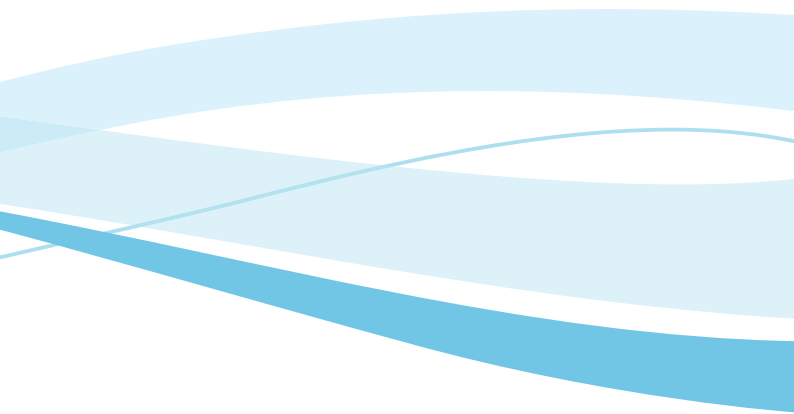
(L2.0.1)

820

USER MANUAL FOR UNIVERSAL FREQUENCY CONVERTER



PREFACE

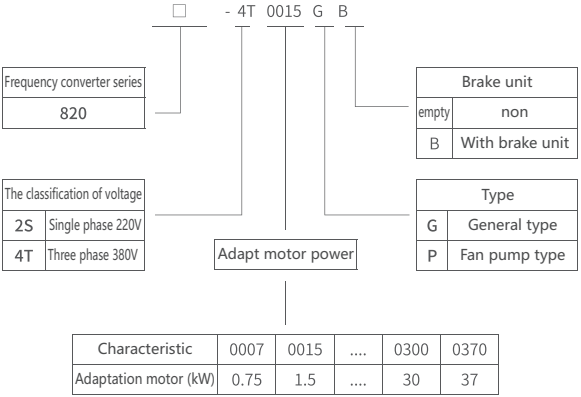
First of all, thank you for buying our frequency converter!

This manual provides the user with the type selection, installation, parameter setting, field debugging, fault diagnosis and daily maintenance and maintenance. In order to use this series of frequency converter correctly, please read this manual carefully in advance, and please keep it properly for later use.

Safety precautions

- This product must be installed and maintained by professional personnel. Any injury and loss caused by the violation has nothing to do with the Company.
- Please confirm that the voltage level of the input power supply is consistent with the rated voltage level of the frequency converter; the wiring position on the power input terminal (R, S, T) and output terminal (U, V, W) is correct; and check whether there is the short circuit in the peripheral circuit and whether the connected circuit is fastened, otherwise the drive will be damaged!
- Any part of the frequency converter does not require a pressure test, the product has been tested when the factory. Otherwise, it will cause an accident!
- The frequency converter must be covered with the cover plate before the power on. Otherwise, it may cause an electric shock!
- Never connect the input power to the output terminal (U, V, W). Don't take the wrong line! Otherwise, there is a risk of explosion and damage to the property!
- Do not touch and operate the frequency converter with wet hands, otherwise there is a danger of electric shock!
- Do not use the contactor on-off method to control the start and stop of the drive. Otherwise, cause equipment damage!
- Confirm that when the voltage of the frequency converter is lower than DC36V, only ten minutes after the power failure. Otherwise, the residual charge on the capacitor will cause harm to people!
- Personnel without professional training do not repair and maintain the frequency converter. Otherwise, cause personal injury or equipment damage!
- After replacing the frequency converter, the parameters must be set, and all plug-in parts must be plugged in the case of power failure!
- If parameter identification is required, please pay attention to the danger of injury in motor rotation. Otherwise, it may cause an accident!
- Do not arbitrarily change the parameters of the frequency converter manufacturer at will. Otherwise, it may cause the damage to the equipment!
- Do not repair and maintain the equipment with electricity. Otherwise, there is a danger of electric shock!
- The motor should be first used before and regularly checked after a long time, the motor insulation inspection should be done to prevent damage to the frequency converter due to the insulation failure of the motor winding. During the insulation inspection, the motor connection must be separated from the frequency converter. It is recommended to use the 500V voltage type megohm meter, and ensure that the measured insulation resistance is not less than 5MΩ. If the customer needs to operate above 50Hz, please consider the endurance of the mechanical device.
- Standard adaptation motor is a quadrupole rat cage induction motor. If this motor is not used, please select the frequency converter according to the rated current of the motor. Do not change the three-phase inverter to twophase use, otherwise it will cause failure or inverter damage. In areas above 1000M, by in the heat dissipation effect of the frequency converter caused by the air is thin, it is necessary to reduce the use. Please consult our company for technical consultation on this situation.

Naming rule

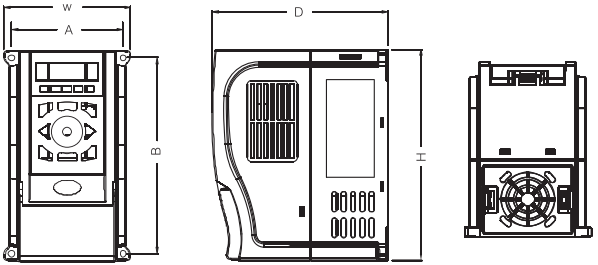


Characteristic	0007	0015	....	0300	0370
Adaptation motor (kW)	0.75	1.5	....	30	37

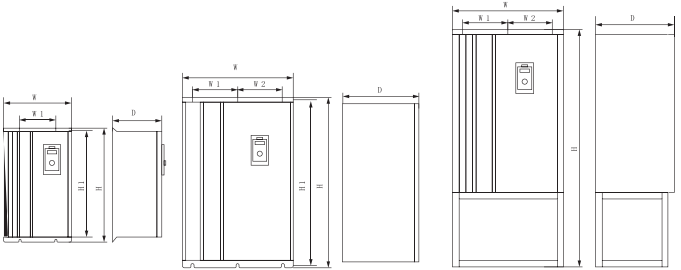
Data plate

MODEL: 820-4T0040GB/4T0055PB
POWER: 4kW 9A/5.5kW 13A
INPUT: 3PH AC380V 50Hz/60Hz
OUTPUT: 3PH AC0V~380V 0Hz-500Hz
S.N: Bar code

Product outer dimensions diagram and mounting hole sizes



Plastic structural outer dimension and mounting size schematic diagram



(Hanging type) (Cabinet type)

Sheet metal structural outer dimension and
Mounting size schematic diagram

Plastic structural outer dimensions and mounting sizes

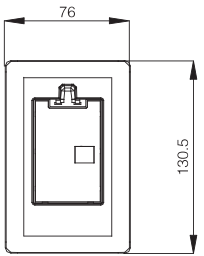
Rated output power (kW)	Input voltage	A (mm)	B (mm)	H (mm)	W (mm)	D (mm)	Installation aperture (mm)
0.4~2.2	Single phase 220V Scope: -15%~+15%	90	157	170	101	142	5
0.75~2.2	Three phase 380V Scope: -15%~+15%	90	157	170	101	142	5
4.0		111	183	197	129	175	5
5.5~11		137	237	256	157	190	5
15~22		151	303	320	170	222	5.8
30~37		205	366	380	218	235	6

