically limited to prevent over-current faults
Overload Pre-Alarm & Alarm	Overload Pre-warning and protection
Output Phase Loss Protection	Output phase loss automatic detection and alarm function
Overvoltage & Overcurrent Stall Control	Automatically limit current and voltage during operation to prevent frequent over-current and over-voltage tripping
Output Short-to-Ground Protection	Effective protection function for output short circuit to ground
Output Phase-to-Phase Short Circuit Protection	Output interphase short circuit effective protection function
Input & Output	
External analog power supply	+10V，load capacity 100mA
Analog Input	AI: 0~10V / 0~20mA (Voltage/current selectable)
Analog Output	AO: 0~10V / 0~20mA(Voltage/current selectable)
Digital Input	DI1~DI5
Digital Output	DO
Relay output	TA/TB/TC: Contact rating 250VAC/3A or 30VDC/1A
MODBUS Communication	A+、B-
Operation Display	
LED Display	5-digit LED digital Set frequency, output frequency, output voltage, output current, motor speed, output torque, digital terminals, status parameters, programming menu parameters and fault codes etc.
Indicator Light	3 units indicators, 3 status indicators.
Environmental characteristics	
Working Temperature	-10~+40°C, Maximum temperature is 50°C, Air Temperature change is less than 0.5°C/min,40~50°C Derating is required, output current derating 2% for each 1°C.
Storage Environment Temperature	-40~+70°C
Application	Indoor, free from direct sunlight, dust, corrosive gas, flammable gas, oil mist, water vapor, dripping water or salt etc.

Humidity	Less than 95%RH, no condensation
Vibration resistance	3.5m/s² at 2~9Hz, 10m/s² at 9~200Hz (IEC60721-3-3).
Protection Degree	IP20
Pollution Level	Class 2 (Dry, non-conductive dust pollution)

9.Wiring of inverter control circuit



Note:

All FC90P series inverters have the same wiring method for the control circuit.The above figure shows the wiring diagram of the three-phase 380V inverter.Terminal ◎ represents the main circuit terminal, and ○ represents the control circuit terminal

10.Function description of control terminal

Type	Mark	Name	Description
Power supply	10V,GND	Internal 10V power supply	10V reference power supply for analog input, maximum allowable output current 100mA
	OP	Internal 24V power supply	NPN, output 24V PNP, common terminal of DI terminal
Analog Input	AI,GND	Analog Input Terminal 1	AI input voltage range: 0~10V / 0~20mA Voltage input impedance: 32kΩ Current input impedance: 500Ω
Analog Output	AO,GND	Analog Output 1	Output current range: 0mA~20mA Output voltage/current signal: 0~10V/0~20mA Voltage or current output is determined by jumper selection
Digital Input	DI1-GND	Digital Input 1	Optocoupler isolation, programmable bipolar selectable input signal Input voltage range: 5~30VDC DI1~DI4 input impedance 1kΩ
	DI2-GND	Digital Input 2	
	DI3-GND	Digital Input 3	
	DI4-GND	Digital Input 4	
	DI5-GND	Digital Input 5	
Digital Output	DO-GND	Pulse Output	Unipolar open collector output Output voltage range: 0~30VDC Output current range: 0~50mA
Relay Output	TA-TB	Normally closed terminal	Programmable output, contact capacity: 250VAC/3A or 30VDC/1A
	TA-TC	Normally open terminal	

11.Signal input terminal wiring instructions

Because weak analog voltage signals are particularly susceptible to external interference, shielded cables are generally required, and the wiring distance should be as short as possible, not exceeding 20m. In some occasions where the analog signal is seriously interfered, a filter capacitor or a ferrite magnet should be added on the analog signal source side.

12.Parameter summary table

" ☆ " : Indicates that the setting value of this parameter can be changed when the inverter is in stop or running state;

" ★ " : Indicates that the setting value of this parameter cannot be changed when the inverter is in running state;

" ● " : Indicates that the value of this parameter is the actual detection record value and cannot be changed;

Function code	Name	Setting range	Factory default	Attributes	DEC address
		P0 group Basic parameters			
P0-01	**Selection of Motor Control Method**	0: SVC- No PG vector control 2: V/F- Open-loop speed control	2	★	0xF001
P0-02	**Command source selection**	0: Panel command channel (L/R LED off) 1: Terminal command channel (L/R LED on) 2: Communication command channel (L/R LED flashing)	0	★	0xF002
P0-03	**Main frequency source X selection**	0: Digital setting (preset frequency P0-08,UP/DOWN can be modified,no memory when power off) 1: Digital setting (preset frequency P0-08,UP/DOWN can be modified,memory when power off) 2: AI 4: Keyboard potentiometer 5: PLUSE pulse setting(DI5) 6: Multi-segment command 7: Simple PLC 8: PID 9: Communication given	1	★	0xF003
P0-04	**Auxiliary frequency source Y selection**	Same as P0-03 (main frequency source X selection)	0	★	0xF004
P0-05	**Frequency source Y during superposition range selection**	0: relative to the maximum frequency 1 : relative to the frequency source X	0	☆	0xF005
P0-06	**Frequency source Y range when superimposed**	0% ~ 150%	100%	☆	0xF006
P0-07	**Frequency source superposition mode selection**	Units place: Frequency source selection 0: Main frequency source X 1: Main and auxiliary operation (the operation method is determined by the tens place) 2: Main frequency source X and auxiliary frequency source Y switching 3: Main frequency source X and main and auxiliary operation results Switching 4: Auxiliary frequency source Y and main-auxiliary operation result switching Tens digit: frequency source main-auxiliary operation relationship 0: main + auxiliary 1: main - auxiliary 2: maximum value of both 3: minimum value of both	00	☆	0xF007
P0-08	**Preset frequency**	0.00Hz~maximum frequency (P0-10)	50.00Hz	☆	0xF008
P0-09	**Running direction**	0: Same direction 1: Opposite direction	0	☆	0xF009
P0-10	**Maximum frequency**	50.00Hz~500.00Hz	50.00Hz	★	0xF00A
P0-11	**Upper limit frequency source**	0: P0-12 setting 1: AI 3: Keyboard potentiometer 5: Communication setting	0	★	0xF00B
P0-12	**Upper limit frequency**	Lower limit frequency P0-14 ~ maximum frequency P0-10	50.00Hz	☆	0xF00C
P0-13	**Upper limit frequency offset**	0.00Hz~maximum frequency P0-10	0.00Hz	☆	0xF00D
P0-14	**Lower limit frequency**	0.00Hz~upper limit frequency P0-12	0.00Hz	☆	0xF00E
P0-15	**Carrier frequency**	0.5kHz~16.0kHz	Model confirmed	☆	0xF00F

Function code	Name	Setting range	Factory default	Attributes	DEC address
P0-16	Carrier frequency adjusted with temperature	0: No 1: Yes	1	☆	0xF010
P0-17	Acceleration time 1	0s~65000s (P0-19 =0) 0.0s~ 6500.0s (P0-19 = 1) 0.0 0s~650.00s (P0-19 =2)	Model confirmed	☆	0xF011
P0-18	Deceleration time 1				0xF012
P0-19	Acceleration and deceleration time unit	0: 1 second 1: 0.1 second 2: 0.01 second	1	★	0xF013
P0-21	Auxiliary frequency source during superposition Bias frequency	0.00Hz~maximum frequency P0-10	0.00Hz	☆	0xF015
P0-23	Digital setting frequency stop memory	0: No memory 1: Memory	0	☆	0xF017
P0-24	Motor parameter group selection	0: Motor parameter group 1 1: Motor parameter group 2	0	★	0xF018
P0-25	Acceleration and deceleration time base frequency	0: Maximum frequency (P0-10) 1: Set frequency 2: 100Hz	0	★	0xF019
P0-26	Frequency command UP/DOWN reference during operation	0: Running frequency 1: Setting frequency	0	★	0xF01A
P0-27	Command source bundled frequency source	Units: Operation panel command binding frequency source selection 0: No binding 1: Digital setting frequency 2: AI 4: Keyboard potentiometer 6: Multi-stage speed 7: Simple PLC 8: PID 9: Communication given Tenth place: terminal command binding frequency source selection Hundreds place: communication command binding frequency source selection	0000	☆	0xF01B
P0-28	Communication protocol selection	0: Modbus RTU 1: Reserved	0	★	0xF01C
		Group P1 Motor Parameters			
P1-00	Motor Type Selection	0: Ordinary asynchronous motor 2: Permanent magnet synchronous motor	0	★	0xF100
P1-01	Motor rated power	0.1~55kW	Model confirmed	★	0xF101
P1-02	Motor rated voltage	1~500V	Model confirmed	★	0xF102
P1-03	Motor rated current	0.01~655.35A (inverter power≤55 kW)	Model confirmed	★	0xF103
P1-04	Motor rated frequency	0.01Hz~maximum frequency	Model confirmed	★	0xF104
P1-05	Motor rated speed	1~65535rpm	Model confirmed	★	0xF105
P1-06	Asynchronous motor stator resistance	0.001Ω ~ 65.535Ω (inverter power ≤55 kW)	Model confirmed	★	0xF106
P1-07	Asynchronous motor rotor resistance	0.001Ω ~ 65.535Ω (inverter power ≤55 kW)	Model confirmed	★	0xF107
P1-08	Asynchronous motor leakage inductance	0.01mH ~ 655.35mH (inverter power ≤55 kW)	Model confirmed	★	0xF108
P1-09	Mutual inductance reactance of asynchronous motor	0.1mH ~ 6553.5mH (inverter power ≤55 kW)	Model confirmed	★	0xF109
P1-10	Asynchronous motor no-load current	0.01~P1-03	Tuning parameters	★	0xF10A

Function code	Name	Setting range	Factory default	Attributes	DEC address
P1-16	Synchronous motor stator resistance	0.001Ω to 65.535Ω (Inverter power ≤ 55kW)	Tuning parameters	★	0xF110
P1-17	Synchronous motor D-axis inductance	0.01mH to 655.35mH (Inverter power ≤ 55kW)	Tuning parameters	★	0xF111
P1-18	Synchronous motor Q-axis inductance	0.01mH to 655.35mH (Inverter power ≤ 55kW)	Tuning parameters	★	0xF112
P1-20	Synchronous motor back electromotive force	0.0V~6553.5V	Tuning parameters	★	0xF114
P1-37	Tuning selection	00: No operation 01: Partial tuning of asynchronous motor parameters at standstill 02: Complete dynamic tuning of asynchronous motor parameters 11: On-load tuning of synchronous motor parameters 12: No-load tuning of synchronous motor parameters	0	★	0xF125
		P2 Group vector parameters			
P2-00	Speed loop proportional gain 1	1~100	30	☆	0xF200
P2-01	Speed loop integration time 1	0.01~10.00s	0.50s	☆	0xF201
P2-02	Switching frequency 1	0.00~P2-05	5.00Hz	☆	0xF202
P2-03	Speed loop proportional gain 2	1~100	10	☆	0xF203
P2-04	Speed loop integration time 2	0.01s~10.00s	1.00s	☆	0xF204
P2-05	Switching frequency 2	P2-02~maximum frequency	10.00Hz	☆	0xF205
P2-06	Asynchronous motor vector control slip gain	50%~200%	100%	☆	0xF206
P2-07	Asynchronous motor speed loop filter time constant	0.000~0.100s	0.015s	☆	0xF207
P2-08	Overexcitation gain of asynchronous motor vector control	0~200	64	☆	0xF208
P2-09	Torque upper limit source in speed control mode	0: Function code P2-10 setting 1: AI 3: Keyboard potentiometer 4: PULSE setting (DI5) 5: Communication given The full scale of options 1-7 corresponds to P2-10	0	☆	0xF209
P2-10	In speed control mode Torque upper limit digital setting	0.0% ~ 200.0%	150.0%	☆	0xF20A
P2-11	Torque command selection in speed control mode (power generation)	0: Function code P2-10 setting (does not distinguish between motoring and generating) 1: AI 3: Keypad potentiometer 5: Communication setting 8: Function code F2-12 setting The full scale of options 1-7 is affected by the operating range of P2-10.	0	☆	0xF20B
P2-12	Digital setting of torque upper limit in speed control mode (power generation)	0.0%~200.0%	150.0%	☆	0xF20C
P2-13	M-axis current loop KP	0~60000	2000	☆	0xF20D

