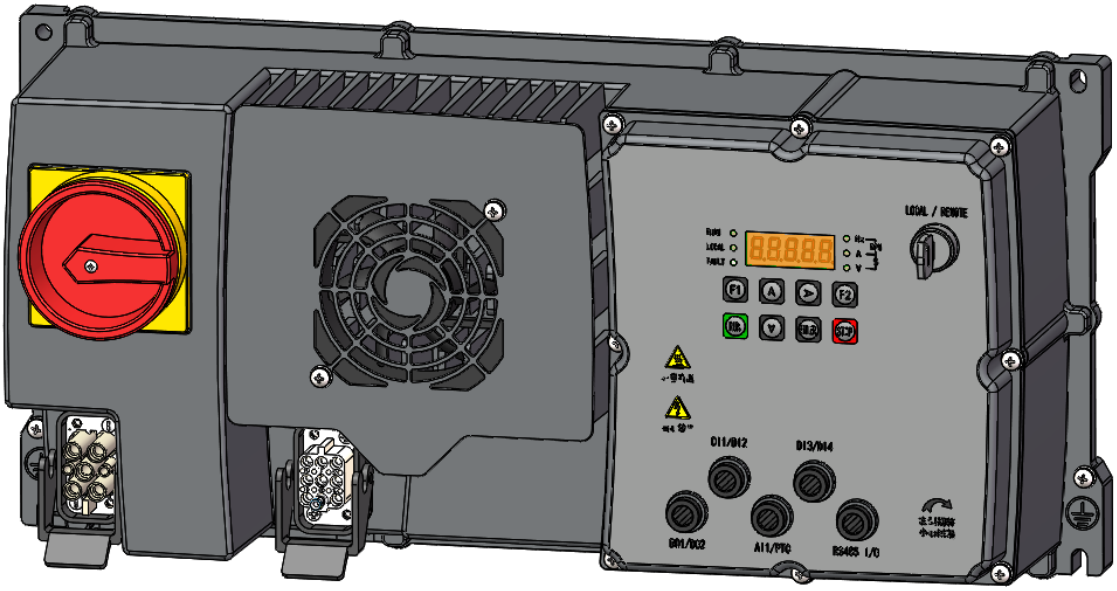
GUIDE VFD GF630N03 Series Logistics VFD AC Asynchronous Type

User manual version: 1.02



Foreword

Thank you for choosing us! At the same time, you will enjoy the comprehensive and sincere service we provide for you!

VFD GF630N03 series is a special VFD for distributed logistics, and its performance index has reached the world's leading level.

In order to fully utilize the excellent performance of this product and to ensure the safety of the user and the equipment, please read this manual in detail before use.

This instruction manual is an accessory sent with the product, please make sure to keep it in a safe place after use, so that it can be used in the future for overhauling and maintenance of the VFD.

For the use of this VFD if there are questions or special requirements, please feel free to contact the company's local offices or distributors, but also directly with the headquarters of the company's after-sales service center, we will be happy to serve you.

The contents of this manual are subject to change without notice.

Wuhan Guide Technology Co.,Ltd.

Safety Precautions

Security Statement

1) Read and follow these safety precautions before installing, operating, or maintaining the product.

2) For personal and equipment safety, follow all safety precautions indicated on the product labeling and in the manual when installing, operating, and maintaining the product.

3) The "CAUTION", "WARNING" and "DANGER" items in this manual do not represent all the safety items to be observed, but are only supplementary to all safety precautions.

4) This product should be used in an environment that complies with the design specifications, otherwise it may cause malfunctions. Abnormal functioning or damage to parts, etc. caused by failure to comply with the relevant regulations are not covered by the product quality warranty.

5) We will not assume any legal responsibility for personal safety accidents, property damage, etc. caused by non-compliant operation of the product.

Symbol	Symbol description
DANGER	◆ "DANGER" means that death or serious bodily injury will result if the operation is not carried out as specified
CAUTION	◆ "CAUTION" indicates a critical step, which needs to be operated according to the prompts and specifications
WARNING	◆ "WARNING" means that death or serious bodily injury may result if the operation is not carried out as specified

Safety instructions

Important notes
DANGER ◆ Do not touch the radiator by hand after ten minutes of power-on or within a period of time after power-off to prevent burns. ◆ Do not power on and off the VFD frequently, and do not power on again within five minutes after power off. ◆ Do not remove the cover of the VFD or touch the printed circuit board when it is powered on to prevent electric shock. ◆ Wiring, inspection and other operations must be carried out 10 minutes after the power is turned off. ◆ The grounding terminal of the VFD must be well grounded! ◆ No foreign matters are allowed to fall into the VFD.

WARNING

- The VFD must not be installed on flammable materials.
- This series of VFD are not suitable for flammable and explosive environments. If necessary, please order a special VFD from the manufacturer.
- It is forbidden to disassemble, assemble or modify the VFD without permission!
- It is strictly forbidden to connect the AC power supply to the output terminals U, V and W of the VFD.
- When the VFD is powered on, do not open the cover or carry out wiring operations.

Unpacking acceptance

CAUTION

- Before unpacking, please check whether the outer packaging of the product is intact, whether there is damage, soaking, moisture, deformation, etc.
- Please open the package in accordance with the specified hierarchical order. It is strictly prohibited to handle it with excessive force!
- When unpacking, please check whether there is any damage, rust, or dents on the surface of the product and its accessories.
- After unpacking, please carefully check whether the quantity and data of the product and its accessories are complete against the packing list.

WARNING

- Upon unpacking, refrain from installing the product if water has infiltrated the product, any parts are missing, or any parts are damaged!
- If the product and its accessories are found to have damage, rust, signs of use and other problems during unpacking, do not install them!
- Please carefully check against the packing list, and do not install if the packing list does not match the product name!

Storage and transportation

CAUTION

- Please store and transport the product according to the storage and transportation conditions, and the storage temperature and humidity shall meet the requirements.
- Avoid storage and transportation in places where water splashes, rain, direct sunlight, intense electric field, strong magnetic field, strong vibration, etc.
- Avoid storing the product for more than 3 months. If the storage time is too long, please carry out closer protection and necessary inspection.
- Please pack the product strictly before vehicle transportation. Closed boxes must be used for long-distance transportation.
- It is strictly forbidden to transport this product together with equipment or articles that may affect or damage this product.

WARNING

- Be sure to use professional loading and unloading equipment to handle large or heavy equipment and products!
- When handling the product by hands, be sure to hold the product housing firmly to avoid falling product parts, otherwise there is a risk of injury!
- When handling the product, be sure to lift and place it gently, and always be mindful of objects underfoot to prevent tripping or falling, otherwise there is a risk of injury or product damage!
- When the equipment is being lifted by lifting tools, no individuals are permitted to stand or remain beneath the equipment.

Installation

WARNING

- Be sure to read the product instruction manual and safety precautions carefully before installation!
- It is strictly forbidden to modify this product!
- It is strictly forbidden to screw the fixing bolts of product parts and components and the bolts marked in red!
- Do not install this product in places with intense electric field or strong electromagnetic wave interference!
- When this product is installed in a cabinet or terminal equipment, the cabinet or terminal equipment shall be provided with corresponding protective devices such as fireproof enclosure, electrical protective enclosure and mechanical protective enclosure, and the protection grade shall meet the requirements of relevant IEC standards and local laws and regulations.

DANGER

- Non-professionals are strictly prohibited from product installation, wiring, maintenance, inspection or component replacement!
- The installation, wiring, maintenance, inspection or component replacement

of this product can only be carried out by professionals who have received relevant training on electrical equipment and have sufficient electrical knowledge.

- The installation personnel must be familiar with the product installation requirements and relevant technical data.
- When it is necessary to install transformers and other equipment with strong electromagnetic interference, please install shielding protection devices to avoid malfunction of this product!

Wiring

DANGER

- Non-professionals are strictly prohibited from equipment installation, wiring, maintenance, inspection or component replacement!
- Do not perform wiring operations when the power is on, otherwise there will be a risk of electric shock.
- Before wiring, cut off the power supply of all equipment. After the power is cut off, there is residual voltage in the internal capacitor of the equipment. Please wait at least 10 minutes before wiring.
- Ensure that the equipment and products are properly grounded, otherwise there will be a risk of electric shock.
- Please adhere to the procedures outlined in the Electrostatic Discharge (ESD) prevention guidelines and wear an electrostatic wrist strap during wiring and other operations to prevent damage to the internal circuitry of the equipment or product.

WARNING

- It is strictly forbidden to connect the input power supply to the output terminals of the equipment or product, as this may cause equipment damage or even lead to a fire.
- When connecting the driver to the motor, be sure to ensure that the phase sequence of the driver and the motor terminals is accurate and consistent to avoid reverse rotation of the motor.
- The cables used in wiring must meet the corresponding requirements for diameter and shielding, and the shielding layer of shielded cables must be reliably grounded at one end!
- After wiring, make sure that there are no falling screws or exposed cables inside the equipment and product.

Power up

WARNING

- Before powering up, please confirm that the equipment and products are installed properly, the wiring is firm, and the motor device is allowed to be restarted.
- Before powering up, please confirm that the power supply meets the requirements of the equipment to avoid equipment damage or fire!
- When powering up, the mechanical device of the equipment or product may act suddenly. Please stay away from the mechanical device.
- After powering up, do not open the equipment cabinet door or product protective cover, otherwise there will be a risk of electric shock!
- It is strictly prohibited to touch any wiring terminals of the equipment while it is powered on, otherwise there will be a risk of electric shock!
- It is strictly prohibited to disassemble any devices or components of the equipment and products while they are powered on, otherwise there will be a risk of electric shock!

Running

DANGER

- It is strictly prohibited to touch any wiring terminals of the equipment while it is in running state, otherwise there will be a risk of electric shock!
- It is strictly prohibited to disassemble any devices or components of the equipment and products while they are in running state, otherwise there will be a risk of electric shock!
- It is strictly forbidden to touch the equipment housing, fan or resistance to test the temperature, otherwise it may cause burns!
- It is strictly forbidden for non-professional technicians to detect signals during running, otherwise it may cause personal injury or equipment damage!

WARNING

- During running, avoid other articles or metal objects from falling into the equipment, otherwise the equipment will be damaged!
- Do not use the contactor on-off method to control the start and stop of the equipment, otherwise the equipment will be damaged!

Maintenance

WARNING

- Before powering up, please confirm that the equipment and products are installed properly, the wiring is firm, and the motor device is allowed to be restarted.
- Before powering up, please confirm that the power supply meets the requirements of the equipment to avoid equipment damage or fire!
- When powering up, the mechanical device of the equipment or product may act suddenly. Please stay away from the mechanical device.
- After powering up, do not open the equipment cabinet door or product protective cover, otherwise there will be a risk of electric shock!
- It is strictly prohibited to touch any wiring terminals of the equipment while it is powered on, otherwise there will be a risk of electric shock!
- It is strictly prohibited to disassemble any devices or components of the equipment and products while they are powered on, otherwise there will be a risk of electric shock!

Scrapping

WARNING

- Please scrap equipment and products in accordance with relevant national regulations and standards to avoid property losses or casualties!
- Scrapped equipment and products shall be treated and recycled in accordance with industrial waste treatment standards to avoid environmental pollution.

Note of caution

1) Leakage protection equipment

The equipment generates large leakage currents that flow through the protective grounding conductor during operation. If using a Leakage Protection Device (RCD) or Leakage Monitor (RCM), use a Leakage Protection Device (RCD) or Leakage Monitor (RCM) that has a delayed response or filters out higher current harmonics.

Please install a B-type leakage protection device (RCD) on the primary side of the power supply. When selecting a leakage protection device (RCD), consider the transient and steady state leakage currents to ground that may occur when the equipment is starting up and running, and select a special RCD with measures to inhibit high harmonics, or a general-purpose RCD with a large residual current.

2) Motor insulation check

When the motor is used for the first time or used again after a long period of time, the motor insulation check should be done to prevent the VFD from being damaged due to the insulation failure of the motor winding. Motor insulation check, please remove the motor and VFD connection line, it is recommended to use 500V voltage megohmmeter, should ensure that the measured insulation resistance of the motor is not less than 5MΩ.

(3) Use other than the rated voltage value

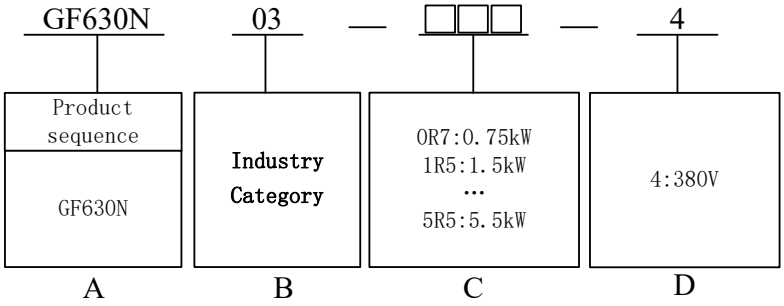
Using the VFD outside the permissible operating voltage range specified in the manual may cause internal damage to the VFD. If necessary, use a step-up or step-down device to transform the power supply before connecting it to the VFD.

CONTENTS

1. Product Information

1.1 Nameplate and model number

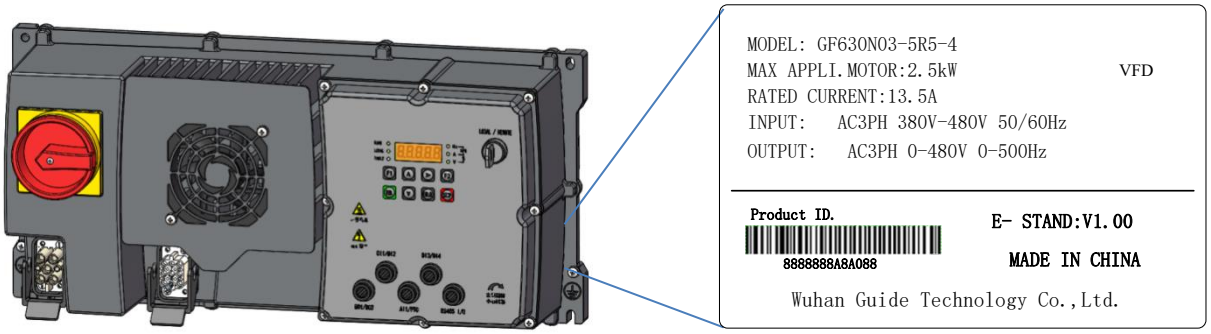
VFD Model Meaning



System Product Model Field Description

field identifier	Detailed description of fields
A	GF630N: High-performance Distributed Logistics Specialized VFD
B	Industry Category: 03 Representative Logistics Distributed VFD
C	Power code: expressed by 3 digits, 0R7:0.75kW, 5R5:5.5kW
D	4: Voltage class 380V

The nameplate of GF630N03 series VFD is shown in the figure (5.5k for example)



Product nameplate description

Model No.: GF630N03-5R5-4 indicates that the GF630N03 series of distributed logistics VFD has a rated power of 5.5kW, built-in braking unit, and a voltage level of 400V, AC asynchronous motor.

AC indicates alternating current power input and output.

3PH indicates three-phase input and output.

380V-480V 50/60Hz indicates the input voltage range and frequency.

0-480V 0-300Hz indicates the VFD output voltage range and output frequency range.

GF630N03 VFD Product List

Model number	Output Current [A]	Maximum applicable Motor capacity [kW]	Models
GF630N03-0R7-4	3.3	0.75	N1
GF630N03-1R5-4	4.8	1.5	
GF630N03-2R2-4	5.7	2.2	
GF630N03-3R7-4	10.2	3.7	N2
GF630N03-5R5-4	13.5	5.5	

Notes:

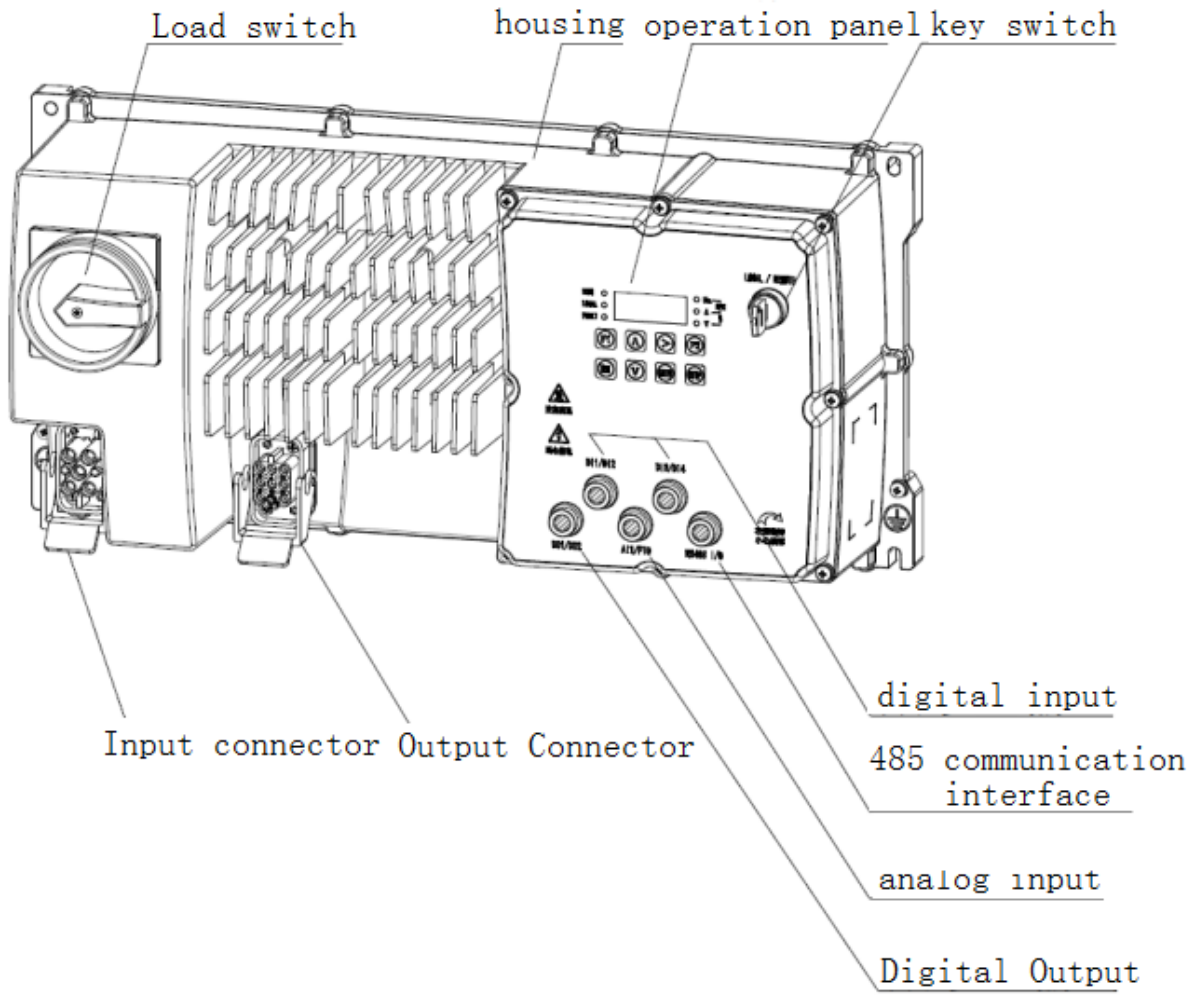
(1) The overload capacity is 150% of the rated output current, with overloading permitted for 1 minute every 5 minutes.

(2) The GF630N03 series VFD comes standard with a built-in brake unit, so please select the model according to the above table.

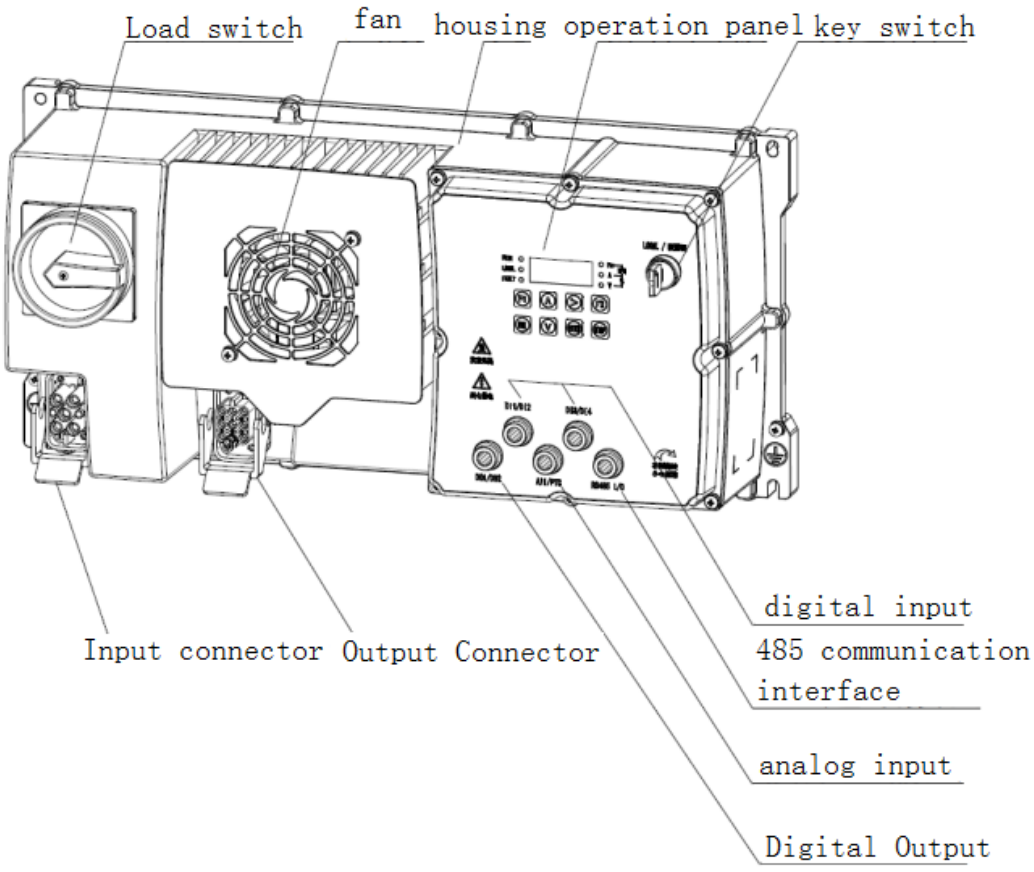
(3) The above table of models applies to AC asynchronous motors and is also applicable to the subsequent contents of this manual.

1.2 Description of components

There are two types of structure for GF630N03 series VFD, which are with fan structure and without fan structure. As shown in the figure below:

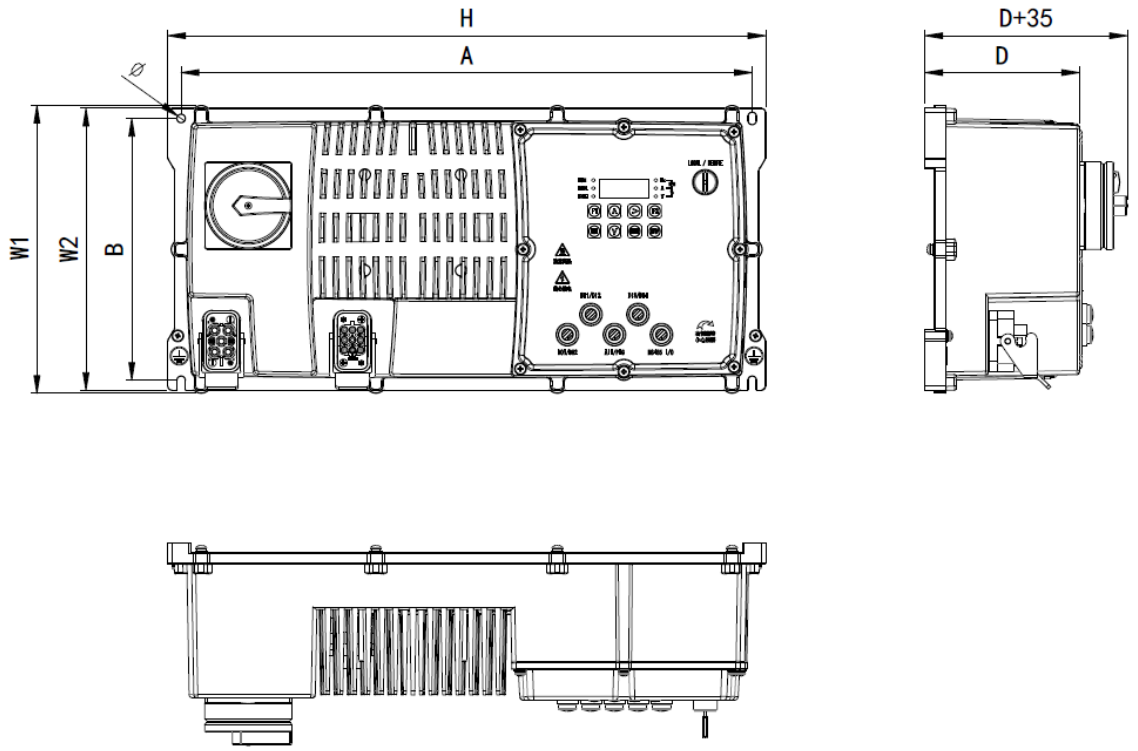


0.7-2.2kW product component schematic (fanless)

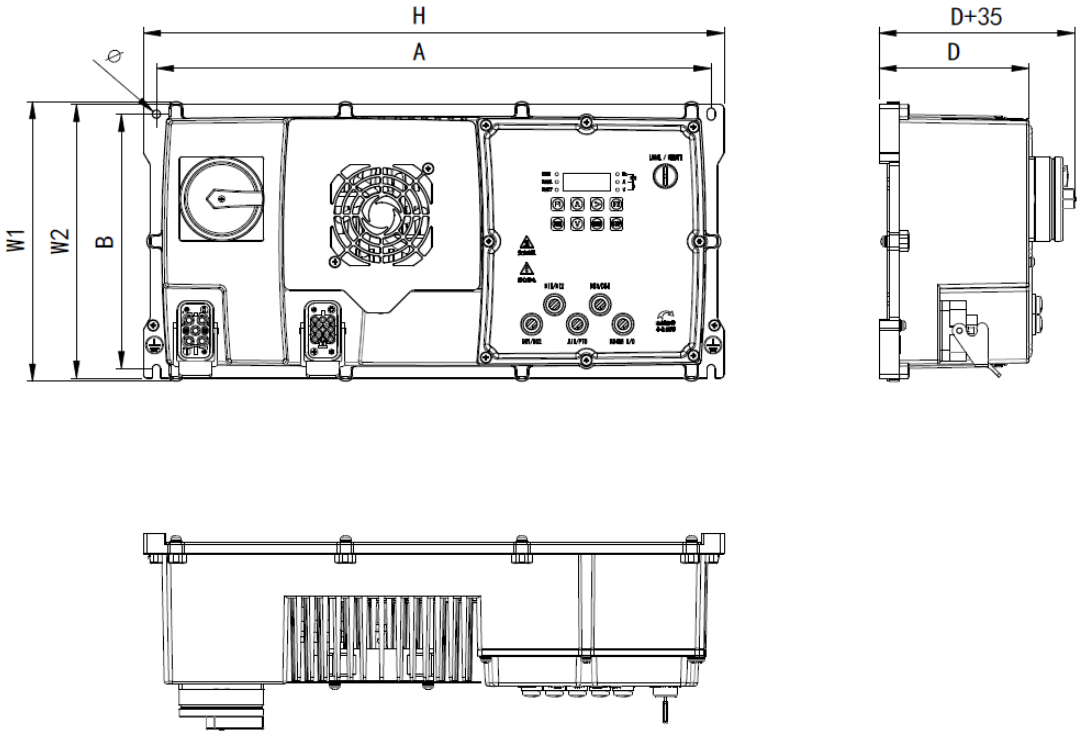


3.7-5.5kW product component schematic (with fan)

1.3 Overall dimensions



N1 model: 0.7-2.2kW external dimensions and installation dimensions schematic (without fan)



N2 model: 3.7-5.5kW external dimensions and installation

dimensions schematic (with fan)

1.4 External dimensions and installation dimensions

Power (output)	Overall dimensions (unit: mm)				Installation Dimension Unit: mm		Installation Hole Diameter	Recommended mounting bolts grade 8.8	Weight kg
	H	W1	W2	D	A	B	Φ	M	
0.7kW	445	215	210	115	425	195	Φ6	4-M5	6.8
1.5kW									
2.2kW									
3.7kW	445	215	210	115	425	195	Φ6	4-M5	7.2
5.5kW									

1.5 Comprehensive product performance index

sports event		clarification
Importation	Input Voltage	Three-phase 380V～480V
	Rated frequency	50/60Hz
	Allowable voltage fluctuation	-15% to +10%
	Allowable frequency fluctuations	Allowable range of frequency variation is fLN ± 2 % (± 4 % for separate supply grid). Frequency variation rate: ≤ 2 % fLN/s.
exports	Output Voltage Range	0～Input Voltage
	Asymmetry of output voltage	Under normal use conditions, the asymmetry of the output three-phase voltage should be no more than 1 % under the symmetrical load of each phase in the whole output frequency adjustment range.
	Output frequency range	0 to 300Hz

containment characterization	Run command method	Panel control, terminal control, communication control
	Carrier frequency	1kHz to 10kHz, adjustable according to temperature and load characteristics
	Frequency resolution	Digital setting: 0.01Hz, analog setting: Maximum frequency x 0.1%
	Control method	Open-loop vector control (SVC), V/F control
	V/F control	Linear, multi-point, square
	Torque control	PG-free torque control
	Top speed	300 Hz, depending on the electrical and mechanical characteristics of the motor
	Starting torque	0Hz/200% (SVC), 0.8Hz/150% (V/F)
	Speed range	1:500 (SVC)
	Speed Accuracy	±0.2% rated speed (SVC), ±0.5% rated speed (V/F)
	Overload capacity	The overload capacity is 150% of the rated output current, with 1 minute of overload allowed every 5 minutes.
	Torque compensation	Automatic torque compensation function
	Acceleration and deceleration mode	Straight lines, user-defined multi-point curves
	Automatic voltage adjustment	Automatically maintains constant output voltage during grid fluctuations
	DC braking method	DC braking at startup and DC braking at shutdown
	Built-in process PID	Closed-loop control systems for process quantities (pressure, temperature, flow, etc.) can be easily realized.
	special function	Free function modules for user programmable applications: Logic function module, math function module, timer module, PID module, etc; Motion Control: Multi-curve acceleration/deceleration function,

		timer-controlled run/stop control, etc; Crane function: Power optimization, open holding brake function for cranes; Synchronization control: master/slave synchronization control, speed/torque control
importation exports terminals	Input terminal	4 digital inputs, 1 analog input (voltage 0 to +10V) are standard on the terminal board.
	Output terminal	2 digital outputs (2 collector outputs) are standard on the terminal block.
human-computer interfaces	Operation panel LED	You can set the relevant parameters and also display various parameters such as output frequency, output voltage and output current; Running status, fault status and parameter setting status should be corresponding to the display. Content: function, data, unit.
protective function		Over-current protection, over-voltage protection, under-voltage protection, over-heating protection, overload protection, etc.
Location		Free from direct sunlight, dust and corrosive environments
Matrix	Altitude	Below 1000 meters, no derating is required. If the altitude exceeds 1,000 meters, reduce the rated voltage and rated output current at a rate of 1% for each additional 100 meters. For altitudes over 3000 meters, consult the manufacturer for guidance.
	Environmental temperature	-10℃～+40℃, the ambient temperature over 40℃ needs to be derated, and the derating is 1% for every 1℃ increase in ambient temperature. Ambient temperature over 50℃ need to consult the manufacturer for guidance. Ambient temperature below -10℃ requires additional auxiliary heating equipment.
	Humidity level	Less than 95% RH, no water droplet condensation
	Stockpile	Storage temperature -20℃～+60℃. Meanwhile, due to the characteristics of electrolytic capacitors, the storage time is more than half a year, and it is necessary to power up the VFD for 10-30 minutes every half a year to charge the electrolytic capacitors.
other than	Efficiency	＞98%
	Protection class	IP54

	Cooling method	Forced air cooling
	Contamination level	2
	Noises	≤80db

1.6 Main technical characteristics

(1) Both open-loop vector and closed-loop vector are capable of 200% torque output at zero speed;

(2) The load does not exceed 50% of the rated load of the motor, can be implemented with load motor self-tuning, and with the motor parameters obtained from the motor no-load self-tuning;

(3) Built-in constant power control function, when entering the constant power weak magnetism speed regulation zone, the frequency converter automatically adjusts the output frequency according to the load size.

1.7 VFD heat generation

model number	Applicable motor capacity [kW]	Heat generation [kW]
GF630N03-0R7B-4	0.75	0.059
GF630N03-1R5B-4	1.5	0.079
GF630N03-2R2B-4	2.2	0.092
GF630N03-3R7B-4	3.7	0.151
GF630N03-5R5B-4	5.5	0.151

1.8 Storage, transportation and installation of the frequency converter

WARNING

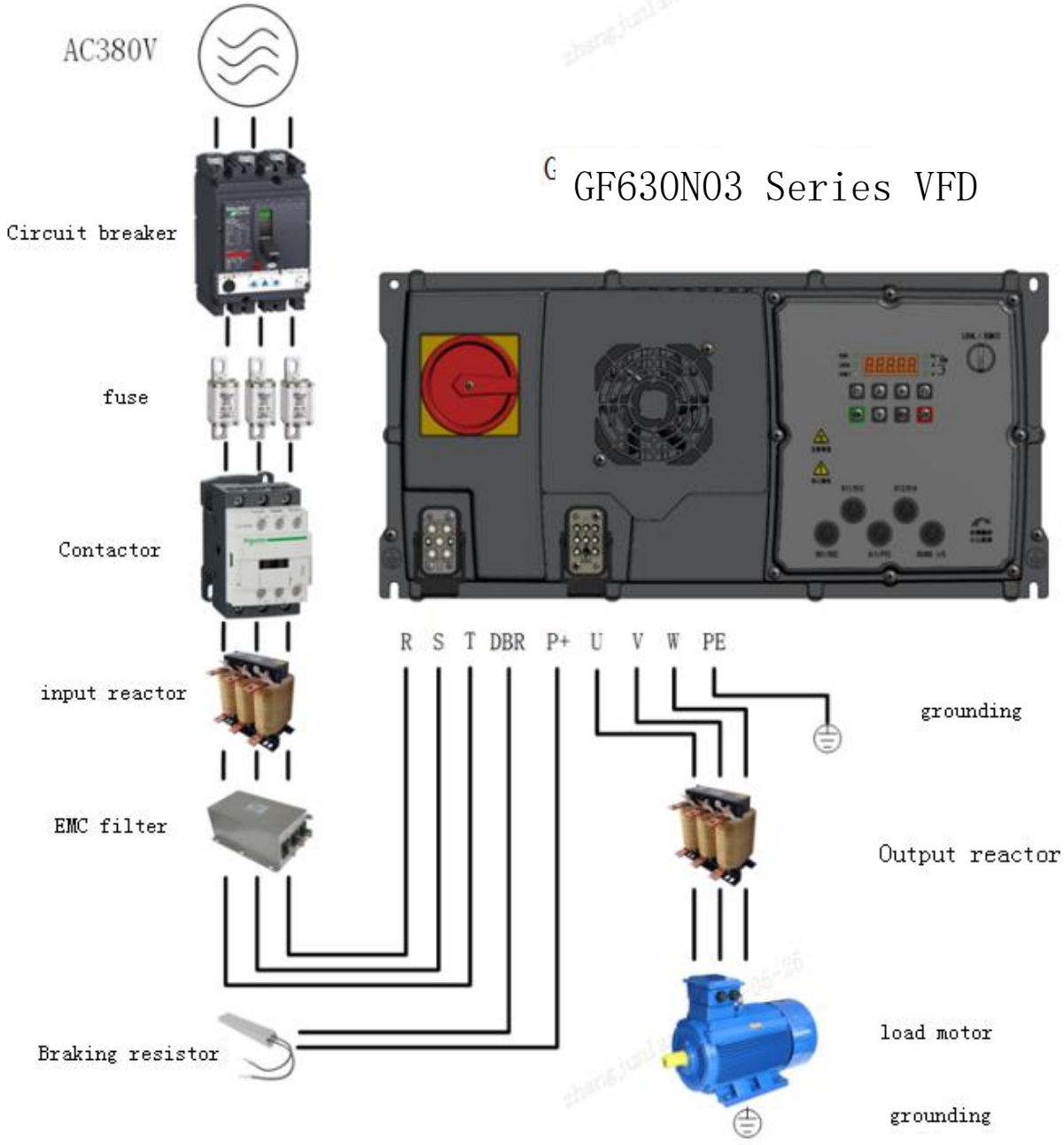
1. Working on the device/system of the frequency converter by untrained and qualified personnel or failing to comply with the relevant provisions of the WARNING may result in serious personal injury or substantial property damage. Only certified and qualified personnel trained in the design, installation, commissioning and operation of the equipment are permitted to work on this device/system.
2. Input power cords are only permitted to be permanently fastened and the unit must be reliably grounded.
3. Even if the VFD is not in operation, the following terminals may still carry dangerous voltages:
   - -Power terminals R, S, T
   - -Terminals U, V, W for motor connection
   - -Brake unit terminal block P+, DBR
4. After the power switch is disconnected, you must wait at least 10 minutes for the VFD to discharge before allowing installation operations to begin.
5. The minimum cross-sectional area of the grounding conductor must be equal to or greater than the cross-sectional area of the supply power cable.

CAUTION

1. Hold the bottom of the body when handling.
   Holding the panel only, there is a danger of the subject falling and hitting your foot and injuring yourself.
2. Please install it on a plate of non-flammable material such as metal.
   Installation on flammable materials poses a fire hazard.
3. When two or more VFDs are installed in the same control cabinet, set up a cooling fan and keep the air temperature at the air inlet below 40° C.
   Due to overheating, it can cause fire and other accidents.

2. System Connections

2.1 System connection diagram



Instructions for the use of peripheral electrical components of the GF630N03 VFD system

2.2 Description of system components

Accessory Name	Mounting position	Functional Description
Interrupter	Between the power supply and the input side of the VFD	Short-circuit breakers: cut off the power supply in case of overcurrent of downstream equipment to prevent accidents
		Leakage protection circuit breaker: VFD may generate high frequency leakage current when working, in order to prevent electric shock accident and induce electric fire, please choose to install suitable leakage protection circuit breaker according to the site conditions.
fuse	Between the power supply and the input side of the VFD	Prevents accidents due to short circuits and protects back-end semiconductor devices.
contactors	Between the circuit breaker and the input side of the VFD	Frequent power up and down operations (with an interval of not less than one hour) or direct start-up operations of the frequency converter through the contactor should be avoided.
Input Reactor	Input side of VFD	Improve the power factor on the input side; Effectively eliminates high harmonics on the input side, preventing damage to other equipment caused by voltage waveform distortion; Eliminates input current imbalance caused by power supply phase imbalance.
EMC Filters	Input side of VFD	Reduce the VFD's external conduction and radiation interference; reduce the conduction interference flowing from the power supply side to the VFD, and improve the VFD's anti-interference ability.
Braking Resistors	VFD output side	Use the braking resistor according to the instruction manual; Regenerative energy is consumed by the braking resistor when the motor is decelerating.
Output Reactor	Between the output side of the VFD and the motor, mounted close to the VFD	The output side of the VFD generally contains more high harmonics. When the motor is far away from the VFD, because the line There is a large distributed capacitance in the One of these harmonics may resonate in the loop, bringing about two Effects: a) Destroys motor insulation and can damage the motor over time. b) Generate large leakage current, causing frequent protection of the VFD. Generally the distance between VFD and motor is more than 100m, it is recommended to install output AC reactor.

dv/dt reactors	Installation near the VFD on the output side of the VFD	Optional dv/dt reactors protect motor insulation and reduce bearing currents.
output toroid	Installation near the VFD on the output side of the VFD	The output magnetic ring is mainly used to reduce the bearing current.
electrical machinery	VFD output side	Please select the appropriate motor as recommended.

◆ Do not install capacitors or surge suppressors on the output side of the VFD, as this will result in malfunctioning of the VFD or damage to the capacitors and surge suppressors.

◆ The input/output (main circuit) of the VFD contains harmonic components that may interfere with communication equipment near the VFD.

An anti-interference filter can be installed to minimize the interference.

2.3 Wiring specifications

Power (output)	Circuit breaker (A) reference current	Input line/output line (mm^2) (CEFR single-core cable 40% cycle duty)	Contactor (A) Rated operating current (AC-3)
0.7 kW	2.6	2.5	9
1.5 kW	4.0	2.5	9
2.2 kW	5.7	2.5	9
3.7 kW	10.2	2.5	12
5.5kW	15.0	2.5	18

2.4 Input/Output AC Reactor Selection

Power (output)	Input Reactor 2% input voltage drop		Output Reactor 1% output voltage drop	
	amps	inductors	amps	inductors
0.7 kW	3.0A	4.67mH	2.6A	2.69mH
1.5 kW	4.8A	2.92mH	4.0A	1.75mH
2.2 kW	6.8A	2.06mH	5.7A	1.22 mH
3.7 kW	12A	1.17mH	10.2A	0.69mH
5.5kW	18A	0.78 mH	15A	0.47mH

2.5 Braking resistor selection

VFD capacity	Braking Resistors			
	Recommended resistance value (Ω)	Minimum Resistance (Ω)	Power (KW) (30% Kc)	Power (KW) (50% Kc)
0.7 kW	750	100	≥0.2	≥0.35
1.5 kW	400	100	≥0.5	≥0.7
2.2 kW	250	78	≥0.8	≥1
3.7 kW	100	64	≥2.0	≥2.5
5.5kW	100	40	≥2.0	≥2.5

Note: 1. The VFD has a built-in braking unit that corresponds to 100% braking torque;

2, Kc: braking frequency, refers to the proportion of the regeneration process to the entire motor operating process;

3、Braking resistor power can be adjusted according to the actual application conditions.

3. Installation and Wiring

3.1 Environmental requirements for operation, storage and pre-transportation of frequency converters

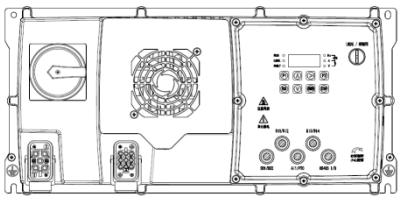
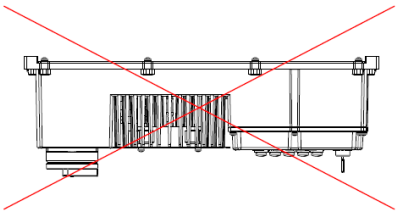
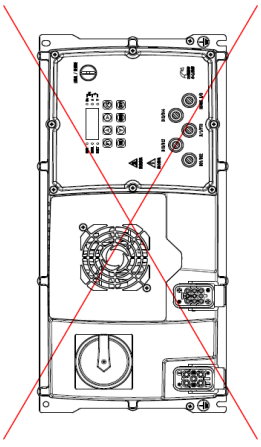
	(Of a computer) Run	Save	Haulage
Wrap	Fixed installation	In protective packaging	Manufacturer's standard box for shipping
Establishments	Installation site: Vertical mounting on a sturdy base indoors, see Mounting. Cooling medium is air. Avoid direct sunlight and external biological intrusion, if it can not meet the requirements, need to add additional protection.	Storage sites: Store in a clean, dry indoor location. Total shipping and storage time not to exceed 6 months.	Transportation: In a standard packing box, it can be transported by cars, trains, airplanes, ships and other similar means.
Matrix temp	-10℃～+40℃, the ambient temperature over 40℃ needs to be derated, and the derating is 1% for every 1℃ increase in ambient temperature. When the ambient temperature exceeds 50℃, it is necessary to consult the manufacturer for guidance. Ambient temperatures below -10° C require additional auxiliary heating equipment.	-20℃～+60℃, air temperature change less than 1℃/min.	-20℃～+60℃
Magnanimity push down	70 to 106 kPa 0.7 to 1.05 Atmospheric pressure	70 to 106 kPa 0.7 to 1.05 Atmospheric pressure	60 to 106 kPa 0.6 to 1.05 Atmospheric pressure
Vibratory	(Math.) Sinusoidal curve 10Hz≤ f≤57Hz: Amplitude: 0.075mm 57Hz≤f≤150Hz: acceleration: 9.8 m/s2	(Math.) Sinusoidal curve 10Hz≤f≤57Hz: Amplitude: 0.075mm 57Hz≤f≤150Hz: acceleration: 9.8 m/s2	Random vibration: Random vibration severity level II for road transportation

Under attack	impermissible	Maximum 100m/s^2, 11ms	Maximum 100m/s^2, 11ms
Liberty whereabouts	impermissible	250mm, when weight <100kg; 100mm, when weight ≥100kg.	250mm, when weight <100kg; 100mm, when weight ≥100kg.
Counterpart humidity level	Less than 95% RH, no water droplet condensation		
Mounting high degree	Below 1000 meters, no derating is required. If the altitude exceeds 1,000 meters, reduce the rated voltage and rated output current at a rate of 1% for each additional 100 meters. For altitudes over 3000 meters, consult the manufacturer for guidance.		
Contamination hierarchy	Pollution level 2		
Gas (i.e. gaseous substance) contamination	The place of use should be free of oil mist, metal dust, dust suspension, corrosive gases, flammable and explosive gases. If this is not the case, additional protection is required.		