Sheet metal structural outer dimension and mounting size

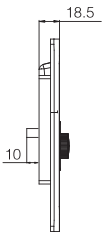
Hang type							
Type	External size			Installation size			Installation aperture
kW	H(mm)	W(mm)	D(mm)	H1(mm)	W1(mm)	W2(mm)	mm
11–15	340	204	214	325	150		Φ6
18.5–22	360	224	214	345	150		Φ6
30–37	460	260	264	440	200		Φ8
45–75	570	380	263	547.5	240		Φ10
90–132	610	400	286	587.5	240		Φ12
160–220	810	500	355	785	200	200	Φ12
250–280	862	600	455	832	200	200	Φ12
315–400	862	750	455	832	250	250	Φ12

Cabinet type							
Type	External size			Installation size			Installation aperture
kW	H(mm)	W(mm)	D(mm)	H1(mm)	W1(mm)	W2(mm)	mm
160–220	1115	500	355		200	200	Φ12
250–280	1329	600	455		200	200	Φ12
315–400	1329	750	455		250	250	Φ12

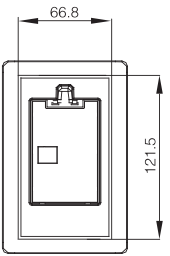
External Keyboard Dimensions



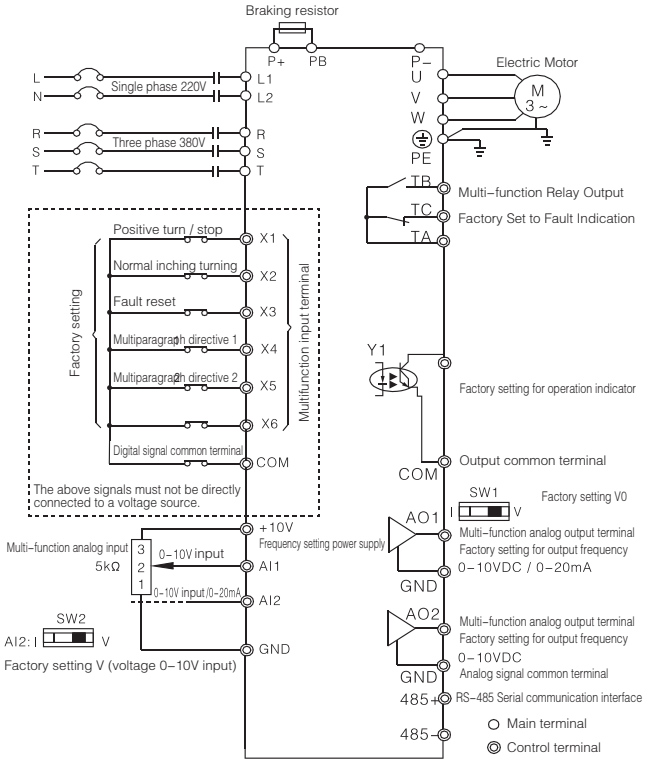
Front



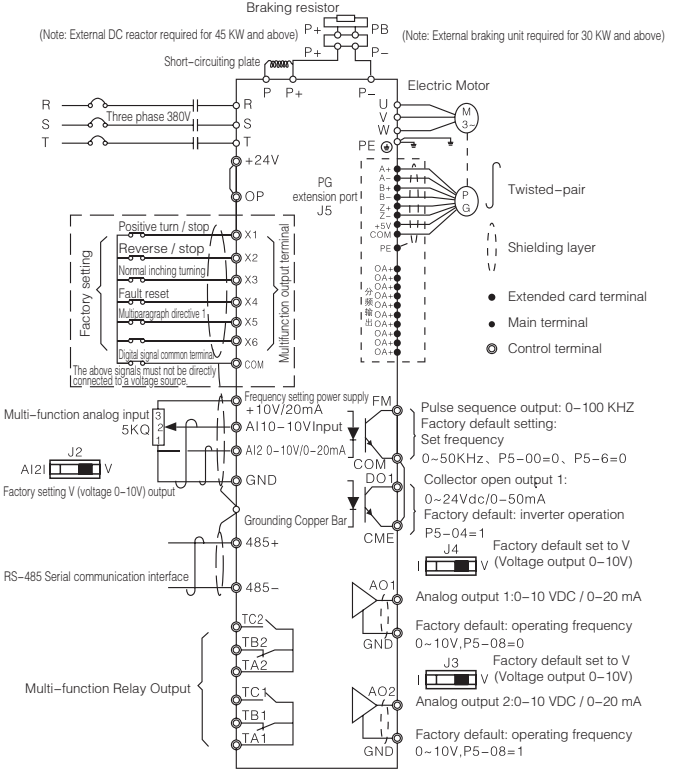
Side



Back (hole size)



0.75kW-75kW Wiring diagram



90kW-400kW Wiring diagram

Main loop terminal diagram

Figure 3-3 Main circuit connection terminal diagram (single phase 0.4kW~2.2kW)

Figure 3-4 Main circuit connection terminal diagram (three phase 0.75kW~2.2kW)

Figure 3-5 Main circuit connection terminal diagram (three phase 3.7kW)

Figure 3-6 Main circuit connection terminal diagram (three phase 5.5kW~11kW) plastic shell

Figure 3-7 Main circuit connection terminal diagram (three phase 15kW~22kW) plastic shell

Figure 3-8 Main circuit connection terminal diagram (three phase 30kW~37kW) plastic shell

Figure 3-9 Main circuit connection terminal diagram (three phase 11kW~15kW) iron shell

Figure 3-10 Main circuit connection terminal diagram (three phase 18.5kW~22kW) iron shell

Figure 3-11 Main circuit connection terminal diagram (30kW~37kW) iron shell

Figure 3-12 Main circuit connection terminal diagram (45kW~132kW)

Main circuit connection terminal diagram (160kW~400kW)

Description of the main circuit terminal of the single-phase frequency converter:

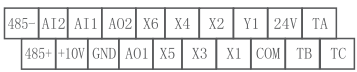
Terminal mark	Name	Explain
L1、L2	Single-phase power supply input terminal	Single-phase 220V AC power supply connection point
U、V、W	Inverter output terminal	Connect to the three phase electric motor
⏚ / E	Earth terminal	Earth terminal

Note: When a single-phase inverter is equipped with an external braking resistor, it is connected through a hole on the right side of the plastic casing. For specific details, please consult with our company's technical staff.

