GUIDE VFD GF630N04 Series

Instruction manual version: 1.01

Foreword

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

The GF630N04 series is a high-performance vector control VFD, and its speed sensorless vector control 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.

security level

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

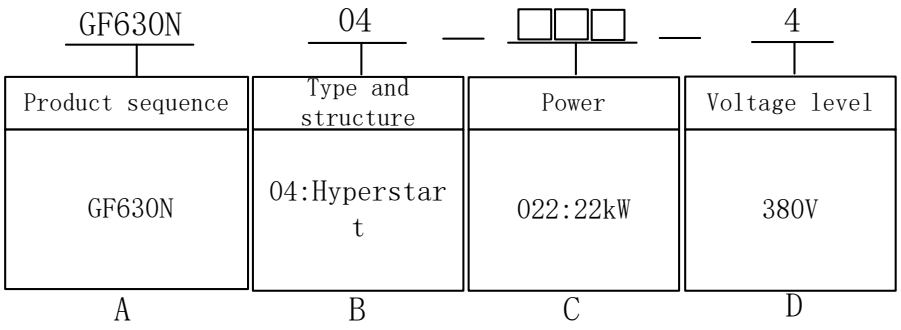
Using the VFD outside the permissible operating voltage range specified in the manual may cause internal damage to the VFD. If necessary, use a step-up or step-down device to transform the power supply before connecting it to the VFD.

CONTENTS

1. Product Information

1.1 Nameplate and model number

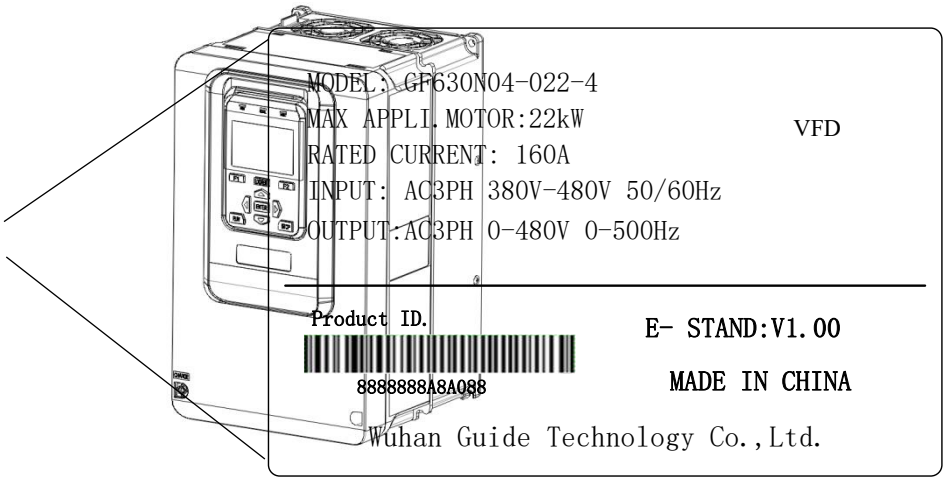
VFD Model Meaning:



System Product Model Field Description

Field identifier	Detailed description of fields
A	Product Serial: GF630N04
B	Structure and type: 04: Hyperstart
C	Power: 022:22kW; 037:37kW; 045:45kW.
D	Voltage level: 4:380V

The nameplate of the GF630N04 series VFD is shown in the figure below



Product nameplate description

Model No.: GF630N04-022-4 indicates that the rated power of GF630N04 series VFD is 22kW and the voltage level is 380V.

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 0-500Hz indicates the VFD output voltage range and output frequency range.

GF630N04 VFD Product List

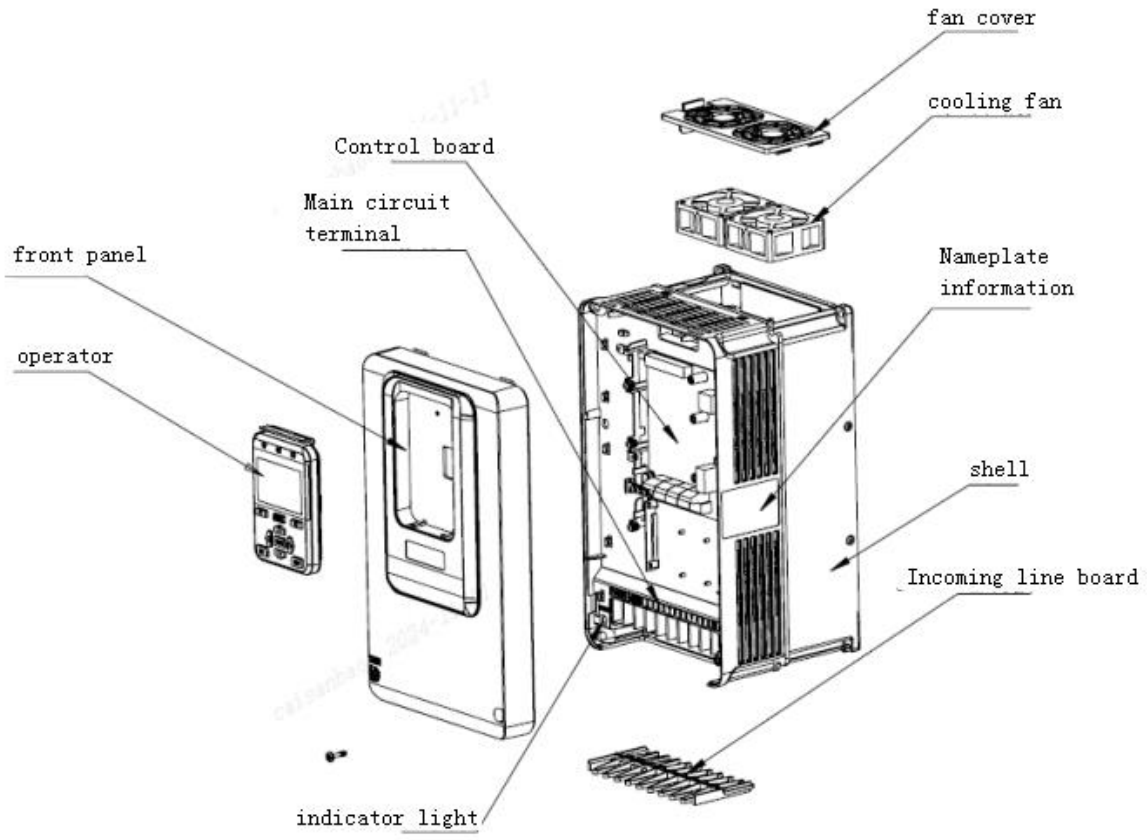
Model number	Peak current [A]	Applicable motor power [kW]	Models
GF630N04-022-4	160	2.2-3	N3
GF630N04-037-4	240	3.7-4.5	
GF630N04-045-4	340	5.5-7.5	

Attention:

1, peak current refers to the peak value of the maximum current that the VFD can output.

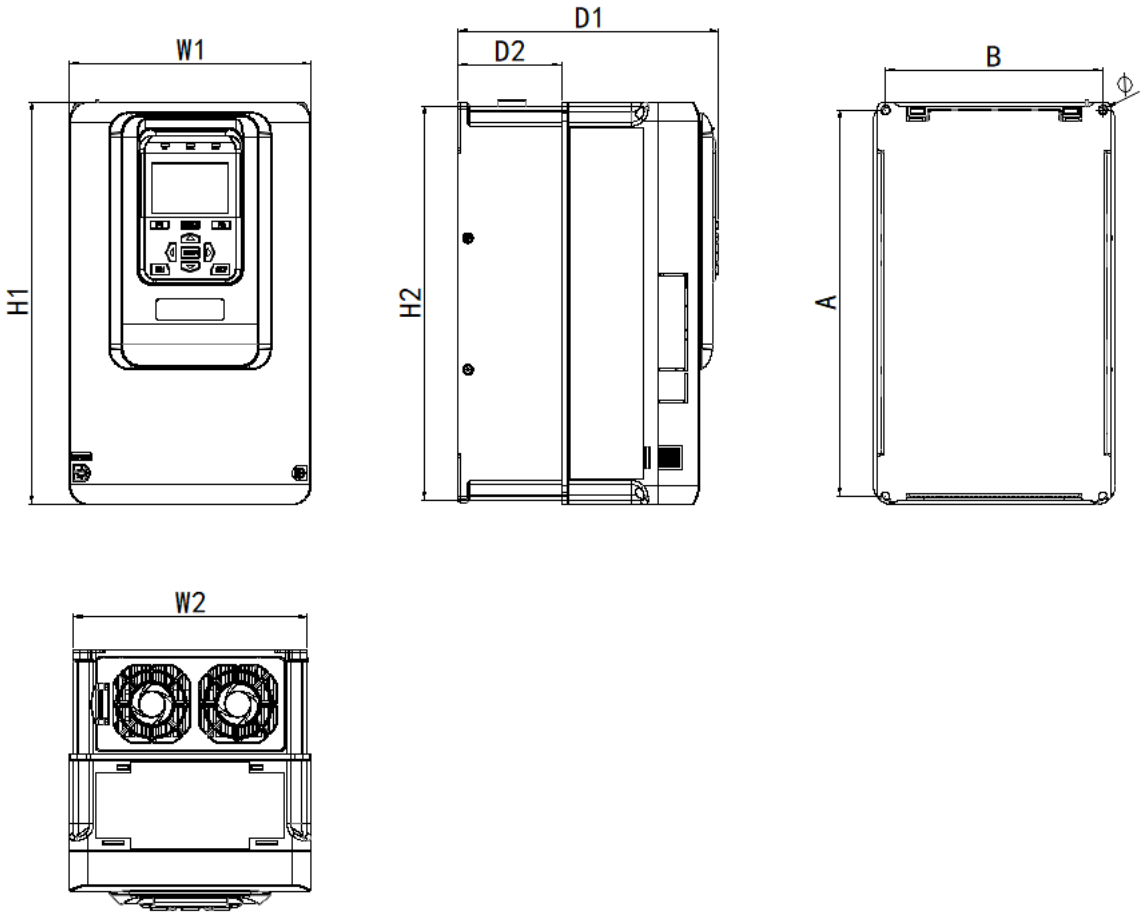
1.2 Description of components

GF630N04 structure diagram:



Schematic diagram of product components (three-phase 380V～480V, 22kW)

1.3 Schematic diagram of N3 overall dimensions and mounting dimensions

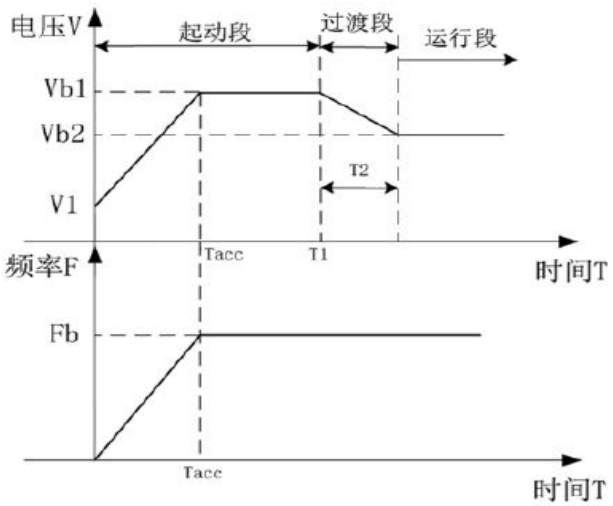


1.4 External dimensions and installation dimensions

Power (output)	Overall dimensions (unit: mm)						Mounting Dimensions Unit: mm		Mounting diameter of hole	Recommended mounting bolts grade 8.8	Weight kg
	H1	H2	W1	W2	D1	D2	A	B	Φ	M	
22kW	302	294	180	174	194	78	288	162	4-ϕ6	4-M5	6.5
37kW	302	294	180	174	194	78	288	162	4-ϕ6	4-M5	6.5
45kW	302	294	180	174	194	78	288	162	4-ϕ6	4-M5	6.5

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～ 500Hz
Containment characterization	Run command method	Panel control, terminal control, communication control
	Frequency command method	Digital feedforward, analog voltage/current feedforward, multispeed/pulse feedforward, communication feedforward.
	Auxiliary frequency command method	Same as above. Frequency fine-tuning and frequency superposition synthesis can be flexibly realized.
	Carrier frequency	2kHz to 8kHz, adjustable according to temperature and load characteristics
	Frequency resolution	Digital setting: 0.01Hz, analog setting: Maximum frequency x 0.1%
	control method	V/F control (asynchronous motors), SVC (synchronous motors), FVC (synchronous motors)
	V/F control	Linear, multi-point, square
	top speed	500 Hz, depending on the electrical and mechanical characteristics of the motor
	Starting torque	0.25Hz/150% (SVC), 0Hz/180% (FVC)
	Speed range	1:200 (SVC), 1:1000 (FVC)
	Speed Accuracy	±0.5% of rated speed (SVC), ±0.02% of rated speed (FVC)
	overload capacity	Allow 150% of rated current overload for 1 minute or 180% of rated current overload for 3s
	Acceleration and deceleration mode	Linear or S-curve acceleration and deceleration
	Automatic voltage adjustment	Automatically maintains constant output voltage during grid fluctuations
	Torque Limit	SVC and FVC modes automatically limit torque during operation to prevent frequent overcurrent
	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.
	Tap function	Support forward/reverse rotation pointing, pointing frequency and acceleration/deceleration time can be set.
	Multi-speed operation	Up to 16 speeds can be realized

	communication method	Modbus 485
	Special function	Instant stop non-stop: Instantaneous power outage through the frequency reduction back to compensate for the bus voltage reduction, maintain the VFD for a short period of time bus does not report under-voltage fault shutdown; Timer function: The VFD stops automatically when the running time reaches the set time; Fast current limiting: Fast current limiting in a single carrier cycle to prevent frequent overcurrent faults in the VFD
	Overboot function	When using the overstart function, the motor connection must be a delta connection; otherwise the overstart function will fail to start. VFD super-start function can realize motor angular start and star run; meanwhile, it can realize frequency conversion speed regulation. It can replace the contactor angular-star switching mode to achieve the purpose of starting smooth and small impact current. Timing diagram of the hyperstart control process: 
importation exports terminals	input terminal	7 digital inputs, 2 analog inputs (1 voltage 0 to +10V and 1 current 4mA to 20mA), 1 high speed digital input (0-50KHz)
	output terminal	3 digital outputs (1 relay output, 2 intelligent digital outputs), 1 high-speed pulse output (0-50KHz), 1 analog output (voltage 0 ~ +10V or current 4mA ~ 20mA)
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; Operation status, fault status and parameter setting status should be corresponding to the display. Content: data, unit.

protective function	Over-current protection, over-voltage protection, under-voltage protection, over-heating protection, overload protection, etc.

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, and GF630N04 VFD can implement self-tuning of motor with load, and it is consistent with the motor parameters obtained from self-tuning of motor with no load;

(3) GF630N04 has a built-in constant power control function, when it enters the constant power weak magnetic speed regulation zone, the VFD automatically adjusts the output frequency according to the load size;

(4) When receiving the signal to start running, it is necessary for the frequency converter to drag the motor to reach the rated value for normal operation within the time (about 180ms or so) for the loom to rotate for one revolution; during the starting process, the starting voltage should be adjustable, and the starting torque required for different fabrics is not the same, and the starting torque can be changed by changing the starting voltage;

(5) In the slow speed pointing process, different fabrics need different force, the thicker fabrics need more force, usually in the case of constant frequency, through a certain law to change the frequency converter output corresponding voltage (similar to the voltage-frequency separation function);

(6) At low-frequency (approx. 5Hz) actuation, large torque output is realized and the equipment runs smoothly;

(7) The current at start-up is about 30 times the normal operating current in order to realize the delta-star start-up switching, which is the process requirement of the loom. Requirements can be met to drive the motor star-delta conversion; (before part of the VFD, in the star connection of the motor, connected to the triangle connection, the VFD can not drive the motor);

(8) The equipment belongs to the constant speed and variable torque equipment during operation, which requires strong overload capability of the frequency converter.

1.7 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

-DC bus terminals P1, P, N

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 fires and other accidents.

2. System Connections

2.1 System connection diagram

Instructions for the use of peripheral electrical components of the GF630N04 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.
(Electrical) 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 up and down operation of the frequency converter through the contactor should be avoided (the interval time should not be less than one hour) or direct start operation.
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; The motor consumes regenerative energy through the braking resistor during deceleration.
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, there is a large distributed capacitance in the line. One of the harmonics may generate resonance in the circuit, bringing two effects: a) Destroys the insulation of the motor and can damage the motor over a long period of 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.

Anti-interference filters can be installed to minimize 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)
22kW	47	6	50
37kW	75	10	80
45kW	94	16	95

2.4 Input/Output AC Reactor Selection

Power (output)	Input Reactor 2% input voltage drop		Output Reactor 1% output voltage drop	
	Current (A)	Inductance (mH)	Current (A)	Inductance (mH)
22kW	54.0	0.26	47	0.15
37kW	86.0	0.16	75	0.09
45kW	92.0	0.15	94	0.07

2.5 Braking resistor selection

Converter quantitative (science)	Braking Resistors			
	Recommended resistance value (Ω)	Minimum resistance value (Ω)	Power (KW) (30% Kc)	Power (KW) (50% Kc)
22kW	100	40	≥0.9	≥1.5
37kW	100	40	≥2.0	≥2.5
45kW	100	40	≥2.0	≥2.5

Note: 1. The VFD has a built-in braking unit, corresponding 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: Vertically mounted on a sturdy indoor base with at least 10 cm of space between the inlet and outlet and at least 5 cm of space between the left and right sides of the chassis. The 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.

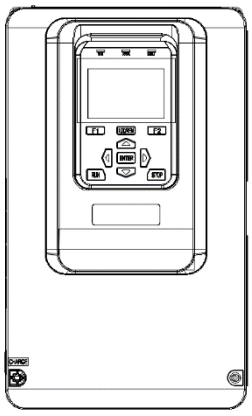
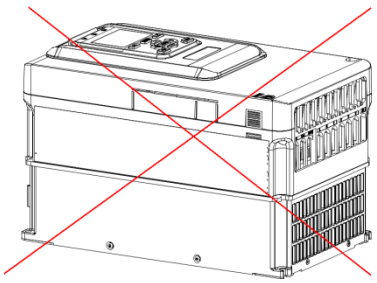
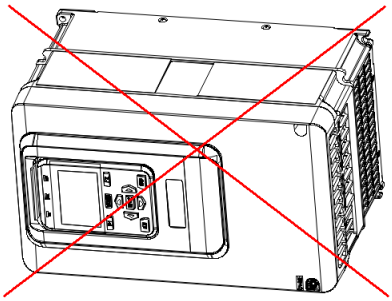
Matrix temp	-10℃～+40℃, the ambient temperature over 40℃ needs to be derated, and the derating is 1% for every 1℃ increase in ambient temperature. When the ambient temperature exceeds 50℃, it is necessary to consult the manufacturer for guidance. Ambient temperatures below -10° C require additional auxiliary heating equipment.	-20℃～ +60° C with an air temperature change of less than 1℃ /min.	-20℃～+ 60℃
Magnanimity push down	70～ 106 kPa 0.7～ 1.05 Atmospheric pressure	70～ 106 kPa 0.7～ 1.05 Atmospheric pressure	60～ 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 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.

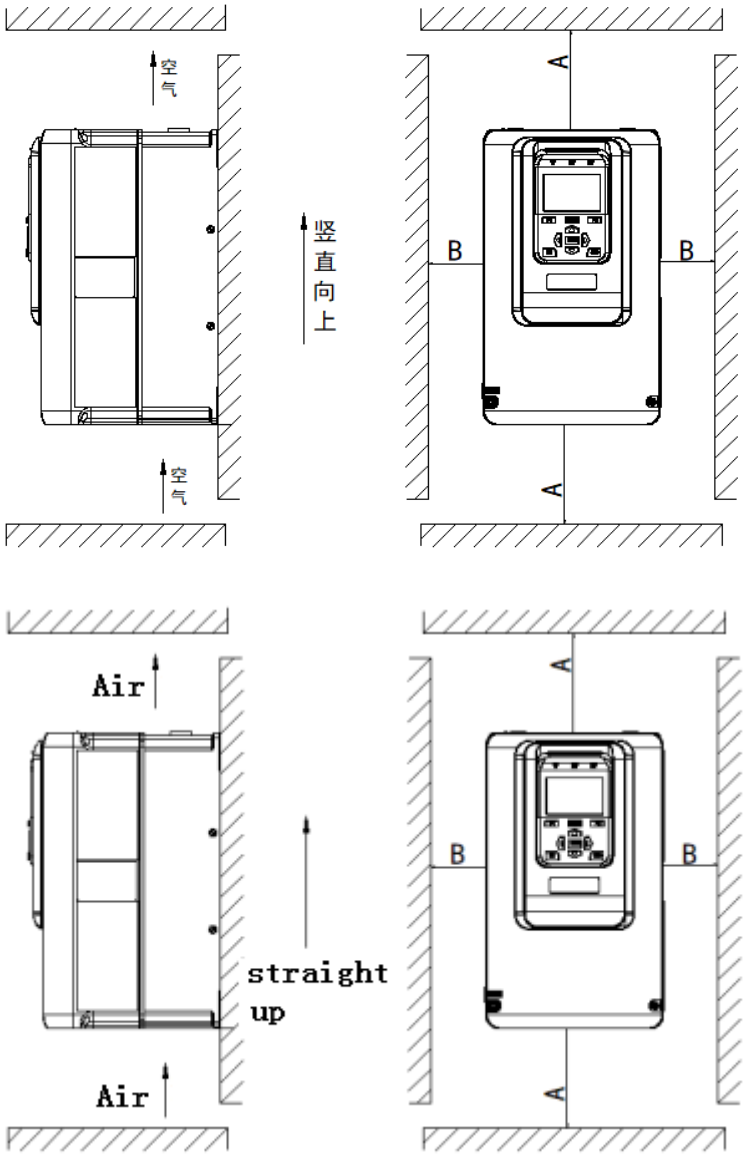
3.2 Installation space and orientation

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 methods

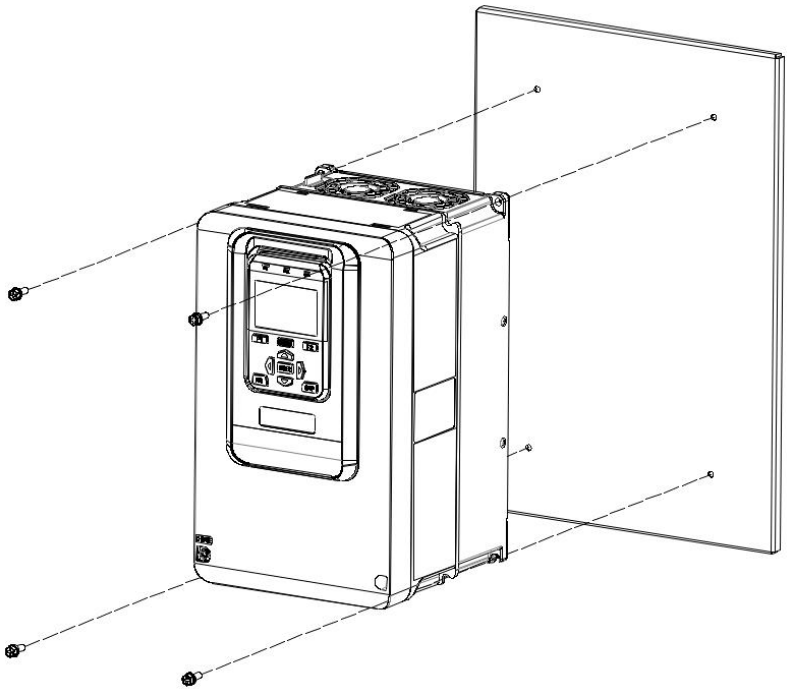


Power band	Dimensional requirements (unit: mm)	
22kW	A≥100	B ≥ 20
37kW	A≥100	B ≥ 20
45kW	A≥100	B ≥ 20

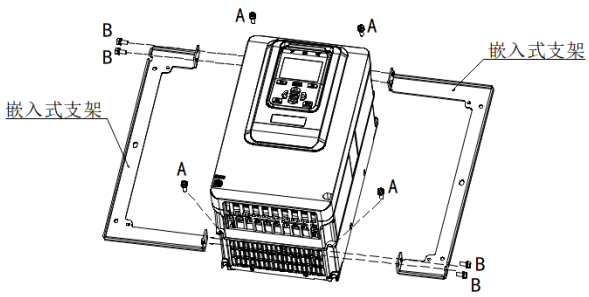
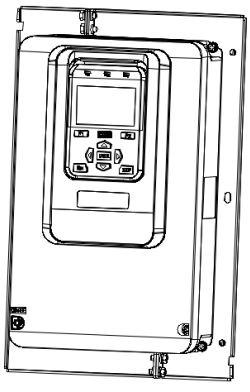
3.2.3 Installation instructions

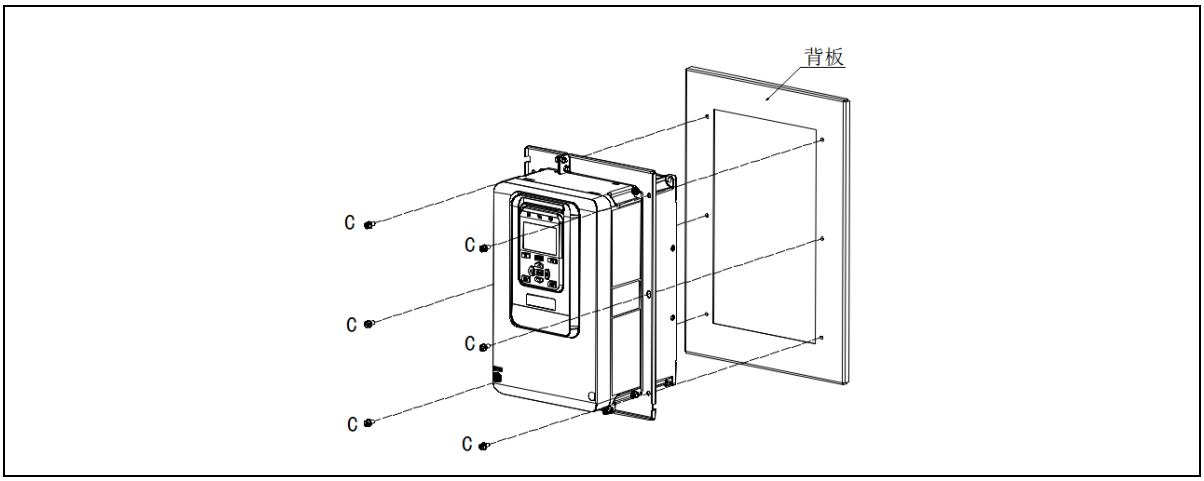
Depending on factors such as different power applications and space, please install the product according to the following installation instructions.

（1） Wall mounting



(2) Flush mounting

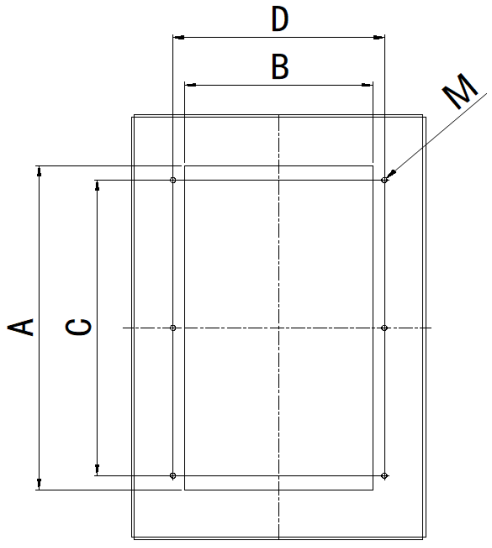
① The recessed bracket is mounted and fixed in the position shown;	② The schematic diagram of the whole machine after installation is as follows;
	
③ The complete unit after installation, fixed to the back panel end of the control cabinet.	



Power band	fastening screw		
	A	B	C
22kW	M5×16	M5×12	6-M5×12
37kW	M5×16	M5×12	6-M5×12
45kW	M5×16	M5×12	6-M5×12

Note: Installation torque M4: 12±1KGF.CM; M5: 20±2KGF.CM; M6: 30±3KGF.CM

Recommended mounting dimensions for backplane



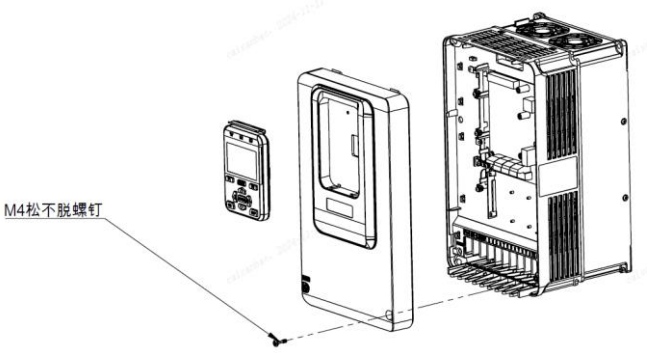
Power band	Recessed opening dimensions (in mm)		Mounting Dimensions (Unit: mm)		Recommended Hexagonal Rivet Nuts
	A	B	C	D	M
22kW	307	178	280	200	6-M5
37kW	307	178	280	200	6-M5
45kW	307	178	280	200	6-M5

Note: Installation torque M4: 12±1KGF.CM; M5: 20±2KGF.CM; M6: 30±3KGF.CM

※Special Note: The embedded bracket is optional, the standard model is not shipped separately; if you want to use embedded installation, you need to purchase the corresponding supporting bracket separately. If you design your own, be sure to design the mounting bracket into a spliced structure.

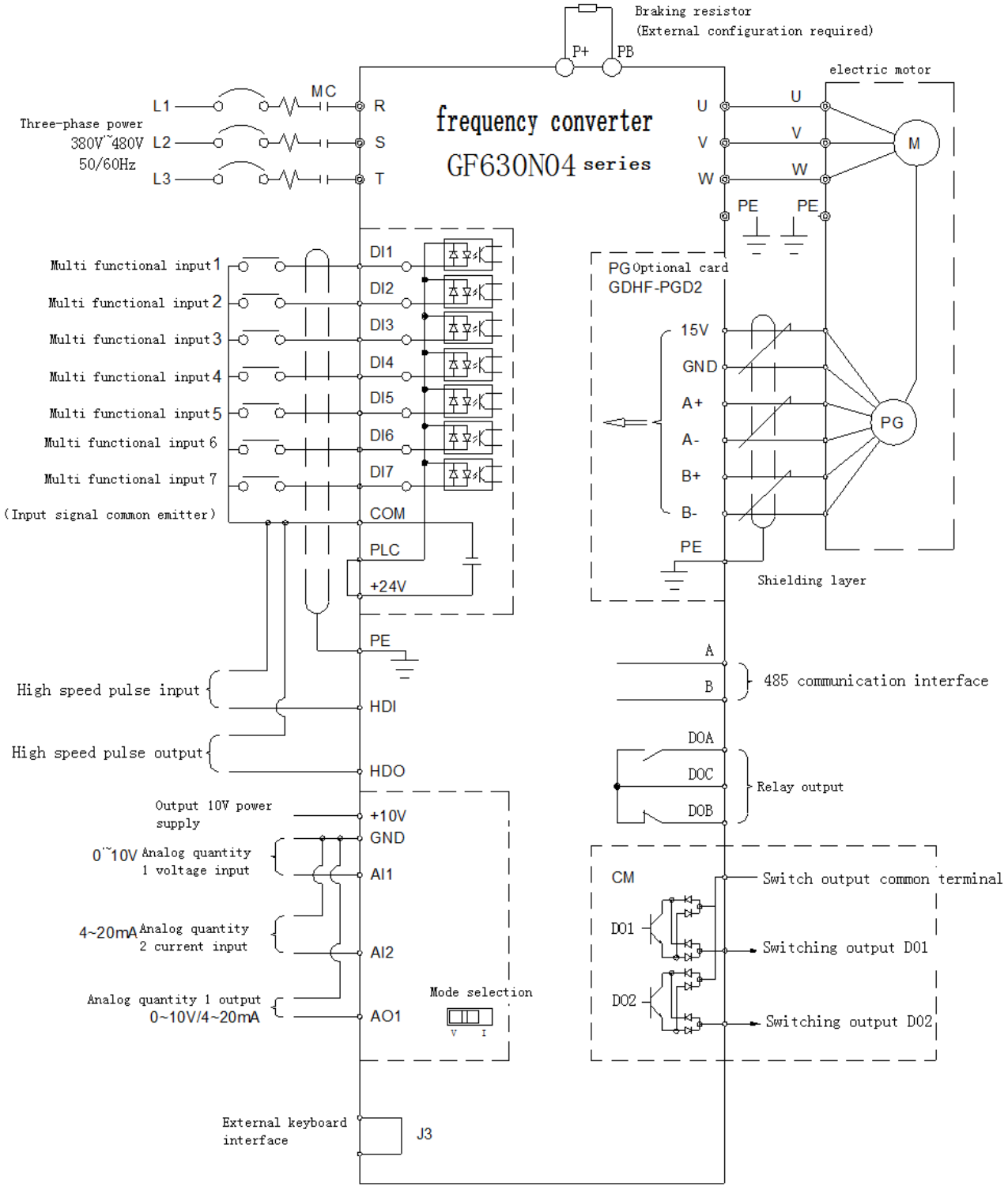
Embedded bracket model	Compatible Models	Number of individual machine requirements (in sets)
GF630N04-N3 Bracket	N3	1

3.2.4 Removal and installation of cover plates

Box cover removal and installation	
1) After removing the keyboard, remove the back keyboard cable;	
2) Use a screwdriver to disassemble the M4 loose screws on the face cover, and then uncover the face cover (pay attention to careful disassembly so as not to break the ring of plastic clips).	

3.3 Wiring

3.3.1 Standard wiring diagrams

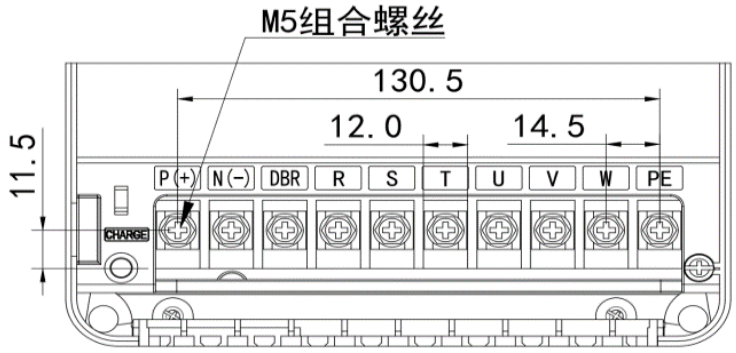


Three-phase 380~480V Typical Wiring Diagrams

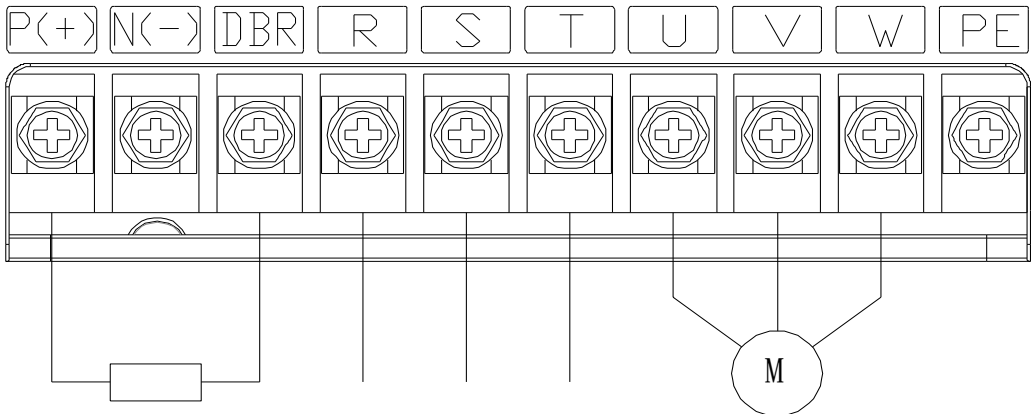
NOTE: --Shield;

3.3.2 Main circuit terminals

N3 Main Circuit Terminal Distribution Diagram.



