Preface

First of all, thank you for buying 631 series frequency inverter!

631 series is a general high performance current vector frequency inverter controlling AC asynchronous motor, which can be used to drive textile, paper making, wire drawing, machine tools, packaging, food, fan, water pump and various automatic production equipment.

This manual introduces the functions and characteristics of 631 series frequency converters, including product selection, parameter setting, operation and debugging, maintenance and inspection, etc. Please be sure to read this manual carefully before use. Equipment manufacturers please send this manual along with the equipment to end users for subsequent reference.

Matters needing attention
◆ In order to illustrate the details of the product, the legend in this manual is sometimes the state of removing the cover or safety cover. ◆ When using this product, please be sure to install the shell or cover according to the provisions, and operate according to the contents of the manual. ◆ The illustrations in this manual are for illustration only and may differ from the products you ordered. ◆ The company is committed to continuous improvement of products, features will continue to upgrade, the information provided is subject to change without prior notice. ◆ If you have any problems, please contact our regional agents or directly contact our customer service center.

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Chapter 1 Safety Precautions

Safety Definitions: In this manual, safety precautions are classified into the following two categories:

 Hazard: A condition that may result in serious injury or even death due to a hazard caused by failure to perform operations as required.

 Caution: Risk of moderate or minor injury and equipment damage due to failure to operate as required.

Please read this chapter carefully when installing, debugging, and maintaining the system, and be sure to follow the safety precautions specified in this chapter. Any injury or loss caused by illegal operation has nothing to do with the Company.

1.1 Safety Matters

Using the phase	Security level	The matters
Before the installation	 dangerous	➢ Do not install when water enters the package, parts are missing, or parts are damaged. ➢ If the label on the outer package is inconsistent with the name of the object, please do not install it!
	 Pay attention to	➢ Handling should be handled gently, otherwise there is the risk of damage to the equipment! ➢ Do not use damaged drives or missing drives, there is a risk of injury! ➢ Do not touch the components of the control system with your hands, otherwise there is a risk of electrostatic damage!
When installation,	 dangerous	➢ Please install on metal and other flame retardant objects, away from combustible materials, otherwise it may cause fire alarm!
	 Pay attention to	➢ Do not let the lead head or screw fall into the drive, otherwise it will cause drive damage! ➢ Install the driver in a place with less vibration and out of direct sunlight. ➢ When placing the driver in an airtight cabinet or space, pay attention to the installation gap to ensure heat dissipation.
When wiring	 dangerous	➢ The instructions of this manual must be followed and used by professional electrical engineers, otherwise unexpected dangers may occur! ➢ There must be a circuit breaker between the driver and the power supply, otherwise there may be a fire! ➢ Please confirm that the power supply is in zero energy state before wiring, otherwise there is the danger of electric shock! ➢ Please correctly ground the driver according to the standard, otherwise

Using the phase	Security level	The matters
		there is the danger of electric shock!
	 Pay attention to	➢ Input power should never be connected to the output terminals (U, V, W) of the drive.Pay attention to the mark of the terminal, do not connect the wrong line!Otherwise cause drive damage! ➢ The brake resistance should never be directly connected to the terminals of DC bus + and -.Otherwise it could cause a fire! ➢ For the diameter of the conducting wire, refer to the manual.Otherwise there could be an accident! ➢ Do not remove the cable inside the drive; otherwise, the drive may be damaged.
Before power on	 dangerous	➢ Ensure that the voltage level of the input power supply is consistent with the rated voltage level of the driver.Power input terminals (R, S, T) and output terminals (U, V, W) are correctly connected.And pay attention to check whether there is a short circuit in the peripheral circuit connected with the driver, whether the connected line is tightened, otherwise the driver damage! ➢ No part of the driver is required to be subjected to a voltage test, which has been performed on the product before it leaves the factory.Otherwise it may cause an accident!
	 Pay attention to	➢ The driver must be covered before powering on, otherwise it may cause electric shock! ➢ All peripherals must be connected in accordance with the instructions in this manual, and the circuit connection method provided in this manual must be correctly connected.Otherwise it may cause an accident!
After power on	 dangerous	➢ Do not open the cover after powering on, otherwise there may be electric shock danger! ➢ If the indicator is off or the keyboard is not displayed after power-on, turn off the power switch immediately. Do not touch any input and output terminals of the driver. Otherwise, electric shock may occur.
	 Pay attention to	➢ If you need to identify the parameters, please exclude the possible danger of injury when the motor is rotating! ➢ Do not change the parameters of the driver manufacturer. Otherwise, the device may be damaged.
In the operation of the	 dangerous	➢ Do not touch the heat dissipation fan, radiator or discharge resistor to test the temperature. Otherwise, burns may occur. ➢ Non-professional and technical personnel do not detect signals during operation. Otherwise, personal injury or equipment damage may be caused.
	 Pay	➢ When the driver is running, do not let anything fall into the device.

Using the phase	Security level	The matters
	attention to	Otherwise, the device may be damaged. ➢ Do not use contactor on/off method to control the driver start/stop, otherwise it will cause equipment damage!
When the maintenance	 dangerous	➢ Do not repair and maintain the equipment with power on, otherwise there will be the danger of electric shock! ➢ Cut off the input power for 10 minutes before carrying out maintenance and repair of the driver, otherwise the residual charge on the capacitor will cause harm to people! ➢ Do not repair or maintain the driver without professional training, otherwise personal injury or equipment damage will be caused! ➢ All pluggable plug-ins must be plugged in under power failure! ➢ You must set and check the parameters after replacing the driver.
	 Pay attention to	➢ Make sure that the motor is disconnected from the driver before performing maintenance work to prevent the motor from returning power to the driver due to unexpected rotation.

1.2 Precautions

- **Use of contactor**

  If the inverter power input side is equipped with a contactor, please do not make the contactor frequently ON and OFF operation, the interval time through the contactor ON/OFF should not be less than one hour, frequent charging and discharging will reduce the service life of the capacitor in the inverter.

  If there is a contactor between the output terminal of the inverter (U, V, W) and the motor, it should be ensured that the on-off operation is carried out when there is no output of the inverter, otherwise the inverter will be damaged.

- **Lightning shock protection**

  Although this series of frequency converters are equipped with lightning overcurrent protection device, which has certain self-protection ability for inductive lightning, customers should also install lightning protection device at the front end of the frequency converters for frequent lightning.

- **Altitude and derating use**

  In the area where the altitude is more than 1000m, the heat dissipation effect of the frequency converter deteriorates due to the thin air, so it is necessary to derate.Please consult our company for technical advice.

- **The input power**

  The input power supply of the frequency converter shall not exceed the working voltage range specified in this manual. If necessary, please use the boost or step-down device to change the power supply to the specified voltage range.

  Do not change the three-phase inverter to two-phase input, otherwise it will lead to failure or inverter damage.

- **The output filter**

  When the cable length between the frequency converter and the motor exceeds 100 meters, it is recommended to choose the output AC reactor to avoid the frequency converter failure caused by over-current caused by excessive distributed capacitance.The output filter can be selected according to site requirements.

  The output of the frequency converter is PWM wave. Please do not install the capacitance or voltage sensitive resistor for lightning protection to improve the power factor on the output side, otherwise it is easy to cause the instantaneous overcurrent of the frequency converter or even damage the frequency converter.

- **About motor heating and noise**

  Because the output voltage of the inverter is PWM wave, which contains certain harmonics, the temperature rise, noise and vibration of the motor will increase slightly compared with the power frequency operation.

- **Scrap of frequency converter**

  The electrolytic capacitor of the main circuit and the electrolytic capacitor on the printed board may explode when burned, and the plastic parts will produce toxic gas when burned.Please dispose of it as industrial waste.

- **Scope of application**

  This product is not designed and manufactured for use in life-threatening situations. If you want to use this product in manned mobile, medical, aerospace, nuclear equipment or other special purposes, please contact us.

  This product is produced under strict quality control. If it is used in equipment that may cause serious accidents or losses due to frequency converter failure, please configure safety devices.

Chapter II Product Information

2.1 Nameplate and model description

Nameplate:

Figure 2-1 nameplate

Model Description:

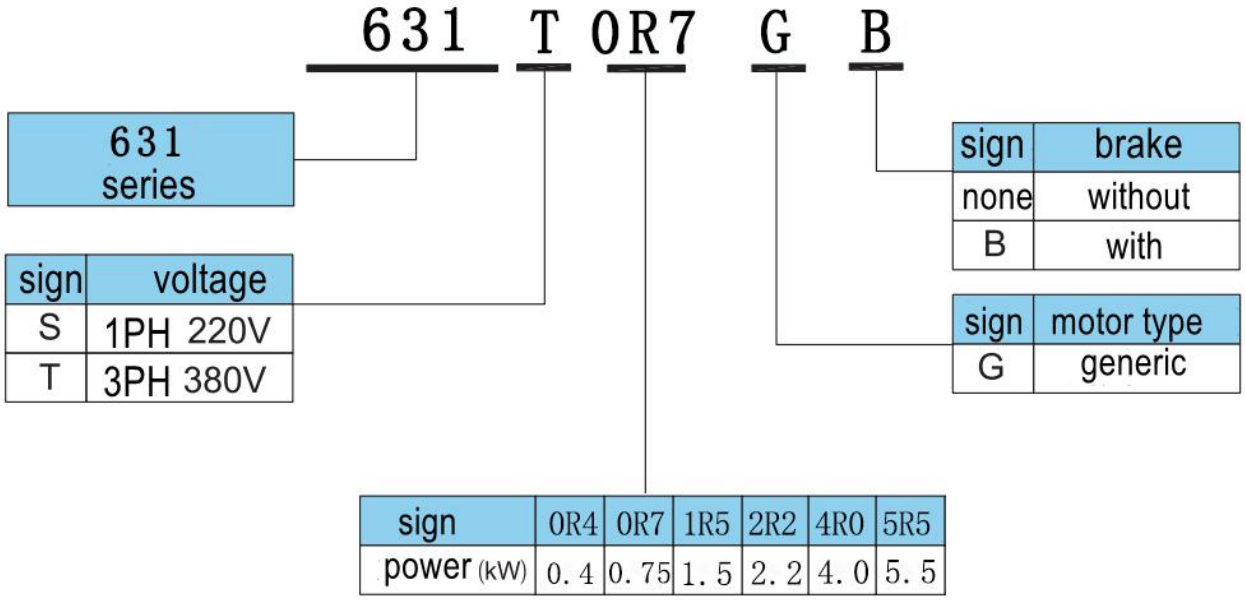


Figure 2-2 Model description

2.2 Product Series Description

Table 2-1 631 Frequency converter models and technical data

Inverter model	The power capacity (KVA)	Input current (A)	The output current (A)	Adaptation motor	
				KW	HP
Single-phase power supply: 220V, 50/60Hz					
631S0R4GB	1	8.2	4.0	0.4	0.5

Inverter model	The power capacity (KVA)	Input current (A)	The output current (A)	Adaptation motor	
				KW	HP
631S0R7GB	1.5	8.2	4.0	0.75	1.0
631S1R5GB	3.0	14.0	7.0	1.5	2.0
Three-phase power supply: 380V, 50/60Hz					
631T0R7GB	1.5	3.4	2.1	0.75	1
631T1R5GB	3.0	5.0	3.8	1.5	2
631T2R2GB	4.0	5.8	5.1	2.2	3
631T4R0GB	5.0	14.6	9.0	4.0	4
631T5R5GB	8.9	20.5	13.0	5.5	7.5

2.3 Product technical specifications

Table 2-2 Technical specifications of the 631 inverter

project		specifications
The power supply	Input voltage	Single-phase/three-phase 220V model: 200V to 240V Three-phase 380V model: 380V to 440V
	The voltage is allowed to fluctuate	- 15% ~ 10%
	Input power frequency	50Hz or 60Hz, the fluctuation is less than 5%
The output	Maximum output voltage	Phase 3:0 ~ input voltage
	Overload capacity	150% rated output current 60 seconds, 180% rated output current 10 seconds,200% rated output current 1 second
control system , sex	The control mode	VVVF control Speed Sensorless vector control (FOC Sensorless)
	The operation mode	Speed control, torque control (FOC Sensorless)
	Speed range	1:100 (VVVF) 1:200 (FOC Sensorless)
	Speed control accuracy	Plus or minus 0.5% (VVVF) ±0.2% (FOC Sensorless)
	Speed of	5 hz (VVVF)

	response	20Hz (FOC Sensorless)
	Frequency control range	0.00 ~ 650.00 Hz
	Input frequency resolution	Digital input: 0.01Hz Analog input: 0.1% of the maximum frequency
	Starting torque	150% / 0.5 Hz (VVVF) 150%/0.25Hz (FOC Sensorless)
	Torque control accuracy	FOC Sensorless: 10%
	VVVF features	VVVF curve types: straight line, multi-point, power function, VF separation; Torque lifting support: automatic torque lifting (factory setting), manual torque lifting
	Frequency giver slope	Support straight line and S curve acceleration and deceleration; Four groups of acceleration and deceleration time, set the range of 0.0s ~ 3600.0s
	Dc bus voltage control	OVC(bus overvoltage control), LVC(bus undervoltage control)
	Carrier frequency	1 KHZ ~ 15 KHZ
	Start the way	Direct start (superposition DC brake);Speed tracking activation
	Stop the way	Deceleration stop (superimposed DC brake);Free to stop
function	communication	MODBUS communication
	The input terminals	5 digital input terminals, one of which is high speed pulse HDI input Two analog input terminals;
	The output terminals	2 digital output terminals;, one of which is high-speed pulse HDO output 2 relay output terminals; 1 analog output terminal, supporting 0 ~ 20mA current output or 0 ~ 10V voltage output;
To protect the	For protection functions, see Chapter 6 fault Analysis and Handling.	
The environmen	Use place	Indoor, free from direct sunlight, dust, corrosive gas, flammable gas, oil mist, water vapor, water drop, salt, etc
	The altitude	0 to 3000 meters.The rated output current will be reduced by 1% for every increase of 100 meters
	The environment temperature	-10℃ ~ +40℃, maximum 50℃.The rated output current decreases by 1.5% for each 1℃ increase from 40℃
	humidity	Less than 95%RH, no condensation
	vibration	Less than 5.9 m/s^2(0.5 g)
	Storage temperature	- 20 ℃ ~ + 60 ℃
other	installation	Wall mounted, floor electric control cabinet type, through wall type
	Protection grade	IP20
	Cooling way	Forced air cooling

Chapter III Mechanical and Electrical Installation

3.1 Overall dimensions and mounting holes of the converter

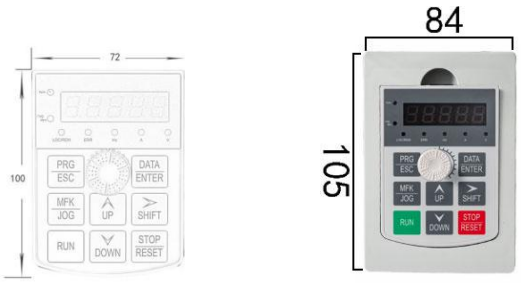


Figure 3-1 Keyboard and hole size

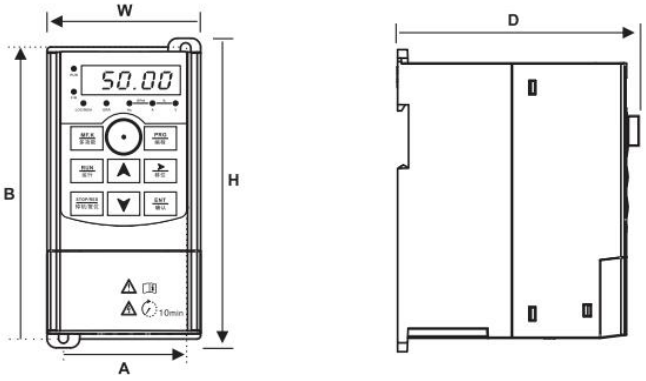


Figure 3-2 Dimensions of 631

Table 3-1 Overall dimensions and installation dimensions of the 631 series

Product model	Mounting hole (mm)		Overall size (mm)				Install the aperture (mm)	Net amount (Kg)	note
	A	B	H	H1	W	D			
Single-phase 220 v									
631S0R4GB	67.5	157	155	170	85	140	Phi is 5.0	1.28	D includes potentiometer Knob height 10mm
631S0R7GB									
631S1R5GB									
Three-phase 380 v									
631T0R7GB	67.5	157	155	170	85	140	Phi is 5.0	1.28	D includes potentiometer Knob height 10mm
631T1R5GB									
631T2R2GB									
631T4R0GB	85	185	182	195	100	155	Phi is 5.0	1.57	D includes potentiometer Knob height 10mm
631T5R5GB									

3.2 wiring

3.2.1 Standard wiring diagram

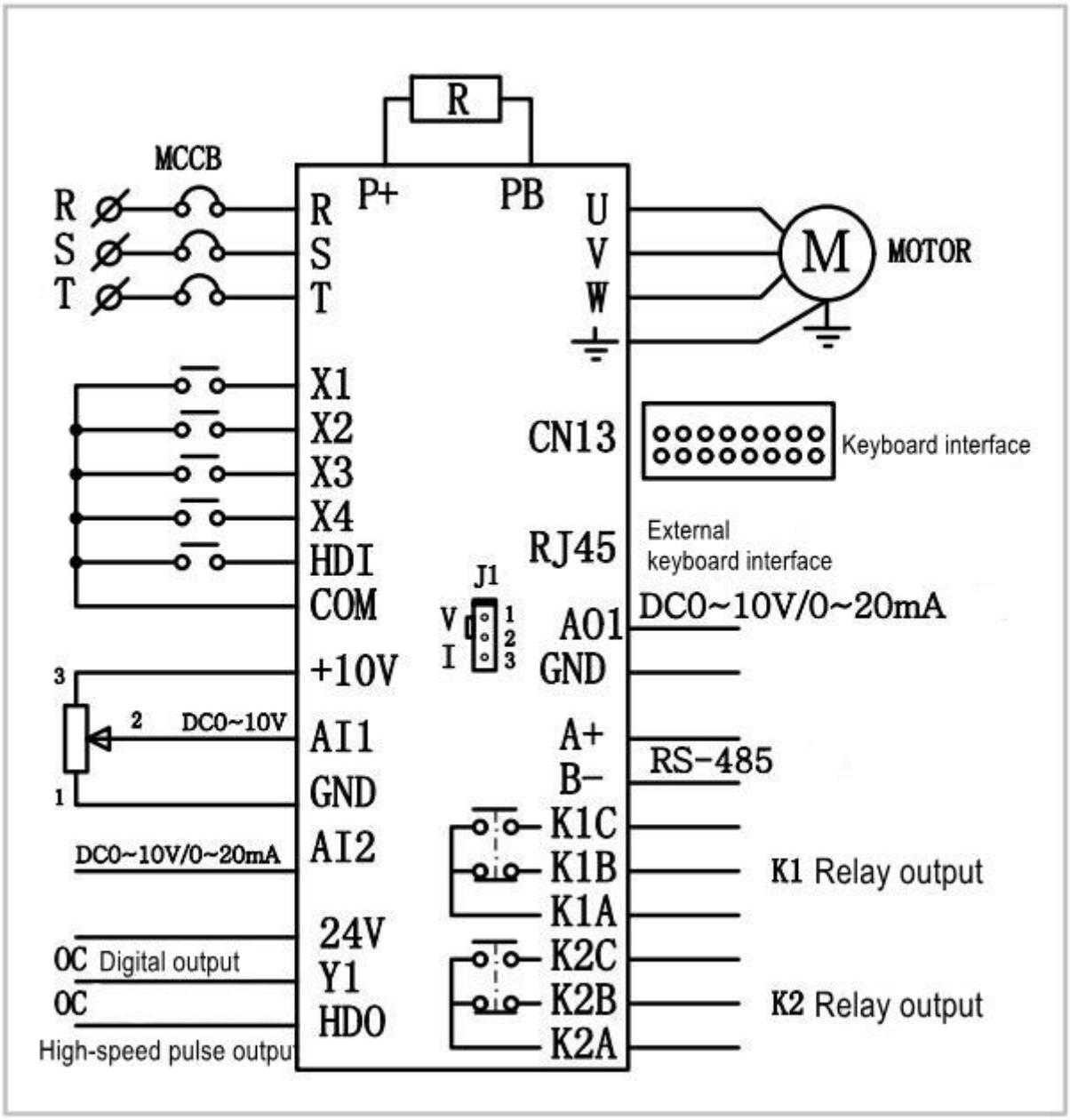


Figure 3-3 Standard wiring diagram

(K2 relay is not installed by default, but can be installed according to customer requirements)

3.2.2 Main loop terminal

1) Description of main loop terminal of single-phase inverter:

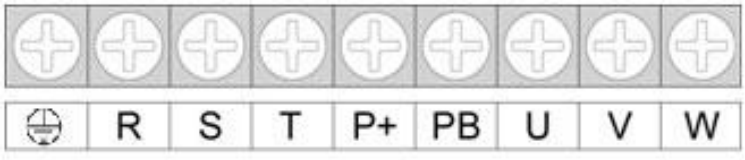
Terminal mark	The name of the	instructions
R, T	Single-phase power input terminal	For the single-phase 220V ac power connection, the S terminal is suspended
(+), (-)	Positive and negative terminals of the DC bus	The common DC bus input point can also be used for the connection point of the external brake unit
P+ PB	Brake resistance connection terminal	Connecting brake resistance
U, V, W	Frequency converter output terminal	Connected three-phase motor
	Earthing terminal	Earthing terminal

2) Description of main loop terminal of three-phase inverter

Terminal mark	The name of the	instructions
R, S, T	Three-phase power input terminal	Ac input three-phase power connection point
(+), (-)	Positive and negative terminals of the DC bus	The common DC bus input point can also be used for the connection point of the external brake unit
P+ PB	Brake resistance connection terminal	Below 30RW (220V below 15RW) brake resistance connection point
P, (+)	External reactor connection terminal	External reactor connection point

U, V, W	Frequency converter output terminal	Connected three-phase motor
⏚	Earthing terminal	Earthing terminal

The main loop terminals of each power segment are shown in the following figure.



(a) 0.4-7.5RW main loop terminals

Figure 3-4 Schematic diagram of main loop terminals

3.2.3 Control loop wiring terminal

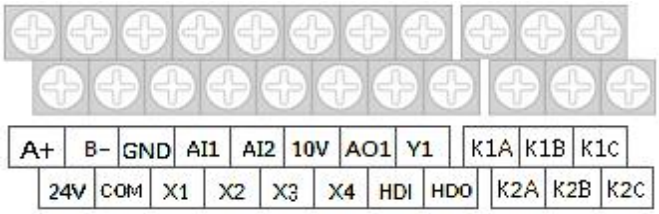


Figure 3-5 631 Control loop terminals

Table 3-2 Definitions of 631 control loop terminals

category	Terminal symbols	The name of the terminal	Functional specifications
The power supply	10V-GND	Output 10V power supply	Provide 10V power supply, maximum output current: 50mA Generally used as the external potentiometer working power supply, potentiometer resistance range: 1K ω ~10K ω
	24V-COM	Output 24V power supply	Provide 24V power supply to the outside, generally used as digital INPUT and output terminal power supply and external sensor Maximum output current: 100mA
simulation The input	AI1-GND	Analog input terminal 1	1, input range: DC 0V~10V/0mA~20mA, select voltage/current from the menu of (06-10). 2, input impedance: voltage input impedance 20K ω, current input impedance 510 ω.
	AI2-GND	Analog input terminal 2	
digital The input	X1-COM	Numeric input 1	1. Photocoupling isolation 2, input impedance: 3.3K ω 3, level input voltage range: 9V~30V 4, HDI can be used as digital input, also can be used as high speed pulse input
	X2-COM	Digital input 2	
	X3-COM	Digital input 3	
	X4-COM	Digital input 4	
	HDI-COM	Digital input	

simulation The output	AO1-GND	Analog output 1	The voltage or current output is determined by the J1 line selection on the control board. Output voltage range: 0V~10V Output current range: 0mA to 20mA
digital The output	DO1-COM	Digital Output 1	Photocoupling isolation, unipolar OC output Output voltage range: 0V~24V Output current range: 0mA~50mA Note: HDO can be used as a digital output or as a high-speed pulse output
	HDO-COM	Digital Output 2	
relay The output	K1A-K1B K2A-K2B	Normally closed contacts	Contact drive capability: AC250V, 3A, COSø=0.4. DC 30 v, 1 a
	K1A-K1C K2A-K2C	Often beginning son	

The fourth chapter keyboard display and operation

4.1 Introduction to LED keyboard interface

With the operation panel, the function parameters of the converter can be modified, the working state of the converter can be monitored, and the operation control (starting and stopping) of the converter can be carried out. Its appearance and functional areas are shown as follows:

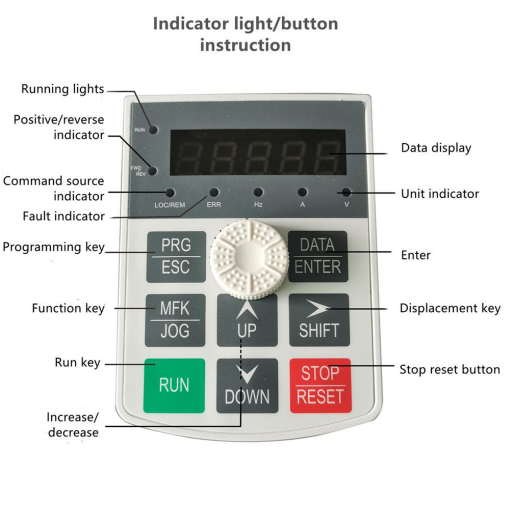


Figure 4-1 Diagram of the operation panel

1) Description of functional indicators:

RUN: When the light is off, the frequency converter is in shutdown state, when the light is on, the frequency converter is in operation state.