Function code	Name	Setting range	Factory default	Attributes	DEC address
P2-14	M-axis current loop KI	0~60000	1300	☆	0xF20E
P2-15	T-axis current loop KP	0~60000	2000	☆	0xF20F
P2-16	T-axis current loop KI	0~60000	1300	☆	0xF210
P2-17	Asynchronous motor speed loop integral properties	Units digit: Integral separation 0: Invalid 1: Valid	0	☆	0xF211
P2-22	Power generation limit enable	0: No limit 1: Limit	1	☆	0xF216
P2-23	Generating power upper limit	0%-200.0%	Model confirmed	☆	0xF217
P2-24	Asynchronous motor vector control slip gain	0: No field weakening. When the output voltage reaches the upper limit, the frequency will automatically be reduced to prevent the system from entering the field weakening zone. 1: Automatic field weakening mode 2: Calculated field weakening mode	1	★	0xF218
P2-25	Synchronous motor field weakening gain	1~50	5	☆	0xF219
P2-29	Synchronous motor output voltage upper limit margin	0%~50%	5%	☆	0xF21D
P2-30	Synchronous motor initial position angle detection current	50%~180%	80%	☆	0xF21E
P2-31	Synchronous motor initial position angle detection	0: Test at every startup; 1: Do not test; 2: Test at the first startup after power-up;	0	☆	0xF21F
P2-32	Synchronous motor speed loop mode selection	0,1	0	☆	0xF220
P2-33	Synchronous motor saliency ratio adjustment gain	50-500	100	☆	0xF221
P2-34	Maximum torque current ratio control	0,1	0	☆	0xF222
P2-36	Current loop KP during tuning	1-100	6	☆	0xF224
P2-37	Current loop KI during tuning	1-100	6	☆	0xF225
P2-38	Z signal correction	0,1	1	☆	0xF226
P2-39	Synchronous motor SVC speed filter level	10-1000	100	☆	0xF227
P2-40	Synchronous motor SVC speed estimation proportional gain	5-200	40	☆	0xF228
P2-41	Synchronous motor SVC speed estimation integral gain	5-200	30	☆	0xF229
P2-42	Synchronous motor SVC initial excitation current limit	30%~80%	30%	☆	0xF22A
P2-43	Low-speed carrier frequency	0.8K~P0-15	1.5k	☆	0xF22B

Function code	Name	Setting range	Factory default	Attributes	DEC address
P2-47	Synchronous motor inductance detection current	0%~80%	50%	☆	0xF22F
P2-49	Zero servo enable	0: Off 1: On	0	☆	0xF231
P2-50	Switching frequency	0.00~P2-02	0.30Hz	☆	0xF232
P2-51	Zero servo speed loop proportional gain	1~100	10	☆	0xF233
P2-52	Zero servo speed loop integral time	0.01s~10.00s	0.50s	☆	0xF234
P2-55	Online parameter identification	0: Off 1: Tune before power-on first run 2: Tune before run	0	☆	0xF237
P2-56	Online back EMF calculation	0: Off 1: On	0	☆	0xF238
P2-57	SVC initial position compensation angle	0.0°~359.9°	0.0	☆	0xF239
P3 group V/F control parameters					
P3-00	V/F curve setting	0: Straight line V/F 1: Multi-point V/F 2: Square V/F 3: 1.2 power V/F 4: 1.4 power V/F 6: 1.6 power V/F 8: 1.8 power V/F 10: V/F completely separated 11: V/F half separation	0	★	0xF300
P3-01	Torque boost	0.0%: (automatic torque boost) 0.1 ~ 30.0%	Model confirmed	☆	0xF301
P3-02	Torque boost cut-off frequency	0.00Hz~maximum frequency	50.00Hz	★	0xF302
P3-03	Multi-point V/F frequency point 1	0.00Hz~P3-05	0.00Hz	★	0xF303
P3-04	Multi-point V/F voltage point 1	0.0%~100.0%	0.0%	★	0xF304
P3-05	Multi-point V/F frequency point 2	P3-03~P3-07	0.00Hz	★	0xF305
P3-06	Multi-point V/F voltage point 2	0.0%~100.0%	0.0%	★	0xF306
P3-07	Multi-point V/F frequency point 3	P3-05~motor rated frequency (P1-04)	0.00Hz	★	0xF307
P3-08	Multi-point VF voltage point 3	0.0%~100.0%	0.0%	★	0xF308
P3-09	V/F slip compensation gain	0.0%~200.0%	0.0%	☆	0xF309
P3-10	V/F overexcitation gain	0~200	64	☆	0xF30A
P3-11	V/F oscillation suppression gain	0~100	Model confirmed	☆	0xF30B
P3-12	Oscillation suppression mode selection	0~4	3	★	0xF30C
P3-13	V/F separated voltage source	0: Digital setting (P3-14) 1: AI 5: Multi-step command 5 6: Simple PLC 7: PID 8: Communication setting Note: 100.0% corresponds to the rated motor voltage	0	☆	0xF30D
P3-14	V/F separation voltage digital setting	0V ~ motor rated voltage	0V	☆	0xF30E
P3-15	Voltage acceleration time for V/F separation	0.0s~1000.0s (Note: It indicates the time from 0V to the rated voltage of the motor)	0.0s	☆	0xF30F

Function code	Name	Setting range	Factory default	Attributes	DEC address
P3-16	Voltage deceleration time for V/F separation	0.0s~1000.0s (Note: It indicates the time from 0V to the rated voltage of the motor)	0.0s	☆	0xF310
P3-17	V/F separation stop mode selection	0: Frequency and voltage are reduced to 0 independently 1: Frequency is reduced after voltage is reduced to 0	0	☆	0xF311
P3-18	Over-current stall current	50~200%	150%	★	0xF312
P3-19	Overcurrent stall enable	0: Invalid 1: Valid	1	★	0xF313
P3-20	Overcurrent stall suppression gain	0~100	20	☆	0xF314
P3-21	Current compensation coefficient of double-speed over-current stall action	50~200%	50	★	0xF315
P3-22	Overvoltage stall action voltage	Three-phase 380-480V models: 330.0V-800.0V Three-phase 200-240V models: 330.0V-800.0V	760	★	0xF316
P3-23	Overvoltage stall enable	0: Invalid 1: Valid	1	★	0xF317
P3-24	Overvoltage stall suppression frequency gain	0~100	30	☆	0xF318
P3-25	Overvoltage stall suppression voltage gain	0~100	30	☆	0xF319
P3-26	Overvoltage stall maximum rising frequency limit	0~50Hz	5Hz	★	0xF31A
P3-27	Settling Compensation Time Constant	0.1~10.0	0.5	☆	0xF31B
P3-28	Automatic Overclock Enable	0: Disable 1: Enable	0	★	0xF31C
P3-29	Minimum generating torque current	10~100	50	☆	0xF31D
P3-30	Maximum torque current	10~100	20	☆	0xF31E
P3-31	Automatic Frequency Boost KP	0~100	50	★	0xF31F
P3-32	Automatic Frequency Boost KI	0~100	50	★	0xF320
P3-33	Online Torque Compensation Gain	80~150	100	☆	0xF321
		P4 Group input termina			
P4-00	DI1 terminal function selection	0: No function 1: Forward running (FWD) 2: Reverse running (REV) 3: Three-wire running control 4: Forward jogging (FJOG) 5: Reverse jogging (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Free stop 9: Fault reset (RESET) 10: Running pause 11: External fault normally open input 12: Multi-segment command terminal 1 13: Multi-segment command terminal 2 14: Multi-segment command terminal 3 15: Multi-segment command terminal 4 16: Acceleration and deceleration time selection terminal 1 17: Acceleration and deceleration time selection terminal 2	01	★	0xF400

Function code	Name	Setting range	Factory default	Attributes	DEC address
P4-01	DI2 terminal function selection	18: Frequency source switching 19: UP/DOWN setting reset (terminal/keyboard) 20: Running command switching terminal 1 21: Acceleration and deceleration prohibited 22: PID pause 23: PLC status reset 24: Wobble frequency pause 25: Counter input 26: Counter reset 27: Length count input 28: Length reset 29: Torque control prohibited 30: PLUSE pulse frequency input (DI5) 31: Reserve 32: Immediate DC braking 33: External fault normally closed input 34: Frequency modification enabled 35: PID action direction reversed 36: External stop terminal 1 37: Switching of running command Terminal 2 38: PID integral pause 39: Switching between frequency source X and preset frequency 40: Switching between frequency source Y and preset frequency 43: Switching between PID parameters 44: User-defined fault 1 45: User-defined fault 2 46: Speed control/torque control switch 47: Emergency stop 48: External stop terminal 2 49: Deceleration DC braking 50: Reset current running time 51: Two-wire and three-wire switching 52: No reversing	04	★	0xF401
P4-02	DI3 terminal function selection		09	★	0xF402
P4-03	DI4 terminal function selection		12	★	0xF403
P4-04	DI5 terminal function selection		13	★	0xF404
P4-10	DI terminal filter time	0.000s~1.000s	0.010s	☆	0xF40A
P4-11	Terminal command mode	0: Two-line type 1 1 : Two-line type 2 2: Three-wire type 1 3: Three-wire type 2	0	★	0xF40B
P4-12	Terminal UP/DOWN change rate	0.001Hz/s~65.535Hz/s	1.00Hz/s	☆	0xF40C
P4-13	AI curve 1 minimum input	0.00V~P4-15	0.00V	☆	0xF40D
P4-14	AI curve 1 minimum input corresponding setting	-100.0%~+100.0%	0.0%	☆	0xF40E
P4-15	AI curve 1 maximum input	P4-13~+10.00V	10.00V	☆	0xF40E
P4-16	AI curve 1 maximum input corresponding setting	-100.0%~+100.0%	100.0%	☆	0xF410
P4-17	AI filter time	0.00s~10.00s	0.10s	☆	0xF411
P4-33	AI curve selection	Bit: AI curve selection 1: Curve 1 (2 points, P4-13~P4-16)	321	☆	0xF421
P4-34	AI below minimum input setting selection	Units: AI is lower than the minimum input setting selection 0: corresponding to the minimum input setting 1: 0.0%	000	☆	0xF422
P4-35	DI1 delay time	0.0s~3600.0s	0.0s	★	0xF423
P4-36	DI2 delay time	0.0s~3600.0s	0.0s	★	0xF424
P4-37	DI3 delay time	0.0s~3600.0s	0.0s	★	0xF425

Function code	Name	Setting range	Factory default	Attributes	DEC address
P4-38	**DI terminal valid mode selection 1**	0: High level active 1: Low level active Units: DI1 Tens: DI2 Hundreds: DI3 Thousands: DI4 Ten thousand's: DI5	00000	★	0xF426
P4-40	**AI input voltage/current mode selection**	Units digit: AI 0: Voltage input 1: Current input	00	★	0xF428
P4-41	**Terminal detection at power-on moment**	0: Level effective 1: Rising edge is valid	0	★	0xF429
		P5 Group output terminal			
P5-02	**Relay function selection (TA-TB-TC)**	0: No output 1: Inverter running 2: Fault output (failure shutdown) 3: Frequency level detection FDT1 output 4: Frequency reached 5: Running at zero speed (no output when stopped) 6: Motor overload pre-alarm 7: Frequency conversion Overload pre-alarm 8: Set count value reached 9: Specified count value reached 11: PLC cycle completed 12: Accumulated running time reached 13: Frequency limited 14: Torque limited 15: Ready to run 17: The upper limit frequency is reached 18: The lower limit frequency is reached (No output during shutdown) 19: Undervoltage state output 20: Communication setting 23: Zero speed running 2 (output even when stopped) 24: Accumulated power-on time is reached 25: Frequency level detection FDT2 Output 26: Frequency 1 reaches the output 27: Frequency 2 reaches the output 28: Current 1 reaches output 29: Current 2 reaches output 30: Timing reaches output 31: AI input overrun 32: Load shedding 33: Reverse running 34: Zero Current state 35: Module temperature reaches 36: Putput current exceeds limit 37: Lower limit frequency reaches (stops and outputs also) 38: Alarm output (continues to run) 40: Current running time reaches 41: Fault output (for free stop fault and under Pressure does not output	2	☆	0xF502
P5-04	**DO output function selection**		0	☆	0xF504
P5-07	**AO output function selection**	0: Running frequency 1: Set frequency 2: Output current 3: Output torque 4: Output power 5: Output voltage 6: PULSE pulse setting (DI5) (100.% corresponds to 100.0kHz) 7: AI 9: Keyboard potentiometer 11: Counter value 12: Communication setting 13: Motor speed	0	☆	0xF507

