Asynchronous motor

PMSM

9600 series
High performance vector frequency inverter
Product instructions

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Product description

9600 series frequency inverter

CNweiken main models of 9600 series frequency inverter based company to customer needs accurate understanding,adhering to the company for high quality and high reliability has always been the pursuit,9600series frequency inverter can provide exvellent performance and powerful functions for customer,the purpose is bring brand-new user experience.

Support vector control of multiple motors

* *Supports the three phase AC asynchronous motor*
* *Supports the three phase AC synchronous motor*
* *Supports vector control of permanent magnet synchronous motor without absolute position feedback*

Asynchronous motor PMSM

Support multiple encoders

DPCM encoder

Open collector encoder

UVWencoder

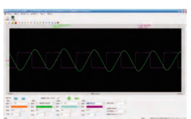
Rotating transformer encoder

New speed sensorless vector control performance

- Speed sensorless vector control performance can locked-rotro,output 150% rated torque at 0.5HZ.
- Sensorless vector control to reduce the sensitivity of the parameters of the motor,improve the field adaptability.
- Can be applied to winding control,multi motor drive load distribution under the same load and so on.

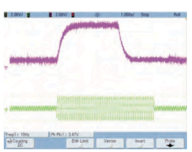
High starting torque characteristics

9600series frequency inverter in the 0.5HZ can provide 150% of the starting torque(sensorless vector control).The 0HZ can provide 180% zero speed torque(sensing vector control)



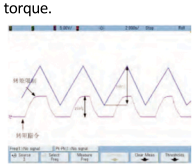
Excellent responsiveness

Torque response<20ms when sensorless vector control.
torque response <5ms when sensing vector control.



Protect torque limit of the mechanical

9600 series frequency inverter can provide limited torque.when the torque command more than machinery to be able to withstand the maximum torque,frequency inverter can make the torque limit play a mechanical maximum efficiency under the premise of the proper protective equipment safety wirhin the set of maximum torque.



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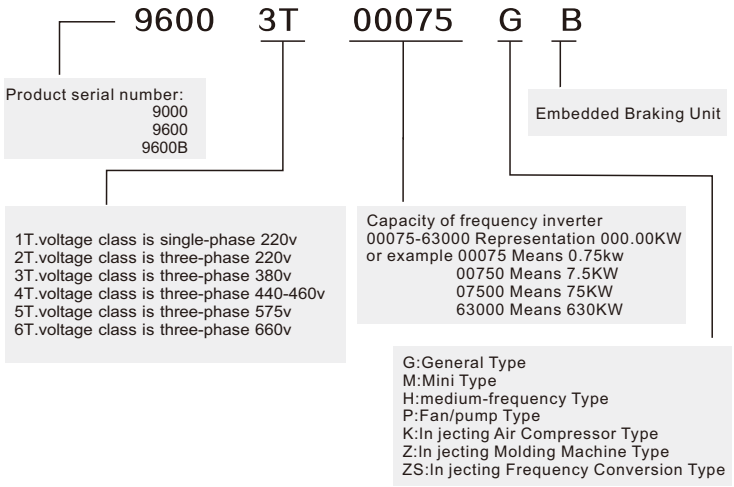
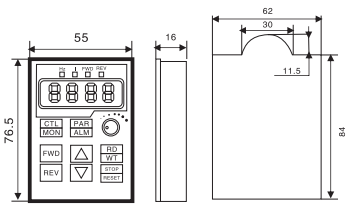
Chapter 1:Description of model

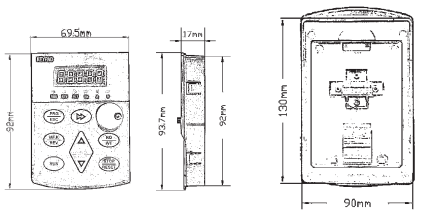


Chapter 2:Outline drawings and dimensions

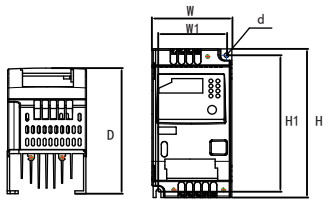
2.1 Small keyboard and mounting holes



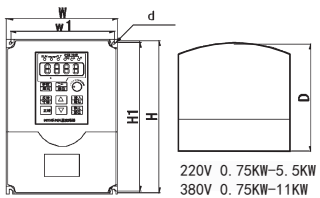
2.2 Big keyboard and mounting holes



2.3 Plastic shell products(0.75kw-11kw)

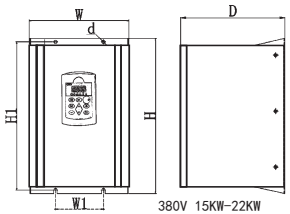


220V 0.75KW-2.2KW M type
380V 0.75KW-4.0KW M type

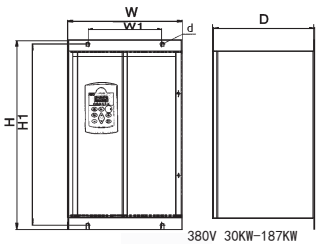


220V 0.75KW-5.5KW
380V 0.75KW-11KW

2.4 Iron shell products(15kw-187kw)

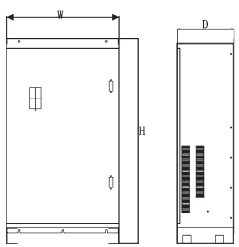


380V 15KW-22KW

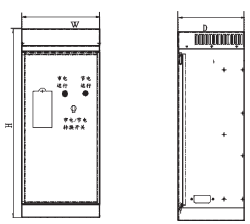


380V 30KW-187KW

2.5 Large power products(200kw-630kw)



2.6 Frequency conversion cabinet(11kw-110kw)



2.7 Product outline dimension and installation hole position size list

Inverter Type			W (mm)	W1 (mm)	H (mm)	H1 (mm)	D (mm)	d (mm)
9600-3T-00075-M	9600-1T-00075-M		80	76	160	150	135	Φ4
9600-3T-00150-M	9600-1T-00150-M							
9600-3T-00220-M	9600-1T-00220-M							
9600-3T-00075-G	9600-1T-00075-G		126	115	170	160	160	Φ4
9600-3T-00150-G	9600-1T-00150-G							
9600-3T-00220-G	9600-1T-00220-G							
9600-3T-00400-G	9600-1T-00400-G							
9600-3T-00550-G								
	9600-3T-00750-P	9600-1T-00550-G	150	134	220	203	172	Φ4
9600-3T-00750-G	9600-3T-01100-P							
9600-3T-01100-G	9600-3T-01500-P							
9600-3T-01100-G	9600-3T-01500-P	(Iron)	150	88	270	260	177	Φ9
9600-3T-01500-G	9600-3T-01850-P		218	108	338	323	228	Φ9
9600-3T-01850-G	9600-3T-02200-P							
9600-3T-02200-G	9600-3T-03000-P							
9600-3T-03000-G	9600-3T-03700-P	9600-6T-01850-G	280	180	420	403	275	Φ9
9600-3T-03700-G	9600-3T-04500-P	9600-6T-02200-G						
9600-3T-04500-G	9600-3T-05500-P	9600-6T-03700-G	370	200	600	579	315	Φ11
9600-3T-05500-G	9600-3T-07500-P	9600-6T-04500-G						
9600-3T-07500-G	9600-3T-09300-P	9600-6T-05500-G						
9600-3T-09300-G	9600-3T-11000-P	9600-6T-07500-G						
9600-3T-11000-G	9600-3T-13200-P	9600-6T-09300-G						
9600-3T-13200-G	9600-3T-16000-P	9600-6T-11000-G	430	300	800	775	358	Φ11
9600-3T-16000-G	9600-3T-18700-P	9600-6T-13200-G						
9600-3T-18700-G	9600-3T-20000-P	9600-6T-16000-G						
9600-3T-20000-G	9600-3T-22000-P	9600-6T-18700-G	692	–	1260	–	355	–
9600-3T-22000-G	9600-3T-25000-P	9600-6T-20000-G						
9600-3T-25000-G	9600-3T-28000-P	9600-6T-22000-G						
9600-3T-28000-G	9600-3T-31500-P	9600-6T-25000-G						
9600-3T-31500-G	9600-3T-37500-P	9600-6T-28000-G						
9600-3T-37500-G	9600-3T-40000-P	9600-6T-31500-G						
9600-3T-40000-G	9600-3T-45000-P	9600-6T-37500-G	Please take the actual size as the criterion					
9600-3T-45000-G	9600-3T-50000-P	9600-6T-40000-G						
9600-3T-50000-G	9600-3T-56000-P	9600-6T-45000-G						
9600-3T-56000-G	9600-3T-63000-P	9600-6T-50000-G						
9600-3T-63000-G		9600-6T-56000-G						
		9600-6T-63000-G						
9600-3T-00750-ZS-B	9600-3T-01500-ZS-B		230	–	570	–	240	–
9600-3T-01100-ZS-B	9600-3T-01850-ZS-B							
9600-3T-02200-ZS	9600-3T-03000-ZS	9600-3T-03700-ZS	280	–	700	–	270	–
9600-3T-04500-ZS	9600-3T-05500-ZS	9600-3T-07500-ZS	320	–	930	–	340	–
9600-3T-09300-ZS	9600-3T-11000-ZS							

Note:other models of product dimensions can refer to the above products.

Chapter 3:Technology standard and selection

3.1 Explanation form of 9600 series technical parameter

Item		Specifications	
Standard functions	Maximum frequency	• Vector control: 0–650 Hz/0-3200Hz • V/F control: 0–650 Hz/0-3200Hz	
	Carrier frequency	0.5–16 kHz The carrier frequency is automatically adjusted based on the load features.	
	Input frequency resolution	Digital setting: 0.01 Hz Analog setting: maximum frequency x 0.025%	
	Control mode	• Sensorless flux vector control (SFVC) • Closed-loop vector control (CLVC) • Voltage/Frequency (V/F) control	
	Startup torque	• G type: 0.5 Hz/150% (SFVC); 0 Hz/180% (CLVC) • P type: 0.5 Hz/100%	
	Speed range	1:100 (SVC)	1:1000 (FVC)
	Speed stability accuracy	• ± 0.5% (SVC) • ± 0.02% (FVC)	
	Torque control accuracy	± 5% (CLVC)	
Standard functions	Overload capacity	• G type: 60s for 150% of the rated current, 3s for 180% of the rated current • P type: 60s for 120% of the rated current, 3s for 150% of the rated current	
	Torque boost	• Fixed boost • Customized boost 0.1%–30.0%	
	V/F curve	• Straight-line V/F curve • Multi-point V/F curve • N-power V/F curve (1.2-power, 1.4-power, 1.6-power, 1.8-power, square)	
	V/F separation	Two types: complete separation; half separation	
	Ramp mode	• Straight-line ramp • S-curve ramp Four groups of acceleration/deceleration time with the range of 0.0–6500.0s	
	DC braking	DC braking frequency: 0.00 Hz to maximum frequency Braking time: 0.0–36.0s Braking action current value: 0.0%–100.0%	
	JOG control	JOG frequency range: 0.00–50.00 Hz JOG acceleration/deceleration time: 0.0–6500.0s	
	Onboard multiple preset speeds	It implements up to 16 speeds via the simple PLC function or combination of X terminal states.	
	Onboard PID	It realizes process-controlled closed loop control system easily.	
	Auto voltage regulation (AVR)	It can keep constant output voltage automatically when the mains voltage changes.	
	Overvoltage/ Overcurrent stall control	The current and voltage are limited automatically during the running process so as to avoid frequent tripping due to overvoltage/overcurrent.	
	Torque limit and control	It can limit the torque automatically and prevent frequent over current tripping during the running process. Torque control can be implemented in the FVC mode.	
Individualized functions	High performance	Control of asynchronous motor and synchronous motor are implemented through the high-performance current vector control technology.	
	Power dip ride through	The load feedback energy compensates the voltage reduction so that the AC drive can continue to run for a short time.	
	Rapid current limit	It helps to avoid frequent overcurrent faults of the AC drive.	
	Virtual I/Os	Five groups of virtual DI/Dos can realize simple logic control.	
	Timing control	Time range: 0.0–6500.0 minutes	
	Multi-motor switchover	Four motors can be switched over via four groups of motor parameters.	
	Multiple communication protocols	It supports communication via Modbus-RTU, PROFIBUS-DP, CANlink and CANopen.	
	Motor overheat protection	The optional I/O extension card enables AI3 to receive the motor temperature sensor input (PT100, PT1000) so as to realize motor overheat protection.	
	Multiple encoder types	It supports various encoders such as differential encoder, open-collector encoder, resolver, UVW encoder, and SIN/ COS encoder.	

Item		Specifications
Individualized functions	User programmable function	The optional programming card helps you to realize secondary development. Its programming environment is compatible with that of the PLC of Inovance.
	Advanced background software	It supports the operation of AC drive parameters and virtual oscillograph function, via which the state inside the AC drive is monitored.
RUN	Running command source	• Operation panel • Control terminals • Serial communication port You can perform switchover between these sources in various ways.
	Frequency source	There are a total of 10 frequency sources, such as digital setting, analog voltage setting, analog current setting, pulse setting and serial communication port setting. You can perform switchover between these sources in various ways.
	Auxiliary frequency source	There are ten auxiliary frequency sources. It can implement fine tuning of auxiliary frequency and frequency synthesis.
	Input terminal	Standard: 6 digital input (X) terminals, two of which supports up to 100 kHz high-speed pulse input 2 analog input (AI) terminals, one of which only supports 0–10 V voltage input and the other supports 0–10 V voltage input or 4–20 mA current input Expanding capacity: 4 X terminals 1 AI terminal that supports -10–10 V voltage input and also supports PT100\PT1000
	Output terminal	Standard 1 high-speed pulse output terminal (open-collector) that supports 0–100 kHz square wave signal output 1 digital output (DO) terminal 1 relay output terminal 1 analog output (AM) terminal that supports 0–20 mA current output or 0–10 V voltage output Expanding capacity: 1 DO terminal 1 relay output terminal 1 AO2 terminal that supports 0–20 mA current output or 0–10 V voltage output
Display and operation on the operation panel	LED display	It displays the parameters.
	Key locking and function selection	It can lock the keys partially or completely and define the function range of some keys so as to prevent mis-function.
	Protection mode	Motor short-circuit detection at power-on, input/output phase loss protection, overcurrent protection, overvoltage protection, undervoltage protection, overheat protection and overload protection
	Optional parts	LCD operation panel, braking unit, I/O extension card 1, I/O extension card 2, user programmable card, RS485 communication card, PROFIBUS-DP communication card, CANlink communication card, CANopen communication card, differential input PG card, UVW differential input PG card, resolver PG card and OC input PG card
Environment	Installation location	Indoor, free from direct sunlight, dust, corrosive gas, combustible gas, oil smoke, vapour, drip or salt.
	Altitude	Lower than 1000 m
	Ambient temperature	-10°C to +40°C (de-rated if the ambient temperature is between 40°C and 50°C)
	Humidity	Less than 95%RH, without condensing
	Vibration	Less than 5.9 m/s2 (0.6 g)
	Storage temperature	-20°C to +60°C
	IP level	IP20
	Pollution degree	PD2
	Power distribution system	TN , TT

3.2 Frequency inverter selection table

Voltage(V)	220V (1F)	220V (240V)	380V (415V)	460V (440V)	575V	660V
Power(KW)	Current(A)	Current(A)	Current(A)	Current(A)	Current(A)	Current(A)
0.4	2.5	2.5				
0.75	4	4	2.5	2.5		
1.5	7	7	3.7	3.7		
2.2	10	10	5	5		
4	16	16	8.5	8		
5.5	20	20	13	11		
7.5	30	30	16	15		
11	42	42	25	22	17	15
15	55	55	32	27	22	18
18.5	70	70	38	34	26	22
22	80	80	45	40	33	28
30	110	110	60	55	41	35
37		130	75	65	52	45
45		160	90	80	62	52
55		200	110	100	76	63
75		260	150	130	104	86
83		320	170	147	117	98
110		380	210	180	145	121
132		420	250	216	173	150
160		550	300	259	207	175
187		600	340	300	230	198
200		660	380	328	263	218
220		720	415	358	287	240
250			470	400	325	270
280			520	449	360	330
315			600	516	415	345
375			680	600	450	390
400			750	650	520	430
450			820	720	650	465
500			900	800	700	550
560			1000	900	780	590
630			1100	1000	850	680

Note:
The common inverter, also called constant torque converter.Overload current 1.5 times of 1 minute,2 times the current instantaneous protection;Fan and water pump inverter also called load inverter,overload current 1.2 times 1 minutes, 1.5 times the current instantaneous protection;When we chooce the type of inverter,the general smaller level is of fan and water pump type.But considering the safety,we recommendations of fan and water pump also try to use common type,in order to avoid overload protection to affect production.

3.3 Guide for selection of brake components

Introduction for selection brake assemblies

Under the table to guide the data, the user can choose according to the actual situation of different resistance and power,resistance must not be less than table recommended values,but the power can be enlarged,the selection of braking resistor need according to the power of motor power of the practical application of the system to determine,and system inertia,deceleration time and potential energy load energy.