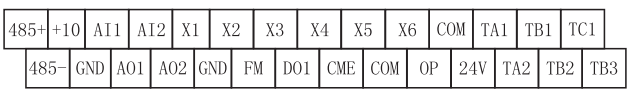
Description of the main circuit terminal of the three-phase frequency converter:

Terminal mark	Name	Explain
R、S、T	Three-phase power supply input terminal	AC input three-phase power connection point
(P1)P+、P-	Positive and negative terminals of the DC bus line	Connecting point of the external brake unit
P+、PB	Brake resistance connection terminal	22kW and below
U、V、W	Inverter output terminal	Connect to the three-phase electric motor
⏚/ E	Earth terminal	Earth terminal

Terminal of the control loop:



Terminal diagram of control loop wiring of 0.75-75kW and below models

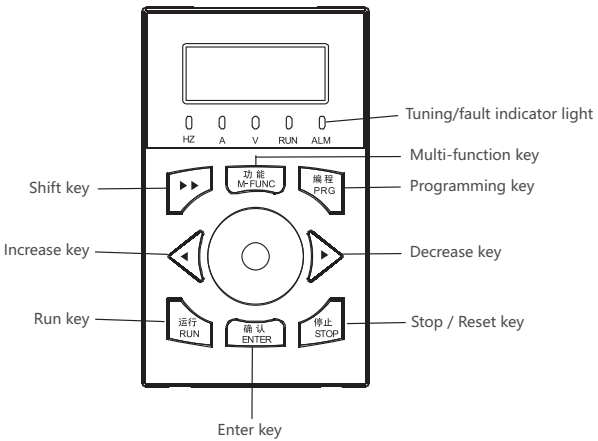


Terminal diagram of control loop wiring of 90kW and above models

OPERATION AND DISPLAY

Introduction of the operation and display panel

With the operation panel, it can modify the functional parameters, monitor the working status of the frequency converter and control the operation (start and stop) of the frequency converter. The appearance and functional areas are shown in the following figure:



● Function indicator light description:
Hz: Frequency status indicator lamp
A: Current indicator lamp
V: Voltage indicator lamp
RUN: When the light is on, the frequency converter is in operation
ALM: When the light is on, the frequency converter is in a fault state

● Digital display area:
5-bit LED display, can display the set frequency, output frequency, various monitoring data and alarm code, etc.

List of functional parameters

P0 Basic function group				
FC	Name	Set the scope	Factory default value	Change
P0-00	GP type is shown	1: Model G (constant torque load model) 2: P type (fan and water pump load model)	Type confirm	★
P0-01	1st Motor control mode	2: V/F control	2	●
P0-02	Command source selection	0: Operation panel command channel (LED out) 1: Terminal command channel (LED bright) 2: Communication command channel (LED flashing)	0	↗
P0-03	Main frequency source X selection	0: Digital setting (Non-volatile) 1: Digital setting (Volatile) 2: AI1 (Analog input 1) 3: AI2 (Analog input 2) 4: Potentiometer setting adjustable by keyboard 5: PULSE setting (X6) 6: Multi-segment command 7: Simple PLC (Programmable logic controller) 8: PID (Proportional-integral-derivative) Control setting 9: Communication command	4	●
P0-04	Secondary frequency source Y selection	Same as P0-03 (Main frequency source X selection)	0	●
P0-05	Auxiliary frequency source y range selection during overlay	0: relative to maximum frequency 1: relative to frequency source X	0	↗
P0-06	Y range of auxiliary frequency source during overlay	0% ~ 150%	100%	↗
P0-07	Frequency source superposition selection	Ones place: Selection of the frequency source 0: Primary frequency source X 1: Result of primary and secondary operation (determined by the tens place) 2: Switch between primary frequency source X and auxiliary frequency source Y 3: Switch between primary frequency source X and the result of primary-secondary operation 4: Switch between auxiliary frequency source Y and the result of primary-secondary operation Tens place: Relationship of primary and secondary frequency sources in operation 0: Primary plus secondary 1: Primary minus secondary 2: Maximum of the two 3: Minimum of the two	00	↗
P0-08	Preset frequency	0.00Hz ~ Maximum frequency (P0-10)	50.00Hz	↗
P0-09	Running direction	0: default direction 1: opposite the default direction	0	↗
P0-10	Maximun-frequency	50.00Hz ~ 500.00Hz	50.00Hz	↗
P0-11	Upper limit frequency source	0: P0-12 setting 1: AI1 2: AI2 3: Keyboard adjustable potentiometer setting 4: PULSE pulse setting 5: Communication given	0	●

P0-12	Upper limiting frequency	Lower limit frequency P0-14 to maximum frequency P0-10	50.00Hz	✓
P0-13	Upper limit frequency bias	0.00Hz ~ the maximum frequency P0-10	0.00Hz	✓
P0-14	Lower limit frequency	0.00Hz ~ upper limit frequency P0-12	0.00Hz	✓
P0-15	Carrier frequency	0.5KHz ~ 16.0KHz	Model determination	✓
P0-16	Carrier frequency is adjusted with the temperature	0: No 1: Yes	1	✓
P0-17	Acceleration time 1	0.00S ~ 65000S	Model determination	✓
P0-18	Slow down time 1	0.00S ~ 65000S	Model determination	✓
P0-19	Time unit of acceleration and deceleration	0: 1s 1: 0.1s 2: 0.01s	1	●
P0-21	Adaid frequency source bias frequency when superposition	1: 0.1Hz 2: 0.01Hz	0.00HZ	●
P0-22	Frequency command resolution	1: 0.1Hz 2: 0.01Hz	2	●
P0-23	Digital setting frequency shutdown memory selection	0: No memory 1: memory	1	
P0-24	Motor selection	0: Motor parameter group 1 1: Motor parameter group 2	1	●
P0-25	Acceleration of deceleration time reference frequency	0: Maximum frequency (P0-10) 1: Set the frequency 2: 100Hz	0	●
P0-26	Runtime requirement rate instruction UP / DOWN baseline	0: Operating frequency 1: Set frequency	0	●
P0-27	Command source bundle frequency source	Ones place: Command binding selection for the operation panel 0: No binding 1: Digital setting frequency 2: AI1 3: AI2 4: Keyboard Adjustable Potentiometer 5: PULSE Pulse setting 6: Multi-speed 7: Simple PLC 8: PID 9: Communication command Tens place: Command binding selection for terminal Hundreds place: Command binding selection for communication commands Thousands place: Command binding selection for automatic operation	0	●
P1 First motor parameters				
FC	Name	Set the scope	Factory default value	Change
P1-00	Motor type selection	0: ordinary assynchronous motor 1: variable frequency assynchronous motor	0	●
P1-01	The motor is rated power	0.1kW ~ 1000.0kW	Model determination	●
P1-02	The motor is rated voltage	1V ~ 380V	Model determination	●
P1-03	Motor face fixed current	0.01A~655.35A (frequency converter power <=55kW) 0.1A~6553.5A (frequency converter power >55kW)	Model determination	●