LOCAL/REMOT: keyboard operation, terminal operation and remote operation (communication control) indicator:

FWD/REV: Positive/negative indicator. If the indicator is on, it indicates that the indicator is in positive state.

ERR: Tuning/torque control/fault indicator. When the indicator is on, it indicates that the indicator is in torque control mode. When the indicator blinks slowly, it indicates that the indicator is in harmonic state.

2) Unit indicator light:

Hz	Frequency unit
A	Current unit
V	Voltage unit
RPM(Hz+A)	Drive units
%(A+V)	The percentage

3) Digital display area:

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

4) Key function description

The keys	The name of the	function
PRG	Programming key	Level 1 menu entry or exit
ENTER	Identify key	Step by step into the menu screen, set parameters confirm
delta	Increasing the key	The increment of data or function code
del	The descending key	Decrement of data or function code
del	The shift key	Under the stop and running display interface, display parameters can be selected circularly;When modifying a parameter, you can select the parameter modification bit
RUN	The operation key	In keyboard mode, used to run operations
STOP/ RESET	Stop/reset	When running, press this key to stop running operations.In the fault alarm state, it can be used for multiple bit operation. The characteristics of this key are restricted by the function code (STOP/RESET function key).
MFK	Multifunction button	Switch function according to function code (MFK key function selection)

4.2 How to View and Modify Function Codes

The display of digital keyboard is divided into three layers, from top to bottom: monitoring status, function code selection status, parameter editing/viewing status, as shown in Figure 4-2.

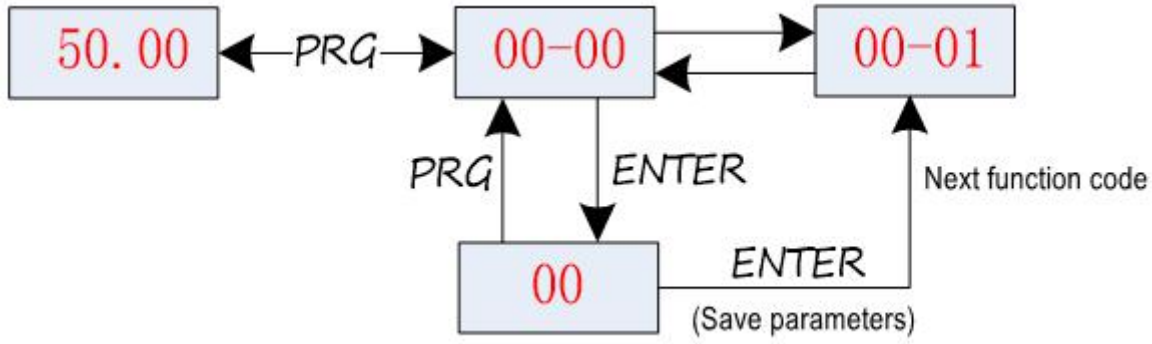


Figure 4-2 Keyboard operation diagram

Chapter 5 detailed description of functions

5.01 00 Group Basic Parameters

00 00 -	Run instruction source	The initial value	0	unit	1

Value range:

1: G type machine

2: P-type machine

📖G type machine is suitable for constant torque load occasions;P-type machine is suitable for fan and water pump load.

00-01	Motor control mode	The initial value	2	unit	1

Value range: 0: Reserved

1: Vector control without speed sensor 2(with torque control)

2: VF control

📖 Speed sensorless vector control: high performance control without encoder, strong load adaptability.If no PG vector control is selected, please set motor parameters and motor vector control parameters correctly.Before the first operation, the motor parameter identification process should be carried out to obtain the correct motor parameters.Once the motor parameter identification process is completed, the motor parameters obtained automatically will be stored in the inverter for future control operation.

Note that a frequency converter can only drive a motor;And the level of frequency converter

capacity and motor capacity can not differ too much, the power level of the motor can be two levels smaller than the frequency converter or one level larger, otherwise it may lead to the decline of control performance, or the drive system can not operate normally.

📖Torque control: Torque control is based on the motor output torque as the control target, can set up different torque given way.The motor speed in torque control is determined by the difference between set torque and load torque.When the set torque is greater than the load torque, the motor continues to accelerate;When the set torque is less than the load torque, the motor continues to decelerate;When the set torque is matched with the load torque, the motor keeps the current speed unchanged.Therefore, when torque control, it is necessary to set the limit value of forward or reverse speed to avoid continuous acceleration of the motor resulting in flying cars.Set 04-05, 04-06 speed limit when torque control.Torque control and speed control can be switched by switching input signal "torque/speed control switch".

📖 VF control: constant voltage/frequency ratio control.It is suitable for the applications where the drive performance is not high, multiple motors are driven by a single inverter or the motor parameter identification cannot be correctly carried out.When choosing VF control, please set motor parameters correctly.

00-02	Run command source selection	The initial value	0	unit	1

Value range: 0: keyboard control (THE L/R indicator is off)

1: Terminal control (L/R on)

2: communication control (L/R flashing)

📖Set the input channel of running commands, including: start, stop, forward, reverse, point, etc.

0: keyboard control

The keyboard keys RUN, STOP/RESET, MF.R to RUN command control.

1: terminal control

Run command control by switching input terminal.Through the switching input terminal for forward operation and reverse operation, can be divided into two wire system and three wire system two control modes.

2: communication control

The upper computer can be controlled by running command through RS485 serial communication interface.See operation method and communication protocol for specific programming.

By entering "Run command switch to keyboard" and "Switch command source between terminal/communication", you can switch the run command between operation panel, terminal, and communication control.

00-03	Frequency source A is selected	The initial value	0	unit	1
00-04	Frequency source B is selected	The initial value	3	unit	1

Value range:

0	Keyboard number setting	5	Simple PLC
1	AI1	6	Multistage speed
2	AI2	7	PID

3	AI3	8	The RS - 485 communication
4	HDI	9	Keyboard analog potentiometer

📖0: keyboard number Settings:

The initial setting frequency is 00-07 "keyboard preset frequency", which can be adjusted by UP/DOWN keys or digital encoder.

1: AI1, analog input terminal, located at the wiring terminal of the main board

2: AI2, analog input terminal, located at the wiring terminal of the main board

3: AI3, analog input terminal, located in the local keyboard pin interface of the motherboard

Analog quantities can be used for a given frequency converter.The machine provides two terminal input analog values AI1 and AI2, AI1 and AI2 can be selected by 06-59 for 0~10V voltage input or 0~20mA current input signal type;

AI3 is derived from the local keyboard interface and can be used for keyboard analog potentiometer given frequency.

The inverter provides curve setting for AI simulation in the input analog parameter group.

4: High-speed pulse HDI is given

High-speed pulse signal requirements: 9V~30V, 0~50RHz.High-speed pulse HDI can be flexibly deployed from 06-30 to 06-37.

5: Simple PLC

Simple PLC can realize the frequency converter in 16 points between switching operation,16 work hold time, each section of acceleration and deceleration time optional.

6: multi-speed

If you do not select the multi-segment speed function, the machine has priority of working

from 1 to 15 segments by default.When the multi-speed function is selected, the value ranges from 0 to 15.

7: PID

This function is generally used for closed-loop control quantity occasions, such as temperature control, constant voltage control, constant current control and other occasions, by PID control output frequency control of the frequency converter.

8: RS-485 communication

This machine provides rS-485 interface that meets international standards and is compatible with modbus-RTU protocol that meets international standards. For details, see the Communication Protocol section.

9: keyboard analog potentiometer:

There are two types of keyboard, one is the installation of digital quantity encoder suitable for digital operation only.The other is an analog potentiometer with a one-turn adjustment,

Is suitable for this function application.Note that the numeric encoder's keyboard should not set 00-03 or 00-04 to 9, otherwise it will not work.

※ *Note: The set values of frequency source A and B cannot be the same.*

00-05	Frequency frequency B reference range selection	The initial value	0	unit	1

Value range:

0: maximum frequency: B Frequency setting range falls within the maximum frequency range,

1: Frequency source A: B frequency setting range falls within the range of A given

value.

00-07	Frequency source combination	The initial value	0	unit	1

Value range:

0	Frequency source A	3	Frequency source A- Frequency source B
1	Frequency source B	4	MAX(A,B)
2	Frequency source A+ frequency source B	5	MIN(A,B)

📖This parameter allows you to select a frequency given combination.

00-08	Keyboard preset frequency	The initial value	50.00	unit	0.01 Hz

Value range: 0.00Hz to Maximum frequency

📖When frequency sources A and B are set as digital Settings, the function code value sets the initial value of frequency number of the frequency converter.

00-09	Motor running direction	The initial value	0	unit	1

Value range: 0: In the same direction

1: The opposite direction

2: disables inversion

🕮By changing the function code, the purpose of changing the motor steering can be realized without changing the motor wiring, which is equivalent to adjusting any two lines of the motor (U,V,W) to realize the rotation direction conversion of the motor.In some special occasions need to prohibit the motor reversal, can set this function to prohibit the reversal.

00-10	Maximum frequency	The initial value	50.00	unit	0.01 Hz

Value range: 0.00Hz to 630.00Hz

🕮 The 100% values of all frequency sources correspond on this basis.Acceleration and deceleration time is also the object of this value.

00-12	Upper limit frequency	The initial value	50.00	unit	0.01 Hz

Value range: minimum frequency to maximum frequency

Limit the upper limit of the output frequency of the converter, which is less than or equal to the maximum frequency value.When the frequency source setting value is greater than the upper frequency,

The output frequency of the converter is limited to the upper frequency value.

00-14	The lower frequency	The initial value	0.00	unit	0.01 Hz

Value range: 0.00Hz to the upper frequency limit

Set the lower limit of frequency converter operation frequency, when the frequency source set value is less than the lower limit of frequency value, the lower limit of frequency value.

00-15	Carrier frequency	The initial value	Models to determine	unit	0.1 RHz

Value range: 1.0KHz to 15.0KHz

📖When the carrier is low:

The loss of the motor increases, the temperature rise of the motor increases, the noise of the motor increases, and the leakage current and radiation interference of the motor decrease.Frequency converter temperature rise decreases, the output current waveform becomes worse.

When the carrier is high:

The loss of the motor is reduced, the temperature rise of the motor is reduced, the noise of the motor is reduced, and the leakage current and radiation interference of the motor are increased.Frequency converter temperature rise is reduced, the output current waveform becomes better.

Note: The carrier frequency of different power and voltage levels varies from factory to factory. If the carrier frequency is higher than the factory value, the temperature rise of the power component of the frequency converter will be increased. In this case, the frequency converter should be derated.

00-16	Zero frequency output	The	0	unit	1

	selection	initial value			

Value range: 0 to 2

📖 Some occasions require 0Hz hold motor shaft to prevent sliding, then you can use some functions:

0: no output, inverter output no current.

1: with output, the frequency converter transmits a small current to the motor and holds the motor shaft slightly

2: DC braking output, the dc braking intensity can be set by 05-11 parameters, the larger the value, the more dead the motor shaft, when holding the motor shaft for a long time, it is recommended that this parameter should not exceed 40%, otherwise the motor is easy to overheat.

00-17	Acceleration time 1	The initial value	Models to determine	unit	0.1 s
00-18	Deceleration time 1	The initial value	Models to determine	unit	0.1 s

Value range: 0.0 to 3600.0s

📖Acceleration time refers to the time required by the inverter to accelerate to the maximum frequency starting from 0.00Hz.The deceleration time is the opposite.

00-19	Industry application macro features	The initial	0	unit	1

		value			

The value ranges from 0 to 65535

📖 This function is mainly used for a variety of industry-specific function selection, select a macro, you can automatically open a specific function, and

Default values for some function code parameters are automatically initialized.

Note: this function is generally used for industry function customization, contact the manufacturer for details.

5.02 01 group motor parameters

01-01	Automatic measurement of motor parameters	The initial value	0	unit	1

Value range: 0: No action is performed

1: dynamic measurement

2: static measurement 1

3: Static measurement 2 (quick measurement)

📖 Through the automatic measurement of motor parameters, the key motor parameters that affect the operation control of the converter are determined. These motor parameters will be automatically saved in the converter after the parameter measurement process is completed until the next input parameter or the automatic measurement of parameters is performed again.

Automatic parameter measurement method is as follows:

- Input parameters 01-01~01-05 according to the motor nameplate;
- Parameter measurement method selection:

1. Dynamic measurement: the motor is used when it is detached from the load.Press RUN to automatically measure all parameters from 01-07 to 01-11.

2. Static measurement 1: the motor is not detached from the load under the condition of use.Press the RUN key to automatically measure some parameters from 01-07 to 01-09 and 01-11, but 01-10 motor mutual inductance cannot be measured.

3. Static measurement 2: The same operation as static measurement 1, but this is a quick measurement of motor parameters function, recommended use.

- When you press RUN to start the automatic measurement of parameters, the keyboard will display the word TUNE, and when the automatic measurement is completed, the word -end - will display.
- If the inverter and motor power do not match, please choose static measurement, after the measurement is completed, it is necessary to manually input 40% of the rated current of 01-05 motor into the no-load current of 01-11 motor.
- If you know the detailed parameters of the motor, you can directly input 01-01~01-11 (except 01-06);If the motor parameters are unknown, please perform the above automatic parameter measurement method.

※ *Note: If the difference between the rated power of the motor nameplate and the power of the inverter is too large, the motor control performance of the inverter will decline;When the rated power value of 01-01 is modified, the motor parameters from 01-02 to 01-11 will be initialized to the factory parameters of the corresponding set power value.*

01.	Motor rating	The	Models to	unit	0.1 KW

		initial value	determine		

Value range: 0.1KW to 1000.0KW

📖 This parameter sets the rated power of the motor, which must be set according to the nameplate specification of the motor.

01-03	Motor rated frequency	The initial value	50.00 Hz	unit	0.01 Hz

Value range: 0.01Hz to maximum frequency

📖 This parameter sets the rated frequency of the motor, which must be set according to the nameplate specification of the motor.

01-04	Motor rated speed	The initial value	Models to determine	unit	1

Value range: 1 to 36000rpm

📖 This parameter sets the rated speed of the motor, which must be set according to the nameplate specification of the motor.

01-05	Motor rated voltage	The initial value	Models to determine	unit	1

Value range: 1 to 2000V

📖 This parameter sets the rated voltage of the motor, which must be set according to the

specifications of the motor's nameplate.

01-06	Motor rated current	The initial value	Models to determine	unit	0.1

Value range: 0.1 to 6553.5a

📖 This parameter sets the rated current of the motor, which must be set according to the nameplate specification of the motor.

※ *Note: If the difference between the rated power of the motor nameplate and the power of the inverter is too large, the motor control performance of the inverter will decline;When the rated power value of 01-01 is modified, the motor parameters from 01-02 to 01-11 will be initialized to the factory parameters of the corresponding set power value.*

01-07	Motor stator resistance	The initial value	Models to determine	unit	0.001
01-08	Motor rotor resistance	The initial value	Models to determine	unit	0.001

Value range: 0.001 to 65.535 ω

📖Generally, this parameter is not on the motor nameplate, so it must be obtained by automatic measurement of motor parameters.If the conditions are available, you can also manually input.

01-09	Leakage inductance of motor	The initial	Models to determine	unit	0.1

01-10	Motor mutual inductance	value The initial value	Models to determine	unit	0.1

Value range: 0.1 to 6553.5mh

📖Generally, this parameter is not on the motor nameplate, so it must be obtained by automatic measurement of motor parameters.If the conditions are available, you can also manually input.

※ *Note: the motor mutual inductance of 01-10 can only be obtained under the condition of dynamic measurement, not static measurement.*

01-11	No-load current of motor	The initial value	Models to determine	unit	0.1

Value range: 0.1 to 6553.5a

📖Generally, this parameter is not on the motor nameplate, so it must be obtained by automatic measurement of motor parameters.If the conditions are available, you can also manually input.

※ *Note: when manual input motor no-load current, it is generally about 40% of the rated current value of 01-05 motor.*

5.03 02 Group VF control parameters

This function code is only valid for V/F control, not for vector control.

V/F control is suitable for general-purpose loads such as fans and water pumps, or a converter with multiple motors, or the inverter power and motor power difference is large.

00	VF curve setting	The	0	unit	1

02 -		initial value			

Value range: 1 to 6

📖0: straight line V/F, suitable for ordinary constant torque load

1: multi-point VF, suitable for dewatering machine, centrifuge, lifting and other special loads.In this case, you can obtain any V/F curve by setting parameters 02-03 to 02-08.

The VF relation curve between straight line VF and square VF.

The VF relation curve between straight line VF and square VF.

4:2.0 power, suitable for fan, water pump and other centrifugal load.

5: VF separation, at this time, the output frequency of the inverter and the output voltage are independent of each other, the output frequency is determined by the frequency source, and the output voltage is determined by 02-16 (VF separation voltage source).

6: Reserved, do not set.

02-01	VF torque enhancement	The initial value	0.0%	unit	0.1

Setting range: 0.0% ~ 10.0%

📖 Used to compensate voltage drop caused by stator resistance and wire, and improve low-frequency load capacity.When set to 0.0%, automatic compensation of stator pressure drop.

Note: when the torque increase is too large, the motor is easy to overexcite and overheat, and the frequency converter is easy to overcurrent.The effect is better after automatic measurement of motor parameters.

02.	VF torque promotion	The	20.0%	unit	0.1

	cutoff frequency alignment	initial value			

Setting range: 0.0% ~ 50.0%

📖When the operating frequency of the converter exceeds this percentage, the torque lifting fails.

02-03	Multipoint VF maximum frequency F3	The initial value	0.00 Hz	unit	0.01

Setting range: 0.00Hz ~ (01-02) Motor rated frequency

02-04	Maximum voltage of multi-point VF V3	The initial value	0.0%	unit	0.1

Setting range: 0.0% ~ 110.0% rated voltage of motor

02-05	Multi-point VF intermediate frequency F2	The initial value	0.00 Hz	unit	0.01

Setting range: 0.00Hz ~ F3

02-06	Multi-point VF intermediate voltage V2	The initial value	0.0%	unit	0.1

Setting range: 0.0% to V3

02-07	Multipoint VF minimum frequency F1	The initial value	0.00 Hz	unit	0.01

Setting range: 0.00Hz to F2

02-08	Multipoint VF minimum voltage V1	The initial value	0.0%	unit	0.1

Setting range: 0.0% to V2

📖 When 02-01=1(multi-point VF), the six parameters 02-01 to 02-08 are valid and form a customized VF curve.

The three-point voltage (V1,V2,V3) and the three-point frequency (F1,F2,F3) must meet the requirements of V3>V2>V1,F3 >F2>F1.See figure 5-1 below.

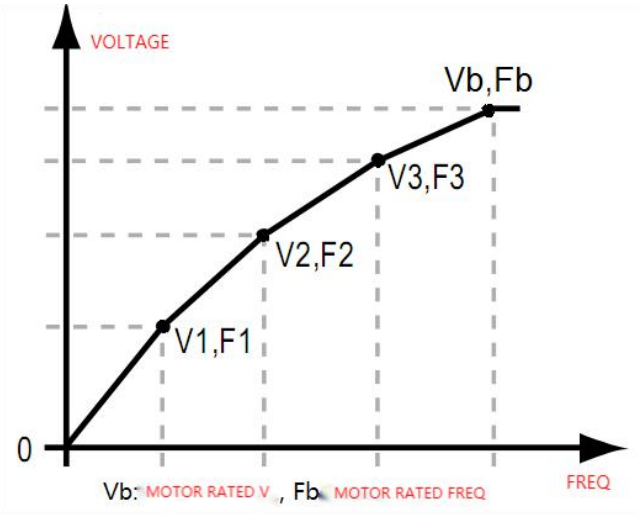


Figure 5-1

Any V/F curve is determined by a curve set as a percentage of input frequency and output voltage, piecewise linearized over different input ranges.

The rated frequency of the motor is the frequency that the V/F curve finally reaches, which is also the corresponding frequency value when the highest voltage is output.

※ *Note: If the slope of V/F curve is set too high, "overcurrent" fault may occur, especially if the voltage is set too high at low frequency, the motor may overheat or even burn out, and the inverter may be over loss speed or over current protection.*

02-09	Slip compensation gain	The initial value	100.0%	unit	0.1

Setting range: 0.0% ~ 200.0%

📖The rotor speed of asynchronous motor decreases with the increase of load, resulting in motor speed deviation.When the motor speed is lower than the target value, the setting value of 02-09 can be increased;On the contrary, decrease the set values of 02-09.

02-10	VF low frequency oscillation suppression coefficient	The initial value	10%	unit	1

Setting range: 0% to 100%

02-11	VF high frequency oscillation suppression coefficient	The initial value	10%	unit	1

Setting range: 0% to 100%

02-12	Oscillation suppression switching frequency	The initial value	30.00 Hz	unit	0.01

Setting range: 0.00Hz to maximum frequency

📖 Used to set oscillation suppression coefficients of different frequencies under VF control mode.If the output current changes repeatedly and is unstable when the constant load is running, Otherwise, inverter overcurrent fault will be caused. The above parameters can be adjusted on the basis of the factory value to eliminate oscillation and make the motor run smoothly.

02-13	Automatic voltage regulator AVR	The initial value	0	unit	1

Setting range: 0 to 2

📖The AVR function keeps the output voltage of the converter constant when the input voltage deviates from the rated value, especially when the input voltage is high.

When AVR is not turned on, the electromechanical flow will increase in the deceleration process, and it is often easy to jump and decelerate and overcurrent fault. If 02-13=1, the motor deceleration current will not be too large.

02-14	VF automatic power saving operation	The initial value	0	unit	1

Setting range: 0 to 1

0: no function

1: Start automatic power saving operation

📖When the load equipment works stably under light load, the inverter automatically adjusts the output voltage value to achieve more power-saving effect.

02-15	VF constant power weak magnetic coefficient	The initial value	1.00	unit	0.01

Setting range: 1.00~1.30

📖When the motor works in VF weak magnetic condition, adjust the output voltage value.

02-16	VF separates the voltage	The	0	unit	1

	source	initial value			

Setting range: 0 to 7

0: digit setting

1: AI1

2: AI2

3: AI3

4: HDI

5: multi-speed

6: PID

7: RS-485 communication

02-17	VF separation voltage digital setting	The initial value	0.0%	unit	0.1

Setting range: 0.0% ~ 100.0%

02-18	VF separation voltage acceleration time	The initial value	0.0 s	unit	0.01

Setting range: 0.0s ~ 3600.0s

02-19	VF separation voltage deceleration time	The initial value	0.0 s	unit	0.01

Setting range: 0.0s ~ 3600.0s

02-20	VF separation voltage upper limit	The initial value	100.0%	unit	0.1

Setting range: 0.0 ~ 100.0%

02-21	Lower limit of VF separation voltage	The initial value	100.0%	unit	0.1

Setting range: 0.0 ~ (02-20)

📖VF separation is generally used in induction heating, inverter power supply and torque motor control.When selecting VF separation control, the output voltage can be determined by function code 02-16, which can be from analog, PID or communication given.When non-digital setting is used, 100% of each setting corresponds to the rated voltage of the motor. When the percentage of analog output setting is negative, the absolute value of the setting is taken as the effective setting value.

VF separation voltage acceleration time: refers to the time required for the output voltage to increase from 0V to the rated voltage of the motor.

VF separation voltage deceleration time: refers to the time required for the output voltage to decrease from the motor rated voltage to 0V.

VF separation voltage upper limit and lower limit are the limits of the output voltage range.

Vector control parameters of group 1 of 03 motors

03-00	ASR proportional gain P1	The initial value	20.0	unit	0.1

Setting range: 0.1 ~ 200.0

03-01	The integral time of ASR is I1	The initial value	0.200 s	unit	0.001

Setting range: 0.001s ~ 10.000s

03-02	ASR proportional gain P2	The initial value	20.0	unit	0.1

Setting range: 0.1 ~ 100.0

03-03	A sub R integral time I2	The initial value	0.200 s	unit	0.001

Setting range: 0.001s ~ 30.000s

03-04	ASR switching frequency 1	The initial value	5.00 Hz	unit	0.01

Setting range: 0.00Hz ~ (03-05)

03-05	ASR switching frequency 2	The initial	10.00 Hz	unit	0.01

[redacted]		value			

Setting range :(03-04) ~ maximum frequency

📖 In order to make the system have fast dynamic response at low speed and high speed, PI adjustment should be carried out at low speed and high speed respectively.In actual operation, the speed regulator will automatically calculate the current PI parameter according to the current frequency.

- Proportional gain P:

For mechanical equipment with large rotational inertia, increase the P gain, and vice versa. When the P gain is increased, the control response can be accelerated, but the motor may oscillate or overshoot.On the contrary, if the P-gain is small, the control response is slow and the time it takes to adjust the speed to a stable value is longer.

- Integration time I:

When the integration time is set to 0, it means that the integration is invalid and controlled by P alone. To make the deviation between the speed instruction in the steady state and the actual speed be 0, please set the integration time I to a non-zero value.When the value of I is set to small, the system response is fast, but if it is too small, oscillation may occur.When the value of I is set too high, the system responds slowly.

- In general, the proportional gain P is firstly adjusted to increase P as far as possible on the premise that the system does not oscillate, and then the integration time I is adjusted to make the system have fast response characteristics and small overshoot.
- PI value adjustment at high and low speeds:

When motor speed is lower than ASR switching frequency 1, speed PI parameters are P1, I1;When the motor speed is higher than the ASR switching frequency 2, the speed PI parameters

are P2, I2.When the motor speed is greater than ASR switching frequency 1 and less than ASR switching frequency 2, the process from ASR switching frequency 1 to ASR switching frequency 2 is a linear transition process.

