Ⅰ-summary

1.1 Safety Precautions

Confirmation

 **Attention**
1.Do not install damaged inverters or inverters with missing parts. There is a risk of injury.

- **Installation**

 **Attention**
1. When carrying, please hold the bottom of the machine body. **Holding the panel only, there is a risk of the main body falling and hitting the foot.** **2. Please install it on a non-flammable material board such as metal.** **Installed on flammable materials, there is a risk of fire.** **3. When two or more inverters are installed in the same control cabinet, please install a cooling fan and keep the air temperature of the air inlet below 40 ℃.** Overheating may cause fire and other accidents.

- **Wiring**

 Danger

1. **Before wiring, make sure that the input power is cut off.**
   There is a danger of electric shock and fire.
2. **Have electrical engineering professionals perform wiring work.**
   There is a danger of electric shock and fire.
3. **The ground terMinal must be reliably grounded.**
   （Level：380V）
   There is a danger of electric shock and fire.
4. **After the emergency stop terMinal is connected, be sure to check whether its action is effective.**
   There is a risk of injury. (The risk of wiring is responsble by the operator)
5. **Do not directly touch the output terMinal, the output terMinal of the inverter should not be connected to the housing, and the output terMinals must not be short-circuited.**
   Risk of electric shock and short circuit

Attention

1. **Please confirm whether the AC main circuit power supply and the rated voltage of the inverter are consistent.**
   There is a danger of injury and fire.
2. **Do not perform voltage withstand test on the inverter.**
   Will cause damage to semiconductor components, etc.
3. **Please connect the braking resistor or braking unit according to the wiring diagram.**
   There is a risk of fire.

4. **Specified power rectangular terMinal.**
   There is a risk of fire.
5. **Do not connect the input power cord to the output U, V, W terMinals.**
   Voltage applied to the output terMinals will cause damage to the inverter.
6. **Do not connect the phase-shifting capacitor and LC / RC noise filter to the output circuit.**
   Will cause internal damage to the inverter.
7. **Do not connect the electromagnetic switch and electromagnetic contactor to the output circuit.**
   When the inverter is running with load, the surge current generated by the action of the electromagnetic switch and electromagnetic contactor will cause the overcurrent protection circuit of the inverter to act.
8. **Do not remove the front panel cover, only need to remove the terMinal cover when wiring.**
   May cause internal damage to the inverter.

- **Maintenance, inspection**

Danger

1. **Do not touch the terMinal of the inverter, there is high voltage on the terMinal.**
   Risk of electric shock.
2. **Before powering on, be sure to install the terMinal cover. When removing the cover, be sure to disconnect the power supply.**

Risk of electric shock.

3. **Non-professional technicians, please do not carry out maintenance and inspection work.**

   Risk of electric shock.

Attention

1. **CMOS integrated circuits are installed on the keyboard board, control circuit board and drive circuit board, please pay special attention when using.**

   Touch the circuit board directly with your fingers. Static induction may damage the integrated chip on the circuit board.

2. **During power-on, do not change the wiring and disassemble the terMinal wiring.**

   Do not check the signal during operation. Will damage the device.

1.2 Precautions for use

When using DVB series inverters, please note the following:

1、Constant torque low speed operation

When the inverter is driven by a common motor at low speed for a long time, the life of the motor will be affected due to poor heat dissipation. If you need low-speed constant torque for long-term operation, you must use a special

frequency conversion motor.

2、Confirmation of motor insulation

When applying DVB series inverters, please confirm the insulation of the motor used before bringing the motor to prevent damage to the equipment. In addition, when the environment of the motor is relatively harsh, please regularly check the insulation of the motor to ensure the safe operation of the system.

3、Negative torque load

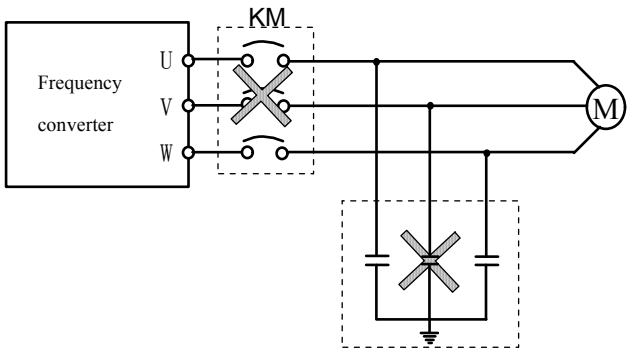
For occasions such as lifting loads, negative torque often occurs, and the inverter will trip due to overcurrent or overvoltage faults. In this case, you should consider the optional braking resistor.

4、Mechanical resonance point of load device

The inverter may encounter the mechanical resonance point of the load device within a certain output frequency range, which must be avoided by setting the jump frequency.

5、Capacitor or pressure-sensitive device for improving power factor

Since the output voltage of the inverter is a pulse wave type, if a power factor improving capacitor or a varistor for lightning protection is installed on the output side, it will cause the inverter to trip or damage the device. Add switching devices such as air switches and contactors, as shown in Figure 1-3. (If a switching device must be connected to the output side, the output current of the inverter must be zero during control operation)



1-3 It is forbidden to use capacitors at the output of the inverter

6、Derating use when setting base frequency

When the fundamental frequency is set lower than the rated frequency, please pay attention to the derating of the motor to avoid overheating and burning of the motor.

7、Operate above 50Hz

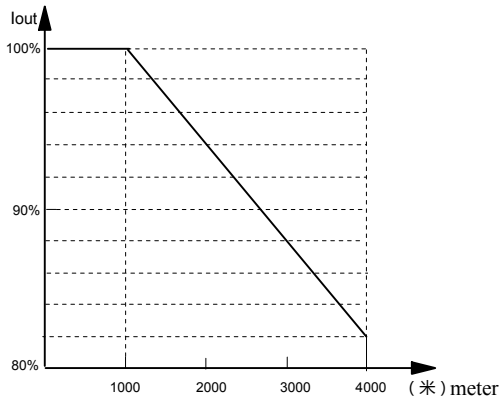
If the operation exceeds 50Hz, in addition to considering the vibration and noise increase of the motor, the speed range of the motor bearings and mechanical devices must also be ensured.

8、Electronic thermal protection value of motor

When choosing a suitable motor, the frequency converter can implement thermal protection for the motor. If the motor does not match the rated capacity of the inverter, you must adjust the protection value or take other protective measures to ensure the safe operation of the motor.

9、Altitude and derating

In areas with an altitude of more than 1000 meters, due to the thin air, the heat dissipation effect of the inverter becomes poor, and it is necessary to derate it. Figure 1-4 shows the relationship between the rated current of the inverter and the altitude.



1-4 Inverter rated output current and altitude derating usage diagram

10、About protection level

The protection grade IP20 of the DVB inverter refers to the situation achieved when the status display unit or keyboard is selected

1.3 Disposal considerations

When scrapping the inverter, please note:

The electrolytic capacitor in the main circuit and the electrolytic capacitor on the printed board may explode when burned. Toxic gases are generated when plastic parts are burned. Please dispose of it as industrial waste.

II-product description

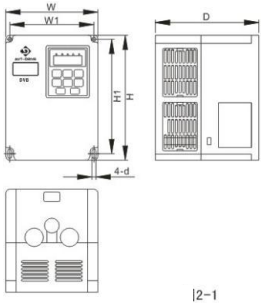
2.1 Product Technical Specifications

Iteam		Standard specification
Input	Rated voltage / frequency	Single-phase 220V, three-phase 200V, three-phase 380V; 50Hz / 60Hz
	Allowable value of change	Voltage: -20% ～ + 20% Voltage unbalance rate: <3% Frequency: ± 5%
output	Rated voltage	0～200V/220V/380V
	Frequency Range	0Hz～500Hz
	Frequency resolution	0.01Hz
	Overload capacity	150% rated current for 1 Minute, 180% rated current for 3 seconds
Main control function	Debugging method	Optimizing space voltage vector SVPWM modulation
	control method	Space voltage vector SVPWM control (with optimal low frequency dead zone compensation characteristics)
	Frequency accuracy	Digital setting: maximum frequency × ± 0.01%; analog setting: maximum frequency × ± 0.2%
	Frequency resolution	Digital setting: 0.01Hz; analog setting: maximum frequency × 0.1%
	Starting frequency	0.40Hz～20.00Hz
	Torque boost	Automatic torque boost, manual torque boost 0.1% ～ 30.0%
	V / F curve	Five modes: constant torque V / F curve, 1 user-defined multi-segment V / F curve mode and 3 torque reduction characteristic curve modes (2.0 power, 1.7 power and 1.2 power)

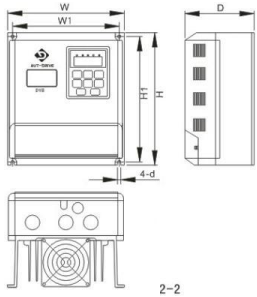
	Acceleration and deceleration curve	Two ways: linear acceleration and deceleration, S curve acceleration and deceleration; seven kinds of acceleration and deceleration time, time unit (Minute / second) optional, up to 6000 Minutes
	DC braking	DC braking start frequency: 0 ～ 15.00Hz Braking time: 0 ～ 60.0 seconds Braking current: 0 ～ 80%
	Energy consumption braking	Built-in energy consumption braking unit, external braking resistor can be connected
	Jog	Jog frequency range: 0.1Hz ～ 50.00Hz, jog acceleration / deceleration time 0.1 ～ 60.0s
	Built-in PI	Conveniently constitute a closed-loop control system
	Multi-speed operation	Multi-speed operation through built-in PLC or control terMinal
	Textile swing frequency	Realize swing frequency function with preset frequency and center frequency adjustable
	Automatic Voltage Adjustment (AVR)	When the grid voltage changes, keep the output voltage constant
	Automatic energy-saving operation	According to the load, automatically optimize the V / F curve to achieve energy-saving operation
	Automatic current limit	Automatically limit the current during operation to prevent frequent overcurrent fault tripping
	Fixed length control	The inverter stops after reaching the set length
	Communication function	It has RS485 standard communication interface and supports MODBUS communication protocol in ASCII and RTU formats. With master-slave multi-machine linkage function
Run function	Running command channel	Operation panel given; control terMinal given; serial port given; can be switched in three ways

	Frequency setting channel	Keyboard analog potentiometer given; keyboard ▲, ▼ key given; function code number given; serial port given; terMinal UP / DOWN given; analog voltage given; analog current given; pulse given; combination given Fixed; can switch at any time in a variety of given ways
	Switch input channel	Forward and reverse instructions; 8 programmable switch inputs, 35 functions can be set separately.
	Analog input channel	2 analog signal inputs, 4 ～ 20mA, 0 ～ 10V optional
	Analog output channel	Analog signal output, 4 ～ 20mA or 0 ～ 10V optional, can realize the output of physical quantity such as set frequency and output frequency
	Switch, pulse output channel	1 programmable open collector output; 1 relay output signal; 1 0 ~ 20KHz pulse output signal to achieve various physical output
Operation panel	LED digital display	Can display set frequency, output voltage, output current and other parameters
	External instrument display	Physical quantity display such as output frequency, output current, output voltage display
	Key lock	Achieve Lock all keys
	Parameter copy	The remote control keyboard can realize the function code parameter copy function between the inverters.
Protective function		Overcurrent protection; overvoltage protection; undervoltage protection; overheat protection; overload protection, etc.
Optional		Brake assembly; remote operation panel; remote cable; keyboard mount, etc.
environment	Place of use	Indoor, no direct sunlight, no dust, corrosive gas, oil mist, water vapor, etc.
	temperature	－10℃～＋40℃
	humidity	Below 90%RH

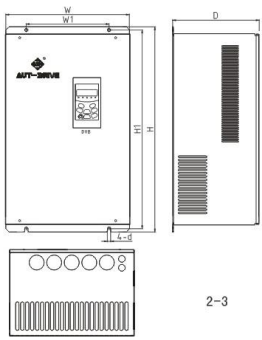
2.2 Dimensions



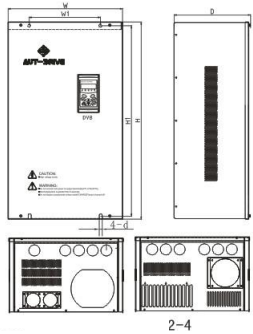
2-1



2-2



2-3



2-4

2-2 Inverter appearance and installation series size

Dimensions and installation dimensions:

TYP	W1 (mm)	H1 (mm)	W (mm)	H (mm)	D (mm)	d (mm)	number
	Installation dimensions		Dimensions			Aperture	
A	114	159	125	170	140	5.5	2-1
B	181	207	193	220	175	5.5	2-2
C	181	247	193	260	175	5.5	2-2
D	215	410	274	430	220	8.0	2-3
E	236	511	320	531	242	10.0	2-3
F	250	600	374	620	262	10.0	2-3
G	290	772	469	805	307	12.0	2-4
H	370	912	533	1008	360	12.0	2-4

