Contents

Preface

Thank you for purchasing the M550 Series Inverters. The M550 Series Inverter is a general-purpose high performance current vector control Inverter. Mainly used to control and adjust the three-phase AC asynchronous motor speed and torque.

M550 series uses high-performance vector control technology, low speed high torque output, has good dynamic characteristics, super overload capacity, rich and powerful functions and stable performance. It is used to drive various automation production equipment involving Textile, Paper-making, Wire-drawing, Machine tool, Packing, Food, Fan and Pump.

This manual describes the correct use of the M550 Series Inverter, including selection, parameter setting, commissioning, maintenance & inspection. Read and understand the manual before using and forward the manual to the end user.

Notes
◆ The drawings in the manual are sometimes shown without covers or protective guards, to explain the details of the product.
◆ Remember to install the covers or protective guards as specified first, and then perform operations in accordance with the instructions.
◆ The drawings in the manual are shown for description only and may not match the product you purchased.
◆ The instructions are subjected to change, without notice, due to product upgrade, specification modification as well as efforts to increase the accuracy and convenience of the manual.
◆ Contact our agents or customer service center if you have problems during using.
◆ When unpacking, please confirm carefully: The model name of the machine and the Inverter rating are the same as your order. The packing contains your ordered machine (with product certification), user manual (with product warranty card).
◆ If the product is damaged during transport, If you find that there is some omission or damage, please promptly contact us or your supplier for solution.

Chapter 1

Safety Information and Precautions

Chapter 1   Safety Information and Precautions

Definition of Security

In this manual, the notices are graded based on the degree of danger:

⚠️**DANGER** : indicates that failure to comply with the notice will result in severe personal injury or even death.

⚠️**WARNING** : indicates that failure to comply with the notice will result in personal injury or property damage.

Read this manual carefully so that you have a thorough understanding. Installation, commissioning or maintenance may be performed in conjunction with this chapter. We will assume no liability or responsibility for any injury or loss caused by improper operation.

1.1 Safety Information

Using stage	Safety grade	Precautions
Before Installation	Danger	◆ Do not install the equipment if you find water seepage, component missing or damage upon unpacking. ◆ Do not install the equipment if the packing list does not conform to the product you received.
	Warning	◆ Handle the equipment with care during transportation to prevent damage to the equipment. ◆ Do not use the equipment if any component is damaged or missing. Failure to comply will result in personal injury. ◆ Do not touch the components with your hands. Failure to comply will result in static electricity damage.
During Installation	Danger	◆ Install the equipment on incombustible objects such as metal, and keep it away from combustible materials. Failure to comply may result in a fire. ◆ Do not loosen the fixed screws of the components, especially the screws with red mark.
	Warning	◆ Do not drop wire end or screw into the Inverter. Failure to comply will result in damage to the Inverter. ◆ Install the Inverter in places free of vibration and direct sunlight. ◆ When two Inverters are laid in the same cabinet, arrange the installation positions properly to ensure the cooling effect.
During Wiring	Danger	◆ Wiring must be performed only by qualified personnel under instructions described in this manual. Failure to comply may result in

		unexpected accidents.
		◆ A circuit breaker must be used to isolate the power supply and the Inverter. Failure to comply may result in a fire.
		◆ Ensure that the power supply is cut off before wiring. Failure to comply may result in electric shock.
		◆ Tie the Inverter to ground properly by standard. Failure to comply may result in electric shock.
	Warning	◆ Never connect the power cables to the output terminals (U, V, W) of the Inverter. Pay attention to the marks of the wiring terminals and ensure correct wiring. Failure to comply will result in damage to the Inverter.
		◆ Never connect the braking resistor between the DC bus **WARNING** (+) and (-). Failure to comply may result in a fire.
		◆ Use wire sizes recommended in the manual. Failure to comply may result in accidents.
Before power-on	Danger	◆ Check that the following requirements are met: - The voltage class of the power supply is consistent with the rated voltage rated voltage class of the Inverter. - The input terminals (R, S, T) and output terminals (U, V, W) are properly connected. ◆ No short-circuit exists in the peripheral circuit. The wiring is secured. - Failure to comply will result in damage to the Inverter ◆ Do not perform the voltage resistance test on any part of the Inverter because such test has been done in the factory. Failure to, comply may result in accidents.
	Warning	◆ Cover the Inverter properly before power-on to prevent electric shock. ◆ All peripheral devices must be connected properly under the instructions described in this manual. Failure to comply will result in accidents.
After Power-on	Danger	◆ Cover the Inverter properly before power-on to prevent electric shock. ◆ All peripheral devices must be connected properly under the instructions described in this manual. Failure to comply will result in accidents.
	Warning	◆ Do not touch the rotating part of the motor during the motor auto-tuning or running. Failure to comply will result in accidents. ◆ Do not change the default settings of the Inverter. Failure to comply will result in damage to the Inverter.
During Running	Danger	◆ Do not touch the fan or the discharging resistor to check the temperature. Failure to comply will result in personal burnt. ◆ Signal detection must be performed only by qualified personnel during operation. Failure to comply will result in personal injury or damage to

		the Inverter.
	Warning	◆ The upper part, both sides and the mounting surface of the Inverter are in high temperature when it is running, do not touch! ◆ Avoid objects falling into the Inverter when it is running. Failure to comply will result in damage to the Inverter. ◆ Do not start/stop the Inverter by turning the contactor ON/OFF. Failure to comply will result in damage to the Inverter.
During Maintenance	Danger	◆ Repair or maintenance of the Inverter may be performed only by qualified personnel. Failure to comply will result in personal injury or damage to the Inverter. ◆ Do not repair or maintain the Inverter at power-on. Failure to comply will result in electric shock. ◆ Repair or maintain the Inverter only ten minutes after the Inverter is powered off. This allows for the residual voltage in the capacitor to discharge to a safe value. Failure to comply will result in personal injury. ◆ Ensure that the Inverter is disconnected from all power supplies before starting repair or maintenance on the Inverter. ◆ Set and check the parameters again after the Inverter is replaced. ◆ All the pluggable components must be plugged or removed only after power-off. ◆ After replacing a new inverter, the parameter must be set and checked

1.2 General Precautions

1) Requirement on Residual Current Device (RCD)

The Inverter generates high leakage current during running, which flows through the protective earthing (PE) conductor. Thus install a type-B RCD at primary side of the power supply. When selecting the RCD, you should consider the transient and steady-state leakage current to ground that may be generated at startup and during running of the Inverter. You can select a specialized RCD with the function of suppressing high harmonics or a general-purpose RCD with relatively large residual current.

2) Motor Insulation Test

Perform the insulation test when the motor is used for the first time, or when it is reused after being stored for a long time, or in a regular check-up, in order to prevent the poor insulation of motor windings from damaging the Inverter. The motor must be disconnected from the Inverter during the insulation test. A 500-V

mega-Ohm meter is recommended for the test. The insulation resistance must not be less than 5 MΩ.

3) Thermal Protection of Motor

If the rated capacity of the motor selected does not match that of the Inverter, especially when the Inverter's rated power is greater than the motor's, adjust the motor protection parameters on the operation panel of the Inverter or install a thermal relay in the motor circuit for protection.

4) Running at Over 50 Hz

The Inverter provides frequency output of 0 to 500 Hz. If the Inverter is required to run at over 50 Hz, consider the capacity of the machine.

5) Vibration of Mechanical Device

The Inverter may encounter the mechanical resonance point at some output frequencies, which can be avoided by setting the skip frequency.

6) Motor Heat and Noise

The output of the Inverter is pulse width modulation (PWM) wave with certain harmonic frequencies, and therefore, the motor temperature, noise, and vibration are slightly greater than those when the Inverter runs at power frequency (50 Hz).

7) Varistor or capacitor on output side of the Inverter

Do not install the capacitor for improving power factor or lightning protection voltage-sensitive resistor on the output side of the Inverter because the output of the Inverter is PWM wave. Otherwise, the Inverter may suffer transient over-current or even be damaged.

8) Contactor at the I/O Terminal of the Inverter

When a contactor is installed between the input side of the Inverter and the power supply, the Inverter must not be started or stopped by switching the contactor on or off. If the Inverter has to be operated by the contactor, ensure that the time interval between switching is at least one hour since frequent charge and discharge will shorten the service life of the capacitor inside the Inverter.

When a contactor is installed between the output side of the Inverter and the motor, do not turn off the contactor when the Inverter is active. Otherwise, modules inside the Inverter may be damaged.

9) When External Voltage is Out of Rated Voltage Range

The Inverter must not be used outside the allowable voltage range specified in this manual. Otherwise, the Inverter's components may be damaged. If required, use a corresponding voltage step-up or step-down device.

10) Prohibition of Three-phase Input Changed into Two-phase Input

Do not change the three-phase input of the Inverter into two-phase input. Otherwise, a fault will result in or the Inverter will be damaged.

11) Lightning Shock Protection

The Inverter has a built-in lightning overcurrent protection device, it has certain self-protection ability for inductive lightning. But user should also install lightning protection device at the front end of the frequency converters in frequent lightning area.

12) Temperature and De-rating

The regular using temperature of this M550 series Inverter is - 10℃～＋40℃. De-rating using is required when temperature is more than 40℃. De-rating by 1.5% for every degree increase in ambient temperature. The highest ambient temperature is 50℃.

13) Altitude and De-rating

In places where the altitude is above M550m and the cooling effect reduces due to thin air, it is necessary to de-rate the Inverter. When the altitude is above 1000m, de-rating by 1% for 100m increase in altitude. The highest altitude is 3000m.

14) Some Special Usage

If the user needs to use a method other than the recommended wiring diagram in this manual, such as shared DC bus, please consult us.

15) Scrap

The electrolytic capacitors on the main circuits and PCB may explode when they are burnt. Poisonous gas is generated when the plastic parts are burnt. Please treat them as industrial waste.

16) About Adaptable Motor

• The default setting of M550 Inverters is for the 4-pole asynchronous induction motors. For other types of motors, select proper parameters in the Inverter.

• The cooling fan and rotor shaft of non-variable-frequency motor are coaxial, which results in reduced cooling effect when the rotational speed declines. If variable speed is required, add a more powerful fan or replace it with variable-frequency motor in applications where the motor overheats easily.

• The standard parameters of the adaptable motor have been configured inside the Inverter. It is still necessary to perform motor auto-tuning or modify the default values based on actual conditions. Otherwise, the running result and protection performance will be affected.

• The Inverter may alarm or even be damaged when short-circuit exists on cables or inside the motor. Therefore, perform insulation short-circuit test when the motor and cables are newly installed or during routine maintenance. During the test, make sure that the Inverter is disconnected from the tested parts.

Chapter 2

Product Information

Chapter 2　Product Information

　　Our Inverters have been tested and inspected before leaving our factory. Before unpacking the product, please check product packaging for shipping damage caused by careless transportation and whether the specifications and type of the product complies with the order. If there is any question, please contact the supplier of the products, or directly contact us.

※Inspect that the contents are complete (M550 series Inverter , operation manual, warranty card, Keypad extension cable every each unit.)

※Check the nameplate on the side of the Inverter to ensure that the product you have received is the right one you ordered.

2.1 Nameplate

Model　**X　0075　G　3　EE　00001　***

Special model

Date of model

Date of manufacture

Voltage level(3 means 3 phase 380v ,
2 means 3 phase 220v ,
1 means 1 phase 220v)

G means general type; **H** means water pump type;
M means mini type;

AC Drive power(0075 means 7.5KW)

Products series(X means M550 series)
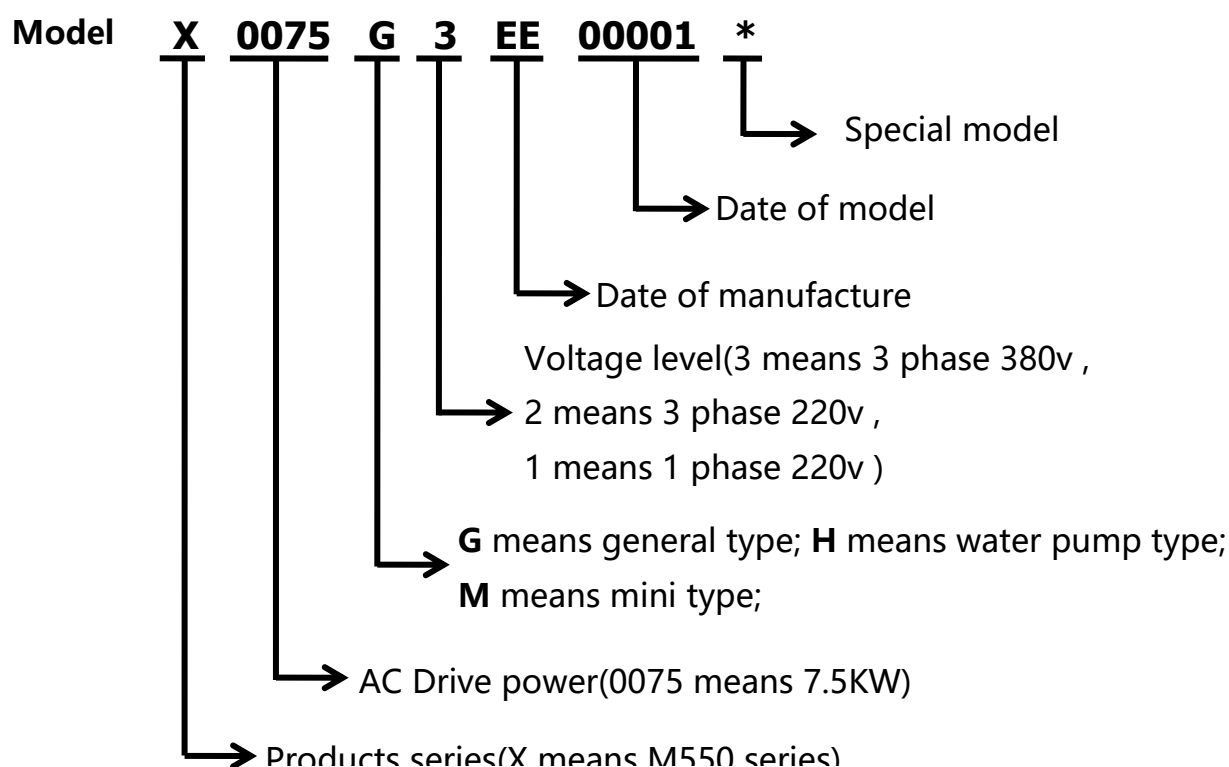
Fig. 2.1

2.2 Products Model Numbers

Inverter model	Adapted motor		Rated Output	Case
	KW	HP	current(A)	
M550-M0007G1	0.75	1	4	A00
M550-M0015G1	1.5	2	7	A00
M550-M0022G1	2.2	3	10	A01
M550-M0040G2	4	5	16	A02
M550-M0055G2	5.5	7.5	25	A03
M550-M0075G2	7.5	10	32	A03
M550-M0110G2	11	15	45	A04
M550-M0150G2	15	20	60	A05
M550-M0185G2	18.5	25	75	A05
M550-M0220G2	22	30	90	A06
M550-M0300G2	30	40	110	A06
M550-M0370G2	37	50	150	A07
M550-M0450G2	45	60	170	A07
M550-M0550G2	55	70	210	A08
M550-M0750G2	75	100	340	A160S
M550-M0930G2	93	125	380	A160S
M550-M0007G3	0.75	1	2.5	A00
M550-M0015G3	1.5	2	3.7	A00
M550-M0022G3	2.2	3	5.1	A00
M550-M0040G3	4	5	8.5	A01
M550-M0055G3	5.5	7.5	13	A02
M550-M0075G3	7.5	10	16	A02
M550-M0110G3	11	15	25	A03
M550-M0150G3	15	20	32	A03
M550-M0185G3	18.5	25	38	A04
M550-M0220G3	22	30	45	A04
M550-M0300G3	30	40	60	A05
M550-M0370G3	37	50	75	A05
M550-M0450G3	45	60	90	A06
M550-M0550G3	55	70	110	A06
M550-M0750G3	75	100	150	A07
M550-M0930G3	93	125	170	A07

Inverter model	Adapted motor		Rated Output	Case
	KW	HP	current(A)	
M550-M1100G3	110	150	210	A08
M550-M1320G3	132	175	250	A08
M550-M1600G3	160	210	300	A160S
M550-M1850G3	185	245	340	A160S
M550-M2000G3	200	260	380	A160S
M550-M2200G3	220	300	415	A160S
M550-M2500G3	250	350	470	A280
M550-M2800G3	280	370	520	A280
M550-M3150G3	315	400	600	A280
M550-M3550G3	355	420	650	A11
M550-M4000G3	400	530	725	A11
M550-M4500G3	450	595	820	A11
M550-M5000G3	500	660	980	A11
M550-M5600G3	560	760	1060	A600
M550-M6300G3	630	844	1200	A600

2.3 Products Dimensions

No.	Power	Dimension(mm)			Installation Size(mm)		Hole φ
		W	D	H	W1	H1	
A00	0.75~1.5KW（220V） 0.75~2.2KW（380V）	86	131.5	170	75	159	5mm
A01	2.2KW （220V） 4KW （380V）	96	151	180	83.6	165.2	5mm
A02	5.5~7.5KW	113	166.5	221.6	98.7	202	5mm
A03	11~15KW	160	171.5	265	143	244.3	6.5mm
A04	18.5~22KW	192	171.5	302.5	172	277	8.5mm
A05	30~37KW	227	171.5	348.5	208.5	323	8.5mm
A06	45~55KW	327.5	238	490	202.5	459	10mm
A075S	75~93KW	300	304	526	200	504	9mm
A08	110~132KW	370	350	690	302	635.5	10mm
A160S	160~220KW	410	360	720	330	690	10mm
A280	250~315KW	600	380	963	400	933	12mm

| A11 | 350~500KW | 818 | 404.5 | 1361.5 | 520 | 1280 | 16mm |
| A600 | 560~630KW | 786 | 410 | 1330 | 500 | 1295 | 16mm |

*Due to Product upgrade, size update without prior notice, Consult staff for details.