- Generally, to achieve better dynamic response at low speed, P2 can be appropriately increased and I2 can be appropriately decreased.

03-06	ASR low pass filter coefficient	The initial value	0	unit	1
Setting range: 0 to 10					

🕮 Used for T axis current instruction filtering, velocity loop output filtering can reduce the impact on current loop.The value should not be too large to affect the system response.

03-07	Electric slip compensation gain	The initial value	100%	unit	1
Setting range: 50% ~ 200%					

🕮In vector control, changing this parameter can adjust the accuracy of steady speed when the motor is running with electric load.If the motor speed is low, increase this parameter, if the motor speed is high, reduce this parameter.

03-08	Braking slip compensation gain	The initial value	100%	unit	1
Setting range: 50% ~ 200%					

🕮In vector control, the accuracy of steady speed can be adjusted by changing this parameter when the motor is running with generating load.If the motor speed is on the high side, increase this parameter; if the motor speed is on the low side, decrease this parameter.

03-09	ACR current loop KP	The initial value	100%	unit	1
03-10	ACR Current loop KI	The initial value	100%	unit	1

Setting range: 50% ~ 200%

🕮Vector control will track the output current of the motor and control the current instruction value.This value sets the proportional KP of the current control (ACR) and the gain of the integral KI.Generally, you are not advised to change the value.

In general, when the inductance of the coil is large, the VALUE of KP can be increased, and vice versa; Setting KI values too high may cause current oscillations.

03-11	Vector 2 constant power weak magnetic constant	The initial value	0.3	unit	0.1

Setting range: 0.1 ~ 2.0

03-12	Constant power minimum rate weak magnetic alignment	The initial value	20%	unit	1

Setting range: 10 ~ 100%

03-13	Weak magnetic proportional gain	The initial value	1000	unit	0.1

Setting range: 0 to 8000

🕮Under the speed control mode of vector control, when the frequency converter runs in the region above the rated frequency of the motor (weak magnetic region), setting the combined coefficient can effectively improve the output torque and acceleration and deceleration characteristics of the motor.

03-14	Upper limit of vector output voltage	The initial value	100.0%	unit	0.1

Setting range: 0.0 ~ 120.0%

🕮In vector control mode, the maximum output voltage can be set by this parameter.

03-15	Motor pre-excitation time	The initial value	0.300 s	unit	0.001

Setting range: 0.000 ~ 10.000

🕮 Suitable for asynchronous motor.In order to achieve the characteristics of fast starting, pre-excitation is carried out before the motor operation, and the pre-excitation time is thus Function code setting.After the stable flux is established, the acceleration is started.A value of 0 indicates that no preexcitation is performed and the operation is received

After the instruction began to accelerate operation.The pre-excitation time is not included in the acceleration and deceleration time.Generally, the factory value does not need to be modified.

04 groups of torque system parameters

00 04 -	Torque control setting source selection	The initial value	0	unit	1

Setting range: 0 to 7

0: speed control (torque invalid)

1: Torque digital setting (04-01)

2: Torque is set by AI1

3: Torque is set by AI2

3: Torque is set by AI3

4: Torque is set by HDI

5: Torque is set by multi-speed

6: Torque is set by RS-485 communication

04-01	Torque digital setting	The initial value	0%	unit	1

Setting range: -300% to 300%

📖 When the torque source of 04-00 is not 0, 100% corresponds to 3 times the rated current value.The digital setting value is 100% corresponding to the rated current of the motor.

04.	Torque filtering time	The initial value	0.010 s	unit	0.001

Setting range: 0.000~10.000s

📖 When the torque instruction is given, the filtering time value of torque is set.

04-03	Forward torque upper limit frequency source	The initial value	0	unit	1
04-04	Reverse torque upper limit frequency source	The initial value	0	unit	1

Setting range: 0 to 6

0: Digital setting (04-05 and 04-06) 4: HDI

1: AI1 5: multi-speed

2: AI2 6: RS-485 communication

3: AI3 7:

04-05	Forward torque upper frequency digital setting	The initial value	50.00 Hz	unit	0.01

Setting range: 0.01Hz ~ maximum frequency

04-06	Reverse torque upper frequency digital setting	The initial value	50.00 Hz	unit	0.01

Setting range: 0.01Hz ~ maximum frequency

📖04-03 is used to select the upper limit frequency source of forward torque, 04-04 is used to select the upper limit frequency source of reverse torque. Limit the positive torque control

Reverse maximum frequency value.Under normal circumstances, torque control occasions when the load torque is very small at the start, there may be a flying phenomenon at this time, need

By selecting the upper limit frequency source to adjust the upper limit frequency, the maximum speed of the limited torque control can be achieved.

04-07	Electric torque limiting mode selection	The initial value	0	unit	1
04-08	Braking torque limiting mode selection	The initial value	0	unit	1

Setting range: 0 to 5

0: Digital setting (04-09 and 04-10)

1: AI1

2: AI2

4: AI3

5: HDI

6: RS-485 communication

04-09	Forward torque limited digital setting	The initial value	180.0%	unit	0.01

Setting range: 0.0 ~ 300.0%

04-10	Reverse torque limited digital setting	The initial value	180.0%	unit	0.01

Setting range: 0.0 ~ 300.0%

📖Under the speed control mode of vector control, when the motor drags the motorized load, the

electric torque of the motor output should be limited.

When the motor drags the generating load, the braking torque of the motor output should be limited.When 04-07 and 04-08 are selected as non-zero values, 100% of them correspond to 3 times of rated current;100% of the digital set value corresponds to 1 times the rated current.

04-11	Vector low frequency torque compensation	The initial value	0.0%	unit	0.1
Setting range: 0.0 ~ 100.0%					

📖Under the vector torque control mode, the inverter runs at a very low speed of 1Hz, so setting this parameter can effectively improve the low-frequency torque characteristics of the motor.

04-12	Vector high frequency torque compensation	The initial value	0.0%	unit	0.1
Setting range: 0.0 ~ 100.0%					

📖In the vector torque control mode, when the frequency converter runs higher than 1Hz, setting this parameter can effectively improve the motor's low and middle frequency torque characteristics.

5.06 05 Group start and stop control parameters

05-00	Start the way	The initial value	0	unit	0200H

Value range: 0 to 1

0: starts directly

1: dc brake before starting

2: Speed tracking starts

🕮 The starting mode is effective in the process of the inverter from the down state to the running state.

0: starts directly

When the inverter starts to run from the shutdown state, it starts from the starting frequency 05-02, and keeps the time set in 05-03 at this frequency, and then runs to the set frequency according to the set acceleration mode and acceleration time.

1: dc brake before starting

Before the inverter starts, the motor may be running at low speed or in reverse rotation state, and overcurrent fault may occur if the inverter is started immediately.Therefore, before the inverter starts, dc brake can be added first to stop the rotation of the motor, and then run to the set frequency according to the set direction.

2: Speed tracking starts

Search the actual speed of the motor in rotation first, and start smoothly without impact from the speed found.Suitable for instantaneous power outage restart, starting the fan is still in rotation and other applications.Please set motor parameters correctly when speed tracking starts.

05-01	Start frequency	The initial value	0.00 Hz	unit	0.01

Value range: 0.00Hz to 50.00Hz

05.	Start frequency hold time	The initial value	0.0 s	unit	0.1

Value range: 0.00 to 50.0s

📖 Starting frequency is the initial frequency of the inverter starting from the shutdown state.Start frequency hold time is the duration of continuous operation at this initial frequency. After this hold time, the frequency converter accelerates to the set frequency.Setting appropriate start frequency and hold time is beneficial to ensure start torque, which is suitable for heavy load start occasions.

When the set frequency is less than the starting frequency, the output frequency of the inverter is zero.Start frequency and start frequency hold time are effective when starting from shutdown.Acceleration time does not include startup frequency hold time.

05-03	Start dc brake current	The initial value	0.0%	unit	0.1

Value range: 0.0% to 100.0%

05-04	Start DC braking time	The initial value	0.00 s	unit	0.01

Value range: 0.00s to 50.00s

📖05-04 Different starting DC braking torque can be realized by setting different values.05-04 is the percentage relative to the rated current of the motor. The limited value inside the frequency converter is the rated current of the frequency converter.05-05 Set the time for starting DC

braking, and start running immediately when the time is up.If 05-05=0.00s, the DC brake is invalid when starting.

05-05	Acceleration and deceleration mode	The initial value	0	unit	1

Value range: 0 to 1

0: straight acceleration and deceleration

1: s-curve mode

📖 0: straight acceleration and deceleration

The output frequency increases or decreases with a constant slope.

1: s-curve mode

S acceleration and deceleration curve can improve the smoothness in the process of starting and stopping, prevent the impact of the load of transport machinery, more suitable for conveyor belt, elevator and other types of use occasions.

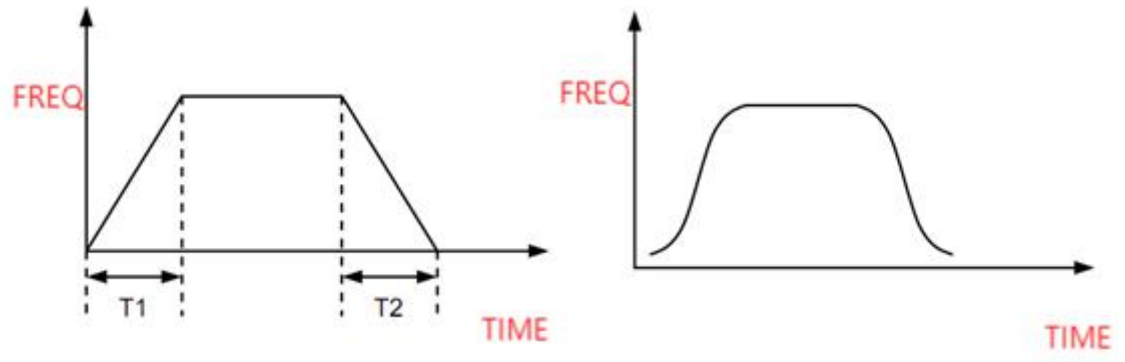


Figure 5-2 Linear acceleration and deceleration and curve acceleration and deceleration

05 - '06	Acceleration time at the beginning of the S curve	The initial	0.1 s	unit	0.1

		value			

Value range: 0.1s to 50.0s

05-07	Acceleration time at the end of the S-curve	The initial value	0.1 s	unit	0.1

Value range: 0.1s to 50.0s

05-08	Parking way	The initial value	0	unit	1

Value range: 0 to 1

0: decelerate and stop

1: Free shutdown

📖 0: slow down and stop

After receiving the stop command, the frequency converter will gradually reduce the output frequency according to the set deceleration time, and stop when the frequency drops to zero.

1: Free parking

After receiving the stop order, the inverter immediately blocks the output and the motor stops freely according to the mechanical inertia.

05-09	Stop dc braking start frequency	The initial value	0.00 Hz	unit	0.01

Value range: 0.00Hz to Maximum frequency

5-10	Dc braking waiting time of shutdown	The initial value	0.00 s	unit	0.01

Value range: 0.00s to 50.00s

05-11	Stop dc brake current	The initial value	0.0%	unit	0.1

Value range: 0.0% to 100.0%

05-12	Dc braking time of shutdown	The initial value	0.00 s	unit	0.01

Value range: 0.00s to 50.00s

📖The stopping DC braking function is generally suitable for fast and accurate stopping occasions, such as fixed-length cutting and other occasions.

Dc braking waiting time refers to the time when the motor has no output after the shutdown and the DC function is not started until the speed stops.

Stop DC braking time refers to the dc braking duration. When this value is set to 0.00s, stop DC braking is prohibited.

05-16	Reverse dead zone time	The initial value	0.0 s	unit	0.1

Value range: 0.0s to 3600.0s

📖 The converter outputs the zero-speed transition time when it transitions from forward

operation to reverse operation or from reverse operation to forward operation, as shown in Figure 5-3.

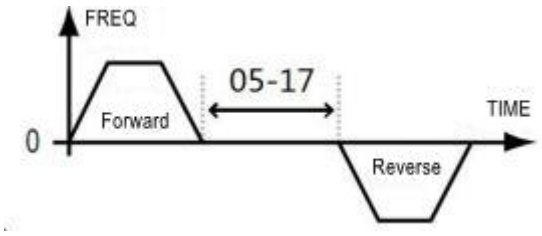


Figure 5-3 Dead zone time of the forward/reverse switchover

05-17	Reverse switching mode	The initial value	0	unit	1

Value range: 0 to 2

0: zero frequency switching

1: Switching frequency is enabled

2: stops speed switching

05-18	Stop speed	The initial value	0.50 Hz	unit	0.01

Value range: 0.00 to 100.00Hz

05-19	Stop the speed detection mode	The initial value	1	unit	1

Value range: 0 to 1

0: set according to the speed

1: feedback value according to speed

05-20	Feedback speed detection time	The initial value	0.50 s	unit	0.01

Value range: 0.00 to 100.00s

05-21	Start the time delay	The initial value	0.0 s	unit	0.1

Value range: 0.0 to 60.0s

05-22	Stop speed delay	The initial value	0.0 s	unit	0.1

Value range: 0.0 to 100.0s

05-23	Brake unit action	The initial value	1	unit	1

Setting range: 0: disabled;1: to enable the

05-24	Action voltage of brake unit	The initial value	Models to determine	unit	0.1

Setting range: 200.0~2000.0V

📖 Used to set the function of the internal brake unit.

220V model action voltage factory value is 380V,

380V model action voltage factory value is 700V.

When 05-24=1, 10-03 overvoltage stall protection voltage will automatically increase 20V on the basis of 05-25, (10-13)=20V+(05-25).

05-25	Overexcited braking coefficient	The initial value	0	unit	1

Value range: 100% to 150%

📖When the overexcitation braking is effective (02-16>100%), the frequency converter can make the motor slow down quickly by increasing the magnetic flux of the motor. At this time, the electric energy in the motor braking process can be converted into heat energy.Select flux braking action can achieve fast deceleration, but the output current will be large, can be set by overexcitation braking coefficient to limit protection, so as not to damage the motor;If the value is set to 0, there is no action, the deceleration time is longer, but the output current is smaller.

5.07 06 Group input Terminal Parameters

06 00 -	HDI input mode	The initial value	1	unit	1

Value range: 0 to 1

0: high-speed pulse input

1: input terminal switch value

📖HDI has all the functions of X terminal, as well as high-speed pulse input function.

06-01	X1 Function selection	The	1	unit	1

		initial value			

Value range: 0 to 48

6.	X2 function selection	The initial value	2	unit	1

Value range: 0 to 48

06-03	X3 Function selection	The initial value	4	unit	1

Value range: 0 to 48

06-04	X4 function selection	The initial value	7	unit	1

Value range: 0 to 48

6-9	HDI function selection	The initial value	16	unit	1

Value range: 0 to 41

📖 631 series frequency converters are equipped with 5 multifunctional digital input terminals.06-01 to 06-04 Set the function of X1 to X4 multi-function terminals. 06-05 Set the function of HDI as multi-function input terminals.Table 5-1 lists the functions that can be selected.

Table 5-1 Functions of multi-function digital input terminals

The set value	The name of the function	Functional specifications
0	There is no function	You can set unused terminals to No function to prevent misoperations
1	Run FWD in positive mode	Through the external terminal to control the inverter forward and reverse
2	Reverse run REV	
3	Three-wire operation control	There are two - line operation mode and three - line operation mode for forward and reverse operation.When three-wire operation, the "three-wire operation" terminal participates in control. Please refer to 06-13 for details on two - wire and three - wire systems
4	Are turning points	For the point frequency and acceleration and deceleration time, see the description of function codes 01-15, 01-27, and 01-28.The terminal tap command is always valid and has nothing to do with 00-01 Settings.
5	Reversal point move	
6	Free parking	Converter block output, and 05-09 free stop meaning the same
7	Failure reset	The remote fault reset can be realized by using the fault reset function of terminals.
8	Run to suspend	During the operation of the inverter, when the terminal is effective, it will be shut down in the way of shutdown, and the inverter will block the output.When the terminal is invalid, the converter starts to resume operation
9	External fault input	After receiving the fault signal, the frequency converter reports the fault code Err17
10	Terminal UP	The increasing and decreasing instructions for modifying the frequency given by the terminal.When the main frequency source is set to 0, the set frequency can be adjusted up and down.
11	Terminal DOWN	
12	The UP/DOWN to zero	Clear UPDOWN frequency to restore the UPDOWN frequency to the preset frequency.
13	Switch between A setting and B setting	For switching between frequency source A and frequency source B
14	Switch between combination setting and A setting	Used to combine set result with frequency source A frequency
15	Switch between combination setting and B setting	Used to combine set result with frequency source B frequency

The set value	The name of the function	Functional specifications
16	Multi-speed terminal 1	Through 16 states of these four terminals, the setting of 16 speed instructions can be realized. Refer to Table 5-2.
17	Multi-speed terminal 2	
18	Multi-speed terminal 3	
19	Multi-speed terminal 4	
20	Multi-speed pause	Multi-speed pause when terminal is in effect
21	Acceleration and deceleration time is set to 1	Acceleration and deceleration time Select 1. Terminal 2 can set a maximum of four acceleration and deceleration times based on different states, as shown in Table 5-3.
22	Acceleration and deceleration time is set to 2	
23	Simple PLC state reset	After the terminal is effective, the simple PLC returns to its original state
24	Simple PLC time pause	After the terminal is effective, the simple PLC module will keep the current section running;After the terminal is invalid, the simple PLC module continues to run after completing the current section
25	Process PID pause	When the terminal is in effect, the PID stops adjusting, and the output of the process PID module remains unchanged
26	The pendulum frequency suspended	After the terminal is effective, the converter runs at the center frequency and pauses at the current frequency
27	The pendulum frequency reset	After the terminal is effective, the pendulum frequency is reset to the center frequency
28	Counter reset	Use with "counter trigger" terminal to clear the count value
29	Torque/speed switch	When the mode is speed control, the terminal is effectively switched to torque control When the mode is torque control, the terminal is effectively switched to speed control
30	Acceleration and deceleration prohibition	When the terminal is valid, the converter maintains the current output frequency and no longer responds to the change of the set frequency.When there is a stop command, the frequency converter can normally slow down and stop.This terminal is invalid during normal deceleration and stop.
31	Counter trigger	With function codes 11-19 (Set count) and 11-20 (specify count), you can control the output of DO "set count to" and "specify Count to" terminals.
32	The length of the reset	Work to keep
33	Frequency increase or decrease Settings temporarily cleared	Frequency increase or decrease Settings temporarily cleared
33	Primary frequency source switches to communication	The main frequency source is given for communication when the terminal is active (low priority)

The set value	The name of the function	Functional specifications
	given	
34	Immediate DC braking	When the terminal is in effect, the motor is immediately put on DC brake
35	keep	
37	Command to switch to the keyboard	When this terminal is active, the command is controlled by the keyboard.
38	Command switch to terminal	When this terminal is valid, the command is controlled by the terminal.
39	Command switch to communication	When this terminal is in effect, the command is controlled by communication.
40	Zero power consumption	When this terminal is valid, the power consumption is cleared
41	Maintenance of electricity consumption	When this terminal is in effect, the power consumption remains

Table 5-2 Relationship between multi-speed terminal status and multi-speed setting

Multi-speed terminal 4	Multi-speed terminal 3	Multi-speed terminal 2	Multi-speed terminal 1	Set frequency
OFF	OFF	OFF	OFF	Multistage speed 0 (13-00)
OFF	OFF	OFF	ON	Multistage speed 1 (13-01)
OFF	OFF	ON	OFF	Multistage speed 2 (13-02)
OFF	OFF	ON	ON	Multi-speed 3 (13-03)
OFF	ON	OFF	OFF	Multi-speed 4 (13-04)
OFF	ON	OFF	ON	Multi-speed 5 (13-05)
OFF	ON	ON	OFF	Multi-speed 6 (13-06)
OFF	ON	ON	ON	Multi-speed 7 (13-07)
ON	OFF	OFF	OFF	Multi-speed 8 (13-08)
ON	OFF	OFF	ON	Multi-speed 9 (13-09)
ON	OFF	ON	OFF	Multi-speed 10 (13-10)
ON	OFF	ON	ON	Multi-speed 11 (13-11)
ON	ON	OFF	OFF	Multi-speed 12 (13-12)
ON	ON	OFF	ON	Multi-speed 13 (13-13)
ON	ON	ON	OFF	Multi-speed 14 (13-14)
ON	ON	ON	ON	Multi-speed 15 (13-15)

Table 5-3 Terminal combinations Select the acceleration and deceleration time

Acceleration and deceleration time selection terminal 2	Acceleration and deceleration time select terminal 1	Acceleration and deceleration time group selection	Corresponding parameters
OFF	OFF	Acceleration and deceleration time 1	11-03, 04
OFF	ON	Acceleration and deceleration time 2	11-05, 11-06
ON	OFF	Acceleration and deceleration time 3	11-07, 11-08
ON	ON	Acceleration and deceleration time 4	11-9, 11 and 10

6-10	Input terminals are selected logically	The initial value	000	unit	1

Value range: 000 to 1FF in hexadecimal code

🕮 Bit0 to bit3 correspond to X1 to X4, and bit8 to HDI.

Bit value 0 is positive logic: the multi-function input terminal is valid when closed, but invalid when disconnected.

Bit set to 1 indicates anti-logic: The multi-function input terminal is valid when it is disconnected, but invalid when it is closed.

This kind of function code is a bit operation, only need to set the corresponding position high or low, but must be converted to hexadecimal code.

6 to 11	Input terminal filtering time	The initial value	0.010 s	unit	0.001

Value range: 0.000 to 1.000s

📖This function code is used to set the input filtering time of the X terminal and the HDI terminal. When the terminal works under high interference conditions, it may cause terminal function misoperation. You can increase this parameter value appropriately.

6 to 12	Virtual terminal setting	The initial value	000	unit	1

Value range: 000 to 1FF in hexadecimal code

📖 Bit0 to bit3 correspond to X1 to X4, and bit8 to HDI.

Bit set to 0: Virtual image terminal is disabled.

Bit Set to 1: Enable the dummy terminal.

This kind of function code is a bit operation, only need to set the corresponding position high or low, but must be converted to hexadecimal code.

6-13	Terminal command mode	The initial value	0	unit	1

Value range: 0 to 3

0: two-wire type 1

1: two-wire type 2

2: three-wire type 1

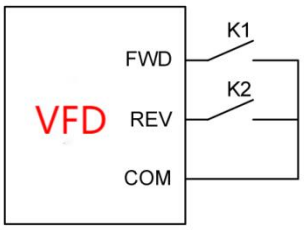
3: Three-wire type 2

📖There are four different ways to run a given command on FWD/REV terminal.

0: two wire type 1: the most commonly used two wire control. Either K1 or K2 determines the state of operation.

Parameter setting: 06-01=1(X1 = FWD), 06-02=2(X2 = REV), 06-13=0 (two-wire type 0)

- When K1 is closed and K2 is off, the motor turns forward.
- When K1 is disconnected and K2 is closed, the motor reverses.
- When the motor is stopped, K1 and K2 are closed at the same time.When the motor is running, K1 and K2 are closed at the same time to maintain the original running state.

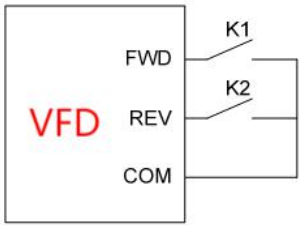


FWD	REV	Start-stop command
0	0	STOP
0	1	Reverse
1	0	Forward
1	1	STOP

Figure 5-4 Two-wire type 1

1: two-wire type 2:

Parameter setting is listed as follows: 06-01=1(X1 is enabled for operation), 06-02=2(X2 is switched on FWD/REV), 06-13=1 (two-wire 1), FWD is enabled on operation, REV is switched on forward and reverse.



FWD	REV	Start-stop command
0	0	stop
0	1	stop
1	0	Forward
1	1	Reverse

Figure 5-5 Two-wire type 2

2: Three-line type 1:

The Xi terminal or HDI terminal is configured with the 3: Three-wire operation control function. The Xi terminal is used as the three-wire enabling terminal.

Parameter setting: 06-01=1(FWD), 06-02=2(REV), 06-03=3(X3 is enabled for operation),06-13=2 (three-line 1)

When K3 is closed, FWD and REV control are effective.When K3 is disconnected, FWD and REV

control are invalid, and the inverter stops.

The rising edge of the FWD terminal indicates the forward operation command.The rising edge of the REV terminal reverses the running command.

3: Three-line type 2:

The Xi terminal or HDI terminal is configured with the 3: Three-wire operation control function. The Xi terminal is used as the three-wire enabling terminal.

Parameter setting: 06-01=1(running command), 06-02=2(FWD/REV switch), 06-03=3(X3 is enabled for running),06-13=3 (three-line 2)

When R3 is closed, FWD and REV control are effective.When K3 is disconnected, FWD and REV control are invalid, and the inverter stops.

The rising edge of the FWD terminal indicates the running command (the REV terminal is disconnected).REV When the terminal is closed, the direction command is reversed.