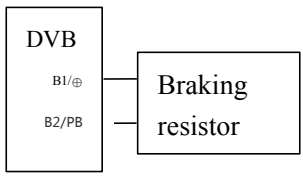
2.3 Selection guide of braking resistor or braking unit

2.3.1 Brake resistance or brake unit selection list

Voltage	Applicable motor		Full load output torque	Applied resistance specification	brake unit	Brake resistor part number	use the amount	Braking torque 10%ED%	Minimum electricity Resistance
	HP	KW	KG-M						
220V series	0.5	0.4	0.312	80W200Ω	Built-in	008-080W200	1	125	80Ω
	1	0.75	0.427	80W200Ω	Built-in	008-080W200	1	125	80Ω
	2	1.5	0.849	300W100Ω	Built-in	008-300W100	1	125	55Ω
	3	2.2	1.262	300W70Ω	Built-in	008-300W070	1	125	35Ω
	5	3.7	2.080	400W40Ω	Built-in	008-300W040	1	125	25Ω
360V series	1	0.75	0.427	80W750Ω	Built-in	008-080W750	1	125	260Ω
	2	1.5	0.849	300W400Ω	Built-in	008-300W400	1	125	190Ω
	3	2.2	1.262	300W250Ω	Built-in	008-300W250	1	125	145Ω
	5	3.7	2.080	400W150Ω	Built-in	008-400W150	1	125	95Ω
	7.5	5.5	3.111	500W100Ω	Built-in	008-500W100	1	125	60Ω
	10	7.5	4.148	1000W75Ω	Built-in	008-1K0W075	1	125	45Ω
	15	11	6.168	1000W50Ω	Built-in	008-1K0W050	1	125	50Ω
	20	15	8.248	1500W40Ω	Built-in	008-1K5W040	1	125	40Ω
	25	18	10.281	4800W32Ω	Built-in	008-1K2W008	4	125	32Ω
	30	22	12.338	4800W27.2Ω	no	008-1K2W6P8	4	125	27.2Ω
	40	30	16.497	6000W20Ω	no	008-1K5W005	4	125	20Ω
	50	37	20.600	9600W16Ω	no	008-1K2W008	8	125	16Ω
	60	45	24.745	9600W13.6Ω	no	008-1K2W6P8	8	125	13.6Ω
	75	55	31.110	12000W10Ω	no	008-1K5W005	8	125	13.6Ω
	100	75	42.700	19200W6.8Ω	no	008-1K2W6P8	16	125	6.8Ω
	125	90	52.500	19200W6.8Ω	no	008-1K2W6P8	16	100	3.4Ω

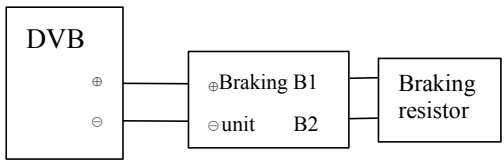
5.2.2 Braking resistor connection

The inverter of 18KW and below includes a braking unit. If there is a requirement for energy-consuming braking, a braking resistor is optional. The connection method is as follows:



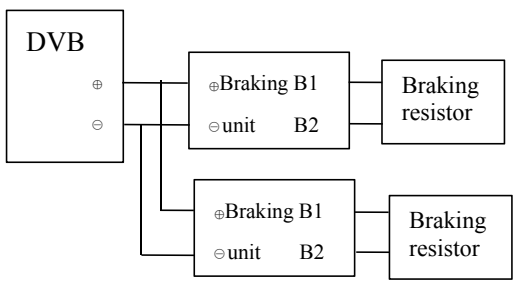
5.2.3Brake unit connection

The connection method of DVB series inverter and braking unit is as follows:



5.2.4 Braking units connected in parallel

The maximum use power of a single braking unit is 45KW. If the inverter of the above specifications needs to use energy-consuming braking, two or more braking units need to be connected in parallel, as shown in the following figure:



III-Inverter installation and wiring

3.1 Inverter installation environment

3.1.1 Installation environment requirements

(1) Installed in a well-ventilated indoor place, the ambient temperature is required to be in the range of -10°C ~ 40°C. If the temperature exceeds 40°C, external forced cooling or derating is required.

(2) Avoid installing in places with direct sunlight, dust, floating fibers and metal powder.

(3) It is strictly forbidden to install in places with corrosive and explosive gas.

(5) Installed in the place where the fixed vibration is less than 5.9m / s² (0.6G).

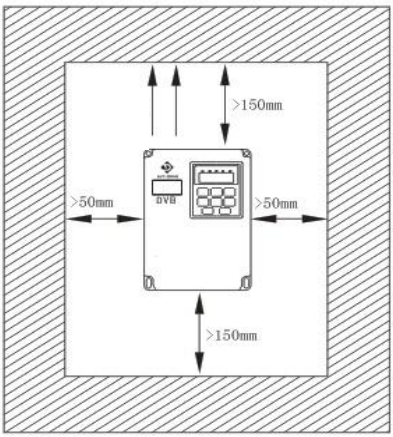
(6) Try to stay away from sources of electromagnetic interference and other electronic instruments and equipment that are sensitive to electromagnetic interference.

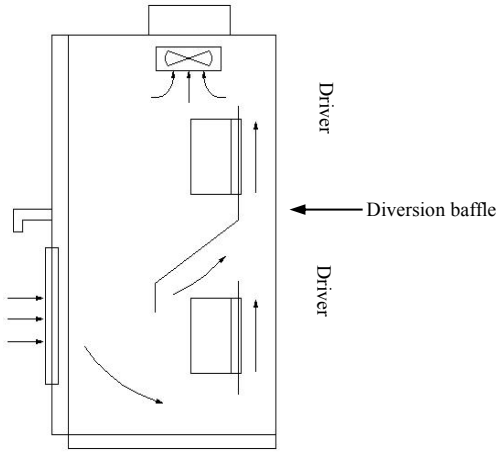
3.1.2 Installation direction and space

(1) Under normal circumstances, it should be installed vertically.

(2) The Minimum requirements for installation interval and distance are shown in Figure 3-1.

(3) When multiple inverters are installed up and down, diversion baffles are used in the middle, as shown in Figure 3-2.



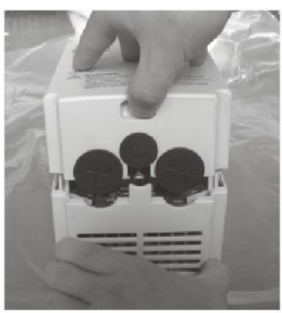


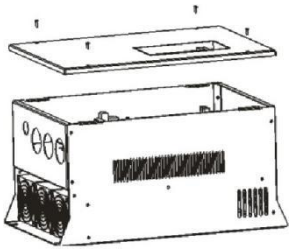
3-1 Installation distance diagram

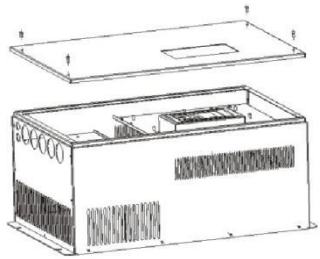
3-2 Installation diagram of multiple inverters

3.2 Inverter panel removal and installation

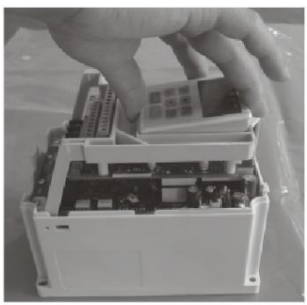
Panel cover removal and installation

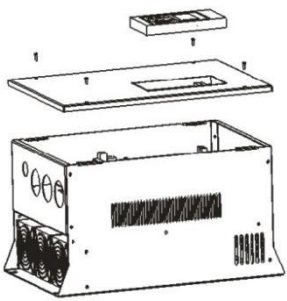


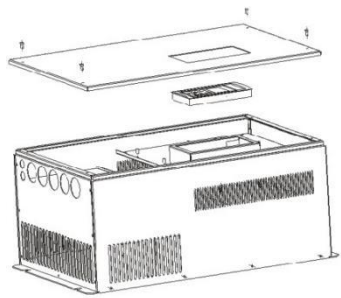




Disassembly and installation of digital operation panel







3.3 Basic operation wiring diagram

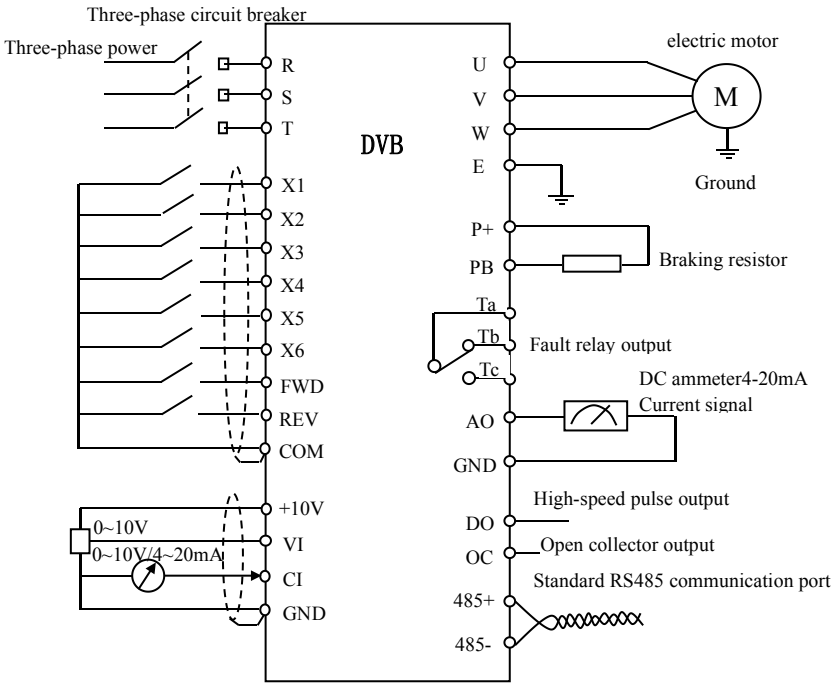


图 3—11 Basic wiring diagram

Ⅳ-Operation and operation instructions of Inverter

4.1 Inverter operation

4.1.1 Command channel for inverter operation

The inverter uses three command channels to control the inverter's start, stop, jog and other running actions.

Operation panel

Use RUN 、STOP RESET 、JOG keys on the operation keyboard to control(factory setting).

Control terMinal

Use control terMinals FWD, REV, COM to form a two-wire control, or use one terMinal in X1 ~ X6 and two terMinals FWD and REV to form a three-wire control.

Serial port

Start and stop control of the inverter through the host computer or other devices that can communicate with the machine.

The selection of the command channel can be completed by the setting of the function code P0.03; it can also be achieved by the selection of the multi-function input terMinal (P4.00 ～ P4.07 select the functions 23 and 24).

Note: When switching the command channel, please switch and debug in advance to confirm whether it can meet the needs of the system, otherwise there is a risk of damage to the equipment and personal injury!

4.1.2 Inverter frequency reference channel

In the normal operation mode of the inverter, there are 8 physical channels

given by frequency, which are:

0:Keyboard analog potentiometer given

1:operation keyboard [▲] 、[▼] given

2:Operation panel function code number given.

3:TerMinal UP / DOWN reference

4:Serial port given

5:Analog VI given

6:Analog CI given

7:TerMinal pulse (PULSE) given

8:Combination settings

4.1.3 Inverter working status

The working state of the inverter is divided into the shutdown state and the running state:

off status: After the inverter is powered on and initialized, if there is no running command input, or after the stop command is executed during operation, the inverter enters the standby state.

Operating status: After receiving the running command, the inverter enters the running state.

4.1.4 Inverter operation mode

The operation modes of DVB inverter are divided into five types, in order of priority: jog operation → closed-loop operation → PLC operation → multi-speed operation → normal operation. As shown in Figure 4-1.

0: Jog operation

When the inverter is in the stop state, after receiving the jog running command (for example, pressing the [JOG] key on the operation keyboard), it runs at the jog frequency (see function codes P3.06 ~ P3.08).

1: Closed loop operation

Set effective parameters of closed-loop operation control (P7.00 = 1), the inverter will enter closed-loop operation mode. It is about PI

adjustment of the given amount and feedback amount (proportional integral operation, see the function code of group P7). The output of the PI regulator is the basic command of the inverter output frequency. The multi-function terMinal (No. 27 function) can disable the closed-loop operation mode and switch to a lower-level operation mode.