2.3.1 0.4-4.0KW Inverter' Shape
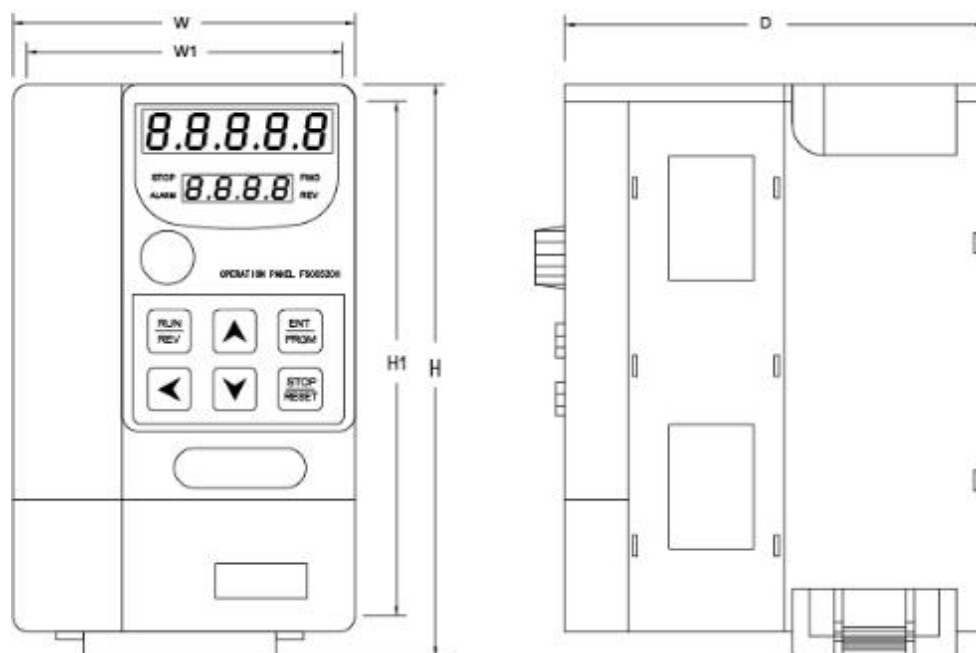
2.3.2   5.5-37KW Inverter' Shape
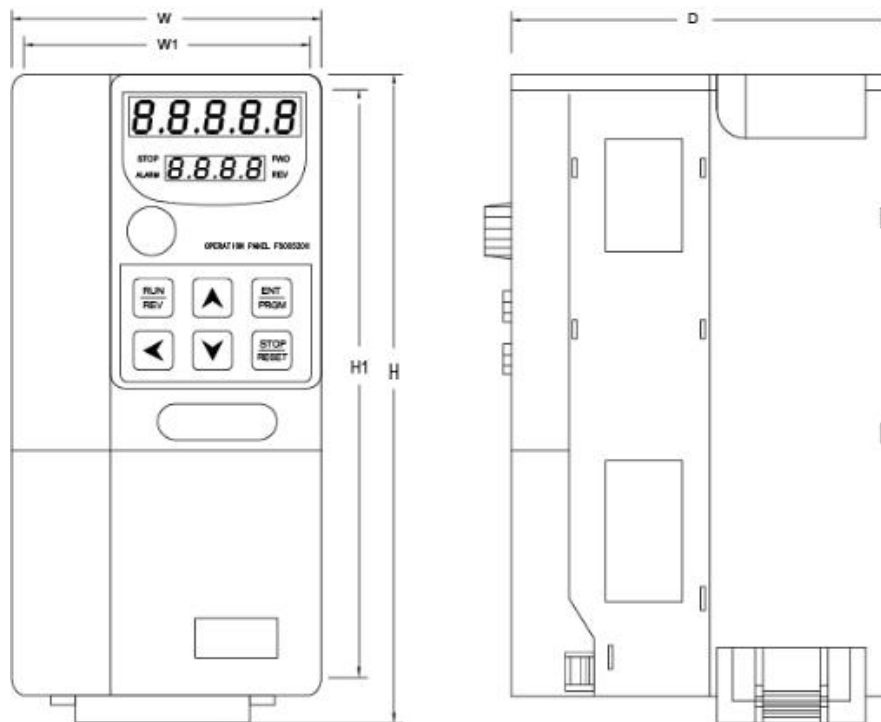
2.3.3   45-500KW Inverter' Shape

Control Panel Size

Front   Side   Back

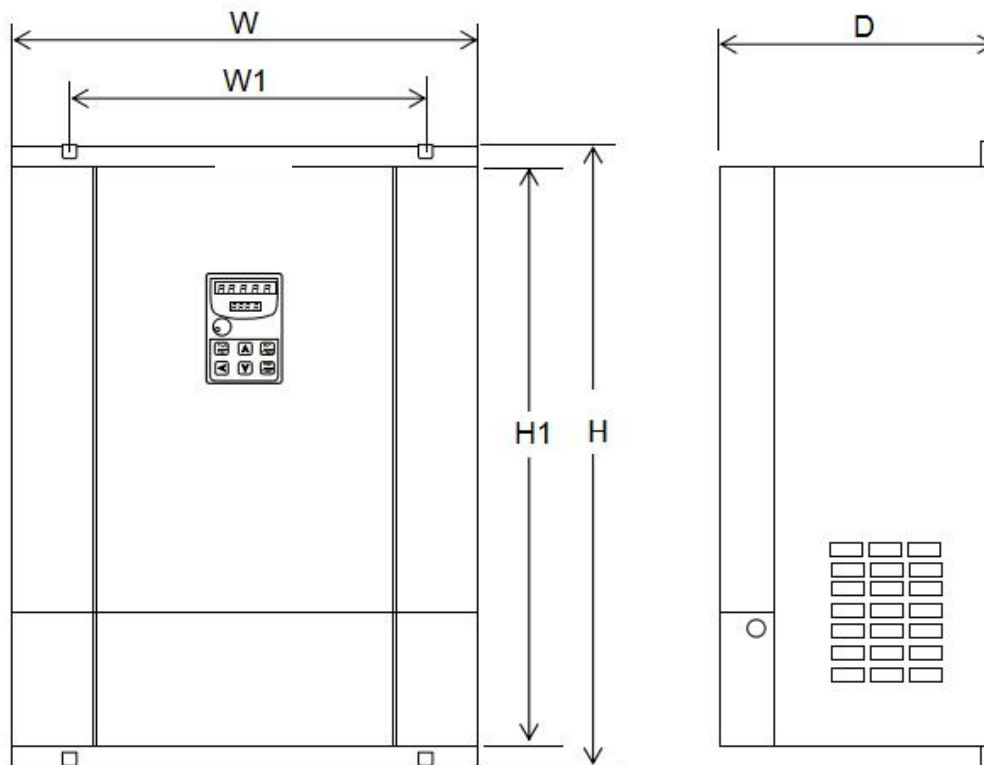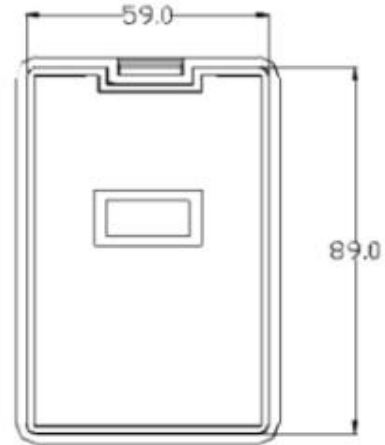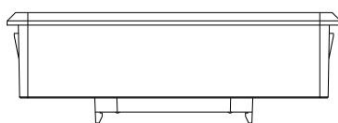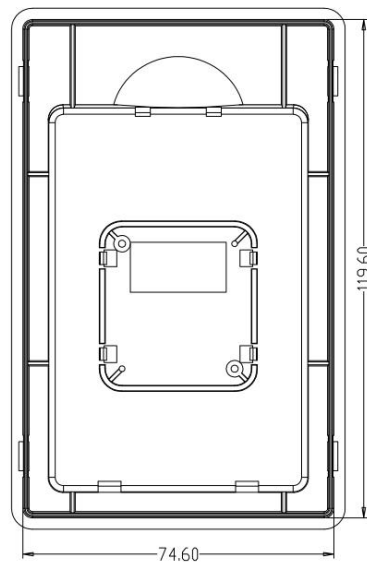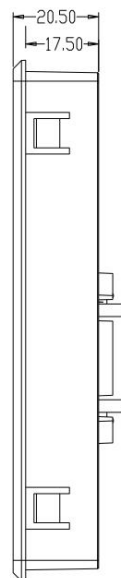## Tray Shape Dimension
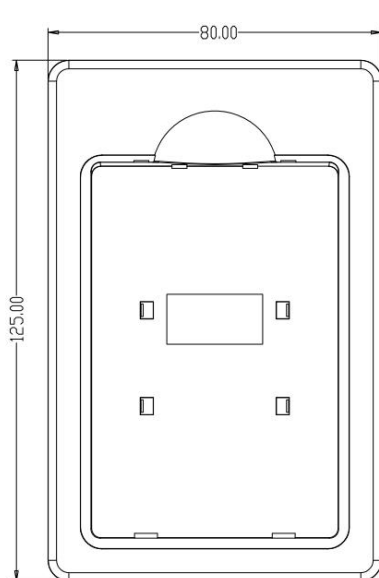
2.4 Basic Technical Specifications

Item		Specifications
Basic Function	Control System	High performance of current vector control technology to realize 3 phase asynchronous motor control
	Drive Performance	High efficiency driving for induction motor and synchronous motor
	Maximum Frequency	Vector Control：0~500Hz V/F Control：0~500Hz
	Carrier Frequency	0.5kHz~16kHz; the carrier frequency will be automatically adjusted according to the load characteristics
	Input Frequency Resolution	Digital Setting： 0.01Hz Analog Setting： maximum frequency ×0.025%
	Control Mode	Open Loop Vector Control(SVC) V/F Control
	Startup Torque	G Type：0.5Hz/150%(SVC)；0Hz/180%(FVC) P Type：0.5Hz/100%
	Speed Range	1：100(SVC)
	Speed Tracking	Prevent overload, overcurrent, and overvoltage caused by motor stall
	Speed Stabilizing Precision	±0.5%(SVC)
	Over Load Capability	G Type：150% rated current 60 seconds; 180% rated current 3 seconds; P Type：120% rated current 60 seconds; 150% rated current 3 seconds
	Torque Boost	Auto Torque Boost Function；Manual torque boost 0.1%~30.0%
	V/F Curve	Linear V/F, multi-point V/F and square V/F curve (power of 1.2, 1.4, 1.6, 1.8, 2)
	V/F Separation	In 2 ways：separation, semi separation
	Acc. / dec Curve	Straight line or S curve acceleration and deceleration mode. Four kinds of acceleration and deceleration time. Acceleration and deceleration time range between 0.0s to 6500s.
	DC Brake	DC Brake Frequency：0.00Hz to maximum frequency. Brake time： 0.0s to 36.0s
		Brake current value：0.0% to 100.0%.
	Jog Control	Jog Frequency Range：0.00Hz~50.00Hz.
		Jog Acceleration/deceleration Time 0.0s~6500.0s.
	Simple PLC and Multi-speed Running	It can realize at maximum of 16 segments speed running via the built-in PLC or control terminal.
	Built-in PID	It is easy to realize process-controlled closed loop control system
	Auto Voltage Regulation (AVR)	It can keep constant output voltage automatically in the case of change of network voltage.
	Over-voltage/current Stall Control	It can limit the running voltage/current automatically and prevent frequent over-voltage/current tripping during the running process
	Quick Current Limit	Minimize the over-current fault, protect normal operation of the Inverter
	Torque Limit &	"Excavators" characteristics, automatically limit torque during operation, prevent

Item		Specifications
	Control	frequent over-current tripping. Closed loop vector mode can realize the torque control.
Personalized	Mains loss Ride Through	When instantaneous power off, voltage reduction is compensated through load feedback energy, which could make Inverter keep running in a short period of time.
	Rapid Current Limit	To avoid Inverter frequently over-current fault.
	Timing Control	Timing control function：set time range 0Min~6500.0Min
	Running Command Channel	Three types of channels：operation panel reference, control terminal reference and serial communication port reference. These channels can be switched in various modes.
	Command Source	Operation panel reference, control terminal reference, and serial COM port reference. It can be switched in various ways.
	Frequency Source	There are totally eleven types of frequency sources, such as digital reference, analog voltage reference , analog current reference, pulse reference, and serial port reference. It can be switched in various ways.
	Input Terminal	Standard： 5 Digital input terminals 2 Analog input terminals 1 Support 0-10V voltage input or 0~20mA current input.
	Output Terminal	Standard： 2 Digital output terminals 1 Relay output terminal, which can be expanded into 2 channels 1 Analog output terminals, support 0~10V output voltage;
	Keypad Potentiometer	Equipped with Keypad potentiometer or coding potentiometer
Display	Protection Function	It can implement power-on motor short-circuit detection, output phase loss protection, over current protection, over voltage protection, under voltage protection, overheating protection and overload protection.
	Using Place	Indoor, and be free from direct sunlight, dust, corrosive gas, combustible gas, oil smoke, vapor, drip or salt.
Environment	Altitude	Below 1000m
	Ambient Temperature	-10 ℃ to +40 ℃ (Derating use when under ambient temperature of 40 ℃ to 50 ℃)
	Humidity	Less than 95%RH, without condensing
	Vibration	Less than 5.9m/s (0.6g)

2.5 Brake Chopper & Brake Resistor

Voltage (V)	Inverter Power (KW)	Brake Chopper Specification	
		W	Ω
Single Phase 220V	0.4	80	200
	0.75	80	150
	1.5	100	100
	2.2	100	70
	4.0	300	50
Three Phase 380V	0.75	150	300
	1.5	150	220
	2.2	250	200
	4.0	300	130
	5.5	400	90
	7.5	500	65

Figure 2.5. Inverter Brake Chopper List

Chapter 3

Installation & Wiring

Chapter 3　Installation & Wiring

3.1 Mechanical Installation

3.1.1 Installation Environment Requirements

1) Ambient Temperature: the ambient temperature has a great influence on the service life of inverter. It is not allowed to operate exceeding the allowable temperature range.(-10℃ ~50℃.)

2) Install the inverter on the surface of the flame retardant object with enough space for heat dissipation. It is easy to generate a lot of heat when working. Install it vertically on the mounting support with screws.

3) 　Avoid vibration. Vibration should be less than 0.6G. Keep away from punching machine etc.

4) Keep away from direct sunlight, damp and dripping places.

5) Avoid places with corrosive, inflammable and explosive gases in the air.

6) Avoid the place with oil, dust and metal dust.

7) The inverter needs to be installed in the final system. After installation, only part of the Keypad panel may leak out on the final housing for operation. The system must be equipped with a fireproof, electrical, and mechanical enclosure that complies with local laws, regulations, and IEC standards.

3.1.2 Installation Clearance Requirements

The clearance that needs to be reserved varies with the power class of the M550 Series, as

shown in the following figure.

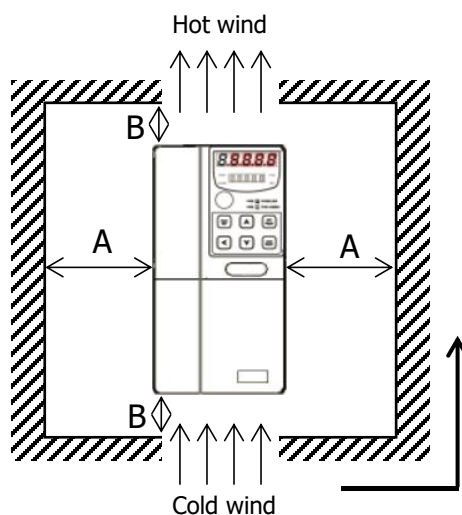Figure 3.1.2.1 Clearance around the M550 Series for installation

Figure. 3.1.2.1

Installation clearance requirements on the M550 series Inverters of different power classes

Power Class	Clearance Requirements	
18.5kW~22kW	A≥10mm	B≥200mm
30kW~37kW	A≥50mm	B≥200mm
45kW~110kW	A≥50mm	B≥300mm

Heat dissipation of inverter is distributed from bottom to top. When multiple inverters work, they are usually installed side by side. In the case of upper and lower row installation, the heat of lower row inverter will cause the temperature rise of upper row equipment and lead to failure, so measures such as installation of heat insulation guide plate should be taken.