(1) The N3 model main wiring terminals are shown below:



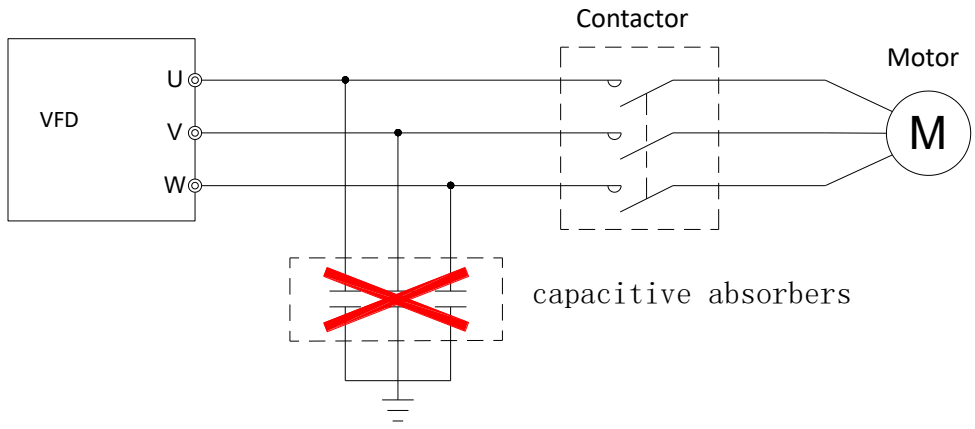
Braking resistor Three-phase AC power supply Motor

Terminal Symbols	Functional Description
P(+)	DC side voltage positive terminal
N(-)	DC side voltage negative terminal
R, S, T	Three-phase AC power supply to the grid
U, V, W	Connecting three-phase AC motor
DBR	VFD braking resistor terminals
PE	VFD ground terminal or ground point.

3.3.3 Wiring Precautions

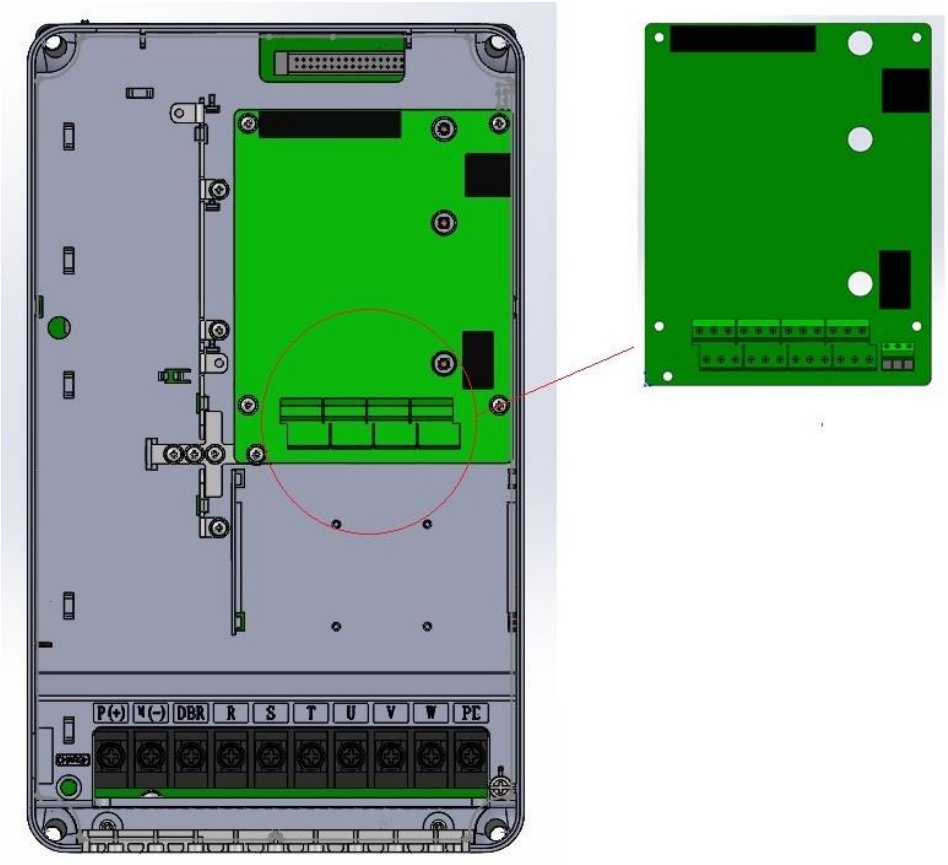
Serial number	Wiring Precautions	Note
1	Wiring operations must be performed by a qualified professional technician.	
2	Before wiring, make sure that the power supply has been completely cut off for more than 10 minutes otherwise there is a risk of electric shock.	
3	It is absolutely prohibited to connect 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 50m, when the wiring length is more than 50m, it is recommended to increase the output reactor.	
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.	



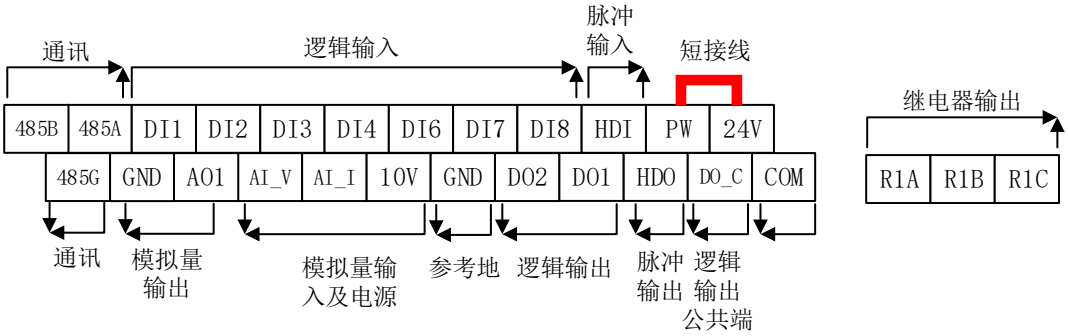
Connection of capacitive absorbers to the outputs is prohibited

3.3.4 Control board



Configuration of control circuit terminals

Control Terminal Arrangement



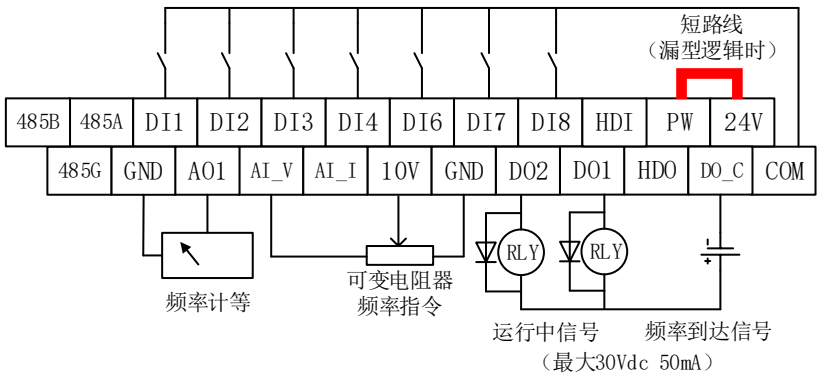
DIP Switch Arrangement

Control Board Port Description

Form	Terminal Symbols	Terminal Name	Terminal Function Description
Power supply	10V	10V Reference Power Supply	Provides an external 10V reference power supply with a maximum output current of 10mA. Generally used as an external potentiometer to regulate the power supply, with a potentiometer resistance of 5kΩ or more.
	24V-COM	24V Power Supply	Provide 24V±10% power supply to the outside, maximum output current 200mA. Generally used as a switching input/output operating power supply or external sensor power supply.
Analog input and output	AI_I-GND	Analog Input 1	1、Input range: current 0~20mA 2、Input impedance: 500Ω 3、Resolution: in 20mA corresponding to 50Hz, the minimum resolution of 0.01mA 4. Tolerance ±1%, 25℃.
	AI_V-GND	Analog Input 2	1、Input range: voltage 0~10V 2、Input impedance: 100kΩ 3、Resolution: in 10V corresponds to 50Hz, the minimum resolution 0.01V 4. Tolerance ±1%, 25℃.
	AO-GND	Analog output 1	1、Output range: 0～10V voltage or 4～20mA current 2. Voltage or current output is set by a jumper. 3、Resolution 10bit, precision 1% 4、Tolerance ±1%, 25℃
Digital quantity input and output	DI1-COM	Switching input 1	1, internal impedance: 3.3kΩ 2、Accept 12～30V voltage input 3、This terminal is a bidirectional input terminal 4、Maximum input frequency: 1KHz 5、Can be connected to 24V or COM via PW to form NPN type or PNP type input.
	DI2-COM	Switching input 2	
	DI3-COM	Switching input 3	
	DI4-COM	Switching input 4	
	DI6-COM	Switching input 6	
	DI7-COM	Switching input 7	

	HDI-COM	High-speed pulse input	High frequency pulse input channel. Maximum input frequency: 50kHz Duty cycle: 20%~80%
	DO1-DO_C	Switching output	1、Open interface output 2、Switching capacity: 50mA/30V 3、Output frequency range：0～1kHz 4. Voltage drops to less than 4V when ON between each terminal and DO_C
	DO2-DO_C	Switching output	
	HDO-COM	High-speed pulse output (FMP)	1、Maximum output frequency: 50kHZ; 2. The duty cycle is 30%-70%; 3、Open collector output, voltage range 0-30V
Relay output	R1A	Relay normally open contacts	RO relay output: Contact capacity: 3A/AC250V, 1A/DC30V
	R1C	Relay Common Contacts	
	R1B	Relay Normally Closed Contacts	
485 communication	485A	485 communication port	485 communication port, differential signal port, standard 485 communication interface using twisted pair or shielded wire
	485B		
RJ45 interface	RJ45 interface	External keyboard interface	For external keyboards
PG Card Expansion Port			Expansion port for external PG card

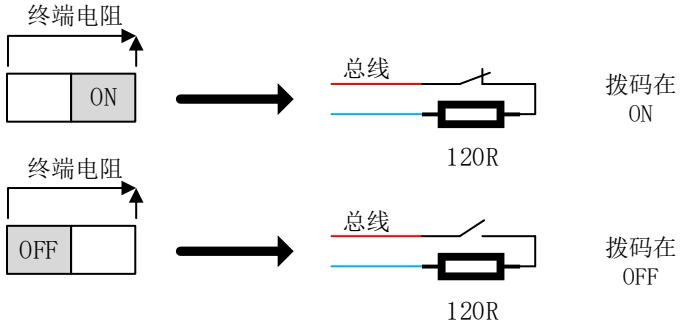
(1) Example of wiring for control circuit terminals (in case of leakage type logic)



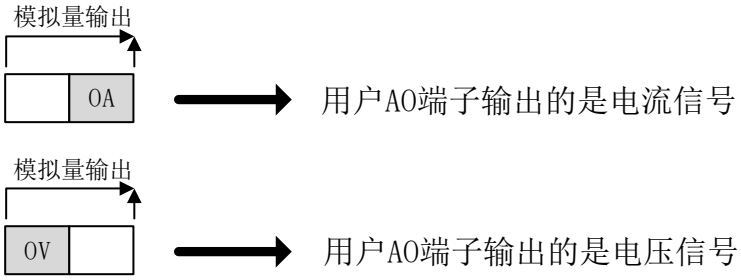
(Note) Calculate the resistance value of the resistor when plugging in the variable resistor; too small a value may cause damage to the AI terminal.
(Note) When a relay is used on the intelligent output terminals (DO1,DO2), connect a surge absorbing diode in parallel with the coil. The surge voltage when the relay is turned ON or OFF may cause the output circuit to malfunction.

(2) Control logic switching method for smart input terminals
The factory setting of the smart input terminals is drain type logic. To switch the input control logic to source type logic, remove the short circuit wire between 24V and PW on the control circuit terminal and connect it between PW and COM.

(Note) Calculate the resistance value of the resistor when plugging in the variable resistor; too small a value may cause damage to the AI terminal.
(Note) When a relay is used on the intelligent output terminals (DO1,DO2), connect a surge absorbing diode in parallel with the coil. The surge voltage when the relay is turned ON or OFF may cause the output circuit to malfunction.
(3) Terminating resistor dip switch usage
485 communication terminal resistance dip switch in the user terminal directly above the SW2 position, when the driver is at the end of the bus, when there is communication instability or communication can not be on the terminal resistance dip switch to ON gear, this time the terminal resistance is connected to the end of the bus; when the driver is in the middle of the communication bus, it is forbidden to fluctuate the terminal resistance dip switch to the ON gear.



(4) Use of analog output dip switches
The analog output selection terminal is at the upper left SW1 position of the user terminal. When the analog output dip switch is flipped to the OA position, the user AO terminal outputs a 4-20mA current signal; when the analog output dip switch is flipped to the OV position, the user AO terminal outputs a 0-10V voltage signal.



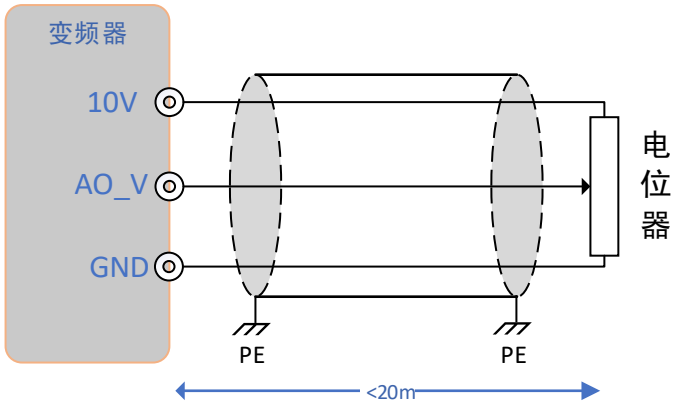
Control circuit wiring instructions

Principles to be followed

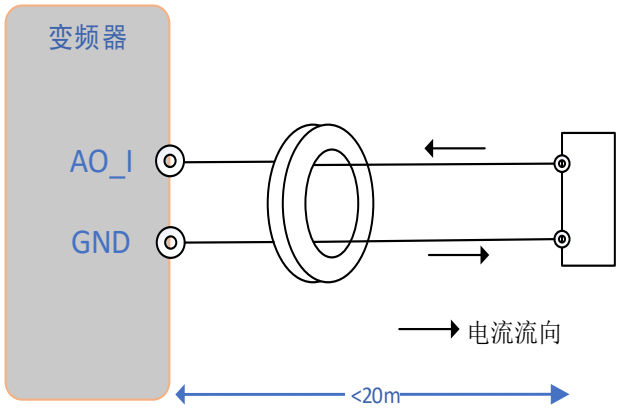
Analog input AI, output AO signals, digital input DI, output DO signals, relay output signals, need to be separated from the main circuit RST, UVW and other power cables or electric power cables by a distance of at least 20 CM or more when wiring the control circuit, otherwise it will result in the control signal receiving interference.

Analog input terminal AO_V, AO_I wiring

Weak analog signals are susceptible to external interference, alignment as far as possible from the source of interference, and wiring distance as short as possible, not more than 20 meters, in some analog signals are subjected to serious interference occasions, the analog signal source side of the need to add filtering capacitors or ferrite cores; the following chart shows:



AO_V wiring diagram



AO_I Wiring Diagram

Note: Signal wires need to be routed in the same direction or wound 2~3 turns in the same direction.

4. Operation panel

4.1 Description of the operating panel

GF630N04 series VFD can realize parameter viewing and modification, as well as parameter backup, restore and comparison functions through LED operation panel. The operation panel is subject to the actual ordering specifications.

4.2 LED operation panel

4.2.1 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/tuning indicator: blinks when there is a system fault or when self-tuning of parameters is in progress, otherwise it is off.

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

The 5-digit LED display on the operation panel shows the set frequency, output frequency, various monitoring data, and alarm codes. The following chart shows the correspondence between the display and the LEDs

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		A		K		U	
1		B		L		V	
2		C		M	无	W	无
3		D		N		X	无
4		E		O		Y	
5		F		P		Z	无
6		G		Q			
7		H		R			
8		I		S			
9		J		T			

Keyboard key area

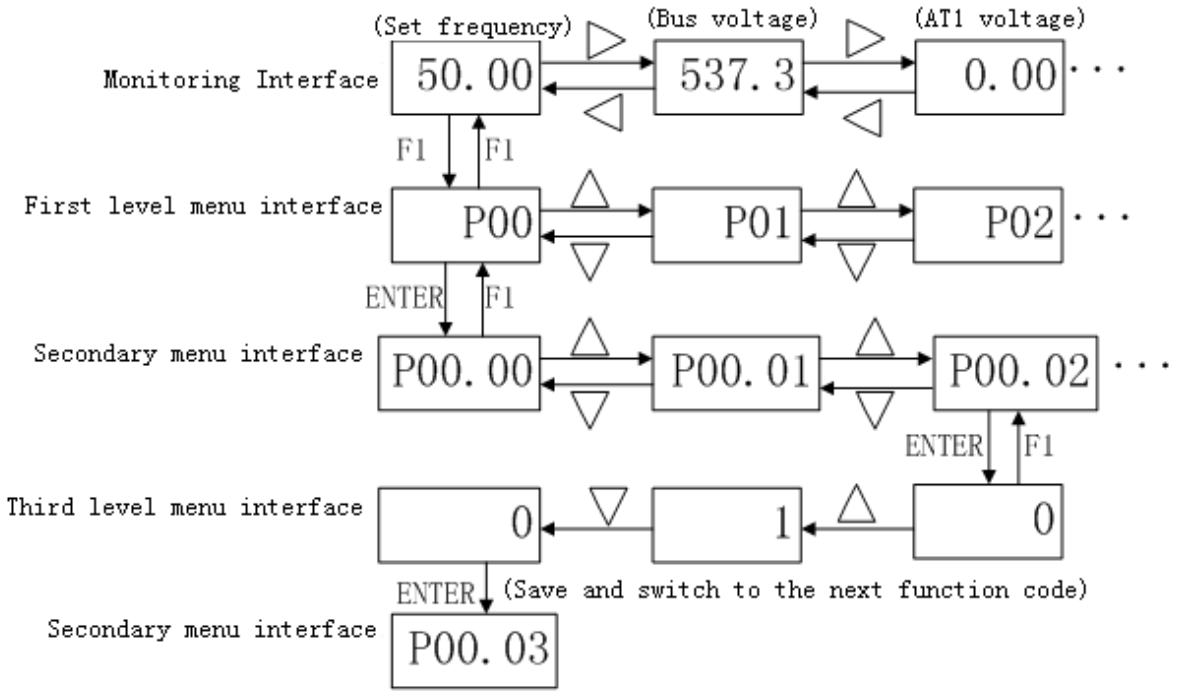
keystrokes	Key Name	Key Function
	menu key	Press this key to enter or exit the first level menu. Monitor interface press F1 key to enter first level menu, first level menu interface press F1 key to return to monitor display interface.
	Local/Remote	When the command source is set to terminal or

	Keys	communication, press this key to switch the command source to the keypad.
	multifunction key	Possibility of switching between pointing or running direction
	upper key	Scroll up menu or setup parameter +1
	down button	Scroll down menu or setup parameter-1
	left click	Setting the number of bits to move the parameter to the left
	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/fault reset

4.2.2 Explanation of the menu composition of the LED operation panel

（1） Standby with no user password set

In standby mode, the LED panel display is in the monitoring interface or function code viewing/editing interface, and the logic of switching between keypad and display interface is as follows:



Explanation of the logic of switching between buttons and display interface:

In standby mode, it enters the monitoring interface and displays the set frequency by default after power on, and press the left (◀)/right (▶) direction key in the monitoring interface to switch to display other parameters, and the parameters that can be displayed in standby mode are set by the function code P02.05.

In the monitoring interface, press F1 key to enter the function code level 1 menu interface, and press up (▲)/down (▼) arrow key in the level 1 menu interface to modify the function code grouping number that needs to be viewed. Press F1 key in the first level menu interface to return to the monitoring interface.

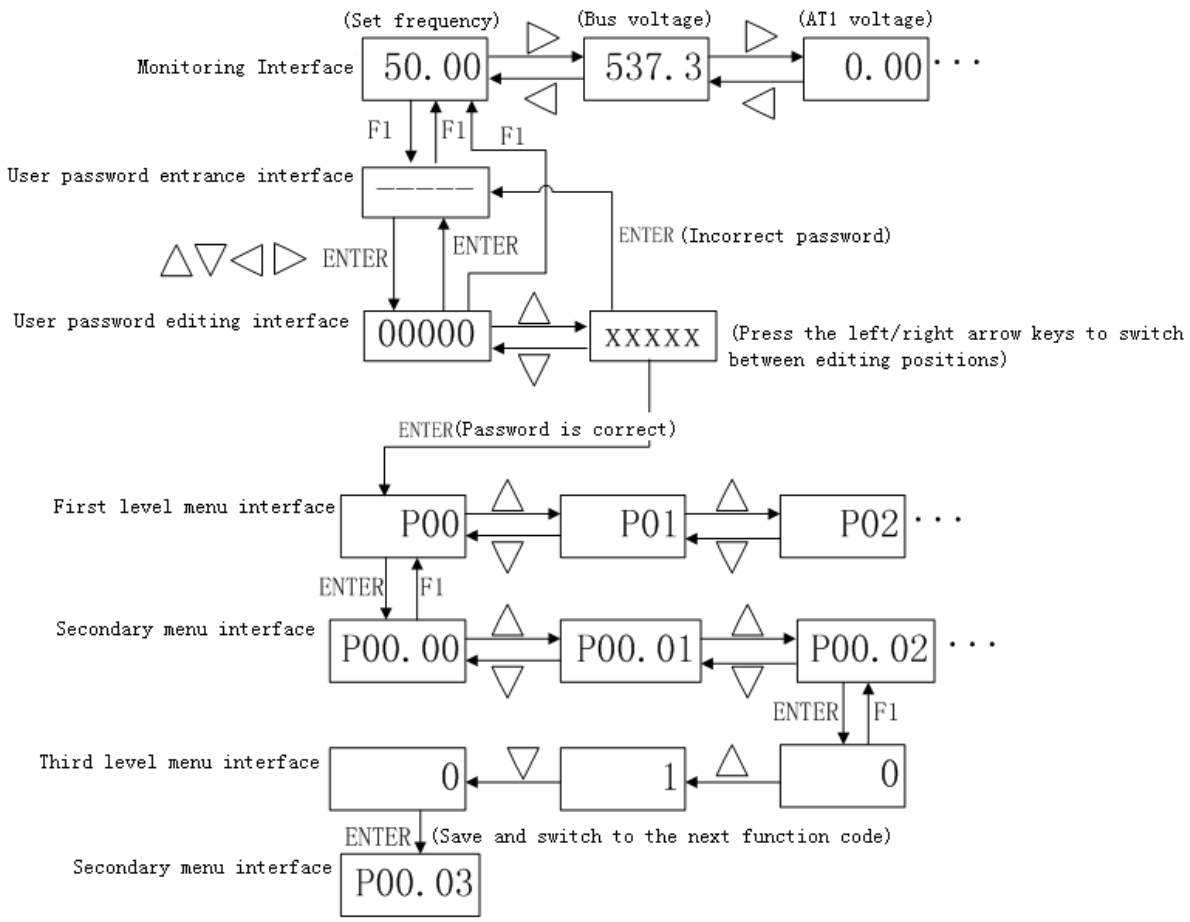
Press ENTER to enter the second level menu interface, press up (▲)/down (▼) arrow key to modify the function code number and group number you need to view. The default edit bit of the secondary menu interface (the corresponding edit bit of the digital tube in blinking state) is single digit, press the left (◀)/right (▶) direction key to switch the edit bit (cycle switching

of single digit, tens digit and hundreds digit), and then press the up (▲)/down (▼) direction key to modify the function code number (tens digit and single digit) and group number (thousands digit and hundreds digit) that need to be viewed. Press F1 key to return to the first level menu interface.

Secondary menu interface Press ENTER to enter the tertiary menu interface and display the current function code value and unit (unit indication). If the current function code can be edited, press up (▲)/down (▼) arrow key to modify the function code value, press left (◄)/right (►) arrow key to switch the editing bit, after modification, press ENTER key to save the modified value and automatically switch to the next function code corresponding to the secondary menu interface. After modification, press ENTER to save the modified value and automatically switch to the next level menu interface corresponding to the function code.

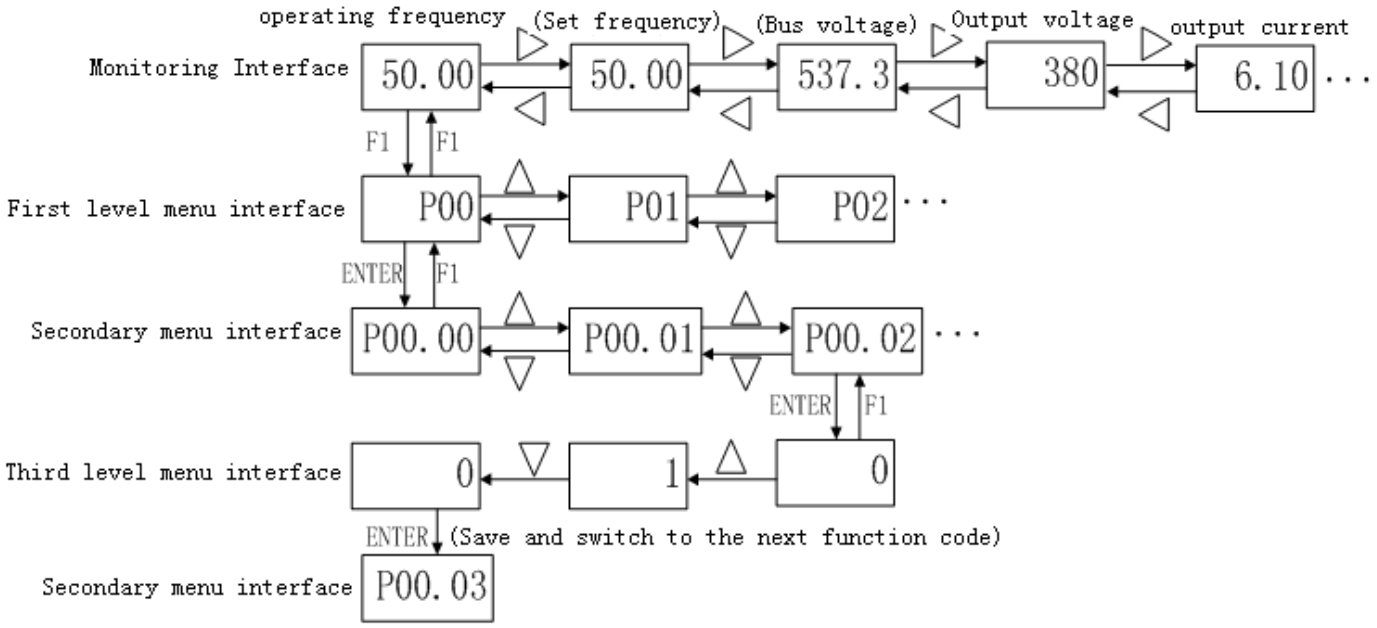
（2） Standby with user password set

If you set user password, you need to input user password when switching from monitoring interface to function code level menu interface in standby mode. Press F1 key to enter the user password entrance interface, press any one of the keys up (▲)/down (▼)/left (◄)/right (►)/ENTER to enter the user password editing interface in the user password entrance interface, enter the user password correctly and press ENTER to enter the first level menu interface automatically, the other key operations and display logic are the same as the above.



（3） operational state

In the running state, the LED panel display is in the monitoring interface or function code viewing/editing interface, and the logic of switching between the keypad and display interface is similar to that in the standby state, but the categories of parameters that can be displayed in the monitoring interface in the running state are different from that in the standby state. The parameters that can be displayed in the monitoring interface under running status are set by function codes P02.03 and P02.04.

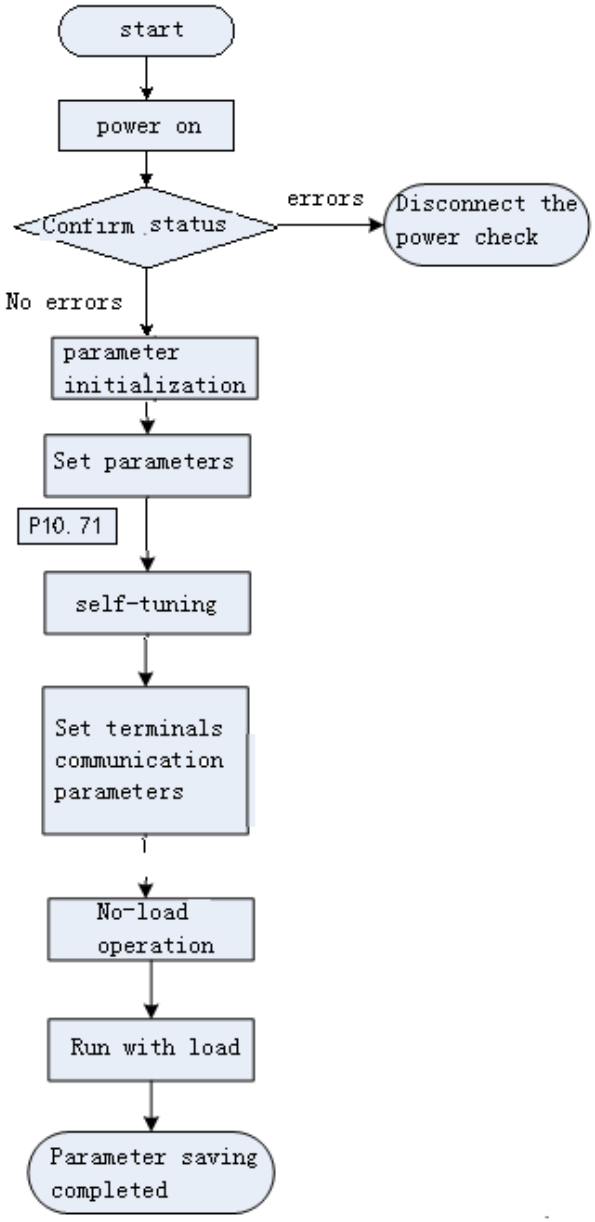

operating frequency
(Set frequency)
(Bus voltage)
Output voltage
output current
Monitoring Interface
50.00
50.00
537.3
380
6.10
F1
F1
First level menu interface
P00
P01
P02
ENTER
F1
Secondary menu interface
P00.00
P00.01
P00.02
ENTER
F1
Third level menu interface
0
1
0
ENTER
(Save and switch to the next function code)
Secondary menu interface
P00.03

5. System Commissioning

This chapter introduces the basic debugging steps of the VFD GF630N04 for super-start motors, which mainly includes the frequency command setting of the VFD, the control of startup and shutdown, and the trial operation of the VFD-controlled motor can be realized according to the contents of this chapter.

5.1 Quick debugging guide

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



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	Is the power supply voltage within the permissible range, three-phase AC380~ 480V 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 and initialization of parameters after power on.

The LED operation panel indicates the status:

When power is applied, the keypad digital tube normally displays the default frequency of 50.00.

When a fault occurs, the keypad digital tube displays the corresponding fault code, which starts with E.

Parameter initialization:

By setting the P00.01 function code, the parameters can be initialized and the parameter values restored to the default values.

Function code	Setting range	Factory value
P00.01	0:No operation 1: Restore factory parameters (excluding motor parameters) 2:Clear the record information (historical faults, accumulated running time, etc.)	0

5.4 Quick Setup Parameters

In V/F mode, set the following parameters to be able to test run the motor.

Function code	Name	clarification	setpoint
P08.10	Maximum frequency (Hz)	Maximum frequency is the default reference for analog/multispeed/pulse/communication feeds, and also for acceleration/deceleration times	50 [Hz]
P08.12	Upper frequency (Hz)	Upper limit of the frequency set by the VFD	
P10.35	Rated power of motor(Kw)	Refer to the motor nameplate to set the motor rated power	
P10.36	Motor rated voltage (V)	Set the rated motor voltage with reference to the motor nameplate	
P10.37	Motor rated current (A)	Set the rated motor current by referring to the motor nameplate.	
P10.38	Motor rated frequency (Hz)	Refer to the motor nameplate to set the rated motor frequency	
P10.39	Rated motor speed	Refer to the motor nameplate to set the rated motor speed (r/min).	
P08.01	Control mode selection	[0] Open-loop vector [1] Closed-loop vector [2] V/F control Set on demand	2

In open-loop vector/closed-loop vector mode, parameter self-tuning can be started after setting the following parameters.

Function code	Name	Clarification	Setpoint
P08.10	Maximum frequency (Hz)	Maximum frequency is the default reference for analog/multispeed/pulse/communication feeds, and also for acceleration/deceleration times	50 [Hz]
P08.12	Upper frequency (Hz)	Upper limit of the frequency set by the VFD	
P10.35	Rated power of motor(Kw)	Refer to the motor nameplate to set the motor rated power	

P10.36	Motor rated voltage (V)	Set the rated motor voltage with reference to the motor nameplate	
P10.37	Motor rated current (A)	Set the rated motor current by referring to the motor nameplate.	
P10.38	Motor rated frequency (Hz)	Refer to the motor nameplate to set the rated frequency of the motor	
P10.39	Motor rated speed(r/min)	Refer to the motor nameplate to set the rated motor speed	
P08.01	Control mode selection	[0] Open-loop vector [1] Closed-loop vector [2] V/F control Set on demand	2
P10.54	Synchronous motor reverse electromotive force (V)	Setting is required before performing self-tuning with load in open-loop vector/closed-loop vector mode only, and this parameter can be obtained automatically for no-load self-tuning.	
P10.61	Number of encoder pulses	Setting is required before performing self-tuning in closed-loop vector mode only.	
P10.62	Encoder Type	Setting is required before performing self-tuning in closed-loop vector mode only.	
P10.68	Rotary Transformer Pole Pairs	Required only in closed-loop vector mode when the encoder type is resolver.	

5.5 self-tuning of motor parameters and test run

self-tuning approach	Operating Points	Note
on-board self-tuning	1. Set the control mode and motor parameters, and encoder parameters need to be set in closed-loop vector mode; 2. Set P10.71 as 11, press ENTER, the panel displays TUNE, enter the parameter self-tuning interface; 3. Press the RUN key to start the parameter self-tuning, the FAULT status light flashes slowly during the self-tuning process, and automatically returns to the standby interface after the self-tuning is finished.	self-tuning with load is suitable for occasions when the motor cannot be disconnected from the load and is not lightly loaded. The following motor parameters can be obtained through self-tuning with load: 1. Synchronous motor stator resistance (P10.50). 2. Synchronous motor D-axis inductance (P10.51); 3. 3. Synchronous motor Q-axis inductance (P10.52). Closed-loop vector mode with on-load self-tuning additionally obtains the encoder phase sequence and mounting angle.
No-load self-tuning	1. Set the control mode and motor parameters, and encoder parameters need to be set in closed-loop vector mode; 2. Set P10.71 as 12, press ENTER, the panel displays TUNE, enter the parameter self-tuning interface; 3. Press the RUN key to start the parameter self-tuning, the FAULT status light flashes slowly during the self-tuning process, and automatically returns to the	No-load self-tuning is suitable for motor and load can be disengaged or light load occasions, through the no-load self-tuning can be obtained as follows motor parameters: 1. Synchronous motor stator resistance (P10.50). 2. Synchronous motor D-axis inductance (P10.51); 3. 3. Synchronous motor Q-axis inductance (P10.52); and 4. Synchronous motor reverse electromotive force (P10.54).

	standby interface after the self-tuning is finished.	Closed-loop vector mode with on-load self-tuning additionally obtains the encoder phase sequence and mounting angle.

（1） Considerations Before Implementing a self-tuning Model

The GF630N04 series 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 VFD, if the difference between the motor power and the standard adapted motor is too large, the control performance of the VFD will be significantly reduced. Please check the following four things before motor self-tuning:

Inspection items	Inspection matters
Whether the motor shaft is connected to other mechanical equipment	If the motor shaft can be disconnected from the load, no-load self-tuning is recommended; if the motor shaft cannot be disconnected from the load, loaded self-tuning is recommended.
Is there a big difference between motor capacity and VFD capacity	Motor self-tuning may not be completed properly when the motor power is too small compared to the VFD power (the motor power requirement is not less than 1/5 of the VFD power).
Confirm that the motor parameters are entered correctly	Whether the P10 group parameters are consistent with the motor nameplate parameters, such as rated power, voltage, current, speed. If the input is incorrect it may lead to self-tuning failure or the motor may not operate normally.
Whether an encoder is mounted on the motor	If closed-loop vector control is used, an encoder should be installed on the motor. If V/F control or open-loop vector control is used, the presence or absence of an installed encoder does not affect motor self-tuning.

（2） 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, the LOCAL indicator lights;	
Step 3	Press the UP/DOWN key on the operation panel to set the reference speed to 5Hz	
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 are no faults in step 4, gradually increase the given value of the frequency 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.	