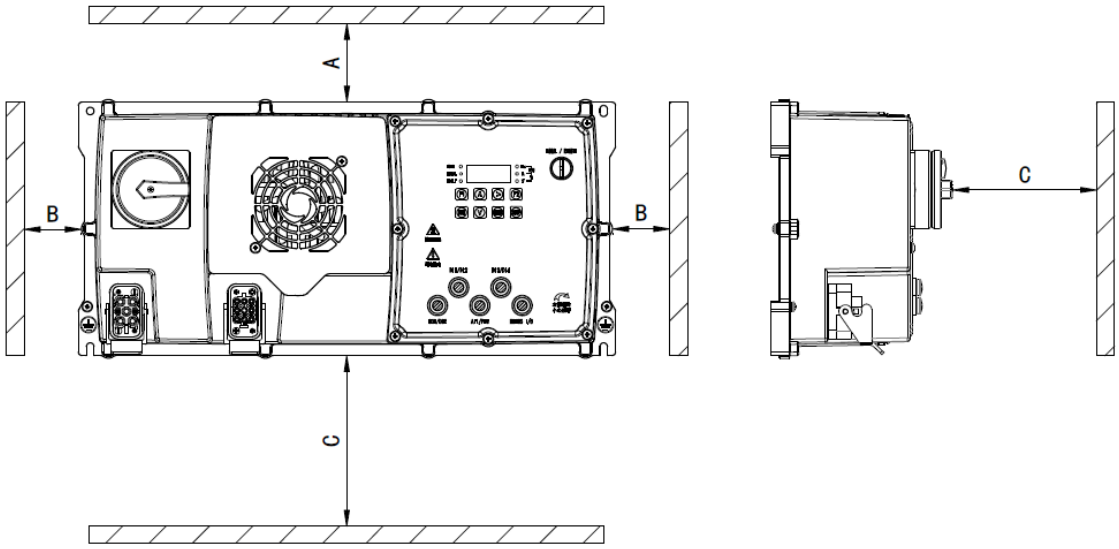
3.2 Installation space and orientation

3.2.1 Direction of installation

To facilitate heat dissipation from the VFD, install the VFD in a vertical orientation. Please check the mounting position according to the following requirements.

Correct Installation	Incorrect installation method	
		

3.2.2 Installation details

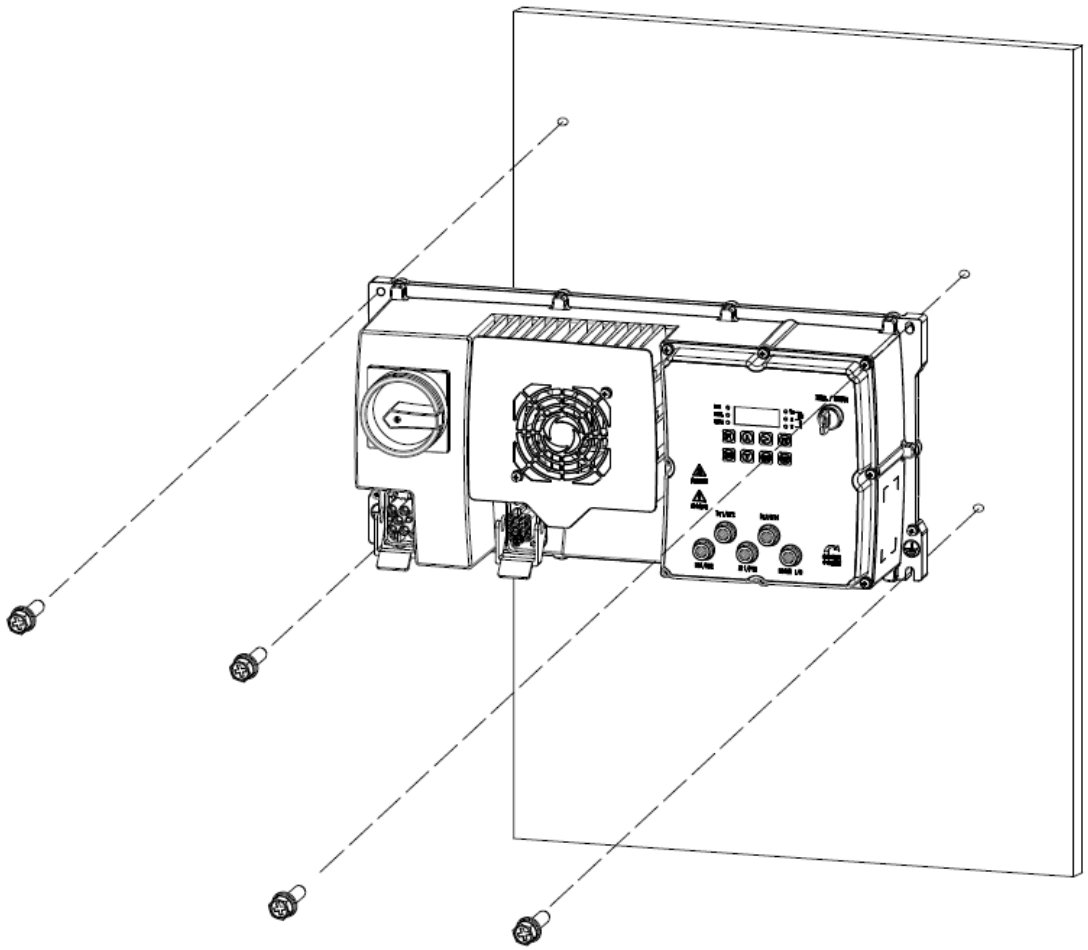


power band	Dimensional requirements (unit: mm)		
0.7kW～5.5kW	A≥100	B ≥ 20	C≥300

3.2.3 Installation instructions

Depending on factors such as different power applications and space, please install the product according to the following installation instructions.

（1） Wall mounting (for VFDs of all form factors)



-Follow the minimum installation spacing required for cooling.

-Fixing washers and screws should be used in combination when mounting the VFD.

-Secure the set screws to the mounting plane by tightening them with 4 screws as required by the standard.

-Washers are required with all mounting screws.

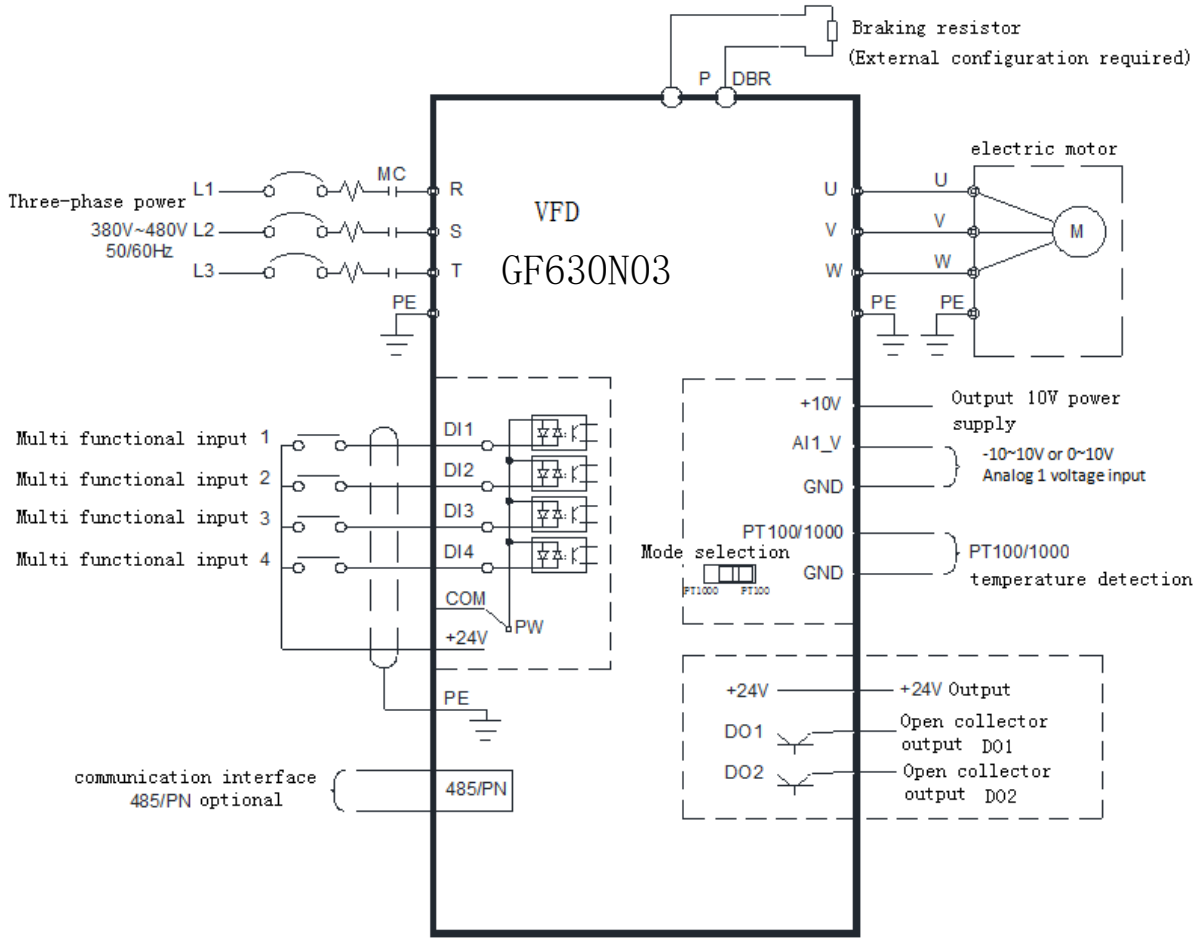
-Avoid environmental influences such as high temperatures and humidity as well as dust, dirt, and conductive gases.

-Do not install the VFD on flammable materials.

-Mounting torque M5: 20±2KGF.CM.

3.3 Wiring

3.3.1 Standard wiring diagrams



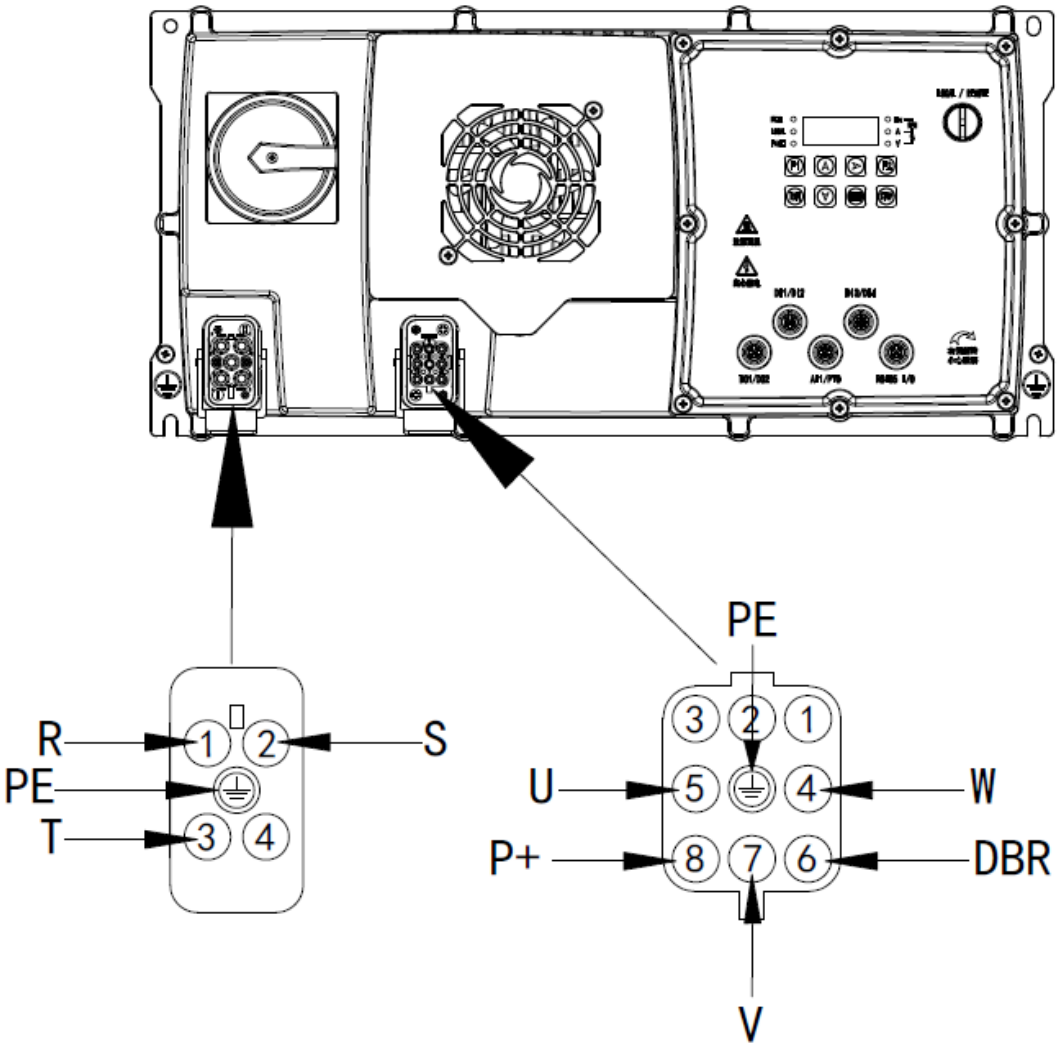
Three-phase 380~480V Typical Wiring Diagrams

Note: --Shield; Twisted Pair

(1) 4-way DI can be compatible with NPN and PNP connection mode, but need to dial selector switch, dial selector switch can refer to 3.3.3 dialing instructions;

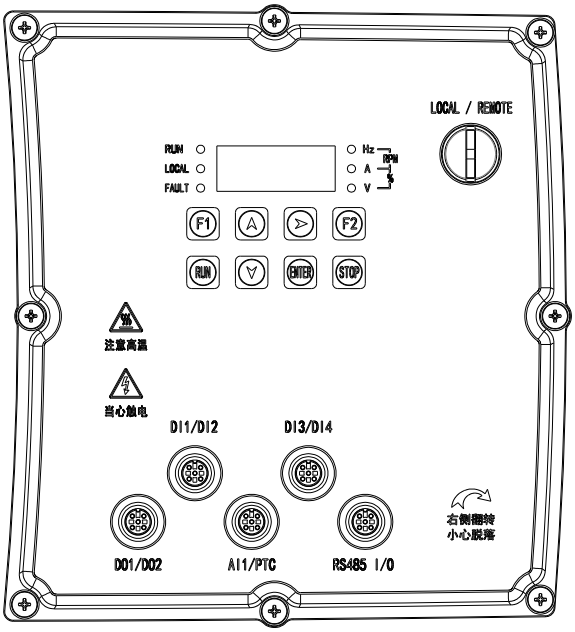
2) The 2 DO outputs are open collector outputs;

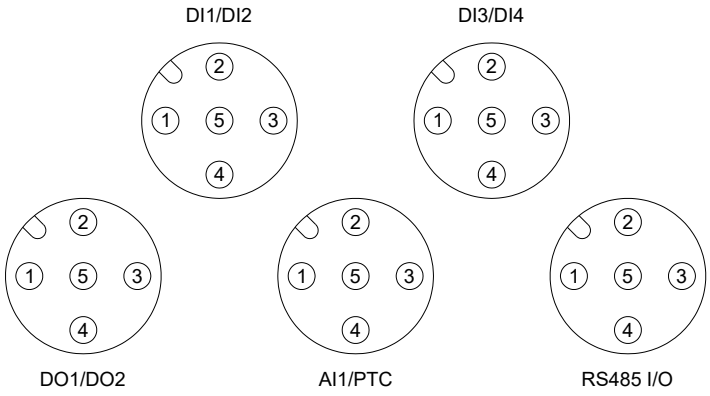
3.3.2 Main circuit terminals



Add 2 docking connector model information;

Terminal Symbols	Functional Description
R, S, T	Three-phase AC power supply to the grid
U, V, W	Connecting three-phase AC motor
P+	DC side voltage positive terminal
DBR	Brake Resistor Terminal Block
PE	ground terminal





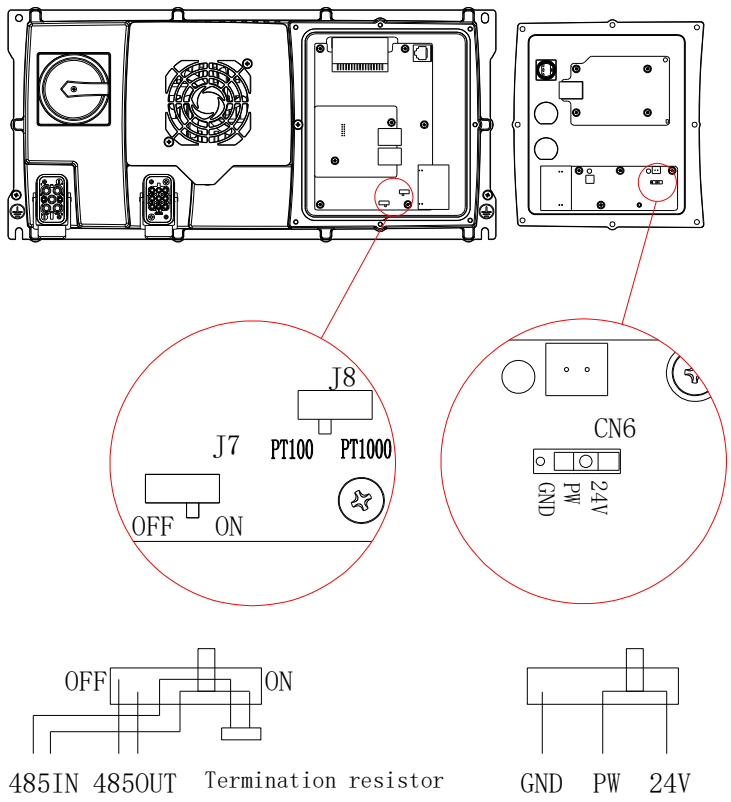
User External Connector					
	DI1/DI2	DI3/DI4	DO1/DO2	AI1/PTC	RS485 I/O
①	+24V			+10V	485+
②	DI1	DI3	DO1	AI1	485+
③	COM			GND	485-
④	DI2	DI4	DO2	PTC+	485-
⑤	COM			PTC-	PE

User cable information:

Material Code	Material Name	model number	lengths	Terminal Model	cold pressing needle	molded body
03.02.008.0331	cord (computer)	M12-5MR-2105-2500	2.5 meters	/	/	/
02.07.999.0080	cord (computer)	22.12.A01.96.P01	5 meters	HQ-4/2-FC	CCSF-2.5	H8A-TS-PG16
02.07.999.0	cord	22.12.A01.96.P	5	HQ-008-	CESM-2	H8A-TS-PG

081	(compute r)	02	meter s	M	.5	16

3.3.3 Dialing instructions:



1. RS485 communication terminal resistor (J7)

The default dial code is in ON state, terminal resistor access, 485out is invalid. When RS485 networking is required and it is located in the middle node, it is necessary to open the cover and adjust the dip switch (J7) to OFF state.

2. Temperature sensor model (J8)

The default dial code is in PT100 state and the sensor type is PT100; if you need to use PT1000 sensor, you need to open the cover and adjust the dial code switch (J8) to PT1000 state.

3. External input sensor type (CN6)

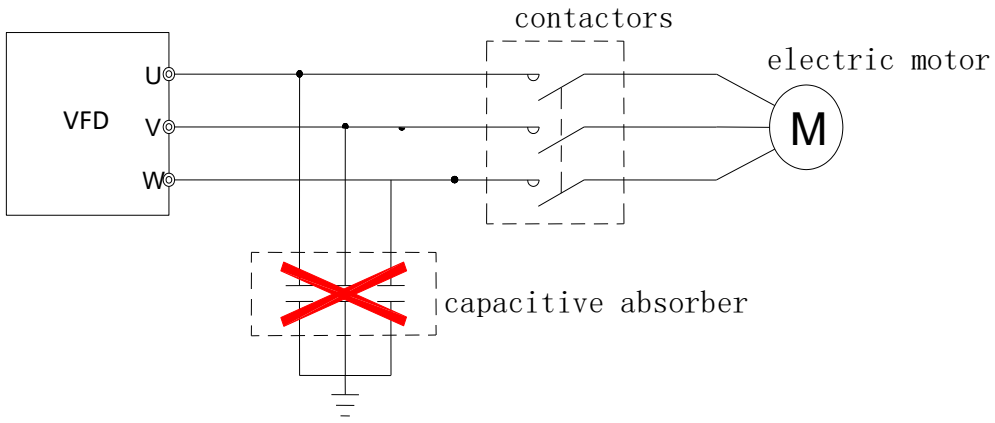
The default dial code is in 24V state, adapting to NPN type sensors; if you need to use PNP type sensors, you need to open the cover and adjust the dial code switch (CN6) to GND state.

3.3.4 Wiring Precautions

serial number	Wiring Precautions	note
1	Wiring operations must be performed by a qualified professional technician.	

2	Before wiring, ensure that the power supply has been completely disconnected for more than 10 minutes Otherwise there is a risk of electric shock.	
3	It is absolutely prohibited to connect the power cord to the output terminals U, V, and W of the VFD.	
4	The VFD and motor must be safely grounded.	
5	Ensure that an intermediate circuit breaker is connected between the VFD and the power supply to prevent the accident from expanding if the VFD fails.	
6	When adding an electromagnetic contactor between the VFD and the motor, be sure to ensure that the contactor's action timing is such that the contactor can only be actuated when there is no output from the VFD.	
7	The U, V, W outputs of the VFD cannot be equipped with absorption capacitors or other capacitance-absorbing devices.	As shown in the figure below.
8	To minimize electromagnetic interference, connect surge absorbers to the coils of electromagnetic contactors, relays, and other devices in the circuit around the VFD.	
9	Use multi-core shielded cable or twisted pair to connect the control terminal. When wiring, the control cable should be kept away from the main circuit and strong electric lines (including power lines, motor lines, relays, contactor lines, etc.) for more than 10cm.	
10	The wiring of relay input and output circuits should be made with stranded or shielded wires of 0.75mm² or more, with the shield connected to the ground terminal of the VFD, and with a wiring length of less than 50m.	
11	The control line should be separated from the main circuit power line, parallel wiring should be separated by more than 10cm, and cross wiring should be made perpendicular.	
12	The connection between VFD and motor should be less than 100m, when the wiring length is more than 100m, it is recommended to increase the output reactor and consult the manufacturer.	

13	All leads shall be sufficiently tightened to the terminals to assure good contact. The main circuit leads should be made of cable wire or copper rows. When cable wires are used, they must be cold pressed or soldered using lugs of the appropriate cross-section before wiring is implemented.	
14	The withstand voltage of all leads must correspond to the voltage level of the VFD.	
15	Shielded cables are recommended for output cables (connection between VFD and motor) larger than 30 m.	



Connection of capacitive absorbers to the outputs is prohibited

4. operation panel

4.1 Description of the operating panel

4.1.1 Introduction of LED operation panel interface

The following figure describes the appearance of the operation panel and the functions of the buttons:

(1) LED operation panel indicator

Status Indicator:

"RUN" running indicator: lights up when the motor is running, otherwise it goes out.

"LOCAL" local/remote indicator: lights up when local mode is selected, goes out when remote mode is selected.

"FAULT" fault: illuminates in the event of a system fault and goes out in all other cases.

Unit Indicator:

The "HZ" indicator lights up when the unit of the currently displayed parameter is Hz or RPM, otherwise it goes out.

The "A" indicator lights up when the unit of the currently displayed parameter is A or RPM or %, otherwise it goes out.

The "V" indicator lights up when the unit of the currently displayed parameter is V or %, otherwise it goes out.

(2) LED operation panel LED display

Data display area

A total of 5-digit LEDs on the operation panel can display the set frequency, output frequency, various monitoring data and alarm codes. The following figure shows the correspondence table with the LED display.

显示文字	LED显示	显示文字	LED显示	显示文字	LED显示	显示文字	LED显示
0	0	A	A	K	K	U	U
1	1	B	b	L	L	V	v
2	2	C	C	M	无	W	无
3	3	D	d	N	n	X	无
4	4	E	E	O	o	Y	y
5	5	F	F	P	P	Z	无
6	6	G	G	Q	q		
7	7	H	H	R	r		
8	8	I	I	S	S		
9	9	J	J	T	t		

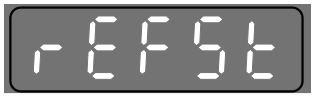
Keyboard key area

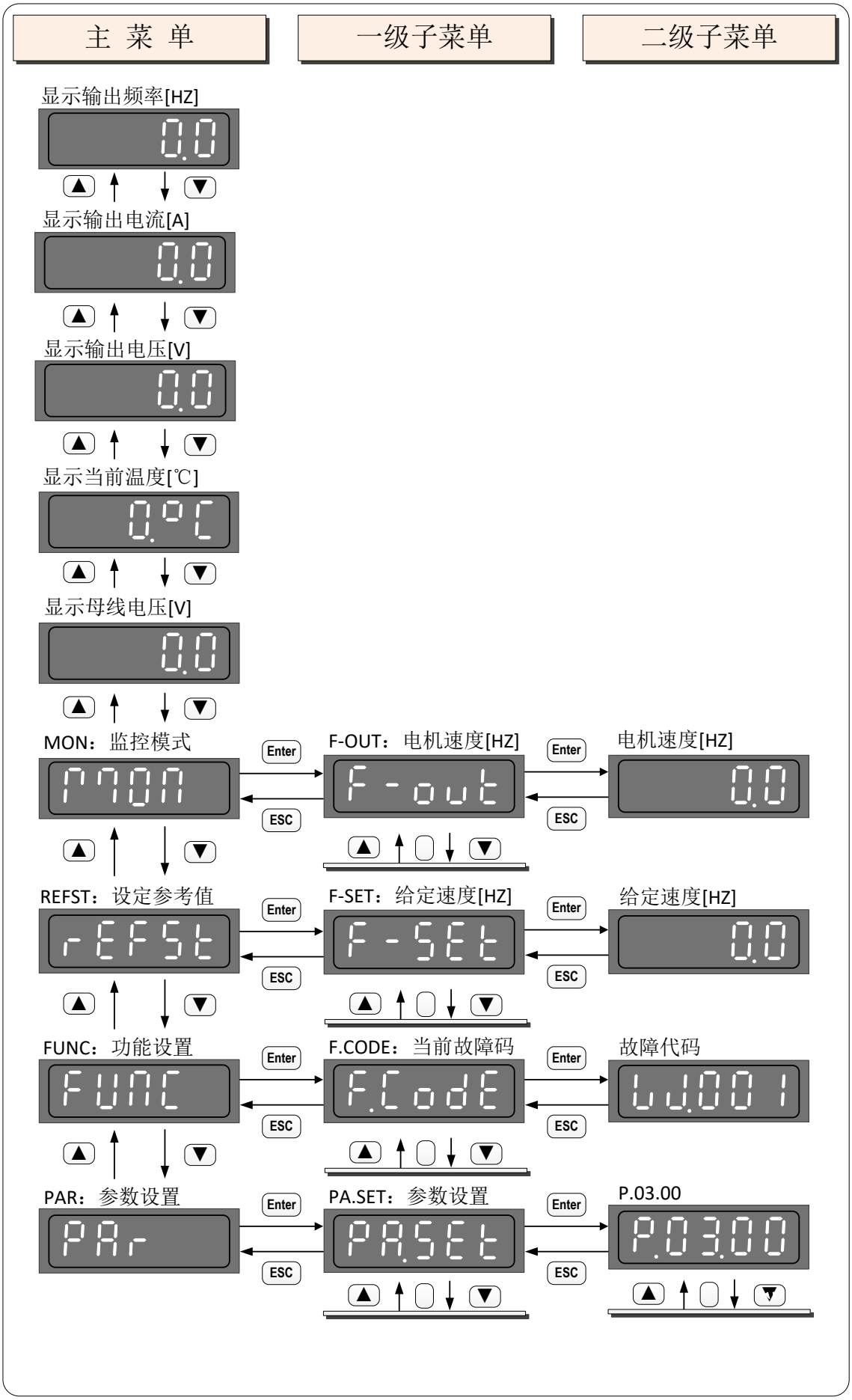
keystrokes	Key Name	Key Function
	exit button	Press this button to return to the previous menu
	Local/Remote Switching Knob	This knob switches between local/remote mode
	multifunction key	Forward/reverse operation direction switching
	upper key	Scroll up menu or setup parameter +1

	down button	Scroll down menu or setup parameter-1
	right click	Setting the parameter to shift the number of bits to the right
	OK button	Step by step into the menu interface, set the parameters to determine
	run key (on a computer keyboard)	starter motor
	stop button	Stop motor

4.2 Main menu composition diagram

Main menu LED display	Type of model	Functional Description
	Displays the current output frequency	Output frequency monitoring value in HZ
	Display current output current	Output current monitoring value in A
	Display current output voltage	Output voltage monitoring value in V

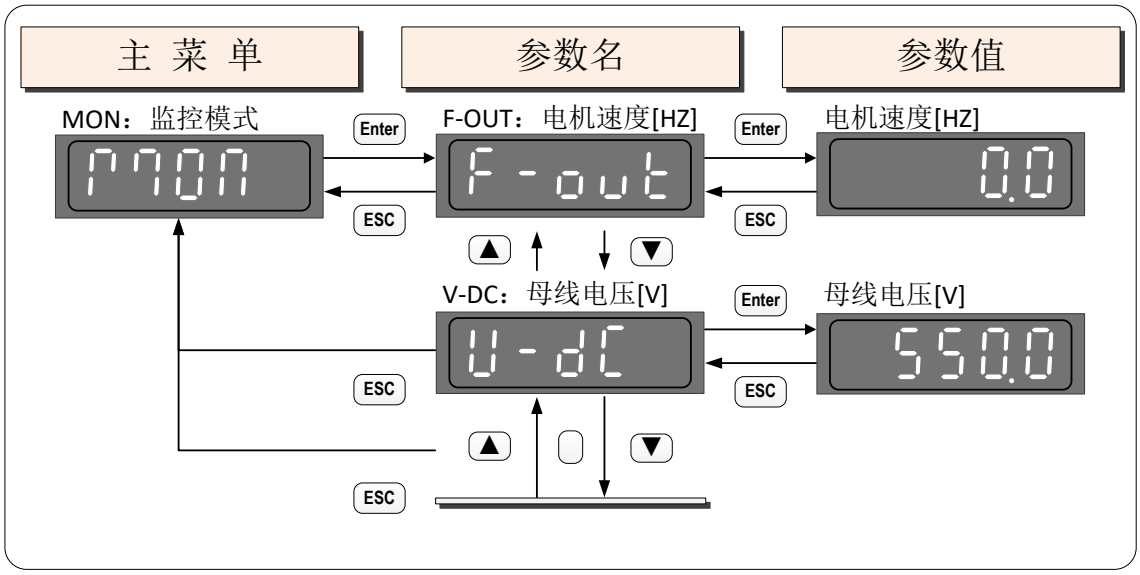
	Displays the current temperature	Output temperature monitoring value in ° C
	Display the current bus voltage	Output bus voltage monitoring value in V
	MON: Monitor Mode	Monitor the operating status of the VFD, digital input/output (I/O) status, and analog values
	REFST: Set reference value	Setting of the given speed, torque setting, torque limitation, analog output
	FUNC: Function Setting	Fault query, fault reset, system reset, date and time, version number
	PAR: Parameterization	Changeable parameter values, motor self-tuning, parameter initialization, password entry


主 菜 单
一级子菜单
二级子菜单
显示输出频率[HZ]
0.0
显示输出电流[A]
0.0
显示输出电压[V]
0.0
显示当前温度[℃]
0.0°C
显示母线电压[V]
0.0
MON：监控模式
MON
Enter
ESC
F-OUT：电机速度[HZ]
F-out
Enter
ESC
电机速度[HZ]
0.0
REFST：设定参考值
rEFSt
Enter
ESC
F-SET：给定速度[HZ]
F-SEt
Enter
ESC
给定速度[HZ]
0.0
FUNC：功能设置
FUNC
Enter
ESC
F.CODE：当前故障码
F.CodE
Enter
ESC
故障代码
U.001
PAR：参数设置
PAr
Enter
ESC
PA.SET：参数设置
PASEt
Enter
ESC
P.03.00
P.03.00

4.3 Description of menu composition

（1） Monitor Mode (Drive Monitor)

Monitors the operating status of the VFD, the status of the digital inputs and outputs (I/Os), and the values of the analog quantities.

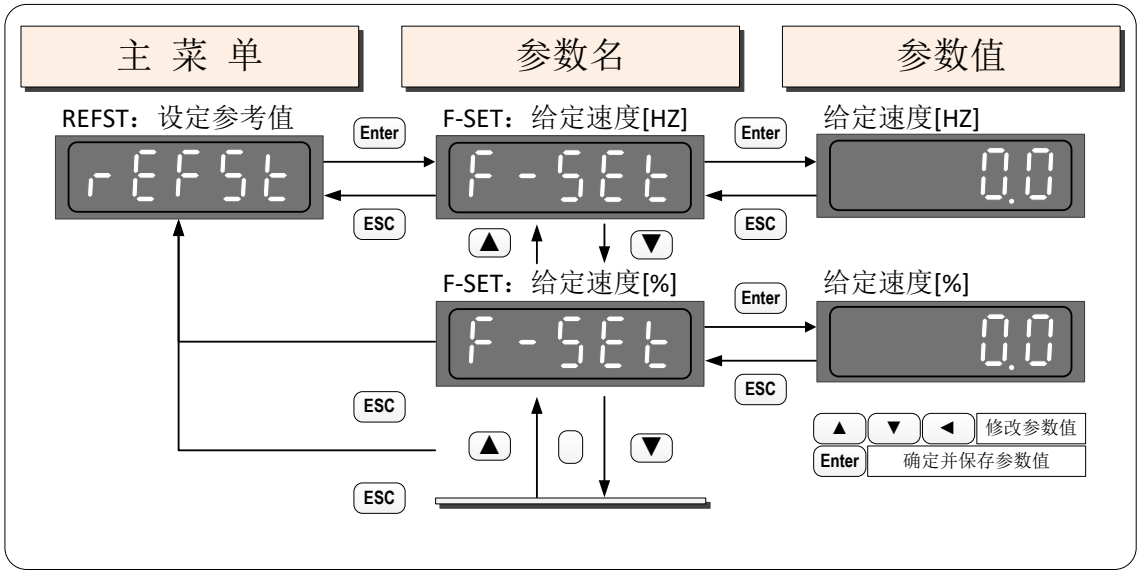


Type of model	Sisplay format	Categorization	Unit (of measure)	Parameter description
Monitoring mode MON	F-OUT	Motor speed [Hz]	Hz	Motor speed during operation
	V-DC	busbar voltage	V	DC bus voltage
	V-OUT	output voltage	V	Output voltage
	IRMS	Motor Current	A	Three-phase current RMS
	TORQ	Load torque	%	Load torque
	P-OUT	output power	kW	output power
	TEMP	temp	℃	Temperature of IGBT in the product
	F-SET	Given frequency [Hz]	Hz	given frequency
	D-IN	digital input	not have	Hexadecimal display of digital inputs
	D-OUT	digital output	not have	Hexadecimal display of digital outputs
	AOUT1	Analog output 1	%	Analog output 1
	AOUT2	Analog output 2	%	Analog output 2
	V1-IN	Analog input 1 (voltage)	V	Analog input 1 (voltage)
	A1-IN	Analog input 1 (current)	A	Analog input 1 (current)
	V2-IN is the	Analog input 2	V	Analog input 2 (voltage)

	temperature display	(voltage)		
	A2-IN	Analog input 2 (current)	A	Analog input 2 (current)
	ROTOR	Encoder speed	rpm	Speed of encoder sampling
	F-AFE	Frequency (AFE)	Hz	Grid frequency sampled in the rectifier-feedback module
	V-AFE	Voltage value (AFE)	V	Amplitude of the voltage sampled in the rectifier-feedback module
	I-A	Phase A current	A	A phase current sampling value
	I-B	B-phase current	A	B-phase current sampling value
	I-C	Phase C current	A	C phase current sampling value
	IMAX	Maximum current	A	Maximum current during start or stop

（2） Set reference value (REFST)

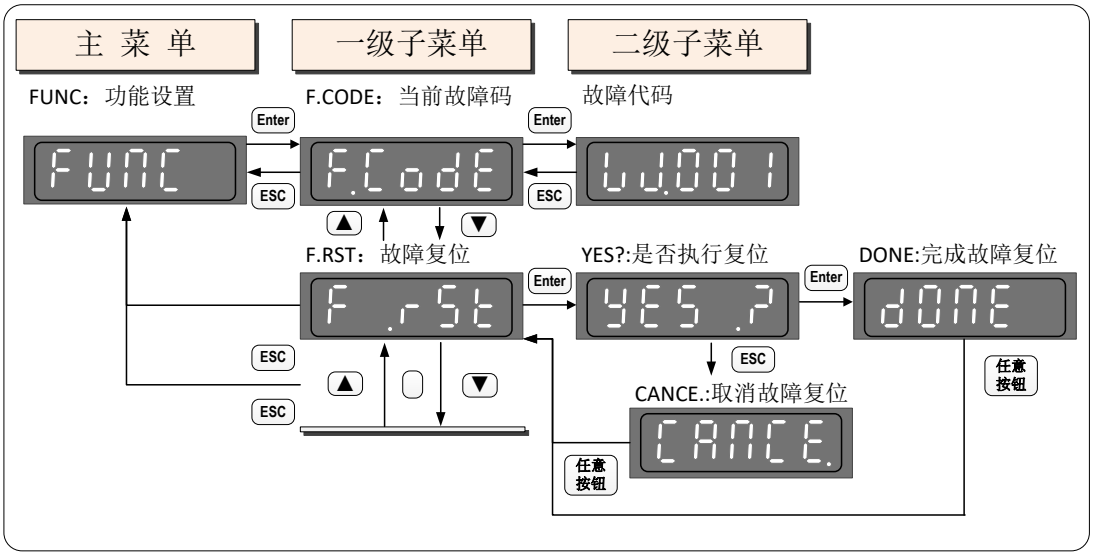
You can set the given speed and given torque of the VFD, and the key operation is shown below:



Type of model	display format	Classification	Unit	Parameter description
Setting reference value REFST	F-SET	given speed	[Hz]	Speed in Hz
	F-SET	given speed	[%]	Speed in %
	T-SET	Torque Setting	[%]	Torque in %
	TLIM	Torque Limit	[%]	Torque limit value %
	A1SET	Analog output 1	[%]	Given analog 1 output
	A2SET	Analog output 2	[%]	Given analog 2 outputs

（3） Function Setting (FUNC)

Function Setting (FUNC) contains View Current Fault Code, Fault Reset, Historical Fault, Clear Fault Record, System Reset, Date Setting, VFD Version Number, Panel Version Number. Select the corresponding function and click ENTER to execute the function. The key operation is shown below:



Type of model	Display format	Functional classification	Functional Description
Menu FUNC	F. CODE	Current Fault Code	Display the current fault code or warning code
	F. RST	fault reset	Reset the current fault
	F. HIS	Historical Failures	View historical faults
	F. CLR	History Fault Clearing	Deleting historical fault information stored in the VFD
	SY.RST	system reset	The VFD restarts immediately after executing this function
	DATE	Date Time	View or set the VFD date and time
	DR. VER	VFD version number	Check the VFD software version number
	PD.VER	Panel version number	View panel software version number

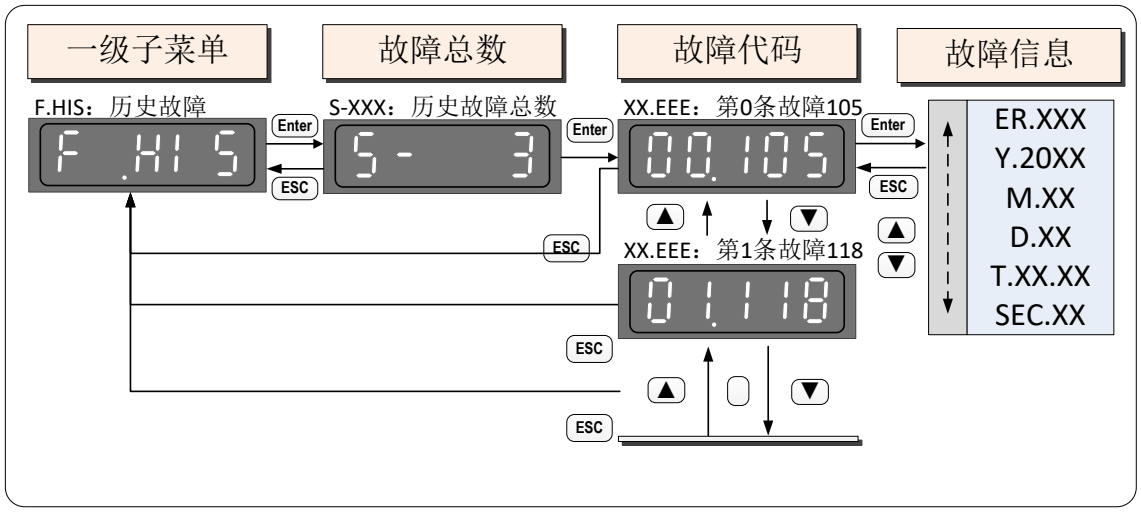
F.CODE: Display the current fault code or warning code of the VFD. 5 seconds without key operation or click ESC key to exit the display of fault code or warning code.

F.RST: Reset the current fault of the VFD. After clicking ENTER key to enter, the confirmation dialog box is displayed: **YES ?** , click **ENTER** key to confirm, and start to execute the fault reset operation, after the execution is completed, the screen displays: **DONE**; click ESC key to cancel the operation of this function,

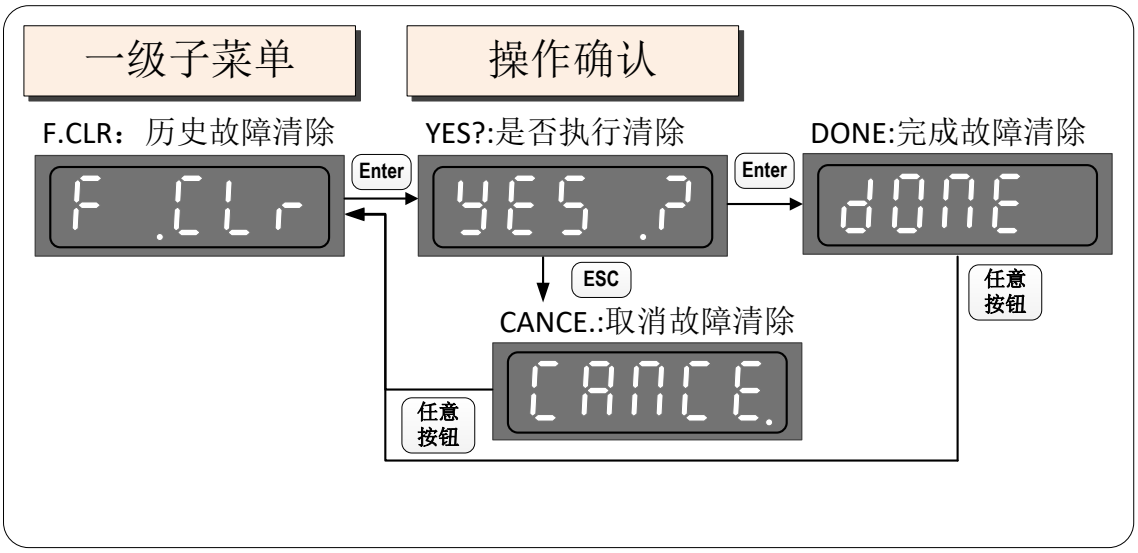
the screen displays: **CANCE.**

F.HIS: can be used to view the history of faults saved in the VFD, click ENTER key to enter, it will display: **S-XXX**, that is, a total of **XXX** history of faults; press any key to enter the history of fault code display: **XX.EEE**, where **XX** is the order of the number, the number starts from 0, increasing in turn, 0 means the most recent faults that occurred, **EEE** means the fault code, the meaning of the detailed code Please refer to the relevant explanation of the fault code; continue to click the ENTER key to enter the fault code details interface, through the up or down key, you can view the date and time of the occurrence of the fault; **ER.XXX** for the fault code, **Y.20XX** for the year 20XX, **M.XX** for the month of XX, **D.XX** for the day of XX, **T.XX.XX** for the time of XX XX, **SEC.XX** for the second of XX. Press ESC key to return to the previous level display under different interface.