3.1.3 Precautions for Mechanical Installation

Heat dissipation problems should be concerned when doing mechanical installation, please mind rules below：

1)   Mounting space is shown in chart 3.1.2, which could ensure the heat sinking space of the Inverter. However, the heat sinking of other devices in the cabinet shall also be considered.

2)   Install the Inverter vertically so that the heat may be expelled from the top. However, the equipment cannot be installed upside down. If there are multiple. Inverters in the cabinet, parallel installation is better. In the applications where up-down installation is required, please install the thermal insulating guide plate.

3)   Installing support must be flame retardant materials.

4)   It is suggested that cooling cabinet be put outside at places where powder dust exists. Space inside the sealed cabinet shall be large as much as possible.

3.2   Electrical Installation

3.2.1 Description of Power Terminals

Terminal Name	Function Description
R、S、T	Three phase power input terminal
P/+、PB	External Brake Resistor
U、V、W	Three phase AC output terminal
PE	Earth Terminal

3.2.2   Caution of Power Terminal Wiring

1) Input Power R、S、T:

● Inverter input side connection, no phase sequence requirements.

● The specifications and installation methods of the external power wiring should comply with the local regulations and related IEC standards.

● Please refer to the following table for power cable wiring：

Inverter Model		Recommended Breaker Specifications	Recommended Contactor Specification	Recommended Input Power Cable (㎡)	Recommended Motor Cable(㎡)	Recommended Control Cable(㎡)
Single Phase 220V	0.4KW	16	10	2.5	2.5	1.5
	0.75KW	16	10	2.5	2.5	1.5
	1.5KW	20	16	4	2.5	1.5
	2.2KW	32	20	6	4	1.5
Three Phase 380V	0.75KW	10	10	2.5	2.5	1.5
	1.5KW	16	10	2.5	2.5	1.5
	2.2KW	16	10	2.5	2.5	1.5
	4KW	25	16	4	4	1.5
	5.5KW	32	25	6	6	1.5
	7.5KW	40	32	6	6	1.5
	11KW	63	40	10	10	1.5
	15KW	63	40	10	10	1.5
	18.5KW	80	65	10	10	1.5
	22KW	80	65	25	25	1.5
	30KW	80	65	25	25	1.5
	37KW	100	80	25	25	1.5
	45KW	160	95	35	35	1.5
	55KW	160	115	35	35	1.5
	75KW	250	160	60	60	1.5
	93KW	250	160	70	70	1.5
	110KW	350	350	90	90	1.5
	132KW	350	350	90	90	1.5
	160KW			120	120	1.5
	185KW			180	180	1.5
	200KW			180	180	1.5
	220KW			240	240	1.5
	250KW			270	270	1.5
	285KW			270	270	1.5
	315KW			2*150	2*150	1.5
	355KW			2*150	2*150	1.5
	400KW			2*180	2*180	1.5
	450KW			2*180	2*180	1.5
	500KW			2*240	2*240	1.5
	560KW			2*240	2*240	1.5

※This chart is for reference only, not as a standard

3.2.2.1 General Purpose Inverter Type Guidance for Peripheral Electrical Components

2) Brake resistor connection terminal（P+）、PB：

● The reference value of the brake resistance selection and the line distance should be less than 5m. Otherwise, the Inverter may be damaged.

3) Inverter output side U、V、W:

● The specifications and installation methods of the external power wiring should comply with the local regulations and related IEC standards.

● For power cable wiring, please refer to the wiring shown in Figure 3.2.2.

● The Inverter side can not be connected to the capacitor or surge absorber, otherwise it will be caused to protect and even damage.

● When the motor cable is too long, because of the influence of distributed capacitance, it is easy to generate electric resonance, resulting in the insulation failure of motor, or the large leakage current, which makes the Inverter over-current protection. When the length of the motor cable is more than 100m, the AC output reactor must be installed near the frequency converter.

4) Earthing terminal PE:

● The terminals must be reliably grounded, and the grounding wire must be less than 10 Omega. Otherwise, it will result in abnormal or even damage to the equipment work.

● Can not share the ground terminal and the power zero line N terminal.

● The impedance of a grounding conductor must be required to meet the requirements of a large short circuit current that may occur when a fault occurs.

● Protection of grounding conductors must be made of yellow green cable.

5) Requirements for the pre - stage protection device:

● Appropriate protective devices should be installed on the input distribution lines. Protection devices need to provide over current protection, short circuit protection and isolation protection and other functions.

● When selecting protective devices, factors such as power cable current capacity, system overload capacity and short-circuit capability of equipment before power distribution should be considered. Generally, please choose according to recommended values in 3.2.2 table recommendation.

3.2.3   Description of Control Terminals

Description of Control Terminals of Inverter

| NC	NC1	DI1	DI2	DI3	DI4	DI5	S+	S-	AI1	AM
TA	TB	TC	AO1	COM	AO2	24V	FM	GND	AI2	10V

Inverter Terminals

Note: NC and NC1 are suspended before delivery. Relay can be added to the terminal.

Control Terminals Description

Type	Terminal sign	Terminal Name	Function Description
Power Supply	+10V-GND	External terminal of 10V power supply	Provide +10V power supply for external units, with maximum output current of 10mA. It is generally used as the operating power supply for the external potentiometer. The potentiometer resistance range is 1kΩ to 5kΩ.
Analog Input	AI1-GND	Analog input terminal 1	1. Input voltage range: DC 0V to 10V 2. Input impedance: 22kΩ
	AI2-GND	Analog input terminal 2	1. Input range: DC 0V~10V/0mA~20mA, chosen by jumper on control board. 2. Input impedance: 22kΩ when voltage input. When current input, through JP2 impedance, 500Ω or 250Ω adjustable.
Digital Input	DI1-COM	Digital Input 1	1. Optical coupling isolation, bipolar input. 2. Input impedance: 2.4kΩ. 3. Electrical level input voltage range: 9V~30V.
	DI2-COM	Digital Input 2	
	DI3-COM	Digital Input 3	
	DI4-COM	Digital Input 4	
	DI5-COM	Digital Input 5	
Analog output	AM-GND	Analog output	Output voltage range: 0V to 10V/4mA~20mA
	FM-GND	Analog output	Output voltage range: 0V to 10V
Digital Output	AO1-COM	Digital output	Optical coupling isolation, dual polarity open collector output. Output voltage range: 0V to 24V. Output current range: 0mA to 50mA.
	AO2-COM	Digital output	Optical coupling isolation, dual polarity open collector output. Output voltage range: 0V to 24V. Output current range: 0mA to 50mA.
Relay output	T/B-T/C	Normally closed	Contact driving capacity: 250Vac, 3A, COSø=0.4. 30Vdc, 1A
	T/A-T/B	Normally open	
	NC/NC1	Reserved	Contact driving capacity: 250Vac, 3A, COSø=0.4. 30Vdc, 1A

3.3.4 Terminal Wiring Diagram
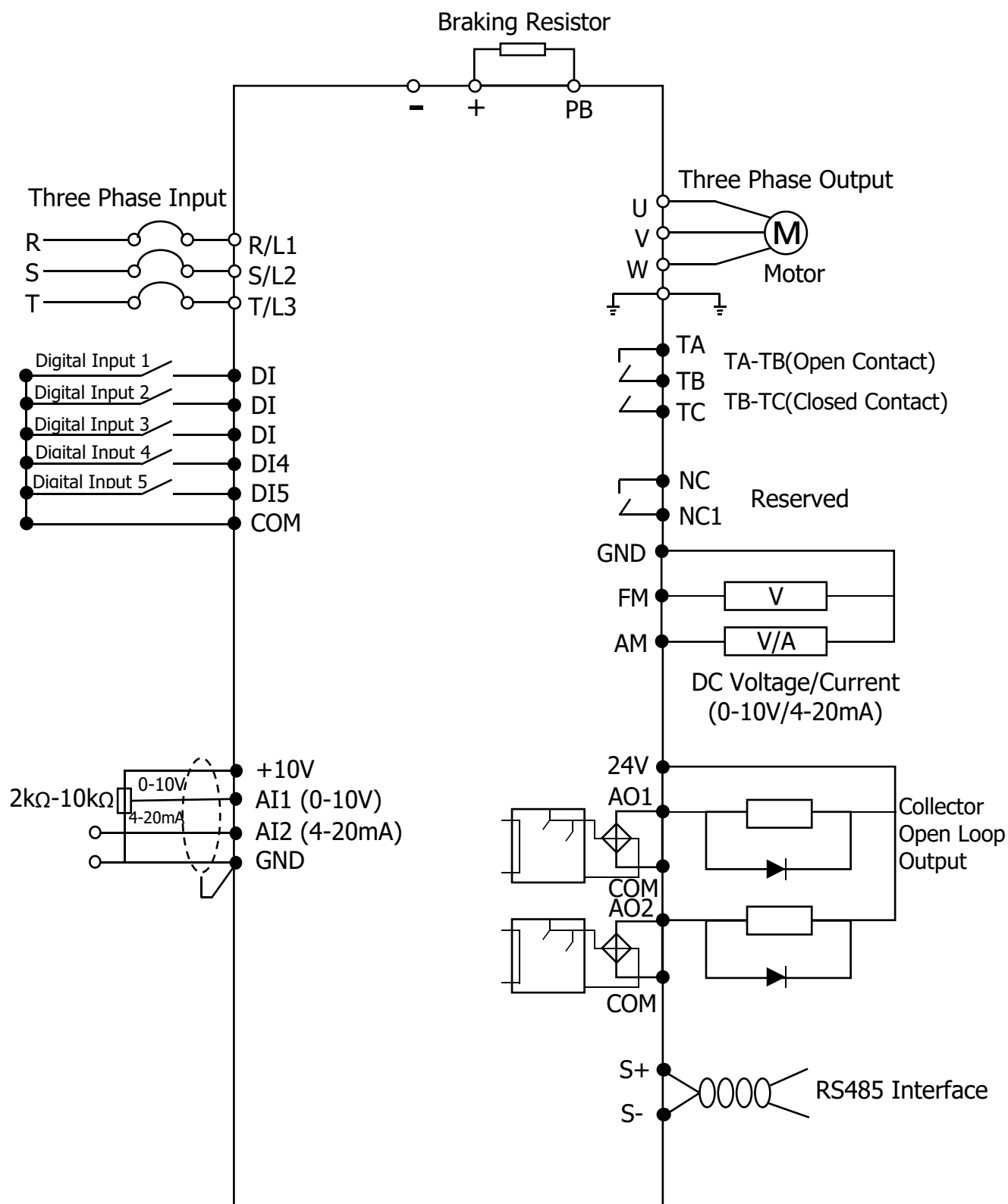
Note: Relay can be installed in NC/NC1.

3.2.6 Jumper of the Control Board

Jumper Terminal Name	Jumper Terminal Status	Specification
JP1	1-2 foot short circuit	Output Signal Range: 4-20mA (AM) (factory default)
	2-3 foot short circuit	Output Signal Range: 0-10V
JP3	1-2 foot short circuit	RS485 terminal matching resistor
	2-3 foot short circuit	Suspended (factory default)

Chapter 4

Keypad Operation Instructions

Chapter 4. Keypad Operation Instructions

- 29 -

4.1 Operation Panel

You can modify the parameters, monitor the working status and start or stop the Inverters by operating the operation panel, as shown in the following figure.
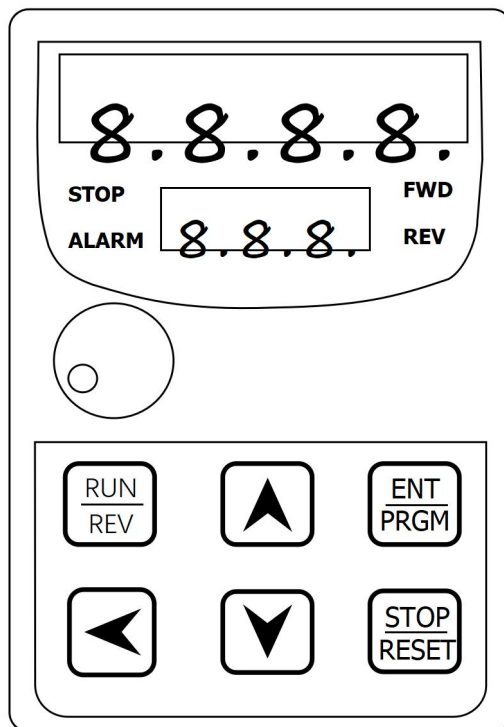
Operation panel figure

4.1.1 Function indicator lamp instructions

- FWD： **forward indicator** lighting

- REV： **reverse indicator** lighting

- STOP： **pause indicator** lighting

- ALM : **fault indicator** lighting

4.2 Description of Keys on the Operation Panel

Key Sign	Name	Function Description
ENT / PRGM	Program/ Enter	Long press for 2 seconds to enter or exit menu. Short press to read or write parameters.
▲	Increase	Increase the data or the function code.
▼	Decrease	Decrease the data or the function code.
◄	Shift	Select the parameter modification and display content.
RUN / REV	Run/Reverse	Panel start, motor running direction switch.
STOP / RESET	Stop/Reset	Stop the Inverter when it is in the running state and perform the reset operation when it is in the fault state.

4.2.1 Parameter Setting

The three level menus are：

1、 Function code number（Level I）

2、 Function code marking（Level II）

3、 Function code set value（Level III）

Notes： In the Level III menu operation, long press ENT/PRGM for 2 seconds to enter the menu, short press ENT/PRGM to enter the lower-level menu. Press ENT/PRGM again to enter the Level III menu to modify specific parameters; After modifying parameters, press ENT/PRGM for 2 seconds to return to the Level II menu, hold down ENT/PRGM for 2 seconds to return to the Level II menu, and hold down ENT/PRGM for 2 seconds to return to the display screen.

For example： Change the function code **P6-03** from 00.00 to 05.00:
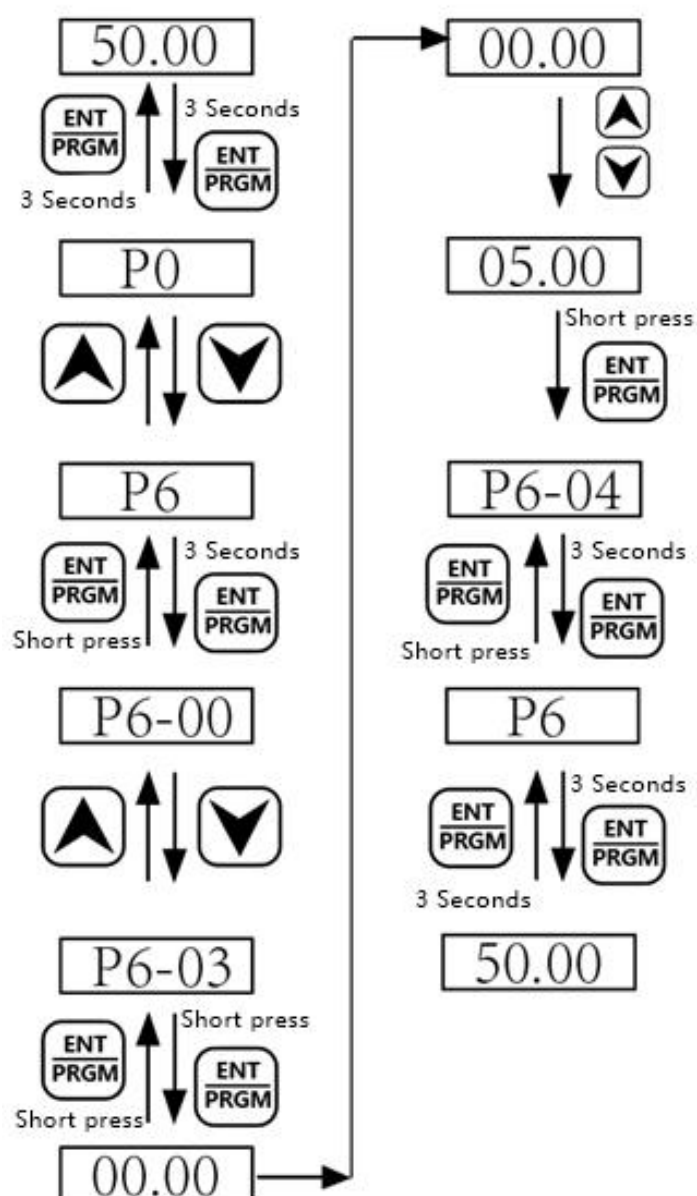
In the state of the level III, if the parameter does not have a flashing bit, it indicates that the function code can not be modified, it may be:

1.Such a function code is only readable, such as, actually detected parameter and running record parameter.