Resistance selec0tion

When braking,the regenerative energy of the motor is almost completely consumed on the braking resistance.
According to the formula:U*U/R=Pb

◆The U in the formula-brake voltage of the system stable brake
(different systems are not the same,for the general choice of 380V AC system 700V)
◆Pb---brake power

Power selection of brake resistance

In theory,the braking resistance is in agreement with the power and braking power,but the reduction is 70%.According to the formula:0.7*Pr=Pb*D

◆Pr-----power of the resistance
◆D-----brake frequency
(the regeneration process accounts for the proportion of the entire working process)

▶Elevator----20%~30% ▶Winding or unwinding machine----20%~30%
▶Centrifuge----50%~60% ▶Accidental braking load----5% ▶General take 10%

Table for selection brake assemblies

Voltage(V)	Power	Resistance(Ω)	Capacity(w)	Remarks
220	0.4KW	200	80	When ordering, the built-in braking unit can be customized.
	0.75KW	200	80	
	1.5KW	100	150	
	2.2KW	60	250	
	3.7KW	40	300	
	5.5KW	30	500	
380	0.75KW	360	200	
	1.5KW	180	400	
	2.2KW	180	400	
	3.7KW	100	500	
	5.5KW	100	500	
	7.5KW	50	1000	
	11KW	50	1000	
	15KW	40	1500	
	18.5KW	40	1500	
	22KW	30	3000	
	30KW	20	5000	
	37KW	20	5000	
	45KW	15	9600	
	55KW	15	10000	

Voltage(V)	Power	Resistance(Ω)	Capacity(w)	Remarks
380	75KW	10	12000	When ordering, the built-in braking unit can be customized.
	93KW	8	20000	
	110KW	8	20000	
	132KW	6	25000	
	160KW	6	25000	
The discharge period is defined as 10%				

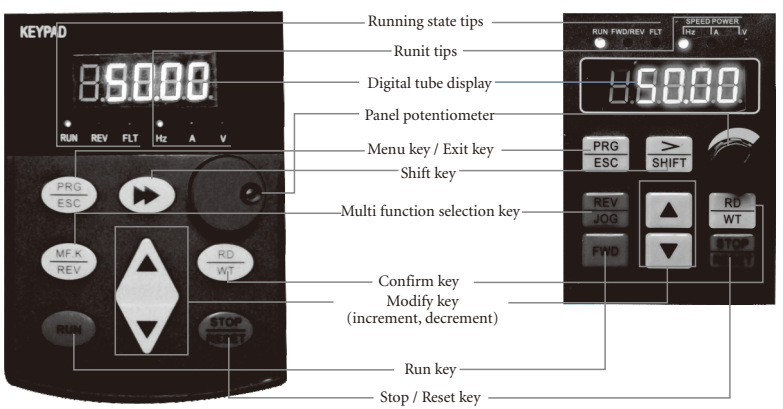
Remarks:

- Brake assembly be used in the consumption of certain potential large inertia load to the inverter feedback energy,avoid the cause of converter tripping over high voltage.Suitable for Large inertia load and frequent braking or fast parking.
- The discharge resistance is not directly connected to the N/P terminal,if the the terminal is P/N, must be add additional to the brake discharge module.If you need to use P/N terminal on 93KW above,please declare in order.4

Chapter 4:Operation panel instructions

4.1 Operation panel diagram and key description

You can use the operation panel to modify the function parameters of the frequency inverter, also monitoring frequency inverter working state and operation control frequency inverter (start, stop) and so on, the external of panel and function area as shown below:



4.11 Instructions of function indicator

RUN:When lamp is off means the frequency inverter is shutdown, when lamp is on means the frequency inverter is running.

LOCAL/REMOT:Keyboard operation, terminal operation and remote operation (communication control) indicator, the lamp is off means the keyboard operation control state, the lamp is on means indicates terminal operation and control state, the lamp is flashes that is in the remote operation control state.

FWD/REV:forward and reverse inversion indicator, the indicator is on means in a forward state.

TUNE/TC:Tuned / torque control / fault indicator light, when the lamp on means into a torque control mode, when the lamp flashes slow means into a tuned state,when the lamp flashes fast means into a state of fault.

4.12 Unit indicate lamp

Hz:Frequency unit A:current unit V:voltage unit

RMP(Hz+A):Unit for speed of revolution %(A+V):percentage

4.13 Digital display area

5 bit LED display, can display the set frequency, output frequency, a variety of monitoring data and alarm code, etc.

4.2 The explanation of function keys

Keystoke sign	Name	Function discription
PRG / ESC	Programming key	First level menu to enter or exit.
RO / WT	Readout/writein key	For reading the parameter value or confirm the datas write-in effectly.
▶▶	Right shift key	In the shutdown display interface and operation interface, can achieve right shift cycle to display parameters and can change the parameters in the selected position.
▲	Increasing key	Increasing of datas or parameter code.
▼	Decreasing key	Decreasing of datas or parameter code.
RUN/FWD	Running key	For controlling forward running of frequency inverter.
STOP/RES	Stop/reset key	In the running state,press this key can be used to stop running.When alarm status,all control modes are available to reset the key operation. The function code P7-02 control.
MF.K / REV	Fast multi function key	This function is determined by the function code "P7-01".

4.3 The explanation of function keys

4.31 In the stop or running state, through the shift key can be displayed by a variety of state parameters. By the function code P7-03 (running parameter 1), P7-04 (running parameter 2), P7-05 (stop parameter) according to the binary bit select this parameter is displayed or not displayed.

4.32 In the stop state, a total of sixteen down state parameters can choose whether to display, respectively: set the frequency, generatrix voltage, X input, DO input, analog input AI1 voltage, analog input AI2 voltage, analog input AI3 voltage, the actual value, the actual length, PLC operation steps number, load speed display, PID set, PULSE input pulse frequency and 3 anti retention parameters, key sequence switch displays the selected parameters.

4.33 At running state, the five operating state parameters: running frequency, frequency setting, bus voltage, output voltage, output current is the default display, display the other parameters: output power, output torque, X input state, DO output state, analog input AI1 voltage, analog input AI2 voltage , analog input AI3 voltage . The actual value, the actual length, line speed, displayed or not displayed of PID set and feedback up to function code P7-03, P7-04 bitwise (convert binary) choice, key sequence switch displays the selected parameters.

4.4 Automatic tuning of motor parameters

Choose vector control operation mode, before the frequency inverter operation, must accurately input parameters of motor nameplate, 9600 inverter according to nameplate parameters matching standard motor parameter; Vector control dependence rely on motor parameters is very strong, to obtain good control performance, must obtain accurate parameters of controlled motor.

Automatic tuning steps for the motor parameters are as follows:
First of all make The command source (P0-02) is selected as the command channel for the operation panel, then according actual parameters of the motor enter the following parameters (according to the current motor selection).

Motor selection	Parameter
Motor 1	P1-00:Motor type selection P1-01:Motor rated power P1-02:Motor rated voltage P1-03:Motor rated current P1-04:Motor rated frequency P1-05:Motor rated speed
Motor 2	A2-00:Motor type selection A2-01:Motor rated power A2-02:Motor rated voltage A2-03:Motor rated current A2-04:Motor rated frequency A2-05:Motor rated speed
Motor 3	A3-00:Motor type selection A3-01:Motor rated power A3-02:Motor rated voltage A3-03:Motor rated current A3-04:Motor rated frequency A3-05:Motor rated speed
Motor 4	A4-00:Motor type selection A4-01:Motor rated power A4-02:Motor rated voltage A4-03:Motor rated current A4-04:Motor rated frequency A4-05:Motor rated speed

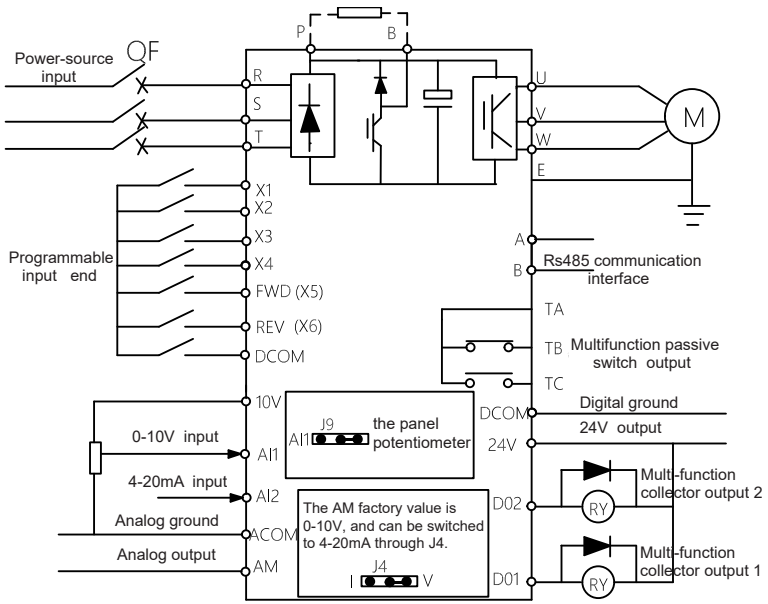
If the motor and the load can be completely disengaged, the P1-37 (motor 2/3/4 for A2/A3/A4-37) select 2 (Asynchronous motor complete auto-tuning) ,then press run key on the keyboard panel, frequency inverter will automatically calculate the the following parameters of motor:

Motor selection	Parameter
Motor 1	P1-16:Synchronous motor stator resistance P1-17:Synchronous motor D axis inductance P1-18:Synchronous motor Q axis inductance
Motor 2	A2-16:Synchronous motor stator resistance A2-17:Synchronous motor D axis inductance A2-18:Synchronous motor Q axis inductance
Motor 3	A3-16:Synchronous motor stator resistance A3-17:Synchronous motor D axis inductance A3-18:Synchronous motor Q axis inductance
Motor 4	A4-16:Synchronous motor stator resistance A4-17:Synchronous motor D axis inductance A4-18:Synchronous motor Q axis inductance

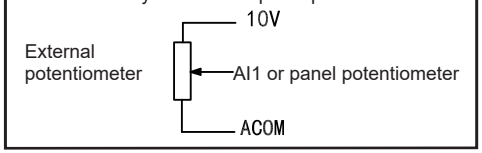
Finish Automatic tuning of motor parameters.
If the motor and the load can not be completely torn off, then P1-37 (motor 2/3/4 for A2/A3/A4-37) select 1 (Asynchronous motor static auto-tuning) then press the RUN key on the keyboard panel.

Chapter 5:Connection Diagram

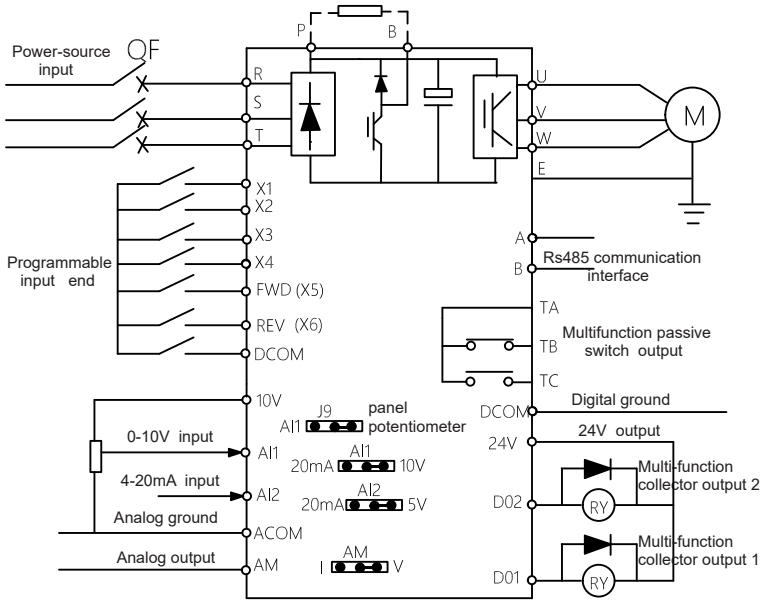
5.1 The wiring diagram of 9600 series 0.75KW-4.0KW



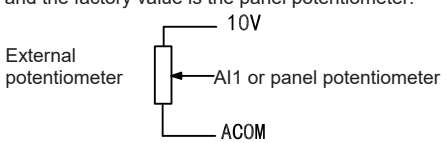
When P0-03=2, the AI1 external potentiometer or the panel potentiometer is selected by J9 to speed, and the factory value is the panel potentiometer.



5.2 The wiring diagram of 9600 series 4.0KW-630KW frequency inverter



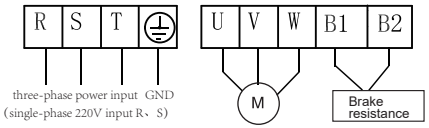
When P0-03=2, the AI1 external potentiometer or the panel potentiometer is selected by J9 to speed, and the factory value is the panel potentiometer.



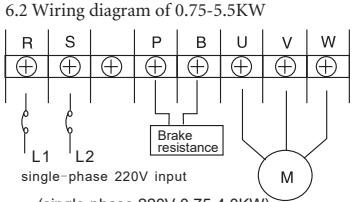
Chapter 6:Description of main loop terminal

6.1 Wiring diagram of model M

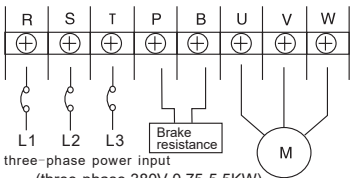
(single-phase 220V 0.75-2.2KW)
(three-phase 380V 0.75-4.0KW)



6.2 Wiring diagram of 0.75-5.5KW

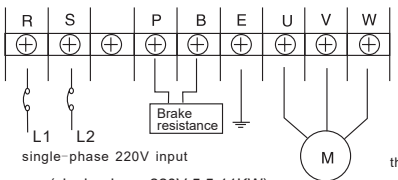


(single-phase 220V 0.75-4.0KW)

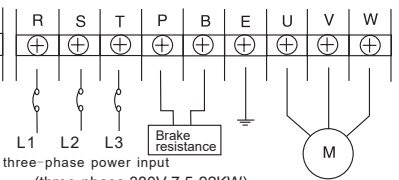


(three-phase 380V 0.75-5.5KW)
(three-phase 220V 0.75-4.0KW)

6.3 Wiring diagram of 7.5-22KW

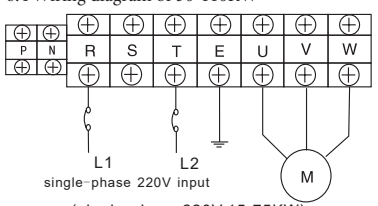


(single-phase 220V 5.5-11KW)

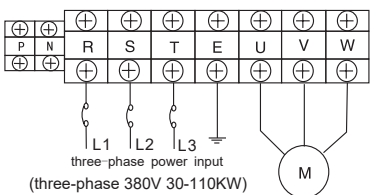


(three-phase 380V 7.5-22KW)
(three-phase 220V 5.5-11KW)

6.4 Wiring diagram of 30-110KW

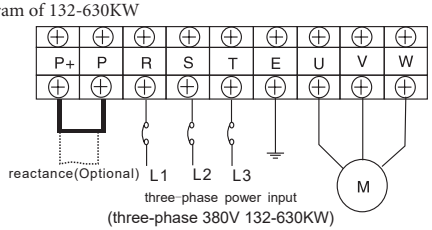


(single-phase 220V 15-75KW)



(three-phase 380V 30-110KW)
(three-phase 220V 15-75KW)

6.5 Wiring diagram of 132-630KW



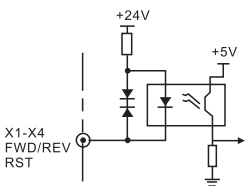
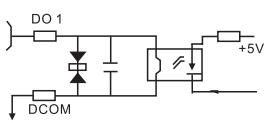
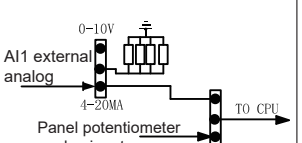
(three-phase 380V 132-630KW)

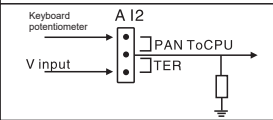
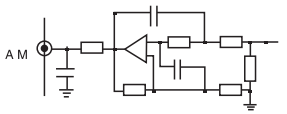
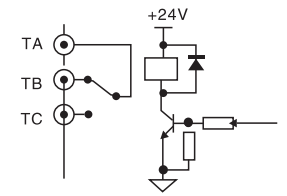
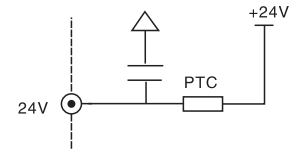
Note: other non-standard customized products, please in kind prevail mark

6.6 Identification of the main loop terminal

Terminal symbol	Function description
R、S、T	AC power input terminal, connected to three-phase 380V AC power supply
R、S、(T)	AC power input terminal, connected to single-phase 220V AC power supply
U、V、W	Frequency inverter output terminal, connected to three phase AC motor
P、P+	DC reactor connecting terminal, respectively, P and P+
P+、N	Brake unit connecting terminal, Positive and negative electrodes are connected to P+, N
P、B	External brake unit connecting terminal,respectively, P and B

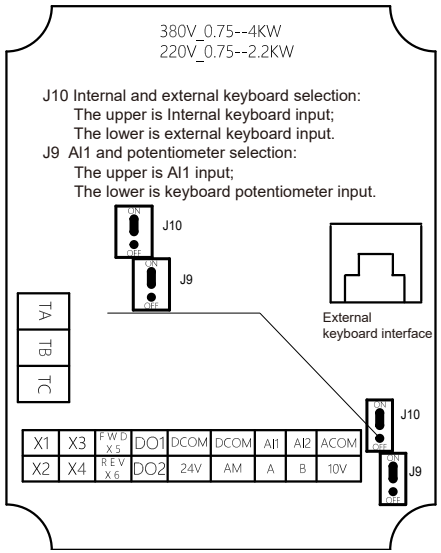
6.7 Function description of control loop terminal

Type	Terminal label	Function description	Electrical specifications	Internal circuit
Operation control terminal	X5/FWD	Forward when connect X5 to DOCM, deceleration then stop when disconnect the two	INPUT 0-24V level signal,Low level effective,5mA. (Note: X5 and X6 for high speed pulse input terminals)	
	X6/REV	Reversal when connect X6 to DOCM, deceleration then stop when disconnect the two		
Multi function digital input terminal	X1 X2 X3 X4 X5 X6	Be effective when connect (X1~X6) to DCOM,the function setting control by parameter P4.00-P4.05.	INPUT 0-24V level signal,Low level effective,5mA.	
Digital input terminal	D01	Multi-function programmable analog voltage output.DO1 control by P5.04=0-41 Do2 control by P5.01=0-41	OUTPUT,Maximum load current≤50mA	
	D02			
Analog signal input and output terminal	AI 1	Analog signal input1, ground wire reference ACOM (default = 0V-10V)	Input optional 0-5V or 0-10V DC voltage signal, selected by the jumper AI1.	