（3） 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, the LOCAL indicator is lit.	
	Step 3	Press the UP/DOWN key on the operation panel to set the reference speed to 5Hz	
	Step 4	Press the RUN button to run the VFD, the RUN indicator lights up and the motor rotates positively	Confirm that the motor is rotating in the correct direction and that there is no fault indication on the VFD
	Step 5	If there are no faults in step 4, gradually increase the given value of the frequency 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 operation	
		Is the acceleration and deceleration of the motor normal	
Fate classifier for objects in rows such as words real recognize affair classifier for principles, items, clauses, tasks, research projects etc		Whether the direction of action of the machinery is correct (whether the direction of rotation of the motor is correct)	
		Is the acceleration and deceleration of the motor normal	
		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. VFD Parameter Setting Instructions

Functional group	Instructions	Functional group	Instructions
P0	Parameter control group	P11	Motor 2 parameter set
P2	Panel Settings Group	P12	Motor 1 vector control group
P3	Digital Input Terminal Block	P13	Motor 2 vector control group
P4	Digital Output Terminal Block	P14	Communication Basic Parameter Set
P5	Analog and Pulse Input Terminal Block	P15	PID Module Group
P6	Analog and Pulse Output Terminal Block	P16	Math Operations Module
P7	Protection parameter sets	P19	Analog Advanced Settings
P8	Motor start/stop control group	P20	torque control
P9	Oscillating Frequency and Segment Speed Group	P21	Advanced control parameters
P10	V/F and motor 1 parameter set	P23	Condition Monitoring Team

Basic Function Code Parameter Table

The symbols in the function table are described as follows:

"☆ ": indicates that the set value of this parameter can be changed when the frequency converter is in the stop and run state;

"★ ": indicates that the set value of the parameter cannot be changed when the frequency converter is in running state;

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

"*": it means that the parameter is a "manufacturer's parameter", which is only set by the manufacturer and prohibited to be operated by the user;

6.1 Parameter control group P0

Function code	Name	Setting range	Factory value	Variation
P00.00	user password	0 to 65535	0	☆
P00.01	Parameter initialization	0: No operation 01: Restore factory parameters, excluding motor parameters 02: Clear record information	0	★
P00.02	Functional parameter group display selection	Digit: P23,P27 group display selection 0: No display 1: Display Ten digits: P11,P13,P16,P19,P20,P21 group display selection 0: No display	11	★
P00.03	Reservations			
P00.04	Function Code Modification Attributes	0: Modifiable 1: not modifiable	0	☆

6.2 Panel Setup Group P2

Function code	Name	Setting range	Factory value	Variation
P02.01	F2 key function selection	0: Disable 1: Reserved 2: Forward and reverse rotation switching 3: Forward rotation point movement 4: Reverse Tap	0	★

P02.02	STOP key function	0: STOP function is only available in keyboard operation. 1: STOP function is available in all operation modes.	1	☆
P02.03	LED operating display parameter 1	0000 to FFFFF Bit00: Operation frequency 1 (Hz) Bit01: Setting frequency (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (kW) Bit06: Output torque (%) Bit07: DI input status Bit08: DO output status Bit09: AI1 voltage (V) Bit10: AI2 voltage (V) Bit11: AI3 voltage (V) Bit12: Count value Bit13: Length value Bit14: Load speed display Bit15: PID setting	1F	☆

P02.04	LED operation display parameter 2	0000 to FFFFF Bit00: PID feedback Bit01: PLC stage Bit02: PULSE input pulse frequency (kHz) Bit03: Operating frequency 2 (Hz) Bit04: Remaining running time Bit05: AI1 voltage before correction (V) Bit06: AI2 voltage before correction (V) Bit07: AI3 voltage before correction (V) Bit08: Line speed Bit09: Current power-up time (Hour) Bit10: Current running time (Min) Bit11: PULSE input pulse frequency (Hz) Bit12: Communication set value Bit13: Encoder feedback speed (Hz) Bit14: Main frequency X display (Hz) Bit15: Auxiliary frequency Y display (Hz)	0	☆
P02.05	LED stop display parameters	0000 to FFFFF Bit00: Setting frequency (Hz) Bit01: Bus voltage (V) Bit02: DI input status Bit03: DO output status Bit04: AI1 voltage (V) Bit05: AI2 voltage (V) Bit06: AI3 voltage (V) Bit07: Count Value Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PID setting Bit12: PULSE input pulse frequency (kHz)	33	☆
P02.06	Load Speed Display Factor	0.0001 to 6.5000	1	☆

P02.07	Inverter module heat sink temperature	0.0℃～100.0℃	-	●
P02.08	product number	-	-	●
P02.09	Cumulative running time	0h～65535h	-	●
P02.11	software version number	-	-	●
P02.12	Load speed display in decimal places	Digits: number of decimal places in P23.14 0: 0 decimal places 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places Tenth Digit: Number of Decimal Places for P23.19/P23.29 1: 1 decimal place 2: 2 decimal places	21	☆
P02.13	Cumulative power-up time	0h～65535h	-	●
P02.14	Cumulative power consumption	0 to 65535 degrees	-	●

6.3 Digital Input Terminal Block P3

Function code	Name	Setting range	Factory value	Variation
P03.00	Digital input terminal 1	0: Disable 1: Forward running 2: Reverse rotation operation 3：Three-wire operation 4：Forward Rotation Tap	1	★

P03.01	Digital Input Terminal 2	5: Reverse rotation spotting 6: Frequency UP 7: Frequency DOWN 8: Free stop 9: Fault reset 10: Running pause 11: External fault normal open input 12: Multi-speed 1 13: Multi-speed 2 14: Multi-speed 3 15: Multi-speed 4 16: Select acceleration and deceleration time 1 17: Select acceleration and deceleration time 2 18: Speed feed source switching 19: Frequency UP/DOWN setting clearing (Terminal, Keypad) 20: Start source switching 1 21: Acceleration/deceleration inhibit 22: PID pause 23: PLC status reset 24: Oscillation frequency pause 25: Counter Input 26: Counter Reset 27: Length Count Input 28: Length Reset 29: Torque control disable 30: (Pulse) frequency input (valid only for DI5) 31: Reserved 32: DC Brake 33: External fault normally	4	★
P03.02	Digital Input Terminal 3		9	★
P03.03	Digital input terminal 4		12	★
P03.04	Digital Input Terminal HDI		13	★
P03.05	Digital input terminal 6		0	★
P03.06	Digital Input Terminal 7		0	★
P03.07	Digital Input Terminal 8		0	★

P03.08	reservations	closed input 34: Frequency modification enable 35: PID action direction reversal 36: External stop signal 1 37: Start source switching 2 38: PID integral pause 39: Switching between main speed source X and preset frequency 40: Switching between auxiliary speed source Y and preset frequency 41: Select motor 1 42: Select motor 2 43: PID parameter switching 44: Customized fault 1 45: Customized fault 2 46: Speed control/torque control switching 47: Emergency stop 48: External stop signal 2 49: Deceleration DC braking 50: Zeroing of current running time 51, 52: Reservations 53: Hyper Start Terminal Enable 54: Star Run Enable 55:59 Reservation	0	★
P03.09	reservations		0	★
P03.10	Digital input terminal filter	0.000s～1.000s	0.010s	☆
P03.11	Digital Input Terminal Command Type	0: Two-wire 1 1: Two-wire 2 2: Three-wire 1 3: Three-wire 2	0	★

P03.12	Frequency UP/DOWN	0.001Hz/s～65.535Hz/s	1.00Hz/s	☆
P03.13	Digital input terminal effective level setting	0: High level active 1: active low Single digit: DI1 Tenth digit: DI2 Hundred: DI3 Thousand bits: DI4 10,000 bits: HDI	0	★
P03.14	Digital input terminal effective level setting2	0: High level active 1: active low Single digit: DI6 Tenth digit: DI7 Hundred bits: DI8 Thousand bits: Reserved 10,000 bits: Reserved	0	★
P03.15	Digital input terminal 1 delay	0.0s～3600.0s	0.0s	★
P03.16	Digital input terminal 2 delay	0.0s～3600.0s	0.0s	★
P03.17	Digital Input Terminal 3 Delay	0.0s～3600.0s	0.0s	★

6.4 Digital output terminal block P4

Function code	Name	Setting range	Factory value	Variation
P04.00	Digital output terminal HDO type selection	0: Pulse output (FMP) 1: Switching output (FMR)	0	☆

P04.01	Switching output function setting	0: Disabled 1: Operating signals 2: Fault output 3: Frequency level detection FDT1 output 4: Frequency arrival 5: Zero speed operation1 6: Motor overload pre-warning 7: VFD overload pre-warning 8: Reaching the set notation value 9: Arrival at the specified notation value 10: Reaching the set length 11: PLC cycle complete 12: Cumulative running time reached 13: In the speed limit 14: In torque limitation 15: Ready to run 16: AI1 greater than AI2 17: Reaching the upper frequency 18: Lower frequency reached (operationally relevant) 19: Undervoltage 20: Communication settings 21: (Reserved) 22: (Reserved) 23: In zero-speed operation 2 (also output during shutdown) 24: Cumulative power-up time reached 25: Frequency level detection	0	☆
P04.02	Relay 1 output function setting		2	☆
P04.03	reservations		0	☆
P04.04	Digital output terminal 1		1	☆

P04.05	Digital output terminal 2	FDT2 outputs 26: Frequency 1 arrives at the output 27: Frequency 2 arrives at the output 28: Current 1 arrives at the output 29: Current 2 reaches the output 30: Timed arrival output 31: AI1 input value out of range 32: Offloading 33: Reverse run 34: Zero current state 35: Module temperature reached 36: Output current exceeds limit value 37: Output lower limit frequency (also output at shutdown) 38: Warning 39: Over-temperature warning 40: This running time arrives	4	☆
P04.06	Switching output	0.0s～3600.0s	0.0s	☆
P04.07	Relay 1 output delay time	0.0s～3600.0s	0.0s	☆
P04.08	reservations	0.0s～3600.0s	0.0s	☆
P04.09	Digital output terminal 1 delay	0.0s～3600.0s	0.0s	☆
P04.10	Digital output terminal 2 delay	0.0s～3600.0s	0.0s	☆

P04.11	Effective logic setting for digital output terminals	0: Positive Logic 1: Reverse Logic Single digit: FMR Tenth position: Relay 1 Hundred bits: Reserved Thousand bits: DO1 Ten thousandths bit: DO2	0	☆

6.5 Analog and pulse input terminal block P5

Function code	Name	Setting range	Factory value	Variation
P05.00	AI curve 1 Minimum	-10.00V to P05.02	-10.00V	☆
P05.01	AI curve 1 minimum	-100.0%～+100.0%	-100.00%	☆
P05.02	AI curve 1 maximum	P05.00 to +10.00V	10.00V	☆
P05.03	AI curve 1 maximum	-100.0%～+100.0%	100.00%	☆
P05.04	AI curve 1 filter	0.00s～10.00s	0.10s	☆
P05.05	AI curve 2 Minimum	-10.00V to P05.07	-10.00V	☆
P05.06	AI curve 2 Minimum	-100.0%～+100.0%	-100.00%	☆
P05.07	AI curve 2 Maximum	P05.05 to +10.00V	10.00V	☆
P05.08	AI curve 2 Maximum	-100.0%～+100.0%	100.00%	☆
P05.09	AI curve 2 filter	0.00s～10.00s	0.10s	☆
P05.10	AI curve 3 Minimum	-10.00V to P05.12	-10.00V	☆
P05.11	AI curve 3 Minimum	-100.0%～+100.0%	-100.00%	☆
P05.12	AI curve 3 Maximum	P05.10 to +10.00V	10.00V	☆
P05.13	AI curve 3 Maximum	-100.0%～+100.0%	100.00%	☆
P05.14	AI curve 3 filter	0.00s～10.00s	0.10s	☆
P05.15	High-speed pulse	0.00kHz to P05.17	0.00kHz	☆
P05.16	High-speed Pulse	-100.0% to 100.0%	0.00%	☆
P05.17	Maximum frequency	P05.15～ 50.00kHz	50.00kHz	☆
P05.18	High-speed pulse	-100.0% to 100.0%	100.00%	☆
P05.19	High-speed pulse	0.00s～10.00s	0.10s	☆

P05.20	AI curve selection	Position: AI_V curve selection 1: Curve 1 (2 points, see P05.00 to P05.03) 2: Curve 2 (2 points, see P05.05～P05.08) 3: Curve 3 (2 points, see P05.10 to P05.13) 4: Curve 4 (4 points, see P19.00 to P19.07) 5: Curve 5 (4 points, see P19.08 to P19.15) Tenth position: AI_I curve	321	☆
P5.21	Selection when AI is below the minimum input value	Bit:AI_V is lower than the minimum input setting selection. 0:Corresponds to the minimum input setting 1:0.0% Tenth position: AI_I below minimum input setting	0	☆

6.6 Analog and Pulse Output Terminal Block P6

Function code	Name	Setting range	Factory value	Variation
P06.00	Pulse output function setting	0: Operating frequency 1：Given frequency 2: Output current 3: Output torque 4: Output power 5: Output voltage 6: Pulse input (100.% corresponds to 50.0kHz) 7: AI1 8: AI2 9: AI3 (expansion card)	0	☆
P06.01	AO1 output setting		0	☆

P06.02	reservations	10: Length 11: Memory value 12：Communication setting 13：Motor speed 14: Output current (100.0% corresponds to 1000.0A) 15: Output voltage (100.0% corresponds to 1000.0V) 16：Retention		
P06.03	Maximum pulse	0.01kHz to 50.00kHz	50.00kHz	☆
P06.04	AO1 deviation	-100.0%～+100.0%	0.00%	☆
P06.05	AO1 Gain	-10.00 to +10.00	1	☆
P06.06	reservations			
P06.07	reservations			
P06.08	reservations			
P06.09	reservations			
P06.10	reservations			

6.7 Protection parameter group P7

Function code	Name	Setting range	Factory value	Variation
P07.00	Motor overload protection options	0: Prohibited 1: Permission	1	☆
P07.01	Motor overload	0.20 to 10.00	1	☆
P07.02	Motor overload	50% to 100%	80%	☆
P07.03	Overvoltage stall	0 to 100	0	☆
P07.04	Overvoltage stall	200.0 to 2200.0	760.0	☆
P07.05	Overspeed loss gain	0 to 100	20	☆
P07.06	Overcurrent loss	50% to 200%	150%	☆

P07.07	Short Circuit to Ground Protection Selection	Single digit: short-circuit protection to ground before startup Ten bits: short-circuit protection to ground before startup selection 0：Invalid	11	☆
P07.08	Starting voltage of brake unit	200.0V to 2000.0V	Model Determinat	☆
P07.09	Failure auto reset	0 to 20	0	☆
P07.10	Fault DO action selection during automatic fault	0: No action 1: Action	0	☆
P07.11	Fault auto reset	0.1s～100.0s	1.0s	☆
P07.12	Input phase loss/contactor suction protection selection	Single digit: Input phase loss protection selection Ten bits: contactor suction protection selection 0: Prohibit	00	☆
P07.13	Output out-of-phase protection selection	Single digit: Output phase loss protection selection Ten bits: Output phase loss protection selection before startup	11	☆
P07.14	Type of first failure	0: No faults 1: Reserved 2：Acceleration overcurrent 3: Deceleration overcurrent 4：Constant speed overcurrent 8: Buffer resistor overload 11: Motor overload 15: External faults 18: Abnormal current detection 21：Abnormal parameter	-	●

P07.15	Second failure type	reading and writing 22：VFD hardware abnormality 24: Reservations 25: Reserved 26: Runtime Arrival 27: User-defined fault 1 28: User-defined fault 2 29: Power-Up Time Reached 30: Dropout 31: Loss of PID feedback at runtime 40: Fast current limit timeout 41: Motor switching during operation 45: Motor over temperature 51: Initial position error 100：Acceleration overvoltage 101：Deceleration overvoltage 102: Constant speed overvoltage 105: Undervoltage 108: Abnormal contactor 111: VFD overload 112: Motor shorted to ground 113: Input phase loss 114：Output phase loss 115: Motor overspeed 118: Encoder/PG card abnormality 119: Excessive speed deviation 120: Module overheating 170: Motor tuning abnormality 202: Abnormal communication	-	●
P07.16	Third (most recent) failure type		-	●

P07.17	Third (most recent) Frequency at failure	-	-	●
P07.18	Third (most recent) Current at fault	-	-	●
P07.19	Third (most recent) bus voltage at fault	-	-	●
P07.20	Input terminal status at third (latest) failure	-	-	●
P07.21	Output terminal status at third (most recent) failure	-	-	●
P07.22	Third (most recent) VFD status at time of failure	-	-	●
P07.23	Third (most recent) Power-up time on failure	-	-	●
P07.24	Third (most recent) Runtime at failure	-	-	●
P07.25	Reverse potential at third (most recent) failure	-	-	●
P07.26	reservations			
P07.27	Frequency at second	-	-	●
P07.28	Current at second	-	-	●
P07.29	Busbar voltage at	-	-	●
P07.30	Input terminal	-	-	●
P07.31	Output terminal	-	-	●
P07.32	VFD status at	-	-	●
P07.33	Power-up time at	-	-	●
P07.34	Runtime at second	-	-	●
P07.35	Reverse	-	-	●
P07.36	reservations			

P07.37	Frequency at first	-	-	●
P07.38	Current at first	-	-	●
P07.39	Bus voltage at	-	-	●
P07.40	Input terminal status at first fault	-	-	●
P07.41	Output terminal status at first fault	-	-	●
P07.42	VFD status at first fault	-	-	●
P07.43	Power-up time at	-	-	●
P07.44	Running time at	-	-	●
P07.45	Reverse potential	-	-	●
P07.46	reservations			
P07.47	Fail-safe action selection 1	Bit: Motor overload (11) 0: Free stop 1: Stop by stopping 2: Continue to run Tenth digit: Input phase loss (113) Hundredths digit: Output phase loss (114) Thousand bits: external fault (15) Ten thousand bits: communication abnormality (202)	0	☆
P07.48	Fail-safe action selection 2	Position: Encoder/PG card exception (118) 0: Free parking Tenth position: Function code read/write abnormality (21) 0: Free parking 1: Shutdown by stopping mode Hundredths: VFD overload (111) Thousandth position: Motor	0	☆

		overheating (45) 10,000 positions: running time arrivals (26)		
P07.49	Fail-safe action selection 3	digits: user-defined fault 1 (27) 0: Free stop 1: Stop by stopping 2: Continue running Tenth digit: user-defined fault 2 (28) 0: Free stop 1: Stop by stopping 2: Continue running Hundred bits: power-up time reached (29) 0: Free stop 1: Stop by stopping 2: Continue running Thousandth position: Load shedding (30) 0: Free stop 1: Decelerate to stop 2: Decelerate to 7% of the rated frequency of the motor and continue operation. When there is no load loss, the motor will automatically	0	☆

P07.50	Fail-safe action selection 4	Bit: Excessive speed deviation (119) 0: Free stop 1: Stop by stopping 2：Continue to run Tenth position: Motor overspeed (115) Hundredth position: Initial position error (51)	0	☆
P07.51	Fail-safe action			
P07.52	Fault indication			
P07.53	Fault indication			
P07.54	Frequency selection for continued operation in case of failure	0: Run at current operating frequency 1: Run at set frequency 2: Run at upper limit frequency 3: Run at the lower limit	0	☆
P07.55	Abnormal Standby Frequency	0% to 100.0% (100.0% corresponds to maximum frequency P08.10)	100.00%	☆
P07.56	Motor Temperature Sensor Type	0: No temperature sensor 1：PT100 2：PT1000	0	☆
P07.57	Motor overheating	0℃～200℃	110° C	☆
P07.58	Motor overheating	0℃～200℃	90° C	☆
P07.59	reservations			
P07.60	reservations			
P07.61	reservations			
P07.62	reservations			
P07.63	Load shedding protection options	0: Invalid 1: Valid	0	☆
P07.64	Dropout detection	0.0 to 100.0%	10.00%	☆
P07.65	Load Drop Detection	0.0 to 60.0s	1.0s	☆

P07.66	reservations			
P07.67	Over speed	0.0% to 50.0% (maximum	20.00%	☆
P07.68	Over speed	0.0s～60.0s	1.0s	☆
P07.69	Excessive speed	0.0% to 50.0% (maximum	20.00%	☆
P07.70	Excessive speed	0.0s～60.0s	0.0s	☆
P07.71	stall without	0 to 100	40	
P07.72	Instantaneous non-	0 to 100	30	
P07.73	Non-stop	0 to 300.0	20.0	
P07.74	reservations			
P07.75	Fail-safe action selection 6	Bit: Initial position angle to recognize faults (51) 0: Continued operation 1: Free stop Tenth digit: load tuning fault (170)	11	☆

6.8 Motor start/stop control group P8

Function code	Name	Setting range	Factory value	Variation
P08.00	reservations			
P08.01	Motor 1 control method	0: Vector control without speed sensor (SVC) 1: Vector control with speed sensor (FVC) 2: V/F control	2	★
P08.02	Startup Source Selection	0: Operation panel command channel (LED off) 1: Terminal command channel (LED on) 2: Communication command channel (LED blinking)	0	☆
P08.03	Main speed feed source X selection	0: digital setting (preset frequency P08.08, UP/DOWN can be modified, power-down does not memorize) 1: Digital setting (preset frequency P08.08, UP/DOWN can be modified, power down memory) 2: AI1 3: AI2 4: AI3 5: PULSE pulse setting (DI5) 6：Multi-segment instruction 7：Simple PLC 8: PID 9：Communication given	0	★
P08.04	Auxiliary speed feed source Y selection	Same as P08.03 (Main speed feed source X selection)	0	★
P08.05	Auxiliary velocity source Y range selection during	0: relative to the maximum frequency 1: relative to velocity	0	☆

	stacking	source X		
P08.06	Auxiliary velocity source Y range when stacked	0% to 150	100%	☆
P08.07	Velocity source overlay selection	Bit: Frequency source selection 0: main speed given source X 1: main and auxiliary operation result (The operation relationship is determined by ten bits) 2：Switching between the main speed source X and the auxiliary speed source Y 3: Switching between main speed given source X and main and auxiliary operation results 4: Switching between the auxiliary speed source Y and the main and auxiliary operation results Ten bits: speed source main and auxiliary operation relationship 0: main + auxiliary 1：Main-Auxiliary 2：Maximum value of both 3: Minimum value of both	0	☆
P08.08	preset frequency	0.00Hz to maximum frequency (P08.10)	50.00 Hz	☆
P08.09	Motor running direction	0: Same direction 1: reverse direction	0	☆
P08.10	Maximum frequency	50.00Hz to 500.00Hz	50.00 Hz	★
P08.11	Upper Frequency Source	0: P08.12 setting 1: AI1 2: AI2	0	★

		3：AI3 4: PULSE pulse setting 5：Communication given		
P08.12	Upper frequency	Minimum frequency P08.14 to maximum frequency P08.10	50.00 Hz	☆
P08.13	Upper Frequency Bias	0.00Hz to maximum frequency P08.10	0.00Hz	☆
P08.14	lower frequency	0.00Hz to upper limit frequency P08.12	0.00Hz	☆
P08.15	carrier frequency	0.5kHz～16.0kHz	Model Determination	☆
P08.16	Carrier frequency adjusted with temperature	0: No 1: Yes	1	☆
P08.17	Acceleration time 1	0.00s～6500.0s	Model Determination	☆
P08.18	Deceleration time 1	0.00s～6500.0s	Model Determination	☆
P08.19	Acceleration and deceleration time multiplier	0: 1 second 1: 0.1 second 2: 0.01 seconds	1	★
P08.20	Overstart hold control selection	0: Overstart hold time is internally controlled F08.47 1: Overstart hold time controlled by terminal	0	★
P08.21	Auxiliary speed during superposition gives the source bias frequency	0.00Hz to maximum frequency P08.10	0.00Hz	☆
P08.22	Velocity feed resolution	2: 0.01Hz	2	★

P08.23	Digitally given speed shutdown memory selection	0: No memory 1: Memorization	0	☆
P08.24	Motor Selection	0: Motor 1 1: Motor 2	0	★
P08.25	Acceleration and deceleration time reference frequency	0: Maximum frequency (P08.10) 1: Set frequency 2: 100Hz	0	★
P08.26	Frequency UP/DOWN operation reference during operation	0: Operating frequency 1: Setting frequency	0	★
P08.27	Combined start source and speed source setting	Bit: Setting of speed source combination at operation panel startup 0: no binding 1: Digital setting frequency 2：AI1 3：AI2 4：AI3 5: PULSE pulse setting (DI5) 6：Multi-segment speed 7：Simple PLC 8: PID 9：Communication given Ten digits: speed source combination setting at terminal start Hundred digits: speed source combination setting at communication start Thousand digits: speed source combination setting at automatic operation	0	☆
P08.28	Activation method	0: Direct start 1: Reservations 2: Reservations	0	☆

P08.29	RPM tracking method	0: Starting from the shutdown frequency 1: Starting from zero speed 2: Starting from the maximum frequency	0	★
P08.30	RPM tracking fast and slow	1 to 100	20	☆
P08.31	Start-up frequency	0.00Hz to 10.00Hz	0.00Hz	☆
P08.32	Starting frequency hold time	0.0s to 100.0s	0.0s	★
P08.33	Starting DC braking current/pre-excitation current	0% to 100%	0%	★
P08.34	Start DC braking time/pre-excitation time	0.0s to 100.0s	0.0s	★
P08.35	Acceleration and deceleration mode	0: Linear acceleration and deceleration 1: S-curve acceleration and deceleration A 2: S-curve acceleration and deceleration B	0	★
P08.36	Proportion of time at the beginning of the S-curve	0.0% to (100.0% - P08.37)	30.00%	★
P08.37	Proportion of time at the end of the S-curve	0.0% to (100.0% - P08.36)	30.00%	★
P08.38	Shutdown mode	0: Decelerate and stop 1: Free parking	0	☆
P08.39	Stopping DC braking start frequency	0.00Hz to maximum frequency	0.00Hz	☆
P08.40	Shutdown DC braking wait time	0.0s to 100.0s	0.0s	☆
P08.41	Stopping DC braking	0% to 100%	0%	☆

	current			
P08.42	Stopping DC braking time	0.0s to 100.0s	0.0s	☆
P08.43	Brake utilization rate	0% to 100%	100%	☆
P08.44	Allowable time for brake pipe opening	0s to 65000s	0s	☆
P08.45	Hyperboost function enable	0: Overstart function disabled 1: Overstart function is effective	0	★
P08.46	overstart voltage	220～ 400V	380	★
P08.47	Overstart Hold Time	0.010-10.000s	0.200s	★
P08.48	Hyperboost switching time	0.010-10.000s	0.500s	★
P08.49	Maximum hold time for overstart	0.010-10.000s	5.000s	★
P08.51	Tap-to-run bound overstart hold time	0: Binding 1: Unbound	0	★
P08.52	DI positive start operation mode selection	0: Mode 1 1: Mode 2	0	★

6.9 Pendulum Frequency and Segment Speed Group P 9

Function code	Name	Clarification	Setting range	Default value
P09.00	Oscillation Frequency Setting Method	0: relative to the center frequency 1: relative to the maximum frequency	0	☆
P09.01	swing amplitude	0.0% to 100.0%	0.00%	☆
P09.02	Burst frequency amplitude	0.0% to 50.0%	0.00%	☆
P09.03	oscillation period	0.1s～3000.0s	10.0s	☆
P09.04	Triangular wave rise time of the pendulum frequency	0.1% to 100.0%	50.00%	☆
P09.05	Setting length	0m～65535m	1000m	☆

P09.06	Actual length	0m～65535m	0m	☆
P09.07	Pulses per meter	0.1 to 6553.5	100	☆
P09.08	Setting the count value	1 to 65535	1000	☆
P09.09	Specify the count value	1 to 65535	1000	☆
P09.10	Multi-segment instruction 0	-100.0% to 100.0%	0.00%	☆
P09.11	Multi-segment instruction 1	-100.0% to 100.0%	0.00%	☆
P09.12	Multi-segment instruction 2	-100.0% to 100.0%	0.00%	☆
P09.13	Multi-segment instruction 3	-100.0% to 100.0%	0.00%	☆
P09.14	Multi-segment instruction 4	-100.0% to 100.0%	0.00%	☆
P09.15	Multi-segment instruction 5	-100.0% to 100.0%	0.00%	☆
P09.16	Multi-segment instruction 6	-100.0% to 100.0%	0.00%	☆
P09.17	Multi-segment instruction 7	-100.0% to 100.0%	0.00%	☆
P09.18	Multi-segment instruction 8	-100.0% to 100.0%	0.00%	☆
P09.19	Multi-segment instruction 9	-100.0% to 100.0%	0.00%	☆
P09.20	Multi-segment instruction 10	-100.0% to 100.0%	0.00%	☆
P09.21	Multi-segment instruction 11	-100.0% to 100.0%	0.00%	☆
P09.22	Multi-segment instruction 12	-100.0% to 100.0%	0.00%	☆
P09.23	Multi-segment instruction 13	-100.0% to 100.0%	0.00%	☆
P09.24	Multi-segment instruction 14	-100.0% to 100.0%	0.00%	☆

P09.25	Multi-segment instruction 15	-100.0% to 100.0%	0.00%	☆
P09.26	Simple PLC operation method	0: Stop at the end of a single run 1: Single run end hold final value 2: Keep cycling	0	☆
P09.27	Simple PLC power-down memory selection	Bit: Power-down memory selection 0: No memory for power down 1：Power down memory Ten digits: shutdown memory selection 0：No memory for shutdown 1: Shutdown memory	0	☆
P09.28	Simple PLC segment 0 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.29	Simple PLC section 0 acceleration and deceleration time selection	0 to 3	0	☆
P09.30	Simple PLC 1st runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.31	Simple PLC 1st Acceleration and Deceleration Time Selection	0 to 3	0	☆
P09.32	Simple PLC 2nd runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.33	Simple PLC 2nd stage acceleration/deceleration time selection	0 to 3	0	☆
P09.34	Simple PLC segment 3 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆

P09.35	Simple PLC 3rd Acceleration and Deceleration Time Selection	0 to 3	0	☆
P09.36	Simple PLC segment 4 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.37	Simple PLC 4th Acceleration and Deceleration Time Selection	0 to 3	0	☆
P09.38	Simple PLC segment 5 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.39	Simple PLC 5th Acceleration and Deceleration Time Selection	0 to 3	0	☆
P09.40	Simple PLC segment 6 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.41	Simple PLC 6th Acceleration and Deceleration Time Selection	0 to 3	0	☆
P09.42	Simple PLC segment 7 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.43	Simple PLC 7th Acceleration and Deceleration Time Selection	0 to 3	0	☆
P09.44	Simple PLC segment 8 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.45	Simple PLC Section 8 Acceleration and Deceleration Time Selection	0 to 3	0	☆

P09.46	Simple PLC segment 9 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.47	Simple PLC 9th Acceleration and Deceleration Time Selection	0 to 3	0	☆
P09.48	Simple PLC paragraph 10 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.49	Simple PLC 10th Acceleration and Deceleration Time Selection	0 to 3	0	☆
P09.50	Simple PLC paragraph 11 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.51	Simple PLC 11th Acceleration and Deceleration Time Selection	0 to 3	0	☆
P09.52	Simple PLC segment 12 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.53	Simple PLC 12th Acceleration and Deceleration Time Selection	0 to 3	0	☆
P09.54	Simple PLC paragraph 13 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.55	Simple PLC 13th Acceleration and Deceleration Time Selection	0 to 3	0	☆
P09.56	Simple PLC paragraph 14 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆

P09.57	Simple PLC 14th Acceleration and Deceleration Time Selection	0 to 3	0	☆
P09.58	Simple PLC paragraph 15 runtime	0.0s (h) to 6553.5s (h)	0.0s (h)	☆
P09.59	Simple PLC 15th Acceleration and Deceleration Time Selection	0 to 3	0	☆
P09.60	Simple PLC runtime unit	0: s (seconds) 1: h (hour)	0	☆
P09.61	Multi-segment Instruction 0 Giving Mode	0: Function code P09.10 given 1: AI1 2: AI2 3: AI3 4: PULSE pulse 5: PID 6: Preset frequency (P08.08) given, UP/DOWN can be modified	0	☆

6.10 V/F and motor 1 parameter set P10

Function code	Name	Setting range	Factory value	Variation
P10.00	VF curve setting	0: Straight line V/F 1: Multi-point V/F 2: Square V/F 3: 1.2 times square V/F 4: 1.4 times square V/F 6: 1.6 times square V/F 8: 1.8th power V/F 9: Reserved 10: VF full separation mode 11: VF semi-separated mode	0	★
P10.01	Torque Increase	0.0%: (automatic torque boost) 0.1% to 30.0%	Model Determination	☆
P10.02	Torque boost cutoff frequency	0.00Hz to maximum frequency	50.00 Hz	★
P10.03	VF frequency point 1	0.00Hz to P10.05	0.00Hz	★
P10.04	VF voltage point 1	0.0% to 100.0%	0.00%	★
P10.05	VF frequency point 2	P10.03～ P10.07	0.00Hz	★
P10.06	VF voltage point 2	0.0% to 100.0%	0.00%	★
P10.07	VF frequency point 3	P10.05 to motor rated frequency (P10.38)	0.00Hz	★
P10.08	VF voltage point 3	0.0% to 100.0%	0.00%	★
P10.09	VF Differential Compensation Gain	0.0% to 200.0%	0.00%	☆
P10.10	VF Overexcitation Gain	0 to 200	64	☆
P10.11	VF Oscillation Suppression Gain	0 to 100	Model Determination	☆

P10.12	Oscillation suppression mode selection	0 to 4	3	☆
P10.13	VF separated voltage source	0: Digital setting (P10.14) 1: AI1 2: AI2 3: AI3 4: PULSE pulse setting (DI5) 5: Multi-segment instruction 6：Simple PLC 7: PID 8：Communication given Note: 100.0% corresponds to the rated voltage of the motor.	0	☆
P10.14	Voltage digital setting for VF separation	0V～Motor rated voltage	0V	☆
P10.15	Voltage rise time for VF separation	0.0s～1000.0s Note: Indicates the time for 0V to change to the rated voltage of the motor.	0.0s	☆
P10.16	Voltage deceleration time for VF separation	0.0s to 1000.0s Note: Indicates the time for 0V to change to the rated motor voltage.	0.0s	☆
P10.17	VF Separation stop mode selection	0: Frequency/voltage reduced to 0 independently 1: Frequency decreases after voltage decreases to 0	0	☆
P10.18	VF overcurrent suppression operating current	50 to 200%	150%	★
P10.19	VF overcurrent inhibit enable	0: Invalid 1: Effective	1	★
P10.20	VF overcurrent suppression suppression gain	0 to 100	20	☆

P10.21	VF times speed overcurrent suppression action current compensation factor	50 to 200%	50%	★
P10.22	Overvoltage Suppression Operating Voltage	650.0V ~800.0V	760.0V	★
P10.23	Overvoltage Suppression Enable	0: Invalid 1: Effective	0	★
P10.24	Overvoltage suppression frequency gain	0 to 100	30	☆
P10.25	Overvoltage Suppression Voltage Gain	0 to 100	30	☆
P10.26	Overpressure Stall Maximum Rise Limit Frequency	0 to 50Hz	5Hz	★
P10.27	reservations			
P10.28	reservations			
P10.29	reservations			
P10.30	reservations			
P10.31	reservations			
P10.32	reservations			
P10.33	reservations			
P10.34	Motor 1 type selection	0: Ordinary asynchronous motor 1: Reservations 2: Permanent magnet synchronous motor	0	★
P10.35	Motor 1 rated power	0.1kW～1000.0kW	Model Determination	★
P10.36	Motor 1 rated voltage	1V to 2000V	Model Determination	★

P10.37	Motor 1 rated current	0.01A～655.35A (VFD power <=55kW) 0.1A～6553.5A (VFD power>55kW)	Model Determination	★
P10.38	Motor 1 rated frequency	0.01Hz to maximum frequency	Model Determination	★
P10.39	Motor 1 rated speed	1rpm～65535rpm	Model Determination	★
P10.40	Reservations			
P10.41	Reservations			
P10.42	Reservations			
P10.43	reservations			
P10.44	reservations			
P10.45 to P10.49	reservations			
P10.50	Synchronous motor 1 stator resistance	0.001Ω～65.535Ω (VFD power <=55kW) 0.0001Ω～6.5535Ω (VFD power>55kW)	tuning parameter	★
P10.51	Synchronous motor 1D axis inductance	0.01mH～655.35mH (VFD power <=55kW) 0.001mH～65.535mH (VFD power >55kW)	tuning parameter	★
P10.52	Synchronous motor 1Q axis inductance	0.01mH～655.35mH (VFD power <=55kW) 0.001mH～65.535mH (VFD power >55kW)	tuning parameter	★
P10.53	Synchronous Motor 1 Inductive Resistance Unit	0 to 12	0	
P10.54	Synchronous motor 1 reverse electromotive force	0.1V～6553.5V	tuning parameter	★
P10.55	Synchronous motor 1 output phase loss detection time	0 to 60000	0	