2. Such a function code cannot be modified in the running state and can only be changed at stop.

4.2.2   Motor Parameter Identification

The method of obtaining the internal electrical parameters of the controlled motor by the Inverter has：Dynamic tuning、Static tuning 1、Static tuning 2、Manual input of motor parameters.

The self‐learning operation steps of the motor parameters are as follows：

The 1st step：If the motor can completely disconnect with the load, in the case of power failure, the motor will be detached from the mechanical motor and the load part, so that the motor can be freely rotated.

The 2nd step：After power-on, the Inverter command source **(P0-02)** is selected as the command channel of the operation panel.

The 3rd step：Input the nameplate parameters of the motor (such as P1-00 to P1-05) correctly, please input the following parameters according to the actual parameters of the motor:

According to the motor nameplate	Parameter	
	P1-00: motor type select	**P1-01**: motor rated power
	P1-02: motor rated voltage	**P1-03**: motor rated current
	P1-04: motor rated frequency	**P1-05**: motor rated speed

The 4th step： If it is asynchronous motor, then **P1-37** please select 2 (complete tuning of the asynchronous machine), press ENTER/PRGM key, meanwhile the Keypad displays TUNE. Then press the RUN/REV key on the Keypad panel, the Inverter will drive the motor to increase or decelerate, and turn it into operation. The running indicator lights up, and the tuning operation duration is about 2 minutes. When the above display information is gone, it returns to the normal parameter display state, indicating that the tuning is completed.

After this complete tuning, the Inverter automatically calculates the following parameters of the motor：

	Parameter
Motor	P1-06: Stator resistance of asynchronous motor
	P1-07: Rotor resistance of asynchronous motor
	P1-08: The leakage inductance of asynchronous motor
	P1-09: Induction motor mutual inductance
	P1-10: Asynchronous motor no-load current

Chart 4.2.3

If the motor can not be completely removed from the load，parameter **P1-37** please choose **3** （asynchronous motor Static tuning 2），then press the **RUN/REV** key on the Keypad panel to start the tuning of the motor parameters.

Chapter 5

Operation Cases and Descriptions

Chapter 5   Operation Cases and Descriptions

5.1 Keypad Run, Stop & Up, Down Change Speed

Parameter Settings:

P0-02=0 (Factory Default)

P0-03=0 (Digital setting, **P0-08** is frequency setting; Power-down does not remember)

P0-03=1 (Digital setting, **P0-08** is frequency setting; the value is saved when power down)

Speed Control: Press "▲" key to increase frequency, "▼" key to decrease frequency

5.2 Keypad start, stop & Keypad potentiometer Change speed control

Parameter Settings:

P0-02=0 (Factory Default)

P0-03=4 (Factory Default)

Start, stop: press "RUN" key, FWD indicator light On to Run; press "STOP / RESET" key to stop;

If you want the Keypad to Forward and Reverse, set **P7-01 = 2** and press the (REV / JOG) key. REV indicator light On.

Speed control: panel potentiometer (clockwise frequency increase, counterclockwise is the opposite)

5.3 External terminal Run, Stop & External potentiometer Change Speed

Parameter Settings:

P0-02=1   P0-03=2

Start, stop: "**DI1-COM**" short-circuit, "FWD" indicator light On;

"**DI2-COM**" short-circuit, "REV" indicator light On;

The Inverter stops when the **DI1-DI2** terminal is disconnected from **COM**.

Speed control: Rotate the external potentiometer（**10V　AI1　GND**）

If the Inverter is powered up, set **P8-18 = 0** (start protection selection)

5.4　External terminal Run, Stop & external analog voltage signal speed control（0-10V）

Parameter Settings:

P0-02=1　P0-03=2

Start, stop: "**DI1-COM**" short-circuit, "FWD" indicator light On;

"**DI2-COM**" short-circuit, "REV" indicator light On;

The Inverter stops when the **DI1-DI2** terminal is disconnected from **COM.**

Speed control: Analog voltage signal (**AI1 GND**- "0-10V or 0-5V voltage signal)

Analog voltage signal linearity adjustment parameters in the **P4-13 --- P4-17**, generally do not need to adjust.

5.5 External terminal Run, Stop & External analog current signal speed Control (4-20MA)

Parameter Settings:

P0-02=1　P0-03=3

Start, stop: "**DI1-COM**" short-circuit, "FWD" indicator light On;

"**DI2-COM**" short-circuit, "REV" indicator light On;

The Inverter stops when the **DI1-DI2** terminal is disconnected from **COM**.

Speed control: Analog current signal (AI2 GND- "4-20MA analog current signal)

Analog current signal linearity adjustment parameters in the P4-18 --- P4-22, generally do not need to adjust.

5.6 External terminal up, down key to control speed

Panel Start:

Parameter Settings:

    P0-02=0   P0-03=0   P4-00=6   P4-01=7

    Start and stop: Press "RUN" key, FWD operation indicator light On. Press (REV / JOG) key, REV indicator light on (set **P7-01 = 2**); Press (STOP / RESET) to stop the Inverter.

    Speed control: (**DI1 --- COM**) Short-circuit speed increases, (**DI2-COM**) short-circuit speed decreases

External start:

Parameter Settings:

    P0-02=1   P0-03=0   P4-00=6   P4-01=7   P4-02=01 P4-02=02

    Start, stop: "**DI3-COM**" shorted FWD indicator light On, the Inverter is running;

    "**DI4-COM**" shorted REV indicator light On, the Inverter is running; Otherwise the Inverter stops.

    Speed control: (**DI1-COM**) Short-circuit speed increases, (**DI2-COM**) Short-circuit speed decreases.

    If you need frequency memory function: **P0-23=1**

5.7 Multi-speed setting

Panel Start:

    P0-02=0   P0-03=6   P4-00=12   P4-01=13   P4-02=14   P4-00=15

(P4 parameter group definition multi-speed function, 12 for multi-step speed 1, 13 for multi-step speed 2, 14 for multi-speed 3, 15 for multi-speed 4; 4 terminals can be combined into 16 speeds)

Start, stop: press "RUN" key, FWD indicator light On, Inverter run. Press REV/JOG key, REV indicator light on, (Set **P7-01=2**). Press STOP/RESET key, Inverter stops.

External start:

P0-02=1   P0-03=6   P4-00=12   P4-01=13   P4-02=14   P4-03=15   P4-04=01

Start, Stop: "**DI1-COM** "terminal short-circuit to start operation, disconnect terminal the Inverter to stop.

Speed control: Define the multi-speed terminal and **COM** short circuit, Inverter display frequency.

Multi-speed Truth-value Table:

4 multi-segment instruction terminals can be combined into 16 states, The 16 states correspond to 16 instruction sets, as shown in Table 1:

K4	K3	K2	K1	Command set	Corresponding parameters
OFF	OFF	OFF	ON	Multi-reference 0	**PC-00**
OFF	OFF	OFF	ON	Multi-reference 1	**PC-01**
OFF	OFF	ON	OFF	Multi-reference 2	**PC-02**
OFF	OFF	ON	ON	Multi-reference 3	**PC-03**
OFF	ON	OFF	OFF	Multi-reference 4	**PC-04**
OFF	ON	OFF	ON	Multi-reference 5	**PC-05**
OFF	ON	ON	OFF	Multi-reference 6	**PC-06**
OFF	ON	ON	ON	Multi-reference 7	**PC-07**
ON	OFF	OFF	OFF	Multi-reference 8	**PC-08**
ON	OFF	OFF	ON	Multi-reference 9	**PC-09**
ON	OFF	ON	OFF	Multi-reference 10	**PC-10**
ON	OFF	ON	ON	Multi-reference 11	**PC-11**

ON	ON	OFF	OFF	Multi-reference 12	**PC-12**
ON	ON	OFF	ON	Multi-reference 13	**PC-13**
ON	ON	ON	OFF	Multi-reference 14	**PC-14**
ON	ON	ON	ON	Multi-reference 15	**PC-15**

When the frequency source is selected as multi-speed, function code **PC-00~PC-15** 100.0%, corresponds to the maximum frequency **P0-10.** Multi-segment instructions in addition to multi-speed function, but also can be used as a PID source, Or as a voltage source for V / F separation control, to meet the need to switch between different setpoints.

Table 2   Acceleration / Deceleration Time Selection Terminal Function Description

Terminal 2	Terminal 1	Acceleration or deceleration time selection	Corresponding parameters
OFF	OFF	Acceleration time 1	**P0-17、P0-18**
OFF	ON	Acceleration time 2	**P8-03、P8-04**
ON	OFF	Acceleration time 3	**P8-05、P8-06**
ON	ON	Acceleration time 4	**P8-07、P8-08**

Chapter 6

Parameters & Communication

Chapter 6   Parameters

Group P and Group A are standard function parameters. Group U includes the monitoring function parameters.

The symbols in the function code table are described as follows:

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

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

"●": The parameter is the measured value in real-time and cannot be modified.

"*": The parameter is factory parameter and can be set only by the manufacturer, not available for user.

6.1   Standard Function Parameters

Table 6-1 Basic function parameter table

Function code	Name	Setting Range	Factory Setting	Property
P0 Standard Function Parameters				
P0-00	Reserved	Reserved	-	
P0-01	Motor Control Mode	0：Speed sensor-less vector control （SFVC） 1：Reserved 2：Voltage/Frequency control (V/F control)	2	★
P0-02	Command Source Selection	0：Operation panel control (LED off) 1：Terminal control (LED on) 2：Communication control (LED blinking)	0	☆

Function code	Name	Setting Range	Factory Setting	Property
P0-03	Main Frequency Source X Selection	0: Digital setting (Pre-frequency by P0-08, changed by UP/DOWN, not saved at power off) 1: Digital setting (Pre-frequency by P0-08, changed by UP/DOWN, saved at power off) 2: AI1 3: AI2 4: Keypad Potentiometer 5: Reserved 6: Multi-reference 7: Simple PLC 8: PID 9: Communication setting 10: Pump mode	4	★
P0-04	Auxiliary Frequency Source Y Selection	Same as **P0-03** (Main frequency source X selection)	0	★
P0-05	Auxiliary Frequency Source Y Range Selection	0: Relative to maximum frequency 1: Relative to frequency source X	0	☆
P0-06	Auxiliary Frequency Source Y Range	0% ~ 150%	100%	☆
P0-07	Frequency Source Stacking Selection	Unit's digit: Frequency source selection 0: Main frequency source X. 1: Main / auxiliary operation result (Ten's digit determines operation relationship) 2: Switching between X & Y 3: Switching between X & option 1 4: Switching between Y & option 1 Ten's digit: Relationship between main / auxiliary frequency source 0: Main+auxiliary	0	☆

Function code	Name	Setting Range	Factory Setting	Property
		1：Main-auxiliary 2：MAX(main frequency source X, auxiliary frequency source Y) 3：MIN(main frequency source X, auxiliary frequency source Y)		
P0-08	Preset Frequency	0.00Hz ～Max frequency （P0-10）	50.00Hz	☆
P0-09	Running Direction	0：Forward direction 1：Reverse direction	0	☆
P0-10	Maximum Frequency	50.00Hz ～ 500.00Hz	50.00Hz	★
P0-11	Source of Frequency Upper Limit	0：Setting by P0-12 1：AI1 2：AI2 3：Keypad potentiometer 4：Reserved 5：Communication setting	0	★
P0-12	Frequency Upper Limit	Frequency lower limit (P0-14) to maximum frequency (P0-10)	50.00Hz	☆
P0-13	Frequency Upper limit Offset	0.00Hz ～Max frequency (P0-10)	0.00Hz	☆
P0-14	Frequency lower Limit	0.00Hz ～Frequency upper limit (P0-12)	0.00Hz	☆
P0-15	Switching Frequency	0.5kHz ～ 16.0kHz	6	☆
P0-16	Switching Frequency Adjusted with Temperature	0：NO 1：YES	1	☆
P0-17	Acceleration Time 1	0.0s ～ 6500.0s	20	☆
P0-18	Deceleration Time 1	0.0s ～ 6500.0s	20	☆
P0-19	Acc./Dec. Time Unit	0：1 s 1：0.1 s 2：0.01 s	1	★
P0-21	Auxiliary Frequency Source Offset Frequency	0.00Hz ～Max frequency (P0-10)	0.00Hz	☆
P0-22	Frequency Command Resolution	1：0.1HZ 2：0.01Hz	2	★

Function code	Name	Setting Range	Factory Setting	Property
P0-23	Digital Setup Frequency Save Selection at Stop	0：Without save 1：Save	0	☆
P0-24	Reserved		-	-
P0-25	Acceleration / Deceleration Reference Frequency	0：Maximum frequency(P0-10) 1：Preset frequency 2：100Hz	0	★
P0-26	Frequency UP/DOWN Reference During Running	0：Running frequency 1： Preset frequency	0	★
P0-27	Command Source & Frequency Source Binding	Unit's digit：Frequency source for operation panel command 0：Without binding 1：Digital setup frequency source 2：AI1 3：AI2 4：Potentiometer 5：Reserved 6：Multi-reference 7：Simple PLC 8：PID 9：Communication setup Tens place：Frequency source for terminal command (Same as Unit's digit) Hundreds place：Frequency source for communication command (Same as Unit's digit) Thousands place：Frequency source for auto-running (Same as Unit's digit)	0	☆
P0-28	Communication Protocol Selection	0：Modbus protocol 1：Reserved	0	☆
P1　Motor Parameter				
P1-00	Motor Type Selection	0：General asynchronous motor 1：Variable frequency asynchronous motor	0	★
P1-01	Motor Rated Power	0.1kW ~ 1000.0kW	Model dependent	★

Function code	Name	Setting Range	Factory Setting	Property
P1-02	Motor Rated Voltage	1V ～ 2000V	Model dependent	★
P1-03	Motor Rated Current	0.01A～655.35A （Inverter power≤55kW） 0.1A～6553.5A （Inverter power>55kW）	Model dependent	★
P1-04	Motor Rated Frequency	0.01Hz ～ Max frequency	50Hz	★
P1-05	Motor Rated Speed	1rpm ～ 65535rpm	Model dependent	★
P1-06	Asynchronous Motor Stator Resistance	0.001Ω～65.535Ω （Inverter power≤55kW 0.0001Ω～6.5535Ω （Inverter power>55kW）	Model dependent	★
P1-07	Asynchronous Motor Rotor Resistance	0.001Ω～65.535Ω （Inverter power≤55kW） 0.0001Ω～6.5535Ω （Inverter power>55kW）	Model dependent	★
P1-08	Asynchronous Motor Leakage Inductance	0.01mH～655.35mH （Inverter power≤ 55kW） 0.001mH～65.535mH （Inverter power> 55kW）	Model dependent	★
P1-09	Asynchronous Motor Mutual Inductance	0.1mH～6553.5mH （Inverter power≤ 55kW） 0.01mH～655.35mH （Inverter power> 55kW）	Model dependent	★
P1-10	Asynchronous Motor no Load Current	0.01A～P1-03 （Inverter power≤ 55kW） 0.1A～P1-03 （Inverter power > 55kW）	Model dependent	★
P1-11	**P1-11~P1-36**	Reserved	-	-
P1-37	Tuning Selection	0：Without operation 1：Asynchronous static tuning 1 2：Asynchronous dynamic tuning 3：Synchronous static tuning 2	0	★

Function code	Name	Setting Range	Factory Setting	Property
P2 Vector Control Function				
P2-00	Speed Control Loop Proportional Gain 1	1 ～ 100	30	☆
P2-01	Speed Control Loop Integration Time 1	0.01s ～ 10.00s	0.50s	☆
P2-02	Switching Boundary Frequency1	0.00 ～ P2-05	5.00Hz	☆
P2-03	Speed Control Loop Proportional Gain 2	1 ～ 100	20	☆
P2-04	Speed Control Loop Integration Time 2	0.01s ～ 10.00s	1.00s	☆
P2-05	Switching Boundary Frequency 2	P2-02 ～ Max frequency	10.00Hz	☆
P2-06	Vector Control Slip Gain	50% ～ 200%	100%	☆
P2-07	Speed Control Loop Filter Time	0.000s ～ 0.100s	0.050s	☆
P2-08	Reserved	——	-	-
P2-09	Torque Upper Limit in Speed Control Mode	0：Function code (P1-10) setting 1：AI1 2：AI2 3：Potentiometer 4：reserved 5：Communication setting 6：MIN (AI1, AI2) 7：MAX (AI1, AI2) 1-7 Full range correspondence o P1-10	0	☆
P2-10	Torque Upper Limit Digital Setup in Speed Control Mode	0.0% ～ 200.0%	150.00%	☆
P2-11	P2-11—P2-12	Reserved	-	
P2-13	Magnetizing Regulation Proportional Gain	0 ～ 60000	2000	☆