Function code	Name	Setting range	Factory default	Attributes	DEC address
		14: Output current (100.0% corresponds to 1000.0A) 15: Output voltage (100.0% corresponds to 1000.0V) 16: Motor output torque (actual value: relative to the percentage of the motor)			
P5-11	**AO zero bias coefficient**	-100.0%~+100.0%	0.0%	☆	0xF50B
P5-12	**AO gain**	-10.00~+10.00	1.00	☆	0xF50C
P5-18	**AO output filter time**	0.0s~655.35s	0.0s	☆	0xF512
P5-22	**RELAY output delay time**	0.0s~3600.0s	0.0s	☆	0xF516
P5-24	**DO output delay time**	0.0s~3600.0s	0.0s	☆	0xF518
P5-26	**Output terminal valid state selection**	0: Positive logic 1: Negative logic Tens digit: RELAY Thousands digit: DO	00000	☆	0xF51A
P5-27	**AO output signal selection**	0: Voltage signal 1: Current signal Units digit: AO	00	☆	0xF51B
P6 Group start and stop control					
P6-00	**Start method**	0: Direct start 1: Speed tracking restart	0	☆	0xF600
P6-01	**Speed tracking mode**	0: Start from shutdown frequency 1: Start from operating frequency 2: Start from maximum frequency	0	★	0xF601
P6-02	**Speed tracking speed**	1~100	20	☆	0xF602
P6-03	**Start frequency**	0~P0-08	0.00Hz	☆	0xF603
P6-04	**Starting frequency hold time**	0.0s~100.0s	0.0s	★	0xF604
P6-05	**Starting DC braking current / pre-excitation current**	0%~100%	0%	★	0xF605
P6-06	**Start DC braking time / pre-excitation time**	0.0s~100.0s	0.0s	★	0xF606
P6-07	**Acceleration and deceleration mode**	0: Linear acceleration and deceleration 1: S-curve acceleration and deceleration A 2: S-curve acceleration and deceleration B	0	★	0xF607
P6-08	**S-curve start period time ratio**	0.0%~(100.0%-P6-09)	30.0%	★	0xF608
P6-09	**S-curve end time ratio**	0.0%~(100.0%-P6-08)	30.0%	☆	0xF609
P6-10	**Shutdown mode**	0: Decelerate to stop 1: Free parking	0	☆	0xF60A
P6-11	**DC braking starting frequency at shutdown**	0.00Hz~maximum frequency	0.00Hz	☆	0xF60B
P6-12	**DC braking waiting time for shutdown**	0.0s~100.0s	0.0s	☆	0xF60C
P6-13	**Stop DC brake current**	0%~100%	0%	☆	0xF60D
P6-14	**Stop DC braking time**	0.0s~100.0s	0.0s	☆	0xF60E
P6-15	**Brake usage**	0%~100%	100%	☆	0xF60F
P6-16	**Speed Tracking Closed-Loop Current KP**	1~60000	2200	☆	0xF610
P6-17	**Speed Tracking Closed-Loop Current KI**	1~60000	1300	☆	0xF611
P6-18	**Speed tracking closed-loop current magnitude**	30~200	100	★	0xF612

Function code	Name	Setting range	Factory default	Attributes	DEC address
P6-19	Speed tracking closed-loop current lower limit	10~100	30	★	0xF613
P6-20	Rise time of speed tracking voltage	0.5~3.0	1.1	★	0xF614
P6-21	Demagnetization time	0.00~5.00	0.5	☆	0xF615
P7 Group keyboard and display					
P7-01	MF.K key function selection	0: MF.K is invalid 1: Switch between operation panel command channel and remote command channel (terminal command channel or communication command channel) 2: Forward and reverse switching 3: Forward jogging 4: Reverse jogging	0	☆	0xF701
P7-02	STOP/RST key function	0: Only in the keyboard operation mode, the stop function of the **STOP** key is valid 1: In any operation mode, the stop function of the **STOP** key is valid	1	☆	0xF702
P7-03	LED running display parameter 1	0000~FFFF Bit00: Operating frequency 1 (Hz) Bit01: Setting frequency (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (kW) Bit06: Output Torque (%) Bit07: X input state Bit08: Y output state Bit09: AI voltage (V) Bit11: Keyboard potentiometer voltage (V) Bit12: Count value Bit14: Load speed display Bit15: PID setting (water supply macro display pressure value)	001F	☆	0xF703
P7-04	LED running display parameter 2	0000~FFFF Bit00: PID feedback (water supply macro display pressure value) Bit01: PLC stage Bit02: PLUSE input pulse frequency (kHz) Bit03: Running frequency 2 (Hz) Bit04: Remaining running time Bit05: AI voltage before correction (V) Bit06: Voltage before AI2 correction (V) Bit07: Keyboard potentiometer voltage before calibration (V) Bit08: Line speed Bit09: Current power-on time (Hour) Bit10: Current running time (Min) Bit11: PLUSE input pulse frequency (Hz) Bit12: Communication setting value Bit13:Reserve Bit14: Main frequency X display (Hz) Bit15: Auxiliary frequency Y display (Hz)	0000	☆	0xF704
P7-05	LED shutdown display parameters	0000~FFFF Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02: X input state Bit03: Y output state Bit04: AI voltage (V) Bit07: Count value Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PID setting(pressure)	0033	☆	0xF705

Function code	Name	Setting range	Factory default	Attributes	DEC address
		Bit12: PLUSE input pulse frequency (kHz) Bit13: PID feedback (pressure)			
P7-06	Load speed display factor	0.0001~6.5000	1.0000	☆	0xF706
P7-07	Inverter module heat sink temperature	0.0℃ ~ 100.0℃	-	●	0xF707
P7-09	Cumulative running time	0h~65535h	-	☆	0xF708
P7-10	Performance version number	-	-	●	0xF709
P7-11	Function version number	-	-	●	0xF70A
P7-12	Load speed display decimal places	Units: Number of decimal places for U0-14 0: 0 decimal places 1: 1 decimal place 2: 2 decimal places Tens: Number of decimal places for U0-19/U0-29 1: 1 decimal place 2: 2 decimal places	21	☆	0xF70B
P7-13	Cumulative power-on time	0~65535h	-	●	0xF70C
P7-14	Cumulative power consumption	0~65535°	-	●	0xF70D
P7-17	Nixie tube 2 stop monitoring selection **(Requires configuring an even-numbered seven-segment keyboard)**	00~99 (Corresponding to group U0 parameter number)	02	☆	0xF710
P7-18	Nixie tube 2 running monitoring selection **(Requires configuring an even-numbered seven-segment keyboard)**	00~99 (Corresponding to group U0 parameter number)	04	☆	0xF711
P7-19	Keyboard Knob Precision Selection	0~6 0: Default method 1: 0.1 2: 0.5 3: 1 4: 3 5: 5 6: 10	0	●	0xF712
		P8 Group auxiliary function			
P8-00	Jog running frequency	0.00Hz~maximum frequency	6.00Hz	☆	0xF800
P8-01	Jog acceleration time	0.0s~6500.0s	20.0s	☆	0xF801
P8-02	Jog deceleration time	0.0s~6500.0s	20.0s	☆	0xF802
P8-03	Acceleration time 2	0.0s~6500.0s	Model confirmed	☆	0xF803
P8-04	Deceleration time 2	0.0s~6500.0s	Model confirmed	☆	0xF804
P8-05	Acceleration time 3	0.0s~6500.0s	Model confirmed	☆	0xF805
P8-06	Deceleration time 3	0.0s~6500.0s	Model confirmed	☆	0xF806
P8-07	Acceleration time 4	0.0s~6500.0s	Model confirmed	☆	0xF807
P8-08	Deceleration time 4	0.0s~6500.0s	Model confirmed	☆	0xF808
P8-09	Jump frequency 1	0.00Hz~maximum frequency	0.00Hz	☆	0xF809
P8-10	Jump frequency 2	0.00Hz~maximum frequency	0.00Hz	☆	0xF80A

Function code	Name	Setting range	Factory default	Attributes	DEC address
P8-11	Jump frequency amplitude	0.00Hz~maximum frequency	0.00Hz	☆	0xF80B
P8-12	Forward and reverse dead time	0.0~3000.0s	0.0s	☆	0xF80C
P8-13	Reverse frequency prohibited	0: Invalid 1: Valid	0	☆	0xF80D
P8-15	Droop control	0.00Hz~10.00Hz	0.00Hz	☆	0xF80F
P8-16	Set the cumulative power-on arrival time	0h~65000h	0h	☆	0xF810
P8-17	Set the cumulative running arrival time	0h~65000h	0h	☆	0xF811
P8-18	Boot Protection Selection	0: No protection 1: Protection	0	☆	0xF812
P8-19	Frequency detection value (FDT1)	0.00Hz~maximum frequency	50.00Hz	☆	0xF813
P8-20	Frequency detection hysteresis value	0.0%~100.0%(FDT1 level)	5.0%	☆	0xF814
P8-21	Frequency arrival detection width	0.0%~100.0% (maximum frequency)	0.0%	☆	0xF815
P8-22	Is the jump frequency valid during acceleration and deceleration	0: Invalid 1: Valid	0	☆	0xF816
P8-25	Acceleration time 1 with Acceleration time 2 switching frequency point	0.00Hz~maximum frequency	0.00Hz	☆	0xF819
P8-26	Deceleration time 1 and Deceleration time 2 switching frequency point	0.00Hz~maximum frequency	0.00Hz	☆	0xF81A
P8-27	Terminal jog priority	0: Invalid 1: Valid	0	☆	0xF81B
P8-28	Frequency detection value (FDT2)	0.00Hz~maximum frequency	50.00Hz	☆	0xF81C
P8-29	Frequency detection hysteresis value	0.0%~100.0% (FDT2 level)	5.0%	☆	0xF81D
P8-30	Arbitrary arrival frequency detection value 1	0.00Hz~maximum frequency	50.00Hz	☆	0xF81E
P8-31	Arbitrary arrival frequency detection width 1	0.0%~100.0% (maximum frequency)	0.0%	☆	0xF81F
P8-32	Arbitrary arrival frequency detection value 2	0.00Hz~maximum frequency	50.00Hz	☆	0xF820
P8-33	Arbitrary arrival frequency detection width 2	0.0%~100.0% (maximum frequency)	0.0%	☆	0xF821
P8-34	Zero current detection level	0.0%~300.0%	5.0%	☆	0xF822
P8-35	Zero current detection delay time	0.01s~600.00s	0.10s	☆	0xF823
P8-36	Output current exceeds limit	0.0% (no detection)	200.0%	☆	0xF824

Function code	Name	Setting range	Factory default	Attributes	DEC address
P8-37	Output current over-limit detection delay time	0.00s~600.00s	0.00s	☆	0xF825
P8-38	Arbitrary arrival current 1	0.0%~300.0% (motor rated current)	100.0%	☆	0xF826
P8-39	Arbitrary arrival current 1 width	0.0%~300.0% (motor rated current)	0.0%	☆	0xF827
P8-40	Arbitrary arrival current 2	0.0%~300.0% (motor rated current)	100.0%	☆	0xF828
P8-41	Arbitrary arrival current 2 width	0.0%~300.0% (motor rated current)	0.0%	☆	0xF829
P8-42	Timing function selection	0: Invalid 1: Valid	0	☆	0xF82A
P8-43	Timing run time selection	0: P8-44 setting 1: AI 3: keyboard potentiometer Note: Analog input range corresponds to P8-44	0	☆	0xF82B
P8-44	Timing run time	0.0Min~6500.0Min	0.0Min	☆	0xF82C
P8-45	AI input voltage protection value lower limit	0.00V~P8-46	3.10V	☆	0xF82D
P8-46	AI input voltage protection upper limit	P8-45~10.00V	6.80V	☆	0xF82E
P8-47	Module temperature reaches	0℃ ~100℃	75 ℃	☆	0xF82F
P8-48	Fan control	0: The fan turns when running 1: The fan keeps turning	0	☆	0xF830
P8-49	Wakeup frequency	Sleep frequency (P8-51) ~ maximum frequency (P0-10)	0.00Hz	☆	0xF831
P8-50	Wake up delay time	0.0s~6500.0s	0.0s	☆	0xF832
P8-51	Sleep frequency	0.00Hz~wake-up frequency (P8-49)	0.00Hz	☆	0xF833
P8-52	Sleep delay time	0.0s~6500.0s	0.0s	☆	0xF834
P8-53	Arrival time setting for this run	0.0Min~6500.0Min	0.0Min	☆	0xF835
P8-54	Output power calibration coefficient	0~6553.5	Model confirmed	☆	0xF836
		P9 Group failure and protection			
P9-00	Motor overload protection selection	0: Disable 1: Enable	1	☆	0xF900
P9-01	Motor overload protection gain	0.20~10.00	1.00	☆	0xF901
P9-02	Motor overload warning coefficient	50%~100%	80%	☆	0xF902
P9-03	Overvoltage stall gain	0~100	30	☆	0xF903
P9-04	Overvoltage stall action voltage	200.0~2000.0V 220V: 380V 380V: 760V	Model confirmed	☆	0xF904
P9-07	Short-circuit protection selection	Units digit: Short-circuit protection selection for power-up 0: Disabled 1: Enabled Tens digit: Short-circuit protection selection for power-up 0: Disabled 1: Enabled	01	☆	0xF907
P9-08	Dynamic braking action voltage	200.0~2000.0V	220V: 360V 380V: 690V	☆	0xF908
P9-09	Fault automatic reset times	0~20	0	☆	0xF909