2: PLC operation

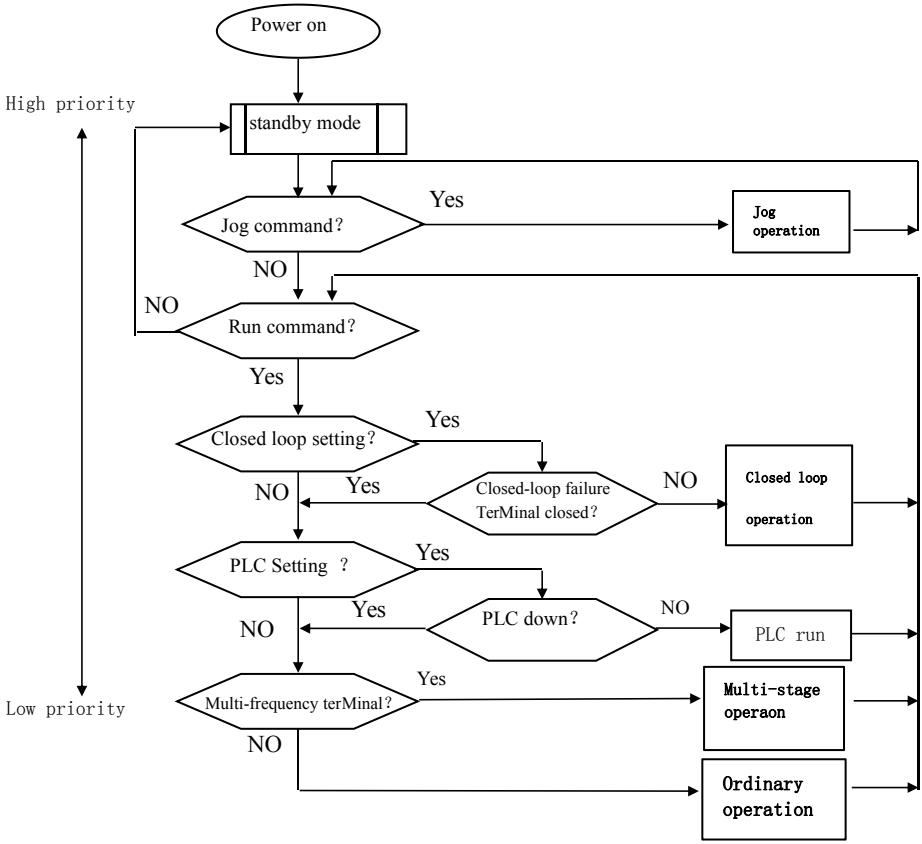
Set the effective parameters of the PLC function (P8.00 digits ≠ 0), the inverter will enter the PLC operation mode, and the inverter will run according to the preset operation mode (see the description of P8 group function codes). The multi-function terMinal (No. 29 function) can make the PLC operation mode invalid and switch to a lower level operation mode.

3: Multi-speed operation

Through the non-zero combination of multi-function terMinals (functions 1, 2, and 3), select multi-step frequency 1 ~ 7 (P3.26 ~ P3.32) for multi-step speed operation.

4: Ordinary operation

Simple open-loop operation mode of general inverter.



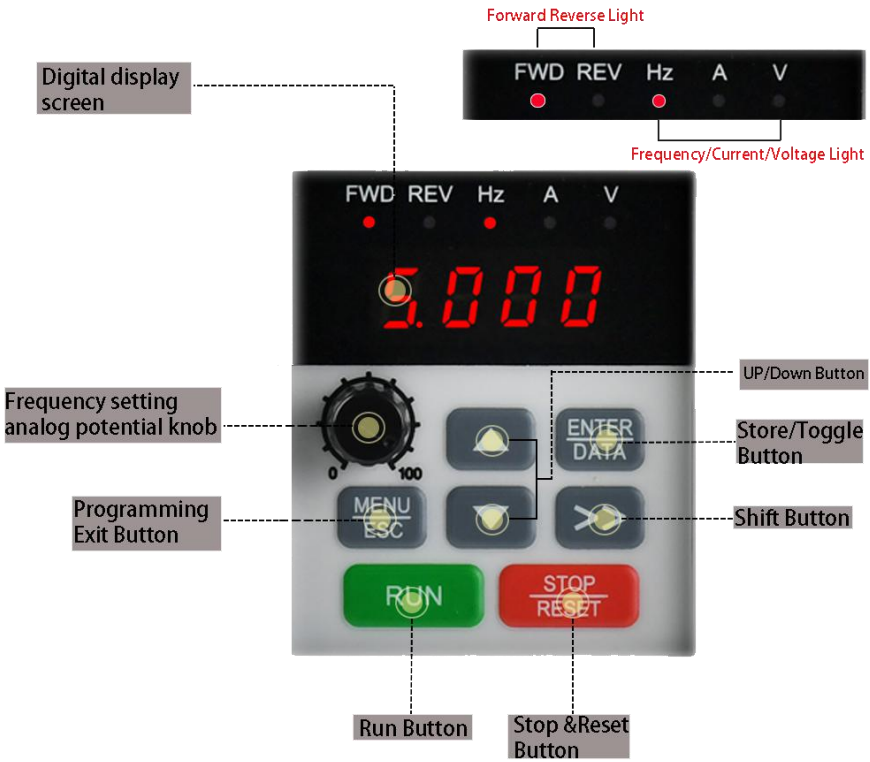
4-1 The logical relationship diagram of the running state of the inverter

All of the above five operation modes except "jog operation" can be operated according to various frequency setting methods. In addition, "PLC operation", "multi-stage operation" and "ordinary operation" can be adjusted for wobble frequency.

4.2 Keyboard operation and use

4.2.1 Keyboard layout

The operation panel and control terMinals of the inverter can control the starting, speed regulation, stopping, braking, operating parameter setting and peripheral equipment of the motor.



4—2 Operating keyboard diagram

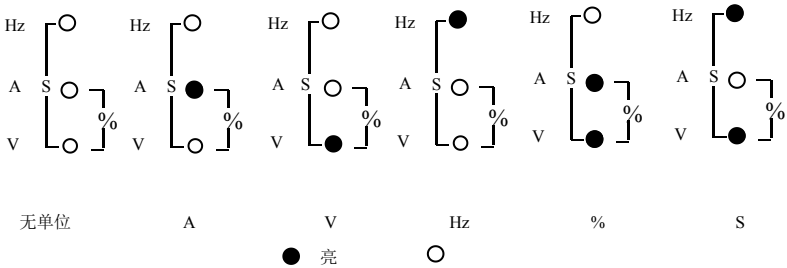
4.2.2 Keyboard function description

There are 8 keys and an analog potentiometer on the operation keyboard of the inverter, the function definition is as follows:

Key	Name	Function
RUN	Run	In the keyboard operation mode, press this key to run.
STOP RESET	STOP/RESET	When the inverter is in the normal running state, if the inverter's operation command channel is set to the panel stop effective mode, press this key, the inverter will stop according to the set mode. When the inverter is in a fault state, press this key to reset the inverter and return to the normal stop state.
MENU ESC	MENU/ESC	Enter or exit programMing state.
JOG	JOG	In the operation keyboard mode, press this key to jog to run (the panel with potentiometer does not have this key).
▲	UP	Increasing data or function code.
▼	DOWN	Decreasing data or function code.
►►	MOVE	In the editing state, you can choose to set the modification bit of the data; in other states, you can switch the display status monitoring parameters.
ENTER DATA	ENTER/DATA	In the programMing state, it is used to enter the next menu or store function code data.
	Analog potentiometer	When P0.01 = 0, select the keyboard analog potentiometer to set the tiMing, adjust the analog potentiometer to control the output frequency of the inverter

4.2.3 LED Digital tube and indicator light description

There are 4 8-segment LED digital tubes, 3 unit indicators and 3 status indicators on the operation panel of the inverter. There are 6 combinations of 3 unit indicators, corresponding to 6 unit indications, as shown in Figure 4-3



4—3 Unit indicator status and unit relationship diagram

Three status indicators are located under the LED digital tube, from left to right are: FWD forward indicator, REV reverse indicator, ALM alarm indicator. Table 4-2 is the status indicator description:

4-2 Description of status indicator

Project			Function	
Display function	LED digital display		Display the current running status parameters and setting parameters of the inverter	
	Status Indicator	FWD	Forward rotation indicator light, indicating that the inverter output positive phase sequence, when connected to the motor, the motor rotates forward	If the FWD and REV indicators are on at the same time, it indicates that the inverter is working

		REV	Reverse indicator light, indicating that the inverter output reverse phase sequence, when connected to the motor, the motor reverses	
		ALM	When the inverter generates a fault alarm, this indicator lights.	

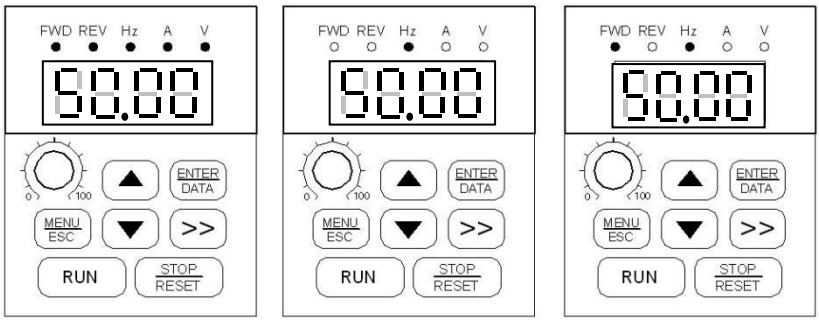
4.2.4 Operation panel display status

The display status of the inverter operation panel is divided into four states: shutdown status parameter display, function code parameter editing status display, fault alarm status display, and running status parameter display.

(A) Stop parameter display status

The inverter is in the stop state, and the operation keyboard displays the stop state monitoring parameters. Usually, the displayed state monitoring parameters are the set frequency (b-01 monitoring parameters). As shown in Figure 4-4, Figure B, the unit indicator on the right shows the unit of the parameter.

Press ►► key to display other shutdown status monitoring parameters (the inverter displays the first seven monitoring parameters of group b by default. Other monitoring parameters can be defined by function codes P3.41 and P3.42. For details, see b in Chapter 5 Function Parameter List Description of group status monitoring parameters). In the display, press ENTER DATA to switch to the default display monitoring parameter b-01, that is, the set frequency, otherwise the last displayed monitoring parameter will always be displayed.



A Power-on initialization Display dynamic picture

B Stop state, Display stop status parameters

C Running status, showing running status parameters

4—4 Parameter display during inverter initialization, shutdown and operation

(B) Line parameter display status

After receiving a valid running command, the inverter enters the running state, and the operation keyboard displays the running state monitoring parameters. The default state monitoring parameter displayed is the output frequency (b-00 monitoring parameter). As shown in Figure 4-4, Figure C, the unit indicator on the right shows the unit of the parameter.

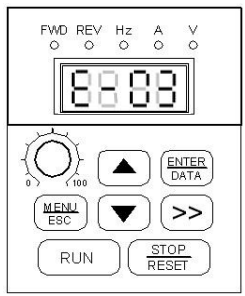
Press ►► key to display the running state monitoring parameters cyclically (defined by function codes P3.41 and P3.42). In the display, you can press ENTER DATA to switch to the default display monitoring parameter b-00, which is the output frequency, otherwise the last displayed monitoring parameter will always be displayed.

(C) Fault alarm display status

When the inverter detects a fault signal, it enters the fault alarm display state and flashes the fault code (as shown in Figure 4-4); press the ▶▶ key to view the fault-related parameters after shutdown, and press ENTER DATA to switch back when querying the fault-related parameters Fault code display. To view

For fault information, you can press the MENU ESC key to enter the programMing status checkConsult P6 group parameters. After identifying and removing the fault, you can After operating the keyboard STOP RESET key, control terMinal or communication Command to reset the fault. If the fault persists,

The fault code is maintained



4—5 Fault alarm display

NOTE:

For some serious faults, such as inverter module protection,

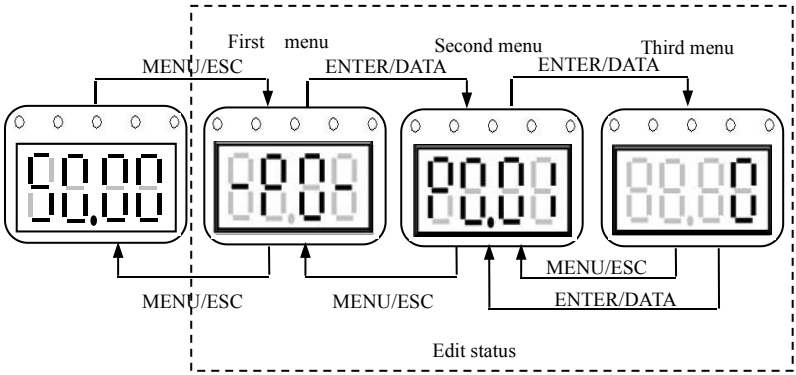
Overcurrent and overvoltage, etc.

It is absolutely forbidden to forcibly reset the fault during the time-out.

Drive converter. Otherwise there is a risk of damage to the inverter

(D) Function code editing status

In the stop, running or fault alarm state, press the MENU ESC key to enter the edit state (if a user password is set, you need to enter the password before you can enter the edit state, see P0.00 instructions and Figure 4-9), edit state Press the three-level menu to display, as shown in Figure 4-6. The order is: function code group → function code number → function code parameter, press ENTER DATA key to enter step by step. In the function code parameter display state, press ENTER DATA key to perform parameter storage operation, press MENU ESC key to not store parameters and return to the previous menu.