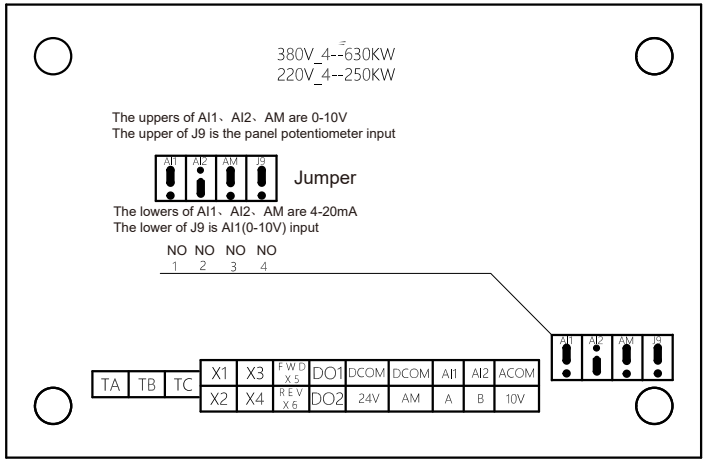
Type	Terminal label	Function description	Electrical specifications	Internal circuit
Analog signal input and output terminal	A I2	Analog signal input2, ground wire reference ACOM (default = 4-20mA)	Input optional 0-5V or 4-20mA signal, selected by the jumper AI2.	
		Multi function programmable analog signal output, ground wire reference ACOM can choose 0-10V or 4-20mA.	Output optional 0-10V or 4-20mA signal, selected by the jumper AM.	
Relay input terminal	TA TB TC	TA and TB normal open output,TA and TC normal close output,control by P5.02=1-41.	Contact rating: 250VAC-3A 30VDC-1A.	
Power interface	24V	24V is a common power supply of digital input terminal circuit.	24VDC-100mA	
	DCOM	DCOM is the ground terminal of digital signal input and output terminals.		
	10V	10V power output,can be used as an external potentiometer for a given power.	Factory default settings:10VDC	
	ACOM	ACOM is the ground terminal of programmable system power supply.		

6.8、Schematic diagram of control loop terminal

6.8.1、9600 series 0.75-4KW



6.8.2、9600 series 4.0-630KW



Chapter 7:Function Code Table

If PP-00 is set to a non-zero number, parameter protection is enabled. You must enter the correct user password to enter the menu.

To cancel the password protection function, enter with password and set PP-00 to 0.

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

"☆": The parameter can be modified when the AC drive is in either stop or running state.

"★": The parameter cannot be modified when the AC drive is in the running state. "

"●": The parameter is the actually measured value and cannot be modified.

"*" : The parameter is factory parameter and can be set only by the manufacturer.

7.1 Standard Function Parameters

Function Code	parameter Name	Setting Range	Default	Property
Group P0: Standard Function parameters				
P0-00	G/P type display	1: G type (constant torque load) 2: P type (variable torque load e.g. fan and pump)	Model dependent	•
P0-01	Motor 1 control mode	0：Speed Sensorless Vector Control(SVC) 1: Speed sensor vector control （FVC） 2: Voltage/Frequency (V/F) control	0	★
P0-02	Command source selection	0: Operation panel control (LED off) 1: Terminal control (LED on) 2: Communication control (LED blinking)	0	☆
P0-03	Main frequency source X selection	0: Digital setting (non-retentive at power failure) 1: Digital setting (retentive at power failure) 2: AI1 (The factory default is the panel potentiometer, which can be switched by jumper J9) 3: AI2 4: AI3 5: Pulse setting (X5/X6) 6: Multi-reference 7: Simple PLC 8: PID 9: Communication setting	0	★
P0-04	Auxiliary frequency source Y selection	The same as P0-03 (Main frequency source X selection)	0	★
P0-05	Range of auxiliary frequency Y for X and Y Operation	0: Relative to maximum frequency 1: Relative to main frequency X	0	☆
P0-06	Range of auxiliary frequency Y for X and Y Operation	0%–150%	100%	☆
P0-07	Frequency source selection	Unit's digit (Frequency source selection) 0: Main frequency source X 1: X and Y Operation (Operation relationship determined by ten's digit) 2: Switchover between X and Y 3: Switchover between X and "X and Y Operation" 4: Switchover between Y and "X and Y Operation" Ten's digit (X and Y Operation relationship) 0: X+Y 1: X-Y 2: the maximum of both 3: The minimum of both	0	☆
P0-08	Preset frequency	0.00 to maximum frequency (valid when frequency source is digital setting)	50.00 Hz	☆

Function Code	parameter Name	Setting Range	Default	Property
P0-09	Rotation direction	0: Same direction 1: Reverse direction	0	☆
P0-10	Maximum frequency	50.00–650.00 Hz	50.00 Hz	★
P0-11	Source of frequency upper limit	0: Set by P0-12 1: AI1 2: AI2 3: AI3 4: Pulse setting (X5/X6) 5: Communication setting	0	★
P0-12	Frequency upper limit	Frequency lower limit (P0-14) to maximum frequency (P0-10)	50.00 Hz	☆
P0-13	Frequency upper limit offset	0.00 Hz to maximum frequency (P0-10)	0.00 Hz	☆
P0-14	Frequency lower limit	0.00 Hz to frequency upper limit (P0-12)	0.00 Hz	☆
P0-15	Carrier frequency	0.5–16.0 kHz	Model dependent	☆
P0-16	Carrier frequency adjustment with temperature	0: No 1: Yes	1	☆
P0-17	Acceleration time 1	0.00–650.00s (P0-19 = 2) 0.0–6500.0s (P0-19 = 1) 0–65000s (P0-19 = 0)	Model dependent	☆
P0-18	Deceleration time 1	0.00–650.00s (P0-19 = 2) 0.0–6500.0s (P0-19 = 1) 0–65000s (P0-19 = 0)	Model dependent	☆
P0-19	Acceleration/Deceleration time unit	0:1s 1: 0.1s 2: 0.01s	1	★
P0-21	Frequency offset of auxiliary frequency source for X and Y Operation	0.00 Hz to maximum frequency (P0-10)	0.00 Hz	☆
P0-22	Frequency reference resolution	1: 0.1 Hz 2: 0.01 Hz	2	★
P0-23	Retentive of digital setting frequency upon power failure	0: Not retentive 1: Retentive	2	☆
P0-24	Motor parameter group selection	0: Motor parameter group 1 1: Motor parameter group 2 2: Motor parameter group 3 3: Motor parameter group 4	0	★
P0-25	Acceleration and deceleration time reference frequency	0: Maximum frequency (P0-10) 1: Set frequency 2: 100 Hz	0	★
P0-26	Run frequency command UP / DOWN reference	0: Running frequency 1: Set frequency	0	★
P0-27	Binding command source to frequency source	Unit's digit (Binding Operation panel command to frequency source) 0: No binding 1: Frequency source by digital setting 2: AI1 3: AI2 4: AI3 5: Pulse setting (X5/X6) 6: Multi-reference 7: Simple PLC 8: PID 9: Communication setting Tens digit: terminal command binding frequency source selection Hundreds place: communication command binding frequency source selection Thousands digit: Binding frequency source selection of automatic operation 0–9, same as unit's digit	0000	☆

Function Code	parameter Name	Setting Range	Default	Property
P0-28	Serial communication protocol	0: Modbus protocol 1: Profibus-DP bridge 2: CANopen bridge	0	☆
		Group P1: Motor 1 parameters		
P1-00	Motor type selection	0: Common asynchronous motor 1: Variable frequency asynchronous motor 2: Permanent magnetic synchronous motor	1	★
P1-01	Rated motor power	0.1–1000.0 kW	Model dependent	★
P1-02	Rated motor voltage	1–2000 V	Model dependent	★
P1-03	Rated motor current	0.01–655.35 A (AC drive power ≤55 kW) 0.1–6553.5 A (AC drive power >55 kW)	Model dependent	★
P1-04	Rated motor frequency	0.01 Hz to maximum frequency	Model dependent	★
P1-05	Rated motor rotational speed	1–65535 RPM	Model dependent	★
P1-06	Stator resistance (asynchronous motor)	0.001–65.535 Ω (AC drive power ≤ 55 kW) 0.0001–6.5535 Ω (AC drive power > 55 kW)	Model dependent	★
P1-07	Rotor resistance (asynchronous motor)	0.001–65.535 Ω (AC drive power ≤ 55 kW) 0.0001–6.5535 Ω (AC drive power > 55 kW)	Model dependent	★
P1-08	Leakage inductive reactance (asynchronous motor)	0.01–655.35 mH (AC drive power ≤ 55 kW) 0.001–65.535 mH (AC drive power > 55 kW)	Model dependent	★
P1-09	Mutual inductive reactance (asynchronous motor)	0.1–6553.5 mH (AC drive power ≤ 55 kW) 0.01—655.35 mH (AC drive power > 55 kW)	Model dependent	★
P1-10	No-load current (asynchronous motor)	0.01 to P1-03 (AC drive power ≤55 kW) 0.1 to P1-03 (AC drive power >55kW)	Model dependent	★
P1-16	Stator resistance (synchronous motor)	0.001–65.535 Ω (AC drive power ≤ 55 kW) 0.0001–6.5535 Ω (AC drive power > 55 kW)	Model dependent	★
P1-17	Shaft D inductance (synchronous motor)	0.01–655.35 mH (AC drive power ≤ 55 kW) 0.001–65.535 mH (AC drive power > 55 kW)	Model dependent	★
P1-18	Shaft Q inductance (synchronous motor)	0.01–655.35 mH (AC drive power ≤ 55 kW) 0.001–65.535 mH (AC drive power > 55 kW)	Model dependent	★
P1-20	Back EMF (synchronous motor)	0.1–6553.5 V	Model dependent	★
P1-27	Encoder pulses per revolution	1–65535	1024	★
P1-28	Encoder type	0: ABZ incremental encoder 1: UVW incremental encoder 2: Resolver 3: SIN/COS encoder 4: Wire-saving UVW encoder	0	★
P1-30	A/B phase sequence of ABZ incremental encoder	0: Forward 1: Reserve	0	★
P1-31	Encoder installation angle	0.0°–359.9°	0.0°	★
P1-32	U, V, W phase sequence of UVW encoder	0: Forward 1: Reserve	0	★
P1-33	UVW encoder angle offset	0.0°–359.9°	0.0°	★
P1-34	Number of pole pairs of resolver	1–65535	1	★
P1-36	Encoder wire-break fault detection time	0.0s: No action 0.1–10.0s	0.0s	★
P1-37	Auto-tuning selection	0: No auto-tuning 1: Asynchronous motor static auto-tuning 2: Asynchronous motor complete auto-tuning 11: Synchronous motor with-load auto-tuning 12: Synchronous motor no-load auto-tuning	0	★
		Group P2: Vector Control parameters		
P2-00	Speed loop proportional gain 1	0–100	30	☆
P2-01	Speed loop integral time 1	0.01–10.00s	0.50s	☆

Function Code	parameter Name	Setting Range	Default	Property
P2-02	Switchover frequency 1	0.00 to P2-05	5.00 Hz	☆
P2-03	Speed loop proportional gain 2	0–100	20	☆
P2-04	Speed loop integral time 2	0.01–10.00s	1.00s	☆
P2-05	Switchover frequency 2	P2-02 to maximum output frequency	10.00 Hz	☆
P2-06	Vector control slip gain	50%–200%	100%	☆
P2-07	Time constant of speed loop filter	0.000–0.100s	0.000s	☆
P2-08	Vector control over- excitation gain	0–200	64	☆
P2-09	Torque upper limit source in speed control mode	0: P2-10 1: AI1 2: AI2 3: AI3 4: Pulse setting (X5/X6) 5: Communication setting 6: MIN（AI1,AI2） 7: MAX（AI1,AI2） The full range of 1-7 selection corresponds to P7-25	0	☆
P2-10	Digital setting of torque upper limit in speed control mode	0.0%–200.0%	150.0%	☆
P2-13	Excitation adjustment proportional gain	0–60000	2000	☆
P2-14	Excitation adjustment integral gain	0–60000	1300	☆
P2-15	Torque adjustment proportional gain	0–60000	2000	☆
P2-16	Torque adjustment integral gain	0–60000	1300	☆
P2-17	Speed loop integral property	Unit's digit: integral separation 0: Disabled 1: Enabled	0	☆
P2-18	Field weakening mode of synchronous motor	0: No field weakening 1: Direct calculation 2: Automatic adjustment	1	☆
P2-19	Field weakening depth of synchronous motor	50%–500%	100%	☆
P2-20	Maximum field weakening current	1%–300%	50%	☆
P2-21	Field weakening automatic adjustment gain	10%–500%	100%	☆
P2-22	Field weakening integral multiple	2–10	2	☆
Group P3: V/F Control parameters				
P3-00	V/F curve setting	0: Linear V/F 1: Multi-point V/F 2: Square V/F 3: 1.2-power V/F 4: 1.4-power V/F 6: 1.6-power V/F 8: 1.8-power V/F 9: Reserved 10: V/F complete separation 11: V/F half separation	0	★
P3-01	Torque boost	0.0% (fixed torque boost) 0.1%–30.0%	Model dependent	☆
P3-02	Cut-off frequency of torque boost	0.00 Hz to maximum output frequency	50.00 Hz	★
P3-03	Multi-point V/F frequency 1 (F1)	0.00 Hz to P3-05	0.00 Hz	★
P3-04	Multi-point V/F voltage 1 (V1)	0.0%–100.0%	0.0%	★
P3-05	Multi-point V/F frequency 2 (F2)	P3-03 to P3-07	0.00 Hz	★
P3-06	Multi-point V/F voltage 2 (V2)	0.0%–100.0%	0.0%	★

Function Code	parameter Name	Setting Range	Default	Property
P3-07	Multi-point V/F frequency 3 (F3)	P3-05 to rated motor frequency (P1-04) Note: The rated frequencies of motors 2, 3, and 4 are resfectively set in A2-04, A3-04, and A4-04.	0.00 Hz	★
P3-08	Multi-point V/F voltage 3 (V3)	0.0%–100.0%	0.0%	★
P3-09	V/F slip compensation gain	0%–200.0%	0.0%	☆
P3-10	V/F over-excitation gain	0–200	64	☆
P3-11	V/F oscillation suppression gain	0–100	Model dependent	☆
P3-13	Voltage source for V/F separation	0: Digital setting (P3-14) 1: AI1 2: AI2 3: AI3 4: Pulse setting (X5/X6) 5: Multi-reference 6: Simple PLC 7: PID 8: Communication setting 100.0% corresponds to the rated motor voltage (P1-02, A4-02, A5-02, A6-02).	0	☆
P3-14	Voltage digital setting for V/F separation	0 V to rated motor voltage	0 V	☆
P3-15	Voltage rise time of V/F separation	0.0–1000.0s It indicates the time for the voltage rising from 0 V to rated motor voltage.	0.0s	☆
Group P4: Input Terminals				
P4-00	X1 function selection	0: No function 1: Forward RUN (FWD) 2: Reverse RUN (REV) 3: Three-line control 4: Forward JOG (FJOG) 5: Reverse JOG (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Coast to stop 9: fault reset (RESET) 10: RUN fause 11: Normally open (NO) input of external fault 12: Multi-reference terminal 1 13: Multi-reference terminal 2 14: Multi-reference terminal 3 15: Multi-reference terminal 4 16: Terminal 1 for acceleration/ deceleration time selection 17: Terminal 2 for acceleration/ deceleration time selection 18: Frequency source switchover 19: UP and DOWN setting clear (terminal, Operation panel) 20: Command source switchover terminal 1 21: Acceleration/Deceleration prohibited 22: PID fause 23: PLC status reset 24: Swing fause 25: Counter input 26: Counter reset 27: Length count input 28: Length reset 29: Torque control prohibited 30: Pulse input (enabled only for X5/X6) 31: Reserved 32: Immediate DC braking	1	★
P4-01	X2 function selection		4	★
P4-02	X3 function selection		9	★
P4-03	X4 function selection		12	★
P4-04	X5 function selection		13	★
P4-05	X6 function selection		0	★

