

EV520 Series General Purpose Inverter

User Manual

Nanjing Oulu Electric Corp.,Ltd.

Foreword

Thank you for using the EV520 series of high-performance vector inverter.

The EV520 high-performance vector inverter is a universal current vector drive, designed to regulate speed and torque of three-phase asynchronous and permanent magnet synchronous motors.

It is compatible with diverse PG encoder cards, industrial bus expansion modules and I/O expansion boards. Equipped with optional LCD operation panel for comprehensive status display, the inverter also supports proprietary upper computer debugging software, enabling rapid commissioning, parameter duplication and recovery.

It serves driving demands for textile, papermaking, wire drawing, machine tool, packaging, food processing, fan, water pump and other automated industrial facilities.

This guide explains how to properly use EV520 series inverter. Before using (installation, operation, maintenance, inspection, etc.), be sure to carefully read the instructions. Understanding of product safety precautions before using this product.

General notes
● This manual due to product improvement, specifications change, as well as to the instructions of their ease of use will be appropriate changes. We will update the information number of instructions, issued a revised edition. ● Due to damage to or loss need to order the manual, please contact OULU or OULU agents to order it as per the information number on the cover. ● This icon in the instructions with the products you ordered may be different, please refer to the specific documentation for products supplied.

Definition of security

In this manual, safety issues the following two categories：

 Warning：Due to the dangers posed against the required operation, may result in serious injury and even death.

 Causion： Due to the dangers posed against the required operation, may lead to moderate harm or minor injuries, and damage to the equipment.

Installation, commissioning and maintenance of the system, please carefully read this chapter (safety precautions), follow the required safety precautions to operate. In case of any injuries and losses caused as a result of illegal operations, that is nothing to do with OULU.

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Chapter 1 Safety Precautions

Before Installation

Warning

Do not install inverter finding the control system with water in, or inverter with missing parts or damaged parts.
Please do not install inverter when the packing list is not consistent with the physical name.

Warning

Carefully handled when loading, otherwise it may damage the inverter.
Please don't use the damaged driver or missing parts inverter, there may be risk of injury.
Do not touch components of the control system, otherwise it will cause danger of static electricity.

During Installation

Warning

Mount the inverter on incombustible surface like metal, and keep away from flammable substances. Otherwise it may cause fire.
Do not twist the mounting bolt of the equipment, especially the screw bolt marked in RED.
Prohibit the use in the dangerous environment where inflammable or combustible or explosive gas, liquid or solid exists. Or it may cause electric shock or fire.

Caution

Do not drop the conducting wire stub or screw into the inverter. Otherwise, it may cause damage to the inverter.
Please install the inverter at the place of less direct sunlight and vibration.
Please mind the location of its installation when more than two inverters are installed in one cabinet, so that radiation effect is promised.

During Wiring

Warning

Operation shall be performed by the professional engineering technician. Otherwise there will be unexpected danger.
There shall be circuit breaker between the inverter and power supply. Otherwise, there may be fire.
Make sure the power is disconnected prior to the connection. Otherwise there will be danger of electric shock.
The earth terminal shall be earthed reliably. Otherwise there may be danger of electric shock.

Warning

Please don't put the power line and the signal line from the same pipeline，when operating wiring, please make power line and signal line apart above 30cm.
The encoder must use shielded cable, and the shield must ensure that a single side of a reliable ground!
Do not connect the input power cable to the output terminals(U/T1、V/T2、W/T3).Attention to the terminals of the mark and do not make wrong connection. Otherwise it may damage the inverter.
The brake resistor cannot be directly connected between the DC bus terminals (DC+)、(DC-). Otherwise it may cause fire.
Ensure the wiring meet the EMC requirements and the local safety standard.
The wire size shall be determined according to the manual. Otherwise, accident may be caused!

Before Power-on

Caution

Any part of the inverter need not to carry on pressure test, which has been done before leaving factory. Or accident may be caused.
Please confirm whether the power voltage class is consistent with the rated voltage of the inverter and the Input terminal (R/L1、S/L2、T/L3) and Output terminal(U/T1、V/T2、W/T3)cable connecting positions are correct, and check whether the external circuit is short circuited and whether the connecting line is firm, otherwise it may damage the inverter.
Do not frequently turn ON/OFF power. If continuously ON/OFF power is needed, please make sure the time interval more than 1 minute.

Caution

The cover must be well closed prior to the inverter power-on. Otherwise electric shock may be caused!
All the external fittings must be connected correctly in accordance with the circuit provided in this manual. Or accident may occur.

Upon Power-on

Warning

Do not open the cover of the inverter upon power-on. Otherwise there will be danger of electric shock!
Do not touch the inverter and its surrounding circuit with wet hand. Otherwise there will be danger of electric shock.
Do not touch the inverter terminals (including control terminal). Otherwise there will be danger of electric shock.
At power-on, the inverter will perform the security check of the external stong-current circuit automatically. Thus, at this time please do not touch the terminals U/T1、V/T2、W/T3, or the terminals of motor, otherwise there will be danger of electric shock.
If the parameter identification is required, pay attention to the danger of injury arising from the rotating motor. Otherwise accident may occur.
Do not change the factory settings at will. Otherwise it may damage the equipment.

During the Operation

Warning

Do not touch the fan, heat sink or discharge resistor to sense the temperature. Otherwise, you may get burnt.
Detection of signals during the operation shall only be conducted by qualified technician. Otherwise, personal injury or equipment damage may be caused.

Caution
Do not control run/stop by using contactor. Or equipment damage may be caused! Avoid anything falling into the equipment when inverter is running. Or damage may be caused.

Maintenance

Warning
Do not carry out repairs and maintenance of equipment with power on. Otherwise, there is a risk of electric shock! No specially trained personnel can not make inverter implementation of repairs and maintenance. Otherwise, personal injury or equipment damage may be caused! Make sure the inverter when the inverter voltage is lower than AC36V implementation of the maintenance and repair, five minutes after power prevail. Otherwise, the residual charge on the capacitor will cause damage! Make the inverter parameter settings, only with all pluggable plug in and out in the case of power outages!

Safety Markers

安全标识	内容说明
	● Read the safety manual and operating instructions carefully before using the product; failure to do so may result in personal injury or death, or product damage! ● Do not touch terminals or remove the cover while power is applied and within 10 minutes after power-off, otherwise electric shock hazard exists!

Chapter 2 Product Information

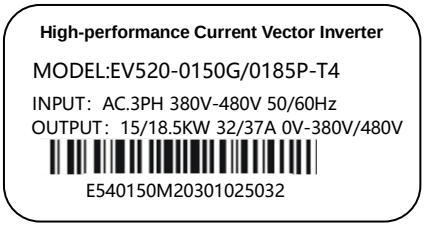
2.1 Naming Rules

EV520 - 0150G/0185P - T4 - **

① ② ③ ④

① Product series	③ Voltage level	④ Model Description
② Power code: 0150/0185：15kW/18.5kW G：General P: Light	S2：single phase 220V T2：three phase 220V T4：three phase 380V T5：three phase 480V T6：three phase 690V	Marked: Non-standard specification Blank: Standard model

2.2 Nameplate



2.3 Product series

Model	Power KVA	Input current A	Output current A	Match motor KW
Single-phase：220V，50/60Hz				
EV520-0004G-S2	1.0	5.4	2.3	0.4
EV520-0007G-S2	1.5	8.2	4.0	0.75
EV520-0015G-S2	3.0	14.0	7.0	1.5
EV520-0022G-S2	4.0	23.0	9.6	2.2
Three-phase：220V，50/60Hz				
EV520-0037G-T2	8.9	14.6	17.0	3.7
EV520-0055G-T2	17.0	26.0	25.0	5.5
EV520-0075G-T2	21.0	35.0	32.0	7.5
EV520-0110G-T2	30.0	46.5	45.0	11
EV520-0150G-T2	40.0	62.0	60.0	15

Model	Power KVA	Input current A	Output current A	Match motor KW
Three-phase：380V/480V，50/60Hz				
EV520-0007G-T4(T5)	1.5	3.4	2.1	0.75
EV520-0015G-T4(T5)	3.0	5.0	3.8	1.5
EV520-0022G-T4(T5)	4.0	5.8	5.1	2.2
EV520-0037G/0055P-T4(T5)	5.9	10.5	9.0	3.7
EV520-0055G/0075P-T4(T5)	8.9	14.6	13.0	5.5
EV520-0075G/0110P-T4(T5)	11.0	20.5	17.0	7.5
EV520-0110G/0150P-T4(T5)	17.0	26.0	25.0	11
EV520-0150G/0185P-T4(T5)	21.0	35.0	32.0	15
EV520-0185G/0220P-T4(T5)	24.0	38.5	37.0	18.5
EV520-0220G/0300P-T4(T5)	30.0	46.5	45.0	22
EV520-0300G/0370P-T4(T5)	40.0	62.0	60.0	30
EV520-0370G/0450P-T4(T5)	57.0	76.0	75.0	37
EV520-0450G/0550P-T4(T5)	69.0	92.0	91.0	45
EV520-0550G/0750P-T4(T5)	85.0	113.0	112.0	55
EV520-0750G/0900P-T4(T5)	114.0	157.0	150.0	75
EV520-0900G/1100P-T4(T5)	134.0	180.0	176.0	90
EV520-1100G/1320P-T4(T5)	160.0	214.0	210.0	110
EV520-1320G/1600P-T4(T5)	192.0	256.0	253.0	132
EV520-1600G/1850P-T4(T5)	231.0	307.0	304.0	160
EV520-1850G/2000P-T4(T5)	240.0	330	340.0	185
EV520-2000G/2200P-T4(T5)	250.0	385.0	377.0	200
EV520-2200G/2500P-T4(T5)	280.0	430.0	426.0	220
EV520-2500G/2800P-T4(T5)	355.0	468.0	465.0	250
EV520-2800G/3150P-T4(T5)	396.0	525.0	520.0	280
EV520-3150G/3500P-T4(T5)	445.0	590.0	585.0	315
EV520-3500G-T4(T5)	500.0	665.0	650.0	350
EV520-4000G-T4(T5)	565.0	785.0	725.0	400
EV520-4500G-T4(T5)	630.0	800.0	820.0	450
EV520-5000G-T4(T5)	700.0	890.0	870.0	500
EV520-5600G-T4(T5)	783.0	980.0	950.0	560
EV520-6300G-T4(T5)	882.0	1180.0	1100.0	630

2.4 Technical data

Item		Specification
Basic function	Highest frequency	Vector control: 0～500Hz; V/F control: 0～500Hz
	Carrier frequency	0.8kHz ～ 12kHz Carrier frequency can be adjusted automatically according to temperature characteristics
	Input frequency resolution	Digital setting: 0.01Hz Analog setting: maximum frequency × 0.025%
	Control mode	without PG Vector (SVC), Feedback vector (FVC) and V/F control
	Motor Type:	Three-phase Asynchronous Motor, Three-phase Permanent Magnet Synchronous Motor
	Start torque	G type: 0.5Hz/150%（SVC）；0Hz/180%（FVC） P type: 0.5Hz/100%
	Speed range	1：100 （SVC） 1：1000 （FVC）
	Speed control accuracy	±0.5%（SVC） ±0.02%（FVC）
	Torque control accuracy	±5%（FVC）
	Overload capacity	G type: 150% rated current 60sec; 180% rated current 3sec P type: 120% rated current 60sec; 150% rated current 3sec
	Toruqe boost	Auto-torque boost; manual torque boost 0.1%~30.0%
	V/F curve	Three types: linear type; multi-point type; the nth power of V/F curve
	V/F Seperation	Two types: full seperation, half seperation
	ACC/DEC curve	Linear or S curve of ACC/DEC ways. Four types of ACC/DEC Time, ACC/DEC time range is 0.0~6500.0s
	DC brake	DC brake frequency: 0.00Hz~ max frequency, brake time: 0.0s~36.0s,brake action current: 0.0%~100.0%
	JOG Control	JOG frequency range: 0.00Hz~50.00Hz.JOG speed-up/down time: 0.0s~6500.0.
	Simple PLC,multi-stage speed running	Via built-in PLC or control terminal can realize max 16 stage speed running
	Built-in PID	Can realize process control close-loop system conveniently
	Auto-adjust voltage(AVR)	When grid voltage changes, can keep output voltage steadily automatically
	Over current and over voltage speed control	During running, limit current and voltage automatically, protect from tripping off frequently for over voltage and over current.
	Quick current-limit function	Reduce over current error on max extent, protect inverter normal running
	Torque limitation and control	“digger” feature, inverter could limit torque automatically, prevent over current tripping off; close-loop vector can realize torque control.
Personable function	Outstanding perform	Using high-perform current vector control
	Instantaneous stop not stop	during instant power-off, by motor feedbacking energy, inverter compensates voltage-drop to keep running for short time.

Item		Specification
	Virtual IO	5 sets of virtual DI/DO, supporting simple logic control
	Timing control	timing control function: setting time range: 0.0min~6500.0min
	Multi-motor switch	2sets of motor parameter, can realize 2motors switching control
	Multi threading bus support	Standard: Modbus RTU Optional: Modbus TCP, Profibus-DP, CANlink, CANopen, PROFINET, EtherCAT, BACnet, etc. (Bus expansion card required)
	Powerful background software	Supports inverter parameter management and virtual oscilloscope functions. It enables parameter copying, restoration and online firmware upgrade. Internal operating status can be monitored via the virtual oscilloscope.
	Multi-encoder support	Supports differential, open-collector, resolver and UVW signals (closed-loop expansion card required)
	Motor overheat protection	Supports motor temperature sensor input including PT100, PT1000, KTY84, etc. (Closed-loop or temperature acquisition card required)
	Command source	Support setting via operation panel, control terminal, serial port and extended communication, with multi-mode switching available
	Frequency source	10 frequency sources available: digital setting, analog voltage setting, analog current setting, pulse setting, serial port setting and extended communication setting. Multi-mode switching is supported.
	Auxiliary frequency sources	10 types of auxiliary frequency source, can realize auxiliary frequency trimming, frequency combining flexiably
Running display and keypad	Input terminal	Standard configuration: 5 digital input terminals, 1 optional high-speed pulse input up to 100kHz 2 analog input terminals, compatible with 0~10V voltage or 0~20mA current input More input functions can be expanded via functional expansion card
	Output terminal	Standard configuration: 1 high-speed pulse output terminal (open-collector optional), supports 0~100kHz square wave output (optional) 1 digital output terminal 2 relay output terminals 1 analog output terminal, compatible with 0~20mA current and voltage output Additional output functions expandable via functional expansion card
	LED display	Can display parameter
	Encoder speed regulation	Stepless speed adjustment supported, stable operation without jitter
	Press-key locking and function selection	Realize press-key partial or full locking, define partal press-key function range, to avoid wrong operation
	Protection function	Power-on motor short circuit test, output phase-loss protection, over-current protection, over-voltage protection, under-voltage protection, overheat protection, overload protection etc.
	Optional parts	Differential PG card, open collector PG card, rotary transformer PG card
Environment	Application site	Indoor, without direct sunlight, no powder, corrosive gas, combustion air, oil dust, water steam, water drop or salt etc.
	Altitude level	No derating needed at altitude ≤1000m. Derate 1% for every 100m elevation above 1000m. Maximum applicable altitude is 3000m. Contact

Item		Specification
		manufacturer if beyond this height.
	Environment temperature	Operating temperature: -10℃ ~ +50℃ Derating required between 40℃ and 50℃, 1.5% power reduction per 1℃ temperature rise
	Humidity	<95%RH, no water drop condensed
Opitional	LCD keypad	Large-size LCD keypad, supporting parameter copy, restoration and online firmware update. Bluetooth connection enables IoT application. Chinese and English display available, multi-language expandable.
	Closed-loop expansion cards	differential input PG card, resolver PG card, OC output PG card, UVW expansion card, etc. Support synchronous motor temperature collection.
	Temperature acquisition card	collects motor and ambient temperature, compatible with various temperature sensors
	Function expansion card	supports extended digital and analog input and output terminal functions.
	Bus expansion card	ModbusTCP, Profibus-DP, CANlink, CANopen, PROFINET, EtherCAT, BACnet, etc.
	STO expansion card	supports STO function expansion. Mainboard customization is required. Please contact us in advance.

2.5 Outsize

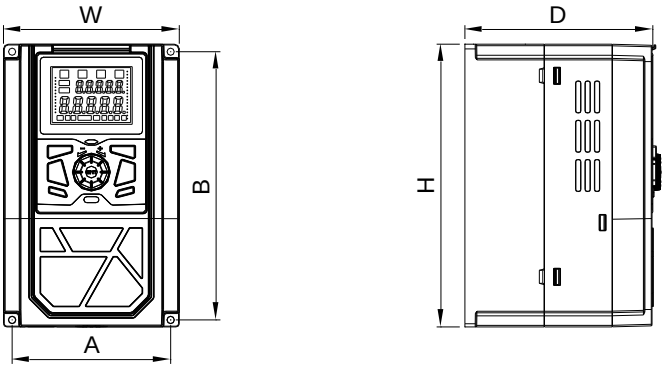


Figure 2-3

2.5.1 Mechanical data and specifics

Model	Install size（mm）		Overall size（mm）			Installation	Weight（KG）≈
	A	B	W	H	D		
Single Phase 220V							
EV520-0004G-S2	101	170.7	112	180	120	Φ4.9	1.3
EV520-0007G-S2							
EV520-0015G-S2							
EV520-0022G-S2							
Three Phase 220V							
EV520-0037G-T2	135	245	150	260	162	Φ6	3.9
EV520-0055G-T2							
EV520-0075G-T2	186	306	212	330	187	Φ9.5	7.5
EV520-0110G-T2							
EV520-0150G-T2	238	396	260	420	194	Φ8.5	12.5
Three Phase 380V/480V							
EV520-0007G-T4(T5)	101	170.7	112	180	120	Φ4.9	1.3
EV520-0015G-T4(T5)							
EV520-0022G-T4(T5)							
EV520-0037G/0055P-T4(T5)	101	170.7	112	180	140	Φ4.9	2.1
EV520-0055G/0075P-T4(T5)							
EV520-0075G/0110P-T4(T5)	135	245	150	260	162	Φ6	3.9
EV520-0110G/0150P-T4(T5)							
EV520-0150G/0185P-T4(T5)							
EV520-0185G/0220P-T4(T5)	186	306	212	330	187	Φ9.5	7.5
EV520-0220G/0300P-T4(T5)							

Model	Install size（mm）		Overall size（mm）			Installation	Weight（KG）≈
	A	B	W	H	D		
EV520-0300G/0370P-T4(T5)							
EV520-0370G/0450P-T4(T5)	238	396	260	420	194	Φ8.5	12.5
EV520-0450G/0550P-T4(T5)							
EV520-0550G/0750P-T4(T5)	272	455	304	470	240	Φ9	22.9
EV520-0750G/0900P-T4(T5)	200	614	278	630	310	Φ9	39
EV520-0900G/1100P-T4(T5)							
EV520-1100G/1320P-T4(T5)							
EV520-1320G/1600P-T4(T5)	330	680	374	700	310	φ9	45.6
EV520-1600G/1850P-T4(T5)							
EV520-1850G/2000P-T4(T5)	400	810	520	820	380	φ13	107
EV520-2000G/2200P-T4(T5)							
EV520-2200G/2500P-T4(T5)							
EV520-2500G/2800P-T4(T5)							
EV520-2800G/3150P-T4(T5)	460 (230+230, total 3 holes)	895	720	920	382	φ13	155
EV520-3150G/3500P-T4(T5)							
EV520-3500G-T4(T5)							
EV520-4000G-T4(T5)							
EV520-4500G-T4(T5)							

2.5.2 Floor mounting dimension

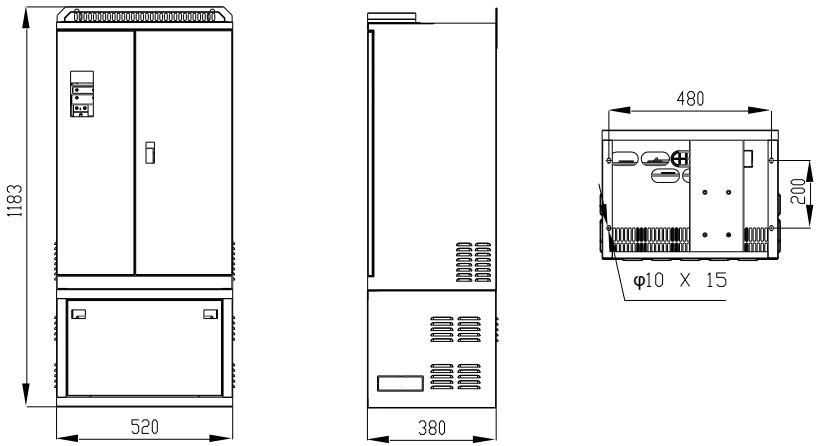


Figure 2-4 Floor mounting diagram for 1850G/2000P～2500G/2800P (T4/T5 voltage grade)

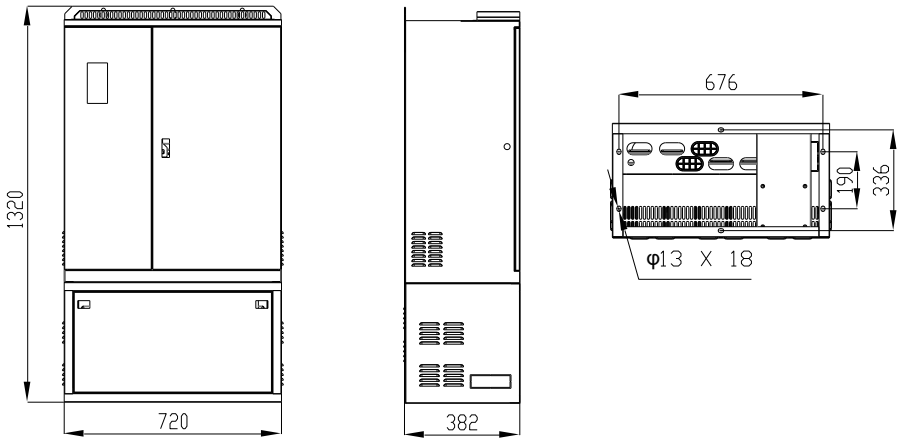


Figure 2-5 Floor mounting diagram for 2800G/3150P～4500P (T4/T5 voltage grade)

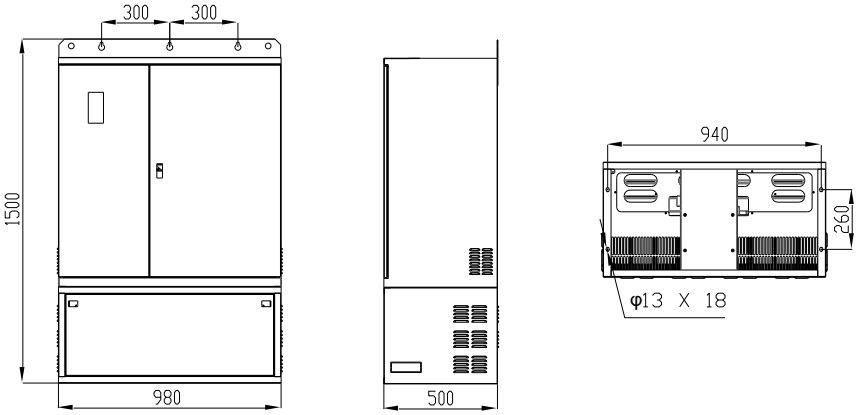
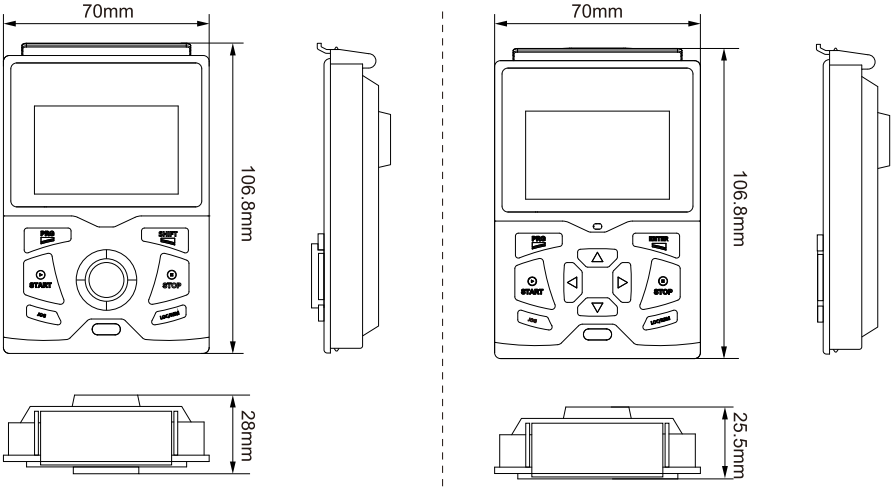


Figure 2-6 Floor mounting diagram for 5000G～6300G (T4/T5 voltage grade)

2.5.3 Operation panel



Standard configuration: LED dual-display keypad

Optional: LCD liquid crystal keypad

Figure 2-7 Operation Panel Dimension Drawing

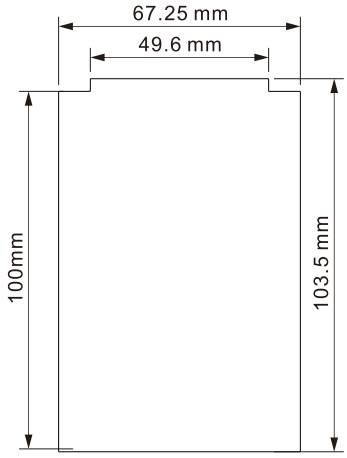


Figure 2-8 Operation Panel Cutout Dimension Drawing

2.6 Daily Maintenance of VFD

2.6.1 Daily maintenance

In order to avoid faults of the frequency converter, ensure the normal operation of equipments and prolong the service life of the frequency converter, daily maintenance is necessary for the frequency converter. The contents of the daily maintenance are shown in the following table:

Examine Items	Contents
Temperature/Humidity	Make sure that the environmental temperature is between **0℃ and 40℃** and the humidity is between **20% and 90%.**
Oil Mist and Dust	Make sure that there are no oil mist, dust and condensed water in the frequency converter.
Frequency Converter	Examine whether the frequency converter has abnormal heating or vibration.
Fan	Make sure the fan is in normal operation and no sundries are locked.
Input Power	Make sure the voltage and the frequency of the input power is within allowable range.
Motor	Examine whether the motor has problems of abnormal vibration, heating and noises and phase loss, etc.

2.6.2 Regular Maintenance

In order to avoid faults of the frequency converter and ensure the long time stable operation with high performance, it is necessary for users to examine the frequency converter at regular intervals (within half a year). The examine contents are shown in the following table:

2.6.3 Replacement of Wearing Parts of Frequency Converter

The main consumable parts of a VFD are the cooling fans and the electrolytic capacitors used for filtering. Their service life is closely related to the operating environment and maintenance conditions. The typical lifespan is:

Component Name	Service Life
Fan	2～3 years
Electrolytic Capacitor	4～5 years

Users can determine the replacement period based on the operating hours.

1）Cooling Fan

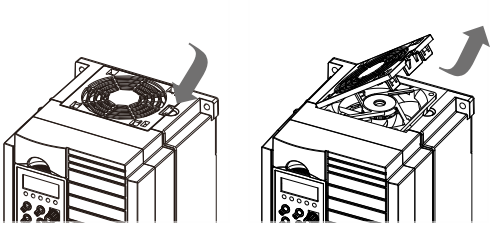
Possible causes of failure: bearing wear and blade aging.

Judgment criteria: check whether the fan blades have cracks and whether there is abnormal vibration noise during startup.

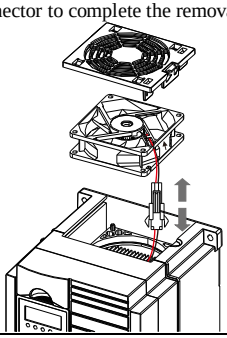
Fan replacement method: press the clips on the plastic fan guard and pull it outward to remove the fan. After replacing the fan, ensure that the airflow direction is upward and pay attention to the correct orientation.

Fan Disassembly (7.5–15 kW Model 3075 Housing, 18.5–30 kW Model 3185 Housing, 37–45 kW Model 3370 Housing)

1. Gently press the clips on the fan cover and remove the cover.



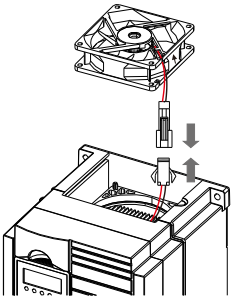
2. Lift the fan upward and then unplug the fan connector to complete the removal.