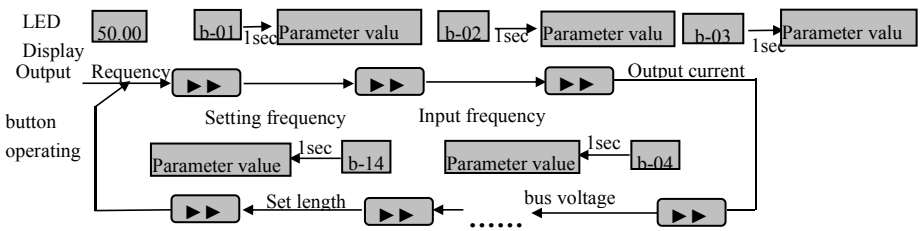
4—6 Operation panel programMing display status

4.2.5 Operation method of operation panel

Various operations can be performed on the inverter through the operation panel, examples are as follows:

① **State parameter display switching:**

After pressing the ►► key, group b status monitoring parameters are displayed. First, the serial number of the monitoring parameter is displayed. After one second, the parameter value of the monitoring parameter is automatically switched and displayed. The switching method is shown in Figure 4-6



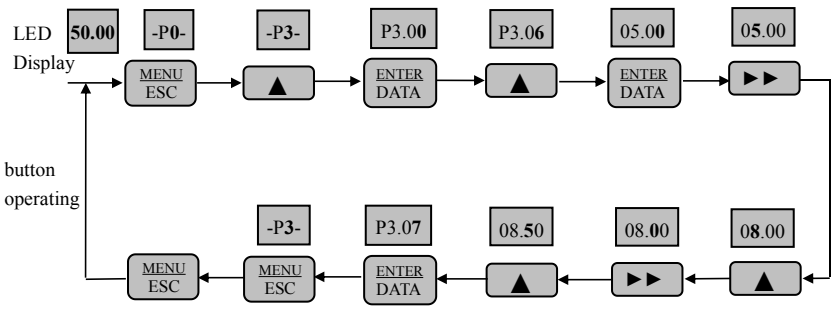
4-6 Operation status parameter display operation example

(1)When the inverter is shipped from the factory, the status parameters only display seven parameters b-00 to b-06. If the user wants to view other status parameters, it can be achieved by modifying the function codes P3.41 and P3.42.

(2)When querying the status monitoring parameters, you can press ENTER DATA to switch directly to the default monitoring parameter display status. The default monitoring parameter in the stop state is the set frequency, and the default monitoring parameter in the running state is the output frequency.

② **Function code parameter setting**

Take the function code P3.06 changed from 5.00Hz to 8.50Hz as an example.



4-7 Parameter editing operation example

Note: In the three-level menu state, if the parameter has no flashing bits, it means that the function code cannot be modified, which may be due to:

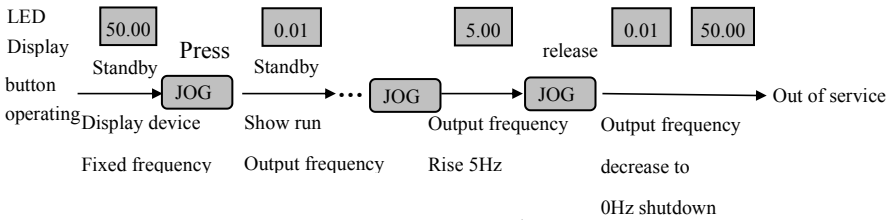
(1) This function code is an unmodifiable parameter, such as the actual detected status parameter, operation record parameter, etc.;

(2) This function code cannot be modified in the running state, and can only be modified after stopping;

(3) The parameter is protected. When the function code P3.01 is 1 or 2, the function code cannot be modified. This is to avoid parameter protection for wrong operation. If you want to edit the function code parameters, you must first set the function code P3.01 to 0;

③ Jog operation

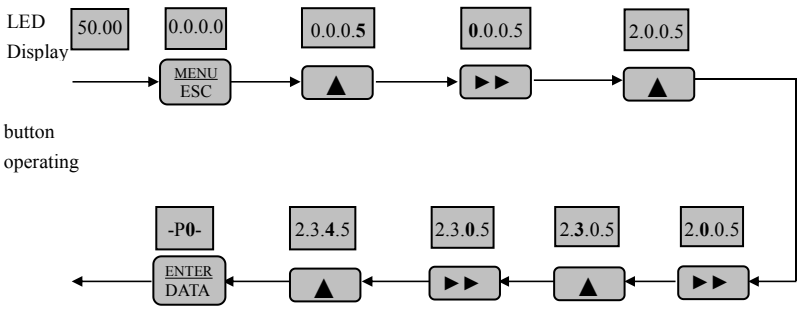
AssuMing that the current running command channel is the operation panel, in the stopped state, the jog running frequency is 5Hz, for example:



4-8 Jog operation example

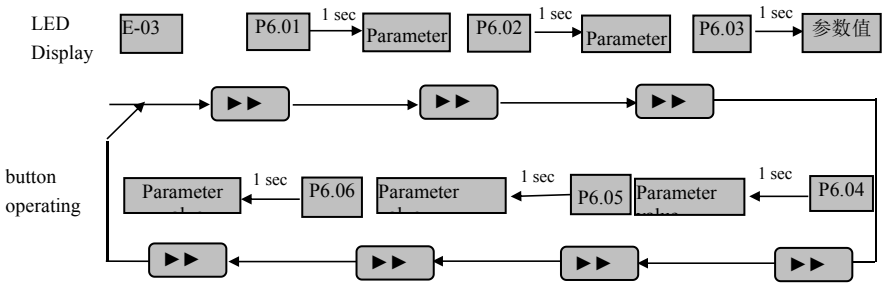
④ Set user password verification unlock operation

Assume that the "user password" P0.00 has been set to "2345". The bold numbers in Figure 4-9 indicate the flash bit.



4-9 Example of entering user password to enter function code operation

⑤ Fault state query fault parameters:



4-10 Example of fault status query operation

NOTE:

(1)When the user presses the ▶▶ key in the fault code display state to query the P6 group function code parameters, the query range is from P6.01 to P6.06. When the user presses the abv ▶▶ key, the LED first displays the function code number, and the function is automatically displayed after 1 second The parameter value of the code.

(2)When the user inquires the fault parameter, he can press MENU ESC key to directly switch back to the fault code display state。

⑥ Set frequency keyboard ▲, ▼ key given operation:

AssuMing the current stop parameter display status, P0.01 = 1, the operation mode is as follows:

(1)Frequency adjustment adopts integral method;

(2)When the ▲ key is pressed and held down, first the LED digits start to increase, when the digits are increased to the tens digits, the tens digits start to increase, when the tens digits are increased to the carry digits, the hundred digits start to increment, and so on. If you release the ▲ key and press the ▲ key again, the LED will start incrementing from the single

digit again.

(3)When the ▼ key is pressed and held down, first the LED digits begin to decrement the key, when decrementing to borrow from the ten digit, the ten digit begins to decrement, when the ten digit decrements to borrow from the hundred digit, the hundred digit begins to decrement, And so on. If you release the ▼ key and press the ▼ key again, the LED will start to decrement from the first digit again.

⑦ **Operation keyboard key lock operation:**

When the operation keyboard is not locked, press the MENU ESC key for five seconds to lock the keyboard。

⑧ **Operation keyboard key unlock operation:**

When the operation keyboard is locked, press the MENU ESC key for five seconds to unlock the keyboard。

4.3 Power on the inverter

4.3.1 Check before power on

Please follow this manual "Inverter Wiring"

The operations provided in require wiring connections.

4.3.2 Initial power-up operation

Check wiring and power supply

After confirMing that it is correct, close the inverter

AC power switch on the input side,

Power on the inverter, the inverter

Operation keyboard LED display boot

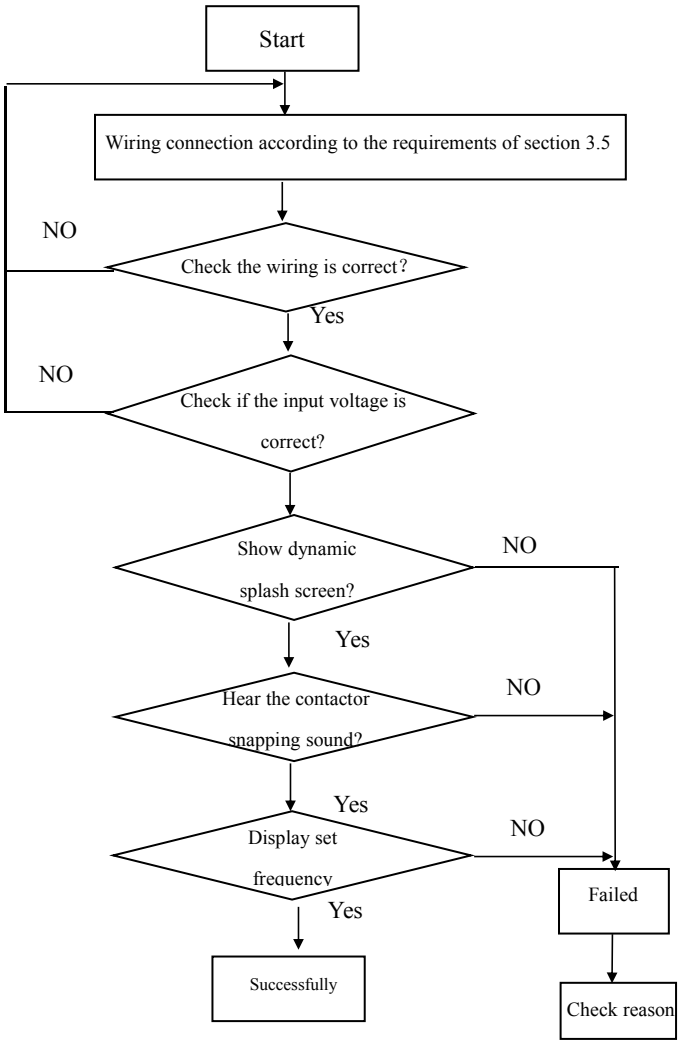
Dynamic picture, normal contactor

Pull in, when the digital tube displays the word

When the symbol becomes the set frequency, the table

Ming frequency converter has been initialized

The initial power-on operation process is as follows:



4-12 Operation process of the first power-on of the inverter

V-Function parameter table

5.1 Explanation of symbols in the table

“○”： Parameters can be modified during operation.

“×”： Parameters cannot be modified during operation.

“* ”： The parameter is read-only and cannot be modified by the user.

5.2 Explanation of symbols in the table

P0 : Basic operating parameters					
Code	Name	PredeterMined area	Min	Setting	Change
P0.00	User password	0: No password protection 0001－9999: password protection	1	0000	○
P0.01	Frequency given channel selection	0: Panel analog potentiometer 1: Keyboard ▲, ▼ key given 2: Number given 1, operation panel 3: Digital reference 2, terMinal UP / DOWN adjustment 4: Digital reference 3, serial port reference 5: VI analog reference (VI-GND) 6: CI analog reference (CI-GND) 7: TerMinal pulse (PULSE) given 8 : Combination setting (see parameter P3.00)	1	0	○
P0.02	Digital setting of operating frequency	P0.19 lower limit frequency ～ P0.20 upper limit frequency	0.01HZ	50.00HZ	○
P0.03	Run command channel selection	0 : Operation panel operating frequency channel 1: TerMinal run command channel 2 : Serial port running command channel	1	0	○
P0.04	Running direction setting	Units: 0: forward rotation 1: reverse rotation Ten's place: 0: reverse is allowed 1: reverse is prohibited	1	10	○

P0.05	Forward and reverse dead time	0.0～120.0s	0.1s	0.1s	○
P0.06	Maximum output frequency	0.01Hz～400.00Hz	0.01Hz	50.00Hz	×
P0.07	Basic operating frequency	1.00Hz～400.00Hz	0.01Hz	50.00Hz	×
P0.08	Maximum output voltage	1～480V	1V	Inverter rating	×
P0.09	Torque boost	0.0%～30.0%	0.1%	2.0%	×
P0.10	Torque boost cutoff frequency	0.01Hz ～ basic running frequency P0.07	0.00	25.00Hz	○
P0.11	Torque boosting method	0：Manual 1：AUTO	1	0	○
P0.12	Carrier frequency	1.0K～14.0K	0.1K	4.0K	×
P0.13	Selection of acceleration and deceleration methods	0：linear acceleration and deceleration 1：S Curve acceleration and deceleration	1	0	×