Function Code	parameter Name	Setting Range	Default	Property
P4-06	X7 function selection	33: Normally closed (NC) input of external fault 34: Frequency modificationforbidden 35: Reverse PID action direction 36: External STOP terminal 1 37: Command source switchoverterminal 2 38: PID integral fause 39: Switchover between main frequency source X and preset frequency 40: Switchover between auxiliary frequency source Y and preset frequency 41: Motor selection terminal 1 42: Motor selection terminal 2 43: PID parameter switchover 44: User-defined fault 1 45: User-defined fault 2 46: Speed control/Torque control switchover 47: Emergency stop 48: External STOP terminal 2 49: Deceleration DC braking 50: Clear the current running time 51: Switchover between two-line mode and three-line mode 52–59: Reserved	0	★
P4-07	X8 function selection		0	★
P4-08	X9 function selection		0	★
P4-09	X10 function selection		0	★
P4-10	X terminal filter time	0.000–1.000s	0.010s	☆
P4-11	Terminal command mode	0: Two-line mode 1 1: Two-line mode 2 2: Three-line mode 1 3: Three-line mode 2	0	★
P4-12	Terminal UP/DOWN rate	0.01–65.535 Hz/s	1.00 Hz/s	☆
P4-13	AI curve 1 minimum input	0.00 V to P4-15	0.00 V	☆
P4-14	Corresponding setting of AI curve 1 minimum input	-100.00%–100.0%	0.0%	☆
P4-15	AI curve 1 maximum input	P4-13 to 10.00 V	10.00 V	☆
P4-16	Corresponding setting of AI curve 1 maximum input	-100.00%–100.0%	100.0%	☆
P4-17	AI1 filter time	0.00–10.00s	0.10s	☆
P4-18	AI curve 2 minimum input	0.00 V to P4-20	0.00 V	☆
P4-19	Corresponding setting of AI curve 2 minimum input	-100.00%–100.0%	0.0%	☆
P4-20	AI curve 2 maximum input	P4-18 to 10.00 V	10.00 V	☆
P4-21	Corresponding setting of AI curve 2 maximum input	-100.00%–100.0%	100.0%	☆
P4-22	AI2 filter time	0.00–10.00s	0.10s	☆
P4-23	AI curve 3 minimum input	-10.00 V to P4-25	-10.00 V	☆
P4-24	Corresponding setting of AI curve 3 minimum input	0.00%–100.0%	0.0%	☆
P4-25	AI curve 3 maximum input	P4-23 to 10.00 V	8.00 V	☆
P4-26	Corresponding setting of AI curve 3 maximum input	-100.00%–100.0%	100.0%	☆
P4-27	AI3 filter time	0.00–10.00s	0.10s	☆
P4-28	Pulse minimum input	0.00 kHz to P4-30	0.00 kHz	☆
P4-29	Corresponding setting of pulse minimum input	-100.00%–100.0%	0.0%	☆
P4-30	Pulse maximum input	P4-28 to 50.00 kHz	50.00 kHz	☆
P4-31	Corresponding setting of pulse maximum input	-100.00%–100.0%	100.0%	☆
P4-32	Pulse filter time	0.00–10.00s	0.10s	☆

Function Code	parameter Name	Setting Range	Default	Property
P4-33	AI curve selection	Unit's digit (AI1 curve selection) Curve 1 (2 points, see P4-13 to P4-16) Curve 2 (2 points, see P4-18 to P4-21) Curve 3 (2 points, see P4-23 to P4-26) Curve 4 (4 points, see A6-00 to A6-07) Curve 5 (4 points, see A6-08 to A6-15) Ten's digit (AI2 curve selection) Curve 1 to curve 5 (same as AI1) Hundred's digit (AI3 curve selection) Curve 1 to curve 5 (same as AI1)	321	☆
P4-34	Setting for AI less than minimum input	Unit's digit (Setting for AI1 less than minimum input) 0: Minimum value 1: 0.0% Ten's digit (Setting for AI2 less than minimum input) 0, 1 (same as AI1) Hundred's digit (Setting for AI3 less than minimum input) 0, 1 (same as AI1)	000	☆
P4-35	X1 delay time	0.0–3600.0s	0.0s	★
P4-36	X2 delay time	0.0–3600.0s	0.0s	★
P4-37	X3 delay time	0.0–3600.0s	0.0s	★
P4-38	X valid mode selection 1	Unit's digit (X1 valid mode) 0: High level valid 1: Low level valid Ten's digit (X2 valid mode) 0, 1 (same as X1) Hundred's digit (X3 valid mode) 0, 1 (same as X1) Thousand's digit (X4 valid mode) 0, 1 (same as X1) Ten thousand's digit (X5 valid mode) 0, 1 (same as X1)	00000 00000	★ ★
P4-39	X valid mode selection 2	Unit's digit (X1 valid mode) 0, 1 (same as X1) Ten's digit (X2 valid mode) 0, 1 (same as X1) Hundred's digit (X3 state) 0, 1 (same as X1) Thousand's digit (X4 valid mode) 0, 1 (same as X1) Ten thousand's digit (X5 valid mode) 0, 1 (same as X1)	00000	★
P4-40	AI2 input signal selection	0: Voltage signal 1: Current signal	0	★
		Group P5: Output Terminals		
P5-00	DO2 terminal output mode	0: Pulse output (FMP) 1: Switch signal output (FMR)	0	☆

Function Code	parameter Name	Setting Range	Default	Property
P5-01	DO2 function (open- collector output terminal)	0: No output 1: AC drive running 2: Fault output (stop) 3: Frequency-level detection PDT1 output 4: Frequency reached 5: Zero-speed running (no output at stop) 6: Motor overload pre-warning 7: AC drive overload pre-warning 8: Set count value reached 9: Designated count value reached 10: Length reached 11: PLC cycle complete 12: Accumulative running time reached 13: Frequency limited 14: Torque limited 15: Ready for RUN 16: AI1 larger than AI2 17: Frequency upper limit reached 18: Frequency lower limit reached (no out put at stop) 19: Undervoltage state output 20: Communication setting 21: Reserved 22: Reserved 23: Zero-speed running 2 (having output at stop) 24: Accumulative power-on time reached 25: Frequency level detection PDT2 output 26: Frequency 1 reached 27: Frequency 2 reached 28: Current 1 reached 29: Current 2 reached 30: Timing reached 31: AI1 input limit exceeded 32: Load becoming 0 33: Reverse running 34: Zero current state 35: Module temperature reached 36: Software current limit exceeded 37: Frequency lower limit reached (having output at stop) 38: Alarm output 39: Motor overheat warning 40: Current running time reached 41: Fault output (There is no output if it is the coast to stop Fault and undervoltage occurs.)	2	☆
P5-02	Relay function (TA-TB-TC)		2	☆
P5-03	Extension card relay function (P/A-P/B-P/C)		0	☆
P5-04	DO1 function selection (open-collector output terminal)		1	☆
P5-05	Extension card DO2 function		4	☆

Function Code	parameter Name	Setting Range	Default	Property
P5-06	FMP function selection	0: Running frequency 1: Set frequency 2: Output current 3: Output torque (absolute value) 4: Output power 5: Output voltage 6: Pulse input 7: AI1 8: AI2 9: AI3 10: Length 11: Count value 12: Communication setting 13: Motor rotational speed 14: Output current 15: Output voltage 16: Output torque (actual value)	0	☆
P5-07	AM function selection		0	☆
P5-08	AO2 function selection		1	☆
P5-09	MaximumDO2 output frequency	0.01–100.00 kHz	50.00 kHz	☆
P5-10	AM offset coefficient	-100.0%–100.0%	0.0%	☆
P5-11	AM gain	-10.00–10.00	1.00	☆
P5-12	AO2 offset coefficient	-100.0%–100.0%	0.00%	☆
P5-13	AO2 gain	-10.00–10.00	1.00	☆
P5-17	DO2 output delay time	0.0–3600.0s	0.0s	☆
P5-18	Relay 1 output delay time	0.0–3600.0s	0.0s	☆
P5-19	Relay 2 output delay time	0.0–3600.0s	0.0s	☆
P5-20	DO1 output delay time	0.0–3600.0s	0.0s	☆
P5-21	DO3 output delay time	0.0–3600.0s	0.0s	☆
P5-22	DO valid mode selection	Unit's digit (FMR valid mode) 0: Positive logic 1: Negative logic Ten's digit (Relay 1 valid mode) 0, 1 (same as FMR) Hundred's digit (Relay 2 valid mode) 0, 1 (same as FMR) Thousand's digit (DO1 valid mode) 0, 1 (same as FMR) Ten thousand's digit (DO3 valid mode) 0, 1 (same as FMR)	00000	☆
		Group P6: Start/Stop Control		
P6-00	Start mode	0: Direct start 1: Rotational speed tracking restart 2: Pre-excited start (asynchronous motor)	0	☆
P6-01	Rotational speed tracking mode	0: From frequency at stop 1: From zero speed 2: From maximum frequency	0	★
P6-02	Rotational speed tracking speed	1–100	20	☆
P6-03	Startup frequency	0.00–10.00 Hz	0.00 Hz	☆
P6-04	Startup frequency holding time	0.0–100.0s	0.0s	★
P6-05	Startup DC braking current/ Pre-excited current	0%–100%	0%	★
P6-06	Startup DC braking time/ Pre-excited time	0.0–100.0s	0.0s	★
P6-07	Acceleration/Deceleration mode	0: Linear acceleration/ deceleration 1: S-curve acceleration/ deceleration A 2: S-curve acceleration/deceleration B	0	★
P6-08	Time proportion of S-curve start segment	0.0% to (100.0% – P6-09)	30.0%	★
P6-09	Time proportion of S-curve end segment	0.0% to (100.0% – P6-08)	30.0%	★

Function Code	parameter Name	Setting Range	Default	Property
P6-10	Stop mode	0: Decelerate to stop 1: Coast to stop	0	☆
P6-11	Initial frequency of stop DC braking	0.00 Hz to maximum frequency	0.00 Hz	☆
P6-12	Waiting time of stop DC braking	0.0–36.0s	0.0s	☆
P6-13	Stop DC braking current	0%–100%	0%	☆
P6-14	Stop DC braking time	0.0–36.0s	0.0s	☆
P6-15	Brake use ratio	0%–100%	100%	☆
Group P7: Operation panel and Display				
P7-01	MF.K Key function selection	0: MF.K key disabled 1: Switchover between Operation panel control and remote command control (terminal or communication) 2: Switchover between forward rotation and reverse rotation 3: Forward JOG 4: Reverse JOG	0	★
P7-02	STOP/RESET key function	0: STOP/RESET key enabled only in Operation panel control 1: STOP/RESET key enabled in any Operation mode	1	☆
P7-03	LED display running parameters 1	0000–FFFF Bit00: Running frequency 1 (Hz) Bit01: Set frequency (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (kW) Bit06: Output torque (%) Bit07: X input status Bit08: DO output status Bit09: AI1 voltage (V) Bit10: AI2 voltage (V) Bit11: AI3 voltage (V) Bit12: Count value Bit13: Length value Bit14: Load speed display Bit15: PID setting	1F	☆
P7-04	LED display running parameters 2	0000–FFFF Bit00: PID feedback Bit01: PLC stage Bit02: Pulse setting frequency (kHz) Bit03: Running frequency 2 (Hz) Bit04: Remaining running time Bit05: AI1 voltage before correction (V) Bit06: AI2 voltage before correction (V) Bit07: AI3 voltage before correction (V) Bit08: Linear speed Bit09: Current power-on time (Hour) Bit10: Current running time (Min) Bit11: Pulse setting frequency (Hz) Bit12: Communication setting value Bit13: Encoder feedback speed (Hz) Bit14: Main frequency X display (Hz) Bit15: Auxiliary frequency Y display (Hz)	0	☆

Function Code	parameter Name	Setting Range	Default	Property
P7-05	LED display stop parameters	0000–FFFF Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02: X input status Bit03: DO output status Bit04: AI1 voltage (V) Bit05: AI2 voltage (V) Bit06: AI3 voltage (V) Bit07: Count value Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PID setting Bit12: Pulse setting frequency (kHz)	33	☆
P7-06	Load speed display coefficient	0.0001–6.5000	1.0000	☆
P7-07	Heatsink temperature of inverter module	0.0–100.0°C	-	●
P7-08	Rectifier bridge heatsink temperature	0.0–100.0°C	-	●
P7-09	Accumulative running time	0–65535 h	-	●
P7-10	Product number	-	-	●
P7-11	Software version	-	-	●
P7-12	Number of decimal places for load speed display	0: 0 decimal place 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places	1	☆
P7-13	Accumulative power-on time	0–65535 h	0 h	●
P7-14	Accumulative power consumption	0–65535 kWh	-	●
Group P8: Auxiliary Functions				
P8-00	JOG running frequency	0.00 Hz to maximum frequency	2.00 Hz	☆
P8-01	JOG acceleration time	0.0–6500.0s	20.0s	☆
P8-02	JOG deceleration time	0.0–6500.0s	20.0s	☆
P8-03	Acceleration time 2	0.0–6500.0s	Model dependent	☆
P8-04	Deceleration time 2	0.0–6500.0s	Model dependent	☆
P8-05	Acceleration time 3	0.0–6500.0s	Model dependent	☆
P8-06	Deceleration time 3	0.0–6500.0s	Model dependent	☆
P8-07	Acceleration time 4	0.0–500.0s	Model dependent	☆
P8-08	Deceleration time 4	0.0–6500.0s	Model dependent	☆
P8-09	Jump frequency 1	0.00 Hz to maximum frequency	0.00 Hz	☆
P8-10	Jump frequency 2	0.00 Hz to maximum frequency	0.00 Hz	☆
P8-11	Frequency jump amplitude	0.00 Hz to maximum frequency	0.00 Hz	☆
P8-12	Forward/Reverse rotation dead-zone time	0.0–3000.0s	0.0s	☆
P8-13	Reverse control	0: Enabled 1: Disabled	0	☆
P8-14	Running mode when set frequency lower than frequency lower limit	0: Run at frequency lower limit 1: Stop 2: Run at zero speed	0	☆
P8-15	Droop control	0.00–10.00 Hz	0.00 Hz	☆
P8-16	Accumulative power-on time threshold	0–65000 h	0 h	☆
P8-17	Accumulative running time threshold	0–65000 h	0 h	☆

Function Code	parameter Name	Setting Range	Default	Property
P8-18	Startup protection	0: No 1: Yes	0	☆
P8-19	Frequency detection value (PDT1)	0.00 Hz to maximum frequency	50.00 Hz	☆
P8-20	Frequency detection hysteresis (PDT hysteresis 1)	0.0%–100.0% (PDT1 level)	5.0%	☆
P8-21	Detection range of frequency reached	0.00–100% (maximum frequency)	0.0%	☆
P8-22	Jump frequency during acceleration/deceleration	0: Disabled 1: Enabled	0	☆
P8-25	Frequency switchover point between acceleration time 1 and acceleration time 2	0.00 Hz to maximum frequency	0.00 Hz	☆
P8-26	Frequency switchover point between deceleration time 1 and deceleration time 2	0.00 to maximum frequency	0.00 Hz	☆
P8-27	Terminal JOG preferred	0: Disabled1: Enabled	0	☆
P8-28	Frequency detection value (PDT2)	0.00 to maximum frequency	50.00 Hz	☆
P8-29	Frequency detection hysteresis (PDT hysteresis 2)	0.0%–100.0% (PDT2 level)	5.0%	☆
P8-30	Any frequency reaching detection value 1	0.00 Hz to maximum frequency	50.00 Hz	☆
P8-31	Any frequency reaching detection amplitude 1	0.0%–100.0% (maximum frequency)	0.0%	☆
P8-32	Any frequency reaching detection value 2	0.00 Hz to maximum frequency	50.00 Hz	☆
P8-33	Any frequency reaching detection amplitude 2	0.0%–100.0% (maximum frequency)	0.0%	☆
P8-34	Zero current detection level	0.0%–300.0% (rated motor current)	5.0%	☆
P8-35	Zero current detection delay time	0.00–600.00s	0.10s	☆
P8-36	Output overcurrent threshold	0.0% (no detection) 0.1%–300.0% (rated motor current)	200.0%	☆
P8-37	Output overcurrent detection delay time	0.00–600.00s	0.00s	☆
P8-38	Any current reaching 1	0.0%–300.0% (rated motor current)	100.0%	☆
P8-39	Any current reaching 1 amplitude	0.0%–300.0% (rated motor current)	0.0%	☆
P8-40	Any current reaching 2	0.0%–300.0% (rated motor current)	100.0%	☆
P8-41	Any current reaching 2 amplitude	0.0%–300.0% (rated motor current)	0.0%	☆
P8-42	Timing function	0: Disabled 1: Enabled	0	☆
P8-43	Timing duration source	0: P8-44 1: AI1 2: AI2 3: AI3 (100% of analog input corresponds to the value of P8-44)	0	☆
P8-44	Timing duration	0.0–6500.0 min	0.0 min	☆
P8-45	AI1 input voltage lower limit	0.00 V to P8-46	3.10 V	☆
P8-46	AI1 input voltage upper limit	P8-45 to 10.00 V	6.80 V	☆
P8-47	Module temperature threshold	0–100°C	75°C	☆
P8-48	Cooling fan control	0: fan working during running 1: fan working continuously	0	☆
P8-49	Wakeup frequency	Dormant frequency (P8-51) to maximum frequency (P0-10)	0.00 Hz	☆
P8-50	Wakeup delay time	0.0–6500.0s	0.0s	☆
P8-51	Dormant frequency	0.00 Hz to wakeup frequency (P8-49)	0.00 Hz	☆
P8-52	Dormant delay time	0.0–6500.0s	0.0s	☆