Function code	Name	Setting range	Factory default	Attributes	DEC address
P9-10	**DO action selection during fault automatic reset**	0: No action 1: Action	1	☆	0xF90A
P9-11	**Fault automatic reset interval time**	0.1s~100.0s	6.0s	☆	0xF90B
P9-12	**Input phase loss\contactor pickup protection selection**	Units digit: Input phase loss protection selection 0: Disable 1: Enable Tens digit: Contactor pickup protection selection 0: Disable 1: Enable	11	☆	0xF90C
P9-13	**Output phase loss protection selection**	Units digit: Output phase loss protection selection 0: Disable 1: Enable Tens digit: Output phase loss protection selection before operation 0: Disable 1: Enable	01	☆	0xF90D
P9-14	**First failure type**	0: No fault 1: Reserved 2: Acceleration overcurrent 3: Deceleration overcurrent 4: Constant speed overcurrent 5: Acceleration overvoltage 6: Deceleration overvoltage 7: Constant speed overvoltage 9: Undervoltage 10: Inverter overload 11: Motor overload 12: Input phase loss 13: Output phase loss 14: Module overheating 15: External fault 16: Communication abnormality 17: Reserved 18: Current detection abnormality 19: Motor tuning abnormality 20: Reserved 21: Parameter reading and writing abnormality 22: Reserved 23: Motor short circuit to ground 26: Running time reached 27: User-defined fault 1 28: User-defined fault 2 29: Power- on time reached 30: Load off 31: PID feedback lost during running 32: PID low limit fault during operation 33: PID high limit fault during operation 34: Water shortage fault during operation 40: Fast current limit overtime 41: Switch motor during operation 42: Excessive speed deviation 43: Motor overspeed Lo55: Keyboard communication timeout fault	-	●	0xF90E
P9-15	**Second failure type**		-	●	0xF90F
P9-16	**Third (most recent) failure type**		--	●	0xF910
P9-17	**Frequency of the third (most recent) failure**	-	-	●	0xF911
P9-18	**Current at the third (most recent) fault**	-	-	●	0xF912
P9-19	**Bus voltage at the third (most recent) fault**	-	-	●	0xF913
P9-20	**Input terminal status at the third (most recent) fault**	-	-	●	0xF914

Function code	Name	Setting range	Factory default	Attributes	DEC address
P9-21	Output terminal status at the third (most recent) fault	-	-	●	0xF915
P9-22	The third (most recent) fault occurred.	-	-	●	0xF916
P9-23	Power-on time at the third (most recent) fault	-	-	●	0xF917
P9-24	Running time at the third (most recent) failure	-	-	●	0xF918
P9-27	Second fault frequency	-	-	●	0xF91B
P9-28	Second fault current	-	-	●	0xF91C
P9-29	Bus voltage at second fault	-	-	●	0xF91D
P9-30	Input terminal status at the second fault	-	-	●	0xF91E
P9-31	Output terminal status at the second fault	-	-	●	0xF91F
P9-32	Inverter status at the second fault	-	-	●	0xF920
P9-33	Power-on time at the second fault	-	-	●	0xF921
P9-34	Running time at the second fault	-	-	●	0xF922
P9-37	Frequency at first Fault	-	-	●	0xF925
P9-38	Current at the first Fault	-	-	●	0xF926
P9-39	Bus voltage at first fault	-	-	●	0xF927
P9-40	Input terminal status at the first fault	-	-	●	0xF928
P9-41	Output terminal status at the first fault	-	-	●	0xF929
P9-42	Inverter status at the first fault	-	-	●	0xF92A
P9-43	Power-on time at first failure	-	-	●	0xF92B
P9-44	Uptime to first failure	-	-	●	0xF92C
P9-47	Fault protection action selection 1	Units digit: Motor overload (Err11) Tens digit: Input phase loss (Err12) Hundreds digit: Output phase loss (Err13) Thousands: External fault (Err15) Ten thousandths: Communication abnormality (Err16) 0: Coast to stop 1: Stop according to the stop method 2: Continue running	00000	☆	0xF92F
P9-48	Fault protection action selection 2	Units digit: Reserved Tens digit: Reserved Hundreds digit: Inverter overload (Err10) 0: Coast to stop 1: Derating operation Thousands digit: Reserved Ten thousand digit: Run time reached (Err26) 0: Coast to stop 1: Stop according to the stop method	00000	☆	0xF930
P9-49	Fault protection action selection 3	Units digit: User-defined fault 1 (Err 27) 0: Coast to stop 1: Stop according to the stop method	100.0%	☆	0xF931

Function code	Name	Setting range	Factory default	Attributes	DEC address
		2: Continue to run Tens digit: User-defined fault 2 (Err 28) 0: Coast to stop 1: Stop according to the stop method 2: Continue to run Hundreds: Power-on time reached (Err 29) 0: Coast to stop 1: Stop according to the stop method 2: Continue to run Thousands digit: Load loss (Err 30) 0: Coast to stop 1: Decelerate to stop 2: Jump to 7% of the motor's rated frequency and continue to run. Automatically return to the set frequency if there is no load loss Ten thousandths digit: PID feedback loss during operation (Err 31) 0: Coast to stop 1: Stop according to the stop method 2: Continue to run			
P9-54	**Continue running frequency selection during fault**	0: Run at the current operating frequency 1: Run at the set frequency 2: Run at the upper frequency limit 3: Run at the lower frequency limit 4: Run at the abnormal backup frequency	0	☆	0xF936
P9-55	**Abnormal backup frequency**	000.0%~100.0% (100.0% corresponds to the maximum frequency P0-10)	100.0%	☆	0xF937
P9-59	**Instantaneous no-power-off action selection**	0: Disable 1: Decelerate 2: Decelerate to stop	0	☆	0xF93B
P9-60	**Momentary power failure pause judgment voltage**	P9-62~100.0%	85.0%	☆	0xF93C
P9-61	**Instantaneous non-stop voltage recovery judgment time**	0.000s~100.00s	0.50s	☆	0xF93D
P9-62	**Instantaneous non-stop power-off action judgment voltage**	60.0%~100.0% (standard bus voltage)	80.0%	☆	0xF93E
P9-63	**Load Loss Protection Selection**	0: Invalid 1: Valid	0	☆	0xF93F
P9-64	**Load drop detection level**	0.000~100.0%	10.0%	☆	0xF940
P9-65	**Load drop detection time**	0.00~60.0s	1.0s	☆	0xF941
P9-67	**Overspeed detection value**	0.0~50.0	20.00%	☆	0xF943
P9-68	**Overspeed detection time**	0.0s: No detection 0.0~60.0s	1.0s	☆	0xF944
P9-69	**Speed deviation too large detection value**	0.0%~50.0% (maximum frequency)	20.00%	☆	0xF945
P9-70	**Excessive speed deviation detection time**	0.0s: No detection 0.0~60.0s	5.0s	☆	0xF946
P9-71	**Instantaneous stop without stopping gain Kp**	0~100	40	☆	0xF947
P9-72	**Instantaneous power failure integral coefficient Ki**	0~100	30	☆	0xF948

Function code	Name	Setting range	Factory default	Attributes	DEC address
P9-73	Instantaneous stop and non-stop action deceleration time	0~300.0s	20.0s	★	0xF949
		PA Group PID function			
PA-00	PID given source	0: PA-01 setting 1: AI 3: Keypad potentiometer 4: PLUSE input pulse setting (DI5) 5: Communication setting 6: Multi-step command setting 7: Pressure given by water supply group AA-01	0	☆	0xFA00
PA-01	PID value given	0.0~100.0%	50.0%	☆	0xFA01
PA-02	PID feedback source	0: AI 2: Keypad potentiometer 4: PLUSE input pulse setting (DI5) 5: Communication setting	0	☆	0xFA02
PA-03	PID action direction	0: Positive action 1: Reverse action	0	☆	0xFA03
PA-04	PID given feedback range	0~65535	1000	☆	0xFA04
PA-05	Proportional gain KP1	0.0~100.0	20.0	☆	0xFA05
PA-06	Integration time Ti1	0.01~10.00s	2.00s	☆	0xFA06
PA-07	Derivative time Td1	0.000~10.000s	0.000s	☆	0xFA07
PA-08	PID inversion cut-off frequency	0.00~maximum frequency	2.00Hz	☆	0xFA08
PA-09	PID deviation limit	0.0~100.0%	0.0%	☆	0xFA09
PA-10	PID differential limiter	0.00~100.00%	0.10%	☆	0xFA0A
PA-11	PID given change time	0.00~650.00s	0.00s	☆	0xFA0B
PA-12	PID feedback filter time	0.00~60.00s	0.00s	☆	0xFA0C
PA-13	PID output filter time	0.00~60.00s	0.00s	☆	0xFA0D
PA-15	Proportional gain KP2	0.0~100.0	20.0	☆	0xFA0E
PA-16	Integration time Ti2	0.01s~10.00s	2.00s	☆	0xFA0F
PA-17	Derivative time Td2	0.000s~10.000s	0.000s	☆	0xFA10
PA-18	PID parameter switching condition	0: No switching 1: Switch via DI terminal 2: Automatically switch based on deviation	0	☆	0xFA11
PA-19	PID parameter switching deviation 1	0.0%~PA-20	20.0%	☆	0xFA12
PA-20	PID parameter switching deviation 2	PA-19~100.0%	80.0%	☆	0xFA13
PA-21	PID initial value	0.0~100.0%	0.0%	☆	0xFA14
PA-22	PID initial value hold time	0.00~650.00s	0.00s	☆	0xFA15
PA-23	The maximum positive value of the two output deviations	0.00~100.00%	1.00%	☆	0xFA16
PA-24	The reverse maximum value of the two output deviations	0.00~100.00%	1.00%	☆	0xFA17
PA-25	The maximum value of the two output deviations in opposite directions	Units: Integral Separation 0: Ineffective 1: Effective Tens: Whether to stop accumulating after reaching the output limitIntegral 0: Continue accumulating 1: Stop accumulating	00	☆	0xFA18

Function code	Name	Setting range	Factory default	Attributes	DEC address
PA-26	PID feedback loss detection value	0.0%: No feedback loss detected 0.1-100.0%	0.0%	☆	0xFA19
PA-27	PID feedback loss detection time	0.0s~20.0s	0.0s	☆	0xFA1A
PA-28	PID stop operation	0: No calculation during shutdown 1: Calculation during shutdown	1	☆	0xFA1B
Pb Group swing frequency, fixed length and counting					
Pb-05	Set length	0~65535m	1000m	☆	0xFB05
Pb-06	Actual length	0~65535m	0m	☆	0xFB06
Pb-07	Pulses per meter	0.1~6553.5	100.0	☆	0xFB07
Pb-08	Set count value	1~65535	1000	☆	0xFB08
Pb-09	Specify count value	1~65535	1000	☆	0xFB09
PC Group multi-segment instructions and simple PLC					
PC-00	Multi-segment instruction 0	-100.0%~100.0%	0.0%	☆	0xFC00
PC-01	Multi-segment instruction 1	-100.0%~100.0%	0.0%	☆	0xFC01
PC-02	Multi-segment instruction 2	-100.0%~100.0%	0.0%	☆	0xFC02
PC-03	Multi-stage instruction 3	-100.0%~100.0%	0.0%	☆	0xFC03
PC-04	Multi-segment instruction 4	-100.0%~100.0%	0.0%	☆	0xFC04
PC-05	Multi-segment instruction 5	-100.0%~100.0%	0.0%	☆	0xFC05
PC-06	Multi-segment instruction 6	-100.0%~100.0%	0.0%	☆	0xFC06
PC-07	Multi-segment instruction 7	-100.0%~100.0%	0.0%	☆	0xFC07
PC-08	Multi-segment instructions 8	-100.0%~100.0%	0.0%	☆	0xFC08
PC-09	Multi-segment instructions 9	-100.0%~100.0%	0.0%	☆	0xFC09
PC-10	Multi-segment instructions 10	-100.0%~100.0%	0.0%	☆	0xFC0A
PC-11	Multi-segment instructions 11	-100.0%~100.0%	0.0%	☆	0xFC0B
PC-12	Multi-segment instruction 12	-100.0%~100.0%	0.0%	☆	0xFC0C
PC-13	Multi-stage instruction 13	-100.0%~100.0%	0.0%	☆	0xFC0D
PC-14	Multi-segment instructions 14	-100.0%~100.0%	0.0%	☆	0xFC0E
PC-15	Multi-segment instruction 15	-100.0%~100.0%	0.0%	☆	0xFC0F
PC-16	Simple PLC operation mode	0: Shut down at the end of a single run 1: Hold final value at the end of a single run 2: Continuously loop	0	☆	0xFC10
PC-17	Easy PLC power-down memory selection	Units digit: Power-off memory selection 0: No memory upon power-off 1: Memory upon power-off Tens digit: Shutdown memory selection 0: No memory upon shutdown 1: Memory upon shutdown	00	☆	0xFC11
PC-18	Simple PLC 0 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC12
PC-19	Simple PLC 0 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC13
PC-20	Simple PLC 1 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC14

Function code	Name	Setting range	Factory default	Attributes	DEC address
PC-21	Simple PLC 1 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC15
PC-22	Simple PLC 2-stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC16
PC-23	Simple PLC 2 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC17
PC-24	Simple PLC 3 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC18
PC-25	Simple PLC 3 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC19
PC-26	Simple PLC 4 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC1A
PC-27	Simple PLC 4 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC1B
PC-28	Simple PLC 5 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC1C
PC-29	Simple PLC 5 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC1D
PC-30	Simple PLC 6 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC1E
PC-31	Simple PLC 6 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC1F
PC-32	Simple PLC 7 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC20
PC-33	Simple PLC 7 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC21
PC-34	Simple PLC 8 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC22
PC-35	Simple PLC 8 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC23
PC-36	Simple PLC 9 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC24
PC-37	Simple PLC 9 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC25
PC-38	Simple PLC 10 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC26
PC-39	Simple PLC 10 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC27
PC-40	Simple PLC 11 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC28