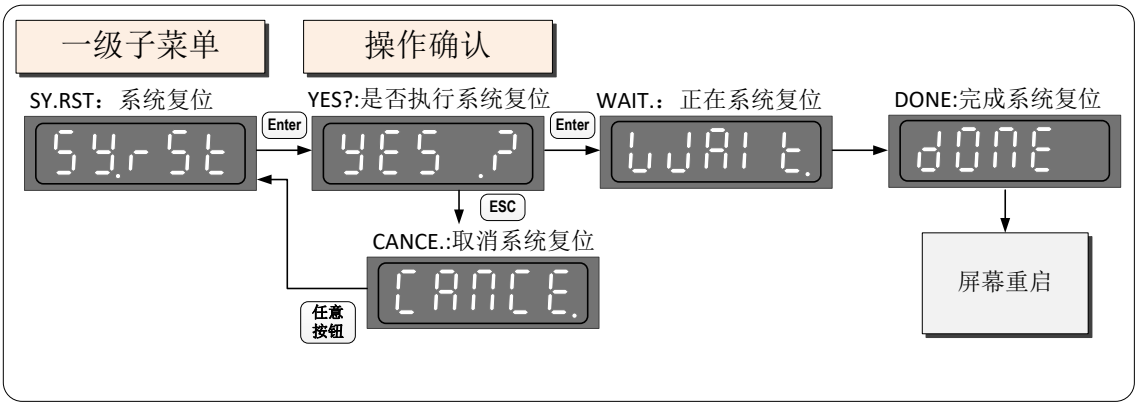
The operation flow is shown below:



F.CLR: It is used to delete the historical faults saved in the VFD, after clicking ENTER key to enter, the confirmation dialog box is displayed: **YES ?** , click **ENTER** to confirm, and start to execute the delete operation, after the execution is completed, the screen displays: **DONE**; click other keys, to cancel the operation, the screen displays: **CANCE.** The operation flow is shown below:



SY.RST: It is used to perform system reset for the VFD, after clicking ENTER key to enter, the confirmation dialog box is displayed: **YES ?** , click **ENTER** to confirm, the screen displays: **WAIT.** and begin to execute the system reset operation, after the execution is completed, the screen displays: **DONE**; immediately after the screen restart. Under the confirmation dialog box, click on other keys, in order to cancel the operation, the screen displays: **CANCE.** The operation flow is shown below:



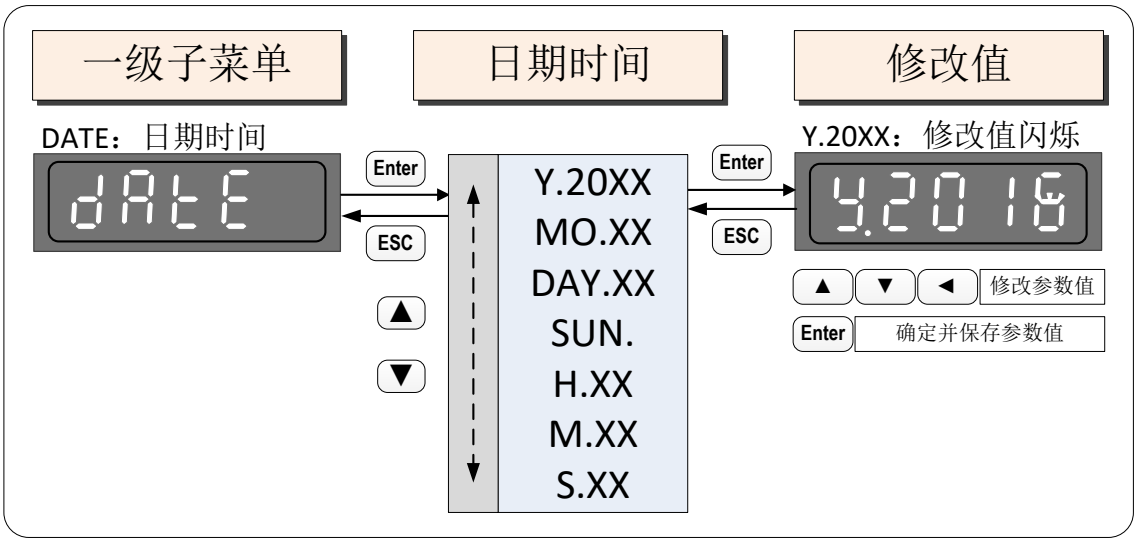
DATE: It is used to set the date and time of the VFD, after clicking ENTER to enter, you can use the up and down keys to check the present date and time, the menu is year, month, day, week, hour, minute and second in order; under the corresponding display screen, click ENTER, the numbers will start flashing, through the left, up and down keys to adjust the correct date or time, click ENTER, it will make corresponding modification to the VFD will be modified

accordingly and the numbers will stop flashing.

The format of the specific numerical expressions is shown in the table below:

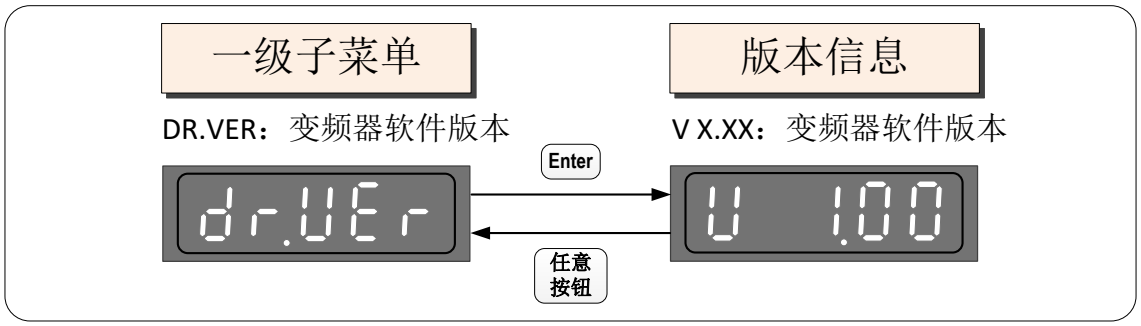
Type of model	Display format	Functional classification	Functional Description
menu DATE	Y.20XX	Current date: Year	Show current date: year, i.e.: 20XX
	MO.XX	Current date: Month	Display the current date: month, i.e.: XX month
	DAY.XX	Current date: Day	Display the current date: day, i.e.: XX day
	XXXX.	Current date: Week	Shows the current day of the week, i.e: MON.: Monday TUES: Tuesday WED.: Wednesday THUR.: Thursday FRI.: Friday SAT.: Saturday SUN.: Sunday
	H.XX	Current time: Hour	Display the current time: hour, i.e.: XX hour
	M.XX	Current time: minutes	Display the current time: minutes, i.e.: XX minutes
	S.XX	Current time: seconds	Display the current time: seconds, i.e.: XX seconds

The operation flow is shown below:

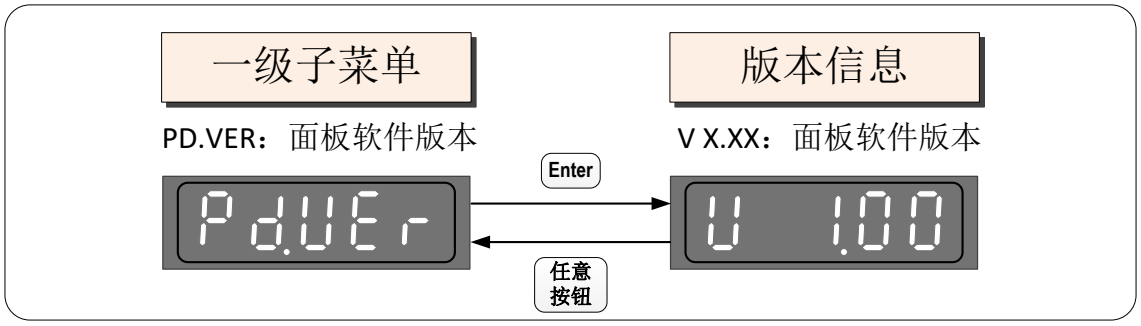


DR.VER: It is used to check the software version of the VFD, after clicking

ENTER key to enter, the screen displays: **VX.XX**; after pressing any key or 5 seconds, it returns to the previous menu, the operation flow is as follows:

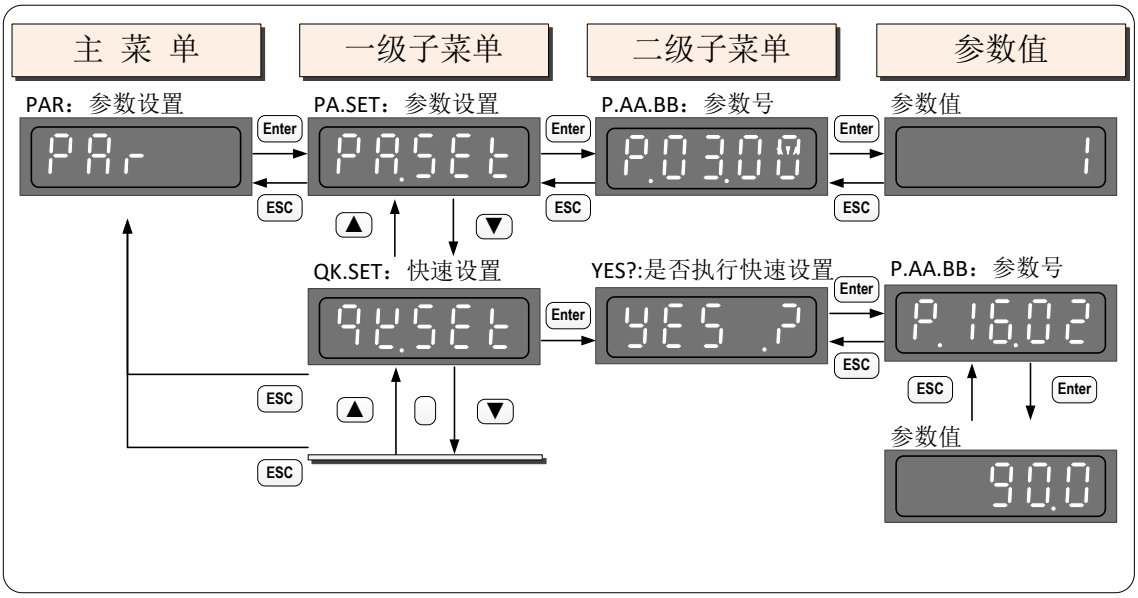


PD.VER: Used to view the software version of this panel, click ENTER to enter, the screen displays: **VX.XX**; press any key or 5 seconds, return to the previous menu, the operation flow is shown below:



（4） Parameter setting (PAR)

Parameter Setting (PAR) contains various functions related to VFD parameters, including parameter viewing and modification, VFD quick setting, parameter initialization, self-tuning 1, self-tuning 2, self-tuning 3, self-tuning 4, advanced privilege password input, and advanced privilege locking, and clicking the ENTER key can execute the corresponding functions. The key operation is shown below:

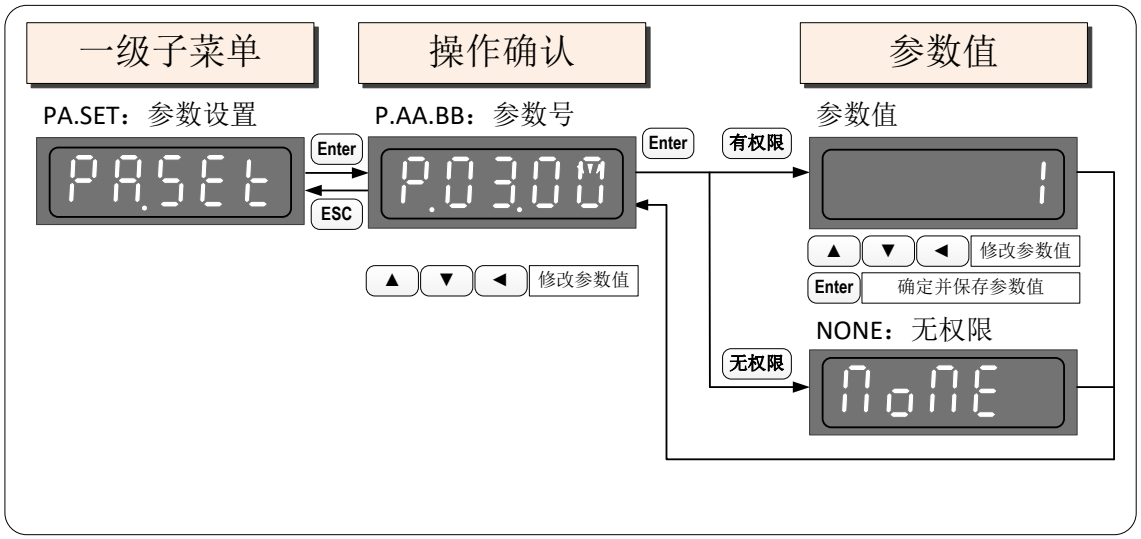


Type of model	display format	Functional classification	Functional Description
parameterization PAR	PA.SET	parameterization	View or modify the corresponding VFD parameters; Parameter access privileges are categorized as: normal privileges, advanced privileges; Normal privilege: you can access parameters with low privilege; Advanced Privilege: allows access to parameters containing both low and high privileges; Panel power-up defaults to: normal permissions. In the PASW. function, enter the correct VFD password to gain advanced privileges.
	QK.SET	Quick Setup	Quick setup of commonly used parameters.

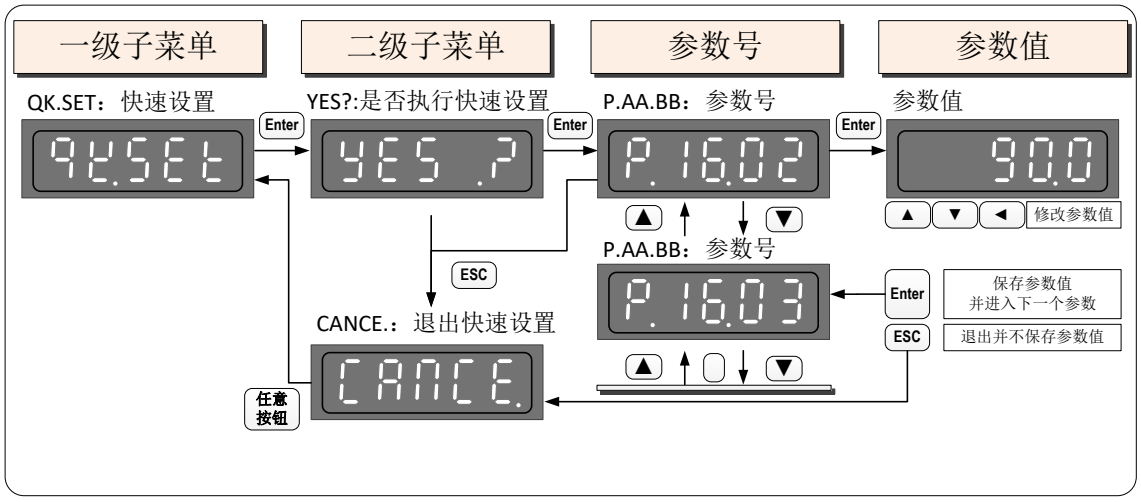
	PA.INI	Parameter initialization	Parameter initialization is restored to the initially set value.
	TUNE.1	Static self-tuning	Motor static self-tuning.
	TUNE.2	Dynamic self-tuning	self-tuning of motor dynamics.
	TUNE.3	self-tuning moment of inertia	self-tuning of mechanical moment of inertia.
	TUNE.4	Capacitive self-tuning (AFE)	Effective only in AFE control mode.
	PASW.	Advanced Privilege Password Entry	Password entry screen, enter the correct password to gain advanced privileges for parameter access.
	P.LOCK	Advanced Privilege Lockdown	Remove advanced privileges for parameter access and change to normal privileges.

PA.SET: Display or modify VFD parameters. Click ENTER to enter the parameter number modification interface "P.AA.BB", use the up and down left keys to modify the required parameter number, AA indicates the parameter group number, BB indicates the parameter number, if the parameter number of the group has reached the largest parameter number contained in the parameter group, the parameter group number automatically enters the next group of parameter groups. After inputting the required parameter number, click ENTER to enter the page of viewing and modifying the data of the parameter number. If you do not have access to the current parameter, the screen will display NONE, which indicates that the parameter cannot be viewed, and you need to obtain advanced privileges to view it; if you have access to the current parameter, the screen will display the real-time value of the parameter, and you can modify the parameter value by using the left button, the up button, and the down button, and clicking ENTER to save the modified parameter value, and the screen will return to the interface of the input parameter number.

The operation flow is shown below:



QK.SET: It is used to quickly set the commonly used VFD parameters, click ENTER to display the confirmation dialog box: **YES ?** , click ENTER to confirm, display the parameter number and enter the parameter value setting screen, use the left key, up key and down key to modify the parameter value, click ENTER to save the modified parameter value and enter the next parameter number; in this function, under the parameter data input screen, click ESC key, it will exit the whole quick setting function. The operation flow is shown below:

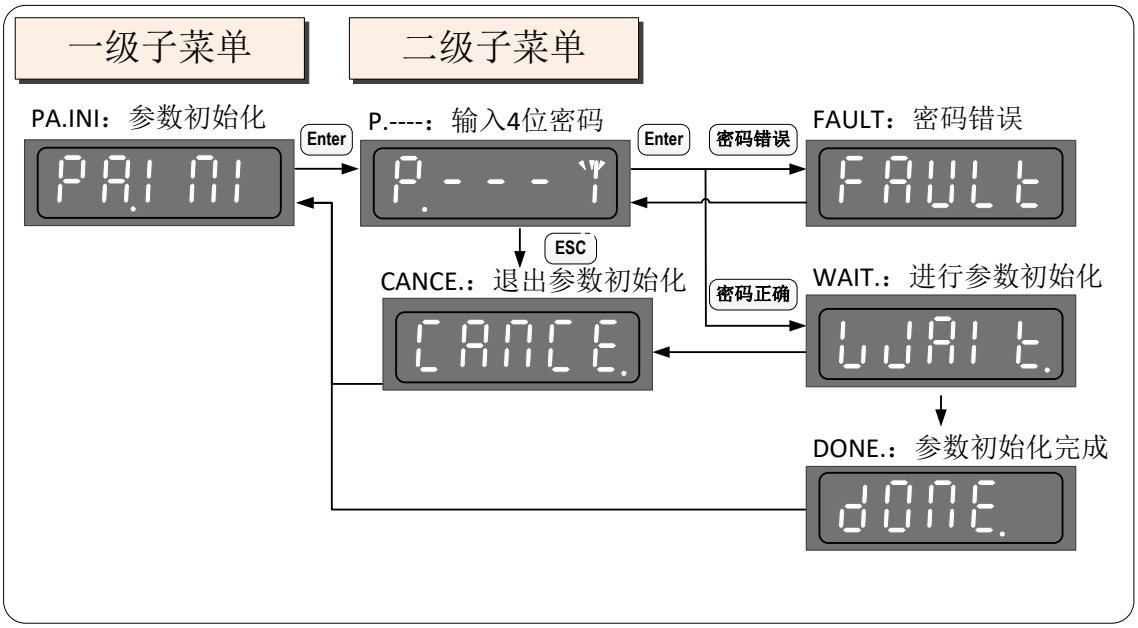


The common parameter numbers included are listed in the table below:

Type of model	Common Parameter Number	Parameter name
Quick Setup QK.SET	P.16.02	Motor rated power
	P.16.03	Motor rated voltage
	P.16.04	Motor rated current
	P.16.05	Motor rated frequency

	P.16.06	Rated motor speed
	P.16.07	Motor rated poles
	P.16.09	Motor synchronous speed
	P.16.11	Control mode selection
	P.16.14	V/F curve setting
	P.16.24	Maximum frequency
	P.08.16	Acceleration time 1
	P.08.35	Deceleration time 1
	P.08.00	Startup Source Selection
	P.08.10	Velocity feed source
	P.08.03	Parking
	P.07.00	Current limit value [motor 1]
	P.07.04	Overcurrent protection [motor 1]
	P.07.19	Overspeed fault [motor 1]

PA.INI: All parameters are restored to factory settings, i.e. parameters are initialized. After clicking ENTER, the screen of inputting password "**P.----**" will appear, input the correct password by left button, up button, down button, i.e. input the password to get the advanced privilege; input correctly, the screen prompts "**WAIT.**" and carries on the operation of initialization of parameters. Initialization operation, after the initialization operation is completed, the screen displays "**DONE**" and returns to the previous menu; if the input password is incorrect, the screen displays "**FAULT**" and returns to the password input screen; if you click on the ESC key on the interface of password input, that is, to exit the parameter initialization. If you click the ESC key in the interface of password input, it will exit the menu of parameter initialization. The operation flow is shown below:

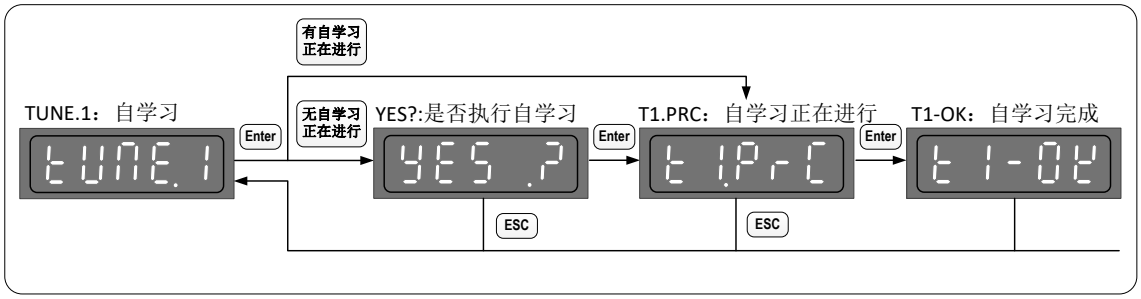


TUNE.1, TUNE.2, TUNE.3, TUNE.4: correspond to static self-tuning, dynamic self-tuning, rotational inertia self-tuning, and capacitive self-tuning (AFE), respectively.

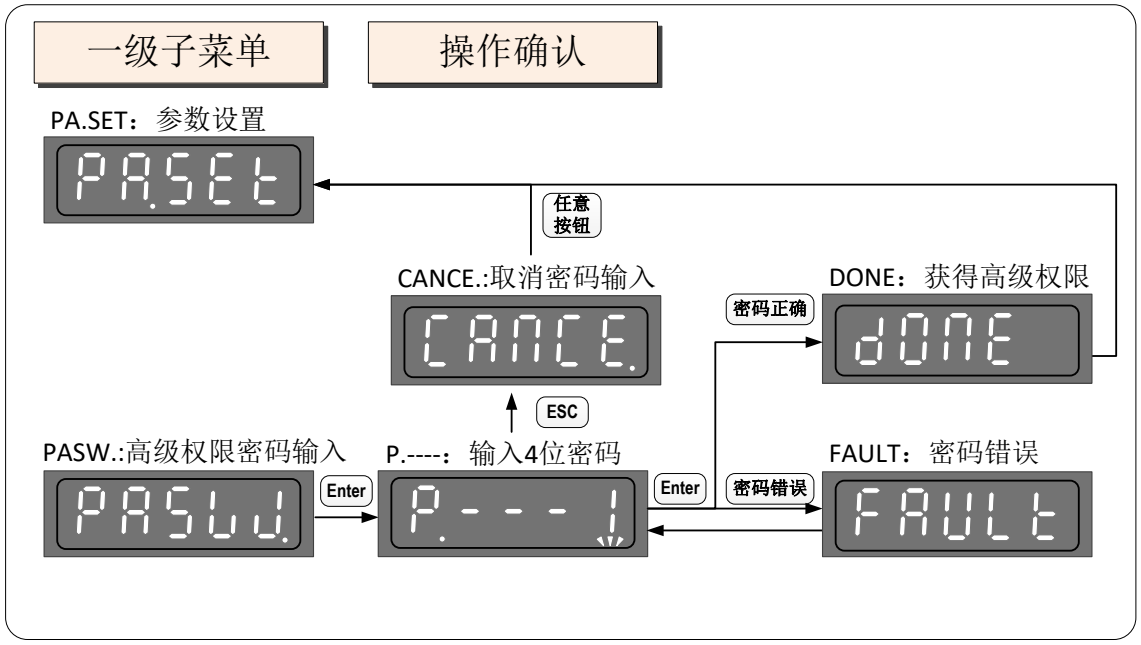
Select "**TUNE.X**" in Function Setting and press ENTER to perform self-tuning. During the self-tuning process, "**TX.PRC.**" is displayed, and "**TX-OK**" is displayed when self-tuning is completed.

Under the self-tuning menu, if the VFD is not ready, the screen will stay in the "**YES ?**" screen. screen; if the VFD is ready, please continue to click ENTER to confirm the start of the self-tuning function until the screen displays "**TX.PRC.**". PRC." screen, i.e., when the self-tuning is in progress, you can click ESC key to exit the self-tuning screen temporarily and perform other functions such as monitoring. Under the self-tuning function selection menu, click the ENTER key to enter, and if there is a self-tuning operation at present, the screen directly displays "**TX.PRC.**". When self-tuning is completed, the screen displays "**TX-OK**".

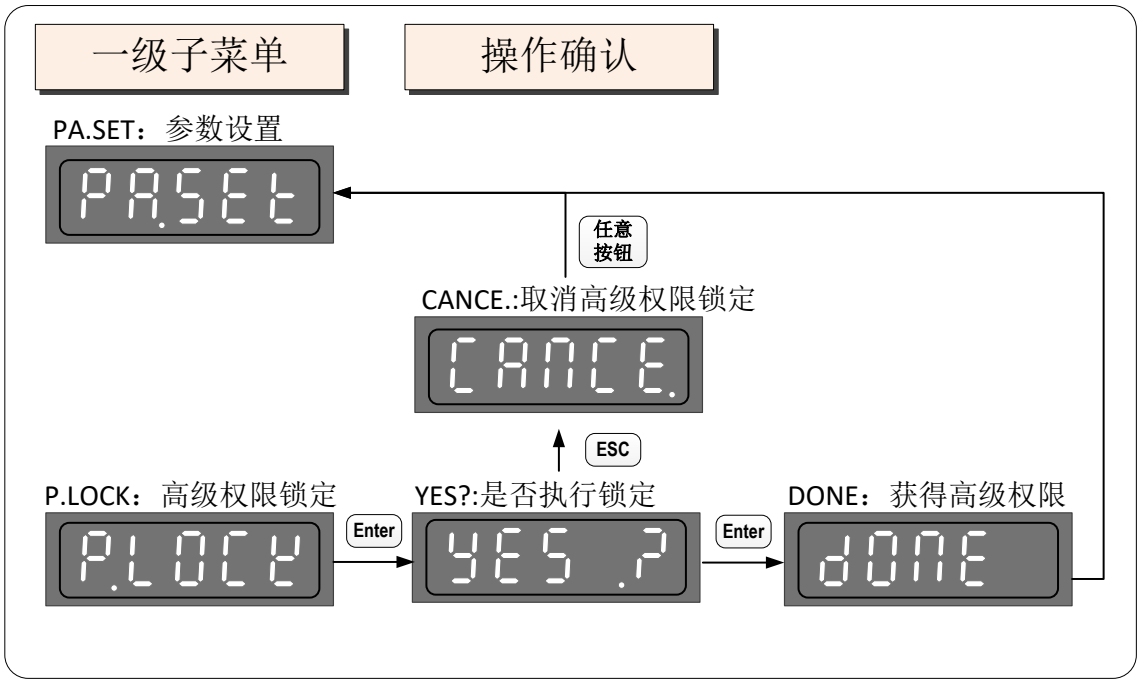
Take **TUNE.1** as an example the operation flow is shown below:



PASW.: Advanced Access Password Entry. Enter the correct password, you can get the advanced privilege of parameter access, and you can view more parameters with higher privilege. After execution, it will jump to PA.SET screen directly, and the operation flow is as follows:



P.LOCK: Advanced privilege lock. Clicking ENTER to confirm will cancel the advanced privilege of parameter access and change it to ordinary privilege. When no key operation timeout, i.e. half of the set value of the backlight off time, the screen will switch to the main menu, and at the same time, the parameter access privilege will be changed to ordinary privilege. After the execution, it will jump to PA.SET screen, the operation flow is as follows:



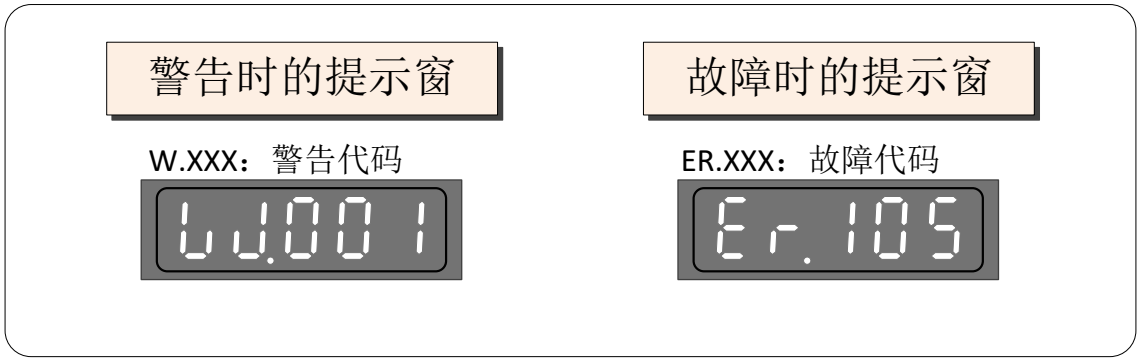
（5） Warning and Error

When a malfunction or warning occurs, the malfunction and warning box will be displayed, and "RESET" can be used to reset the malfunction only when the malfunction or warning box is displayed. You can use the "ESC" key to temporarily hide the warning and fault prompts, but the warning or fault prompts will still be displayed for more than 15 seconds until the faults and warnings are eliminated.

After the prompt box has been hidden, the fault needs to be reset, under the main menu, press RESET to reset the fault.

After the box has been hidden, you can use "F.CODE" to bring up the trouble box again.

Where XXX is a fault code or warning code.

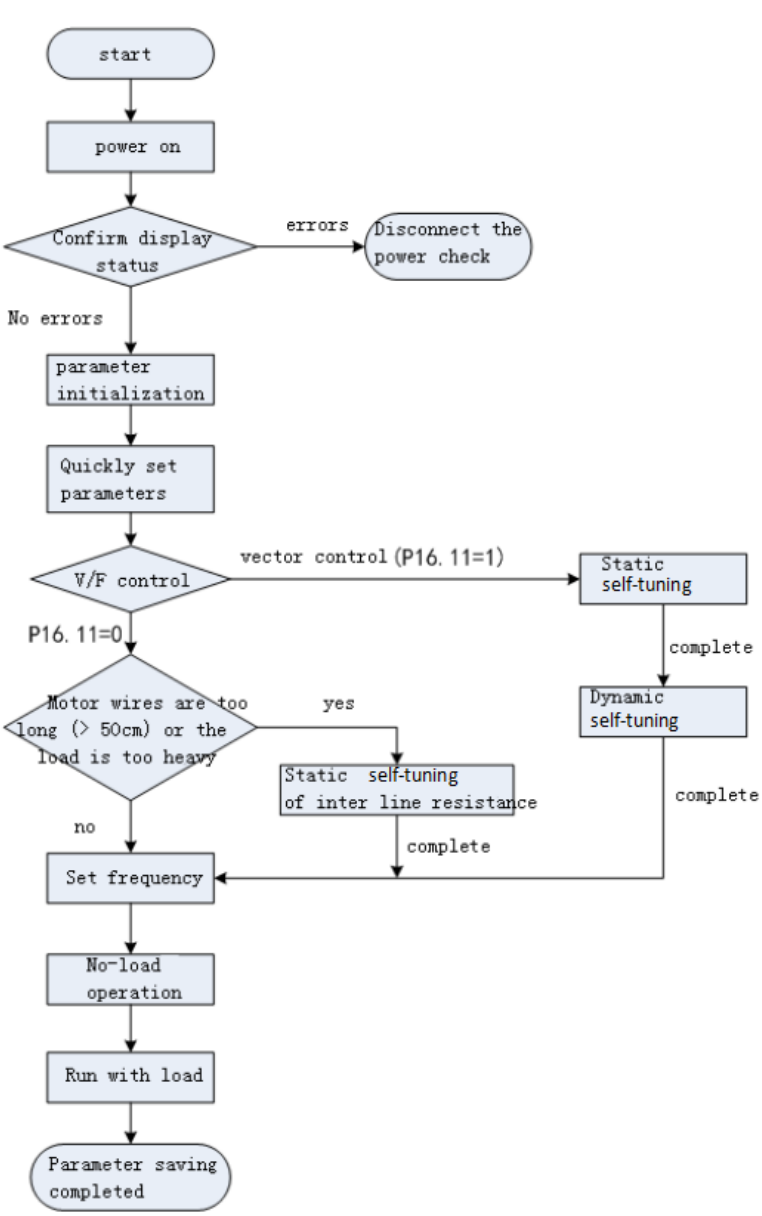


5. System Commissioning

This chapter introduces the basic debugging steps of the logistics special VFD, mainly including the frequency command setting of the VFD, the control of startup and shutdown, according to the contents of this chapter can realize the trial operation of the VFD-controlled motor.

5.1 Quick debugging guide

Please perform a trial run based on the flowchart shown below.



Attention:

1, Before using the operation panel for self-tuning, be sure to select the Local/Remote key as Local.

2, the initial value of the control mode is V/F control (P16.11=0). In order to get better control performance, it is recommended that the V/F control also do static self-tuning.

3, open-loop vector control (P16.11 = 1) must be strictly in accordance with the following steps to do self-tuning, first static self-tuning, then dynamic self-tuning, and finally rotational inertia self-tuning, these three steps are recommended to be done, otherwise there will be a risk of reporting faults in the actual operation process.

5.2 Checking before turning on the power

Be sure to check the following items before turning on the power.

Sports event	Element
Confirmation of power supply voltage	Whether the power supply voltage is within the permissible range, three-phase AC380~460V 50/60Hz;
Confirmation of connection between VFD output terminals and motor terminals	Are the output terminals (U,V,W) of the motor and the motor well connected;
Confirmation of connection to VFD control circuit terminals	Whether the control terminals of the VFD are well connected to other control devices;
Load Confirmation	Whether the motor is in the no-load state (not connected to the mechanical state).

5.3 Confirmation of display status after power-on

The LED operation panel indicates the status:

When the power is turned on, the display of the operator in the normal state is shown below.

state of affairs	demonstrate	instructions
normal time		Factory default display is digitally set to 10.00Hz
malfunction		The VFD is stopped during a fault and the fault type is displayed.
When the communication connection is disconnected		The communication connection is disconnected and there is a communication failure with the DSP.

5.4 Restoring factory settings

The LED operation panel reverts to the factory settings as follows:

For details, see PA.INI in (4) Parameter setting in Chapter 4, 4.2.6 Description of menu composition.

5.5 Quick Setup Parameters

Quickly set the following parameters to be able to test run the motor.

Function code	Name	Clarification	Factory value	Function code	Name	Clarification	Factory value
P16.2	Motor rated power	Refer to the motor nameplate to set the motor rated power		P16.24	Maximum frequency	Setting the maximum frequency (this parameter is only valid in V/F control mode)	50 [Hz]
P16.3	Motor rated voltage	Set the rated motor voltage with reference to the motor nameplate		P8.16	Acceleration time 1	Acceleration time from the stop state to the set value of P8.15	3
P16.4	Motor rated current	Set the rated motor current by referring to the motor nameplate.		P8.35	Deceleration time 1	Deceleration time from P8.34 set value to stop	3
P16.5	Motor rated frequency	Refer to the motor nameplate to set the rated motor frequency		P8.0	Startup method selection	[0] Digital input terminal [1] Operation panel [2] DP communication [3] MODBUS [4] Free function	1

						module	
P16.6	Rated motor speed	Refer to the motor nameplate to set the rated motor speed		P8.10	Velocity feed source	[0] I/O terminal [1] Analog input 1 [2] Analog Input 2 [3] Operation panel [4] DP communication [5] MODBUS [6] Free function module	3
P16.7	Motor rated poles	Setting according to the rated speed (120 x P16.5 / P16.6) rounded down		P8.3	Parking	[0] Ramp parking [1] Free parking	1
P16.9	Motor synchronous speed	Set according to rated speed (120 x P16.5/P16.7)		P7.0	Current limit value [motor 1]	0~300[%]	180%
P16.11	Control mode selection	[0] V/F control [1] Open-loop vectors	0	P7.4	Overcurrent protection [motor 1]	0~300[%]	235%
P16.14	V/F curve setting	[0] Linear V/F curve	0	P7.19	Overspeed fault	100.0 to 720.0 [%]	120%

		[1] Multi-point V/F curves			[motor 1]		
		[2] Quadratic power curves					

5.6 self-tuning of motor parameters

self-tuning is necessary when the motor wires are too long or when vector control is selected. Please perform self-tuning in the following order to automatically recognize the motor parameters.

（1） Select Control Mode

Function code	Parameter selection	Control mode	self-tuning options
P16.11	0	V/F control	Static self-tuning
	1	Open-loop vector control	Static and dynamic self-tuning

（2） Considerations Before Implementing a self-tuning Model

The VFD provides a parameter self-tuning function. The accurate self-tuning of parameters comes from the correct setting of motor nameplate parameters. In order to ensure the control performance, please configure the motor according to the standard adapted motor of the frequency converter, if the difference between the motor power and the standard adapted motor is too large, the control performance of the frequency converter will be significantly reduced.

Please check the following four things before motor self-tuning:

Inspection items	Inspection matters	note
Whether the motor shaft is connected to other mechanical equipment	Dynamic self-tuning is best when performed without loads	In motor dynamic self-tuning, the motor will rotate at 7.5% of the rated speed.
	If the motor is connected to other mechanical equipment, the load must not exceed 50% of the rated load.	
Motor capacity and VFD capacity	Motor power and VFD power requirements are not less than 1/5 of the VFD power	
Is the motor parameter setting input correct?	The P16 group parameters are consistent with the motor nameplate parameters, such as rated power, voltage, current, speed, number of poles, and synchronous	Incorrect inputs may cause self-tuning to fail or the motor to fail to operate properly.

	speed.	

(3) self-tuning of motor parameters

Type of self-tuning	Control mode	self-tuning content	Control method	Operational requirement
Static self-tuning	V/F control mode	self-tuning of the resistance between the wires, recognizing only the value of the stator resistance	this locality	1,Check Static self-tuning in Function Setting; 2,Press the confirmation button for self-tuning. 3,self-tuning process shows "Static self-tuning in progress!" 4,When the self-tuning is completed, it displays "Static self-tuning completed!". . 5, dynamic self-tuning and rotational inertia self-tuning cannot be done in VF mode.
Dynamic self-tuning	Vector control mode	Identification of stator and rotor resistance and inductance parameters	Local & Remote	1,The static self-tuning in vector control mode must be completed first. 2,Remote: self-tuning by operating the handle of the corresponding mechanism in the driver's cab (gears are not limited). Local: Check Dynamic self-tuning in the Function Setup; 3,Check Static self-tuning in Function Setting; 4,Press the confirmation button for self-tuning. 5. "Dynamic self-tuning in progress!" is displayed during the self-tuning process. 6,When the self-tuning is completed, it displays "Dynamic self-tuning completed!". .
Moment of inertia self-tuning	Vector control mode	Optimization of the mechanical moment of inertia	Local & Remote	1,self-tuning of rotational inertia is performed with the motor shaft connected to the load. 2,When self-tuning of moment of inertia is performed, the load of the motor must not exceed 50% of the rated load. 3,The rotational inertia uses the default value, and the vector control can operate normally. 4,Select self-tuning of rotational

				inertia in the function setting; 5,Press the confirmation button for self-tuning. 6,self-tuning process shows "self-tuning of rotational inertia is in progress!" 7,When the self-tuning is completed, it shows "self-tuning of rotational inertia completed!". .

(4) Trial run in no-load condition:

The following explains how to test run the motor under no load.

Before operation, confirm the safety around the motor and machinery, and confirm that the emergency stop circuit and mechanical safety devices operate correctly. During operation, confirm that the motor rotates normally (whether there is abnormal sound and vibration), and confirm that the acceleration and deceleration of the motor are normal.

The procedure for using the operation panel is described below:

	Manipulate	Caveat
Step 1	Turn on the power and display the initial screen	
Step 2	Selected for local control, LOCAL indicator is lit	
Step 3	Press the ENTER key on the operation panel to set the reference [1] speed to 5 Hz.	
Step 4	Press the RUN button to run the VFD, the RUN indicator lights up and the motor rotates positively	Verify that the motor is rotating in the correct direction and that there is no fault indication on the VFD;
Step 5	If there is no fault in step 4, gradually increase the frequency setting to 50 Hz.	Confirm the output current through the operation panel to ensure that the current does not exceed the rated current of the motor;
Step 6	After confirming, press the STOP button to stop the operation.	

(5) Trial run with status:

The following describes the method of trial operation of the motor under load.

Element	Manipulate	Note
Mechanical system connections	Make sure that the area around the motor and machinery is safe	

		Make sure the motor stops completely	
		Please connect the mechanical system	
		Make sure the mounting screws are not loose, and fix the motor shaft and mechanical system firmly.	
		Make sure that the emergency stop circuit and mechanical safety devices are operating correctly.	
		Be prepared to press the STOP button on the operation panel at any time to prevent abnormalities.	
operating procedure	Step 1	Turn on the power and display the initial screen	
	Step 2	Selected for local control, LOCAL indicator is lit	
	Step 3	Press the ENTER key on the operation panel to set the reference [1] speed to 5 Hz.	
	Step 4	Press the RUN button to run the VFD, the RUN indicator lights up and the motor rotates positively	Verify that the motor is rotating in the correct direction and that there is no fault indication on the VFD;
	Step 5	If there is no fault in step 4, gradually increase the frequency setting to 50 Hz.	Confirm the output current through the operation panel to ensure that the current does not exceed the rated current of the motor;
	Step 6	After confirming, press the STOP button to stop the operation.	
		Is the acceleration and deceleration of the motor normal	
Operational confirmations		Whether the direction of action of the machinery is correct (whether the direction of rotation of the motor is correct);	
		The motor accelerates and decelerates properly.	
		Confirm that the output current is not too high	
		Change the frequency command and direction of rotation to check for abnormal sounds and vibrations.	

（6） Parameter saving

Select Backup All Parameters in Function Setting to copy the parameter values of the VFD to the storage area of the operation panel. If the frequency converter

needs to replace the control board, copy the data recorded in the operation panel to the new control board, and the operation can be resumed.

Note: The software version in the control board when restoring the parameters must be the same as the previous one, otherwise the restoration of the parameters will not be successful.

6. VFD Parameter Setting Instructions

Containment	Functional constituency	Clarification	Containment	Functional group	Clarification
parameter control	P0	parameter control	V/F Parameters	P16	Motor 1 parameter V/F group
terminal control	P3	Digital Input Terminal Block		P17	Motor 2 parameter V/F group
	P4	Digital Output Terminal Block		P18	Motor 3 parameter V/F group
	P5	Analog Input Terminal Block		P19	Motor 4 parameter V/F group
	P6	Analog Output Terminal Block	vector control	P20	Motor 1 vector control group
safeguard	P7	Protection parameter sets		P21	Motor 2 vector control group
start-stop control	P8	Motor 1 start/stop control group		P22	Motor 3 vector control group
	P9	Motor 2 start/stop control group		P23	Motor 4 vector control group
	P10	Motor 3 start-stop control group	newsletter	P31	CAN bus
	P11	Motor 4 start-stop control group		P32	MODBUS bus
Segment speed control	P12	Motor 1-stage speed brake set		P33	bus communication
	P13	Motor 2-stage speed brake set			
	P14	Motor 3-stage speed brake set			
	P15	Motor 4-stage speed brake set			

6.1 Parameter control P0

Function code	Name	Clarification	Setting range	Default value	Explanation
P0.0	Initialization Options	[0] Default setting: initialized with default parameters; [1] Last save: Initialize the parameters of the last save;	0 to 1	0	
P0.1	Initialization power	VFD power	0 to 27	14	
P0.3	Initialization Frequency	[0] 50 HZ; [1] 60 HZ.	0 to 1	0	
P0.4	Set Password	Used to set the password for modifying parameters			
P0.5	enter a password	Used to enter the correct password in order to modify the parameters			

6.2 Digital Input Terminal Block P3

function	Name	clarification	Setting	default	explanation
P3.0	Digital input terminal 1	Programmable Multi-Function Terminals	0 to 41	0	
P3.1	Digital Input Terminal 2	Programmable Multi-Function Terminals	0 to 41	0	
P3.2	Digital Input Terminal 3	Programmable Multi-Function Terminals	0 to 41	0	
P3.3	Digital input terminal 4	Programmable Multi-Function Terminals	0 to 41	0	
P3.4~ P3.11	reservations	DI6 as a remote-local switch requires a description of the			
P3.12	Power-on automatic	[0] disable; [1] enable	0 to 1	0	

	operation control				
P3.13~ P3.16	reservations				
P3.17	Frequency UP@Hz/sec	The given frequency increases in steps per second.	0.0 to 50.0	1.0	
P3.18	Frequency DOWN@Hz/sec	The given frequency decreases in steps per second.	0.0 to 50.0	1.0	

This parameter is used to set the function corresponding to the digital multi-function input terminal.

Setpoint	Functionality	Clarification
0	prohibit the use of sth.	The VFD does not operate even if a signal is input. Unused terminals can be set to disabled to prevent malfunction.
1	forward motion (e.g. of a ship)	Forward and reverse motor control via external terminals
2	invert the operation	
3	driver enable (High level)	Enable when this terminal is high.
4	Driver Enable.NC (Low level)	Enable when this terminal is low.
5	fault reset	External fault reset function. Same function as the </RST key on the operation keypad. Remote fault reset is possible with this function.
6	Multi-Segment Speed 1 (Bit 0)	Multi-speed command input terminal (see 7.1 for details)
7	Multi-speed 2 (bit 1)	
8	Multi-speed 3 (bit 2)	
9	Multi-speed 4 (bit 3)	
10	Hook mode	This function is enabled when there is a signal on this terminal (see 7.11 for details).
11	Direction change signal	Changing the direction of operation when there is a signal on this terminal

12	Local emergency stop signal (High level)	Valid when input terminal is high
13	Local emergency stop signal.NC (Low level)	Valid when input terminal is low
14	Remote emergency stop signal (High level)	Valid when input terminal is high
15	Remote emergency stop signal.NC (Low level)	Valid when input terminal is low
16	Slave ready signal	Slave ready when signal is present on this terminal
17	Select motor 0	Motor selection bit 1 and motor selection bit 0 combine to form a motor selection signal, with 00 indicating that the target motor is 1, 01 indicating that the target motor is 2, 10 indicating that the target motor is 3, and 11 indicating that the target motor is 4.
18	Select motor 1	
19	Startup/given source selection	For selective switching of start-stop and speed feed sources
20	Main contactor suction confirmation	Main contactor status feedback in AFE control mode
21	Run-up limit	The rope length is the equivalent rope length of the ascending limit when there is a signal on this terminal.
22-23	FUNC 22～ FUNC 23	standby
24	free parking	This function is enabled when there is a signal on this terminal.
25	FUNC25	standby
26	Dynamic torque control	Torque control mode when there is a signal on this terminal, otherwise speed control mode
27	FUNC 27	standby
30	Two/four times conversion	Converts to quadruple when a signal is present on this terminal.
31	Frequency UP	When there is a signal at this terminal, the frequency increases in step frequency

32	Frequency DOWN	When there is a signal at this terminal, the frequency will be reduced in step frequency
33	Emergency Deceleration Enable	When there is a signal at this terminal, the deceleration time becomes the normal deceleration time multiplied by the value of parameter P8.62, which can be used to reduce the deceleration time in an emergency.
40	Anti-punching zero position	A signal on this terminal indicates that the anti-roofing limit is being calibrated.
41	anti-roofing bypass	The presence of a signal on this terminal indicates that operation can be continued without being restricted by the anti-roofing limit.