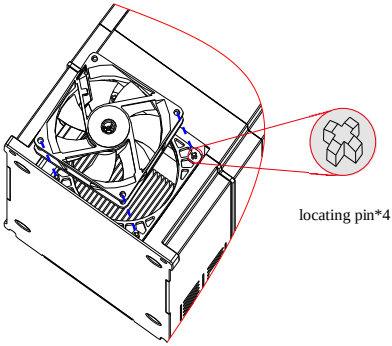
Fan Installation (7.5–15 kW 3075 Housing, 18.5–30 kW 3185 Housing, 37–45 kW 3370 Housing)

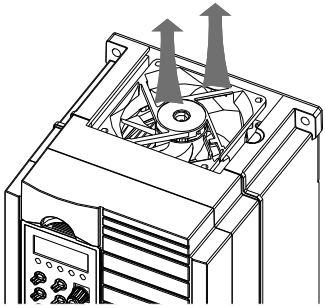
1.Install the fan by following the reverse order of removal, and make sure to identify the correct fan orientation；

2.Plug the fan power connector into the machine's built-in adapter socket, as shown below:

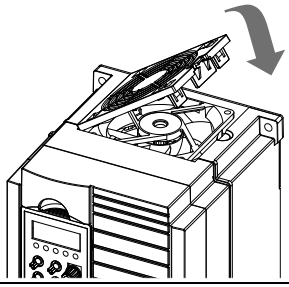


3.Place the fan into the installation position of the unit. When inserting, make sure the four mounting holes at the bottom of the fan align with the locating pins. Arrange the fan wires neatly along the side of the fan, ensuring they do not block the air inlet or outlet. Pay attention to ensure the airflow direction of the fan is upwards；





4.Insert the small clips on the fan cover into the slots on the unit, then gently press down to secure the clips：



2) Filter Electrolytic Capacitor

Possible causes of failure: poor input power quality, high ambient temperature, frequent load fluctuations, or aging of the electrolyte. Criteria for assessment: check for any leakage of liquid, whether the safety vent has bulged, measurement of capacitance, and measurement of insulation resistance.

2.7 Brake Assembly Selection Guide

(*): Table 2-1 is the guidance data. The user can select different resistance values and power according to the actual situation (but the resistance must not be less than the recommended value in the table, the power can be large).

The selection of the braking resistor needs to be determined according to the power generated by the motor in the actual application system, and is related to the inertia of the system, the deceleration time, the energy of the potential energy load, etc., and needs to be selected according to the actual situation.

The greater the inertia of the system, the shorter the required deceleration time, and the more frequent the braking, the greater the braking power needs to be selected and the smaller the resistance.

2.7.1 Choice of resistance

When braking, almost all of the regenerative energy of the motor is consumed by the braking resistor.

According to the formula:

R=U*U/Pb

In the formula U----the braking voltage of the system stable braking

Note: Different systems are different. For 380VAC systems, 700V is generally taken.

Pb----brake power

2.7.2 Brake resistor power selection

In theory, the braking resistor power is the same as the braking power, but considering the derating is 70%.

According to the formula:

0.7*Pr=Pb*D

Pr----resistance power

D----Brake frequency (the proportion of the regeneration process to the entire working process)

Common application	Elevator	Unwinding and taking	Centrifuge	Accidental braking resistor	Normal use
Braking frequency value	20% ~30%	-20 ~30%	50%~60%	-5%	10%

Model	Brake power	Brake Resistance	Braking resistor	Notes
Single phase 220V				
EV520-0004G-S2	80W	≥200Ω	Standard built-in	No special instructions
EV520-0007G-S2	80W	≥150Ω		
EV520-0015G-S2	100W	≥100Ω		
EV520-0022G-S2	100W	≥70Ω		
Three phase 220V				
EV520-0037G-T2	400W	≥45Ω	Standard	No special instructions

Model	Brake power	Brake Resistance	Braking resistor	Notes
EV520-0055G-T2	800W	≥22Ω	built-in	
EV520-0075G-T2	1000W	≥16Ω		
EV520-0110G-T2	1500W	≥22Ω		
EV520-0150G-T2	2500W	≥16Ω		
Three phase 380V				
EV520-0007G-T4(T5)	150W	≥300Ω	Standard built-in	No special instructions
EV520-0015G-T4(T5)	150W	≥220Ω		
EV520-0022G-T4(T5)	250W	≥200Ω		
EV520-0037G/0055P-T4(T5)	300W	≥130Ω		
EV520-0055G/0075P-T4(T5)	400W	≥90Ω		
EV520-0075G/0110P-T4(T5)	500W	≥65Ω		
EV520-0110G/0150P-T4(T5)	800W	≥43Ω		
EV520-0150G/0185P-T4(T5)	1000W	≥32Ω		
EV520-0185G/0220P-T4(T5)	1300W	≥25Ω		
EV520-0220G/0300P-T4(T5)	1500W	≥22Ω		
EV520-0300G/0370P-T4(T5)	2500W	≥16Ω		
EV520-0370G/0450P-T4(T5)	3.7kW	≥16.0Ω	Optional built-in	B added after inverter model
EV520-0450G/0550P-T4(T5)	4.5kW	≥16Ω		
EV520-0550G/0750P-T4(T5)	5.5kW	≥8Ω		
EV520-0750G/0900P-T4(T5)	7.5kW	≥8Ω		
EV520-0900G/1100P-T4(T5)	4.5kW×2	≥8Ω×2		
EV520-1100G/1320P-T4(T5)	5.5kW×2	≥8Ω×2		
EV520-1320G/1600P-T4(T5)	6.5kW×2	≥8Ω×2		
EV520-1600G/1850P-T4(T5)	16kW	≥2.5Ω		
EV520-1850G/2000P-T4(T5)	18kW	≥2.5Ω	External	
EV520-2000G/2200P-T4(T5)	20kW	≥2.5Ω		
EV520-2200G/2500P-T4(T5)	22kW	≥2.5Ω		
EV520-2500G/2800P-T4(T5)	12.5kW×2	≥2.5Ω×2		
EV520-2800G/3150P-T4(T5)	14kW×2	≥2.5Ω×2		
EV520-3150G/3500P-T4(T5)	16kW×2	≥2.5Ω×2		
EV520-3500G-T4(T5)	17kW×2	≥2.5Ω×2		
EV520-4000G-T4(T5)	14kW×3	≥2.5Ω×3		
EV520-4500G-T4(T5)	16kW×3	≥2.5Ω×3		
EV520-5000G-T4(T5)	17kW×3	≥2.5Ω×3		
EV520-5600G-T4(T5)	20kW×3	≥2.5Ω×3		
EV520-6300G-T4(T5)	22kW×3	≥2.5Ω×3		

Note: ×2 indicates that the two brake units are used in parallel with their respective braking resistors, and ×3 has the same meaning as ×2

Chapter 3 Mechanical and Electrical Installation

3.1 Mechanical Installation

3.1.1 Installation environment

1) Ambient temperature: The ambient temperature has a great influence on the life of the inverter. Do not allow the operating temperature of the inverter to exceed the permissible temperature range (-10 ℃ ~ 40 ℃).

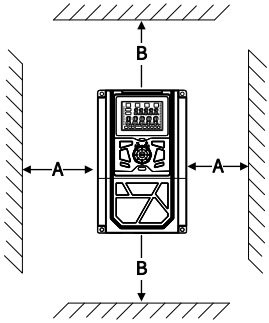
2) Mount the inverter on the surface of the flame retardant and attach it to the mounting bracket vertically with screws. Inverter work easy to produce a lot of heat, there should be enough space around the heat.

3) Please install it where it is not easy to vibrate. Vibration should not be greater than 0.6G. Special attention away from the punch and other equipment.

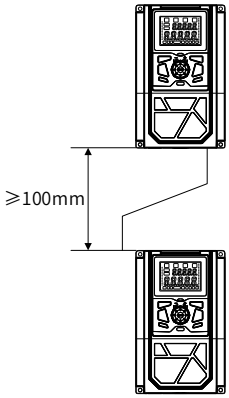
4) to avoid the place in the direct sunlight, wet, there are drops of water.

5) to avoid installed in the air corrosive, flammable, explosive gas of the place.

6) to avoid the equipment in the oil, dust, dust and more places.



Single unit installation drawing



upper and lower installation drawing

Figure 3-1 Mechanical Installation picture show

Unit installation: When the inverter power is not greater than 22kW can not consider the A size. When greater than 22kW, A should be greater than 50mm. Up and down installation: Install the thermal insulation baffle when the inverter is installed up and down.

Power level	Installment size	
	B	A
≤15kW	≥100mm	Not requirement
18.5Kw~45kW	≥200mm	≥50mm
≥55kW	≥300mm	≥50mm

3.1.2 Mechanical installation method

It need to focus on the heat problem. So please note the following:

1) Please install the inverter vertically, so that the heat can be distributed upwards. But can not be inverted. If the cabinet has more frequency converter, it is best to install side by side. Please refer to Figure 3-1 for the installation of the insulation baffle.

2) Installation space Follow the example shown in Figure 3-1 to ensure the cooling space of the inverter. However, please consider the layout of the cabinet when the heat dissipation of other devices.

3) The mounting bracket must be flame retardant.

4) For metal dust applications, it is recommended to install the radiator cabinet. At this time fully sealed cabinet space as much as possible.

3.2 Electrical Installation

3.2.1 Selection of external electrical components

Model	Empty open (MCCB) A	Recommend Contactor A	Recommended input side Main circuit lead wire mm^2	Recommended output side main Circuit wire mm^2	Recommended control circuit Wire mm^2
Single phase 220V					
EV520-0004G-S2	10	10	2.5	2.5	1.0
EV520-0007G-S2	16	10	2.5	2.5	1.0
EV520-0015G-S2	25	16	4.0	4.0	1.0
EV520-0022G-S2	32	25	4.0	4.0	1.0
Three phase 220V					
EV520-0037G-T2	40	32	4.0	4.0	1.0
EV520-0055G-T2	63	40	4.0	4.0	1.0
EV520-0075G-T2	63	40	6.0	6.0	1.0
EV520-0110G-T2	100	63	10	10	1.5
EV520-0150G-T2	125	100	16	10	1.5

Model	Empty open (MCCB) A	Recommend Contactor A	Recommended input side Main circuit lead wire mm^2	Recommended output side main Circuit wire mm^2	Recommended control circuit Wire mm^2
Three phase 380V					
EV520-0007G-T4(T5)	10	10	2.5	2.5	1.0
EV520-0015G-T4(T5)	16	10	2.5	2.5	1.0
EV520-0022G-T4(T5)	16	10	2.5	2.5	1.0
EV520-0037G/0055P-T4(T5)	25	16	4.0	4.0	1.0
EV520-0055G/0075P-T4(T5)	32	25	4.0	4.0	1.0
EV520-0075G/0110P-T4(T5)	40	32	4.0	4.0	1.0
EV520-0110G/0150P-T4(T5)	63	40	4.0	4.0	1.0
EV520-0150G/0185P-T4(T5)	63	40	6.0	6.0	1.0
EV520-0185G/0220P-T4(T5)	100	63	6	6	1.5
EV520-0220G/0300P-T4(T5)	100	63	10	10	1.5
EV520-0300G/0370P-T4(T5)	125	100	16	10	1.5
EV520-0370G/0055P-T4(T5)	160	100	16	16	1.5
EV520-0450G/0055P-T4(T5)	200	125	25	25	1.5
EV520-0550G/0075P-T4(T5)	200	125	35	25	1.5
EV520-0750G/0090P-T4(T5)	250	160	50	35	1.5
EV520-0900G/1100P-T4(T5)	250	160	70	35	1.5
EV520-1100G/1320P-T4(T5)	350	350	120	120	1.5
EV520-1320G/1600P-T4(T5)	400	400	150	150	1.5
EV520-1600G/1850P-T4(T5)	500	400	185	185	1.5
EV520-1850G/2000P-T4(T5)	500	400	185	185	1.5
EV520-2000G/2200P-T4(T5)	600	600	150*2	150*2	1.5
EV520-2200G/2500P-T4(T5)	600	600	150*2	150*2	1.5
EV520-2500G/2800P-T4(T5)	800	600	185*2	185*2	1.5
EV520-2800G/3150P-T4(T5)	800	800	185*2	185*2	1.5
EV520-3150G/3500P-T4(T5)	800	800	150*3	150*3	1.5
EV520-3500G-T4(T5)	800	800	150*4	150*4	1.5
EV520-4000G-T4(T5)	1000	1000	150*4	150*4	1.5
EV520-4500G-T4(T5)	1200	1200	185*3	185*3	1.5
EV520-5000G-T4(T5)	1400	1400	185*3	185*3	1.5
EV520-5600G-T4(T5)	1400	1400	185*3	185*3	1.5
EV520-6300G-T4(T5)	1600	1600	185*4	185*4	1.5

3.2.2 Connect with peripheral devices

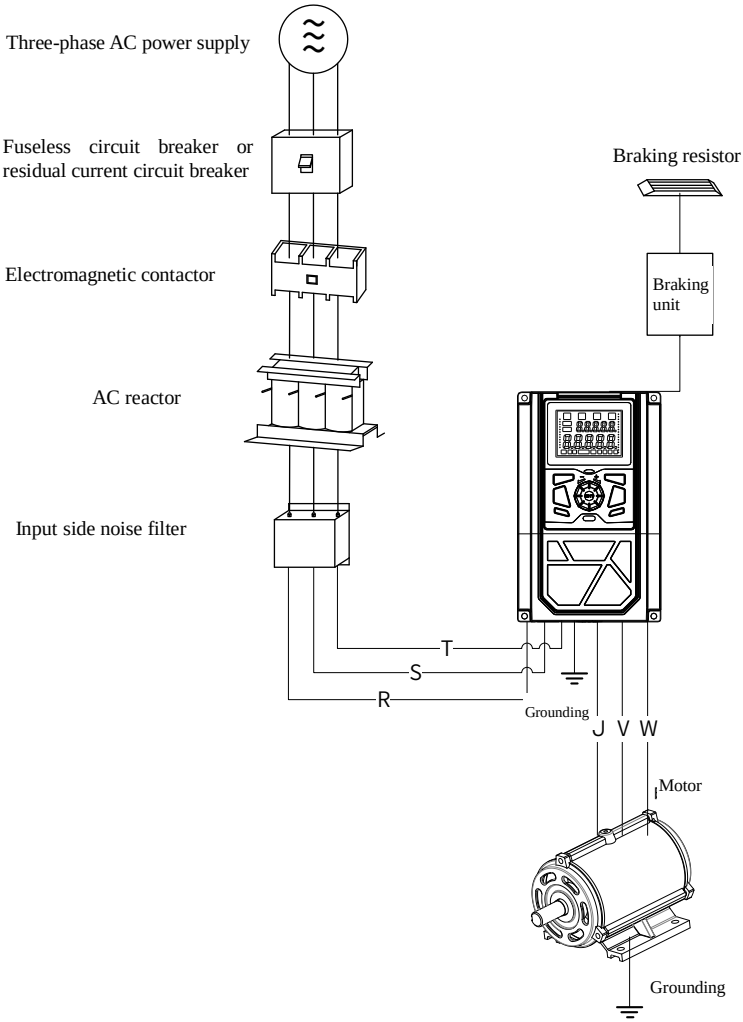


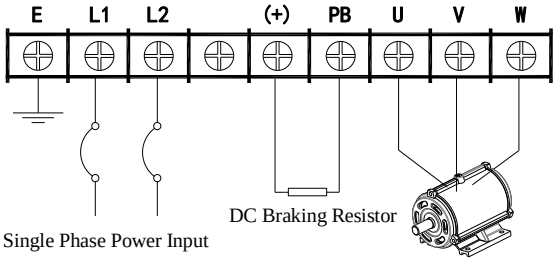
Figure 3-2 Connection to Peripheral Devices

3.2.3 Instructions for the use of external electrical components

Name	Function
Air switch	When the downstream device is overcurrent, disconnect the power supply
Contactor	The inverter should be operated up and down, and the frequency converter should be avoided by the contactor (Less than twice per minute) or direct start operation.
AC input Reactor	Improve the input side of the power factor; effectively eliminate the input side of the high harmonics, to prevent the voltage waveform Distortion caused by other equipment damage; to eliminate the power supply phase imbalance caused by the input current imbalance.
EMC input filter	Reduce the conduction and radiation interference of the inverter to the outside; reduce the conduction from the power supply side to the inverter Interference, improve the anti-interference ability of the inverter.
DC Reactor	Improve the input side of the power factor; improve the efficiency of the whole machine and thermal stability. Effectively eliminate the loss The impact of the high-order harmonic on the inverter, reducing external conduction and radiation interference.
AC output filter	Inverter output side generally contains more high-order harmonics. When the distance between the motor and the inverter, because the line There is a large distributed capacitance in the road. Where a harmonic may produce resonance in the loop, bringing two aspect: ◆ damage to the motor insulation performance, long time will damage the motor. ◆ produce a large leakage current, causing frequent protection of the inverter. General frequency converter and motor distance Over 100m, it is recommended to install the output AC reactor.

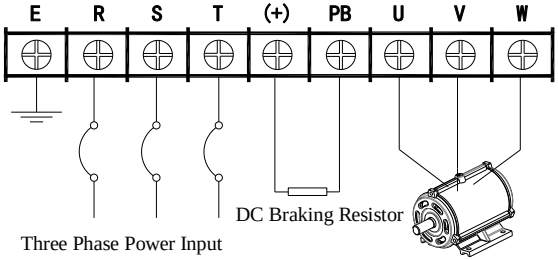
3.3 Terminal block diagram

a) Wiring Diagram for Main Circuit Terminal Block (0.4kW-2.2kW, S2 Voltage Class)



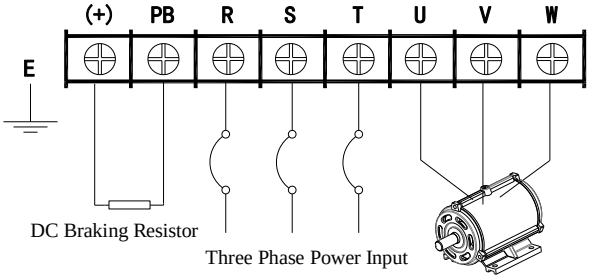
b) Wiring Diagram for Main Circuit Terminal Block (3.7kW-7.5kW, T2 Voltage Class)

Wiring Diagram for Main Circuit Terminal Block (0.75kW-18.5kW, T4/T5 Voltage Class)

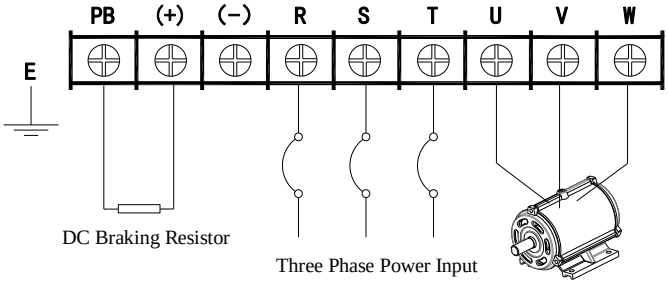


c) Wiring Diagram for Main Circuit Terminal Block (11kW-15kW, T2 Voltage Class)

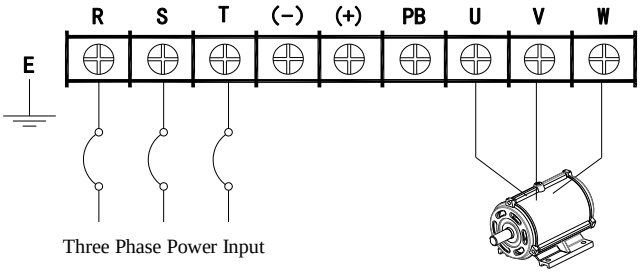
Wiring Diagram for Main Circuit Terminal Block (22kW-30kW, T4/T5 Voltage Class)



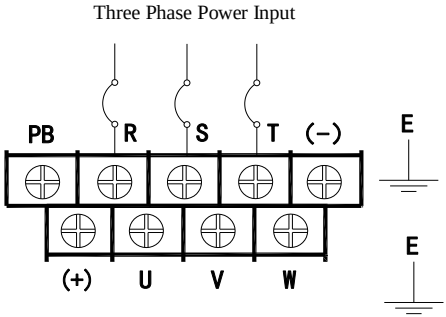
d) Wiring Diagram for Main Circuit Terminal Block (37kW-45kW, T4/T5 Voltage Class)



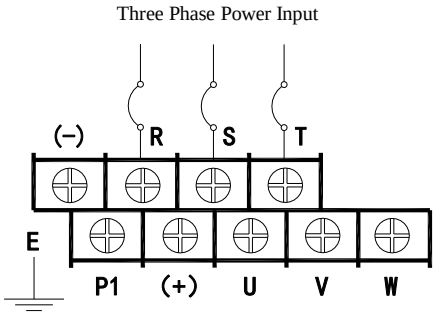
e) Wiring Diagram for Main Circuit Terminal Block (55kW, T4/T5 Voltage Class)



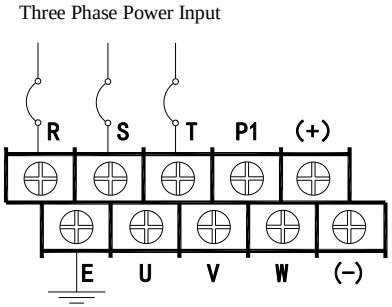
f) Wiring Diagram for Main Circuit Terminal Block (75kW-110kW, T4/T5 Voltage Class)



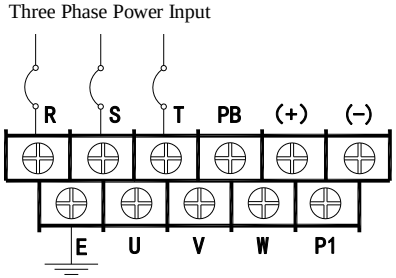
g) Wiring Diagram for Main Circuit Terminal Block (132kW-160kW, T4/T5 Voltage Class)



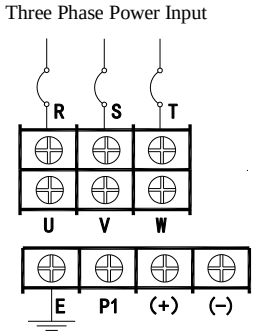
h) Wiring Diagram for Main Circuit Terminal Block (185kW-250kW, T4/T5 Voltage Class)



i) Wiring Diagram for Main Circuit Terminal Block (280kW-450kW, T4/T5 Voltage Class)

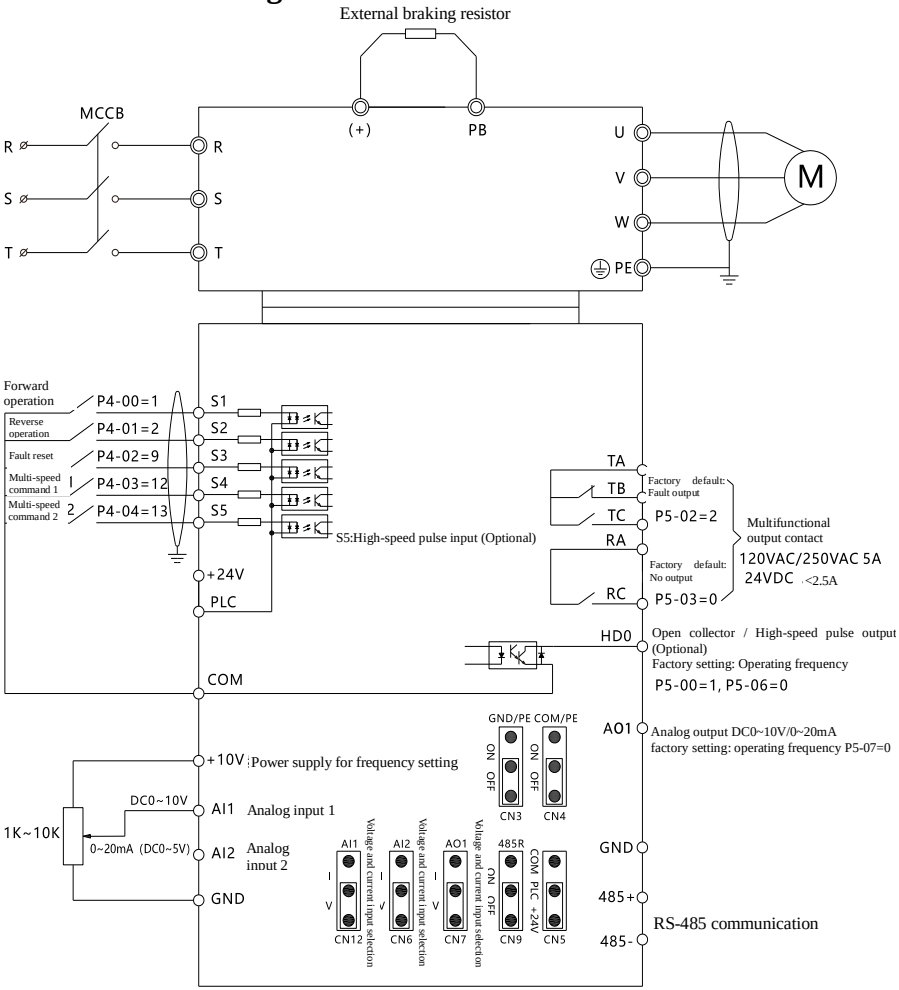


j) Wiring Diagram for Main Circuit Terminal Block (500kW-630kW, T4/T5 Voltage Class)



Terminal Symbols	Function Description
⏚	Earth Terminal
R、S、T	Connection for 3-phase AC mains power
U、V、W	Connection for 3-phase AC motor
（+）	Positive DC terminal of filter capacitor
（-）	Negative DC terminal of filter capacitor
PB	DC braking resistor can be connected between this terminal and (+)

3.4 Standard Wiring Diagram



3.5 Control board terminal section

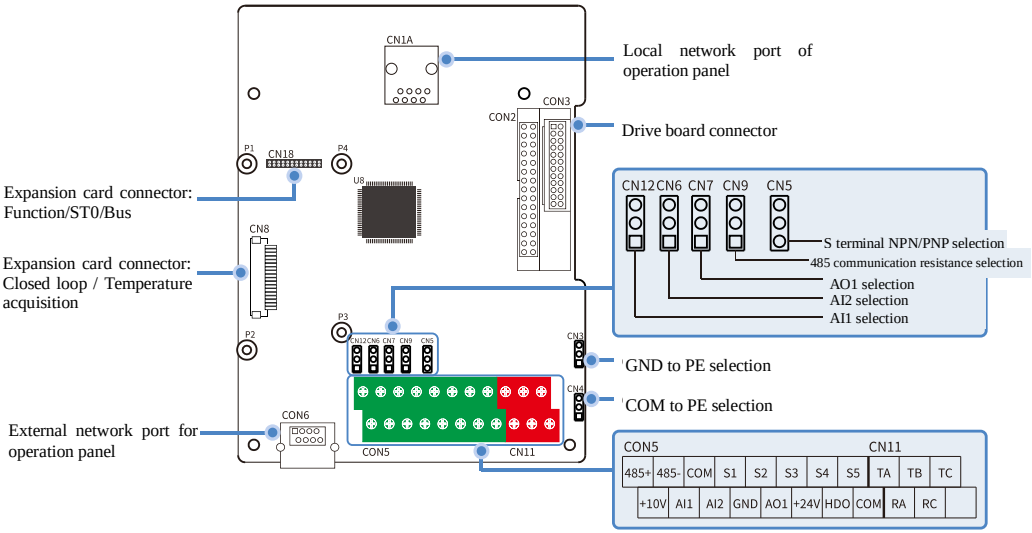
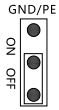
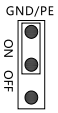
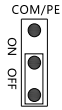
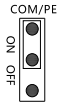


Figure 3-4 Control terminal shows

3.5.1 Control Board Jumper Description

Jumper position	Function description	Jumper position	Function description
AI1 I V	AI1 input voltage 0~10V (factory default)	AI1 I V	AI1 input current 0~20mA
AI2 I V	AI2 input voltage 0~10V (factory default)	AI2 I V	AI2 input current 0~20mA
AO1 I V	AO1 output voltage choosing 0~10V (factory default)	AO1 I V	AO1 output current 0~20mA
485-R	485/CAN Communication resistor is not shorted (factory default)	485-R	485/CAN Communication resistor is shorted
COM 24V	+24V&PLC shorted (factory default)	COM 24V	COM &PLC shorted

Jumper position	Function description	Jumper position	Function description
	GND disconnected from PE (Factory default)		GND connected to PE
	COM disconnected from PE (Factory default)		GND connected to PE

3.5.2 Description of Control Panel Terminals

Terminal Name	Purpose and Description of Terminal
S1～S5	Multifunctional digital input 1, optical lotus isolation, compatible bipolar input 2. input impedance: 5.1kΩ 3.input voltage range: 9~30V
+24V-COM	+24V power supply provided for this equipment (current: 150mA)
+10V-GND	+10V power supply provided for this equipment (current: 10mA)
COM	common terminal of +24V
AI1-GND AI2-GND	Analog input, voltage (0 ~10V) / current (0 ~ 20mA) through the motherboard jumper optional Input impedance: 10kΩ (voltage input) / 250Ω (current input)
GND	zero potential reference of +10V (Note: GND is isolated from COM)
HDO	high-speed pulse or open collector output terminal, the corresponding common terminal of which is COM output frequency range: 0~100 kHz
AO1	analog output terminal output range: voltage (0~10V) /current (0~20mA)
TA-TB-TC	TA relay output, TA common terminal, TB is normally closed, and TC is normally open contact capacity: AC250V/3A, DC30V/1A
RA- RC	RA relay output, RA common terminal, and RC is normally open contact capacity: AC250V/3A, DC30V/1A
485+, 485-	485 communication ports, positive and negative terminals for 485 differential signal, please use twisted pair cable or shielded wire for standard 485 communication ports

3.5.3 Operation Panel Interface Description of Control Board

Connector Name	Connector Purpose & Description
Connector CN1A:	Interface for local/external panels applicable to low power models: 0.4kW-2.2kW (S2 voltage grade), 3.7kW-7.5kW (T2 voltage grade), 0.75kW-15kW (T4/T5 voltage grade), compatible with digital and LCD panels. Local panel interface for high power models 18.5kW and above (T4/T5 voltage grade), compatible with digital and LCD panels.
Connector CON6	External panel interface for high power models 18.5kW and above (T4/T5 voltage grade), compatible with digital and LCD panels.