P10.56~ P10.60	reservations			
P10.61	Encoder impulse	1 to 65535	1024	★
P10.62	Encoder Type	0: ABZ incremental encoder 1: Reserved 2: Rotary Transformer 3: Reserved 4: Reserved	0	★
P10.63	Reservations			
P10.64	ABZ Incremental Encoder AB Phase Sequence	0: Forward 1: Reverse	0	★
P10.65	Encoder mounting angle	0.0 to 359.9°	0.0°	★
P10.66	Reservations			
P10.67	Reservations			
P10.68	Rotary Transformer Pole Pairs	1 to 65535	1	★
P10.69	Reservations			
P10.70	Encoder break detection time	0.0: No action 0.1s～10.0s	0	★
P10.71	Synchronizer Tuning Options	0: No operation 1: Reservations 2: Reserved 11: Synchronous machine stationary tuning 12: Synchronous machine complete tuning	0	★

6.11 Motor 2 parameter group P11

Function cod	Name	Setting range	Factory value	Variation
P11.00	Motor 2 type selection	0: Ordinary asynchronous motor 1: Reservations 2: Permanent magnet synchronous motor	0	★
P11.01	Motor rated power	0.1kW～1000.0kW	Model Determination	★
P11.02	Motor rated voltage	1V to 2000V	Model Determination	★
P11.03	Motor rated current	0.01A～655.35A (VFD power <=55kW) 0.1A～6553.5A (VFD power >55kW)	Model Determination	★
P11.04	Motor rated frequency	0.01Hz to maximum frequency	Model Determination	★
P11.05	Rated motor speed	1rpm～65535rpm	Model Determination	★
P11.06	reservations			
P11.07	reservations			
P11.08	reservations			
P11.09	reservations			
P11.10	reservations			
P11.11 ~ P11.15	reservations			
P11.16	Synchronous motor stator resistance	0.001Ω～65.535Ω (VFD power <=55kW) 0.0001Ω～6.5535Ω (VFD power>55kW)	tuning parameter	★

P11.17	Synchronous motor D-axis inductance	0.01mH～655.35mH (VFD power <=55kW) 0.001mH～65.535mH (VFD power >55kW)	tuning parameter	★
P11.18	Synchronous motor Q-axis inductance	0.01mH～655.35mH (VFD power <=55kW) 0.001mH～65.535mH (VFD power >55kW)	tuning parameter	★
P11.19	Synchronous Motor Inductance Resistance Unit	0 to 12	0	
P11.20	Synchronous motor reaction potential	0.1V～6553.5V	tuning parameter	★
P11.21	Synchronizer Output Out-of-Phase Detection Time	0 to 60000	0	
P11.22 ~ P11.26	reservations			
P11.27	Number of encoder pulses	1 to 65535	1024	★
P11.28	Encoder Type	0: ABZ incremental encoder 1: Reserved 2: Rotary Transformer 3: Reserved 4: Reserved	0	★
P11.29	reservations		0	★
P11.30	ABZ Incremental Encoder AB Phase Sequence	0: Forward 1: Reverse	0	★
P11.31	Encoder mounting angle	0.0 to 359.9°	0.0°	★
P11.32	reservations		0	★
P11.33	reservations		0.0°	★

P11.34	Rotary Transformer Pole Pairs	1 to 65535	1	★
P11.35	reservations		4	
P11.36	Speed feedback PG break detection time	0.0: No action 0.1s～10.0s	0	★
P11.37	Tuning Options	0: No operation 1: Reservations 2: Reservations 11: Synchronous machine static tuning 12: Synchronous machine complete tuning	0	★

6.12 Motor 1 vector control group P12

Function code	Name	Setting range	Factory value	Variation
P12.00	Velocity loop proportional gain 1	1 to 100	30	☆
P12.01	Velocity loop integration time1	0.01s～10.00s	0.50s	☆
P12.02	Switching frequency 1	0.00 to P02.05	5.00Hz	☆
P12.03	Velocity loop proportional gain 2	1 to 100	20	☆
P12.04	Velocity loop integration time2	0.01s～10.00s	1.00s	☆
P12.05	Switching frequency 2	P02.02～Maximum frequency	10.00Hz	☆
P12.06	Vector Control Differential Gain	50% to 200%	100%	☆
P12.07	reservations			
P12.08	Vector control overexcitation gain	0 to 200	64	☆

P12.09	Torque upper limit source in speed control mode (electric)	0: P12.10 Setting 1: AI1 2: AI2 3: AI3 4: PULSE Pulse 5: Communication given 6: MIN(AI1,AI2) 7: MAX(AI1,AI2) The full-scale range of options 1-7 corresponds to P12.10.	0	☆
P12.10	Digital setting of upper torque limit in speed control mode (electric)	0.0% - 200.0%	150.00%	☆
P12.11	Torque upper limit source in speed control mode (power generation)	0: P12.12 setting 1: AI1 2: AI2 3: AI3 4: PULSE Pulse 5: Communication given 6: MIN(AI1,AI2) 7: MAX(AI1,AI2) The full-scale range of options 1-7 corresponds to P12.12.	0.00%	☆
P12.12	Digital setting of upper torque limit in speed control mode (power generation)	0.0% - 200.0%	150.00%	☆
P12.13	Excitation regulation proportional gain	0 to 60000	2000	☆
P12.14	Excitation Regulation Integral Gain	0 to 60000	1300	☆

P12.15	Torque Adjustment Proportional Gain	0 to 60000	2000	☆
P12.16	Torque Regulation Integral Gain	0 to 60000	1300	☆
P12.17	Speed Ring Points Properties	Single digit: separation of points 0: Invalid 1: valid	0	☆
P12.18	Synchronous machine weak magnetic mode	0:Weak magnetism invalid 1:Direct calculation mode 2:Automatic adjustment mode	1	☆
P12.19	synchronous machine weak magnetic coefficient	0 to 50	5	☆
P12.20	Maximum weak magnetic current	1% to 300%	50%	☆
P12.21	Automatic gain adjustment for weak magnetism	10% to 500%	100%	☆
P12.22	Generation torque limit effective enable	0 1	0	☆
P12.23	Synchronizer output voltage saturation margin	1%～ 50%	5%	☆
P12.24	Synchronizer initial position angle detection current	50%～ 180%	80%	☆
P12.25	Synchronizer initial position angle detection	0,1,2	0	☆
P12.26	reservations			
P12.27	Synchronizer Convexity Adjustment Gain	50～ 500	100	☆

P12.28	Maximum torque to current ratio control	0,1	0	☆
P12.29	Feedforward compensation mode	0	0	
P12.30	Current loop Kp adjustment during tuning	1 to 100	6	☆
P12.31	Current loop Ki adjustment during tuning	1 to 100	6	☆
P12.32	Z Signal Correction	0,1	1	☆
P12.33	SVC speed estimation filter coefficients	10～ 1000	100	☆
P12.34	Synchronizer SVC speed estimation proportional gain	5～ 200	40	
P12.35	Synchronous machine SVC speed estimation integral gain	5～ 200	30	
P12.36	Synchronous machine SVC Initial excitation current limit value	0～ 80%	30%	☆
P12.37	Synchronizer SVC Starting Minimum Carrier Frequency	0.8K ~ P08.15	1.5K	☆
P12.38	Low frequency operation mode	0,1	0	
P12.39	braking frequency	0～ 1000	200	
P12.40	reservations			
P12.41	Low frequency braking current	0～ 80	50	

P12.42	Synchronizer SVC Speed Tracking	0 1 ～	0	☆
P12.43	Zero servo enable	0 1 ～	0	☆
P12.44	Switching frequency	0.00 to P12.02	0.30Hz	☆
P12.45	Zero servo speed loop proportional gain	1 to 100	10	☆
P12.46	Zero servo speed loop Integral time	0.01s ~ 10.00s	0.50s	☆
P12.47	Stopping the machine prohibits reversal	0 1 ～	0	☆
P12.48	Stopping Angle	0.0° ～ 10.0°	0.8°	☆
P12.49	no-tuning mode	0,1,2	0	☆
P12.50	Online reverse potential recognition enable	0,1	0	☆
P12.51	SVC initial position compensation angle	0 to 360.0	0	

6.13 Motor 2 vector control group P13

Function code	Name	Setting range	Factory value	Variation
P13.00	Velocity loop proportional gain 1	1 to 100	30	☆
P13.01	Velocity loop integration time1	0.01s～10.00s	0.50s	☆
P13.02	Switching frequency 1	0.00 to P13.05	5.00Hz	☆
P13.03	Velocity loop proportional gain 2	1 to 100	20	☆
P13.04	Velocity loop integration time2	0.01s～10.00s	1.00s	☆
P13.05	Switching frequency 2	P13.02 ~ Maximum frequency	10.00Hz	☆
P13.06	Vector Control Differential Gain	50% to 200%	100%	☆

P13.07	Velocity loop filtering time constant	0.000s～0.100s	0.000s	☆
P13.08	Vector control overexcitation gain	0 to 200	64	☆
P13.09	Torque upper limit source in speed control mode (electric)	0: P13.10 setting 1: AI1 2: AI2 3: AI3 4: PULSE Pulse 5: Communication given 6: MIN(AI1,AI2) 7: MAX(AI1,AI2) 1.7 Full scale of option, corresponds to P13.10 digital setting.	0	☆
P13.10	Digital setting of upper torque limit in speed control mode (electric)	0.0% - 200.0%	150.00%	☆
P13.11	Torque upper limit source in speed control mode (power generation)	0: P13.12 setting 1: AI1 2: AI2 3: AI3 4: PULSE Pulse 5: Communication given 6: MIN(AI1,AI2) 7: MAX(AI1,AI2) 1.7 Full scale of option, corresponding to P13.12 Digital setting	0.00%	☆
P13.12	Digital setting of upper torque limit in speed control mode (power generation)	0.0% - 200.0%	150.00%	☆
P13.13	Excitation regulation proportional gain	0 to 60000	2000	☆

P13.14	Excitation Regulation Integral Gain	0 to 60000	1300	☆
P13.15	Torque Adjustment Proportional Gain	0 to 60000	2000	☆
P13.16	Torque Regulation Integral Gain	0 to 60000	1300	☆
P13.17	Speed Ring Points Properties	Single digit: separation of points 0: Invalid 1: valid	0	☆
P13.18	Synchronous machine weak magnetic mode	0:Weak magnetism invalid 1:Direct calculation mode 2:Automatic adjustment mode	1	☆
P13.19	synchronous machine weak magnetic coefficient	0 to 50	5	☆
P13.20	reservations			
P13.21	reservations			
P13.22	Generation torque limit effective enable	0,1	0	☆
P13.23	Motor 2 control method	0: Vector control without speed sensor (SVC) 1: Vector control with speed sensor (FVC) 2: V/F control	2	★
P13.24	Motor 2 acceleration and deceleration time selection	0: Same as motor 1 1: Acceleration and deceleration time 1 2: Acceleration and deceleration time 2 3: Acceleration and deceleration time 3 4: Acceleration and deceleration time 4	0	☆
P13.25	Torque Increase	0.0%: (automatic torque boost) 0.1% to 30.0	Model Determination	☆

P13.26	reservations			
P13.27	Oscillation suppression gain	0 to 100	Model Determination	☆
P13.28	Synchronizer output voltage saturation margin	1% to 50%	5%	☆
P13.29	Synchronizer initial position angle detection current	50% to 180%	80%	☆
P13.30	Synchronizer initial position angle detection	0,1,2	0	☆
P13.31	reservations			
P13.32	Synchronizer Convexity Adjustment Gain	50-500	100	☆
P13.33	Maximum torque to current ratio control	0,1	0	☆
P13.34	Feedforward compensation mode	0	0	
P13.35	Current loop Kp adjustment during tuning	1 to 100	6	☆
P13.36	Current loop Ki adjustment during tuning	1 to 100	6	☆
P13.37	Z Signal Correction	0,1	1	☆
P13.38	SVC speed estimation filter coefficients	10 to 1000	100	☆
P13.39	Synchronizer SVC speed estimation proportional gain	5 to 200	40	
P13.40	Synchronous machine SVC speed estimation integral gain	5 to 200	30	

P13.41	Synchronous machine SVC Initial excitation current limit value	0 to 80%	30%	☆
P13.42	Synchronizer SVC Starting Minimum Carrier Frequency	0.8K ~ P08.15	1.5K	☆
P13.43	Low frequency operation mode	0,1	0	
P13.44	braking frequency	0 to 1000	200	
P13.45	reservations			
P13.46	Low frequency braking current	0 to 80	50	
P13.47	Synchronizer SVC Speed Tracking	0 to 1	0	☆
P13.48	Zero servo enable	0 1 ～	0	☆
P13.49	Switching frequency	0.00 to P12.02	0.30Hz	☆
P13.50	Zero servo speed loop proportional gain	1 to 100	10	☆
P13.51	Zero servo speed loop Integral time	0.01s ~ 10.00s	0.50s	☆

6.14 Communication basic parameter set P14

Function code	Name	Setting range	Factory value	Variation
P14.00	Communication Expansion Card Type	0: Modbus communication card 1: PN communication card 2: Reserved	0	☆

P14.01	baud	Bit: MODBUS 0: 300BPS 1: 600BPS 2：1200BPS 3：2400BPS 4：4800BPS 5：9600BPS 6：19200BPS 7：38400BPS 8：57600BPS 9：115200BPS 0：115200BPs 1：208300BPs 2：256000BPs 3：512000Bps Hundredths: Reserved Thousand bits: Reserved	5009	☆
P14.02	MODBUS Data Format	0: no checksum (8-N-2) 1: Even Check (8-E-1) 2: Odd Check (8-O-1) 3: No checksum (8-N-1) (MODBUS valid)	3	☆
P14.03	Local address	1 to 247, 0 is the broadcast address	1	☆
P14.04	Latency of reply	0ms to 20ms	2	☆
P14.05	Communication timeout	0.0 (invalid), 0.1s to 60.0s	0	☆
P14.06	Data transfer format selection	Digits: MODBUS 0: Non-standard MODBUS protocols 1: Standard MODBUS protocol Ten: PN 0: PPO1 format 1: PPO2 format 2: PPO3 format 3: PPO5 format	31	☆
P14.07	Communication reading current resolution	0: 0.01A 1: 0.1A	0	☆
P14.08	Communication master-slave mode	0,1	0	
P14.09	Expansion card communication interruption timeout	0 to 60.0	0	

6.15 PID Module Group P15

Function code	Name	Setting range	Factory value	Variation

P15.00	PID given source	0: P15.01 setting 1: AI1 2: AI2 3: AI3 4: PULSE pulse setting (DI5) 5：Communication given 6：Multi-segment command given	0	☆
P15.01	PID value given	0.0% to 100.0%	50.00%	☆
P15.02	PID Feedback Source	0: AI1 1: AI2 2: AI3 3: AI1.AI2 4: PULSE pulse setting (DI5) 5: Communication given 6: AI1+AI2 7: MAX (|AI1|, |AI2|) 8: MIN (|AI1|, |AI2|)	0	☆
P15.03	Direction of PID action	0: Positive effect 1: Counterproductive	0	☆
P15.04	PID Feedback Range	0 to 65535	1000	☆
P15.05	Proportional gain	0.0 to 100.0	20	☆
P15.06	Integration time	0.01s～10.00s	2.00s	☆
P15.07	Differential time	0.000s～10.000s	0.000s	☆
P15.08	PID inversion	0.00 to maximum frequency	2.00Hz	☆
P15.09	PID Deviation Limit	0.0% to 100.0%	0.00%	☆
P15.10	PID differential	0.00% to 100.00%	0.10%	☆
P15.11	PID given change	0.00 to 650.00s	0.00s	☆
P15.12	PID feedback	0.00 to 60.00s	0.00s	☆
P5.13	PID output	0.00 to 60.00s	0.00s	☆
P15.14	Reservations	-	-	☆
P15.15	Proportional gain	0.0 to 100.0	20	☆
P15.16	Integration time	0.01s～10.00s	2.00s	☆
P15.17	Differential time	0.000s～10.000s	0.000s	☆

P15.18	PID parameter switching conditions	0: No switching 1: Switching via DI terminal 2: Automatic switching according to deviation	0	☆
P15.19	PID parameter	0.0% to P15.20	20.00%	☆
P15.20	PID parameter	P15.19 to 100.0%	80.00%	☆
P15.21	PID initial value	0.0% to 100.0%	0.00%	☆
P15.22	PID initial value	0.00 to 650.00s	0.00s	☆
P15.23	Positive maximum of	0.00% to 100.00%	1.00%	☆
P15.24	Two output	0.00% to 100.00%	1.00%	☆
P15.25	PID Integral Properties	Single digit: separation of points 0: Invalid 1: valid Ten bits: whether to stop integrating after the output	0	☆
P15.26	PID feedback loss detection value	0.0%: No judgment of feedback loss	0.00%	☆
P15.27	PID feedback loss	0.0s～20.0s	0.0s	☆
P15.28	PID stopping operation	0: No calculation during shutdown 1: Calculated during shutdown	0	☆

6.16 Digital Arithmetic Module Group P16

Function code	Name	Setting range	Factory value	Variation
P16.00	Virtual VDI1	0 to 59	0	★
P16.01	Virtual VDI2	0 to 59	0	★
P16.02	Virtual VDI3	0 to 59	0	★
P16.03	Virtual VDI4	0 to 59	0	★
P16.04	Virtual VDI5	0 to 59	0	★

P16.05	Virtual VDI Terminal Status Setting Mode	0: Whether VDI is valid or not is determined by the state of virtual VDOx 1: Whether VDI is valid or not is set by function code P16.06 Bit: Virtual VDI1 Ten: Virtual VDI2	0	★
P16.06	Virtual VDI Terminal Status Settings	0: Invalid 1: Valid Bit: Virtual VDI1 Ten: Virtual VDI2 Hundredths: Virtual VDI3 Thousands: Virtual VDI4 10,000 Bit: Virtual VDI5	0	★
P16.07	Function selection when AI1 terminal is used as DI	0 to 59	0	★
P16.08	Function selection when AI2 terminal is used as DI	0 to 59	0	★
P16.09	Function selection when AI3 terminal is used as DI	0 to 59	0	★
P16.10	Valid mode selection when AI terminal is used as DI	0: High level active 1: active low Single digit: AI1 Tenth position: AI2 Hundred: AI3	0	★
P16.11	Virtual VDO1 output function selection	0: Internally shorted to physical DIx 1 to 40: see P04 group physical DO output selection	0	☆
P16.12	Virtual VDO2 output function selection	0: Internally shorted to physical DIx 1 to 40: see P04 group physical DO output selection	0	☆

P16.13	Virtual VDO3 output function selection	0: Internally shorted to physical DIx 1 to 40: see P04 group physical DO output selection	0	☆
P16.14	Virtual VDO4 output function selection	0: Internally shorted to physical DIx 1 to 40: see P04 group physical DO output selection	0	☆
P16.15	Virtual VDO5 output function selection	0: Internally shorted to physical DIx 1 to 40: see P04 group physical DO output selection	0	☆
P16.16	VDO1 output delay	0.0s～3600.0s	0.0s	☆
P16.17	VDO2 Output Delay	0.0s～3600.0s	0.0s	☆
P16.18	VDO3 output delay	0.0s～3600.0s	0.0s	☆
P16.19	VDO4 Output Delay	0.0s～3600.0s	0.0s	☆
P16.20	VDO5 Output Delay	0.0s～3600.0s	0.0s	☆
P16.21	VDO output terminal valid state selection	0: Positive logic 1: Antilogic Bit: VDO1 Tenth position: VDO2 Hundredth: VDO3 Thousandths: VDO4 10,000 positions: VDO5	0	☆

6.17 Analog Advanced Settings Group P19

Function code	Name	Setting range	Factory value	Variation
P19.00	AI Curve 4 Minimum	-10.00V to P19.02	-10.00V	☆
P19.01	AI Curve 4 Minimum	-100.0%～+100.0%	-100.0%	☆
P19.02	AI curve 4 inflection	P19.00～ P19.04	3.00V	☆
P19.03	AI Curve 4 Inflection	-100.0%～+100.0%	30.00%	☆
P19.04	AI curve 4 inflection	P19.02～ P19.06	6.00V	☆
P19.05	AI Curve 4 Inflection	-100.0%～+100.0%	60.00%	☆

P19.06	AI Curve 4 Maximum	P19.04 to +10.00V	10.00V	☆
P19.07	AI Curve 4 Maximum	-100.0%～+100.0%	100.00%	☆
P19.08	AI Curve 5 Minimum	-10.00V to P19.10	-10.00V	☆
P19.09	AI Curve 5 Minimum	-100.0%～+100.0%	-100.00%	☆
P19.10	AI curve 5 inflection	P19.08～ P19.12	-3.00V	☆
P19.11	AI Curve 5 Inflection	-100.0%～+100.0%	-30.00%	☆
P19.12	AI curve 5 inflection	P19.10～ P19.14	3.00V	☆
P19.13	AI Curve 5 Inflection	-100.0%～+100.0%	30.00%	☆
P19.14	AI Curve 5 Maximum	P19.12 to +10.00V	10.00V	☆
P19.15	AI Curve 5 Maximum	-100.0%～+100.0%	100.00%	☆
P19.16~ P19.23	reservations			
P19.24	AI1 sets the jump point	-100.0% to 100.0%	0.00%	☆
P19.25	AI1 sets the jump range	0.0% to 100.0%	0.50%	☆
P19.26	AI2 sets the jump point	-100.0% to 100.0%	0.00%	☆
P19.27	AI2 sets the jump range	0.0% to 100.0%	0.50%	☆
P19.28	AI3 sets the jump point	-100.0% to 100.0%	0.00%	☆
P19.29	AI3 sets the jump range	0.0% to 100.0%	0.50%	☆
P19.30	AI1 Measured voltage 1	-10.000V ~ 10.000V	Factory calibration	☆
P19.31	AI1 Display voltage 1	-10.000V ~ 10.000V	Factory calibration	☆
P19.32	AI1 Measured voltage 2	-10.000V ~ 10.000V	Factory calibration	☆
P19.33	AI1 Display voltage 2	-10.000V ~ 10.000V	Factory calibration	☆
P19.34	AI2 Measured voltage 1	-10.000V ~ 10.000V	Factory calibration	☆
P19.35	AI2 Display voltage 1	-10.000V ~ 10.000V	Factory calibration	☆
P19.36	AI2 Measured voltage 2	-10.000V ~ 10.000V	Factory calibration	☆
P19.37	AI2 Display voltage 2	-10.000V ~ 10.000V	Factory calibration	☆

P19.38	AI3 Measured voltage 1	-10.000V ~ 10.000V	Factory calibration	☆
P19.39	AI3 Display voltage 1	-10.000V ~ 10.000V	Factory calibration	☆
P19.40	AI3 Measured voltage 2	-10.000V ~ 10.000V	Factory calibration	☆
P19.41	AI3 Display voltage 2	-10.000V ~ 10.000V	Factory calibration	☆
P19.42	AO1 Target voltage 1	0.500V to 4.000V	Factory calibration	☆
P19.43	AO1 Measured voltage 1	0.500V to 4.000V	Factory calibration	☆
P19.44	AO1 Target voltage 2	6.000V to 9.999V	Factory calibration	☆
P19.45	AO1 Measured voltage 2	6.000V to 9.999V	Factory calibration	☆
P19.46	AO2 Target voltage 1	0.500V to 4.000V	Factory calibration	☆
P19.47	AO2 Measured voltage 1	0.500V to 4.000V	Factory calibration	☆
P19.48	AO2 Target voltage 2	6.000V to 9.999V	Factory calibration	☆
P19.49	AO2 Measured voltage 2	6.000V to 9.999V	Factory calibration	☆

6.18 Torque control group P20

Function code	Name	Setting range	Factory value	Variation
P20.00	Speed/torque control method	0: Speed control 1: Torque control	0	★
P20.01	Torque Setting Source Selection in Torque Control Mode	0: Digital setting 1 (P20.03) 1: AI1 2: AI2 3: AI3 4: High-speed pulse 5: Communication given 6: MIN (AI1,AI2) 7: MAX (AI1,AI2) (full scale for options 1-7, corresponding	0	★

P20.02	reservations			
P20.03	Digital setting of torque in torque	-200.0% to 200.0%	150.00%	☆
P20.04	Torque Filtering	0 to 10.00	0.00%	
P20.05	Torque control forward maximum	0.00Hz to maximum frequency	50.00 Hz	☆
P20.06	Torque control reverse maximum	0.00Hz to maximum frequency	50.00 Hz	☆
P20.07	Torque controlled	0.00s to 650.00s	0.00s	☆
P20.08	Torque controlled	0.00s to 650.00s	0.00s	☆

6.19 Advanced Control Parameter Group P21

Function code	Name	Setting range	Factory value	Variation
P21.00	Tap operation frequency	0.00Hz to maximum frequency	2.00Hz	☆
P21.01	Tap acceleration time	0.0s～6500.0s	20.0s	☆
P21.02	Tap deceleration time	0.0s～6500.0s	20.0s	☆
P21.03	Acceleration time 2	0.0s～6500.0s	Model Determination	☆
P21.04	Deceleration time 2	0.0s～6500.0s	Model Determination	☆
P21.05	Acceleration time 3	0.0s～6500.0s	Model Determination	☆
P21.06	Deceleration time 3	0.0s～6500.0s	Model Determination	☆

P21.07	Acceleration time 4	0.0s～6500.0s	Model Determination	☆
P21.08	Deceleration time4	0.0s～6500.0s	Model Determination	☆
P21.09	Jump Frequency 1	0.00Hz to maximum frequency	0.00Hz	☆
P21.10	Jump Frequency 2	0.00Hz to maximum frequency	0.00Hz	☆
P21.11	hopping frequency amplitude	0.00Hz to maximum frequency	0.00Hz	☆
P21.12	Forward and reverse dead time	0.0s～3000.0s	0.0s	☆
P21.13	Reverse Control Enable	0: Allowed 1: Prohibited	0	☆
P21.14	Set frequency below lower limit frequency operation mode	0: Run at lower frequency limit 1: Stop 2: Zero speed operation	0	☆
P21.15	sag control	0.0% to 100.0%	0.0%	☆
P21.16	Setting the cumulative power-up arrival time	0h～65000h	0h	☆
P21.17	Setting the cumulative running arrival time	0h～65000h	0h	☆
P21.18	Startup Protection Selection	0: not protected 1: protected	1	☆
P21.19	Frequency Detection Value (FDT1)	0.00Hz to maximum frequency	50.00 Hz	☆
P21.20	Frequency detection hysteresis (FDT1)	0.0% to 100.0% (FDT1 level)	5.00%	☆
P21.21	Frequency Reach Detection Width	0.0% to 100.0% (maximum frequency)	0.00%	☆

P21.22	Jumping frequency during acceleration and deceleration Effective or not	0: not valid 1: valid	0	☆
P21.23	reservations			
P21.24	reservations			
P21.25	Acceleration time 1 and acceleration time 2 switching frequency points	0.00Hz to maximum frequency	0.00Hz	☆
P21.26	Deceleration time 1 and deceleration time 2 switching frequency points	0.00Hz to maximum frequency	0.00Hz	☆
P21.27	Terminal Tap Priority	0: not valid 1: valid	0	☆
P21.28	Frequency Detection Value (FDT2)	0.00Hz to maximum frequency	50.00 Hz	☆
P21.29	Frequency detection hysteresis (FDT2)	0.0% to 100.0% (FDT2 level)	5.00%	☆
P21.30	Arbitrary arrival frequency detection value 1	0.00Hz to maximum frequency	50.00 Hz	☆
P21.31	Arbitrary arrival frequency detection width1	0.0% to 100.0% (maximum frequency)	0.00%	☆
P21.32	Arbitrary arrival frequency detection value 2	0.00Hz to maximum frequency	50.00 Hz	☆
P21.33	Arbitrary arrival frequency detection width2	0.0% to 100.0% (maximum frequency)	0.00%	☆

P21.34	Zero current detection level	0.0% to 300.0% 100.0% corresponds to rated motor current	5.00%	☆
P21.35	Zero current detection delay time	0.01s～600.00s	0.10s	☆
P21.36	Output current overrun	0.0% (without detection) 0.1% to 300.0% (motor rated current)	200.00%	☆
P21.37	Output current overrun detection delay time	0.00s～600.00s	0.00s	☆
P21.38	Arbitrary arrival current1	0.0% to 300.0% (motor rated current)	100.00%	☆
P21.39	Arbitrary arrival current1 width	0.0% to 300.0% (motor rated current)	0.00%	☆
P21.40	Arbitrary arrival current2	0.0% to 300.0% (motor rated current)	100.00%	☆
P21.41	Arbitrary arrival current2 width	0.0% to 300.0% (motor rated current)	0.00%	☆
P21.42	Timer function selection	0:Invalid 1:Valid	0	☆
P21.43	Timed runtime selection	0: P21.44 setting 1: AI1 2: AI2 3: AI3 The analog input range corresponds to P21.44.	0	☆
P21.44	Timed Runtime	0.0Min～6500.0Min	0.0 Min	☆
P21.45	AI1 Input voltage protection value lower limit	0.00V to P21.46	3.10V	☆
P21.46	AI1 input voltage protection value upper limit	P21.45 to 10.00V	6.80V	☆

P21.47	Module temperature reaches	0℃～100℃	75° C	☆
P21.48	Cooling Fan Control	0: Fan running during operation 1: Fan running all the time	0	☆
P21.49	wake-up frequency	Dormant frequency (P08.51) to maximum frequency (P08.10)	0.00Hz	☆
P21.50	Wake-up delay time	P 0.0s to 6500.0s	0.0s	☆
P21.51	Sleeping frequency	0.00Hz to wake-up frequency (P21.49)	0.00Hz	☆
P21.52	Sleep delay time	0.0s～6500.0s	0.0s	☆
P21.53	Arrival time setting for this run	0.0Min～6500.0Min	0.0 Min	☆
P21.54	Output power correction factor	0.00% - 200.0%	100.00%	☆
P21.55	Current correction factor	0~200%	100.00%	☆
P21.56	Output voltage display mode	0,1	0	
P21.57	DPWM switching upper frequency	5.00Hz to P08.10	12.00Hz	☆
P21.58	PWM modulation method	0: Asynchronous modulation 1: synchronous modulation	0	☆
P21.59	Deadband compensation mode selection	0: No compensation 1: Compensation mode 1	1	☆
P21.60	Random PWM depth	0: Random PWM invalid 1 to 10: PWM carrier frequency random depth	0	☆
P21.61	Fast Current Limit Enable	0: not enabled 1: Enable	1	☆
P21.62	modulation factor	100 to 120	110	☆
P21.63	Undervoltage point setting	60.0V to 1100.0V	Model Determination	☆
P21.64	reservations			

P21.65	Dead time adjustment	100% to 200%	150%	☆
P21.66	Overpressure point setting	200.0V to 2200.0V	Model Determination	★

6.20 Status Monitoring Group P23

Function code	Name	Smallest unit	Mail address	
P23.00	Operating frequency	0.01Hz	7000H	
P23.01	Setting frequency	0.01Hz	7001H	
P23.02	Busbar voltage (V)	0.1V	7002H	
P23.03	Output Voltage (V)	1V	7003H	
P23.04	Output Current (A)	0.01A	7004H	
P23.05	Output power (kW)	0.1kW	7005H	
P23.06	Output torque (%)	0.10%	7006H	
P23.07	DI Input Status	1	7007H	
P23.08	DO Output Status	1	7008H	
P23.09	AI1 Voltage (V)	0.01V	7009H	
P23.10	AI2 Voltage (V) / Current (mA)	0.01V/0.01mA	700AH	
P23.11	AI3 Voltage (V)	0.01V	700BH	
P23.12	numerical value	1	700CH	
P23.13	length value	1	700DH	
P23.14	Load speed display	1	700EH	
P23.15	PID setting	1	700FH	
P23.16	PID Feedback	1	7010H	
P23.17	PLC Phase	1	7011H	
P23.18	PULSE Input Pulse F	0.01kHz	7012H	
P23.19	Feedback speed (Hz)	0.01Hz	7013H	
P23.20	Remaining running t	0.1Min	7014H	
P23.21	AI1 Pre-correction	0.001V	7015H	
P23.22	AI2 Voltage (V) / C	0.001V/0.01mA	7016H	
P23.23	AI3 Voltage before	0.001V	7017H	
P23.24	Linear velocity	1m/Min	7018H	
P23.25	Current power-up ti	1Min	7019H	
P23.26	Current Runtime	0.1Min	701AH	

P23.27	PULSE Input pulse f	1Hz	701BH	
P23.28	Communication Setpo	0.01%	701CH	
P23.29	Encoder feedback sp	0.01Hz	701DH	
P23.30	Main Frequency X Di	0.01Hz	701EH	
P23.31	Auxiliary frequency	0.01Hz	701FH	
P23.32	View any memory add	1	7020H	
P23.33	Synchronizer rotor		7021H	
P23.34	Motor temperature v	1° C	7022H	
P23.35	Target torque (%)	0.10%	7023H	
P23.36	Rotary position	100.00%	7024H	
P23.37	Power factor perspe	0.1°	7025H	
P23.38	ABZ Position	1	7026H	
P23.39	VF Separation targe	1V	7027H	
P23.40	VF Separate output	1V	7028H	
P23.41	DI input status vis	1	7029H	
P23.42	DO Input status vis	1	702AH	
P23.43	DI Function status	1	702BH	
P23.44	DO Function status	1	702CH	
P23.45	error message (comp	1	702DH	
P23.46	Master-slave contro		702EH	
P23.47~ P23.57	reservations			
P23.58	Z Signal Counter	100.00%	703AH	
P23.59	Setting frequency	0.01%	703BH	
P23.60	Operating frequency	0.01%	703CH	
P23.61	VFD status	1	703DH	
P23.62	Current Fault Code	1	703EH	
P23.63	Peer-to-peer commun	0.01%	703FH	
P23.64	Number of slaves	1	7040H	
P23.65	Upper torque limit	0.01%	7041H	
P23.66	Communication contr			

P23.67	Communication Contr			
P23.68	Reservations			
P23.69	Reservations			
P23.70	RPM 1RMP			
P23.71	Current display for			
P23.72	Communication card			
P23.73	Motor serial number			
P23.74	Reverse potential d	0.1V	704AH	

7. Detailed Parameter Function Description

7.1 Parameter Control P 0

P00.00	User password	Factory value	0
	Setting range	0～ 65535	

P00.00 Set any non-zero number, then the password protection function takes effect. The next time you enter the menu, you must enter the password correctly, otherwise you can not view and modify the function parameters, please keep in mind the user password set.

Setting P00.00 to 00000 clears the set user password and invalidates the password protection function.

P00.01	Parameter initialization		Factory value	0
	Setting range	0	no operation	
		1	Restore factory parameters, excluding motor parameters	
		2	Clearing Recorded Information	

1、Restore factory set values, excluding motor parameters

After setting P00.01 to 1, most of the VFD function parameters are restored to the manufacturer's factory parameters, but the following parameters are not restored:

1）Manufacturer's parameters (group P1).

2）Parameter control group: P00.00, P00.01.

3）Fault logging information: P07.14～ P07.45.

4）Motor parameters: P10.34～ P10.55, P11.00～ P11.21.

5) Cumulative running time (P02.09), cumulative power-up time (P02.13), cumulative power consumption (P02.14) ;

6) Maximum frequency (P08.10), upper limit frequency (P08.12).

7) Vector control parameters: P12.13～ P12.16, P13.13～ P13.16.

2. Clearing record information

Clears the VFD fault record information, accumulated running time (P02.09), accumulated power-on time (P02.13), and accumulated power consumption (P02.14).

P00.02	Functional Parameter Mode Display Attributes		Factory value	11
	Setting range	the units place (or column) in the decimal system	P23,P27 group display selection	
		0	not shown	
		1	demonstrate	
		the tens place (or column) in the decimal system	P11,P13,P16,P19,P20,P21 group display selection	
		0	not shown	
		1	demonstrate	

P00.04	Function Code Modification		Factory value	0
	Setting range	0	Modifiable	
		1	Unmodifiable	

The user sets whether the function code parameters can be modified or not, and is used to prevent the risk of the function parameters being altered by mistake.