6.3 Digital output terminal block P4

Function code	Name	Clarification	Setting range	Default value	Explanation
P4.0	Digital output terminal 1	Multi-function switching output terminal	0 to 64	0	
P4.1	Digital output terminal 2	Multi-function switching output terminal	0 to 64	0	
P4.2~ P4.6	reservations				
P4.16	Free function block digital output 1	Free function module settings	0 to 500	0	
P4.17	Free function block digital output 2	Free function module settings	0 to 500	0	
P4.18	Free Function Block Digital Output 3	Free Function Module Setting	0 to 500	0	
P4.19	Free function block digital output 4	Free Function Module Setting	0 to 500	0	

The functions of the multifunction switching output terminals are shown in the table below:

Setpoint	Functionality	Clarification
0	prohibit the use of sth.	This terminal has no function

1	operating signal	Valid for normal operation (see 7.2 for details)
2	fault output	Output ON signal when the VFD is malfunctioning
3	Brake Brake	Valid when the brake meets the conditions for opening (see 7.2 for details)
4	run request (computing)	Valid when run signal is input
5	ready run	Valid when the VFD is ready
6	Multi-speed 1	[6] to [9] Effective when multispeed commands are input.
7	Multi-speed 2	
8	Multi-speed 3	
9	Multi-speed 4	
10	FUNC 10	standby
11	orientations	Effective when there is a signal in the input direction
12	warnings	Effective in the event of a warning
13	overtemperature warning	Effective when overheating occurs
14	overload warning	Effective when an overload warning occurs
15	overspeed warning	Effective when an overspeed warning occurs
16	Holding brake failure	Effective in the event of a brake failure (see 7.7 for details)
17	Motor Selection 0	This signal is active when motor 1 is selected
18	Motor option 1	This signal is active when motor 2 is selected
19	Motor option 2	This signal is active when motor 3 is selected
20	Motor Selection 3	This signal is active when motor 4 is selected
21-31	FUNC 21 to FUNC 31	standby
32	Pre-charge completion signal	This terminal is signaled when there is a run signal in AFE control mode.
33-48	FUNC 33 to FUNC 48	standby
49	PROFIBUS Function 1	PROFIBUS Function 1 Output 1 This terminal signal is active
50	PROFIBUS Function 2	PROFIBUS function 2 output 1 Signal valid on this terminal
51	PROFIBUS Function 3	PROFIBUS Function 3 Output 1 Signal active on this terminal

52	PROFIBUS Function 4	PROFIBUS Function 4 Output 1 Signal active on this terminal
53	PROFIBUS Function 5	PROFIBUS Function 5 Output 1 Signal active on this terminal
54-56	FUNC 54 to FUNC 56	standby
57	Local function 1	Local Function 1 Output 1 Signal valid on this terminal
58	Local Function 2	Local Function 2 Output 1 Signal valid on this terminal
59	Local Function 3	Local Function 3 Output 1 Signal valid on this terminal
60	Local function 4	Local Function 4 Output 1 This terminal signal is active
61	Free Function Module 1	Free Function Module 1 Output 1 Signal valid on this terminal
62	Free Function Module 2	Free Function Module 2 Output 1 Signal valid on this terminal
63	Free Function Module 3	Free Function Module 3 Output 1 Signal valid on this terminal
64	Free function module 4	Free Function Module 4 Output 1 Signal valid on this terminal

6.4 Analog input terminal block P5

Function	Name	Clarification	Setting range	Default value	Explanation
P5.0	AI1 type	[0] Prohibition [1]0 to +10V [2] -10 to +10V [3] 0 to 20 mA (reserved)	0 to 3	1	

P5.1	AI1 filter time	Set the filter time corresponding to the analog terminal AI1 analog. Use when the set value fluctuates greatly due to interference from the surrounding environment. Setting the filter time to a larger value will reduce the setting up and down but the response will be slower.	0.0 to 1000.0 [ms]	0.0 [ms]	
P5.2	AI1 voltage bias	Setting the AI1 voltage bias	-10.00 to 10.00 [V]	0.000 [V]	See 7.3 for details
P5.3	AI1 current bias (reserved)	Setting the AI1 current bias	-20.00 to 20.00 [mA]	0.000 [mA]	See 7.3 for details
P5.4	AI1 minimum voltage	Setting AI1 minimum voltage	-10.00 to 10.00 [V]	0.000 [V]	See 7.3 for details
P5.5	AI1 Minimum current (reserved)	Setting AI1 minimum current	0.00 to 20.00 [mA]	0.000 [mA]	See 7.3 for details
P5.6	AI1 Minimum given value	Setting the minimum given value of AI1	-300.0 to 300.0 [%]	0.0 [%]	See 7.3 for details
P5.7	AI1 Maximum Voltage	Setting the maximum voltage of AI1	-10.00 to 10.00 [V]	10.000 [V]	See 7.3 for details
P5.8	AI1 Maximum current (reserved)	Setting AI1 maximum current	0.00 to 20.00 [mA]	20.000 [mA]	See 7.3 for details
P5.9	AI1 Maximum given value	Setting the maximum given value of AI1	-300.0 to 300.0 [%]	100.0 [%]	See 7.3 for details

P5.18	Type AI2 (for temperature display, change to temperature-related display)	[0] Prohibition [1]0 to +10V [2] -10 to +10V [3] 0-20mA	0 to 3	3	
P5.19	AI2 Filter Time	Set the filter time corresponding to the analog terminal AI2 analog. Use when the set value fluctuates greatly due to interference from the surrounding environment. Setting a larger value for the filtering time reduces the fluctuation up and down of the set value, but the response will be slower.	0.0 to 1000.0 [ms]	0.0 [ms]	
P5.20	AI2 voltage bias	Setting the AI2 voltage bias	-10.00 to 10.00 [V]	0.000 [V]	
P5.21	AI2 current bias	Setting the AI2 current bias	-20.00 to 20.00 [mA]	0.000 [mA]	
P5.22	AI2 Minimum Voltage	Setting AI2 minimum voltage	-10.00 to 10.00 [V]	0.000 [V]	
P5.23	AI2 Minimum Current	Setting AI2 minimum current	0.00 to 20.00 [mA]	0.000 [mA]	
P5.24	AI2 Minimum given value	Setting the AI2 minimum given value	-300.0 to 300.0 [%]	0.0 [%]	
P5.25	AI2 Maximum Voltage	Setting AI2 maximum voltage	-10.00 to 10.00 [V]	10.000 [V]	
P5.26	AI2 Maximum Current	Setting AI2 maximum current	0.00 to 20.00 [mA]	20.000 [mA]	

P5.27	AI2 Maximum given value	Setting the maximum given value of AI2	-300.0 to 300.0 [%]	100.0 [%]	

6.5 Analog output terminal block P6

Reservations.

6.6 Protection parameter group P7

Function code	Name	Clarification	Setting range	Default value	Explanation
P7.0	Current limit value [motor 1]	Setting the motor 1 current limit value	0.0 to 300.0 [%]	180.0 [%]	See 7.5 for details
P7.1	Current limit value [motor 2]	Setting the motor 2 current limit value	0.0 to 300.0 [%]	180.0 [%]	See 7.5 for details
P7.2	Current limit value [motor 3]	Setting the motor 3 current limit value	0.0 to 300.0 [%]	180.0 [%]	See 7.5 for details
P7.3	Current limit value [motor 4]	Setting the motor 4 current limit value	0.0 to 300.0 [%]	180.0 [%]	See 7.5 for details
P7.4	Overcurrent protection [motor 1]	Setting the motor 1 overcurrent protection value	0.0 to 300.0 [%]	235.0 [%]	See 7.5 for details
P7.5	Overcurrent protection [motor 2]	Setting the motor 2 overcurrent protection value	0.0 to 300.0 [%]	235.0 [%]	See 7.5 for details
P7.6	Overcurrent protection [motor 3]	Setting the motor 3 overcurrent protection value	0.0 to 300.0 [%]	235.0 [%]	See 7.5 for details
P7.7	Overcurrent protection [motor 4]	Setting the motor 4 overcurrent protection value	0.0 to 300.0 [%]	235.0 [%]	See 7.5 for details
P7.8	Zero sequence current overcurrent [motor 1]	Setting motor 1 zero sequence current overcurrent	0.0 to 100.0 [%]	20.0 [%]	See 7.5 for details
P7.9	Zero sequence current overcurrent [motor 2]	Setting motor 2 zero sequence current overcurrent	0.0 to 100.0 [%]	20.0 [%]	See 7.5 for details

P7.10	Zero sequence current overcurrent [motor 3]	Setting motor 3 zero sequence current overcurrent	0.0 to 100.0 [%]	20.0 [%]	See 7.5 for details
P7.11	Zero sequence current overcurrent [motor 4]	Setting motor 4 zero sequence current overcurrent	0.0 to 100.0 [%]	20.0 [%]	See 7.5 for details
P7.12	Busbar overvoltage	Setting the bus overvoltage value	600 to 820 [V]	800 [V]	See 7.5 for details
P7.13	Busbar undervoltage	Setting the bus undervoltage value	300-500 [V]	350 [V]	See 7.5 for details
P7.14	overtemperature fault	Setting the over-temperature fault value	60.0 to 100.0 [° C]	87.5 [° C]	See 7.5 for details
P7.15	Over Temperature Alarm	Setting the over-temperature alarm value	50.0 to 100.0 [° C]	80.0 [° C]	See 7.5 for details
P7.19	Overspeed fault [motor 1]	Setting the motor 1 overspeed fault value	100.0 to 720.0 [%]	120.0 [%]	See 7.5 for details
P7.20	Overspeed fault [motor 2]	Setting the motor 2 overspeed fault value	100.0 to 720.0 [%]	120.0 [%]	See 7.5 for details
P7.21	Overspeed fault [motor 3]	Setting the motor 3 overspeed fault value	100.0 to 720.0 [%]	120.0 [%]	See 7.5 for details
P7.22	Overspeed fault [motor 4]	Setting the motor 4 overspeed fault value	100.0 to 720.0 [%]	120.0 [%]	See 7.5 for details
P7.23	Open-loop vector protection 1 time M1	Setting the motor 1 open-loop vector protection time	0.00 to 3.00 [s]	0.50 [s]	See 7.5 for details
P7.24	Open-loop vector protection 1 time M2	Setting the motor 2 open-loop vector protection time	0.00 to 3.00 [s]	0.50 [s]	See 7.5 for details
P7.25	Open-loop vector protection 1 time M3	Setting the motor 3 open-loop vector protection time	0.00 to 3.00 [s]	0.50 [s]	See 7.5 for details
P7.26	Open-loop vector protection 1 time M4	Setting the motor 4 open-loop vector protection time	0.00 to 3.00 [s]	0.50 [s]	See 7.5 for details

P7.27	Motor 1 blocking detection time	Setting the motor 1 blocking protection detection time	0.00 to 3.00 [s]	2.00 [s]	
P7.28	Motor 2 blocking detection time	Setting the motor 2 blocking protection detection time	0.00 to 3.00 [s]	2.00 [s]	
P7.29	Motor 3 blocking detection time	Setting the motor 3 blocking protection detection time	0.00 to 3.00 [s]	2.00 [s]	
P7.30	Motor 4 blocking detection time	Setting the motor 4 blocking protection detection time	0.00 to 3.00 [s]	2.00 [s]	
P7.31	Speed anomaly range	Setting the abnormal speed protection percentage value	0.0 to 100.0 [%]	25.0 [%]	
P7.32	Speed anomaly detection time	Setting the abnormal speed protection detection time	0.00 to 5.00 [s]	1 [s]	
P7.33	self-tuning failure time	Setting the self-tuning failure detection time	0.0 to 1000.0 [s]	360.0 [s]	
P7.34	Over-torque enable after gate opening	[0] Prohibition [1] Enable	0 to 1	0	
P7.47	continuous current	Setting the current value that allows long time operation	0.0 to 300.0 [%]	100.0 [%]	See 7.5 for details
P7.48	Overload current1	Setting the value of overload current 1	0.0 to 300.0 [%]	150.0 [%]	See 7.5 for details
P7.49	Overload time1	Setting the permissible overload current 1 time	0.00 to 60.00 [s]	60.00 [s]	See 7.5 for details
P7.50	Overload current2	Setting the value of overload current 2	0.0 to 300.0 [%]	200.0 [%]	See 7.5 for details
P7.51	Overload time2	Setting the permissible overload current 2 time	0.00 to 5.00 [s]	5.00 [s]	See 7.5 for details
P7.55	Input phase loss protection enable	[0] Prohibition [1] Enable	0 to 1	0	
P7.56	Input phase loss preset		0.0 to 200.0 [%]	120.0 [%]	
P7.57	Input phase failure detection time		0.0 to 12.0 [s]	5 [s]	

P7.59	Output out-of-phase protection enable	[0] Prohibition [1] Enable	0 to 1	1	
P7.60	Output out-of-phase detection time		0.10 to 3.00 [s]	0.30 [s]	
P7.64	braking mode	[0] Prohibition [1] Enable	0 to 1	0	See 7.5 for details
P7.65	Brake Start Deviation Voltage	Setting the brake start voltage deviation value	-25 to 150 [V]	50 [V]	See 7.5 for details
P7.66	Brake operating deviation voltage	Setting the brake turn-on holding voltage deviation value	-25 to 150 [V]	100 [V]	See 7.5 for details
P7.69	Overvoltage Suppression Enable	[0] Prohibition [1] Enable	0 to 1	0	See 7.5 for details
P7.70	Overvoltage suppression deviation value	Setting overvoltage suppression value deviation	-25 to 150 [V]	100 [V]	See 7.5 for details
P7.71	Overvoltage inhibit 1 enable	[0] Prohibition [1] Enable	0 to 1	0	See 7.5 for details
P7.73	Undervoltage Limit Enable	[0] Prohibition [1] Enable	0 to 1	0	
P7.74	Undervoltage limit value		300-500 [V]	460 [V]	
P7.75	Undervoltage Controller Gain		0.0 to 1000.0 [%]	100.0 [%]	
P7.76	Undervoltage recovery time		0.00 to 300.00 [s]	1.00 [s]	
P7.77	Undervoltage dropout value		0.0 to 200.0 [%]	15.0 [%]	
P7.94	Pre-Charge Action Options	[0] Operation control [1] Bus voltage control	0 to 1	1	
P7.95	Pre-charge failure time	Setting the pre-charge failure time in AFE control mode	0.0 to 3000.0 [s]	15.0 [s]	
P7.96	Pre-charge shutdown delay	Thyristor Off Delay	0.00 to 300.00 [s]	0.00 [s]	

6.7 Motor 1 start/stop control group P8

Function code	Name	Clarification	Setting range	Default value	Particular
P8.0	Startup Source Selection	[0] Digital input terminal [1] Operation panel [2] DP communication [3] MODBUS [4] Free function module	0 to 4	0	
P8.3	Parking	[0] Ramp parking [1] Free parking	0 to 1	0	See 7.6 for details
P8.4	Startup source 2 selection	[0] Digital input terminal [1] Operation panel [2] DP communication [3] MODBUS [4] Free function module	0 to 4	0	
P8.6	runtime delay	Setting the runtime delay time	0.00 to 300.00 [s]	0.00 [s]	See 7.6 for details
P8.10	Velocity feed source	[0] I/O terminal [1] Analog input 1 [2] Analog Input 2 [3] Operation panel [4] DP communication [5] MODBUS [6] Free function module	0 to 6	0	
P8.12	Velocity feed source 2	[0] I/O terminal [1] Analog input 1 [2] Analog Input 2 [3] Operation panel [4] DP communication [5] MODBUS [6] Free function module	0 to 6	0	
P8.15	Acceleration zone 1	Setting the first accelerated gradient pattern	0.0 to 300.0 [%]	100.0 [%]	See 7.6 for details

P8.16	Acceleration time 1	Acceleration time from the stop state to the set value of P8.15	0.0 to 300.0 [s]	3.00 [s]	See 7.6 for details
P8.17	Acceleration zone 2	Setting the second acceleration gradient mode	0.0 to 300.0 [%]	200.0 [%]	See 7.6 for details
P8.18	Acceleration time 2	Acceleration time from P8.15 set value to P8.17 set value	0.0 to 300.0 [s]	4.00 [s]	See 7.6 for details
P8.19	Acceleration zone 3	Setting the third acceleration gradient mode	0.0 to 300.0 [%]	240.0 [%]	See 7.6 for details
P8.20	Acceleration time 3	Acceleration time from P8.17 set value to P8.19 set value	0.0 to 300.0 [s]	7.00 [s]	See 7.6 for details
P8.21	Acceleration zone 4	Setting the fourth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P8.22	Acceleration time 4	Acceleration time from P8.19 set value to P8.21 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P8.23	Acceleration zone 5	Setting the fifth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P8.24	Acceleration time 5	Acceleration time from P8.21 set value to P8.23 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P8.25	Acceleration zone 6	Setting the sixth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P8.26	Acceleration time 6	Acceleration time from P8.23 set value to P8.25 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P8.27	Acceleration zone 7	Setting the seventh acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P8.28	Acceleration time 7	Acceleration time from P8.25 set value to P8.27 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P8.29	Acceleration zone 8	Setting the eighth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P8.30	Acceleration time 8	Acceleration time from set value P8.27 to set value P8.29	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details

P8.32	Deceleration time control source	[0] Disable [1] PROFIBUS [2] MODBUS [3] Local Settings	0 to 3	0	See 7.6 for details
P8.33	Deceleration Time Multiplier		0.1 to 10.0	1.0	See 7.6 for details
P8.34	Deceleration zone 1	Setting the first deceleration gradient pattern	0.0 to 300.0 [%]	100.0 [%]	See 7.6 for details
P8.35	Deceleration time 1	Deceleration time from P8.34 set value to stop	0.0 to 300.0 [s]	3.00 [s]	See 7.6 for details
P8.36	Deceleration zone 2	Setting the second deceleration gradient mode	0.0 to 300.0 [%]	200.0 [%]	See 7.6 for details
P8.37	Deceleration time 2	Deceleration time from P8.34 set value to P8.36 set value	0.0 to 300.0 [s]	4.00 [s]	See 7.6 for details
P8.38	Deceleration zone 3	Setting the third deceleration gradient mode	0.0 to 300.0 [%]	240.0 [%]	See 7.6 for details
P8.39	Deceleration time 3	Deceleration time from P8.36 set value to P8.38 set value	0.0 to 300.0 [s]	7.00 [s]	See 7.6 for details
P8.40	Deceleration zone 4	Setting the fourth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P8.41	Deceleration time4	Deceleration time from set value P8.38 to set value P8.40	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P8.42	Deceleration zone 5	Setting the fifth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P8.43	Deceleration time 5	Deceleration time from set value P8.40 to set value P8.42	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P8.44	Deceleration zone 6	Setting the sixth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P8.45	Deceleration time 6	Deceleration time from P8.42 set value to P8.44 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P8.46	Deceleration zone 7	Setting the seventh deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details

P8.47	Deceleration time 7	Deceleration time from set value P8.44 to set value P8.46	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P8.48	Deceleration zone 8	Setting the eighth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P8.49	Deceleration time 8	Deceleration time from set value P8.46 to set value P8.48	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P8.53	Linearization of backshift to deceleration	[0] Prohibition [1] Enable	0 to 1	0	See 7.6 for details
P8.54	Free-running start speed		0.0 to 300.0 [%]	0.0 [%]	See 7.6 for details
P8.55	Variable direction deceleration enable	[0] Prohibition [1] Enable	0 to 1	0	See 7.6 for details
P8.56	Vertical deceleration time		0.00 to 300.00 [s]	1.50 [s]	See 7.6 for details
P8.57	Emergency stop method	[0] Ramp parking [1] Free parking	0 to 1	1	
P8.58	Emergency stop deceleration time		0.00 to 300.00 [s]	1.50 [s]	
P8.62	Emergency Deceleration Time Ratio		0 to 1	0.5	

6.8 Motor 2 start/stop control group P9

function	Name	clarification	Setting	default	particular

P9.0	Startup Source Selection	[0] Digital input terminal [1] Operation panel [2] DP communication [3] MODBUS [4] Free function module	0 to 4	0	
P9.3	Parking	[0] Ramp parking [1] Free parking	0 to 1	0	See 7.6 for details
P9.4	Startup source 2 selection	[0] Digital input terminal [1] Operation panel [2] DP communication [3] MODBUS [4] Free function module	0 to 4	0	
P9.6	runtime delay	Setting the runtime delay time	0.00 to 300.00 [s]	0.00 [s]	See 7.6 for details
P9.10	Velocity feed source	[0] I/O terminal [1] Analog input 1 [2] Analog Input 2 [3] Operation panel [4] DP communication [5] MODBUS [6] Free function module	0 to 6	0	
P9.12	Velocity feed source 2	[0] I/O terminal [1] Analog input 1 [2] Analog Input 2 [3] Operation panel [4] DP communication [5] MODBUS [6] Free function module	0 to 6	0	
P9.15	Acceleration zone 1	Setting the first accelerated gradient pattern	0.0 to 300.0 [%]	100.0 [%]	See 7.6 for details
P9.16	Acceleration time 1	Acceleration time from the stop state to the set value of P8.15	0.0 to 300.0 [s]	3.00 [s]	See 7.6 for details
P9.17	Acceleration zone 2	Setting the second acceleration gradient mode	0.0 to 300.0 [%]	200.0 [%]	See 7.6 for details

P9.18	Acceleration time 2	Acceleration time from P8.15 set value to P8.17 set value	0.0 to 300.0 [s]	4.00 [s]	See 7.6 for details
P9.19	Acceleration zone 3	Setting the third acceleration gradient mode	0.0 to 300.0 [%]	240.0 [%]	See 7.6 for details
P9.20	Acceleration time 3	Acceleration time from P8.17 set value to P8.19 set value	0.0 to 300.0 [s]	7.00 [s]	See 7.6 for details
P9.21	Acceleration zone 4	Setting the fourth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P9.22	Acceleration time 4	Acceleration time from P8.19 set value to P8.21 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P9.23	Acceleration zone 5	Setting the fifth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P9.24	Acceleration time 5	Acceleration time from P8.21 set value to P8.23 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P9.25	Acceleration zone 6	Setting the sixth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P9.26	Acceleration time 6	Acceleration time from P8.23 set value to P8.25 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P9.27	Acceleration zone 7	Setting the seventh acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P9.28	Acceleration time 7	Acceleration time from P8.25 set value to P8.27 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P9.29	Acceleration zone 8	Setting the eighth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P9.30	Acceleration time 8	Acceleration time from set value P8.27 to set value P8.29	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P9.32	Deceleration time control source	[0] Disable [1] PROFIBUS [2] MODBUS [3] Local Settings	0 to 3	0	See 7.6 for details
P9.33	Deceleration Time Multiplier		0.1 to 10.0	1.0	See 7.6 for details

P9.34	Deceleration zone 1	Setting the first deceleration gradient pattern	0.0 to 300.0 [%]	100.0 [%]	See 7.6 for details
P9.35	Deceleration time 1	Deceleration time from P8.34 set value to stop	0.0 to 300.0 [s]	3.00 [s]	See 7.6 for details
P9.36	Deceleration zone 2	Setting the second deceleration gradient mode	0.0 to 300.0 [%]	200.0 [%]	See 7.6 for details
P9.37	Deceleration time 2	Deceleration time from P8.34 set value to P8.36 set value	0.0 to 300.0 [s]	4.00 [s]	See 7.6 for details
P9.38	Deceleration zone 3	Setting the third deceleration gradient mode	0.0 to 300.0 [%]	240.0 [%]	See 7.6 for details
P9.39	Deceleration time 3	Deceleration time from P8.36 set value to P8.38 set value	0.0 to 300.0 [s]	7.00 [s]	See 7.6 for details
P9.40	Deceleration zone 4	Setting the fourth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P9.41	Deceleration time4	Deceleration time from set value P8.38 to set value P8.40	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P9.42	Deceleration zone 5	Setting the fifth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P9.43	Deceleration time 5	Deceleration time from set value P8.40 to set value P8.42	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P9.44	Deceleration zone 6	Setting the sixth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P9.45	Deceleration time 6	Deceleration time from P8.42 set value to P8.44 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P9.46	Deceleration zone 7	Setting the seventh deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P9.47	Deceleration time 7	Deceleration time from P8.44 set value to P8.46 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P9.48	Deceleration zone 8	Setting the eighth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details

P9.49	Deceleration time 8	Deceleration time from set value P8.46 to set value P8.48	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P9.53	Linearization of backshift to deceleration	[0] Prohibition [1] Enable	0 to 1	0	See 7.6 for details
P9.54	Free-running start speed		0.0 to 300.0 [%]	0.0 [%]	See 7.6 for details
P9.55	Variable direction deceleration enable	[0] Prohibition [1] Enable	0 to 1	0	See 7.6 for details
P9.56	Vertical deceleration time		0.00 to 300.00 [s]	1.50 [s]	See 7.6 for details
P9.57	Emergency stop method	[0] Ramp parking [1] Free parking	0 to 1	1	
P9.58	Emergency stop deceleration time		0.00 to 300.00 [s]	1.50 [s]	
P9.62	Emergency Deceleration Time Ratio		0 to 1	0.5	

6.9 Motor 3 start/stop control group P10

Function code	Name	Clarification	Setting range	Default value	Particular
P10.0	Startup Source Selection	[0] Digital input terminal [1] Operation panel [2] DP communication [3] MODBUS [4] Free function module	0 to 4	0	
P10.3	Parking	[0] Ramp parking [1] Free parking	0 to 1	0	See 7.6 for details

P10.4	Startup source 2 selection	[0] Digital input terminal [1] Operation panel [2] DP communication [3] MODBUS [4] Free function module	0 to 4	0	
P10.6	runtime delay	Setting the runtime delay time	0.00 to 300.00 [s]	0.00 [s]	See 7.6 for details
P10.10	Velocity feed source	[0] I/O terminal [1] Analog input 1 [2] Analog Input 2 [3] Operation panel [4] DP communication [5] MODBUS [6] Free function module	0 to 6	0	
P10.12	Velocity feed source 2	[0] I/O terminal [1] Analog input 1 [2] Analog Input 2 [3] Operation panel [4] DP communication [5] MODBUS [6] Free function module	0 to 6	0	
P10.15	Acceleration zone 1	Setting the first accelerated gradient pattern	0.0 to 300.0 [%]	100.0 [%]	See 7.6 for details
P10.16	Acceleration time 1	Acceleration time from the stop state to the set value of P8.15	0.0 to 300.0 [s]	3.00 [s]	See 7.6 for details
P10.17	Acceleration zone 2	Setting the second acceleration gradient mode	0.0 to 300.0 [%]	200.0 [%]	See 7.6 for details
P10.18	Acceleration time 2	Acceleration time from P8.15 set value to P8.17 set value	0.0 to 300.0 [s]	4.00 [s]	See 7.6 for details
P10.19	Acceleration zone 3	Setting the third acceleration gradient mode	0.0 to 300.0 [%]	240.0 [%]	See 7.6 for details
P10.20	Acceleration time 3	Acceleration time from P8.17 set value to P8.19 set value	0.0 to 300.0 [s]	7.00 [s]	See 7.6 for details
P10.21	Acceleration zone 4	Setting the fourth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details

P10.22	Acceleration time 4	Acceleration time from P8.19 set value to P8.21 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P10.23	Acceleration zone 5	Setting the fifth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P10.24	Acceleration time 5	Acceleration time from P8.21 set value to P8.23 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P10.25	Acceleration zone 6	Setting the sixth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P10.26	Acceleration time 6	Acceleration time from P8.23 set value to P8.25 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P10.27	Acceleration zone 7	Setting the seventh acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P10.28	Acceleration time 7	Acceleration time from P8.25 set value to P8.27 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P10.29	Acceleration zone 8	Setting the eighth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P10.30	Acceleration time 8	Acceleration time from set value P8.27 to set value P8.29	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P10.32	Deceleration time control source	[0] Disable [1] PROFIBUS [2] MODBUS [3] Local Settings	0 to 3	0	See 7.6 for details
P10.33	Deceleration Time Multiplier		0.1 to 10.0	1.0	See 7.6 for details
P10.34	Deceleration zone 1	Setting the first deceleration gradient pattern	0.0 to 300.0 [%]	100.0 [%]	See 7.6 for details
P8.35	Deceleration time 1	Deceleration time from P8.34 set value to stop	0.0 to 300.0 [s]	3.00 [s]	See 7.6 for details
P10.36	Deceleration zone 2	Setting the second deceleration gradient mode	0.0 to 300.0 [%]	200.0 [%]	See 7.6 for details
P10.37	Deceleration time 2	Deceleration time from P8.34 set value to P8.36 set value	0.0 to 300.0 [s]	4.00 [s]	See 7.6 for details

P10.38	Deceleration zone 3	Setting the third deceleration gradient mode	0.0 to 300.0 [%]	240.0 [%]	See 7.6 for details
P10.39	Deceleration time 3	Deceleration time from P8.36 set value to P8.38 set value	0.0 to 300.0 [s]	7.00 [s]	See 7.6 for details
P10.40	Deceleration zone 4	Setting the fourth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P10.41	Deceleration time4	Deceleration time from set value P8.38 to set value P8.40	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P10.42	Deceleration zone 5	Setting the fifth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P10.43	Deceleration time 5	Deceleration time from set value P8.40 to set value P8.42	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P10.44	Deceleration zone 6	Setting the sixth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P10.45	Deceleration time 6	Deceleration time from P8.42 set value to P8.44 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P10.46	Deceleration zone 7	Setting the seventh deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P10.47	Deceleration time 7	Deceleration time from set value P8.44 to set value P8.46	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P10.48	Deceleration zone 8	Setting the eighth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P10.49	Deceleration time 8	Deceleration time from set value P8.46 to set value P8.48	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P10.53	Linearization of backshift to deceleration	[0] Prohibition [1] Enable	0 to 1	0	See 7.6 for details
P10.54	Free-running start speed		0.0 to 300.0 [%]	0.0 [%]	See 7.6 for details

P10.55	Change direction deceleration enable	[0] Prohibition [1] Enable	0 to 1	0	See 7.6 for details
P10.56	Vertical deceleration time		0.00 to 300.00 [s]	1.50 [s]	See 7.6 for details
P10.57	Emergency stop method	[0] Ramp parking [1] Free parking	0 to 1	1	
P10.58	Emergency stop deceleration time		0.00 to 300.00 [s]	1.50 [s]	
P10.62	Emergency Deceleration Time Ratio		0 to 1	0.5	

6.10 Motor 4 start/stop control group P11

Function code	Name	Instructions	Setting range	Default value	Particular
P11.0	Startup Source Selection	[0] Digital input terminal [1] Operation panel [2] DP communication [3] MODBUS [4] Free function module	0 to 4	0	
P11.3	Parking	[0] Ramp parking [1] Free parking	0 to 1	0	See 7.6 for details
P11.4	Startup source 2 selection	[0] Digital input terminal [1] Operation panel [2] DP communication [3] MODBUS [4] Free function module	0 to 4	0	
P11.6	runtime delay	Setting the runtime delay time	0.00 to 300.00 [s]	0.00 [s]	See 7.6 for details

P11.10	Velocity feed source	[0] I/O terminal [1] Analog input 1 [2] Analog Input 2 [3] Operation panel [4] DP communication [5] MODBUS [6] Free function module	0 to 6	0	
P11.12	Velocity feed source 2	[0] I/O terminal [1] Analog input 1 [2] Analog Input 2 [3] Operation panel [4] DP communication [5] MODBUS [6] Free function module	0 to 6	0	
P11.15	Acceleration zone 1	Setting the first accelerated gradient pattern	0.0 to 300.0 [%]	100.0 [%]	See 7.6 for details
P11.16	Acceleration time 1	Acceleration time from the stop state to the set value of P8.15	0.0 to 300.0 [s]	3.00 [s]	See 7.6 for details
P11.17	Acceleration zone 2	Setting the second acceleration gradient mode	0.0 to 300.0 [%]	200.0 [%]	See 7.6 for details
P11.18	Acceleration time 2	Acceleration time from P8.15 set value to P8.17 set value	0.0 to 300.0 [s]	4.00 [s]	See 7.6 for details
P11.19	Acceleration zone 3	Setting the third acceleration gradient mode	0.0 to 300.0 [%]	240.0 [%]	See 7.6 for details
P11.20	Acceleration time 3	Acceleration time from P8.17 set value to P8.19 set value	0.0 to 300.0 [s]	7.00 [s]	See 7.6 for details
P11.21	Acceleration zone 4	Setting the fourth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P11.22	Acceleration time 4	Acceleration time from P8.19 set value to P8.21 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P11.23	Acceleration zone 5	Setting the fifth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P11.24	Acceleration time 5	Acceleration time from P8.21 set value to P8.23 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details

P11.25	Acceleration zone 6	Setting the sixth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P11.26	Acceleration time 6	Acceleration time from P8.23 set value to P8.25 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P11.27	Acceleration zone 7	Setting the seventh acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P11.28	Acceleration time 7	Acceleration time from P8.25 set value to P8.27 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P11.29	Acceleration zone 8	Setting the eighth acceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P11.30	Acceleration time 8	Acceleration time from set value P8.27 to set value P8.29	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P11.32	Deceleration time control source	[0] Disable [1] PROFIBUS [2] MODBUS [3] Local Settings	0 to 3	0	See 7.6 for details
P11.33	Deceleration Time Multiplier		0.1 to 10.0	1.0	See 7.6 for details
P11.34	Deceleration zone 1	Setting the first deceleration gradient pattern	0.0 to 300.0 [%]	100.0 [%]	See 7.6 for details
P11.35	Deceleration time 1	Deceleration time from P8.34 set value to stop	0.0 to 300.0 [s]	3.00 [s]	See 7.6 for details
P11.36	Deceleration zone 2	Setting the second deceleration gradient mode	0.0 to 300.0 [%]	200.0 [%]	See 7.6 for details
P11.37	Deceleration time 2	Deceleration time from P8.34 set value to P8.36 set value	0.0 to 300.0 [s]	4.00 [s]	See 7.6 for details
P11.38	Deceleration zone 3	Setting the third deceleration gradient mode	0.0 to 300.0 [%]	240.0 [%]	See 7.6 for details
P11.39	Deceleration time 3	Deceleration time from P8.36 set value to P8.38 set value	0.0 to 300.0 [s]	7.00 [s]	See 7.6 for details
P11.40	Deceleration zone 4	Setting the fourth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details

P11.41	Deceleration time 4	Deceleration time from set value P8.38 to set value P8.40	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P11.42	Deceleration zone 5	Setting the fifth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P11.43	Deceleration time 5	Deceleration time from set value P8.40 to set value P8.42	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P11.44	Deceleration zone 6	Setting the sixth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P11.45	Deceleration time 6	Deceleration time from P8.42 set value to P8.44 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P11.46	Deceleration zone 7	Setting the seventh deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P11.47	Deceleration time 7	Deceleration time from P8.44 set value to P8.46 set value	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P11.48	Deceleration zone 8	Setting the eighth deceleration gradient mode	0.0 to 300.0 [%]	300.0 [%]	See 7.6 for details
P11.49	Deceleration time 8	Deceleration time from set value P8.46 to set value P8.48	0.0 to 300.0 [s]	10.00 [s]	See 7.6 for details
P11.53	Linearization of backshift to deceleration	[0] Prohibition [1] Enable	0 to 1	0	See 7.6 for details
P11.54	Free-running start speed		0.0 to 300.0 [%]	0.0 [%]	See 7.6 for details
P11.55	Variable direction deceleration enable	[0] Prohibition [1] Enable	0 to 1	0	See 7.6 for details
P11.56	Vertical deceleration time		0.00 to 300.00 [s]	1.50 [s]	See 7.6 for details
P11.57	Emergency stop method	[0] Ramp parking [1] Free parking	0 to 1	1	

P11.58	Emergency stop deceleration time		0.00 to 300.00 [s]	1.50 [s]	
P11.62	Emergency Deceleration Time Ratio		0 to 1	0.5	

6.11 Motor 1-stage speed brake group P12

Function code	Name	Instructions	Setting range	Default value	Explanation
P12.0	Multi-speed mode selection	[0] Direct Input [1] Binary	0 to 1	1	See 7.7 for details
P12.1	Multi-band speed unit selection	[0][%] [1][Hz] [2][rpm]	0 to 2	1	
P12.2	Multi-speed 1		0.0 to 3000.0	10.0	
P12.3	Multi-speed 2		0.0 to 3000.0	20.0	
P12.4	Multi-speed 3		0.0 to 3000.0	35.0	
P12.5	Multi-speed 4		0.0 to 3000.0	50.0	
P12.6	Multi-speed 5		0.0 to 3000.0	50.0	
P12.7	Multi-speed 6		0.0 to 3000.0	50.0	
P12.8	Multi-Speed 7		0.0 to 3000.0	50.0	
P12.9	Multi-Segment Speed 8		0.0 to 3000.0	50.0	
P12.10	Multi-speed 9		0.0 to 3000.0	50.0	
P12.11	Multi-speed 10		0.0 to 3000.0	50.0	
P12.12	Multi-speed 11		0.0 to 3000.0	50.0	
P12.13	Multi-speed 12		0.0 to 3000.0	50.0	
P12.14	Multi-speed 13		0.0 to 3000.0	50.0	
P12.15	Multi-speed 14		0.0 to 3000.0	50.0	
P12.16	Multi-speed 15		0.0 to 3000.0	50.0	
P12.17	Multi-speed 16		0.0 to 3000.0	50.0	

P12.18	FCD pulses per meter LSW_2X	Parameters related to the anti-roofing function, the lower 16 bits of the pulse per meter are calculated when doubling the rope	0 to 65535	1000	See 7.11 for details
P12.19	FCD Pulses per meter MSW_2X	Parameters related to the anti-roofing function, the high 16 digits of the pulse per meter are calculated when the rope is doubled	0 to 100	2	See 7.11 for details
P12.20	FCD speed (m/min)_2X	Parameters related to the anti-roofing function, the running speed of the mechanism is calculated at two times the rope (m/min)	0.0 to 100.0	5.0	See 7.11 for details
P12.21	Startup enable after current disappears	For some special motors with large residual magnetism, the current has to disappear before starting again each time the motor is started or reversed.	0 to 1	0	
P12.22	Open gate forward speed value	Setting the open gate forward speed value	0.0 to 20.0 [%]	2.0 [%]	See 7.7 for details
P12.23	Open gate reverse speed value	Setting the open gate reverse speed value	0.0 to 20.0 [%]	0.0 [%]	See 7.7 for details
P12.24	Open gate positive torque	Setting the positive opening torque	0.0 to 200.0 [%]	30.0 [%]	See 7.7 for details
P12.25	Open gate reverse torque	Setting the opening reverse torque	0.0 to 200.0 [%]	20.0 [%]	See 7.7 for details
P12.26	Positive gate opening delay	Setting the positive gate opening delay time	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P12.27	Reverse gate opening delay	Setting the reverse gate opening delay time	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P12.28	Positive gate opening control delay	Setting the positive gate opening time	0.00 to 2.00 [s]	0.07 [s]	See 7.7 for details
P12.29	Reverse gate opening control delay	Setting the reverse gate opening time	0.00 to 2.00 [s]	0.07 [s]	See 7.7 for details

P12.30	Open gate limit @ given reverse	For some special motors with large residual magnetism, special control is required when controlling from forward to reverse.	0 to 1	0	
P12.31	Open Gate Limit @ Reverse Delay	For some special motors with large residual magnetism, special control is required when controlling from forward to reverse.	0 to 2	0.3	
P12.32	Forward Braking Speed	Setting the holding speed in forward direction	0.0 to 20.0 [%]	0.0 [%]	See 7.7 for details
P12.33	Reverse Braking Speed	Setting the brake speed in reverse	0.0 to 20.0 [%]	0.0 [%]	See 7.7 for details
P12.34	Positive Brake Delay Time	Setting the forward brake delay time	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P12.35	Reverse Brake Delay Time	Setting the delay time for the reverse holding brake	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P12.36	Positive holding time	Setting the forward hold time	0.00 to 2.00 [s]	0.50 [s]	See 7.7 for details
P12.37	Reverse holding time	Setting the reverse holding time	0.00 to 2.00 [s]	0.50 [s]	See 7.7 for details
P12.38	Smooth Lift Enable	[0] Prohibition [1] Enable	0 to 1	0	See 7.11 for details
P12.39	Abnormal brake rise enable	[0] Prohibition [1] Enable	0 to 1	0	Whether ascending is permitted after brake failure
P12.40	Brake Failure Detection Speed Threshold	Setting the Brake Failure Detection Speed Threshold	0.0 to 100.0 [%]	10.0 [%]	See 7.11 for details
P12.41	Brake failure detection time	Setting the brake failure detection time	0.00 to 100.00 [s]	0.10 [s]	See 7.11 for details
P12.42	Maximum time for anomaly detection	Setting the maximum time for anomaly detection	0 to 3000 [s]	3 [s]	See 7.11 for details
P12.43	Unwinding torque	Setting the slack rope torque	0.0 to 50.0 [%]	20.0 [%]	See 7.11 for details

P12.44	Loose rope torque detection time	Setting the slack rope torque detection time	0.00 to 5.00 [s]	0.20 [s]	See 7.11 for details
P12.45	Loading torque	Setting the loading torque	20.0 to 100.0 [%]	25.0 [%]	See 7.11 for details
P12.46	Loading torque detection time	Setting the loading torque detection time	0.00 to 5.00 [s]	0.10 [s]	See 7.11 for details
P12.47	Load torque fluctuation range	Setting the range of loading torque fluctuation	0 to 30.0 [%]	10.0 [%]	See 7.11 for details
P12.48	Loading torque stabilization time	Setting the loading torque stabilization time	0.00 to 5.00 [s]	0.00 [s]	See 7.11 for details
P12.49	Rapid deceleration time ratio	Setting the rapid deceleration time ratio	0.00~1.00	0.1	See 7.11 for details
P12.50	Rope speed	Setting the rope speed	0.0 to 10.0 [%]	10.0 [%]	See 7.11 for details

6.12 Motor 2-stage speed brake set P13

Function code	Name	Instructions	Setting range	Default value	Explanation
P13.0	Multi-speed mode selection	[0] Direct Input [1] Binary	0 to 1	1	See 7.7 for details
P13.1	Multi-band speed unit selection	[0][%] [1][Hz] [2][rpm]	0 to 2	1	
P13.2	Multi-speed 1		0.0 to 3000.0	10.0	
P13.3	Multi-speed 2		0.0 to 3000.0	20.0	
P13.4	Multi-speed 3		0.0 to 3000.0	35.0	
P13.5	Multi-speed 4		0.0 to 3000.0	50.0	
P13.6	Multi-speed 5		0.0 to 3000.0	50.0	
P13.7	Multi-speed 6		0.0 to 3000.0	50.0	
P13.8	Multi-Speed 7		0.0 to 3000.0	50.0	
P13.9	Multi-Segment Speed 8		0.0 to 3000.0	50.0	
P13.10	Multi-speed 9		0.0 to 3000.0	50.0	

P13.11	Multi-speed 10		0.0 to 3000.0	50.0	
P13.12	Multi-speed 11		0.0 to 3000.0	50.0	
P13.13	Multi-speed 12		0.0 to 3000.0	50.0	
P13.14	Multi-speed 13		0.0 to 3000.0	50.0	
P13.15	Multi-speed 14		0.0 to 3000.0	50.0	
P13.16	Multi-speed 15		0.0 to 3000.0	50.0	
P13.17	Multi-speed 16		0.0 to 3000.0	50.0	
P13.18	FCD Pulses per meter LSW_2X	Parameters related to the anti-roofing function, the lower 16 bits of the pulse per meter are calculated when doubling the rope	0 to 65535	1000	See 7.11 for details
P13.19	FCD Pulses per meter MSW_2X	Parameters related to the anti-roofing function, the high 16 bits of the number of pulses per meter are calculated when the rope is doubled	0 to 100	2	See 7.11 for details
P13.20	FCD speed (m/min)_2X	Parameters related to the anti-roofing function, the running speed of the mechanism is calculated at two times the rope (m/min)	0.0 to 100.0	5.0	See 7.11 for details
P13.21	Startup enable after current disappears	For some special motors with large residual magnetism, the current has to disappear before starting again each time the motor is started or reversed.	0 to 1	0	
P13.22	Open gate forward speed value	Setting the open gate forward speed value	0.0 to 20.0 [%]	2.0 [%]	See 7.7 for details
P13.23	Open gate reverse speed value	Setting the open gate reverse speed value	0.0 to 20.0 [%]	0.0 [%]	See 7.7 for details
P13.24	Open gate positive torque	Setting the positive opening torque	0.0 to 200.0 [%]	30.0 [%]	See 7.7 for details
P13.25	Open gate reverse torque	Setting the opening reverse torque	0.0 to 200.0 [%]	20.0 [%]	See 7.7 for details
P13.26	Positive gate opening delay	Setting the forward gate opening delay time	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details