P0：Basic operating parameters					
Code	**Name**	**PredeterMined area**	**Min**	**Setting**	**Change**
P0.14	S Curve start time	10.0%～50.0%（Acceleration and deceleration time） P0.14＋P0.15《 90%	0.1%	20.0%	○
P0.15	S Curve rise time	10.0%～80.0%（加减速时间） P0.14＋P0.15《 90%	0.1%	60.0%	○
P0.16	Acceleration and deceleration time unit	0：sec 1：Min	0	0	×
P0.17	acceleration time 1	0.1～6000.0	0.1	20.0	○
P0.18	deceleration time 1	0.1～6000.0	0.1	20.0	○
P0.19	Upper limit frequency	Lower limit frequency ～ maximum output frequency P0.06	0.01Hz	50.00Hz	×
P0.20	Lower limit frequency	0.00Hz ～ upper limit frequency	0.01Hz	0.00Hz	×
P0.21	Lower frequency	0：Run at the lower limit frequency	1	0	×

	operation mode	1: Stop			
P0.22	V / F curve setting	0: Constant torque curve 1: Torque drop characteristic curve 1 (1.2 power) 2: Torque drop characteristic curve 2 (1.7th power) 3: Torque drop characteristic curve 3 (power of 2.0) 4: Multi-section V / F curve	1	0	×
P0.23	V / F frequency value P1	0.00～P0.25	0.01Hz	0.00Hz	×
P0.24	V / F voltage value V1	0～ P0.26	0.1%	0.0%	×
P0.25	V / F frequency value P2	P0.23 ～ P0.27	0.01Hz	0.00Hz	×
P0.26	V / F voltage value V2	P0.24 ～ P0.28	0.1%	0.0%	×
P0.27	V / F frequency value P3	P0.25 ～ P0.07 Basic operating frequency	0.01Hz	0.00Hz	×
P0.28	V / F voltage value V3	P0.26 ～ 100.0%	0.1%	0.0%	×

P1: frequency given parameters					
Code	**Name**	**PredeterMined area**	**Min**	**Setting**	**Change**
P1.00	Analog filter time constant	0.01～30.00s	0.01s	0.20s	○
P1.01	VI channel gain	0.01～9.99	0.01	1.00	○
P1.02	VI Minimum given	0.00～P1.04	0.01Hz	0.00V	○
P1.03	VI Minimum given corresponding frequency	0.00～Upper limit frequency	0.01Hz	0.00Hz	○
P1.04	VI maximum given	P1.04～10.00V	0.01V	10.00V	○
P1.05	VI maximum Corresponding frequency	0.00～Upper limit frequency	0.01Hz	50.00Hz	○
P1: frequency given parameters					

Code	Name	PredeterMined area	Min	Setting	Change
P1.06	CI Channel gain	0.01～ 9.99	0.01	1.00	○
P1.07	CI Minimum given	0.00～ P1.09	0.01V	0.00V	○
P1.08	CI Minimum given corresponding frequency	0.00～Upper limit frequency	0.01Hz	0.00Hz	○
P1.09	CI maximum given	P1.07 ～10.00V	0.01V	10.00V	○
P1.10	CI maximum given corresponding frequency	0.00～Upper limit frequency	0.01Hz	50.00Hz	○
P1.11	PULSE maximum input pulse	0.1～20.0K	0.1K	10.0K	○
P1.12	PULSE Minimum given	0.0 ～ P2.14(PULSE Maximum given)	0.1K	0.0K	○
P1.13	PULSE Minimum given corresponding frequency	0.00～Upper limit frequency	0.01Hz	0.00Hz	○
P1.14	PULSE Max given	P1.12（PULSE Minimum given）～ P1.11（Maximum input pulse）	0.1K	10.0K	○
P1.15	PULSEMaximum response frequency	0.00～Upper limit frequency	0.01Hz	50.00Hz	○

P2：frequency given parameters					
Code	Name	PredeterMined area	Min	Setting	Change
P2.00	Starting operation mode	0：Start from start frequency 1：Braking first and then starting from the starting frequency 2：Speed check and restart	1	0	×
P2.01	Starting frequency	0.40～20.00Hz	0.01Hz	0.50Hz	○
P2.02	Starting frequency duration	0.0～30.0s	0.1s	0.0s	○

P2.03	DC braking current at start	0.0～80.0%	0.1%	0%	○
P2.04	DC braking time at start	0.0～60.0s	0.1s	0.0s	○
P2.05	Stop mode	0：slow down 1：Free parking 2 ： Deceleration + DC braking	1	0	×
P2.06	Initial frequency of DC braking at stop	0.0～15.00Hz	0.0Hz	3.00Hz	○
P2.07	DC braking time at stop	0.0～60.0s	0.1s	0.0s	○
P2.08	DC braking current when stopped	0.0～80.0%	0.1%	0.0%	○

P3：frequency given parameters					
Code	**Name**	**PredeterMined area**	**Min**	**Setting**	**Change**
P3.00	Frequency input Channel combination	0： VI＋CI 1： VI－CI 2:External pulse setting＋VI＋▲、▼ 3:External pulse setting－VI－▲、▼ 4：External pulse setting＋CI 5：External pulse setting－CI 6：RS485＋VI＋▲、▼ 7：RS485－VI－▲、▼ 8：RS485＋CI＋▲、▼ 9：RS485－CI－▲、▼ 10： RS485 ＋ CI ＋ External pulse setting 11： RS485 － CI － External pulse setting 12：RS485 setting＋VI＋External pulse setting 13： RS485setting － VI － External pulse setting 14：VI＋CI＋▲、▼＋number	1	0	×

		15: VI+CI-▲、▼+number 16: MAX (VI, CI) 17: Min (VI, CI) 18: MAX (VI, CI, PULSE) 19: Min (VI, CI, PULSE) 20: VI, CI any non-zero value is valid, VI first			
P3.01	Parameter initialization	Ones: 0:All parameters are allowed to be modified 1:Except this parameter, other parameters are not allowed to be modified 2:Except P0.02 and this parameter, other parameters are not allowed to be modified Ten: 0: no action 1: Restore factory default 2: Clear fault record	1	0	×
P3: auxiliary operating parameters					
Code	**Name**	**PredeterMined area**	**Min**	**Setting**	**Change**
P3.02	Parameter copy	0:No action 1:Parameter upload 2:Parameter download Note: Only the remote control keyboard is valid	1	0	×
P3.03	Automatic energy-saving operation	0: No action 1: action	1	0	×
P3.04	AVR function	0: No action 1: Action all the time	1	0	×

		2 : No action during deceleration only			
P3.05	Slip frequency compensation	0～150%	1%	0%	×
P3.06	Jog operating frequency	0.10～50.00Hz	0.01Hz	5.00Hz	○
P3.07	Jog acceleration time	0.1～60.0s	0.1s	20.0s	○
P3.08	Jog deceleration time	0.1～60.0s	0.1s	20.0s	○
P3.09	Communication configuration	LED Ones: Baud rate selection 0: 1200BPS 1: 2400BPS 2: 4800BPS 3: 9600BPS 4: 19200BPS 5: 38400BPS LED Tens: Data Format 0: 1－7－2,No check 1: 1－7－1, Odd parity 2: 1－7－1, Even parity 3: 1－8－2, No check 4: 1－8－1, Odd parity 2: 1－7－1, Even parit 5: 1－8－1, Even parity LED Hundreds: 0: MODBUS, ASCII 1: MODBUS, RTU	1	005	×
P3.10	Local address	0～248 0: Broadcast address 248: Inverter as host address	1	1	×

P3: Auxiliary operating parameters					
Code	**Name**	**PredeterMined area**	**Min**	**Setting**	**Change**
P3.11	Communication timeout	0.0～1000.0s 0.0: Pick-up function is invalid	0.1s	0.0s	×

	detection time				
P3.12	Local response delay	0～1000ms	1	5ms	×
P3.13	Multi-machine linkage ratio	0.01～1.00	0.01	1.00	×
P3.14	Acceleration time 2	0.1～6000.0	0.1	20.0	○
P3.15	Deceleration time 2	0.1～6000.0	0.1	20.0	○
P3.16	Acceleration time 3	0.1～6000.0	0.1	20.0	○
P3.17	Deceleration time 3	0.1～6000.0	0.1	20.0	○
P3.18	Acceleration time 4	0.1～6000.0	0.1	20.0	○
P3.19	Acceleration time 4	0.1～6000.0	0.1	20.0	○
P3.20	Acceleration time 5	0.1～6000.0	0.1	20.0	○
P3.21	Acceleration time 5	0.1～6000.0	0.1	20.0	○
P3.22	Acceleration time 6	0.1～6000.0	0.1	20.0	○
P3.23	Acceleration time 6	0.1～6000.0	0.1	20.0	○
P3.24	Acceleration time 7	0.1～6000.0	0.1	20.0	○
P3.25	Acceleration time 7	0.1～6000.0	0.1	20.0	○
P3.26	Multi-band frequency 1	Lower limit frequency to upper limit frequency	0.01Hz	5.00Hz	○
P3.27	Multi-band frequency 1	Lower limit frequency to upper limit frequency	0.01Hz	10.00Hz	○
P3.28	Multi-band frequency 3	Lower limit frequency to upper limit frequency	0.01Hz	20.00Hz	○
P3.29	Multi-band	Lower limit frequency to upper	0.01Hz	30.00Hz	○

	frequency 4	limit frequency			
P3.30	Multi-band frequency 5	Lower limit frequency to upper limit frequency	0.01Hz	40.00Hz	○
P3.31	Multi-band frequency	Lower limit frequency to upper limit frequency	0.01Hz	45.00Hz	○
P3.32	Multi-band frequency 7	Lower limit frequency to upper limit frequency	0.01Hz	50.00Hz	○
P3.33	Jump frequency 1	0.00～400.00Hz	0.01Hz	0.00Hz	×
P3.34	Jump frequency 1 range	0.00～30.00Hz	0.01Hz	0.00Hz	×
P3.35	Jump frequency 2	0.00～400.00Hz	0.01Hz	0.00Hz	×
P3.36	Jump frequency 2 range	0.00～30.00Hz	0.01Hz	0.00Hz	×
P3.37	Jump frequency 3	0.00～400.00Hz	0.01Hz	0.00Hz	×
P3.38	Jump frequency 3 range	0.00～30.00Hz	0.01Hz	0.00Hz	×
P3.39	Set running time	0～65.535K hour	0.001K	0.000K	○
P3.40	Running time accumulation	0～65.535K hour	0.001K	0.000K	*

P3: auxiliary operating parameters					
Code	**Name**	**PredeterMined area**	**Min**	**Settign**	**Change**
P3.41	Display parameter selection 1	0000～1111 Ones: operation hours 0: No display 1: Display Tens: Input and output terMinal status 0: No Display 1: Display Hundreds: Analog Input VI 0: No display	1	0000	○

		1: Display 千位: Analog input CI 0: No display 1: Display			
P3.42	Display parameter selection2	0000～1111 Tens: External pulse input 0: No display 1: Display Tens: External count value 0: No display 1: Display Hundreds: Actual length 0: No display 1: Display	1	0000	○
P3.43	Display parameter selection3	00～13	1	00	○
P3.44	Unitless display factor	0.1～60.0	0.1	1.0	○

P4: TerMinal function parameters					
Code	**Name**	**PredeterMined area**	**Min**	**Setting**	**Change**
P4.00	Input terMinal X1 function selection	0: Console idle 1: Multi-speed control terMinal1 2: Multi-speed control terMinal2 3: Multi-speed control terMinal3 4: External forward rotation jog control input 5: External reverse jog control input 6: Acceleration and deceleration time terMinal1 7: Acceleration and deceleration time terMinal2 8: Acceleration and deceleration time terMinal3	1	0	×

		9: Three-wire operation control 10: Free stop input (FRS) 11: External stop command 12: Stop DC braking input command DB 13: Inverter operation prohibited 14 : Frequency increasing instruction (UP) 15 : Frequency decreasing instruction (DOWN) 16: Acceleration and deceleration prohibition instruction 17: External reset input (clear fault) 18: External device fault input (normally open) 19 : Frequency given channel selection 1 20 : Frequency given channel selection 2 21 : Frequency given channel selection 3 22: Command switch to terMinal 23: Run command channel selection 1 24: Run command channel selection 2 25 : Swing frequency input selection 26: Swing frequency state reset 27: Closed-loop failure 28: Simple PLC pause command 29: PLC failure 30: PLC stop status reset 31: Frequency switch to CI 32: Counter trigger signal input 33: Counter clear input			

		34: External interrupt input 35: Pulse frequency input (only valid for X4) 36: Actual length clear input			
P4.01	Input terMinal X2 function selection	Same as above	1	0	×
P4.02	Input terMinal X3 function selection	Same as above	1	0	×
P4.03	Input terMinal X4 function selection	Same as above	1	0	×
P4.04	Input terMinal X5 function selection	Same as above	1	0	×
P4.05	Input terMinal X6 function selection	Same as above	1	0	×
P4.06	Input terMinal X7 function selection	Same as above	1	0	
P4.07	Input terMinal X8 function selection	Same as above	1	0	
P4.08	FWD / REV operation mode selection	0: Mode of two-wire control 1 1: Mode of two-wire control 2 2: Mode of three-wire control 1 3: Mode of three-wire control 2	1	0	×
P4.09	UP / DN rate	0.01—99.99Hz/s	0.01	1.00Hz/s	○
P4.10	Two-way open collector output terMinal OC output selection	0: Inverter running (RUN) 1: Frequency arrival signal (FAR) 2: Frequency level detection signal (FDT1) 3: Frequency level detection signal (FDT2)	1	0	×