Function code	Name	Setting range	Factory default	Attributes	DEC address
PC-41	Simple PLC 11 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC29
PC-42	Simple PLC 12 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC2A
PC-43	Simple PLC 12 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC2B
PC-44	Simple PLC 13 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC2C
PC-45	Simple PLC 13 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC2D
PC-46	Simple PLC 14 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC2E
PC-47	Simple PLC 14 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC2F
PC-48	Simple PLC 15 stage running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	☆	0xFC30
PC-49	Simple PLC 15 stage Acceleration and deceleration time selection	0~3	0	☆	0xFC31
PC-50	Simple PLC operation time unit	0: s (second) 1: h (hour)	0	☆	0xFC32
PC-51	Multi-segment instruction 0 given mode	0: Function code PC-00 setting 1: AI 3: Keyboard potentiometer 4: PULSE input pulse (DI5) 5: PID 6: Preset frequency (P0-08) setting, UP/DOWN adjustable	0	☆	0xFC33
Pd Group communication parameters					
Pd-00	Baud rate	0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS	5	☆	0xFD00
Pd-01	Data format	0: No parity (8-N-2) 1: Even parity (8-E-1) 2: Odd parity (8-O-1) 3: No parity (8-N-1)	0	☆	0xFD01
Pd-02	Local address	1~247	1	☆	0xFD02
Pd-03	Response delay	0~20ms	2	☆	0xFD03
Pd-04	Communication timeout	0.0(Invalid), 0.1s~60.0s	0.0	☆	0xFD04
Pd-05	Data transmission format selection	1: Standard MODBUS protocol	31	☆	0xFD05
Pd-06	Communication reading current resolution	0: 0.01A 1: 0.1A	0	☆	0xFD06
PP Group user password					
PP-00	User password	0~65535	00000	☆	0x1F00
PP-01	Parameter initialization	0: No operation 01: Restore factory parameters, excluding motor parameters 02: Clear record information	000	★	0x1F01

Function code	Name	Setting range	Factory default	Attributes	DEC address
PP-02	Function parameter group display selection	Units digit: Display selection for Group U Tens digit: Display selection for Group A 0: No display 1: Display	11	★	0x1F02
PP-04	Function code modification properties	0: Can be modified 1: Cannot be modified	0	☆	0x1F04
PP-05	G/P model modification	1: G type 2: P type	1	★	0x1F05
Group A0 torque ccontrol parameters					
A0-00	Speed/torque selection	0: Speed control 1: Torque control	0	☆	0xA000
A0-01	Torque setting source	0: A0-03 setting 1: AI setting 3: keyboard potentiometer 4: HDI high-speed pulse setting 5: Communication setting Note: 1-7 full scale corresponds to the A0-03 digital setting	0	★	0xA001
A0-03	Torque digital setting	-200.0%~200.0%	150%	☆	0xA003
A0-05	Torque positive maximum frequency	0.00Hz~maximum frequency (P0-10)	50.00 Hz	☆	0xA005
A0-06	Torque reverse maximum frequency	0.00Hz~maximum frequency (P0-10)	50.00 Hz	☆	0xA006
A0-07	Torque acceleration time	0~655.35s	0.00s	☆	0xA007
A0-08	Torque deceleration time	0~655.35s	0.00s	☆	0xA008
Group A2 second motor parameter 1					
A2-00	Motor Type Selection	0: Ordinary asynchronous motor 2: Permanent magnet synchronous motor	0	★	0xA200
A2-01	Motor rated power	0.1~1000kW	Model confirmed	★	0xA201
A2-02	Motor rated voltage	1~2000V	Model confirmed	★	0xA202
A2-03	Motor rated current	0.01~655.35A (inverter power≤55 kW)	Model confirmed	★	0xA203
A2-04	Motor rated frequency	0.01Hz~maximum frequency	Model confirmed	★	0xA204
A2-05	Motor rated speed	1~65535rpm	Model confirmed	★	0xA205
A2-06	Asynchronous motor stator resistance	0.001Ω ~ 65.535Ω (inverter power ≤55 kW)	Model confirmed	★	0xA206
A2-07	Asynchronous motor rotor resistance	0.001Ω ~ 65.535Ω (inverter power ≤55 kW)	Model confirmed	★	0xA207
A2-08	Asynchronous motor leakage inductance	0.01mH ~ 655.35mH (inverter power ≤55 kW)	Model confirmed	★	0xA208
A2-09	Mutual inductance reactance of asynchronous motor	0.1mH ~ 6553.5mH (inverter power ≤55 kW)	Model confirmed	★	0xA209
A2-10	Asynchronous motor no-load current	0.01~P1-03	Tuning parameters	★	0xA2A
A2-16	Synchronous motor stator resistance	0.001Ω to 65.535Ω (Inverter power ≤ 55kW)	Tuning parameters	★	0xA210
A2-17	Synchronous motor D-axis inductance	0.01mH to 655.35mH (Inverter power ≤ 55kW)	Tuning parameters	★	0xA211
A2-18	Synchronous motor Q-axis inductance	0.01mH to 655.35mH (Inverter power ≤ 55kW)	Tuning parameters	★	0xA212
A2-20	Synchronous motor back electromotive force	0.0V~6553.5V	Tuning parameters	★	0xA214

Function code	Name	Setting range	Factory default	Attributes	DEC address
A2-37	Tuning selection	00: No operation 01: Partial tuning of asynchronous motor parameters at standstill 02: Complete dynamic tuning of asynchronous motor parameters 11: On-load tuning of synchronous motor parameters 12: No-load tuning of synchronous motor parameters	0	★	0xA225
A2-38	Speed loop proportional gain 1	1~100	30	☆	0xA226
A2-39	Speed loop integration time 1	0.01~10.00s	0.50s	☆	0xA227
A2-40	Switching frequency 1	0.00~P2-05	5.00Hz	☆	0xA228
A2-41	Speed loop proportional gain 2	1~100	20	☆	0xA229
A2-42	Speed loop integration time 2	0.01s~10.00s	1.00s	☆	0xA22A
A2-43	Switching frequency 2	P2-02~maximum frequency	10.00Hz	☆	0xA22B
A2-44	Asynchronous motor vector control slip gain	50~200%	150%	☆	0xA22C
A2-45	Asynchronous motor speed loop filter time constant	0.000~0.100s	0.000s	☆	0xA22D
A2-46	Overexcitation gain of asynchronous motor vector control	0~200	64	☆	0xA22E
A2-47	Torque upper limit source in speed control mode	0: Function code P2-10 setting 1: AI 3: Keyboard potentiometer 4: PULSE pulse setting(DI5) 5: Communication given The full range of options 1-7 corresponds to P2-10	0	☆	0xA22F
A2-48	In speed control mode Torque upper limit digital setting	0.0% ~ 200.0%	150.0%	☆	0xA230
A2-49	Torque command selection in speed control mode (power generation)	0: Function code P2-12 setting (does not distinguish between motoring and generating) 1: AI 3: Keypad potentiometer 4: PULSE setting 5: Communication setting 8: Function code P2-12 setting The full scale of options 1-7 is affected by the operating range of P2-10.	0	☆	0xA231
A2-50	Digital setting of torque upper limit in speed control mode (power generation)	0.0%~200.0%	150.0%	☆	0xA232
A2-51	M-axis current loop KP	0~60000	2000	☆	0xA233
A2-52	M-axis current loop KI	0~60000	1300	☆	0xA234
A2-53	T-axis current loop KP	0~60000	2000	☆	0xA235
A2-54	T-axis current loop KI	0~60000	1300	☆	0xA236
A2-55	Asynchronous motor speed loop integral properties	Units digit: Integral separation 0: Invalid 1: Valid	0	☆	0xA237

Function code	Name	Setting range	Factory default	Attributes	DEC address
A2-60	The upper limit of power generation voltage is effective	0: No limit 1: Limit		☆	0xA23C
A2-61	Generating power upper limit	0%-200.0%	Model confirmed	☆	0xA23D
A2-62	Synchronous motor field weakening mode	0,1,2	1	★	0xA23E
A2-63	Synchronous motor field weakening gain	1~50	5	☆	0xA23F
A2-67	Second motor control method and Selection of Motor Types	0: SVC - Sensorless Vector Control 2: V/F - Open-loop Speed Control	02	★	0xA243
A2-68	Second motor acceleration and deceleration time selection	0: Same as motor 1 2: Acceleration time 2 3: Acceleration time 3 4: Acceleration time 4	0	☆	0xA244
A2-69	Second motor torque boost	0.0%: Automatic torque boost 0.1%~30.0%	Model confirmed	☆	0xA245
A2-71	Second motor oscillation suppression gain	0~100	40	☆	0xA247
Group A3 second motor parameter 2					
A3-00	Synchronous motor output voltage upper limit margin	0%~50%	5%	☆	0xA300
A3-01	Synchronous motor initial position angle detection current	50%~180%	80%	☆	0xA301
A3-02	Synchronous motor initial position angle detection	0: Test at every startup; 1: Do not test; 2: Test at the first startup after power-up;	0	☆	0xA302
A3-03	Synchronous motor speed loop mode selection	0,1	0	☆	0xA303
A3-04	Synchronous motor saliency ratio adjustment gain	50~500	100	☆	0xA304
A3-05	Maximum torque current ratio control	0,1	0	☆	0xA305
A3-07	Current loop KP during tuning	1~100	6	☆	0xA307
A3-08	Current loop KI during tuning	1~100	6	☆	0xA308
A3-09	Z signal correction	0,1	1	☆	0xA309
A3-10	Synchronous motor SVC speed filter level	10~1000	100	☆	0xA30A
A3-11	Synchronous motor SVC speed estimation proportional gain	5~200	40	☆	0xA30B
A3-12	Synchronous motor SVC speed estimation integral gain	5~200	30	☆	0xA30C
A3-13	Synchronous motor SVC initial excitation current limit	30%~80%	30%	☆	0xA30D
A3-14	Low-speed carrier frequency	0.8K~P0-15	1.5k	☆	0xA30E

Function code	Name	Setting range	Factory default	Attributes	DEC address
A3-18	SVC low frequency braking current	0~80%	50%	☆	0xA322
A3-19	Synchronous machine SVC speed tracking	0~1	0	☆	0xA323
A3-20	Zero servo enable	0: Off 1: On	0	☆	0xA324
A3-21	Switching frequency	0.00~P2-02	0.30Hz	☆	0xA325
A3-22	Zero servo speed loop proportional gain	1~100	10	☆	0xA326
A3-23	Zero servo speed loop integral time	0.01s~10.00s	0.50s	☆	0xA327
A3-24	Reverse is prohibited during shutdown	0~1	0	☆	0xA328
A3-25	Stop angle	0.0o~10.0°	0.8°	☆	0xA329
A3-26	Online parameter identification	0: Off 1: Tune before power-on first run 2: Tune before run	0	☆	0xA32A
A3-27	Online back-EMF identification	0: Off 1: On	0	☆	0xA32B
A3-28	SVC initial position compensation angle	0.0°~359.9°	0.0	☆	0xA32C
Group A5 control optimization parameters					
A5-00	DPWM switching upper limit frequency	5.0Hz~P0-10	8.00Hz	☆	0xA500
A5-01	PWM modulation method	0: Asynchronous modulation 1: Synchronous modulation	0	☆	0xA501
A5-02	Dead zone compensation mode selection	0: No compensation 1: Compensation mode 1	1	☆	0xA502
A5-03	Random PWM Depth	0: Random PWM invalid 1 ~ 10: PWM carrier frequency random depth	0	☆	0xA503
A5-04	Fast current limit enable	0: Disable 1: Enable	1	☆	0xA504
A5-05	Overmodulation coefficient	100~105	105	★	0xA505
A5-06	Undervoltage point setting	100.0~2000.0V	Model confirmed	☆	0xA506
A5-08	Dead time adjustment	100~200%	150%	☆	0xA508
A5-09	Overvoltage point setting	200.0~2500.0V	Model confirmed	★	0xA509
Group AA intelligent constant pressure parameter supply					
AA-00	Pressure Sensor Range	0~99.99Bar (kg)	10.00	☆	0xAA00
AA-01	Target pressure value given	0~99.99Bar (kg)	5.00	☆	0xAA01
AA-02	Sleep pressure deviation	0.0~Wake-up pressure deviation value (AA-06)	0.1	☆	0xAA02
AA-03	Sleep rate	1~10 Hz/s	2	☆	0xAA03
AA-04	Sleep frequency	0.00~maximum frequency (P0-10)	2.00	☆	0xAA04
AA-05	Holding time	0.0~999.9s	10.0	☆	0xAA05
AA-06	Arousal pressure bias	Sleep pressure deviation value (AA-02) ~ Target pressure (AA-01)	0.3	☆	0xAA06
AA-07	Wake-up delay time	0.0~999.9s	3.0	☆	0xAA07
AA-08	Operating time at rest frequency	0.0~100.0s	1.0	☆	0xAA08
AA-09	Water shortage detection method selection	00: No detection 1: Current detection 2: Pressure detection 3: Both detections	0	☆	0xAA09