Function code	Name	Setting Range	Factory Setting	Property
P2-14	Magnetizing Regulation Integration Gain	0 ～ 60000	1300	☆
P2-15	Torque Regulation Proportional Gain	0 ～ 60000	2000	☆
P2-16	Torque Regulation Integration Gain	0 ～ 60000	1300	☆
P2-17	Speed Control Loop Integration Attribute	Unit's digit: integral separation 0：Invalid 1：Valid	0	☆
P3　V/F Control Parameter				
P3-00	V/F Curve Setting	0：Linear V/F 1：Multi-point V/F 2：Square V/F 3：Power of 1.2 V/F 4：Power of 1.4 V/F 6：Power of 1.6 V/F 8：Power of 1.8 V/F 9：reserved 10：VF complete separation mode 11：VF semi separation mode	0	★
P3-01	Torque Boost	0.0%： (automatically) 0.1% ～ 30.0%	Model dependent	☆
P3-02	Torque Boost Cut-off Frequency	0.00Hz ～ Max frequency	50.00Hz	★
P3-03	Multi-point V/F Frequency Point F1	0.00Hz ～ P3-05	0.00Hz	★
P3-04	Multi-point V/F Voltage Point V1	0.0% ～ 100.0%	0.00%	★
P3-05	Multi-point V/F Frequency Point F2	P3-03 ～ P3-07	0.00Hz	★
P3-06	Multi-point V/F Voltage Point V2	0.0% ～ 100.0%	0.00%	★
P3-07	Multi-point V/F Frequency Point F3	P3-05 ～ rated frequency (P1-04)	0.00Hz	★
P3-08	Multi-point V/F Voltage Point V3	0.0% ～ 100.0%	0.00%	★

Function code	Name	Setting Range	Factory Setting	Property
P3-09	V/F Slip Compensation Gain	0.0% ~ 200.0%	0.00%	☆
P3-10	V/F Over-magnetizing Gain	0 ~ 200	64	☆
P3-11	V/F Oscillation Suppression Gain	0 ~ 100	40	☆
P3-12	Reserved	-	-	-
P3-13	V/F Separation Voltage Source	0：Digital setting（P3-14） 1：AI1 2：AI2 3：Potentiometer 4：reserved 5：Multi-reference 6：Simple PLC 7：PID 8：Communication setup Note：100.0% corresponding to the motor rated voltage	0	☆
P3-14	V/F Separation Voltage Digital Setup	0V ~ rated voltage	0V	☆
P3-15	Voltage Increase Time of V/F Separation	0.0s ~ 1000.0s Note：It indicates the time for the voltage rising from 0 V to rated motor voltage.	0.0s	☆
P3-16	Voltage Decrease Time of V/F Separation	0.0s ~ 1000.0s Note：It indicates the time for the voltage decreasing from rated motor voltage to 0 V.	0.0s	☆
P3-17	V/F Separation Stop Mode Selection	0：Frequency and voltage declining to 0 independently 1：Frequency declining after voltage declines to 0	0	☆
P3-18	Current Limit of Over-current Stall	50~200%	100%	★
P3-19	Over-current Stall Enable	0 :Disabled 1 : Enabled	1	★
P3-20	Over-current Stall Inhibition Gain	0~100	10	☆

Function code	Name	Setting Range	Factory Setting	Property
P3-21	Compensation Factor of Action Current During Over-current Stall	50~200%	50%	★
P3-22	Voltage Limit of Over-voltage Stall	650.0V~800.0V	720.0V	★
P3-23	Over-voltage Stall Enable	0 :Disabled 1 : Enabled	1	★
P3-24	Over-voltage Stall Suppression Frequency Gain	0~100	30	☆
P3-25	Over-voltage Stall Suppression Voltage Gain	0~100	30	☆
P3-26	Maximum Frequency Limit of Over-voltage Stall	0~50Hz	5Hz	★
P3-27	Reserved	Reserved	Reserved	☆
P4 Input Terminal				
P4-00	DI1 Terminal Function Selection	0： No function 1： Forward command (FWD) 2： Reverse command (REV) 3： Three line running control 4： FWD JOG command (PJOG) 5： REV JOG command (RJOG)	1	★
P4-01	DI2 Terminal Function Selection	6： UP 7： DOWN 8： Coast stop 9： Fault reset （RESET） 10： Pause 11： External trip normally open input	2	★
P4-02	DI3 Terminal Function Selection	12： Multi-reference terminal 1 13： Multi-reference terminal 2 14： Multi-reference terminal 3 15： Multi-reference terminal 4 16： Acc./Dec. time selection terminal 1	12	★

Function code	Name	Setting Range	Factory Setting	Property
P4-03	DI4 Terminal Function Selection	17：Acc./Dec. time selection terminal 2 18：Frequency source switching 19：UP/DOWN setup reset (terminal and Keypad) 20：Running command switching terminal	13	★
P4-04	DI5 Terminal Function Selection	21：Acc./Dec forbidden 22：PID pause 23：PLC reset 24：Swing frequency pause 25：Counter input 26：Counter reset	14	★
P4-05	Reserved	27：Length counter input 28：Length counter reset 29-31：Reserved 32：Immediate DC braking 33：External trip normally closed input	0	★
P4-06	Reserved	34：Frequency modification enable 35：PID direction reversed 36：External stop terminal1 37：Control command switching terminal 2	0	★
P4-07	Reserved	38：PID integration suspension 39：Frequency source X and preset frequency switching 40：Frequency source Y and preset frequency switching 41：Motor terminal selection	0	★
P4-08	Reserved	42：Reserved 43：PID parameter switching 44：Reserved 45：Reserved 46：Speed control/ torque control switching	0	★

Function code	Name	Setting Range	Factory Setting	Property
P4-09	Reserved	47: Emergency stop 48: External stop terminal 2 49: Deceleration DC braking 50: Clear current running time 51: 2-line type / 3-line type switching 52-59: Reserved	0	★
P4-10	DI Filter Time	0.000s ~ 1.000s	0.010s	☆
P4-11	Terminal Command Mode	0: 2-line type 1 1: 2-line type 2 2: 3-line type 1 3: 3-line type 2	0	★
P4-12	Terminal UP/DOWN Variation Rate	0.001Hz/s ~ 65.535Hz/s	1.00Hz/s	☆
P4-13	AI Curve 1 Minimum Input	0.00V ~ P4-15	0.00V	☆
P4-14	AI Curve 1 Minimum Input Corresponding Setup	-100.0% ~ +100.0%	0.00%	☆
P4-15	AI Curve 1 Maximum Input	P4-13 ~ +10.00V	10.00V	☆
P4-16	AI Curve 1 Maximum Input Corresponding Setup	-100.0% ~ +100.0%	100.00%	☆
P4-17	AI1 Filter Time	0.00s ~ 10.00s	0.10s	☆
P4-18	AI Curve 2 Minimum Input	0.00V ~ P4-20	0.00V	☆
P4-19	AI Curve 2 Minimum Input Corresponding Setup	-100.0% ~ +100.0%	0.00%	☆
P4-20	AI Curve 2 Maximum Input	P4-18 ~ +10.00V	10.00V	☆
P4-21	AI Curve 2 Maximum Input Corresponding Setup	-100.0% ~ +100.0%	100.00%	☆
P4-22	AI2 Filter Time	0.00s ~ 10.00s	0.10s	☆
P4-23	P4-23—P4-32 Reserved	Reserved	Reserved	

Function code	Name	Setting Range	Factory Setting	Property
P4-33	AI Curve Selection	Unit's digit：AI1 curve selection 1：Curve 1（2 point，see P4-13 ～ P4-16） 2：Curve 2（2 point，see P4-18 ～ P4-21） 3：Curve 3（2 point，see P4-23 ～ P4-26） 4：Curve 4（4 point，see A6-00 ～ A6-07） 5：Curve 5（4 point，see A6-08 ～ A6-15） Tens place：AI2 curve selection，same as unit digit. Hundreds' digit：Reserved	321	☆
P4-34	A1 Less than Minimum Input Setup Selection	Unit's digit :AI1 less than minimum input setup selection 0: Minimum input setting 1: 0.0% Ten's digit：AI2 less than minimum input setup selection，same as AI1 Hundred's digit：AI3 less than minimum input setup selection，same as AI1	0	☆
P4-35	DI1 Delay Time	0.0s ～ 3600.0s	0.0s	★
P4-36	DI2 Delay Time	0.0s ～ 3600.0s	0.0s	★
P4-37	DI3 Delay Time	0.0s ～ 3600.0s	0.0s	★
P4-38	DI Terminal Valid Mode Selection 1	0：High level valid 1：Low level valid Unit's digit：DI1 Ten's digit：DI2 Hundred's digit：DI3 Thousand's digit：DI4 Ten thousand's digit：DI5	0	★
P5　Output Terminal (Changeable)				
P5-00	AO1 Terminal Output Mode Selection	0：Pulse output 1：Digital output	1	☆

Function code	Name	Setting Range	Factory Setting	Property
P5-01	AO1 Output Function Selection (Open Collector Output Terminal)	0: No output 1: Inverter in operation 2: Fault output(fault causing coast stop) 3: Frequency level detection FDT1 output 4: At the target frequency 5: Zero speed operation (no output at stop) 6: Motor overload pre-alarm 7: Inverter overload pre-alarm 8: Preset counter value reached 9: Designated counter value reached 10: Length reached 11: PLC circulation end 12: Total running time reached 13: Frequency limit	0	☆
P5-02	Relay1 Function Selection (TA、TB、TC)	14: Torque limit 15: RUN ready 16: AI1>AI2 17: Frequency upper limit reached 18: Frequency lower limit reached (Related to operation) 19: Undervoltage state output 20: Communication setup 21: Location Completed (Reserved) 22: Location Approach (Reserved) 23: Zero speed operation 2 (output at stop) 24: Total power-on time reached 25: Inspection level of FDT2 frequency 26: Frequency 1 reached output 27: Frequency 2 reached output	2	☆
P5-03	Reserved	28: Current 1 reached output 29: Current 2 reached output 30: Timing reached output 31: AI1 over limit 32: Off load 33: Reverse running 34: Zero current state 35: Module temperature limit reached 36: Output current over limit 37: Frequency lower limit reached (output valid when stop) 38: Alarm output 39: Motor over temperature pre-alarm 40: Running time reached	0	☆

Function code	Name	Setting Range	Factory Setting	Property
P5-04	AO2 Output Function Selection(Open Collector Output Terminal)	41: Fault output (fault causing coast stop, and no-output when under-voltage)	1	☆
P5-05	Relay2 Output Function Selection(TA1、TB1)	Reserved	4	☆
P5-06	AO1 Output Function Selection (Pulse Output)	0: Running frequency 1: Preset frequency 2: Output current 3: Output torque (Absolute value of torque) 4: Output power 5: Output voltage		
P5-07	AM Output Function Selection	6: Reserved 7: AI1 8: AI2 9: Reserved 10: Length 11: Counter value	0	☆
P5-08	FM Output Function Selection	12: Communication setup 13: Motor speed 14: Output current (100.0% means 1000.0A) 15: Output voltage (100.0% means 1000.0V) 16: Output torque (actual value of torque)	1	☆
P5-09	Reserved	Reserved	Reserved	-
P5-10	AM Zero Offset	-100.0% ~ +100.0%	0.00%	☆
P5-11	AM Gain	-10.00 ~ +10.00V	1.00V	☆
P5-12	FM Zero Offset	-100.0% ~ +100.0%	0.00%	☆
P5-13	FM Gain	-10.00 ~ +10.00V	1.00V	☆
P5-14	P5-14—P5-16	reserved	Reserved	-
P5-17	AO1 Output Delay Time	0.0s ~ 3600.0s	0.0s	☆
P5-18	RELAY1 Output Delay Time	0.0s ~ 3600.0s	0.0s	☆
P5-19	RELAY2 Output Delay Time	0.0s ~ 3600.0s	0.0s	☆

Function code	Name	Setting Range	Factory Setting	Property
P5-20	AO2 Output Delay Time	0.0s ~ 3600.0s	0.0s	☆
P5-21	FM Output Delay Time	0.0s ~ 3600.0s	0.0s	☆
P5-22	AO Output Terminal Valid State Selection	0：Positive logic 1： Negative logic Unit's digit：AO1 Ten's digit：Relay 1 Hundred's digit：Relay 2 Thousand's digit：AO2 Ten thousand's digit：reserved	0	☆
P5-23	Reserved	Reserved	Reserved	★
P6 Start/Stop Control				
P6-00	Start Mode	0：Direct start	0	
P6-01	P6-01—P6-02	Reserved	Reserved	-
P6-03	Start Frequency	0.00Hz ~ 10.00Hz	0.00Hz	☆
P6-04	Start Frequency Hold Time	0.0s ~ 100.0s	0.0s	★
P6-05	Start DC Braking Current /Pre-magnetizing Current	0% ~ 100%	0%	★
P6-06	Start DC Braking xtime /Pre-Magnetizing Time	0.0s ~ 100.0s	0.0s	★
P6-07	Acceleration/ Deceleration Mode	0：Straight acc. /dec. Time 1：S curve acc. /dec. mode A 2：S curve acc. /dec. mode B	0	★
P6-08	Time Proportion of S-curve Initial-segment	0.0% ~ (100.0%-P6-09)	30.00%	★
P6-09	Time Proportion of S-curve end Segment	0.0% ~ (100.0%-P6-08)	30.00%	★
P6-10	Stop Mode	0：Ramp stop 1：Coast stop	0	☆
P6-11	DC Braking Initial Frequency at Stop	0.00Hz ~MAX Frequency	0.00Hz	☆
P6-12	DC Braking Waiting Time at Stop	0.0s ~ 100.0s	0.0s	☆

Function code	Name	Setting Range	Factory Setting	Property
P6-13	DC Braking Current at Stop	0% ～ 100%	0%	☆
P6-14	DC Braking Time at Stop	0.0s ～ 100.0s	0.0s	☆
P6-15	Brake Utilization Ratio	0% ～ 100%	100%	☆
P6-16	**F6-16—F6-20**	Reserved	Reserved	-
P6-21	Demagnetizing Time	0.00~5.00s	1s	★
P7　Keypad and Display				
P7-01	RUN/REV Selection	0： REV invalid 1： Switching between FWD & REV rotation	0	★
P7-02	STOP/RESET Function	0：STOP/RES key is only valid when use the Keypad operation mode. 1：STOP/RES key is valid when use any operation mode.	1	☆
P7-03	Display Parameter of LED Main Screen during Running	0000 ～ PPPP Bit00: running frequency 1(Hz) Bit01: preset frequency (Hz) Bit02: DC Bus voltage (V) Bit03: output voltage (V) Bit04: output current (A) Bit05: output power (kW) Bit06: output torque (%) Bit07: DI input state Bit08: AM output state Bit09: AI1 voltage (V) Bit10: AI2 voltage (V) Bit11: reserved Bit12: counter Bit13: length Bit14: load speed display Bit15: PID setting	H.4015F	☆
P7-04	Reserved	0000 ～ PPPP Bit00： PID feedback Bit01： PLC phase Bit02： reserved Bit03： running frequency 2 (Hz) Bit04： Remaining running time Bit05： AI1 Pre-correction voltage (V) Bit06： AI2 Pre-correction voltage (V)	H.0000	☆

Function code	Name	Setting Range	Factory Setting	Property
		Bit07：reserved		
		Bit08：line speed		
		Bit09：current power-on time (Hour)		
		Bit10：current running time (Min)		
		Bit11：reserved		
		Bit12：communication setting		
		Bit13：reserved		
		Bit14：Main frequency X display (Hz)		
		Bit15：Auxiliary Y display (Hz)		
P7-05	LED Auxiliary Panel Display	0 ~ 9 0：Output Current (A) 1：DC Bus Voltage (V) 2：Load Speed 3：PID Setting 4：PID Feedback 5：DI Input State 6：DO Output State 7：AI1 Voltage 8：AI2 Voltage	0	☆
P7-06	Load Speed Display Coefficient	0.0001 ~ 6.5000	1	☆
P7-07	Inverter Module Heatsink Temperature	-20℃ ~ 120℃	-	●
P7-08	Rectifier Module Heatsink Temperature	-	-	●
P7-09	Accumulative Running Time	0h ~ 65535h	-	●
P7-10	Product ID	-	-	●
P7-11	Software Version No.	-	-	●
P7-12	Load Speed Display Decimal Places	Unit's digit：U0-14 number of decimal place 0：0 decimal place 1：1 decimal place 2：2 decimal place 3：3 decimal place	11	☆