P1-04	Rated frequency of motor	0.01Hz ~ The maximum frequency	Model determination	●
P1-05	Motor rated speed	1RPM ~ 65535RPM	Model determination	●
P1-06	Asynchronous motor stator resistance	0.001Ω ~ 65.535Ω (Frequency converter power <=55kW) 0.0001Ω ~ 6.5535Ω (Frequency converter power >55kW)	Tuning parameters	●
P1-07	Asynchronous motor rotor resistance	0.001Ω ~ 65.535Ω (Frequency converter power <=55kW) 0.0001Ω ~ 6.5535Ω (Frequency converter power >55kW)	Tuning parameters	●
P1-08	Asynchronous motor mixed sense resistance	0.01MH ~ 655.35MH (Frequency converter power <=55kW) 0.001MH ~ 65.535MH (Frequency converter power >55kW)	Tuning parameters	●
P1-09	Mutual inductive resistance of asynchronous motor	0.1MH ~ 6553.5MH (Frequency converter power <=55kW) 0.01MH ~ 655.35MH (Frequency converter power >55kW)	Tuning parameters	●
P1-10	No-load current of Asynchronous motor	0.01A ~ P1-03 (Frequency converter power <=55kW) 0.1A ~ P1-03 (Frequency converter power >55kW)	Tuning parameters	●
P1-37	Select the spectrum	0: No Operation 1: Asynchronous Machine Stationary Part Parameter Tuning 2: Asynchronous Machine Dynamic Full Tuning 3: Asynchronous Machine Stationary Full Tuning	0	●
P3 V/F control parameters				
FC	Name	Set the scope	Factory default value	Change
P3-00	V/F curve setting	0: Linear V/F 1: Multi-point V/F 2: Square V/F 3: 1.2 Power V/F 4: 1.4 Power V/F 6: 1.6 Power V/F 8: 1.8 Power V/F 10: VF Complete Separation Mode 11: VF Partial Separation Mode	0	✓
P3-01	Recurrent ascension	0.0%: (Automatic torque increase) 0.1%~30.0%	Model determination	✓
P3-02	Torque lift cutoff frequency	0.00Hz ~ the maximum frequency	50.00Hz	✓
P3-03	Multipoint V/F frequency point 1	0.00Hz ~ P3-05	0.00Hz	✓
P3-04	Multipoint V/F voltage point 1	0.0% ~ 100.0%	0.0%	✓
P3-05	Multipoint V/F frequency point 2	P3-03 ~ P3-07	0.00Hz	✓
P3-06	Multipoint V/F voltage point 2	0.0% ~ 100.0%	0.0%	✓
P3-07	Multipoint V/F frequency point 3	P3-05~Motor rated frequency (P1-04)	0.00Hz	✓
P3-08	Multi-point V/F voltage point 3	0.0% ~ 100.0%	0.0%	✓
P3-09	The VF transition compensation gain	0.0% ~ 200.0%	0.0%	✓
P3-10	V/F over impact gain	0 ~ 200	64	✓
P3-11	V/F oscillation suppresses the benefit	0 ~ 100	Model determination	✓

P3-13	Voltage source separated by the VF	0: Number setting (P3-14) 1: AI1 2: AI2 3: AI3 4: PULSE Pulse setting (DI5) 5: Multi-segment command 6: Simple PLC 7: PID 8: Communication command Note: 100.0% corresponds to the motor rated voltage	150%	↗
P3-14	Voltage number setting of the VF division	0V ~ Motor rated voltage	0V	↗
P3-15	Voltage acceleration time for the V/F separation	0.0S ~ 1000.0S Note: It represents the time from 0V to the motor's rated voltage.	0.0S	↗
P3-16	Voltage deceleration time for the V/F separation	0.0S ~ 1000.0S Note: It represents the time from 0V to the motor's rated voltage.	0.0s	↗
P3-17	V/F separation and shutdown mode selection	0: Frequency / voltage independently reduced to 0 1: After the voltage is reduced to 0, the frequency is reduced to 0	0	↗
P3-18	Over-drain speed action current	50~200%	150%	●
P3-19	Excessive loss speed enabling	0: Invalid 1: Valid	1	●
P3-20	Overloss speed suppression gain	0~100	20	●
P3-21	The compensation coefficient of overdrain action current	50~200%	50%	●
P3-22	Over-voltage stall action voltage	Three phases 380 ~ 480 V Model: 330.0V ~ 800.0V Three phases 200 ~ 240 V Model: 330.0V ~ 800.0V	770.0V	●
P3-23	Overpressure stall enabling	0: Invalid 1: Valid	1	●
P3-24	Over-voltage stall suppression frequency gain	0~100	30	↗
P3-25	Over-voltage stallsuppressed voltage gain	0~100	30	↗
P3-26	Maximum rise frequency limit of overvoltage stall	0~50Hz	5Hz	●

P4 Input terminal				
FC	Name	Set the scope	Factory default value	Change
P4-00	X1 Terminal function selection	0: No function 1: Forward run (FWD) 2: Reverse run (REV) 3: Three-wire operation control 4: Forward jog (FJOG) 5: Reverse jog (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Free coasting 9: Fault reset (RESET) 10: Run pause 11: External fault open input 12: Multi-segment instruction terminal 1 13: Multi-segment instruction terminal 2 14: Multi-segment instruction terminal 3 15: Multi-segment instruction terminal 4 16: Acceleration/deceleration time selection terminal 1 17: Acceleration/deceleration time selection terminal 2 18: Frequency source switch 19: UP/DOWN setting reset (terminal, keyboard) 20: Operation command switch terminal 21: Acceleration/deceleration prohibited 22: PID pause 23: PLC status reset 24: Oscillation pause 25: Counter input 26: Counter reset 27: Length count input 28: Length reset 29: Torque control prohibited 30: PULSE (pulse) frequency input (only for X5) 32: Immediate DC braking 33: External fault closed input 34: Frequency modification enable 35: PID action direction reverse 36: External stop terminal 1 37: Control command switch terminal 2 38: PID integral pause 39: Frequency source X and preset frequency switch 40: Frequency source Y and preset frequency switch 41: Motor selection terminal 1 42: Motor selection terminal 2 43: PID parameter switch 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: Running time reset	1	●
P4-01	X2 Terminal function selection		4	●
P4-02	X3 Terminal function selection		9	●
P4-03	X4 Terminal function selection		12	●
P4-04	X5 Terminal function selection		13	●
P4-05	X6 Terminal function selection		0	●

P4-10	X filtering time	0.000S ~ 1.000S	0.010S	↗
P4-11	Terminal command mode	0: Two-wire configuration 1 1: Two-wire configuration 2 2: Three-wire configuration 1 3: Three-wire configuration 2	0	•
P4-12	Rate of change of the terminal UP / DOWN	0.001Hz/S ~ 65.535Hz/S	1.00Hz/S	↗
P4-13	AI Curve 1 minimum input	0.00V ~ P4-15	0.00V	↗
P4-14	R curve 1 minimum input corresponds to the setting	-100.0% ~ +100.0%	0.0%	↗
P4-15	AI curve 1 max input	P4-13 ~ +10.00V	10.00V	↗
P4-16	AI line 1 the maximum entry corresponding setting	-100.0% ~ +100.0%	100.0%	↗
P4-17	The AI1 filtering time	0.00s ~ 10.00s	0.10S	↗
P4-18	AI Curve 2 minimum input	0.00V ~ P4-20	0.00V	↗
P4-19	A Curve 2 The minimum input corresponds to the setting	-100.0% ~ +100.0%	0.0%	↗
P4-20	AI curve 2 maximum input	P4-18 ~ +10.00V	10.00V	↗
P4-21	The AI is set accordingly by the maximum input of line 2	-100.0% ~ +100.0%	100.0%	↗
P4-22	The A12 filtering time	0.00s ~ 10.00s	0.10s	↗
P4-23	Keyboard potentiometer minimum input	0.0V ~ P4-25	0.01V	↗
P4-24	Minimum keyboard potentiometer input corresponds to setting	0 ~ +100.0%	0.0%	↗
P4-25	Keyboard potentiometer maximum input	P4-23 ~ +10.00V	10.00V	↗
P4-26	Maximum keyboard potentiometer input corresponds to setting	-100.0% ~ +100.0%	100.0%	↗
P4-27	Keyboard potentiometer filter time	0.00s ~ 10.00s	0.10S	↗