3.5.4 Control Board Expansion Card Interface Description

Connector Name	Connector Purpose & Description
Connector CN8	Connector for closed-loop expansion card and temperature acquisition card. It expands various encoders to realize FVC control and collect motor and ambient temperature data. Optional installation based on actual encoder type equipped on motor.
Connector CN18	Connector for function, bus and STO expansion cards. It extends I/O, industrial bus and STO functions, selectable according to actual working conditions.

Note：

1. Only one expansion card can be installed for low power range: 0.4kW-2.2kW(S2 grade), 3.7kW-7.5kW(T2 grade), 0.75kW-15kW(T4/T5 grade).

2. For 18.5kW and above(T4/T5 grade), one expansion card can be mounted respectively on CN8 and CN18. Contact us if failing to meet operating requirements.

3. Since optional expansion cards vary for different power ratings, be sure to specify the compatible inverter power rating when placing an order to avoid incompatibility issues.

4. Refer to *Appendix C-Expansion Card Function Description* for expansion card selection and function details.

Chapter 4 Operation and Commissioning

4.1 Digital Panel Operation & Application Examples (Standard Configuration)

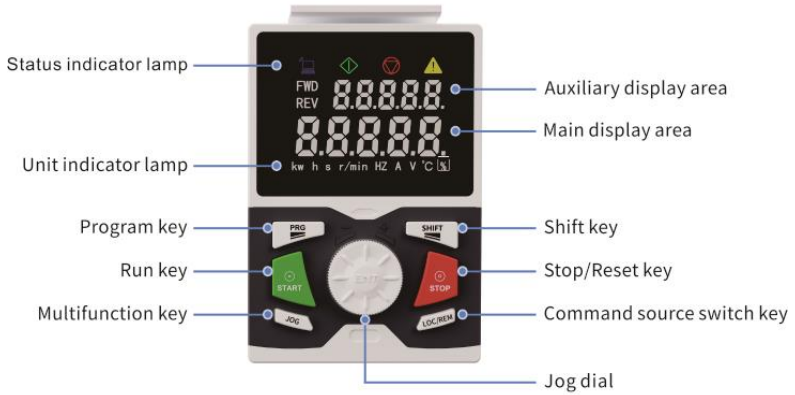


Figure 4-1 Schematic Diagram of Digital Operation Panel

Jog Dial Instruction

Indicator Status		Status Description
	Jog dial	Rotate clockwise to increase data or function code
		Rotate counterclockwise to decrease data or function code
		Press jog dial to enter menu or confirm data

Digital Panel Application Examples:

Take setting preset frequency P0.08 as an example, change 50.00Hz to 25.00Hz. The steps are as follows:

(1)Under parameter monitoring display interface, press“  ”to enter primary menu P0 ；

(2)Press“  ”enter the secondary menu P0-00；

(3)Rotate clockwise“  ”to enter secondary menu P0-08；

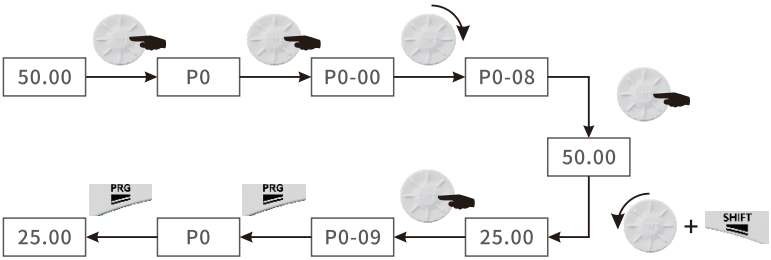
(4)Press“  ”to enter tertiary menu, display 50.00Hz；

(5)Rotate counterclockwise“  ”to reduce current value，press“  ”the key to shift cursor for

quick modification on tens, hundreds and thousands digit；

(6)Press“ ”to confirm modification and return to secondary menu showing P0-09, modification completed；

(7)Press“ ”the key twice to return to monitoring interface, showing 25.00Hz；



Take modifying DC bus voltage on auxiliary display area as example, steps are as follows:

(1)Under parameter monitoring display interface, press“ ”to enter primary menu P0；

(2)Rotate clockwise“ ”to enter secondary menu P7；

(3)Press“ ”to enter menu P7-00；

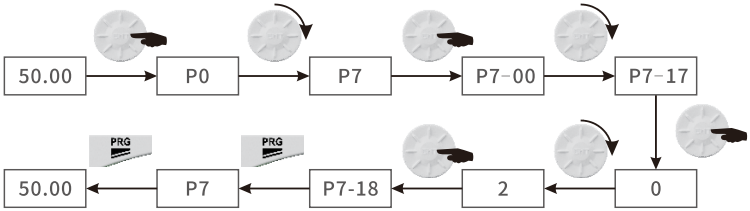
(4) Rotate clockwise“ ”to enter menu P7-17；

(5)Press“ ”to enter tertiary menu, displaying 0 or other values；

(6)Rotate counterclockwise“ ”adjust current value up or down and set it to 2. The value corresponds to the serial number of D0 group monitoring parameters.；

(7)Press“ ”to confirm setting and return to P7-18, modification finished；

(8)Press“ ”the key twice to back to monitoring interface with 25.00Hz displayed.



4.2 LCD Panel Operation & Application Examples (Optional)

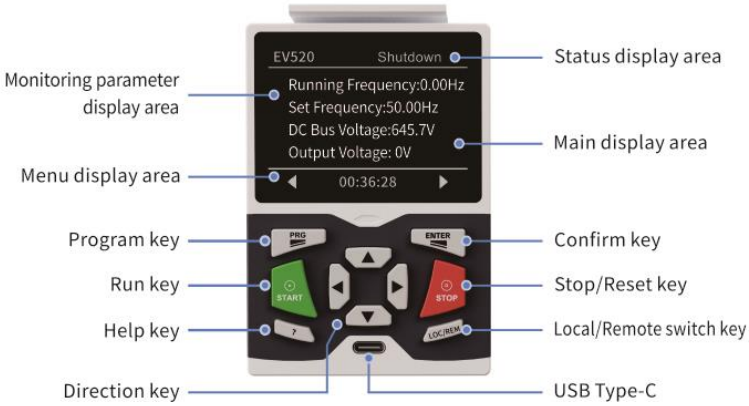
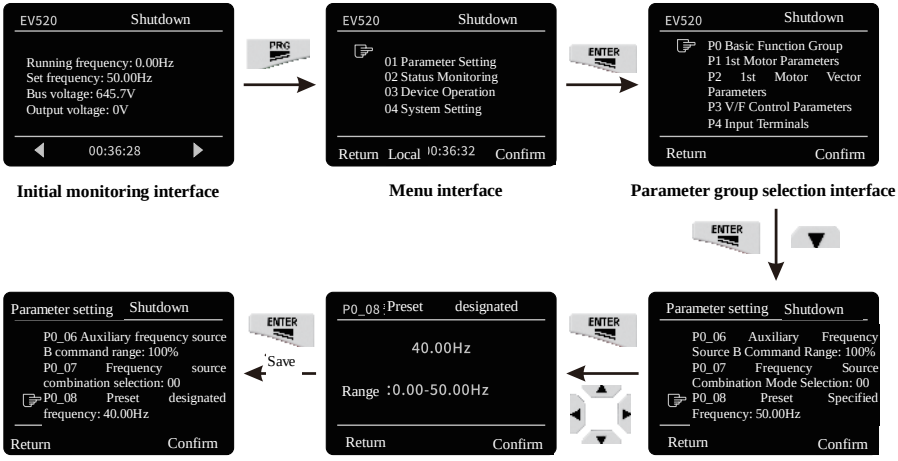


Figure 4-2 Schematic Diagram of LCD Operation Panel

LCD Panel Application Examples：

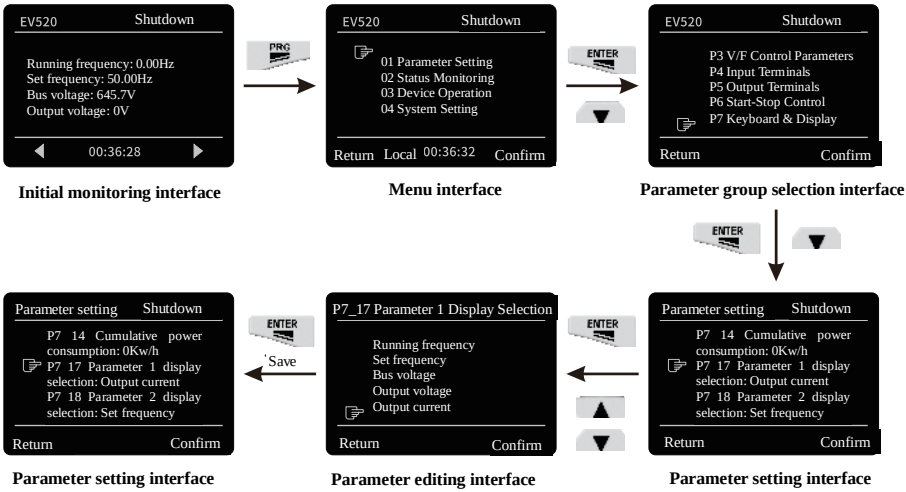
■ Take setting preset frequency P0_08 as an example, the setup steps are as follows:



Initial monitoring interface **Menu interface** **Parameter group selection interface**

Parameter setting interface **Parameter editing interface** **Parameter setting interface**

■ Take changing display parameter 1 from running frequency to output current on initial monitoring interface as example, setup steps are as follows:



Initial monitoring interface **Menu interface** **Parameter group selection interface**

Parameter setting interface **Parameter editing interface** **Parameter setting interface**

4.3 Commissioning Process

4.3.1 Commissioning Guide

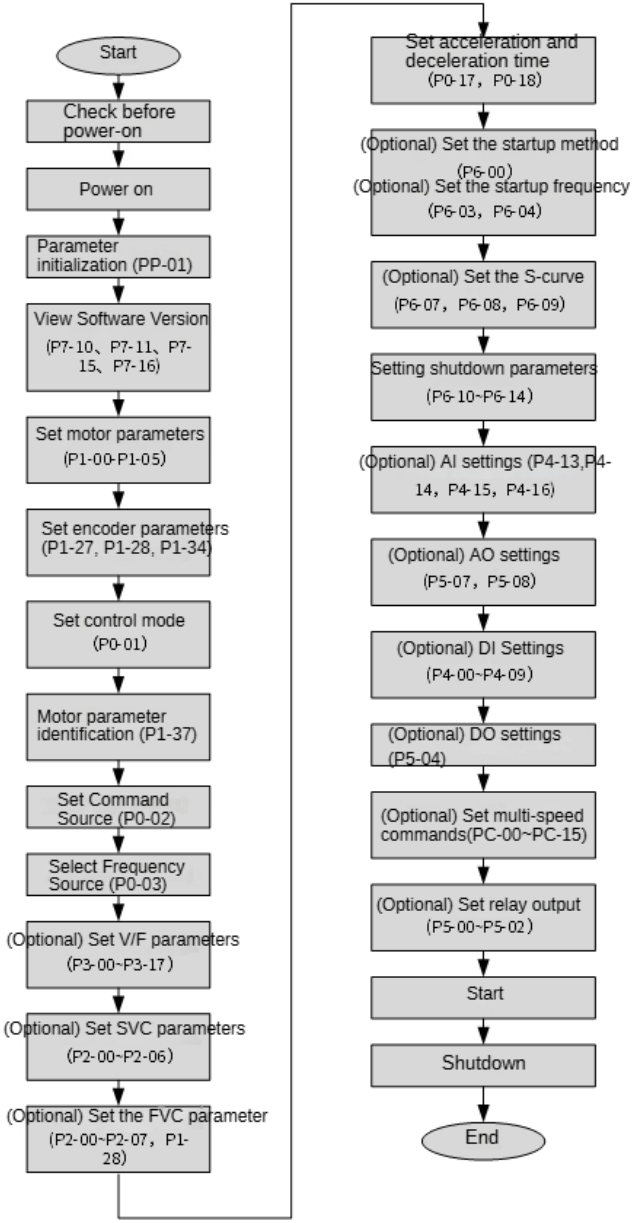


Figure 4-3 Basic Commissioning Flow Chart

Table 4-1 Basic Commissioning Procedure Table

No.	Step	Related Parameters
1	Pre-power-on Inspection	None
2	Power On	None
3	Parameter Initialization	PP-01
4	Check Software Version	P7-10、P7-11、P7-15、P7-16
5	Set Motor Parameters	P1-00-P1-05 Note: Set the corresponding motor type.
6	Set Encoder Parameters	P1-27、P1-28、P1-34
7	Set Control Mode	P0-01
8	Motor Parameter Identification	P1-37
9	Set Command Source	P0-02
10	Select Frequency Source	P0-03
11	Optional: Set V/F Parameters	P3-00～P3-17
12	Optional: Set SVC Parameters	P2-00～P2-06
13	Optional: Set FVC Parameters	P2-00～P2-07、P1-28
14	Set Acceleration/Deceleration Time	P0-17、P0-18
15	Optional: Set Start Mode & Start Frequency	P6-00、P6-03、P6-04
16	Optional: Set S-curve	P6-07、P6-08、P6-09
17	Set Stop Parameters	P6-10～P6-14
18	Optional: AI Configuration	P4-13,P4-14、P4-15、P4-16
19	Optional: AO Configuration	P5-07、P5-08
20	Optional: DI Configuration	P4-00～P4-09
21	Optional: DO Configuration	P5-04
22	Optional: Set Multi-speed Commands	PC-00～PC-15
23	Optional: Set Relay Output	P5-00～P5-02
24	Start	None
25	Stop	None

4.3.2 Commissioning Procedure for V/F Control Mode (Asynchronous Motor Only)

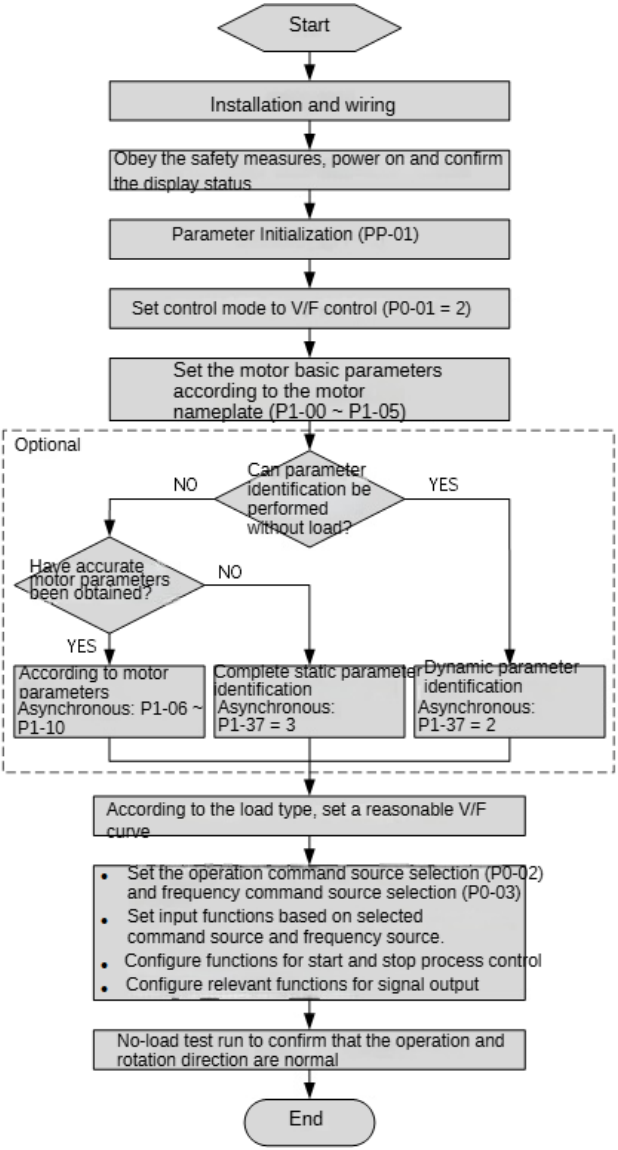


Figure 4-4 Inverter Commissioning Flow Chart (V/F Control)

4.3.3 SVC Control Mode Tuning Flow

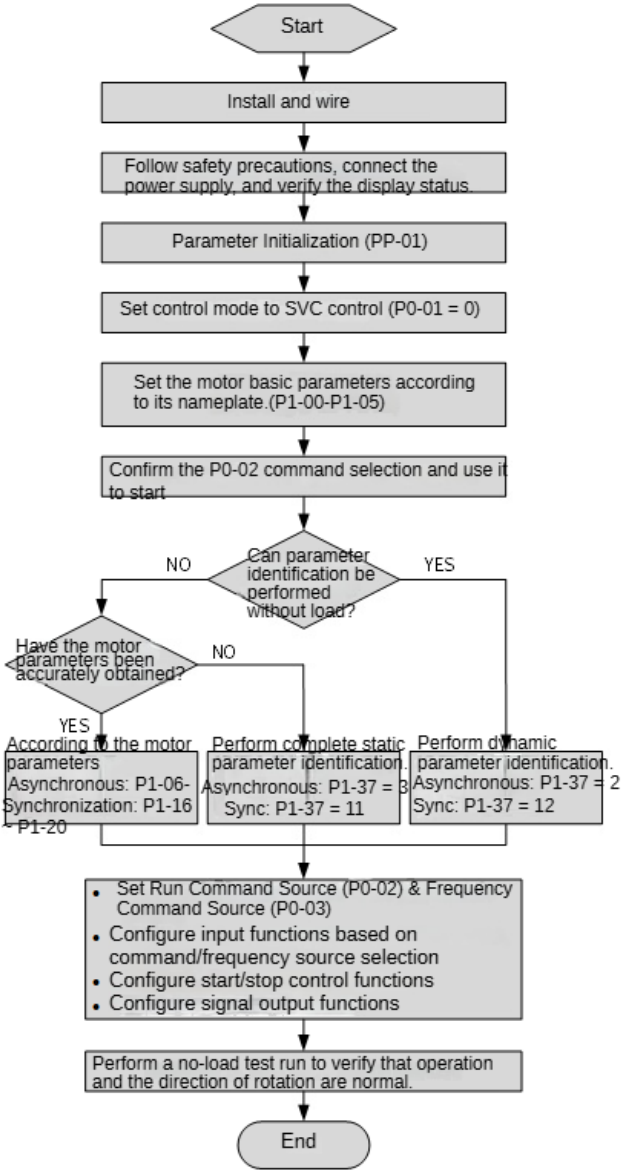


Figure 4-5 SVC Control Inverter Commissioning Flowchart

4.3.4 FVC Control Mode Tuning Flow

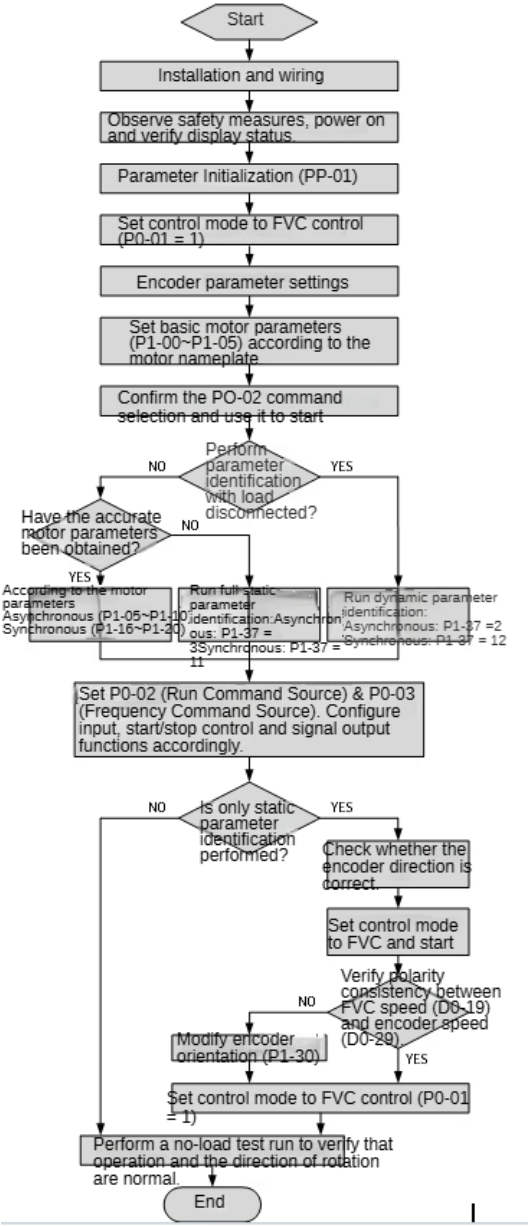


Figure 4-6 Inverter Commissioning Flow Chart (FVC)

Chapter 5 Function Parameters Table

PP-00 is set to a non-zero value, that is, the parameter protection password is set. In the function parameter mode and the user changes the parameter mode, the parameter menu must enter the password correctly and cancel the password.

The parameter menu in user-defined parameter mode is not password protected.

P group, A group is the basic function parameters, d group is the monitoring function parameters. The symbols in the function table are described below:

"☆": indicates that the set value of the parameter is in the Inverter is in shutdown, running state, can be changed;

"★": indicates that the set value of this parameter can not be changed when the Inverter is running;

"●": indicates that the value of the parameter is the actual detection record value, can not be changed;

"*": Indicates that the parameter is "factory parameter", only the manufacturer settings, prohibit the user to operate;

5.1 basic function data

Function Code	Name	Set Range	Default	Alteration
Group P0 Basic Function Group				
P0-01	Motor 1 control mode	0:No speed sensor vector control (SVC) 1:Speed sensor vector control (FVC) 2: V / F control	2	★
P0-02	Command source selection	0:Operation panel instruction channel 1: Terminal command channel 2: Terminal communication command channel (Terminal RS485) 3: Extended communication command channel (Bus expansion card)	0	☆
P0-03	Main frequency reference setting A channel selection	0: Digital setting (preset frequency P0-08, UP / DOWN can be modified, power is not memory) 1: digital setting (preset frequency P0-08, UP / DOWN can be modified, power-down memory 2: AI1 3: AI2 4: AI3 5: High-speed pulse input setting (S5) 6: Multi-segment instructions 7: Simple PLC 8: PID 9: Terminal communication reference (Terminal RS485) 10: Extended communication reference (Bus expansion card)	0	★
P0-04	Auxiliary frequency source B command input selection	With P0-03 (main frequency source A instruction input selection)	0	★

Function Code	Name	Set Range	Default	Alteration
P0-05	Auxiliary frequency source B Reference object selection	0: relative to maximum frequency 1: Relative to frequency source A	0	☆
P0-06	Auxiliary frequency source B command range	0%～150%	100%	☆
P0-07	Frequency source combination mode selection	Bit: frequency source selection 0: Main frequency source A 1: main and auxiliary operation results (operation relationship determined by ten) 2: Main frequency source A and auxiliary frequency source B switch 3: Main frequency source A and master and slave operation result switching 4: auxiliary frequency source B and master and slave operation result switching Ten: frequency source main and auxiliary operation relationship 0: main + auxiliary 1: main - auxiliary 2: the two maximum 3: the two minimum	00	☆
P0-08	Preset frequency	0.00Hz～max frequency（P0-10）	50.00Hz	☆
P0-09	Running direction	0：same direction 1：opposite direction	0	☆
P0-10	Max. frequency	50.00Hz～500.00Hz	50.00Hz	★
P0-11	Setting channel of frequency upper limit	0: P0-12 is set 1: AI1 2: AI2 3: AI3 (Function expansion card) 4: High-speed pulse setting (S5) 5: Terminal communication reference (Terminal RS485) 6: Extended communication reference (Bus expansion card)	0	★
P0-12	Frequency reference upper limit	Upper limit P0-14～max frequency P0-10	50.00Hz	☆
P0-13	Frequency reference upper limit offset	0.00Hz～max frequency P0-10	0.00Hz	☆
P0-14	Frequency reference lower limit	0.00 Hz to frequency upper limit P0-12	0.00Hz	☆
P0-15	Carrier frequency	0.8kHz～12.0kHz	Model determined	☆
P0-16	Carrier frequency adjusted with temperature	0：no 1：yes	1	☆
P0-17	Acceleration time 1	(0.00s～65000s)*P0-19	Model determined	☆
P0-18	Deceleration time 1	(0.00s～65000s)*P0-19	Model determined	☆

Function Code	Name	Set Range	Default	Alteration
P0-19	Acceleration/Deceleration time unit	0：1s 1：0.1s 2：0.01s	1	★
P0-21	Frequency offset of Auxiliary frequency setting channel for main and auxiliary calculation	0.00Hz ~ max frequency P0-10	0.00Hz	☆
P0-22	Frequency reference resolution	1：0.1Hz 2：0.01Hz	2	★
P0-23	Retentive of digital setting frequency upon stop	0: do not remember 1: memory	1	☆
P0-24	Motor parameter group selection	0: 1st motor parameter 1: 2nd motor parameter	0	★
P0-25	Acceleration/Deceleration tim base frequency	0: maximum frequency (P0-10) 1: Set frequency 2：100Hz	0	★
P0-26	Base frequency for UP/DOWN modification during running	0: Run frequency 1: Set frequency	0	★
P0-27	The run command is tied to the main frequency source A command selection：	Bit: Operation panel command Bind frequency source selection 0: no binding 1: Digital setting frequency 2: AI1 3: AI2 4: AI3 (Function expansion card) 5: High-speed pulse input setting (S5) 6: Multi-speed 7: Simple PLC 8: PID 9: Communication reference (Terminal RS485) A: Extended communication reference (Bus expansion card) Ten: Terminal Command Binding Frequency Source Selection Hundreds: communication command binding frequency source selection (Terminal RS485) Thousands place: Select frequency source bound to extended communication command (Bus expansion card)	000	☆
P0-28	Serial port comms. protocol	Units digit: Communication protocol selection (Terminal RS485) 0: Modbus RTU protocol 1: Extended communication protocol Tens digit: Reserved Hundreds digit: Extended	0100	☆

Function Code	Name	Set Range	Default	Alteration
		communication protocol selection (Bus expansion card) 0: Modbus RTU protocol 1: Extended communication protocol Thousands digit: CAN communication protocol selection 0: CANLINK protocol 1: CANOPEN protocol		
Group P1 Motor 1 Parameters				
P1-00	Motor 1 type selection	0: ordinary asynchronous motor 1: Variable frequency asynchronous motor	0	★
P1-01	Motor 1 Rated power	0.1kW ~ 1000.0kW	Model dependent	★
P1-02	Motor 1 Rated voltage	1V ~ 2000V	Model dependent	★
P1-03	motor 1 Rated current	0.1 to 6553.5 A	Model dependent	★
P1-04	Rated motor 1 frequency	0.01Hz ~ Max frequency	Model dependent	★
P1-05	Rated motor 1 speed	1rpm ~ 65535rpm	Model dependent	★
P1-06	Stator resistance of asynchronous motor 1	0.001Ω ~ 65.535Ω	Auto-tuning dependent	★
P1-07	Rotor resistance of asynchronous motor 1	0.001Ω ~ 65.535Ω	Auto-tuning dependent	★
P1-08	Leakage inductive reactance of asynchronous motor 1	0.01mH ~ 655.35mH	Auto-tuning dependent	★
P1-09	Mutual inductive of asynchronous motor 1	0.1mH ~ 6553.5mH	Auto-tuning dependent	★
P1-10	No-load current of asynchronous motor 1	0.01A ~ P1-03	Auto-tuning dependent	★
P1-11	SVC torque increase	0.0 ~ 50.0%	10.0%	☆
P1-12	SVC Torque Raise Cut-off Frequency	0.00 ~ P1-04	20.00Hz	☆
P1-13	Current loop filtering time	0.000 ~ 0.100s	0.000s	☆
P1-16	Stator resistance of synchronous motor 1	0.001Ω ~ 65.535Ω (Drive power ≤ 55kW) 0.0001Ω ~ 6.5535Ω (Drive power > 55kW)	Auto-tuning parameters	★
P1-17	D-axis inductance of Synchronous Motor 1	0.01mH ~ 655.35mH (Drive power ≤ 55kW) 0.001mH ~ 65.535mH (Drive power > 55kW)	Auto-tuning parameters	★
P1-18	Q-axis inductance of Synchronous Motor 1	0.01mH ~ 655.35mH (Drive power ≤ 55kW) 0.001mH ~ 65.535mH (Drive power > 55kW)	Auto-tuning parameters	★
P1-20	Synchronous Motor Back EMF Coefficient	0.1V ~ 6553.5V	Auto-tuning parameters	★