Function Code	parameter Name	Setting Range	Default	Property
P8-53	Current running time reached	0.0–6500.0 min	0.0 min	☆
P8-54	Output power correction coefficient	0.00%–200 .0%	100.0%	☆
		Group P9: fault and Protection		
P9-00	Motor overload protection selection	0: Disabled 1: Enabled	1	☆
P9-01	Motor overload protection gain	0.20–10.00	1.00	☆
P9-02	Motor overload warning coefficient	50%–100%	80%	☆
P9-03	Overvoltage stall gain	0 (no stall overvoltage)–100	0	☆
P9-04	Overvoltage stall protective voltage	120%–150%	130%	☆
P9-05	Overcurrent stall gain	0–100	20	☆
P9-06	Overcurrent stall protective current	100%–200%	150%	☆
P9-07	Short-circuit to ground upon power-on	0: Disabled 1: Enabled	1	☆
P9-09	fault auto reset times	0–20	0	☆
P9-10	DO action during fault auto reset	0: Not act 1: Act	0	☆
P9-11	Time interval of fault auto reset	0.1s–100.0s	1.0s	☆
P9-12	Input phase loss protection/ contactor energizing protection selection	Unit's digit: Input phase loss protection Ten's digit: Contactor energizing protection 0: Disabled 1: Enabled	11	☆
P9-13	Output phase loss protection selection	0: Disabled 1: Enabled	1	☆
P9-14	1st fault type	0: No fault 1: Reserved 2: Overcurrent during acceleration 3: Overcurrent during deceleration 4: Overcurrent at constant speed 5: Overvoltage during acceleration 6: Overvoltage during deceleration 7: Overvoltage at constant speed 8: Bupper resistance overload 9: Undervoltage 10: AC drive overload 11: Motor overload 12:Power input phase loss 13: Power output phase loss 14: Module overheat 15: External equipment fault 16: Communication fault 17: Contactor fault 18: Current detection fault 19: Motor auto-tuning fault 20: Encoder/PG card fault 21: EEPROM read-write fault 22: AC drive hardware fault 23: Short circuit to ground 24: Reserved 25: Reserved 26: Accumulative running time reached 27: User-defined fault 1 28: User-defined fault 2 29: Accumulative power-on time reached 30: Load becoming 0 31: PID feedback lost during running 40: With-wave current limit fault 41: Motor switchover fault during running 42: Too large speed deviation 43: Motor over-speed 45: Motor overheat	-	•
P9-15	2nd fault type		-	•
P9-16	3rd (latest) fault type		-	•

Function Code	parameter Name	Setting Range	Default	Property
P9-17	Frequency upon 3rd fault	-	-	●
P9-18	Current upon 3rd fault	-	-	●
P9-19	Bus voltage upon 3rd fault	-	-	●
P9-20	Input terminal status upon 3rd fault	-	-	●
P9-21	Output terminal status upon 3rd fault	-	-	●
P9-22	AC drive status upon 3rd fault	-	-	●
P9-23	Power-on time upon 3rd fault	-	-	●
P9-24	Running time upon 3rd fault	-	-	●
P9-27	Frequency upon 2nd fault	-	-	●
P9-28	Current upon 2nd fault	-	-	●
P9-29	Bus voltage upon 2nd fault	-	-	●
P9-30	Input terminal status upon 2nd fault	-	-	●
P9-31	Output terminal status upon 2nd fault	-	-	●
P9-32	AC drive status upon 2nd fault	-	-	●
P9-33	Power-on time upon 2nd fault	-	-	●
P9-34	Running time upon 2nd fault	-	-	●
P9-37	Frequency upon 1st fault	-	-	●
P9-38	Current upon 1st fault	-	-	●
P9-39	Bus voltage upon 1st fault	-	-	●
P9-40	Input terminal status upon 1st fault	-	-	●
P9-41	Output terminal status upon 1st fault	-	-	●
P9-42	AC drive status upon 1st fault	-	-	●
P9-43	Power-on time upon 1st fault	-	-	●
P9-44	Running time upon1st fault	-	-	●
P9-47	fault protection action selection 1	Unit's digit (Motor overload, Err11) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run Ten's digit (Power input phase loss, Err12) Same as unit's digit Hundred's digit (Power output phase loss, Err13) Same as unit's digit Thousand's digit (External equipment fault, Err15) Same as unit's digit Ten thousand's digit (Communication fault, Err16) Same as unit's digit	00000	☆
P9-48	fault protection action selection 2	Unit's digit (Encoder fault, Err20) 0: Free parking 1: Switch over to V/F control, stop according to the stop mode 2: Switch over to V/F control,continue to run Ten's digit (EEPROM read-write fault, Err21) 0: Coast to stop 1: Stop according to the stop mode Hundred's digit: reserved Thousand's digit (Motor overheat, Err25) Same as unit's digit in P9-47 Ten thousand's digit (Accumulative running time reached) Same as unit's digit in P9-47	00000 00000	☆ ☆

Function Code	parameter Name	Setting Range	Default	Property
P9-49	fault protection action selection 3	Unit's digit (User-defined fault 1,Err27) Same as unit's digit in P9-47 Ten's digit (User-defined fault 2,Err28) Same as unit's digit in P9-47 Hundred's digit (Accumulative power-on time reached, Err29) Same as unit's digit in P9-47 Thousand's digit (Load becoming 0, Err30) 0: Free parking 1: Stop according to the stop mode 2: Continue to run at 7% of rated motor frequency and resume to the set frequency if the load recovers Ten thousand's digit (PID feedback lost during running, Err31) Same as unit's digit in P9-47	00000	☆
P9-50	fault protection action selection 4	Unit's digit (Too large speed deviation, Err42) Same as unit's digit in P9-47 Ten's digit (Motor over-speed, Err43) Same as unit's digit in P9-47 Hundred's digit (Initial position fault, Err51) Same as unit's digit in P9-47 Thousand's digit (Speed feedback fault, Err52) Same as unit's digit in P9-47 Ten thousand's digit: Reserved	00000	☆
P9-54	Frequency selection for continuing to run upon fault	0: Current running frequency 1: Set frequency 2: Frequency upper limit 3: Frequency lower limit 4: Backup frequency upon abnormality	0	☆
P9-55	Backup frequency upon abnormality	0.0%–100.0% (maximum frequency)	100.0%	☆
P9-56	type of motor temperature sensor	0: No temperature sensor 1: PT100 2: PT1000	1	☆
P9-57	Motor overheat protection threshold	0–200°C	110°C	☆
P9-58	Motor overheat warning threshold	0–200°C	90°C	☆
P9-59	Action selection at instantaneous power failure	0: Invalid 1: Decelerate 2: Decelerate to stop	0	☆
P9-60	Action fause judging voltage at instantaneous power failure	80.0%–100.0%	90.0%	☆
P9-61	Voltage rally judging time at instantaneous power failure	0.00–100.00s	0.50s	☆
P9-62	Action judging voltage at instantaneous power failure	60.0%–100.0% (standard bus voltage)	80.0%	☆
P9-63	Protection upon load becoming 0	0: Disabled 1: Enabled	0	☆
P9-64	Detection level of load becoming 0	0.0%–100.0% (rated motor current)	10.0%	☆
P9-65	Detection time of load becoming 0	0.0–60.0s	1.0s	☆
P9-67	Over-speed detection value	0.0%–50.0% (maximum frequency)	20.0%	☆
P9-68	Over-speed detection time	0.0–60.0s	1.0s	☆
P9-69	Detection value of too large speed deviation	0.0%–50.0% (maximum frequency)	20.0%	☆

Function Code	parameter Name	Setting Range	Default	Property
P9-70	Detection time of too large speed deviation	0.0–60.0s	5.0s	☆
Group PA: Process Control PID Function				
PA-00	PID setting source	0: PA-01 1: AI1 2: AI2 3: AI3 4: Pulse setting (X5/X6) 5: Communication setting 6: Multi-reference	0	☆
PA-01	PID digital setting	0.0%–100.0%	50.0%	☆
PA-02	PID feedback source	0: AI1 1: AI2 2: AI3 3: AI1 – AI2 4: Pulse setting (X5/X6) 5: Communication setting 6: AI1 + AI2 7: MAX (|AI1|, |AI2|) 8: MIN (|AI1|, |AI2|)	0	☆
PA-03	PID action direction	0: Forward action 1: Reverse action	0	☆
PA-04	PID setting feedback range	0–65535	1000	☆
PA-05	Proportional gain Kp1	0.0–100.0	20.0	☆
PA-06	Integral time Ti1	0.01–10.00s	2.00s	☆
PA-07	Dipperential time Td1	0.000–10.000s	0.000s	☆
PA-08	Cut-off frequency of PID reverse rotation	0.00 to maximum frequency	2.00 Hz	☆
PA-09	PID deviation limit	0.0%–100.0%	0.0%	☆
PA-10	PID dipperential limit	0.00%–100.00%	0.10%	☆
PA-11	PID setting change time	0.00–650.00s	0.00s	☆
PA-12	PID feedback filter time	0.00–60.00s	0.00s	☆
PA-13	PID output filter time	0.00–60.00s	0.00s	☆
PA-14	Reserved	-	-	☆
PA-15	Proportional gain Kp2	0.0–100.0	20.0	☆
PA-16	Integral time Ti2	0.01–10.00s	2.00s	☆
PA-17	Dipperential time Td2	0.000–10.000s	0.000s	☆
PA-18	PID parameter switchover condition	0: No switchover 1: Switchover via X 2: Automatic switchover based on deviation	0	☆
PA-19	PID parameter switchover deviation 1	0.0% to PA-20	20.0%	☆
PA-20	PID parameter switchover deviation 2	PA-19 to 100.0%	80.0%	☆
PA-21	PID initial value	0.0%–100.0%	0.0%	☆
PA-22	PID initial value holding time	0.00–650.00s	0.00s	☆
PA-23	Maximum deviation between two PID outputs in forward direction	0.00%–100.00%	1.00%	☆
PA-24	Maximum deviation between two PID outputs in reverse direction	0.00%–100.00%	1.00%	☆
PA-25	PID integral property	Unit's digit (Integral separated) 0: Invalid 1: Valid Ten's digit (Whether to stop integral Operation when the output reaches the limit) 0: Continue integral Operation 1: Stop integral Operation	00	☆
PA-26	Detection value of PID feedback loss	0.0%: Not judging feedback loss 0.1%–100.0%	0.0%	☆

Function Code	parameter Name	Setting Range	Default	Property
PA-27	Detection time of PID feedback loss	0.0–20.0s	0.0s	☆
PA-28	PID Operation at stop	0: No PID Operation at stop 1: PID Operation at stop	0	☆
Group PB: Swing Frequency, Fixed Length and Count				
PB-00	Swing frequency setting mode	0: Relative to the central frequency 1: Relative to the maximum frequency	0	☆
PB-01	Swing frequency amplitude	0.0%–100.0%	0.0%	☆
PB-02	Jump frequency amplitude	0.0%–50.0%	0.0%	☆
PB-03	Swing frequency cycle	0.0–3000.0s	10.0s	☆
PB-04	Triangular wave rising time coefficient	0.0%–100.0%	50.0%	☆
PB-05	Set length	0–65535 m	1000 m	☆
PB-06	Actual length	0–65535 m	0 m	☆
PB-07	Number of pulses per meter	0.1–6553.5	100.0	☆
PB-08	Set count value	1–65535	1000	☆
PB-09	Designated count value	1–65535	1000	☆
GroupPC: Multi-Reference and Simple PLC Function				
PC-00	Reference 0	-100.0%–100.0%	0.0%	☆
PC-01	Reference 1	-100.0%–100.0%	0.0%	☆
PC-02	Reference 2	-100.0%–100.0%	0.0%	☆
PC-03	Reference 3	-100.0%–100.0%	0.0%	☆
PC-04	Reference 4	-100.0%–100.0%	0.0%	☆
PC-05	Reference 5	-100.0%–100.0%	0.0%	☆
PC-06	Reference 6	-100.0%–100.0%	0.0%	☆
PC-07	Reference 7	-100.0%–100.0%	0.0%	☆
PC-08	Reference 8	-100.0%–100.0%	0.0%	☆
PC-09	Reference 9	-100.0%–100.0%	0.0%	☆
PC-10	Reference 10	-100.0%–100.0%	0.0%	☆
PC-11	Reference 11	-100.0%–100.0%	0.0%	☆
PC-12	Reference 12	-100.0%–100.0%	0.0%	☆
PC-13	Reference 13	-100.0%–100.0%	0.0%	☆
PC-14	Reference 14	-100.0%–100.0%	0.0%	☆
PC-15	Reference 15	-100.0%–100.0%	0.0%	☆
PC-16	Simple PLC running mode	0: Stop after the AC drive runs one cycle 1: Keep final values after the AC drive runs one cycle 2: Repeat after the AC drive runs one cycle	0	☆
PC-17	Simple PLC retentive selection	Unit's digit (Retentive upon power failure) 0: No 1: Yes Ten's digit (Retentive upon stop) 0: No 1: Yes	00	☆
PC-18	Running time of simple PLC reference 0	0.0–6553.5s (h)	0.0s (h)	☆
PC-19	Acceleration/deceleration time of simple PLC reference 0	0–3	0	☆
PC-20	Running time of simple PLC reference 1	0.0–6553.5s (h)	0.0s (h)	☆
PC-21	Acceleration/deceleration time of simple PLC reference 1	0–3	0	☆
PC-22	Running time of simple PLC reference 2	0.0–6553.5s (h)	0.0s (h)	☆
PC-23	Acceleration/deceleration time of simple PLC reference 2	0–3	0	☆
PC-24	Running time of simple PLC reference 3	0.0–6553.5s (h)	0.0s (h)	☆
PC-25	Acceleration/deceleration time of simple PLC reference 3	0–3	0	☆

Function Code	parameter Name	Setting Range	Default	Property
PC-26	Running time of simple PLC reference 4	0.0–6553.5s (h)	0.0s (h)	☆
PC-27	Acceleration/deceleration time of simple PLC reference 4	0–3	0	☆
PC-28	Running time of simple PLC reference 5	0.0–6553.5s (h)	0.0s (h)	☆
PC-29	Acceleration/deceleration time of simple PLC reference 5	0–3	0	☆
PC-30	Running time of simple PLC reference 6	0.0–6553.5s (h)	0.0s (h)	☆
PC-31	Acceleration/deceleration time of simple PLC reference 6	0–3	0	☆
PC-32	Running time of simple PLC reference 7	0.0–6553.5s (h)	0.0s (h)	☆
PC-33	Acceleration/deceleration time of simple PLC reference 7	0–3	0	☆
PC-34	Running time of simple PLC reference 8	0.0–6553.5s (h)	0.0s (h)	☆
PC-35	Acceleration/deceleration time of simple PLC reference 8	0–3	0	☆
PC-36	Running time of simple PLC reference 9	0.0–6553.5s (h)	0.0s (h)	☆
PC-37	Acceleration/deceleration time of simple PLC reference 9	0–3	0	☆
PC-38	Running time of simple PLC reference 10	0.0–6553.5s (h)	0.0s (h)	☆
PC-39	Acceleration/deceleration time of simple PLC reference 10	0–3	0	☆
PC-40	Running time of simple PLC reference 11	0.0–6553.5s (h)	0.0s (h)	☆
PC-41	Acceleration/deceleration time of simple PLC reference 11	0–3	0	☆
PC-42	Running time of simple PLC reference 12	0.0–6553.5s (h)	0.0s (h)	☆
PC-43	Acceleration/deceleration time of simple PLC reference 12	0–3	0	☆
PC-44	Running time of simple PLC reference 13	0.0–6553.5s (h)	0.0s (h)	☆
PC-45	Acceleration/deceleration time of simple PLC reference 13	0–3	0	☆
PC-46	Running time of simple PLC reference 14	0.0–6553.5s (h)	0.0s (h)	☆
PC-47	Acceleration/deceleration time of simple PLC reference 14	0–3	0	☆
PC-48	Running time of simple PLC reference 15	0.0–6553.5s (h)	0.0s (h)	☆
PC-49	Acceleration/deceleration time of simple PLC reference 15	0–3	0	☆
PC-50	Time unit of simple PLC running	0: s (second)1:h (hour)	0	☆
PC-51	Reference 0 source	0: Set by PC-00 1: AI1 2: AI2 3: AI3 4: Pulse setting 5: PID 6: Set by preset frequency (P0- 08), modified via terminal UP/ DOWN	0	☆

Function Code	parameter Name	Setting Range	Default	Property
Group PD: Communication parameters				
PD-00	Baud rate	Unit's digit (Modbus baud rate) 0: 300 BPs 1: 600 BPs 2: 1200 BPs 3: 2400 BPs 4: 4800 BPs 5: 9600 BPs 6: 19200 BPs 7: 38400 BPs 8: 57600 BPs 9: 115200 BPs Ten's digit (PROFIBUS-DP baud rate) 0: 115200 BPs 1: 208300 BPs 2: 256000 BPs 3: 512000 Bps Hundred's digit (reserved) Thousand's digit (CANlink baud rate) 0: 20 1: 50 2: 100 3: 125 4: 250 5: 500 6: 1 M	6005	☆
PD-01	Data format	0: No check, data format <8,N,2> 1: Even farity check, data format <8,E,1> 2: Odd farity check, data format <8,O,1> 3: No check, data format <8,N,1> Valid for Modbus	0	☆
PD-02	Local address	0: Broadcast address 1–247 Valid for Modbus, PROFIBUS-DP and CANlink	1	☆
PD-03	Response delay	0–20 ms Valid for Modbus	2 ms	☆
PD-04	Communication timeout	0.0s (invalid) 0.1–60.0s Valid for Modbus, PROFIBUS-DP and CANopen	0.0s	☆
PD-05	Modbus protocol selection and PROFIBUS-DP data format	Unit's digit: Modbus protocol 0: Non-standard Modbus protocol 1: Standard Modbus protocol Ten's digit: PROFIBUS-DP data format 0: PPO1 format 1: PPO2 format 2: PPO3 format 3: PPO5 format	30	☆
PD-06	Communication reading current resolution	0: 0.01A 1: 0.1A	0	☆
PD-08	CANlink communication timeout time	0.0s: Invalid 0.1–60.0s	0	☆