P5 Output terminal				
FC	Name	Set the scope	Factory default value	Change
P5-00	Y1 terminal output mode selection	0: Pulse output (FMP) 1: Switch volume output (FMR)	1	✓
P5-01	Y1 output function selection	0: No output 1: Frequency converter running 2: Fault output (Fault stop) 3: Frequency level detection PDT1 output 4: Frequency reached 5: Zero speed operation (No output when stopped) 6: Motor overload pre-alarm 7: Frequency converter overload pre-alarm 8: Set value reached 9: Target value reached 10: Length reached 11: Simple PLC cycle complete 12: Accumulated operating time reached 13: Frequency limiting 14: Torque limiting 15: Ready for operation 16: AI1 > AI2 17: Upper limit frequency reached 18: Lower limit frequency reached (Related to operation) 19: Under-voltage output 20: Communication setting 21: Reserved 22: Reserved 23: Zero speed operation 2 (Outputs even when stopped) 24: Accumulated power-up time reached 25: Frequency level detection PDT2 output 26: Frequency 1 reached output 27: Frequency 2 reached output 28: Current 1 reached output 29: Current 2 reached output 30: Timer reached output 31: AI1 input exceeded limit 32: Load drop 33: Reverse operation 34: Zero current state 35: Module temperature reached 36: Output current exceeded limit 37: Lower limit frequency reached (Outputs even when stopped) 38: Alarm output (Continues operation) 39: Motor overtemperature pre-alarm 40: Current operating time reached	0	✓
P5-02	Control board relay, device 1 function selection (TA1-TB1-TC1)		2	✓
P5-03	Control board Relay, device 2 function selection (TA2-TB2-TC2)		0	✓
P5-04	Expansion card relay 2 function selection (R/A2-R/B2-R/C2)		1	✓
P5-05	Y2 output function selection		4	✓

P5-06	The FMP output function selection	0: Running frequency 1: Set frequency 2: Output current 3: Output torque 4: Output power 5: Output voltage 6: PULSE input (100.0% - 100.0kHz) 7: AI1 8: AI2 9: Panel potentiometer 10: Length 11: Memory value 12: Communication setting 13: Motor speed 14: Output current (100.0% corresponds to 1000.0A) 15: Output voltage (100.0% corresponds to 1000.0V)	0	↗
P5-07	A01 output function selection		0	↗
P5-08	A02 output function selection		1	↗
P5-09	FMP output the maximum frequency	0.01kHz ~ 100.00kHz	50.00kHz	↗
P5-10	A01 Zero-bias coefficient	-100.0% ~ +100.0%	0.0%	↗
P5-11	A01 gain	-10.00 ~ +10.00	1.00	↗
P5-12	A02 Zero-bias coefficient	-100.0% ~ +100.0%	0.0%	↗
P5-13	A02 gain	-10.00 ~ +10.00	1.00	↗
P5-17	Y1 output delay time	0.0S ~ 3600.0S	0.0s	↗
P5-18	Relay1 output delay time	0.0S ~ 3600.0S	0.0S	↗
P6 Start and stop control				
FC	Name	Set the scope	Factory default value	Change
P6-00	Starting mode	0: Direct start 1: Speed tracking and restarting 2: Pre-excitation start (AC asynchronous machine)	0	↗
P6-01	Speed tracking method	0: Start from the shutdown frequency 1: Start at zero speed 2: Starting with the maximum frequency	0	●
P6-02	Speed tracking fast and slow	1 ~ 100	20	↗
P6-03	Start frequency	0.00Hz ~ 10.00Hz	0.00Hz	↗
P6-04	Start the frequency hold time	0.0S ~ 100.0S	0.0S	●
P6-05	Start the DC brake current / pre-excitation current	0% ~ 100%	0%	●
P6-06	Start the DC braking time / pre-excitation time	0.0S ~ 100.0S	0.0S	●
P6-07	Add deceleration mode	0: Line acceleration and deceleration 1: S Curve acceleration and deceleration A 2: S Curve acceleration and deceleration B	0	●

P6-08	S curve start period time scale	0.0% ~ (100.0%-P6-09)	30.0%	●
P6-09	S curve end period time scale	0.0% ~ (100.0%-P6-08)	30.0%	●
P6-10	Stopping method	0: Slow down and stop 1: Free parking	0	✓
P6-11	Stopping DC brake starting frequency	0.00Hz ~ the maximum frequency	0.00Hz	✓
P6-12	Stopping DC brake wait time	0.0S ~ 100.0S	0.0S	✓
P6-13	Stopping DC brake current	0% ~ 100%	0%	✓
P6-14	Stopping DC brake time	0.0S ~ 100.0S	0.0S	✓
P6-15	Braking usage rate	0% ~ 100%	100%	✓
P7 Keyboard and display				
FC	Name	Set the scope	Factory default value	Change
P7-01	M-FUNC key function selection	0: M-FUNC Invalid 1: Switch between the operation panel command channel and the remote command channel (terminal command channel or communication command channel) 2: Forward/Reverse switch 3: Forward jog 4: Reverse jog	3	●
P7-02	The STOP / RESET key function	0: The STOP/RES key stop function is effective only in the keyboard operation mode 1: The STOP/RES key stop function is effective in any operation mode	1	✓
P7-06	Load speed display coefficient	0.0001 ~ 6.5000	1.0000	✓
P7-07	Inverter module, the radiator temperature	0.0℃ ~ 100.0℃	-	★
P7-08	Recfier bridge radiator temperature	0.0℃ ~ 100.0℃	-	★
P7-09	Cumulative running time	0H ~ 65535H	-	★
P7-10	Product number	-	-	★
P7-11	Software version number	-	-	★
P7-12	Load speed shows the decimal number	0: Zero decimal places 1: One decimal place 2: Two decimal places 3: Three decimal places	1	✓
P7-13	Cumulative power time	0H ~ 65535H	-	★
P7-14	Cumulative worship of electricity	0 ~ 65535°	-	★
P8 Assisted function				
FC	Name	Set the scope	Factory default value	Change
P8-00	Point movement operation frequency	0.00Hz ~ the maximum frequency	6.00Hz	✓
P8-01	Point motion acceleration time	0.0S ~ 6500.0S	20.0S	✓
P8-02	Point motion deceleration time	0.0S ~ 6500.0S	20.0S	✓
P8-03	Acceleration time 2	0.0S ~ 6500.0S	Model determination	✓
P8-04	Slow down time 2	0.0S ~ 6500.0S	Model determination	✓
P8-05	Acceleration time 3	0.0S ~ 6500.0S	Model determination	✓
P8-06	Slow down time 3	0.0S ~ 6500.0S	Model determination	✓
P8-07	Acceleration time 4	0.0S ~ 6500.0S	Model determination	✓