Function Code	Name	Set Range	Default	Alteration
P1-22	Learning compensation angle of synchronous motor	0 °~ 360 °	0 °	★
P1-27	Encoder pulses	1 ~ 65535	1024	★
P1-28	Encoder type (Closed-loop expansion card)	0: ABZ incremental encoder 1: UVW encoder 2: Resolver 4:UVW Encoder (Wire-saving Type) 5: Single-turn absolute encoder (17-bit) 6: Single-turn absolute encoder (17-bit) (Auto-read motor parameters, for our company's motors) 7: Single-turn absolute encoder (23-bit) 8: Single-turn absolute encoder (23-bit) (Auto-read motor parameters, for our company's motors)	0	★
P1-30	A/B phase sequence of ABZ incremental encoder	0: Forward 1: Reserve	0	★
P1-31	Encoder zero position angle	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	0.0：no operation 0.1s ~ 10.0s	0.0s	★
P1-37	Motor auto-tuning method selection	0: no operation 1: Asynchronous machine static part of the parameters of self-learning 2: asynchronous machine dynamic complete self-learning 3: asynchronous machine static complete self-learning 11: Synchronous motor on-load auto-tune 12: Synchronous motor no-load auto-tune	0	★
Group P2 Vector Control Parameters				
P2-00	Speed loop proportional gain 1	1 ~ 100	30	☆
P2-01	Speed loop integral time 1	(10~1000) shows 0.01s ~ 10.00s	0.50s	☆
P2-02	Switch over frequency 1	0.00 ~ P2-05	5.00Hz	☆
P2-03	Speed loop proportional gain 2	1 ~ 100	20	☆
P2-04	Speed loop integral time 2	0.01s ~ 10.00s	1.00s	☆
P2-05	Switch over frequency 2	P2-02 ~ max frequency(P0-10)	10.00Hz	☆
P2-06	SVC/FVC slip compensation gain	50% ~ 200%	100%	☆
P2-07	SVC Speed feedback filter time constant	0.000s ~ 0.100s	0.015s	☆

Function Code	Name	Set Range	Default	Alteration
P2-09	Torque limit source in speed control	0: Function code P2-10 setting 1: AI1 2: AI2 3: AI3 (Function expansion card) 4: High-speed pulse input setting (S5) 5: Communication reference (Terminal RS485) 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) 8: Extended communication reference (Bus expansion card) Full scale of options 1~8 corresponds to P2-10.	0	☆
P2-10	Digital setting of torque limit in speed control	0.0% ~ 200.0%	150.0%	☆
P2-11	Torque limit source in speed control (in regenerative state)	0: Function code P2-12 setting (no distinction between electric and power generation) 1: AI1 2: AI2 3: AI3 (Function expansion card) 4: High-speed pulse input setting 5: Communication reference (Terminal RS485) 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) 8: Extended communication reference (Bus expansion card) Full scale of options 1~8 corresponds to P2-12.	0	☆
P2-12	Digital setting of torque limit in speed control (in regenerative state)	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 separation selection	Units: integral separation 0: Disabled 1: Enabled	0	☆
P2-18	Synchronous Machine Field-Weakening Mode	0: No Field-Weakening 1: Automatic Adjustment Mode 2: Calculation & Automatic Adjustment Composite Mode	1	☆
P2-19	Field-Weakening Gain of Synchronous Machine	0 ~ 50	5	☆
P2-20	Maximum Field-Weakening Current of Synchronous Machine	0 ~ 300%	50%	☆

Function Code	Name	Set Range	Default	Alteration
P2-21	Max. torque coefficient of field weakening area	50~200%	100%	☆
P2-22	Regenerative power limit selection	0: Disabled 1: Enabled	0	☆
P2-23	Regenerative power limit	0~200%	Model dependent	☆
P2-24	Sync motor initial angle detect current	50%～180%	80%	☆
P2-25	Sync motor initial angle detection	0: Detect every run 1: No detection 2: Detect on first run after power-up	0	☆
P2-27	Sync motor saliency ratio gain	50 ~ 500	100	☆
P2-28	Maximum torque per ampere control	0: Disabled 1: Enabled	0	☆
P2-32	Z signal correction	0: Disabled 1: Enabled	1	☆
P2-36	Low-speed excitation current	0～80%	30%	☆
P2-37	Low-speed carrier frequency	0.8K～P0-15	1.5KHz	☆
P2-38	SVC low-frequency brake mode	0: Low-frequency braking disabled 1: Low-frequency braking enabled	0	☆
P2-39	SVC low-frequency brake activate frequency	0 ~ 10.00Hz	2.00Hz	☆
P2-40	SVC low-frequency brake frequency step	0.0005～1.0000 Hz	0.0010Hz	☆
P2-41	SVC low-frequency brake current	0～80%	50%	☆
P2-42	Sync motor SVC speed tracking	0: Disabled 1: Enabled	0	☆
P2-43	Zero servo enable	0: Disabled 1: Enabled	0	☆
P2-44	Switching frequency	0.00～P2-02	0.30Hz	☆
P2-45	Zero servo speed loop gain	1～100	10	☆
P2-46	Zero servo speed loop integral time	0.01s～10.00s	0.50s	☆
P2-47	Stop anti-reverse enable	0: Disabled 1: Enabled	0	☆
P2-48	Stop angle	0.0 °～10.0 °	0.8 °	☆
Group P3 V/F Control Parameters				
P3-00	V/F curve setting	0: Straight line V / F 1: Multipoint 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: VF complete separation mode 11: VF semi-separation mode	0	★

Function Code	Name	Set Range	Default	Alteration
P3-01	Torque boost	0.0% (Ineffective) 0.1% ~ 30.0%	Model dependent	☆
P3-02	Cut-off frequency of torque boost	0.00Hz ~ max frequency	50.00Hz	★
P3-03	Multi-point V/F frequency 1	0.00Hz ~ P3-05	5.00Hz	★
P3-04	Multi-point V/F voltage 1	0.0% ~ 100.0%	10.0%	★
P3-05	Multi-point V/F frequency 2	P3-03 ~ P3-07	25.00Hz	★
P3-06	Multi-point V/F voltage 2	0.0% ~ 100.0%	50.0%	★
P3-07	Multi-point V/F frequency 3	P3-05 ~ motor rated frequency (P1-04)	50.00Hz	★
P3-08	Multi-point V/F voltage 3	0.0% ~ 100.0%	100.0%	★
P3-09	Slip compensation gain	-	-	-
P3-10	V/F over-excitation gain	0 ~ 200	64	☆
P3-11	V/F oscillation suppression gain	0 ~ 100	40	☆
P3-13	Voltage source for V/F separation	0: digital setting (P3-14) 1: AI1 2: AI2 3: AI3 (Function expansion card) 4:High-speed pulse input setting (S5) 5: multi-segment instructions 6: Simple PLC 7: PID 8: communication given (Terminal RS485) 9: Extended communication reference (Bus expansion card) Note: 100.0% corresponds to the motor rated voltage	0	☆
P3-14	Digital setting of voltage for V/F separation	0V ~ motor rated voltage	0V	☆
P3-15	Voltage rise time of V/F separation	0.0s ~ 1000.0s Note: 0v to rated motor voltage	0.0s	☆
P3-16	Voltage decline time of V/F separation	0.0s~1000.0s Note: time of 0v to rated motor voltage	0.0s	☆
P3-17	Stop mode selection for V/F separation	0: Frequency and voltage declining to 0 independently 1: Frequency declining after voltage declines to 0	0	☆
P3-18	Current limit level	50~200%	150%	★
P3-19	Current limit selection	0: useless 1: useful	1	★
P3-20	Current limit gain	0~100	20	☆
P3-21	Compensation factor of speed multiplying current	50~200%	50%	★

Function Code	Name	Set Range	Default	Alteration
	limit level			
P3-22	Voltage limit	650V~800.0V	760V	★
P3-23	Voltage limit selection	0：useless 1：useful	1	★
P3-24	Frequency gain for voltage limit	0~100	60	☆
P3-25	Voltage gain for voltage limit	0~100	30	☆
P3-26	Frequency rise threshold during voltage limit	0~50Hz	5Hz	★
P3-34	Energy-saving mode enable (Valid only under V/F control with linear V/F curve))	0: Disabled 1: Enabled	0	☆
P3-35	Operating detection current of energy-saving mode	0-60%	40%	☆
P3-36	Operating voltage detection ratio of energy-saving mode	70-100%	80%	☆
P3-37	Voltage switching acceleration/deceleration time for energy-saving mode	0.0-10.0s	1.0S	☆
Group P4 Input Terminals				
P4-00	S1 function selection	0: no function 1: Forward run (FWD) or run command 2: reverse run (REV) or positive and negative running direction (Note: set 1, 2 to be used with P4-11) 3: three-wire operation control 4: forward jog (FJOG) 5: reverse jog (RJOG) 6: Terminal UP 7: Terminal DOWN 8: free parking 9: Fault reset (RESET) 10: run pause 11: External fault normally open input 12: Multi-step command terminal 1 13: Multi-step command terminal 2 14: Multi-step command terminal 3 15: Multi-step command terminal 4 16: Acceleration / deceleration time selection terminal 1 17: Acceleration / deceleration time selection terminal 2 18: Frequency command switching 19: UP / DOWN setting clear (terminal, keyboard) 20: control command to switch terminal 1 21: Acceleration / deceleration is	1	★
P4-01	S2 function selection		2	★
P4-02	S3 function selection		9	★
P4-03	S4 function selection		12	★
P4-04	S5 function selection		13	★
P4-05	S6 Terminal Function (Normal for standard card; STO1 for STO card)		0	★
P4-06	S7 Terminal Function (Normal for standard card; STO2 for STO card)		0	★
P4-07	S8 Terminal Function (Function Expansion Card)		0	★
P4-08	S9 Terminal Function (Function Expansion Card)		0	★
P4-09	S10 Terminal Function (Function Expansion Card)		0	★

Function Code	Name	Set Range	Default	Alteration
		prohibited 22: PID pause 23: Easy PLC status reset 24: Wobble is suspended 25: Counter input 26: Counter reset 27: Length count input 28: Length reset 29: Torque control disabled 30: High-speed pulse input (only valid for S5) 31: Reserved 32: Immediate DC braking 33: External fault normally closed input 34: Frequency modification enabled 35: PID direction is reversed 36: External parking terminal 1 37: control command to switch terminal 2 38: PID integral is paused 39: Frequency source A and preset frequency switching 40: Frequency source B and preset frequency switching 41: Motor terminal selection function 42: Reserved 43: PID parameter switch 44: User defined fault 1 45: user defined fault 2 46: Speed control / torque control switching 47: Emergency stop 48: External parking terminal 2 49: Deceleration of DC braking 50: This run time is cleared 51: two-wire / three-wire switch 52: Reverse frequency disabled 53-61: Reserved 62: STO1 Detection (Valid for S6 only) 63: STO2 Detection (Valid for S7 only)		
Group P4 Input terminal				
P4-10	S1~S7 filter time (S6/S7 delay disabled for STO card)	0.000s ~ 1.000s	0.010s	☆
P4-11	Terminal control mode	0: two lines 1 1: two lines 2 2: three lines 1 3: three lines 2	-	★
P4-12	Terminal UP/DOWN rate	0.001Hz/s ~ 65.535Hz/s	1.00Hz/s	☆
P4-13	AI curve 1 min. input	0.00V ~ P4-15	0.00V	☆
P4-14	Corresponding percentage of AI curve 1 min. input	-100.0% ~ +100.0%	0.0%	☆

Function Code	Name	Set Range	Default	Alteration
P4-15	AI curve 1 max. input	P4-13 ~ +10.00V	10.00V	☆
P4-16	Corresponding percentage of AI curve 1 max. input	-100.0% ~ +100.0%	100.0%	☆
P4-17	AI1 filter time	0.00s ~ 10.00s	0.10s	☆
P4-18	AI curve 2 min. input	0.00V ~ P4-20	0.00V	☆
P4-19	Corresponding percentage of AI curve 2 min. input	-100.0% ~ +100.0%	0.0%	☆
P4-20	AI curve 2 max. input	P4-18 ~ +10.00V	10.00V	☆
P4-21	Corresponding percentage of AI curve 2 max. input	-100.0% ~ +100.0%	100.0%	☆
P4-22	AI2 filter time	0.00s ~ 10.00s	0.10s	☆
P4-23	AI3 curve min. input	0.00V ~ P4-25	0.00V	☆
P4-24	Corresponding percentage of AI curve 3 min. input	0.00% ~ +100.0%	0.0%	☆
P4-25	AI curve 3 max. input	P4-23 ~ +10.00V	10.00V	☆
P4-26	Corresponding percentage of AI curve 3 max. input	0.00% ~ +100.0%	100.0%	☆
P4-27	AI3 filter time	0.00s ~ 10.00s	0.10s	☆
P4-28	Pulse min. input	0.00kHz ~ P4-30	0.00kHz	☆
P4-29	Corresponding percentage of pulse min. input	-100.0% ~ 100.0%	0.0%	☆
P4-30	Pulse max. input	P4-28 ~ 100.00kHz	50.00kHz	☆
P4-31	Corresponding percentage of pulse max. input	-100.0% ~ 100.0%	100.0%	☆
P4-32	Pulse filter time	0.00s ~ 10.00s	0.10s	☆
P4-33	AI curve selection	Bit: AI1 curve selection 1: curve 1 (2 points, see P4-13 ~ P4-16) 2: Curve 2 (2 points, see P4-18 ~ P4-21) 3: curve 3 (2 points, see P4-23 ~ P4-26) 4: curve 4 (4 points, see A6-00 ~ A6-07) 5: curve 5 (4 points, see A6-08 ~ A6-15) Ten: AI2 curve selection, ibid Hundreds: AI3 Curve Select (Function Expansion Card), same as above	321	☆
P4-34	Setting selection when AI less than min. input	Bit: AI1 is lower than the minimum input setting 0: corresponds to the minimum input setting 1: 0.0% Ten: AI2 is lower than the minimum input setting, ibid	000	☆

Function Code	Name	Set Range	Default	Alteration
		Hundreds: AI3 Below Min Input Select (Function Expansion Card), same as above		
P4-35	S1 delay	0.0s ~ 3600.0s	0.0s	★
P4-36	S2 delay	0.0s ~ 3600.0s	0.0s	★
P4-37	S3 delay	0.0s ~ 3600.0s	0.0s	★
P4-38	S1~S5 active mode selection 1	0: active high 1: active low Bit: S1 Ten: S2 Hundred places: S3 Thousands of bits: S4 Million: S5	00000	★
P4-39	S6、S7 active mode selection 2 (This function of S6 and S7 is invalid when using STO expansion card.)	0: active high 1: active low Bit: S6 Ten: S7 Hundred places: reserved Thousands of places: reserved Million: reserved	00000	★
Group P5 Output Terminals				
P5-00	HDO terminal output mode	0: pulse output (HDP) 1: Switching output (HDY)	1	☆
P5-01	HDY function selection	0: No output 1: The inverter is running 2: fault output (fault stop) 3: Frequency level detection FDT1 output 4: frequency arrives 5: Zero speed operation (no output at shutdown) 6: motor overload pre-alarm 7: Inverter overload pre-alarm 8: Set the count value to reach 9: Specifies that the count value arrives 10: length to reach 11: PLC cycle is complete 12: The cumulative run time arrives 13: Frequency limit 14: Torque limit 15: Ready to run 16: AI1> AI2 17: upper limit frequency arrival 18: Lower frequency arrival (operation related) 19: Undervoltage status output 20: communication settings ((Terminal RS485 or bus expansion card)) 21: Positioning completed (reserved) 22: positioning close (reserved) 23: zero speed running 2 (also output when stopped) 24: The total power-up time arrives	0	☆
P5-02	Relay 1 output function selection (TA-TB-TC)		2	☆
P5-03	Relay 2 output function selection (RA-RC)		0	☆
P5-04	DO1/T1A-T1C output function selection (Function expansion card)		-	☆
P5-05	DO2/T2A-T2C output function selection (Function expansion card)		-	☆

Function Code	Name	Set Range	Default	Alteration
		25: Frequency level detection FDT2 output 26: Frequency 1 reaches the output 27: Frequency 2 reaches the output 28: current 1 reaches the output 29: current 2 reaches the output 30: Timing arrival output 31: AI1 input is overrun 32: Underload 33: reverse running 34: zero current state 35: Module temperature arrives 36: Output current is exceeded 37: Lower frequency arrival (shutdown also output) 38: Alarm output (continued) 39: Motor overtemperature warning 40: This run time arrives 41: fault output (for free stop fault), and undervoltage is not output		
P5-06	HDP function selection	0: operating frequency 1: Set frequency 2: Output current 3: Output torque 4: Output power 5: Output voltage 6: High speed pulse input (100.% corresponds to 100.0 kHz) 7: AI1 8: AI2 9: AI3 (Function expansion card) 10: length 11: count value 12: communication settings (Comm. Settings (RS485 / Bus Expansion Card) 13: motor speed 14: Output current: 100.0% vs. 1000.0A 15: Output voltage: 100.0% corresponds to 1000.0V 16: motor output torque (actual value, relative motor percentage)	0	☆
P5-07	AO1 function selection		0	☆
P5-08	AO2 function selection (Function expansion card)		1	☆
P5-09	HDO output frequency	0.01kHz ~ 100.00kHz	50.00kHz	☆
P5-10	AO1 zero offset coefficient	-100.0% ~ +100.0%	0.0%	☆
P5-11	AO1 gain	-10.00 ~ +10.00	1.00	☆
P5-12	AO2 zero offset coefficient	-100.0% ~ +100.0%	0.0%	☆
P5-13	AO2 gain	-10.00 ~ +10.00	1.00	☆
P5-17	HDY output delay	0.0s ~ 3600.0s	0.0s	☆
P5-18	Relay 1 output delay	0.0s ~ 3600.0s	0.0s	☆

Function Code	Name	Set Range	Default	Alteration
P5-19	Relay 2 output delay	0.0s ~ 3600.0s	0.0s	☆
P5-20	DO1/T1A-T1C output delay time (Function expansion card)	0.0s ~ 3600.0s	0.0s	☆
P5-21	DO2/T2A-T2C output delay time (Function expansion card)	0.0s ~ 3600.0s	0.0s	☆
P5-22	Active mode selection	0: Positive logic 1: anti logic Bit: HDO (HDY) Ten: RO1A Hundred places: RO2A Thousands place: DO1/T1A-T1C (Function expansion card) Ten-thousands place: DO2/T2A-T2C (Function expansion card)	00000	☆
Group P6 Start/Stop Control				
P6-00	Start mode	0: Direct start 1: Catching a spinning motor 2: Pre-excited start 3: SVC quick start	0	☆
P6-01	Mode of catching a spinning motor	0: From stop frequency 1: From 50 Hz 2: From max. frequency	0	★
P6-02	Speed of catching a spinning motor	20	20	☆
P6-03	Start frequency	0.00Hz ~ 10.00Hz	0.00Hz	☆
P6-04	Start frequency holding time	0.0s ~ 100.0s	0.0s	★
P6-05	DC injection braking 1 level/Pre excitation level	0% ~ 100%	50%	★
P6-06	DC injection braking 1 active time /Pre-excitation active time	0.0s ~ 100.0s	0.0s	★
P6-07	Acceleration/ Deceleration mode	0: Linear acceleration / deceleration 1: S-curve acceleration / deceleration A (static) 2: S curve acceleration / deceleration B (dynamic)	0	★
P6-08	Time proportion of S-curve start segment	0.0% ~ (100.0%-P6-09)	30.0%	★
P6-09	Time proportion of S-curve end segment	0.0% ~ (100.0%-P6-08)	30.0%	★
P6-10	Stop mode	0: Decelerate to stop 1: Coast to stop	0	☆
P6-11	DC injection braking 2 start frequency	0.00Hz ~ max frequency(P0-10)	0.00Hz	☆
P6-12	DC injection braking 2 delay time	0.0s ~ 100.0s	0.0s	☆
P6-13	DC injection braking 2 level	0% ~ 100%	50%	☆

Function Code	Name	Set Range	Default	Alteration
P6-14	DC injection braking 2 active time	0.0s ~ 100.0s	0.0s	☆
P6-15	Braking use ratio	0% ~ 100%	100%	☆
P6-18	Catching a spinning motor current limit	30%~200%	Model dependent	☆
P6-21	Demagnetization time (effective for SVC)	0.00~5.00s	Model dependent	☆
Group P7 Keypad Operation and LED Display				
P7-00	Keyboard Type Select	0: Standard keyboard 1: New dual-row keyboard	1	☆
P7-01	JOG default display check	0: JOG is invalid 1: Operation panel command channel and remote command channel (terminal command channel or communication command channel) switch 2: Forward and reverse switching 3: moving forward 4: reverse jog	0	★
P7-02	STOP/RESET key function	0: The STOP / RES key stop function is valid only during keyboard operation 1: STOP / RES key shutdown is active in any mode of operation	1	☆
P7-03	Main display LED operating status display parameter 1	0000 ~ FFFF Bit00: Operating 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: S terminal input status Bit08: HDO output status Bit09: AI1 voltage (V) Bit10: AI2 Voltage (V) Bit11: AI3 Voltage (V) (Function expansion card) Bit12: Count value Bit13: Length value Bit14: Load speed display Bit15: PID setting	1F	☆
P7-04	Main display LED operating status display parameter 2	0000 ~ FFFF Bit00: PID feedback Bit01: PLC stage Bit02: High-speed pulse input frequency (kHz) Bit03: Operating frequency 2 (Hz) Bit04: Remaining runtime Bit05: AI1 before correction voltage (V) Bit06: AI2 before correction voltage (V) Bit07: AI3 Correction before voltage (V) (Function expansion card) Bit08: Line speed Bit09: Current power-on time (Hour)	0	☆

Function Code	Name	Set Range	Default	Alteration
		Bit10: Current running time (Min) Bit11: High-speed pulse input frequency (Hz) Bit12: Communication setpoint Bit13: Encoder feedback speed (Hz) Bit14: Main frequency A display (Hz) Bit15: Secondary frequency B display (Hz)		
P7-05	Main display LED shutdown status display parameters	0000 ~ FFFF Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02: S input status Bit03: HDO output status Bit04: AI1 voltage (V) Bit05: AI2 voltage (V) Bit06: AI3 voltage (V) (Function expansion card) Bit07: Count value Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PID setting Bit12: High-speed pulse input frequency (kHz)	33	☆
P7-06	Load speed display coefficient	0.0001 ~ 6.5000	1.0000	☆
P7-07	Heat sink temperature of AC Drive IGBT	-20.0℃ ~ 120.0℃	-	●
P7-09	Accumulative running time	0h ~ 65535h	-	●
P7-12	Number of decimal places for load speed display	Bit: d0-14 the number of decimal places 0: 0 decimal places 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places Ten: d0-19 / d0-29 the number of decimal places 1: 1 decimal place 2: 2 decimal places	20	☆
P7-13	Accumulative power-on time	0h ~ 65535h	-	●
P7-14	Accumulative power consumption	0kW ~ 65535kwh	-	●
P7-17	Display selection 1	Range: 0～73. This value corresponds to the serial number of monitoring parameters in Group D0. For example, when set to 0, it displays the content of d0.00. This parameter sets the secondary display for dual-display keypads, and also defines the first line content for custom display on LCD keypads.	0	☆
P7-18	Display selection 2	Range: 0～73. This value corresponds to the index of monitoring parameters in Group d0. For example, setting it to 1 displays the content of d0.01.	1	☆

Function Code	Name	Set Range	Default	Alteration
		This parameter defines the second line content for custom display on LCD keypads.		
P7-19	Display selection 3	Range: 0~73. This value corresponds to the index of monitoring parameters in Group d0. If set to 2, the content of d0.02 will be displayed. This parameter is used to configure the third line of the custom display on the LCD keypad.	2	☆
P7-20	Display selection 4	Range: 0～73. This value corresponds to the index of monitoring parameters in Group d0. For example, setting it to 3 displays the content of d0.03. This parameter defines the fourth line content for custom display on LCD keypads.	3	☆
Group P8 Auxiliary Functions				
P8-00	Jog frequency reference	0.00 Hz to max. Frequency (P0-10)	2.00 Hz	☆
P8-01	Jog acceleration time	0.0s to 6500.0s	20.0s	☆
P8-02	Jog deceleration time	0.0s to 6500.0s	20.0s	☆
P8-03	Acceleration time 2	0.0s to 6500.0s	Model dependent	☆
P8-04	Deceleration time 2	0.0s to 6500.0s	Model dependent	☆
P8-05	Acceleration time 3	0.0s to 6500.0s	Model dependent	☆
P8-06	Deceleration time 3	0.0s to 6500.0s	Model dependent	☆
P8-07	Acceleration time 4	0.0s to 6500.0s	Model dependent	☆
P8-08	Deceleration time 4	0.0s to 6500.0s	Model dependent	☆
P8-09	Frequency jump 1	0.00 Hz to max. frequency (P0-10)	0.00 Hz	☆
P8-10	Frequency jump 2	0.00 Hz to max. frequency (P0-10)	0.00 Hz	☆
P8-11	Frequency jump band	0.00 Hz to max. frequency (P0-10)	0.00 Hz	☆
P8-12	Forward/Reverse run switchover dead-zone time	0.0s to 3000.0s	0.0s	☆
P8-13	Reverse RUN selection	0, 1	0	☆
P8-14	Running mode when frequency reference lower than frequency lower limit	0: Run at the lower limit frequency 1: Stop 2: Run at zero speed	0	☆
P8-15	Droop rate	0.00% to 100.00%	0.00%	☆
P8-16	Accumulative power-on time threshold	0 to 65000 h	0 h	☆

Function Code	Name	Set Range	Default	Alteration
P8-17	Accumulative running time threshold	0 to 65000 h	0 h	☆
P8-18	Startup protection selection	0:non protect, 1: protect	0	☆
P8-19	Frequency detection value FDT1	0.00 Hz to max. frequency (P0-10)	50.00 Hz	☆
P8-20	Frequency detection hysteresis FDT1	0.0% to 100.0% (FDT1)	5.0%	☆
P8-21	Detection width of target frequency reached	0.0% to 100.0% (max. frequency P0-10)	0.0%	☆
P8-22	Jump frequency function	0: invalid, 1 :valid	0	☆
P8-25	Switchover frequency of accel time 1 and accel time 2	0.00 Hz to max. Frequency (P0-10)	0.00 Hz	☆
P8-26	Switchover frequency of decel time 1 and decel time 2	0.00 Hz to max. frequency (P0-10)	0.00 Hz	☆
P8-27	Set highest priority to terminal JOG function	0: invalid, 1 :valid	0	☆
P8-28	Frequency detection value FDT2	0.00 Hz to max. frequency	50.00 Hz	☆
P8-29	Frequency detection hysteresis FDT2	0.0% to 100.0%	5.0%	☆
P8-30	Detection of frequency 1	0.00 Hz to max. Frequency P0-10	50.00 Hz	☆
P8-31	Detection width of frequency 1	0.0% to 100.0% (max. Frequency P0-10)	0.0%	☆
P8-32	Detection of frequency 2	0.00 Hz to max. frequency P0-10	50.00 Hz	☆
P8-33	Detection width of frequency 2	0.0% to 100.0% (max. Frequency P0-10)	0.0%	☆
P8-34	Zero current detection level	0.0% to 300.0% (rated motor current)	5.0%	☆
P8-35	Zero current detection delay	0.01s to 600.00s	0.10s	☆
P8-36	Output over current threshold	0.0% (no detection) 0.1% to 300.0% (rated motor current)	200.0%	☆
P8-37	Output over current detection delay	0.00s to 600.00s	0.00s	☆
P8-38	Detection level of current 1	0.0% to 300.0% (rated motor current)	100.0%	☆
P8-39	Detection width of current 1	0.0% to 300.0% (rated motor current)	0.0%	☆
P8-40	Detection level of current 2	0.0% to 300.0% (rated motor current)	100.0%	☆
P8-41	Detection width of current 2	0.0% to 300.0% (rated motor current)	0.0%	☆
P8-42	Timing function	0: invalid, 1 :valid	0	★
P8-43	Running time setting	0: P8-44 setting 1:AI1	0	★

Function Code	Name	Set Range	Default	Alteration
	channel	2:AI2 3. AI3 (Function expansion card) Corresponding to analog input range P8-44		
P8-44	Running time	0.0 to 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 11.00 V	6.80 V	☆
P8-47	IGBT temperature threshold	0 ℃ to 100 ℃	75 ℃	☆
P8-48	Cooling fan working mode	0: wind turbine runs during operation, 1: wind turbine keeps running	0	☆
P8-49	Wake-up frequency	P8-51 to max. frequency (P0-10)	0.00 Hz	☆
P8-50	Wakeup delay time	0.0s to 6500.0s	0.0s	☆
P8-51	Hibernating frequency	0.00 Hz to wakeup frequency (P8-49)	0.00 Hz	☆
P8-52	Hibernating delay time	0.0s to 6500.0s	0.0s	☆
P8-53	Running time threshold this time	0.0 to 6500.0 min	0.0 min	☆
P8-54	Output power correction coeffcient	0.0% to 200.0%	100.0%	☆
Group P9 Fault and Protection				
P9-00	Motor overload protection	0:Forbid, 1:permit	1	☆
P9-01	Motor overload protection gain	0.20 to 10.00	1.00	☆
P9-02	Motor overload pre-warning coeffcient	50% to 100%	80%	☆
P9-03	Overvoltage protection gain	0~100	30	☆
P9-04	Overvoltage protection voltage	650 to 800 V	770 V	☆
P9-07	Detection of short-circuit to ground upon power-on	Single : power-to-ground short-circuit protection selection 0:invalid 1: valid Tens : Selection of short-to-ground protection before running 0:invalid 1: valid	01	☆
P9-08	Braking unit applied voltage	650 to 800 V	690V	★
P9-09	Auto reset times	0 to 20	0	☆
P9-10	Selection of HDO action during auto reset	0:No action, 1: Action	0	☆
P9-11	Delay of auto reset	0.1s to 100.0s	5.0s	☆
P9-12	Input phase loss/pre-charge relay	Single : Input phase loss protection selection	11	★