Function code	Name	Setting range	Factory default	Attributes	DEC address
AA-10	Water shortage detection pressure	0.0~ Target pressure (AA-01)	0.5	☆	0xAA0A
AA-11	Water shortage detection frequency	0.0~maximum frequency (P0-10)	4.50	☆	0xAA0B
AA-12	Water shortage detection time	0.0~999.9s	20.0	☆	0xAA0C
AA-13	Water shortage detection current	0.0~motor rated current (P1-03)	0	☆	0xAA0D
AA-14	Automatic reset interval time for water shortage fault	1~9999	15	☆	0xAA0E
AA -15	Number of automatic resets for water shortage faults	0~100	0	☆	0xAA0F
AA-16	PID high limit alarm	PID low limit alarm (AA-18) ~ Pressure Sensor Range (AA-00)	100.0	☆	0xAA10
AA-17	PID high limit alarm detection time	0.0~200.0s	0	☆	0xAA11
AA-18	PID low limit alarm	0.0~PID high limit alarm (AA-16)	0.0	☆	0xAA12
AA-19	PID low limit alarm detection time	0.0~200.0s	0.0	☆	0xAA13
AA-20	Automatic operation selection after power on	0: Off 1: On	0	☆	0xAA14
AA-21	Automatic operation delay time	0.1~100.0s	1.0	☆	0xAA15
AA-22	Antifreeze Function Selection	0: Off 1: On	0	★	0xAA16
AA-23	Reserve	0~9999min	0	☆	0xAA17
AA-24	Dead time adjustment	0~9999s	60	☆	0xAA18
AA-25	Overvoltage point setting	0.00~30.00Hz	10.00	☆	0xAA19
AA-26	Dormant Flag	-	-	●	0xAA20
Group Ab Photovoltaic water pump parameters					
Ab-01	CVT mode target voltage ratio	0~99.9%	80%	☆	0xAB01
Ab-02	Photovoltaic open circuit voltage	-	-	★	0xAB02
Ab-03	MPPT upper limit voltage ratio	0~99.9%	99.9%	☆	0xAB03
Ab-04	MPPT lower limit voltage ratio	0~99.9%	0.1%	☆	0xAB04
Ab-05	MPPT search time	0.01s~10.00s	1s	☆	0xAB05
Ab-06	MPPT initial voltage	0~99.9%	80.0%	☆	0xAB06
Ab-07	MPPT PID proportional gain	0~65535	5000	☆	0xAB07
Ab-08	MPPT PID integral gain	0~65535	300	☆	0xAB08
Ab-11	MPPT search step	0~30.0V	1.0V	☆	0xAB0B
Ab-12	Actual control target voltage	-	-	★	0xAB0C
Ab-13	Current photovoltaic voltage display	-	-	★	0xAB0D
Ab-14	Output power display	-	-	★	0xAB0E
Ab-15	Sleep wake-up voltage ratio	0~99.9%	80.0%	☆	0xAB0F
Ab-16	Low-speed sleep frequency ratio	0~99.9%	33.3%	☆	0xAB10
Ab-17	Sleep flag	-	-	★	0xAB11

Function code	Name	Setting range	Factory default	Attributes	DEC address
Ab-18	Low-speed sleep judgment time	0~3600s	30s	☆	0xAB12
Ab-19	Low speed shutdown times	0~5	0	☆	0xAB13
Ab-21	First sleep wake-up time 1	0~3600s	10s	☆	0xAB15
Ab-22	Second sleep wake-up time 2	0~3600s	30s	☆	0xAB16
Ab-23	The third sleep wake-up time 3	0~3600s	60s	☆	0xAB17
Ab-24	The fourth sleep wake-up time is 4	0~3600s	180s	☆	0xAB18
Ab-25	The fifth sleep wake-up time is 5	0~3600s	3600s	☆	0xAB19
Group AC AIAO correction					
AC-00	AI measured voltage 1	0.500V~4.000V	Factory correction	☆	0xAC00
AC-01	AI display voltage 1	0.500V~4.000V	Factory correction	☆	0xAC01
AC-02	AI measured voltage 2	6.000V~9.999V	Factory correction	☆	0xAC02
AC-03	AI display voltage 2	6.000V~9.999V	Factory correction	☆	0xAC03
AC-12	AO target voltage 1	0.500V~4.000V	Factory correction	☆	0xAC0C
AC-13	AO measured voltage 1	0.500V~4.000V	Factory correction	☆	0xAC0D
AC-14	AO target voltage 2	6.000V~9.999V	Factory correction	☆	0xAC0E
AC-15	AO measured voltage 2	6.000V~9.999V	Factory correction	☆	0xAC0F
AC-24	AI measured current 1	0.000mA~20.000mA	Factory correction	☆	0xAC18
AC-25	AI sampling current 1	0.000mA~20.000mA	Factory correction	☆	0xAC19
AC-26	AI measured current 2	0.000mA~20.000mA	Factory correction	☆	0xAC1A
AC-27	AI sampling current 2	0.000mA~20.000mA	Factory correction	☆	0xAC1B
AC-28	AO ideal current 1	0.000mA~20.000mA	Factory correction	☆	0xAC1C
AC-29	AO measured current 1	0.000mA~20.000mA	Factory correction	☆	0xAC1D
AC-30	AO Ideal Current 2	0.000mA~20.000mA	Factory correction	☆	0xAC1E
AC-31	AO measured current 2	0.000mA~20.000mA	Factory correction	☆	0xAC1F
U0 group parameter monitoring group					
U0-00	Operating frequency (Hz)	-	0.01Hz	●	0x7000
U0-01	Set frequency (Hz)	-	0.01Hz	●	0x7001
U0-02	Bus voltage (V)	-	0.1V	●	0x7002
U0-03	Output voltage (V)	-	1V	●	0x7003
U0-04	Output current (A)	-	0.01A	●	0x7004
U0-05	Output power (kW)	-	0.1kW	●	0x7005
U0-06	Output torque (%)	-	0.1%	●	0x7006
U0-07	DI input state	-	1	●	0x7007
U0-09	AI voltage (V)	-	0.01V	●	0x7009
U0-12	Count value	-	1	●	0x700C
U0-13	Length value	-	1	●	0x700D
U0-14	Load speed display	-	1	●	0x700E
U0-15	PID setting (dimensionless) PID set pressure value	-	1 0.01kg	●	0x700F
U0-16	PID feedback (dimensionless) PID feedback pressure value	-	1 0.01kg	●	0x7010

Function code	Name	Setting range	Factory default	Attributes	DEC address
U0-17	PLC stage	-	1	●	0x7011
U0-18	PLUSE input pulse frequency (Hz)	-	0.01kHz	●	0x7012
U0-19	Feedback speed (unit 0.1Hz)	-	0.1Hz	●	0x7013
U0-20	Remaining run time	-	0.1Min	●	0x7014
U0-21	AI voltage before correction	-	0.001V	●	0x7015
U0-24	Motor speed	-	1m/Min	●	0x7018
U0-25	Current power-on time	-	1Min	●	0x7019
U0-26	Current running time	-	0.1Min	●	0x701A
U0-27	PLUSE input pulse frequency	-	1Hz	●	0x701B
U0-28	Communication settings	-	0.01%	●	0x701C
U0-30	Main frequency X display	-	0.01Hz	●	0x701E
U0-31	Auxiliary frequency Y display	-	0.01Hz	●	0x701F
U0-32	View any memory address value	-	1	●	0x7020
U0-35	Target torque (%)	-	0.1%	●	0x7023
U0-37	Power factor angle	-	0.1°	●	0x7025
U0-39	V/F separation target voltage	-	1V	●	0x7027
U0-40	V/F separation output voltage	-	1V	●	0x7028
U0-41	DI input status intuitive display	-	1	●	0x7029
U0-42	FM input status intuitive display	-	1	●	0x702A
U0-43	DI function status intuitive display 1	-	1	●	0x702B
U0-44	DI function status intuitive display 2	-	1	●	0x702C
U0-45	Fault information	-	1	●	0x702D
U0-59	Set frequency (%)	-	0.01%	●	0x703B
U0-60	Operating frequency (%)	-	0.01%	●	0x703C
U0-61	Inverter status	-	1	●	0x703D
U0-62	Current fault code	-	1	●	0x703E
U0-65	Torque upper limit	-	0.1%	●	0x7041
U0-73	Motor serial number	-	0	●	0x7049
U0-74	Inverter operation	-	0.0	●	0x704A

13.Fault alarm and countermeasures

Fault name	Fault Code	Troubleshooting	Troubleshooting Countermeasures
Inverter unit protection	Err01	The inverter output circuit is shortcircuited	Eliminate peripheral faults
		The wiring between the motor and the inverter is too long	Install reactor or output filter
		The module is overheated	Check whether the air duct is blocked and whether the fan is working properly. work normally and troubleshoot

Fault name	Fault Code	Troubleshooting	Troubleshooting Countermeasures
		The internal wiring of the inverter is loose	Plug in all cables
		The main control board is abnormal	Seek technical support
		The driver board is abnormal	Seek technical support
		The inverter module is abnormal	Seek technical support
Acceleration overcurrent	**Err02**	There is grounding or short circuit in the output circuit of the inverter	Eliminate peripheral faults
		The control mode is vector without parameter identification	Carry out motor parameter identification
		The acceleration time is too short	Increase the acceleration time
		Manual torque boost or V/F curve is inappropriate	Adjust manual lifting torque or V/F curve
		Low voltage	Adjust the voltage to the normal range
		Start the rotating motor	Select the speed tracking start or wait for the motor to stop restart
		Sudden load increase during acceleration	Cancel sudden load
Deceleration overcurrent	**Err03**	There is grounding or short circuit in the output circuit of the inverter	Eliminate peripheral faults
		The control mode is vector without parameter identification	Carry out motor parameter identification
		The deceleration time is too short	Increase the deceleration time
		Low voltage	Adjust the voltage to the normal range
		Sudden load increase during deceleration	Cancel sudden load
		No braking unit and braking resistor installed	Install brake unit and resistor
Constant speed overcurrent	**Err04**	There is grounding or short circuit in the output circuit of the inverter	Eliminate peripheral faults
		The control mode is vector without parameter identification	Carry out motor parameter identification
		Low voltage	Increase acceleration time,Cancel sudden additional load
		Whether there is a sudden load during operation	Adjust the voltage to the normal range
		The selection of frequency inverter is too small	Choose a frequency Inverter with a higher power level
Accelerated overvoltage	**Err05**	The input voltage is too high	Adjust the voltage to the normal range
		During the acceleration process,there is an external force to drive the motor to run	Cancel the external power or install braking resistor
		Acceleration time is too short	Increase the acceleration time
		No braking unit and braking resistor installed	Install brake unit and resistor
Deceleration overvoltage	**Err06**	The input voltage is too high	Adjust the voltage to the normal range
		During the acceleration process,there is an external force to drive the motor to run	Cancel the external power or install braking resistor
		The deceleration time is too short	Increase the acceleration time
		No braking unit and braking resistor installed	Install brake unit and resistor

Fault name	Fault Code	Troubleshooting	Troubleshooting Countermeasures
Constant speed overvoltage	**Err07**	The input voltage is too high	Adjust the voltage to the normal range
		There is an external force to drive the motor during operation	Cancel the external power or install braking resistor
Control power failure	**Err08**	The input voltage is not within the specified range	Adjust the voltage to the range required by the specification
Undervoltage fault	**Err09**	Momentary power failure	Reset fault
		The input voltage of the inverter is not within the range required by the specification	Adjust the voltage to the normal range
		The bus voltage is abnormal	Seek technical support
		The rectifier bridge and buffer resistor are abnormal	Seek technical support
		The driver board is abnormal	Seek technical support
		The control panel is abnormal	Seek technical support
Inverter overload	**Err10**	Whether the load is too large or the motor is blocked	Reduce the load and check the motor and mechanical condition
		The selection of frequency inverter is too small	Choose a frequency inverter with a higher power level
Motor overload	**Err11**	Whether the setting of motor protection parameter P9-01 is appropriate	Set this parameter correctly
		Whether the load is too large or the motor is blocked	Reduce the load and check the motor and mechanical condition
		The selection of frequency inverter is too small	Select a frequency inverter with a higher power level
Input phase loss	**Err12**	The three-phase input power supply is abnormal	Check and eliminate the problems in the peripheral circuit
		The driver board is abnormal	Seek technical support
		Abnormal lightning protection board	Seek technical support
		The main control board is abnormal	Seek technical support
Output phase loss	**Err13**	The lead wire from the inverter to the motor is abnormal	Eliminate peripheral faults
		The three-phase output of the inverter is unbalanced when the motor is running	Check whether the three-phase winding of themotor is normal and troubleshoot
		The driver board is abnormal	Seek technical support
		Module exception	Seek technical support
Module overheating	**Err14**	The ambient temperature is too high	Reduce the ambient temperature
		The air duct is blocked	Clean the air duct
		The fan is damaged	Replace the fan
		The module thermistor is damaged	Replace the thermistor
		The inverter module is damaged	Replace the inverter module
External device Fault	**Err15**	Multi-function terminal X inputs external fault signal	Reset operation
		The virtual IO function inputs an external fault signal	Reset operation
Communication fail	**Err16**	The upper computer is not working properly	Check the wiring of the host computer