Function Code	parameter Name	Setting Range	Default	Property
Group PE: User-defined parameters				
PE-00	User-defined function code 0	P0-00 to PP-xx A0-00 to Ax-xx U0-xx to U0-xx	P0-10	☆
PE-01	User-defined function code 1		P0-02	☆
PE-02	User-defined function code 2		P0-03	☆
PE-03	User-defined function code 3		P0-07	☆
PE-04	User-defined function code 4		P0-08	☆
PE-05	User-defined function code 5		P0-17	☆
PE-06	User-defined function code 6		P0-18	☆
PE-07	User-defined function code 7		P3-00	☆
PE-08	User-defined function code 8		P3-01	☆
PE-09	User-defined function code 9		P4-00	☆
PE-10	User-defined function code 10		P4-01	☆
PE-11	User-defined function code 11		P4-02	☆
PE-12	User-defined function code 12		P5-04	☆
PE-13	User-defined function code 13		P5-07	☆
PE-14	User-defined function code 14		P6-00	☆
PE-15	User-defined function code 15		P6-10	☆
PE-16	User-defined function code 16		P0-00	☆
PE-17	User-defined function code 17		P0-00	☆
PE-18	User-defined function code 18		P0-00	☆
PE-19	User-defined function code 19		P0-00	☆
PE-20	User-defined function code 20		P0-00	☆
PE-21	User-defined function code 21		P0-00	☆
PE-22	User-defined function code 22		P0-00	☆
PE-23	User-defined function code 23		P0-00	☆
PE-24	User-defined function code 24		P0-00	☆
PE-25	User-defined function code 25		P0-00	☆
PE-26	User-defined function code 26		P0-00	☆
PE-27	User-defined function code 27		P0-00	☆
PE-28	User-defined function code 28		P0-00	☆
PE-29	User-defined function code 29		P0-00	☆
Group PP: Function Code Management				
PP-00	User password	0–65535	0	☆
PP-01	Restore default settings	0: No Operation 01: Restore factory settings except motor parameters 02: Clear records 04: reserved 501: reserved	0	★
PP-02	Function parameter group display selection	Unit's digit (Group U display selection) 0: Not display 1: Display Ten's digit (Group A display selection) 0: Not display 1: Display	11	★
PP-03	Individualized parameter display property	Unit's digit (User-defined parameter display selection) 0: Not display 1: Display Ten's digit (User-modified parameter display selection) 0: Not display 1: Display	00	☆
PP-04	parameter modification property	0: Modifiable 1: Not modifiable	0	☆

Function Code	parameter Name	Setting Range	Default	Property
Group A0: Torque Control and Restricting parameters				
A0-00	Speed/Torque control selection	0: Speed control 1: Torque control	0	★
A0-01	Torque setting source in torque control	0: Digital setting (A0-03) 1: AI1 2: AI2 3: AI3 4: Pulse setting (X5/X6) 5: Communication setting 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) Full range of values 1–7 corresponds to the digital setting of A0-03.	0	★
A0-03	Torque digital setting in torque control	-200.0%–200.0%	150.0%	☆
A0-05	Forward maximum frequency in torque control	0.00 Hz to maximum frequency (P0-10)	50.00 Hz	☆
A0-06	Reverse maximum frequency in torque control	0.00 Hz to maximum frequency (P0-10)	50.00 Hz	☆
A0-07	Acceleration time in torque control	0.00–65000s	0.00s	☆
A0-08	Deceleration time in torque control	0.00–65000s	0.00s	☆
Group A1: Virtual X (VX)/Virtual DO (VDO)				
A1-00	VX1 function selection	0–59	0	★
A1-01	VX2 function selection	0–59	0	★
A1-02	VX3 function selection	0–59	0	★
A1-03	VX4 function selection	0–59	0	★
A1-04	VX5 function selection	0–59	0	★
A1-05	VX state setting mode	Unit's digit (VX1) 0: Decided by state of VDOx 1: Decided by A1-06 Ten's digit (VX2) 0, 1 (same as VX1) Hundred's digit (VX3) 0, 1 (same as VX1) Thousand's digit (VX4) 0, 1 (same as VX1) Ten thousand's digit (VX5) 0, 1 (same as VX1)	00000	★
A1-06	VX state selection	Unit's digit (VX1) 0: Invalid 1: Valid Ten's digit (VX2) 0, 1 (same as VX1) Hundred's digit (VX3) 0, 1 (same as VX1) Thousand's digit (VX4) 0, 1 (same as VX1) Ten thousand's digit (VX5) 0, 1 (same as VX1)	00000	★
A1-07	Function selection for AI1 used as X	0–59	0	★
A1-08	Function selection for AI2 used as X	0–59	0	★
A1-09	Function selection for AI3 used as X	0–59	0	★

Function Code	parameter Name	Setting Range	Default	Property
A1-10	State selection for AI used as X	Unit's digit (AI1) 0: High level valid 1: Low level valid Ten's digit (AI2) 0, 1 (same as unit's digit) Hundred's digit (AI3) 0, 1 (same as unit's digit)	000	★
A1-11	VDO1 function selection	0: Short with physical Xx internally 1–40: Refer to function selection of physical DO in group P5.	0	☆
A1-12	VDO2 function selection	0: Short with physical Xx internally 1–40: Refer to function selection of physical DO in group P5.	0	☆
A1-13	VDO3 function selection	0: Short with physical Xx internally 1–40: Refer to function selection of physical DO in group P5.	0	☆
A1-14	VDO4 function selection	0: Short with physical Xx internally 1–40: Refer to function selection of physical DO in group P5.	0	☆
A1-15	VDO5 function selection	0: Short with physical Xx internally 1–40: Refer to function selection of physical DO in group P5.	0	☆
A1-16	VDO1 output delay	0.0–3600.0s	0.0s	☆
A1-17	VDO2 output delay	0.0–3600.0s	0.0s	☆
A1-18	VDO3 output delay	0.0–3600.0s	0.0s	☆
A1-19	VDO4 output delay	0.0–3600.0s	0.0s	☆
A1-20	VDO5 output delay	0.0–3600.0s	0.0s	☆
A1-21	VDO state selection	Unit's digit (VDO1) 0: Positive logic 1: Reverse logic Ten's digit (VDO2) 0, 1 (same as unit's digit) Hundred's digit (VDO3) 0, 1 (same as unit's digit) Thousand's digit (VDO4) 0, 1 (same as unit's digit) Ten thousand's digit (VDO5) 0, 1 (same as unit's digit)	00000	☆
Group A2: Motor 2 parameters				
A2-00	Motor type selection	0: Common asynchronous motor 1: Variable frequency asynchronous motor 2: Permanent magnetic synchronous motor	0	★
A2-01	Rated motor power	0.1–1000.0 kW	Model dependent	★
A2-02	Rated motor voltage	1–2000 V	Model dependent	★
A2-03	Rated motor current	0.01–655.35 A (AC drive power ≤55 kW) 0.1–6553.5 A (AC drive power >55 kW)	Model dependent	★
A2-04	Rated motor frequency	0.01 Hz to maximum frequency	Model dependent	★
A2-05	Rated motor rotational speed	1–65535 RPM	Model dependent	★
A2-06	Stator resistance (asynchronous motor)	0.001–65.535 Ω (AC drive power ≤ 55 kW) 0.0001–6.5535 Ω (AC drive power > 55 kW)	Model dependent	★
A2-07	Rotor resistance (asynchronous motor)	0.001–65.535 Ω (AC drive power ≤ 55 kW) 0.0001–6.5535 Ω (AC drive power > 55 kW)	Model dependent	★
A2-08	Leakage inductive reactance (asynchronous motor)	0.01–655.35 mH (AC drive power ≤ 55 kW) 0.001–65.535 mH (AC drive power > 55 kW)	Model dependent	★
A2-09	Mutual inductive reactance (asynchronous motor)	0.1–6553.5 mH (AC drive power ≤ 55 kW) 0.01–655.35 mH (AC drive power > 55 kW)	Model dependent	★
A2-10	No-load current (asynchronous motor)	0.01 A to A2-03 (AC drive power ≤ 55 kW) 0.1 A to A2-03 (AC drive power > 55 kW)	Model dependent	★

Function Code	parameter Name	Setting Range	Default	Property
A2-16	Stator resistance (synchronous motor)	0.001–65.535 Ω (AC drive power ≤ 55 kW) 0.0001–6.5535 Ω (AC drive power > 55 kW)	Model dependent	★
A2-17	Shaft D inductance (synchronous motor)	0.01–655.35 mH (AC drive power ≤ 55 kW) 0.001–65.535 mH (AC drive power > 55 kW)	Model dependent	★
A2-18	Shaft Q inductance (synchronous motor)	0.01–655.35 mH (AC drive power ≤ 55 kW) 0.001–65.535 mH (AC drive power > 55 kW)	Model dependent	★
A2-20	Back EMF (synchronous motor)	0.1–6553.5 V	Model dependent	★
A2-27	Encoder pulses per revolution	1–65535	1024	★
A2-28	Encoder type	0: ABZ incremental encoder 1: UVW incremental encoder 2: Resolver 3: SIN/COS encoder 4: Wire-saving UVW encoder	0	★
A2-29	Speed feedback PG selection	0: Local PG 1: Extended PG 2: Pulse input (X5/X6)	0	★
A2-30	A, B phase sequence of ABZ incremental encoder	0: Forward 1: Reserve	0	★
A2-31	Encoder installation angle	0.0°–359.9°	0.0°	★
A2-32	U, V, W phase sequence of UVW encoder	0: Forward 1: Reverse	0	★
A2-33	UVW encoder angle offset	0.0°–359.9°	0.0°	★
A2-34	Number of pole pairs of resolver	1–65535	1	★
A2-36	Encoder wire-break fault detection time	0.0s: No action 0.1–10.0s	0.0s	★
A2-37	Auto-tuning selection	0: No auto-tuning 1: Asynchronous motor static auto-tuning 2: Asynchronous motor complete auto-tuning 11: Synchronous motor with-load auto-tuning 12: Synchronous motor no-load auto-tuning	0	★
A2-38	Speed loop proportional gain 1	0–100	30	☆
A2-39	Speed loop integral time 1	0.01–10.00s	0.50s	☆
A2-40	Switchover frequency 1	0.00 to A2-43	5.00 Hz	☆
A2-41	Speed loop proportional gain 2	0–100	15	☆
A2-42	Speed loop integral time 2	0.01–10.00s	1.00s	☆
A2-43	Switchover frequency 2	A2-40 to maximum output frequency	10.00 Hz	☆
A2-44	Vector control slip gain	50%–200%	100%	☆
A2-45	Time constant of speed loop filter	0.000–0.100s	0.000s	☆
A2-46	Vector control over- excitation gain	0–200	64	☆
A2-47	Torque upper limit source in speed control mode	0: A2-48 1: AI1 2: AI2 3: AI3 4: Pulse setting (X5/X6) 5: Via communication 6: MIN(AI1,AI2) 7: MIN(AI1,AI2) Full range of values 1–7 corresponds to the digital setting of A2-48.	0	☆
A2-48	Digital setting of torque upper limit in speed control mode	0.0%–200.0%	150.0%	☆
A2-51	Excitation adjustment proportional gain	0–20000	2000	☆
A2-52	Excitation adjustment integral gain	0–20000	1300	☆

Function Code	parameter Name	Setting Range	Default	Property
A2-53	Torque adjustment proportional gain	0–20000	2000	☆
A2-54	Torque adjustment integral gain	0–20000	1300	☆
A2-55	Speed loop integral property	Unit's digit: Integral separated 0: Disabled 1: Enabled	0	☆
A2-56	Field weakening mode of synchronous motor	0: No field weakening 1: Direct calculation 2: Adjustment	0	☆
A2-57	Field weakening degree of synchronous motor	50%–500%	100%	☆
A2-58	Maximum field weakening current	1%–300%	50%	☆
A2-59	Field weakening automatic adjustment gain	10%–500%	100%	☆
A2-60	Field weakening integral multiple	2–10	2	☆
A2-61	Motor 2 control mode	0: Sensorless flux vector control (SVC) 1: Closed-loop vector control (FVC) 2: Voltage/Frequency (V/F) control	0	☆
A2-62	Motor 2 acceleration/ deceleration time	0: Same as motor 1 1: Acceleration/Deceleration time 1 2: Acceleration/Deceleration time 2 3: Acceleration/Deceleration time 3 4: Acceleration/Deceleration time 4	0	☆
A2-63	Motor 2 torque boost	0.0%: Automatic torque boost 0.1%–30.0%	Model dependent	☆
A2-65	Motor 2 oscillation suppression gain	0–100	Model dependent	☆
		Group A3: Motor 3 parameters		
A3-00	Motor type selection	0: Common asynchronous motor 1: Variable frequency asynchronous motor 2: Permanent magnetic synchronous motor	0	★
A3-01	Rated motor power	0.1–1000.0 kW	Model dependent	★
A3-02	Rated motor voltage	1–2000 V	Model dependent	★
A3-03	Rated motor current	0.01–655.35 A (AC drive power ≤55 kW) 0.1–6553.5 A (AC drive power >55 kW)	Model dependent	★
A3-04	Rated motor frequency	0.01 Hz to maximum frequency	Model dependent	★
A3-05	Rated motor rotational speed	1–65535 RPM	Model dependent	★
A3-06	Stator resistance (asynchronous motor)	0.001–65.535 Ω (AC drive power ≤ 55 kW) 0.0001–6.5535 Ω (AC drive power > 55 kW)	Model dependent	★
A3-07	Rotor resistance (asynchronous motor)	0.001–65.535 Ω (AC drive power ≤ 55 kW) 0.0001–6.5535 Ω (AC drive power > 55 kW)	Model dependent	★
A3-08	Leakage inductive reactance (asynchronous motor)	0.01–655.35 mH (AC drive power ≤ 55 kW) 0.001–65.535 mH (AC drive power > 55 kW)	Model dependent	★
A3-09	Mutual inductive reactance (asynchronous motor)	0.1–6553.5 mH (AC drive power ≤ 55 kW) 0.01–655.35 mH (AC drive power > 55 kW)	Model dependent	★
A3-10	No-load current (asynchronous motor)	0.01 A to A2-03 (AC drive power ≤ 55 kW) 0.1 A to A2-03 (AC drive power > 55 kW)	Model dependent	★
A3-16	Stator resistance (synchronous motor)	0.001–65.535 Ω (AC drive power ≤ 55 kW) 0.0001–6.5535 Ω (AC drive power > 55 kW)	Model dependent	★
A3-17	Shaft D inductance (synchronous motor)	0.01–655.35 mH (AC drive power ≤ 55 kW) 0.001–65.535 mH (AC drive power > 55 kW)	Model dependent	★
A3-18	Shaft Q inductance (synchronous motor)	0.01–655.35 mH (AC drive power ≤ 55 kW) 0.001–65.535 mH (AC drive power > 55 kW)	Model dependent	★
A3-20	Back EMF (synchronous motor)	0.1–6553.5 V	Model dependent	★

Function Code	parameter Name	Setting Range	Default	Property
A3-27	Encoder pulses per revolution	1–65535	1024	★
A3-28	Encoder type	0: ABZ incremental encoder 1: UVW incremental encoder 2: Resolver 3: SIN/COS encoder 4: Wire-saving UVW encoder	0	★
A3-29	Speed feedback PG selection	0: Local PG 1: Extended PG 2: Pulse input (X5/X6)	0	★
A3-30	A, B phase sequence of ABZ incremental encoder	0: Forward 1: Reserve	0	★
A3-31	Encoder installation angle	0.0°–359.9°	0.0°	★
A3-32	U, V, W phase sequence of UVW encoder	0: Forward 1: Reverse	0	★
A3-33	UVW encoder angle offset	0.0°–359.9°	0.0°	★
A3-34	Number of pole pairs of resolver	1–65535	1	★
A3-36	Encoder wire-break fault detection time	0.0s: No action 0.1–10.0s	0.0s	★
A3-37	Auto-tuning selection	0: No auto-tuning 1: Asynchronous motor static auto-tuning 2: Asynchronous motor complete auto-tuning 11: Synchronous motor with-load auto-tuning 12: Synchronous motor no-load auto-tuning	0	★
A3-38	Speed loop proportional gain 1	0–100	30	☆
A3-39	Speed loop integral time 1	0.01–10.00s	0.50s	☆
A3-40	Switchover frequency 1	0.00 to A3-43	5.00 Hz	☆
A3-41	Speed loop proportional gain 2	0–100	15	☆
A3-42	Speed loop integral time 2	0.01–10.00s	1.00s	☆
A3-43	Switchover frequency 2	A3-40 to maximum output frequency	10.00 Hz	☆
A3-44	Vector control slip gain	50%–200%	100%	☆
A3-45	Time constant of speed loop filter	0.000–0.100s	0.000s	☆
A3-46	Vector control over- excitation gain	0–200	64	☆
A3-47	Torque upper limit source in speed control mode	0: A3-48 1: AI1 2: AI2 3: AI3 4: Pulse setting (X5/X6) 5: Via communication 6: MIN (AI1,AI2) 7: MAX (AI1,AI2) Full range of values 1–7 corresponds to the digital setting of A3-48.	0	☆
A3-48	Digital setting of torque upper limit in speed control mode	0.0%–200.0%	150.0%	☆
A3-51	Excitation adjustment proportional gain	0–20000	2000	☆
A3-52	Excitation adjustment integral gain	0–20000	1300	☆
A3-53	Torque adjustment proportional gain	0–20000	2000	☆
A3-54	Torque adjustment integral gain	0–20000	1300	☆
A3-55	Speed loop integral property	Unit's digit: Integral separated 0: Disabled 1: Enabled	0	☆