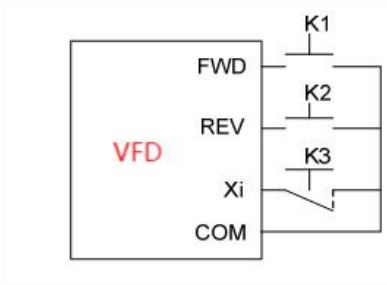


Figure 5-6 Three-wire type 1

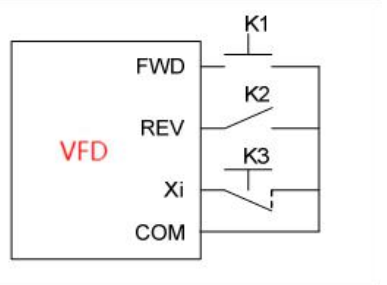


Figure 5-7 Three-wire type 2

6-14	X1 terminal opening delay	The initial value	0.000 s	unit	0.001
6 to 15	X1 terminal disconnect delay	The initial value	0.000 s	unit	0.001
6-16	X2 terminal commissioning	The	0.000 s	unit	0.001

	delay	initial value			
06-17	X2 terminal disconnection delay	The initial value	0.000 s	unit	0.001
06-18	X3 terminal opening delay	The initial value	0.000 s	unit	0.001
06-19	X3 terminal disconnection delay	The initial value	0.000 s	unit	0.001
06-20	X4 terminal commissioning delay	The initial value	0.000 s	unit	0.001
06-21	The X4 terminal is disconnected delay	The initial value	0.000 s	unit	0.001
06-30	HDI terminal commissioning delay	The initial value	0.000 s	unit	0.001
06-31	HDI terminal disconnect delay	The initial value	0.000 s	unit	0.001

Value range: 0.00s to 50.000s

📖When the status of the functional terminal changes, the function can be set according to the function code to delay the change of the status.The specific performance is as follows: The function terminal changes from invalid state to effective state, and the opening delay is maintained, this function is effective;This function is invalid only when the function terminal changes from the open state to the off state and the on-off delay is maintained.If the function code is set to 0.00s, the corresponding delay is invalid.

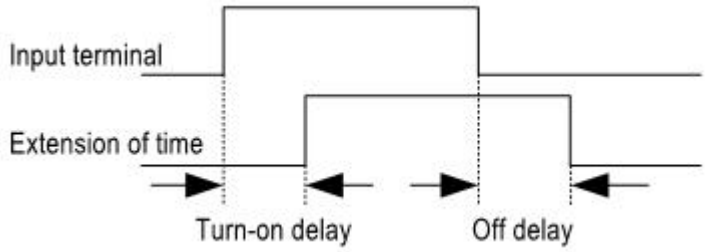


Figure 5-8X Terminal delay processing diagram

06-33	Select terminal start protection during power-on	The initial value	0	unit	1

Value range: 0 to 1

0: protect

1: no protection

📖 0: protect

When the command source is terminal, if the terminal has been effective when the converter is powered on, you need to make the terminal invalid before it can be effective.

1: no protection

When the command source is terminal, it can run directly if running terminal is effective when the inverter is powered on.

06-34	UP/DOWN terminal control setting	The initial value	000	unit	1

Value range: 000 to 221

Bits: The UP/DOWN terminal is enabled

Zero: effectively

1: invalid

Tens: Frequency source control selected

0: applies only to the digital setting of frequency sources A and B

1: All frequency sources are valid

2: Multi-segment speed is invalid when multi-segment speed is preferred

Hundreds: stop option

0: The setting is valid

1: effective operation, clear after shutdown

2: the operation is effective and the shutdown instruction is cleared

06-35	UP Frequency change rate of the UP terminal	The initial value	0.50 Hz/s	unit	0.01

Value range: 0.01 to 50.00Hz/s

06-36	DOWN Frequency change rate of the terminal	The initial	0.50 Hz/s	unit	0.01

[redacted]		value			

Value range: 0.01 to 50.00Hz/s

📖The UP/DOWN function includes keyboard UP/DOWN and terminal UP/DOWN.

When the frequency source is set to "0: Keyboard digital Settings", the keyboard UP/DOWN key or keyboard digital potentiometer is effective.You can set the multi-function X terminal to realize the UP/DOWN function of the terminal.The "Frequency Increase/Decrease Setting Clear" of multi-function X terminal is valid for both keyboard UP/DOWN and terminal UP/DOWN.

06-37	HDI input lower limit	The initial value	0.000 RHz	unit	0.001

Value range: 0.000KHz ~ (06-35)

06-38	The HDI lower limit is set	The initial value	0.0%	unit	0.1

Value range: -100.0 to 100.0%

06-39	HDI input upper limit	The initial value	20.000 RHz	unit	0.001

Value range :(06-33) ~ 50.000KHz

06-40	The HDI upper limit is set accordingly	The initial value	100.0%	unit	0.001

Value range: -100.0 to 100.0%

06-41	HDI filtering time	The initial value	0.100 s	unit	0.001

Value range: 0.000s to 10.000s

📖This function code set is used to set the relationship between HDI input high speed pulse frequency and corresponding Settings.

06-42	AI1 lower limit	The	0.00 V	unit	0.01

		initial value			

Value range: 0.00 to 10.00V

06-43	The lower limit of AI1 is set	The initial value	0.0%	unit	0.1

Value range: -100.0% to 100.00%

06-44	AI1 ceiling	The initial value	10.00 V	unit	0.01

Value range :(06-42) to 10.00v

06-45	AI1 upper limit is set accordingly	The initial value	100.0%	unit	0.1

Value range: -100.0% to 10.00V

06-46	AI1 Enter the filtering time	The initial value	0.100 s	unit	0.001

Value range: 0.000s to 10.000s

06-47	AI2 lower limit	The initial value	0.00 V	unit	0.01

Value range: 0.00 to 10.00V

06-48	The lower limit of AI2 is set	The initial value	0.0%	unit	0.1

Value range: -100.0% to 100.00%

06-49	The upper limit AI2	The initial value	10.00 V	unit	0.01

Value range :(06-47) to 10.00v

06-50	AI2 upper limit is set accordingly	The initial value	100.0%	unit	0.1

Value range: -100.0% to 10.00V

06-51	AI2 Enter the filtering time	The initial value	0.100 s	unit	0.001

Value range: 0.000s to 10.000s

06-52	AI3 lower limit	The initial value	0.00 V	unit	0.01

Value range: 0.00 to 10.00V

06-53	The lower limit of AI3 is set	The initial value	0.0%	unit	0.1

Value range: -100.0% to 100.00%

06-54	AI3 median	The initial value	0.50 V	unit	0.01

Value range :(06-52) to (06-56)

06-55	AI3 corresponding Settings in the middle	The initial value	0.0%	unit	0.1

Value range: -100.0% to 10.00V

06-56	The upper limit AI3	The initial value	10.00 V	unit	0.01

Value range :(06-54) to 10.00v

06-57	AI3 upper limit is set accordingly	The initial value	100.0%	unit	0.1

Value range: -100.0% to 10.00V

06-58	AI3 Enter the filtering time	The initial value	0.100 s	unit	0.001

Value range: 0.000s to 10.000s

📖AI1, AI2 enter 0 to 10V and 0 to 20mA.AI3 as keyboard analog potentiometer 0~5V input.When the local keyboard is disabled

When the rJ-45 network port is used to plug out the keyboard, the local keyboard interface pin can also be used as an expansion card and as a signal for the external AI3 (reserved).

Note: The input voltage range of AI3 is 0~5V, but the voltage value of AI3 is amplified and calibrated to 0~10V, so all parameters related to AI3 are

The value ranges from 0 to 10V.

06-59	AI input type IV is selected	The initial value	0	unit	1

Value range: 0 to 1

📖 0: AI terminal voltage input: the input voltage ranges from 0 to 10V.

1: AI terminal current input: the input current ranges from 0 to 20mA.

5.08 07 Group output terminal Parameters

07-00	HDO terminal output mode	The initial value	0	unit	1

Value range: 0 to 1

📖 0: high-speed pulse output

1: terminal switching output (open collector)

07-01	Y1 Terminal output function selection	The initial value	0	unit	1
07.	Select the HDO terminal	The	0	unit	1

	output function	initial value			
07-03	K1 terminal output function selection	The initial value	1	unit	1
07-04	Select the K2 terminal output function	The initial value	0	unit	1

Value range: 0 to 23

📖The frequency converter is equipped with multifunctional digital output terminals Y1 and HDO and 2-way relay output terminals K1 and K2

Table 5-4 Multi-function digital output function list

The set value	**The name of the function**	**Functional specifications**
0	There is no function	You can set unused terminals to No function to prevent misoperations
1	In the operation of the	The frequency converter is in the running state (frequency can be 0Hz), output ON signal.
2	Running in positive turn	When the output frequency of the frequency converter is in the positive direction, ON signal is output.
3	In reverse operation	When the output frequency of the inverter is in the opposite direction, ON signal is output.
4	Click running	When the output frequency of the inverter is in the opposite direction, ON signal is output.
5	Frequency converter failure	When the frequency converter has a fault or fault shutdown, output ON signal.
6	Frequency level detection FDT1	When the output frequency of the inverter exceeds 11-32 (FDT1 frequency check value), the output ON signal, until the output frequency drops to (11-32)*(100-(11-33)), the output OFF signal

<table>
<tr><th>The set value</th><th>The name of the function</th><th>Functional specifications</th></tr>
<tr><td>7</td><td>Frequency level detection FDT2</td><td>Frequency converter output frequency exceeds 11-34 (FDT1 frequency check value), output ON signal, until the output frequency drops to (11-34)*(100%-(11-35)) output OFF signal</td></tr>
<tr><td>8</td><td>Frequency to</td><td>When the output frequency of the inverter reaches the set frequency ±(11-36), the ON signal is output</td></tr>
<tr><td>9</td><td>Zero speed operation</td><td>When the output frequency of the frequency converter is 0Hz, the ON signal is output</td></tr>
<tr><td>10</td><td>Upper bound frequency arrival</td><td>When the output frequency reaches the upper limit, the ON signal is output.</td></tr>
<tr><td>11</td><td>Lower bound frequency arrival</td><td>When the output frequency of the frequency converter reaches the lower limit, the ON signal is output.</td></tr>
<tr><td>12</td><td>Operational readiness</td><td>When the inverter is powered ON and the system initialization is stable, and no fault information is detected, and the inverter is in the running state, the ON signal is output.</td></tr>
<tr><td>13</td><td>In the field</td><td>When the transducer is in the pre-excitation state, it outputs ON signal</td></tr>
<tr><td>14</td><td>Overload alarm</td><td>Inverter output reaches 10-09 and 10-10 time, output ON signal</td></tr>
<tr><td>15</td><td>Underload alarm</td><td>Frequency converter output lower than 10-11 and 10-10 time, output ON signal</td></tr>
<tr><td>16</td><td>Simple PLC stage completed</td><td>Simple PLC after completing a running stage, output ON signal.</td></tr>
<tr><td>17</td><td>Simple PLC cycle completed</td><td>Simple PLC to complete a running cycle, output ON signal.</td></tr>
<tr><td>18</td><td>Set count value reached</td><td>When the counter value reaches the set value, output ON signal.</td></tr>
<tr><td>19</td><td>The specified count arrives</td><td>When the counter value reaches the specified value, output ON signal.</td></tr>
<tr><td>20</td><td>External fault</td><td>When there is an external fault input from the X terminal, the ON signal is output.</td></tr>
<tr><td>22</td><td>Run time arrival</td><td>When the accumulated running time exceeds 11-21, the ON signal is output</td></tr>
<tr><td>23</td><td>Communication virtual terminal output</td><td>Communication command control terminal output.Please refer to the communication Protocol section for the address.
<table>
<tr><td>Bit0</td><td>Bit1</td><td>Bit2</td><td>Bit3</td></tr>
<tr><td>Y1</td><td>HDO</td><td>K1</td><td>K2</td></tr>
</table>
</td></tr>
</table>

07-05	AO1 Output function selection	The initial value	0	unit	1
07-07	HDO pulse output function selection	The initial value	0	unit	1

Value range: 0 to 14

📖The output range of analog AO1 is 0~10V and 0~20mA.High speed pulse output terminal HDO can range from 0.00 to 50.00KHz.

Table 5-5 Functions and calibration relation of analog output and high-speed pulse output

The set value	**The name of the function**	**Pulse or analog quantity 0~100% corresponding function**
0	Operating frequency	0~ Maximum frequency
1	Set frequency	0~ Maximum frequency
2	Slope set frequency	0~ Maximum frequency
3	Running speed	0~ Maximum frequency corresponds to rotational speed
4	The output current	0~2 times the rated current value of the converter
5	The output current	0~2 times the rated current of the motor
6	The output voltage	0~1.5 times the rated voltage of the converter
7	The output power	0~2 times the rated power of the converter
8	Set the torque	Twice the rated torque
9	The output torque	Twice the rated torque
10	Analog quantity AI1 input value	0 ~ 10.00 V
11	Analog quantity AI2 input value	0 ~ 10.00 V
12	Analog quantity AI3 input value	0 ~ 10.00 V
13	High speed pulse HDI input value	0.00 ~ 50.00 KHz
14	Communication set value AO1	0 ~ 100.0%

07-08	AO1 Output lower limit	The initial value	0.0%	unit	0.1

Value range: -100.0%~(07-10)

7-9	AO1 Indicates the output lower limit	The initial value	0.00 V	unit	0.01

Value range: 0.00 to 10.00V

7-10	AO1 Output upper limit	The initial value	100.0%	unit	0.1

Value range :(07-08) to 100.0%

07-11	AO1 Indicates the output upper limit	The initial value	10.00 V	unit	0.01

Value range: 0.0 to 10.00V

7-12	AO1 output filtering time	The initial value	0.000 s	unit	0.001

Value range: 0.000s to 10.000s

07-18	HDO output lower limit	The initial	0.0%	unit	0.1

		value			

Value range: -100.0%~(07-20)

07-19	HDO output lower limit	The initial value	0.00 KHz	unit	0.01

Value range: 0.00~50.00KHz

07-20	HDO output upper limit	The initial value	100.0%	unit	0.1

Value range :(07-18) to 100.0%

07-21	HDO output upper limit	The initial value	20.00 KHz	unit	0.01

Value range: 0.00~50.00KHz

07-22	HDO output filtering time	The initial value	0.000 s	unit	0.001

Value range: 0.000s to 10.000s

📖The corresponding relationship between AO1 and HDO's tenancy output and simulated output is calibrated by the above functional parameters.

07-23	Y1 Startup delay	The initial value	0.000 s	unit	0.001

Value range: 0.000 to 50.000s

07-24	Y1 Disconnect delay	The initial value	0.000 s	unit	0.001

Value range: 0.000 to 50.000s

07-25	HDO startup delay	The initial value	0.000 s	unit	0.001

Value range: 0.000 to 50.000s

07-26	HDO disconnect delay	The initial value	0.000 s	unit	0.001

Value range: 0.000 to 50.000s

07-27	K1 opening delay	The initial value	0.000 s	unit	0.001

Value range: 0.000 to 50.000s

07-28	K1 disconnect delay	The initial value	0.000 s	unit	0.001

Value range: 0.000 to 50.000s

07-29	K2 Opening delay	The initial	0.000 s	unit	0.001

		value			

Value range: 0.000 to 50.000s

07-30	K2 disconnect delay	The initial value	0.000 s	unit	0.001

Value range: 0.000 to 50.000s

📖The above function parameters can be independently set for the open and off time of Y1,HDO,K1 and K2.

07-31	Select polarity of output terminal	The initial value	0	unit	1

Value range: 0 to F (hexadecimal value)

📖When the Bit value is 0, the output terminal is in positive polarity.

When the Bit value is 1, the output terminal is negative polarity.

Bit0	Bit1	Bit2	Bit3
Y1	HDO	K1	K2

5.09 08 Groups of Keyboard Display parameters

08-00	The user password	The initial value	00000	unit	1

Value range: 00000 to 65535

📖It is used to protect the function code menu.

- The password protection function takes effect when a non-zero value is set.Next time you enter the menu, you must enter the correct user password. Otherwise, you cannot view

and modify menu function code parameters. Remember the password.

- Enter 00000 to clear the previously set password. The password protection function is invalid.

※ *Note 1: When the frequency converter is equipped with a user password, five "0.0.0.0.0" with a decimal point will be prompted to enter the function code, indicating that there is no user password.The user password must be entered correctly to enter the menu group.*

※ *Note 2: Clear the user password method. Enter the correct password according to the above method, enter 08-00 again, enter 00000 to clear.*

08-01	MFK/JOG key function selection	The initial value	1	unit	1

Value range: 0 to 6

🕮 MFK/JOG key is a multi-function key, which can be defined as the following special functions.

0	There is no function	4	Clear UP/DOWN Settings
1	Point running (JOG)	5	Free parking
2	SHIFT key	6	Switching command Sources in sequence (08-02)
3	Forward/reverse switching		

08-02	The MFK key runs the command source switch	The initial value	0	unit	1

Value range: 0 to 3

🕮 MFK multi-function key is 08-01 set to 6, as the command source according to the

sequence switch key use, the following is the switch order.

0: keyboard control -> Terminal control -> communication control

1: keyboard control -> terminal control

2: Keyboard control -> communication control

3: Terminal control -> communication control

08-03	The STOP/RESET button function	The initial value	0	unit	1
Value range: 0 to 3					

📖Select the effect of this function key on different command sources.

0: applies only to panel control

1: controls both panel and terminal

2: effective for both panel and communication control

3: applies to all control modes

08-04	Restoring factory parameters	The initial value	0	unit	1
Value range: 0 to 3					

📖 Function code parameters can be restored to factory defaults or fault records can be cleared.

0: no operation

1: Restore the default value (even the user password can be cleared)

2: Clears fault records

3: Keyboard lock (when selected, all functions except 08-04 are read-only and cannot be modified)

08-05	Keyboard digital control Settings	The initial value	0004	unit	1

Value range: 0000 to 1224

📖Keyboard ∧/∨ (UP/DOWN) keys and control mode selection of encoder.

Bits: frequency enable selection

0: ∧/∨ and the encoder are both valid

1: Only ∧/∨ is valid

2: Valid only for the encoder

3: ∧/∨ and encoder are invalid

Tens digit: frequency control selection

0: this parameter is valid only for keyboard digits

1: All frequency modes are valid

2: Multi-speed priority has no effect on multi-speed

Hundreds: action selection when stopping

0: The setting is valid

1: effective during operation and cleared after shutdown

2: valid while running, cleared after receiving the stop command

Thousands: ∧/∨ key and encoder integration function

0: The integral function is valid

1: The integral function is invalid

08-06	Keyboard encoder and UP/DOWN keys Resolution adjustment selection	The initial value	2	unit	1

The value ranges from 1 to 4

📖Keyboard encoder adjusts fast and slow rate values.

08-07	Frequency setting Action selection in case of power failure	The initial value	00	unit	1

Value range: 00 to 11

📖When the frequency converter power down, the frequency set value whether to perform the save action.

Bits: the encoder adjusts the frequency when the power is off

Ten: communication set frequency power off action selection

0: stored in case of power failure

1: Zero in case of power failure

08-08	Function code parameter replication	The initial value	0	unit	1

Value range: 0 to 4

📖You can use this function when you need to batch save or copy the set parameters of the converter.

0: no operation

1: Upload function parameters to the keyboard

2: Keyboard parameters downloaded to the machine (including motor parameters)

3: Keyboard parameters downloaded to the machine (excluding motor parameters)

4: Keyboard parameters downloaded to the machine (motor parameters only)

08-09	LED running status display parameter 1	The initial value	033F	unit	1

Value range: 0000 to FFFF(hexadecimal value)

BIT0: Operating frequency (Hz on)	BIT8: PID set value (% blinking)
BIT1: Set frequency (Hz flashing)	BIT9: PID feedback value (% on)
BIT2: Bus voltage (V on)	BIT10: indicates the input terminal status
BIT3: Output voltage (V on)	BIT11: output terminal status
BI: Output current (on A)	BIT12: Torque set value (% light)
BIT5: Running speed (RPM on)	BIT13: pulse meter value
BIT6: Output power (% light)	BIT14: keep
BIT7: output torque (% light)	BIT15: current number of PLC and multi-speed segments

08-10	LED running status display parameter 2	The initial value	0000	unit	1

Value range: 0000 to FFFF(hexadecimal value)

BIT0: analog value AI1 (V on)	BIT8: AC incoming current
BIT1: Analog value AI2 (V on)	BIT9: Upper limit frequency
BIT2: Analog value AI3 (V on)	
BIT3: high speed pulse HDI frequency	
BI: Motor overload percentage (% on)	
BIT5: Inverter overload percentage (% on)	
BIT6: Slope frequency set value (Hz on)	
BIT7: Linear speed	

08-11	LED shutdown display parameters	The initial value	038B	unit	1

Value range: 0000 to FFFF(hexadecimal value)

BIT0: Set frequency (Hz on, frequency slowly blinking) BIT1: Bus voltage (V on) BIT2: indicates the input terminal status BIT3: output terminal status BI: PID set value (% blinking) BIT5: PID feedback value (% on) BIT6: Torque set value (% light) BIT7: Analog value AI1 (V on)	BIT8: Analog value AI2 (V on) BIT9: Analog value AI3 (V on) BIT10: High speed pulse HDI frequency BIT11: current number of PLC and multi-speed segments BIT12: pulse meter value BIT13: keep BIT14: Upper limit frequency BIT15: keep

08-12	Software version	The initial value	read-only	unit	0.01

Value range: 0.00 to 655.35

08-13	Rectifier temperature	The initial value	read-only	unit	0.1

Value range: 0.0~120.0℃

08-14	Inverter temperature	The initial value	read-only	unit	0.1

Value range: 0.0~120.0℃

08-15	Frequency display coefficient	The initial value	1.00	unit	0.01

Value range: 0.01 to 10.00

08-16	Speed display coefficient	The initial value	97.3%	unit	0.1

Value range: 0.1 to 999.9%

08-17	Line speed display coefficient	The initial value	1.0%	unit	0.1

Value range: 0.1 to 999.9%

08-18	Input work factor display coefficient	The initial value	0.56	unit	0.01

Value range: 0.00 to 1.00

08-19	Accumulated running time	The initial value	read-only	unit	1

Value range: 0 to 65535h

08-20	Monitor high accumulative power consumption	The initial	read-only	unit	1 KWh

		value			
08-21	Monitor low accumulative power consumption	The initial value	read-only	unit	0.1 KWh

Value range: KWh

📖Cumulative power consumption =(08-20)*1000+(08-21)

08-22	Set high power consumption	The initial value	0 RWh	unit	1 KWh
08-23	Set low power consumption	The initial value	0.0 RWh	unit	0.1 KWh

Value range: KWh

📖Initial power consumption =(08-22)*1000+(08-23)

08-24	Barcode1	The initial value	read-only	unit	1
08-25	Barcode2	The initial value	read-only	unit	1
08-26	Barcode3	The initial value	read-only	unit	1

08-27	Barcode4	The initial value	read-only	unit	1
08-28	Barcode5	The initial value	read-only	unit	1
08-29	Barcode6	The initial value	read-only	unit	1

Value range: 0000 to FFFF

📖Manufacturer bar code query, used only by manufacturers.

08-30	Motor power display correction coefficient	The initial value	1.00	unit	0.01

Value range: 0.1 to 3.00

5.10 09 Group Fault Record Parameters

09-00	Current fault code	The initial value	-	unit	1
09-01	Previous failure code	The initial value	-	unit	1

09.	First two before the fault code	The initial value	-	unit	1
09-03	The first three failure codes	The initial value	-	unit	1
09-04	First four fault codes	The initial value	-	unit	1
09-05	The first five fault codes	The initial value	-	unit	1
09-06	Current frequency of failure	The initial value	-	unit	1
09-07	Given frequency of current failure ramp	The initial value	-	unit	1
09-08	Current fault output voltage	The initial value	-	unit	1
09-09	Current fault output current	The initial	-	unit	1

		value			
9 -- 10	Current fault bus voltage	The initial value	-	unit	1
09-11	Current temperature of the faulty module	The initial value	-	unit	1
09-12	Status of the current fault input terminal	The initial value	-	unit	1
09-13	Status of the current fault output terminal	The initial value	-	unit	1
09-14	Operation frequency of previous failure	The initial value	-	unit	1
09-15	Given frequency of previous failure ramp	The initial value	-	unit	1
09-16	Output voltage of previous fault	The initial value	-	unit	1

09-17	Output current of the previous fault	The initial value	-	unit	1
09-18	Bus voltage of previous failure	The initial value	-	unit	1
09-19	Temperature of the previous faulty module	The initial value	-	unit	1
09-20	Enter the terminal status of the previous fault	The initial value	-	unit	1
09-21	Output terminal status of the previous fault	The initial value	-	unit	1
09-22	Operation frequency of previous two failures	The initial value	-	unit	1
09-23	Given frequency of the first and second failure slopes	The initial value	-	unit	1
09-24	Output voltage of the previous two faults	The initial	-	unit	1

		value			
09-25	Output current of the previous two faults	The initial value	-	unit	1
09-26	The bus voltage of the previous two failures	The initial value	-	unit	1
09-27	Temperature of the first and second faulty modules	The initial value	-	unit	1
09-28	Input terminal status of the first two faults	The initial value	-	unit	1
09-29	Status of the output terminal of the previous two faults	The initial value	-	unit	1

The value ranges from 00 to 36

📖When the frequency converter fails, the detailed information about the current fault is recorded for querying and analyzing the cause of the fault.For details about the mapping between fault codes, see Fault Analysis and Handling.

5.11 Protection Group Parameters

10-00	Motor overload protection	The	2	unit	1

	option	initial value			

Value range: 0 to 2

📖The heat dissipation effect of ordinary induction motor is worse than that of variable frequency induction motor at low speed. The correct selection of motor type is beneficial to accurately protect the motor from overheating and overload.

0: no protection

1: ordinary motor: when the frequency of ordinary asynchronous motor is lower than half of the rated frequency, the heat dissipation effect is poor. In this case, the software automatically reduces the overload protection value.

2: variable frequency motor: the variable frequency motor is equipped with a special cooling fan, which is not affected by the working frequency of the motor. The cooling effect is good, and the overload protection value is not adjusted.