Function Code	Name	Set Range	Default	Alteration
	protection	0:Forbid 1: allow Tens : Contactor pull-in protection selection 0:Forbid 1: allow		
P9-13	Output phase loss protection	Single : Output phase loss protection selection 0:Forbid 1: allow Tens : Input phase loss protection selection 0:Forbid 1: allow	01	☆
P9-14	1st fault type	0: No fault 1: Reserved 2: Over-current during acceleration 3: Over-current during deceleration 4: Over-current at constant speed 5: Over-voltage during acceleration 6: Over-voltage during deceleration 7: Over-voltage at constant speed 8: Braking resistor overload 9: Under-voltage 10: Inverter overload 11: Motor overload 12: Input phase loss 13: Output phase loss 14: IGBT module overheat 15: External fault 16: Communication error (Terminal RS485) 17: Contactor abnormal 18: Current detection error 19: Motor auto-tuning failure 20: Encoder/PG card error 21: Parameter read/write error 22: Inverter hardware fault 23: Motor ground short circuit 24: Reserved 25: Reserved 26: Operation time reached 27: User-defined fault 1 28: User-defined fault 2 29: Power-on time reached 30: Under-load 31: PID feedback loss during operation 32: STO Trigger 33: STO1 Trigger 34: STO2 Trigger 40: Fast current limit timeout 41: Motor switching during running 42: Excessive speed deviation 43: Motor overspeed (Reserved) 45: Motor over temperature 51: Initial position error 55: Slave fault in master-slave control 56: CAN communication failure 57: LCD keypad communication error 58: Expansion card communication	-	●
P9-15	2nd fault type		-	●
P9-16	3rd (latest) fault type		-	●

Function Code	Name	Set Range	Default	Alteration
		error		
P9-17	Frequency upon 3rd fault	-	-	●
P9-18	Current upon 3rd fault	-	-	●
P9-19	Bus voltage upon 3rd fault	-	-	●
P9-20	DI state upon 3rd fault	-	-	●
P9-21	DO state upon 3rd fault	-	-	●
P9-22	AC drive state 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	DI state upon 2nd fault	-	-	●
P9-31	Input terminal state upon 2nd fault	-	-	●
P9-32	AC drive state 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	DI state upon 1st fault	-	-	●
P9-41	DO state upon 1st fault	-	-	●
P9-42	AC drive state upon 1st fault	-	-	●
P9-43	Power-on time upon 1st fault	-	-	●
P9-44	Running time upon 1st fault	-	-	●
P9-47	Fault protection action selection 1	00000 to 22222	00000	☆
P9-48	Fault protection action selection 2	00000 to 11111	00000	☆
P9-49	Fault protection action selection 3	00000 to 22222	00000	☆
P9-50	Fault protection action selection 4	00000 to 22222	00000	☆

Function Code	Name	Set Range	Default	Alteration
P9-54	Frequency selection for continuing to run upon fault	0 to 4	0	☆
P9-55	Backup frequency upon fault	0.0% to 100.0% (max. Frequency P0-10)	100.0%	☆
P9-56	Motor temperature sensor type (Closed-loop expansion card / Temperature acquisition card)	0：No Sensor 1：PT100 2：PT1000 3：KTY84	0	☆
P9-57	Motor overtemperature protection threshold (Closed-loop expansion card / Temperature acquisition card)	0℃-200℃	110℃	☆
P9-58	Motor Over-Temp Pre-Alarm Threshold (Closed-loop Card / Temp. Card)	0℃-200℃	90℃	☆
P9-59	Power dip ride-through function selection	0 to 2	0	★
P9-60	Threshold of power dip ride through function disabled	80% to 100%	85%	★
P9-61	Judging time of bus voltage recovering from power dip	0.0s to 100.0s	0.5s	★
P9-62	Threshold of power dip ride through function enabled	60% to 100%	80%	★
P9-63	Load lost protection	0: Disabled 1: Enabled	0	☆
P9-64	Load lost detection level	0.0% to 100.0%	10.0%	☆
P9-65	Load lost detection time	0.0s to 60.0s	1.0s	☆
P9-67	Over speed detection level	0.0% to 50.0% (max. frequency)	20.0%	☆
P9-68	Over speed detection time	0.0s: no test , 0.1~60.0s	1.0s	☆
P9-69	Detection level of speed error	0.0% to 50.0% (max. frequency)	20.0%	☆
P9-70	Detection time of speed error	0.0s to 60.0s	5.0s	☆
P9-71	Power dip ride-through gain Kp	0 to 100	80	☆
P9-72	Power dip ride-through integral coeffcient	0 to 100	20	☆
P9-73	Deceleration time of power dip ride-through	0.0s to 300.0s	0.1s	★
P9-76	Frequency converter G/P	1:G model 2:P model	1	★

Function Code	Name	Set Range	default	change
Group PA: PID Function				
PA-00	PID reference setting channel	0: PA-01 setting 1: AI1 2:AI2 3: AI3 (Function expansion card) 4: High-speed pulse input setting (S5) 5: Communication reference (Terminal RS485) 6: Multi-step command reference 7: Extended communication reference (Bus expansion card)	0	☆
PA-01	PID digital setting	0.0% to 100.0%	50.0%	☆
PA-02	PID feedback source selection	0: AI1 1: AI2 2: (AI3) (Function expansion card) 3: AI1-AI2 4: High-speed pulse input setting (S5) 5: Communication reference (Terminal RS485) 6: AI1 + AI2 7: MAX (| AI1 |, | AI2 |) 8: MIN (| AI1 |, | AI2 |) 9: Extended communication reference (Bus expansion card)	0	☆
PA-03	PID operation direction	0: Positive action 1: negative action	0	☆
PA-04	PID reference and PEedback range	0 to 65535	1000	☆
PA-05	Proportional gain Kp1	0.0 to 1000.0	20.0	☆
PA-06	Integral time Ti1	0.01s to 10.00s	2.00s	☆
PA-07	Differential time Td1	0.000s to 10.000s	0.000s	☆
PA-08	PID output limit in reverse direction	0.00 Hz to max. Frequency P0-10	0.00 Hz	★
PA-09	PID error limit	0.0% to 100.0%	0.0%	☆
PA-10	PID differential limit	0.00% to 100.00%	0.10%	☆
PA-11	PID reference change time	0.00s to 650.00s	0.00s	☆
PA-12	PID feedback filter time	0.00s to 60.00s	0.00s	☆
PA-13	PID output filter time	0.00s to 60.00s	0.00s	☆
PA-14	Reserved	-	-	-
PA-15	Proportional gain Kp2	0.0 to 1000.0	20.0	☆
PA-16	Integral time Ti2	0.01s to 10.00s	2.00s	☆
PA-17	Differential time Td2	0.000s to 10.000s	0.000s	☆
PA-18	PID parameter switchover condition	0:0: Do not switch 1: Switch via S terminal	0	☆

Function Code	Name	Set Range	default	change
		2:Automatic switching through deviation 3:Automatic switching by running frequency		
PA-19	PID error 1 for auto switchover	0.0% to PA-20	20.0%	☆
PA-20	PID error 2 for auto switchover	PA-19 to 100.0%	80.0%	☆
PA-21	PID initial value	0.0% to 100.0%	0.0%	☆
PA-22	PID initial value active time	0.00s to 650.00s	0.00s	☆
PA-25	PID integral property	Units: integral separation 0: invalid 1: valid Tens place: whether to stop integration after output to the limit 0: Continue integration 1: Stop integration	00	☆
PA-26	Detection level of PID feedback loss	0.0%: No detection 0.1% to 100.0%	0.0%	☆
PA-27	Detection time of PID feedback loss	0.0s to 20.0s	0.0s	☆
PA-28	Selection of PID operation at stop	0: Stop no calculation, 1 :stop and calculation	0	☆
Group Pb: Wobble Function, Fixed Length and Count				
Pb-00	Wobble setting mode	0, 1	0	☆
Pb-01	Wobble amplitude	0.0% to 100.0%	0.0%	☆
Pb-02	Wobble step	0.0% to 50.0%	0.0%	☆
Pb-03	Wobble cycle	0.0s to 3000.0s	10.0s	☆
Pb-04	Triangular wave rising time coefPCient	0.0% to 100.0%	50.0%	☆
Pb-05	Set length	0 to 65535 m	1000 m	☆
Pb-06	Actual length	0 to 65535 m	0 m	☆
Pb-07	Number of pulses per meter	0.1 to 6553.5	100.0	☆
Pb-08	Set count value	1 to 65535	1000	☆
Pb-09	Designated count value	1 to 65535	1000	☆
Group PC: Multi - Reference and Simple PLC Function				
PC-00	Reference 0	-100.0% to 100.0%	0.0%	☆
PC-01	Reference 1	-100.0% to 100.0%	0.0%	☆
PC-02	Reference 2	-100.0% to 100.0%	0.0%	☆
PC-03	Reference 3	-100.0% to 100.0%	0.0%	☆
PC-04	Reference 4	-100.0% to 100.0%	0.0%	☆
PC-05	Reference 5	-100.0% to 100.0%	0.0%	☆
PC-06	Reference 6	-100.0% to 100.0%	0.0%	☆

Function Code	Name	Set Range	default	change
PC-07	Reference 7	-100.0% to 100.0%	0.0%	☆
PC-08	Reference 8	-100.0% to 100.0%	0.0%	☆
PC-09	Reference 9	-100.0% to 100.0%	0.0%	☆
PC-10	Reference 10	-100.0% to 100.0%	0.0%	☆
PC-11	Reference 11	-100.0% to 100.0%	0.0%	☆
PC-12	Reference 12	-100.0% to 100.0%	0.0%	☆
PC-13	Reference 13	-100.0% to 100.0%	0.0%	☆
PC-14	Reference 14	-100.0% to 100.0%	0.0%	☆
PC-15	Reference 15	-100.0% to 100.0%	0.0%	☆
PC-16	Simple PLC running mode	0:Stop at stand-alone operation 1:Always keep at the end of stand-alone operation 2: Consistent cycle	0	☆
PC-17	Simple PLC retentive selection	Single digit: power-down memory selection 0: No memory when power off 1: power-down memory Tenth place: Stop memory selection 0: Stop and not remember 1: shutdown memory	00	☆
PC-18	Running time of simple PLC reference 0	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-19	Acceleration/deceleration time of simple PLC reference 0	0 to 3	0	☆
PC-20	Running time of simple PLC reference 1	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-21	Acceleration/deceleration time of simple PLC reference 1	0 to 3	0	☆
PC-22	Running time of simple PLC reference 2	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-23	Acceleration/deceleration time of simple PLC reference 2	0 to 3	0	☆
PC-24	Running time of simple PLC reference 3	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-25	Acceleration/deceleration time of simple PLC reference 3	0 to 3	0	☆
PC-26	Running time of simple PLC reference 4	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-27	Acceleration/deceleration time of simple PLC reference 4	0 to 3	0	☆
PC-28	Running time of simple PLC reference 5	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-29	Acceleration/deceleration time of simple PLC reference 5	0 to 3	0	☆

Function Code	Name	Set Range	default	change
PC-30	Running time of simple PLC reference 6	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-31	Acceleration/deceleration time of simple PLC reference 6	0 to 3	0	☆
PC-32	Running time of simple PLC reference 7	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-33	Acceleration/deceleration time of simple PLC reference 7	0 to 3	0	☆
PC-34	Running time of simple PLC reference 8	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-35	Acceleration/deceleration time of simple PLC reference 8	0 to 3	0	☆
PC-36	Running time of simple PLC reference 9	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-37	Acceleration/deceleration time of simple PLC reference 9	0 to 3	0	☆
PC-38	Running time of simple PLC reference 10	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-39	Acceleration/deceleration time of simple PLC reference 10	0 to 3	0	☆
PC-40	Running time of simple PLC reference 11	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-41	Acceleration/deceleration time of simple PLC reference 11	0 to 3	0	☆
PC-42	Running time of simple PLC reference 12	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-43	Acceleration/deceleration time of simple PLC reference 12	0 to 3	0	☆
PC-44	Running time of simple PLC reference 13	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-45	Acceleration/deceleration time of simple PLC reference 13	0 to 3	0	☆
PC-46	Running time of simple PLC reference 14	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-47	Acceleration/deceleration time of simple PLC reference 14	0 to 3	0	☆
PC-48	Running time of simple PLC reference 15	0.0s (h) to 6500.0s (h)	0.0s (h)	☆
PC-49	Acceleration/deceleration time of simple PLC reference 15	0 to 3	0	☆
PC-50	Time unit of simple PLC running	0:s, 1:h	0	☆
PC-51	Reference 0 source	0: Function code PC-00 is given 1: AI1 2: AI2 3: AI3 (Function expansion card) 4: High speed pulse input 5: PID 6: Preset frequency (P0-08) given, UP	0	☆

Function Code	Name	Set Range	default	change
		/DOWN can be modified		
Group PD: Communication				
Pd-00	Baud rate	Bit: MODBUS (Terminal RS485) 0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: 115200BPS Ten: keep hundred: reserved Thousands of bits: reserved	5005	☆
Pd-01	MODBUS Data format symbol (Terminal RS485)	0: no parity (8-N-2) 1: Even check (8-E-1) 2: Odd parity (8-O-1) 3: No parity (8-N-1)	3	☆
Pd-02	Local address	0: Broadcast address; 1 to 247	1	☆
Pd-03	MODBUS Response delay	0 to 20 ms	2	☆
Pd-04	Communication timeout	0.0: invalid 0.1s to 60.0s	0.0s	☆
Pd-05	Modbus protocol selection and PROFIBUS-DP data frame	Bit: MODBUS 0: non-standard MODBUS protocol 1: Standard MODBUS protocol Ten: Profibus-DP 0: PPO1 format 1: PPO2 format 2: PPO3 format 3: PPO5 format	31	☆
Pd-06	Current resolution read by communication	0: 0.01A(≤55kw valid) 1: 0.1A	0	☆
Pd-08	Bus expansion card interruption detection time	0.0：Invalid 0.1s～60.0s	0.0	☆
Pd-10	Debug communication baud rate setting	5：9600BPS 6：19200BPS 7：38400BPS 8：57600BPS 9：115200BPS	6	☆
Pd-11	Debug communication data format	0: No parity (8-N-2) 1: Even parity (8-E-1) 2: Odd parity (8-O-1) 3: No parity (8-N-1)	3	☆

Function Code	Name	Set Range	default	change
Pd-12	Debug communication local address	1～247	1	☆
Pd-13	Debug communication response delay	0ms～20ms	2	☆
Pd-14	Debug communication timeout	0.0：invalid 0.1s～60.0s	0.0	☆
Pd-15	Internal communication baud rate setting for bus expansion card	5：9600BPS 6：19200BPS 7：38400BPS 8：57600BPS 9：115200BPS	9	☆
Pd-16	Bus expansion card internal communication data format	0: No parity (8-N-2) 1: Even parity (8-E-1) 2: Odd parity (8-O-1) 3: No parity (8-N-1)	3	☆
Pd-17	Bus expansion card internal communication local address	1～247	1	☆
Pd-18	Bus expansion card internal communication response delay	0ms～20ms	2	☆
Pd-19	Bus expansion card internal communication timeout	0.0：invalid 0.1s～60.0s	0.0	☆
Group PE: User-Defined Parameters				
PE-00	User function code 0 (PZD1 Receive)	P0-00 to PP-xx, A0-00 toAx-xx, d0-00 to d0-xx, d3-00 to d3-xx	d3-17	☆
PE-01	User function code 1 (PZD2 Receive)		d3-18	☆
PE-02	User function code 2 (PZD3 Receive)		P0.00	☆
PE-03	User function code 3 (PZD4 Receive)		P0.00	☆
PE-04	User function code 4 (PZD5 Receive)		P0.00	☆
PE-05	User function code 5 (PZD6 Receive)		P0.00	☆
PE-06	User function code 6 (PZD7 Receive)		P0.00	☆
PE-07	User function code 7 (PZD8 Receive)		P0.00	☆
PE-08	User function code 8 (PZD9 Receive)		P0.00	☆
PE-09	User function code 9 (PZD10 Receive)		P0.00	☆
PE-10	User function code 10 (PZD11 Receive)		P0.00	☆
PE-11	User function code 11 (PZD12 Receive)		P0.00	☆

Function Code	Name	Set Range	default	change
PE-12	User function code 12		P0.00	☆
PE-13	User function code 13		P0.00	☆
PE-14	User function code 14		P0.00	☆
PE-15	User function code 15		P0.00	☆
PE-16	User function code 16		P0.00	☆
PE-17	User function code 17		P0.00	☆
PE-18	User function code 18		P0.00	☆
PE-19	User function code 19		P0.00	☆
PE-20	User function code 20 (PZD1 Transmit)		d0-68	☆
PE-21	User function code 21 (PZD2 Transmit)		d0-69	☆
PE-22	User function code 22 (PZD3 Transmit)		P0.00	☆
PE-23	User function code 23 (PZD4 Transmit)		P0.00	☆
PE-24	User function code 24 (PZD5 Transmit)		P0.00	☆
PE-25	User function code 25 (PZD6 Transmit)		P0.00	☆
PE-26	User function code 26 (PZD7 Transmit)		P0.00	☆
PE-27	User function code 27 (PZD8 Transmit)		P0.00	☆
PE-28	User function code 28 (PZD9 Transmit)		P0.00	☆
PE-29	User function code 29 (PZD10 Transmit)		P0.00	☆
PE-30	User function code 30 (PZD11 Transmit)		P0.00	☆
PE-31	User function code 31 (PZD12 Transmit)		P0.00	☆
Group PP: Function Parameter Management				
PP-00	User password	0 to 65535	0	☆
PP-01	Parameter initialization	0: No operation 01: Restore factory parameters except motor parameters 02: Clear records 04: Back up current user parameters 501: Restore user backup parameters	0	☆
PP-02	Parameter display property	Bit: d group display selection 0: not displayed 1: display Ten: Group A shows the selection 0: not displayed 1: display	11	★

Function Code	Name	Set Range	default	change
PP-03	Selection of individualized parameter display	Bit: user custom parameter group display selection 0: not displayed 1: display Ten: User Change Parameter Group Display Selection 0: not displayed 1: display	00	☆
PP-04	Selection of parameter modification	0: Can be modified 1: can not be modified	0	☆
PP-05	Inverter function macro	0: None 1: Water supply macro mode 1 2: Water supply macro mode 2 3: Positioning function 4: Special functions for machine tools	0	★
Group A0: Torque Control and Limit				
A0-00	Speed/Torque control selection	0: Speed control 1: Torque control	0	★
A0-01	Torque reference source in torque control	0: Digital setting 1 (A0-03) 1: AI1 2: AI2 3: (AI3) (Function Expansion Card) 4: High-speed pulse input (S5) 5: Communication setting 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) 8: Extended Communication Reference (Bus Expansion Card) 1-8 option full scale, corresponding to A0-03 digital setting	0	★
A0-03	Torque digital setting in torque control	-200.0% to 200.0%	150.0%	☆
A0-05	Forward max. frequency in torque control	0.00 Hz to max. frequency (P0-10)	50.00Hz	☆
A0-06	Reverse max. frequency in torque control	0.00 Hz to max. frequency (P0-10)	50.00Hz	☆
A0-07	Acceleration time in torque control	0.00s to 65000s	0.00s	☆
A0-08	Deceleration time in torque control	0.00s to 65000s	0.00s	☆
Group A1: Virtual DI/DO Group				
A1-00	VDI1 Terminal Function Selection	0: No function 1: Forward run (FWD) / Run command 2: Reverse run (REV) / Forward/Reverse direction control (Note: Setting 1 and 2 shall be used with P4-11) 3: 3-wire run control 4: Forward jog (FJOG)	0	★
A1-01	VDI2 Terminal Function Selection		0	★
A1-02	VDI3 Terminal Function Selection		0	★
A1-03	VDI4 Terminal Function Selection		0	★

Function Code	Name	Set Range	default	change
A1-04	VDI5 Terminal Function Selection	5: Reverse jog (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Coast to stop 9: Fault reset (RESET) 10: Run pause 11: External fault input (Normally Open) 12: Multi-step command terminal 1 13: Multi-step command terminal 2 14: Multi-step command terminal 3 15: Multi-step command terminal 4 16: Accel/Decel time selection terminal 1 17: Accel/Decel time selection terminal 2 18: Frequency command switch 19: UP/DOWN setting clear (Terminal / Keypad) 20: Control command switch terminal 1 21: Acceleration/Deceleration inhibit 22: PID pause 23: Simple PLC status reset 24: Swing frequency pause 25: Counter input 26: Counter reset 27: Length count input 28: Length reset 29: Torque control inhibit 30: High-speed pulse input (Valid only for S5) 31: Reserved 32: Immediate DC braking 33: External fault input (Normally Closed) 34: Frequency modification enable 35: PID action direction reverse 36: External stop terminal 1 37: Control command switch terminal 2 38: PID integral pause 39: Switch between frequency source A and preset frequency 40: Switch between frequency source B and preset frequency 41: Motor terminal selection function 42: Reserved 43: PID parameter switch 44: User-defined fault 1 45: User-defined fault 2 46: Speed / Torque control switch 47: Emergency stop 48: External stop terminal 2 49: Deceleration DC braking 50: Current running time reset	0	★

Function Code	Name	Set Range	default	change
		51: 2-wire / 3-wire mode switch 52: Reverse frequency inhibit 53-61: Reserved 62: STO1 63: STO2		
A1-05	VDI Terminal Status Setting Mode	Units digit: VDI1 0: Parameter setting (A1.06, linked with VDO1) 1: DO status 2: DI status Tens digit: VDI2 0: Parameter setting (A1.06, linked with VDO2) 1: DO status 2: DI status Hundreds digit: VDI3 0: Parameter setting (A1.06, linked with VDO3) 1: DO status 2: DI status Thousands digit: VDI4 0: Parameter setting (A1.06, linked with VDO4) 1: DO status 2: DI status Ten-thousands digit: VDI5 0: Parameter setting (A1.06, linked with VDO5) 1: DO status 2: DI status	00000	★
A1-06	Virtual VDI Terminal Status Setting	00000 ~ 11111	0	★
A1-07	AI1 Terminal Function Selection (Used as DI)	同 A1-00	0	★
A1-08	AI2 Terminal Function Selection (Used as DI)	同 A1-00	0	★
A1-09	AI3 Terminal Function Selection (Used as DI)	同 A1-00	0	★
A1-10	AI Used as DI Active State Selection	Units digit: AI1 0: Active high 1: Active low Tens digit: AI2 0: Active high 1: Active low Hundreds digit: AI3 0: Active high 1: Active low	0	★
A1-11	VDO1 Output Function Selection	0: No output	0	☆

Function Code	Name	Set Range	default	change
A1-12	VDO2 Output Function Selection	1: Inverter running 2: Fault output (fault stop) 3: Frequency level detection FDT1 output 4: Frequency reached 5: Zero-speed running (no output when stopped) 6: Motor overload pre-alarm 7: Inverter overload pre-alarm 8: Set count value reached 9: Specified count value reached 10: Length reached 11: PLC cycle completed 12: Cumulative running time reached 13: Frequency limiting active 14: Torque limiting active 15: Run ready 16: AI1 > AI2 17: Upper limit frequency reached 18: Lower limit frequency reached (running-related) 19: Undervoltage status output 20: Communication setting (via RS485 terminal or fieldbus expansion card) 21: Positioning completed (reserved) 22: Positioning approaching (reserved) 23: Zero-speed running 2 (output even when stopped) 24: Cumulative power-on time reached 25: Frequency level detection FDT2 output 26: Frequency 1 reached output 27: Frequency 2 reached output 28: Current 1 reached output 29: Current 2 reached output 30: Timer reached output 31: AI1 input out of range 32: Underload status 33: Reverse running 34: Zero current status 35: Module temperature reached 36: Output current out of range 37: Lower limit frequency reached (output even when stopped) 38: Alarm output (running continues) 39: Motor overtemperature pre-alarm 40: Current running time reached 41: Fault output (for coast-to-stop faults; no output for undervoltage)	0	☆
A1-13	VDO3 Output Function Selection		0	☆
A1-14	VDO4 Output Function Selection		-	☆
A1-15	VDO5 Output Function Selection		-	☆
A1-16	VDO1 Output Delay Time	0.0s ~ 3600.0s	0.0s	☆
A1-17	VDO2 Output Delay Time	0.0s ~ 3600.0s	0.0s	☆

Function Code	Name	Set Range	default	change
A1-18	VDO3 Output Delay Time	0.0s ~ 3600.0s	0.0s	☆
A1-19	VDO4 Output Delay Time	0.0s ~ 3600.0s	0.0s	☆
A1-20	VDO5 Output Delay Time	0.0s ~ 3600.0s	0.0s	☆
A1-21	VDO Output Terminal Valid State Selection	0: Positive logic 1: Negative logic Units digit: VDO1 Tens digit: VDO2 Hundreds digit: VDO3 Thousands digit: VDO4 Ten-thousands digit: VDO5	00000	☆
Group A2: Motor 2 Parameters				
A2-00	Motor 2 type selection	0: Ordinary asynchronous motor 1: Variable-frequency asynchronous motor 2: Permanent Magnet Synchronous Motor (PMSM)	0	★
A2-01	Rated power of motor 2	0.1 to 1000.0 kW	Model dependent	★
A2-02	Rated voltage of motor 2	1 to 2000 V	Model dependent	★
A2-03	Rated current of motor 2	0.1 to 6553.5 A	Model dependent	★
A2-04	Rated frequency of motor 2	0.01 Hz to max. frequency	Model dependent	★
A2-05	Rated speed of motor 2	1 to 65535 rpm	Model dependent	★
A2-06	Stator resistance	0.001 to 65.535 Ω	Auto-tuning dependent	★
A2-07	Rotor resistance	0.001 to 65.535 Ω	Auto-tuning dependent	★
A2-08	Leakage inductive reactance	0.01 to 655.35 mH	Auto-tuning dependent	★
A2-09	Mutual inductive reactance	0.1 to 6553.5 mH	Auto-tuning dependent	★
A2-10	No-load current	0.01 A to A2-03	Auto-tuning dependent	★
A2-16	Stator resistance of Synchronous Motor 2	0.001Ω ~ 65.535Ω (Drive power ≤ 55kW) 0.0001Ω ~ 6.5535Ω (Drive power > 55kW)	Auto-tuning parameters	★
A2-17	D-axis inductance of Synchronous Motor 2	0.01mH ~ 655.35mH (Drive power ≤ 55kW) 0.001mH ~ 65.535mH (Drive power > 55kW)	Auto-tuning parameters	★
A2-18	Q-axis inductance of Synchronous Motor 2	0.01mH ~ 655.35mH (Drive power ≤ 55kW) 0.001mH ~ 65.535mH (Drive power > 55kW)	Auto-tuning parameters	★

Function Code	Name	Set Range	default	change
A2-20	Back EMF coefficient of synchronous motor	0.1V～6553.5V	Auto-tuning parameters	
A2-27	Encoder pulses per revolution	1 to 65535	1024	★
A2-28	Encoder type	0: ABZ incremental encoder 1: UVW encoder 2: Resolver 4: UVW Encoder (Wire-saving Type) 5: Single-turn absolute encoder (17-bit) 6: Single-turn absolute encoder (17-bit) (Auto-read motor parameters, for our company's motors) 7: Single-turn absolute encoder (23-bit) 8: Single-turn absolute encoder (23-bit) (Auto-read motor parameters, for our company's motors)	0	★
A2-29	Speed feedback channel selection	0: Local PG card 1: Extension PG card 2: Pulse input (S5)	0	★
A2-30	A/B phase sequence of ABZ incremental encoder	0: Forward 1: Reserve	0	★
A2-31	Encoder installation angle	0.0 to 359.9 °	0.0 °	★
A2-34	Number of pole pairs of resolver	1 to 65535	1	★
A2-36	Encoder wire-break fault detection time	0.0s: No detection 0.1s to 10.0s	0.0s	★
A2-37	Auto-tuning selection	0 to 3	0	★
A2-38	Speed loop proportional gain 1	1 to 100	30	☆
A2-39	Speed loop integral time 1	0.01s to 10.00s	0.50	☆
A2-40	Switch over frequency 1	0.00 to A2-43	5.00	☆
A2-41	Speed loop proportional gain 2	1 to 100	20	☆
A2-42	Speed loop integral time 2	0.01s to 10.00s	1.00	☆
A2-43	Switch over frequency 2	A2-40 to max. frequency	10.00	☆
A2-44	Vector control slip gain	50% to 200%	100%	☆
A2-45	Speed loop filter time constant	0.000s to 0.100s	0.015s	☆
A2-47	Torque limit source in speed control	0: A2-48 setting 1: AI1 (Note: J6 jumper) 2: AI2 3: AI3 (Function expansion card) 4: High-speed pulse input (S5) 5: communication given 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) 8: Extended communication reference (Fieldbus expansion card) 1-8 option full scale, corresponding to	0	☆