		4：Early warning signal of overload (OL) 5：Inverter under voltage lockout shutdown (LU) 6：External fault shutdown (EXT) 7：The output frequency reaches the upper limit (FH) 8：The output frequency reaches the lower limit (FL) 9：Inverter running at zero speed 10：Simple PLC stage operation completed 11：End of one cycle of PLC operation 12：Set count value reached 13：Set count value reached 14：The inverter is ready for operation (RDY) 15：Inverter fault 16：Start frequency running time 17：DC braking time at start 18：Stopping time 19：Upper and lower limits of swing frequency 20：Set running time to arrive			
P4.11	Relay output selection	Same as above	1	0	×
P4.12	Frequency arrival (FAR) detection amplitude	0.00～50.00Hz	0.01Hz	5.00Hz	○
P4.13	FDT1 (frequency level) level	0.00～Upper limit frequency	0.01Hz	10.00Hz	○
P4.14	FDT1 lag	0.00～50.00Hz	0.01Hz	1.00Hz	○
P4.15	FDT2 (frequency level) level	0.00～Upper limit frequency	0.01Hz	10.00Hz	○
P4.16	FDT2 lag	0.00～50.00Hz	0.01Hz	1.00Hz	○

P4.17	Analog output (AO) selection	0: Output frequency (0 ～ upper limit frequency) 1: Output current (0 ～ 2 times of motor rated current) 2 : Output voltage (0 ~ 1.2 inverter rated voltage) 3: Bus voltage (0 ～ 800V) 4: PID given 5: PID feedback 6: VI (0～10V) 7: CI(0～10V/4～20mA)	1	0	○
P4.18	Analog output (AO) gain	0.50～2.00	0.01	1.00	○
P4.19	DO output terMinal function selection	0: Output frequency (0 ～ upper limit frequency) 1: Output current (0 ～ 2 times of motor rated current) 2 : Output voltage (0 ~ 1.2 inverter rated voltage) 3: Bus voltage (0 ～ 800V) 4: PID given 5: PID feedback 6: VI (0～10V) 7: CI(0～10V/4～20mA)	1	0	○
P4.20	DO maximum pulse output frequency	0.1K～20.0K (MAX 20KHz)	0.1KHz	10.0KHz	○
P4.21	Set the count value to the given	F4.20～9999	1	0	○
P4.22	The specified count value reaches the given	0～F4.19	1	0	○
P4.23	Overload pre-alarm detection level	20%～200%	1	130%	○
P4.24	Overload pre-alarm delay time	0.0～20.0s	0.1s	5.0s	○

P5: Protection function parameters					
Code	Name	Predetermined area	Min	Setting	Change
P5.00	Motor overload protection mode selection	0: Inverter blocked output 1: negative	1	0	×
P5.01	Motor overload protection factor	20～120%	1	100%	×
P5.02	Overvoltage stall selection	0: Forbid 1: Admit	1	1	×
P5.03	Stall overpressure point	380V: 120～150% 220V: 110～130%	1%	140% 120%	○
P5.04	Automatic current limit level	110%～200%	1%	150%	×
P5.05	Frequency drop rate at current limit	0.00～99.99Hz/s	0.01Hz/s	10.00Hz/s	○
P5.06	Automatic current limiting action selection	0 : Constant speed is invalid 1 : Constant speed effective Note: acceleration and deceleration are always effective	1	1	×
P5.07	Power off and restart setting	0: No act 1: Act	1	0	×
P5.08	Power off and restart waiting room	0.0～10.0s	0.1s	0.5s	×
P5.09	Fault self-recovery times	0～10 0: Indicates no automatic reset function Note: Overload and overheating have no self-recovery function	1	0	×
P5.10	Note: Overload and overheating have no self-recovery function	0.5～20.0s	0.1s	5.0s	×

P7: Process closed-loop control parameters					
Code	Name	PredeterMined area	Min	Setting	Change
P7.00	Closed-loop operation control options	0: Closed loop operation control is invalid 1: Closed-loop operation control is effective	1	0	×
P7.01	Selection of given channel	0: Number given 1: 0 ~ 10V voltage given by VI 2: Given by CI simulation	1	1	○
P7.02	Feedback channel selection	0: VI analog input voltage 0 ~ 10V 1: Analog input by CI 2: VI+CI 3: VI-CI 4: Min {VI, CI} 5: Max {VI, CI}	1	1	○
P7.03	Filtering for a given channel	0.01～50.00s	0.01s	0.50s	○
P7.04	Feedback channel filtering	0.01～50.00s	0.01s	0.50s	○
P7.05	Set the given number	0.00～10.00V	0.01V	0.00V	○
P7.06	Minimum given amount	0.0～MAXP7.08	0.1%	0.0%	○
P7.07	Feedback amount corresponding to the Minimum given amount	0.0～100.0%	0.1%	0.0%	○
P7.08	Maximum given amount	Min given P7.06～100.0%	0.1%	100.0%	○
P7.09	Maximum given amount corresponds to feedback amount	0.0～100.0%	0.1%	100.0%	○
P7.10	Proportional gain KP	0.000～9.999	0.001	0.050	○
P7.11	Integral gain KI	0.001～9.999	0.001	0.050	○

P7.12	Sampling period T	0.01～10.00S	0.01	1.00	○
P7.13	Deviation limit	0.0～20.0%	1%	2.0%	○
P7.14	Closed loop regulation characteristics	0:Positive 1:reaction Note: The relationship between reference and speed	1	0	×
P7.15	Integral adjustment options	0: When the frequency reaches the upper and lower limits, stop integral adjustment 1: When the frequency reaches the upper and lower limits, continue to adjust the integral	1	0	×
P7.16	Closed-loop prefab frequency	0～MAX	0.01Hz	0.00Hz	○
P7.17	Closed loop precast frequency hold time	0.0～250.0s	0.1s	0.1s	×
P7.18	PID zero frequency sleep wake threshold	0.00～400.00Hz	0.01Hz	0.01Hz	×
P7.19	Zero frequency hysteresis	0.00～400.00Hz	0.01Hz	0.01Hz	×

P8: Simple PLC operating parameters					
Code	**Name**	**PredeterMined area**	**Min**	**Setting**	**Change**
P8.00	Simple PLC operation mode selection	0000～1113 Ones:Way selection 0: No action 1: Stop after single cycle 2: Keep the final value after a single cycle 3: Continuous loop Tens:Selection of PLC restart and restart mode 0: Start again from the first paragraph	1	0000	×

		1: Continue running from the stage frequency at the moment of interruption hundreds : PLC state parameter storage selection when power off 0: Don't store 1: Store the stage and frequency of power-off moment Thousands: Phase run time unit 0:sec 1:minn			
P8.01	Phase 1 settings	000～621 LED Ones: frequency setting 0: Multi-band frequency i (i = 1 to 7) 1:Frequency is determined by P0.01 function code LED Tens : Selection of running direction 0: Forward 1: backward 2 : Determined by operation instruction	1	000	○

Ⅵ-Fault diagnosis and exception handling

6.1 Failure phenomena and countermeasures

When the inverter is abnormal, the LED digital tube will display the function code and content of the corresponding fault. The fault relay acts and the inverter stops output. If a fault occurs, if the motor is rotating, it will stop freely until it stops rotating. The possible fault types of HD1000 are shown in Table 7-1. When a fault occurs in the inverter, the user should first check according to the prompts of this table and record the fault

phenomenon in detail. When technical service is required, please contact our after-sales service and technical support department or our local agents.

6-1 Fault alarm content and countermeasures

Code	Fault type	Reason of fault	Failure countermeasures
E-01	Inverter accelerates overcurrent	The load is too heavy and the acceleration time is too short.	Increase acceleration time
		V / F curve is not suitable	Adjust the V / F curve settings.
		Restart the rotating motor	Set to speed check and restart
		The torque boost setting is too large.	Adjust manual torque boost or change to automatic rotation
		Inverter power is too small	Use inverter with large power
E-02	Frequency converter decelerates overcurrent	Deceleration time is too short	Extended deceleration time
		With potential energy load or large inertia load	Increase the braking power of external energy-consuming
		Inverter power is too small	Use inverter with large power
E-03	Inverter running at constant speed overcurrent	Sudden change in load	Check load or reduce load
		The acceleration and deceleration time is set too short	Properly increase the acceleration and deceleration time
		Abnormal load	Perform load check
		Low grid voltage	Check input power
		Inverter power is too small	Use inverter with large power
E-04	Inverter accelerates overvoltage	Abnormal input voltage	Check power
		The acceleration time setting is too short	Extend the acceleration time
		Restart the rotating motor	Set to speed detection tracking
Code	Fault type	Possible cause of failure	Failure countermeasures
E-05	Inverter decelerating	Deceleration time is too short	Extended deceleration time

		With potential energy load or large inertia load	Increase the braking power of external energy-consuming
E-06	Inverter running at constant speed overvoltage	Abnormal input voltage	Check power
		The acceleration and deceleration time is set too	Increase the acceleration and
		Abnormal change in input voltage	Install input reactor
		Large load inertia	Use energy-saving braking components
E-07	Inverter control power supply overvoltage	Abnormal input voltage	Check power or call service
E-08	Inverter overheating	Air duct obstruction	Clean air ducts or improve ventilation
		The ambient temperature is too high	Improve ventilation conditions and reduce carrier frequency
		Damaged fan	Replace the fan
		Inverter module is abnormal	Call service
E-09	Inverter overload	Acceleration time is too short	Extended time acceleration
		DC braking volume is too large	Reduce DC braking current and extend braking time
		V / F curve is not suitable	Adjust V / F curve and torque boost
		Restart the rotating motor	Set to speed check and restart function
		The grid voltage is too low	Check grid voltage
		Overload	Choose a more powerful inverter
E-10	Motor overload	V / F curve is unavailable	Adjust V / F curve and torque
		The grid voltage is too low	Check grid voltage
		Long-term low-speed large-load operation of general motors	Long-term low-speed operation, optional inverter motor

		The motor overload protection coefficient is set	Correctly set the motor overload
		The motor is locked or the load is too large	Check the load
E-11	Unde rvoltage during operation	The grid voltage is too low	Check grid voltage
Code	Fault type	Possible cause of failure	Failure countermeasures
E-12	Inverter module protection	Frequency converter instantaneous overcurrent	See overcurrent countermeasures
		The output three phases have interphase short circuit or ground short circuit	Rewiring
		Clogged air duct or damaged fan	Clean the air duct or replace the fan
		The ambient temperature is too high	Lower ambient temperature
		Control board connection or plug-in is loose	Check and reconnect
		Abnormal output waveform causes abnormal current waveform	Check wiring
		Check the wiring auxiliary power is damaged, the drive voltage is undervoltage...	Call service
		Control board abnormal	Call service
E-13	External equipment failure	External fault emergency stop terminal closed	Disconnect the external fault terminal after handling the external fault
E-14	Current detection circuit malfunction	Control board connection or plug-in is loose	Check and reconnect
		Auxiliary power supply damaged	Call service
		Hall device damaged	Call service
		Amplifier circuit is abnormal	Call service
E-15	RS232/485 communication fail	Incorrect baud rate setting	Set the baud rate appropriately
		Serial port communication error	Press STOP RESET and call service

		Improper setting of fault alarm parameters	Modify the settings of P3.09 ～ P3.12
		The host computer is not working	Check if the host computer is working or not and the wiring is correct
E-16	System interference	Serious interference	Press STOP RESET to reset or add power filter on the power input side
		Main board DSP read and write errors	Call service
E-17	E^2PROM Read and write errors	An error occurred while reading and writing control parameters	Press STOP RESET to reset and seek the service of manufacturer or agent

6.2 Fault record query

This series of inverters records the fault codes of the last 6 occurrences and the operating parameters of the inverter during the last fault. Looking up this information helps to find the cause of the fault. The fault information is all saved in the P6 group parameters, please refer to the keyboard operation method to enter the P6 group parameter search information.

6.3 Fault reset

When the inverter fails, to resume normal operation, you can choose any of the following

operations：

(1) When the fault code is displayed, after confirming that it can be reset,press STOP RESET .

(2) Set any terminal of X1 ～ X8 as external RESET input (P4.00 ～ P4.07 = 17), then close with COM terminal and open.

(3) cut the power supply.

 **Attention**
(1) Before resetting, the cause of the fault must be thoroughly investigated and eliminated, otherwise it may cause permanent damage to the inverter. (2) If it cannot be reset or the fault reoccurs after resetting, the cause should be checked. Continuous reset will damage the inverter. (3) Overload and overheat protection should be reset after 5 minutes delay.