When this function code is set to 0, all function codes can be modified;

when it is set to 1, all function codes can only be viewed and cannot be modified.

7.2 Panel Setup P2

P02.01	F2 key function selection		Factory value	0
	Found order Example wear by wrapping around (scarf, shawl)	0	F2 key is invalid	
		1	Reservations	
		2	Forward and reverse switching	
		3	Rotary motion	
		4	Inversion point movement	

The F2 key is a multi-function key, and the functions of the F2 key can be set with this function code. Switching is possible with this key both in stop and in run.

0: This key has no function.

1: Reservations

2: Forward and reverse switching

The direction of the frequency command is switched with the F2 key. This function is only effective when the command source is an operation panel command channel.

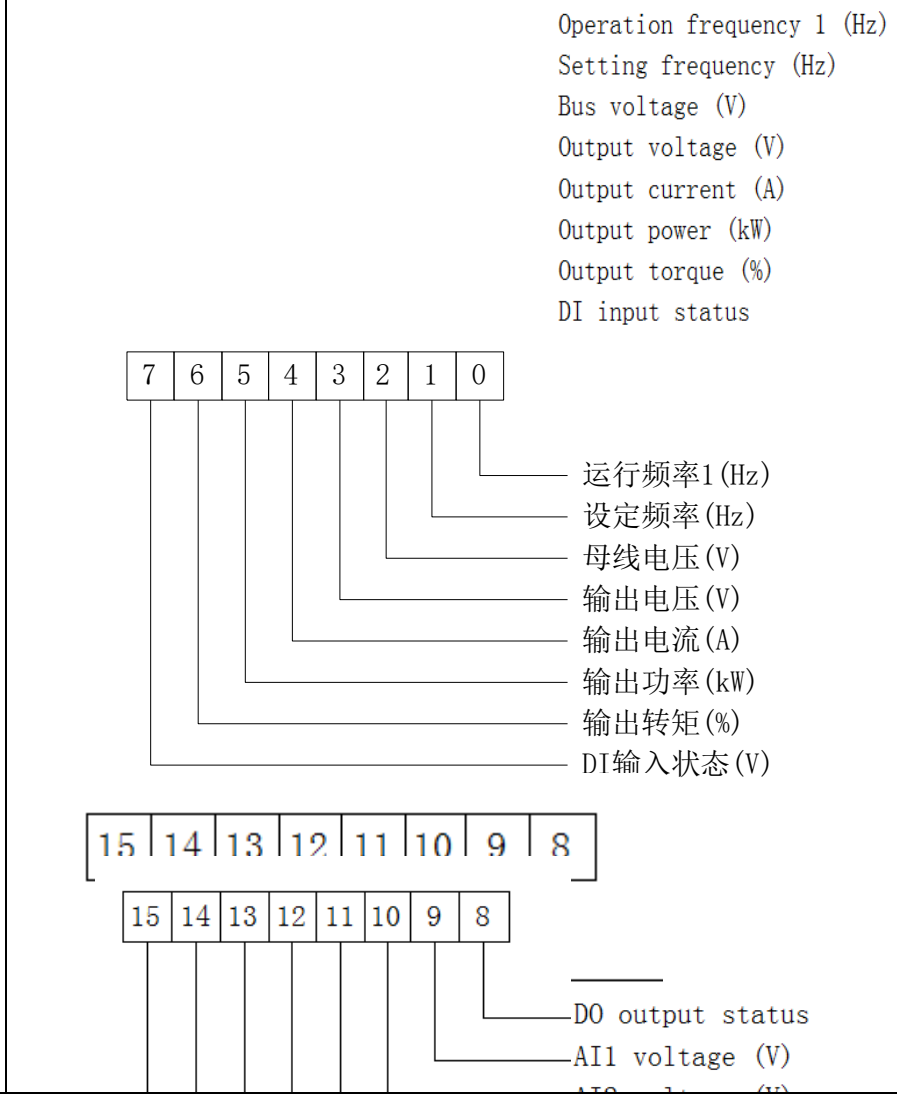
3: Positive rotation point movement

Positive rotation pointing motion (FJOG) is realized with the keyboard F2 key.

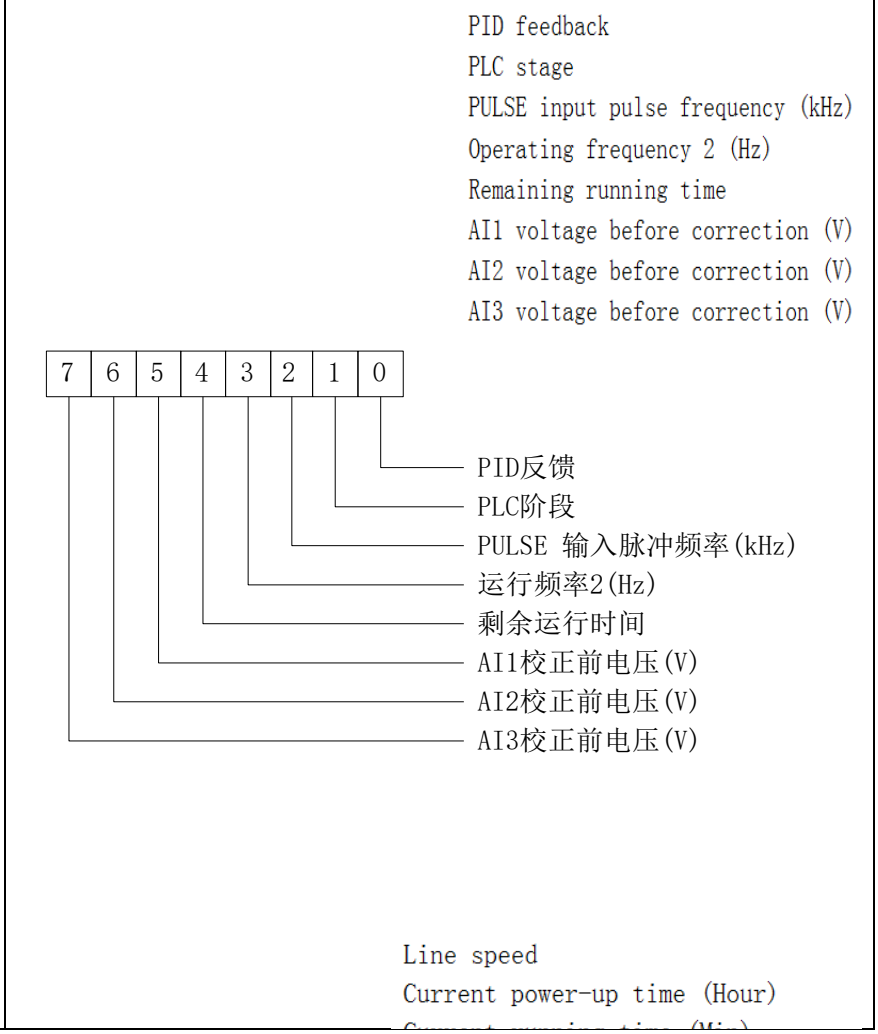
4: Reverse point movement

Reverse Jogging (RJOG) via keyboard F2 key.

	LED operating display parameter 1		Factory value	1F
P02.03	Found order example wear by wrapping around (scarf, shawl)	0000 ～ FFFF		

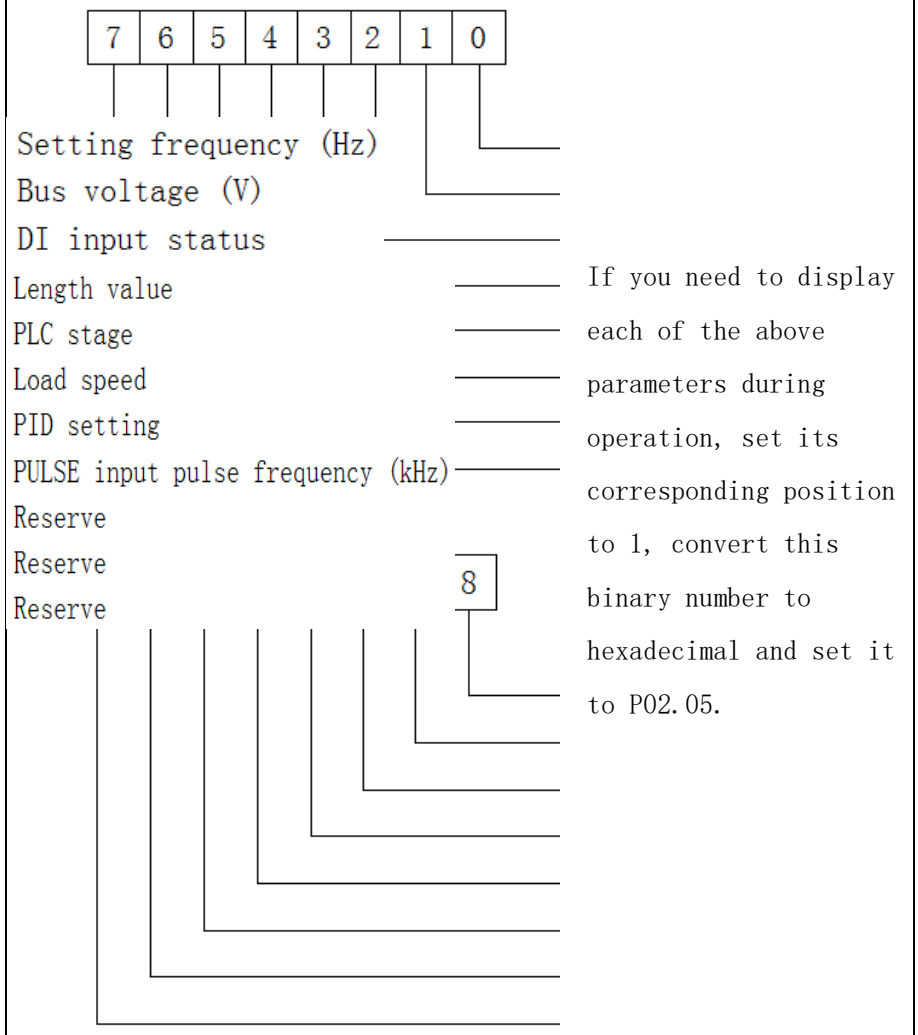


P02.02	STOP/RESET key function		Factory value	1
	Setting range	0	The STOP/RES key stop function is only available in the keypad operation mode.	
		1	The STOP/RES button stop function is available in all operating modes.	
P02.04	LED operation display parameter 2		Factory value	0
	Found order example wear by wrapping around (scarf, shawl)	0000 ～ FFFF		



Run Display Parameters, used to set the parameters that can be viewed when the VFD is in the running state.

The maximum number of status parameters that can be viewed is 32, and the status parameters to be displayed are selected according to the binary digits of each of the parameter values of P02.03 and P02.04, with the display order starting from the lowest bit of P02.03.

P02.05	LED stop display parameters	Factory value	0
	Found order example wear by wrapping around (scarf, shawl)	0000 ～FFFF	

P02.06	Load Speed Display Factor	Factory value	1.0000
	Setting range	0.0001～ 6.5000	

When the load speed needs to be displayed, the parameter is used to adjust the correspondence between the VFD output frequency and the load speed. Refer to the description of P02.12 for the specific correspondence.

P02.07	Inverter module heat sink temperature	Factory value	0
	Setting range	0.0℃～ 100.0℃	

Displays the temperature of the inverter module IGBT.

The inverter module IGBT over-temperature protection value varies from model to model.

P02.09	Cumulative running time	Factory value	0h
	Setting range	0h～ 65535h	

The accumulated running time of the VFD is displayed. When the running time reaches the set running time P21.17, the VFD multifunction digital output function (12) outputs the ON signal.

P02.11	Software version number	Factory value	
	Setting range	Control board software version number	
P02.12	Load speed display in decimal places	Factory value	1
	Setting range	0	0 decimal place
		1	1 decimal place
		2	2 decimal places
		3	3 decimal places

Bit:

Used to set the number of decimal places for the load speed display. The following is an example of how the load speed is calculated:

If the load speed display coefficient P02.06 is 2.000 and the load speed decimal digit P02.12 is 2 (2 decimal digits), when the frequency converter is running at 40.00Hz, the load speed is: 40.00*2.000 = 80.00 (2 decimal digits display)

If the VFD is in stop state, the load speed is displayed as the speed corresponding to the set frequency, i.e. "set load speed". Take the set frequency 50.00Hz as an example, then the load speed of the shutdown state is: 50.00 * 2.000 = 100.00 (2 decimal points display)

P02.13	Cumulative power-up time	Factory value	0h
	Setting range	0h～ 65535h	

Displays the accumulated power-up time of the VFD since it was shipped from the factory.
When this time reaches the set power-on time (P21.17), the VFD multi-function digital output function (24) outputs the ON signal.

P02.14	Cumulative power consumption	Factory value	-
	Setting range	0～ 65535 degrees	

Displays the accumulated power consumption of the VFD so far.

7.3 Digital Input Terminal Block P3

The GF630N04 series VFD comes standard with 8 multifunction digital input terminals (of which HDI can be used as a high-speed pulse input terminal) and 2 analog input terminals. If more inputs and outputs are required for the system.

Function code	Name	Factory value	Note
P03.00	DI1 Terminal function selection	1 (positive rotation operation)	Standard equipment
P03.01	DI2 terminal function selection	4 (Positive Rotation Punctuation)	Standard equipment
P03.02	DI3 Terminal Function Selection	9 (fault reset)	Standard equipment
P03.03	DI4 Terminal Function Selection	12 (multiband speed 1)	Standard equipment

P03.04	HDI terminal function selection	13 (multiband speed 2)	standard equipment
P03.05	DI6 Terminal	0	standard equipment
P03.06	DI7 Terminal	0	standard equipment
P03.07	DI8 Terminal	0	standard equipment

These parameters are used to set the functions of the digital multi-function input terminals, and the functions that can be selected are shown in the table below:

Setpoint	Functions	Explanation
0	Non-functional	The unused terminals can be set to "no function" to prevent malfunction.
1	Positive rotation operation (FWD)	The forward and reverse rotation of the VFD is controlled via external terminals.
2	Reverse Run (REV)	
3	Three-wire operation control	This terminal is used to determine that the VFD operation is in 3-wire control mode. For details, refer to the description of function code P03.01 ("Terminal command mode").
4	Positive Rotation Oscillation (FJOG)	FJOG is pointing forward operation, RJOG is pointing reverse operation. See function codes P21.00, P21.01, P21.02 for the description of the frequency, acceleration and deceleration time.
5	Reversal Point (RJOG)	
6	Terminal UP	Incremental and decremental commands to modify the frequency when the frequency is given by the external terminal. When the frequency source is set digitally, the set frequency can be adjusted up or down.
7	Terminal DOWN	
8	free parking	The frequency converter blocks the output, at which point the motor stopping process is not controlled by the frequency converter. This method

		has the same meaning as free parking described in P08.38.
9	Fault reset (RESET)	Function for fault reset using the terminals. The function is the same as the RESET key on the keypad. This function enables remote fault reset.
10	run pause (in computing)	The VFD decelerates and stops, but all operating parameters are memorized. Such as PLC parameters, swing frequency parameters, PID parameters. After this terminal signal disappears, the frequency converter returns to the running state before stopping.
11	External fault normally open input	When this signal is sent to the VFD, the VFD reports fault E015 and carries out fault processing according to the fault protection action mode (refer to function P07.47 for details).
12	Multi-speed terminal 1	You can set 16 speed segments or 16 other commands by using the 16 states of these four terminals. See the attached table for details.
13	Multi-Speed Terminal 2	
14	Multi-Speed Terminal 3	
15	Multi-Speed Terminal 4	
16	Acceleration and deceleration time selection terminal 1	Four acceleration and deceleration time selections are realized by the four states of these two terminals, as detailed in the attached table.
17	Acceleration and deceleration time selection terminal 2	
18	Frequency source switching	Used to switch to select different frequency sources. According to the setting of the frequency source selection function code (P08.07), this terminal is used to realize switching between two frequency sources when switching between a certain two frequency sources is set as the frequency source.
19	UP/DOWN setting clear	When the frequency is given as a digital frequency

	(terminal, keypad)	feeder, this terminal clears the frequency value changed by terminal UP/DOWN or keypad UP/DOWN, restoring the given frequency to the value set by P08.08.
20	Run command switching terminal	When the command source is set to terminal control (P08.02=1), this terminal allows switching between terminal control and keypad control. When the command source is set to communication control (P08.02=2), this terminal allows switching between communication control and keypad control.
21	Acceleration and deceleration prohibited	Ensures that the VFD is not affected by external signals (except for the stop command) and maintains the current output frequency.
22	PID pause	The PID is temporarily disabled and the VFD maintains the current output frequency and no longer performs PID regulation of the frequency source.
23	PLC status reset	The PLC is paused during execution, and when it is run again, the VFD can be restored to the initial state of the simple PLC by using this terminal.
24	pause in oscillation frequency	The VFD is output at the center frequency. The swing frequency function is suspended.
25	Tally Input	Input terminal for tally pulse.
26	Counter Reset	Zeroing of the counter status.
27	Length Count Input	Input terminal for length counting.
28	length reset	Length Zero
29	Torque control prohibited	Prohibit the VFD from performing torque control, and the VFD enters the speed control mode
30	PULSE frequency input (valid only for DI5)	DI5 functions as a pulse input terminal.
31	reservations	reservations
32	Immediate DC braking	When this terminal is active, the VFD switches

		directly to the DC braking state
33	External Fault Normally Closed Input	When an external fault normally closed signal is fed to the VFD, the VFD reports fault E015 and stops.
34	Frequency modification enable	If this function is set to active, when there is a change in frequency, the VFD does not respond to the change in frequency until this terminal state is invalid.
35	PID action direction reversed	When this terminal is active, the direction of PID action is opposite to the direction set in P15.03.
36	External parking terminal 1	When controlled by the keyboard, this terminal can be used to stop the VFD, which is equivalent to the function of the STOP key on the keyboard.
37	Control command switching terminal 2	Used to switch between terminal control and communication control. If the command source is selected as terminal control, the system switches to communication control when the terminal is active, and vice versa.
38	PID integral pause	When this terminal is valid, the integral regulation function of PID is suspended, but the proportional and differential regulation functions of PID remain valid.
39	Frequency source X and preset frequency switching	If this terminal is valid, the frequency source X is replaced by the preset frequency (P08.08)
40	Frequency source Y and preset frequency switching	If this terminal is valid, the frequency source Y is replaced by the preset frequency (P08.08)
41	Motor selection terminal 1	The four states of the two terminals can realize the switching of four groups of motor parameters, see the attached table for details.
42	Motor selection terminal 2	
43	PID parameter switching	When the PID parameter switching condition is the DI terminal (P15.18=1), the PID parameter uses

		P15.05～ P15.07 when this terminal is invalid; and P15.15～ P15.17 when this terminal is valid;
44	User-defined faults1	When user-defined faults 1 and 2 are valid, the VFD alarms E027, E028 respectively, and the VFD will process according to the action mode selected by fault protection action selection P07.49.
45	User-defined fault 2	
46	Speed control/torque control Switching	Enables the VFD to switch between torque control and speed control modes. If this terminal is invalid, the VFD operates in the mode defined in P20.00 (speed/torque control mode), and if this terminal is valid, the VFD switches to another mode.
47	emergency stop	When this terminal is active, the VFD stops at the fastest speed and the current is at the set current limit during this stopping process. This function is used to fulfill the requirement that the VFD needs to stop as soon as possible when the system is in emergency.
48	External parking terminal 2	In any control mode (panel control, terminal control, communication control), this terminal can be used to decelerate the VFD to stop, at which time the deceleration time is fixed as deceleration time 4.
49	Deceleration DC braking	When this terminal is active, the VFD first decelerates to the stopping DC braking start frequency and then switches to DC braking.
50	This run time is cleared to zero	When this terminal is valid, the timing time of this run of the VFD is cleared to zero, this function needs to be used in conjunction with Timing Run (P21.42) and Time Arrival of this Run (P21.53).

The 4 multi-segment command terminals can be combined into 16 states, and each of the 16 states corresponds to 16 command settings. The details are shown in the table:

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

Schedule Acceleration and Deceleration Time Selection Terminal Function Description

Terminal 2	Terminal 1	Acceleration or deceleration time selection	Corresponding parameter
OFF	OFF	Acceleration time 1	P08.17, P08.18
OFF	ON	Acceleration time 2	P21.03, P21.04
ON	OFF	Acceleration time 3	P21.05, P21.06
ON	ON	Acceleration time 4	P21.07, P21.08

Table Functional description of the motor selection terminals

Terminal 2	Terminal 1	Motor Selection	Corresponding parameter set
OFF	OFF	Motor 1	Groups P10, P12
OFF	ON	Motor 2	Group P11

P03.10	DI filter time	Factory value	0.010s
	Setting range	0.000s～ 1.000s	

Set the software filtering time for DI terminal status. If the input terminals are susceptible to interference that may cause malfunctions, this parameter can be increased to enhance the anti-interference capability. However, an increase in the filtering time will cause the response of the DI terminal to slow down.

P03.11	Terminal command		Factory 0
	Setting range	0	Two-wire 1
		1	Two-wire 2
		2	Three-linear 1
		3	Three-linear 2

This parameter defines four different ways of controlling the operation of the VFD via the external terminals.

Note: For the convenience of explanation, the following three terminals DI1, DI2 and DI3 among the multi-function input terminals of DI1～ DI10 are arbitrarily selected as external terminals. In other words, the functions of DI1, DI2 and DI3 terminals are selected by setting the value of P03.00～ P03.02. For detailed function definition, see the setting range of P03.00～ P0309.

0: 2-wire mode 1: This mode is the most commonly used 2-wire mode. The forward and reverse motor operation is determined by terminals DIx and DIy.

The terminal function settings are as follows:

Terminals	Setpoint	Descriptive
DIx	1	Positive rotation operation (FWD)
DIy	2	Reverse Run (REV)

Where DIx, DIy are the multi-function input terminals of DI1～ DI10, level active.

1: Two-wire mode 2: With this mode the DIx terminal functions as the run enable terminal, while the DIy terminal functions to determine the run direction.

The terminal function settings are as follows:

Terminals	Setpoint	Descriptive
DIx	1	Positive rotation operation (FWD)
DIy	2	Reverse Run (REV)

Where DIx and DIy are the multi-function input terminals of DI1～ DI10, level active.

2: 3-wire control mode 1: This mode DIn is the enable terminal and the direction is controlled by DIx and DIy respectively.

The terminal function settings are as follows:

Terminals	Setpoint	Descriptive
DIx	1	Positive rotation operation (FWD)
DIy	2	Reverse Run (REV)

DIn	3	Three-wire operation control

When operation is required, the DIn terminal must be closed first, and forward or reverse motor control is realized by the rising edge of the pulse of DIx or DIy.

When stopping is required, this shall be done by disconnecting the DIn terminal signal. In this case, DIx, DIy and DIn are the multi-function input terminals of DI1～ DI10, DIx and DIy are pulse-active and DIn is level-active.

3: 3-wire control mode 2: The enable terminal of this mode is DIn, the operation command is given by DIx, and the direction is determined by the state of DIy.

The terminal function settings are as follows:

Terminals	Setpoint	Descriptive
DIx	1	Positive rotation operation (FWD)
DIy	2	Reverse Run (REV)
DIn	3	Three-wire operation control

When operation is required, the DIn terminal must be closed first, and the motor operation signal is generated by the rising edge of the pulse of DIx, and the motor direction signal is generated by the state of DIy.

When stopping is required, this shall be done by disconnecting the DIn terminal signal. In this case, DIx, DIy and DIn are the multi-function input terminals of DI1～ DI10, DIx is pulse active and DIy and DIn are

level active.

P03.12	Terminal UP/DOWN change rate	Factory value	1.00Hz/s
	Setting range	0.01Hz/s～ 65.535Hz/s	

Used to set the speed of frequency change, i.e., the amount of frequency change per second, when the terminal UP/DOWN adjusts the set frequency.

When P8.22 (frequency decimal point) is 2, the value ranges from 0.001 Hz/s～ 65.535 Hz/s. When P8.22 (frequency decimal point) is 1, the value ranges from 0.01 Hz/s～ 655.35.

P03.15	DI1 delay time	Factory value	0.0s
	Setting range	0.0s～ 3600.0s	
P03.16	DI2 delay time	Factory value	0.0s
	Setting range	0.0s～ 3600.0s	
P03.17	DI3 Delay Time	Factory value	0.0s
	Setting range	0.0s～ 3600.0s	

Used to set the delay time for the VFD to respond to a change in the status of the DI terminal when that change occurs.

Currently, only DI1, DI2, and DI3 have the function to set the delay time.

P03.13	DI terminal active mode selection 1		Factory	00000
	Setting range	The units place (or column) in the decimal system	DI1 terminal valid state setting	
		0	Active High	
		1	Active Low	
		The tens place (or column) in the decimal system	DI2 terminal valid state setting (0～ 1, as above)	

		Thundreds place (or column) in the decimal system	DI3 terminal valid state setting (0～ 1, as above)
		The thousands place (or column) in the decimal system	DI4 Terminal valid state setting (0～ 1, as above)
		The ten thousands place (or column) in the decimal system	HDI terminal active state setting (0～ 1, same as above)
P03.14	DI terminal active mode selection 2	Factory value	00000
	Setting range	The units place	DI6 terminal valid state setting
		0	Active High
		1	Active Low
		The tens place	DI7 Terminal valid state setting (0～ 1, as
		The hundreds	DI8 Terminal valid state setting (0～ 1, as
		The thousands	Reservations
		The ten	Reservations

Used to set the valid state mode of the digital input terminals. When selected as high level valid, the corresponding DI terminal is valid when it is connected to COM and invalid when it is disconnected. When low level is selected, the corresponding DI terminal is invalid when it is connected to COM and invalid when it is disconnected.

7.4 Digital Output Terminal Block P4

The GF630N04 series VFD comes standard with one multi-function analog output terminal (AO1), two multi-function digital output terminals (DO1, DO2), one multi-function relay output terminal (R1), and one HDO terminal

(which can be selected as a high-speed pulse output terminal, or as an open-collector switching output).

P04.00	HDO output mode selection	Factory value	0
	Setting range	0	Pulse output (FMP)
		1	Switching output (FMR)

The HDO terminals are programmable multiplexed terminals that can be used as high-speed pulse output terminals (FMP) or as open-collector switching output terminals (FMR).

When used as a pulse output FMP, the maximum frequency of the output pulse is 50kHz, see P06.06 for the description of FMP related functions.

P04.01	FMR function selection (open collector output terminal)	Factory value	0
P04.02	Relay 1 output function selection	Factory value	2
P04.03	Reservations	Factory value	0
P04.04	DO1 output function selection (open collector output terminal)	Factory value	1
P04.05	DO2 output function selection (open collector output terminal)	Factory value	4

The above 5 function codes are used to select the function of the 5 digital outputs.

The multifunction output terminal functions are described below:

Setpoint	Functionality	Explanation
0	No output	Output terminals without any function.
1	VFD in operation	Indicates that the VFD is running and has an output frequency (which can be zero), at which time the ON signal is output.
2	Fault output (fault shutdown)	The ON signal is output when the VFD fails and the fault stops.

3	Frequency level detection FDT1 output	Please refer to the description of function codes P21.19 and P21.20.
4	Frequency arrival	Refer to function code P21.21 for instructions.
5	In zero-speed operation (no output at shutdown)	When the VFD is running and the output frequency is 0, the ON signal is output. The signal is OFF when the VFD is in the stop state.
6	Motor overload pre-warning	Before the motor overload protection is activated, judgment is made according to the overload pre-warning threshold, and an ON signal is output after the pre-warning threshold is exceeded. Refer to function code P07.00～ P07.02 for motor overload parameter setting.
7	VFD overload pre-warning	The ON signal is output 10s before the VFD overload protection occurs.
8	The set count value reaches	When the count value reaches the value set in P09.08, the ON signal is output.
9	The specified count value reaches	When the counting value reaches the value set in P09.08, the ON signal is output. Counting function refer to P9 group function description
10	Length Arrival	When the detected actual length exceeds the length set in P09.05, the ON signal is output.
11	PLC cycle completion	When the simple PLC completes a cycle, it outputs a pulse signal with a width of 250ms.
12	Cumulative running time reaches	When the accumulated running time of the VFD exceeds the time set in P21.17, the ON signal is output.

13	Frequency limited	When the set frequency exceeds the upper limit frequency or lower limit frequency, and the output frequency of the VFD also reaches the upper limit frequency or lower limit frequency, the ON signal is output.
14	Torque limited	When the output torque reaches the torque limit value under the speed control mode, the frequency converter is in the stall protection state and outputs the ON signal at the same time.
15	Running readiness	When the power supply to the main and control circuits of the VFD has been stabilized and the VFD has not detected any fault information and the VFD is in a runnable state, the ON signal is output.
16	AI1>AI2	When the value of analog input AI1 is greater than the input value of AI2, the ON signal is output.
17	The upper frequency reaches	When the operating frequency reaches the upper limit frequency, the ON signal is output.
18	Lower limit frequency reached (no output at shutdown)	When the operating frequency reaches the lower limit frequency, the ON signal is output. This signal is OFF in the shutdown state.
19	Undervoltage status output	When the VFD is in the undervoltage state, the ON signal is output.
20	Communication Settings	Please refer to the communication protocol.
21	Reservations	Reservations
22	Reservations	Reservations
23	2 in zero-speed operation (also output during shutdown)	When the VFD output frequency is 0, the ON signal is output. This signal is also ON in the stop state.

24	Cumulative power-up time reaches	When the VFD's accumulated power-on time (P02.13) exceeds the time set in P21.16, the ON signal is output.
25	Frequency level detection FDT2 output	Please refer to the description of function codes P21.28 and P21.29.
26	Frequency 1 Arrival Output	Please refer to the description of function codes P21.30 and P21.31.
27	Frequency 2 arrives at the output	Refer to function codes P21.32 and P21.33 for instructions.
28	Current 1 arrives at the output	Refer to function codes P21.38 and P21.39 for instructions.
29	Current 2 reaches the	Refer to function codes P21.40 and P21.41 for
30	Timed Arrival Output	When the timing function selection (P21.42) is valid, the VFD outputs the ON signal after the current running time of the VFD reaches the set timing time.
31	AI1 input overrun	When the value of analog input AI1 is greater than P21.46 (upper limit of AI1 input protection) or less than P21.45 (lower limit of AI1 input protection), the ON signal is output.
32	offloading (computing)	The ON signal is output when the VFD is in the off-load state.
33	Reverse running	When the VFD is in reverse operation, the ON signal is outputted
34	Zero current state	Please refer to the description of function codes P21.28 and P21.29.
35	Module temperature reaches	inverter module heat sink temperature (P02.07) reaches the set module temperature Output ON signal when value (P21.47) is reached (P21.47 outputs ON signal).
36	Software current overrun	Refer to function codes P21.36 and P21.37 for instructions.

37	Lower frequency limit reached (shutdown also output)	When the operating frequency reaches the lower limit frequency, the ON signal is output. This signal is also ON in the shutdown state.
38	Alarm output	When a fault occurs in the frequency converter and the processing mode of the fault is to continue operation, the frequency converter alarm outputs.
40	This run time arrives	If the VFD starts operation for more than the time set in P21.53, the ON signal is output.

P04.06	FMR Output Delay Time	Factory value	0.0s
	Setting range	0.0s～ 3600.0s	
P04.07	Relay 1 output delay	Factory value	0.0s
	Setting range	0.0s～ 3600.0s	
P04.09	DO1 output delay time	Factory value	0.0s
	Setting range	0.0s～ 3600.0s	
P04.10	DO2 output delay time	Factory value	0.0s
	Setting range	0.0s～ 3600.0s	

Set output terminals FMR, Relay 1, DO1 and DO2 for the delay time from when the state is changed to when the actual output produces the change.

P04.11	DO Output terminal valid state selection	Factory value	00000
	Setting range	The units place (or column) in the decimal system	FMR active state selection
		0	Positive logic
		1	Inverse logic
		The tens place (or column) in the decimal	Relay 1 active state setting (0～ 1, as above)

		The hundreds place (or column) in the decimal	Reservations
		the thousands place (or column) in the decimal system	DO1 terminal valid state setting (0～ 1, as above)
		the ten thousands place (or column) in the decimal system	DO2 terminal valid state setting (0～ 1, as above)

Defines the output logic for output terminals FMR, Relay 1, DO1 and DO2.

0: Positive logic, the digital output terminals and the corresponding common terminal are connected for valid state, disconnected for invalid state.

7.5 Analog and Pulse Input Terminal Block P5

P05.00	AI curve 1 minimum input	Factory value	-10.0
	Setting range	-10.00V～ P05.02	
P05.01	AI Curve 1 Minimum Input Correspondence Setting	Factory value	-100
	Setting range	-100.00%～ 100.0%	
P05.02	AI Curve 1 Maximum Input	Factory value	10.00 V
	Setting range	P05.00～ 10.00V	
P05.03	AI Curve 1 Maximum Input Corresponding Setting	Factory value	100.0 %
	Setting range	-100.00%～ 100.0%	
P05.04	AI1 filter time	Factory value	0.10 s
	Setting range	0.00s～ 10.00s	

The above function codes are used to set, the relationship between the analog input voltage and the setpoint it represents.

When the analog input voltage is greater than the set "Maximum Input"

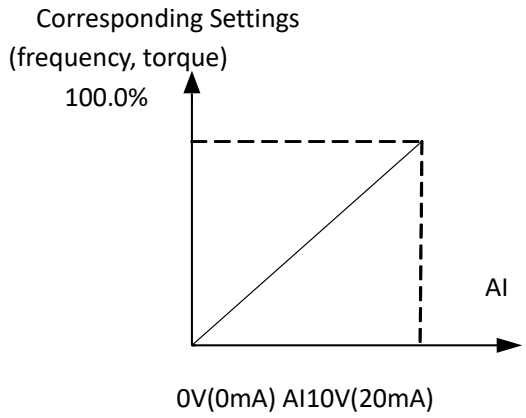
(P05.02), the analog voltage is calculated according to "Maximum Input"; similarly, when the analog input voltage is less than the set "Minimum Input" (P05.00), the analog voltage is calculated as the minimum input or 0.0% according to the setting of "AI Below Minimum Input Setting Selection" (P05.21). Similarly, if the analog input voltage is less than the set "Minimum input" (P05.00), the analog voltage is calculated as the minimum input or 0.0% according to the setting of "AI less than minimum input setting selection" (P05.21).

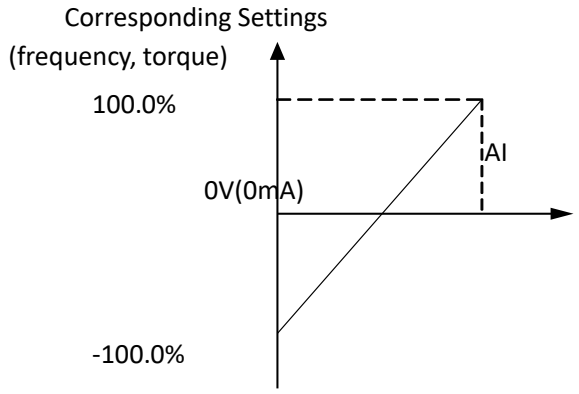
When the analog input is a current input, 1mA current is equivalent to 0.5V.

AI1 input filter time, used to set the software filter time of AI1, when the field analog is easy to be interfered, please increase the filter time to make the detected analog stable, but the larger the filter time is, the slower the response to the analog detection, how to set needs to be weighed according to the actual application.

The meaning of the nominal value corresponding to the analog setting of 100.0% varies in different applications, please refer to the description in each application section.

The following illustrations show two typical setups:





Simulating the correspondence between a given and a set quantity

P05.05	AI Curve 2 Minimum Input	Factory value	-10.00V
	Setting range	-10.00V to P05.07	
P05.06	AI Curve 2 Minimum Input	Factory value	-100.00%
	Setting range	-100.00%～ 100.0%	
P05.07	AI Curve 2 Maximum Input	Factory value	10.00V
	Setting range	P05.05～ 10.00V	
P05.08	AI Curve 2 Maximum Input Corresponding Setting	Factory value	100.0%
	Setting range	-100.00%～ 100.0%	

P05.09	AI2 Filter Time	Factory value	0.10s
	Setting range	0.00s～ 10.00s	

For the function and use of Curve 2, refer to the description of Curve

1.