Function Code	Name	Set Range	default	change
		A2-48 digital settings		
A2-48	Digital setting of torque limit in speed control	0.0% to 200.0%	150.0%	☆
A2-49	Torque limit source in speed control (regenerative)	0: Function code A2-50 setting 1: AI1 (Note: J6 jumper) 2: AI2 3: AI3 (Function expansion card) 4: High-speed pulse input setting (S5) 5: communication given 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) 8: Extended communication reference (Fieldbus expansion card) 1-7 option full scale, corresponding to P2-12 digital settings	0	☆
A2-50	Digital setting of torque limit in speed control (regenerative)	0.0% to 200.0%	150.0%	☆
A2-51	Excitation adjustment proportional gain	0 to 60000	2000	☆
A2-52	Excitation adjustment integral gain	0 to 60000	1300	☆
A2-53	Torque adjustment proportional gain	0 to 60000	2000	☆
A2-54	Torque adjustment integral gain	0 to 60000	1300	☆
A2-55	Speed loop integral separation selection	0: Disabled 1: Enabled	0	☆
A2-56	Synchronous Machine Field-Weakening Mode	0: No Field-Weakening 1: Automatic Adjustment Mode 2: Calculation & Automatic Adjustment Composite Mode	1	☆
A2-57	Field weakening gain of synchronous motor	0～50	5	☆
A2-58	Field weakening gain of synchronous motor	0～300%	50%	☆
A2-59	Max. torque coefficient in field weakening area	50% to 200%	100%	☆
A2-60	Regenerative power limit selection	0: Disabled 1: Enabled	0	☆
A2-61	Motor 2 control mode	0: Speed Sensorless Vector Control (SVC) 1: with speed sensor vector control (FVC) 2: V / F control	2	★
A2-62	Motor 2 acceleration/deceleration time selection	0: same as the first motor 2: acceleration / deceleration time 2 3: acceleration / deceleration time 3 4: Acceleration / deceleration time 4	0	☆
A2-63	Motor 2 torque boost	0.0%: Ineffective 0.1% to 30.0%	Model dependent	☆

Function Code	Name	Set Range	default	change
A2-65	Oscillation Suppression Gain for Motor 2	0～100	40	
A2-66	Motor 2 oscillation suppression gain	0%～50%	5%	☆
A2-67	Initial position angle detection current for synchronous motor	50%～180%	80%	☆
A2-68	Initial position angle detection of synchronous motor	0: Detect every run 1: No detection 2: Detect on first run after power-up	0	☆
A2-70	Salient pole ratio adjustment gain for synchronous motor	50～500	100	☆
A2-71	Maximum torque per ampere control	0: Enabled 1: Disabled	0	☆
A2-75	Z signal correction	0: Disabled 1: Enabled	1	☆
A2-79	Low-speed excitation current	0～80%	30%	☆
A2-80	Low-speed carrier frequency	0.8K～P0-15	1.5KHz	☆
A2-81	SVC low-frequency braking mode	0: Low-frequency braking disabled 1: Low-frequency braking enabled	0	☆
A2-82	SVC low-frequency braking activation mode	0～10.00Hz	2.00Hz	☆
A2-83	SVC low-frequency braking frequency step	0.0005～1.0000Hz	0.0010Hz	☆
A2-84	SVC low-frequency braking current	0～80%	50%	☆
A2-85	SVC speed tracking for synchronous motor	0: Disabled 1: Enabled	0	☆
A2-86	Zero servo enable	0: Disabled 1: Enabled	0	☆
A2-87	Switching frequency	0.00～F2-02	0.00Hz	☆
A2-88	Zero servo speed loop proportional gain	1～100	10	☆
A2-89	Zero servo speed loop integral time	0.01s～10.00s	0.50s	☆
A2-90	Stop anti-reverse enable	0: Disabled 1: Enabled	0	☆
A2-91	Stop angle	0.0°～10.0°	0.8°	☆
Group A4: Bus Expansion Card Configuration Parameters				
A4-00	BACnet MSTP local device address	1-247	1	☆
A4-01	BACnet MSTP communication mode selection	1: Enable selection of A4-02 (Set BACnet MSTP baud rate)	1	☆
A4-02	BACnet MSTP baud rate	0：9600BPS 1：19200BPS 2：38400BPS	2	☆

Function Code	Name	Set Range	default	change
		3：57600BPS 4：76800BPS 5：115200BPS		
A4-03	BACnet MSTP communication timeout	0.0: Disable 0.1s～60.0s	0.0	☆
A4-05	CAN Communication Slave Address	1～247	1	☆
A4-06	CAN Communication Baud Rate	0：20K 1：50K 2：100K 3：125K 4：250K 5：500K 6：1M	5	☆
A4-07	CAN Communication Time-out Time	0.0：Disable 0.1s～60.0s	0.0s	☆
A4-20	Bus expansion card Ethernet IP address 1	0～255(Takes effect after modification and restart.)	192	☆
A4-21	Bus expansion card Ethernet IP address 2	0～255(Takes effect after modification and restart.)	168	☆
A4-22	Bus expansion card Ethernet IP address 3	0～255(Takes effect after modification and restart.)	0	☆
A4-23	Bus expansion card Ethernet IP address 4	0～255(Takes effect after modification and restart.)	20	☆
A4-24	Bus expansion card Ethernet subnet mask 1	0～255(Takes effect after modification and restart.)	255	☆
A4-25	Bus expansion card Ethernet subnet mask 2	0～255(Takes effect after modification and restart.)	255	☆
A4-26	Bus expansion card Ethernet subnet mask 3	0～255(Takes effect after modification and restart.)	255	☆
A4-27	Bus expansion card Ethernet subnet mask 4	0～255(Takes effect after modification and restart.)	0	☆
A4-28	Bus expansion card Ethernet gateway 1	0～255(Takes effect after modification and restart.)	192	☆
A4-29	Bus expansion card Ethernet gateway 2	0～255(Takes effect after modification and restart.)	168	☆
A4-30	Bus expansion card Ethernet gateway 3	0～255(Takes effect after modification and restart.)	0	☆
A4-31	Bus expansion card Ethernet gateway 4	0～255(Takes effect after modification and restart.)	1	☆
A4-32	Bus expansion card Ethernet MAC address high byte	0～0xFFFF(Takes effect after modification and restart.)	0	☆
A4-33	Bus expansion card Ethernet MAC address middle byte	0～0xFFFF(Takes effect after modification and restart.)	0	☆
A4-34	Bus expansion card Ethernet MAC address low byte	0～0xFFFF(Takes effect after modification and restart.)	0	☆
A4-35	Bus expansion card Ethernet communication timeout	0.0: Disable 0.1s～60.0s	0.0s	☆

Function Code	Name	Set Range	default	change
Group A5: Control Optimization				
A5-00	DPWM switchover frequency upper limit	5.00 Hz to max. frequency P0-10	8.00 Hz	☆
A5-01	PWM modulation pattern	0: Asynchronous modulation, 1: Synchronous modulation	0	☆
A5-02	Dead zone compensation mode selection	0：No compensation, 1：Compensation mode 1	1	☆
A5-03	Random PWM depth	0：Random PWM is invalid 1~ 10：PWM carrier frequency random depth	0	☆
A5-04	Over current fast prevention	0:no use, 1:use	1	☆
A5-05	Voltage over modulation coefficient	100～120%	110%	★
A5-06	Under voltage threshold	200.0～200.0V	Model confirmation	☆
A5-08	Dead-zone time adjustment	100%～200%	150%	★
A5-09	Over voltage threshold	650 to 820V	Model dependent	★
Group A6: AI Curve Setting				
A6-00	AI curve 4 min. input	-10.00 V to A6-02	0.00 V	☆
A6-01	Corresponding percentage of AI curve 4 min. input	-100.0% to 100.0%	0.0%	☆
A6-02	AI curve 4 inflexion 1 input	A6-00 to A6-04	3.00 V	☆
A6-03	Corresponding percentage of AI curve 4 inflexion 1 input	-100.0% to 100.0%	30.0%	☆
A6-04	AI curve 4 inflexion 2 input	A6-02 to A6-06	6.00 V	☆
A6-05	Corresponding percentage of AI curve 4 inflexion 2 input	-100.0% to 100.0%	60.0%	☆
A6-06	AI curve 4 max. input	A6-04 to 10.00 V	10.00 V	☆
A6-07	Corresponding percentage of AI curve 4 max. input	-100.0% to 100.0%	100.0%	☆
A6-08	AI curve 5 min. input	-10.00 V to A6-10	-10.00 V	☆
A6-09	Corresponding percentage of AI curve 5 min. input	-100.0% to 100.0%	-100.0%	☆
A6-10	AI curve 5 inflexion 1 input	A6-08 to A6-12	-3.00 V	☆
A6-11	Corresponding percentage of AI curve 5 inflexion 1 input	-100.0% to 100.0%	-30.0%	☆
A6-12	AI curve 5 inflexion 2 input	A6-10 to A6-14	3.00 V	☆
A6-13	Corresponding percentage of AI curve 5 inflexion 2 input	-100.0% to 100.0%	30.0%	☆
A6-14	AI curve 5 max. input	A6-12 to 10.00 V	10.00 V	☆

Function Code	Name	Set Range	default	change
A6-15	Corresponding percentage of AI curve 5 max. input	-100.0% to 100.0%	100.0%	☆
A6-24	Jump point of AI1 input corresponding setting	-100.0% to 100.0%	0.0%	☆
A6-25	Jump amplitude of AI1 input corresponding setting	0.0% to 100.0%	0.5%	☆
A6-26	Jump point of AI2 input corresponding setting	-100.0% to 100.0%	0.0%	☆
A6-27	Jump amplitude of AI2 input corresponding setting	0.0% to 100.0%	0.5%	☆
A6-28	Jump point of AI3 input corresponding setting (Function expansion card)	-100.0% to 100.0%	0.0%	☆
A6-29	Jump amplitude of AI3 input corresponding setting (Function expansion card)	0.0% to 100.0%	0.5%	☆
Group A8: Point-point Communication				
A8-00	Point-point communication	0: Disabled 1: Enabled	0	☆
A8-01	Master or slave selection	0: Master 1: Slave	0	☆
A8-02	Selection of action of the slave in point-point communication	Ones place: follower command follows 0: The slave does not follow the master command. 1: The slave runs with the master command Tens place: Slave fault information transmission 0: Slave fault information is not transmitted 1: Slave fault information transmission Hundreds: the master shows that the slave is offline 0: The slave is offline and the master does not report a fault 1: Slave is offline and master reports failure	011	★
A8-03	The slave received data	0: Output frequency 1: Frequency reference	0	☆
A8-04	Zero offset of received data	-100.00% to 100.00%	0.00 %	☆
A8-05	Gain of received data	-10.00 to 10.00	1.00	☆
A8-06	Point-point communication interruption detection time	0.0s to 10.0s	1.0s	☆
A8-07	Master data sending cycle in point-point communication	0.001 to 10.000s	0.001s	☆
A8-11	Window width	0.20 to 10.00 Hz	0.50 Hz	☆

Function Code	Name	Set Range	default	change
Group AC: AI/AO Correction				
AC-00	AI1 measured voltage 1	-10.00 to 10.000 V	Factory corrected	☆
AC-01	AI1 displayed voltage 1	-10.00 to 10.000 V	Factory corrected	☆
AC-02	AI1 measured voltage 2	-10.00 to 10.000 V	Factory corrected	☆
AC-03	AI1 displayed voltage 2	-10.00 to 10.000 V	Factory corrected	☆
AC-04	AI2 measured voltage 1	-10.00 to 10.000 V	Factory corrected	☆
AC-05	AI2 displayed voltage 1	-10.00 to 10.000 V	Factory corrected	☆
AC-06	AI2 measured voltage 2	-10.00 to 10.000 V	Factory corrected	☆
AC-07	AI2 displayed voltage 2	-10.00 to 10.000 V	Factory corrected	☆
AC-08	AI3 measured voltage 1 (Function expansion card)	-10.00 to 10.000 V	Factory corrected	☆
AC-09	AI3 displayed voltage 1 (Function expansion card)	-10.00 to 10.000 V	Factory corrected	☆
AC-10	AI3 measured voltage 2 (Function expansion card)	-10.00 to 10.000 V	Factory corrected	☆
AC-11	AI3 displayed voltage 2 (Function expansion card)	-10.00 to 10.000 V	Factory corrected	☆
AC-12	AO1 target voltage 1	-10.00 to 10.000 V	Factory corrected	☆
AC-13	AO1 measured voltage 1	-10.00 to 10.000 V	Factory corrected	☆
AC-14	AO1 target voltage 2	-10.00 to 10.000 V	Factory corrected	☆
AC-15	AO1 measured voltage 2	-10.00 to 10.000 V	Factory corrected	☆
AC-16	AO2 target voltage 1 (Function expansion card)	-10.00 to 10.000 V	Factory corrected	☆
AC-17	AO2 measured voltage 1 (Function expansion card)	-10.00 to 10.000 V	Factory corrected	☆
AC-18	AO2 target voltage 2 (Function expansion card)	-10.00 to 10.000 V	Factory corrected	☆
AC-19	AO2 measured voltage 2 (Function expansion card)	-10.00 to 10.000 V	Factory corrected	☆

5.2 Monitoring Parameters

Para. No.	Para. Name	Min unit	Communication add
d0 Group Basic data			
d0-00	Running frequency（Hz）	0.01Hz	7000H
d0-01	Set frequency（Hz）	0.01Hz	7001H
d0-02	Bus voltage	0.01V	7002H
d0-03	Output voltage	1V	7003H
d0-04	Output current	0.01A	7004H
d0-05	Output power	0.1kW	7005H
d0-06	Output torque	0.1%	7006H
d0-07	S state INPUT stature	1	7007H
d0-08	HD0 output state	1	7008H
d0-09	AI1 voltage	0.01V	7009H
d0-10	AI2 voltage/current	0.01V/0.01mA	700AH
d0-11	AI3 voltage (Function expansion card)	0.01V	700BH
d0-12	Count value	1	700CH
d0-13	length value	1	700DH
d0-14	Load speed display	1	700EH
d0-15	PID reference	1	700FH
d0-16	PID feedback	1	7010H
d0-17	PLC stage	1	7011H
d0-18	Pulse reference	0.01kHz	7012H
d0-19	feedback speed	0.01Hz	7013H
d0-20	Remaining running time	0.1Min	7014H
d0-21	AI1 voltage before correction	0.001V	7015H
d0-22	AI2 voltage (V)/ current (MA) before correction	0.001V/0.01mA	7016H
d0-23	AI3 voltage before correction (Function expansion card)	0.001V	7017H
d0-24	Motor speed	1m/Min	7018H
d0-25	Accumulative power-on time	1Min	7019H
d0-26	Accumulative running time	0.1Min	701AH
d0-27	Pulse reference	1Hz	701BH
d0-28	Communication reference	0.01%	701CH
d0-29	Encoder feedback speed	0.01%	701DH
d0-30	Main frequency A reference	0.01Hz	701EH
d0-31	Auxiliary frequency B reference	0.01Hz	701FH
d0-32	Viewing any register address value	1	7020H
d0-34	Motor temperature	1℃	7022H
d0-35	Target torque (%)	0.1%	7023H

Para. No.	Para. Name	Min unit	Communication add
d0-36	Resolver position	1	7024H
d0-37	Power factor angle	0.1 °	7025H
d0-38	ABZ position	1	7026H
d0-39	Target voltage upon V/F separation	1V	7027H
d0-40	Output voltage upon V/F separation	1V	7028H
d0-41	S state display	1	7029H
d0-42	HD0 state display	1	702AH
d0-43	S set for function state display 1	1	702BH
d0-44	S set for function state display 2	1	702CH
d0-45	fault information	1	702DH
d0-58	Phase Z counting	1	703AH
d0-59	Frequency Reference	0.01%	703BH
d0-60	Running frequency	0.01%	703CH
d0-61	AC drive state	1	703DH
d0-62	Current fault code	1	703EH
d0-63	Site to site communication transmission value	0.01%	703FH
d0-64	Site to site communication reception value	1	7040H
d0-65	Torque upper limit	0.1%	7041H
d0-66	Bus expansion card type	1	7042H
d0-67	Bus expansion card software version	0.01	7043H
d0-68	Inverter composite status (for bus expansion card use)	1	7044H
d0-69	Inverter running frequency (for bus expansion card)	0.01Hz	7045H
d0-70	Inverter running speed (for bus expansion card)	1RPM	7046H
d0-71	Inverter output current (for bus expansion card)	0.1A	7047H
d0-73	Motor Series	0: motor1 1: motor2	7046H
d0-74	AC drive output torque	-100-100%	7047H
d3 Communication monitoring parameters			
d3-16	Communication set frequency value	0.01%	7310H
d3-17	Communication run command value	1	7311H
d3-18	Communication controlled D0 output value	1	7312H
d3-19	Communication controlled AO1 output value	1	7313H
d3-20	Communication controlled AO2 output (function expansion card)	1	7314H
d3-21	Communication controlled high-speed pulse output value	1	7315H
d3-22	Communication composite command value	1	7316H
d3-23	Communication set speed value	1	7317H

Chapter 6 Fault Display and settlement

6.1 Guidance on the adjustment

1） Drive in Open-loop Vector Control （P0-01=0）

The AC drive implements control of the motor speed and torque without an encoder for speed feedback. In this control mode, motor auto-tuning is required to obtain the motor related.

Error	Solution
Overload or Over current detected during motor start	◆ Set motor parameters （P1-01~P1-05） according to motor nameplate. ◆ Select a proper motor auto-tuning mode by setting P1-37 and perform motor auto-tuning. If possible, select dynamic auto-tuning
Poor torque or speed response and motor oscillation at speeds below 5 Hz	◆ If motor torque and speed response are too slow, increase the setting of P2-00 (speed loop proportional gain 1) by 10 gradually or decrease the setting of P2-01 (speed loop integral time 1) by 0.05 gradually. ◆ If motor oscillation occurs, decrease the setting of P2-00 and P2-01.
Poor torque or speed response and motor oscillation at speeds above 5 Hz	◆ If motor torque and speed response are too slow, increase the setting of P2-03 (speed loop proportional gain 2) by 10 gradually or decrease. the setting of P2-04 (speed loop integral time 4) by 0.05 gradually. ◆ If motor oscillation occurs, decrease the setting of P2-03 and P2-04.
Low speed accuracy	◆ If speed error when motor runs with load is large, increase the setting of P2-06 (vector control slip compensation gain) by 10% gradually.
Obvious speed fluctation	◆ If motor speed fluctuation is large, increase the setting of P2-07 (SVC torque filter time) by 0.001s gradually.
Too loud motor noise	◆ Increase the setting of P0-15 (carrier frequency) by 1.0 kHz gradually. Note that increase in carrier frequency will result in an increase in the leakage current of the motor.
Insuffcient motor torque	◆ Check whether torque upper limit is small. If yes, please Increase the setting of P2-10 (digital setting of torque upper limit in speed control mode) in the speed control mode; Increase the torque reference in the torque control mode.

3）Closed loop vector control mode (P0-01=1)

This mode is used in applications where the motor has encoder speed feedback. It is necessary to correctly set the encoder line number, encoder type and signal direction to complete the automatic tuning of the motor parameters.

Error	Solution
Start reporting overcurrent or overload fault	■ Set the encoder line number, type and encoder direction correctly.
Overload reported during motor rotation Or overcurrent fault	■ The motor parameters (P1-01 ~ P1-05) are set according to the motor nameplate; ■ Perform motor parameter self-learning (P1-37). It is best to perform motor dynamic complete self-learning under conditions.
Torque or speed response below 5Hz Slow, motor vibration	■ To improve the response of torque and speed, it is necessary to strengthen the speed loop proportional adjustment (P2-00 increases the setting value by 10 units) or decrease the speed loop integration time (P2-01 decreases by 0.05) ■ If vibration occurs, the values of P2-00 and P2-01 need to be weakened.
Torque or speed response above 5Hz Should be slow and motor vibration.	■ To improve the response of torque and speed, it is necessary to strengthen the speed loop proportional adjustment (P2-03 increases the setting value by 10 units) or decrease the speed loop integration time (P2-04 decreases by 0.05 units); ■ If vibration occurs, the values of P2-03 and P2-04 need to be weakened.
Large speed fluctuation	■ When the motor speed fluctuates abnormally, the speed filter time (P2-07) can be appropriately increased, and the unit is increased by 0.001s.
Noise from the motor	■ Properly increase the carrier frequency value (P0-15), and increase it in 1.0kHz units (note: increasing the carrier frequency motor leakage current will increase).
Insufficient motor torque or output	■ Whether the upper torque limit is limited. Increase the upper torque limit (P2-10) in speed mode; increase the torque command in torque mode.

3) Drive in V/F Control (P0-01=2)

It is applicable to application without an encoder for speed feedback. You need to set rated motor voltage and rated motor frequency correctly.

Error	Solution
Motor oscillation during running	1.Increase the setting of P3-11 (V/F oscillation suppression gain) by 10 gradually. The permissible maximum setting here is 100.
Over current during start	1.Decrease the setting of P3-01 (torque boost) by 0.5% gradually.
Too loud motor noise	1.Increase the setting of P0-15 (carrier frequency) by 1.0 kHz gradually. Note that increase in carrier frequency will result in an increase in the leakage current of the motor.
Very large current during running	1. Set rated motor voltage (P1-02) and rated motor frequency (P1-04) correctly. 2. Decrease the setting of P3-01 (torque boost) by 0.5% gradually.
Over voltage detected when heavy load is suddenly removed or during deceleration	1. Ensure that P3-23 (voltage limit selection) is set to 1 (enabled). Increase the setting of P3-24/P3-25 (frequency gain/voltage gain for voltage limit) by 10 gradually. The permissible maximum setting here is 100. 2. Decrease the setting of P3-22 (voltage limit 770v) by 10 V gradually. The permissible minimum setting here is 700 V.
Over current detected when heavy load is suddenly added or during acceleration	1. Increase the setting of P3-20 (P3-20 factory default set 20) by 10 gradually. The permissible maximum setting here is 100. 2. Decrease the setting of P3-18 (P3-18 factory default is 150%) by 10% gradually. The permissible minimum setting here is 50%.

6.2 Fault Display

When a fault occurs during running, The operation panel displays the fault code such as shown in the following figure.

Fault	display	Fault reason	Error settlement
Over current during acceleration	FU02	Ground fault or short circuit exists in the output circuit.	◆ Check whether short-circuit occurs on the motor, motor cable or contactor.
		Control mode is FVC or SVC but motor auto-tuning is not performed.	◆ Set motor parameters according to motor nameplate and perform motor auto-tuning.
		Acceleration time is too short.	◆ Increase acceleration time.
		The over current stall prevention parameters are set improperly.	◆ Ensure that current limit is enabled (P3-19 = 1). ◆ The setting of current limit level (P3-18) is too large. Adjust it between 120% and 150%. ◆ The setting of current limit gain (P3-20) is too small. Adjust it between 20 and 40.
		Customized torque boost or V/F curve is not appropriate.	◆ Adjust the customized torque boost or V/F curve.
		The spinning motor is started.	◆ Enable the catching a spinning motor function or start the motor after it stops.
		The AC drive suffers external interference.	◆ View historical fault records. If the current value is far from the over current level, find interference source. If external interference does not exist, it is the drive board or hall device problem.
Over current during deceleration	FU03	Ground fault or short circuit exists in the output circuit.	◆ Check whether short-circuit occurs on the motor, motor cable or contactor.
		Control mode is SVC or FVC but motor auto-tuning is not performed.	◆ Set the motor parameters according to the motor nameplate and perform motor auto-tuning.
		Acceleration time is too short.	◆ Increase acceleration time.
		The over current stall prevention parameters are set improperly.	◆ Ensure that current limit is enabled (P3-19 = 1) ◆ The setting of current limit level (P3-18) is too large. Adjust it between 120% and 150%. ◆ The setting of the current limit gain (P3-20) is too small. Adjust it between 20 and 40.
		Braking unit and braking resistor are not installed.	◆ Install braking unit and braking resistor.
		The AC drive suffers external interference.	◆ View historical fault records. If the current value is far from the over current level, find interference source. If external interference does not exist, it is the drive board or hall device problem.
Over current at constant speed	FU04	Ground fault or short circuit exists in the output circuit.	◆ Check whether short-circuit occurs on the motor, motor cable or contactor.
		Control mode is SVC or FVC	◆ Set motor parameters according to motor

Fault	display	Fault reason	Error settlement
		but motor auto-tuning is not performed.	nameplate and perform motor auto-tuning.
		The over current stall prevention parameters are set improperly.	◆ Ensure that current limit is enabled (P3-19). ◆ The setting of current limit level (P3-18) is too large. Adjust it between 120% and 150%. ◆ The setting of current limit gain (P3-20) is too small. Adjust it between 20 and 40.
		The AC drive power class is small.	◆ If output current exceeds rated motor current or rated output current of the AC drive during stable running, replace a drive of larger power class.
		The drive suffers external interference.	◆ View historical fault records. If the current value is far from the over current level, find interference source. If external interference does not exist, it is the drive board or hall device problem.
Over voltage during acceleration	FU05	Input voltage is too high.	◆ Adjust input voltage to normal range.
		An external force drives motor during acceleration.	◆ Cancel the external force or install a braking resistor.
		The over voltage stall prevention parameters are set improperly.	◆ Ensure that the voltage limit function is enabled (P3-23). ◆ The setting of voltage limit (P3-22) is too large. Adjust it between ◆ 700 V and 770 V. ◆ The setting of frequency gain for voltage limit (P3-24) is too small. Adjust it between 30 and 50.
		Braking unit and braking resistor are not installed.	◆ Install braking unit and braking resistor.
		Acceleration time is too short.	◆ Increase acceleration time.
Over voltage during deceleration	FU06	The over voltage stall prevention parameters are set improperly.	◆ Ensure that the voltage limit function is enabled (P3-23). ◆ The setting of voltage limit (P3-22) is too large. Adjust it between 700 V and 770 V. ◆ The setting of frequency gain for voltage limit (P3-24) is too small. Adjust it between 30 and 50.
		An external force drives motor during deceleration.	◆ Cancel the external force or install braking resistor.
		Deceleration time is too short.	◆ Increase deceleration time.
		Braking unit and braking resistor are not installed.	◆ Install braking unit and braking resistor.
Over voltage at constant speed	FU07	The over voltage stall prevention parameters are set improperly.	◆ Ensure that the voltage limit function is enabled (P3-23) ◆ The setting of voltage limit (P3-22) is too large. Adjust it between 700 V and 770 V. ◆ The setting of frequency gain for voltage limit (P3-24) is too small. Adjust it between 30 and 50. ◆ The setting of frequency rise threshold during

Fault	display	Fault reason	Error settlement
			voltage limit (P3-26) is too small. Adjust it between 5 Hz and 20 Hz.
		An external force drives motor during running.	◆ Cancel the external force or install a braking resistor
Pre-charge resistor fault	FU08	Input voltage is not in arranged range	◆ Arrange voltage in a reasonable range
Under voltage	FU09	Instantaneous power failure occurs	◆ Enable the power dip ride through function (P9-59).
		The AC drive's input voltage is not within the permissible range.	◆ Adjust the voltage to normal range.
		The bus voltage is abnormal.	◆ Contact the agent or Inovance.
		The rectifier bridge, the buffer resistor, the drive board or the control board are abnormal.	◆ Contact the agent or Inovance.
AC drive overload	FU10	Load is too heavy or locked-rotor occurs on motor.	◆ Reduce load or check motor and mechanical conditions.
		The AC drive power class is small.	◆ Replace a drive of larger power class.
Motor overload	FU11	P9-01 (Motor overload protection gain) is set improperly.	◆ Set P9-01 correctly.
		Load is too heavy or locked-rotor occurs on motor.	◆ Reduce load or check motor and mechanical conditions.
Input phase loss	FU12	The three-phase power input is abnormal	◆ Check the peripheral circuit
		Driver, lightning protection board, main control board, rectifier bridge are abnormal	◆ Contact seller
Output phase loss	FU13	Motor winding is damaged.	◆ Check resistance between motor wires. ◆ Replace motor is winding is damaged.
		The cable connecting the AC drive and the motor is abnormal.	◆ Check for wiring errors and ensure the output cable is connected properly Correct wiring.
		The AC drive's three-phase outputs are unbalanced when the motor is running.	◆ Check whether the motor three-phase winding is normal.
		The drive board or the IGBT is abnormal.	◆ Contact the agent or Inovance.
overheat	FU14	The ambient temperature is too high.	◆ Lower the ambient temperature.
		The ventilation is clogged.	◆ Clean the ventilation.
		The fan is damaged.	◆ Replace the cooling fan.
		Thermally sensitive resistor of IGBT is damaged.	◆ Replace the damaged thermally sensitive resistor.
		The AC Drive Inverter module is damaged.	◆ Replace the AC Drive Inverter module.
Out project	FU15	External fault signal is input	◆ Confirm that the mechanical condition allows

Fault	display	Fault reason	Error settlement
fault		via S.	restart (P8-18) and reset the operation.
Communication fault	FU16	Host computer is in abnormal state.	◆ Check the cable of host computer.
		Communication cable is abnormal.	◆ Check the communication cables.
		The serial port communication protocol (P0-28) of extension communication card is set improperly.	◆ Set extension communication card correctly.
		Communication parameters in group Pd are set improperly.	◆ Set communication parameters in group Pd properly.
		After all the preceding checking are done but the fault still exists, restore the default settings.	
Contactor fault	FU17	Drive board and power supply are abnormal.	◆ Replace drive board or power supply board.
		Contactor is abnormal.	◆ Replace contactor.
		The lightning protection board is abnormal.	◆ Replace the lightning protection board.
Current detection failure	FU18	The hall is abnormal.	◆ Replace the hall.
		The drive board is abnormal.	◆ Replace the drive board.
Motor self learning malfunction	FU19	Motor parameters are not set according to nameplate.	◆ Set motor parameters correctly according to nameplate.
		Motor auto-tuning times out.	◆ Check the cable connecting AC drive and motor.
		The encoder is abnormal.	◆ Check whether P1-27 (encoder pulses per revolution) is set correctly. Check whether signal lines of encoder are connected correctly and securely.
Encoder fault	FU20	Encoder is not matched.	◆ Set the type of encoder correctly.
		Encoder wiring is incorrect.	◆ Check the PG card power supply and phase sequence.
		Encoder is damaged.	◆ Replace encoder.
		PG card is abnormal.	◆ Replace PG card.
EEPROM read-write fault	FU21	The EEPROM chip is damaged.	◆ Replace the main control board.
Short circuit to ground	FU23	Motor is short circuited to the ground.	◆ Replace cable or motor.
Accumulative running time reached	FU26	Accumulative running time reaches the setting value.	◆ Clear the record through parameter initialization.
User-defined fault 1	FU27	User-defined fault 1 is input via S.	◆ Reset the operation.
User-defined fault 2	FU28	User-defined fault 2 is input via virtual S	◆ Reset the operation.