Fault name	Fault Code	Troubleshooting	Troubleshooting Countermeasures
Communication fail	**Err16**	The communication line is abnormal	Check the communication cable
		Reserve	Correctly set the communication expansion card type
		The setting of the communication parameter PD group is incorrect	Correctly set the communication parameters
Current sense failure	**Err18**	Check the abnormality of the Hall device	Replace the Hall device
		The driver board is abnormal	Replace the driver board
Motor tuning failure	**Err19**	The motor parameters are not set according to the nameplate	Correctly set the motor parameters according to the nameplate
		The parameter identification process timed out	Check the lead wires from the inverter to the motor
EEPROM Read and write failure	**Err21**	The EEPROM chip is damaged	Replace the main control board
Inverter hardware failure	**Err22**	There is overvoltage	Handle according to overvoltage fault
		There is an overcurrent	Handle according to overcurrent fault
Short circuit fault to ground	**Err23**	The motor is short-circuited to the ground	Replace the cable or motor
Cumulative running time reached fault	**Err26**	The cumulative running time reaches the set value	Use the parameter initialization function to clear the record information
Custom Fault 1	**Err27**	Input the signal of user-defined fault 1 through the multi-function terminal X	Reset operation
		Input the signal of user-defined fault 1 through the virtual IO function	Reset operation
Custom Fault 2	**Err28**	Input the signal of user-defined fault 2 through the multi-function terminal X	Reset operation
		Input the signal of user-defined fault 2 through the virtual IO function	Reset operation
Cumulative power-on time reached fault	**Err29**	The cumulative power-on time reaches the set value	Use the parameter initialization function to clear the record information
Load drop fault	**Err30**	The operating current of the inverter is less than P9-64	Confirm whether the load is off or whether the parameter settings of P9-64 and P9-65 conform to the actual operating conditions
PID feedback lost at runtime Fault	**Err31**	PID feedback is less than the set value of PA-26	Check the PID feedback signal or set PA-26 to an appropriate value
PID low limit fault during operation	**Err32**	PID feedback is lower than the AA-16 setting value	Check the PID feedback signal or set AA-16 to a suitable value
PID high limit fault during operation	**Err33**	PID feedback is higher than the AA-14 setting value	Check the PID feedback signal or set AA-14 to a suitable value
Water shortage during operation	**Err34**	The on-site water pressure is lower than the detection water pressure value set by AA-08	Check whether the AA-08 setting is reasonable. Check whether the outlet valve is closed. Check whether the pressure transmitter is damaged.

Fault name	Fault Code	Troubleshooting	Troubleshooting Countermeasures
Wave-by-wave current limiting fault	**Err40**	Whether the load is too large or the motor is blocked	Reduce the load and check the motor and mechanical condition
		The selection of frequency inverter is too small	Choose a frequency inverter with a higher power level
Switching motor failure while running	**Err41**	Change through the terminals during the operation of the inverter current motor selection	Switch the motor after the inverter stops
Speed deviation is too large	**Err42**	No parameter identification was conducted	Perform parameter identification
		Parameter identification was not performed. The speed deviation detection parameters P9-69/P9-70 are set improperly.	Perform parameter identification Set the test parameters appropriately based on the actual situation.
Wrong initial position	**Err51**	The motor parameters and the actual deviation are too large	Reconfirm whether the motor parameters are correct, focusing on whether the rated current is set too small
Keyboard communication timeout error	**Lo55**	The control board cannot communicate with the keyboard or the communication times out	Replace the keyboard or request manufacturer technical support

14.MODBUS Communication Protocol

The inverter provides RS485 communication interface and supports Modbus-RTU communication protocol. Users can realize centralized control through a computer or PLC , set inverter operation commands through this communication protocol, modify or read function code parameters, and read inverter working status and fault information, etc.

1. Agreement

The serial communication protocol defines the content and format of information transmitted in serial communication. These include: host polling (or broad broadcast) format; the encoding method of the host, including: the function code of the required action, transmission data and error checking,etc. The sound from the machine Should also adopt the same structure, including: action confirmation, return data and error checking, etc. If the slave is receiving information When an error occurs, or the action required by the host cannot be completed, it will organize a fault message as a response and feed it back to the host.

Application method: Inverter is connected to the " single master and multiple slaves " PC/PLC control network with RS485 bus as a communication slave.

Bus structure

(1) **Hardware interface**

Comes with communication interface A+, B- terminals.

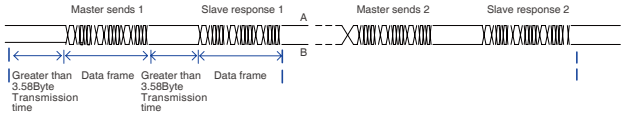
(2) **Topological structure**

Single-master multi-slave system. Each communication device in the network has a unique slave address, one of which is used as a communication host (PC upper computer, PLC , HMI , etc.),the host initiates communication, and performs parameter read or write operations on the slave, and other devices are in the As a communication slave, it responds to inquiries or communication operations from the host to the machine. Only one device can send data at a time, while other devices are receiving.

The setting range of the slave address is 1 ~ 247 , and 0 is the broadcast communication address. The slave address must be unique in the network.

(3) **Communication transmission method**

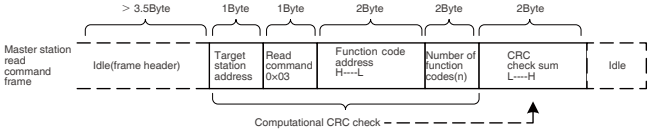
Asynchronous serial, half-duplex transmission mode. In the process of serial asynchronous communication, the data is sent one frame at a time in the form of a message. It is stipulated in the MODBUS-RTU protocol that when the idle time of no data on the communication data line is greater than the transmission time of 3.5Byte , it means a new one. Start of communication frame.



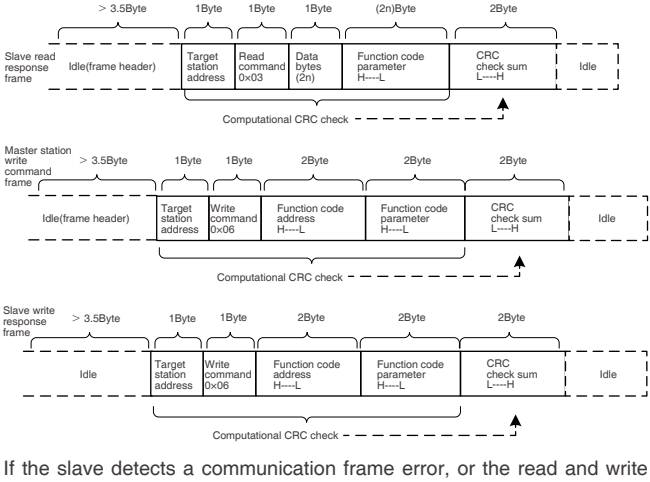
The built-in communication protocol of the inverter is the Modbus-RTU slave communication protocol, which can respond to the "query / command" of the host, or make corresponding actions according to the "query/command" of the host, and respond with communication data . host can refer to a personal computer (PC), industrial control equipment or a programmable logic controller (PLC), etc. The host can not only communicate with a slave, but also issue broadcast information to all lower slaves. For the independent access "query / command" of the host, the accessed slave must return a response frame rate; for the broadcast information sent by the host,the slave does not need to feedback the response to the host.

(4) **Communication data structure**

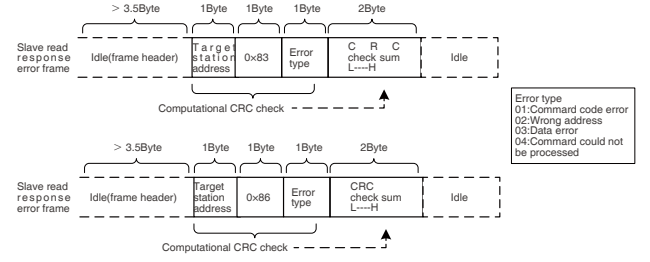
Modbus protocol is as follows, and the inverter only supports reading or writing of Word type parameters. The corresponding communication read operation command is 0x03 ; the write operation command is 0x06 , which does not support byte or bit read and write operations:



Theoretically, the upper computer can read several consecutive function codes at one time (that is, n can reach up to 12) , but be careful not to cross the last function code of this function code group, otherwise an error will be answered.



If the slave detects a communication frame error, or the read and write fails due to other reasons,it will reply with an error frame.



Data frame field description:

Frame header START	Idle for more than 3.5 character transfer times
Slave address ADR	Communication address range: 1~247 ; 0= broadcast address
Command code CMD	03: read slave machine parameters; 06: write slave machine parameters
Function code address H	The parameter address inside the Frequency Inverter, expressed in hexadecimal ; it is divided into functional code type and non-functional code type (such as running status parameters, Run commands, etc.) parameters, etc., see address definition for details. When transmitting, the high byte comes first and the low byte follows.
Function code address L	

Number of function codes H	The number of function codes read in this frame, if it is 1 , it means read 1 function code. When transmitting, the high byte comes first and the low byte follows. This protocol can only rewrite one function code at a time, without this field.
Number of function codes L	
Data H	Response data, or specially written data, when transmitting, the high byte comes first and the low byte follows.
Data L	
CRC CHK high bit	Detection value: CRC16 check value. When transmitting, the high byte comes first and the low byte follows. For the calculation method, see the description of the CRC check in this section.
CRC CHK low bit	
END	3.5 character time

CMD check method :

· **Check method** —— CRC check method: CRC (Cyclical Redundancy Check) uses the RTU frame format, and the message includes an error detection field based on the CRC method. The CRC field checks the content of the entire message. The CRC field is two bytes and contains a 16 -bit binary value. It is calculated by the transmitting device and added to the message. The receiving device recalculates the CRC of the received message and compares it with the value in the received CRC field. If the two CRC values are not equal, it means that there is an error in the transmission.

· CRC is stored in 0xFFFF first , and then calls a process to compare the continuous 8 -bit bytes in the message with the value in the current register line processing. Only the 8Bit data in each character is valid for CRC , and the start and stop bits and parity bits are all invalid.

· CRC generation, each 8 -bit character is individually exclusive or (XOR) with the contents of the register, and the result moves towards the least significant bit, and the most significant bit is filled with 0 . The LSB is extracted and detected. If the LSB is 1 , the register is exclusive or different from the preset value. If the LSB is 0 , it will not be performed. The whole process is repeated 8 times. After the last bit (bit 8) is complete, the next

· Each 8-bit byte is individually exclusive-ored with the current value of the register. The value in the final register is the CRC value after all bytes in the message have been executed .CRC is added to the message, the low byte is added first, followed by the high byte. The simple function of CRC is as follows:

```
unsigned int CRC16_CHK(unsigned char *data, unsigned char length)
{
    int j = 0;
    unsigned int reg_crc = 0xffff;
    while(length--)
    {
        reg_crc ^= *data++;
        for(j=0;j<8;j++)
        {
            if(reg_crc & 0x01)
            {
                reg_crc = (reg_crc >> 1) ^ 0xa001;
            }
            else
            {
                reg_crc = reg_crc >> 1;
            }
        }
    }
    return reg_crc;
}
```

Function code parameter address marking rules:

Read and write function code parameters (some function codes cannot be changed and are only used by the manufacturer or monitored):

Use the function code group number and label as the parameter address to express the rules:

High byte: P0~PF (Group P), A0~AF (Group A), 70~7F (Group U)

Low byte: 00~FF

For example: if you want to range function code P3-12 , then the access address of the function code is expressed as F30CH

Notice:

· PF group: parameters cannot be read or changed;

· U : can only read, but cannot change parameters.

· Some parameters cannot be changed when the inverter is running; some parameters cannot be changed no matter what state the inverter is in;

· When changing the function code parameters, pay attention to the range, unit and related instructions of the parameters.

Function code group number	Newsletter access address	Comm modifies RAM Function code address
P0 ~ PE group	0×F000 ~ 0×FEFF	0×0000 ~ 0×0EFF
A0 ~ AC group	0×A000 ~ 0×ACFF	0×4000 ~ 0×4CFF
U0 group	0×7000 ~ 0×70FF	Read only, not writable

Notice:

· Since the EEPROM is frequently stored, the service life of the EEPROM will be reduced . Therefore, some function codes do not need to be stored in the communication mode, and only need to change the value in RAM .

· If it is a P group parameter, to realize this function, just change the high bit F of the function code address to 0 . If it is a group A parameter, to realize this function, just change the high bit A of the function code address to 4 .

· Write the corresponding function code address of RAM as follows:

· High byte: 00~0F (P group), 40~4F (A group)

· Low byte: 00~FF

· For example: function code P3-12 is not stored in EEPROM , and the address is expressed as 030C H; function code A0-05 is not stored in EEPROM , and the address is represented as 4005 H;

Notice:

This address indicates that it can only be used for writing to RAM , and cannot be used for reading. When reading, it is an invalid address. For all parameters, you can also use the command code 07H to realize this function.