Ⅶ-Communication protocol of serial port RS485

7.1 Communication Overview

The company's series of inverters provide users with a common RS485 communication interface in industrial control. The communication protocol adopts the MODBUS standard communication protocol. The inverter can be used as a slave to communicate with a host computer (such as a PLC controller or a PC) that has the same communication interface and uses the same communication

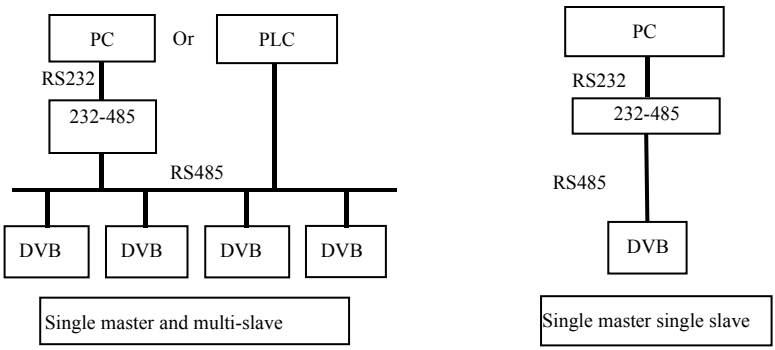
protocol to realize centralized monitoring of the inverter. One inverter can be used as the master, and several inverters of our company can be connected as slaves through the RS485 interface. In order to realize the multi-machine linkage of the inverter. The remote control keyboard can also be connected through the communication port. Realize the user's remote operation of the inverter.

The MODBUS communication protocol of this inverter supports two transmission modes: RTU mode and ASCII mode. The user can choose one of them according to the situation. The following is a detailed description of the inverter communication protocol.

7.2 Communication protocol description

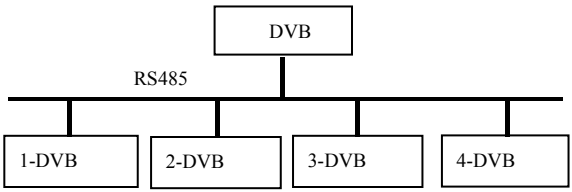
7.2.1 Communication networking

(1) Inverter as the network mode of slave unit:



9－1 Schematic diagram of slave unit network

(2) Multi-machine linkage networking:



9－2 Schematic diagram of multi-machine linkage networking

7.2.2 Communication protocol

The inverter can be used as a master or a slave in the RS485 network. When used as a master, it can control other inverters of our company to achieve multi-level linkage. As a slave, a PC or PLC can be used as a master Control the inverter to work. The specific communication method is as follows：

(1) The inverter is a slave, and the master-slave type point-to-point communication. When the master uses the broadcast address to send commands, the slave does not answer.

(2) As the master, the inverter uses the broadcast address to send commands to the slave, and the slave does not answer.

(3) Users can set the inverter's local address, baud rate, and data format by using keyboard or serial communication.

(4) The slave reports the current fault information in the last reply frame to the master polling.

7.2.3 Communication interface

The communication is RS485 interface, asynchronous serial, half-duplex transmission. The default communication protocol is ASCII.

The default data format is: 1 start bit, 7 data bits, and 2 stop bits.

The default rate is 9600bps. For communication parameter settings, please refer to P3.09 ～ P3.12 function codes.

7.3 ASCII Communication Protocol

7.3.1 ASCII Protocol Format:

Master Command Frame Format

1	Frame header
2	Slave address
3	Slave address
4	Master response
5	Master response
6	Fault index
7	Fault index
8	Command index
9	Command index
10	Setting data
11	Setting data
12	Setting data
13	Setting data
14	Checksum
15	Checksum
16	End of frame
17	End of frame

Slave Response Frame Format

1	Frame header
2	Slave address
3	Slave address
4	Slave response
5	Slave response
6	Fault index
7	Fault index
8	Command index
9	Command index
10	Response data
11	Response data
12	Response data
13	Response data
14	Checksum
15	Checksum
16	End of frame
17	End of frame

Master Command Frame Format:

definition	head	Add.	Command area	Index area	Set data area	Check area	end
byte	1	2	2	4	4	2	2

Slave Response Frame Format

definition	head	Add.	Response area	Index area	Response data area	Check area	end
byte	1	2	2	4	4	2	2

Note:

(1) (1) The ASCII mode message frame starts with the colon ":" character ASCII code 3AH and ends with a carriage return and line feed character (ASCII code 0DH, 0AH).

(2) In the ASCII mode protocol, except for the frame header and frame tail, the effective character sets in other areas are: 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, lowercase ASCII letters a, b, c, d, e, f are illegal characters.

(3) The effective command frame length in ASCII mode is 13 or 17 bytes. The response frame length is 17 bytes.

(4) The ASCII mode error check adopts the LRC (Longitudinal Verbose Detection) method. The error detection field contains two ASCII characters.

(5) ASCII mode serial data transmission format adopts 3 transmission formats:

1 start bit, 7 data bits, 2 stop bits.

1 start bit, 7 data bits, 1 odd parity bit, 1 stop bit.

1 start bit, 7 data bits, 1 even parity bit, 1 stop bit.

(6) ASCII mode character transmission sequence...:

No Parity

Start	1	2	3	4	5	6	7	Stop	Stop

With Parity

Star	1	2	3	4	5	6	7	Parity	Stop

7.3.2 Protocol format interpretation

(1) **Frame header**

The frame header is the colon ":" character ASCII code 3AH.

(2) Slave address

Data meaning: the local address of the slave. Double-byte ASCII code, high-order first, low-order second. The address range is 0 to 247, where address 0 is the broadcast address. The factory setting of the inverter is 01.

(3) Host command / slave response

Data meaning: the command sent by the host, double-byte ASCII code, high bit first, low bit behind.

Slave response to the command. Double-byte ASCII code. For normal response, the slave only responds to the corresponding function code. For objection response (some kind of error), the slave responds with the same command code, but the highest bit of the command byte becomes 1. Examples are as follows：

The 485 read slave function code parameter command is：

00010000B(Hexadecimal is 10H)

The slave's error response is：

10010000B(Hexadecimal is 90H)

(4) Index zone

Data meaning: including auxiliary index byte and command index byte.

Data meaning: including auxiliary index byte and command index byte.

For the slave, the auxiliary index and command index are used to report the fault status code from the slave, and the command index is reported without modification.

Data type: hexadecimal, 4 bytes. ASCII format.

The command index occupies the lower two bytes, the data range: "00" ~ "FF".

The secondary index occupies the upper two bytes, and the data range: "00"~"FF".

The failure status of the slave occupies the "auxiliary index" byte, figure 9-1。

7-1 Fault type description

Fault index	Fault description	Fault index	Fault description
01	Speed up overcurrent	02	Overflow during deceleration
03	Overcurrent at constant speed	04	Speed up overpressure
05	Overpressure during	06	Constant speed overpressure

	deceleration		
07	Overpressure during shutdown	08	Inverter overheating
09	Inverter overload	10	Motor overload
11	Undervoltage during operation	12	Inverter module protection
13	External equipment failure	14	Current detection circuit failure
15	RS232/485 communication failure	16	System interference
17	E^2PROM errors	18	

(5) Checksum

Data meaning: frame check. Double-byte ASCII code.

Calculation method: For the message sending end, the calculation method of LRC is to continuously accumulate all the bytes from the "slave address" to the "running data" in the message to be sent, which are not converted into ASCII code, and the result is discarded. Invert the bit, add 1 (convert to complement) afterwards, and finally convert to ASCII code, put it in the check area, high byte first, low byte second. For the message receiving end, the same LRC method is used to calculate the checksum of the received message and compared with the actual received checksum. If they are equal, the received message is correct. If they are not equal, the received message is incorrect. If the check is incorrect, the message frame is discarded without any response, and the next frame of data is continued to be received.

(6) End of frame

Data meaning: hexadecimal 0DH, 0AH, double-byte ASCII. 0DH in the front, 0AH in the back.

7.3.3 ASCII protocol command list

7—2 Protocol Command Table

Name	Master command	Secondary index	Command index	Master sending example (slave address 01H)	Slave response example (Slave address 01H)	Operating data accuracy	Explanation

Check slave status		00	00	00	3A 30 31 30 30 30 30 30 30 46 46 0D 0A	3A 30 31 30 30 30 30 30 30 31 30 46 41 30 34 46 0D 0A	1	The inverter currently allows the master to control and to set the frequency, the current set frequency is 40.00Hz
Read slave parameters	Current operating frequency	01	00	00	3A 30 31 30 31 30 30 30 30 46 45 0D 0A	3A 30 31 30 31 30 30 30 30 00 31 46 34 30 39 0D 0A	0.01Hz	The response frame data area is the current operating frequency of 5.00 Hz
	Current setting frequency	01	00	01	3A 30 31 30 31 30 30 30 31 46 44 0D 0A	3A 30 31 30 31 30 31 30 30 00 31 46 34 30 38 0D 0A	0.01Hz	The response frame data area is the current operating frequency of 5.00Hz
	Output voltage	01	00	02	3A 30 31 30 31 30 30 30 32 46 43 0D 0A	3A 30 31 30 31 30 30 30 32 30 31 37 43 37 46 0D 0A	1V	The response frame data area is the current output voltage 380V
	Input voltage	01	00	03	3A 30 31 30 31 30 30 30 33 46 42 0D 0A	3A 30 31 30 31 30 30 30 33 30 30 30 35 46 36 0D 0A	0.1A	The response frame data area is the current output current 0.5A
	bus voltage	01	00	04	3A 30 31 30 31 30 30 30 34 46 41 0D 0A	3A 30 31 30 31 30 30 30 32 30 32 30 38 46 32 0D 0A	1V	The response frame data area is the current bus voltage 520V
	Module temperature	01	00	05	3A 30 31 30 31 30 30 30 35 46 39 0D 0A	3A 30 31 30 31 30 30 30 35 30 30 32 38 44 31 0D 0A	$1^{o}C$	The response frame data area is the current module temperature 40OC
	Load motor speed	01	00	06	3A 30 31 30 31 30 30 30 36 46 38 0D 0A	3A 30 31 30 31 30 30 30 36 30 33 45 38 30 44 0D 0A	1rpm	The response frame data area is the current load motor speed 1000 rpm
	Name	Master commands	Secondary index	Command index	Host sending instance (Slave address 01H)	Slave response example (slave address 01H)	Operating data accuracy	Explanation

	Input and output terminal status	01	00	07	3A 30 31 30 31 30 30 30 37 46 37 0D 0A		无	
	Analog input AI1	01	00	08	3A 30 31 30 31 30 30 30 38 46 36 0D 0A	3A 30 31 30 31 30 30 30 38 30 30 36 34 39 32 0D 0A	0.01V	The response frame data area is analog input AI1: 1.00V
	Analog input AI2	01	00	09	3A 30 31 30 31 30 30 30 39 46 35 0D 0A	3A 30 31 30 31 30 30 30 39 30 30 36 34 39 31 0D 0A	0.01V	The response frame data area is analog input AI2: 1.00V
	operation hours	01	00	0A	3A 30 31 30 31 30 30 30 41 46 34 0D 0A	3A 30 31 30 31 30 30 30 41 30 30 30 39 45 42 0D 0A	Hour	Response frame data area is 9 hours running time
	Read the running status of the inverter	01	00	0F	3A 30 31 30 31 30 30 30 46 45 46 0D 0A	3A 30 31 30 31 30 30 30 46 30 30 30 35 45 41 0D 0A	Non	The current inverter runs in reverse, BIT0=1, BIT2 =1
Operation control and adjustment function	Slave running	02	00	00	3A 30 31 30 32 30 30 30 30 46 44 0D 0A	3A 30 31 30 32 30 30 30 30 30 31 33 38 38 36 30 0D 0A	0.01HZ	The response frame data area is the current set frequency 50.00HZ
	Set the current operating frequency of the slave	03	00	00	3A 30 31 30 33 30 30 30 30 31 33 38 38 36 31 0D 0A	3A 30 31 30 33 30 30 30 30 31 33 38 38 36 31 0D 0A	0.01Hz	The data area of command frame and response frame is set frequency 50.00Hz.