P05.10	AI Curve 3 Minimum Input	Factory value	-10.00V
	Setting range	0.00s～ P05.12	
P05.11	AI Curve 3 Minimum Input Correspondence Setting	Factory value	-100.00%
	Setting range	-100.00%～ 100.0%	
P05.12	AI Curve 3 Maximum Input	Factory value	10.00V
	Setting range	P05.10～ 10.00V	
P05.13	AI Curve 3 Maximum Input Correspondence Setting	Factory value	100.0%
	Setting range	-100.00%～ 100.0%	
P05.14	AI3 Filter Time	Factory value	0.10s
	Setting range	0.00s～ 10.00s	

For the function and use of Curve 3, refer to the description of Curve

1.

P05.15	PULSE Minimum Input	Factory value	0.00kHz
	Setting range	0.00kHz～ P05.17	
P05.16	PULSE Minimum Input	Factory value	0.0%
	Setting range	-100.00%～ 100.0%	
P05.17	PULSE Maximum Input	Factory value	50.00kHz
	Setting range	P05.15～ 50.00kHz	

P05.18	PULSE Maximum Input	factory value	100.0%
	Setting range	-100.00%～ 100.0%	
P05.19	PULSE filter time	factory value	0.10s
	Setting range	0.00s～ 10.00s	

This group of function codes is used to set, the relationship between the DI5 pulse frequency and the corresponding setting.

The pulse frequency can only be entered into the VFD via the DI5 channel. The application of this group of functions is similar to curve 1, please refer to the description of curve 1.

P05.20	AI curve selection		Factory value	321
	Setting range	The units place (or	AI_V curve selection	
		1	Curve 1 (2 points, see P05.00～ P05.03)	
		2	Curve 2 (2 points, see P05.05～ P05.08)	
		3	Curve 3 (2 points, see P05.10～ P05.13)	
		4	Curve 4 (4 points, see P19.00～ P19.07)	
		5	Curve 5 (4 points, see P19.08～ P19.15)	
		The tens place (or column) in the decimal system	AI_I curve selection (1～ 6, as above)	
		the hundreds place (or column) in the decimal system	reservations	

The digits, tens, and hundreds of this function code are used to select, respectively, the set curves corresponding to analog inputs AI1, AI2, and AI3.3 Each analog input can be used to select any of the five curves, respectively.

Curve 1, Curve 2, and Curve 3 are 2-point curves and are set in the P05

group of function codes, while Curve 4 and Curve 5 are 4-point curves and need to be set in the P19 group of function codes.

The standard unit of GF630N04 VFD provides 2 analog inputs, and the use of AI3 requires the configuration of multifunctional input/output expansion card.

<table>
<tr><td rowspan="6">P05.21</td><td colspan="2">AI below minimum input setting</td><td>Factory value</td><td>000</td></tr>
<tr><td rowspan="5">Setting range</td><td>The units place (or</td><td colspan="2">AI_V below minimum input setting</td></tr>
<tr><td>0</td><td colspan="2">Corresponding Minimum Input Setting</td></tr>
<tr><td>1</td><td colspan="2">0.0%</td></tr>
<tr><td>The tens place (or</td><td colspan="2">AI_I below minimum input setting</td></tr>
<tr><td>The hundreds place (or column) in the decimal system</td><td colspan="2">Reservations</td></tr>
</table>

This function code is used to set the setting for the analog input when the analog input voltage is less than the set "Minimum Input".

The digits, tens and hundreds of this function code correspond to the analog inputs AI_V and AI_I, respectively.

If 0 is selected, when the AI input is lower than the "Minimum Input", the setting corresponding to the analog quantity is the "Minimum Input Corresponding Setting" of the curve determined by the function code (P05.01, P05.06, P05.11).

If 1 is selected, the setting corresponding to this analog quantity is 0.0% when the AI input is below the minimum input.

7.6 Analog and pulse output terminal block P6

P06.00	FMP output function selection (pulse output terminal)	Factory value	0
P06.01	AO1 output function selection	Factory value	0

The FMP terminal output pulse frequency range is 0.01kHz ~ P06.03 (F

M P output maximum frequency), and P06.03 can be set between 0.01kHz and 50.00kHz.

The analog output AO1 output range is 0V～ 10V , or 0mA～ 20mA. The ranges of the pulse outputs or analog outputs are related to the calibration of the corresponding functions as shown in the table below:

Setpoint	Functionality	Functions corresponding to pulse or analog output 0.0%~100.0%
0	Operating frequency	0 to maximum output frequency
1	Setting frequency	0 to maximum output frequency
2	Output Current	0～ 2 times rated motor current
3	Output torque	0～ 2 times rated motor torque
4	Output power	0～ 2x rated power
5	Output voltage	0～ 1.2 times the rated voltage of the VFD
6	PULSE Pulse Input	0.01kHz～ 50.00kHz
7	AI1	0V～ 10V
8	AI2	0V～ 10V (or 0～ 20mA)
9	AI3	0V～ 10V
10	lengths	0 to maximum set length
11	Rumerical value	0 to maximum count value
12	Communication Settings	0.0%～ 100.0%
13	Motor speed	0 to Maximum Output Frequency Corresponding Rotation Speed
14	Output Current	0.0A~1000.0A
15	Output voltage	0.0V~1000.0V
16	Output torque (actual)	-2 times rated motor torque～ 2 times rated motor torque

P06.03	FMP Output Maximum Frequency	Factory value	50.00kHz
	Setting range	0.01kHz～ 100.00kHz	

This function code is used to select the maximum frequency value of the output pulse when the FM terminal is selected as a pulse output.

P06.04	AO1 zero bias factor	Factory value	0.0%
	Setting range	-100.0%～ +100.0%	
P06.05	AO1 Gain	Factory value	1.00
	Setting range	-10.00～ +10.00	

The above function codes are generally used to correct the zero drift of the analog output and the deviation of the output amplitude. It can also be used to customize the desired AO output curve.

If the zero bias is denoted by "b", the gain is denoted by k, the actual output is denoted by Y, and the standard output is denoted by X, then the actual output is: Y = kX＋ b.

Among them, the zero bias coefficient of AO1/ AO2 100% corresponds to 10V (or 20mA), and the standard output refers to the output of 0V～ 10V (or 0mA～ 20mA) corresponding to the amount of analog output representation without zero bias and gain correction.

For example, if the analog output is the operating frequency, and you want to output 8V when the frequency is 0, and 3V when the frequency is the maximum frequency, then the gain should be set to "-0.50", and the zero

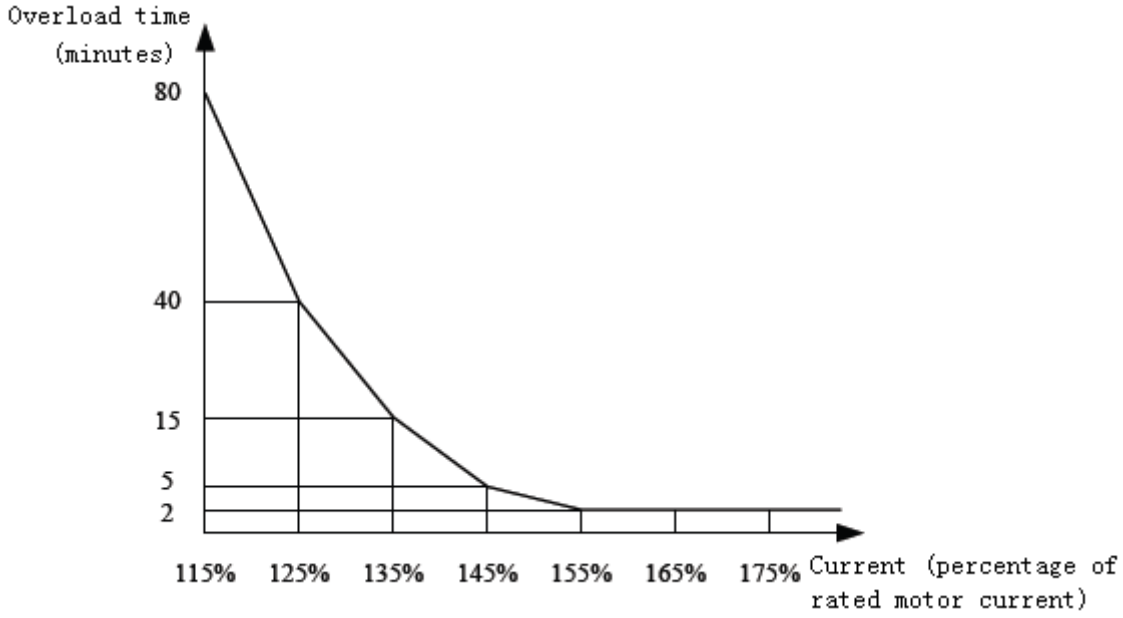
bias should be set to "80%".

7.7 Protection parameter set P7

P07.00	Motor overload protection options		Factory value	1
	Setting range	0	Prohibited	
		1	Permissible	
P07.01	Motor overload protection gain		Factory value	1.00
	Setting range		0.20～ 10.00	

P07.00=0: No motor overload protection function, there may be a danger of motor overheating damage, it is recommended to heat the relay between the VFD and the motor;

P07.00=1: At this time, the VFD judges whether the motor is overloaded according to the inverse time limit curve of motor overload protection.



For example, if you want the motor to run at 120% motor current for 30 minutes to report an overload, first calculate the motor current Ix for a 30-minute overload at the default setting.

The motor overload graph shows that the 30-minute overload is located in the 125% and 135% current range, which gives the following 30-minute overload motor current Ix at the default setting: (40-30)÷ (125%-Ix)=(40-15)÷ (125%-135%)

The motor current Ix = 129%, which leads to the need for the motor to report an overload for 30 minutes at 120% motor current and the motor overload protection gain:

P07.01=120%÷ Ix=120%÷ 129%=0.93

Note: Users need to set the value of P07.01 correctly according to the actual overload capacity of the motor, the parameter is set too large is prone to motor overheating damage and the VFD is not timely alarm protection of the danger!

P07.02	Motor overload warning factor	factory value	80%
	Setting range	50%～ 100%	

This function is used to give the control system a warning signal via the DO prior to motor overload fault protection. This warning coefficient is used to determine how far in advance of motor overload protection the warning is given. The larger the value the smaller the warning advance. When the VFD output current accumulation is greater than the product of overload inverse time curve and P07.02, the VFD multifunctional digital DO outputs "motor overload pre-warning" ON signal.

P07.03	Overvoltage stall gain	Factory value	0
	Setting range	0 (without overpressure stall) to 100	

P07.04	Overvoltage stall protection voltage	factory value	760.0
	Setting range	200.0~2200.0	

During deceleration of the VFD, when the DC bus voltage exceeds the overvoltage stall protection voltage, the VFD stops decelerating to keep at the current operating frequency, and continues to decelerate when the bus voltage drops.

Overvoltage stall gain is used to adjust the ability of the VFD to suppress overvoltage during deceleration. The larger the value, the stronger the ability to suppress overvoltage. Under the premise of no overpressure, the smaller the gain setting is, the better.

For small inertia loads, the overvoltage stall gain should be small, otherwise it causes the system dynamic response to become slower. For large inertia loads, this value should be large, otherwise the suppression effect is not good and overvoltage failure may occur.

When the overpressure stall gain is set to 0, the overpressure stall function is canceled.

P07.05	Overspeed loss gain	Factory value	20
	Setting range	0～ 100	
P07.06	Overcurrent stall protection current	Factory value	150%
	Setting range	50%～ 200%	

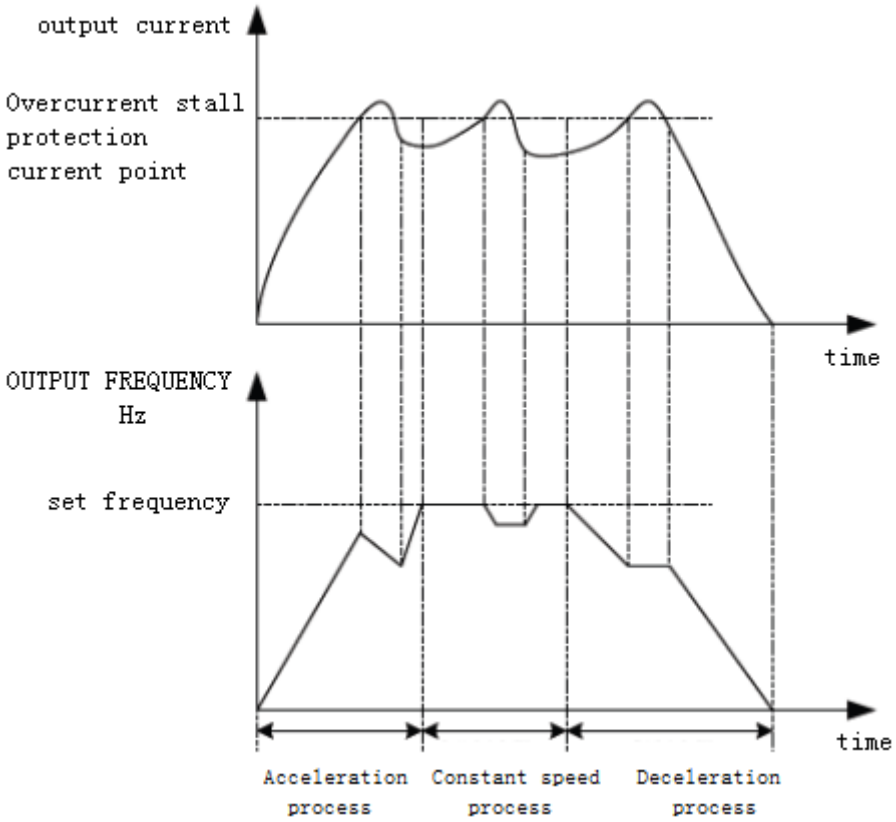
Over current stall: When the output current of the VFD reaches the set over

current stall protection current (P07.06), the VFD reduces the output frequency when accelerating; reduces the output frequency when running at constant speed; and slows down the descending speed when decelerating until the current is less than the over current stall protection current (P07.06), and then the running frequency will return to normal. See the diagram for details.

Overcurrent stall protection current: Select the current protection point of overcurrent stall function. Exceeding this parameter value frequency converter starts to execute the overcurrent stall protection function the value is relative to the motor rated current as a percentage.

Overcurrent loss gain: used to adjust the ability of the VFD to inhibit overcurrent during acceleration and deceleration. The larger the value, the stronger the ability to inhibit overcurrent. Under the premise of no overcurrent, the smaller the gain is set, the better.

For small inertia loads, the overcurrent loss speed gain should be small, otherwise it causes the system dynamic response to become slower. For large inertia loads, this value should be large, otherwise the suppression effect is not good and overcurrent faults may occur. In the case of very small inertia, it is recommended that the overcurrent suppression gain be set to less than 20, and when the overcurrent loss gain is set to 0, the overcurrent loss function is canceled.



P07.07	Short Circuit to Ground Protection Selection	Factory value	11
	Setting range	Digits: power-up to ground short-circuit protection selection;	
P07.08	Starting voltage of brake unit operation	Factory value	Model Determination
	Setting range	200.0V~2000.0V	

Optionally, the VFD detects whether the motor is shorted to ground when powering up.

If this function is valid, the UVW terminal of the VFD will have voltage output for a period of time after power-up.

P07.09	Failure auto reset times	Factory value	0
	Setting range	0～ 20	

Used to set the number of times the VFD can be reset automatically when the VFD selects Fault Auto Reset. After this number of times is exceeded, the VFD

maintains the fault status.

P07.10	Fault DO action selection during automatic fault reset	Factory value	1
	Setting range	0: No action 1: Movement	

If the VFD is set with the automatic fault reset function, whether or not the fault DO operates during the automatic fault reset can be set via P07.10.

P07.11	Fault auto reset interval	Factory value	1.0s
	Setting range	0.1s～ 100.0s	

Waiting time between the VFD fault alarm and the automatic fault reset.

P07.12	Input phase loss protection selection	Factory value	1
	Setting range	0: Prohibited 1: Permission	

Selects whether or not to protect against input phase loss.

P07.13	Output out-of-phase protection selection	Factory value	11
	Setting range	0: Prohibited 1: Permission	

Select whether or not to protect the output from phase loss.

P07.14	Type of first failure	0 999～
P07.15	Second failure type	
P07.16	Third (most recent) failure type	

Records the last three fault types of the VFD, with 0 being no fault. Refer to Chapter 8 for possible causes and solutions for each fault code.

P07.17	Frequency at third failure	Frequency at last failure

<table>
<tr><td>P07.18</td><td>Current at third fault</td><td>Current at last fault</td></tr>
<tr><td>P07.19</td><td>Busbar voltage at third fault</td><td>Bus voltage at last fault</td></tr>
<tr><td>P07.20</td><td>Input terminal status at third fault</td><td>The state of the digital input terminals at the time of the most recent fault, in that order:
<table><tr><td>BIT9</td><td>BIT8</td><td>BIT7</td><td>BIT6</td><td>BIT5</td><td>BIT4</td><td>BIT3</td><td>BIT2</td><td>BIT1</td><td>BIT0</td></tr><tr><td>DI0</td><td>DI9</td><td>DI8</td><td>DI7</td><td>DI6</td><td>DI5</td><td>DI4</td><td>DI3</td><td>DI2</td><td>DI1</td></tr></table>
When the input terminal is ON its corresponding secondary bit is 1, OFF is 0, the status of all DIs is converted to a decimal number for display.</td></tr>
<tr><td>P07.21</td><td>Output terminals on third fault</td><td>The status of all output terminals at the time of the most recent fault, in that order:
<table><tr><td>BIT4</td><td>BIT3</td><td>BIT2</td><td>BIT1</td><td>BIT0</td></tr><tr><td>DO2</td><td>DO1</td><td>DO4</td><td>DO5</td><td>FMP</td></tr></table>
When the input terminal is ON its corresponding secondary bit is 1, OFF is 0, the status of all DIs is converted to a decimal number for display.</td></tr>
<tr><td>P07.22</td><td>VFD status at third fault</td><td>Reservations</td></tr>
<tr><td>P07.23</td><td>Power-up time at third failure</td><td>Current power-up time at the time of the most recent failure</td></tr>
<tr><td>P07.24</td><td>Runtime at third failure</td><td>Current runtime at the time of the most recent failure</td></tr>
<tr><td>P07.27</td><td>Frequency at second failure</td><td rowspan="11">Same as P07.17～
P07.24</td></tr>
<tr><td>P07.28</td><td>Current at second fault</td></tr>
<tr><td>P07.29</td><td>Busbar voltage at second fault</td></tr>
<tr><td>P07.30</td><td>Input terminal status at second fault</td></tr>
<tr><td>P07.31</td><td>Output terminals at second fault</td></tr>
<tr><td>P07.32</td><td>VFD status at second fault</td></tr>
<tr><td>P07.33</td><td>Power-up time at second failure</td></tr>
<tr><td>P07.34</td><td>Runtime at second failure</td></tr>
</table>

P07.37	Frequency at first failure	Same as P07.17～P07.24
P07.38	Current at first fault	
P07.39	Bus voltage at first fault	
P07.40	Input terminal status at first fault	
P07.41	Output terminals at first fault	
P07.42	VFD status at first fault	
P07.43	Power-up time at first failure	
P07.44	Running time at first failure	

P07.47	Fail-safe action selection 1		Factory value	00000
	Found order example wear by wrapping around (scarf, shawl)	the units place (or column) in the	Motor overload (E011)	
		0	Freedom to stop	
		1	Shutdown by stopping mode	
		2	Continue to run	
		The tens place (or column) in the	Input phase loss (E113) (same bit)	
		The hundreds place (or column) in the	Output phase loss (E114) (same bit)	
		The thousands place (or column) in the	External fault (E015) (same bit)	
		The ten thousands place (or column) in	Communication Abnormal (E0202) (same bit)	
P07.48	Fail-safe action selection 2		factory value	00000
	Tound order example wear by	The units place (or column) in the	Encoder failure (E118)	
		0	Freedom to stop	
		1	Switching to VF, stopping by stopping mode	
		2	Switch to VF and keep running	

	wrapping around (scarf, shawl)	The tens place (or column) in the	Function code read/write exception (E021)
		0	Freedom to stop
		1	Shutdown by stopping mode
		The hundreds place (or column) in the decimal system	Frequency converter overload (E111) (same as P07.47 position)
		The thousands place (or column) in the decimal system	Motor overheat (E045) (same as P07.47 position)
		The ten thousands place (or column) in the decimal system	Runtime arrival (E026) (same as P07.7 bit)
P07.49	Fail-safe action selection 3		factory value: 00000
	found order example wear by wrapping around (scarf, shawl)	the units place (or column) in the decimal system	User-defined fault 1 (E027) (same as P07.47 bit)
		the tens place (or column) in the decimal system	User-defined fault 2 (E028) (same as P07.47 bit)
		the hundreds place (or column) in the decimal system	Power-up time arrival (E029) (same as P07.47 bit)
		the thousands place (or column) in the decimal system	Dropout (E030)
		0	Freedom to stop
		1	Shutdown by stopping mode
		2	Decelerate to 7% of the motor's rated frequency to continue running, and automatically return to the set frequency without dropping the load.
		the ten thousands place (or column) in the decimal system	Runtime PID feedback lost (E031) (same as P07.47 bits)
P07.50	Fail-safe action selection 4		Factory value: 00000
	Found	The units place (or column) in the decimal system	Excessive speed deviation (E119) (same as P07.47 position)

	order example wear by wrapping around (scarf, shawl)	The tens place (or column) in the decimal system	Motor overspeed (E115) (same as P07.47 position)
		The hundreds place (or column) in the decimal system	Initial position error (E051) (Same as P07.47 position)
		The thousands place (or column) in the decimal system	Speed feedback error (E052) (same as P07.47 bit)
		The ten thousands place (or column) in the decimal system	Reservations

When "Free Stop" is selected, the VFD displays E** and stops the machine directly.

When "stop by stopping" is selected: the frequency converter displays A** and stops by stopping, and E** is displayed after stopping. When "continue to run" is selected: the frequency converter continues to run and displays A**, and the running frequency is set by P07.54.

P07.54	Frequency selection for continued operation in		factory value	0
	found order example wear by wrapping	0	Running at current operating frequency	
		1	Runs at set frequency	
		2	Upper frequency operation	
		3	Operate at lower frequency limit	
		4	Operate at abnormal standby frequency	
P07.55	Abnormal Standby Frequency		factory value	100.0%
	Setting range		0%～ 100.0%	

When a fault is generated during operation of the VFD and the handling mode of this fault is set to continue operation, the VFD displays A** and runs at the frequency determined by P07.54.

When abnormal standby frequency operation is selected, the value set by P07.55, is a percentage relative to the maximum frequency.

P07.56	Motor Temperature Sensor Type		factory value	0
	found order example wear by wrapping around	0	No temperature sensor	
		1	PT100	
		2	PT1000	
P07.57	Motor overheating protection threshold		factory value	110℃
	Setting range		0℃～ 200℃	
P07.58	Motor overheating pre-alarm threshold		factory value	90℃
	Setting range		0℃～ 200℃	

The temperature signal of the motor temperature sensor needs to be connected to the multi-function input/output expansion card, which is optional. The analog input AI3 of the expansion card can be used as motor temperature sensor input, and the motor temperature sensor signal is connected to AI3 and PGND terminal.

The AI3 volume input of the GF630N04 supports two types of motor temperature sensors, PT100 and PT1000, and the sensor type must be set correctly when using it. The motor temperature value is displayed in P20.34.

When the motor temperature exceeds the motor overheating protection threshold P07.57, the VFD fault alarms and handles according to the selected fault protection action mode.

When the motor temperature exceeds the motor overheating pre-warning threshold P07.58, the VFD multi-function digital DO outputs the motor overheating pre-warning ON signal.

P07.63	Load shedding protection options		Factory value	0
	Setting range	0	null	
		1	Efficiently	
P07.64	Dropout detection level		Factory value	10.0%
	Setting range		0.0%～ 100.0% (motor rated current)	
P07.65	Load Drop Detection Time		Factory value	1.0s
	Setting range		0.0s～ 60.0s	

If the load dropping protection function is effective, the VFD output frequency is automatically reduced to 7% of the rated frequency when the VFD output current is less than the load dropping detection level P07.64 and the duration is greater than the load dropping detection time P07.65. If the load is restored during the load shedding protection period, the VFD automatically resumes to run at the set frequency.

P07.67	Over speed detection value	Factory value	15.0%
	Setting range	0.0%～ 50.0% (maximum frequency)	
P07.68	Over speed detection time	Factory value	1.0s
	Setting range	0.0s～ 60.0s	

This function is only valid when the VFD is running with speed sensor vector control.

When the frequency converter detects that the actual rotational speed of the motor exceeds the set frequency, the exceeding value is greater than the overspeed detection value P07.67, and the duration is greater than the overspeed detection time P07.68, the frequency converter fault alarms E115 and handles it according to the fault protection action mode.

P07.69	Excessive speed deviation detection value	Factory value	20.0%
	Setting range	0.0%～ 50.0% (maximum frequency)	
P07.70	Excessive speed deviation detection time	Factory value	2.0 s
	Setting range	0.0s～ 60.0s	

This function is only valid when the VFD is running with speed sensor vector control.

When the frequency converter detects that the actual rotational speed of the motor deviates from the set frequency, and the amount of deviation is greater than the speed deviation overdetermination detection value P07.69 and the duration is greater than the speed deviation overdetermination detection time P07.70, the frequency converter fails to alarm E119, and handles the situation according to the fault protection action mode.

When the excessive speed deviation detection time is 0.0s, the excessive speed deviation fault detection is canceled.

7.8 Motor start/stop control group P8

P08.01	1st motor control method		Factory value	0
	Setting range	0	Speed Sensorless Vector Control (SVC)	
		1	Vector control with speed sensor (FVC)	
		2	V/F control	

0: Vector control without speed sensor

Refers to open-loop vector control, applicable to the usual high-performance control occasions, a frequency converter can only drive one motor. Such as machine tools, centrifuges, wire drawing machines, injection molding machines and other loads.

1: Vector control with speed sensor refers to closed-loop vector control, an encoder must be added at the motor end, and the VFD must be equipped with a PG card of the same type as the encoder. It is suitable for high-precision speed control or torque control. One VFD can only drive one motor. Such as high-speed paper machinery, lifting machinery, elevators and other loads.

2: V/F control, only for factory test, and can only be connected to asynchronous motors.

Tip: The motor parameter identification process must be carried out when selecting a vector control method. Only accurate motor parameters can be used to the advantage of the vector control method. Better performance can be achieved by adjusting the speed regulator parameter P12 group function code (P13 group for 2nd motor).

For permanent magnet synchronous motors, speed sensor vector control is

generally selected, and the GF630N04 supports speed sensorless vector control of permanent magnet synchronous motors.

P08.02	Command Source Selection		Factory value	0
	Setting range	0	operation panel command channel (LOCAL bright)	
		1	Terminal command channel (LOCAL extinguish)	
		2	Communication command channel (LOCAL blinking)	

Selects the input channel for VFD control commands.

VFD control commands include: start, stop, forward, reverse, and tap.

0: Operation panel command channel ("LOCAL" lamp is on); operation command control by RUN and STOP buttons on the operation panel.

1: Terminal command channel ("LOCAL" light off); operation command control by multi-function input terminals FWD (forward rotation), REV (reverse rotation), FJOG (forward jog), RJOG (reverse jog) and so on.

2: Communication command channel ("LOCAL" lamp blinking) Operation commands are given by the host computer through communication. When this option is selected, a communication card is required.

P08.03	Main frequency source X selection		Factory value	0
	Found order Example wear by wrapping around (scarf, shawl)	0	Digital setting (preset frequency P08.08, UP/DOWN can be modified, no memory for power down)	
		1	Digital setting (preset frequency P08.08, UP/DOWN modifiable, power-down memory)	
		2	AI1	
		3	AI2	
		4	AI3	
		5	Pulse setting (DI5)	
		6	Multisession command (computing)	

		7	PLC
		8	PID
		9	Communication protocol

Selects the input channel for the VFD's main given frequency. There are a total of 10 main given frequency channels:

0: Digital setting (no memory for power down)

The initial value of set frequency is the value of P08.08 "Preset Frequency". The set frequency value of the VFD can be changed by using the ▲ and ▼ keys of the keypad (or UP and DOWN of the multi-function input terminal).

After the VFD is powered down and powered up again, the set frequency value is restored to the P08.08 "Digitally set preset frequency" value.

1: Digital setting (power-down memory)

The initial value of set frequency is the value of P08.08 "Preset Frequency". The set frequency value of the VFD can be changed by using the ▲ and ▼ keys of the keypad (or UP and DOWN of the multi-function input terminal).

After the VFD is powered down and powered up again, the set frequency is the set frequency at the last power down moment, and is memorized by the keypad ▲, ▼ keys or the correction amount of the terminals UP and DOWN.

It should be reminded that P08.23 is "Digital Setting Frequency Shutdown Memory Selection", P08.23 is used to select whether the frequency correction is memorized or cleared when the VFD is shut down.P08.23 is related to

shutdown, not related to power-down memory, so pay attention to it in the application.

2: AI1

3: AI2

4: AI3

The finger frequency is determined by the analog input terminals. 2 analog input terminals (AI1, AI2) are provided with the GF630N04 control board, and 1 additional analog input terminal (AI3) is available with the optional I/O expansion card.

Among them, AI1 is -10V～ 10V voltage type input, AI2 can be -10V～ 10V voltage input or 0/ 4mA～ 20mA current input, selected by J1 jumper on the terminal board, AI3 is -10V～ 10V voltage type input.

The input voltage values of AI1, AI2, AI3, and the correspondence with the target frequency can be freely selected by the user.GF630N04 provides 5 groups of correspondence curves, of which 3 groups of curves are straight line relationship (2-point correspondence), and 2 groups of curves are arbitrary curves with 4-point correspondence, which can be set by the user through the function codes of group P05 and group P19.

Function code P05.20 is used to set the three analog inputs from AI1 to AI3, which one of the 5 curves is selected respectively, and for the specific correspondence of the 5 curves, please refer to the description of the function codes of groups P05 and P19.

5: Pulse feed (DI5) The frequency feed is given by means of the terminal pulse. Specifications for the pulse feed signal: voltage range 9V～ 30V, frequency range 0kHz～ 50kHz. Pulse feed can only be input from the multi-function input terminal DI5.

The relationship between the input pulse frequency at terminal DI5 and the corresponding setting is set by P05.15 to P05.18. This correspondence is a 2-point linear correspondence, and the 100.0% of the setting corresponding to the pulse input is the percentage relative to the maximum frequency P08.10.

6: Multi-segment instruction When selecting multi-segment instruction operation mode, it is necessary to combine different states of digital input DI terminals to correspond to different set frequency values. 4 multi-segment instruction terminals can be set up in GF630N04, and the 16 states of the 4 terminals can be corresponded to any 16 "multi-segment instructions" by P09 group function codes. The "Multi-segment command" is a percentage of the maximum frequency P08.10.

When the digital input DI terminal functions as a multi-segment command terminal, it is necessary to make the corresponding settings in the P3 group, for details, please refer to the description of the relevant function parameters of P3.

7: Simple PLC

When the frequency source is simple PLC, the running frequency source of the

VFD can be switched to run between 1~16 arbitrary frequency commands, and the holding time, respective acceleration and deceleration time of the 1~16 frequency commands can also be set by the user, for details, refer to the relevant instructions of group P9.

8: PID

Selects the output of the process PID control as the operating frequency. Generally used for process closed-loop control in the field, such as constant pressure closed-loop control, constant tension closed-loop control and other occasions.

To use PID as the frequency source, you need to set the parameters related to "PID function" in group P15.

9: Communication given It means that the main frequency source is given by the upper computer through communication.

P08.04	Auxiliary frequency source Y selection		Factory value	0
	Found order example wear by wrapping around (scarf, shawl)	0	Digital setting (preset frequency P08.08, UP/DOWN can be modified, no memory for power down)	
		1	Digital setting (preset frequency P08.08, UP/DOWN modifiable, power-down memory)	
		2	AI1	
		3	AI2	
		4	AI3	
		5	Pulse setting (DI5)	
		6	multisession command (computing)	

		7	PLC
		8	PID
		9	communication protocol

The auxiliary frequency source is used in the same way as the main frequency source X when it is used as an independent frequency giving channel (i.e., the frequency source selection is switched from X to Y), and the method of using it can be referred to the relevant instructions in P08.03.

Care needs to be taken when the auxiliary frequency source is used as a superimposed given (i.e., the frequency source is selected as X+Y, X to X+Y toggle, or Y to X+Y toggle):

1) When the auxiliary frequency source is digitally given, the preset frequency (P08.08) does not work, and the frequency adjustment made by the user through the ▲ and ▼ keys of the keypad (or UP and DOWN of the multi-function input terminals) is adjusted directly on the basis of the main given frequency.

2) When the auxiliary frequency source is given by analog input (AI1, AI2, AI3) or pulse input, 100% of the input setting corresponds to the auxiliary frequency source range, which can be set by P08.05 and P08.06.

3) The frequency source is pulse input giving time, similar to analog giving. Tip: Auxiliary frequency source Y selection and main frequency source X selection, can not be set to the same channel, that is, P08.03 and P08.04 should not be set to the same value, otherwise it will easily cause

confusion.

P08.05	Auxiliary Frequency Source Y Range Selection for Stacking		Factory value	0
	Setting range	0	Relative to maximum frequency	
		1	Relative to the main frequency source X	
P08.06	Auxiliary frequency source Y range when stacked		Factory value	0
	Setting range		0%～ 150%	

These two parameters are used to determine the adjustment range of the auxiliary frequency source when the frequency source is selected as "Frequency Superposition" (i.e., P08.07 is set to 1, 3, or 4).

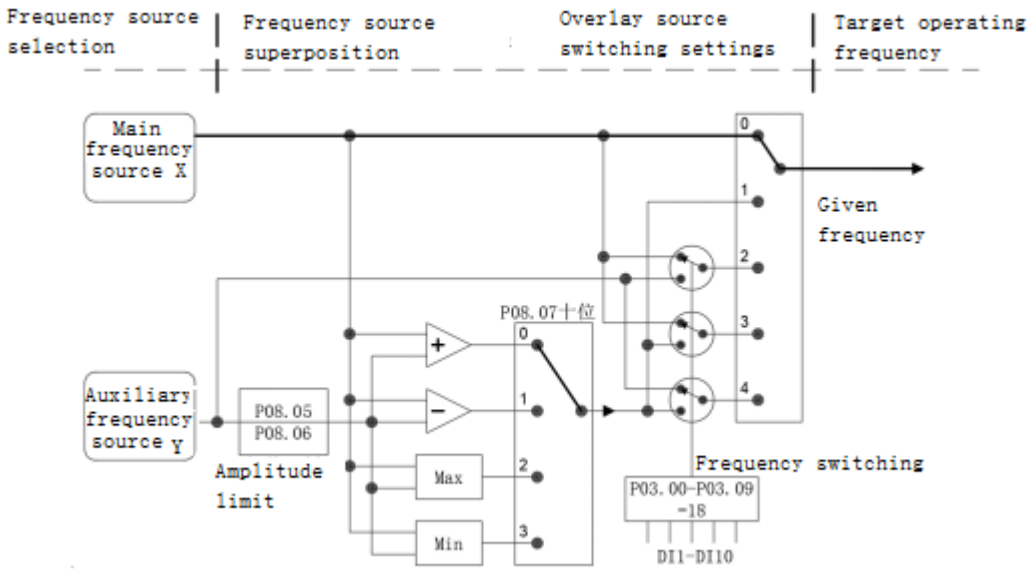
P08.05 is used to determine the object to which the range of the auxiliary frequency source corresponds, either relative to the maximum frequency or relative to the main frequency source X. If it is selected as relative to the main frequency source, the range of the auxiliary frequency source will change as the main frequency X changes.

P08.07	Frequency source stack selection		Factory value	0
	Found order example wear by wrapping around (scarf, shawl)	the units place (or column) in the decimal system	Frequency source selection	
		0	Main frequency source X	
		1	Primary and secondary results (arithmetic relationships are determined by the tens place)	
		2	Switching between main frequency source X and auxiliary frequency source Y	
		3	Switching between main frequency source X and main and auxiliary operation results	
		4	Auxiliary frequency source Y and main and auxiliary operation result switching	

		the tens place (or column) in the decimal	Frequency Source Primary and Secondary Operational Relationships
		0	Main+ Auxiliary
		1	Principal - subsidiary
		2	Maximum value of both
		3	Both minima

The frequency giving channel is selected by this parameter. Frequency feed is realized by the compounding of the main frequency source X and the auxiliary frequency source Y.