Fault	display	Fault reason	Error settlement
Accumulative power reach error	FU29	Accumulative power-on time reached	◆ Use the parameter initialization function to clear the record information
Load loss	FU30	Working current <P9-64	◆ Check whether the load is off or P9-64, P9-65 parameter set Whether to meet the actual operating conditions
PID feedback lost during running	FU31	PID feedback <PA-26 set value	◆ Check PID feedback or set PA-26 properly.
Safe Torque Off (STO)	STO	Simultaneous failure of STO1 and STO2	◆ Check the wiring of STO1 and STO2.
			◆ Check whether CN4 on the expansion card is jumpered to COM and PLC.
			◆ Check parameter P4-39; both the units and tens digits shall be set to 1.
Safe Torque Off (STO1)	STO1	STO1 failure	◆ Check the wiring of STO1.
			◆ Check whether CN4 on the expansion card is jumpered to COM and PLC.
			◆ Check parameter P4-39; the units digit shall be set to 1.
Safe Torque Off (STO2)	STO2	STO2 failure	◆ Check the wiring of STO2.
			◆ Check whether CN4 on the expansion card is jumpered to COM and PLC.
			◆ Check parameter P4-39; the tens digit shall be set to 1.
Pulse-by-pulse current limit fault	FU40	Load is too heavy or locked-rotor occurs on motor.	◆ Reduce load or check motor and mechanical conditions.
		The AC drive power class is small.	◆ Replace a drive of larger power class.
Motor switchover fault during running	FU41	Motor switchover via terminal during drive running of the AC drive.	◆ Perform motor switchover after the AC drive stops.
Speed error	FU42	Encoder parameters are set improperly.	◆ Set encoder parameters properly.
		Motor auto-tuning is not performed.	◆ Perform motor auto-tuning.
		P9-69 (detection level of speed error) and P9-70 (detection time of speed error) are set incorrectly.	◆ Set data correctly based on actual condition
Motor over speed	FU43	Encoder parameters are set improperly.	◆ Set encoder parameters properly.
		Motor auto-tuning is not performed.	◆ Perform motor auto-tuning.
		P9-67 (Over speed detection level) and	◆ Set data correctly based on the actual situation.

Fault	display	Fault reason	Error settlement
		P9-68 (Over speed detection time) are set incorrectly.	
Motor over temperature	FU45	Temperature sensor connection error	◆ Connect the temperature sensor correctly.
		Incorrect temperature sensor type selection	◆ Select the correct temperature sensor type (P9-56).
		Improper setting of temperature protection thresholds P9-57, P9-58	◆ Set detection parameters reasonably according to actual conditions.
Initial position error	FU51	No motor connected in vector mode	◆ Please connect the motor.
		Incorrect control mode setting	◆ Please set the correct control mode.
Point-to-point slave fault	FU55	Point-to-point communication slave offline	◆ Check the slave device.
CAN communication fault	FU56	Host device abnormal	◆ Check the wiring of the host device.
		Abnormal communication cable	◆ Check the communication cable.
		Incorrect setting of communication expansion card (P0-28)	◆ Set the correct type of communication expansion card.
		Incorrect setting of group Pd communication parameters	◆ Set the communication parameters correctly.
LCD keypad or host debugger communication	FU57	Incorrect setting of Pd-14	◆ Set Pd-14 to 0
		Incorrect settings of communication parameters Pd-10 ~ Pd-13	◆ Set communication parameters correctly
Extended communication fault	FU58	Incorrect setting of Pd-19	◆ Set Pd-14 to 0
		Incorrect settings of communication parameters Pd-15 ~ Pd-18	◆ Set communication parameters correctly

6.3 Faults and Diagnostics

Troubleshoot the fault according to the following table. If the fault cannot be eliminated, contact the agent.

No.	Error	Reason	Possible Solution
1	There is no display while power-on.	The mains voltage is not input or too low.	◆ Check the power supply.
		The switching power supply on drive board of the AC drive is faulty.	◆ Check bus voltage.
		Wires between control board and drive board and between control board and operating panel break.	◆ Re-plug the 30-core cable
		Pre-charge resistor of the AC drive is damaged.	◆ Contact the agent or Inovance.
		Control board or operating panel is faulty.	
		Rectifier bridge is damaged.	
2	"510-A" is displayed while power-on	Wire between drive board and control board is in poor	◆ Re-plug the 30-core cable
		Related components on control board are damaged	◆ Contact the agent or Inovance.
		The motor or motor cable is short circuited to ground.	
		The hall is damaged.	
		The mains voltage is too low.	
3	"FU23" is displayed at power-on.	Motor or motor output cable is short circuited to ground.	◆ Use a megger to measure insulation resistance of motor and motor cable.
		The AC drive is damaged.	◆ Contact the agent or Inovance.
4	The display is normal while power-on. But after running, "-510-A" is displayed and the drive stops immediately.	The cooling fan is damaged or locked-rotor occurs.	◆ Replace the fan.
		Short circuit exists in wiring of control terminals.	◆ Eliminate short circuit fault in control circuit wiring.
5	FU14 (IGBT overheat) is detected frequently.	The setting of carrier frequency is too high.	◆ Reduce carrier frequency (P0-15).
		The cooling fan is damaged, or ventilation is clogged.	◆ Replace the fan or clean the ventilation.
		Components inside the AC drive are damaged (thermistor or others).	◆ Contact the agent
6	The motor does not rotate after the AC drive runs.	Motor and motor wires	◆ Reconfirm the wiring between the inverter and the motor is correct.
		Incorrect Inverter Parameter Setting (Motor Parameters)	◆ Restore factory parameters and reconfigure the application parameter group. ◆ Verify correct settings of encoder parameters and motor rated parameters, such as motor rated frequency, rated speed, etc.

No.	Error	Reason	Possible Solution
			◆ Check that P0-01 (Control Mode) and P0-02 (Operation Mode) are set properly. ◆ For heavy-load startup under V/F mode, adjust parameter P3-01 (Torque Boost).
		Cable connection between drive board and control board is in poor contact.	◆ Re-connect wirings and ensure secure connection.
		The drive board is faulty.	◆ Contact the agent or Inovance.
7	S terminals are disabled.	Related parameters are set incorrectly.	◆ Check and set parameters in group P4 again.
		External signals are incorrect.	◆ Re-connect external signal cables.
		PLC and +24 V becomes loose.	◆ Re-confirm the jumper bar across PLC and +24 V.
		The control board is faulty.	◆ Contact the agent or Inovance.
8	Motor speed does not rise in FVC control.	Encoder is faulty.	◆ Replace encoder and re-confirm cable connection.
		Encoder connection is incorrect or in poor contact.	◆ Replace the PG card.
		PG card is faulty.	◆ Contact the agent or Inovance.
		Drive board is faulty.	
9	The AC drive detects over current and over voltage frequently.	Motor parameters are set improperly.	◆ Set motor parameters or perform motor auto-tuning again.
		Acceleration/deceleration time is improper.	◆ Set proper acceleration/deceleration time.
		Load fluctuates.	◆ Contact the agent or Inovance.
10	FU17 is detected upon power-on or running.	The pre-charge relay or contactor is not closed.	◆ Check whether the relay or contactor cable is loose. ◆ Check whether the relay or contactor is faulty. ◆ Check whether 24V power supply of the contactor is faulty. ◆ Contact the agent or Inovance.
11	When decelerating or decelerating to stop, the motor freely stops or has no braking ability	Encoder disconnection or overvoltage stall protection takes effect	◆ In vector control mode with speed sensor (P0-01=1), please check the encoder wiring; If the braking resistor has been configured, the "overvoltage stall enable" needs to be selected as "invalid" (set P3-23=0) to turn off the overvoltage stall.
12	Inverter runs but has no output.	Motor not wired.	◆ Check motor wiring.
		Control board fault (STO-type control board incorrectly selected).	◆ Replace the control board.

Appendix A Definition of Communication Data Addresses

EV520 series inverter supports Modbus communication protocol. The host computer can realize the control, monitoring and modification of the function parameters of the inverter through the Modbus communication protocol.

EV520 communication data can be divided into function code data and non-function code data, the latter includes running commands, running status, running parameters, alarm information, etc.

A.1 EV520 Parameter Data

The parameter data provides important parameters of the AC drive. EV510H have group P and Group A. The parameter data is described as below:

Parameter data	P group (read-write)	P0、P1、P2、P3、P4、P5、P6、P7、P8、P9、PA、PB、PC、PD、PE、PF
	A group (read-write)	A0、A1、A2、A3、A4、A5、A6、A7、A8、A9、AA、AB、AC、AD、AE、AF

Communication addresses of parameter data are defined as follows:

1. When parameter data is read by means of communication

For groups P0 to PF and A0 to AF, the high 16 bits of the communication address indicate the group number and the low 16 bits indicate the parameter number in the group.

Example:

Communication address of P0-16 is F010H, where F0H represents group P0 and 10H is the hexadecimal data format of serial number 16 in the group. Communication address of AC-08 is AC08H, where ACH represents group AC and 08H is the hexadecimal data format of serial number 8 in the group.

2. When parameter data is written by means of communication

For groups P0 to PF, whether the high 8 bits in communication address are 00 to 0F or P0 to PF is decided by whether the high 8 bits are written to EEPROM. The low 8 bits indicate parameter number in the group P0-16:

If it need not be written to EEPROM, communication address is 0010H.

If it needs to be written to EEPROM, communication address is F010H.

For groups A0 to AF, whether the high 8 bits in communication address are 40to 4F or A0 to AF is decided by whether the high 8 bits are written to EEPROM. The low 8 bits indicate parameter number in the group.AC-08.

If it need not be written to EEPROM, communication address is 4C08H.

If it needs to be **written** to EEPROM, communication address is AC08H.

A.2 EV520 Non-Parameter Data

Non-Parameter Data	Status data (read only)	Group d monitoring parameters, AC drive fault information and AC drive running status
	Control parameters (write-only)	Control commands, communication setting values, AO1 control, AO2 control, high-speed pulse (FMP) output control and parameter initialization

1. Status Data

Status data includes group d (monitoring parameters), AC drive fault description and AC drive running status.

●. Group d (monitoring parameters)

The high 16 bits in communication address of d0 to dF is 70 to 7F and the low 8 bits indicate the function code number in the group. For example, the communication address of d0-11 is 700BH.

●. AC drive fault description

When fault description is read via communication, the communication address is 8000H. You can obtain current fault code of the AC drive by reading the address.

●. AC drive running status

When the drive running status is read via communication, the communication address is 3000H. You can obtain current running status information of the AC drive by reading the address. The running status is defined in the following table.

Communication Address of AC Drive's	Running Status Status Definition
3000H	1: Forward run 2: Reverse run 3: Stop

2. Control Parameters

The control parameters include control command, communication setting values, AO1 control, AO2 control, high-speed pulse (FMP) output control and parameter initialization.

3. Control commands

When P0-02 (command source selection) is set to 2 (serial comms.), you can implement control such as start/stop of the AC drive by using communication address. The control commands are defined in the following table.

Communication Address of AC Drive's Running Status	Status Definition
2000H	1: Forward run 2: Reverse run 3: Forward jog 4: Reverse jog 5: Coast to stop 6: Decelerate to stop 7: Fault reset

4. Communication reference

Communication setting values include data set via communication such as frequency reference, torque limit, V/F separation voltage, PID reference and PID feedback. Communication address is 1000H. The range is -10000−10000 and corresponding value range is -100.00% to 100.00%.

5. Digital output terminal control

When a Digital output terminal is set for function 20 (Communication setting), Control on DO terminals of the drive is defined in the following table.

Communication Address of Drive Running Status	Status Definition
2001H	BiT0：non BiT1：non BiT2：RELAY1 output control BiT3：RELAY2 output control BiT4：HD0 output control

6.AO1 control, AO2 control, high-speed pulse (FMP) output control

When AO1, AO2 and FMP are set to function 12 (Communication setting), host computer can implement control on AO and high-speed pulse outputs by means of communication addresses. The definition is provided in the following table.

Communication Address		Command Definition
AO1	2002H	0 ~ 7FFF indicates 0% ~ 100%
AO2	2003H	

7.Parameter initialization

This function is required when you need to perform parameter initialization on the drive by using host computer.

If PP-00 (User password) is set to a non-zero value, pass password verification first. Host computer performs parameter initialization within 30s after password verification is successful.

Communication address of password verification via communication is 1F00H. Directly write correct user password to this address to perform password verification.

Communication address of parameter initialization by means of communication is 1F01H, defined in the following table.

Communication Address of Parameter Initialization	Command Definition
1F01H	1: Restore default settings 2: Clear records 4: Restore user backup parameters 501: Back up current user parameters

Appendix B Modbus Communication Protocol

The drive provides RS485 communication interface and supports Modbus-RTU communication protocol so that the user can implement centralized control, such as setting running commands and function codes, and reading running status and fault information of the AC drive, by using a PC or PLC.

B.1 Agreement content

This protocol defines content and format of transmitted messages during serial communication, including master polling (or broadcasting) format and master coding method (function code for the action, transmission data, and error check). The slave uses the same structure in response, including action confirmation, data returning and error check. If an error occurs when the slave receives a message, or the slave cannot complete the action required by the master, the slave returns a fault message as a response to the master

Application

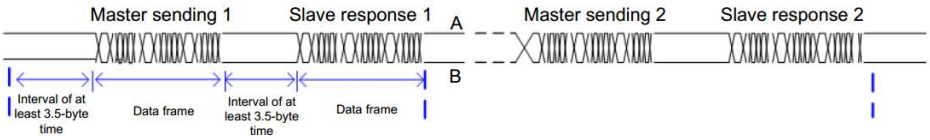
The AC drive is connected to a "single-master multi-slave" PC/PLC control network with RS485 Bus.

Bus Structure
(1) Topological structure

The system consists of a single master and multiple slaves. In the network, each communication device has a unique slave address. A device is the master (can be a PC, a PLC or an HMI) and initiates communication to perform parameter read or write operations on slaves. The other devices (slaves) provide data to respond to query or operations from the master. At the same moment, either the master or the slave transmits data and the other can only receives data.The address range of the slaves is 1 to 247, and 0 is broadcast address. A slave address must be unique in the network.

(2)Transmission mode

The asynchronous serial and half-duplex transmission mode is used. During asynchronous serial communication, data is sent frame by frame in the form of message. In Modbus-RTd protocol, an interval of at least 3.5-byte time marks the end of the previous message. A new message starts to be sent after this interval.



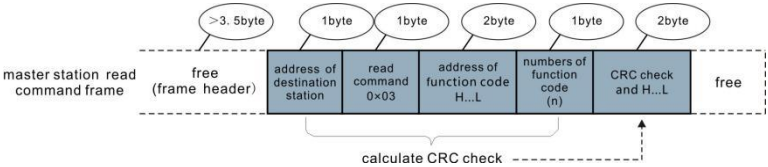
The communication protocol used by the drive is the Modbus-RTd slave communication protocol, which allows the drive to provide data to respond to "query/command" from the master or execute the action according to "query/command" from the master.

The master can be a PC, an industrial device, or a PLC. The master can communicate with a single slave or send broadcast messages to all slaves. When the master communicates with

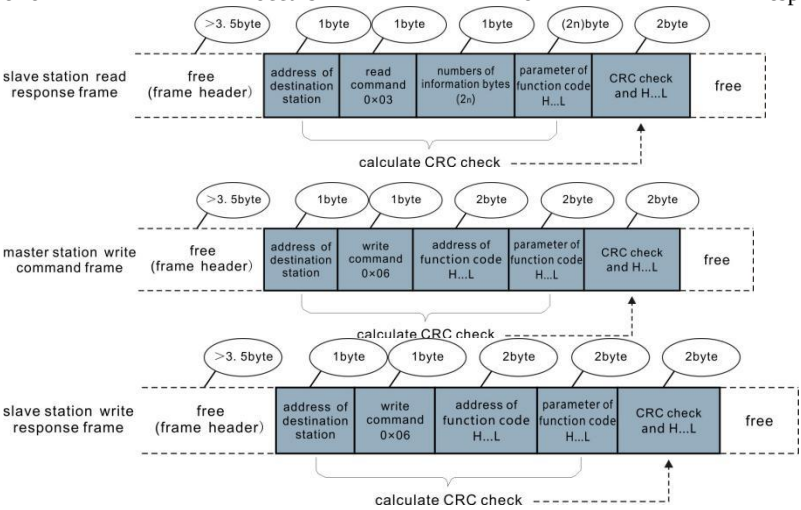
a single slave, the slave needs to return a message (response) to "query/command" from the master. For a broadcast message sent by the master, the slaves need not return a response.

(3)Data Format

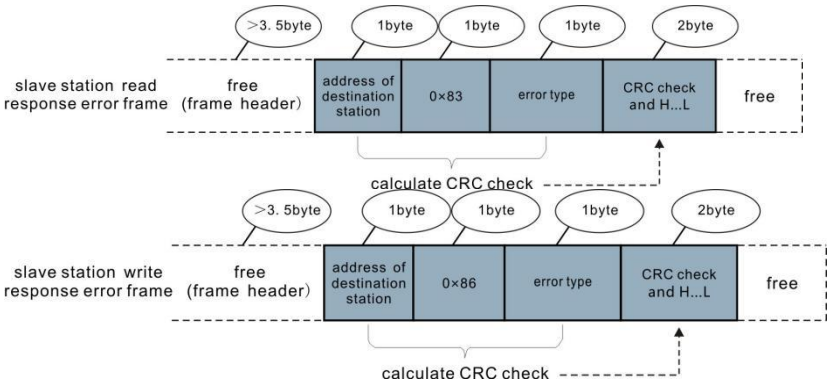
The drive supports reading and writing of word-type parameters only. Reading command is 0x03 and writing command is 0x06. It does not support reading and writing of bytes or bits.



In theory, host computer can read several consecutive parameters (n can reach up to 12) but the last parameter it reads must not jump to the next parameter group. Otherwise, an error occurs on Response.



If the slave detects a communication frame error or reading/writing failure is caused by other reasons, an error frame will be returned as follows:



The frame format is described in the following table.

Frame header START	Greater than the 3.5-byte transmission idle time
Slave address (ADR)	Communication address : 1 to 247 0: Broadcast address
Command code (CMD)	03:Read slave parameters 06: Write slave parameters
Function code address H	It is the internal parameter address of the AC drive, expressed in hexadecimal format. The parameters include functional parameters and non-functional parameters (running status and running command). During transmission, low-order bytes follow the high-order bytes.
Function code address L	
Number of function codes H	It is the number of function codes read by this frame. If it is 1, it indicates that one function code is read. During transmission, low bytes follow high bytes. In the present protocol, only one function code is read once, an this field is unavailable.
Number of function codes L	
Data H	It is the response data or data to be written. During transmission, low-order bytes follow the high-order bytes.
Data L	
CRC CHK low bytes	It is the detection value (CRC16 verification value). During transmission, low-order bytes follow the high-order bytes.
CRC CHK high bytes	
END	3.5 byte transmission time.

CMD Check

In Modbus-CRC mode, a message includes a CRC-based error-check field. The CRC field checks content of entire message. The CRC field is two bytes, containing a 16-bit binary value. The CRC field is calculated by transmitting device, and then added to message. The receiving device recalculates a CRC value after receiving message, and compares the calculated value with the CRC value in the received CRC field.

The CRC is first stored to 0xFFFF. Then a procedure is invoked to process the successive 8-bit byte in the message and the value in the register. Only the eight bits in each character are used for the CRC. The start bit, stop bit and the parity bit do not apply to the CRC.

During generation of the CRC, each eight-bit character is in exclusive-OR (XOR) with the content in the register. Then the result is shifted in the direction of the least significant bit (LSB), with a zero filled into the most significant bit (MSB) position. The LSB is extracted and examined. If the LSB was a 1, the register then performs XOR with a preset value. If the LSB was a 0, no performed. This process is repeated until eight shifts have been performed. After the last (eighth) shift, the next eight-bit byte is in XOR with the register's current value, and the process repeats for eight more shifts as described above. The final value of the register, after all the bytes of the message have been applied, is the CRC value.The CRC is added to the message from the low-order byte followed by the high-order byte.

The CRC simple function is as follows: unsigned int crc_chk_value（unsigned char *data_value,unsigned char length）{

```
        unsigned int crc_value=0xFFFF;
        int i;
        while（length--）                    {
                crc_value^=*data_value++;
                for（i=0;i<8;i++）                    {
                        if（crc_value&0x0001）
                                =（crc_value>>1）
                                 }
                                 else
^0xa001;{                        {
                               }
                        }
```

```
}                                   crc_value=crc_value>>1;
}
return (crc_value) ;
}
```

Definition of Communication Parameter Addresses

Read and Written Parameters Function parameters can be read and written (except those which cannot be changed because they are only for the factory use or for monitoring).

Parameter group No. and parameter identifying No. are used to express parameter address.

- High-order bytes: P0 to PF (groups P), A0 to AF (groups A), 70 to 7F (group d)
- Low-order bytes: 00 to FF

For example, to read parameter P3-12, communication address of P3-12 is expressed as 0xF30C

Note

- Group PF: The parameters cannot be read or changed.
- Group d: These parameters can only be read.

Some parameters cannot be modified when the AC drive is running. Some parameter cannot be modified regardless of status of the AC drive. In addition, pay attention to setting range, unit and description of parameters when modifying them.

Parameter Group	Visited Address	Parameter Address in RAM
P0 ~ PE Group	0 ×F000 ~ 0 ×FEFF	0 ×0000 ~ 0 ×0EFF
A0 ~ AC Group	0 ×A000 ~ 0 ×ACFF	0 ×4000 ~ 0 ×4CFF
d0 Group	0 ×7000 ~ 0 ×70FF	

Notes: Frequent storage to the EEPROM reduces its service life. Therefore, in communication mode, users can change values of certain parameters in RAM rather than storing the setting.

- For groups P parameters, users only need to change high order F of the function code address to 0. For groups A parameters, users only need to change high order A of the function code address to 4.The function code addresses are expressed as follows:
- High-order bytes: 00 to 0F (groups P), 40 to 4F (groups A)
- Low-order bytes: 00 to FF

For example, if function code P3-12 is not stored into EEPROM, the address is expressed

as 030C; if function code A0-05 is not stored into EEPROM, the address is expressed as 4005.

It is an invalid address when being read. Users can also use command code 07H to implement this function.

Stop/RUN Parameters

Para. Address	Description	Address	Description
1000	*Communication setting value (Decimal) -10000~10000	1010	PID setting
1001	Running frequency	1011	PID feedback
1002	Bus voltage	1012	PLC process
1003	Output voltage	1013	Pulse input frequency, unit: 0.01kHz
1004	Output current	1014	Feedback speed, unit: 0.1Hz
1005	Output power	1015	Remaining running time
1006	Output torque	1016	AI1 voltage before correction
1007	Running speed	1017	AI2 voltage before correction
1008	S input indication	1018	AI3 voltage before correction (Function expansion card)
1009	HDO output indication	1019	Linear speed
100A	AI1 voltage	101A	Current power-on time
100B	AI2 voltage	101B	Current running time
100C	AI3 voltage (Function expansion card)	101C	Pulse input frequency, unit 1Hz
100D	Counting value input	101D	Communication reference
100E	Length value input	101E	Actual feedback speed
100F	Load speed	101F	Main A frequency reference display
		1020	Auxiliary B frequency reference display

Notes:

Communication setting value indicates percentage: 10000 corresponds to 100.00%, and -10000 corresponds to -100.00%.

With regard to frequency, communication reference is a percentage of P0-10 (maximum frequency). With regard to torque, communication reference is a percentage of P2-10 and A2-48 (corresponding to motor 1 and motor 2, respectively).

Control command input to AC drive (write-only):

Command Word Address	Command Word Function
2000	0001: Forward run 0002: Reverse run 0003: Forward jog 0004: Reverse jog 0005: Coast to stop 0006: Decelerate to stop 0007: Fault reset

Read AC drive state (read-only):

Command Word Address	Command Word function
3000	0001: Forward RUN 0002: Reverse RUN 0003: Stop

Parameter lock password check: (If "8888H" is returned, it indicates that password check is passed.)

Password address	Password Content
1F00	*****

DO terminal control (write-only)

Command Address	Command Content
2001	BIT2: RELAY1 control BIT3: RELAY2 control BIT4: HDO control

AO1 control (write-only)

Command Address	Command Content
2002	0 ~ 7FFF indicate 0% ~ 100%

AO2 control (write-only)

Command Address	Command Content
2003	0 ~ 7FFF indicate 0% ~ 100%

Pulse output control (write-only)

Command Address	Command Content
2004	0 ~ 7FFF indicate 0% ~ 100%

AC drive fault description

AC Drive Fault Address	AC Drive Fault Information		
8000	0000: No fault 0001: Reserved 0002: Over current during acceleration, 0003: Over current during deceleration 0004: Over current at constant speed 0005: Over voltage during acceleration 0006: Over voltage during Deceleration 0007: Over voltage at constant speed 0008: Buffer resistor overload 0009: Under voltage 000A: AC drive overload 000B: Motor overload 000C: Power input phase loss	000D: Power output phase loss 000E: IGBT overheat 000F: External fault 0010: Communication fault 0011: Contactor abnormal 0012: Current detection failure 0013: Motor self-learning failure 0014: Encoder/PG card fault 0015: Parameter read and write fault 0016:AC drive hardware fault 0017: Motor short circuited to ground 0018: Reserved 0019: Reserved 001A: Accumulative running time reached	001B: User-defined fault 1 001C: User-defined fault 2 001D: Accumulative power-on time reached 001E: Load lost 001F: PID feedback lost during Running 0020: STO Trigger 0021: STO1 Trigger 0022: STO2 Trigger 0028: Fast current limit timeout 0029: Motor switch over error during running 002A: Too large speed deviation 002B: Motor over-speed 002D: Motor overheat 0033: Initial position error 0037: Point-to-point slave fault 0038: CAN communication fault 0039: LCD keypad communication fault 003A: Bus expansion card communication fault

Group Pd Communication Parameter Description

Pd-00	Baud rate	Factory default	6005
	Set range	Bit: Modbus Baud rate	
		Units digit: Modbus (Terminal RS485) 0：300BPS 1：600BPS 2：1200BPS 3：2400BPS 4：4800BPS	5：9600BPS 6：19200BPS 7：38400BPS 8：57600BPS 9：115200BPS

This parameter is used to set transmission speed between host computer and AC drive. Note that baud rate of host computer must be the same as that of AC drive. Otherwise, communication shall fail. The higher baud rate is, the faster communication will be.

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

Note that data format of host computer must be the same as that of AC drive. Otherwise, communication shall fail.

Pd-02	Local address	Factory default	1
	Set range	1~247，0 Broadcast address	

This parameter is used to set address of AC drive. This address is unique (except broadcast address), which is basis for point-to-point communication between host computer and AC drive. When local address is set to 0 (that is, broadcast address), AC drive can only receive and execute broadcast commands of host computer, but will not respond to host computer.

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

This parameter sets interval between AC drive completing receiving data and AC drive sending data to host computer. If response delay is shorter than system processing time, system processing time shall prevail. If response delay is longer than system processing time, system sends data to host computer only after response delay is up.

Pd-04	Communication timeout	Factory default	0.0 s
	Set range	0.0 s（invalid）；0.1~60.0s	

When this parameter is set to 0.0s, system does not detect communication timeout

When AC drive does not receive communication signal within time set in this parameter, it detects communication timeout fault (FU16). Generally, this parameter is set to 0.0s. In applications with continuous communication, you can use this parameter to monitor communication status.

Pd-05	Modbus protocol selection	Factory default	30
	Setting Range	Bit: MODBUS 0: Non-standard MODBUS protocol 1: Standard MODBUS protocol Ten: Profibus-DP 0: PPO1 format 1: PPO2 format 2: PPO3 format 3: PPO4 format	

Pd-05 = 1: Select the standard Modbus protocol.

Pd-06	Communication read current resolution	Factory default	0
	Set range	0：0.01A； 1：0.1A	

Pd-05 = 0: When reading a command, the number of bytes returned by the slave is one byte greater than the standard Modbus protocol. Refer to the "5 Communication Data Structure" section of this protocol.