10-01	Motor overload protection factor	The initial value	100.0%	unit	0.1

Value range: 20.0 to 120.0%

📖 Used to adjust motor overload protection point.Motor overload protection is generally the ratio of inverter output current to motor rated current.

Motor overload inverse time ratio S=Io/(In*R), (Io is output current, In is rated motor current, K is 10-01 parameter)

The smaller the set value K is, the larger the ratio of side overload inverse time limit is, and the easier the protection is.The S value is a multiple of the rated current.

10.	Overvoltage stall protection is enabled	The initial value	1	unit	1

Value range: 0: invalid 1: valid

10-03	Overvoltage stall operating voltage	The initial value	Models to determine	unit	1

Value range: 120 to 150%

📖In the process of frequency converter deceleration, the motor is in the power generation state, and the DC bus voltage of the frequency converter rises. When the bus voltage exceeds the overvoltage stall protection voltage point, the frequency converter stops deceleration and remains at the current operating frequency, until the bus voltage drops below the 10-03 voltage action point, and then continues to decelerate.

Default value: 220V: 120%, 380V: 140%

10-04	Overcurrent protection is enabled	The initial value	01	unit	1

Value range: 00 to 11

Bits: indicates that software overcurrent protection is enabled

0: invalid. 1: valid

Tens: Hardware overcurrent protection is enabled

0: valid. 1: invalid

Hundreds: inverter unit overcurrent fault release blocking option

0: can be removed

1: The lockdown can be lifted after 60 seconds

2: Keeps the device locked. Power on the device again

10-05	Over loss rate protection current	The initial value	Models to determine	unit	0.1

Value range: 50.0 to 200.0%

10-06	Over loss rate of decline	The initial value	10.00 Hz	unit	0.01

Value range: 0.00 to 50.00Hz

📖When the output current of the converter reaches the protection current value of over loss speed, the acceleration operation will be suspended.When running at constant speed, it will lower the frequency. If overcurrent continues, the frequency will be reduced to the lower frequency value.Until the output current is less than the over-loss speed protection current value, the converter continues to accelerate to a given frequency value.

Over loss speed protection has software protection and hardware protection, software protection is over loss speed;Hardware protection is jumper overload OL failure.

Over loss rate decline rate refers to the rate of frequency decline at over loss rate, which is changed in seconds. The higher the value is, the faster the frequency decline rate is and the more sensitive the over current protection is.

10-07	I/O phase loss protection	The initial	111	unit	1

		value			

Value range: 000 to 111

🕮It is used to detect and protect the input and output phase deficiency of inverter.

Bits: indicates that the input phase loss protection is enabled

Tens: output phase loss protection is enabled

Hundreds: enable the hardware protection for input phase loss

10-08	Underload overload protection action	The initial value	000	unit	1

Value range: 000 to 131

🕮 Overload and underload protection function selection for motor or inverter.

Bits: underload overload alarm selection

0: the motor is under overload warning

1: inverter overload warning

Tens: underload overload action for selection

0: Inverter overloads alarm and continues operation

1: inverter underload warning, overload after shutdown

2: inverter overload warning and continue to run, underload after shutdown

3: inverter underload after shutdown

Hundreds: underload overload protection can

0: valid for the whole process

1: valid at constant speed

10-09	Overload detection of the	The	Models to	unit	1

	alignment	initial value	determine		

Value range :(10-11) to 200%

10-10	Overload detection time	The initial value	1.0 s	unit	0.1

Value range: 0.1 to 3600.0s

📖If the current of motor or frequency converter is greater than (10-09) and the duration reaches (10-10) time, the output terminal will generate overload alarm ON signal.

10-11	Underload detection level	The initial value	50%	unit	1

Value range: 0%~(10-09)

10-12	Underload detection time	The initial value	1.0 s	unit	0.1

Value range: 0.1 to 3600.0s

📖If the current of motor or frequency converter is less than (10-11) and the duration reaches (10-12) time, the output terminal will generate underload alarm ON signal.

10 to 13	Times of automatic reset of faults	The initial value	0	unit	1

Value range: 0 to 10

10-14	Fault automatic reset interval	The initial value	1.0 s	unit	0.1

Value range: 0.1 to 3600.0s

📖The frequency of automatic reset is set as non-zero value. When the continuous reset frequency exceeds the set value, the frequency converter will report fault shutdown.

The interval between the occurrence of a fault and automatic reset is the fault automatic reset interval.

10-15	Special function selection	The initial value	00	unit	1

Value range: 00 to 11

📖This parameter is used to extend some additional functionality

Bits: the voltage is unstable and the frequency is automatically reduced

Tens place: frequency reaches the second acceleration and deceleration time of switching

0: invalid. 1: valid

10 to 16	Output terminal fault action selection	The initial value	00	unit	1

Value range: 00 to 11

📖This parameter is used for

Bits: indicates the undervoltage fault action

Tens: Automatic reset during action

0: valid. 1: invalid

10 to 17	Instantaneous power outage re-operation option	The initial value	0	unit	1

Value range: 0: stop. 1: continue

10 to 18	Instantaneous power outage and operation waiting time	The initial value	1.0 s	unit	0.1

Value range: 0.0 to 3600.0s

📖When the frequency converter is powered off, if it is powered on again, 10-15=1, the frequency converter will wait for 10-16 time and start automatically.

10-19	Instantaneous power off frequency reduction enabled	The initial value	0	unit	1

Value range: 0: invalid, 1: valid

10-20	Instantaneous power down frequency constant	The initial value	10.00 Hz	unit	0.01

Value range: 0.00Hz~ Maximum frequency (change in seconds)

📖 When the inverter power supply is off, the internal bus voltage drops to (380V model: 460V;220V model: 260V), the frequency converter control motor with 10-14 frequency down constant to reduce the operation frequency, so that the motor is in the power generation state so that the bus voltage inside the frequency converter can be maintained, so that the frequency

converter can maintain a longer time without stopping.If power is restored to the grid during this period, the converter speeds up to a given frequency.

5.12 11 Auxiliary Function Parameters

11-00	Dot operation frequency	The initial value	5.00 Hz	unit	0.01
Value range: 0.00Hz to Maximum frequency					
11-01	Dot acceleration time	The initial value	Models to determine	unit	0.1
11.	Point deceleration time	The initial value	Models to determine	unit	0.1
Value range: 0.0 to 3600.0s					

📖Setting of the point running frequency and acceleration and deceleration time of the converter.

1. You can control the operation command by tapping the operation panel, control terminal or communication input.

2. The multi-function MF.K key on the operation panel can be set as forward and reverse button by function code 00-19.

3. The terminal can be operated by inputting the terminal with the switching value of "forward moving" and "reverse moving".

11-03	Acceleration time 2	The	Models to	unit	0.1

		initial value	determine		
11-04	Deceleration time 2	The initial value	Models to determine	unit	0.1
11-05	Acceleration time 3	The initial value	Models to determine	unit	0.1
11-06	Deceleration time 3	The initial value	Models to determine	unit	0.1
11-07	Acceleration time 4	The initial value	Models to determine	unit	0.1
11-08	Deceleration time 4	The initial value	Models to determine	unit	0.1

Value range: 0.0 to 3600.0s

📖The frequency converter provides 4 sets of acceleration and deceleration time, the first set is 00-12 and 00-13.

You can select different acceleration and deceleration time groups by using multi-functional input terminals. For details, see Table 5-3.

At the same time, 4 groups of acceleration and deceleration time can also be applied to simple

PLC multi-section acceleration and deceleration time Settings, see 13 groups of menu.

11-09	Operation mode when the operating frequency is lower than the lower limit	The initial value	0	unit	1

Value range: 0 to 2

📖When the running frequency is lower than the lower limit frequency, the running state of the converter can be selected by this parameter.

0: Runs at the lower frequency

1: stop

2: sleep

11-10	Sleep recovery delay	The initial value	0.0 s	unit	0.1

Value range: 0.0 to 3600.0s

📖In the dormant state, when the set frequency is greater than the lower limit frequency value and the duration reaches the set value of 11-10, the inverter will resume operation from the dormant state.

11-11	Drooping frequency	The initial value	0.00 Hz	unit	0.01

Value range: 0.00 to 10.00Hz

📖 This function is generally applied to the average power distribution of multiple motors dragging a load, and the decrease of the output frequency when the frequency converter outputs

the rated power.

As the load increases, the output frequency of the frequency converter decreases. When multiple motors drag the same load, the output frequency of the motor in the load decreases more, so that the load of the motor can be reduced, so as to realize the average power distribution of multiple motors.

11-12	Cooling fan control	The initial value	0	unit	1

Value range: 0 to 1

📖 0: Run with the frequency converter, 1: Always running

11-19	Setting value	The initial value	0	unit	1

Value range :(11-20) to 65535

11-20	Specified count	The initial value	0	unit	1

Value range: 0~(11-19)

📖The specified count is smaller than the set count.When the counter value reaches the value of 11-20, the output terminal outputs "the specified value reaches" ON signal, and the counter continues to count;When the counter value reaches the value of 11-19, the output terminal outputs "the specified value reaches" ON signal, and the counter is cleared for the next round of counting.

11-21	Run time set value	The initial value	0	unit	1

Value range: 0 to 65,535 minutes

📖Set the running time value of the converter. When the accumulated running time reaches this value, the multi-function digital terminal outputs "running time reaches" signal ON.

11-22	Jump frequency 1	The initial value	0.00	unit	0.01

Value range: 0.00 to Maximum frequency

11-23	Jump frequency amplitude 1	The initial value	0.00	unit	0.01

Value range: 0.00 to Maximum frequency

11-24	Jump frequency 2	The initial value	0.00	unit	0.01

Value range: 0.00 to Maximum frequency

11 to 25	Jump frequency amplitude 2	The initial value	0.00	unit	0.01

Value range: 0.00 to Maximum frequency

11-26	Jump frequency 3	The initial value	0.00	unit	0.01

Value range: 0.00 to Maximum frequency

11-27	Jump frequency amplitude 3	The initial value	0.00	unit	0.01

Value range: 0.00 to Maximum frequency

📖When the set frequency is within the jump frequency range, the actual operating frequency will be near the set jump frequency.By setting the jump frequency value, the frequency converter can avoid the mechanical resonance frequency point of the load.This function is invalid when the jump frequency is set to 0.00Hz.

11-28	The pendulum frequency range	The initial value	0.0%	unit	0.1

Value range: 0.0 to 100.0%

11-29	Jump frequency amplitude	The initial value	0.0%	unit	0.1

Value range: 0.0 to 50.0%

11-30	Pendulum rise time	The	5.0 s	unit	0.1

		initial value			

Value range: 0.1 to 3600.0s

11-31	Pendulum drop time	The initial value	5.0 s	unit	0.1

Value range: 0.1 to 3600.0s

📖Pendulum function is generally used in textile, chemical fiber and other industries, in need of transverse motion, winding applications.

- The swing frequency function refers to that the output frequency of the frequency converter swings up and down with the set frequency as the center, and the running track of the running frequency in the time axis. When the value of 11-28 is set to 0, the swing frequency function is closed.
- Swing AW= set frequency (as the center frequency) * swing amplitude 11-28,
- Jump frequency = swing AW* Jump frequency amplitude, which is a percentage of the swing.
- The operating frequency of the pendulum is constrained by the upper and lower frequencies.

11-32	FDT1 level detected value	The initial value	50.00 Hz	unit	0.01

Value range: 0.00Hz to Maximum frequency

11-33	FDT1 lag detection value	The initial value	5.0%	unit	0.1

Value range: 0.0 to 100.0%

11-34	FDT2 level detected value	The initial value	50.00 Hz	unit	0.01

Value range: 0.00Hz to Maximum frequency

11-35	FDT2 hysteresis test value	The initial value	5.0%	unit	0.1

Value range: 0.0 to 100.0%

📖When the operating frequency is higher than FDT1 and FDT2 values, the multi-function output terminal of the converter will output "Frequency detection level FDT1".

Or "frequency detection level FDT2" ON signal, when the operating frequency is lower than (FDT level detection value *FDT lag detection value),

The ON signal of the multi-function output terminal is cancelled.

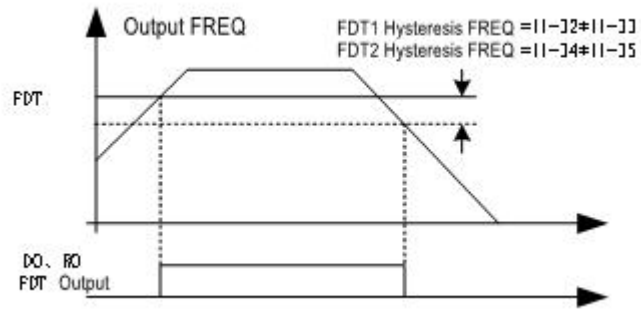


Figure 5-9 Output diagram of FDT

11-36	The frequency reaches the detection range	The initial value	0.00 Hz	unit	0.01

Value range: 0.00Hz to Maximum frequency

📖When the operating frequency reaches to the set frequency ± (11-36), the multi-function output terminal outputs "frequency reaching" ON signal,

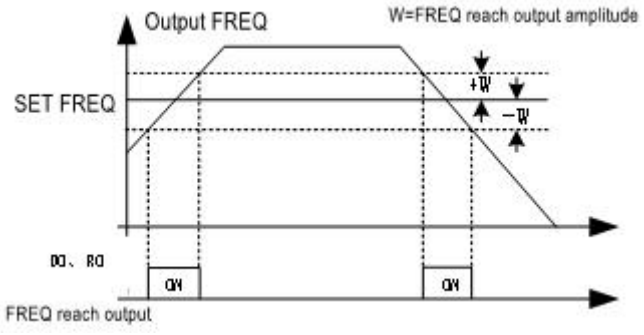


Figure 5-10 Schematic diagram of set frequency/frequency arrival signal output

11-37	Overmodulation selection	The initial value	01	unit	1

Value range: 00 to 11

📖This function code parameter is used to enable or disable the overmodulation function and to select the depth of overmodulation.

Bits: indicates that overmodulation is enabled

0: invalid

1: effective

Tens place: selection of overmodulation intensity

0: mild

The depth of 1:

11-38	PWM select	The initial value	00	unit	1

Value range: 00 to 11

📖This function code is used to select PWM mode and low frequency carrier frequency limiting mode.

Bits: indicates PWM mode selection

0: PWM1, three-phase modulation and two-phase modulation

1: PWM2, three-phase modulation

Tens digit: low frequency carrier frequency limiting mode selection

0:2KHz limit

1:4KHz limit

2: unlimited

5.13 Twelve GROUP PID Functions

12-00	PID given source	The initial value	0	unit	1

Value range: 0 to 6

📖This parameter is used to select the target quantity given channel of the process PID.

0	Numbers given	4	HDI
1	AI1	5	Multistage speed
2	AI2	6	The RS - 485 communication
3	AI3		

The set target amount of process PID is relative value, and the set range is -100.0~100.0%

12-01	PID digital setting	The	0.0%	unit	0.1

		initial value			

Value range: -100.0 to 100.0%

📖This parameter is the set target value of the process PID. It is a relative quantity percentage value, and the PID feedback value is also a relative quantity.

This value is valid when 12-00=0.

12.	PID feedback source	The initial value	0	unit	1

Value range: 0 to 5

📖This parameter is used to select the source of the PID feedback value.This parameter must be different from the given PID source. Otherwise, the PID does not work properly.

1	AI1	4	HDI
2	AI2	5	The RS - 485 communication
3	AI3		

12-03	PID action Direction	The initial value	0	unit	1

Value range: 0 to 1

📖

0: Positive effect: When the PID feedback signal is less than the feed quantity, the output frequency of the inverter rises.Such as winding tension situations.

1: reaction: the effect is just opposite to the positive effect.Such as unwinding tension control occasions.

12-04	Proportional gain Kp	The initial value	1.00	unit	0.01
Value range: 0.00 to 100.0					
12-05	Integral time Ti	The initial value	0.10 s	unit	0.01
Value range: 0.01 to 10.00s					
12-06	Differential time Td	The initial value	0.00 s	unit	0.01
Value range: 0.00 to 10.00s					

📖 Three adjusting parameters of process PID, reasonable adjustment of these three parameters can make process PID work stably.

- Proportional gain Kp: the maximum value of this parameter 100.00 indicates that when the deviation between PID feedback quantity and feed quantity is 100.00%, the output frequency amplitude of PID controller is the maximum frequency.The larger Kp is, the faster the regulating response is, but the larger Kp is, the more likely it is to produce oscillation.Kp cannot completely eliminate the deviation, and Ki can be used to eliminate residual deviation.
- Integral time Ti: determines the feedback amount of the PID controller and the

adjustment time of the given deviation integral speed.The larger Ki is, the faster the regulating response is, but too large Ki is easy to produce oscillation.

- Differential time Td: Strength adjustment of the PID regulator's feedback quantity and the rate of change of the given deviation.If the process PID controller

  Often jump feedback, then need to use Kd, Kd can quickly respond to the PID regulator feedback amount and the change of the deviation of the given quantity, the larger the response is faster, but too large is easy to cause system oscillation.

12-07	Sampling time	The initial value	0.100 s	unit	0.001

Value range: 0.000 to 10.000s

📖 This parameter sets the sampling period of the feedback signal. The smaller the value is, the faster the PID controller responds.However, too small sampling period will have higher correlation requirements on PID gain adjustment, which may lead to system oscillation.

12-08	PID control deviation limit	The initial value	0.0%	unit	0.1

Value range: 0.0 to 100.0%

📖 This function determines when the feedback signal and the given signal deviation reached what level, stop the internal PID adjustment, maintain stable output.The output is updated only if the closed-loop feedback value deviates from the given value by more than this value.Setting the limit of deviation requires both control accuracy and stability.

12-09	PID output upper limit	The initial value	100.0%	unit	0.1

Value range :(12-10) to 100.0%

12-10	PID output lower limit	The initial value	0.0%	unit	0.1

Value range: -100.0%~ (12-09)

🕮 PID upper and lower limits limit the output range of the PID controller.100.0% corresponds to the maximum frequency or voltage.

12 and 11	PID command acceleration and deceleration time	The initial value	0.0 s	unit	0.1

Value range: 0.0 to 1000.0s

🕮 Used to set the acceleration and deceleration time of PID controller.

12-12	PID output filtering time	The initial value	0.000 s	unit	0.001

Value range: 0.000 to 10.000s

🕮 Used to set the output filtering time of PID controller.

12-13	Low frequency proportional gain Kp	The initial value	1.00	unit	0.01

Value range: 0.00 to 100.00

📖 When PID works in low frequency band, this Kp value is used as.

12-14	PID feedback loss detection	The initial value	0.0%	unit	0.1

Value range: 0.0 to 100.0%

12 to 15	PID feedback loss detection time	The initial value	1.0 s	unit	0.1

Value range: 0.0 to 3600.0s

📖 PID feedback disconnection detection function, prevent feedback disconnection caused by the phenomenon of racing.Adjust according to the nature of the feedback sensor.

12-16	PID control function	The initial value	0001	unit	1

Value range: 0000 to 1111

📖 PID controller function selection.

Bits:

0: continuous integral adjustment when the frequency reaches the upper and lower limits.The integrals respond in real time to changes between quantitative and feedback quantities.

1: integral adjustment stops when the frequency reaches the upper and lower

limits.The product component stays the same.

Ten:

0: Consistent with the specified direction.

1: Go in the opposite direction.

One hundred:

0: refer to the maximum frequency limiter

1: reference frequency source A limiting

One thousand:

0: A+B, the acceleration and deceleration time of frequency source A is invalid

1: A+B, frequency source A is determined by acceleration and deceleration time 4

5.14 13 groups of multi-speed and simple PLC parameters

13-00	Multi-speed 0 frequency setting	The initial value	0.0%	unit	0.1
13-01	Multi-speed 1 frequency setting	The initial value	0.0%	unit	0.1
13.	Multispeed 2 frequency setting	The initial value	0.0%	unit	0.1
13-03	Multi-speed 3 frequency setting	The initial	0.0%	unit	0.1

		value			
13-04	Multispeed 4 frequency setting	The initial value	0.0%	unit	0.1
13-05	Multi-speed 5 frequency setting	The initial value	0.0%	unit	0.1
13-06	Multi-speed 6 frequency setting	The initial value	0.0%	unit	0.1
13-07	Multi-speed 7 frequency setting	The initial value	0.0%	unit	0.1
13-08	Multi-speed 8 frequency setting	The initial value	0.0%	unit	0.1
13-09	Multi-speed 9 frequency setting	The initial value	0.0%	unit	0.1
13-10	Multi-speed 10 frequency set point	The initial value	0.0%	unit	0.1

13 and 11	Multispeed 11 frequency setting	The initial value	0.0%	unit	0.1
13-12	Multispeed 12 frequency set point	The initial value	0.0%	unit	0.1
13-13	Multispeed 13 frequency setting	The initial value	0.0%	unit	0.1
13 and 14	Multispeed 14 frequency setting	The initial value	0.0%	unit	0.1
13 to 15	Multispeed 15 frequency set point	The initial value	0.0%	unit	0.1

Value range: -100.0% to 100.0%

📖 Multi-speed 16-segment frequency set value, 100.0% corresponding to the maximum frequency, negative value indicates reverse operation.Multispeed frequencies have the highest priority, taking precedence over either channel of frequency sources A or B.Four multi-segment command terminals correspond to 0-15 segment speeds. For details, see Table 5-2.

13-16	PLC phase 0 running time	The initial	0.0 s (min)	unit	0.1

		value			
13 to 17	PLC phase 1 running time	The initial value	0.0 s (min)	unit	0.1
13 to 18	PLC phase 2 running time	The initial value	0.0 s (min)	unit	0.1
13 to 19	PLC phase 3 running time	The initial value	0.0 s (min)	unit	0.1
13-20	PLC phase 4 running time	The initial value	0.0 s (min)	unit	0.1
13-21	PLC phase 5 running time	The initial value	0.0 s (min)	unit	0.1
13-22	PLC phase 6 running time	The initial value	0.0 s (min)	unit	0.1
13-23	PLC phase 7 running time	The initial value	0.0 s (min)	unit	0.1
13-24	PLC phase 8 running time	The	0.0 s (min)	unit	0.1

		initial value			
13 to 25	PLC section 9 running time	The initial value	0.0 s (min)	unit	0.1
13 to 26	PLC phase 10 running time	The initial value	0.0 s (min)	unit	0.1
13-27	PLC phase 11 running time	The initial value	0.0 s (min)	unit	0.1
13-28	PLC section 12 running time	The initial value	0.0 s (min)	unit	0.1
13-29	PLC phase 13 running time	The initial value	0.0 s (min)	unit	0.1
13-30	PLC section 14 running time	The initial value	0.0 s (min)	unit	0.1
13-31	PLC section 15 running time	The initial value	0.0 s (min)	unit	0.1

Value range: 0.0~ 6553.5s (min)

🕮 16 simple PLC running time setting values.

13-32	PLC 0~7 acceleration and deceleration time	The initial value	0000	unit	1

Value range: 0000 to FFFF (hexadecimal value)

🕮 Simple PLC 0~7 section acceleration and deceleration time selection, acceleration and deceleration time 1~4 by two bit value selected.

Acceleration and deceleration time selection table of PLC 0-7:

Period of	7	6	5	4	3	2	1	0
Bit	15, 14	13, 14	11,	9, 8	7, 6	5, 4	3, 2	1, 0
T1	00	00	00	00	00	00	00	00
T2	01	01	01	01	01	01	01	01
T3	10	10	10	10	10	10	10	10
	11	11	11	11	11	11	11	11

13-33	PLC 8~15 acceleration and deceleration time	The initial value	0000	unit	1

Value range: 0000 to FFFF (hexadecimal value)

🕮 Simple PLC section 8~15 acceleration and deceleration time selection, acceleration and deceleration time 1~4 is selected by two bit values.

PLC acceleration and deceleration time selection table for section 8~15:

Period of	15	14	13	12	11	10	9	8
Bit	15, 14	13, 14	11,	9, 8	7, 6	5, 4	3, 2	1, 0
T1	00	00	00	00	00	00	00	00
T2	01	01	01	01	01	01	01	01

T3	10	10	10	10	10	10	10	10
	11	11	11	11	11	11	11	11

13 to 34	Unit of PLC running time	The initial value	0	unit	1

Value range: 0 to 1

🕮 0: seconds (s)

1: minute (min)

13-35	PLC operation mode	The initial value	0	unit	1

Value range: 0 to 2

🕮 0: single operation knots down.A cycle of speed after the shutdown, need to run instructions to start.

1: the node speed of a single run runs at the final value.After a cycle of speed, maintain the running frequency and direction of the last section.

2: Keep repeating.Once the loop is complete, it starts again and repeats until the stop command is given.

13-36	PLC power failure memory selection	The initial value	0	unit	1

Value range: 0 to 1

🕮 0: does not remember the power failure

1: Memory of power failure.When the inverter power, automatic memory of the current running PLC stage number, running frequency, running direction.

13-37	PLC stop memory start option	The initial value	0	unit	1

Value range: 0 to 1

📖 0: restarts from the first segment.When the frequency converter has a fault or shutdown instruction during operation, it starts to run from the first section when it is restarted.

1: Continue to operate from the stage frequency at the time of power failure.When the frequency converter is running when there is a failure or shutdown instruction, the frequency converter memory the current number of segments and the running time, and then automatically continue to run the remaining time in memory after starting.

13-38	Multi-speed zero-frequency given source	The initial value	0	unit	1
13-39	Multispeed 1 frequency given source	The initial value	0	unit	1

Value range: 0 to 7

📖 0: the frequency percentage value of multi-speed 0 is given by the number 13-00, and the frequency percentage value of multi-speed 1 is given by the number 13-01.