Digits: frequency source selection:



0: Main frequency source X

The main frequency X is used as the target frequency.

1: Primary and secondary operation results The primary and secondary operation results are used as the target frequency, and the relationship between the primary and secondary operations is described in the "Decile" of this function.

2: Switching between main frequency source X and auxiliary frequency source Y When multifunction input terminal function 18 (frequency switching) is not valid, main frequency X is used as the target frequency. When multifunction input terminal function 18 (frequency source switching) is valid, auxiliary frequency Y is used as the target frequency.

3: Switching between main frequency source X and main and auxiliary operation results When multifunction input terminal function 18 (frequency switching) is not valid, main frequency X is used as the target frequency. When multifunction input terminal function 18 (frequency switching)

When valid, the result of the primary and secondary operations is used as the target frequency.

4: Switching between auxiliary frequency source Y and main and auxiliary operation results When multifunction input terminal function 18 (frequency switching) is not valid, auxiliary frequency Y is used as the target frequency. When multifunction input terminal function 18 (frequency switching) is valid, the main and auxiliary operation result is used as the target frequency. Tenth position: frequency source main and auxiliary operation relationship:

0: Primary frequency source X + secondary frequency source Y

The sum of main frequency X and auxiliary frequency Y is used as the target frequency. Realizes the frequency superposition given function.

1: Primary frequency source X - Auxiliary frequency source Y

The difference between the primary frequency X minus the auxiliary frequency Y is used as the target frequency.

2: MAX (main frequency source X, auxiliary frequency source Y) Take the largest absolute value of the main frequency X and auxiliary frequency Y as the target frequency. Offset frequency to flexibly respond to various types of needs.

P08.08	Preset Frequency	Factory value	50.00 Hz
	Setting range	0.00～maximum frequency (valid for digital setting of frequency source selection method)	

When "DIGITAL SET" or "TERMINAL UP/DOWN" is selected for the frequency source, the function code value is the initial value of the frequency digital setting of the VFD.

P08.09	Running direction		Factory value	0
	Setting range	0	directional consistency	
		1	opposite direction	

By changing this function code, the purpose of changing the motor steering can be realized without changing the motor wiring, which is equivalent to adjusting any two wires of the motor (U, V, W) to realize the conversion of the motor rotation direction.

Tip: The motor running direction will be restored to its original state after the parameters are initialized. Use with caution if it is strictly prohibited to change the motor steering direction after the system has been

debugged.

P08.10	Maximum frequency	factory value	50.00 Hz
	Setting range	5.00Hz to 500.00Hz	

The analog inputs, pulse inputs (DI5), and multi-segment commands in the GF630N04 are each calibrated at 100.0% relative to P08.10 when used as a frequency source.

The maximum output frequency of the GF630N04 can reach 500Hz. In order to take into account the two indexes of the frequency command resolution and the frequency input range, the number of decimal digits of the frequency command can be selected through P08.22.

When P08.22 is selected as 1, the frequency resolution is 0.1Hz, at which time the P08.10 setting range is 50.0Hz～ 500.0Hz;

When P08.22 is selected as 2, the frequency resolution is 0.01Hz, at which time P08.10 sets the range to 50.00Hz～ 500.00Hz.

P08.11	Upper Frequency Source		Factory value	0
	Found order example wear by wrapping around (scarf, shawl)	0	P08.12 Settings	
		1	AI1	
		2	AI2	
		3	AI3	
		4	PULSE setting	
		5	Communication Settings	

Defines the source of the upper limit frequency. The upper limit frequency

can come from a digital setting (P08.12) or from an analog input channel. When the upper limit frequency is set with an analog input, 100% of the analog input setting corresponds to P08.12.

For example, when the torque control mode is used in the winding control site, in order to avoid the phenomenon of "flying car" when the material breaks the line, the upper limit frequency can be set by analog, and when the frequency converter runs to the upper limit frequency value, the frequency converter will keep running at the upper limit frequency.

P08.12	Upper frequency	Factory value	50.00 Hz
	Setting range	Lower limit frequency P08.14～Maximum frequency P08.10	
P08.13	Upper Frequency Bias	Factory value	0.00Hz
	Setting range	0.00Hz to maximum frequency P08.10	

When the upper limit frequency is an analog or PULSE setting, P08.13 serves as a bias for the setting value, and this bias frequency is superimposed with the upper limit frequency value set by P08.11 as the final upper limit frequency setting value.

P08.14	Lower frequency	Factory value	0.00Hz
	Setting range	0.00Hz to upper limit frequency P08.12	

When the frequency command is lower than the lower limit frequency set in P08.14, the VFD can stop, run at the lower limit frequency or run at zero

speed, and the operation mode to be used can be set through P21.14 (Setting frequency lower than the lower limit frequency operation mode).

P08.15	carrier frequency	factory value	Depends on the power of the model
	Setting range	0.5kHz～ 16.0kHz	

Adjusting the carrier frequency has an effect on the following properties:

Carrier frequency	Low → High
Motor noise	Large → Small
Output current waveform	Poor → Good
Motor temperature rise	High → Low
VFD temperature rise	Low → High
Leakage current	Small → Large
Radiation interference with the outside world	Small → Large

The factory setting of carrier frequency is different for different power VFDs. Although the user can modify according to the need, but need to pay attention to: if the carrier frequency is set higher than the factory value, it will lead to the VFD radiator temperature rise, at this time the user needs to derate the use of the VFD, otherwise the VFD has the danger of overheating alarm.

P08.16	Carrier frequency adjusted with temperature	Factory value	0
	Setting range	0: No 1: Yes	

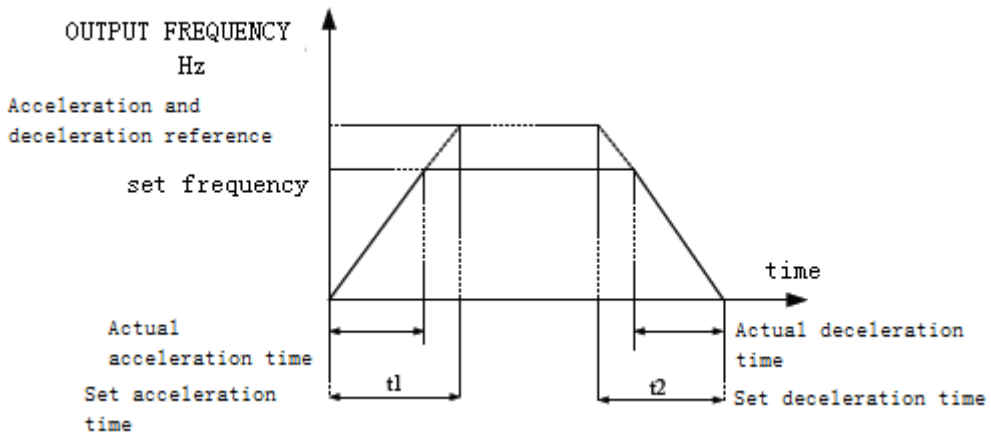
Carrier frequency adjustment with temperature means that when the VFD detects a higher temperature of its own heat sink, it automatically reduces the carrier frequency in order to reduce the temperature rise of the VFD.

When the heat sink temperature is lower, the carrier frequency gradually returns to the set value. This function can reduce the chance of overheating alarm of the VFD.

P08.17	Acceleration time 1	Factory value	Model power related
	Setting range	0.00s～ 6500.0s	
P08.18	Deceleration time 1	Factory value	Model power related
	Setting range	0.00s～ 6500.0s	

Acceleration time refers to the time required for the VFD to accelerate from zero frequency, to the acceleration and deceleration reference frequency (determined by P08.25), see t1 in the figure.

Deceleration time refers to the time required for the VFD to decelerate from the acceleration and deceleration reference frequency (determined by P08.25), to zero frequency, see t2 in the figure.



Acceleration and deceleration

time diagram

The GF630N04 provides 4 groups of acceleration and deceleration times, which can be selected by the user by switching the digital input terminal DI. The

four groups of acceleration and deceleration times are set by the following function codes:

Group I: P08.17, P08.18;

Group II: P21.03, P21.04;

Group III: P21.05, P21.06;

Group IV: P21.07, P21.08.

P08.19	Acceleration and deceleration time unit		Factory value	1
	Setting range	0	1 second	
		1	0.1 second	
		2	0.01 seconds	

To meet the needs of various types of sites, the GF630N04 offers three acceleration and deceleration time units of 1 second, 0.1 second and 0.01 second.

Note: When this function parameter is modified, the number of decimal places displayed in the acceleration and deceleration time of P8 group will change, and the corresponding acceleration and deceleration time will also change, so pay special attention to it during the application.

P08.21	Auxiliary frequency source bias frequency during stacking	Factory value	0.00Hz
	Setting range	0.00Hz to maximum frequency P08.10	

This function code is only valid when the frequency source is selected as the primary and secondary operation.

When the frequency source is the main auxiliary operation, P8.21 is used as

the bias frequency and superimposed with the main auxiliary operation result as the final frequency setting value, so that the frequency setting can be more flexible.

P08.23	Digital set frequency shutdown memory selection		Factory value	0
	Setting range	0	lost in memory	
		1	memorization	

This function is valid only when the frequency source is set digitally.

"No Memory" means that after the VFD stops, the digital set frequency value is restored to the value of P08.08 (Preset Frequency), and the frequency correction made by the keypad ▲, ▼ keys or the terminals UP and DOWN is cleared to zero.

"Memory" means that after the VFD is shut down, the digital set frequency is retained as the set frequency at the last shutdown moment, and the frequency correction made by ▲, ▼ keys of the keypad or UP, DOWN of the terminal remains effective.

P08.24	Motor Selection		Factory value	0
	Setting range	0	Motor 1	
		1	Motor 2	

GF630N04 supports the application of VFD to drag 2 motors in time-sharing. 2 motors can be set up separately with motor nameplate parameters, independent parameter tuning, selection of different control modes, and

independent setting of parameters related to operation performance.

Motor 1 corresponds to functional parameter groups P10 and P12, and Motor 2 corresponds to functional parameter groups P11 and P13.

The user selects the current motor by P08.24 function code, and can also switch the motor by digital input terminal DI. When the function code selection contradicts the terminal selection, the terminal selection prevails.

P08.25	Acceleration and deceleration time reference frequency		Factory value	0
	Setting range	0	Maximum frequency (P08.10)	
		1	Setting frequency	
		2	100Hz	

Acceleration and deceleration time is the acceleration and deceleration time between the zero frequency and the frequency set by P08.25.

When P08.25 is selected as 1, the acceleration and deceleration time is related to the setting frequency, and if the setting frequency is changed frequently, the acceleration of the motor is variable, which needs to be taken care of when applying.

P08.26	Run-time frequency command UP/DOWN reference		Factory value	0
	Setting range	0	operating frequency	
		1	Setting frequency	

This parameter is valid only when the frequency source is set digitally.

It is used to determine which method is used to correct the set frequency when the ▲ and ▼ keys of the keypad or terminal UP/DOWN are actuated,

i.e., whether the target frequency is increased or decreased on the basis of the operating frequency, or increased or decreased on the basis of the set frequency.

The difference between the two settings is evident when the frequency converter is in the process of acceleration and deceleration, i.e. if the frequency converter is running at a different frequency than the set frequency, the difference between the different choices of this parameter is significant.

<table>
<tr><td rowspan="12">P08.27</td><td colspan="2">Command Source Bundle Frequency Source</td><td>Factory value</td><td>0</td></tr>
<tr><td rowspan="11">Found order example wear by wrapping around (scarf, shawl)</td><td>The units place (or column) in the decimal system</td><td colspan="2">operation panel Command Binding Frequency Source Selection</td></tr>
<tr><td>0</td><td colspan="2">unbundled</td></tr>
<tr><td>1</td><td colspan="2">Digitally set frequency source</td></tr>
<tr><td>2</td><td colspan="2">AI1</td></tr>
<tr><td>3</td><td colspan="2">AI2</td></tr>
<tr><td>4</td><td colspan="2">AI3</td></tr>
<tr><td>5</td><td colspan="2">PULSE pulse setting (DI5)</td></tr>
<tr><td>6</td><td colspan="2">multisession command (computing)</td></tr>
<tr><td>7</td><td colspan="2">Simple PLC</td></tr>
<tr><td>8</td><td colspan="2">PID</td></tr>
<tr><td>9</td><td colspan="2">communication protocol</td></tr>
<tr><td>the tens place (or column) in the decimal system</td><td colspan="2">Terminal Command Binding Frequency Source Selection (0～ 9, same bit)</td></tr>
<tr><td>the hundreds place (or column) in the decimal system</td><td colspan="2">Communication Command Binding Frequency Source Selection (0～ 9, same bit)</td></tr>
</table>

Define bundled combinations between three run command channels and nine

frequency-given channels to facilitate synchronized switching.

The meaning of the above frequency given channels is the same as the main frequency source X selection P08.03, see P08.03 function code description.

Different run command channels can be bundled with the same frequency given channel. When the command source has a bundled frequency source, the frequency source set in P08.03~ P08.07 will no longer function during the validity of this command source.

P08.28	Activation method		Factory value	0
	found order example wear by wrapping around (scarf, shawl)	0	Direct launch	
		1	Reservations	
		2	Reservations	

0: Direct start

If the start DC braking time is set to 0, the frequency converter operates from the start frequency. If the start DC braking time is not set to 0, the DC braking is done first, and then the VFD starts running from the start frequency. Suitable for small inertia loads where the motor may rotate during startup.

1: Reservations

2: Reservations

P08.31	Start-up frequency	Factory value	0.00Hz
	Setting range	0.00Hz～ 10.00Hz	
P08.32	Starting frequency hold time	Factory value	0.0s

	Setting range	0.0s～ 100.0s

To ensure motor torque at startup, set the appropriate starting frequency. In order to build up the magnetic flux sufficiently when the motor starts, it is necessary to keep the starting frequency for a certain period of time.

The start frequency P08.31 is not limited by the lower limit frequency. However, when the set target frequency is less than the start frequency, the frequency converter does not start and is in standby mode.

The start frequency hold time does not work during forward and reverse switching. The start frequency hold time is not included in the acceleration time, but is included in the run time of the simple PLC.

Example 1:

P08.31 0= Frequency source is digitally given

P08.08= 2.00Hz Digitally set frequency of 2.00Hz

P08.31= 5.00Hz Start-up frequency of 5.00Hz

P08.32= 2.0s Start frequency hold time is 2.0s At this time, the VFD will be in standby mode and the VFD output frequency is 0.00Hz.

Example 2:

P08.03 0= Frequency source is digitally given

P08.08= 10.00Hz Digitally set frequency to 10.00Hz

P08.31= 5.00Hz Start-up frequency of 5.00Hz

P08.32= 2.0s Start frequency hold time of 2.0s

At this point, the VFD accelerates to 5.00Hz for 2.0s and then accelerates

to a given frequency of 10.00Hz.

P08.33	Starting DC braking current	factory value	0%
	Setting range	0%～ 100%	
P08.34	Start DC braking time	factory value	0.0s
	Setting range	0.0s～ 100.0s	

Starting DC braking is generally used to bring a running motor to a stop before starting it. Pre-excitation is used to establish the magnetic field of an asynchronous motor before starting to improve response speed.

Starting DC braking is only effective when the starting mode is direct starting. At this time, the frequency converter first performs DC braking according to the set start DC braking current, and then starts operation after the start DC braking time. If the set DC braking time is 0, it will start directly without DC braking. The higher the DC braking current, the higher the braking force.

Starting DC braking current, which is a percentage of the rated current relative to the VFD.

P08.35	Acceleration and deceleration mode		Factory value	0
	Setting range	0	Linear acceleration and deceleration	
		1	S-curve acceleration and deceleration A	
		2	S-curve acceleration/deceleration B	

Select the way in which the frequency of the VFD changes during startup and stopping.

0: Linear acceleration and deceleration The output frequency increases or

decreases in accordance with a straight line.

1: S-curve acceleration and deceleration A output frequency increases or decreases according to the S-curve.

The S-curve is used in places where gentle starting or stopping is required, such as elevators and conveyor belts. Function codes P08.36 and P08.37 define the proportion of time for the start and end segments of the acceleration and deceleration of the S-curve respectively The acceleration and deceleration time is when the set frequency is above the rated frequency:

$$t = (\frac{4}{9} \times (\frac{f}{f_b})^2 + \frac{5}{9}) \times T$$

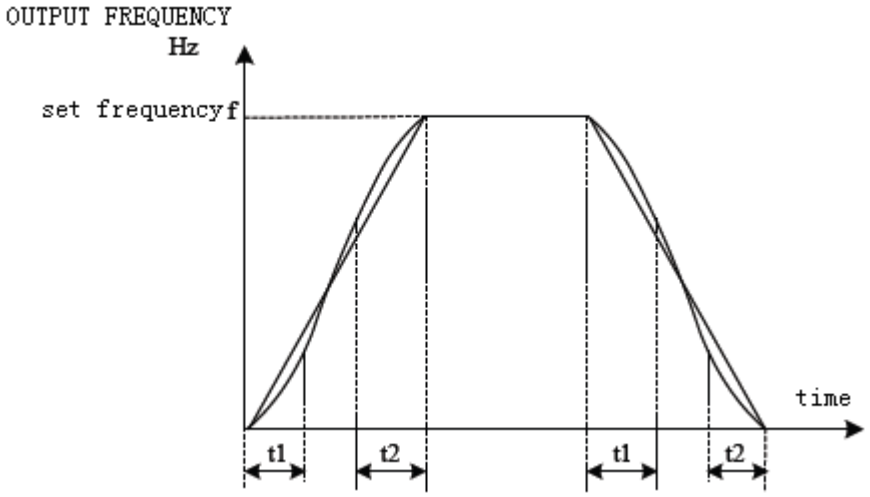
where f is the set frequency, f b is the rated frequency of the motor, and T is the time to accelerate from the 0 frequency to the rated frequency f b .

P08.36	Proportion of time at the beginning of the S-curve	Factory value	30.0%
	Setting range	0.0% to (100.0% - P08.37)	
P08.37	Proportion of time at the end of the S-curve	Factory value	30.0%
	Setting range	0.0% to (100.0% - P08.36)	

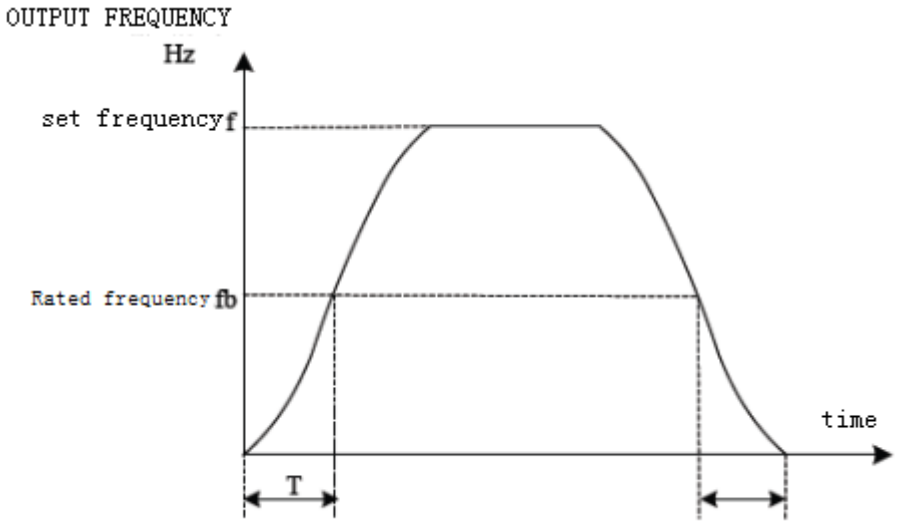
Function codes P08.36 and P08.37 define, respectively, the proportion of the start and end periods of the S-curve acceleration and deceleration A. The two function codes have to satisfy: P08.36 + P08.37 ≤ 100.0%.

In the figure, t1 is the parameter defined by parameter P08.36, during which the slope of the output frequency change gradually increases. t2 is the time

defined by parameter P08.37, during which the slope of the output frequency change gradually changes to 0. During the time between t1 and t2, the slope of the output frequency change is fixed, i.e., linear acceleration and deceleration is performed in this interval.



S-curve acceleration/deceleration A schematic



S-curve acceleration/deceleration B schematic

P08.38	Stopping Methods		Factory value	0
	Setting range	0	Decelerate	
		1	Free parking	

0: Deceleration stop After the stop command is valid, the VFD reduces the output frequency according to the deceleration time and stops after the frequency drops to 0.

1: Free stop After the stop command is valid, the VFD terminates the output immediately, and the motor stops freely according to the mechanical inertia at this time.

P08.39	Stopping DC braking start frequency	Factory value	0.00Hz
	Setting range	0.00Hz to maximum frequency	
P08.40	Shutdown DC braking wait time	Factory value	0.0s
	Setting range	0.0s～ 36.0s	
P08.41	Stopping DC braking current	Factory value	0%
	Setting range	0%～ 100%	
P08.42	Stopping DC braking time	Factory value	0.0s
	Setting range	0.0s～ 36.0s	

Stopping DC braking start frequency: During deceleration and stopping, when the operating frequency is reduced to this frequency, the DC braking process will start.

Stopping DC braking waiting time: After the running frequency is reduced to the starting frequency of stopping DC braking, the frequency converter

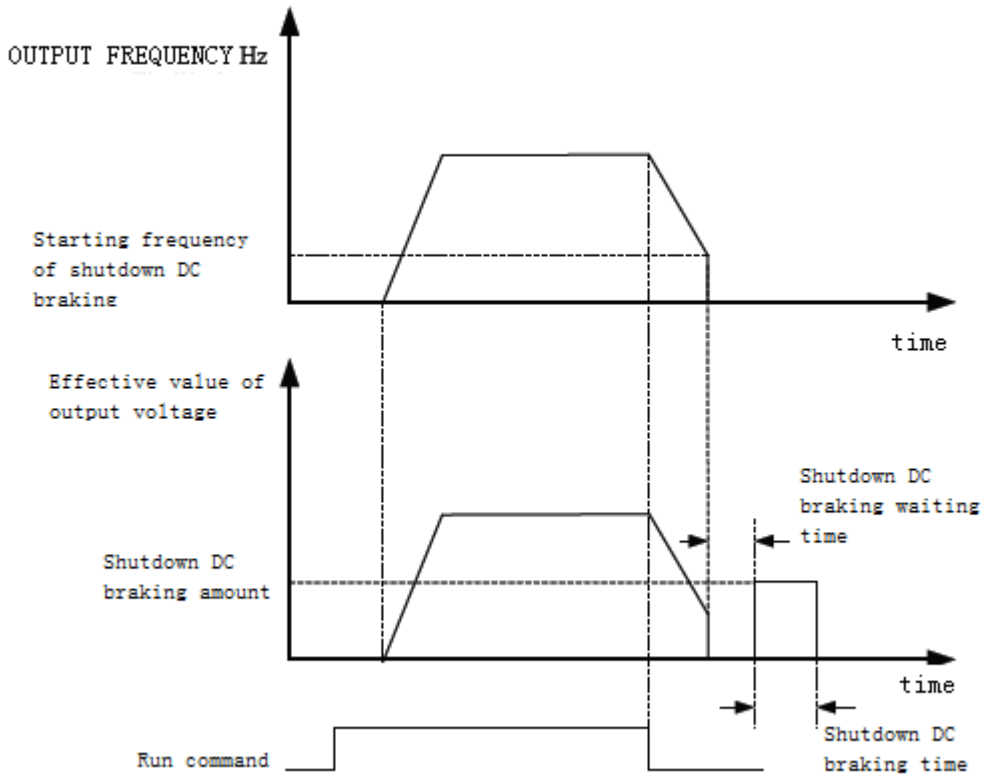
stops the output for a period of time first, and then starts the DC braking process. It is used to prevent overcurrent and other faults that may be caused by starting DC braking at higher speeds.

Stopping DC braking current: The stopping DC braking current, relative to the base value, has two scenarios.

1, when the motor rated current is less than or equal to 80% of the rated current of the VFD, it is relative to the motor rated current as a percentage of the base value.

2, when the motor rated current is greater than 80% of the rated current of the VFD, is relative to 80% of the rated current of the VFD as a percentage base value.

The stopping DC braking process is shown in the schematic diagram.



P08.43	Brake utilization rate	Factory value	100%
	Setting range	0%～ 100%	

Valid only for VFDs with built-in brake units.

Used to adjust the duty cycle of the dynamic unit, high brake utilization, the brake unit action duty cycle is high, braking effect is strong, but the braking process VFD bus voltage fluctuation is large.

P08.45	Hyperboost function		Factory value	0
	Setting range	0	Bind	
		1	Unbound	
P08.47	Overstart hold time		Factory value	0.200S
	Setting range		0.010-10.000S	
P08.49	Maximum hold time for overstart		Factory value	5.000S
	Setting range		0.010-10.000S	
P08.51	Tap-to-run bound overstart hold time selection		Factory value	0
	Setting range	0	Bind	
		1	Unbound	
P08.52	DI positive start operation mode selection		Factory value	0
	Setting range	0	Model 1	
		1	Model 2	

When the overstart function is enabled, the pointing operation enables overstart, and the pointing operation can choose whether or not to count the pointing time within the overstart hold time set in P08.47 according to P08.51.

DI positive start operation mode selection: Mode 1 and Mode 2 can be selected.

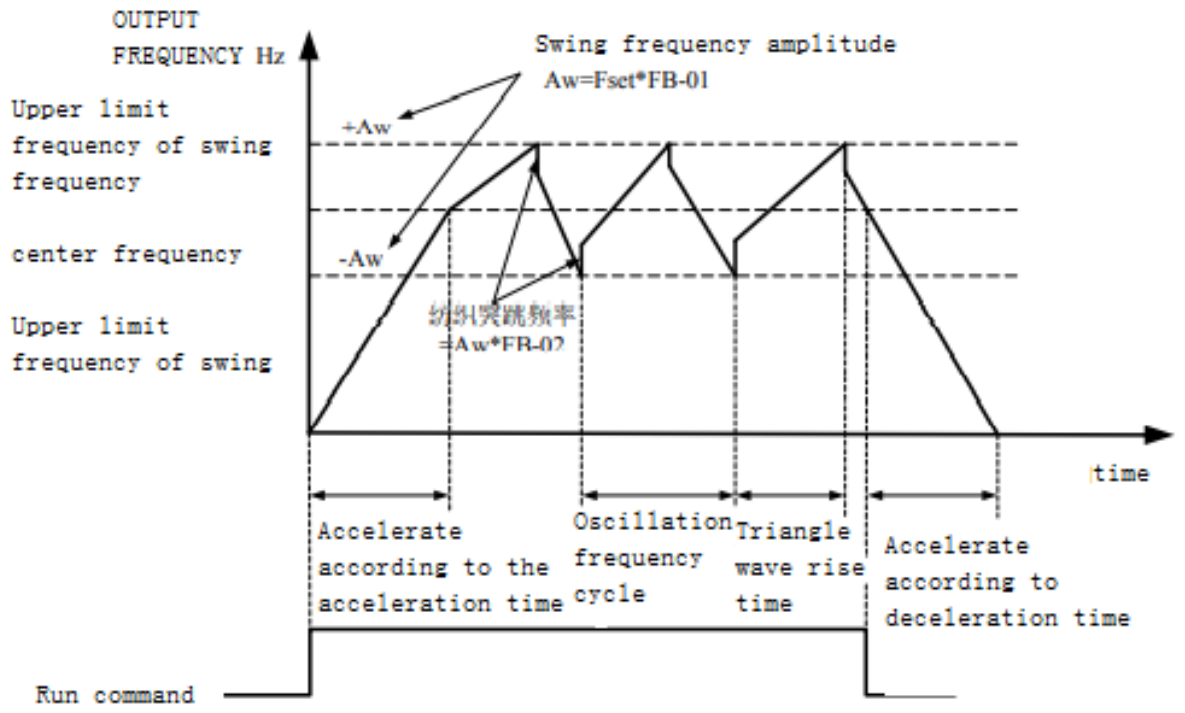
Assuming that DI1 is configured as 1: positive rotation operation (P03.00=1) and DI2 is configured as 4: positive rotation spotting (P03.01=4).

Mode 1: Press the button corresponding to DI1, the motor runs positively.

Mode 2: Pressing the button corresponding to DI1, the DI2 button must be pressed again for the motor to run positively, at this time DI1 is used as a preparatory signal for positive running.

7.9 Pendulum Frequency and Segment Speed Group P9

Pendulum frequency function is suitable for textile, chemical fiber and other industries, as well as the need for traverse, winding function of the occasion. Pendulum frequency function refers to the frequency converter output frequency, to set the frequency as the center of the up and down swing, running frequency in the time axis of the track pendulum frequency function refers to the frequency converter output frequency, to set the frequency as the center of the up and down swing, running frequency in the time axis of the track as shown in the figure, pendulum amplitude set by the P09.00 and P09.01, when the P09.01 is set to 0 pendulum amplitude of 0, at this time the pendulum frequency does not work.



Oscillating Frequency Working Diagram

P09.00	Oscillation setting method	factory value	0
	Setting range	0	Relative to center frequency
		1	Relative to maximum frequency

This parameter is used to determine the reference amount of the pendulum.

0: Relative to the center frequency, a variable pendulum amplitude system. The pendulum amplitude varies with the center frequency (set frequency).

1: Relative maximum frequency, for a fixed pendulum system, with a fixed pendulum amplitude.

P09.01	Swing amplitude	Factory value	0.0%
	Setting range	0.0%～ 100.0%	
P09.02	Burst frequency amplitude	Factory value	0.0%

	Setting range	0.0%～ 50.0%

This parameter is used to determine the value of the pendulum amplitude and the value of the glitch frequency.

When setting the pendulum amplitude relative to the center frequency (P09.00 = 0), the pendulum amplitude AW = frequency source× pendulum amplitude P09.01.

When setting the pendulum amplitude relative to the maximum frequency (P09.00 = 1), pendulum AW = maximum frequency× Pendulum amplitude P09.01.

Sudden jump frequency amplitude is the frequency percentage of the sudden jump frequency relative to the pendulum amplitude when the pendulum frequency is running, i.e.: Sudden tuning frequency = Pendulum amplitude AW × Sudden jump frequency amplitude P09.02 If you select the pendulum amplitude relative to the center frequency (P09.00 = 0), the sudden tuning frequency is a changing value. If the pendulum amplitude is selected relative to the maximum frequency (P09.00=1), the glitch frequency is a fixed value.

Pendulum frequency operation frequency, subject to upper and lower frequency limits.

P09.03	Oscillation period	Factory value	10.0s
	Setting range	0.0s～ 3000.0s	
P09.04	Triangular wave rise time coefficient	Factory value	50.0%
	Setting range	0.0%～ 100.0%	

Pendulum Frequency Period: The time value of a complete pendulum frequency period.

The delta wave rise time coefficient, P09.04, is the percentage of time that

the delta wave rise time is relative to the pendulum frequency period, P09.03.

Triangle wave rise time = pendulum frequency period P09.03 × triangle wave rise time coefficient P09.04 , in seconds.

Triangle wave fall time = swing frequency period P09.03 x (1 - triangle wave rise time factor P09.04) in seconds.

P09.05	Setting length	Factory value	1000m
	Setting range	0m～ 65535m	
P09.06	Actual length	Factory value	0m
	Setting range	0m～ 65535m	
P09.07	Pulses per meter	Factory value	100.0
	Setting range	0.1～ 6553.5	

The above function codes are used for fixed length control.

The length information needs to be collected through the multi-function digital input terminal, the number of pulses sampled by the terminal and the number of pulses per meter P09.07 are divided to calculate the actual length P09.06. When the actual length is greater than the set length P09.05, the multi-function digital DO outputs the "Length Arrived" ON signal.

During the fixed length control process, the length reset operation can be performed through the multi-function DI terminal (DI function selection is 28), please refer to the P3 group parameter for details.

The application requires that the corresponding input terminal function is set to "length counting input" (function 27) and that the DI5 port must be used for high pulse frequencies.

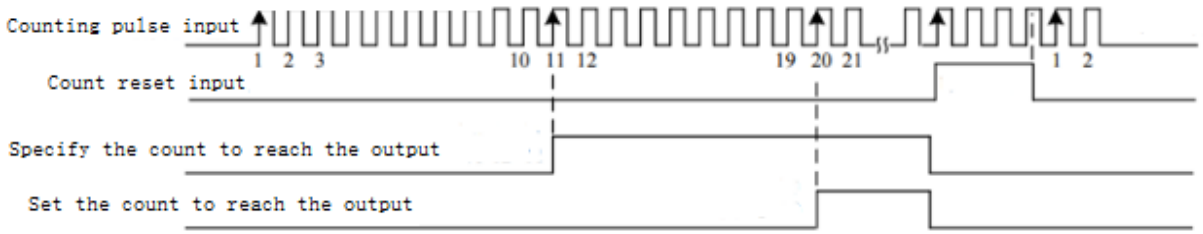
P09.08	Setting the count value	Factory value	1000
	Setting range	1～ 65535	
P09.09	Specify count value	Factory value	1000
	Setting range	1～ 65535	

The counting values have to be captured via the multifunction digital inputs. The corresponding input terminal must be set to "Counter input" (function 25) and the DI5 port must be used for high pulse frequencies.

When the count value reaches the set count value P09.08, the multifunction digital DO outputs the "set count value reached" ON signal, and then the counter stops counting.

When the counting value reaches the specified counting value P09.09, the multifunction digital DO outputs the "specified counting value reached" ON signal, and then the counter continues to count until the counter stops at the "set counting value".

The specified count value P09.09 should not be greater than the set count value P09.08. The following diagram shows the set count value arrival and specified count value arrival functions.



The multi-segment instruction of the GF630N04 is more versatile than the usual multi-segment speed. In addition to realizing the multi-segment speed function, it can also be used as a voltage source for VF separation and as a source for the process PID. For this purpose, the scale of the multisection command is relative.

Simple PLCs can perform simple combinations of multiple commands.

P09.10	Multi-segment instruction 0	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	
P09.11	Multi-segment instruction 1	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	
P09.12	Multi-segment instruction 2	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	
P09.13	Multi-segment instruction 3	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	
P09.14	Multi-segment instruction 4	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	
P09.15	Multi-segment instruction 5	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	
P09.16	Multi-segment instruction 6	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	

P09.17	Multi-segment instruction 7	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	
P09.18	Multi-segment instruction 8	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	
P09.19	Multi-segment instruction 9	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	
P09.20	Multi-segment instruction 10	Factory value	0.0Hz
	Setting range	-100.0%～ 100.0%	
P09.21	Multi-segment instruction 11	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	
P09.22	Multi-segment instruction 12	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	
P09.23	Multi-segment instruction 13	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	
P09.24	Multi-segment instruction 14	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	
P09.25	Multi-segment instruction 15	Factory value	0.0%
	Setting range	-100.0%～ 100.0%	

Multi-segment commands can be used in three ways: as a frequency source, as a voltage source for VF separation, and as a setting source for a process PID.

Under the three applications, the outline of the multi-segment instruction is a relative value, ranging from -100.0% to 100.0%, when used as a frequency source, it is a percentage of the relative maximum frequency;

when used as a VF separation voltage source, it is a percentage of the relative rated voltage of the motor; and since the PID given is originally a relative value, the multi-segment instruction does not need an outline conversion when used as a PID setting source.

Multi-segment commands need to be switched and selected according to the different states of the multi-function digital DI, please refer to the relevant instructions of P3 group.

7.10 V/F control and motor 1 parameter set P10

P10.35	Rating	Factory value	Determination of model power
	Setting range	0.1kW～ 1000.0kW	
P10.36	Rated voltage	Factory value	Determination of model power
	Setting range	1V～ 2000V	
P10.37	Rated current	Factory value	Determination of model power
	Setting range	0.01A～ 655.35A (VFD power <= 55kW) 0.1A～ 6553.5A (VFD power >55kW)	
P10.38	Rated frequency	Factory value	Determination of model power
	Setting range	0.01Hz to maximum frequency	
P10.39	Rated speed	Factory value	Determination of model power
	Setting range	1rpm～ 65535rpm	

The above function codes are motor nameplate parameters. Whether VF control or vector control is used, it is necessary to accurately set the relevant parameters according to the motor nameplate.

Motor parameter tuning is required to obtain better VF or vector control

performance, and the accuracy of the tuning results is closely related to the correct setting of the motor nameplate parameters.