Function code	Name	Setting Range	Factory Setting	Property
		Ten's digit：U0-19/U0-29 number of decimal place 1：1 decimal place 2：2 decimal place		
P7-13	Accumulative Power-on Time	Reserved	-	●
P7-14	Accumulative Power Consumption	Reserved	-	●
P8 Auxiliary Functions				
P8-00	JOG Running Frequency	0.00Hz ～MAX frequency	2.00Hz	☆
P8-01	JOG Acceleration Time	0.0s ～ 6500.0s	20.0s	☆
P8-02	JOG Deceleration Time	0.0s ～ 6500.0s	20.0s	☆
P8-03	Acceleration Time 2	0.0s ～ 6500.0s	20.0s	☆
P8-04	Deceleration Time 2	0.0s ～ 6500.0s	20.0s	☆
P8-05	Acceleration Time 3	0.0s ～ 6500.0s	20.0s	☆
P8-06	Deceleration Time 3	0.0s ～ 6500.0s	20.0s	☆
P8-07	Acceleration Time 4	0.0s ～ 6500.0s	20.00s	☆
P8-08	Deceleration Time 4	0.0s ～ 6500.0s	20.00s	☆
P8-09	Skip Frequency 1	0.00Hz ～MAX frequency	0.00Hz	☆
P8-10	Skip Frequency 2	0.00Hz ～MAX frequency	0.00Hz	☆
P8-11	Skip Frequency Amplitude	0.00Hz ～MAX frequency	0.00Hz	☆
P8-12	Dead Time of Forward & Reverse Rotations	0.0s ～ 3000.0s	0.0s	☆
P8-13	Reverse Rotation Control	0：Enabled 1：Disabled	1	☆
P8-14	Preset Frequency below Lower Limit Running Mode	0：Run with frequency lower limit 1：Stop 2：Zero speed running	0	☆
P8-15	Droop Control	0.00Hz ～ 10.00Hz	0.00Hz	☆

Function code	Name	Setting Range	Factory Setting	Property
P8-16	Accumulative Power-on Time Limit Setup	0h ～ 65000h	0h	☆
P8-17	Accumulative Running Time Limit Setup	0h ～ 65000h	0h	☆
P8-18	Start Protection Selection	0：No protect 1：protect	0	☆
P8-19	Frequency Detection Value (FDT1)	0.00Hz ～MAX frequency	50.00Hz	☆
P8-20	Frequency Detection Lag Value (FDT1)	0.0% ～ 100.0%（FDT1 level）	5.00%	☆
P8-21	Frequency Reached Detection Range	0.0% ～ 100.0%（MAX frequency）	0.00%	☆
P8-22	Acc./Dec. Skip Frequency Validity	0：invalid 1：valid	0	☆
P8-23	P8-23--P8-24	Reserved	Reserved	
P8-25	Acc. Time1 & Acc. Time 2 Frequency Switching Point	0.00Hz ～MAX frequency	0.00Hz	☆
P8-26	Dec. Time1 & Dec. Time 2 Frequency Switching Point	0.00Hz ～MAX frequency	0.00Hz	☆
P8-27	Terminal Jog Priority	0：invalid 1：valid	0	☆
P8-28	Frequency Detection Value (FDT2)	0.00Hz ～MAX frequency	50.00Hz	☆
P8-29	Frequency Detection Lag value(FDT2)	0.0% ～ 100.0%（PDT2 level）	5.00%	☆
P8-30	Specified Frequency Reached Detection Value1	0.00Hz ～MAX frequency	50.00Hz	☆
P8-31	Specified Frequency Arrival Detection Range 1	0.0% ～ 100.0%（MAX frequency）	0.00%	☆
P8-32	Specified Frequency Arrival Detection Value 2	0.00Hz ～MAX frequency	50.00Hz	☆
P8-33	Specified Frequency Arrival Detection Range 2	0.0% ～ 100.0%（MAX frequency）	0.00%	☆

Function code	Name	Setting Range	Factory Setting	Property
P8-34	Zero-current Detection Level	0.0% ~ 300.0% 100.0% motor rated current	5.00%	☆
P8-35	Zero-current Detection Delay Time	0.01s ~ 600.00s	0.10s	☆
P8-36	Output Current Overlimit Value	0.0%(No detection)	200.00%	☆
P8-37	Output Current Overlimit Detection Delay Time	0.00s ~ 600.00s	0.00s	☆
P8-38	Specified Current Arrival 1	0.0%~300.0%(Motor rated current)	100.00%	☆
P8-39	Specified Current Arrival Range1	0.0%~300.0%(Motor rated current)	0.00%	☆
P8-40	Specified Current Arrival 2	0.0%~300.0%(Motor rated current)	100.00%	☆
P8-41	Specified Current Arrival Range2	0.0%~300.0%(Motor rated current)	0.00%	☆
P8-42	Reserved	Reserved	Reserved	★
P8-43	Reserved	0：P8-44 setting 1：AI1 2：AI2 3：Potentiometer (Analog input range corresponds to P8-44)	0	★
P8-44	Reserved	Reserved	Reserved	★
P8-45	AI1 Input Voltage Protection Value Lower Limit	0.00V ~ P8-46	3.10V	☆
P8-46	AI1 Input Voltage Protection Value upper Limit	P8-45 ~ 10.00V	6.80V	☆
P8-47	Module Temperature Reached	-20℃ ~ 100℃	75℃	☆
P8-48	Cooling Fan Control	0：Cooling fan runs at running 1：Cooling fan runs after power-on	0	☆
P8-49	Reserved	Reserved		☆
P8-50	Reserved	Reserved		☆
P8-51	Reserved	Reserved		☆
P8-52	Reserved	Reserved		☆

Function code	Name	Setting Range	Factory Setting	Property
P8-53	Current Running Time limit	0.0 ～ 6500.0 Min	0.0Min	☆
P8-54	Output Power Correction Coefficient	0.00% ～ 200.0%	100.00%	☆
P9　Fault and Protection				
P9-00	Motor Overload Protection Selection	0：Disable 1：Enable	1	☆
P9-01	Motor Overload Protection Gain	0.20 ～ 10.00	1	☆
P9-02	Motor Overload Pre-alarm Coefficient	50% ～ 100%	80%	☆
P9-03	Over-voltage Stall Gain	0 ～ 100	30	☆
P9-04	Over-voltage Stall Protection Voltage	650V-800V	730V	☆
P9-05	Over Current Stall Gain	0 ～ 100	20	☆
P9-06	Over Current Stall Protection Current	100% ～ 200%	100%	☆
P9-07	Ground Short Circuit Protection upon Power-on	0：Invalid 1：valid	1	☆
P9-08	Working Voltage of Brake Unit	650 ～ 800V	680V	☆
P9-09	Fault Auto Reset Times	0 ～ 20	0	☆
P9-10	FAULT AO Action Selection During Fault auto Reset	0：Disable 1：Enable	0	☆
P9-11	Fault auto Reset Interval Time	0.1s ～ 100.0s	1.0s	☆
P9-12	Input Phase loss Protection Selection	Unit's digit：Input phase loss protection selection Ten's digit：Contactor conducting protection 0：Forbidden 1：Allowed	11	☆
P9-13	Output Phase loss Protection Selection	0：Forbidden 1：Allowed	1	☆

Function code	Name	Setting Range	Factory Setting	Property
P9-14	The 1ST Fault Type	0： No fault 1： reserved 2： Acceleration over current 3： Deceleration over current 4： Constant speed over current 5： Acceleration over voltage 6： Deceleration over voltage 7： Constant speed over voltage 8： Inrush resistor overload 9： Undervoltage fault	-	●
P9-15	The 2nd Fault Type	10： Inverter overload 11： Motor overload 12： Input phase loss 13： Output phase loss 14： Module overheating 15： External fault 16： Communication fault 17： Contactor fault 18： Current detection fault 19： Motor tuning fault 20： Reserved 21： EEPROM read & write fault 22： Inverter hardware fault		
P9-16	The 3rd (Latest) Fault Type	23： Short circuit to ground fault 24： Reserved 25： Reserved 26： Total running time arrival 27： User-defined fault 1 28： User-defined fault 2 29： Total power-on time reached 30： Load off fault 31： PID feedback loss during operation fault 40： Fast current limiting overtime fault 41： Motor switching fault 42： Reserved	-	●

Function code	Name	Setting Range	Factory Setting	Property
		43: Reserved 45: Reserved 51: Reserved 55: Reserved		
P9-17	The 3rd (Latest) Fault Frequency	-	-	●
P9-18	The 3rd Fault Current	-	-	●
P9-19	The 3rd Fault DC Bus Voltage	-	-	●
P9-20	The 3rd Fault Input Terminal State	-	-	●
P9-21	The 3rd Fault Output Terminal Sstate	-	-	●
P9-22	The 3rd Fault Inverter State	-	-	●
P9-23	The 3rd Fault Power-on Time	-	-	●
P9-24	The 3rd Fault Running Time	-	-	●
P9-27	The 2nd Fault Frequency	-	-	●
P9-28	The 2nd Fault Current	-	-	●
P9-29	The 2nd Fault DC Bus Voltage	-	-	●
P9-30	The 2nd Fault Input Terminal State	-	-	●
P9-31	The 2nd Fault Output Terminal State	-	-	●
P9-32	The 2nd Fault Inverter State	-	-	●
P9-33	The 2nd Fault Power-on Time	-	-	●
P9-34	The 2nd Fault Running Time	-	-	●
P9-35	P9-35—P9-36	Reserved	Reserved	
P9-37	The 1st Fault－Frequency	-	-	●
P9-38	The 1st Fault－Current	-	-	●

Function code	Name	Setting Range	Factory Setting	Property
P9-39	The 1st Fault DC Bus Voltage	-	-	●
P9-40	The 1st Fault Input Terminal State	-	-	●
P9-41	The 1st Fault Output Terminal State	-	-	●
P9-42	The 1st Fault Inverter State	-	-	●
P9-43	The 1st fault power-on time	-	-	●
P9-44	The 1st Fault – Running Time	-	-	●
P9-45	P9-45—P9-58	Reserved	Reserved	☆
P9-59	Mains Loss Ride through Enable	0 Invalid 1 Bus voltage constant control 2 Ramp to stop	0	★
P9-60	Mains Loss Ride through Recovery Voltage	80%~100%	85%	★
P9-61	Mains Loss Ride through Judgment Time	0.1~100s	0.5s	★
P9-62	Mains Loss Ride through DC Bus Voltage	60%~100%	80%	★
P9-63	Load-off Protection Selection	0：Invalid 1：Valid	0	☆
P9-64	Load-off Detection Level	0.0 ～ 100.0%	10.00%	☆
P9-65	Load-off Detection Time	0.0 ～ 60.0s	1.0s	☆
P9-67	Over Speed Detection Value	0.0%～ 50.0%（MAX frequency）	20.00%	☆
P9-68	Over Speed Detection Time	0.0s：No detection 0.1 ～ 60.0s	1.0s	☆
P9-69	Excessive Speed Deviation Detection Value	0.0%～ 50.0%（MAX frequency）	20.00%	☆
P9-70	Excessive Speed Deviation Detection Time	0.0s：NO detection 0.1 ～ 60.0s	5.0s	☆
P9-71	Reserved	Reserved	Reserved	☆
P9-72	Reserved	Reserved	Reserved	☆
P9-73	Mains Loss Ride through Action Deceleration Time	0~300.0s	20.0s	★

Function code	Name	Setting Range	Factory Setting	Property
PA Constant Pressure Water Supply				
PA-00	PID Reference Source	0：PA-01setting 1：AI1 2：AI2 3：Panel potentiometer 4：Communication setting	0	☆
PA-01	PID Reference Value	0.0Bar ~ 1000.0Bar	3.5Bar	☆
PA-02	PID Feedback Source	0：AI1 1：AI2 2：Communication 3：DC Bus voltage 4：Temperature	0	☆
PA-03	PID Direction	0：Direct 1：Inverse	0	☆
PA-04	Accelerate PID Proportional Gain Kp	0.0 ~ 6500.0	20	☆
PA-05	Accelerate PID Integral Time Ki	0.01s ~ 10.00s	0.80s	☆
PA-06	Deceleration PID Proportional Gain Kp	0.0 ~ 6500.0	200	☆
PA-07	Deceleration PID Integral Time Ki	0.01s ~ 10.00s	0.01s	☆
PA-08	Sensor Type	0：0~10V 1：4~20mA 2：0~5V 3：0.5V~4.5V	0	☆
PA-09	Sensor Range	0.0Bar ~ 25.0Bar	16.0Bar	☆
PA-10	Sensor Zero Correction	-10.0Bar ~ 10.0Bar	0.0Bar	☆
PA-11	Sensor Full Range Calibration	-10.0Bar ~ 10.0Bar	0.0Bar	☆
PA-12	Sleep Frequency	P0-14 ~ P0-12	20.0Hz	☆
PA-13	Sleep Delay Time	0.0s ~ 1200.0s	0.0s	☆
PA-14	Sleep Pressure Error	0% ~ 100%	8%	☆

Function code	Name	Setting Range	Factory Setting	Property
PA-15	Frequency Step of Sleep Deceleration	0.0Hz ~ 50.0Hz	5.0Hz	☆
PA-16	Sleep Deceleration Time Delay	60.0s ~ 600.0s	60.0s	☆
PA-17	Wake up Pressure	0% ~ 100%	80%	☆
PA-18	Pressure Upper Limit	0% ~ 300%	150%	☆
PA-19	Water Shortage-Time Detection	5.0s ~ 1200.0s	120.0s	☆
PA-20	Water Shortage Frequency Detection	0 ~ P0-12	45.0Hz	☆
PA-21	Water Shortage Current Detection	0% ~ 200%	40%	☆
PA-22	Water Shortage Pressure Detection	0% ~ 100%	20%	☆
PA-23	Automatic Restart Time for Water Shortage	1 ~ 2000Min	20Min	☆
PA-24	Automatic Restart Pressure for Water Shortage	0% ~ 100%	50%	☆
PA-25	Antifreeze Function	0：Disable 1：Enable	0	☆
PA-26	Antifreeze Operation Frequency	0Hz ~ P0-12Upper limiting	10.0Hz	☆
PA-27	Antifreeze Operation Time	60.0s ~ 3600.0s	60.0s	☆
PA-28	Antifreeze Operation Period	0Min ~ 1440Min	30Min	
Pb　Swing Frequency, Fixed Length and Counting				
Pb-00	Swing Setup Mode	0：Relative to the center frequency 1：Relative to the maximum frequency	0	☆
Pb-01	Swing Frequency Amplitude	0.0% ~ 100.0%	0.00%	☆
Pb-02	Jump Frequency Amplitude	0.0% ~ 50.0%	0.00%	☆

Function code	Name	Setting Range	Factory Setting	Property
Pb-03	Swing Frequency Period	0.1s ~ 3000.0s	10.0s	☆
Pb-04	Triangle Wave Rise Time Coef.	0.1% ~ 100.0%	50.00%	☆
Pb-05	Pb-05~Pb-07	Reserved	Reserved	☆
Pb-08	Preset Counting Value	1 ~ 65535	1000	☆
Pb-09	Designated Counting Value	1 ~ 65535	1000	☆
PC Multi-Speed Function & Simple PLC Function				
PC-00	Multi-reference 0	-100.0% ~ 100.0%	0.00%	☆
PC-01	Multi-reference 1	-100.0% ~ 100.0%	0.00%	☆
PC-02	Multi-reference 2	-100.0% ~ 100.0%	0.00%	☆
PC-03	Multi-reference 3	-100.0% ~ 100.0%	0.00%	☆
PC-04	Multi-reference 4	-100.0% ~ 100.0%	0.00%	☆
PC-05	Multi-reference 5	-100.0% ~ 100.0%	0.00%	☆
PC-06	Multi-reference 6	-100.0% ~ 100.0%	0.00%	☆
FC-07	Multi-reference 7	-100.0% ~ 100.0%	0.00%	☆
PC-08	Multi-reference 8	-100.0% ~ 100.0%	0.00%	☆
PC-09	Multi-reference 9	-100.0% ~ 100.0%	0.00%	☆
PC-10	Multi-reference 10	-100.0% ~ 100.0%	0.00%	☆
PC-11	Multi-reference 11	-100.0% ~ 100.0%	0.00%	☆
PC-12	Multi-reference 12	-100.0% ~ 100.0%	0.00%	☆
PC-13	Multi-reference 13	-100.0% ~ 100.0%	0.00%	☆
PC-14	Multi-reference 14	-100.0% ~ 100.0%	0.00%	☆
PC-15	Multi-reference 15	-100.0% ~ 100.0%	0.00%	☆
PC-16	PLC Running Mode	0：Single running, then stop 1：Single running, then stop and keep final value 2：Continuous operation	0	☆
PC-17	PLC Power off Save Selection	Unit's digit：Power off save selection 0：Power off without save 1：Power off with save Ten's digit：Stop save selection 0：Stop without save 1：Stop with save	0	☆