P13.27	Reverse gate opening delay	Setting the reverse gate opening delay time	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P13.28	Positive gate opening control delay	Setting the positive gate opening time	0.00 to 2.00 [s]	0.07 [s]	See 7.7 for details
P13.29	Reverse gate opening control delay	Setting the reverse gate opening time	0.00 to 2.00 [s]	0.07 [s]	See 7.7 for details
P13.30	Open gate limit @ given reverse	For some special motors with large residual magnetism, special control is required when controlling from forward to reverse.	0 to 1	0	
P13.31	Open Gate Limit @ Reverse Delay	For some special motors with large residual magnetism, special control is required when controlling from forward to reverse.	0 to 2	0.3	
P13.32	Forward Braking Speed	Setting the holding speed in forward direction	0.0 to 20.0 [%]	0.0 [%]	See 7.7 for details
P13.33	Reverse Braking Speed	Setting the brake speed in reverse	0.0 to 20.0 [%]	0.0 [%]	See 7.7 for details
P13.34	Positive Brake Delay Time	Setting the forward brake delay time	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P12.35	Reverse Brake Delay Time	Setting the delay time for the reverse holding brake	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P13.36	Positive holding time	Setting the forward hold time	0.00 to 2.00 [s]	0.50 [s]	See 7.7 for details
P13.37	Reverse holding time	Setting the reverse holding time	0.00 to 2.00 [s]	0.50 [s]	See 7.7 for details
P13.38	Smooth Lift Enable	[0] Prohibition [1] Enable	0 to 1	0	See 7.11 for details
P13.39	Abnormal brake rise enable	[0] Prohibition [1] Enable	0 to 1	0	Whether ascending is permitted after brake failure
P13.40	Brake Failure Detection Speed Threshold	Setting the Brake Failure Detection Speed Threshold	0.0 to 100.0 [%]	10.0 [%]	See 7.11 for details

P13.41	Brake failure detection time	Setting the brake failure detection time	0.00 to 100.00 [s]	0.10 [s]	See 7.11 for details
P13.42	Maximum time for anomaly detection	Setting the maximum time for anomaly detection	0 to 3000 [s]	3 [s]	See 7.11 for details
P13.43	Unwinding torque	Setting the slack rope torque	0.0 to 50.0 [%]	20.0 [%]	See 7.11 for details
P13.44	Loose rope torque detection time	Setting the slack rope torque detection time	0.00 to 5.00 [s]	0.20 [s]	See 7.11 for details
P13.45	Loading torque	Setting the loading torque	20.0 to 100.0 [%]	25.0 [%]	See 7.11 for details
P13.46	Loading torque detection time	Setting the loading torque detection time	0.00 to 5.00 [s]	0.10 [s]	See 7.11 for details
P13.47	Load torque fluctuation range	Setting the range of loading torque fluctuation	0 to 30.0 [%]	10.0 [%]	See 7.11 for details
P13.48	Loading torque stabilization time	Setting the loading torque stabilization time	0.00 to 5.00 [s]	0.00 [s]	See 7.11 for details
P13.49	Rapid deceleration time ratio	Setting the rapid deceleration time ratio	0.00~1.00	0.1	See 7.11 for details
P13.50	Rope speed	Setting the rope speed	0.0 to 10.0 [%]	10.0 [%]	See 7.11 for details

6.13 Motor 3-stage speed brake set P14

Function code	Name	Clarification	Setting range	Default value	Explanation
P14.0	Multi-speed mode selection	[0] Direct Input [1] Binary	0 to 1	1	See 7.7 for details
P14.1	Multi-band speed unit selection	[0][%] [1][Hz] [2][rpm]	0 to 2	1	
P14.2	Multi-speed 1		0.0 to 3000.0	10.0	
P14.3	Multi-speed 2		0.0 to 3000.0	20.0	
P14.4	Multi-speed 3		0.0 to 3000.0	35.0	

P14.5	Multi-speed 4		0.0 to 3000.0	50.0	
P14.6	Multi-speed 5		0.0 to 3000.0	50.0	
P14.7	Multi-speed 6		0.0 to 3000.0	50.0	
P14.8	Multi-Speed 7		0.0 to 3000.0	50.0	
P14.9	Multi-Segment Speed 8		0.0 to 3000.0	50.0	
P14.10	Multi-speed 9		0.0 to 3000.0	50.0	
P14.11	Multi-speed 10		0.0 to 3000.0	50.0	
P14.12	Multi-speed 11		0.0 to 3000.0	50.0	
P14.13	Multi-speed 12		0.0 to 3000.0	50.0	
P14.14	Multi-speed 13		0.0 to 3000.0	50.0	
P14.15	Multi-speed 14		0.0 to 3000.0	50.0	
P14.16	Multi-speed 15		0.0 to 3000.0	50.0	
P14.17	Multi-speed 16		0.0 to 3000.0	50.0	
P14.18	FCD Pulses per meter LSW_2X	Parameters related to the anti-roofing function, the lower 16 bits of the pulse per meter are calculated when doubling the rope	0 to 65535	1000	See 7.11 for details
P14.19	FCD Pulses per meter MSW_2X	Parameters related to the anti-roofing function, the high 16 bits of the number of pulses per meter are calculated when the rope is doubled	0 to 100	2	See 7.11 for details
P14.20	FCD speed (m/min)_2X	Parameters related to the anti-roofing function, the running speed of the mechanism is calculated at two times the rope (m/min)	0.0 to 100.0	5.0	See 7.11 for details
P14.21	Startup enable after current disappears	For some special motors with large residual magnetism, the current has to disappear before starting again each time the motor is started or reversed.	0 to 1	0	
P14.22	Open gate forward speed value	Setting the open gate forward speed value	0.0 to 20.0 [%]	2.0 [%]	See 7.7 for details

P14.23	Open gate reverse speed value	Setting the open gate reverse speed value	0.0 to 20.0 [%]	0.0 [%]	See 7.7 for details
P14.24	Open gate positive torque	Setting the positive opening torque	0.0 to 200.0 [%]	30.0 [%]	See 7.7 for details
P14.25	Open gate reverse torque	Setting the opening reverse torque	0.0 to 200.0 [%]	20.0 [%]	See 7.7 for details
P14.26	Positive gate opening delay	Setting the forward gate opening delay time	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P14.27	Reverse gate opening delay	Setting the reverse gate opening delay time	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P14.28	Positive gate opening control delay	Setting the positive gate opening time	0.00 to 2.00 [s]	0.07 [s]	See 7.7 for details
P14.29	Reverse gate opening control delay	Setting the reverse gate opening time	0.00 to 2.00 [s]	0.07 [s]	See 7.7 for details
P14.30	Open gate limit @ given reverse	For some special motors with large residual magnetism, special control is required when controlling from forward to reverse.	0 to 1	0	
P14.31	Open Gate Limit @ Reverse Delay	For some special motors with large residual magnetism, special control is required when controlling from forward to reverse.	0 to 2	0.3	
P14.32	Forward Braking Speed	Setting the holding speed in forward direction	0.0 to 20.0 [%]	0.0 [%]	See 7.7 for details
P14.33	Reverse Braking Speed	Setting the brake speed in reverse	0.0 to 20.0 [%]	0.0 [%]	See 7.7 for details
P14.34	Positive Brake Delay Time	Setting the forward brake delay time	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P14.35	Reverse Brake Delay Time	Setting the delay time for the reverse holding brake	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P14.36	Positive holding time	Setting the forward hold time	0.00 to 2.00 [s]	0.50 [s]	See 7.7 for details
P14.37	Reverse holding time	Setting the reverse holding time	0.00 to 2.00 [s]	0.50 [s]	See 7.7 for details
P14.38	Smooth Lift Enable	[0] Prohibition [1] Enable	0 to 1	0	See 8.12 for details

P14.39	Abnormal brake rise enable	[0] Prohibition [1] Enable	0 to 1	0	Whether ascending is permitted after brake failure
P14.40	Brake Failure Detection Speed Threshold	Setting the Brake Failure Detection Speed Threshold	0.0 to 100.0 [%]	10.0 [%]	See 7.11 for details
P14.41	Brake failure detection time	Setting the brake failure detection time	0.00 to 100.00 [s]	0.10 [s]	See 7.11 for details
P14.42	Maximum time for anomaly detection	Setting the maximum time for anomaly detection	0 to 3000 [s]	3 [s]	See 7.11 for details
P14.43	Unwinding torque	Setting the slack rope torque	0.0 to 50.0 [%]	20.0 [%]	See 7.11 for details
P14.44	Loose rope torque detection time	Setting the slack rope torque detection time	0.00 to 5.00 [s]	0.20 [s]	See 7.11 for details
P14.45	Loading torque	Setting the loading torque	20.0 to 100.0 [%]	25.0 [%]	See 7.11 for details
P14.46	Loading torque detection time	Setting the loading torque detection time	0.00 to 5.00 [s]	0.10 [s]	See 7.11 for details
P14.47	Load torque fluctuation range	Setting the range of loading torque fluctuation	0 to 30.0 [%]	10.0 [%]	See 7.11 for details
P14.48	Loading torque stabilization time	Setting the loading torque stabilization time	0.00 to 5.00 [s]	0.00 [s]	See 7.11 for details
P14.49	Rapid deceleration time ratio	Setting the rapid deceleration time ratio	0.00~1.00	0.1	See 7.11 for details
P14.50	Rope speed	Setting the rope speed	0.0 to 10.0 [%]	10.0 [%]	See 7.11 for details

6.14 Motor 4-stage speed brake set P15

Function code	Name	Clarification	Setting range	Default value	Particular
P15.0	Multi-speed mode selection	[0] Direct Input [1] Binary	0 to 1	1	See 7.7 for details
P15.1	Multi-band speed unit selection	[0][%] [1][Hz] [2][rpm]	0 to 2	1	
P15.2	Multi-speed 1		0.0 to 3000.0	10.0	
P15.3	Multi-speed 2		0.0 to 3000.0	20.0	
P15.4	Multi-speed 3		0.0 to 3000.0	35.0	
P15.5	Multi-speed 4		0.0 to 3000.0	50.0	
P15.6	Multi-speed 5		0.0 to 3000.0	50.0	
P15.7	Multi-speed 6		0.0 to 3000.0	50.0	
P15.8	Multi-Speed 7		0.0 to 3000.0	50.0	
P15.9	Multi-Segment Speed 8		0.0 to 3000.0	50.0	
P15.10	Multi-speed 9		0.0 to 3000.0	50.0	
P15.11	Multi-speed 10		0.0 to 3000.0	50.0	
P15.12	Multi-speed 11		0.0 to 3000.0	50.0	
P15.13	Multi-speed 12		0.0 to 3000.0	50.0	
P15.14	Multi-speed 13		0.0 to 3000.0	50.0	
P15.15	Multi-speed 14		0.0 to 3000.0	50.0	
P15.16	Multi-speed 15		0.0 to 3000.0	50.0	
P15.17	Multi-speed 16		0.0 to 3000.0	50.0	
P15.18	FCD Pulses per meter LSW_2X	Parameters related to the anti-roofing function, the lower 16 bits of the pulse per meter are calculated when doubling the rope	0 to 65535	1000	See 7.11 for details

P15.19	FCD Pulses per meter MSW_2X	Parameters related to the anti-roofing function, the high 16 bits of the number of pulses per meter are calculated when the rope is doubled	0 to 100	2	See 7.11 for details
P15.20	FCD speed (m/min)_2X	Parameters related to the anti-roofing function, the running speed of the mechanism is calculated at two times the rope (m/min)	0.0 to 100.0	5.0	See 7.11 for details
P15.21	Startup enable after current disappears	For some special motors with large residual magnetism, the current has to disappear before starting again each time the motor is started or reversed.	0 to 1	0	
P15.22	Open gate forward speed value	Setting the open gate forward speed value	0.0 to 20.0 [%]	2.0 [%]	See 7.7 for details
P15.23	Open gate reverse speed value	Setting the open gate reverse speed value	0.0 to 20.0 [%]	0.0 [%]	See 7.7 for details
P15.24	Open gate positive torque	Setting the positive opening torque	0.0 to 200.0 [%]	30.0 [%]	See 7.7 for details
P15.25	Open gate reverse torque	Setting the opening reverse torque	0.0 to 200.0 [%]	20.0 [%]	See 7.7 for details
P15.26	Positive gate opening delay	Setting the forward gate opening delay time	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P15.27	Reverse gate opening delay	Setting the reverse gate opening delay time	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P15.28	Positive gate opening control delay	Setting the positive gate opening time	0.00 to 2.00 [s]	0.07 [s]	See 7.7 for details

P15.29	Reverse gate opening control delay	Setting the reverse gate opening time	0.00 to 2.00 [s]	0.07 [s]	See 7.7 for details
P15.30	Open gate limit @ given reverse	For some special motors with large residual magnetism, special control is required when controlling from forward to reverse.	0 to 1	0	
P15.31	Open Gate Limit @ Reverse Delay	For some special motors with large residual magnetism, special control is required when controlling from forward to reverse.	0 to 2	0.3	
P15.32	Forward Braking Speed	Setting the holding speed in forward direction	0.0 to 20.0 [%]	0.0 [%]	See 7.7 for details
P15.33	Reverse Braking Speed	Setting the brake speed in reverse	0.0 to 20.0 [%]	0.0 [%]	See 7.7 for details
P15.34	Positive Brake Delay Time	Setting the forward brake delay time	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P15.35	Reverse Brake Delay Time	Setting the delay time for the reverse holding brake	0.00 to 2.00 [s]	0.00 [s]	See 7.7 for details
P15.36	Positive holding time	Setting the forward hold time	0.00 to 2.00 [s]	0.50 [s]	See 7.7 for details
P15.37	Reverse holding time	Setting the reverse holding time	0.00 to 2.00 [s]	0.50 [s]	See 7.7 for details
P15.38	Smooth Lift Enable	[0] Prohibition [1] Enable	0 to 1	0	See 7.11 for details
P15.39	Abnormal brake rise enable	[0] Prohibition [1] Enable	0 to 1	0	Whether ascending is permitted after brake failure

P15.40	Brake Failure Detection Speed Threshold	Setting the Brake Failure Detection Speed Threshold	0.0 to 100.0 [%]	10.0 [%]	See 7.11 for details
P15.41	Brake failure detection time	Setting the brake failure detection time	0.00 to 100.00 [s]	0.10 [s]	See 7.11 for details
P15.42	Maximum time for anomaly detection	Setting the maximum time for anomaly detection	0 to 3000 [s]	3 [s]	See 7.11 for details
P15.43	Unwinding torque	Setting the slack rope torque	0.0 to 50.0 [%]	20.0 [%]	See 7.11 for details
P15.44	Loose rope torque detection time	Setting the slack rope torque detection time	0.00 to 5.00 [s]	0.20 [s]	See 7.11 for details
P15.45	Loading torque	Setting the loading torque	20.0 to 100.0 [%]	25.0 [%]	See 7.11 for details
P15.46	Loading torque detection time	Setting the loading torque detection time	0.00 to 5.00 [s]	0.10 [s]	See 7.11 for details
P15.47	Load torque fluctuation range	Setting the range of loading torque fluctuation	0 to 30.0 [%]	10.0 [%]	See 7.11 for details
P15.48	Loading torque stabilization time	Setting the loading torque stabilization time	0.00 to 5.00 [s]	0.00 [s]	See 7.11 for details
P15.49	Rapid deceleration time ratio	Setting the rapid deceleration time ratio	0.00~1.00	0.1	See 7.11 for details
P15.50	Rope speed	Setting the rope speed	0.0 to 10.0 [%]	10.0 [%]	See 7.11 for details

6.15 Motor 1 parameter V/F group P16

Function code	Name	Clarification	Setting range	Default value	Particular
P16.0	Input Voltage Setting	Set according to actual input voltage	320-460 [V]	380 [V]	
P16.2	Motor rated power	Setting according to motor nameplate parameters	0.0 to 4000.0 [kW]	Model Determination [kW]	
P16.3	Motor rated voltage	Setting according to motor nameplate parameters	320-460 [V]	380 [V]	
P16.4	Motor rated current	Setting according to motor nameplate parameters	0.0 to 6500.0 [A]	Model Determination [A]	
P16.5	Motor rated frequency	Setting according to motor nameplate parameters	0.0 to 300.0 [Hz]	50.0 [Hz]	
P16.6	Rated motor speed	Setting according to motor nameplate parameters	0 to 6000 [rpm]	1465 [rpm]	
P16.7	Motor rated poles	Setting according to motor nameplate parameters	2 to 12 [pole]	4 [pole]	See 7.8 for details
P16.9	Motor synchronous speed	Setting according to motor nameplate parameters	0 to 7200 [rpm]	1500 [rpm]	See 7.8 for details
P16.11	Control mode selection	[0] V/F control [1] Open-loop vectors [2] Closed-loop vectors	0 to 2	0	
P16.12	Carrier frequency setting	Set carrier frequency	1.00 to 10.00 [kHz]	3.00 [kHz]	See 7.8 for details

P16.14	V/F curve setting	[0] Linear V/F curve [1] Multi-point V/F curves [2] Quadratic power curves	0 to 2	0	See 7.8 for details
P16.15	torque compensation	[0] Prohibition [1] Enable	0 to 1	0	See 7.8 for details
P16.16	Torque compensation time	Setting torque compensation time	2 to 500 [ms]	500 [ms]	
P16.17	V/F control mode	[0] Frequency control [1] Slip control	0 to 1	0	
P16.18	Slippage compensation time	Setting the slip compensation time	10 to 1000 [ms]	200 [ms]	
P16.19	Stator resistance self-tuning option	[0] Online [1] Offline	0 to 1	0	
P16.22	Start-up delay time	Setting the start-up delay time	0.00 to 100.00 [s]	0.00 [s]	See 7.8 for details
P16.23	minimum frequency	Setting the minimum frequency (this parameter is only valid in V/F control mode)	0.00 to 300.00 [Hz]	0.00 [Hz]	
P16.24	Maximum frequency	Setting the maximum frequency (this parameter is only valid in V/F control mode)	0.00 to 300.00 [Hz]	50.00 [Hz]	
P16.25	Maximum modulation rate	Setting the maximum modulation rate	0.0 to 120.0 [%]	100.0 [%]	
P16.26	V/F startup voltage bias	Set V/F startup voltage bias	0.00 to 10.00 [%]	0.75 [%]	See 7.8 for details

P16.27	Rated Frequency Output Voltage	Output voltage at set rated frequency	0.0 to 200.0 [%]	100.0 [%]	See 7.8 for details
P16.30	Power-of-two starting voltage compensation	Setting the power-of-two curve to start voltage compensation	0.0 to 100.0 [%]	0.0 [%]	See 7.8 for details
P16.33	Multi-point V/F curves	Setting the number of points in a multi-point V/F curve	0 to 6	2	See 7.8 for details
P16.34	V/F frequency point 1		0.0 to 300.0 [Hz]	5.0 [Hz]	
P16.35	V/F voltage point 1		0.0 to 125.0 [%]	11.5 [%]	
P16.36	V/F frequency point 2		0.0 to 300.0 [Hz]	50.0 [Hz]	
P16.37	V/F voltage point 2		0.0 to 125.0 [%]	100.0 [%]	
P16.38	V/F frequency point 3		0.0 to 300.0 [Hz]	50.0 [Hz]	
P16.39	V/F voltage point 3		0.0 to 125.0 [%]	100.0 [%]	
P16.40	V/F frequency point 4		0.0 to 300.0 [Hz]	50.0 [Hz]	
P16.41	V/F voltage point 4		0.0 to 125.0 [%]	100.0 [%]	
P16.42	V/F frequency point 5		0.0 to 300.0 [Hz]	50.0 [Hz]	
P16.43	V/F voltage point 5		0.0 to 125.0 [%]	100.0 [%]	
P16.44	V/F frequency point 6		0.0 to 300.0 [Hz]	50.0 [Hz]	
P16.45	V/F voltage point 6		0.0 to 125.0 [%]	100.0 [%]	

P16.48	frequency modulation source	[0] Prohibition [1] PID module 1 [2] PID module 2 [3] Free function blocks	0 to 3	0	
P16.50	Start DC braking time	Setting the start DC braking time	0.00 to 300.00 [s]	0.00 [s]	See 7.8 for details
P16.51	Starting DC braking current	Setting the starting DC braking current	0.0 to 150.0 [%]	70.0 [%]	See 7.8 for details
P16.52	Starting DC braking frequency	Setting the starting DC braking frequency	0.00 to 5.00 [Hz]	0.00 [Hz]	See 7.8 for details
P16.54	Stop DC braking time	Setting the stop DC braking time	0.00 to 300.00 [s]	0.00 [s]	See 7.8 for details
P16.55	Stop DC braking current	Setting the stopping DC braking current	0.0 to 150.0 [%]	75.0 [%]	See 7.8 for details
P16.56	Stop DC braking frequency	Setting the stop DC braking frequency	0.00 to 5.00 [Hz]	0.00 [Hz]	See 7.8 for details
P16.59	Overcurrent protection proportional gain	Setting the overcurrent protection ratio	0.0 to 1000.0 [%]	100.0 [%]	
P16.60	Integral gain for overcurrent protection	Setting of overcurrent protection points	0.0 to 1000.0 [%]	100.0 [%]	
P16.61	Overpressure limiting ratio	Setting the overvoltage limiting ratio	0.0 to 1000.0 [%]	100.0 [%]	
P16.62	Overvoltage Limit Points	Setting overvoltage limit points	0.0 to 1000.0 [%]	100.0 [%]	
P16.64	V/F stabilizing action gain	Setting the V/F stabilizing action gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.8 for details

P16.66	Current Limit Proportional Gain	Setting the current limit loop ratio in V/F mode	0.0 to 1000.0 [%]	100.0 [%]	
P16.67	Start DC braking ratio	Setting the starting DC braking ratio	0.0 to 1000.0 [%]	100.0 [%]	
P16.68	Initiate DC braking credit	Setting the startup DC braking integral	0.0 to 1000.0 [%]	100.0 [%]	
P16.69	Stop DC braking ratio	Setting the stop DC braking ratio	0.0 to 1000.0 [%]	100.0 [%]	
P16.70	Stop DC Brake Integration	Setting the stopping DC braking integral	0.0 to 1000.0 [%]	100.0 [%]	

6.16 Motor 2 parameter V/F group P17

Function code	Name	Instructions	Setting range	Default value	Explanation
P17.0	Input voltage setting	Set according to actual input voltage	320-460 [V]	380 [V]	
P17.2	Motor rated power	Setting according to motor nameplate parameters	0.0 to 4000.0 [kW]	Model Determination [kW]	
P17.3	Motor rated voltage	Setting according to motor nameplate parameters	320-460 [V]	380 [V]	
P17.4	Motor rated current	Setting according to motor nameplate parameters	0.0 to 6500.0 [A]	Model Determination [A]	
P17.5	Motor rated frequency	Setting according to motor nameplate parameters	0.0 to 300.0 [Hz]	50.0 [Hz]	
P17.6	Rated motor speed	Setting according to motor nameplate parameters	0 to 6000 [rpm]	1465 [rpm]	

P17.7	Motor rated poles	Setting according to motor nameplate parameters	2 to 12 [pole]	4 [pole]	See 7.8 for details
P17.9	Motor synchronous speed	Setting according to motor nameplate parameters	0 to 7200 [rpm]	1500 [rpm]	See 7.8 for details
P17.11	Control mode selection	[0] V/F control [1] Open-loop vectors [2] Closed-loop vectors	0 to 2	0	
P17.12	Carrier frequency setting	Set carrier frequency	1.00 to 10.00 [kHz]	3.00 [kHz]	See 7.8 for details
P17.14	V/F curve setting	[0] Linear V/F curve [1] Multi-point V/F curves [2] Quadratic power curves	0 to 2	0	See 7.8 for details
P17.15	torque compensation	[0] Prohibition [1] Enable	0 to 1	0	See 7.8 for details
P17.16	Torque compensation time	Setting torque compensation time	2 to 500 [ms]	500 [ms]	
P17.17	V/F control mode	[0] Frequency control [1] Slip control	0 to 1	0	
P17.18	Slippage compensation time	Setting the slip compensation time	10 to 1000 [ms]	200 [ms]	
P17.19	Stator resistance self-tuning option	[0] Online [1] Offline	0 to 1	0	
P17.22	Start-up delay time	Setting the start-up delay time	0.00 to 100.00 [s]	0.00 [s]	See 7.8 for details

P17.23	minimum frequency	Setting the minimum frequency (this parameter is only valid in V/F control mode)	0.00 to 300.00 [Hz]	0.00 [Hz]	
P17.24	Maximum frequency	Setting the maximum frequency (this parameter is only valid in V/F control mode)	0.00 to 300.00 [Hz]	50.00 [Hz]	
P17.25	Maximum modulation rate	Setting the maximum modulation rate	0.0 to 120.0 [%]	100.0 [%]	
P17.26	V/F startup voltage bias	Set V/F startup voltage bias	0.00 to 10.00 [%]	0.75 [%]	See 7.8 for details
P17.27	Rated Frequency Output Voltage	Output voltage at set rated frequency	0.0 to 200.0 [%]	100.0 [%]	See 7.8 for details
P17.30	Power-of-two starting voltage compensation	Setting the power-of-two curve to start voltage compensation	0.0 to 100.0 [%]	0.0 [%]	See 7.8 for details
P17.33	Multi-point V/F curves	Setting the number of points in a multi-point V/F curve	0 to 6	2	See 7.8 for details
P17.34	V/F frequency point 1		0.0 to 300.0 [Hz]	5.0 [Hz]	
P17.35	V/F voltage point 1		0.0 to 125.0 [%]	11.5 [%]	
P17.36	V/F frequency point 2		0.0 to 300.0 [Hz]	50.0 [Hz]	
P17.37	V/F voltage point 2		0.0 to 125.0 [%]	100.0 [%]	
P17.38	V/F frequency point 3		0.0 to 300.0 [Hz]	50.0 [Hz]	
P17.39	V/F voltage point 3		0.0 to 125.0 [%]	100.0 [%]	

P17.40	V/F frequency point 4		0.0 to 300.0 [Hz]	50.0 [Hz]	
P17.41	V/F voltage point 4		0.0 to 125.0 [%]	100.0 [%]	
P17.42	V/F frequency point 5		0.0 to 300.0 [Hz]	50.0 [Hz]	
P17.43	V/F voltage point 5		0.0 to 125.0 [%]	100.0 [%]	
P17.44	V/F frequency point 6		0.0 to 300.0 [Hz]	50.0 [Hz]	
P17.45	V/F voltage point 6		0.0 to 125.0 [%]	100.0 [%]	
P17.48	frequency modulation source	[0] Prohibition [1] PID module 1 [2] PID module 2 [3] Free function blocks	0 to 3	0	
P17.50	Start DC braking time	Setting the start DC braking time	0.00 to 300.00 [s]	0.00 [s]	See 7.8 for details
P17.51	Starting DC braking current	Setting the starting DC braking current	0.0 to 150.0 [%]	70.0 [%]	See 7.8 for details
P17.52	Starting DC braking frequency	Setting the starting DC braking frequency	0.00 to 5.00 [Hz]	0.00 [Hz]	See 7.8 for details
P17.54	Stop DC braking time	Setting the stop DC braking time	0.00 to 300.00 [s]	0.00 [s]	See 7.8 for details
P17.55	Stop DC braking current	Setting the stopping DC braking current	0.0 to 150.0 [%]	75.0 [%]	See 7.8 for details
P17.56	Stop DC braking frequency	Setting the stop DC braking frequency	0.00 to 5.00 [Hz]	0.00 [Hz]	See 7.8 for details

P17.59	Overcurrent protection proportional gain	Setting the overcurrent protection ratio	0.0 to 1000.0 [%]	100.0 [%]	
P17.60	Integral gain for overcurrent protection	Setting of overcurrent protection points	0.0 to 1000.0 [%]	100.0 [%]	
P17.61	Overpressure limiting ratio	Setting the overvoltage limiting ratio	0.0 to 1000.0 [%]	100.0 [%]	
P17.62	Overvoltage Limit Points	Setting overvoltage limit points	0.0 to 1000.0 [%]	100.0 [%]	
P17.64	V/F stabilizing action gain	Setting the V/F stabilizing action gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.8 for details
P17.66	Current Limit Proportional Gain	Setting the current limit loop ratio in V/F mode	0.0 to 1000.0 [%]	100.0 [%]	
P17.67	Start DC braking ratio	Setting the starting DC braking ratio	0.0 to 1000.0 [%]	100.0 [%]	
P17.68	Initiate DC braking credit	Setting the startup DC braking integral	0.0 to 1000.0 [%]	100.0 [%]	
P17.69	Stop DC braking ratio	Setting the stop DC braking ratio	0.0 to 1000.0 [%]	100.0 [%]	
P17.70	Stop DC Brake Integration	Setting the stopping DC braking integral	0.0 to 1000.0 [%]	100.0 [%]	

6.17 Motor 3 parameter V/F group P18

Function code	Name	Instructions	Setting range	Default value	Particular
P18.0	Input Voltage Setting	Set according to actual input voltage	320-460 [V]	380 [V]	
P18.2	Motor rated power	Setting according to motor nameplate parameters	0.0 to 4000.0 [kW]	Model Determination [kW]	
P18.3	Motor rated voltage	Setting according to motor nameplate parameters	320-460 [V]	380 [V]	
P18.4	Motor rated current	Setting according to motor nameplate parameters	0.0 to 6500.0 [A]	Model Determination [A]	
P18.5	Motor rated frequency	Setting according to motor nameplate parameters	0.0 to 300.0 [Hz]	50.0 [Hz]	
P18.6	Rated motor speed	Setting according to motor nameplate parameters	0 to 6000 [rpm]	1465 [rpm]	
P18.7	Motor rated poles	Setting according to motor nameplate parameters	2 to 12 [pole]	4 [pole]	See 7.8 for details
P18.9	Motor synchronous speed	Setting according to motor nameplate parameters	0 to 7200 [rpm]	1500 [rpm]	See 7.8 for details
P18.11	Control mode selection	[0] V/F control [1] Open-loop vectors [2] Closed-loop vectors	0 to 2	0	
P18.12	Carrier frequency setting	Set carrier frequency	1.00 to 10.00 [kHz]	3.00 [kHz]	See 7.8 for details

P18.14	V/F curve setting	[0] Linear V/F curve [1] Multi-point V/F curves [2] Quadratic power curves	0 to 2	0	See 7.8 for details
P18.15	torque compensation	[0] Prohibition [1] Enable	0 to 1	0	See 7.8 for details
P18.16	Torque compensation time	Setting torque compensation time	2 to 500 [ms]	500 [ms]	
P18.17	V/F control mode	[0] Frequency control [1] Slip control	0 to 1	0	
P18.18	Slippage compensation time	Setting the slip compensation time	10 to 1000 [ms]	200 [ms]	
P18.19	Stator resistance self-tuning option	[0] Online [1] Offline	0 to 1	0	
P18.22	Start-up delay time	Setting the start-up delay time	0.00 to 100.00 [s]	0.00 [s]	See 7.8 for details
P18.23	minimum frequency	Setting the minimum frequency (this parameter is only valid in V/F control mode)	0.00 to 300.00 [Hz]	0.00 [Hz]	
P18.24	Maximum frequency	Setting the maximum frequency (this parameter is only valid in V/F control mode)	0.00 to 300.00 [Hz]	50.00 [Hz]	
P18.25	Maximum modulation rate	Setting the maximum modulation rate	0.0 to 120.0 [%]	100.0 [%]	
P18.26	V/F startup voltage bias	Set V/F startup voltage bias	0.00 to 10.00 [%]	0.75 [%]	See 7.8 for details

P18.27	Rated Frequency Output Voltage	Output voltage at set rated frequency	0.0 to 200.0 [%]	100.0 [%]	See 7.8 for details
P18.30	Power-of-two starting voltage compensation	Setting the power-of-two curve to start voltage compensation	0.0 to 100.0 [%]	0.0 [%]	See 7.8 for details
P18.33	Multi-point V/F curves	Setting the number of points in a multi-point V/F curve	0 to 6	2	See 7.8 for details
P18.34	V/F frequency point 1		0.0 to 300.0 [Hz]	5.0 [Hz]	
P18.35	V/F voltage point 1		0.0 to 125.0 [%]	11.5 [%]	
P18.36	V/F frequency point 2		0.0 to 300.0 [Hz]	50.0 [Hz]	
P18.37	V/F voltage point 2		0.0 to 125.0 [%]	100.0 [%]	
P18.38	V/F frequency point 3		0.0 to 300.0 [Hz]	50.0 [Hz]	
P18.39	V/F voltage point 3		0.0 to 125.0 [%]	100.0 [%]	
P18.40	V/F frequency point 4		0.0 to 300.0 [Hz]	50.0 [Hz]	
P18.41	V/F voltage point 4		0.0 to 125.0 [%]	100.0 [%]	
P18.42	V/F frequency point 5		0.0 to 300.0 [Hz]	50.0 [Hz]	
P18.43	V/F voltage point 5		0.0 to 125.0 [%]	100.0 [%]	
P18.44	V/F frequency point 6		0.0 to 300.0 [Hz]	50.0 [Hz]	
P18.45	V/F voltage point 6		0.0 to 125.0 [%]	100.0 [%]	

P18.48	frequency modulation source	[0] Prohibition [1] PID module 1 [2] PID module 2 [3] Free function blocks	0 to 3	0	
P18.50	Start DC braking time	Setting the start DC braking time	0.00 to 300.00 [s]	0.00 [s]	See 7.8 for details
P18.51	Starting DC braking current	Setting the starting DC braking current	0.0 to 150.0 [%]	70.0 [%]	See 7.8 for details
P18.52	Starting DC braking frequency	Setting the starting DC braking frequency	0.00 to 5.00 [Hz]	0.00 [Hz]	See 7.8 for details
P18.54	Stop DC braking time	Setting the stop DC braking time	0.00 to 300.00 [s]	0.00 [s]	See 7.8 for details
P18.55	Stop DC braking current	Setting the stopping DC braking current	0.0 to 150.0 [%]	75.0 [%]	See 7.8 for details
P18.56	Stop DC braking frequency	Setting the stop DC braking frequency	0.00 to 5.00 [Hz]	0.00 [Hz]	See 7.8 for details
P18.59	Overcurrent protection proportional gain	Setting the overcurrent protection ratio	0.0 to 1000.0 [%]	100.0 [%]	
P18.60	Integral gain for overcurrent protection	Setting of overcurrent protection points	0.0 to 1000.0 [%]	100.0 [%]	
P18.61	Overpressure limiting ratio	Setting the overvoltage limiting ratio	0.0 to 1000.0 [%]	100.0 [%]	
P18.62	Overvoltage Limit Points	Setting overvoltage limit points	0.0 to 1000.0 [%]	100.0 [%]	
P18.64	V/F stabilizing action gain	Setting the V/F stabilizing action gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.8 for details

P18.66	Current Limit Proportional Gain	Setting the current limit loop ratio in V/F mode	0.0 to 1000.0 [%]	100.0 [%]	
P18.67	Start DC braking ratio	Setting the starting DC braking ratio	0.0 to 1000.0 [%]	100.0 [%]	
P18.68	Initiate DC braking credit	Setting the startup DC braking integral	0.0 to 1000.0 [%]	100.0 [%]	
P18.69	Stop DC braking ratio	Setting the stop DC braking ratio	0.0 to 1000.0 [%]	100.0 [%]	
P18.70	Stop DC Brake Integration	Setting the stopping DC braking integral	0.0 to 1000.0 [%]	100.0 [%]	

6.18 Motor 4-parameter V/F group P19

Function code	Name	Instructions	Setting range	Default value	Explanation
P19.0	Input voltage setting	Set according to actual input voltage	320-460 [V]	380 [V]	
P19.2	Motor rated power	Setting according to motor nameplate parameters	0.0 to 4000.0 [kW]	Model Determination [kW]	
P19.3	Motor rated voltage	Setting according to motor nameplate parameters	320-460 [V]	380 [V]	
P19.4	Motor rated current	Setting according to motor nameplate parameters	0.0 to 6500.0 [A]	Model Determination [A]	
P19.5	Motor rated frequency	Setting according to motor nameplate parameters	0.0 to 300.0 [Hz]	50.0 [Hz]	
P19.6	Rated motor speed	Setting according to motor nameplate parameters	0 to 6000 [rpm]	1465 [rpm]	

P19.7	Motor rated poles	Setting according to motor nameplate parameters	2 to 12 [pole]	4 [pole]	See 7.8 for details
P19.9	Motor synchronous speed	Setting according to motor nameplate parameters	0 to 7200 [rpm]	1500 [rpm]	See 7.8 for details
P19.11	Control mode selection	[0] V/F control [1] Open-loop vectors [2] Closed-loop vectors	0 to 2	0	
P19.12	Carrier frequency setting	Set carrier frequency	1.00 to 10.00 [kHz]	3.00 [kHz]	See 7.8 for details
P19.14	V/F curve setting	[0] Linear V/F curve [1] Multi-point V/F curves [2] Quadratic power curves	0 to 2	0	See 7.8 for details
P19.15	torque compensation	[0] Prohibition [1] Enable	0 to 1	0	See 7.8 for details
P19.16	Torque compensation time	Setting torque compensation time	2 to 500 [ms]	500 [ms]	
P19.17	V/F control mode	[0] Frequency control [1] Slip control	0 to 1	0	
P19.18	Slippage compensation time	Setting the slip compensation time	10 to 1000 [ms]	200 [ms]	
P19.19	Stator resistance self-tuning option	[0] Online [1] Offline	0 to 1	0	
P19.22	Start-up delay time	Setting the start-up delay time	0.00 to 100.00 [s]	0.00 [s]	See 7.8 for details

P19.23	minimum frequency	Setting the minimum frequency (this parameter is only valid in V/F control mode)	0.00 to 300.00 [Hz]	0.00 [Hz]	
P19.24	Maximum frequency	Setting the maximum frequency (this parameter is only valid in V/F control mode)	0.00 to 300.00 [Hz]	50.00 [Hz]	
P19.25	Maximum modulation rate	Setting the maximum modulation rate	0.0 to 120.0 [%]	100.0 [%]	
P19.26	V/F startup voltage bias	Set V/F startup voltage bias	0.00 to 10.00 [%]	0.75 [%]	See 7.8 for details
P19.27	Rated Frequency Output Voltage	Output voltage at set rated frequency	0.0 to 200.0 [%]	100.0 [%]	See 7.8 for details
P19.30	Power-of-two starting voltage compensation	Setting the power-of-two curve to start voltage compensation	0.0 to 100.0 [%]	0.0 [%]	See 7.8 for details
P19.33	Multi-point V/F curves	Setting the number of points in a multi-point V/F curve	0 to 6	2	See 7.8 for details
P19.34	V/F frequency point 1		0.0 to 300.0 [Hz]	5.0 [Hz]	
P19.35	V/F voltage point 1		0.0 to 125.0 [%]	11.5 [%]	
P19.36	V/F frequency point 2		0.0 to 300.0 [Hz]	50.0 [Hz]	
P19.37	V/F voltage point 2		0.0 to 125.0 [%]	100.0 [%]	
P19.38	V/F frequency point 3		0.0 to 300.0 [Hz]	50.0 [Hz]	
P19.39	V/F voltage point 3		0.0 to 125.0 [%]	100.0 [%]	

P19.40	V/F frequency point 4		0.0 to 300.0 [Hz]	50.0 [Hz]	
P19.41	V/F voltage point 4		0.0 to 125.0 [%]	100.0 [%]	
P19.42	V/F frequency point 5		0.0 to 300.0 [Hz]	50.0 [Hz]	
P19.43	V/F voltage point 5		0.0 to 125.0 [%]	100.0 [%]	
P19.44	V/F frequency point 6		0.0 to 300.0 [Hz]	50.0 [Hz]	
P19.45	V/F voltage point 6		0.0 to 125.0 [%]	100.0 [%]	
P19.48	frequency modulation source	[0] Prohibition [1] PID module 1 [2] PID module 2 [3] Free function blocks	0 to 3	0	
P19.50	Start DC braking time	Setting the start DC braking time	0.00 to 300.00 [s]	0.00 [s]	See 7.8 for details
P19.51	Starting DC braking current	Setting the starting DC braking current	0.0 to 150.0 [%]	70.0 [%]	See 7.8 for details
P19.52	Starting DC braking frequency	Setting the starting DC braking frequency	0.00 to 5.00 [Hz]	0.00 [Hz]	See 7.8 for details
P19.54	Stop DC braking time	Setting the stop DC braking time	0.00 to 300.00 [s]	0.00 [s]	See 7.8 for details
P19.55	Stop DC braking current	Setting the stopping DC braking current	0.0 to 150.0 [%]	75.0 [%]	See 7.8 for details
P19.56	Stop DC braking frequency	Setting the stop DC braking frequency	0.00 to 5.00 [Hz]	0.00 [Hz]	See 7.8 for details

P19.59	Overcurrent protection proportional gain	Setting the overcurrent protection ratio	0.0 to 1000.0 [%]	100.0 [%]	
P19.60	Integral gain for overcurrent protection	Setting of overcurrent protection points	0.0 to 1000.0 [%]	100.0 [%]	
P19.61	Overpressure limiting ratio	Setting the overvoltage limiting ratio	0.0 to 1000.0 [%]	100.0 [%]	
P19.62	Overvoltage Limit Points	Setting overvoltage limit points	0.0 to 1000.0 [%]	100.0 [%]	
P19.64	V/F stabilizing action gain	Setting the V/F stabilization gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.8 for details
P19.66	Current Limit Proportional Gain	Setting the current limit loop ratio in V/F mode	0.0 to 1000.0 [%]	100.0 [%]	
P19.67	Starting DC braking ratio	Setting the starting DC braking ratio	0.0 to 1000.0 [%]	100.0 [%]	
P19.68	Initiate DC braking credit	Setting the startup DC braking integral	0.0 to 1000.0 [%]	100.0 [%]	
P19.69	Stop DC braking ratio	Setting the stop DC braking ratio	0.0 to 1000.0 [%]	100.0 [%]	
P19.70	Stop DC Brake Integration	Setting the stopping DC braking integral	0.0 to 1000.0 [%]	100.0 [%]	

6.19 Motor 1 vector control group P20

Function code	Name	Clarification	Setting range	Default value	Explanation
P20.0	torque control	[0] Prohibition [1] Enable	0 to 1	0	See 7.9 for details
P20.1	Positive torque source selection	[0] Velocity loop outputs [1] Analog input 1 [2] Analog Input 2 [3] Operation panel [4] Parameter setting: according to the value of P20.3 [5] DP communication [6] MODBUS [7] Free function blocks	0 to 7	0	See 7.9 for details
P20.2	Negative torque source selection	ibid	0 to 7	0	
P20.3	Fixed torque value setting	Fixed torque value setting	-300.0 to 300.0 [%]	0.0 [%]	See 7.9 for details
P20.5	Torque input value filtering time		0 to 1000 [ms]	0 [ms]	
P20.6	Torque setting factor		0.0 to 200.0 [%]	100.0 [%]	See 7.9 for details

P20.7	Torque limit value setting method	[0] Internal limit values [1] Parameter setting: according to P20.8 and P20.9 [2] Analog input 1 [3] Analog input 2 [4] Operation panel [5] DP communication [6] MODBUS [7] Free function blocks	0 to 7	0	See 7.9 for details
P20.8	Forward torque limit value	This value is valid if [1] is selected for P20.7.	0.0 to 300.0 [%]	200.0 [%]	See 7.9 for details
P20.9	Reverse torque limit value	This value is valid if [1] is selected for P20.7.	0.0 to 300.0 [%]	200.0 [%]	See 7.9 for details
P20.11	Torque limiting filter time		0 to 1000 [ms]	0 [ms]	
P20.13	Estimating RPM Filtering Time	Setting the open-loop vector speed estimation filtering time	20.0 to 500.0 [ms]	100.0 [ms]	See 7.9 for details
P20.14	Number of encoder pulses	Setting the number of pulses for 1 revolution of the motor	0 to 60000	1024	
P20.15	Encoder phase sequence reversal	[0] Prohibition [1] Enable	0 to 1	0	See 7.9 for details
P20.16	Forward Maximum Velocity	Setting the forward maximum speed (valid only with vector control)	0.0 to 300.0 [%]	100.0 [%]	
P20.17	Reverse Maximum Speed	Setting the reverse maximum speed (valid only with vector control)	0.0 to 300.0 [%]	100.0 [%]	

P20.18	Forward Minimum Velocity	Setting the forward minimum speed (valid only with vector control)	0.0 to 300.0 [%]	0.0 [%]	
P20.19	Reverse Minimum Speed	Setting the reverse minimum speed (valid only with vector control)	0.0 to 300.0 [%]	0.0 [%]	
P20.20	Constant power speed limit enable	[0] Prohibition [1] Enable	0 to 1	0	
P20.21	Constant Power Speed Limit Curve	[0] Parabolic [1] Linear	0 to 1	0	
P20.22	Speed limit value at light load	This parameter is valid in constant power mode	0.0 to 300.0 [%]	160.0 [%]	
P20.23	Light load setting value	This parameter is valid in constant power mode	0.0 to 200.0 [%]	20.0 [%]	
P20.24	Speed limit value for heavy load	This parameter is valid in constant power mode	0.0 to 300.0 [%]	100.0 [%]	
P20.25	Overloaded set values	This parameter is valid in constant power mode	0.0 to 200.0 [%]	100.0 [%]	
P20.26	Position Loop Gain	Position Loop Gain	0.0 to 1000.0 [%]	0.0 [%]	See 7.9 for details
P20.27	Position loop velocity compensation	Position loop output limit value corresponding to maximum speed regulation	0.00 to 15.00 [%]	2.00 [%]	See 7.9 for details
P20.28	Torque control speed limit	[0] Maximum speed value: speed limited by P20.16 and P20.17 [1] Ramp Inputs [2] Ramp Outputs [3] DP communication	0 to 3	0	