P10.50	Synchronous motor stator resistance	Factory value	Determination of model power
	Setting range	0.001Ω～ 65.535Ω (VFD power <= 55kW) 0.0001Ω～ 6.5535Ω (VFD power >55kW)	
P10.51	Synchronous motor D-axis inductance	Factory value	Determination of model power
	Setting range	0.01mH～ 655.35mH (VFD power <= 55kW) 0.001mH～ 65.535mH (VFD power >55kW)	
P10.52	Synchronous motor Q-axis inductance	Factory value	Determination of model power
	Setting range	0.01mH～ 655.35mH (VFD power <= 55kW) 0.001mH～ 65.535mH (VFD power >55kW)	
P10.54	Synchronous motor reaction potential	Factory value	Determination of model power
	Setting range	0.1V～ 6553.5V	

P10.50~10.54 are the parameters of synchronous motor, some synchronous motor nameplate will provide some parameters, but most of the motor nameplate does not provide the above parameters, which need to be obtained through the automatic tuning of the frequency converter, and you must choose "synchronous machine no-load tuning". Because "synchronous motor no-load tuning" can get P10.50~10.54 these 4 motor parameters, if it is "synchronous machine with load tuning" need to set P10.54 manually, the specific way is as follows:

(1) If the nameplate labeling reverse electromotive force coefficient Ke, calculated as follows: E = (Ke * *2 * pi)/60

2) If the nameplate indicates the reverse electromotive force E'(V/1000r/min), calculate as follows: E=E'* /1000

3) If the nameplate does not indicate the above two parameters, the

calculation is as follows: E=P/(1.65*I)

Where, is the rated speed (rpm), P is the rated power (w), and I is the rated current (A).

If the "Synchronous motor no-load tuning" does not recognize the exact reverse electromotive force coefficient, the A064 warning can be changed manually.

When modifying the rated power of the motor or the rated voltage of the motor, the frequency converter will automatically modify the parameter values of P10.50~10.54.

The above synchronizer parameters can also be set directly to the corresponding function codes according to the data provided by the manufacturer.

P10.61	Number of encoder pulses	Factory value	1024
	Setting range	1～ 65535	

P10.62	Encoder Type		Factory value	0
	Found order example wear by wrapping around (scarf, shawl)	0	ABZ Incremental Encoders	
		1	Reservations	
		2	Rotary Transformer	
		3	Reservations	
		4	Reservations	
P10.71	Tuning Options		Factory value	0
	Found order	0	No operation	
		11	Synchronous machine stationary tuning	

		12	Synchronous machine complete tuning

Motor type and nameplate parameters P10.34~P10.39 need to be set correctly before parameter self-tuning.

Description of tuning action: Set the motor nameplate parameters and self-tuning type after selecting the motor control mode, and then press the RUN key, the VFD will carry out stationary tuning.

0: No operation, i.e. tuning is disabled.

11: Synchronous machine static tuning, suitable for synchronous motor and load is not easy to disengage, and can not be complete tuning occasions.

12: Synchronous machine no-load tuning

During the no-load tuning process, the VFD will first carry out stationary tuning, and then it will slowly accelerate to 40% of the rated frequency of the motor, and after keeping it for a period of time, it will decelerate and stop and end the tuning.

Description: Tuning supports motor tuning in keypad operation mode, terminal mode, and communication mode.

7.11 Advanced Control Parameters P21

P21.00	Tap operation frequency	Factory value	2.00Hz
	Setting range	0.00Hz to maximum frequency	
P21.01	Tap acceleration time	Factory value	20.0s
	Setting range	0.0s～ 6500.0s	
P21.02	Tap deceleration time	Factory value	20.0s
	Setting range	0.0s～ 6500.0s	

Define the given frequency and acceleration/deceleration time of the VFD at pointing.

For pointing operation, the start mode is fixed to the direct start mode (P08.28 = 0) and the stop mode is fixed to the deceleration stop (P08.38 = 0).

P21.03	Acceleration time 2	Factory value	20.0s
	Setting range	0. 0s～ 6500.0s	
P21.04	Deceleration time 2	Factory value	20.0s
	Setting range	0. 0s～ 6500.0s	
P21.05	Acceleration time 3	Factory value	20.0s
	Setting range	0. 0s～ 6500.0s	
P21.06	Deceleration time 3	Factory value	20.0s
	Setting range	0. 0s～ 6500.0s	
P21.07	Acceleration time 4	Factory value	20.0s
	Setting range	0. 0s～ 6500.0s	
P21.08	Deceleration time 4	Factory value	20.0s
	Setting range	0. 0s～ 6500.0s	

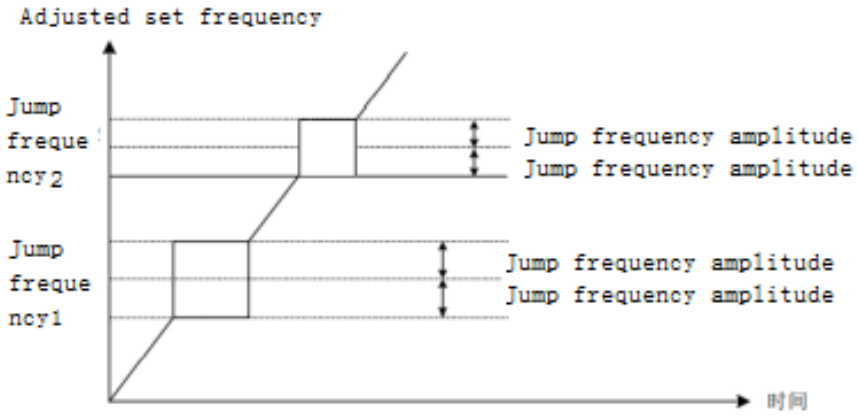
The GF630N04 provides 4 sets of acceleration and deceleration times, P08.17\P08.18 and the above 3 sets of acceleration and deceleration times. The definition of the 4 groups of acceleration and deceleration times is exactly the same, please refer to the relevant instructions in P08.17 and P08.18. The 4 groups of acceleration and deceleration times can be switched and selected by different combinations of the multi-function digital input terminals DI, please refer to the relevant instructions in function code

P03.01～ P03.05 for the detailed usage.

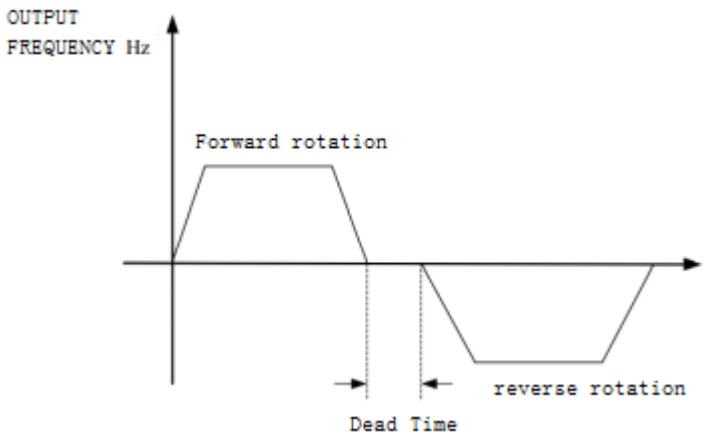
P21.09	Jump Frequency 1	Factory value	0.00Hz
	Setting range	0.00Hz to maximum frequency	
P21.10	Jump Frequency 2	Factory value	0.00Hz
	Setting range	0.00 Hz to maximum frequency	
P21.11	hopping frequency amplitude	Factory value	0.00Hz
	Setting range	0.00 to maximum frequency	

When the set frequency is within the jump frequency range, the actual operating frequency will run at a jump frequency closer to the set frequency. By setting the jump frequency, the VFD can avoid the mechanical resonance point of the load.

GF630N04 can set two jump frequency points, if both jump frequencies are set to 0, the jump frequency function is canceled. Please refer to the following figure for the schematic illustration of the principle of jumping frequency and jumping frequency amplitude.



P21.12	Forward and reverse dead time	Factory value	0.0s
	Setting range	0.00s～ 3000.0s	



Set the transition time at output 0Hz during the VFD forward and reverse transition as shown in the figure:

P21.13	Reverse Control Enable		Factory value	0
	Setting range	0	permissible	
		1	prohibited	

This parameter sets whether the VFD is allowed to run in the reverse state or not, and in the case where the motor is not allowed to be reversed, P21.13=1 is to be set.

P21.14	Set frequency below lower limit frequency operation mode		Factory value	0
	Setting range	0	Operate at lower frequency limit	
		1	(Of a prepaid mobile phone) be out of credit	
		2	Zero-speed operation	

When the set frequency is lower than the lower limit frequency, the operation state of the VFD can be selected by this parameter.GF630N04 provides three operation modes to meet various application requirements.

P21.15	sag control	factory value	0.0%
	Setting range	0.0% to 100.0%	

The sag rate allows a small speed difference between the master and slave stations, which in turn can avoid conflicts between them. The default value of this parameter is 0.

The sag rate only needs to be adjusted if both the master and the slave are in speed control mode. The appropriate sag rate for each drive process needs to be found gradually in practice, and it is recommended that P21.15 not be set too large, otherwise there will be a noticeable drop in steady state speed when the load is large. Sag rate must be set for both master and slave.

Sag speed = Synchronization frequency × Output torque (%) × Sag rate (%)

If P21.15 = 10.0%, synchronization frequency 50Hz, output torque 50%, then:

Sag velocity = 50Hz x 50% x 10% = 2.5Hz

Actual frequency of VFD = 50Hz - 2.5Hz = 47.5Hz

P21.18	Startup Protection Selection	Factory value	1
	Setting range	0: not protected 1: protected	

This parameter relates to the safety protection function of the frequency converter.

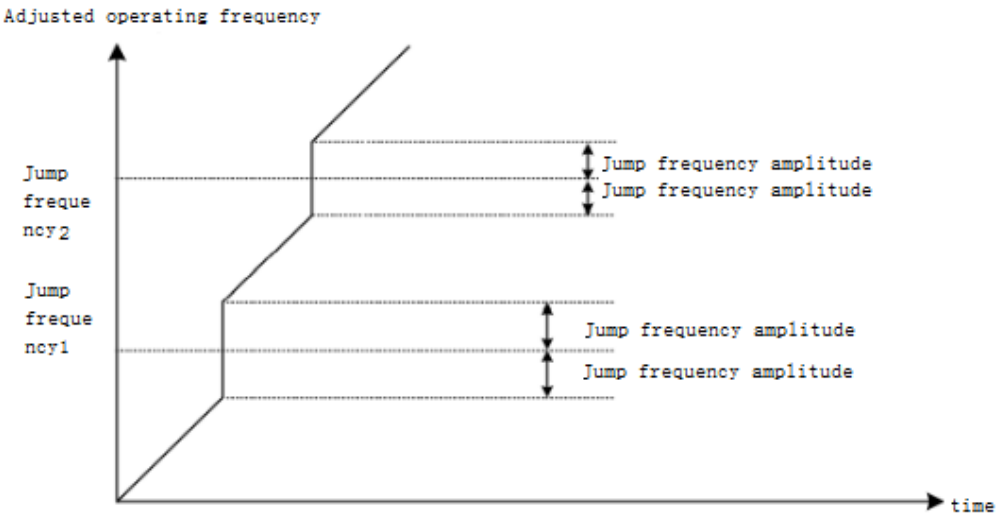
If this parameter is set to 1, if the run command is valid at the moment of power-on of the frequency converter (for example, the terminal run command is closed before power-on), the frequency converter does not respond to the run command, and the run command must be withdrawn once, and the frequency

converter responds only after the run command is valid again. In addition, if this parameter is set to 1, if the run command is valid at the time of VFD fault reset, the VFD does not respond to the run command, and the run command must be removed before eliminating the run protection state. Setting this parameter to 1 prevents the danger caused by the motor responding to the run command when power-on or fault reset occurs unknowingly.

P21.22	Whether the jump frequency is valid during acceleration and	Factory value	0
	Setting range	0: Invalid 1: Effective	

This function code is used to set whether the jump frequency is valid during acceleration and deceleration.

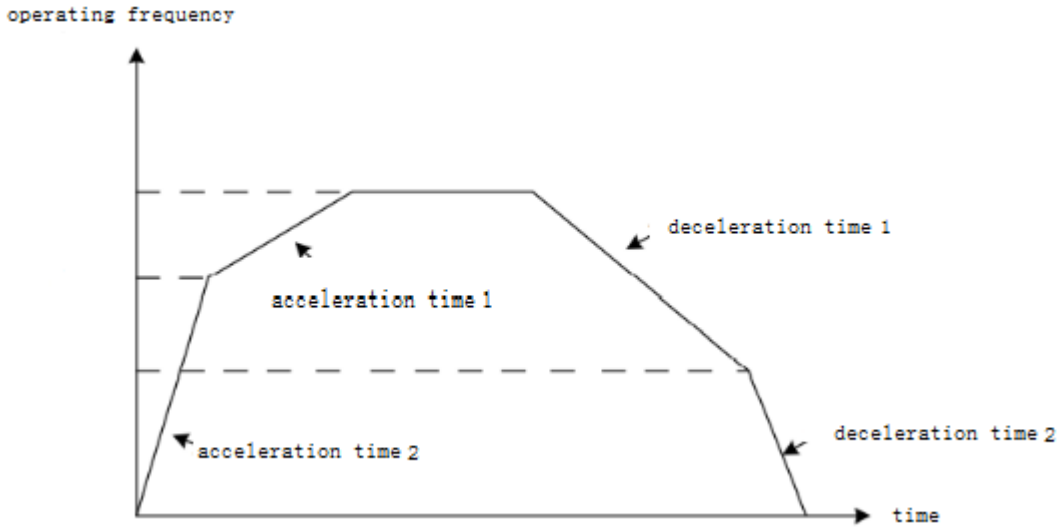
When the setting is valid, the actual operating frequency jumps over the set jump frequency boundary when the operating frequency is in the jump frequency range. The following diagram shows the jump frequency effective during acceleration and deceleration.



P21.25	Acceleration time 1 and acceleration time 2 switching	Factory value	0.00Hz

	Setting range	0.00Hz to maximum frequency	
P21.26	Deceleration time 1 and deceleration time 2 switching	Factory value	0.00Hz
	Setting range	0.00Hz to maximum frequency	

This function is valid when the motor is selected as motor 1 and the acceleration and deceleration times are not selected by switching via the DI terminal. It is used to select different acceleration and deceleration times during VFD operation, not via the DI terminal but by itself, depending on the operating frequency range.



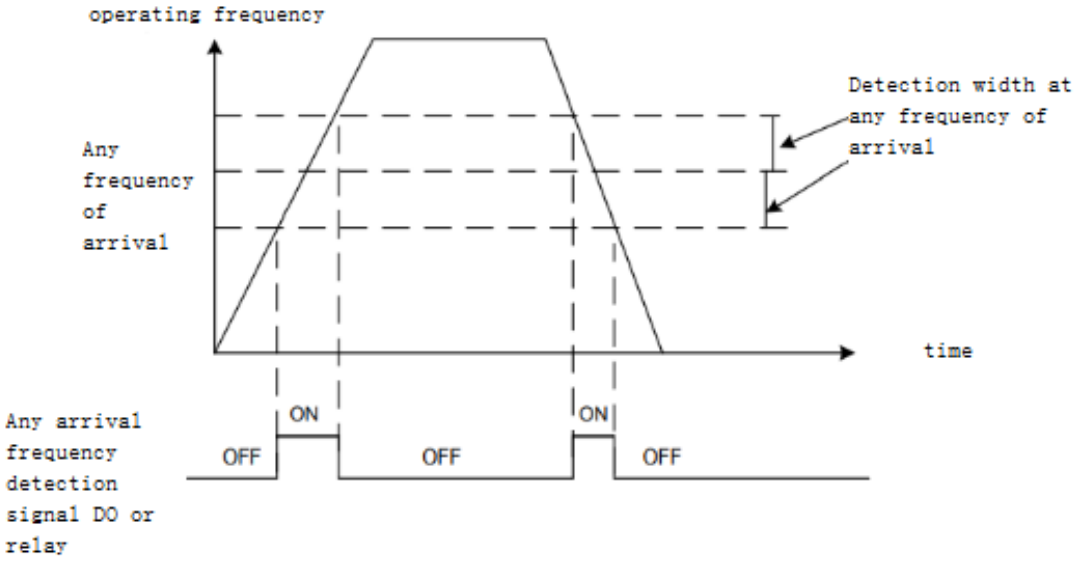
The above figure shows the schematic diagram of acceleration and deceleration time switching. During acceleration, acceleration time 2 is selected if the operating frequency is less than P21.25; acceleration time 1 is selected if the operating frequency is greater than P21.25.

During deceleration, deceleration time 1 is selected if the operating frequency is greater than P21.26, and deceleration time 2 is selected if the operating frequency is less than P21.26.

P21.31	Arbitrary arrival frequency detection amplitude1	Factory value	0.0%
	Setting range	0.0%～ 100.0% (maximum frequency)	
P21.32	Arbitrary arrival frequency detection value 2	Factory value	50.00 Hz
	Setting range	0.00Hz to maximum frequency	
P21.33	Arbitrary arrival frequency detection amplitude2	Factory value	0.0%
	Setting range	0.0%～ 100.0% (maximum frequency)	

When the output frequency of the VFD is within the positive or negative detection amplitude of any arrival frequency detection value, the multi-function DO outputs the ON signal.

The GF630N04 provides two sets of arbitrary arrival frequency detection parameters to set the frequency value and frequency detection range respectively. The following figure shows the schematic diagram of this function.



P21.42	Timer function selection	Factory value	0

	Setting range	0	null	
		1	validity	
P21.43	Timed runtime selection		Factory value	0
	Setting range	0	P21.44 Settings	
		1	AI1	
		2	AI2	
		3	AI3	
		Analog input range 100% corresponds to P21.44		
P21.44	Timed Runtime		Factory value	0.0 Min
	Setting range	0.0Min～ 6500.0Min		

This group of parameters is used to complete the VFD timer run function.

P21.42 When the timing function selection is valid, the VFD starts timing when it starts, and when it reaches the set timing running time, the VFD stops automatically, and at the same time, the multi-function DO outputs ON signal.

The VFD starts timing from 0 each time it starts, and the timed remaining runtime can be viewed via P23.20.

The runtime is set by P21.43 and P21.44 and the time unit is minutes.

P21.61	Fast Current Limit Enable		factory value	1
	Setting range	0	disable	
		1	enable	

Enabling the fast current limiting function can minimize the frequency

converter to have overcurrent fault and ensure the uninterrupted operation of the frequency converter. If the frequency converter continues to be in the fast current limiting state for a long time, the frequency converter may be damaged such as overheating, which is not allowed, so the frequency converter will alarm fault E040 when it is in the fast current limiting state for a long time, indicating that the frequency converter is overloaded and needs to be shut down.

7.12 Analog Advanced Settings P19

P19.30	AI1 measured voltage1	Factory value	Factory calibration
	Setting range	-10.000V～ 10.000V	
P19.31	AI1 displays voltage 1	Factory value	Factory calibration
	Setting range	-10.000V～ 10.000V	
P19.32	AI1 measured voltage2	Factory value	Factory calibration
	Setting range	-10.000V～ 10.000V	
P19.33	AI1 display voltage 2	Factory value	Factory calibration
	Setting range	-10.000V～ 10.000V	
P19.34	AI2 measured voltage1	Factory value	Factory calibration
	Setting range	-10.000V～ 10.000V	
P19.35	AI2 display voltage 1	Factory value	Factory calibration
	Setting range	-10.000V～ 10.000V	
P19.36	AI2 measured voltage2	Factory value	Factory calibration
	Setting range	-10.000V～ 10.000V	
P19.37	AI2 display voltage 2	Factory value	Factory calibration

	Setting range	-10.000V～ 10.000V	
P19.38	AI3 measured voltage1	Factory value	Factory calibration
	Setting range	-10.000V～ 10.000V	
P19.39	AI3 display voltage 1	Factory value	Factory calibration
	Setting range	-10.000V～ 10.000V	
P19.40	AI3 measured voltage2	Factory value	Factory calibration
	Setting range	-10.000V～ 10.000V	
P19.41	AI3 display voltage 2	Factory value	Factory calibration
	Setting range	-10.000V～ 10.000V	

This group of function codes is used to correct the analog input AI to eliminate the effects of zero bias and gain on the AI input port. This group of function parameters has been calibrated at the factory and will revert to the factory-calibrated values when the factory values are restored. Correction is generally not required at the application site.

Measured voltage means, the actual voltage measured by multimeter and other measuring instruments, the display voltage means the voltage display value sampled by the VFD, see P23 group AI voltage before correction (P23.21, P23.22, P23.23) display.

When calibrating, input two voltage values into each AI input port and input the value measured by multimeter and the value read by P23 group, respectively, accurately into the above function code, then the VFD will automatically carry out the calibration of zero deviation and gain of AI.

For the mismatch between the user's given voltage and the actual sampled voltage of the VFD, the field correction method can be used to make the sampled value of the VFD consistent with the desired given value, taking AI1 as an example, the field correction method is as follows:

AI1 voltage signal (around 2V) is given.

Actual measurement of AI1 voltage value, stored in function parameter P19.30

View the value displayed in P23.21 and store it in function parameter P19.31.

Given the AI1 voltage signal (around 8V), actually measure the AI1 voltage value and store it in function parameter P19.32.

View the value displayed in P23.21 and store it in function parameter P19.33.

When calibrating AI2 and AI3, the actual sampled voltages are viewed at P23.22 and P23.23, respectively.

It is recommended to sample -8V and 8V as a calibration point.

P19.42	A01 Target voltage 1	Factory value	Factory calibration
	Setting range	0.500V～ 4.000V	
P19.43	A01 Measured voltage1	Factory value	Factory calibration
	Setting range	0.500V～ 4.000V	
P19.44	A01 Target voltage 2	Factory value	Factory calibration
	Setting range	6.000V～ 9.999V	
P19.45	A01 Measured voltage2	Factory value	Factory calibration
	Setting range	6.000V～ 9.999V	

This group of function codes is used to correct the analog output AO. This group of function parameters has been calibrated at the factory and will revert to the factory-calibrated value when the factory value is restored. Generally, no calibration is required at the application site.

Target voltage refers to the theoretical output voltage value of the VFD.

Measured voltage refers to the actual output voltage value measured by instruments such as multimeter.

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 Fault Codes

Fault codes are displayed in the operating state.

Trouble code	Operation Panel Display	Troubleshooting	Failure causes and measures
Inverter unit protection	E001	1, VFD output circuit short circuit 2、Loose wiring inside the VFD 3、Main control board abnormality 4, abnormal drive board 5, abnormal inverter module 6, motor and VFD wiring is too long 7、Module overheating	1. Troubleshooting peripheral faults 2、Plug in all connecting cables 3、Seek technical support 4、Seek technical support 5、Seek technical support 6、Adding reactor or output filter 7、Check whether the air duct is blocked, whether the fan is working properly and eliminate problems
Deceleration overcurrent	E003	1、The output circuit of VFD has ground or short circuit. 2、Control mode is vector and there is no parameter tuning. 3、Suddenly add load during deceleration 4、No braking unit and braking resistor are installed. 5、Deceleration time is	1、Remove peripheral faults 2、Tuning motor parameters 3、Cancel the sudden load 4、Adding brake unit and resistance 5、Increase the deceleration time 6、Adjust the voltage to the normal range

		too short 6、Low voltage	
Constant speed overcurrent	E004	1、The output circuit of VFD has ground or short circuit. 2、Control mode for vector and no parameter tuning 3、Low voltage 4、Whether there is a sudden load in operation 5、Selection of frequency converter is small	1、Remove peripheral faults 2、Tuning motor parameters 3、Tuning the voltage to the normal range 4、Cancel the sudden load 5、Select a larger power level VFD
Control Power malfunction	E008	1、Input voltage is not within the range specified in the specification	1. Adjust the voltage to the range required by the specification
Motor overload	E011	1、Motor protection parameter P07.10 Is the setting appropriate? 2、Whether the load is too large or motor blocking occurs 3、Selection of frequency converter is small	1、Set this parameter correctly 2、Reduce the load and check the motor and mechanical conditions 3、Select the VFD with bigger power level
External equipment malfunction	E015	1. Signal input for external faults via multi-function terminal DI 2. Inputting signals for external faults through the virtual IO function.	1、Reset run 2、Reset run
Current Detecti	E018	1、Check the Hall device abnormality	1、Replacement of Hall devices

on Faults		2、Driver board abnormality	2、Replace the driver
EEPROM read/write failure	E021	1、 EEPROM chip damage	1. Replace the main control board
VFD Hardware VFD Hardware Failure	E022	1. Existence of overpressure 2、Existing overcurrent	1、Press overpressure troubleshooting 2、Press overcurrent fault processing
Cumulative Running Time Reached Failure	E026	1、Accumulated running time reaches the set value	1、Use the parameter initialization function to clear the record information
User-defined User-defined faults 1	E027	1. Input the signal of user-defined fault 1 through the multi-function terminal DI. 2、Input the signal of user-defined fault 1 through the virtual IO function.	1、Reset run 2、Reset run
User-defined User-defined faults 2	E028	1. Input the signal of user-defined fault 2 through the multi-function terminal DI. 2、Input the signal of user-defined fault 2 through the virtual IO function.	1、Reset run 2、Reset run
Cumulative power-up	E029	1. Accumulated power-up time reaches the set value	1、Use the parameter initialization function to clear the record information

Time Reached Failure			
Loss of load failure	E030	1、VFD running current less than P07.64	1, to confirm whether the load is detached or P07.64, P07.65 parameter settings are in line with actual operating conditions
Runtime PID feedback loss fault	E031	1、 PID feedback less than P15.26 set value	1、Check the PID feedback signal or set P15.26 to a suitable value.
Wave-by-wave current limiting faults	E040	1, whether the load is too large or motor blocking occurs 2, VFD selection is small	1、Reduce the load and check the motor and mechanical conditions 2、Select a larger power level VFD
Switching motor failure during operation	E041	1、Change the current motor selection through the terminal during the VFD running process	1. Motor switching operation after VFD shutdown
Motor over-temperature fault	E045	1、Temperature sensor wiring loose 2、Motor temperature is too high	1、Test the temperature sensor wiring and troubleshooting 2、Reduce the load frequency or take other heat dissipation measures to the motor for heat dissipation processing

Initial position angle to recognize faults	E051	Motor starts running without stopping in SVC mode, output phase loss Special motors with excessive motor inductance	Prevent starting the motor before it has stopped or set P12.25 to 1 or 2. Check that the motor drive cable is connected. This fault can be blocked by setting bit P07.72 to 1.
Brake Resistor Short Circuit Failure	E060	Shorted PB port and busbar "+" terminal Shorted braking resistor Damaged braking resistor	Check and troubleshoot PB port and "+" wiring Check if the braking resistor is short-circuited Check the braking resistor resistance value with a multimeter.
Brake pipe open time failure	E061	1、Brake tube turn-on time is greater than P08.44 set value.	1、Troubleshooting the cause of the long-term opening of the brake pipe, you can set P08.44 to 0 to shield this fault!
Acceleration overvoltage	E100	1、Input voltage is high 2、Acceleration process there is an external force to drag the motor to run 3、Acceleration time is too short 4、No additional braking unit and braking resistance	1、Regulate the voltage to the normal range 2、Cancel this power or install braking resistance 3、Increase the acceleration time 4、Add brake unit and resistance
Deceleration overvoltage overvoltage	E101	1、Input voltage is high 2、Deceleration process there is an external force dragging the motor to run 3、The deceleration time is too short 4、No additional braking unit and braking resistance	1、Regulate the voltage to the normal range 2、Cancel this power or install braking resistance 3、Increase the deceleration time 4、Add brake unit and resistance

Constant speed overvoltage overvoltage	E102	1. High input voltage 2, the existence of external drag motor operation during operation	1. Adjust the voltage to the normal range 2、Cancel this power or add braking resistance
Undervoltage fault	E105	1、Instantaneous power failure 2、VFD input voltage is not in the range of specification requirements 3, rectifier bridge and buffer resistor is not normal 4、Driver board abnormality 5、Unnormal bus voltage 6、Control board abnormality	1、Reset the fault 2、Adjust the voltage to the normal range 3、Seek technical support 4、Seek technical support 5、Seek technical support 6、Seek technical support
Contactor failure malfunction	E108	1, the driver board and power supply is not normal 2、Contactors are not normal	1. Replace the driver board or power board 2、Replacement of contactors
Acceleration overcurrent	E110	1、The output circuit of the VFD is grounded or short-circuited. 2、Control mode for vector and no parameter tuning 3、Starting the motor that is rotating 4、Accelerate the process of sudden load 5、Selection of the frequency converter is small 6、Acceleration time is too short	1、Remove peripheral faults 2、Tuning motor parameters 3、Select the speed tracking start or wait for the motor to stop before starting 4、Cancel the sudden load 5、Select the VFD with bigger power level 6、Increase the acceleration time 7、Adjust the manual boost torque or V/F curve

		7、Manual torque increase or V/F curve is not appropriate 8、Low voltage	8、Adjust the voltage to the normal range
Frequency VFD overload overloading	E111	1 2, whether the load is too large or motor blocking, VFD selection is small	1、Reduce the load and check the motor and mechanical conditions 2, the choice of power level greater frequency converter
Short to ground faults	E112	1、Motor short circuit to ground	1、Replace the cable or motor
Input out of phase	E113	1, three-phase input power supply is not normal 2、Driver board abnormality 3, abnormal lightning protection board 4, the main control board is abnormal	1. Check and eliminate problems in the peripheral wiring 2、Seek technical support 3、Seeking technical support 4、Seeking technical support
Output Out-of-Phase	E114	1, the VFD to the motor lead is not normal 2, motor running VFD three-phase output imbalance 3、Driver board abnormality 4、Module abnormality	1、Remove peripheral faults 2、Check whether the motor three-phase winding is normal and troubleshooting 3、Seek technical support 4、Seek technical support
Motor overspeed fault	E115	1, the encoder parameters are not set correctly 2、No parameter tuning 3、Motor overspeed detection parameters	1、Correctly set the encoder parameters 2、Tuning motor parameters 3、Reasonable setting of detection parameters

		P07.67, P07.68 set unreasonable	according to the actual situation
code disc failure	E118	Do not reset when reporting this fault, check P23.45 for additional information, P19.45 has 9 conditions from 1 to 7 and 11 and 12. P23.45=1, no encoder is connected, or the encoder and PG card are damaged or have poor contact. P23.45=3, the Z signal of the encoder is not received or is interfered with. 3、P23.45=5, the Z signal cable of encoder is not connected or damaged. 3, P23.45=6, Z signal is disturbed or ABZ signal is disturbed, or the zero position angle has been incorrectly modified (P10.65) 4、P23.45=7, Encoder pulse number incorrectly set, rated frequency or rated speed incorrectly set. 5、P23.45=12, possibly the encoder or PG card is damaged	Check the encoder and wiring for proper functioning Check for loose or unseen Z signal wires and check for sources of interference. Check for loose or unseen Z signal wires and check for sources of interference. Check the encoder signal line, if modified P10.65 must be re-parameterized. Check that the number of encoder pulses, rated frequency and rated speed are set correctly. Check encoder and wiring or set P07.71: 1 Mask the fault Check the encoder and wiring or set P07.71 to: 1 Mask the fault: 1 Mask this fault
Excessive speed deviation fault	E119	1, the encoder parameters are not set correctly 2、No parameter tuning 3、Speed deviation is too large detection parameters P07.69, P07.70 set unreasonable	1、Correctly set the encoder parameters 2、Tuning motor parameters 3、Reasonable setting of detection parameters according to the actual situation

Module overheating	E120	1、High ambient temperature 2, air duct blockage 3、Damaged fan 4, module thermistor damage 5, inverter module damage	1、Lower the ambient temperature 2、Clean the air duct 3、Replace the fan 4、Replace the thermistor 5、Replace the inverter module
Motor with load Tuning Fault	E170	1、The upper limit of torque P12.10 is set too small. 2. Incorrect setting of encoder pulse number, rated frequency or rated speed. 3、Encoder PG card is not connected properly or damaged 4. Incorrect setting of encoder type 5. The load is too heavy or P10.64 is set incorrectly.	1. Increase the upper torque limit P12.10. 2. Check whether the encoder pulse number, rated frequency or rated speed are set correctly. rated frequency or rated speed are set correctly. 3、Check if the PG card is damaged or wired correctly. Check whether the encoder type is set correctly. 5、Set the tenth digit of P07.72 to 0 to shield this fault, and then retune, if still report other faults such as overload, you can reverse the phase sequence of the encoder P10.64, and then retune, if it still can't be passed, it may be that the motor is too heavily loaded, it is recommended to try to replace the larger model.
Malfunction of communications	E202	1, the upper computer is not working properly 2、Communication line is not normal 3、Communication expansion card P14.00 incorrect settings 3、Communication parameter P14 group is not set correctly.	1、Check the wiring of the upper computer 2、Check the communication connection line 3、Correctly set the type of communication expansion card 4、Correctly set the communication parameters.

Reverse electro motive force Recogni zing Abnorma lities WARNING	A064	1. Wrong setting of motor parameters 2. P10.54 Reverse potential setting error during static identification 3. Abnormal recognition of reverse electromotive force during dynamic recognition. 4. The motor is demagnetizing 5. The motor reverse potential is too large or too small.	1. Set the motor parameters correctly, especially the rated frequency and rated speed. 2. Check if the P10.54 setting is too large or too small and modify it. 3. check whether the motor is completely unloaded during dynamic identification and whether the motor rotates up to 40% of the rated speed during identification; if the motor fails to rotate up to 40% of the rated speed due to the load connected to the motor, it is necessary to disengage the load and conduct the identification again 4. check if the motor is demagnetized 5. If you confirm that the motor's reverse electromotive force is too large or too small, you can press the "STOP" key to reset this warning and continue the next operation.

8.2 Troubleshooting

Fault phenomenon	Inspection matters	Step
No display on power-up	1、Grid voltage is not or too low 2, VFD drive board switching power supply failure 3, rectifier bridge damage 4, VFD buffer resistor damage 5, control board, keyboard failure 6, the control board and drive board, the keyboard between the broken wire	1、Check the input power 2、Check the bus voltage 3、Re-plug the 34-core cable 4~6, seek factory service.
Power-up display HF630	1. Poor contact of the wires between the driver board and the control board 2、Related devices on the control board is damaged 3、Motor or motor line has a short circuit to ground 4、Hall failure 5、Grid voltage is too low	1、Re-plug the 34-core cable 2~5、Seek factory service.
Alarm "E112" is displayed on power-up.	1、Motor or output line short circuit to ground 2、Damaged VFD	1、Measure the insulation of the motor and output wires with a rocking meter 2、Seek the service of the manufacturer.
Power on the VFD display is normal, after running, the display shows "HF630" and stops immediately.	1, the fan is damaged or blocked 2, peripheral control terminal wiring has a short circuit	1、Replace the fan 2、Remove the external short-circuit fault.
Frequent E120 (module overheating) faults reported	1、Carrier frequency setting is too high 2, fan damage or air duct blockage 3, VFD internal device damage (thermocouple or other)	1、Lower the load frequency (P08.15) 2、Replace the fan, clean the air duct 3、Seek factory service.
Motor does not rotate after VFD operation	1、Motor and motor line 2, VFD parameter setting error (motor parameters) 3, poor contact between the driver board and the control board wires 4, drive board failure	1、Re-confirm the connection line between VFD and motor 2、Replace the motor or clear the mechanical failure 3、Check and reset motor parameters 4、Seek factory service.

DI terminal failure	1、Error in parameter setting 2, external signal error 3, PW and +24V jumper loose 4、Control board failure	1、Check and reset the relevant parameters of P3 group. 2、Re-connect the external signal line 3、Re-confirm the jumper between PW and +24V. 4、Seek factory service
Motor speed cannot be increased with closed-loop vector control	1、Encoder failure 2, The encoder is connected to the wrong wire or poor contact 3、PG card failure 4、Driver board failure	1. Replace the dial and reconfirm the wiring. 2、Replace the PG card 3~4、Seek factory service
Frequent overcurrent and overvoltage faults reported by VFDs	1、Motor parameters are not set correctly 2、Inappropriate acceleration and deceleration time 3、Load fluctuation	1、Reset motor parameters or motor tuning 2、Set the appropriate acceleration and deceleration time 3、Seek the service of the manufacturer
Power up (or run) report Err17	1、Soft start contactor not suction	1、Check whether the contactor cable is loose 2、Check whether the contactor is faulty 3、Check the 24V power supply of the contactor Whether there is a failure 4、Seek factory service
Power-up display 	1、Related devices on the control board are damaged	1. Replace the control board

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 if you are not a specialized technician. 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
Lit. scatter heat device	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 wear parts

The fan and electrolytic capacitor 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) Operation 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.

GUIDE VFD GF630N04 Series

Instruction manual version: 1.01

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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