P8-08	Slow down time 4	0.0S ~ 6500.0S	Model determination	✓
P8-09	Jump frequency 1	0.00Hz ~ the maximum frequency	0.00Hz	✓
P8-10	Jump frequency 2	0.00Hz ~ the maximum frequency	0.00Hz	✓
P8-11	Jump frequency amplitude	0.00Hz ~ the maximum frequency	0.00Hz	✓
P8-12	Forward and reverse dead zone time	0.0S ~ 3000.0S	0.0S	✓
P8-13	Reverse frequency prohibited	0: Allow 1: Prohibited	0	✓
P8-14	Set the frequency below the lower limit frequency operating mode	0: Run at a lower limit frequency 1: Downtime 2: Zero speed operation	0	✓
P8-15	Drop control	0.00HZ ～ 10.00HZ	0.00HZ	✓
P8-16	Set the cumulative power arrival time	0H ～ 65000H	0H	✓
P8-17	Sets the cumulative run arrival time	0H ～ 65000H	0H	✓
P8-18	Terminal run protection selection when power up	0: No protection; 1: Protection	0	✓
P8-22	Whether the jump frequency is effective during the acceleration and deceleration process	0: Invalid; 1: Valid	0	✓
P8-25	Acceleration time 1 and acceleration time 2 switch frequency points	0.00Hz ~ Maximum frequency	0.00Hz	✓
P8-26	The ation time 1 and deceleration time 2 switch frequency points	0.00Hz ~ Maximum frequency	0.00Hz	✓
P8-27	Terminal point motion is preferred	0: Invalid; 1: Valid	0	✓
P8-45	AI1 Input Voltage Protection Lower Limit	0.00V ～ P8-46	3.10V	✓
P8-46	AI1 Input Voltage Protection Upper Limit	P8-45 ～ 10.00V	6.80V	✓
P8-47	Module temperature arrives	0°C～ 100°C	75°C	✓
P8-48	Heat dissipation fan control	0: The fan operates during operation 1: The fan is always running	0	✓
P8-49	Wake up frequency	Dormant frequency (P8-51) ~ Maximum frequency (P0-10)	0.00HZ	✓
P8-50	Wake up delay time	0.0S ～ 6500.0S	0.0S	✓
P8-51	The dormancy frequency	0.00Hz ~ Wake-up frequency (P8-49)	0.00HZ	✓
P8-52	Sleep delay time	0.0S ～ 6500.0S	0.0S	✓
P8-53	Set the arrival time of this run	0.0MIN ～ 6500.0MIN	0.0MIN	✓

P9 Fault and protection

FC	Name	Set the scope	Factory default value	Change
P9-00	Motor overload protection selection	0: Prohibit; 1: Allow	1	✓
P9-01	Motor overload protection gain	0.20 ~ 10.00	1.00	✓
P9-02	Motor overload warning factor	50% ~ 100%	80%	✓

P9-07	Power up to the ground nuisance road protection choice	0: Invalid 1: Valid	1	↗
P9-08	Retain	-	-	★
P9-09	Number of automatic reset	0 ~ 20	0	↗
P9-10	Fault DO action selection during fault automatic reset	0: Do not move 1: Action	0	↗
P9-11	Automatic fault reset interval time	0.1S ~ 100.0S	1.0S	↗
P9-12	Tank welding / contact with suction	Ones place: Input phase loss protection Tens place: Contactor engagement protection 0: Prohibit 1: Allow	00	↗
P9-13	Output the missing phase protection selection	0: Prohibit; 1: Allow	1	↗
P9-14	First failure type	0: No fault 1: Retain 2: Accelerated overcurrent 3: Decelerated overcurrent 4: Constant-speed over-current 5: Accelerated overvoltage 6: Deceleration overvoltage 7: Constant speed overvoltage 8: Buffered resistance to overload 9: Underpressure 10: Frequency converter overload 11: Motor overload 12: Enter the missing phase 13: Output-phase deficiency 14: The module is overheated 15: Department 16: Communication is abnormal 18: The current check quality calculation is constant 19: Abnormal motor spectrum regulation 20: Encoder / PG card is abnormal 21: Abnormal parameter reading and writing 22: The frequency converter hardware is abnormal 23: Motor is short circuit to the ground 24: Retain 25: Retain 26: Run time arrives 27: User-defined fault 1 28: User-defined fault 2 29: Power-up on the time to arrive 30: Loading 31: The PID feedback is lost during the runtime 40: Fast flow limit is available then 41: Switch the motor during operation 42: Excessive speed deviation 43: Motor overspeed 45: Motor over-temperature 51: Initial position error	-	★
P9-15	Second failure type		-	★
P9-16	Third (most recent) Failure type		-	★

P9-17	Frequency of the third (latest) old card	-	-	★
P9-18	Current at the third (latest) failure	-	-	★
P9-19	Third (most time) time domain voltage	-	-	★
P9-20	Fruit three times (new) in the feeling	-	-	★
P9-21	Three times (one question) to the society sense	-	-	★
P9-22	The third (the most tongue) fault occurs	-	-	★
P9-23	Power up time for the third (worst) barrier	-	-	★
P9-24	Run time for the third (latest) failure	-	-	★
P9-27	Frequency at the second failure	-	-	★
P9-28	Current at the second fault	-	-	★
P9-29	Bus voltage during the second failure	-	-	★
P9-30	Enter the terminal status for the second fault	-	-	★
P9-31	Output terminal status at the second failure	-	-	★
P9-32	Frequter status during the second failure	-	-	★
P9-33	Power-on time during the second failure	-	-	★
P9-34	Run time for the second failure time	-	-	★
P9-37	Frequency at the first failure	-	-	★
P9-38	Current at the first fault	-	-	★
P9-39	Bus voltage at the first failure	-	-	★
P9-40	Enter the terminal status at the first failure	-	-	★
P9-41	Output terminal status at the first failure	-	-	★
P9-42	Frequency converter status at the first failure	-	-	★
P9-43	Power time during the first failure	-	-	★
P9-44	Run time during the first failure	-	-	★