Function Code	parameter Name	Setting Range	Default	Property
A3-56	Field weakening mode of synchronous motor	0: No field weakening 1: Direct calculation 2: Adjustment	0	☆
A3-57	Field weakening degree of synchronous motor	50%–500%	100%	☆
A3-58	Maximum field weakening current	1%–300%	50%	☆
A3-59	Field weakening automatic adjustment gain	10%–500%	100%	☆
A3-60	Field weakening integral multiple	2–10	2	☆
A3-61	Motor 2 control mode	0: Sensorless flux vector control (SVC) 1: Closed-loop vector control (FVC) 2: Voltage/Frequency (V/F) control	0	☆
A3-62	Motor 2 acceleration/ deceleration time	0: Same as motor 1 1: Acceleration/Deceleration time 1 2: Acceleration/Deceleration time 2 3: Acceleration/Deceleration time 3 4: Acceleration/Deceleration time 4	0	☆
A3-63	Motor 2 torque boost	0.0%: Automatic torque boost 0.1%–30.0%	Model dependent	☆
A3-65	Motor 2 oscillation suppression gain	0–100	Model dependent	☆
		Group A4: Motor 4 parameters		
A4-00	Motor type selection	0: Common asynchronous motor 1: Variable frequency asynchronous motor 2: Permanent magnetic synchronous motor	0	★
A4-01	Rated motor power	0.1–1000.0 kW	Model dependent	★
A4-02	Rated motor voltage	1–2000 V	Model dependent	★
A4-03	Rated motor current	0.01–655.35 A (AC drive power ≤ 55 kW) 0.1–6553.5 A (AC drive power > 55 kW)	Model dependent	★
A4-04	Rated motor frequency	0.01 Hz to maximum frequency	Model dependent	★
A4-05	Rated motor rotational speed	1–65535 RPM	Model dependent	★
A4-06	Stator resistance (asynchronous motor)	0.001–65.535 Ω (AC drive power ≤ 55 kW) 0.0001–6.5535 Ω (AC drive power > 55 kW)	Model dependent	★
A4-07	Rotor resistance (asynchronous motor)	0.001–65.535 Ω (AC drive power≤ 55 kW) 0.0001–6.5535 Ω (AC drive power > 55 kW)	Model dependent	★
A4-08	Leakage inductive reactance (asynchronous motor)	0.01–655.35 mH (AC drive power ≤ 55 kW) 0.001–65.535 mH (AC drive power > 55 kW)	Model dependent	★
A4-09	Mutual inductive reactance (asynchronous motor)	0.1–6553.5 mH (AC drive power ≤ 55 kW) 0.01–655.35 mH (AC drive power > 55 kW)	Model dependent	★
A4-10	No-load current (asynchronous motor)	0.01 A to A2-03 (AC drive power ≤ 55 kW) 0.1 A to A2-03 (AC drive power > 55 kW)	Model dependent	★
A4-16	Stator resistance (synchronous motor)	0.001–65.535 Ω (AC drive power ≤ 55 kW) 0.0001–6.5535 Ω (AC drive power > 55 kW)	Model dependent	★
A4-17	Shaft D inductance (synchronous motor)	0.01–655.35 mH (AC drive power ≤ 55 kW) 0.001–65.535 mH (AC drive power > 55 kW)	Model dependent	★
A4-18	Shaft Q inductance (synchronous motor)	0.01–655.35 mH (AC drive power ≤ 55 kW) 0.001–65.535 mH (AC drive power > 55 kW)	Model dependent	★
A4-20	Back EMF (synchronous motor)	0.1–6553.5 V	Model dependent	★
A4-27	Encoder pulses per revolution	1–65535	1024	★
A4-28	Encoder type	0: ABZ incremental encoder 1: UVW incremental encoder 2: Resolver 3: SIN/COS encoder 4: Wire-saving UVW encoder	0	★

Function Code	parameter Name	Setting Range	Default	Property
A4-29	Speed feedback PG selection	0: Local PG 1: Extended PG 2: Pulse input (X5/X6)	0	★
A4-30	A, B phase sequence of ABZ incremental encoder	0: Forward 1: Reserve	0	★
A4-31	Encoder installation angle	0.0°–359.9°	0.0°	★
A4-32	U, V, W phase sequence of UVW encoder	0: Forward 1: Reverse	0	★
A4-33	UVW encoder angle offset	0.0°–359.9°	0.0°	★
A4-34	Number of pole pairs of resolver	1–65535	1	★
A4-36	Encoder wire-break fault detection time	0.0s: No action 0.1–10.0s	0.0s	★
A4-37	Auto-tuning selection	0: No auto-tuning 1: Asynchronous motor static auto-tuning 2: Asynchronous motor complete auto-tuning 11: Synchronous motor with-load auto-tuning 12: Synchronous motor no-load auto-tuning	0	★
A4-38	Speed loop proportional gain 1	0–100	30	☆
A4-39	Speed loop integral time 1	0.01–10.00s	0.50s	☆
A4-40	Switchover frequency 1	0.00 to A4-43	5.00 Hz	☆
A4-41	Speed loop proportional gain 2	0–100	15	☆
A4-42	Speed loop integral time 2	0.01–10.00s	1.00s	☆
A4-43	Switchover frequency 2	A4-40 to maximum output frequency	10.00 Hz	☆
A4-44	Vector control slip gain	50%–200%	100%	☆
A4-45	Time constant of speed loop filter	0.000–0.100s	0.000s	☆
A4-46	Vector control over- excitation gain	0–200	64	☆
A4-47	Torque upper limit source in speed control mode	0: A4-48 1: AI1 2: AI2 3: AI3 4: Pulse setting (X5/X6) 5: Via communication 6: MIN(AI1,AI2) 7: MIN(AI1,AI2) Full range of values 1–7 corresponds to the digital setting of A4-48.	0	☆
A4-48	Digital setting of torque upper limit in speed control mode	0.0%–200.0%	150.0%	☆
A4-51	Excitation adjustment proportional gain	0–20000	2000	☆
A4-52	Excitation adjustment integral gain	0–20000	1300	☆
A4-53	Torque adjustment proportional gain	0–20000	2000	☆
A4-54	Torque adjustment integral gain	0–20000	1300	☆
A4-55	Speed loop integral property	Unit's digit: Integral separated 0: Disabled 1: Enabled	0	☆
A4-56	Field weakening mode of synchronous motor	0: No field weakening 1: Direct calculation 2: Adjustment	0	☆
A4-57	Field weakening degree of synchronous motor	50%–500%	100%	☆
A4-58	Maximum field weakening current	1%–300%	50%	☆

Function Code	parameter Name	Setting Range	Default	Property
A4-59	Field weakening automatic adjustment gain	10%–500%	100%	☆
A4-60	Field weakening integral multiple	2–10	2	☆
A4-61	Motor 2 control mode	0: Sensorless flux vector control (SVC) 1: Closed-loop vector control (FVC) 2: Voltage/Frequency (V/F) control	0	☆
A4-62	Motor 2 acceleration/ deceleration time	0: Same as motor 1 1: Acceleration/Deceleration time 1 2: Acceleration/Deceleration time 2 3: Acceleration/Deceleration time 3 4: Acceleration/Deceleration time 4	0	☆
A4-63	Motor 2 torque boost	0.0%: Automatic torque boost 0.1%–30.0%	Model dependent	☆
A4-65	Motor 2 oscillation suppression gain	0–100	Model dependent	☆
Group A5: Control Optimization parameters				
A5-00	DPWM switchover frequency upper limit	0.00–15.00 Hz	12.00 Hz	☆
A5-01	PWM modulation mode	0: Asynchronous modulation 1: Synchronous modulation	0	☆
A5-02	Dead zone compensation mode selection	0: No compensation 1: compensation mode 1 2: compensation mode 2	1	☆
A5-03	Random PWM depth	0: Random PWM invalid 1–10	0	☆
A5-04	Rapid current limit	0: Disabled1: Enabled	1	☆
A5-05	Current detection compensation	0–100	5	☆
A5-06	Undervoltage threshold	60.0%–140.0%	100.0%	☆
A5-07	SVC optimization mode selection	0: No optimization 1: Optimization mode 1 2: Optimization mode 2	1	☆
A5-08	Dead-zone time adjustment	100%–200%	150%	☆
A5-09	Overvoltage threshold	200.0–2500.0 V	2000.0 V	☆
Group A6: AI Curve Setting				
A6-00	AI curve 4 minimum input	-10.00 V to A6-02	0.00 V	☆
A6-01	Corresponding setting of AI curve 4 minimum input	-100.0%–100.0%	0.0%	☆
A6-02	AI curve 4 inflexion 1 input	A6-00 to A6-04	3.00 V	☆
A6-03	Corresponding setting of AI curve 4 inflexion 1 input	-100.0%–100.0%	30.0%	☆
A6-04	AI curve 4 inflexion 1 input	A6-02 to A6-06	6.00 V	☆
A6-05	Corresponding setting of AI curve 4 inflexion 1 input	-100.0%–100.0%	60.0%	☆
A6-06	AI curve 4 maximum input	A6-06 to 10.00 V	10.00 V	☆
A6-07	Corresponding setting of AI curve 4 maximum input	-100.0%–100.0%	100.0%	☆
A6-08	AI curve 5 minimum input	-10.00 V to A6-10	0.00 V	☆
A6-09	Corresponding setting of AI curve 5 minimum input	-100.0%–100.0%	0.0%	☆
A6-10	AI curve 5 inflexion 1 input	A6-08 to A6-12	3.00 V	☆
A6-11	Corresponding setting of AI curve 5 inflexion 1 input	-100.0%–100.0%	30.0%	☆
A6-12	AI curve 5 inflexion 1 input	A6-10 to A6-14	6.00 V	☆
A6-13	Corresponding setting of AI curve 5 inflexion 1 input	-100.0%–100.0%	60.0%	☆
A6-14	AI curve 5 maximum input	A6-14 to 10.00 V	10.00 V	☆
A6-15	Corresponding setting of AI curve 5 maximum input	-100.0%–100.0%	100.0%	☆
A6-16	Jump point of AI1 input corresponding setting	-100.0%–100.0%	0.0%	☆

Function Code	parameter Name	Setting Range	Default	Property
A6-17	Jump amplitude of AI1 input corresponding setting	0.0%–100.0%	0.5%	☆
A6-18	Jump point of AI2 input corresponding setting	-100.0%–100.0%	0.0%	☆
A6-19	Jump amplitude of AI2 input corresponding setting	0.0%–100.0%	0.5%	☆
A6-20	Jump point of AI3 input corresponding setting	-100.0%–100.0%	0.0%	☆
A6-21	Jump amplitude of AI3 input corresponding setting	0.0%–100.0%	0.5%	☆
Group A7: User Programmable Function				
A7-00	User programmable function selection	0: Disabled 1: Enabled	0	★
A7-01	Selection of control mode of the output terminals on the control board	Unit's digit: FMR (DO2 used as digital output) 0: Controlled by the AC drive 1: Controlled by the user programmable card Ten's digit: relay (TA-TB-TC) Same as unit's digit Hundred's digit: DO1 Same as unit's digit Thousand's digit FMR (DO2 used as pulse output) Same as unit's digit Ten thousand's digit: AM Same as unit's digit	00000	★
A7-02	AI/AM/AO2 function selection of the user programmable card	0: AI3 (voltage input), AO2 (voltage output) 1: AI3 (voltage input), AO2 (current output) 2: AI3 (current input), AO2 (voltage output) 3: AI3 (current input), AO2 (current output) 4: AI3 (PTC input), AO2 (voltage output) 5: AI3 (PTC input), AO2 (current output) 6: AI3 (PT100 input), AO2 (voltage output) 7: AI3 (PT100 input), AO2 (current output)	0	★
A7-03	FMP output	0.0%–100.0%	0.0%	☆
A7-04	AM output	0.0%–100.0%	0.0%	☆
A7-05	Digital output	Binary setting Unit's digit: FMR Ten's digit: TA-TB-TC Hundred's digit: DO	1	☆
A7-06	Frequency setting through the user programmable card	-100.00% to 100.00%	0.0%	☆
A7-07	Torque setting through the user programmable card	-200.00% to 200.00%	0.0%	☆
A7-08	Command given by the user programmable card	1: Forward RUN 2: Reverse RUN 3: Forward JOG 4: Reverse JOG 5: Coast to stop 6: Decelerate to stop 7: fault reset	0	☆
A7-09	faults given by the user programmable card	0: No fault 80–89: fault codes	0	☆
Group A8: Point-point Communication				
A8-00	Point-point communication selection	0: Disabled 1: Enabled	0	☆
A8-01	Master and slave selection	0: Master 1: Slave	0	☆

Function Code	parameter Name	Setting Range	Default	Property
A8-02	Slave following master command selection	0: Slave not following running commands of the master 1: Slave following running commands of the master	0	☆
A8-03	Usage of data received by slave	0: Torque setting 1: Frequencysetting	0	☆
A8-04	Zero offset of received data (torque)	-100.00%–100.00%	0.00%	★
A8-05	Gain of received data (torque)	-10.00–10.00	1.00	★
A8-06	Point-point communication interruption detection time	0.0–10.0s	1.0s	☆
A8-07	Master data sending cycle	0.001–10.000s	0.001s	☆
A8-08	Zero offset of received data zero offset (frequency)	-100.00%–100.00%	0.00%	★
A8-09	Gain of received data gain (frequency)	-10.00–10.00	1.00	★
A8-10	Runaway prevention coefficient	0.00%–100.00%	10.00%	★
Group AC: AI/AM/AO2 Correction				
AC-00	AI1 measured voltage 1	0.500–4.000 V	factory corrected	☆
AC-01	AI1 displayed voltage 1	0.500–4.000 V	factory corrected	☆
AC-02	AI1 measured voltage 2	6.000–9.999 V	factory corrected	☆
AC-03	AI1 displayed voltage 2	6.000–9.999 V	factory corrected	☆
AC-04	AI2 measured voltage 1	0.500–4.000 V	factory corrected	☆
AC-05	AI2 displayed voltage 1	0.500–4.000 V	factory corrected	☆
AC-06	AI2 measured voltage 2	6.000–9.999 V	factory corrected	☆
AC-07	AI2 displayed voltage 2	9.999–10.000 V	factory corrected	☆
AC-08	AI3 measured voltage 1	9.999–10.000 V	factory corrected	☆
AC-09	AI3 displayed voltage 1	9.999–10.000 V	factory corrected	☆
AC-10	AI3 measured voltage 2	9.999–10.000 V	factory corrected	☆
AC-11	AI3 displayed voltage 2	9.999–10.000 V	factory corrected	☆
AC-12	AM target voltage 1	0.500–4.000 V	factory corrected	☆
AC-13	AM measured voltage 1	0.500–4.000 V	factory corrected	☆
AC-14	AM target voltage 2	6.000–9.999 V	factory corrected	☆
AC-15	AM measured voltage 2	6.000–9.999 V	factory corrected	☆
AC-16	AO2 target voltage 1	0.500–4.000 V	factory corrected	☆
AC-17	AO2 measured voltage 1	0.500–4.000 V	factory corrected	☆
AC-18	AO2 target voltage 2	6.000–9.999 V	factory corrected	☆
AC-19	AO2 measured voltage 2	6.000–9.999 V	factory corrected	☆

7.2 Monitoring Parameters

Function Code	Parameter Name	Min. Unit	Communication Address
Group U0: Standard Monitoring Parameters			
U0-00	Running frequency (Hz)	0.01 Hz	7000H
U0-01	Set frequency (Hz)	0.01 Hz	7001H
U0-02	Bus voltage	0.1 V	7002H
U0-03	Output voltage	1 V	7003H
U0-04	Output current	0.01 A	7004H
U0-05	Output power	0.1 kW	7005H
U0-06	Output torque	0.1%	7006H
U0-07	X state	1	7007H
U0-08	DO state	1	7008H
U0-09	AI1 voltage (V)	0.01 V	7009H
U0-10	AI2 voltage (V)/current (mA)	0.01 V/0.01 mA	700AH
U0-11	AI3 voltage (V)	0.01 V	700BH
U0-12	Count value	1	700CH
U0-13	Length value	1	700DH
U0-14	Load speed	1	700EH
U0-15	PID setting	1	700FH
U0-16	PID feedback	1	7010H
U0-17	PLC stage	1	7011H
U0-18	Input pulse frequency (Hz)	0.01 kHz	7012H
U0-19	Feedback speed	0.01 Hz	7013H
U0-20	Remaining running time	0.1 Min	7014H
U0-21	AI1 voltage before correction	0.001 V	7015H
U0-22	AI2 voltage (V)/current (mA) before correction	0.01 V/0.01 mA	7016H
U0-23	AI3 voltage before correction	0.001 V	7017H
U0-24	Linear speed	1 m/Min	7018H
U0-25	Accumulative power-on time	1 Min	7019H
U0-26	Accumulative running time	0.1 Min	701AH
U0-27	Pulse input frequency	1 Hz	701BH
U0-28	Communication setting value	0.01%	701CH
U0-29	Encoder feedback speed	0.01 Hz	701DH
U0-30	Main frequency X	0.01 Hz	701EH
U0-31	Auxiliary frequency Y	0.01 Hz	701FH
U0-32	Viewing any register address value	1	7020H
U0-33	Synchronous motor rotor position	0.1°	7021H
U0-34	Motor temperature	1°C	7022H

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Function Code	Parameter Name	Min. Unit	Communication Address
U0-35	Target torque	0.1%	7023H
U0-36	Resolver position	1	7024H
U0-37	Power factor angle	0.1°	7025H
U0-38	ABZ position	1	7026H
U0-39	Target voltage upon V/F separation	1 V	7027H
U0-40	Output voltage upon V/F separation	1V	7028H
U0-41	X state visual display	1	7029H
U0-42	DO state visual display	1	702AH
U0-43	X function state visual display 1	1	702BH
U0-44	X function state visual display 2	1	702CH
U0-45	Fault information	1	702DH
U0-58	Phase Z counting	1	703AH
U0-59	Current set frequency	0.01%	703BH
U0-60	Current running frequency	0.01%	703CH
U0-61	AC drive running state	1	703DH
U0-62	Current fault code	1	703EH
U0-63	Sent value of point-point communication	0.01%	703FH
U0-64	Received value of point-point communication	0.01%	7040H
U0-65	Torque upper limit	0.1%	7041H

Chapter 8:Maintenance and Troubleshooting

8.1 Routine Repair and Maintenance of the 9600 series

8.1.1 Routine Maintenance

The influence of the ambient temperature, humidity, dust and vibration will cause the aging of the devices in the AC drive, which may cause potential faults or reduce the service life of the AC drive. Therefore, it is necessary to carry out routine and periodic maintenance.