Function code	Name	Setting Range	Factory Setting	Property
PC-18	PLC Segment 0 Running Time	0.0s(h) ~ 6553.5s(h)	0.0s(h)	☆
PC-19	PLC Segment 0 Acc./Dec. Time	0 ~ 3	0	☆
PC-20	PLC Segment 1 Running Time	0.0s(h) ~ 6553.5s(h)	0.0s(h)	☆
PC-21	PLC Segment 1 Acc./Dec. Time	0 ~ 3	0	☆
PC-22	PLC Segment 2 Running Time	0.0s(h) ~ 6553.5s(h)	0.0s(h)	☆
PC-23	PLC Segment 2 Acc./Dec. Time	0 ~ 3	0	☆
PC-24	PLC Segment 3 Running Time	0.0s(h) ~ 6553.5s(h)	0.0s(h)	☆
PC-25	PLC Segment 3 Acc./Dec. Time	0 ~ 3	0	☆
PC-26	PLC Segment 4 Running Time	0.0s(h) ~ 6553.5s(h)	0.0s(h)	☆
PC-27	PLC Segment 4 Acc./Dec. Time	0 ~ 3	0	☆
PC-28	PLC Segment 5 Running Time	0.0s(h) ~ 6553.5s(h)	0.0s(h)	☆
PC-29	PLC Segment 5 Acc./Dec. Time	0 ~ 3	0	☆
PC-30	PLC Segment 6 Running Time	0.0s(h) ~ 6553.5s(h)	0.0s(h)	☆
PC-31	PLC Segment 6 Acc./Dec. Time	0 ~ 3	0	☆
PC-32	PLC Segment 7 Running Time	0.0s(h) ~ 6553.5s(h)	0.0s(h)	☆
PC-33	PLC Segment 7 Acc./Dec. Time	0 ~ 3	0	☆
PC-34	PLC Segment 8 Running Time	0.0s(h) ~ 6553.5s(h)	0.0s(h)	☆
PC-35	PLC Segment 8 Acc./Dec. Time	0 ~ 3	0	☆
PC-36	PLC Segment 9 Running Time	0.0s(h) ~ 6553.5s(h)	0.0s(h)	☆
PC-37	PLC Segment 9 Acc./Dec. Time	0 ~ 3	0	☆
PC-38	PLC Segment 10 Running Time	0.0s(h) ~ 6553.5s(h)	0.0s(h)	☆
PC-39	PLC Segment 10 Acc./Dec. Time	0 ~ 3	0	☆
PC-40	PLC Segment 11 Running Time	0.0s(h) ~ 6553.5s(h)	0.0sh)	☆
PC-41	PLC Segment 11 Acc./Dec. Time	0 ~ 3	0	☆

Function code	Name	Setting Range	Factory Setting	Property
PC-42	PLC Segment 12 Running Time	0.0s(h) ～ 6553.5s(h)	0.0s(h)	☆
PC-43	PLC Segment 12 Acc./Dec. Time	0 ～ 3	0	☆
PC-44	PLC Segment 13 Running Time	0.0s(h) ～ 6553.5s(h)	0.0s(h)	☆
PC-45	PLC Segment 13 Acc./Dec. Time	0 ～ 3	0	☆
PC-46	PLC Segment 14 Running Time	0.0s(h) ～ 6553.5s(h)	0.0s(h)	☆
PC-47	PLC Segment 14 Acc./Dec. Time	0 ～ 3	0	☆
PC-48	PLC Segment 15 Running Time	0.0s(h) ～ 6553.5s(h)	0.0s(h)	☆
PC-49	PLC Segment 15 Acc./Dec. Time	0 ～ 3	0	☆
PC-50	PLC Running Time Unit	0：seconds 1：hours	0	☆
PC-51	Multi-reference 0 Reference Mode	0：Function code PC-00 setting 1：AI1 2：AI2 3：Potentiometer 4：Reserved 5：PID 6：Pre-frequency（P0-08）changed by UP/DOWN	0	☆
PD **Communication Function**				
Pd-00	Communication Baud Rate	Unit's digit：MODBUS 0：300BPS 1：600BPS 2：1200BPS 3：2400BPS 4：4800BPS 5：9600BPS 6：19200BPS 7：38400BPS 8：57600BPS 9：115200BPS	5	☆

Function code	Name	Setting Range	Factory Setting	Property
Pd-01	MODBUS Data Format	0: No parity(8-N-2) 1: Even parity, 1 stop bit(8-E-1) 2: Uneven parity, 1 stop bit(8-O-1) 3: No parity (8-N-1) (MODBUS valid)	0	☆
Pd-02	Local Address	1-247, 0 is broadcast address	1	☆
Pd-03	MODBUS Response Delay	0ms ~ 20ms	2	☆
Pd-04	Communication Timeout	0.0: invalid, 0.1 ~ 60.0s	0	☆
Pd-05	Data Format Selection	Unit's digit: MODBUS 0: Non-standard MODBUS protocol 1: Standard MODBUS protocol	1	☆
Pd-06	Communication Current Resolution	0: 0.01A 1: 0.1A	0	☆
PE reserved				
PP Function Code Management				
PP-00	Reserved	0 ~ 65535	0	☆
PP-01	Parameter Initialization	0: No function 01: Restore to factory default value, motor parameter not included 02: Clear memory	0	★
PP-02	Function Parameter Group Display Attribute	Unit's digit: U group display selection 0: No display 1: display Ten's digit: A group display selection 0: No display 1: display	11	★
PP-03	Reserved	Reserved	Reserved	☆
PP-04	Function Codes Modification Attribute	0: Can be modified 1: Can not be modified	0	☆
A0 Torque Control				
A0-00	Speed/ torque Control Mode Selection	0: speed control 1: torque control	0	★

Function code	Name	Setting Range	Factory Setting	Property
A0-01	Torque Setup Source Selection in Torque Control Mode	0：digit setting 1(A0-03) 1：AI1 2：AI2 3：potentiometer 4：reserved 5：Communication setting 6：MIN(AI1,AI2) 7：MAX(AI1,AI2) (Full range of 1-7 options, corresponding to A0-03 digital Settings)	0	★
A0-02	Reserved	Reserved	Reserved	
A0-03	Torque Digital Setting in Torque Control Mode	-200.0% ～ 200.0%	150.00%	☆
A0-04	Reserved	Reserved	Reserved	
A0-05	Torque Control Forward Maximum Frequency	0.00Hz ～MAX frequency	50.00Hz	☆
A0-06	Torque Control Reverse Maximum Frequency	0.00Hz ～MAX frequency	50.00Hz	☆
A0-07	Torque Increase Filter Time	0.00s ～ 650.00s	0.00s	☆
A0-08	Torque Decrease Filter Time	0.00s ～ 650.00s	0.00s	☆
A1 ~A4 reserved				
A5 Control Optimization				
A5-00	DPWM Switching Frequency upper Limit	0.00Hz ～ 15.00Hz	8.00Hz	☆
A5-01	PWM Modulation Mode	0：Asynchronous modulation 1：Synchronous modulation	0	☆
A5-02	Dead Time Compensation Mode Selection	0：No compensation 1：Compensation mode 1	1	☆
A5-03	Random PWM Depth	0：Random PWM invalid 1 ～ 10：PWM carrier frequency random depth	0	☆
A5-04	Fast Current-limiting Enable	0：Disabled 1：Enabled	1	☆
A5-05	Current Detection Compensation	0 ～ 100	0	☆
A5-06	Under-voltage Point Setup	210~420V	Model dependant	☆

Function code	Name	Setting Range	Factory Setting	Property
A5-07	SVC Optimization Mode Selection	0：No action 1：optimization mode 1 2：optimization mode 2	2	☆
A5-08	Dead time Adjustment	100% ～ 200%	150%	★
A5-09	Over-voltage Point Setup	200.0V ～ 2500.0V	Model dependant	★

6.2 Monitoring parameters

Function code	Parameter name	MIN unit	Communication address
U0　Basic Monitoring Parameters			
U0-00	Running Frequency (Hz)	0.01Hz	7000H
U0-01	Preset Frequency (Hz)	0.01Hz	7001H
U0-02	DC Bus Voltage (V)	0.1V	7002H
U0-03	Output Voltage (V)	1V	7003H
U0-04	Output Current (A)	0.01A	7004H
U0-05	Output Power (kW)	0.1kW	7005H
U0-06	Output Torque (%)	0.10%	7006H
U0-07	DI Input Status	1	7007H
U0-08	DO Output Status	1	7008H
U0-09	AI1 Voltage (V)	0.01V	7009H
U0-10	AI2 Voltage（V）/ Current（mA）	0.01V/0.01mA	700AH
U0-11	Reserved	Reserved	Reserved
U0-12	Counter	1	700CH
U0-13	Reserved	1	700DH
U0-14	Load Speed Display	1	700EH
U0-15	PID Reference	1	700PH

Function code	Parameter name	MIN unit	Communication address
U0-16	PID Feedback	1	7010H
U0-17	PLC Phase	1	7011H
U0-18	Reserved	Reserved	Reserved
U0-19	Reserved	Reserved	Reserved
U0-20	Remaining Running Time	0.1Min	7014H
U0-21	AI1 Voltage before Calibration	0.001V	7015H
U0-22	AI2 Voltage(V)/Current(mA) before Calibration	0.001V/0.01mA	7016H
U0-23	U0-23-- U0-24	Reserved	Reserved
U0-24	Liner Speed	1m/Min	7018H
U0-25	Current Power-on Time	1Min	7019H
U0-26	Current Running Time	0.1Min	701AH
U0-27	Reserved	Reserved	Reserved
U0-28	Communication Setting Value	0.01%	701CH
U0-29	Reserved	Reserved	Reserved
U0-30	Main Frequency X	0.01Hz	701EH
U0-31	Auxiliary Frequency Y	0.01Hz	701PH
U0-32	View Value at Specified Memory Address	1	7020H
U0-33	U0-33—U0-38	Reserved	Reserved
U0-39	Target Voltage upon V/F Separation	1V	7027H
U0-40	Output Voltage upon V/F Separation	1V	7028H
U0-41	DI State Visual Display	1	7029H
U0-42	AO State Visual Display	1	702AH
U0-43	DI Function State Visual Display 1	1	702BH
U0-44	DI Function State Visual Display 2	1	702CH

Function code	Parameter name	MIN unit	Communication address
U0-45	Fault Information	1	702DH
U0-58	Z Signal Counter	1	703AH
U0-59	Preset Frequency (%)	0.01%	703BH
U0-60	Running Frequency (%)	0.01%	703CH
U0-61	Inverter State	1	703DH
U0-62	Reserved	Reserved	Reserved
U0-63	Transmit Value of Point-point Communication	0.01%	703PH
U0-64	Number of Slave	1	7040H
U0-65	Torque upper Limit	0.10%	7041H

Table 6-2 Monitoring parameters

6.3　Communication Address

M550 series Inverters support the Modbus communication protocol，The host computer can control, monitor and modify the function parameters through the communication protocol.

M550 series communication data can be divided into function code data, non functional code data. The non functional code data includes operation command, running state, running parameter, alarm information, etc.

6.3.1 M550 series function code data

Function code data is an important setting parameter for Inverter , as follows：

M550-series function code data	P group (read-write)	P0、P1、P2、P3、P4、P5、P6、P7、P8、P9、PA、PB、PC、PD、PE、PP
	A group (read-write)	A0、A1、A2、A5、A6、A7、A8、A9、AA、AB、AC、AD、AE、AP

Definition of the communication address as follows：

1、When reading function code data through communication:

For P0~PP and A0~AP group function code data, the higher 16 bits of communication address are functional group number, the lower 16 bits are function code in function group.

For example：

1) **P0-16** function parameters，Its communication address is F010H，the F0H means P0 group，10H represents the sequence number 16–in hexadecimal data format of the function code in the function group.

2) **AC-08** function parameters，its communication address is AC08，the ACH means AC group，08H represents the sequence number 8 in hexadecimal data format of the function code in the function group.

2. When writing function code data from communication, for P0~PP group data, the higher 16 bits of communication address are divided into 00~0P or P0~PP depending on whether it is written to EEPROM, and the lower 16 bits are function code in function group.

For example:

1) WRITE function code parameter **P0-16**

When not writing to EEPROM, its address is 0010H

When writing to EEPROM, its address is F010H

For A0~AP group data, the higher 16 bits of communication address are   divided into 40~4F or A0~AF depending on whether writing to EEPROM. The lower 16 bits are function code in function group.

For example:

2) WRITE function code parameter **AC-08**

When not writing to EEPROM, its address is 4C08H

When writing to EEPROM, its address is AC08H

6.3.2   Non-functional code data

M550 Non-functional code data	Status data (read only)	U group monitor parameter、inverter fault description、inverter running statue
	Control parameter （write only）	Control command、communication setting、digit output terminal control、analog output AO1 control、analog output AO2 control、high speed pulse (PMP) output control、parameter initialization

1、Status Data

State data divided into U group monitor parameter、Inverter fault description、Inverter running state.

1) U Group Monitor Parameter

The details descriptions of the U group data please reference to the 5th & 6th chapter, its communication address is defined as follows：

U0~UF，The higher 16 bits of communication address are 70~7F, and the lower 16 bits are the sequence number of the monitoring parameters in the group，

For example：

U0-11，its communication address is 700BH

2) Inverter Fault Description

When reading inverter fault description by- communication, the communication address is fixed to 8000H. By reading the address data, the host computer can get the fault code of the current Inverter. Please reference to the function code definition in the 5th chapter to get the description of the fault code.

3) Inverter Running State

When reading the Inverter running state by communication, the communication address is fixed to 3000H, and the host computer can read the address data by reading the address data, and it can get the information of the current Inverter running state. It is defined as follows:

Inverter running status communication address	definition
3000H	1：Forward running
	2：Reverse running
	3：Stop

2、Control Parameter

Control parameters include control command、communication setting value、digit output terminal control、analog output AM control、analog output FM control、parameter initialization.

1) Control Command

When **P0-02**(command source) is set as 2：During communication control, the host computer can control the start and stop of the Inverter by writing to this fixed communication address 2000H. The control commands are defined as follows:

Control order communication address	Order function
2000H	1：Forward running
	2：Reverse running
	3：Forward jog
	4：Reverse jog
	5：Coast stop
	6：Ramp to stop
	7：Fault reset

2) Communication Setting Value

Communication set values for frequency source, torque upper limit source, V/F separation voltage source, PID reference source and PID feedback source. This value sets the scale factor for these parameters. The communication address is 1000H, the data range is -10000~10000, corresponding to the value -100.00%~100.00%.

3) Digital Output Terminal Control

The communication address is fixed as 2001H: the host computer can control the digital output terminal of the Inverter by writing to this communication address. It is defined as follows:

Digit output terminal control communication address	Order contents
2001H	BIT0：AO1 output control
	BIT1：AO2 output control
	BIT2：RELAY1 output control
	BIT3：RELAY2 output control
	BIT4：FMR output control
	BIT5：VDO1
	BIT6：VDO2
	BIT7：VDO3
	BIT8：VDO4
	BIT9：VDO5

4) Analog output terminals AM、FM

When the function of the analog output terminal AM, FM is selected as 12: during communication control, the host computer can control the analog terminal of the Inverter by writing to this communication address. It is defined as follows:

Output control communication address		Order contents
AO1	2002H	0 ～ 7FFF represents 0%～ 100%
AO2	2003H	

5）Parameter initialization

Host computer can initialize the parameters of the frequency inverter by using this function.

If PP-00 (user password) is not 0, the password verification needs to be done through communication first. If successful, the host computer can finish the initialization operation in 30 seconds.

The communication address of the user password verification is 1F00H, if the correct user password is written to the address, the password verification is done. The communication address of initialization is 1F01H, and the data content is defined as follows:

Parameter initial communication address	Order contents
1F01H	1：Recover the factory parameters
	2：Clear the record information
	4：Recover the User backup parameters
	501：Recover the user current parameters

Read-write function code parameters (some codes could not to be changed, used by the factory only)

6.3.3 Function code parameters address marking rules

The function code group number and label parameter address rules:

Higher byte： F0~FF(P group)、A0~AP(A group)、70~7F(U group)

Lower byte：00~FF

For example：If choose **P3-12** ,the access address of function code is 0xF30C；

Note：

1) PP group：Neither read nor write；

2) U group：Read only.

Some parameters can not to be changed when the Inverter is running; Some parameters can not be changed in all cases. When changing the function code parameters , pay attention to the parameters range, unit, and related instructions.

Function code group	Communication access address	Communication access address in RAM
P0 ～ PE group	0xF000 ～ 0xFEFF	0x0000 ～ 0x0EFF
A0 ～ AC group	0xA000 ～ 0xACFF	0x4000 ～ 0x4CFF
U0 group	0x7000 ～ 0x70FF	

Note: It will reduce the service life of EEPROM if it is stored frequently. Therefore, some function codes do not need to be stored in the communication mode, just change the value in RAM.

1) For parameters in P group, changing its higher 4 bits of address from F to 0.

2) For parameters in A group, changing its higher 4 bits of address from A to 4.