1: AI1 2: AI2 3: AI3 4: HDI 5: PID

6: keyboard analog potentiometer 7: Preset frequency (00-08) Given, UP/DOWN can be

adjusted

5.15 14 groups of SCI communication parameters

14-00	Local address	The initial value	1	unit	1

Value range: 0 to 247

🕮 0: broadcast address, but no reply.

1 to 247: address of the slave for point-to-point communication.

14-01	Communication baud rate	The initial value	3	unit	1

Value range: 0 to 6

🕮 Set baud rate for SCI communication.

0	1200BPS	3	9600BPS	6	57600BPS
1	2400BPS	4	19200BPS	-	-
2	4800BPS	5	38400BPS	-	-

14.	MODBUS communication format	The initial value	3	unit	1

Value range: 0 to 5

🕮 MODBUS protocol format selection of native SCI

0	No validation 8 - N - 1 - RTU	3	No validation 8 - N - 2 - RTU
1	No validation 8 - E - 1 - RTU	4	No check 8 - E - 2 - RTU

2	No check - O - 1-8 RTU	5	No check - O - 2-8 RTU

14-03	MODBUS communication reply delay	The initial value	5ms	unit	1

Value range: 0 to 200ms

🕮 It refers to the waiting time for the converter to reply to the Modbus-RTU host after receiving data.

14-04	MODBUS communication timeout period	The initial value	0.0 s	unit	0.1

Value range: 0.0 to 60.0s

🕮 If this parameter is set to 0.0s, the communication timeout function is invalid.

When set to non-zero value, communication timeout function is effective, reach this set value or communication is not on the report of communication failure code.

In general, this value can be set to 0.0s off.The purpose of setting this parameter is to monitor whether the bit error rate occurs in the communication of the system.

14-05	Communication error action selection	The initial value	0	unit	1

Value range: 0 to 3

🕮 In case of frequency converter communication error, the following operation mode can be selected

0: alarm and free shutdown

1: Do not alarm and continue to run

2: stop the machine without alarm (only effective communication control)

3: Stop the machine according to the shutdown mode (all controls are effective)

14-06	Communication error action selection	The initial value	0	unit	1

Value range: 0 to 1

🕮 0: The write operation responds. The mainframe writes data to the converter, which responds.

1: The write operation does not respond.The host writes data to the converter, which does not respond. This improves communication efficiency and reduces the time it takes to respond to data.

14-07	Communication protocol selection	The initial value	0	unit	1

Value range: 0 to 1

🕮 0: supports 380 protocol

When this option is selected, most communication addresses are compatible with the 380 protocol format, such as the address of the control monitor class, menu 00 and menu 30 most commonly used menu addresses are compatible with the 380 standard Modbud-RTU format.

1: compatible with GD protocol

For control class addresses outside the menu group of the INVT-compatible GD series, refer to the [7. Communication protocol] of the INVT GD series.

5.16 30 Group Monitoring Parameters

📖For monitoring the various state information of the inverter, users can view it through the menu on the panel, or read it through the communication address.

Chapter vi Fault analysis and treatment

The following types of faults may occur during the use of the inverter. Please refer to the following table for simple fault analysis and handling.If the fault cannot be removed, contact technical support engineers.

Numeric fault codes and alphanumeric fault codes are listed for users with different habits to compare.

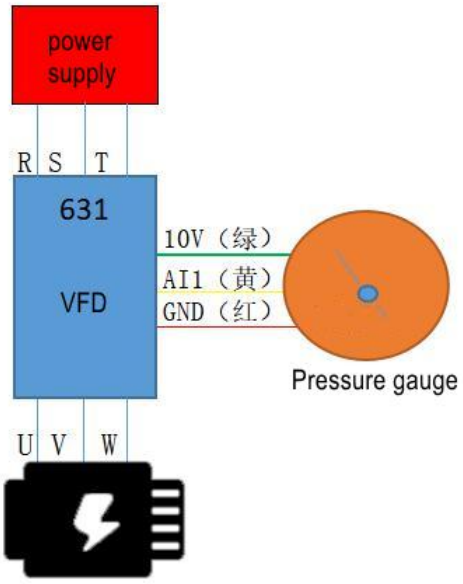
The fault code	The fault name	Troubleshooting Cause	Troubleshooting Measures
Err01 (Out)	Inverter unit protection	1. Short-circuit of the output loop of the converter 2. The wiring of motor and frequency converter is too long 3. Module overheating 4. The internal connection of the converter is loose 5. The main control board is abnormal 6. The driver board is abnormal 7. The inverter module is abnormal 8. Leakage or short circuit of motor line	1. Remove peripheral faults 2. Add reactor or output filter 3, check the air duct, fan and eliminate problems 4. Plug in all the connecting wires 5. Seek technical support 6. Seek technical support 7. Seek technical support 8, check the motor line or motor to ensure normal
Err02 (OC1)	Accelerated overcurrent	1. There is grounding or short circuit in the output loop of the frequency converter 2. The control mode is vector and no parameter identification is carried out 3. The acceleration time is too short 4. Manual torque lifting or V/F curve is not suitable 5. Low voltage 6. Start the motor that is rotating 7. Load is added in the process of acceleration 8. Converter selection is small	1. Remove peripheral faults 2. Identification of motor parameters 3. Increase the acceleration time 4. Adjust manual lifting torque or V/F curve 5. Adjust the voltage to the normal range 6. Start speed tracking or wait for the motor to stop before starting 7, cancel the sudden loading 8. Choose frequency converter with higher power grade
Err03 (OC2)	Retarding overcurrent	1. There is grounding or short circuit in the output loop of the frequency converter 2. The control mode is vector and no parameter identification is carried out 3, deceleration time is too short 4. Low voltage 5. Load is added in the process of deceleration 6, no brake unit and brake resistance	1. Remove peripheral faults 2. Identification of motor parameters 3, increase the deceleration time 4. Adjust the voltage to the normal range 5, cancel the sudden loading 6, add brake unit and resistance
Err04 (OC3)	Constant speed overcurrent	1. There is grounding or short circuit in the output loop of the frequency converter 2. The control mode is vector and no parameter identification is carried out 3. Low voltage 4. Whether there is sudden loading in operation	1. Remove peripheral faults 2. Identification of motor parameters 3. Adjust the voltage to the normal range 4, cancel the sudden loading 5. Choose frequency converter with higher power grade
Err05 (Ov1)	Accelerated overvoltage	1. The input voltage is high 2, in the process of acceleration, there is external force to drag the motor to run 3. The acceleration time is too short 4, no brake unit and brake resistance	1. Adjust the voltage to the normal range 2, cancel the additional power or add brake resistance 3. Increase the acceleration time 4, add brake unit and resistance

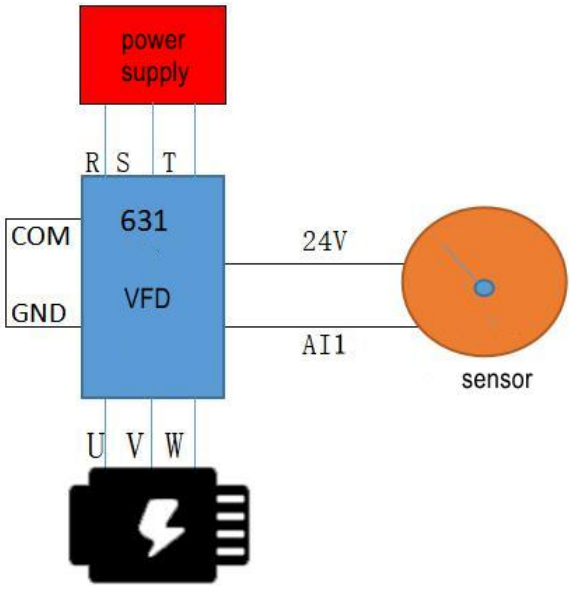
The fault code	The fault name	Troubleshooting Cause	Troubleshooting Measures
Err06 (Ov2)	Retarding overvoltage	1. The input voltage is high 2, in the process of deceleration, there is external force to drag the motor to run 3. The deceleration time is too short 4, no brake unit and brake resistance	1. Adjust the voltage to the normal range 2, cancel the additional power or add brake resistance 3, increase the deceleration time 4, add brake unit and resistance
Err07 (Ov3)	Constant speed overvoltage	1. The input voltage is high 2, in the process of operation, there is external force to drag the motor to run	1. Adjust the voltage to the normal range 2, cancel the additional power or add brake resistance
Err09 (Uv)	Busbar undervoltage	1. Instantaneous power failure 2. The voltage at the input end of the converter is not within the range required by the specification 3. Bus voltage is abnormal 4. Rectifier bridge and buffer resistance are abnormal 5. The driver board is abnormal 6. The control board is abnormal	1. Reset the fault 2, adjust the voltage to the normal range 3. Seek technical support 4. Seek technical support 5. Seek technical support 6. Seek technical support
Err10 (oL2)	Inverter overload	1. Whether the load is too large or the motor is blocked 2. Converter selection is small	1. Reduce the load and check the motor and machinery 2. Choose frequency converter with higher power grade
Err11 (oL1)	Motor overload	1. Whether the motor protection parameters are set properly 2. Whether the load is too large or the motor is blocked 3, motor selection is small	1. Set this parameter correctly 2. Reduce the load and check the motor and machinery 3, choose the motor with higher power grade
Err12 (SPI)	The input phase	1. The three-phase input power supply is abnormal 2. The driver board is abnormal 3. The surge protection board is abnormal 4. The main control board is abnormal	1, check and eliminate problems in the peripheral line 2. Seek technical support 3. Seek technical support 4. Seek technical support
Err13 (Spo)	The output phase	1. The lead wire from the frequency converter to the motor is abnormal 2. Inverter three-phase output is unbalanced when the motor is running 3. The driver board is abnormal 4. The module is abnormal	1. Remove peripheral faults 2. Check whether the motor winding is normal and troubleshoot 3. Seek technical support 4. Seek technical support
Err14 (oH2)	IGBT overheat	1. The ambient temperature is too high 2. Air duct is blocked 3. The fan is damaged 4. Thermistor of the module is damaged 5. The inverter module is damaged	1, reduce the ambient temperature 2, clean up the air duct 3. Replace the fan 4, replace the thermistor 5. Replace the inverter module
Err15 (EF)	External fault	Xi terminal input external fault signal	Check the external wiring, clear the fault operation
Err16 (CE)	485 Communication failure	1. The upper computer does not work normally 2. The communication line is abnormal 3. The communication parameter group is incorrectly set	1. Check the connection of the upper computer 2, check the communication connection line 3. Set communication parameters correctly

The fault code	The fault name	Troubleshooting Cause	Troubleshooting Measures
Err18 (ItE)	Current detection fault	1. Check the abnormality of Hall device 2. The driver board is abnormal 3. The main control board is abnormal	1. Replace hall devices 2. Replace the drive board 3. Seek technical support
Err19 (tE)	Motor tuning failure	1. Motor parameters are not set according to the nameplate 2. Parameter identification timed out	1. Set motor parameters correctly according to the nameplate 2. Check the lead from the converter to the motor
Err21 (EEP)	EEPROM read/write faults	1. EEPROM operations are too frequent 2. EEPROM chip is damaged	1. The upper computer operates EEPROM reasonably 2. Replace the main control board
Err23 (ETH)	Short circuit to ground fault	1、 The motor shorted to the ground 2、 Motor wiring UVW overlay 3、 Inverter module is damaged.	1、 Replace the motor 2、 Replace the motor line or remove the short circuit fault 3、 Replace the module or driver board
Err26 (End)	Total running time reached	The accumulated running time reaches the set value	Reset the running time
Err30 (LL)	Underload fault	1. The running current of the converter is less than the set parameter	1. Check whether the load is disconnected 2. Whether the parameter Settings conform to the actual operating
Err31 (PIdE)	PID feedback disconnection	1. PID feedback signal is disconnected 2. PID feedback loss The detection value is improperly set	1. Check the PID feedback signal 2. Check the PID feedback loss setting reasonable value
Err40 (oL4)	The fast current limiting fault occurs	1. Whether the load is too large or the motor is blocked 2. Converter selection is small	1. Reduce the load and check the motor and machinery 2. Choose frequency converter with higher power grade
Err42 (dEU)	Excessive velocity deviation	1. No parameter identification was carried out 2. The detection parameters are unreasonable if the speed deviation is too large 3. Heavy load or blocked rotation	1. Identification of motor parameters 2. Speed deviation detection parameters are reset reasonably 3. Check the load to ensure that the load is normal
Err48 (oL3)	Electronic overload fault	Inverter according to the set value of electronic overload parameter overload alarm failure	Detect load or adjust electronic overload value
Err51 (Sto)	Initial position misalignment fault	1. Unreasonable motor parameter setting 2. No parameter identification was carried out 3. The motor line is not connected properly	1. Set motor parameters and identify motor parameters 2. Identification of motor parameters 3, check the motor wiring to ensure normal
Err60 (bCE)	Brake tube protection failure	The brake resistance is short or the brake module is abnormal	Check the brake resistance or seek technical support
P-Lu	The power supply voltage	1、 The inverter supply voltage is insufficient 2、 Frequency converter internal switching power supply or bus detection failure 3、 The power or voltage range on the mainboard does not match the	1、 Check inverter power supply 2、 Check the internal power supply or bus circuit of the converter 3、 Check whether the rated voltages match each other

Chapter 7 Special Parameter Group for Constant Pressure Water Supply (with sleep)

631 Series water supply instructions:





00-02=0/1(keyboard/terminal start) **00-19=3 (constant pressure water supply parameter macro)** **00-03=7 (PID control)** **06-59 = 10** **06-60=1(pressure sensor supply voltage 10V)** **20-00 = 10/16 kg** **20-01=5 (Target pressure)** **20-02=5 (dormant pressure)** **20-03=3 (arousal pressure)** **20-04=0.05 (steady pressure deviation)** **20-05=10.0 seconds (sleep delay)** **20-06=0.00 (Wake up delay)**	**00-02=0/1 (keyboard/terminal start)** **00-19=3 (constant pressure water supply parameter macro)** **00-03=7 (PID control)** **06-59 = 11** **06-42= 2.00V (AI1 lower limit)** **20-00 = 10/16 kg** **20-01=5 (Target pressure)** **20-02=5 (dormant pressure)** **20-03=3 (arousal pressure)** **20-04=0.05 (steady pressure deviation)** **20-05=10.0 seconds (sleep delay)** **20-06=0.00 (Wake up delay)**

Appendix A Modbus Protocol

A.0 Networking mode

There are two networking modes of frequency converters: single-host/multi-slave mode and single-host/single-slave mode.

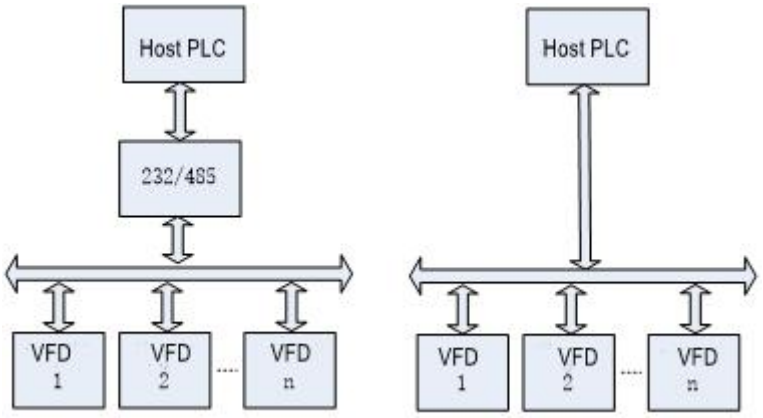


Figure A-1 Single-host multi-slave network mode

Figure A-2 Single-host single-slave group network mode

A.1 Interface Mode

RS485 asynchronous half duplex.

For details about the default data format of the RS485 terminal, see SCI Group Parameters.

A.2 Communication Mode

1. The frequency converter is slave, master-slave point-to-point communication.The slave machine does not respond when the host uses the broadcast address to send a command.

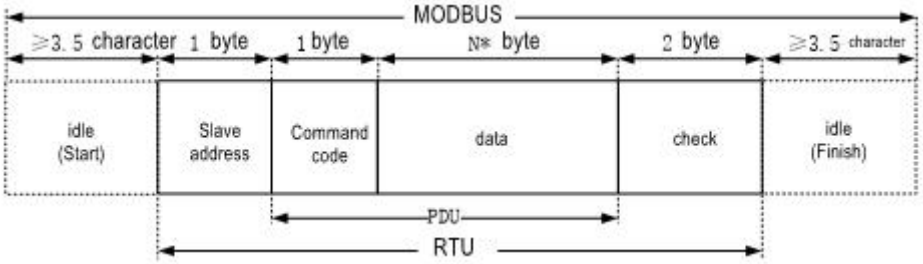
2. Set the local address, baud rate and data format of the converter with the slave computer operation panel or serial communication mode;

3. The slave machine reports the current fault information in the reply frame of the latest polling for the host.

4. The frequency converter adopts the local RS-485 interface.

A.3 Packet Format

Modbus packets contain start flags, RTU packets, and end flags.



RTU packets include address codes, PDUs, and CRC checks.A PDU consists of command codes and data.

Field description of data frame:

Frame START START	Idle transfer time of more than 3.5 characters.	
Slave address ADDR	Communication address range: 1 to 247 Slave address, 0 is broadcast address.	
CMD command code	The command code	describe
	0x03	Read multiple registers of the converter.
	0x06	Write a single register to the converter.
	0x10	Write multiple registers to the converter.
data	It mainly includes register address, register number, and register content. For details, see Section A.4.	
CRCL	CRC16 Check value.When transmitting, the low byte comes first and the high byte comes last.	
CRCH		
Frame END END	Idle transfer time of more than 3.5 characters.	

A.4 Command Code Description

A.4.1 Command Code 0x03 Read Multiple Registers (16 Consecutive Addresses Supported)

●Request the PDU

Device address	1 byte	0x01
The command code	1 byte	0x03
The starting address	2 bytes	0x0000 ~ 0XFFFF (high 8-bit address first)
Register quantity	2 bytes	0x0001 ~ 0x0010 (1 ~ 16, high 8 bits first)
CRC check code	2 bytes	

●Response PDU

Device address	1 byte	0x01
The command code	1 byte	0x03
The number of bytes	1 byte	2*N (N is the number of registers)
Register values	2 * N bytes	The register value is 8 bits higher than the first; The register value of the starting address is sent first.
CRC check code	2 bytes	The lower 8 bits of CRC are the first and the higher 8 bits are the second

Note: Currently the Modbus protocol 0x03 command code does not support reading multiple function codes across groups.

Example: Host send: 01 03 00 08 00 01 05 C8 (read 00-08 function code)

Frequency converter response: 01 03 02 1388 B5 12 (return 0x1388(5000), i.e. 50.00Hz)

A.4.2 Command Code 0x06 Write A Single Register

●Request the PDU

Device address	1 byte	0x01
The command code	1 byte	0x06
The starting address	2 bytes	0x0000 ~ 0xFFFF (high 8-bit address first)
Register values	2 bytes	0x0000 ~ 0xFFFF (register value higher than 8 bits)
CRC check code	2 bytes	The lower 8 bits of CRC are the first and the higher 8 bits are the second

●Response PDU

Device address	1 byte	0x01
The command code	1 byte	0x06
Register address	2 bytes	0x0000 ~ 0xFFFF (high 8-bit address first)
Register values	2 bytes	0x0000 ~ 0xFFFF (register value higher than 8 bits)
CRC check code	2 bytes	The lower 8 bits of CRC are the first and the higher 8 bits are the second

Example: Host sending: 01 06 00 08 2710 12 34 (write 0x2710(10000) to 00-08 function code, that is, 100.00Hz)

Inverter response: 01 06 00 08 27 10 12 34 (same as sending frame)

A.4.3 Command Code 0x10 Write Multiple Registers (Supporting 16 Consecutive Addresses)

●Request the PDU

Device address	1 byte	0x01
The command code	1 byte	0x10
The starting address	2 bytes	0x0000 ~ 0xFFFF (high 8-bit address first)
Register quantity	2 bytes	0x0001 ~ 0x0010 (1~16, high 8 bits first)
The number of bytes	1 byte	2*N (N is the number of registers)
Register values	2 * N bytes	The register value is 8 bits higher than the first; The register value of the starting address is sent first.
CRC check code	2 bytes	The lower 8 bits of CRC are the first and the higher 8 bits are the second

●Response PDU

Device address	1 byte	0x01
The command code	1 byte	0x10

The starting address	2 bytes	0x0000 ~ 0xFFFF (high 8-bit address first)
Register quantity	2 bytes	0x0001 ~ 0x0010 (1~16, high 8 bits first)
CRC check code	2 bytes	The lower 8 bits of CRC are the first and the higher 8 bits are the second

Example: Host sending: 01 10 00 01 00 02 00 04 00 02 00 01 72 91 (Function codes 00-01=2, 00-02=1)

Inverter response: 01 10 0001 0002 10 08 (response start register address 0x0001 and write register number 0x0002)

A.5 Command Code 0x08 Ping Communication

This function is used for ping communication of frequency converter to test whether there is a normal response to communication.

●The request and response contents are the same

Device address	1 byte	0x01
The command code	1 byte	0x08
The starting address	2 bytes	0x0000 ~ 0xFFFF (high 8-bit address first)
The data content	2 bytes	0x0001 ~ 0x0010 (1 ~ 16, high 8 bits first)
CRC check code	2 bytes	The lower 8 bits of CRC are the first and the higher 8 bits are the second

For example:Host send: 01 08 00 00 12 34 ED 7C

Inverter response: 01 08 00 00 12 34 ED 7C

0x08 command code, write 0x1234 arbitrarily to address 0X0000.The frequency converter responded with exactly the same content.

A. 6 CRC check

Ccr-16 is a tabulated version of the cCR-16. The following is the C language source code for the cCR-16 implementation. Note that the final result has exchanged high and low bytes, i.e. the result is the CRC checksum to be sent:

```
Uint16 CRC16(const Uint16 *data, Uint16 len)
{
    Uint16 crcValue = 0xffff;
    Uint16 i;
    while (len--)
    {
        crcValue   ^=   *data++;
        for (i = 0; i <= 7; i++)
        {
            if (crcValue & 0x0001)
            {
                crcValue = (crcValue >> 1) ^ 0xa001;
            }
            else
            {
```

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

A.7 Register ADDRESS

The register address is 16 bits of data. The higher 8 bits represent the function code group number, and the lower 8 bits represent the intra-group number.In order to avoid memory damage caused by frequent writing of EEPROM, the high position of register address indicates whether EEPROM is stored, the highest bit 0x8000 indicates whether EEPROM is stored, and 0 indicates only RAM.For example, write data to 00-02 function code. 0x0002 indicates that the written RAM is powered off and will not be saved.0x8002 Indicates that write EEPROM is saved on power failure.

14-07 can choose to be compatible with two communication address protocols, 0 is 380 address mode, 1 is GD address mode.

Register address table is as follows:

Address space		describe
Function code	0x0000 ~ 0x1F0A	The communications address is in hexadecimal format.The higher eight digits indicate the group number (00 to 1F), and the lower eight digits indicate the group number (0 to 1F).For example, function code 10-17 is 0x0A11 (0x0A=10, 0x11=17).
Shutdown/operation Parameters, speaking, reading and writing	0x1000	Communication set 100 parts ratio of -10000~10000, corresponding to -100.00~100.00%, negative motor inversion
	0x1001	Operating frequency
	0x1002	Bus voltage
	0x1003	The output voltage
	0x1004	The output current
	0x1005	The output power
	0x1006	The output torque
	0x1007	Running speed
	0x1008	DI Input status
	0x1009	DO output status
	0x100A	AI1 voltage
	0x100B	AI2 voltage
	0x100C	AI3 voltage
	0x100D	Count input
	0x100E	Length input
	0x100F	The load speed

	0x1010	PID given value
	0x1011	PID feedback value
	0x1012	PLC steps
	0x1013	HDI Input pulse frequency (input pulse wave frequency), unit: 0.01RHz
	0x1014	Feedback speed (min/revolution, RPM)
	0x1015	Remaining running time (min)
	0x1016	AI1 Voltage before calibration (0.01V)
	0x1017	AI2 Voltage before calibration (0.01V)
	0x1018	AI3 Voltage before calibration (0.01V)
	0x1019	Linear velocity
	0x101A	Current power-on time
	0x101B	Current running time
	0x101C	HDI input pulse frequency (relative to maximum frequency), unit 1Hz
	0x101D	Communication set value view
	0x101E	Actual feedback speed
	0x101F	Frequency source A is displayed
	0x1020	Frequency source B display
	0x2000	Communication control command, defined as follows: 0x0000: Invalid command 0x0001: Indicates positive running 0x0002: Reverse running 0x0003: Positive rotation 0x0004: Reverse dot 0x0005:14-00 =0 indicates free parking;14-00=1 means slow down and stop 0x0006:14-00 =0 means slow down stop;14-00=1 for free parking 0x0007: Fault reset 0x0008: Point stop
	0x2001	Output terminal function value 23 (Bit0: Y1, Bit1: HDO, Bit2: K1, Bit3: K2) 14-07=0, DO output terminal control 14-07=1, communication set frequency, 0~Fmax, unit: 0.01Hz
	0x2002	14-07=0, AO1 analog output setting (0~0x7FFF corresponds to 0~100%) 14-07=1, PID given, range (0~1000, corresponding to 100.0%)
	0x2003	14-07=0, AO2 analog output setting (0~0x7FFF corresponds to 0~100%) 14-07=1, PID feedback, range (0~1000, corresponding to 100.0%)
	0x2004	14-07=0, HDO high-speed pulse output control (0~0x7FFF corresponds to 0~100%) 14-07=1, torque set value (-3000~3000, 1000 corresponds to 100.0%

		rated motor current)
Fault code	0x2102	14-07 = 0 or 1.See 09 Group Fault Record Parameters
Native identification code	0x2103	14-07 = 0 or 1.keep
Frequency converter state 1	0x3000	14-07=0 This address is 0x3000, 14-07=1 The address is 0x2100. 1: forward 2: reverse 3: stop 4: fault 5: power undervoltage
Frequency converter status 2	0x3001	14-07=0 This address is 0x3001, 14-07=1 This address is 0x2101. Bit0:0- Not ready to run 1- Ready to run Bit3:0- Asynchronous motor 1- Synchronous motor Bi: 0- No overload 1- Overload warning Bit5:0- No excitation 1- Excitation medium
Monitoring parameter group	0x7000	See monitoring parameter group function code
Fault code	0x8000	When 14-07=0, the fault code address corresponds to 0x8000, If 14-07=1, the fault code address corresponds to 0x5000. See the code table in 09 Group Fault Recording Parameters.