Routine maintenance involves checking:

- Whether the motor sounds abnormally during running
- Whether the motor vibrates excessively during running
- Whether the installation environment of the AC drive changes.
- Whether the AC drive's cooling fan works normally
- Whether the AC drive overheats

Routine cleaning involves:

- Keep the AC drive clean all the time.
- Remove the dust, especially metal powder on the surface of the AC drive, to prevent the dust from entering the AC drive.
- Clear the oil stain on the cooling fan of the AC drive.

8.1.2 Periodic Inspection

Perform periodic inspection in places where inspection is difficult.

Periodic inspection involves:

Check and clean the air duct periodically.

Check whether the screws become loose.

Check whether the AC drive is corroded.

Check whether the wiring terminals show signs of arcing;

Main circuit insulation test

Prompt

Before measuring the insulating resistance with megameter (500 VDC megameter recommended), disconnect the main circuit from the AC drive. Do not use the insulating resistance meter to test the insulation of the control circuit. The high voltage test need not be performed again because it has been completed before delivery.

8.1.3 Replacement of Vulnerable Components

The vulnerable components of the AC drive are cooling fan and filter electrolytic capacitor. Their service life is related to the operating environment and maintenance status. Generally, the service life is shown as follows:

Component	Service Life	Possible Damage Reason	Judging Criteria
Fan	2 to 3 years	• Bearing worn • Blade aging	• Whether there is crack on the blade • Whether there is abnormal vibration noise upon startup
Electrolytic capacitor	4 to 5 years	• Input power supply in poor quality • High ambient temperature • Frequent load jumping • Electrolytic aging	• Whether there is liquid leakage. • Whether the safe valve has projected. • Measure the static capacitance. • Measure the insulating resistance.

8.1.4 Storage of the AC Drive

For storage of the AC drive, pay attention to the following two aspects:

1) Pack the AC drive with the original packing box provided by our company.
2) Long-term storage degrades the electrolytic capacitor. Thus, the AC drive must be energized once every 2 years, each time lasting at least 5 hours. The input voltage must be increased slowly to the rated value with the regulator.

8.2 Warranty Agreement

1) Free warranty only applies to the AC drive itself.
2) Our company will provide 12-month warranty (starting from the leave-factory date as indicated on the barcode) for the failure or damage under normal use conditions. If the equipment has been used for over 12 months, reasonable repair expenses will be charged.
3) Reasonable repair expenses will be charged for the damages due to the following causes:
   - Improper operation without following the instructions
   - Fire, flood or abnormal voltage.
   - Using the AC drive for non-recommended function
4) The maintenance fee is charged according to Inovance's uniform standard. If there is an agreement, the agreement prevails.

8.3 Faults and Solutions

The 9600 series provides a total of 24 pieces of fault information and protective functions. After a fault occurs, the AC drive implements the protection function, and displays the fault code on the operation panel (if the operation panel is available).

Before contacting us for technical support, you can first determine the fault type, analyze the causes, and perform troubleshooting according to the following tables. If the fault cannot be rectified, contact the agent or Inovance.

Err22 is the AC drive hardware overcurrent or overvoltage signal. In most situations, hardware overvoltage fault causes Err22.

Figure 8-1 Solutions to the faults of the 9600 series

Fault Name	Display	Possible Causes	Solutions
Inverter unit protection	Err01	1: The output circuit is grounded or short circuited. 2: The connecting cable of the motor is too long. 3: The module overheats. 4: The internal connections become loose. 5:The main control board is faulty. 6: The drive board is faulty. 7: The inverter module is faulty.	1: Eliminate external faults. 2: Install a reactor or an output filter. 3: Check the air filter and the cooling fan. 4: Connect all cables properly. 5: Contact the agent or our company.
Overcurrent during acceleration	Err02	1: The output circuit is grounded or short circuited. 2: Motor auto-tuning is not performed. 3: The acceleration time is too short. 4: Manual torque boost or V/F curve is not appropriate. 5: The voltage is too low. 6: The startup operation is performed on the rotating motor. 7: A sudden load is added during acceleration. 8: The AC drive model is of too small power class.	1: Eliminate external faults. 2: Perform the motor auto-tuning. 3: Increase the acceleration time. 4: Adjust the manual torque boost or V/F curve. 5: Adjust the voltage to normal range. 6: Select rotational speed tracking restart or start the motor after it stops. 7: Remove the added load. 8: Select an AC drive of higher power class.
Overcurrent during deceleration	Err03	1: The output circuit is grounded or short circuited. 2: Motor auto-tuning is not performed. 3: The deceleration time is too short. 4: The voltage is too low. 5: A sudden load is added during deceleration. 6: The braking unit and braking resistor are not installed.	1: Eliminate external faults. 2: Perform the motor auto-tuning. 3: Increase the deceleration time. 4: Adjust the voltage to normal range. 5: Remove the added load. 6: Install the braking unit and braking resistor.

Fault Name	Display	Possible Causes	Solutions
Overcurrent at constant speed	Err04	1: The output circuit is grounded or short circuited. 2: Motor auto-tuning is not performed. 3: The voltage is too low. 4: A sudden load is added during operation. 5: The AC drive model is of too small power class.	1: Eliminate external faults. 2: Perform the motor auto-tuning. 3: Adjust the voltage to normal range. 4: Remove the added load. 5: Select an AC drive of higher power class.
Overvoltage during acceleration	Err05	1: The input voltage is too high. 2: An external force drives the motor during acceleration. 3: The acceleration time is too short. 4: The braking unit and braking resistor are not installed.	1: Adjust the voltage to normal range. 2: Cancel the external force or install a braking resistor. 3: Increase the acceleration time. 4: Install the braking unit and braking resistor.
Overvoltage during deceleration	Err06	1: The input voltage is too high. 2: An external force drives the motor during deceleration. 3: The deceleration time is too short. 4: The braking unit and braking resistor are not installed.	1: Adjust the voltage to normal range. 2: Cancel the external force or install the braking resistor. 3: Increase the deceleration time. 4: Install the braking unit and braking resistor.
Overvoltage at constant speed	Err07	1: The input voltage is too high. 2: An external force drives the motor during deceleration.	1: Adjust the voltage to normal range. 2: Cancel the external force or install the braking resistor.
Control power supply fault	Err08	The input voltage is not within the allowable range.	Adjust the input voltage to the allowable range.
Undervoltage	Err09	1: Instantaneous power failure occurs on the input power supply. 2: The AC drive's input voltage is not within the allowable range. 3: The bus voltage is abnormal. 4: The rectifier bridge and buffer resistor are faulty. 5: The drive board is faulty. 6: The main control board is faulty.	1: Reset the fault. 2: Adjust the voltage to normal range. 3: Contact the agent or our company.
AC drive overload	Err10	1: The load is too heavy or locked-rotor occurs on the motor. 2: The AC drive model is of too small power class.	1: Reduce the load and check the motor and mechanical condition. 2: Select an AC drive of higher power class.

Fault Name	Display	Possible Causes	Solutions
Motor overload	Err11	1: P9-01 is set improperly. 2: The load is too heavy or locked-rotor occurs on the motor. 3: The AC drive model is of too small power class.	1: Set P9-01 correctly. 2: Reduce the load and check the motor and the mechanical condition. 3: Select an AC drive of higher power class.
Power input phase loss	Err12	1: The three-phase power input is abnormal. 2: The drive board is faulty. 3: The lightening board is faulty. 4: The main control board is faulty.	1: Eliminate external faults. 2: Contact the agent or our company.
Power output phase loss	Err13	1: The cable connecting the AC drive and the motor is faulty. 2: The AC drive's three-phase outputs are unbalanced when the motor is running. 3: The drive board is faulty. 4: The module is faulty.	1: Eliminate external faults. 2: Check whether the motor three-phase winding is normal. 3: Contact the agent or our company.
Module overheat	Err14	1: The ambient temperature is too high. 2: The air filter is blocked. 3: The fan is damaged. 4: The thermally sensitive resistor of the module is damaged. 5: The inverter module is damaged.	1: Lower the ambient temperature. 2: Clean the air filter. 3: Replace the damaged fan. 4: Replace the damaged thermally sensitive resistor. 5: Replace the inverter module.
External equipment fault	Err15	1: External fault signal is input via X. 2: External fault signal is input via virtual I/O.	Reset the operation.
Communication fault	Err16	1: The host computer is in abnormal state. 2: The communication cable is faulty. 3: P0-28 is set improperly. 4: The communication parameters in group PD are set improperly.	1: Check the cabling of host computer. 2: Check the communication cabling. 3: Set P0-28 correctly. 4: Set the communication parameters properly.
Contactor fault	Err17	1: The drive board and power supply are faulty. 2: The contactor is faulty.	1: Replace the faulty drive board or power supply board. 2: Replace the faulty contactor.

Fault Name	Display	Possible Causes	Solutions
Current detection fault	Err18	1: The HALL device is faulty. 2: The drive board is faulty.	1: Replace the faulty HALL device. 2: Replace the faulty drive board.
Motor auto-tuning fault	Err19	1: The motor parameters are not set according to the nameplate. 2: The motor auto-tuning times out.	1: Set the motor parameters according to the nameplate properly. 2: Check the cable connecting the AC drive and the motor.
Encoder fault	Err20	1: The encoder type is incorrect. 2: The cable connection of the encoder is incorrect. 3: The encoder is damaged. 4: The PG card is faulty.	1: Set the encoder type correctly based on the actual situation. 2: Eliminate external faults. 3: Replace the damaged encoder. 4: Replace the faulty PG card.
EEPROM read-write fault	Err21	The EEPROM chip is damaged.	Replace the main control board.
AC drive hardware fault	Err22	1: Overvoltage exists. 2: Overcurrent exists.	1: Handle based on overvoltage. 2: Handle based on overcurrent.
Short circuit to ground	Err23	The motor is short circuited to the ground.	Replace the cable or motor.
Accumulative running time reached	Err26	The accumulative running time reaches the setting value.	Clear the record through the parameter initialization function.
User-defined fault 1	Err27	1: The user-defined fault 1 signal is input via X. 2: User-defined fault 1 signal is input via virtual I/O.	Reset the operation.
User-defined fault 2	Err28	1: The user-defined fault 2 signal is input via X. 2: The user-defined fault 2 signal is input via virtual I/O.	Reset the operation.
Accumulative power-on time reached	Err29	The accumulative power-on time reaches the setting value.	Clear the record through the parameter initialization function.
Load becoming 0	Err30	The AC drive running current is lower than P9-64.	Check that the load is disconnected or the setting of P9-64 and P9-65 is correct.
PID feedback lost during running	Err31	The PID feedback is lower than the setting of PA-26.	Check the PID feedback signal or set PA-26 to a proper value.

Fault Name	Display	Possible Causes	Solutions
Pulse-by-pulse current limit fault	Err40	1: The load is too heavy or locked-rotor occurs on the motor. 2: The AC drive model is of too small power class.	1: Reduce the load and check the motor and mechanical condition. 2: Select an AC drive of higher power class.
Motor switchover fault during running	Err41	Change the selection of the motor via terminal during running of the AC drive.	Perform motor switchover after the AC drive stops.
Too large speed deviation	Err42	1: The encoder parameters are set incorrectly. 2: The motor auto-tuning is not performed. 3: P9-69 and P9-70 are set incorrectly.	1: Set the encoder parameters properly. 2: Perform the motor auto-tuning. 3: Set P9-69 and P9-70 correctly based on the actual situation.
Motor over-speed	Err43	1: The encoder parameters are set incorrectly. 2: The motor auto-tuning is not performed.3: P9-69 and P9-70 are set incorrectly.	1: Set the encoder parameters properly. 2: Perform the motor auto-tuning. 3: Set P9-69 and P9-70 correctly based on the actual situation.
Motor overheat	Err45	1: The cabling of the temperature sensor becomes loose. 2: The motor temperature is too high.	1: Check the temperature sensor cabling and eliminate the cabling fault. 2: Lower the carrier frequency or adopt other heat radiation measures.
Initial position fault	Err51	The motor parameters are not set based on the actual situation.	Check that the motor parameters are set correctly and whether the setting of rated current is too small.
Speed feedback fault	Err52	Unable to identify encoder.	Reconfirm whether the connection of the encoder is correct.

8.4 Common Faults and Solutions

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

Table 9-2 Troubleshooting to common faults of the AC drive

SN	Fault	Possible Causes	Solutions
1	There is no display at power-on.	1: There is no power supply to the AC drive or the power input to the AC drive is too low. 2: The power supply of the switch on the drive board of the AC drive is faulty. 3: The rectifier bridge is damaged. 4: The control board or the operation panel is faulty. 5: The cable connecting the control board and the drive board and the operation panel breaks.	1: Check the power supply. 2: Check the bus voltage. 3: Re-connect the 8-core and 28-core cables. 4: Contact the agent or our company for technical support.
2	“HC” is displayed at power-on.	1: The cable between the drive board and the control board is in poor contact. 2: Related components on the control board are damaged. 3: The motor or the motor cable is short circuited to the ground. 4: The HALL device is faulty. 5: The power input to the AC drive is too low.	1: Re-connect the 8-core and 28-core cables. 2: Contact the agent or our company for technical support.
3	“Err23” is displayed at power-on.	1: The motor or the motor output cable is short-circuited to the ground. 2: The AC drive is damaged.	1: Measure the insulation of the motor and the output cable with a megger. 2: Contact the agent or our company for technical support.
4	The AC drive display is normal upon power-on. But “HC” is displayed after running and stops immediately.	1:The cooling fan is damaged or locked-rotor occurs. 2: The external control terminal cable is short circuited.	1: Replace the damaged fan. 2: Eliminate external fault.
5	Err14 (module overheat) fault is reported frequently.	1: The setting of carrier frequency is too high. 2: The cooling fan is damaged, or the air filter is blocked. 3: Components inside the AC drive are damaged (thermal coupler or others).	1: Reduce the carrier frequency (P0-15). 2: Replace the fan and clean the air filter. 3: Contact the agent or our company for technical support.

SN	Fault	Possible Causes	Solutions
6	The motor does not rotate after the AC drive runs.	1: Check the motor and the motor cables. 2: The AC drive parameters are set improperly (motor parameters). 3: The cable between the drive board and the control board is in poor contact. 4: The drive board is faulty.	1: Ensure the cable between the AC drive and the motor is normal. 2: Replace the motor or clear mechanical faults. 3: Check and re-set motor parameters.
7	The X terminals are disabled.	1: The parameters are set incorrectly. 2: The external signal is incorrect. 3: The jumper bar across OP and +24 V becomes loose. 4: The control board is faulty.	1: Check and reset the parameters in group P4. 2: Re-connect the external signal cables. 3: Re-confirm the jumper bar across OP and +24 V. 4: Contact the agent or our company for technical support.
8	The motor speed is always low in CLVC mode.	1: The encoder is faulty. 2: The encoder cable is connected incorrectly or in poor contact. 3: The PG card is faulty. 4: The drive board is faulty.	1: Replace the encoder and ensure the cabling is proper. 2: Replace the PG card. 3: Contact the agent or our company for technical support.
9	The AC drive reports overcurrent and overvoltage frequently.	1: The motor parameters are set improperly. 2: The acceleration/deceleration time is improper. 3: The load fluctuates.	1: Re-set motor parameters or re-perform the motor auto-tuning. 2: Set proper acceleration/ deceleration time. 3: Contact the agent or our company for technical support.
10	Err17 is reported upon power-on or running.	The soft startup contactor is not picked up.	1: Check whether the contactor cable is loose. 2: Check whether the contactor is faulty. 3: Check whether 24 V power supply of the contactor is faulty. 4: Contact the agent or our company for technical support.
11	888888 is displayed upon power-on.	Related component on the control board is damaged.	Replace the control board.

Product Warranty Card

Customer information	Add. of unit:	
	Name of unit: P.C.:	Contact person: Tel.:
Product information	Product model:	
	Body barcode (Attach here):	
	Name of agent:	
Failure information	(Maintenance time and content): Maintenance personnel:	