Shutdown / Run Parameters section:

Parameter address	Parameter Description	Parameter address	Parameter Description
1000H	Communication setting value (decimal) -10000~10000	1010 H	PID setting
1001H	Operating frequency	1011 H	PID feedback
1002H	Bus voltage	1012 H	PLC steps
1003H	The output voltage	1013 H	Input pulse frequency, Unit 0.01kHz
1004H	Output current	1014 H	Feedback speed, unit 0.1Hz
1005H	Output Power	1015	Remaining run time
1006H	Output torque	1016	AI1 voltage before correction
1007H	Running speed	1019	Line speed
1008H	DI input flag	101A	Current power-on time
1009H	DO output flag	101B	Current running time
100AH	AI voltage	101C	Input pulse frequency, unit 1Hz
100DH	Count value input	101D	Communication settings
100EH	Length value input	101E	Actual feedback speed
100FH	Load speed	101F	Main frequency X display

Notice:

· The communication setting value is a percentage of the relative value, 10000 corresponds to 100.00% , and -10000 corresponds to -100.00% .

· For frequency dimension data, the percentage is the percentage relative to the maximum frequency (P0-10); for torque dimension data, the percentage is P2-10 , A2-48 , A3-48 , A4-48 (Torque upper limit digital setting, respectively corresponding to the first, second, third and fourth motors).

Control command input to the inverter: (write only)

Command word address	Command function
2000H	0001: Forward running
	0002: Reverse operation
	0003: Forward jogging
	0004: Reverse jog
	0005: Free stop
	0006: Deceleration to stop
	0007: Fault reset

Read inverter status: (read only)

Status word address	Status word function
3000H	0001: Forward running
	0002: Reverse operation
	0003: Stop

Parameter lock password verification: (if the return is 8888H , it means the password verification is passed)

Password address	Enter the content of the password
1F00H	*****

Digital output terminal control:(write only)

Command address	Command content
2001H	BIT0: FM output control BIT1: Reserved BIT2: RELAY output control BIT3: Reserved BIT4: FMR output control BIT5: VDO1 BIT6: VDO2 BIT7: VDO3 BIT8: VDO4 BIT9: VDO5

Analog output AO control: (write only)

Command address	Command content
2002H	0~7FFF means 0%~100%

Pulse (PULSE) Output Control: (write only)

Command address	Command content
2004H	0~7FFF means 0%~100%

Inverter fault description

Inverter fault address	Inverter fault information
8000H	0000: No fault 0001: Reserved 0002: Acceleration overcurrent 0003: Deceleration overcurrent 0004: Constant speed overcurrent 0005: Acceleration overvoltage 0006: Deceleration overvoltage 0007: Constant speed overvoltage 0008: Buffer resistor overload fault 0009: Undervoltage fault 000A: Inverter overload 000B: Motor overload 000C: Input phase loss 000D: Output phase loss 000E: Module overheating 000F: External fault 0010: Abnormal communication 0011: Abnormal contactor 0012: Current detection failure 0013: Motor tuning failure 0014: Encoder /PG card failure 0015: Abnormal reading and writing of parameters 0016: Inverter hardware failure 0017: The motor is short-circuited to the ground 0018: Reserved 0019: Reserved 001A: Run time reached 001B: User-defined fault 1 001C: User-defined fault 2 001D: The power-on time is reached 001E: Load off 001F: Loss of PID feedback while running 0028: Fast current limit timeout fault 0029: Switching motor failure while running 002A: The speed deviation is too large 002B: Motor over speed 002D: Motor over temperature 005A: Encoder line number setting error 005B: No encoder connected 005C: Initial position error 005E: Speed feedback error

• PD group communication parameter description

Pd-00	Baud rate	Factory default	6005
	Setting range	MODUBS baud rate	
		0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS	5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: 115200BPS

This parameter is used to set the data transmission rate between the upper computer and the inverter. Note that the baud rate set by the upper computer and the inverter must be consistent, otherwise, the communication cannot be carried out. The higher the baud rate, the faster the communication speed.

• Digital output terminal control: (Write only)

Pd-01	Data Format	Factory default	0
	Setting range	0: No parity: data format <8,N,2> 1: Even check: data format <8,E,1> 2: Odd parity: data format <8, O, 1> 3: No parity: data format <8-N-1>	

• The data format set by the upper computer and the inverter must be consistent, otherwise, the communication cannot be carried out.

Pd-02	Local address	Factory default	1
	Setting range	1~247 , 0 is broadcast address	

· When the local address is set to 0 , it is the broadcast address to realize the broadcast function of the host computer.
· The local address is unique (except the broadcast address), which is the basis for realizing the point-to-point communication between the upper computer and the Frequency Inverter.

Pd-03	Response delay	Factory default	2ms
	Setting range	0~20ms	

Response delay: refers to the interval between the end of the inverter receiving data and sending data to the upper computer. If the response delay is small If the response delay is longer than the system processing time, the response delay is longer than the system processing time. After the system finishes processing the data, it will wait until the response delay time is up before sending data to the host computer.

Pd-04	Communication timeout	Factory default	0.0 s
	Setting range	0.0 s (Inactive) 0.1~60.0s	

· When this function code is set to 0.0 s , the communication timeout parameter is invalid.
· When this function code is set to a valid value, if the interval between one communication and the next communication exceeds the communication timeout time, the system will The system will report a communication failure error (Err16). Normally, it is set to invalid. If in a system with continuous communication, By setting the secondary parameters, you can monitor the communication status.

Pd-05	Communication Protocol Selection	Factory default	0
	Setting range	0: non-standard Modbus protocol; 1: Standard Modbus protocol	

Pd-05=1: Select standard Modbus protocol.
Pd-05=0: When reading the command, the number of bytes returned by the slave is one byte more than the standard Modbus protocol,

Pd-06	Communication reading current resolution	Factory default	0
	Setting range	0 : 0.01A 1 : 0.1A	

· It is used to determine the output unit of the current value when the communication reads the output current.
· The function code data is an important setting parameter of the inverter. There are group P and group A function parameters. The parameter groups are as follows:

Function code data	P (readable and writable)	P0 , P1 , P2 , P3 , P4 , P5 , P6 , P7 , P8 , P9 , PA , PB , PC , PD , PE , PF
	A (readable and writable)	A0 , A1 , A2 , A3 , A4 , A5 , A6 , A7 , A8 , A9 , AA , AB , AC , AD , AE , AF

The function code data communication address is defined as follows:

· When reading function code data for communication, for P0~PF, A0~AF group function code data, the upper sixteen digits of the communication address are directly the function group number, and the lower sixteen digits.are directly the serial number of the function code in the function group. Examples are as follows:

· **P0-16 function parameter:** its communication address is F010H, where F0H represents the function parameter of P0 group, and 10H represents the hexadecimal data format of serial number 16 in the function group.

· AC-08 function parameters: its communication address is AC08, where ACH represents the function parameters of AC group, and 08H represents the hexadecimal data format of the function code in the function group number 08

· When writing function code data for communication, for P0~PF group function code data, the high sixteen bits of the communication address are divided into 00~0F or P0~PF according to whether it is written into EEPROM, and the low sixteen bits are directly It is the serial number of the function code in the function group, for example as follows:

· **Write function in parameter P0-16:** Writing to EEPROM, its communication address is F010H.Not necessary to write to EEPROM, its communication address is 0010H.When writing EEPROM data for communication, for the function code data of group A0 ~ AF , the high sixteen bits of the communication address are divided into 10~4F or A0~AF, and the low sixteen bits are directly the serial number of the function code in the function group. Examples are as follows:

· **Write function parameter AC-08:** Writing to EEPROM , its communication address is AC08H.Not necessary to write to EEPROM , its communication address is 4C08H.

• Non-function code data

Non-function code data	Status data (readable)	U monitoring parameters, inverter fault description, inverter running status
	Control parameters (writable)	Control command, communication setting value, digital output terminal control, analog output AO control, high-speed pulse (FMP) output control, parameter initialization

• Status data

State data is divided into U group monitoring parameters, inverter fault description, and inverter running status.

1. Group U parameter monitoring parameters

U monitoring data, see the function description of group U0 in the manual, and its address is defined as follows:

U0 ~ UF , the high sixteen bits of the communication address are 70~7F, and the low sixteen bits are the serial numbers of the monitoring parameters in the group, examples are as follows:

U0-11 , its communication address is 700BH.

• Inverter fault description

When the communication reads the inverter fault, the communication address is fixed at 8000H, and the host computer can obtain the current inverter fault code by reading the address data. The description of the fault code is defined in Chapter 5 P9-14 function code.

• Inverter running status

When the communication reads the running status of the inverter, the communication address is set to 3000H, and the upper computer can obtain the current running status information of the inverter by reading the data of this address, which is defined as follows:

Inverter running state communication address	Read status word definition
3000H	1: Forward running
	2: Reverse operation
	3: Shutdown

• Control parameters

Control parameters are divided into control command, digital output terminal control, analog output AO control, high-speed pulse (FMP) output control.

• Control commands

When P0-02 (command source) is selected as 2 : communication control, the upper computer can realize the start-stop and other related command control of the inverter through the communication address. The control command is defined as follows:

Control command communication address	Command function
2000H	1: Forward running
	2: Reverse operation
	3: Forward jogging
	4: Reverse jog
	5: Free stop
	6: Deceleration to stop
	7: Fault reset

• Communication settings

The communication setting value is mainly used for the given data when the medium frequency source, torque upper limit source, VF separation voltage source, PID given source, PID feedback source, etc. are selected as communication given. The communication address is 1000H, and the host computer sets When the communication address is valued, its data range is -10000 ~ 10000 , corresponding to the relative given value -100.00%-100.00%

• Digital output terminal control

When the function of the digital output terminal is selected as 20 : communication control, the upper computer can realize the control of the digital output terminal of the inverter through the communication address, which is defined as follows:

Digital output terminal control communication address	Command content
2001H	BiT0: FM output control BiT1: Reserved BiT2: RELAY output control BiT3: Reserved BiT4: FMR output control BiT5: VDO1 BiT6: VDO2 BiT7: VDO3 BiT8: VDO4 BiT9: VDO5

• Analog output AO, high-speed pulse output FMP control

When the analog output AO, high-speed pulse output FMP output function is selected as 12 : communication setting, the upper computer can realize the control of the inverter analog and high-speed pulse output through the communication address, defined as follows:

Output control communication address		Command content
AO	2002H	0~7FFF means 0%~100%
FMP	2004H	

• Parameter initialization

This function needs to be used when it is necessary to realize the parameter initialization operation of the inverter through the host computer.

If PP-00 (user password) is not 0 , it is necessary to pass the password verification first, after the verification is passed, after 30 seconds, the upper computer will perform parameter initialization.

The communication address for user password verification by communication is 1F00H, and the correct user password can be directly written into this address to complete the password verification.

The address for parameter initialization for communication is 1F01H, and its data content is defined as follows:

Parameter initialization communication address	Command function
1F01H	1: Restore factory parameters
	2: Clear record information
	4: Restore user backup parameters
	501: Back up the user's current parameters

Product After-Sales Service Policy

The company solemnly promises that, from the day the user purchases the product from our company (hereinafter referred to as the manufacturer), the user enjoys the following after-sales warranty services for the product.

① This product has a 24-month free warranty from the date of purchase from the manufacturer (except for products exported to foreign countries/non-standard machines).
② If the product has quality problems within one month from the date of purchase by the user from the manufacturer, the manufacturer will guarantee refund, replacement and warranty.
③ If the product has quality problems within three months from the date of purchase by the user from the manufacturer, the manufacturer will guarantee replacement and warranty.
④ This product enjoys paid lifetime service from the date of purchase from the manufacturer.
⑤ Disclaimer: Product failures caused by the following reasons are not within the scope of the manufacturer's 24-month free warranty service commitment:

(1) The user does not operate correctly according to the procedures listed in the "Product Manual";
(2) The user repairs the product without communicating with the manufacturer or modifies the product without authorization, resulting in product failure;
(3) The use of the product in the standard scope of use of the product in the user's country of origin causes product failure;
(4) The user's poor use environment leads to abnormal aging of product components or causes failures;
(5) Product damage caused by force majeure such as earthquake, fire, wind and flood disasters, lightning strike, abnormal voltage or other natural disasters;
(6) During the transportation process after the user purchases the product, the product is lost due to improper selection of the transportation method or other external force intrusion; (the transportation method is reasonably selected by the user, and the company assists in handling the consignment procedures)

⑥ The manufacturer has the right not to provide warranty service under the following circumstances:

(1) When the brand, trademark, serial number, nameplate and other marks marked by the manufacturer on the product are damaged or unrecognizable;
(2) When the user fails to pay off the purchase price in accordance with the "Purchase and Sales Contract" signed by both parties;
(3) When the user deliberately conceals the improper use of the product during installation, wiring, operation, maintenance or other processes from the after-sales service provider of the manufacturer.

⑦ Janson Controls Technologies (Shenzhen) Co.,Limited reserves the final interpretation right of this policy.

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