P20.30	Speed Bias Setting Source (in torque mode)	[0] Speed bias value: Speed bias for P20.31 and P20.32 set values [1] Analog input 1 [2] Analog input 2 [3] Panel Settings	0 to 3	0	
P20.31	Positive speed bias	Setting the forward speed bias value	0.0 to 100.0 [%]	5.0 [%]	
P20.32	Reverse speed bias	Setting the reverse speed bias value	0.0 to 100.0 [%]	5.0 [%]	
P20.34	Synchronization Compensation Enable	[0] Prohibition [1] Enable	0 to 1	0	See 7.9 for details
P20.35	Magnetic Field Holding Time	Magnetic field holding time after stopping	0.0 to 100.0 [s]	0.0 [s]	
P20.36	Starting magnetic field current	Setting the starting magnetic field current value	50.0 to 150.0 [%]	110.0 [%]	
P20.37	starting magnetic flux	starting magnetic flux	0.0 to 150.0 [%]	100.0 [%]	See 7.9 for details
P20.38	Starting flux end speed	Starting flux end speed	0.0 to 100.0 [%]	25.0 [%]	See 7.9 for details
P20.39	fundamental magnetic flux	fundamental magnetic flux	0.0 to 120.0 [%]	100.0 [%]	See 7.9 for details
P20.40	Basic magnetic flux starting speed	Basic magnetic flux starting speed	0.0 to 150.0 [%]	100.0 [%]	See 7.9 for details
P20.41	Maximum magnetic flux	Maximum magnetic flux	0.0 to 150.0 [%]	135.0 [%]	
P20.42	Torque observation function	[0] Prohibition [1] Enable	0 to 1	1	

P20.43	Torque observation time	Load observation time	25 to 1000 [ms]	75 [ms]	
P20.44	Load observation time	Weight observation time (functioning at constant power)	25 to 1000 [ms]	250 [ms]	
P20.45	No-load positive load torque value	This parameter is valid in constant power mode (weight)	0.0 to 100.0 [%]	22.0 [%]	
P20.46	No-load reverse load torque value	This parameter is valid in constant power mode	0.0 to 100.0 [%]	18.0 [%]	
P20.47	Heavy duty positive load torque value	This parameter is valid in constant power mode	0.0 to 200.0 [%]	92.0 [%]	
P20.48	Heavy load reverse load torque value	This parameter is valid in constant power mode	0.0 to 200.0 [%]	87.0 [%]	
P20.49	Load value at heavy load	This parameter is valid in constant power mode	0.0 to 150.0 [%]	100.0 [%]	
P20.51	Overvoltage suppression proportional gain	Bus overvoltage suppression proportional gain	0.0 to 1000.0 [%]	100.0 [%]	
P20.52	Overvoltage suppression integral	Bus overvoltage suppression integral	0.0 to 1000.0 [%]	100.0 [%]	
P20.53	Excitation control Kp	Flux Controller Proportional Gain	0.0 to 1000.0 [%]	100.0 [%]	
P20.54	Excitation Control Ki	Flux Controller Integral Gain	0.0 to 1000.0 [%]	100.0 [%]	
P20.55	Speed tracking proportional gain	Speed tracking controller proportional gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details
P20.56	Speed Tracking Integral Gain	Speed Tracking Controller Integral Gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details

P20.57	Maximum speed proportional gain	The proportional gain corresponding to the maximum speed, the	0.0 to 100.0 [%]	100.0 [%]	Prevent control oscillation after overclocking, if there is over current reported after overclocking, you can turn down this value

P20.58	Speed gain switching speed	Speed value at which the speed tracking proportional gain starts to change linearly	0.0 to 100.0 [%]	100.0 [%]	Generally set to 100% for the base speed, the speed tracking proportional gain will be adjusted towards the maximum value after overclocking.
P20.60	DROOP control gain	When set to 0, DROOP control is not effective	0.0 to 100.0 [%]	0.0 [%]	See 7.9 for details
P20.61	DROOP control filter time	Adjust the DROOP control response. Increase this value when vibrations and oscillations occur	30 to 2000 [ms]	50 [ms]	See 7.9 for details
P20.62	Current Proportional Gain	Current controller proportional gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details
P20.63	Current Integral Gain	Current Controller Integral Gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details
P20.64	Master-Slave 2 Control Gain	Master-Slave Control Method 2 Control Gain	0.0 to 100.0 [%]	0.0 [%]	See 7.9 for details

P20.65	Master-Slave 2 control filter time	Master-Slave Control Method 2 Filter Time	30 to 2000.0 ms	50 ms	
P20.98	moment of inertia (mechanics)	Moment of inertia (expressed in time)	0.01 to 300.00 [s]	0.75 [s]	
P20.99	Friction loss factor	Friction loss factor	0.00 to 10.00 [%]	0.00 [%]	

6.20 Motor 2 vector control group P21

Function code	Name	Instructions	Setting range	Default value	Explanation
P21.0	torque control	[0] Prohibition [1] Enable	0 to 1	0	See 7.9 for details
P21.1	Positive torque source selection	[0] Velocity loop outputs [1] Analog input 1 [2] Analog Input 2 [3] Operation panel [4] Parameter setting: according to the value of P20.3 [5] DP communication [6] MODBUS [7] Free function blocks	0 to 7	0	See 7.9 for details
P21.2	Negative torque source selection	ibid	0 to 7	0	
P21.3	Fixed torque value setting	Fixed torque value setting	-300.0 to 300.0 [%]	0.0 [%]	See 7.9 for details
P21.5	Torque input value filtering time		0 to 1000 [ms]	0 [ms]	
P21.6	Torque setting factor		0.0 to 200.0 [%]	100.0 [%]	See 7.9 for details

P21.7	Torque limit value setting method	[0] Internal limit values [1] Parameter setting: according to P20.8 and P20.9 [2] Analog input 1 [3] Analog input 2 [4] Operation panel [5] DP communication [6] MODBUS [7] Free function blocks	0 to 7	0	See 7.9 for details
P21.8	Forward torque limit value	This value is valid if [1] is selected for P20.7.	0.0 to 300.0 [%]	200.0 [%]	See 7.9 for details
P21.9	Reverse torque limit value	This value is valid if [1] is selected for P20.7.	0.0 to 300.0 [%]	200.0 [%]	See 7.9 for details
P21.11	Torque limiting filter time		0 to 1000 [ms]	0 [ms]	
P21.13	Estimating RPM Filtering Time	Setting the open-loop vector speed estimation filtering time	20.0 to 500.0 [ms]	100.0 [ms]	See 7.9 for details
P21.14	Number of encoder pulses	Setting the number of pulses for 1 revolution of the motor	0 to 60000	1024	
P21.15	Encoder phase sequence reversal	[0] Prohibition [1] Enable	0 to 1	0	See 7.9 for details
P21.16	Forward Maximum Velocity	Setting the forward maximum speed (valid only with vector control)	0.0 to 300.0 [%]	100.0 [%]	
P21.17	Reverse Maximum Speed	Setting the reverse maximum speed (valid only with vector control)	0.0 to 300.0 [%]	100.0 [%]	

P21.18	Forward Minimum Velocity	Setting the forward minimum speed (valid only with vector control)	0.0 to 300.0 [%]	0.0 [%]	
P21.19	Reverse Minimum Speed	Setting the reverse minimum speed (valid only with vector control)	0.0 to 300.0 [%]	0.0 [%]	
P21.20	Constant power speed limit enable	[0] Prohibition [1] Enable	0 to 1	0	
P21.21	Constant Power Speed Limit Curve	[0] Parabolic [1] Linear	0 to 1	0	
P21.22	Speed limit value at light load	This parameter is valid in constant power mode	0.0 to 300.0 [%]	160.0 [%]	
P21.23	Light load setting value	This parameter is valid in constant power mode	0.0 to 200.0 [%]	20.0 [%]	
P21.24	Speed limit value for heavy load	This parameter is valid in constant power mode	0.0 to 300.0 [%]	100.0 [%]	
P21.25	Overloaded set values	This parameter is valid in constant power mode	0.0 to 200.0 [%]	100.0 [%]	
P21.26	Position Loop Gain	Position Loop Gain	0.0 to 1000.0 [%]	0.0 [%]	See 7.9 for details
P21.27	Position loop velocity compensation	Position loop output limit value corresponding to maximum speed regulation	0.00 to 15.00 [%]	2.00 [%]	See 7.9 for details
P21.28	Torque control speed limit	[0] Maximum speed value: speed limited by P20.16 and P20.17 [1] Ramp Inputs [2] Ramp Outputs [3] DP communication	0 to 3	0	

P21.30	Speed Bias Setting Source (in torque mode)	[0] Speed bias value: Speed bias for P20.31 and P20.32 set values [1] Analog input 1 [2] Analog input 2 [3] Panel Settings	0 to 3	0	
P21.31	Positive speed bias	Setting the forward speed bias value	0.0 to 100.0 [%]	5.0 [%]	
P21.32	Reverse speed bias	Setting the reverse speed bias value	0.0 to 100.0 [%]	5.0 [%]	
P21.34	Synchronization Compensation Enable	[0] Prohibition [1] Enable	0 to 1	0	See 7.9 for details
P21.35	Magnetic Field Holding Time	Magnetic field holding time after stopping	0.0 to 100.0 [s]	0.0 [s]	
P21.36	Starting magnetic field current	Setting the starting magnetic field current value	50.0 to 150.0 [%]	110.0 [%]	
P21.37	starting magnetic flux	starting magnetic flux	0.0 to 150.0 [%]	100.0 [%]	See 7.9 for details
P21.38	Starting flux end speed	Starting flux end speed	0.0 to 100.0 [%]	25.0 [%]	See 7.9 for details
P21.39	fundamental magnetic flux	fundamental magnetic flux	0.0 to 120.0 [%]	100.0 [%]	See 7.9 for details
P21.40	Basic magnetic flux starting speed	Basic magnetic flux starting speed	0.0 to 150.0 [%]	100.0 [%]	See 7.9 for details
P21.41	Maximum magnetic flux	Maximum magnetic flux	0.0 to 150.0 [%]	135.0 [%]	
P21.42	Torque observation function	[0] Prohibition [1] Enable	0 to 1	1	
P21.43	Torque observation time	Load observation time	25 to 1000 [ms]	75 [ms]	

P21.44	Load observation time	Weight observation time (functioning at constant power)	25 to 1000 [ms]	250 [ms]	
P21.45	No-load positive load torque value	This parameter is valid in constant power mode (weight)	0.0 to 100.0 [%]	22.0 [%]	
P21.46	No-load reverse load torque value	This parameter is valid in constant power mode	0.0 to 100.0 [%]	18.0 [%]	
P21.47	Heavy duty positive load torque value	This parameter is valid in constant power mode	0.0 to 200.0 [%]	92.0 [%]	
P21.48	Heavy load reverse load torque value	This parameter is valid in constant power mode	0.0 to 200.0 [%]	87.0 [%]	
P21.49	Load value at heavy load	This parameter is valid in constant power mode	0.0 to 150.0 [%]	100.0 [%]	
P21.51	Overvoltage suppression proportional gain	Bus overvoltage suppression proportional gain	0.0 to 1000.0 [%]	100.0 [%]	
P21.52	Overvoltage suppression integral	Bus overvoltage suppression integral	0.0 to 1000.0 [%]	100.0 [%]	
P21.53	Excitation control Kp	Flux Controller Proportional Gain	0.0 to 1000.0 [%]	100.0 [%]	
P21.54	Excitation Control Ki	Flux Controller Integral Gain	0.0 to 1000.0 [%]	100.0 [%]	
P21.55	Speed tracking proportional gain	Speed tracking controller proportional gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details
P21.56	Speed Tracking Integral Gain	Speed Tracking Controller Integral Gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details

P21.57	Maximum speed proportional gain	The proportional gain corresponding to the maximum speed, the	0.0 to 100.0 [%]	100.0 [%]	Prevent control oscillation after overclocking, if there is overcurrent reported after overclocking, you can turn down this value
P21.58	Speed gain switching speed	Speed value at which the speed tracking proportional gain starts to change linearly	0.0 to 100.0 [%]	100.0 [%]	Generally set to 100% for the base speed, the speed tracking proportional gain will be adjusted towards the maximum value after over clocking.
P21.60	DROOP control gain	When set to 0, DROOP control is not effective	0.0 to 100.0 [%]	0.0 [%]	See 7.9 for details
P21.61	DROOP control filter time	Adjust the DROOP control response. Increase this value when vibrations and oscillations occur	30 to 2000 [ms]	50 [ms]	See 7.9 for details
P21.62	Current Proportional Gain	Current controller proportional gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details

P21.63	Current Integral Gain	Current Controller Integral Gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details
P21.64	Master-Slave 2 Control Gain	Master-Slave Control Method 2 Control Gain	0.0 to 100.0 [%]	0.0 [%]	See 7.9 for details
P21.65	Master-Slave 2 control filter time	Master-Slave Control Method 2 Filter Time	30 to 2000.0 ms	50 ms	
P21.98	moment of inertia (mechanics)	Moment of inertia (expressed in time)	0.01 to 300.00 [s]	0.75 [s]	
P21.99	Friction loss factor	Friction loss factor	0.00 to 10.00 [%]	0.00 [%]	

6.21 Motor 3 vector control group P22

Function code	Name	Clarification	Setting range	Default value	Explanation
P22.0	torque control	[0] Prohibition [1] Enable	0 to 1	0	See 7.9 for details
P22.1	Positive torque source selection	[0] Velocity loop outputs [1] Analog input 1 [2] Analog Input 2 [3] Operation panel [4] Parameter setting: according to the value of P20.3 [5] DP communication [6] MODBUS [7] Free function blocks	0 to 7	0	See 7.9 for details
P22.2	Negative torque source selection	ibid	0 to 7	0	
P22.3	Fixed torque value setting	Fixed torque value setting	-300.0 to 300.0 [%]	0.0 [%]	See 7.9 for details
P22.5	Torque input value filtering time		0 to 1000 [ms]	0 [ms]	
P22.6	Torque setting factor		0.0 to 200.0 [%]	100.0 [%]	See 7.9 for details

P22.7	Torque limit value setting method	[0] Internal limit values [1] Parameter setting: according to P20.8 and P20.9 [2] Analog input 1 [3] Analog input 2 [4] Operation panel [5] DP communication [6] MODBUS [7] Free function blocks	0 to 7	0	See 7.9 for details
P22.8	Forward torque limit value	This value is valid if [1] is selected for P20.7.	0.0 to 300.0 [%]	200.0 [%]	See 7.9 for details
P22.9	Reverse torque limit value	This value is valid if [1] is selected for P20.7.	0.0 to 300.0 [%]	200.0 [%]	See 7.9 for details
P22.11	Torque limiting filter time		0 to 1000 [ms]	0 [ms]	
P22.13	Estimating RPM Filtering Time	Setting the open-loop vector speed estimation filtering time	20.0 to 500.0 [ms]	100.0 [ms]	See 7.9 for details
P22.14	Number of encoder pulses	Setting the number of pulses for 1 revolution of the motor	0 to 60000	1024	
P22.15	Encoder phase sequence reversal	[0] Prohibition [1] Enable	0 to 1	0	See 7.9 for details
P22.16	Forward Maximum Velocity	Setting the forward maximum speed (valid only with vector control)	0.0 to 300.0 [%]	100.0 [%]	
P22.17	Reverse Maximum Speed	Setting the reverse maximum speed (valid only with vector control)	0.0 to 300.0 [%]	100.0 [%]	
P22.18	Forward Minimum Velocity	Setting the forward minimum speed (valid only with vector control)	0.0 to 300.0 [%]	0.0 [%]	

P22.19	Reverse Minimum Speed	Setting the reverse minimum speed (valid only with vector control)	0.0 to 300.0 [%]	0.0 [%]	
P22.20	Constant power speed limit enable	[0] Prohibition [1] Enable	0 to 1	0	
P22.21	Constant Power Speed Limit Curve	[0] Parabolic [1] Linear	0 to 1	0	
P22.22	Speed limit value at light load	This parameter is valid in constant power mode	0.0 to 300.0 [%]	160.0 [%]	
P22.23	Light load setting value	This parameter is valid in constant power mode	0.0 to 200.0 [%]	20.0 [%]	
P22.24	Speed limit value for heavy load	This parameter is valid in constant power mode	0.0 to 300.0 [%]	100.0 [%]	
P22.25	Overloaded set values	This parameter is valid in constant power mode	0.0 to 200.0 [%]	100.0 [%]	
P22.26	Position Loop Gain	Position Loop Gain	0.0 to 1000.0 [%]	0.0 [%]	See 7.9 for details
P22.27	Position loop velocity compensation	Position loop output limit value corresponding to maximum speed regulation	0.00 to 15.00 [%]	2.00 [%]	See 7.9 for details
P22.28	Torque control speed limit	[0] Maximum speed value: speed limited by P20.16 and P20.17 [1] Ramp Inputs [2] Ramp Outputs [3] DP communication	0 to 3	0	
P22.30	Speed Bias Setting Source (in torque mode)	[0] Speed bias value: Speed bias for P20.31 and P20.32 set values [1] Analog input 1 [2] Analog input 2 [3] Panel Settings	0 to 3	0	
P22.31	Positive speed bias	Setting the forward speed bias value	0.0 to 100.0 [%]	5.0 [%]	

P22.32	Reverse speed bias	Setting the reverse speed bias value	0.0 to 100.0 [%]	5.0 [%]	
P22.34	Synchronization Compensation Enable	[0] Prohibition [1] Enable	0 to 1	0	See 7.9 for details
P22.35	Magnetic Field Holding Time	Magnetic field holding time after stopping	0.0 to 100.0 [s]	0.0 [s]	
P22.36	Starting magnetic field current	Setting the starting magnetic field current value	50.0 to 150.0 [%]	110.0 [%]	
P22.37	starting magnetic flux	starting magnetic flux	0.0 to 150.0 [%]	100.0 [%]	See 7.9 for details
P22.38	Starting flux end speed	Starting flux end speed	0.0 to 100.0 [%]	25.0 [%]	See 7.9 for details
P22.39	fundamental magnetic flux	fundamental magnetic flux	0.0 to 120.0 [%]	100.0 [%]	See 7.9 for details
P22.40	Basic magnetic flux starting speed	Basic magnetic flux starting speed	0.0 to 150.0 [%]	100.0 [%]	See 7.9 for details
P22.41	Maximum magnetic flux	Maximum magnetic flux	0.0 to 150.0 [%]	135.0 [%]	
P22.42	Torque observation function	[0] Prohibition [1] Enable	0 to 1	1	
P22.43	Torque observation time	Load observation time	25 to 1000 [ms]	75 [ms]	
P22.44	Load observation time	Weight observation time (functioning at constant power)	25 to 1000 [ms]	250 [ms]	
P22.45	No-load positive load torque value	This parameter is valid in constant power mode (weight)	0.0 to 100.0 [%]	22.0 [%]	
P22.46	No-load reverse load torque value	This parameter is valid in constant power mode	0.0 to 100.0 [%]	18.0 [%]	
P22.47	Heavy duty positive load torque value	This parameter is valid in constant power mode	0.0 to 200.0 [%]	92.0 [%]	

P22.48	Heavy load reverse load torque value	This parameter is valid in constant power mode	0.0 to 200.0 [%]	87.0 [%]	
P22.49	Load value at heavy load	This parameter is valid in constant power mode	0.0 to 150.0 [%]	100.0 [%]	
P22.51	Overvoltage suppression proportional gain	Bus overvoltage suppression proportional gain	0.0 to 1000.0 [%]	100.0 [%]	
P22.52	Overvoltage suppression integral	Bus overvoltage suppression integral	0.0 to 1000.0 [%]	100.0 [%]	
P22.53	Excitation control Kp	Flux Controller Proportional Gain	0.0 to 1000.0 [%]	100.0 [%]	
P22.54	Excitation Control Ki	Flux Controller Integral Gain	0.0 to 1000.0 [%]	100.0 [%]	
P22.55	Speed tracking proportional gain	Speed tracking controller proportional gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details
P22.56	Speed Tracking Integral Gain	Speed Tracking Controller Integral Gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details
P22.57	Maximum speed proportional gain	The proportional gain corresponding to the maximum speed, the	0.0 to 100.0 [%]	100.0 [%]	Prevent control oscillation after overclocking, if there is overcurrent reported after overclocking, you can turn down this value

P22.58	Speed gain switching speed	Speed value at which the speed tracking proportional gain starts to change linearly	0.0 to 100.0 [%]	100.0 [%]	Generally set to 100% for the base speed, the speed tracking proportional gain will be adjusted towards the maximum value after over clocking.
P22.60	DROOP control gain	When set to 0, DROOP control is not effective	0.0 to 100.0 [%]	0.0 [%]	See 7.9 for details
P22.61	DROOP control filter time	Adjust the DROOP control response. Increase this value when vibrations and oscillations occur	30 to 2000 [ms]	50 [ms]	See 7.9 for details
P22.62	Current Proportional Gain	Current controller proportional gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details
P22.63	Current Integral Gain	Current Controller Integral Gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details
P22.64	Master-Slave 2 Control Gain	Master-Slave Control Method 2 Control Gain	0.0 to 100.0 [%]	0.0 [%]	See 7.9 for details
P22.65	Master-Slave 2 control filter time	Master-Slave Control Method 2 Filter Time	30 to 2000.0 ms	50 ms	
P22.98	moment of inertia (mechanics)	Moment of inertia (expressed in time)	0.01 to 300.00 [s]	0.75 [s]	
P22.99	Friction loss factor	Friction loss factor	0.00 to 10.00 [%]	0.00 [%]	

6.22 Motor 4 vector control group P23

function	Name	instructions	Setting range	default	explanat
P23.0	torque control	[0] Prohibition [1] Enable	0 to 1	0	See 7.9 for details
P23.1	Positive torque source selection	[0] Velocity loop outputs [1] Analog input 1 [2] Analog Input 2 [3] Operation panel [4] Parameter setting: according to the value of P20.3 [5] DP communication [6] MODBUS [7] Free function blocks	0 to 7	0	See 7.9 for details
P23.2	Negative torque source selection	ibid	0 to 7	0	
P23.3	Fixed torque value setting	Fixed torque value setting	-300.0 to 300.0 [%]	0.0 [%]	See 7.9 for details
P23.5	Torque input value filtering time		0 to 1000 [ms]	0 [ms]	
P23.6	Torque setting factor		0.0 to 200.0 [%]	100.0 [%]	See 7.9 for details
P23.7	Torque limit value setting method	[0] Internal limit values [1] Parameter setting: according to P20.8 and P20.9 [2] Analog input 1 [3] Analog input 2 [4] Operation panel [5] DP communication [6] MODBUS [7] Free function blocks	0 to 7	0	See 7.9 for details

P23.8	Forward torque limit value	This value is valid if [1] is selected for P20.7.	0.0 to 300.0 [%]	200.0 [%]	See 7.9 for details
P23.9	Reverse torque limit value	This value is valid if [1] is selected for P20.7.	0.0 to 300.0 [%]	200.0 [%]	See 7.9 for details
P23.11	Torque limiting filter time		0 to 1000 [ms]	0 [ms]	
P23.13	Estimating RPM Filtering Time	Setting the open-loop vector speed estimation filtering time	20.0 to 500.0 [ms]	100.0 [ms]	See 7.9 for details
P23.14	Number of encoder pulses	Setting the number of pulses for 1 revolution of the motor	0 to 60000	1024	
P23.15	Encoder phase sequence reversal	[0] Prohibition [1] Enable	0 to 1	0	See 7.9 for details
P23.16	Forward Maximum Velocity	Setting the forward maximum speed (valid only with vector control)	0.0 to 300.0 [%]	100.0 [%]	
P23.17	Reverse Maximum Speed	Setting the reverse maximum speed (valid only with vector control)	0.0 to 300.0 [%]	100.0 [%]	
P23.18	Forward Minimum Velocity	Setting the forward minimum speed (valid only with vector control)	0.0 to 300.0 [%]	0.0 [%]	
P23.19	Reverse Minimum Speed	Setting the reverse minimum speed (valid only with vector control)	0.0 to 300.0 [%]	0.0 [%]	
P23.20	Constant power speed limit enable	[0] Prohibition [1] Enable	0 to 1	0	

P23.21	Constant Power Speed Limit Curve	[0] Parabolic [1] Linear	0 to 1	0	
P23.22	Speed limit value at light load	This parameter is valid in constant power mode	0.0 to 300.0 [%]	160.0 [%]	
P23.23	Light load setting value	This parameter is valid in constant power mode	0.0 to 200.0 [%]	20.0 [%]	
P23.24	Speed limit value for heavy load	This parameter is valid in constant power mode	0.0 to 300.0 [%]	100.0 [%]	
P23.25	Overloaded set values	This parameter is valid in constant power mode	0.0 to 200.0 [%]	100.0 [%]	
P23.26	Position Loop Gain	Position Loop Gain	0.0 to 1000.0 [%]	0.0 [%]	See 7.9 for details
P23.27	Position loop velocity compensation	Position loop output limit value corresponding to maximum speed regulation	0.00 to 15.00 [%]	2.00 [%]	See 7.9 for details
P23.28	Torque control speed limit	[0] Maximum speed value: speed limited by P20.16 and P20.17 [1] Ramp Inputs [2] Ramp Outputs [3] DP communication	0 to 3	0	
P23.30	Speed Bias Setting Source (in torque mode)	[0] Speed bias value: Speed bias for P20.31 and P20.32 set values [1] Analog input 1 [2] Analog input 2 [3] Panel Settings	0 to 3	0	
P23.31	Positive speed bias	Setting the forward speed bias value	0.0 to 100.0 [%]	5.0 [%]	
P23.32	Reverse speed bias	Setting the reverse speed bias value	0.0 to 100.0 [%]	5.0 [%]	
P23.34	Synchronization Compensation Enable	[0] Prohibition [1] Enable	0 to 1	0	See 7.9 for details

P23.35	Magnetic Field Holding Time	Magnetic field holding time after stopping	0.0 to 100.0 [s]	0.0 [s]	
P23.36	Starting magnetic field current	Setting the starting magnetic field current value	50.0 to 150.0 [%]	110.0 [%]	
P23.37	starting magnetic flux	starting magnetic flux	0.0 to 150.0 [%]	100.0 [%]	See 7.9 for details
P23.38	Starting flux end speed	Starting flux end speed	0.0 to 100.0 [%]	25.0 [%]	See 7.9 for details
P23.39	fundamental magnetic flux	fundamental magnetic flux	0.0 to 120.0 [%]	100.0 [%]	See 7.9 for details
P23.40	Basic magnetic flux starting speed	Basic magnetic flux starting speed	0.0 to 150.0 [%]	100.0 [%]	See 7.9 for details
P23.41	Maximum magnetic flux	Maximum magnetic flux	0.0 to 150.0 [%]	135.0 [%]	
P23.42	Torque observation function	[0] Prohibition [1] Enable	0 to 1	1	
P23.43	Torque observation time	Load observation time	25 to 1000 [ms]	75 [ms]	
P23.44	Load observation time	Weight observation time (functioning at constant power)	25 to 1000 [ms]	250 [ms]	
P23.45	No-load positive load torque value	This parameter is valid in constant power mode (weight)	0.0 to 100.0 [%]	22.0 [%]	
P23.46	No-load reverse load torque value	This parameter is valid in constant power mode	0.0 to 100.0 [%]	18.0 [%]	
P23.47	Heavy duty positive load torque value	This parameter is valid in constant power mode	0.0 to 200.0 [%]	92.0 [%]	

P23.48	Heavy load reverse load torque value	This parameter is valid in constant power mode	0.0 to 200.0 [%]	87.0 [%]	
P23.49	Load value at heavy load	This parameter is valid in constant power mode	0.0 to 150.0 [%]	100.0 [%]	
P23.51	Overvoltage suppression proportional gain	Bus overvoltage suppression proportional gain	0.0 to 1000.0 [%]	100.0 [%]	
P23.52	Overvoltage suppression integral	Bus overvoltage suppression integral	0.0 to 1000.0 [%]	100.0 [%]	
P23.53	Excitation control Kp	Flux Controller Proportional Gain	0.0 to 1000.0 [%]	100.0 [%]	
P23.54	Excitation Control Ki	Flux Controller Integral Gain	0.0 to 1000.0 [%]	100.0 [%]	
P23.55	Speed tracking proportional gain	Speed tracking controller proportional gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details
P23.56	Speed Tracking Integral Gain	Speed Tracking Controller Integral Gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details

P23.57	Maximum speed proportional gain	The proportional gain corresponding to the maximum speed, the	0.0 to 100.0 [%]	100.0 [%]	Prevent control oscillation after overclocking, if there is over current reported after overclocking, you can turn down this value

P23.58	Speed gain switching speed	Speed value at which the speed tracking proportional gain starts to change linearly	0.0 to 100.0 [%]	100.0 [%]	Generally set to 100% for the base speed, the speed tracking proportional gain will be adjusted towards the maximum value after overclocking.
P23.60	DROOP control gain	When set to 0, DROOP control is not effective	0.0 to 100.0 [%]	0.0 [%]	See 7.9 for details
P23.61	DROOP control filter time	Adjust the DROOP control response. Increase this value when vibrations and oscillations occur	30 to 2000 [ms]	50 [ms]	See 7.9 for details
P23.62	Current Proportional Gain	Current controller proportional gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details
P23.63	Current Integral Gain	Current Controller Integral Gain	0.0 to 1000.0 [%]	100.0 [%]	See 7.9 for details
P23.64	Master-Slave 2 Control Gain	Master-Slave Control Method 2 Control Gain	0.0 to 100.0 [%]	0.0 [%]	See 7.9 for details

P23.65	Master-Slave 2 control filter time	Master-Slave Control Method 2 Filter Time	30 to 2000.0 ms	50 ms	
P23.98	moment of inertia (mechanics)	Moment of inertia (expressed in time)	0.01 to 300.00 [s]	0.75 [s]	
P23.99	Friction loss factor	Friction loss factor	0.00 to 10.00 [%]	0.00 [%]	

6.23 CAN bus P31

Reservations.

6.24 MODBUS bus P32

Reservations.

6.25 Bus communication P33

Function code	Name	Clarification	Setting range	Default value	Particular
P33.0	Profibus communication enable	[0] Prohibition [1] Enable	0 to 1	0	
P33.1	station address	According to PLC settings	1 to 255	1	
P33.2	Communication type selection	[0]PPO1 [1]PPO2 [2] PPO5 [3] GUIDE	0 to 3	2	
P33.3	Communication input area memory	Setting according to communication protocol	0 to 16	14	
P33.4	Communication output area memory	Setting according to communication protocol	0 to 16	14	
P33.5	Faulty operation	[0] faulty emergency stops [1] Faulty deceleration stops [2] Warning to slow down and stop [3] Ignore	0 to 3	0	
P33.6	Fault detection delay time		0 to 1000 [ms]	50 [ms]	
P33.7	Automatic fault reset	[0] Prohibition [1] Enable	0 to 1	0	

P33.8	Auto reset time		0.0 to 10.0 [s]	3.0 [s]	
P33.13	Communication input word [W0]	See Table 7-2	0 to 37	0	
P33.14	Communication input word accuracy [W0]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	0	
P33.15	Communication input word [W1]	See Table 7-2	0 to 37	0	
P33.16	Communication input word accuracy [W1]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	0	
P33.17	Communication input word [W2]	See Table 7-2	0 to 37	0	
P33.18	Communication input word accuracy [W2]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	0	
P33.19	Communication input word [W3]	See Table 7-2	0 to 37	0	
P33.20	Communication input word accuracy [W3]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	0	
P33.21	Communication input word [W4]	See Table 7-2	0 to 37	1	
P33.22	Communication input word accuracy [W4]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	0	
P33.23	Communication input word [W5]	See Table 7-2	0 to 37	18	

P33.24	Communication input word accuracy [W5]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	2	
P33.25	Communication input word [W6]	See Table 7-2	0 to 37	21	
P33.26	Communication input word accuracy [W6]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	1	
P33.27	Communication input word [W7]	See Table 7-2	0 to 37	22	
P33.28	Communication input word accuracy [W7]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	1	
P33.29	Communication input word [W8]	See Table 7-2	0 to 37	23	
P33.30	Communication input word accuracy [W8]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	1	
P33.31	Communication input word [W9]	See Table 7-2	0 to 37	0	
P33.32	Communication input word accuracy [W9]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	0	
P33.33	Communication input word [W10]	See Table 7-2	0 to 37	0	
P33.34	Communication input word accuracy [W10]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	0	

P33.35	Communication input word [W11]	See Table 7-2	0 to 37	0	
P33.36	Communication input word accuracy [W11]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	0	
P33.37	Communication input word [W12]	See Table 7-2	0 to 37	0	
P33.38	Communication input word accuracy [W12]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	0	
P33.39	Communication input word [W13]	See Table 7-2	0 to 37	0	
P33.40	Communication input word accuracy [W13]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	0	
P33.41	Communication input word [W14]	See Table 7-2	0 to 37	0	
P33.42	Communication input word accuracy [W14]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	0	
P33.43	Communication input word [W15]	See Table 7-2	0 to 37	0	
P33.44	Communication input word accuracy [W15]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000	0 to 4	0	
P33.45	Communication output word [WO]	See Table 7-3	0 to 48	0	

P33.46	Communication output word accuracy [W0]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	0	
P33.47	Communication output word [W1]	See Table 7-3	0 to 48	0	
P33.48	Communication output word accuracy [W1]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	0	
P33.49	Communication output word [W2]	See Table 7-3	0 to 48	0	
P33.50	Communication output word accuracy [W2]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	0	
P33.51	Communication output word [W3]	See Table 7-3	0 to 48	0	
P33.52	Communication output word accuracy [W3]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	0	
P33.53	Communication output word [W4]	See Table 7-3	0 to 48	1	

P33.54	Communication output word accuracy [W4]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	0	
P33.55	Communication output word [W5]	See Table 7-3	0 to 48	19	
P33.56	Communication output word accuracy [W5]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	2	
P33.57	Communication output word [W6]	See Table 7-3	0 to 48	26	
P33.58	Communication output word accuracy [W6]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	6	
P33.59	Communication output word [W7]	See Table 7-3	0 to 48	30	
P33.60	Communication output word accuracy [W7]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	1	
P33.61	Communication output word [W8]	See Table 7-3	0 to 48	14	

P33.62	Communication output word accuracy [W8]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	0	
P33.63	Communication output word [W9]	See Table 7-3	0 to 48	13	
P33.64	Communication output word accuracy [W9]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	0	
P33.65	Communication output word [W10]	See Table 7-3	0 to 48	40	
P33.66	Communication output word accuracy [W10]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	6	
P33.67	Communication output word [W11]	See Table 7-3	0 to 48	0	
P33.68	Communication output word accuracy [W11]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	0	

P33.69	Communication output word [W12]	See Table 7-3	0 to 48	0	
P33.70	Communication output word accuracy [W12]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	0	
P33.71	Communication output word [W13]	See Table 7-3	0 to 48	0	
P33.72	Communication output word accuracy [W13]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	0	
P33.73	Communication output word [W14]	See Table 7-3	0 to 48	0	
P33.74	Communication output word accuracy [W14]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	0	
P33.75	Communication output word [W15]	See Table 7-3	0 to 48	0	

P33.76	Communication output word accuracy [W15]	[0]×1 [1] × 10 [2] × 100 [3] × 1000 [4] × 10000 [5][%] × 1 [6][%] × 10 [7][%] × 100	0 to 7	0	

Table 7-2 Communication Input Word Descriptions

Setpoint	Show
0	non-use
1	Control word 0
2	Control word 1
3	Control word 2
4	Control word 3
5	Control word 4
6	Encoder high [32]
7	Encoder low bit [32]
8	32_MSW
9	32_LSW
10	digital output
11	parameter control word
12	Parameter 0 @32bit
13	Parameter 1 @32bit
14	Parameter 2 @32bit
15	Parameter 3 @32bit
16	Parameter 4 @32bit
17	Parameter 5 @32bit
18	Given frequency [Hz]
19	Given speed [rpm]
20	Given speed [%]
21	Given torque [%]
22	Torque limit value [%]

23	Speed limit value [Hz]
24	Active current setting
25	Reactive current setting
26	Analog output 1 [%]
27	Analog output 2 [%]
28	Acceleration time control
29	Deceleration time control
30～ 37	SET_W12～ 19

Table 7-3 Communication Output Word Descriptions

Setpoint	Clarification
0	non-use
1	Status word 0
2	Status word 1
3	Status word 2
4	Status word 3
5	Status word 4
6	Status word 5
7	Parameter 0 @32bit
8	Parameter 1 @32bit
9	Parameter 2 @32bit
10	Parameter 3 @32bit
11	Parameter 4 @32bit
12	Parameter 5 @32bit
13	Encoder high [32]
14	Encoder low bit [32]
15	32bit_MSW
16	32bit_LSW
17	digital input
18	digital output
19	output frequency

20	Estimated speed [rpm]
21	Measured speed [rpm]
22	DC bus voltage
23	Bus filter voltage
24	temp
25	Motor torque
26	Load torque
27	RMS value of phase A current
28	RMS value of phase B current
29	RMS phase C current
30	Current RMS
31	output voltage
32	Setting frequency
33	Analog Input 1
34	Analog Input 2
35	output power
36	Motor filtering torque
37	Load filtering torque
38	dead weight
39	peak current (elec.)
40	Filter torque setting
41	Mwh electric state
42	Kwh electric state
43	Mwh generation status
44	Kwh generation status
45～ 48	AW26～ 29

7. Detailed Parameter Function Description

7.1 Digital Input Terminals

(1) Multi-Segment Speed Control

The multispeed command value is set by selecting [0] direct input or [1] binary according to parameter P12.0 (multispeed setting mode).

A. Select [0] for direct entry

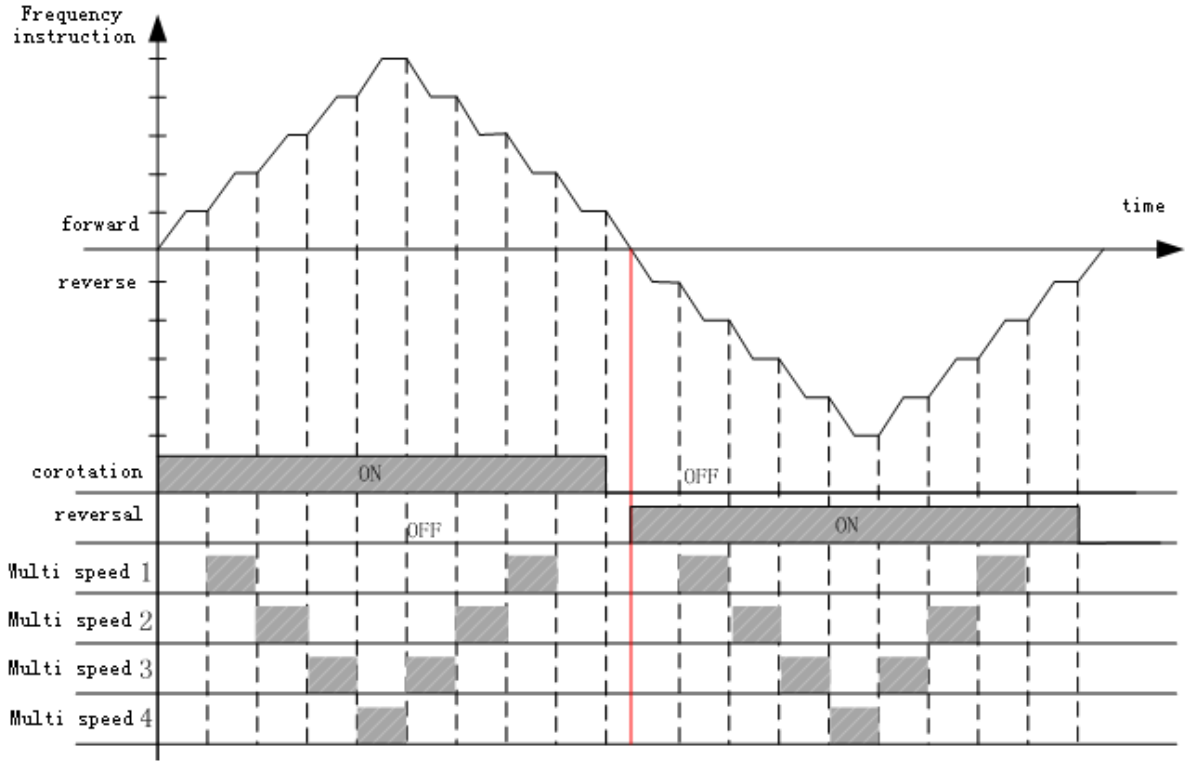
[1] Forward operation [2] Reverse operation - 1 paragraph

[6] Multi-Segment Speed 1 (Bit 0) --- 2 segments

[7] Multi-Segment Speed 2 (Bit 1) - 3 segments

[8] Multi-band speed 3 (bit 2) - 4 bands

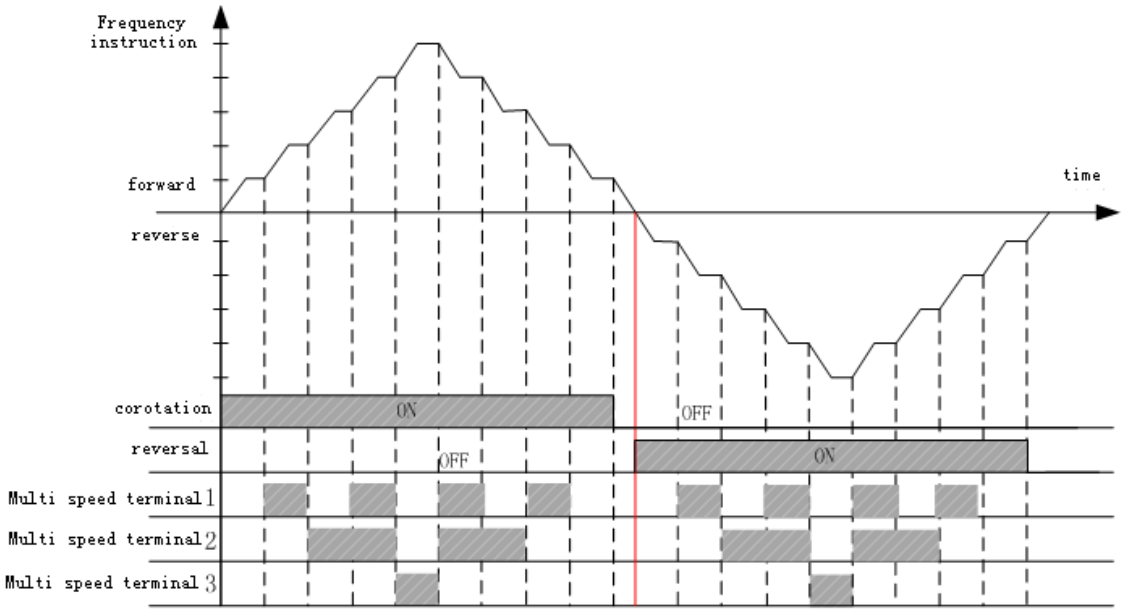
[9] Multi-band speed 4 (bit 3) - 5 bands



B. Select [1] Binary

The 16-phase diagram is composed of four multispeed terminals (calculated using 8421 decoding). When only the forward or reverse operation signal is input, operation is performed at the greater value of parameter P12.2 (multispeed 1)

and the minimum speed setting.



(2) Confirmation of open brake status

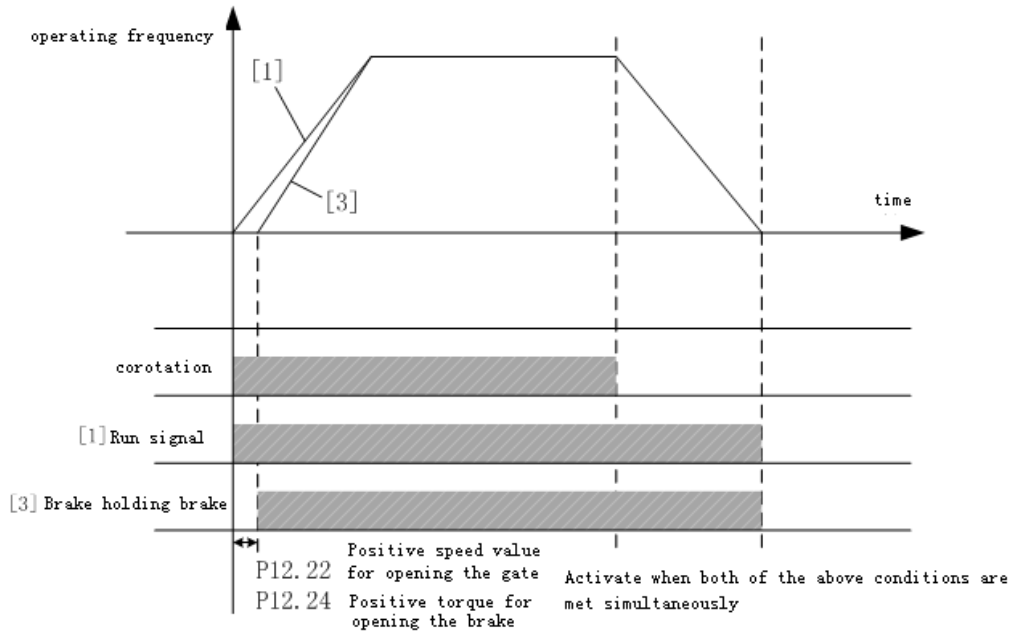
Set the function of DI terminal as [22] "Holding brake contactor state", if the absolute value of feedback speed is greater than or equal to 10Hz during operation, and no open gate feedback confirmation signal is received at this time, report E106 "Holding brake feedback abnormality 1"; if the absolute value of feedback speed is less than 10Hz during operation, and no open gate feedback confirmation signal is received within 2s, report E107 "Holding brake feedback abnormality 2". If the absolute value of the feedback speed is less than 10Hz during operation, and no feedback confirmation signal for opening the gate is received within 2s, report E107 "abnormal holding brake feedback 2".