The related function code address show as follows：

Higher byte： 00~0F(P group)、40~4F(A group)

Lower byte： 00~FF

For example： function code **P3-12 is** not stored into EEPROM，the address is 030C；

Function code A0-05 is not stored into EEPROM, the address is 4005；

This address of RAM means it can be written rather read.

For all the parameters, the command code 07H can be used to support this function.

1. Stop/Run Parameters:

Note:

1)　The set value of the communication is the percentage of the relative value，10000 means 100.00%，-10000 means -100.00%。

2)　For the data related to frequency, the data is the percentage of the maximum frequency (**P0-10**). For the torque data, the data is the percentage of **P2-10** and **A2-48** (digital setting of the torque upper limit , corresponding to the first, second motor).

2、Control command to Inverter：　(Write only)

Command address	Command function
1000H	Input frequency
Command address	Command function
2000H	0001：Forward running
	0002：Reverse running
	0003：Forward jog
	0004：Reverse jog
	0005：Coast stop
	0006：Ramp to stop
	0007：Fault reset

3、Read the state of the Inverter：　(Read only)

State character address	State character function
3000H	0001：Forward running
	0002：Reverse running
	0003：Stop

4、Parameter lock password verification ：　(If return value is 8888H, it means the verification is successful)

Password address	Input contents
1F00H	*****

5、Digit output terminal control： (Write only)

Command address	Command contents
2001H	BIT0：AO2 output control BIT1：reserved BIT2：RELAY1 output control BIT3：RELAY2 output control BIT4：A01 output control BIT5：VDO1 BIT6：VDO2 BIT7：VDO3 BIT8：VDO4 BIT9：VDO5

6、Analog output AM control： (Write only)

Command address	Command contents
2002H	0 ～ 7FFF means 0%～ 100%

7、Analog output FM control： (Write only)

Command address	Command contents
2003H	0 ～ 7FFF means 0%～ 100%

8、Inverter fault description：

Inverter fault address	Inverter fault information	
8000H	0000：No fault 0001：Reserved 0002：Accelerate over current 0003：Decelerate over current 0004：Constant speed over current 0005：Accelerate over voltage 0006：Decelerate over voltage 0007：Constant speed over voltage 0008：Inrush resistor overload fault 0009：Undervoltage fault 000A：Inverter overload	0015：Parameter read-write abnormal 0016：Inverter hardware fault 0017：Motor short circuit to ground fault 0018：Reserved 0019：Reserved 001A：Running time reached 001B：User defined fault 1 001C：User defined fault 2 001D：Power-on time reached 001E：Load off 001F：PID feedback loss during running

	000B：Motor overload	0028：Fast current limiting fault
	000C：Input phase loss	0029：Fault of switching motor during running
	000D：Output phase loss	
	000E：Module overheating	002A：Excessive velocity deviation
	000F：External fault	002B：Reserved
	0010：Communication abnormal	002D：Reserved
		005A：Reserved
	0011：Contactor abnormal	005B：Reserved
	0012：Current detecting fault	005C：Reserved
	0013：Motor tuning fault	005E：Reserved
	0014：Reserved	

Chapter 7

Maintenance and Troubleshooting

Chapter 7   Maintenance and Troubleshooting

7.1 Routine Repair and Maintenance

7.1.1 Routine Maintenance

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

Routine maintenance involves checking:

1) Whether the motor sounds abnormally during running

2) Whether the motor vibrates excessively during running

3) Whether the installation environment of the Inverter changes

4) Whether the Inverter's cooling fan works normally

5) Whether the Inverter overheats

Routine cleaning involves:

1)Keep the Inverter clean all the time.

2) Remove the dust, especially metal powder on the surface of the Inverter, to prevent the dust from entering the Inverter.

3) Clear the oil stain on the cooling fan of the Inverter.

7.1.2 Periodic Inspection

Perform periodic inspection in places where inspection is difficult.

Periodic inspection involves:

1) Check and clean the air duct periodically

2) Check whether the screws become loose

3) Check whether the Inverter is corroded

4) Check whether the wiring terminals show signs of arcing.

5) Main circuit insulation test

Note: Before measuring the insulating resistance with megameter (500V DC megameter recommended), disconnected the main circuit from the Inverter. Do not use the insulating resistance meter to test the insulation of the control circuit. The high voltage test need not be performed again because it has been completed before delivery.

7.1.3 Replacement of Vulnerable Components

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

Component	Service Life
Fan	2 to 3 years
Electrolytic capacitor	4 to 5 years

Note: Standard replacement time is under the following conditions, Users can determine the replacement period according to the running time.

◆ Ambient temperature: the annual average temperature is about 30 ° C

◆ Load rate: less than 80%

◆ Running rate: less than 20 hours per day

1) Cooling Fan

● Possible damage reason: Bearing worn, Blade aging

● Judging Criteria: Whether there is crack on the blade, whether there is abnormal vibration noise upon startup.

2) Filter electrolytic capacitor

● Possible damage reason: Input power supply in poor quality, high ambient temperature, frequent load jumping, electrolytic aging.

● Judging Criteria: Whether there is liquid leakage, whether the safe valve has projected, measure the static capacitance, measure the insulating resistance.

7.1.4 Storage of the Inverter

After purchasing Inverter, for temporary storage and long-term storage, pay attention to the following two aspects:

1) Pack the Inverter with the original box provided by us.

2) Long-term storage degrades the electrolytic capacitor. Thus, the Inverter must be energized once every 2 years, each time lasting at least 5 hours. The input voltage must be increased slowly to the rated value with the regulator.

7.1.5 Warranty Agreement

1) Free warranty only applies to the Inverter itself.

2) The machine damage caused by the user's failure to comply with the provisions in the user manual.

3) Damage caused by fire, flood, abnormal voltage, etc.4) Damage caused by abnormal functions of the frequency converter.5) The service fee shall be calculated according to the unified standard of the manufacturer.

7.2 Faults and Solutions

M550 Series Inverter provide a total Fault information and protective functions. After a fault occurs, the Inverter implements the protection function, and displays the fault code on the operation panel (if the operation panel is available). The corresponding fault types and common solutions for faults are shown in the following table. The table lists only for reference, please do

not repair, transform, if can not rule out the fault, please contact our company or agents for technical support.

Figure 7-1 Error and Solutions of Inverters

Fault Name	Display	Possible Causes	Solutions
Inverter Unit Protection	Err01	1. The output circuit is grounded or short circuited 2. The connecting cable of the motor is too long 3. The module overheats 4. The internal connections become loose 5. The main control board is faulty 6. The drive board is faulty 7. The Inverter module is faulty	1. Eliminate external faults 2. Install a reactor or an output filter 3. Check the air filter and the cooling fan 4. Connect all cables properly 5. Contact for Technical support 6. Contact for Technical support 7. Contact for Technical support
Overcurrent During Acceleration	Err02	1. The output circuit is grounded or short circuited 2. The control method is vector and no parameter identification 3. The acceleration time is too short 4. Manual torque boost or V/F curve is not appropriate 5. The voltage is too low 6. The startup operation is performed on the rotating motor. 7. A sudden load is added during acceleration 8. The Inverter model is of too small power class	1. Eliminate external faults 2. Perform the motor auto-tuning 3. Increase the acceleration time 4. Adjust the manual torque boost or V/F curve 5. Adjust the voltage to normal range 6. Select rotational speed tracking restart or start the motor after it stops 7. Remove the added load. 8. Select and Inverter of higher power class

Overcurrent During Deceleration	Err03	1. The output circuit is grounded or short circuited 2. The control method is vector and no parameter identification 3. The deceleration time is too short 4. The voltage is too low 5. A sudden load is added during deceleration 6. The braking unit and braking resistor are not installed	1. Eliminate external faults 2. Perform the motor auto-tuning 3. Increase the deceleration time 4. Adjust the voltage to normal range 5. Remove the added load. 6. Install the braking unit and braking resistor
Overcurrent at Constant Speed	Err04	1. The output circuit is grounded or short circuited 2. The control method is vector and no parameter identification 3. The voltage is too low 4. A sudden load is added during deceleration 5.The Inverter model is of too small power class	1. Eliminate external faults 2. Perform the motor auto-tuning 3. Adjust the voltage to normal range 4. Remove the added load. 5. Select and Inverter of higher power class
Overvoltage during Acceleration	Err05	1. The input voltage is too high 2. An external force drives the motor during acceleration 3. The acceleration time is too short 4. The braking unit and braking resistor are not installed	1. Adjust the voltage to normal range 2. Cancel the external force or install a braking resistor 3. Increase the acceleration time 4. Install the braking unit and braking resistor
Overvoltage during Deceleration	Err06	1. The input voltage is too high 2. An external force drives the motor during deceleration 3. The deceleration time is too short 4. The braking unit and braking resistor are not installed	1. Adjust the voltage to normal range 2. Cancel the external force or install a braking resistor 3. Increase the deceleration time 4. Install the braking unit and braking resistor

Overvoltage at Constant Speed	Err07	1. The input voltage is too high 2. An external force drives the motor during running	1. Adjust the voltage to normal range 2. Cancel the external force or install a braking resistor
Control Power Supply Fault	Err08	1. The input voltage is not within the allowable range	1. Adjust the voltage to normal range
Undervoltage	Err09	1. Instantaneous power failure 2. The Inverter's input voltage is not within the allowable range 3. The bus voltage is abnormal 4. The rectifier bridge and buffer resistor are faulty 5. The drive board is faulty 6. The main control board is faulty	1. Reset the fault 2. Adjust the voltage to normal range 3. Contact for Technical support 4. Contact for Technical support 5. Contact for Technical support 6. Contact for Technical support
Inverter Overload	Err10	1. The load is too heavy or locked-rotor occurs on the motor 2. The Inverter model is of too small power class	1. Reduce the load and check the motor and mechanical condition 2. Select an Inverter of higher power class
Motor Overload	Err11	1. P9-01 is set improperly 2. The load is too heavy or locked-rotor occurs on the motor 3. The Inverter model is of too small power class	1. Set P9-01 correctly 2. Reduce the load and check the motor and mechanical condition 3. Select an Inverter of higher power class
Power Input Phase Loss	Err12	1. The three-phase power input is abnormal 2. The drive board is faulty 3. The lightening board is faulty 4. The main control board is faulty	1. Eliminate external faults 2. Contact for Technical support 3. Contact for Technical support 4. Contact for Technical support

Power Output Phase Loss	Err13	1. The cable connecting the Inverter and the motor is faulty 2. The Inverter's three-phase outputs are unbalanced when the motor is running 3. The drive board is faulty 4. The module is faulty	1. Eliminate external faults 2. Check whether the motor three-phase winding is normal 3. Contact for Technical support 4. Contact for Technical support
Module Overheat	Err14	1. The ambient temperature is too high 2. The air filter is blocked 3. The fan is damaged 4. The thermally sensitive resistor of the module is damaged 5. The Inverter module is damaged	1. Lower the ambient temperature 2. Clean the air filter 3. Replace the damaged fan 4. Replace the damaged thermally sensitive resistor 5. Replace the Inverter module
External Equipment Fault	Err15	1. External fault signal is input via DI 2. External fault signal is input via virtual I/O	1. Reset the operation 2. Reset the operation
Communication Fault	Err16	1. The host computer is in abnormal state 2. The communication cable is faulty 3. P0-28 is set improperly 4. THe communication parameters in group PD are set improperly	1. Check the cabling of host computer 2. Check the communication cabling 3. Set the communication expansion card typecorrectly 4. Set the communication parameters properly
Contactor Fault	Err17	1. The drive board and power supply are faulty 2. The contactors is faulty	1. Replace the faulty drive board or power supply board 2. Replace the faulty contactor
Current Detection fault	Err18	1. The HALL device is faulty 2. The drive board is faulty	1. Replace the faulty HALL device 2. Replace the faulty drive board
Motor Auto-tuning Fault	Err19	1. The motor parameters are not set according to the nameplate 2. The motor auto-tunning times out	1. Set the motor parameters according to the nameplate properly 2. Check the cable connecting the Inverter and the motor

EEPROM Write Fault	Err21	1. The EEPROM chip is damaged	1. Replace the main control board
Inverter Hardware Fault	Err22	1、Overvoltage 2、Overcurrent	1. Solve as overvoltage fault 2. Solve as overcurrent fault
Short Circuit to Ground	Err23	1. The motor is short circuited to the ground	1. Replace the cable or motor
Accumulative Running Time Reached	Err26	1. The accumulative running time reaches the setting value	1. Clear the record through the parameter initialization function
Accumulative Power-on Time Reached	Err29	1. The accumulative power-on time reaches the setting value	1. Clear the record through the parameter initialization function
Load Becoming 0	Err30	1. The Inverter running current is lower than P9-64	1. Check that the load is disconnected or the setting of P9-64 and P9-65 is correct
PID Feedback Lost during Running	Err31	1. The PID feedback is lower than the setting of PA-26	1. Check the PID feedback signal or set PA-26 to a proper value
Pulse-by-Pulse Current Limit Fault	Err40	1. The load is too heavy or locked-rotor occurs on the motor 2. The Inverter model is of too small power class	1. Reduce the load and check the motor and mechanical condition 2. Select an Inverter of higher power class
Motor Switchover Fault during Running	Err41	1. Change the selection of the motor via terminal during running of the Inverter	1. Perform motor switchover after the Inverter stops
Excessive Speed Deviation Fault	Err42	1. Excessive Speed deviation Inspection parameter P6.69, P6.70 Setting is not correct 2. Didn't proceed Parameter self-learning	1. Correctly Setting Parameter P6.69, P6.70. 2. Parameter self-learning

7.3 Common Faults and Solutions

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

Table 7-2 Troubleshooting to common faults of the Inverter

SN	Fault	Possible Causes	Solutions
1	There is no Display at Power-on	1. There is no power supply to the Inverter or the power input to the Inverter is too low 2. The power supply of the switch on the drive board of the Inverter is faulty 3. The rectifier bridge is damaged 4. The buffer resistor is faulty 5. The control board or the operation panel is faulty 6. The cable connecting the control board and the drive board and the operation panel breaks	1. Check the power supply 2. Check the bus voltage 3. Re-connect the 10-core and 26-core cables 4~6. Contact us for technical support
2	"H50.00" is Displayed at Power-on	1. The cable between the drive board and the control board is in poor contact 2. Related components on the control board are damaged 3. The motor or the motor cable is short circuited to the ground 4. The HALL device is faulty 5. The power input to the Inverter is too low	1. Re-connect the 10-core and 26-core cables 2~5. Contact us for technical support
3	"Err23" is Displayed at Power-on	1. The motor or the motor output cable is short circuited to the ground 2. The Inverter is damaged	1. Measure the insulation of the motor and the output cable with a megger 2. Contact us for technical support

4	The Inverter Display is Normal upon power-on. But the "H50.00" Displayed after Running and Stops Immediately.	1. The cooling fan is damaged or locked-rotor occurs 2. The external control terminal cable is short circuited	1. Replace the damaged fan 2. Eliminate external fault
5	Err14 (Module Overheat) Fault is Reported Frequently	1. The setting of carrier frequency is too high 2. The cooling fan is damaged or the air filter is blocked 3. Components inside the Inverter are damaged (thermocouple or other)	1. Reduce the carrier frequency (P0-15) 2. Replace the fan and clean the air filter 3. Contact us for technical support
6	The Motor does not Rotate after the Inverter Runs	1. Check the motor and the motor cables 2. The Inverter parameters are set improperly (Motor parameters) 3. The cable between the drive board and the control board is in poor contact 4. The drive board is faulty	1. Ensure the cable between the Inverter and the motor is normal 2. Replace the motor or clear mechanical faults 3. Check the re-set motor parameters 4. Contact us for technical support
7	The DI Terminals are Disabled	1. The parameters are set incorrectly 2. The external signal is incorrect 3. The jumper bar across OP and +24V becomes loose 4. The control board is faulty	1. Check and reset the parameters in group P4 2. Re-connect the external signal cables 3. Re-confirm the jumper bar across OP and +24V 4. Contact us for technical support
8	The Motor Speed is always Low in Closed Loop Vector Control Mode	1、 The inverter encoder is faulty 2、 The encoder is connected to wrong wire or poor contact 3、 The PG card is faulty 4、 The drive board is faulty	1、 Replace the code board and reconfirm the cable connection 2、 Replace the PG card 3~4、 Contact us for technical support

9	The Inverter Reports Overcurrent and Overvoltage Frequently	1. The motor parameters are set improperly 2. The acceleration/deceleration time is improper 3. The load fluctuates	1. Re-set motor parameters or re-perform the motor auto-tunning 2. Set properacceleration/deceleration time 3. Contact us for technical support
10	Err17 is Reported upon Power-on or Running	The soft startup contactor is not picked up	1. Check whether the contactor cable is loose 2. Check whether the contactor is faulty 3. Check whether 24V power supply of the contactor is faulty 4. Contact us for technical support

QUALIFIED CERTIFICATE

This product has gone through rigorous quality control tests at factory.

CHECKER	
APPROVAL MARK	