P9-47	Fault protection action selection 1	Individual place: Motor overload (ERR11) 0: Free stop 1: Stop according to stop mode 2: Continue operation Tens place: Input phase missing (ERR12) (0~2) Same as individual place Hundreds place: Output phase missing (ERR13) (0~2) Same as individual place Thousands place: External fault (ERR15) (0~2) Same as individual place Ten thousands place: Communication exception (ERR16) (0~2) Same as individual place	0000	✓
P9-54	Continue running frequency selection when failure	0: Run at the current operating frequency 1: Run at the set frequency 2: Run at the maximum frequency 3: Run at the minimum frequency 4: Run at the emergency backup frequency	0	✓
P9-55	Abnormal backup frequency	0.0% ~ 100.0% (100.0% corresponds to the maximum frequency of P0–10)	100.0%	✓
P9-56	Motor temperature sensor type	0: No temperature sensor 1: PT100 2: PT1000	0	✓
P9-57	Motor overheat protection threshold	0 ~ 200 ℃	110℃	✓
P9-58	Motor overheating forecast alarm threshold	0 ~ 200℃	90℃	✓
P9-59	Inststant stop function selection	0: Invalid 1: Bus voltage is under constant control 2: Slow down	0	•
P9-60	Instant action pause judgment voltage	80.0% ~ 100.0%	85.0%	•
P9-61	Time of instantaneous power outage voltage recovery	0.00s ~ 100.00S	0.50S	•
P9-62	The instantaneous power outage action determines the voltage	60.0%~100.0% (standard bus bar voltage)	80.0%	✓
P9-63	Loading protection options	0: Invalid 1: Valid	0	✓
P9-64	Desload detection level	0.0 ~ 100.0%	10.0%	✓
P9-65	Deload detection time	0.0 ~ 60.0S	1.0S	✓
P9-67	Overspeed detection value	0.0%~50.0% (Maximum frequency)	20.0%	✓
P9-68	Overspeed detection time	0.0S ~ 60.0S	1.0S	✓
P9-69	Excessive velocity deviation and the detection value	0.0%~50.0% (Maximum frequency)	20.0%	✓
P9-70	Speed deviation is too large for the detection time	0.0S ~ 60.0S	5.0S	✓

PA PID function				
FC	Name	Set the scope	Factory default value	Change
PA-00	PID for a given source	0: PA-01 setting 1: AI1 2: AI2 3: Keyboard Adjustable Potentiometer 4: PULSE Pulse setting (X5) 5: Communication setpoint 6: Multi-segment instruction setpoint	0	✓
PA-01	The PID values are given	0.0% ~ 100.0%	50.0%	✓
PA-02	PID feedback source	0: AI1 1: AI2 2: Keyboard Adjustable Potentiometer 3: AI1-AI2 4: PULSE Pulse setting (X5) 5: Communication setpoint 6: AI1+AI2 7: MAX (|AI1|, |AI2|) 8: MIN (|AI1|, |AI2|)	0	✓
PA-03	PID application direction	0: Positive action 1: Negative action	0	✓
PA-04	PID given the feedback range	0 ~ 65535	100	✓
PA-05	Proportional gain of KP 1	0.0 ~ 100.0	20.0	✓
PA-06	Integral of the time, TI1	0.01S ~ 10.00S	0.50S	✓
PA-07	Differential time, TD1	0.000S ~ 10.000S	0.000S	✓
PA-08	PID reversal cutoff frequency	0.00 ~ Maximum frequency	0Hz	✓
PA-09	The PID deviation limit	0.0% ~ 100.0%	0.0%	✓
PA-10	PID differential limit amplitude	0.00% ~ 100.00%	0.10%	✓
PA-11	PID given the time of change	0.00 ~ 650.00S	0.00S	✓
PA-12	The PID feedback filtering time	0.00 ~ 60.00S	0.00S	✓
PA-13	The PID output filter time	0.00 ~ 60.00S	0.00S	✓
PA-15	Proportional gain of KP 2	0.0 ~ 100.0	20.0	✓
PA-16	Integral time, TI2	0.01S ~ 10.00S	2.00S	✓
PA-17	Differential time, TD2	0.000S ~ 10.000S	0.000S	✓
PA-18	The PID parameter switching condition	0: No switching 1: Switch through X terminal 2: Automatic switching based on deviation	0	✓
PA-19	PID parameter switching deviation 1	0.0% ~ PA-20	20.0%	✓
PA-20	PID parameter switching deviation 2	PA-19 ~ 100.0%	80.0%	✓

PA-21	PID starter	0.0% ~ 100.0%	0.0%	✓
PA-22	PID initial value holding time	0.00 ~ 650.00S	0.00s	✓
PA-23	Two consecutive positive output deviations at maximum value	0.00% ~ 100.00%	1.00%	✓
PA-24	Two consecutive negative output deviations at maximum value	0.00% ~ 100.00%	1.00%	✓
PA-25	The PID integration attribute	Individual place: Integral separation 0: Invalid 1: Valid Tens place: Stop integration after output reaches limit 0: Continue integration 1: Stop integration	00	✓
PA-26	PID feedback loss detection value	0.0%: No judgment of feedback loss 0.1% ~ 100.0%	0.0%	✓
PA-27	PID feedback loss detection time	0.0S ~ 20.0S	0.0S	✓
PA-28	The PID shutdown operation	0: No operation during shutdown 1: Operation during shutdown	0	✓

Pd Communication parameters				
FC	Name	Set the scope	Factory default value	Change
Pd-00	Baud rate	Individual place: MODBUS 0 : 300BPS 1 : 600BPS 2 : 1200BPS 3 : 2400BPS 4 : 4800BPS 5 : 9600BPS 6 : 19200BPS 7 : 38400BPS 8 : 57600BPS 9 : 115200BPS	6005	✓
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	✓
Pd-02	This machine address	1~247, 0 is the broadcast address	1	✓
Pd-03	Answering delay	0MS ~ 20MS	2	✓
Pd-04	Communication timeout time	0.0 (Invalid), 0.1S ~ 60.0S	0 . 0	✓
Pd-05	Data transfer format selection	Individual place: MODBUS 0: Non-standard MODBUS protocol 1: Standard MODBUS protocol	30	✓
Pd-06	Communication to read the current resolution	0 : 0.01A 1 : 0.1A	0	✓

PP Function code management				
FC	Name	Set the scope	Factory default value	Change
PP-00	User password	0 ~ 65535	0	✓
PP-01	Parameter initialization	0: No operation 01: Restore factory settings, excluding motor parameters	0	●
PP-02	Functional parameter group display selection	Individual place: U group display selection 0: Do not display; 1: Display Tens place: A group display selection 0: Do not display; 1: Display	11	✓
PP-04	The function code modifies the properties	0: Modifiable 1: Unmodifiable	0	✓
A5 Control optimization parameters				
FC	Name	Set the scope	Factory default value	Change
A5-00	DPWM switching upper limit frequency	0.00HZ ～ 15.00Hz	8.00Hz	✓
A5-01	PWM modulation mode	0: Asynchronous modulation 1: Synchronous modulation	0	✓
A5-02	Selection of dead zone compensation mode	0: No compensation 1: Compensation mode 1 2: Compensation mode 2	1	✓
A5-03	Random PWM depth	0: Random PWM disabled 1~10: PWM carrier frequency with random depth	0	✓
A5-04	Fast flow limiting enabling	0: Not enable 1: Enable	1	✓
A5-05	Current detection compensation	0 ～ 100	5	✓
A5-06	Underpressure point setting	60.0% ～ 140.0%	100.0%	✓
A5-07	SVC-optimized mode selection	0: Unoptimized 1: Optimization mode 1 2: Optimization mode 2	1	✓
A5-08	Time adjustment of dead zone	100% ～ 200%	150%	✓