Note: This communication address fault code will not be saved during power failure, and it will be 0 after the fault clearing operation. If the fault code of power failure protection is read, please read "09 Group Fault Record Parameters".

A.8 Communication Error Response

Communication error code table:

The error code	The name of the	describe
0x01	Command code invalid	The command code received by the converter is invalid
0x02	Register address invalid	The register address received by the converter is invalid
0x03	Invalid data value	Data value out of range
0x04	Data values cannot be modified	This error code is returned when some parameters of the converter are not modified successfully
0x05	User password error	The user passwords are inconsistent
0x06	The frame error	The length of a packet sent by the host is incorrect or the CRC check code is incorrect. Procedure
0x07	Function code value read-only	The function code of the read-only property is read by the host
0x08	Run unmodifiable	The function code attribute is written by the host when it cannot be modified at run time
0x09	User Password	When a user password is set, the host reads and writes the function code

	Protection	without unlocking the password

Communication error command code table:

Error command	The name of the	describe
0x83	0 x03 read error	0x03 When an error occurs during command reading, the command code in the response data frame changes from 0x03+0x80 to 0x83
0x86	0 x06 write error	0x06 When an error occurs during command writing, the command code in the response data frame changes from 0x06+0x80 to 0x86
0x90	0 x10 read error	0x10 When an error occurs during command reading, the command code in the response data frame changes from 0x10+0x80 to 0x90

For example:

Host send: 01 06 00 03 00 05 B9 C9 (function code write operation 00-03=5)

Inverter response: 01 86 04 43 A3

The maximum value of function code 00-03 is 2. When the command code 0x06 is used to write 5, the frequency converter will return communication frame with communication error command code 0x86 and error code 0x04, and writing 00-03=5 fails.

Appendix B List of function codes

Symbol Description:

"○" indicates that the setting value of this parameter can be changed in the shutdown or running state of the inverter.

"●" indicates that the setting value of this parameter cannot be changed when the inverter is in operation state.

※ indicates that the value is recorded and cannot be changed.

Function code	The name of the	describe	The factory value	attribute
00 Group basic parameters				
00 00 -	Frequency converter type G/P	0: Type G: constant torque load 1: P-type: fan and water pump loads	0	low
00-01	Motor control mode	0: keep 1: Vector control without speed sensor 2(with torque control) 2: VF control	2	low
00-02	Run command source selection	0: keyboard command (THE L/R indicator is off) 1: Terminal command (BLINKING L/R indicator) 2: Communication command (L/R on)	0	low
00-03	Frequency source A is selected	0: digital setting (preset frequency 00-08, UP/DOWN Or keyboard encoder can be modified, power off memory) 1: AI1 2: AI2 3: AI3(Extension) 4: HDI 5: Simple PLC 6: multi-speed 7: PID 8: RS-485 communication 9: keyboard analog potentiometer	0	low
00-04	Frequency source B is selected	Same as above (00-03)	3	low
00-05	Frequency source B	0: indicates the maximum frequency 1: indicates frequency source A	0	a.

Function code	The name of the	describe	The factory value	attribute
	reference range selection			
00-07	Frequency source combination	0: indicates frequency source A 1: indicates frequency source B 2: frequency source A+ frequency source B 3: Frequency source A- Frequency source B 4: Maximum value of both MAX(A,B) 5: Minimum values of both MIN(A,B)	0	a.
00-08	Keyboard preset frequency	0.00 Hz ~ (00-08)	50.00 Hz	a.
00-09	Motor running direction	0: same direction 1: The opposite direction 2: disables inversion	0	low
00-10	Maximum frequency	00-09-630.00 Hz	50.00 Hz	low
00-12	Upper limit frequency	00-10 ~ (00-08)	50.00 Hz	low
00-14	The lower frequency	0.00 Hz ~ (00-09)	0.00 Hz	low
00-15	Carrier frequency	1.0 ~ 15.0 KHz	Models to determine	a.
00-16	Zero frequency output selection	0: no output 1: Output is generated 2: DC brake output (set size from 05-11)	0	a.
00-17	Acceleration time 1	0.0 ~ 3600.0 s	Models to determine	a.
00-18	Deceleration time 1	0.0 ~ 3600.0 s	Models to determine	a.
00-19	Industry application macro selection	0 ~ 65535	0	a.
01 group motor parameters				
01-01	Automatic measurement of motor parameters	0: no function 1: dynamic test 2: Static test 1 3: Static test 2	0	low
01.	Motor rating	0.1 ~ 1000.0 KW	Models to determine	low
01-03	Motor rated	0.01Hz ~ maximum frequency (00-08)	50.00 Hz	low

Function code	The name of the	describe	The factory value	attribute
	frequency			
01-04	Motor rated speed	1 ~ 36000 RPM	Models to determine	low
01-05	Motor rated voltage	0~2000V	Models to determine	low
01-06	Motor rated current	0.1 ~ 6553.5 A	Models to determine	low
01-07	Motor stator resistance	0.001 ~ 65.535 Ω	Models to determine	a.
01-08	Motor rotor resistance	0.001 ~ 65.535 Ω	Models to determine	a.
01-09	Leakage inductance of motor	0.1 ~ 6553.5 mH	Models to determine	a.
01-10	Motor mutual inductance	0.1 ~ 6553.5 mH	Models to determine	a.
01-11	No-load current of motor	0.1 ~ 6553.5 A	Models to determine	a.
Group 02 VF control				
00 02 -	VF curve setting	0: line VF 1: multi-point VF(V1<V<V3, F1<F2<F3) 21.3 to the power VF 3:1.7 VF Four to the power of 2.0 VF 5: VF separation 6: keep	0	low
02-01	VF torque enhancement	0.0% : automatic torque lift 0.1-10.0% : manual setting	0.0%	a.
02.	VF torque promotion cutoff frequency alignment	0.0 ~ 50.0%	20.0%	a.
02-03	Multipoint VF maximum frequency F3	0.00 Hz ~ (01-02)	0.00 Hz	
02-04	Maximum voltage of multi-point VF V3	0.0% ~ 110.0%	0.0%	a.

Function code	The name of the	describe	The factory value	attribute
02-05	Multi-point VF intermediate frequency F2	0.00 Hz ~ F3	0.00 Hz	a.
02-06	Multi-point VF intermediate voltage V2	0.0% ~ V3	0.0%	a.
02-07	Multipoint VF minimum frequency F1	0.00 Hz ~ F2	0.00 Hz	a.
02-08	Multipoint VF minimum voltage V1	0.0% ~ V2	0.0%	a.
02-09	VF slip compensation gain	0.0 ~ 200.0%	100.0%	a.
02-10	VF low frequency oscillation suppression coefficient	0 ~ 100	10	a.
02-11	VF high frequency oscillation suppression coefficient	0 ~ 100	10	a.
02-12	VF oscillation suppression frequency switching	0.00Hz ~ Maximum frequency	30.00 Hz	a.
02-13	Automatic voltage regulator AVR	0: Cancel AVR 1: Full AVR 2: keep	1	a.
02-14	Automatic power saving operation	0: no function 1: Start automatic power saving operation	0	a.
02-15	VF constant power weak magnetic constant	1.00 ~ 1.30	1.00	a.
02-16	VF separates the	0: Digital setting (02-17)	0	a.

Function code	The name of the	describe	The factory value	attribute
	voltage source	1: AI1 2: AI2 3: AI3(Extension) 4: HDI 5: multi-speed 6: PID 7: RS-485 communication 8: keyboard analog potentiometer		
02-17	VF separation voltage digital setting	0.0 ~ 100.0%	0.0%	a.
02-18	VF separation voltage acceleration time	0.0 ~ 3600.0 s	0.0 s	a.
02-19	VF separation voltage deceleration time	0.0 ~ 3600.0 s	0.0 s	a.
02-20	VF separation voltage upper limit	(02-21) ~ 100.0%	100.0%	low
02-21	Lower limit of VF separation voltage	0.0 ~ (20).	0.0%	low
03 groups of motor vector control parameters				
03-00	ASR proportional gain P1	0.0 ~ 200.0	20.0	a.
03-01	The integral time of ASR is I1	0.000 ~ 10.000 s	0.200 s	a.
03-02	ASR proportional gain P2	0.0 ~ 200.0	20.0	a.
03-03	A sub R integral time I2	0.000 ~ 10.000 s	0.200 s	a.
03-04	ASR switching frequency 1	0.00 Hz ~ (03-22)	5.00 Hz	a.
03-05	ASR switching	(03-21)~ maximum frequency	10.00 Hz	a.

Function code	The name of the	describe	The factory value	attribute
	frequency 2			
03-06	ASR low pass filter constant	0 ~ 10	0	a.
03-07	Electric slip compensation gain	50 ~ 200%	100%	a.
03-08	Braking slip compensation gain	50 ~ 200%	100%	a.
03-09	ACR current loop KP	0 ~ 65535	1000	a.
03-10	ACR Current loop KI	0 ~ 65535	1000	a.
03-11	Vector 2 constant power weak magnetic constant	0.1 ~ 2.0	0.3	a.
03-12	Constant power minimum weak magnetic alignment	10% ~ 100%	20%	a.
03-13	Weak magnetic proportional gain	0 ~ 8000	1000	a.
03-14	Upper limit of vector output voltage	0.0 ~ 120.0%	100.0%	a.
03-15	Motor pre-excitation time	0.000 ~ 10.000 s	0.300 s	a.
04 group of torque control parameters				
00 04 -	Torque setting source selection	0: speed control (torque invalid) 1: Torque digital setting (04-01) 2: Torque is set by AI1 3: Torque is set by AI2 4: Torque is set by AI3 5: Torque is set by HDI 6: Torque is set by multi-speed 7: Torque RS-485 communication setting	0	a.

Function code	The name of the	describe	The factory value	attribute
		8: keyboard analog potentiometer setting		
04-01	Torque digital setting	300.0 ~ 300.0%	50.0%	a.
04.	Torque filtering time	0.000 ~ 10.000 s	0.010 s	a.
04-03	Forward torque upper limit frequency source	0: Digital setting of torque upper limit frequency (04-05 and 04-06) 1: AI1 2: AI2 3: AI3 4: HDI 5: multi-speed 6: RS-485 communication 7: keyboard analog potentiometer	0	a.
04-04	Reverse torque upper limit frequency source	Same as above	0	a.
04-05	Upper frequency of forward torque Digital setting	0.00Hz ~ Maximum frequency	50.00 Hz	a.
04-06	Upper frequency of reverse torque Digital setting	0.00Hz ~ Maximum frequency	50.00 Hz	a.
04-07	Electric torque limiting mode selection	0: Digital setting of torque upper limit value (04-09 and 04-10) 1: AI1 2: AI2 3: AI3 4: HDI 5: RS-485 communication 6: keyboard analog potentiometer		a.
04-08	Braking torque limiting mode selection	Same as above		a.
04-09	Electric torque limited digital setting	0.0 ~ 300.0%	180.0%	a.
04-10	Braking torque limited digital	0.0 ~ 300.0%	180.0%	a.

Function code	The name of the	describe	The factory value	attribute
	setting			
04-11	Vector low frequency torque compensation	0.0 ~ 100.0%	0.0%	a.
04-12	Vector high frequency torque compensation	0.0 ~ 100.0%	0.0%	a.
05 Groups of start and stop control parameters				
05-00	Start the way	0: starts directly 1: dc brake before starting 2: speed tracking starts	0	low
05-01	Start frequency	0.00 ~ 50.00 Hz	0.50 Hz	low
05.	Start frequency hold time	00.0 ~ 50.0 s	0.0 s	low
05-03	Start dc brake current	0.0 ~ 100.0%	0.0%	low
05-4	Start DC braking time	0.00 ~ 50.00 s	0.00 s	low
05-05	Acceleration and deceleration mode	0: straight acceleration and deceleration 1: S curve acceleration and deceleration	0	low
05 - '06	Acceleration time at the beginning of the S curve	0.0 ~ 50.0 s	0.1 s	a.
05-07	Deceleration time at the end of the S-curve	0.0 ~ 50.0 s	0.1 s	a.
05-08	Stop way	0: decelerate and stop 1: Free shutdown	0	a.
05-09	Stop dc braking start frequency	0.00~ Maximum frequency	0.00 Hz	a.
5-10	Dc braking waiting time of shutdown	0.00 ~ 50.00 s	0.00 s	a.
05-11	Stop dc brake current	0.0 ~ 100.0%	0.0%	a.

Function code	The name of the	describe	The factory value	attribute
05-12	Dc braking time of shutdown	0.00 ~ 50.00 s	0.00 s	a.
05-16	Reverse dead zone time	0.0 ~ 3600.0 s	0.00 s	a.
05-17	Reverse switching mode	0: zero frequency switching 1: Switching frequency is enabled 2: stops speed switching	0	low
05-18	Stop speed	0.00 ~ 100.00 Hz	0.50 Hz	low
05-19	Stop the speed detection method	0: detected according to the speed set value 1: detection according to the speed feedback value	1	low
05-20	Feedback speed detection time	0.00 ~ 100.00 s	0.05 s	low
05-21	Start the time delay	0.0 ~ 60.0 s	0.0 s	a.
05-22	Stop speed delay	0.0 ~ 100.0 s	0.0 s	a.
05-23	Brake unit action	0: disabled 1: enabled	1	a.
05-24	Action voltage of brake unit	From 200.0 V to 2000.0 V (220V machine: 380V, 380V machine: 700V)	Models to determine	a.
05-25	Excitation braking strength	0 ~ 150 0: disable Greater than 0: the greater the value, the better the braking effect	0	a.
06 Group input terminal parameters				
06 00 -	HDI input mode	0: high-speed pulse input 1: input terminal switch value	1	low
06-01	X1 terminal function selection	0: no function 1: Positive operation (FWD) 2: Reverse running (REV) 3: three-line operation control 4: Positive rotation inching (FJOG) 5: Reverse inching (RJOG) 6: Free parking 7: Fault reset	1	low

Function code	The name of the	describe	The factory value	attribute
6.	X2 terminal function selection	8: Pause 9: external fault input 10: Frequency setting increasing (UP) 11: Frequency setting decline (DOWN) 12: clear frequency increase and decrease Settings 13: Switch between A setting and B setting 14: Switch between combination setting and A setting 15: Switch between combination setting and B setting 16: multi-speed terminal 1 17: multi-speed terminal 2 18: multi-speed terminal 3 19: multi-speed terminal 4 20: Multi-speed pause 21: Set acceleration and deceleration time to 1 22: Acceleration and deceleration time 2 23: simple PLC shutdown reset 24: Simple PLC pause 25: PID control pause 26: Pendulum pause (stop at the current frequency) 27: Pendulum reset (back to center frequency) 28: Counter reset 29: torque/speed control switch 30: Acceleration and deceleration are prohibited 31: Counter trigger 32: The length is reset 33: Frequency increase or decrease Settings temporarily cleared 34: DC brake 35: Reserved (motor 1 switching motor 2) 36: Switch the command to the keyboard 37: Switch the command to the terminal 38: Command switch to communication 39: preexcitation command 40: zero power consumption 41: Electricity consumption is maintained	2	low
06-03	X3 terminal function selection		4	low
06-04	X4 terminal function selection		5	low
6-9	Select the HDI terminal function		0	low
6-10	Input terminals are selected logically	Bit0~3: X1~X4, Bit8: HDI 0 is positive logic, 1 is negative logic;	000	a.

Function code	The name of the	describe	The factory value	attribute
6 to 11	Input terminal filtering time	0.000 ~ 1.000 s	0.010 s	a.
6 to 12	Virtual terminal setting	0x000~0x1FF 0: disabled. 1: enabled Bit0 ~ bit3: X1 X4 Bit8: HDI	0x000	low
6-13	Terminal command mode	0: two-line 1 1: Two-wire type 2 2: three-wire type 1 3: Three-wire type 2	0	low
6-14	X1 terminal opening delay	0.00 ~ 50.000 s	0.000 s	a.
6 to 15	X1 terminal disconnect delay	0.00 ~ 50.000 s	0.000 s	a.
6-16	X2 terminal commissioning delay	0.00 ~ 50.000 s	0.000 s	a.
06-17	X2 terminal disconnection delay	0.00 ~ 50.000 s	0.000 s	a.
06-18	X3 terminal opening delay	0.00 ~ 50.000 s	0.000 s	a.
06-19	X3 terminal disconnection delay	0.00 ~ 50.000 s	0.000 s	a.
06-20	X4 terminal commissioning delay	0.00 ~ 50.000 s	0.000 s	a.
06-21	The X4 terminal is disconnected delay	0.00 ~ 50.000 s	0.000 s	a.
06-30	HDI terminal commissioning delay	0.00 ~ 50.000 s	0.000 s	a.
06-31	HDI terminal disconnect delay	0.00 ~ 50.000 s	0.000 s	a.
06-33	Select terminal start protection during power-on	0: protected 1: not protected	0	a.
06-34	UP/DOWN	Bits: The UP/DOWN terminal is enabled	000	a.

Function code	The name of the	describe	The factory value	attribute
	terminal control setting	Zero: effectively 1: invalid Tens: Frequency source control selected 0: applies only to the digital setting of frequency sources A and B 1: All frequency sources are valid 2: Multi-segment speed is invalid when multi-segment speed is preferred Hundreds: stop option 0: The setting is valid 1: effective operation, clear after shutdown 2: the operation is effective and the shutdown instruction is cleared		
06-35	UP Frequency change rate of the UP terminal	0.01 ~ 50.00 Hz/s	0.50 Hz/s	a.
06-36	DOWN Frequency change rate of the terminal	0.01 ~ 50.00 Hz/s	0.50 Hz/s	a.
06-37	HDI input lower limit	0.000 KHz ~ (06-35)	0.000 KHz	a.
06-38	The HDI lower limit is set	- 100.0% ~ 100.0%	0.0%	a.
06-39	HDI input upper limit	06-33) (~ 50.000 KHz	50.000 KHz	a.
06-40	The HDI upper limit is set accordingly	- 100.0% ~ 100.0%	100.0%	a.
06-41	HDI filtering time	0.000 s to 10.000 s	0.100 s	a.
06-42	AI1 lower limit	0.00 V ~ (06-44)	0.00 V	a.
06-43	The lower limit of AI1 is set	- 100.0% ~ 100.0%	0.0%	a.
06-44	AI1 ceiling	(06-42) ~ 10.00 V	10.00 V	a.
06-45	AI1 upper limit is set accordingly	- 100.0% ~ 100.0%	100.0%	a.
06-46	AI1 Enter the filtering time	0.000 s to 10.000 s	0.100 s	a.
06-47	AI2 lower limit	0.00 V ~ (06-39)	0.00 V	a.

Function code	The name of the	describe	The factory value	attribute
06-48	The lower limit of AI2 is set	100.0 ~ 100.0%	0.0%	a.
06-49	The upper limit AI2	(06-47) ~ 10.00 V	10.00 V	a.
06-50	AI2 upper limit is set accordingly	100.0 ~ 100.0%	100.0%	a.
06-51	AI2 Enter the filtering time	0.000 s to 10.000 s	0.100 s	a.
06-52	AI3 lower limit	- 10.00 V ~ (06-54)	0.00 V	a.
06-53	The lower limit of AI3 is set	100.0 ~ 100.0%	0.0%	a.
06-56	The upper limit AI3	(06-54) ~ 10.00 V	10.00 V	a.
06-57	AI3 upper limit is set accordingly	100.0 ~ 100.0%	100.0%	a.
06-58	AI3 Enter the filtering time	0.000 s to 10.000 s	0.100 s	a.
06-59	AI input type IV is selected	Bits: AI1 Ten: AI2 0: AI terminal voltage input, 1: indicates the AI terminal current input	10	a.
07 Output terminal parameters				
07-00	HDO terminal output mode	0: high-speed pulse output 1: switch output of the terminal	1	low
07-01	Y1 Terminal output function selection	0: invalid 1: running 2: running 3: running in reverse 4: In operation 5: The inverter is faulty 6: Frequency level detection FDT1 7: Frequency level detection FDT2 8: frequency arrival 9: Zero speed operation 10: Upper limit frequency reached 11: The lower limit frequency reaches 12: Ready for operation	0	a.
07.	Select the HDO terminal output function		0	a.

Function code	The name of the	describe	The factory value	attribute
07-03	K1 relay output function selection	13: pre-excitation 14: Overload alarm 15: Underload alarm 16: Simple PLC stage completed 17: Simple PLC cycle completion 18: Set record value reached 19: The specified value arrives 20: Indicates an external fault 22: Run time arrives 23: communication virtual terminal output	1	a.
07-04	K2 relay output function selection		5	a.
07-05	AO1 Output function selection	0: operating frequency 1: Set the frequency 2: slope given frequency 3: running speed 4: output current (frequency converter 2 times rating) 5: output current (motor 2 times rating) 6: output voltage 7: output power 8: set torque 9: output torque 10: simulate the input value of AI1 11: simulates the input value of AI2 12: simulate the input value of AI3 13: high-speed pulse HDI input value 14: communication set value output 15: keep 22: torque current (3 times motor rating)	4	a.
07-07	HDO pulse output function selection		0	a.
07-08	AO1 Output lower limit	- 100.0% ~ (07-10)	0.0%	
7-9	AO1 Indicates the output lower limit	From 0.00 V to 10.00 V	0.00 V	a.
7-10	AO1 Output upper limit	(07-08) ~ 100.0%	100.0%	a.
07-11	AO1 Indicates the output	From 0.00 V to 10.00 V	10.00 V	a.

Function code	The name of the	describe	The factory value	attribute
	upper limit			
7-12	AO1 output filtering time	0.000 s to 10.000 s	0.000 s	a.
07-18	HDO output lower limit	- 100.0% ~ (07-20)	0.0%	a.
07-19	HDO output lower limit	0.00 ~ 50.00 KHz	0.00 KHz	a.
07-20	HDO output upper limit	(07-18) ~ 100.0%	100.0%	a.
07-21	HDO output upper limit	0.00 ~ 50.00 KHz	50.00 KHz	a.
07-22	HDO output filtering time	0.000 s to 10.000 s	0.000 s	a.
07-23	Y1 Startup delay	0.00 ~ 50.000 s	0.000 s	a.
07-24	Y1 Disconnect delay	0.00 ~ 50.000 s	0.000 s	a.
07-25	HDO startup delay	0.00 ~ 50.000 s	0.000 s	a.
07-26	HDO disconnect delay	0.00 ~ 50.000 s	0.000 s	a.
07-27	K1 opening delay	0.00 ~ 50.000 s	0.000 s	a.
07-28	K1 disconnect delay	0.00 ~ 50.000 s	0.000 s	a.
07-29	K2 Opening delay	0.00 ~ 50.000 s	0.000 s	a.
07-30	K2 disconnect delay	0.00 ~ 50.000 s	0.000 s	a.
07-31	Select polarity of output terminal	0~F (Bit0~3: Y1, HDO, K1, K2)	0	a.
08 groups of keyboard display parameters				
08-00	The user password	0 to 65535 (00000: no password)	00000	a.
08-01	MFK/JOG key function selection	0: no function 1: JOG running 2: SHIFT key 3: forward/reverse switch 4: Clears UP/DOWN Settings	1	low

Function code	The name of the	describe	The factory value	attribute
		5: Free parking 6: Switch command sources in sequence (08-02)		
08-02	The MFK key runs the command source switch	0: keyboard control → terminal control → communication control 1: Keyboard control ←→ Terminal control 2: Keyboard control ←→ Communication control 3: Terminal control ←→ Communication control	0	a.
08-03	The STOP/RESET button function	0: applies only to panel control 1: controls both panel and terminal 2: effective for both panel and communication control 3: applies to all control modes	0	a.
08-04	Restoring factory parameters	0: no operation 1: restores the default value 2: Clears fault records 3: The keyboard is locked	0	low
08-05	Keyboard digital control Settings	0000 ~ 1223 **Bits: frequency enable selection** 0: ∧/∨ and the encoder are both valid 1: Only ∧/∨ is valid 2: Encoder only 3: ∧/∨ and encoder are invalid **Tens digit: frequency control selection** 0: this parameter is valid only for keyboard digits 1: All frequency modes are valid 2: Multi-speed priority has no effect on multi-speed **Hundreds: action selection when stopping** 0: The setting is valid 1: effective during operation and cleared after shutdown 2: valid while running, cleared after receiving the stop command **Thousands: ∧/∨ key and encoder integration function** 0: The integral function is valid 1: The integral function is invalid	0000	a.
08-06	Keyboard	1 ~ 4	2	a.