7.2 Digital output terminals

Brake opening control

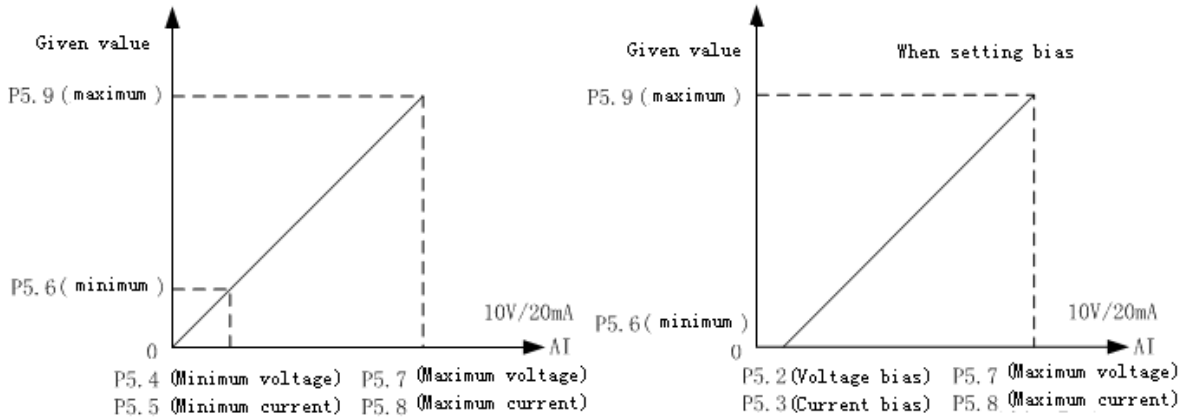
When the motor is equipped with a brake, the VFD can control the on/off signal of the brake. Horizontal load brake control signal is set to [1] run signal or [3] brake holding brake; vertical load brake control signal is set to [3] brake holding brake.

Refer to the following figure for the difference between the output signal selection [1] Run signal and [3] Brake holding brake:



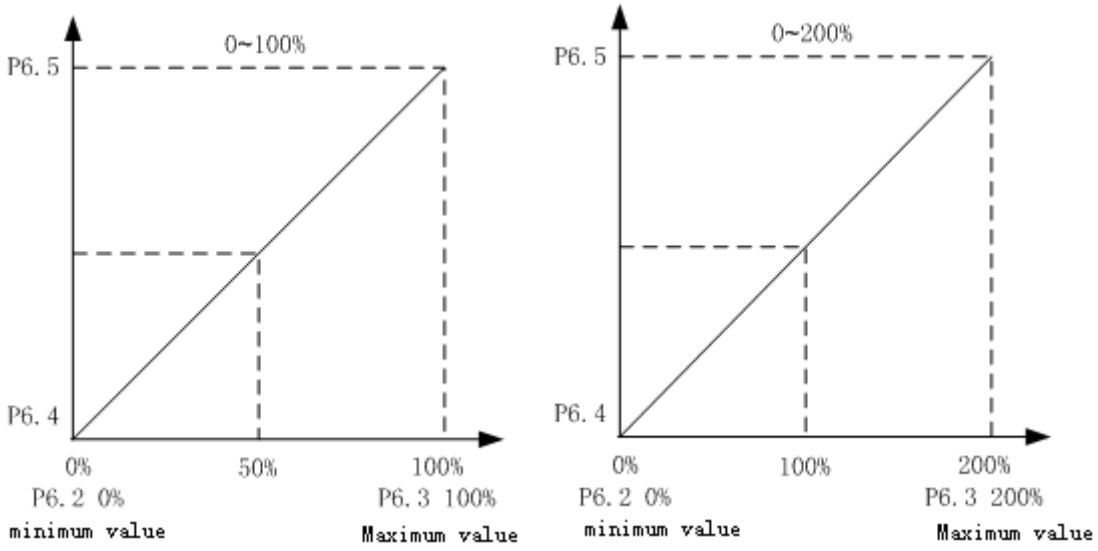
7.3 Analog Inputs

The analog input settings are shown in the figure below:

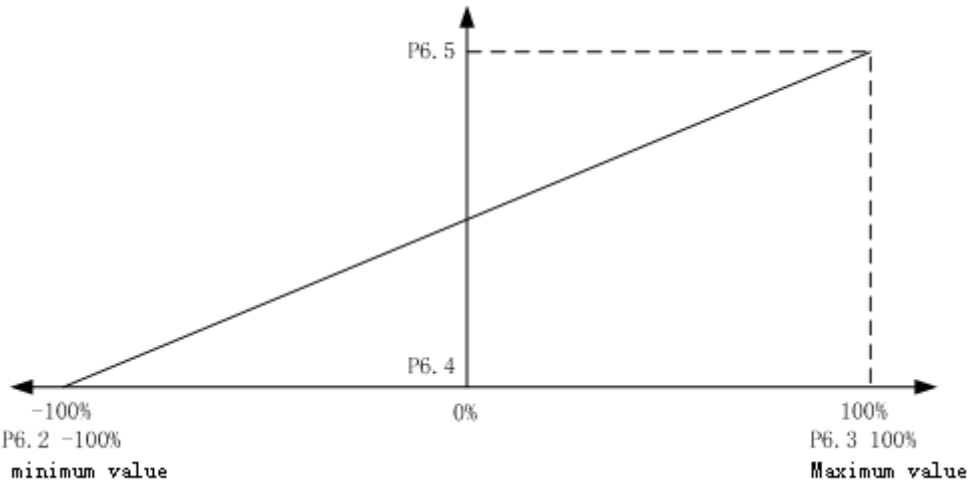


7.4 Analog output

The analog output settings are shown in the figure below:



(a) Output setting range 0~100% (b) Output setting range 0~200%



(c) Output setting range -100 to 100%

7.5 Protection parameters

(1) Current Limit Function

P7.0, P7.1, P7.2, P7.3 Current Limit Function: Limits the motor from flowing a high current. This function is activated when the motor current exceeds the limit value.

(2) Overcurrent protection function

P7.4, P7.5, P7.6, P7.7 overcurrent protection function: this function is activated when the motor current exceeds the value of parameter P7.4 multiplied

by parameter P16.4 (motor rated current), and will cut off the output of the VFD. This value is a percentage of the rated motor current.

(3) Zero sequence current protection

P7.8, P7.9, P7.10, P7.11 Zero sequence current protection value: VFD output three-phase current and: $I_a + I_b + I_c$; motor rated current: P16.4. When $\frac{(I_a + I_b + I_c)}{3} > P7.8 \times P16.4 \times 1.414$, this function is activated and the VFD output is cut off.

Note: Zero sequence current fault will be reported when there is a short circuit or grounding in the three phases of the motor.

(4) Busbar over-voltage and under-voltage protection

P7.12, P7.13 bus over-voltage or under-voltage protection function: when the bus voltage of the frequency converter exceeds the value of parameter P7.12, this function is activated and the output of the frequency converter is cut off. When the bus voltage of the frequency converter is lower than the value of P7.13, this function is activated and the output of the frequency converter is cut off. It is recommended to set it according to the default value.

(5) temperature protection

P7.14 Over-temperature fault function: when the IGBT temperature of the VFD exceeds the value of parameter P7.14, this function is activated and the output of the VFD is cut off, and the VFD reports over-temperature fault.

P7.15 Over-temperature alarm function: This function is activated when the IGBT temperature of the VFD exceeds the value of parameter P7.15 when the VFD is in the shutdown state.

(6) overspeed protection

P7.19, P7.20, P7.21, P7.22 overspeed fault function: this function is activated and the output of the VFD is cut off when the motor speed exceeds the value of parameter P7.19. The values of P7.19 to P7.22 are the percentage of the rated motor speed.

(7) Open-loop vector start protection

The protection of P7.23 only works when the control mode is open-loop vector (P16.11 = 1). this protection is disabled when P7.23 is set to the maximum value. In the open-loop vector control mode, if the starting torque is low or the magnetic field is not well established, the motor speed follows the given setting poorly at the starting moment and the duration exceeds the set value of P7.23, this function is activated and the output of the frequency converter is cut off.

The protection of P7.24 to P7.26 also only works when the control mode is open-loop vector (P17.11=1, P18.11=1, P19.11=1), just for different motors.

(8) Speed anomaly protection

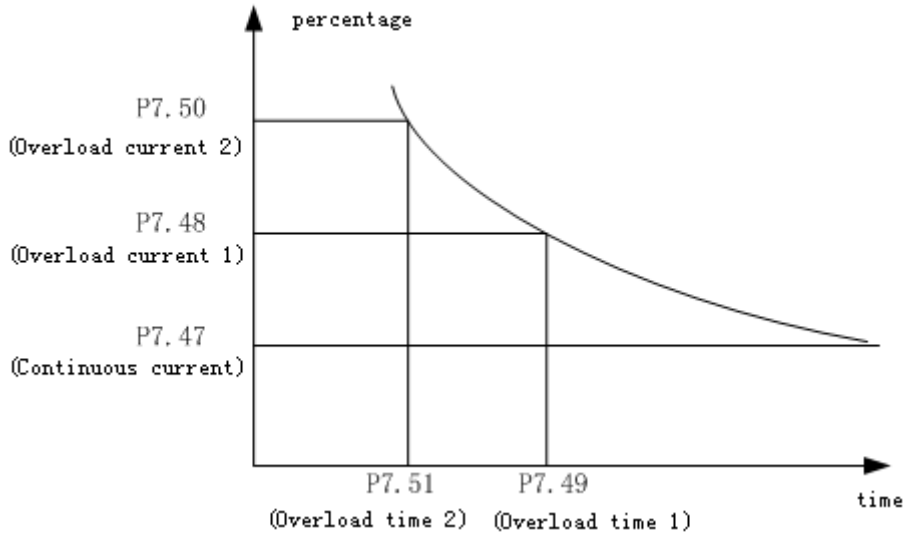
P7.31, P7.32 speed abnormality protection function, only works when the control mode is closed-loop vector (P16.11=2).P7.31 sets the deviation value of speed abnormality, and 100% corresponds to the rated frequency of the motor.P7.32 sets the detection time of speed abnormality. When the difference between the encoder detected speed and the given speed exceeds the speed value set in P7.31 and runs for the time set in P7.32, this function is activated and the VFD output is cut off.

(9) self-tuning protection

P7.33 sets the self-tuning failure time, which acts during static self-tuning operation; when the time for static self-tuning exceeds P7.33, this function is activated and static self-tuning is terminated.

(10) Overload protection function

P7.48, P7.50 Overload protection function: when the motor current exceeds the current protection value, this function is activated and the output of the VFD is cut off. The protection parameters are shown below:



(11) Built-in brake unit

The parameters of P7.64, P7.65 and P7.66 are only effective when the frequency converter has a built-in braking unit, i.e., the power band of 110KW and below in the GF630N03 series frequency converter works. This function is enabled after P7.64 is set to 1. The built-in braking unit starts to work when the bus voltage is higher than the braking start voltage value, which is determined by parameter P7.65. The value of brake full turn-on voltage is determined by parameter P7.66, and the value of brake full turn-on voltage must not be less than the value of brake start voltage, therefore, it is required that P7.66 ≥ P7.65. The input voltage of P16.0 is set to 380 V, and the value of brake start voltage is 647 V when P7.65 is 50 V; and the value of brake full turn-on voltage is 697 V when P7.66 is 100 V. The calculation formula is as follows is as follows:

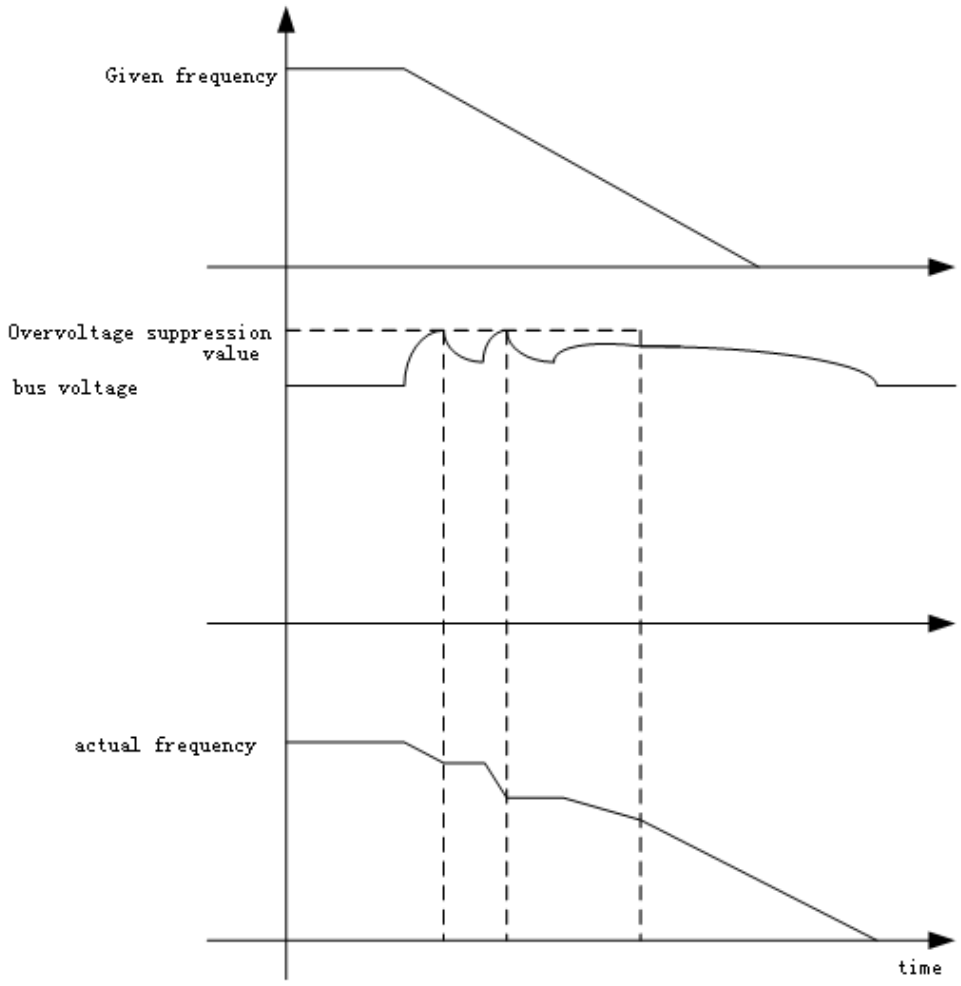
Brake starting voltage value $=1.075\times\sqrt{2}\times P16.0+20+P7.65$;

Brake full turn-on voltage value $=1.075\times\sqrt{2}\times P16.0+20+P7.66$.

(12) Overvoltage suppression

The parameters of P7.69, P7.70 and P7.71 will affect the actual deceleration time of the motor when they work. when the default value of P7.69 is [0], the

frequency converter must be connected to the braking unit and resistor. when the input voltage of P16.0 is set to 380V, and the input voltage of P7.70 is 100V, the over-voltage rejection value will be 711V. the formula for calculating this value is: over-voltage rejection value = $1.1\times\sqrt{2}\times P16.0+20+P7.70$. See the following diagram for details:



When P7.71 is set to enable, the software automatically adjusts the deceleration time and increases the excitation to realize over-voltage suppression; when P7.71 is set to disable, the software automatically adjusts the deceleration time to realize over-voltage suppression.

7.6 Motor start/stop control parameters

（1） Parking options:

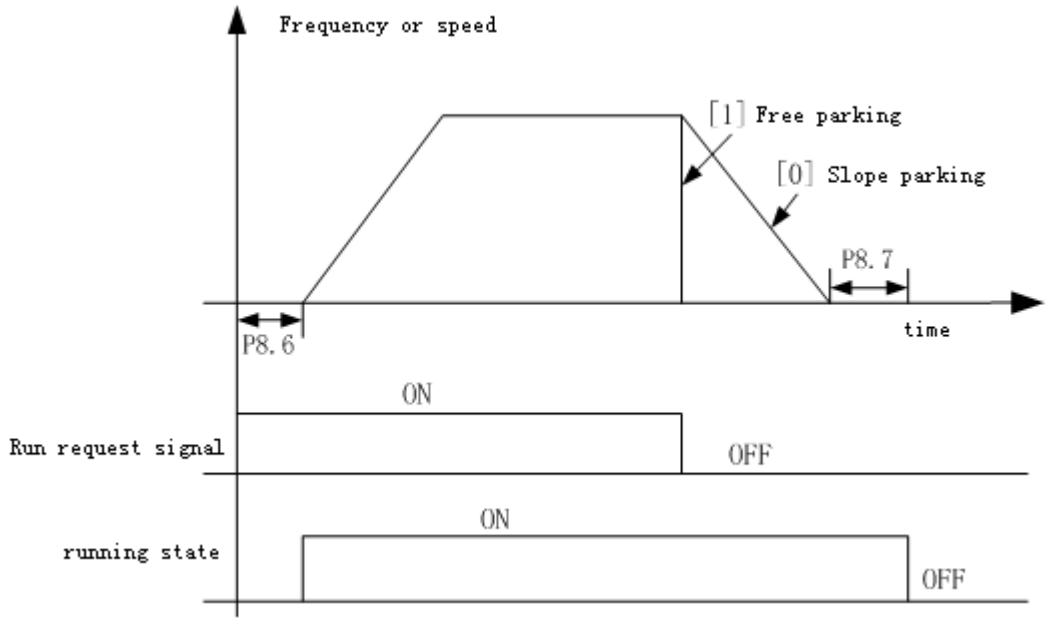
P8.3 Parking method: Set the method of decelerating the motor speed during parking. See the figure below.

[0] Ramp stop: The motor speed will slowly decelerate to zero according to the set deceleration time.

[1] Free stop: The VFD output voltage is cut off immediately while the stop mode is implemented.

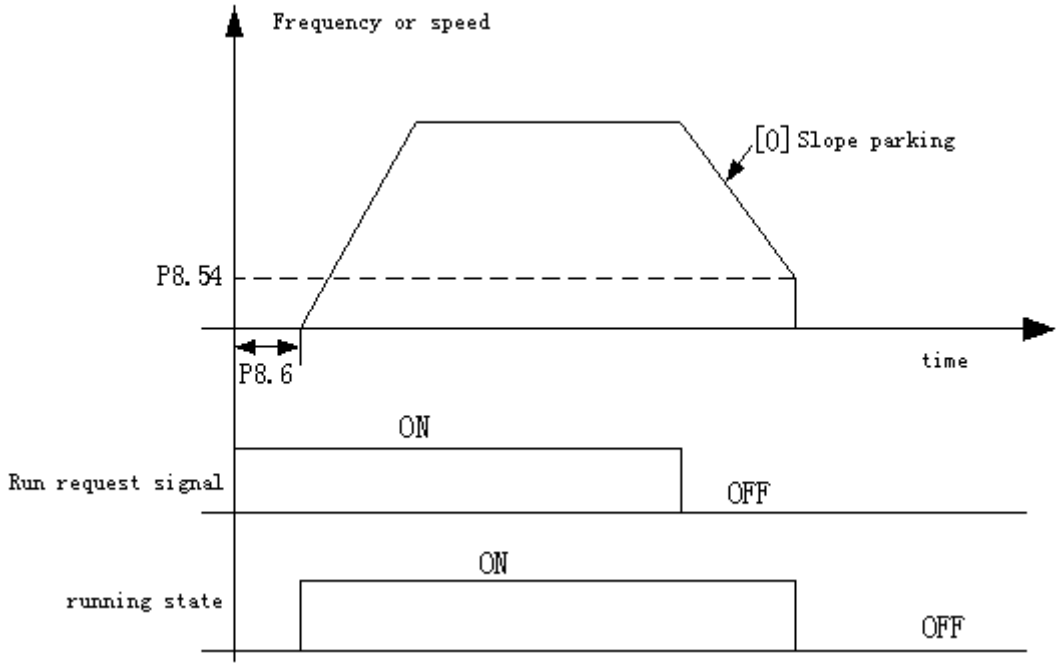
P8.6 Running delay time: the VFD starts from the moment of issuing the start command and maintains the stop state for a certain period of time within the time set in P8.6 before realizing the start mode. Refer to the following figure.

P8.7 Torque holding after zero speed: Even if the motor speed becomes zero, within the time set by this parameter, the frequency converter will still keep the running mode, at this time there is torque output, and the real sense of stopping will be realized only after this time. See the following figure.



Parking mode control diagram

P8.54 Free running start speed: When this value is set to a value greater than 0 and P8.3 Stopping mode is set to [0] Ramp stop, the frequency converter will become free stopping when the given speed decreases to the value set in P8.54 during stopping.

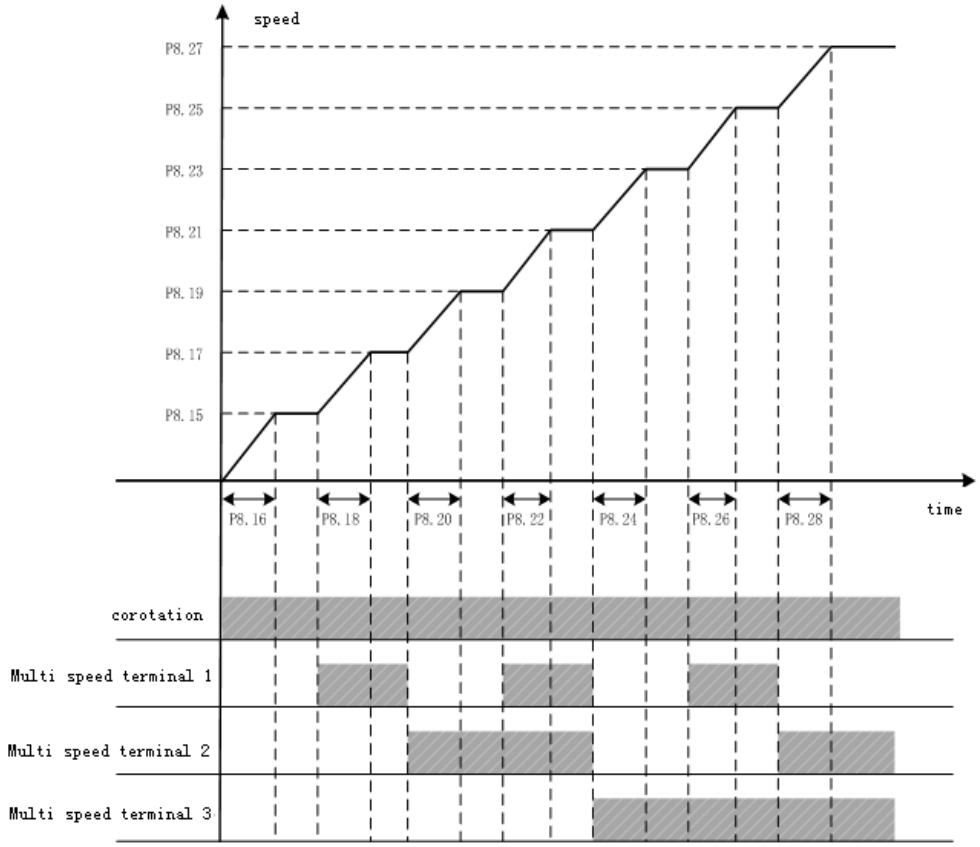


Free-running start speed

(2) Acceleration and deceleration control:

When the VFD is running, the acceleration and deceleration time and the acceleration and deceleration mode can be adjusted.P8.14 adjusts the multiplier of the acceleration time, i.e. the actual acceleration time is the set acceleration time multiplied by the value of P8.14.P8.33 adjusts the multiplier of the deceleration time, i.e. the actual deceleration time is the set deceleration time multiplied by the value of P8.33.P8.33 adjusts the multiplier of the deceleration time.

The acceleration mode is multiband speed as shown below:



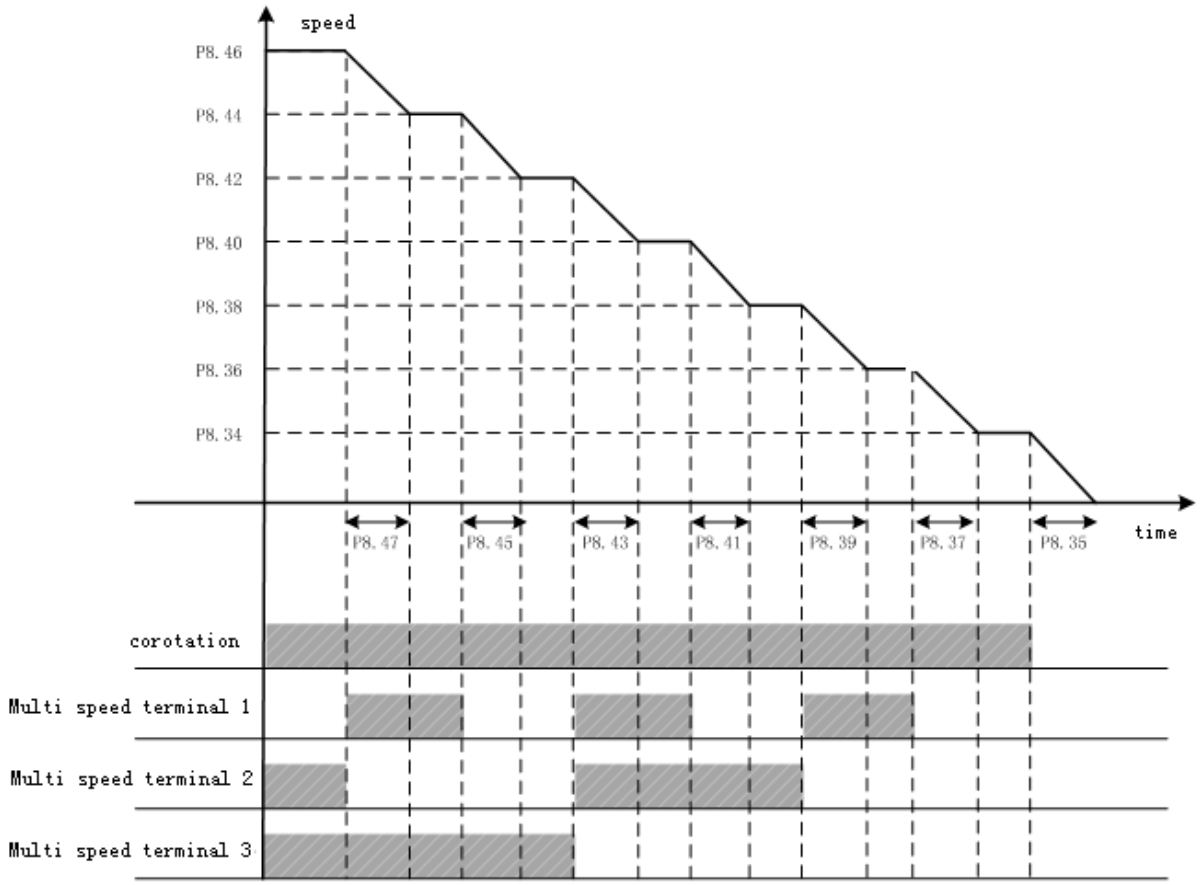
When setting the value of the acceleration zone, follow the requirements below:

P8.15<P8.17<P8.19<P8.21<P8.23<P8.25<P8.27

An example of its parameter setting when the motor is operated at the rated speed:

P8.15	P8.17	P8.19	P8.21	P8.23	P8.25	P8.27
10%	20%	30%	50%	60%	80%	100%

The deceleration mode is multispeed as shown below:



When setting the value of the deceleration zone, follow the requirements below:

P8.34<P8.36<P8.38<P8.40<P8.42<P8.44<P8.46

An example of its parameter setting when the motor is operated at the rated speed:

P8.34	P8.36	P8.38	P8.40	P8.42	P8.44	P8.46
10%	20%	30%	50%	60%	80%	100%

(3) Deceleration time is adjusted by communication:

During operation, the deceleration time multiplier can be modified by PROFIBUS or MODBUS communication, and the source of deceleration time control can be set via P8.32. Optionally, it can be disabled so that this function does not work. Example:

Deceleration time for deceleration zone 1 = P8.33 x P8.35 x (time deceleration multiplier given by the communication x 0.001).

(4) The deceleration time is adjusted by backshifting the handle:

During deceleration, the deceleration time is adjusted by hitting reverse gear with the handle. When P8.53 is set to [0] disable and P8.55 is set to [1] enable, the deceleration time becomes the value of P8.56. When P8.53 is set to [1] enable and P8.55 is set to [1] enable, the deceleration time changes linearly with the reverse gear, corresponding to the intermediate value of P8.56 and the current gear deceleration time.

7.7 Multi-stage motor speed and braking control

(1) Terminal vs. Multi-Speed:

P12.2 to P12.17 Multi-Segment Speed is to set the reference value of rotational speed when the VFD carries out multi-segment speed operation. Taking P12.0 = [1] binary as an example, the following table gives the relationship between the multisegment speed terminals and the multisegment speed segments:

Operating segment	Multi-speed terminal 1	Multi-Speed Terminal 2	Multi-Speed Terminal 3	Multi-Speed Terminal 4
Multi-speed 1	0	0	0	0
Multi-speed 2	1	0	0	0
Multi-speed 3	0	1	0	0
Multi-speed 4	1	1	0	0
Multi-speed 5	0	0	1	0
Multi-speed 6	1	0	1	0
Multi-Speed 7	0	1	1	0
Multi-Segment Speed 8	1	1	1	0
Multi-speed 9	0	0	0	1
Multi-speed 10	1	0	0	1
Multi-speed 11	0	1	0	1
Multi-speed 12	1	1	0	1
Multi-speed 13	0	0	1	1
Multi-speed 14	1	0	1	1
Multi-speed 15	0	1	1	1
Multi-speed 16	1	1	1	1

0 for multispeed terminal OFF 1 for multispeed terminal ON

(2) Brake open holding brake control:

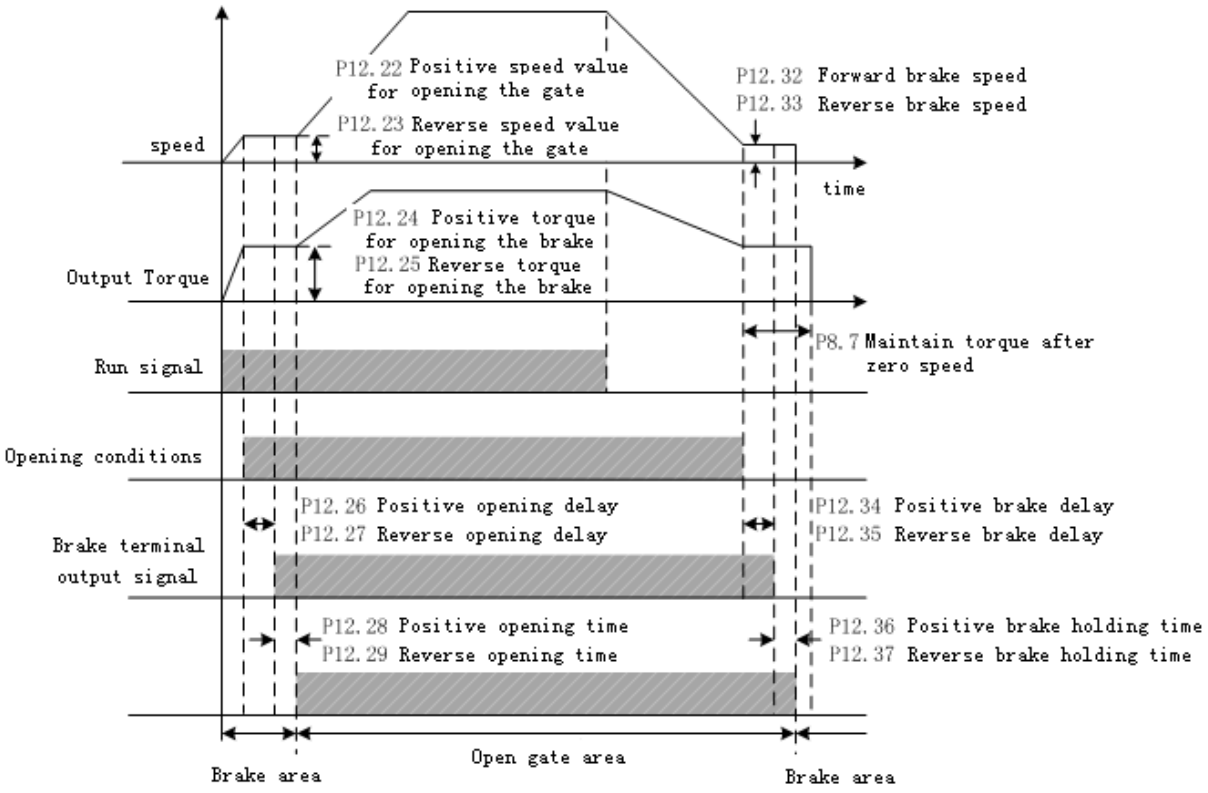
P12.22 to P12.37 Use this function to control the open holding brake when the system uses an electromagnetic brake. The brake control function is effective only when the digital output terminal is set to [3] Brake holding brake.

If the frequency converter receives a running signal when the motor is stopped, it gives the motor its corresponding torque value according to the positive and negative directions. If the two conditions of opening speed value (P12.22 or P12.23) and opening torque (P12.24 or P12.25) are satisfied at the same time, an opening signal is given on the output relay or output terminal for opening holding brake control.

If a stop signal is received while the motor is running, the motor starts to decelerate. If the output frequency reaches the value of parameter P12.32 [Forward holding speed] or P12.33 [Reverse holding speed], a holding signal is applied to its corresponding output terminal.

P12.28 and P12.29 indicate the time when the mechanical gate outputs the open gate command from the VFD brake terminal signal to the completion of the open gate; P12.36 and P12.37 indicate the time when the mechanical gate outputs the hold gate command from the VFD brake terminal signal to the completion of the hold gate.

Note: The torque and speed setting values are based on the motor parameters of group P16.



7.8 Basic motor parameters and V/F control parameters

(1) Motor rating parameters:

P16.0～P16.9 Motor parameters: In order to drive the motor correctly, it is necessary to confirm the parameters on the motor nameplate and input them to the corresponding parameters of the VFD. If the motor parameters are entered incorrectly, the VFD may not work properly and self-tuning will fail.P16.7 The number of motor stages is set according to the following formula: 120 × P16.5/P16.6 value rounded up.P16.9 Synchronous speed is set according to the following formula: 120×P16.5/P16.7.

When two motors are connected in parallel, the parameter values P16.2 (rated power) and P16.4 (rated current) are the cumulative values of the nameplate parameters of the two motors.

(2) Carrier Frequency:

P16.12 The carrier frequency is mainly used to improve the noise of motor

operation and the interference of the VFD to the outside world.

Advantages of using high carrier frequency: more ideal current waveform, less current harmonics, less motor noise;

Disadvantages of adopting high carrier frequency: switching loss increases, temperature rise of frequency converter increases, output capacity of frequency converter is affected, meanwhile, leakage current of frequency converter increases, electromagnetic interference to the outside world increases. Under the high carrier frequency, the frequency converter needs to be derated.

Using a low carrier frequency is the opposite of the above.

Note: Too low a carrier frequency will cause low-frequency (0.5Hz~2Hz) or over-frequency (>50Hz) operation instability, torque reduction or even oscillation phenomenon.

The following figure represents a graphical representation of the relationship between the carrier frequency's impact on the environment:

<table>
<tr><th>Carrier frequency</th><th>Electromagnetic noise, noises</th><th>Leakage current</th><th>Calorific value</th></tr>
<tr><td>1kHz</td><td rowspan="3">The larger the carrier frequency
The less electromagnetic noise and clutter</td><td rowspan="3">The larger the carrier frequency
The higher the leakage current</td><td rowspan="3">The larger the carrier frequency
The greater the heat generation</td></tr>
<tr><td>5kHz</td></tr>
<tr><td>10kHz</td></tr>
</table>

The following table represents the relationship table between model and carrier frequency:

Models	Carrier frequency (factory value kHz)
0.4kW～11kW	4
15kW～37kW	3.5
45kW～132kW	3

160kW～250kW	2.5
280kW～450kW	2

(3) V/F curve selection:

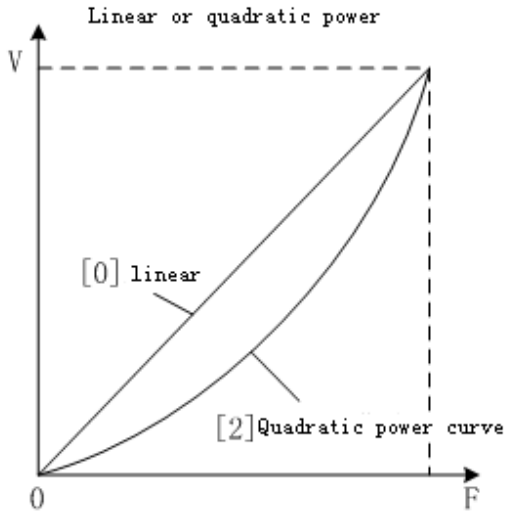
The parameter of P16.14 is valid for V/F control (P16.11=0), not for vector control.

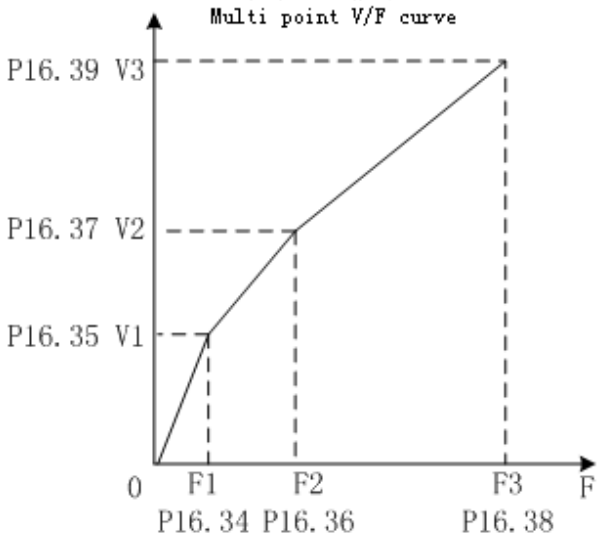
[0] Linear V/F curve. Suitable for normal constant torque loads.

[1] Multi-point V/F curve. The V/F curve can be defined by setting (P16.33 to P16.45).

[2] Quadratic power curve. Applicable to variable torque load occasions, such as: fans, pumps, etc..

The individual curves are shown below:





The twelve parameters from P16.34 to P16.45 define the multi-point V/F curve. the setting value of the V/F curve is usually set according to the load characteristics of the motor. Note: V1＜V2＜V3, F1＜F2＜F3. too high a low-frequency voltage setting may cause the motor to overheat or even burn, and the VFD may stall or overcurrent protect.

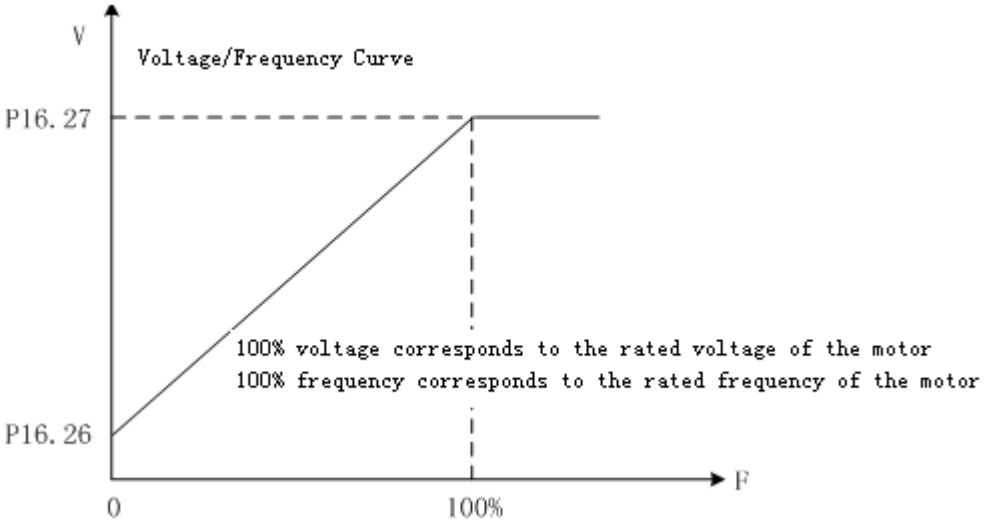
(4) Torque compensation:

P16.15 Torque compensation is only valid in V/F control mode. Enable this parameter when the starting torque is low. However, enable this parameter only

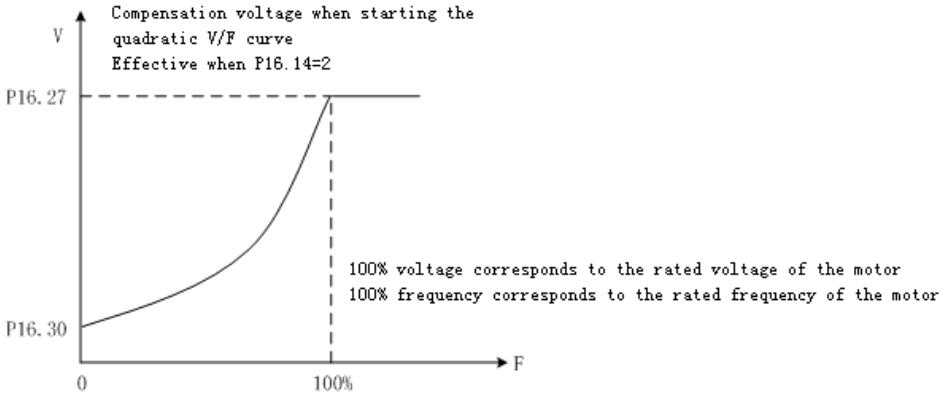
after the static self-tuning in V/F control mode is completed. Enabling this parameter increases the starting current and starting voltage, and overcurrent may occur. It is recommended to enable this parameter only when a high starting torque is required (mixers, brick kilns, etc.).

(5) Compensates for voltage at startup:

When P16.14 = [0] linear V/F curve, the V/F startup compensation voltage setting value is P16.26. P16.26 and P16.27 can be set by referring to the following figure:



When P16.14 = [2] power-of-two curve, the V/F startup compensation voltage setting value is P16.30. P16.30 and P16.27 can be set by referring to the following figure:



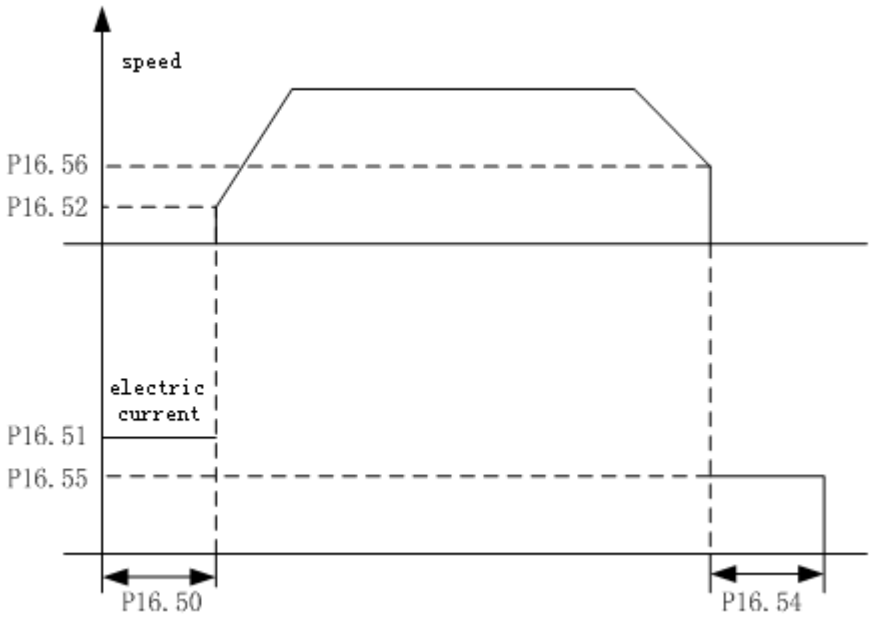
(6) DC braking:

P16.50 to P16.56 are DC braking functions, which are divided into DC braking

at start and DC braking at stop. This function works only in V/F control mode.

DC braking at startup: Set the values of P16.50, P16.51, and P16.52 to add DC braking current to the motor that is in free-slip stop, so that the motor stops first and then starts again.