FAULT DIAGNOSIS AND COUNTERMEASURES

Fault code	Fault name	Troubleshooting of fault causes	Fault handling strategies
ERR02	Acceleration overcurrent	1. Grounding or short circuit in the inverter output circuit 2. Control mode is vector without parameter identification 3. Too short acceleration time 4. Manual torque boost or inappropriate V/F curve 5. Low voltage 6. Starting on a rotating motor 7. Sudden load increase during acceleration 8. Undersized inverter selection	1. Troubleshoot peripheral issues 2. Perform motor parameter identification 3. Increase acceleration time 4. Adjust manual boost torque or V/F curve 5. Set voltage to the normal range 6. Select speed tracking start or restart after the motor stops 7. Eliminate sudden load addition 8. Choose a larger power rating inverter
ERR03	Deceleration overcurrent	1. The output circuit of the inverter has a ground or short circuit. 2. The control mode is vector without parameter identification. 3. The deceleration time is too short. 4. The voltage is low. 5. A sudden load is added during the deceleration process. 6. No braking unit and braking resistor have been installed.	1. Eliminate peripheral faults. 2. Conduct motor parameter identification. 3. Increase deceleration time. 4. Adjust the voltage to the normal range. 5. Cancel sudden load addition. 6. Install a braking unit and resistor.
ERR04	Constant speed overcurrent	1. Troubleshoot peripheral issues. 2. Perform motor parameter identification. 3. Increase deceleration time. 4. Adjust voltage to the normal range. 5. Cancel sudden load increments. 6. Install braking unit and resistance.	1. Exclude peripheral malfunctions. 2. Conduct motor parameter recognition. 3. Adjust the voltage to the normal range. 4. Eliminate sudden load impositions. 5. Opt for an inverter with a higher power rating.
ERR05	Acceleration overvoltage	1. Input voltage is too high. 2. During acceleration, there is external force driving the motor operation. 3. Acceleration time is too short. 4. No braking unit and braking resistor have been added.	1. Adjust the voltage to the normal range. 2. Eliminate the external force or add a braking resistor. 3. Increase the acceleration time. 4. Install a braking unit and resistor.
ERR06	Deceleration overvoltage	1. Input voltage is too high. 2. During deceleration, there is external force driving the motor operation. 3. Deceleration time is too short. 4. No braking unit and braking resistor have been installed.	1. Adjust the voltage to the normal range. 2. Eliminate the external force or add a braking resistor. 3. Increase the acceleration time. 4. Install a braking unit and a resistor.
ERR07	Constant speed overvoltage	1. The input voltage is too high. 2. An external force is driving the motor during operation.	1. Adjust the voltage to the normal range. 2. Eliminate the external force or install a braking resistor.
ERR08	Control power supply failure	The input voltage is not within the specified range.	Adjust the voltage to the range required by the specifications.
ERR09	Undervoltage fault	1. Instantaneous power outage. 2. The input voltage of the inverter is not within the specified range. 3. The bus voltage is abnormal. 4. The rectifier bridge and buffer resistor are abnormal. 5. The driving board is abnormal. 6. The control board is abnormal.	1. Reset the fault. 2. Adjust the voltage to the normal range. 3. Seek technical support. 4. Seek technical support. 5. Seek technical support. 6. Seek technical support.

ERR10	Frequency converter overload	1. Is the load too high or is the motor locked? 2. The inverter is undersized.	1. Reduce the load and check the mechanical condition of the motor. 2. Select an inverter with a higher power rating.
ERR11	Motor overload	1. Is the motor protection parameter P9-01 set appropriately? 2. Is the load too high or has the motor locked? 3. The inverter is undersized.	1. Properly set this parameter. 2. Reduce the load and inspect the motor and mechanical conditions. 3. Choose an inverter with a higher power rating.
ERR12	Input phase loss	1. The three-phase input power supply is abnormal. 2. The drive board is abnormal. 3. The lightning protection board is abnormal. 4. The main control board is abnormal.	1. Check and troubleshoot the issues with the peripheral circuitry. 2. Seek technical support. 3. Seek technical support. 4. Seek technical support.
ERR13	Output phase loss	1. The wiring from the inverter to the motor is abnormal. 2. The three-phase output of the inverter is unbalanced during motor operation. 3. The drive board is abnormal. 4. The module is abnormal.	1. Troubleshoot peripheral issues. 2. Check if the three-phase windings of the motor are normal and troubleshoot any issues found. 3. Seek technical support. 4. Seek technical support.
ERR14	The module overheating	1. Ambient temperature is too high. 2. The air duct is blocked. 3. The fan is damaged. 4. The thermal resistor of the module is damaged. 5. The inverter module is damaged.	1. Reduce the ambient temperature. 2. Clear the air duct. 3. Replace the fan. 4. Replace the thermal resistor. 5. Replace the inverter module.
ERR15	External equipment failure	1. Input an external fault signal through the multifunctional terminal X. 2. Input an external fault signal through the virtual IO function.	1. Reset and resume operation. 2. Reset and resume operation.
ERR16	Communication failure	1. The upper computer is not functioning properly. 2. The communication line is abnormal. 3. The communication parameters in the PD group are not set correctly.	1. Check the upper computer's wiring. 2. Inspect the communication connection cable. 3. Properly set the communication parameters.
ERR17	Contactor failure	1. The drive board and power supply are abnormal. 2. The contactor is abnormal.	1. Replace the drive board or power supply board. 2. Replace the contactor.
ERR18	Current detection failure	1. Check for abnormalities in the Hall device. 2. The drive board is abnormal.	1. Replace the Hall device. 2. Replace the drive board.
ERR19	Motor tuning fault	1. The motor parameters have not been set according to the nameplate. 2. The parameter identification process has timed out.	1. Correctly set the motor parameters according to the nameplate. 2. Inspect the wiring from the inverter to the motor.
ERR21	EEPROM Read and write fault	1. The EEPROM chip is damaged.	1. Replace the main control board.
ERR23	Short circuit to ground fault	1. The motor is short-circuited to ground.	1. Replace the cable or the motor.
ERR40	Wave-by-wave flow limit failure	1. Is the load too high or is the motor blocked? 2. The inverter is undersized.	1. Reduce the load and check the mechanical condition of the motor. 2. Select an inverter with a higher power rating.
ERR42	Excessive speed deviation and large fault	1. The encoder parameters are not set correctly. 2. Parameter identification has not been performed. 3. The speed deviation is too large; the detection parameters P9-69 and FP9-70 are set unreasonably.	1. Properly set the encoder parameters. 2. Conduct motor parameter identification. 3. Reasonably set the detection parameters based on actual conditions.

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