Used to determine the output unit of the current value when the communication reads the output current.

Appendix C Expansion Card Function Description

Expansion Card Selection Table

Expansion Card Type	Expansion Card Name	Expansion Card Model	Expansion Card Description
Function Expansion Card	I-O Expansion Card 1	EV515IO1	Supports expansion of 4-channel digital input, 1-channel analog input, 1-channel analog output, 1-channel collector output and 1-channel relay output
	Relay Output Expansion Card 1	EV520IO2-K3	Supports expansion of 3-channel relay output
Closed-loop Expansion Card	Absolute Encoder PG Expansion Card-DB9	EV520PG-CT1	Absolute encoder closed-loop expansion card with DB9 external interface
	Absolute Encoder PG Expansion Card-TB	EV520PG-CT2	Absolute encoder closed-loop expansion card with European-style terminal block for external interface
	ABZ Encoder PG Card	EV520PG-ABZ	ABZ encoder closed-loop expansion card, compatible with differential input and open-collector input
	Resolver PG Card	EV515PG-RT1	Resolver closed-loop expansion card
	Motor Temperature Acquisition Card	EV520TM1	Motor temperature acquisition card. Via jumper selection, it supports 1-channel analog acquisition, or 1-channel PT100 / PT1000 / KTY84 temperature acquisition
	Positioning PG Card (For Straightening Machine)	EV520IO1	Supports 1-channel AB encoder detection, 4-channel digital input and 3-channel high-power collector output
Fieldbus Expansion Card	CANlink/CANopen Fieldbus Expansion Card	EV515CAN1	Supports CANlink / CANopen fieldbus expansion
	ModbusTCP/BACnet Fieldbus Expansion Card	EV515BACnet1	Supports ModbusTCP / BACnet fieldbus expansion
	EtherCAT Fieldbus Expansion Card	EV520EtherCAT1	Supports EtherCAT fieldbus expansion

C.1 I-O Expansion Card 1 (EV515IO1)

C.1.1 Introduction

EV515IO1 is a multi-functional I-O expansion card, adding 4-channel digital input, 1-channel analog input, 1-channel open-collector output, 1-channel relay output and 1-channel analog output.

This expansion card has two variants:

EV515IO1(PA6.0): Applicable to our low-power inverters: 0.4kW-2.2kW (S2 voltage class), 3.7kW-7.5kW (T2 voltage class), 0.75kW-15kW (T4/T5 voltage class).

EV515IO1(PA12.0): Applicable to our high-power inverters of 18.5kW and above (T4/T5 voltage class).



C.1.2 Interface Definition

AI3	GND	COM	+24V	NC	TA2	TB2	TC2
AO2	+15V	S6	S7	S8	S9	DO2	COM

Terminal Name	Terminal Purpose & Description
S6～S9	Multi-function digital input 1. Opto-coupler isolated, supports bipolar input 2. Input impedance: 5.1kΩ 3. Voltage range for level input: 9V～30V
+24V-COM	On-board +24V power supply (Current: 150mA)
+15V-GND	On-board +15V power supply (Current: 10mA)
COM	Common terminal for +24V
AI3-GND	Analog input. Voltage (0～10V) / Current (0～20mA) selectable via main-board jumperInput impedance: 10kΩ (voltage input) / 250Ω (current input)
GND	Reference zero potential for +10V (Note: GND is isolated from COM)
DO2	Open-collector output terminal, its corresponding common terminal is COM
AO2	Analog output terminal Output range: Voltage (0～10V) / Current (0～20mA)
TA2-TB2-TC2	TA2 relay output: TA2-common, TB2-normally-closed, TC2-normally-openContact rating: AC250V/3A, DC30V/1A

C.1.3 Relevant Parameter Settings

Configure the following basic parameters when using this card on the inverter. Perform parameter setting while the inverter is stopped.

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P4-05	S6 Terminal Function Selection(Normal for function expansion card; STO1 signal for STO expansion card)	0～63	0	Same as S1-S5, refer to Group P4 parameters
P4-06	S7 Terminal Function Selection(Normal for function expansion card; STO2 signal for STO expansion card)	0～63	0	Same as S1-S5, refer to Group P4 parameters
P4-07	S8 Terminal Function Selection(For function expansion card)	0～63	0	Same as S1-S5, refer to Group P4 parameters
P4-08	S9 Terminal Function Selection(For function expansion card)	0～63	0	Same as S1-S5, refer to Group P4 parameters
P4-23	AI Curve 3 Minimum Input	0.00V～P4-25	0.00V	Same as AI1, refer to Group P4 parameters
P4-24	Setting Corresponding to AI Curve 3 Minimum Input	0.00%～+100.0%	0.0%	Same as AI1, refer to Group P4 parameters
P4-25	AI Curve 3 Maximum Input	P4-23～+10.00V	10.00V	Same as AI1, refer to Group P4 parameters
P4-26	Setting Corresponding to AI Curve 3 Maximum Input	0.00%～+100.0%	100.0%	Same as AI1, refer to Group P4 parameters
P4-27	AI3 Input Filter Time	0.00s～10.00s	0.10s	Same as AI1, refer to Group P4 parameters
P5-04	DO1/T1A-T1C Output Function Selection(For function expansion card)	0～41	0	Same as HDO, refer to Group P5 parameters
P5-05	DO2/T2A-T2C Output Function Selection(For function expansion card)	0～41	0	Same as Relay 1 output function (TA-TB-TC), refer to Group P5 parameters
P5-12	AO2 Offset Coefficient	-100.0%～+100.0%	0.0%	Same as AO1 output function, refer to Group P5 parameters
P5-13	AO2 Gain	-10.00～+10.00	1.00	Same as AO1 output function, refer to Group P5 parameters

C.2 Relay Output Expansion Card 1(EV520IO2-K3)

C.2.1 Introduction

EV520IO2-K3 is a multi-function relay expansion card providing 3-channel relay output.

This expansion card has two variants:

EV520IO2-K3(PA6.0): Applicable to our low-power inverters: 0.4kW-2.2kW (S2 voltage class), 3.7kW-7.5kW (T2 voltage class), 0.75kW-15kW (T4/T5 voltage class).

EV520IO2-K3(PA12.0): Applicable to our high-power inverters of 18.5kW and above (T4/T5 voltage class).



C.2.2 Interface Definition

T1A	T1C	T2A	T2C	T3A	T3C

Terminal Name	Terminal Purpose & Description
TIA-T1C	T1A relay output, normally-open relay Contact rating: AC250V/3A, DC30V/1A
T2A-T2C	T2A relay output, normally-open relay Contact rating: AC250V/3A, DC30V/1A
T3A-T3C	T3A relay output, normally-open relay Contact rating: AC250V/3A, DC30V/1A

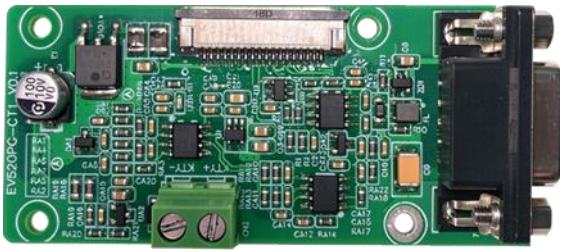
C.2.3 Relevant Parameter Settings

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P5-04	DO1/T1A-T1C Output Function Selection(For function expansion card)	0～41	0	Same as HDO, refer to Group P5 parameters
P5-05	DO2/T2A-T2C Output Function Selection(For function expansion card)	0～41	0	Same as Relay 1 output function (TA-TB-TC), refer to Group P5 parameters
P5-24	DO3/T3A-T3C Output Function Selection(For function expansion card)	0～41	0	Same as Relay 1 output function (TA-TB-TC), refer to Group P5 parameters

C.3 Absolute Encoder PG Expansion Card-DB9 (EV520PG-CT1)

C.3.1 Introduction

EV520PG-CT1 is an absolute encoder expansion card with DB9 interface. It works with our servo motors (17-bit / 23-bit encoder) and permanent-magnet synchronous motors.



C.3.2 Interface Definition

EV520PG-CT1 adopts DB9 (9-pin) connector for connection to inverter encoder module. Pin definitions are as follows:

Pin No.	Signal Name	Description
1	PS+	Absolute encoder communication positive
2	PS-	Absolute encoder communication negative
3	/	Reserved pin (Not connected)
4	/	Reserved pin (Not connected)
5	KTY-	Second terminal of KTY84-130
6	/	Reserved pin (Not connected)
7	+5V	5V power positive
8	GND	5V power ground
9	KTY+	One terminal of KTY84-130

Pin definition of European-style terminal block CN2:

KTY+	KTY-

Terminal Name	Terminal Purpose & Description
KTY+	One terminal of KTY84-130
KTY-	Second terminal of KTY84-130

C.3.3 Relevant Parameter Settings

■ Set the following basic parameters for resolver configuration on the inverter. Perform parameter setting while the inverter is stopped.

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P0-01	Control Mode Selection	0/1/2	0	Set to 1: Speed-sensor vector control mode
P1-00	Motor Type Selection	0～2	0	0: General asynchronous motor 1: Variable-frequency asynchronous motor 2: Permanent-magnet synchronous motor
P1-28	Encoder Type Selection	0～8	0	5: Single-turn Absolute Encoder (17-bit) 6: Single-turn Absolute Encoder (17-bit) (Auto-read motor parameters, for our company's motors) 7: Single-turn Absolute Encoder (23-bit) 8: Single-turn Absolute Encoder (23-bit) (Auto-read motor parameters, for our company's motors)
P1-01	Motor Rated Power	0.1～1000.0	/	Unit: kW, set according to motor nameplate
P1-02	Motor Rated Voltage	60～660	/	Unit: V, set according to motor nameplate
P1-03	Motor Rated Current	0.1～1500.0	/	Unit: A, set according to motor nameplate
P1-04	Motor Rated Frequency	20.00～Fmax	/	Unit: Hz, set according to motor nameplate
P1-05	Motor Rated Speed	1～30000	/	Unit: r/min, set according to motor nameplate
P1-30	Encoder Phase Sequence	0/1	0	
P1-37	Motor Auto-tuning	0～12	0	0: No operation 1: Static partial-parameter auto-tuning for asynchronous motor 2: Dynamic full auto-tuning for asynchronous motor 3: Static full auto-tuning for asynchronous motor 11: Loaded auto-tuning for synchronous motor 12: No-load auto-tuning for synchronous motor

■ If KTY84-130 temperature sensor is equipped, configure parameters below:

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P9-56	Motor Temperature Sensor Type	0/1/2/3	0	Set to 3: KTY84
P9-57	Motor Overheat Protection Threshold	0～200℃	110℃	Set as required
P9-58	Motor Overheat Pre-alarm Threshold	0～200℃	90℃	Set as required

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P9-78	Motor Temperature Sampling Adjustment Coefficient	90.0～110%	100.0℃	Set as required
D0-34	Current Temperature Monitoring	/	/	View real-time sampled temperature value

C.4 Absolute Encoder PG Expansion Card-TB (EV520PG-CT2)

C.4.1 Introduction

EV520PG-CT2 is an absolute encoder expansion card with European-style terminal block. It works with our servo motors (17-bit / 23-bit encoder) and permanent-magnet synchronous motors.



C.4.2 Interface Definition

Pin definitions for European-style terminal block J1:

PG	PS-	PS+	GND	+5V

Terminal Name	Terminal Purpose & Description
PG	Protective ground terminal
PS-	Absolute encoder communication negative
PS+	Absolute encoder communication positive
GND	5V power ground
+5V	5V power positive

Pin definition of European-style terminal block CN2:

KTY+	KTY-

Terminal Name	Terminal Purpose & Description
KTY+	One terminal of KTY84-130
KTY-	Second terminal of KTY84-130

C.4.3 Relevant Parameter Settings

■ Set the following basic parameters for resolver configuration on the inverter. Perform parameter setting while the inverter is stopped.

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P0-01	Control Mode Selection	0/1/2	0	Set to 1: Speed-sensor vector control mode
P1-00	Motor Type Selection	0～2	0	0: General asynchronous motor 1: Variable-frequency asynchronous motor 2: Permanent-magnet synchronous motor
P1-28	Encoder Type Selection	0～8	0	5: Single-turn Absolute Encoder (17-bit) 6: Single-turn Absolute Encoder (17-bit) (Auto-read motor parameters, for our company's motors) 7: Single-turn Absolute Encoder (23-bit) 8: Single-turn Absolute Encoder (23-bit) (Auto-read motor parameters, for our company's motors)
P1-01	Motor Rated Power	0.1～1000.0	/	Unit: kW, set according to motor nameplate
P1-02	Motor Rated Voltage	60～660	/	Unit: V, set according to motor nameplate
P1-03	Motor Rated Current	0.1～1500.0	/	Unit: A, set according to motor nameplate
P1-04	Motor Rated Frequency	20.00～Fmax	/	Unit: Hz, set according to motor nameplate
P1-05	Motor Rated Speed	1～30000	/	Unit: r/min, set according to motor nameplate
P1-30	Encoder Phase Sequence	0/1	0	
P1-37	Motor Auto-tuning	0～12	0	0: No operation 1: Static partial-parameter auto-tuning for asynchronous motor 2: Dynamic full auto-tuning for asynchronous motor 3: Static full auto-tuning for asynchronous motor 11: Loaded auto-tuning for synchronous motor 12: No-load auto-tuning for synchronous motor

■ If KTY84-130 temperature sensor is equipped, configure parameters below:

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P9-56	Motor Temperature Sensor Type	0/1/2/3	0	Set to 3：KTY84
P9-57	Motor Overheat Protection Threshold	0～200℃	110℃	Set as required
P9-58	Motor Overheat Pre-alarm Threshold	0～200℃	90℃	Set as required

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P9-78	Motor Temperature Sampling Adjustment Coefficient	90.0～110%	100.0℃	Set as required
D0-34	Current Temperature Monitoring	/	/	View real-time sampled temperature value

C.5 ABZ Encoder PG Expansion Card (EV520PG-ABZ)

C.5.1 Introduction

EV520PG-ABZ is an ABZ encoder expansion card with European-style terminal block. It supports differential input and open-collector input and shall be used with line-saving encoders.



C.5.2 Interface Definition

Pin definitions for European-style terminal block J1:

PE	COM	5/15V	Z-	Z+	B-	B+	A-	A+

Terminal Name	Terminal Purpose & Description
PE	Protective ground terminal
COM	5V/15V power ground
5/15V	5V/15V power positive
Z-	Encoder Z-phase input negative
Z+	Encoder Z-phase input positive
B-	Encoder B-phase input negative
B+	Encoder B-phase input positive
A-	Encoder A-phase input negative
A+	Encoder A-phase input positive

Pin definition of European-style terminal block CN2:

KTY+	KTY-

Terminal Name	Terminal Purpose & Description
KTY+	One terminal of KTY84-130
KTY-	Second terminal of KTY84-130

C.5.3 Relevant Parameter Settings

■ Set the following basic parameters for resolver configuration on the inverter. Perform parameter setting while the inverter is stopped.

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P0-01	Control Mode Selection	0/1/2	0	Set to 1: Speed-sensor vector control mode
P1-00	Motor Type Selection	0～2	0	0: General asynchronous motor 1: Variable-frequency asynchronous motor 2: Permanent-magnet synchronous motor
P1-28	Encoder Type Selection	0～8	0	0：ABZ encoder 4：UVW Encoder (Wire-saving Type)
P1-01	Motor Rated Power	0.1～1000.0	/	Unit: kW, set according to motor nameplate
P1-02	Motor Rated Voltage	60～660	/	Unit: V, set according to motor nameplate
P1-03	Motor Rated Current	0.1～1500.0	/	Unit: A, set according to motor nameplate
P1-04	Motor Rated Frequency	20.00～Fmax	/	Unit: Hz, set according to motor nameplate
P1-05	Motor Rated Speed	1～30000	/	Unit: r/min, set according to motor nameplate
P1-30	Encoder Phase Sequence	0/1	0	
P1-37	Motor Auto-tuning	0～12	0	0: No operation 1: Static partial-parameter auto-tuning for asynchronous motor 2: Dynamic full auto-tuning for asynchronous motor 3: Static full auto-tuning for asynchronous motor 11: Loaded auto-tuning for synchronous motor 12: No-load auto-tuning for synchronous motor

■ If KTY84-130 temperature sensor is equipped, configure parameters below:

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P9-56	Motor Temperature Sensor Type	0/1/2/3	0	Set to 3：KTY84
P9-57	Motor Overheat Protection Threshold	0～200℃	110℃	Set as required
P9-58	Motor Overheat Pre-alarm Threshold	0～200℃	90℃	Set as required

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P9-78	Motor Temperature Sampling Adjustment Coefficient	90.0～110%	100.0℃	Set as required
D0-34	Current Temperature Monitoring	/	/	View real-time sampled temperature value

C.6 Resolver PG Expansion Card (EV515PG-RT1)

C.6.1 Introduction

EV515PG-RT1 is resolver expansion card with excitation frequency of 10kHz and DB9 interface, compatible with resolver.



C.6.2 Interface Definition（PB9）

Resolver PG card uses DB9 (9-pin) connector for connection to inverter encoder module. Pin definitions are as follows:

Pin No.	Signal Name	Signal Type	Description
1	EXC-	Excitation Return-	Negative return terminal for excitation signal
2	EXC+	Excitation Input+	Positive input terminal for excitation signal
3	COS+	Cosine Signal+	Positive output of cosine signal
4	COS-	Cosine Signal-	Negative differential output of cosine signal
5	SIN+	Sine Signal+	Positive output of sine signal
6	/	Reserved	Reserved pin (Not connected)
7	KTY+	KTY+	Connect to one terminal of KTY84-130; leave unconnected if no KTY sensor
8	KTY-	KTY-	Connect to second terminal of KTY84-130; leave unconnected if no KTY sensor
9	SIN-	Sine Signal-	Negative differential output of sine signal

Wiring Notes

①Resolver signal cable shall be twisted-pair shielded cable, with single-point grounding for shield at inverter side.

②Signal cables shall be routed away from power cables; avoid parallel routing. Minimum spacing

≥200 mm is recommended.

③ Excitation drive circuit and signal conditioning circuit shall be powered by DC-DC isolation module.

④ Analog ground and digital ground shall adopt single-point connection.

⑤ For wiring, route SIN / COS signals as differential pairs and keep away from power circuits.

⑥ Perform insulation test after wiring completion to ensure no short-circuit or electric leakage.

C.6.3 Relevant Parameter Settings

■ Set the following basic parameters for resolver configuration on the inverter. Perform parameter setting while the inverter is stopped.

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P0-01	Control Mode Selection	0/1/2	0	Set to 1: Speed-sensor vector control mode
P1-00	Motor Type Selection	0～2	0	0: General asynchronous motor 1: Variable-frequency asynchronous motor 2: Permanent-magnet synchronous motor
P1-28	Encoder Type Selection	0～8	0	Set to 2：resolver
P1-01	Motor Rated Power	0.1～1000.0	/	Unit: kW, set according to motor nameplate
P1-02	Motor Rated Voltage	60～660	/	Unit: V, set according to motor nameplate
P1-03	Motor Rated Current	0.1～1500.0	/	Unit: A, set according to motor nameplate
P1-04	Motor Rated Frequency	20.00～Fmax	/	Unit: Hz, set according to motor nameplate
P1-05	Motor Rated Speed	1～30000	/	Unit: r/min, set according to motor nameplate
P1-30	Encoder Phase Sequence	0/1	0	
P1-34	Resolver Pole-pair Number	1～65535	1	Must match pole-pair number of resolver
P1-37	Motor Auto-tuning	0～12	0	0: No operation 1: Static partial-parameter auto-tuning for asynchronous motor 2: Dynamic full auto-tuning for asynchronous motor 3: Static full auto-tuning for asynchronous motor 11: Loaded auto-tuning for synchronous motor 12: No-load auto-tuning for synchronous motor

■ If KTY84-130 temperature sensor is equipped, configure parameters below:

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P9-56	Motor Temperature Sensor Type	0/1/2/3	0	Set to 3：KTY84

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P9-57	Motor Overheat Protection Threshold	0～200℃	110℃	Set as required
P9-58	Motor Overheat Pre-alarm Threshold	0～200℃	90℃	Set as required
P9-78	Motor Temperature Sampling Adjustment Coefficient	90.0～110%	100.0℃	Set as required
D0-34	Current Temperature Monitoring	/	/	View real-time sampled temperature value

C.7 Motor Temperature Acquisition Card (EV520TM1)

C.7.1 Introduction

EV520TM1 is motor temperature acquisition card. By DIP-switch selection, it can acquire resistance value from PT100, PT1000, KTY84-130 and convert to real-time temperature.



C.7.2 Interface Definition

Pin definitions of EV520TM1 are as follows:

AI3	/	/	GND

Terminal Name	Terminal Purpose & Description
AI3	One terminal of temperature sensor
GND	Second terminal of temperature sensor

Detection circuit can be switched for different sensors via DIP-switch configuration.

C.7.3 Relevant Parameter Settings

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P9-56	Motor Temperature Sensor Type	0/1/2/3	0	0：No temperature detection 1：PT100 2：PT1000 3：KTY84
P9-57	Motor Overheat Protection Threshold	0～200℃	110℃	Set as required

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P9-58	Motor Overheat Pre-alarm Threshold	0～200℃	90℃	Set as required
P9-78	Motor Temperature Sampling Adjustment Coefficient	90.0～110%	100.0℃	Set as required
D0-34	Current Temperature Monitoring	/	/	View real-time sampled temperature value

C.8 Positioning PG Card (For Straightening Machine) (EV520IO1)

C.8.1 Introduction

EV520IO1 is special-purpose positioning expansion card for steel bar straightening machine. It provides 4-channel digital input and 3-channel open-collector output. Collector outputs adopt high-power MOSFET, which can directly drive 24V high-power loads such as cutting knives. It also provides 1-channel AB encoder detection for length calculation.

This expansion card requires customized firmware. Please contact our company in advance if this card shall be applied for working conditions.



C.8.2 Interface Definition

Pin definitions of CN4:

SGND	24V	S6	S7	S8	S9	DO3	DO2	DO1

Terminal Name	Terminal Purpose & Description
S6～S9	Multi-function digital input 1. Opto-coupler isolated, supports bipolar input 2. Input impedance: 5.1kΩ 3. Voltage range for level input: 9V～30V
24V	External +24V power supply output
SGND	Common terminal for +24V
DO1～DO3	Open-collector output terminals, corresponding common terminal is SGND Capable of driving high-power equipment

Pin definitions of CN3:

VCC	GND	A	B

Terminal Name	Terminal Purpose & Description
VCC	On-board +24V power supply for encoder powering
GND	Common terminal for +24V
A-B	AB encoder signals

C.8.3 Relevant Parameter Settings

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P4-05	S6 Terminal Function Selection(Normal for function expansion card; STO1 signal for STO expansion card)	0～63	0	Same as S1-S5, refer to Group P4 parameters
P4-06	S7 Terminal Function Selection(Normal for function expansion card; STO2 signal for STO expansion card)	0～63	0	Same as S1-S5, refer to Group P4 parameters
P4-07	S8 Terminal Function Selection(For function expansion card)	0～63	0	Same as S1-S5, refer to Group P4 parameters
P4-08	S9 Terminal Function Selection(For function expansion card)	0～63	0	Same as S1-S5, refer to Group P4 parameters
P5-04	DO1/T1A-T1C Output Function Selection(For function expansion card)	0～41	0	Same as HDO, refer to Group P5 parameters
P5-05	DO2/T2A-T2C Output Function Selection(For function expansion card)	0～41	0	Same as Relay 1 output function (TA-TB-TC), refer to Group P5 parameters
P5-24	DO3/T3A-T3C Output Function Selection(For function expansion card)	0～41	0	Same as Relay 1 output function (TA-TB-TC), refer to Group P5 parameters

C.9 CANlink/CANopen Fieldbus Expansion Card (EV515CAN1)

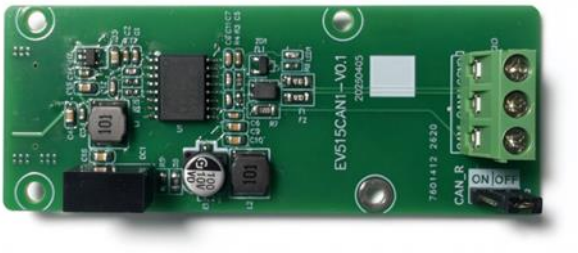
C.9.1 Introduction

EV515CAN1 is CAN communication expansion card, which connects inverter to high-speed CANLink / CANopen communication network for fieldbus control.

This expansion card has two variants:

EV515CAN1 (PA6.0): Applicable to our low-power inverters: 0.4kW-2.2kW (S2 voltage class), 3.7kW-7.5kW (T2 voltage class), 0.75kW-15kW (T4/T5 voltage class).

EV515CAN1 (PA12.0): Applicable to our high-power inverters of 18.5kW and above (T4/T5 voltage class).



C.9.2 Interface Definition

Pin definitions of EV515CAN1:

CANL	CANH	CGND

Terminal Name	Terminal Purpose & Description
CANL	CAN communication L
CANH	CAN communication H
CGND	CAN communication ground

C.9.3 Relevant Parameter Settings

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P0-02	Run Command Channel	0/1/2/3	0	Set to 3: Extended communication command channel (fieldbus expansion card) for bus control
P0-03	Main Frequency Source A Command Selection	0～10	0	Set to 10: Extended communication reference (fieldbus expansion card) for frequency reference
A4-05	CAN Communication Slave Address	1～247	1	CAN communication slave address
A4-06	CAN Communication Baud Rate	0～6	5	CAN communication slave baud rate
A4-07	CAN Communication Time-out Time	0.0：Disabled 0.1s～60.0s	0.0	Disabled by default

C.10 ModbusTCP / BACnet Fieldbus Expansion Card (EV515BACnet1)

C.10.1 Introduction

EV515BACnet1 is fieldbus adapter card supporting ModbusTCP, BACnet-MSTP, BACnet/IP. It enables inverter to act as fieldbus slave and accept control from fieldbus master.

This expansion card has two variants:

EV515BACnet1 (PA6.0): Applicable to our low-power inverters: 0.4kW-2.2kW (S2 voltage class), 3.7kW-7.5kW (T2 voltage class), 0.75kW-15kW (T4/T5 voltage class).

EV515BACnet1 (PA12.0): Applicable to our high-power inverters of 18.5kW and above (T4/T5 voltage class).



C.10.2 Interface Definition

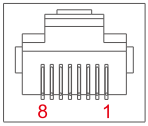
Pin definitions of CN3:

485A	485B	CGND

Terminal Name	Terminal Purpose & Description
485A	RS485+ for MSTP protocol
485B	RS485- for MSTP protocol
GND	Communication ground

Standard Ethernet port: BACnet/IP pin assignment:

Pin No.	Signal Name	Description
1	TX+	Transmit Data+
2	TX-	Transmit Data-
3	RX+	Receive Data+
4	N/C	Not connected
5	N/C	Not connected
6	RX-	Receive Data-
7	N/C	Not connected
8	N/C	Not connected



C.10.3 Relevant Parameter Settings

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P0-02	Run Command Channel	0/1/2/3	0	Set to 3: Extended communication command channel (fieldbus expansion card) for bus control
P0-03	Main Frequency Source A Command Selection	0～10	0	Set to 10: Extended communication reference (fieldbus expansion card) for frequency reference
A4-00	BACnet MSTP Local Device Address	1～247	1	BACnet MSTP local device address
A4-01	BACnet MSTP Communication Mode Selection	1	1	1: A4-02 (BACnet MSTP baud rate setting) takes effect
A4-02	BACnet MSTP Baud Rate	0～5	2	Default baud rate:19200
A4-03	BACnet MSTP Communication Time-out Time	0.0:Disabled 0.1s-60.0s	0.0	Disabled by default

C.11 EtherCAT Fieldbus Expansion Card (EV520EtherCAT1)

C.11.1 Introduction

EV520EtherCAT1 is EtherCAT fieldbus adapter card for ultra-high-speed industrial I/O network. Protocol processing is implemented at I/O layer with advantages of high efficiency, flexible topology and easy operation.

This expansion card has two variants:

EV520EtherCAT1 (PA6.0): Applicable to our low-power inverters: 0.4kW-2.2kW (S2 voltage class), 3.7kW-7.5kW (T2 voltage class), 0.75kW-15kW (T4/T5 voltage class).

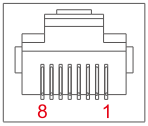
EV520EtherCAT1 (PA12.0): Applicable to our high-power inverters of 18.5kW and above (T4/T5 voltage class).



C.11.2 Interface Definition

EV520EtherCAT1 uses standard RJ45 connectors. This communication option has two RJ45 ports: IN for input and OUT for output. Pin assignment is shown below:

Pin No.	Signal Name	Description
1	TX+	Transmit Data+
2	TX-	Transmit Data-
3	RX+	Receive Data+
4	N/C	Not connected
5	N/C	Not connected
6	RX-	Receive Data-
7	N/C	Not connected
8	N/C	Not connected



C.11.3 Relevant Parameter Settings

Parameter Code	Parameter Name	Setting Range	Default Value	Description
P0-02	Run Command Channel	0/1/2/3	0	Set to 3: Extended communication command channel (fieldbus expansion card) for bus control
P0-03	Main Frequency Source A Command Selection	0～10	0	Set to 10: Extended communication reference (fieldbus expansion card) for frequency reference





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