Function code	The name of the	describe	The factory value	attribute
	encoder and UP/DOWN key resolution adjustment options			
08-07	Frequency setting Action selection in case of power failure	00 ~ 11 **Bits: the encoder adjusts the frequency when the power is off** **Ten: communication set frequency power off action selection** 0: stored in case of power failure 1: Zero in case of power failure	00	a.
08-08	Function code parameter replication	0: no operation 1: Upload function parameters to the keyboard 2: Keyboard function parameters downloaded to the machine (including motor parameters) 3: Keyboard function parameters downloaded to the machine (excluding motor parameters) 4: Keyboard function parameters downloaded to the machine (motor parameters only)	0	low
08-09	LED running status display parameter 1	0000~FFFF BIT0: Operating frequency (Hz on) BIT1: Set frequency (Hz flashing) BIT2: Bus voltage (V on) BIT3: Output voltage (V on) BI: Output current (on A) BIT5: Running speed (RPM on) BIT6: Output power (% light) BIT7: output torque (% light) BIT8: PID set value (% blinking) BIT9: PID feedback value (% on) BIT10: indicates the input terminal status BIT11: output terminal status BIT12: Torque set value (% light) BIT13: pulse meter value BIT15: current number of PLC and multi-speed segments	033F	a.

Function code	The name of the	describe	The factory value	attribute
08-10	LED running status display parameter 2	0000~FFFF BIT0: analog value AI1 (V on) BIT1: Analog value AI2 (V on) BIT2: Analog value AI3 (V on) BIT3: high speed pulse HDI frequency BI: Motor overload percentage (% on) BIT5: Inverter overload percentage (% on) BIT6: Slope frequency set value (Hz on) BIT7: Linear speed BIT8: AC incoming current BIT9: Upper limit frequency	0000	a.
08-11	LED shutdown display parameters	0000~FFFF BIT0: Set frequency (Hz on, frequency slowly blinking) BIT1: Bus voltage (V on) BIT2: indicates the input terminal status BIT3: output terminal status BI: PID set value (% blinking) BIT5: PID feedback value (% on) BIT6: Torque set value (% light) BIT7: Analog value AI1 (V on) BIT8: Analog value AI2 (V on) BIT9: Analog value AI3 (V on) BIT10: High speed pulse HDI frequency BIT11: current number of PLC and multi-speed segments BIT12: pulse meter value BIT13: Length value BIT14: Upper limit frequency	038B	a.
08-12	Software version	0.00 ~ 655.35	-	does
08-13	Rectifier temperature	0 ~ 120.0 ℃	-	does
08-14	Inverter temperature	0 ~ 120.0 ℃	-	does

Function code	The name of the	describe	The factory value	attribute
08-15	Frequency display coefficient	0.01 ~ 10.00	1.00	a.
08-16	Speed display coefficient	0.1 ~ 999.9%	97.3%	a.
08-17	Line speed display coefficient	0.1 ~ 999.9%	1.0%	a.
08-18	Input work factor display coefficient	0.00 ~ 1.00	0.56	a.
08-19	Accumulated running time	0~65535h	-	does
08-20	Monitor high accumulative power consumption	Cumulative power consumption =(08-20)*1000+(08-21)	0KWh	does
08-21	Monitor low accumulative power consumption		0.0 KWh	does
08-22	Set high initial value of electricity consumption	Initial power consumption =(08-22)*1000+(08-23)	0KWh	a.
08-23	Set low initial value of electricity consumption		0.0 KWh	a.
08-24	Barcode1			does
08-25	Barcode2			does
08-26	Barcode3			does
08-27	Barcode4			does
08-28	Barcode5			does
08-29	Barcode6			does
08-30	Motor power display correction coefficient	0.00 ~ 3.00	1.00	a.

Function code	The name of the	describe	The factory value	attribute
09 Group Fault record Parameters				
09-00	Current fault code			does
09-01	Previous failure code			does
09.	First two before the fault code			does
09-03	The first three failure codes			does
09-04	First four fault codes			does
09-05	The first five fault codes			does
09-06	Current frequency of failure			does
09-07	Given frequency of current failure ramp			does
09-08	Current fault output voltage			does
09-09	Current fault output current			does
9 -- 10	Current fault bus voltage			does
09-11	Current temperature of the faulty module			does
09-12	Status of the current fault input terminal			does
09-13	Status of the current fault output terminal			does
09-14	Operation frequency of previous failure			does
09-15	Given frequency			does

Fault code	The fault name	Fault code	The fault name
0	trouble-free	29	-
1	Inverter unit protection	30	Underload fault
2	Accelerated overcurrent	31	PID feedback disconnection
3	Retarding overcurrent	40	The fast current limiting fault occurs
4	Constant speed overcurrent	42	Excessive velocity deviation
5	Accelerated overvoltage	48	Electronic overload fault
6	Retarding overvoltage	51	Initial misalignment
7	Constant speed overvoltage	60	Brake tube protection
8	-		
9	Busbar undervoltage		
10	Inverter overload		
11	Motor overload		
12	The input phase		
13	The output phase		
14	IGBT overheat		
15	External fault		
16	Communication failures		
17	-		
18	Current detection fault		
19	Motor tuning		

<table>
<tr><th>Function code</th><th>The name of the</th><th>describe</th><th>The factory value</th><th>attribute</th></tr>
<tr><td></td><td>of previous failure ramp</td><td rowspan="15"><table>
<tr><td></td><td>failure</td><td></td><td></td></tr>
<tr><td>20</td><td>-</td><td></td><td></td></tr>
<tr><td>21</td><td>EEPROM failure</td><td></td><td></td></tr>
<tr><td>23</td><td>Short circuit to ground fault</td><td></td><td></td></tr>
<tr><td>26</td><td>Run time arrival</td><td></td><td></td></tr>
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<tr><td>09-16</td><td>Output voltage of previous fault</td><td></td><td>does</td></tr>
<tr><td>09-17</td><td>Output current of the previous fault</td><td></td><td>does</td></tr>
<tr><td>09-18</td><td>Bus voltage of previous failure</td><td></td><td>does</td></tr>
<tr><td>09-19</td><td>Temperature of the previous faulty module</td><td></td><td>does</td></tr>
<tr><td>09-20</td><td>Enter the terminal status of the previous fault</td><td></td><td>does</td></tr>
<tr><td>09-21</td><td>Output terminal status of the previous fault</td><td></td><td>does</td></tr>
<tr><td>09-22</td><td>Operation frequency of previous two failures</td><td></td><td>does</td></tr>
<tr><td>09-23</td><td>Given frequency of the first and second failure slopes</td><td></td><td>does</td></tr>
<tr><td>09-24</td><td>Output voltage of the previous two faults</td><td></td><td>does</td></tr>
<tr><td>09-25</td><td>Output current of the previous two faults</td><td></td><td>does</td></tr>
<tr><td>09-26</td><td>The bus voltage of the previous two failures</td><td></td><td>does</td></tr>
<tr><td>09-27</td><td>Temperature of the first and second faulty modules</td><td></td><td>does</td></tr>
</table>

Function code	The name of the	describe	The factory value	attribute
09-28	Input terminal status of the first two faults			does
09-29	Status of the output terminal of the previous two faults			does
10 Protection parameters				
10-00	Motor overload protection option	0: no action 1: ordinary motor 2: frequency conversion motor	2	low
10-01	Motor overload protection factor	20.0% ~ 120.0%	100.0%	a.
10.	Overvoltage stall protection is enabled	0: invalid 1: valid	1	a.
10-03	Overvoltage stall operating voltage	220V model: 120~150%	120%	a.
		380V model: 120~150%	140%	
10-04	Overcurrent protection option	Bits: indicates that overcurrent protection is enabled 0 is invalid, 1 is valid Tens: Indicates that hardware traffic limiting protection is enabled 0 is valid, 1 is invalid Hundreds: inverter unit overcurrent fault release blocking option 0: can be removed 1: The lockdown can be lifted after 60 seconds 2: Keeps the device locked. Power on the device again	101	low
10-05	Over loss rate protection current	50.0 ~ 200.0%	Models to determine	low
10-06	Over loss rate of decline	0.00~50.00Hz(change per second)	10.00 Hz	low
10-07	I/O phase loss protection	Bits: indicates that the input phase loss protection is enabled Tens: output phase loss protection is enabled	11	a.

Function code	The name of the	describe	The factory value	attribute
		0 is invalid, 1 is valid		
10-08	Underload overload protection action	Bits: underload overload alarm selection 0: the motor is under overload warning 1: inverter overload warning Tens: underload overload action for selection 0: Inverter overloads alarm and continues operation 1: inverter underload warning, overload after shutdown 2: inverter overload warning and continue to run, underload after shutdown 3: inverter underload after shutdown Hundreds: underload overload protection can 0: valid for the whole process 1: valid at constant speed	000	a.
10-09	Overload detection of the alignment	(10-11) ~ 200%	Models to determine	a.
10-10	Overload detection time	0.1 ~ 3600.0 s	1.0 s	a.
10-11	Underload detection level	0 ~ (10 -)	50%	a.
10-12	Underload detection time	0.1 ~ 3600.0 s	1.0 s	a.
10 to 13	Times of automatic reset of faults	0 ~ 10	0	a.
10-14	Fault automatic reset interval	0.1 ~ 3600.0 s	1.0 s	a.
10-15	Overpressure point setting	0 ~ 2500.0 V	Models to determine	a.
10 to 16	Undervoltage point setting	0 ~ 2000.0 V	Models to determine	a.
10 to 17	Special function selection	Bits: the voltage is unstable and the frequency is automatically reduced Tens place: frequency reaches the second acceleration and deceleration time of switching 0: invalid. 1: valid	00	a.
10 to 18	Output terminal fault action	Bits: indicates the undervoltage fault action Tens: Automatic reset during action	00	a.

Function code	The name of the	describe	The factory value	attribute
	selection	0: valid. 1: invalid		
10-19	Instantaneous power outage re-operation option	0: stops running 1: Keep running	0	a.
10-20	Instantaneous power outage and operation waiting time	0.0 ~ 3600.0 s	1.0 s	a.
10 to 21	Instantaneous power off frequency reduction enabled	0: invalid. 1: valid	0	a.
10 to 22	Instantaneous power down frequency constant	0.00Hz~ Maximum frequency (change in seconds)	10.00 Hz	a.
10-23	Detected value of velocity deviation	0.0 ~ 50.0%	10.0%	a.
10 to 24	Speed deviation detection time	0.0 ~ 10.0 s	0.5 s	a.
11 sets of auxiliary function parameters				
11-00	Dot operation frequency	0.00Hz~ Maximum frequency	5.00 Hz	a.
11-01	Dot acceleration time	0.0 ~ 3600.0 s	Models to determine	a.
11.	Point deceleration time	0.0 ~ 3600.0 s	Models to determine	a.
11-03	Acceleration time 2	0.0 ~ 3600.0 s	Models to determine	a.
11-04	Deceleration time 2	0.0 ~ 3600.0 s	Models to determine	a.
11-05	Acceleration time 3	0.0 ~ 3600.0 s	Models to determine	a.
11-06	Deceleration time 3	0.0 ~ 3600.0 s	Models to determine	a.

Function code	The name of the	describe	The factory value	attribute
11-07	Acceleration time 4	0.0 ~ 3600.0 s	Models to determine	
11-08	Deceleration time 4	0.0 ~ 3600.0 s	Models to determine	
11-09	Operating frequency below Working mode of lower limit frequency	0: Runs at the lower frequency 1: stop 2: sleep	0	a.
11-10	Sleep recovery delay	0.0 ~ 3600.0 s	0.0 s	a.
11-11	Drooping frequency	0.00 ~ 10.00 Hz	0.00 Hz	a.
11-12	Cooling fan control	0: Run with the inverter 1: Always running	0	a.
11-19	Setting value	(11-20) to 65535	0	a.
11-20	Specified count	0 ~ (11-19)	0	a.
11-21	Scheduled running time	0~65535min	0min	a.
11-22	Jump frequency 1	0.00~ Maximum frequency	0.00 Hz	a.
11-23	Jump frequency amplitude 1	0.00~ Maximum frequency	0.00 Hz	a.
11-24	Jump frequency 2	0.00~ Maximum frequency	0.00 Hz	a.
11 to 25	Jump frequency amplitude 2	0.00~ Maximum frequency	0.00 Hz	a.
11-26	Jump frequency 3	0.00~ Maximum frequency	0.00 Hz	a.
11-27	Jump frequency amplitude 3	0.00~ Maximum frequency	0.00 Hz	a.
11-28	The pendulum frequency range	0.0~100.0% (relative set frequency)	0.0%	a.
11-29	Jump frequency amplitude	0.0~50.0% (swing range)	0.0%	a.
11-30	Pendulum rise time	0.1 ~ 3600.0 s	5.0 s	a.
11-31	Pendulum drop time	0.1 ~ 3600.0 s	5.0 s	a.
11-32	FDT1 frequency	0.00 ~ P00.03	50.00 Hz	a.

Function code	The name of the	describe		The factory value	attribute
	check value				
11-33	FDT1 frequency lag value	0.0 ~ 100.0%		5.0%	a.
11-34	FDT2 frequency check	0.00~ Maximum frequency		50.00 Hz	a.
11-35	FDT2 frequency hysteresis value	0.0 ~ 100.0%		5.0%	a.
11-36	The frequency reaches the threshold	0.0~ maximum frequency		0.00 Hz	a.
11-37	Overmodulation selection	Bits: indicates that overmodulation is enabled 0: invalid. 1: valid Tens place: selection of overmodulation intensity 0: light, 1: deep		01	a.
11-38	PWM mode selection	Bits: indicates PWM mode selection 0: two phase and three phase modulation 1: three-phase modulation Ten: low speed carrier frequency limit selection 0:2 RHz limit 1:4 RHz limit 2: unlimited		00	a.
12 groups of process PID parameters					
12-00	PID given source	0: the number is given 1: AI1 2: AI2 3: AI3	4: HDI 5: multi-speed 6: RS-485 communication 7: keyboard analog potentiometer	0	a.
12-01	PID digital setting	100.0 ~ 100.0%		0.0%	a.
12.	PID feedback source	0: AI1 1: AI2 2: AI3	3: HDI 4: RS-485 communication 5: keyboard analog potentiometer	0	a.
12-03	PID action Direction	0: positive effect	1: Reaction	0	a.
12-04	Proportional gain KP1	0.00 ~ 100.00		1.00	a.

Function code	The name of the	describe	The factory value	attribute
12-05	The integral time is TI1	0.01 ~ 10.00 s	0.10 s	a.
12-06	Differential time T 1	0.00 s to 10.00 s	0.00 s	a.
12-07	PID Sampling period T1	0.000 ~ 10.000 s	0.100 s	a.
12-08	PID parameter switching deviation	0.0 ~ 100.0%	0.0%	a.
12-09	PID output upper limit	(12 -) 10 ~ 100.0%	100.0%	a.
12-10	PID output lower limit	- 100.0% ~ (12-9)	0.0%	a.
12 and 11	PID command acceleration and deceleration time	0.0 ~ 1000.0 s	0.0 s	a.
12-12	PID output filtering time	0.000 ~ 10.000 s	0.000 s	a.
12-13	Low frequency proportional gain	0.00 ~ 100.00	1.00	a.
12-14	The PID feedback is lost	0.0%(not detected) ~ 100.0%	0.0%	a.
12 to 15	PID feedback loss detection time	0.0 s to 3600.0 s	1.0 s	a.
12-16	PID control function	Bits: 0: continuous integral adjustment when frequency reaches upper and lower limits 1: the integral adjustment stops when the frequency reaches the upper and lower limits Ten: 0: Consistent with the specified direction 1: Go in the opposite direction One hundred: 0: refer to the maximum frequency limiter 1: reference frequency source A limiting One thousand: 0: A+B, the acceleration and deceleration time of	0001	a.

Function code	The name of the	describe	The factory value	attribute
		frequency source A is invalid 1: A+B, frequency source A is determined by acceleration and deceleration time 4		
13 groups of multi-speed and simple PLC parameters				
13-00	Multi-speed 0 frequency setting	- 100.0% ~ 100.0%	0.0%	a.
13-01	Multi-speed 1 frequency setting	- 100.0% ~ 100.0%	0.0%	a.
13.	Multispeed 2 frequency setting	- 100.0% ~ 100.0%	0.0%	a.
13-03	Multi-speed 3 frequency setting	- 100.0% ~ 100.0%	0.0%	a.
13-04	Multispeed 4 frequency setting	- 100.0% ~ 100.0%	0.0%	a.
13-05	Multi-speed 5 frequency setting	- 100.0% ~ 100.0%	0.0%	a.
13-06	Multi-speed 6 frequency setting	- 100.0% ~ 100.0%	0.0%	a.
13-07	Multi-speed 7 frequency setting	- 100.0% ~ 100.0%	0.0%	a.
13-08	Multi-speed 8 frequency setting	- 100.0% ~ 100.0%	0.0%	a.
13-09	Multi-speed 9 frequency setting	- 100.0% ~ 100.0%	0.0%	a.
13-10	Multi-speed 10 frequency set point	- 100.0% ~ 100.0%	0.0%	a.
13 and 11	Multispeed 11 frequency	- 100.0% ~ 100.0%	0.0%	a.

Function code	The name of the	describe	The factory value	attribute
	setting			
13-12	Multispeed 12 frequency set point	- 100.0% ~ 100.0%	0.0%	a.
13-13	Multispeed 13 frequency setting	- 100.0% ~ 100.0%	0.0%	a.
13 and 14	Multispeed 14 frequency setting	- 100.0% ~ 100.0%	0.0%	a.
13 to 15	Multispeed 15 frequency set point	- 100.0% ~ 100.0%	0.0%	a.
13-16	PLC phase 0 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13 to 17	PLC phase 1 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13 to 18	PLC phase 2 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13 to 19	PLC phase 3 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13-20	PLC phase 4 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13-21	PLC phase 5 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13-22	PLC phase 6 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13-23	PLC phase 7 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13-24	PLC phase 8 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13 to 25	PLC section 9 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13 to 26	PLC phase 10 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13-27	PLC phase 11 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13-28	PLC section 12 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13-29	PLC phase 13	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.

Function code	The name of the	describe	The factory value	attribute
	running time			
13-30	PLC section 14 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13-31	PLC section 15 running time	0.0 ~ 6553.5 s (min)	0.0 s (min)	a.
13-32	PLC 0~7 acceleration and deceleration time	Value range: 0x0000 to 0xFFFF 0 segment: bit0-1: two bit values selected acceleration and deceleration time 1,2,3,4 1 segment: bit2-3: two bit values selected acceleration and deceleration time 1,2,3,4 Section 2: bi-5: two bits: select acceleration and deceleration time 1,2,3,4 3 segments: bit6-7: two bit values selected acceleration and deceleration time 1,2,3,4 4 segments: bit8-9: two bit values selected acceleration and deceleration time 1,2,3,4 5 segments: bit11-10: two bit values selected acceleration and deceleration time 1,2,3,4 6 segments: bit12-13: two bit values selected acceleration and deceleration time 1,2,3,4 7 segments: bit14-15: two bit values selected acceleration and deceleration time 1,2,3,4	0000	a.
13-33	PLC 8~15 acceleration and deceleration time	Value range: 0x0000 to 0xFFFF 8 segments: bit0-1: two bit values selected acceleration and deceleration time 1,2,3,4 9 segments: bit2-3: two bit values selected acceleration and deceleration time 1,2,3,4 10 segments: bi-5: two bit values select acceleration and deceleration time 1,2,3,4 11 segments: bit6-7: two bit values selected acceleration and deceleration time 1,2,3,4 12 segments: bit8-9: two bit values selected acceleration and deceleration time 1,2,3,4 13 segments: bit11-10: two bit values selected acceleration and deceleration time 1,2,3,4 14 segments: bit12-13: two bit values selected acceleration and deceleration time 1,2,3,4 15 segments: bit14-15: two bit values selected acceleration and deceleration time 1,2,3,4	0000	a.
13 to 34	Unit of PLC running time	0: seconds (s) 1: minutes (min)	0	low

Function code	The name of the	describe		The factory value	attribute
13-35	PLC operation mode	0: the machine stops after a single run 1: the node speed of a single run runs at the final value 2: keeps running in a loop		0	low
13-36	PLC power failure memory selection	0: does not remember the power failure 1: Memory of power failure		0	a.
13-37	PLC stop memory start option	0: restarts from the first segment 1: Continue operation from the stage frequency of the downtime		0	a.
13-38	Multi-speed zero-frequency given source	0:13-00 is given 1: AI1 2: AI2 3: AI3	4: HDI 5: PID 6: keyboard analog potentiometer 7: preset frequency can be fine-tuned	0	a.
13-39	Multispeed 1 frequency given source	0:13-01 For a given value, 1 to 7 is the same as above		0	a.
14 groups of SCI communication parameters					
14-00	Local address	0 Broadcast address. The value ranges from 1 to 247		1	a.
14-01	Communication baud rate	00 0:12 BPS 00 BPS unto them Chief 00 BPS "600 BPS Now 200 BPS Official 400 BPS He who eats me 600 BPS		3	a.
14.	MODBUS data format	0: no check (N, 8,1) for RTU 1: parity (E, 8,1) for RTU 2: odd check (O, 8,1) for RTU 3: no check (N, 8,2) for RTU 4: parity (E, 8,2) for RTU 5: odd check (O, 8,2) for RTU		3	a.
14-03	MODBUS communication	0~200ms		5	a.

Function code	The name of the	describe	The factory value	attribute
	reply delay			
14-04	Serial port communication timeout period	0.0: invalid, 0.1~60.0s	0.0 s	a.
14-05	Communication error action selection	0: alarm and free shutdown 1: Do not alarm and continue to run 2: stop the machine by stopping mode without alarm (communication control mode only) 3: Stop the machine by stopping mode without alarm (all control modes)	0	a.
14-06	Communication processing action selection	LED bits: 0: The write operation responded 1: The write operation does not respond	0	a.
14-07	Communication protocol selection	0: compatible with 380 protocol (including 00 groups,30 groups of partial menu) 1: Compatible with GD protocol (communication control only)	0	a.

Function code	The name of the	The smallest unit of	Correspondence Address (HEX)	Mailing Address (DEC)
30 groups of monitoring parameters				
30-00	Operating frequency	0.01 Hz	0x7000	28672
30-01	Set frequency	0.01 Hz	0x7001	28673
30.	Bus voltage	0.1 V	0x7002	28674
30-03	The output voltage	1V	0x7003	28675
30-04	The output current	0.1 A	0x7004	28676
30-05	Motor Power (%)	0.1%	0x7005	28677
30-06	Output torque (%)	0.1%	0x7006	28678
30-07	Input terminal status	See 30 groups for detailed instructions	0x7007	28679
30-08	Output terminal status	See 30 groups for detailed instructions	0x7008	28680
30-09	AI1 Input voltage	0.01 V	0x7009	28681
30-10	AI2 Input voltage	0.01 V	0x700A	28682
30-11	AI3 Input voltage	0.01 V	0x700B	28683
30-12	count	1	0x700C	28684
30-13	The length of the value	1	0x700D	28685
30-14	Motor speed	1rpm	0x700E	28686
30 to 15	PID given value	0.1%	0x700F	28687

30-16	PID feedback value	0.1%	0x7010	28688
30-17	Number of current stages of PLC and multi-speed	1	0x7011	28689
30-18	HDI input frequency	0.01 KHz	0x7012	28690
30-19	keep		0x7013	28691
30-20	Frequency converter model	1	0x7014	28692
30-21	Frequency converter rated power	0.1 KW	0x7015	28693
30-22	Rated voltage of converter	1V	0x7016	28694
30-23	Rated current of frequency converter	0.1 A	0x7017	28695
30-24	Linear velocity	1m/Min	0x7018	28696
30-25	Current running time	1Min	0x7019	28697
30-26	Slope set frequency	0.01 Hz	0x701A	28698
30-27	Torque feeding	0.1%	0x701B	28699
30-28	The output torque	0.1 Nm	0x701C	28700
30-29	Digital regulation	0.01 Hz	0x701D	28701
30-30	The torque current	0.1 A	0x701E	28702
30 and 31	Field current	0.1 A	0x701F	28703
30 and 32	Motor power factor	0.01	0x7020	28704
30-33	Estimated motor frequency	0.01 Hz	0x7021	28705
30-34	Ac incoming current	0.1 A	0x7022	28706
30-35	Motor overload meter value	1	0x7023	28707

Appendix C Warranty Agreement

1) The warranty period of this product is twelve months (based on the body strip code information), during the warranty period according to the normal use of the manual

   Under the product failure or damage, our company is responsible for free maintenance.

2) During the warranty period, if the damage is caused by the following reasons, a certain repair fee will be charged:

   A. Damage of the machine caused by mistakes in use and unauthorized repair and transformation;

   B. Machine damage caused by fire, flood, abnormal voltage, other natural and secondary disasters;

   C. Hardware damage caused by artificial fall and transportation after purchase;

   D. Machine damage caused by failure to operate according to the user manual provided by our company;

   E. Failure and damage caused by obstacles outside the machine (such as external equipment factors);

3) When the product is faulty or damaged, please fill in the product Warranty Card correctly and in detail.

4) The maintenance fee shall be charged in accordance with our company's newly adjusted maintenance Price List.

5) This warranty card will not be reissued under normal circumstances, please be sure to keep this card and show it to the maintenance personnel during the warranty.

6) If you have any problem in the service process, please contact our agent or our company in time.

7) The company reserves the right to interpret this Agreement.

LOGO Product warranty card

<table>
<tr><td rowspan="3">The customer informati</td><td colspan="2">Company Address:</td></tr>
<tr><td rowspan="2">Company Name: Postal Code:</td><td>Contacts:</td></tr>
<tr><td>Contact Number:</td></tr>
<tr><td rowspan="3">Product informati on</td><td colspan="2">Product Model:</td></tr>
<tr><td colspan="2">Barcode of the body (pasted here) :</td></tr>
<tr><td colspan="2">Agent Name:</td></tr>
<tr><td>Fault informati on</td><td colspan="2">(Maintenance time and content) :</td></tr>
</table>