DC braking when stopping: Set the values of P16.54, P16.55 and P16.56 to add DC braking current to the motor that is decelerating to stop the motor. The specific settings are shown in the following figure:



(7) Suppression of resonance:

P16.64 Stabilizing action gain is a parameter that automatically eliminates resonance in the event of mechanical or electrical resonance in the motor. If the setting value is not zero, the stabilizing controller acts to suppress and eliminate the resonance phenomenon caused by mechanical or electrical reasons. If set to zero, the stabilizing controller does not act.

7.9 Motor vector control parameters

(1) Torque and speed switching:

P20.0 is the value to be set for switching between torque control and speed

control.

P20.0=0 and P20.1=0, P20.2=0 is speed control mode, it is not possible to switch to torque control mode with this setting.

Torque control mode is available when P20.0=0 and P20.1≠0, P20.2≠0. It is not possible to switch to speed control mode with this setting.

P20.0 = 1 and P20.1 ≠ 0, P20.2 ≠ 0 is the torque control mode when the torque and speed switching signal is set to 1, and is the speed control mode when the torque and speed switching signal is set to 0.

In torque control, when the motor output torque is greater than the load torque, the motor speed will gradually increase to the equilibrium or limit value. When the motor output torque is less than the load torque, the motor speed gradually decreases to the equilibrium or negative limit value. In order to use torque control, make preparations to be able to operate normally when P16.11 is selected as [1] open-loop vector or [2] closed-loop vector mode.

P20.3 Fixed torque value setting: This parameter is valid when parameter P20.1 is set to [4].

(2) Zero Torque Function

Activating this function by terminal or communication sets the given torque to zero in torque control mode. When this signal disappears, the VFD will automatically switch to speed control mode, tracking from the current speed to the given speed. To enable this function, please set P12.24 (open gate forward torque) and P12.25 (open gate reverse torque) to 0%.

(3) Torque limitation:

P20.7 is the setting source for the torque limit, this setting value is valid in both speed control mode and torque control mode. The values of P20.8 and P20.9 are only valid when P20.7 = 1.

(4) Encoder Direction:

P20.15 Encoder phase sequence reversal function: It has the function of making the encoder output A or B phase ahead when the motor rotates positively. If the encoder A and B connections are reversed, or the motor U, V and W connections are reversed, the phase sequence can be changed by changing the parameters without changing the encoder wiring.

When [0] is disabled, the encoder rotation direction is the same as the motor rotation direction;

When [1] is enabled, if the encoder rotates in the opposite direction to the motor, the VFD internally swaps phase A and B for each other to recognize the function.

(5) Synchronized compensation control:

When driving a load with two motors connected non-rigidly, the function of adjusting the speed of one of the motors to keep the two motors in balanced position. This function only works under closed-loop vector control and must be used in conjunction with the GDHF-PGD2 synchronous PG card.

Synchronization compensation control is valid for only one of the VFDs controlling two motors (VFD with GDHF-PGD2 synchronization PG card installed). When DI function "[10] hook mode" is valid or DP control "CW0.9 hook mode" is valid, set the value of P20.26 and P20.27 both greater than 0, the synchronization compensation control will be activated only after both motors open the gate and the speed of the other motor reaches 2% of the rated speed. 2% of the rated speed of the other motor, the synchronization compensation control will be activated.

When P20.34 is set to [0], the synchronization compensation control algorithm 1 minimizes the encoder pulse error for both motors to 0 pulses. Set P20.26 and P20.27 to values greater than 0 to adjust the synchronization compensation control response. It is generally recommended that P20.26 be set to 50% to 100% and P20.27 to 3% to 5%.

When P20.34 is set to [1], the synchronization compensation control algorithm 2 controls the encoder pulse error of both motors to a minimum of 200 pulses. Since this control algorithm is internally fixed, it is sufficient to set P20.26 and P20.27 to any value greater than zero.

If both VFDs are GF630N03 series VFDs of GUIDE, it is recommended that P20.34 be set to [1]; if one VFD is GF630N03 series VFD of GUIDE and the other one is other brand VFD, it is recommended that P20.34 be set to [0].

(6) DROOP control:

When two motors are rigidly connected to drive a load, this function stabilizes the motor torque and balances the load between the two motors. The DROOP control function of the VFD controlling the two motors must both be active. the DROOP control decelerates the motors when the load torque is too high and accelerates the motors when it is too low, thus maintaining load balance. DROOP control is not effective when P20.60 is set to 0. P20.61 is a parameter for adjusting the response of DROOP control, so increase this setting when vibration and oscillation occur.

(7) Master-Slave Method 1 Function:

When two VFDs control two rigidly coupled motors (e.g., gantry crane lifting mechanism, rotating mechanism), the VFD of one of the motors is selected as the master for speed control, and the other is selected as the slave for torque control. The output torque of the master is transmitted to the slave as the slave's torque setting value.

(8) Master-Slave Method 2 Function:

When two VFDs control two rigidly coupled motors (e.g., gantry crane lifting mechanism, rotating mechanism), both VFDs use speed control (i.e., default value [0] is selected for both P20.1 and P20.2), and one of the motors' VFDs is selected as the master, and the other as the slave. At the same time, the output torque of the master needs to be transmitted to the slave via analog, but not as the

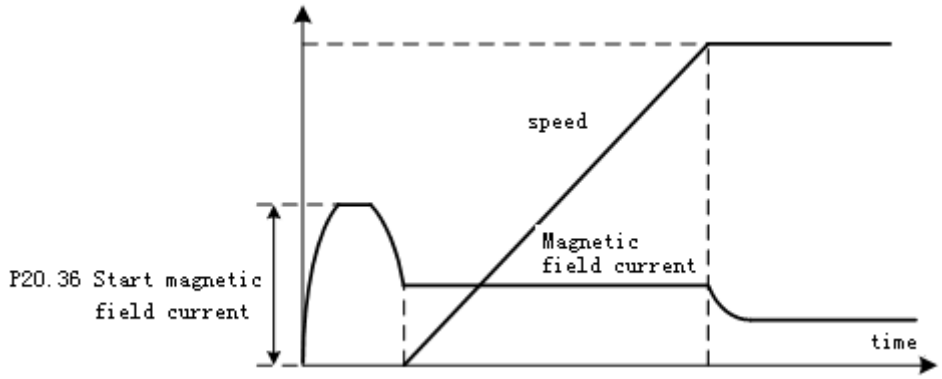
slave torque given value.

(9) Anti-open bucket function:

This function prevents two GUIDE VFDs from doing grapple control when the support machine is chasing the rope in the process of the driver handle back to zero to appear in the air open bucket phenomenon. When wiring, the encoder line of the support machine should be connected to the PGD1 card of the opening and closing machine, the opening and closing machine should receive the speed of the two machines at the same time, the PLC will activate this function after the closing of the bucket is completed, and the function will be exited after the completion of chasing the rope. Activate this function by DI function or CW0.10 position "1" of DP communication control word.

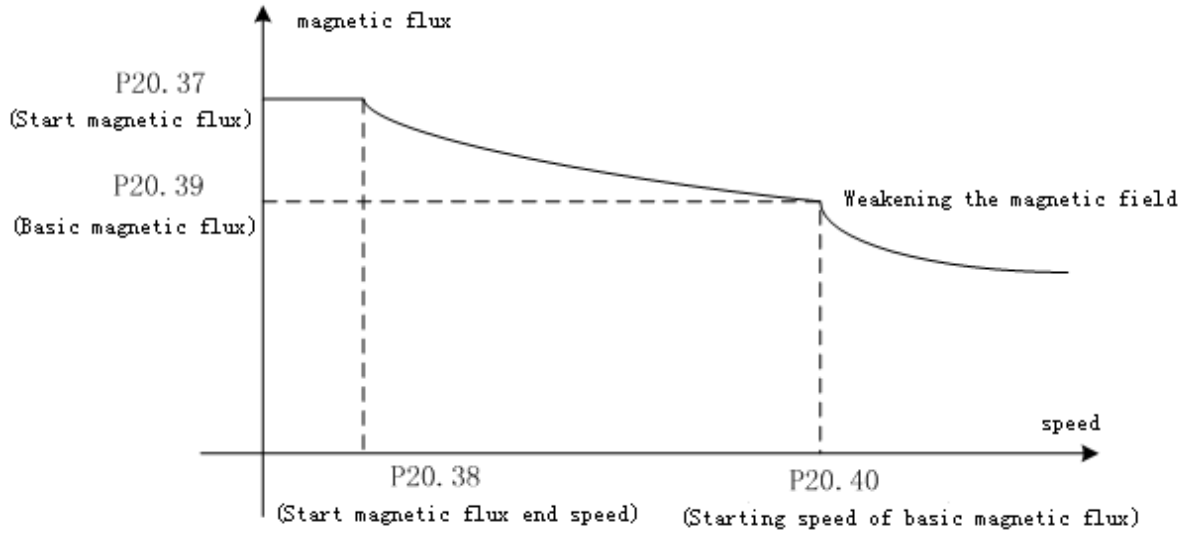
(10) Starting magnetic field current:

P20.36 Startup magnetic field current: This item controls the base limit value of the magnetic field current at startup, and reduces the startup current when vector controlled, as shown below:



(11) Magnetic Flux:

P20.37 to P20.40 set the size of the magnetic field corresponding to the speed as shown below:

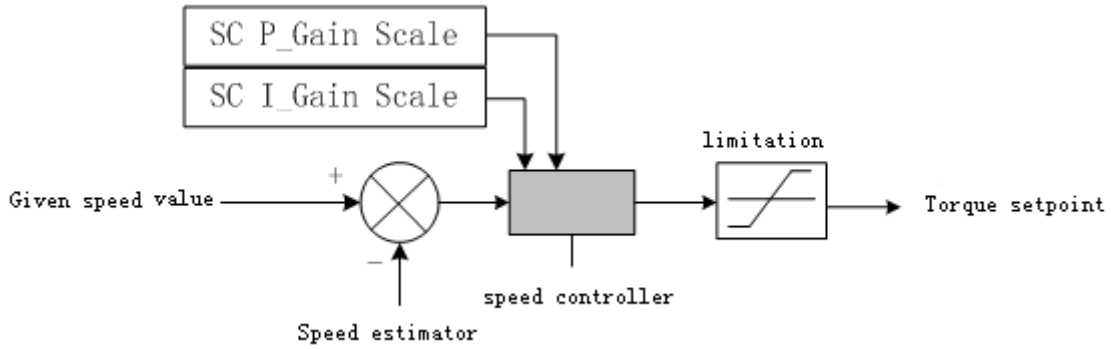


(12) Velocity ring:

P20.55 Speed Tracking Controller Proportional Gain: It has the characteristic that as the speed error rises, the high torque output command becomes larger. If its value is set to a larger value, the speed deviation is quickly reduced.

P20.56 Speed Tracking Controller Integral Gain: This is the time it takes for the speed controller to output the rated torque command when a constant speed error persists. If its value is set to a small value the speed deviation is quickly reduced.

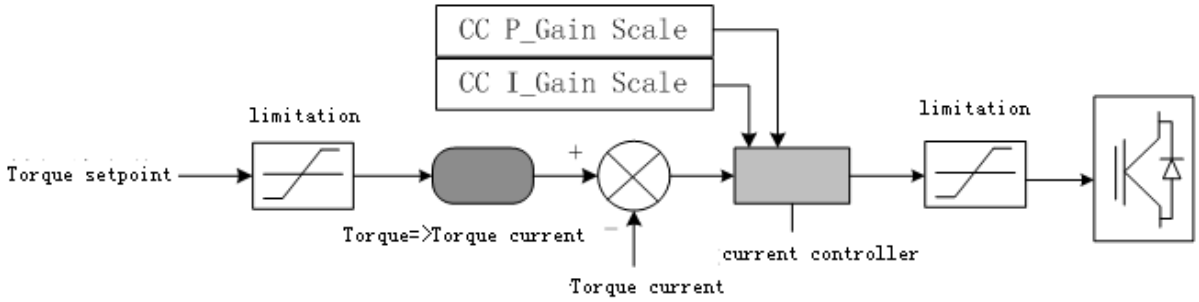
The speed controller gain set by percentage (%) can be obtained by auto-tuning, and the speed control block diagram is shown below:



(13) Current loop:

P20.62 and P20.63 are the current loop proportional and integral gains. Sets

the percent (%) value of the current controller gain. can be obtained by auto-tuning. The vector control block diagram is shown below:



7.10 Advanced Applications

If a problem such as vibration or misalignment occurs during operation, and a malfunction is caused by the control performance, adjust the parameters in the following table to correspond to the control mode, and only the parameters that are frequently adjusted are recorded in the following table.

Control mode	Parameter name	Performances	Default value	Recommended value	Method of adjustment
V/F control	P16.64 V/F stabilizing action gain	Suppresses mid-speed (10 to 40 Hz) jerky tuning and vibration.	100	80 to 150	In case of insufficient torque for heavy loads: Reduce the value of this parameter; When oscillation occurs with light loads: Increase the value of this parameter.
	P16.12 Carrier frequency setting	Improvement of motor electromagnetic noise	Varies by power	Varies by power (if you change the carrier frequency, it is recommended to do the motor parameter self-tuning all over again)	When the electromagnetic noise of the motor is large: increase the value of this parameter; When vibration occurs at low and medium speeds: Reduce the value of this parameter.

	P16.15 torque compensation	Improvement of motor torque	prohibited	prohibited	In case of heavy load and insufficient torque at low speed: enable this parameter; When oscillating with light load: this parameter is disabled
	P16.26 V/F startup voltage bias	Improved low-speed torque	0.75	0.5 to 1.2	When the low-speed torque is insufficient: increase the value of this parameter; when the starting shock is too large: decrease the value of this parameter.
	P7.0 Current Limit Value	Improvement of current inrush	150	150 to 220	When the motor speed response is slow and out of tune under heavy load: increase the value of this parameter; When the motor current shock is large during light load: reduce the value of this parameter.
vector control	P16.12 Carrier frequency setting	Improvement of motor electromagnetic noise	Varies by power	Varies by power (if you change the carrier frequency, it is recommended to do the motor parameter self-tuning all over again)	When the electromagnetic noise of the motor is large: adjust the value of this parameter; when vibration occurs at low and medium speeds: adjust the value of this parameter.

	P7.0 Current Limit Value	Improvement of current inrush	150	150 to 220	When the motor speed response is slow and out of tune under heavy load: increase the value of this parameter; When the motor current shock is large during light load: reduce the value of this parameter.
	P20.43 Torque observation time	Improvement of motor vibration and misalignment	75	50-100	When the motor vibrates under load: Increase the value of this parameter; When the motor torque response is slow due to load change: reduce the value of this parameter.
	P20.56 Speed Tracking Integral Gain	Improved speed and torque response to suppress vibration and misalignment	100	80 to 150	When the speed and torque response is too slow: increase the value of this parameter; when the shock is big during starting: decrease the value of this parameter.

7.11 Special functions

(1) Brake abnormal protection control function

This function is valid only in closed-loop vector control mode or open-loop vector control mode.

Principle of brake failure protection function under closed-loop vector control mode: when the frequency converter is in the stop state, if the encoder feedback speed is detected to be greater than the speed detection threshold (the detection threshold corresponds to the parameter of the frequency converter as P12.40), and the duration is more than the detection time (the detection time corresponds to the parameter of the frequency converter as P12.41), the brake failure protection function will be triggered; and at the same time, the frequency converter will output the zero speed and large torque to hang the weight in the air at zero speed; and a buzzer alarm signal will be output. At the same time, the VFD outputs zero speed and large torque to suspend the weight in the air at zero speed; and outputs a buzzer alarm signal, and then waits for the driver to operate the handle to lower the weight to the safe position on the ground, then disconnects the VFD and repairs the brake.

Principle of brake failure protection function under open-loop vector control mode: when the VFD-controlled motor stops and holds the brake (the VFD will not cut off the output, but still passes the current to the motor, because it needs to estimate the speed of the motor in real time, and make preparations for determining whether the brake is invalid or not), if the estimated speed is greater than the speed detection threshold value (the detection threshold corresponds to the parameter of the VFD as P12.40), and the duration is more than the detection time (If the estimated speed is greater than the speed detection threshold (the detection threshold corresponds to the VFD parameter P12.40), and the duration exceeds the detection time (the detection time corresponds to the VFD parameter P12.41), the brake failure protection function will be triggered; at the same time, the VFD outputs zero-speed large torque to suspend the heavy loads in the air at zero-speed; and outputs the alarm signal of buzzer, and then waits for the driver to operate the handle to lower the heavy loads to the ground at the safe position, and then disconnects the power of the VFD and repairs the brake.

P12.42 is used to set the standby time of the VFD under vector control. If no abnormal brake fault is detected after this time, the VFD will stop.
The parameters to be set are shown in the table below:

Parameter number	Parameter name	Setpoint	Note	
P4.2	Digital output terminal 3 (P4.0 digital output terminal 1 or P4.1 digital output	[16] Brake failure	This terminal needs to be connected externally to a relay and then to a buzzer for outputting a brake failure alarm.	The brake failure protection function can only be activated if both

	terminal 2 can also be selected)			functions are set for the digital output terminals.
P4.3	Digital output terminal 4	[3] Brake Brake	This terminal controls the brake open holding brake.	
P7.31	Abnormal Speed Error	60	Prevents reporting of abnormal speed faults during brake failure detection.	
P7.32	Abnormal Speed Time	2		
P8.7	Torque holding after zero speed	0.5	Recommended setting is 0.5	
P12.32	Forward Braking Speed	0.5%	The recommended setting of 0.5 is related to brake failure protection.	
P12.33	Reverse Braking Speed	0.5%	The recommended setting of 0.5 is related to brake failure protection.	
P12.40	Brake Failure Detection Speed Threshold	10	100% corresponds to the P16.6 motor rated speed. The recommended setting is 10 in %.	
P12.41	Brake failure detection time	0.1s	Do not exceed 0.3s, recommended setting is 0.1s	
P12.42	Maximum time for anomaly detection	xxx(s)	In closed-loop vector control mode, the recommended setting for this parameter is 3s; In the open-loop vector control mode, after the VFD control motor stops and stabilizes, it continues to output voltage and starts to detect whether the brake is abnormal or not, which lasts for the time of P12.42, and then the VFD stops outputting voltage (after stopping outputting voltage, it will lose the function of protection against brake failure), and this parameter is recommended to be set to 300s;	

Attention:

1.1 After using the open-loop vector brake failure protection function, the frequency converter will be in the running state after powering up and starting once, and the frequency converter will not be able to cut off the output and stop until after the continuous P12.42 time, because the speed of the motor has to be estimated in real time, so when overhauling the motor, make sure to cut off the incoming power supply of the frequency converter, or there is a danger of electric shock!!!!

1.2 To use the brake failure protection function, it is necessary to keep

the frequency converter in the power-on state and the frequency converter does not report any faults, except for brake failure, other electrical and mechanical institutions should be in the normal state, otherwise this function is invalid.

(2) Constant power control function for hoisting mechanism

In order to improve the operation efficiency of the hoisting mechanism, the GUIDE VFD has a built-in constant power control function, also known as the load-following-speed function. This function is only effective in closed-loop vector or open-loop vector control mode, and the parameters to be set are as follows:

Parameter number	Parameter name	Setpoint	Note
P20.21	Constant Power Speed Limit Curve	[0] "Parabolic."	
P20.22	Speed limit value at light load	Set to the maximum speed required in the field. Unit: %	For example, if the rated frequency of the hoist motor is 50 HZ and the maximum speed requirement is 85 HZ, the value is set to 85/50*100% = 170%.
P20.23	Light load setting value	Set to the percentage of the rated load capacity of the mechanism that the lifting mechanism is allowed to lift in order to achieve the speed set in P20.22; Range: 10-40%	For example, if a mechanism rated for 10T allows a 4T load to reach the speed value of P20.22, the parameter is set to 4/10*100 = 40; Note: This value should not exceed 40, and if P20.22 is larger, the smaller the value should be set.
P20.24	Speed limit value for heavy load	100%	
P20.25	Overloaded set values	100%	

P20.45	No-load positive load torque value	6%	
P20.46	No-load reverse load torque value	5%	
P20.47	Heavy duty positive load torque value	90%	
P20.48	Heavy load reverse load torque value	77%	
P20.49	Load value at heavy load	100%	
P20.20	Constant power speed limit enable	[1] "Enable"	The constant power function is enabled when this parameter is enabled

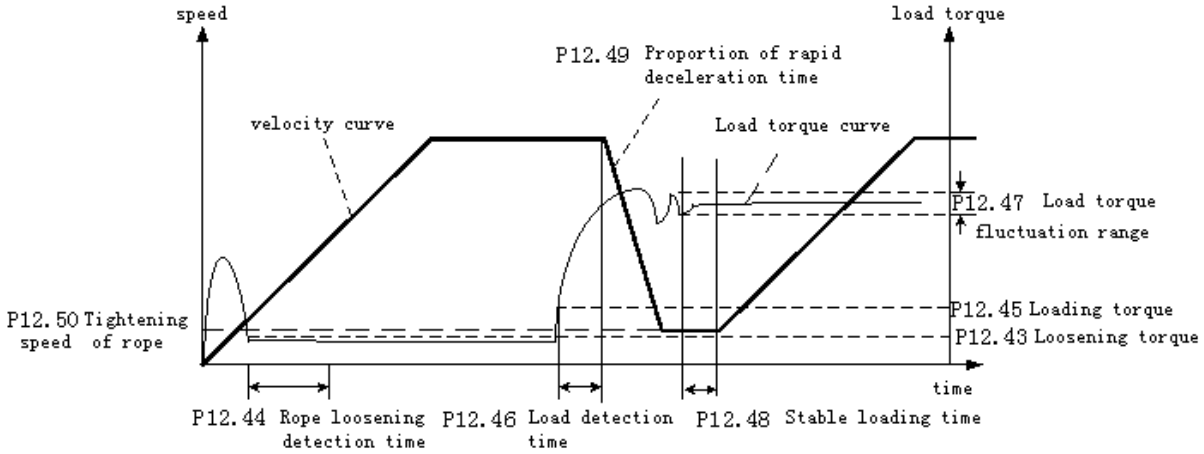
(3) Smooth lifting control function

This function is valid only in closed-loop vector control mode or open-loop vector control mode.

The parameters to be set are as follows:

Parameter number	Parameter name	Setpoint	Note
P12.43	Unwinding torque	20%	Load torque at slack rope as a percentage of rated torque
P12.44	Loose rope torque detection time	0.2s	Duration of slack rope condition
P12.45	Loading torque	30%	Load torque in loaded state as a percentage of rated torque, the parameter setting value should be greater than P12.43
P12.46	Loading torque detection time	0.1s	Duration of the loaded state
P12.47	Load torque	10%	Range of load torque fluctuation at full

	fluctuation range		load as a percentage of rated torque
P12.48	Loading torque stabilization time	3s	Duration of load torque fluctuation range at full load within the range of P12.47
P12.49	Rapid deceleration time ratio	0.2	Ratio of deceleration time to normal deceleration time in loaded state
P12.50	Rope speed	3%	Percentage of target speed decelerated to rated speed in the loaded state
P12.38	Smooth Lift Enable	[1] Enable	This parameter is set to [1] enable to enable the smooth lifting function. 0] Disable, disable the smooth lifting function.
P4.3	Digital output terminal 4	[3] Brake Brake	This terminal controls the brake open holding brake.



Attention:

During commissioning, make sure that the direction of lift rise is the same as the direction of positive rotation given by the speed.

(4) Lifting mechanism anti-roofing control function

This function is valid under closed-loop vector control or open-loop vector control. After setting this function, when the lifting mechanism almost reaches the pre-calibrated soft limit point, the lifting motor will automatically decelerate and stop at the calibrated anti-roofing zero position, and will not be allowed to rise again.

Parameters to be set for this function:

Parameter number	Parameter name	Setpoint	Note
P3.5	Digital input terminal 6	[30] Two/four times conversion	Set the input terminals according to the actual electrical connections. When this terminal is connected to COM, the anti-roofing function of the lifting mechanism is executed at four times the rate; if this terminal is not shorted to COM, the anti-roofing function of the lifting mechanism is executed at two times the rate.
P3.6	Digital Input Terminal 7	【40】 Anti-topping zero position	Set the input terminals according to the actual electrical connections. After the hoisting mechanism runs to the position close to the upper limit, the handle returns to zero and stops, and this terminal is shorted to COM for 2 seconds and then disconnected, setting this position as the zero point for preventing the top of the roof, so that the hoisting mechanism will not rise above this position in the future.
P3.7	Digital Input Terminal 8	[41] Anti-roofing bypass	Set the input terminals according to the actual electrical connections. If it is necessary to reset the anti-roofing soft limit point, short this terminal to COM, i.e. press and hold the bypass button to allow the hoisting mechanism to continue to rise.
P12.18	FCD pulses per meter LSW_2X	Adjust the lifting mechanism to 2x rate for commissioning settings;	In closed-loop vector control, lift up 1 meter, number of encoder pulses, lower 16 bits

P12.19	FCD Pulses per meter MSW_2X	Adjust the lifting mechanism to 2x rate for commissioning settings;	In closed-loop vector control, lift up 1 meter, number of encoder pulses, high 16 bits
P12.20	FCD speed (m/min)_2X	Adjust the lifting mechanism to 2x rate for commissioning settings;	Adjusted according to agency nameplate data settings. This value determines when to start decelerating and stopping when the anti-roofing zero point is almost reached.

Debugging Instructions:

(1) The number of FCD pulses per meter LSW and the number of FCD pulses per meter MSW can be calculated from the values of the panel or host computer monitoring parameters 101.62 Encoder 1 32-bit count LSW and 102.63 Encoder 1 32-bit count MSW.

(2) When the digital input terminal is set to [40] anti-roofing zero position, the frequency converter each time the power is turned on, must be re-calibrated anti-roofing zero point, otherwise it can not rise, at this time, you need to hold down the bypass button, and then pull up the ascending handle rises close to the end of the ascending limit to calibrate the rise of the speed of up to a maximum of only 30HZ;

(3) When calibrating the anti-roofing zero point, it is necessary to press the "Zero Calibration" button for more than 2 seconds, otherwise the calibration may not be successful.

(4) If the calibrated anti-roofing point is not suitable and needs to be re-calibrated, press and hold the "Bypass" button while raising the lifting mechanism to a suitable position to re-calibrate the anti-roofing zero point.

8. Abnormal Countermeasures and Inspections

In order to protect the equipment, the VFD has protection functions for overcurrent, overvoltage and undervoltage. When the protection function is activated, the output of the VFD is cut off and the motor is stopped, and this state is maintained until forced reset (reset).

8.1 Warning Codes

Warning code displayed in the stopped state

Warning code	Warning message	Reason for warning	Step
W01	The system's not ready. SYS_NOT_RDY	The VFD is not ready at power-on.	Confirm VFD input voltage, bus voltage
W02	No drive enable signal NO_DRV_ENABLE	When the digital input terminal is set to [Drive Enable], the corresponding conditions are not met; the corresponding control word for communication is not signaled.	Confirm the digital input parameters of parameter group P3, the corresponding external relays and wiring. Checking the status of the control word in communication
W03	Terminal Local Warning LOCAL_EM	When the digital input terminal is set to [Local Emergency Stop Signal], the conditions corresponding to it are met.	Confirm the digital input parameters of parameter group P3, the corresponding external relays and wiring.
W04	Terminal Remote Warning REMOTE_EM	When the digital input terminal is set to [Remote Emergency Stop Signal], the corresponding conditions are met.	Confirm the digital input parameters of parameter group P3, the corresponding external relays and wiring.
W06	overheating OT	The frequency converter overheats and the radiator temperature rises to the value of parameter P7.14 (over-temperature fault)	Confirm case temperature, cooling fan, load current
W09	DP communication warning P/BALARM	DP card communication external warning	Checking the status of the corresponding control bit for DP communication

Warning code	Warning message	Reason for warning	Step
W10	MODBUS communication warning MODBUS ALARM	External warning for Modbus communication	Confirmation of the status of the corresponding control bits for Modbus communication
W15	Parameter setting error PARAMETER ERROR	Parameter setting error	Verify that the parameter settings are not out of range
W18	Temperature detection abnormality Temp_Sensing Fail	Temperature Detection Abnormal Warning	Confirm temperature sampling connection cable
W20	The slave's not ready. SLV_NOT_RDY	Abnormalities on the slave during parallel operation	Confirm that the parallel control line and slave status are normal.
W21	Slave 1 communication error SLV1_CAN_ERR	Slave 1 communication error during parallel operation	Confirm that the parallel communication line and slave 1 communication are normal.

8.2 Fault Codes

Fault codes are displayed in the operating state.

Trouble code	Error message (computing)	Failure causes and measures
[E052]	U-phase IGBT fault (not resettable) ERR_UT not reset	Confirm that this IGBT is normal Confirm that the IGBT driver cable and driver circuit are normal. Power back on after power failure
[E054]	V-phase IGBT fault (non-resettable) ERR_UT not reset	Confirm that this IGBT is normal Confirm that the IGBT driver cable and driver circuit are normal. Power back on after power failure
[E055]	W-phase IGBT fault (non-resettable) ERR_UT not reset	Confirm that this IGBT is normal Confirm that the IGBT driver cable and driver circuit are normal. Power back on after power failure
[E056]	Slave failure (non-resettable) ERR_SLAVE_FAULT not reset	Confirm that the slave is working properly Power back on after powering down the slave

[E057]	Built-in brake unit (non-resettable) ERR_DB not reset	Verify that the brake IGBT is functioning properly Confirm that the brake IGBT drive cable and drive circuit are normal. Power back on after power failure
[E100]	overpressurization OV	Confirmation of braking resistor Confirm parameter P8.35 (Deceleration time 1) and adjust its timing. Confirmation of parameter P7.12 (busbar overvoltage)
[E105]	phase sequence UV	Drop in bus voltage to its limit value due to a drop in input voltage or input voltage out of phase Confirmation of input voltage Confirm the electromagnetic contactor on the input side of the VFD Confirmation of parameter P7.13 (Bus undervoltage)
[E106]	Holding brake feedback abnormality 1 Brake abnormal 1	Confirm DI terminal wiring Verify that the motor brake brake control is functioning properly
[E107]	Holding brake feedback abnormality 2 Brake abnormal 2	Confirm DI terminal wiring Verify that the motor brake brake control is functioning properly
[E108]	DC contactor failure DC switch open	Check DC contactor connection wires Verify that the DC contactor is functioning properly
[E110]	overcurrent OC	Check motor load; check for open gate Confirmation of acceleration and deceleration times Confirm that the motor and its wiring are normal Verify that the encoder and wiring are correct Confirmation of parameter P7.4 (Overcurrent protection)
[E111]	overloaded OL	VFD output current exceeds parameter P7.48 (overload current 1) and time exceeds P7.49 (overload time 1) Check motor load Confirmation of load current Confirmation parameters P7.48, P7.49 Confirm that the motor and its wiring are normal
[E112]	short circuit to earth ZC	Confirmation parameter P7.8 Confirm that the motor is not short-circuited

		Confirm that the VFD ground wire is connected Verify that the current sensor is wired properly
[E113]	Input out of phase MIP	Confirm that the VFD input line wiring is normal Verify that the control wires on the linear filter board are connected properly.
[E114]	Output Out-of-Phase MOP	Confirm that the VFD output line to the motor is normal
[E115]	overspeed OS	Motor speed exceeds parameter P7.19 Confirmation parameter P7.19 Confirm the encoder is good or bad and there is no interference in the wiring.
[E116]	Open-loop vector control error SLVC Fail	Verify that the acceleration and deceleration times are not too short Confirmation parameter P7.23
[E117]	motor stalling MOTOR STALL	Check brake connections If there is an encoder, make sure that the encoder is connected and that parameters P20.14 and P20.15 are set correctly.
[E118]	Encoder Error PG ERROR	Verify that the electrical connection of the encoder and the settings of parameters P20.14 and P20.15 are correct.
[E119]	speed anomaly (geology) SPEED ABNORMAL	Verify that the electrical connection of the encoder and the settings of parameters P20.14 and P20.15 are correct. Confirmation parameters P7.31, P7.32
[E120]	VFD IGBT overheating OT	Confirmation of external and internal temperatures Confirm the VFD cooling fan Confirmation of load current
[E138]	Temperature Sampling Fault TEMP_SENSING FAIL	Confirm temperature sampling connection cable
[E139]	Pre-charge failure Pre_Charging Fail (Rectifier Feedback Unit)	Confirm the input voltage of the rectifier/feedback unit Confirm that the charging circuit (charging contactor, resistor, etc.) is normal. Confirmation parameter P7.95
[E140]	Input voltage too low LineUV (Rectifier Feedback Unit)	Verify rectifier feedback module input voltage Verify that there are no problems with main contactor suction (main contacts, coil power, etc.)
[E141]	Input power supply out of phase Line OPEN (Rectifier Feedback Unit)	Confirm that the input voltage of the rectifier feedback module is normal.

[E142]	Incoming power supply detection fault Line Detection Error (Rectifier Feedback Unit)	Confirm the input voltage of the rectifier/feedback unit Confirm the voltage sampling connection line
[E143]	Main contactor feedback point failure Line SW Fail (Rectifier Feedback Unit)	Confirm DI terminal setting Confirm the main contactor feedback point connection line Confirm main contactor control wiring
[E144]	Main contactor short circuit Line SW SHORT (Rectifier Feedback Unit)	Confirm the main contactor feedback point connection line Verify that the main contactor is not shorted
[E145]	Excessive grid voltage (AFE) Line OV (Rectifier Feedback Unit)	Confirm the input voltage of the rectifier/feedback unit Confirm that parameter P16.0 is consistent with the actual voltage
[E146]	Abnormal grid frequency (AFE) Line Over_Freq (Rectifier Feedback Unit)	Confirm the input voltage of the rectifier/feedback unit Verify that the voltage sampling in the rectifier-feedback unit is normal.
[E152]	U-phase IGBT failure PDP[U]	Confirm that this IGBT is normal Confirm that the IGBT driver cable and driver circuit are normal. Confirm that the output wiring or motor is normal
[E154]	V-phase IGBT failure PDP[V]	Confirm that this IGBT is normal Confirm that the IGBT driver cable and driver circuit are normal. Confirm that the output wiring or motor is normal
[E155]	W-phase IGBT failure PDP[W]	Confirm that this IGBT is normal Confirm that the IGBT driver cable and driver circuit are normal. Confirm that the output wiring or motor is normal
[E156]	hardware overcurrent Hardware OC	Check motor load; check for open gate Confirmation of acceleration and deceleration times Confirm that the motor and its wiring are normal Confirm that the VFD output current is not too large
[E157]	Failure of built-in brake unit PDP[DB]	Confirm that this power device is normal Confirm that the power device driver cable and driver circuit are normal.

[E160]	slave computer failure SLAVE FAULT	Verify that the slave is not reporting errors
[E161]	The slave's not ready. SLV_NOT_RDY	Verify that the slave meets the operating conditions
[E162]	Slave 1 CAN error SLV1_CAN_ERR	Confirm that the parallel fiber optic cable and slave 1 communication are normal.
[E167]	CAN communication error CAN_ERR	Confirm that the VFD communication is normal
[E170]	Failure of self-tuning MOTOR TUNING FAIL	Confirm motor nameplate parameters Confirmation parameter P7.33
[E180]	DP communication error P/B ERROR	Verify that the communication card is connected properly Verify that the communication configuration is correct
[E181]	DP communication warning P/B_EM	Check the status of communication control word CW0.4.
[E171]	Rope length error Rope error	Rope length error
[E200]	Terminal Local Fault LOCAL_EM	When the digital input terminal is set to [Local emergency stop signal], the corresponding terminal is signaled. Confirm the digital input parameters of parameter group P3, the corresponding external relays and wiring.
[E201]	Terminal Remote Fault REMOTE_EM	When the digital input terminal is set to [Remote emergency stop signal], the corresponding terminal is signaled. Confirm the digital input parameters of parameter group P3, the corresponding external relays and wiring.
[E202]	Modbus communication failure MODBUS EMERGENCY	Modbus communication control word CW0.4 has a signal to confirm its status
[E203]	No drive control signal DRIVE DISABLED	No signal for the corresponding control word in DP communication; no signal for the corresponding terminal in terminal control.
[E204]	DI function setting duplication ERR DUPLICATE DI SET	Confirm DI terminal settings
[E210]	Keyboard Operator Malfunction Panel Error	Verify that the operating keyboard is connected properly
[E220]	Memory CRC checksum error MEMORY CRC ERR	Replacement of control board

[E221]	parameter error PARAMETER ERROR	Confirm that the parameter settings meet the requirements

8.3 Troubleshooting

Defective phenomenon		Inspection matters	Step
electrical machinery incapable revolve	No output from VFD	-Is the digital input terminal assigned -Whether the run command signal is ON -Is the forward or reverse terminal in good contact with the COM terminal	-Check digital input terminal assignment -Run command signal is set to ON -Please connect the forward or reverse terminal and COM terminal (selected as terminal mode)
		-Is the input three-phase power supply normal?	-Check the tightness of the terminal screws. -Measurement of input three-phase terminal voltage
		-Is the operation panel power light on. If yes, check again if the operation signal lamp is on.	-If the power light on the operation panel does not turn on and there is no improvement after plugging the panel cable back in, please consult your agent or our company. -If the operation panel power lamp is on but the run signal lamp is not, give the run command again.
		-If a warning or error message has been displayed on the operation panel	-Run after reset
		-Is the operating mode and command value of the VFD correct?	-Check the VFD operation mode parameters
	The VFD has an output	-Is the motor in a holding condition or is the load too heavy?	-Release the holding brake and lighten the load -Try running the motor separately
		-If the motor is equipped with a brake, does the brake operate normally?	-Cautiously open the gate before running
		-Is the motor wired properly or is there a phase loss in the motor?	-Check the connection status of VFD output and motor output.
		-Is the VFD output current greater than or equal to the current limit value?	-Confirm that the parameter settings are correct and try to adjust the acceleration and deceleration times to slowly increase the speed.
		-Is the contactor status ON when there is an electromagnetic contactor between the VFD and the motor?	-Confirm the ON status of the electromagnetic contactor and the wiring status.
When the motor steering is reversed		Whether the VFD output three-phase and motor wiring is normal or not	-Interchange V-phase and W-phase
		-The terminals connected to the control circuit and their parameter settings are normal.	-Check forward/reverse direction terminal wiring and parameter values

Defective phenomenon	Inspection matters	Step
When motor speed cannot be increased	-Is the load too heavy	-Lighten the load -If it is overloaded, it activates its limiting function, so that the speed falls below its speed setting. Unloading or relieving the load
	-Speed command signal is normal	-Check control circuit wiring or signals and setpoints
Motor jerks during operation	-Is there too much load variation -Is there a large change in the input voltage -Does it occur at a particular frequency	-Raising the power of motors and VFDs by one notch -Reduces load and input voltage variations -Fine-tune its output frequency setting
When the motor current exceeds the rated current	-Is the input voltage dropping back	-Check the VFD input power
	-Is the load too large	-Discharge or lighten the load
	-Is the motor in a holding state	-Release the motor from the holding state
	-Whether the load is dynamic (its weight is variable)	Re-confirmation of VFD power calculation
	-Is motor self-tuning completed properly	-Re-implementation of motor self-tuning

9. Maintenance and care

DANGER
1. Do not touch the VFD's terminals; there is a high voltage on the terminals. There is a risk of electrocution. 2. Be sure to install the terminal cover before energizing, and when removing the cover, be sure to disconnect the power supply. There is a risk of electrocution. 3. Cut off the main circuit power supply and confirm that the light-emitting diode is off before carrying out maintenance and inspection. Danger of residual voltage on electrolytic capacitors. 4. Do not perform maintenance or inspection work by non-specialized technicians. There is a risk of electrocution.
CAUTION
1. CMOS integrated circuits are installed on the operation keypad board, control circuit board, and driver circuit board, so be careful when using them. By touching the board directly with your fingers, electrostatic induction may damage the integrated chips on the board. 2. Do not change the wiring or disassemble the terminal wires while the power is on. There is a risk of electrocution. 3. Do not check signals during operation. can damage the device.

9.1 Care and maintenance instructions

Since VFD is a typical product combining power electronic technology and microelectronic technology, it has the dual characteristics of industrial equipment and microelectronic devices. Changes in the environment in which the VFD is used, such as the influence of temperature, humidity, smoke, etc., as well as the aging of the VFD's internal components and other factors may lead to a variety of faults in the VFD. Therefore, in order to make this product run normally for a long time, it is necessary to carry out daily inspection and regular (at least once every six months) maintenance and repair of the frequency converter during storage and use.

9.2 Routine maintenance

In order to prevent the frequency converter from malfunctioning, ensure the normal operation of the equipment and extend the service life of the frequency converter, it is necessary to carry out routine maintenance of the frequency converter, and the contents of the routine maintenance are indicated as follows:

Inspection items	Inspection content	Criterion
Operating environment	1. Temperature, humidity 2. Dust, gas	1. When the temperature > 40 ℃ should be shut down or reduce the ambient temperature Humidity < 95%, no condensation 2. No odor, no flammable, explosive gas
Cooling system	1. Installation environment 2. VFD body fan	1. The installation environment is well ventilated and the air ducts are not blocked. 2. The body fan runs normally, no abnormal noise
VFD body	1. Vibration, temperature rise 2. Noise 3. Wires, terminals	1. Smooth vibration, normal air temperature at the air outlet 2. No abnormal noise, no odor 3. Fastening screws are not loose
Electrical machinery	1. Vibration, temperature rise 2. Noise	1. Smooth operation and normal temperature 2. No abnormal, uneven noise
Input and output parameters	1. Input Voltage 2. Output current	1. Input voltage within the specified range 2. Output current below rated value

9.3 Regular maintenance

In order to prevent the VFD from malfunctioning and to ensure its long time high performance and stable operation, the user must check the VFD regularly (within half a year), and the content of the check is expressed as follows:

Inspection items	Inspection content	Methods of elimination
Screws for external terminals	Loose screws or not	Tighten
Power component	Dust, dirt	Complete removal of debris

		with dry compressed air
Car radiator	Dust, dirt	Complete removal of debris with dry compressed air
electrolytic capacitor	Discoloration and odor	Replacement of electrolytic capacitors
Fan (loanword)	Abnormal noise and vibration Whether the cumulative time exceeds 20,000 hours	1. Clearance of debris 2. Replacement of the fan
PCB board	Dust, dirt	Complete removal of debris with dry compressed air

9.4 Replacement of wearing parts

The fan and electrolytic capacitors in the VFD are easily damaged parts, and their life span is closely related to the use of the environment and maintenance conditions. The general life time of the fragile components is as follows:

Fan: Replacement is required after more than 5 years of use. If the VFD is used in a critical position, then please replace the fan in time when it first starts to make abnormal noise. Fan spare parts are available from Wuhan Guide Technology Co.,Ltd.

Electrolytic capacitors: must be replaced after more than 5 years of use. For details, please contact Wuhan Guide Technology Co.,Ltd. or call our national unified service hotline (400-0077-570).

Note: Life time is the time when used under the following conditions.

(1) Ambient temperature: 40° C;

(2) Load factor: 80%;

(3) Operating rate: 24 hours/day .

9.5 Storage and warranty

After the VFD is purchased and not used temporarily or stored for a long period of time, the following matters should be noted:

(1) Avoid storing the VFD in places with high temperature, humidity or vibration, metal dust, and ensure good ventilation.

(2) If the VFD is not used for a long time, it should be energized once every six months to restore the characteristics of the filter capacitor and check the function of the VFD. Energized should be through an autotransformer gradually increase the voltage, and energized time is not less than 5 hours.

During the warranty period, a repair fee shall be charged for faults caused by

① Malfunctions caused by use not in accordance with the operation manual or use beyond standard specifications.

② Malfunctions caused by self-repair or modification without permission.

③ Malfunctions caused by poor storage.

④ Malfunctions caused when the VFD is used for non-normal functions.

⑤ Damage to the machine caused by fire, salt corrosion, gas corrosion, earthquake, storm, flood, lightning, abnormal voltage or other force majeure.

Even if the warranty period is exceeded, the company provides a lifetime paid maintenance service.

Appendix AMODBUS Protocol Introduction

A.1 MODBUS communication configuration

Establishing communication between the communication card and the VFD first requires the MODBUS communication parameters to be configured in the VFD. The options for these parameters are described in detail below.

Note: Newly set parameters must be powered off and then on again to take effect.

Table 1 MODBUS parameter configuration

Function code	Name	Setting range	Factory value	Variation
P2.5	local address	0 for broadcast address, 1~255 for non-broadcast address	0	☆
P2.6	baud	0: 9600BPS 1: 14400BPS 2: 19200BPS 3: 38400BPS 4: 56000BPS 5: 57600BPS 6: 115200BPS 7: 128000BPS 8: 256000BPS	6	☆
P2.7	MODBUS communication type	0: RS232 C 1: RS485	0	☆

1. Communication Expansion Card Type P2.7
   This parameter is the communication expansion card type selection. Select [1] to enable MODBUS 485 communication.
2. MODBUS local address P2.5
   In a MODBUS network, each device corresponds to a unique node address, which is set according to the actual application.
3. Baud rate selection P2.6
   Select the baud rate of the bus port, which must be consistent with the baud rate set by the MODBUS master according to the actual application.
4. Data Bit Checksum
   In the serial interface, the communication checksum format setting, according to the actual application, must be consistent with the checksum setting set by the MODBUS master station.The MODBUS data checksum format of

GF630N03-A VFD is fixed as the following format:

8_N_1: 8 data bits, no parity, 1 stop bit;

GUIDE VFD GF630N03 Series Logistics VFD AC

Asynchronous Type

Instruction manual version: 1.02

Precautions

1. Be sure to read this manual before using the inverter product.
2. For safety, ask professionals to carry out commissioning and wiring.
3. The contents of this manual are subject to change without prior notice.

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