	Slave running frequency setting	04	00	00	3A 30 31 30 34 30 30 30 30 31 33 38 38 36 30 0D 0A	3A 30 31 30 34 30 30 30 30 31 33 38 38 36 30 0D 0A	0.01Hz	The data area of command frame and response frame is set frequency 50.00Hz.
	Slave forward running	05	00	00	3A 30 31 30 35 30 30 30 30 30 46 41 0D 0A	3A 30 31 30 35 30 30 30 30 31 33 38 38 35 46 0D 0A	0.01Hz	The response frame data area is the current set frequency 50.00HZ
	Slave reverse operation	06	00	00	3A 30 31 30 36 30 30 30 30 46 39 0D 0A	3A 30 31 30 36 30 30 30 30 31 33 38 38 35 45 0D 0A	0.01Hz	The response frame data area is the current set frequency 50.00HZ
	Slave forward running with running frequency setting	07	00	00	3A 30 31 30 37 30 30 30 30 30 31 46 34 30 33 0D 0A	3A 30 31 30 37 30 30 30 30 30 31 46 34 30 33 0D 0A	0.01Hz	Forward running set frequency = 5.00Hz
	Slave reverse running with running frequency setting	08	00	00	3A 30 31 30 38 30 30 30 30 30 31 46 35 30 31 0D 0A	3A 30 31 30 38 30 30 30 30 30 31 46 35 30 31 0D 0A	0.01Hz	Reverse running set frequency = 5.00Hz
	Never stop	09	00	00	3A 30 31 30 39 30 30 30 30 46 36 0D 0A	3A 30 31 30 39 30 30 30 30 30 31 46 35 30 30 0D 0A	0.01Hz	The response frame data area is currently set frequency 5.00HZ
	Slave jog running	0A	00	00	3A 30 31 30 41 30 30 30 30 46 35 0D 0A	3A 30 31 30 41 30 30 30 30 30 31 46 34 30 30 0D 0A	0.01Hz	The response frame data area is set for the current jog frequency 5.00HZ

	Slave forward rotation jog operation	0B	00	00	3A 30 31 30 42 30 30 30 30 46 34 0D 0A	3A 30 31 30 42 30 30 30 30 30 31 46 34 46 46 0D 0A	0.01Hz	The response frame data area is set for the current jog frequency 5.00HZ
	Slave reverse running	0C	00	00	3A 30 31 30 43 30 30 30 30 46 33 0D 0A	3A 30 31 30 43 30 30 30 30 30 31 46 34 46 45 0D 0A	0.01Hz	The response frame data area is set for the current jog frequency 5.00HZ
	Slave stop jog running	0D	00	00	3A 30 31 30 44 30 30 30 30 46 32 0D 0A	3A 30 31 30 44 30 30 30 30 30 31 46 34 46 44 0D 0A	0.01Hz	The response frame data area is set for the current jog frequency 5.00HZ
	Slave fault reset	0E	00	00	3A 30 31 30 45 30 30 30 30 46 31 0D 0A	3A 30 31 30 45 30 37 30 30 31 33 38 38 34 46 0D 0A	0.01Hz	The response frame data area is currently set frequency 5.00HZ
	Emergency stop from the machine	0F	00	00	3A 30 31 30 46 30 30 30 30 46 30 0D 0A	3A 30 31 30 46 30 30 30 30 31 33 38 38 35 35 0D 0A	0.01Hz	The inverter directly blocks the output. The response frame data area is currently set frequency 5.00HZ
Read function code parameter command	Reading frequency input channel selection P0.01	10	00	01	3A 30 31 31 30 30 30 30 31 45 45 0D 0A	3A 30 31 31 30 30 30 30 30 31 30 30 30 33 45 42 0D 0A	1	The auxiliary index is the function code group number 0, and the command index is the function code number 01H.
	Digital setting of reading frequency P0.02	10	00	02	3A 30 31 31 30 30 30 30 32 45 44 0D 0A	3A 30 31 31 30 30 30 30 32 30 46 41 30 33 45 0D 0A	0.01Hz	The auxiliary index is the function code group number 0, and the command index is the function code number 2. P0.02=40.00Hz

	Read start frequency P2.01	10	02	01	3A 30 31 31 30 30 32 30 31 45 43 0D 0A	3A 30 31 31 30 30 32 30 31 30 30 30 32 45 41 0D 0A	0.01Hz	The auxiliary index is the function code group number 2, and the command index is the function code number 1. P2.01=0.02HZ
	Read the function code (the function code group number exceeds the range)	10	10	0A	3A 30 31 31 30 30 41 30 31 45 34 0D 0A	3A 30 31 39 30 30 41 30 31 30 32 30 30 35 33 0D 0A	1	The function code group number 10 is out of range, and the upper 8 bits of the response frame data area = 02H (function code group number overrun error code).
	Read function code (function code number exceeds the range)	10	01	21	3A 30 31 31 30 30 31 32 31 43 44 0D 0A	3A 30 31 39 30 30 31 32 31 30 33 30 30 34 41 0D 0A	1	The function code number 21H is out of range, and the upper 8 bits of the response frame data area = 03H (the function code number exceeds the error code).
Setting function	Frequency digital setting P0.02=5.00HZ	11	00	02	3A 30 31 31 31 30 30 30 32 30 31 46 34 46 37 0D 0A	3A 30 31 31 31 30 30 30 32 30 31 46 34 46 37 0D 0A	0.01Hz	The auxiliary index is the function code group number 0, and the command index is the function code number 2. P0.02=5.00Hz
	Multi-band frequency 1 setting P3.25 = 4.99HZ	11	03	19	3A 30 31 31 31 30 33 31 39 30 31 46 33 44 45 0D 0A	3A 30 31 31 31 30 33 31 39 30 31 46 33 44 45 0D 0A	0.01Hz	The auxiliary index is the function code group number 3, and the command index is the function code number 25. P3.25=4.99Hz

	Enter the user password P0.00 = 3. Remove password protection.	11	00	00	3A 30 31 31 31 30 30 30 30 30 30 33 45 42 0D 0A	3A 30 31 31 31 30 30 30 30 30 30 30 30 36 42 0D 0A	1	Enter the user password, the password is entered correctly, and the user password P0.00 becomes 0. Password protection is released.
	Enter the user password P0.00 = 3. Incorrect password.	11	00	00	3A 30 31 31 31 30 30 30 30 30 30 33 45 42 0D 0A	3A 30 31 39 31 30 30 30 30 30 34 30 30 36 41 0D 0A	1	Enter the user password. If the password is entered incorrectly, the upper 8 digits of the response frame data area = 04H (user password entered incorrectly).
	The frequency number is set to P002=500, but The user password is not equal to 0.	11	00	02	3A 30 31 31 31 30 30 30 32 30 31 46 34 46 37 0D 0A	3A 30 31 39 31 30 30 30 32 30 31 30 30 36 42 0D 0A	1	Since the user password is not equal to 0, the upper 8 bits of the response frame data area = 01H (user password is not equal to 0 error code).

	Write function code (function code group number exceeds the range)	11	0A	00	3A 30 31 31 31 30 41 30 30 30 30 30 33 45 31 0D 0A	3A 30 31 39 31 30 41 30 30 30 32 30 30 36 32 0D 0A	1	The function code group number 0AH is out of range, and the upper 8 bits of the response frame data area = 02H (the function code group number exceeds the error code).
	Write function code (function code number exceeds the range)	11	02	30	3A 30 31 31 31 30 32 33 30 30 30 30 33 42 39 0D 0A	3A 30 31 39 31 30 32 33 30 30 33 30 30 33 39 0D 0A	1	The function code number 30H is out of range, and the upper 8 bits of the response frame data area = 03H (function code number overrun error code).
	Write frequency input channel selection P0.01=500	11	00	01	3A 30 31 31 31 30 30 30 31 30 31 46 34 46 38 0D 0A	3A 30 31 39 31 30 30 30 31 30 35 30 30 36 38 0D 0A	1	The upper 8 bits of the response frame data area = 05H (function code data exceeds maximum error code)
	Fault Setting frequency function code P601=19H	11	06	01	3A 30 31 31 31 30 36 30 31 30 30 31 39 43 45 0D 0A	3A 30 31 39 31 30 36 30 31 30 37 30 30 36 30 0D 0A	1	The upper 8 bits of the response frame data area = 07H (the function code data is a read-only error code).

	Function code P013=1 for acceleration/deceleration mode selection, but the inverter is running.	11	00	0C	3A 30 31 31 31 30 30 30 43 30 30 30 31 45 31 0D 0A	3A 30 31 39 31 30 30 30 43 30 38 30 30 35 41 0D 0A	1	P013 function code cannot be written during operation, the upper 8 bits of the response frame data area = 08H (function code data cannot be written with error code during operation).
version number	Query slave software version number command	12	00	00	3A 30 31 31 32 30 30 30 30 45 44 0D 0A	3A 30 31 31 32 30 30 30 30 30 31 30 31 45 42 0D 0A	1	The response frame data area is the slave software version number V1.01

7—3 Check slave status

<table>
<tr><td>Function definition</td><td colspan="8">Check slave status</td></tr>
<tr><td>Meanning</td><td>Frame header</td><td>Address</td><td>Command</td><td>Secondary index</td><td>Command index</td><td>Data area</td><td>Checksum</td><td>End of frame</td></tr>
<tr><td>Master command</td><td>3AH</td><td>ADDR</td><td>00</td><td>00</td><td>00</td><td>无</td><td>LRC</td><td>0DH、0AH</td></tr>
<tr><td>Bytes</td><td>1</td><td>2</td><td>2</td><td>2</td><td>2</td><td>0</td><td>2</td><td>2</td></tr>
<tr><td>Slave response</td><td>3AH</td><td>ADDR</td><td>00</td><td>Error code</td><td>Status code</td><td>Current set frequency</td><td>LRC</td><td>0DH、0AH</td></tr>
<tr><td>Bytes</td><td>1</td><td>2</td><td>2</td><td>2</td><td>2</td><td>4</td><td>2</td><td>2</td></tr>
<tr><td rowspan="8">Remarks</td><td colspan="8">Index area: Command frame index area is all zeros
The auxiliary index of the response frame is the slave fault code, and the command index area is the current status code of the slave. The specific code meanings are as follows:
Data area: The host command frame has no data area. The slave responds to the current set frequency value of the slave in the frame data area, with the high bit first and the low bit behind.</td></tr>
<tr><td colspan="8">Slave response frame types and examples</td></tr>
<tr><td>Code</td><td colspan="3">Response frame example</td><td colspan="4">Explanation</td></tr>
<tr><td>00H</td><td colspan="3">3A 30 31 30 30 30 37 30 30 30 46 41 30 34 39 0D 0A</td><td colspan="4">The slave is not ready.</td></tr>
<tr><td>01H</td><td colspan="3">3A 30 31 30 30 30 30 30 31 30 46 41 30 34 46 0D 0A</td><td colspan="4">Allow the host to control and allow to set the frequency.</td></tr>
<tr><td>02H</td><td colspan="3">3A 30 31 30 30 30 30 30 32 30 30 30 30 46 44 0D 0A</td><td colspan="4">Allow the host to control and not allow to set the frequency.</td></tr>
<tr><td>03H</td><td colspan="3">3A 30 31 30 30 30 30 30 33 30 46 41 30 34 44 0D 0A</td><td colspan="4">Not allow the host to control and allow to set the frequency.</td></tr>
<tr><td>04H</td><td colspan="3">3A 30 31 30 30 30 30 30 34 30 30 30 30 46 42 0D 0A</td><td colspan="4">Not allow the host to control and not allow to set the frequency.</td></tr>
<tr><td>Send instance</td><td colspan="8">3A 30 31 30 30 30 30 30 30 46 46 0D 0A；</td></tr>
<tr><td>Example response</td><td colspan="8">3A 30 31 30 30 30 30 30 31 30 46 41 30 34 46 0D 0A；(当前设定频率 40.00Hz)</td></tr>
</table>

7－4 Check running status of the slave

Function definition	Check running status of the slave							
Meaning	Frame header	Address	Command	Secondary index	Command index	Data area	Checksum	End of frame
Master commands	3AH	ADDR	01	00	0F	无	LRC	0DH、0AH
Bytes	1	2	2	2	2	0	2	2
Slave response	3AH	ADDR	01	Error code	0F	Current running status word	LRC	0DH、0AH
Bytes	1	2	2	2	2	4	2	2

Remark

Index area: The auxiliary index area of the command frame is 00H, and the command index is 0FH.
The auxiliary index of the response frame is the slave fault code, and the command index is 0FH.
Data area: The host command frame has no data area. The data area of the slave response frame is the current running status word of the slave. The high position is in the front and the low position is in the back.
The specific code meanings are as follows:

Slave response frame running status word meaning

Bit	Explanation	0	1
BIT0	Stop/Run status	Stop	Running
BIT1	Undervoltage sign	Normal	Undervoltage
BIT2	Forward/reverse running mode flag	Forward	Reverse
BIT3	Swing frequency operation mode sign	invalid	Effective
BIT4	Operation status sign	No	Jog
BIT5	PI closed-loop operating mode flag	No	Yes
BIT6	PLC work mode	No	Yes
BIT7	Multi-step frequency operation mode	No	Yes
BIT8	Specify count value arrival flag	No	Yes
BIT9	Set count value arrival flag	No	Yes
BIT10~15	Keeping	—	—

Send instance	3A 30 31 30 31 30 30 30 46 45 46 0D 0A；
Example response	3A 30 31 30 31 30 30 30 46 30 30 30 35 45 41 0D 0A；(Current inverter running in reverse)

7—5 Get slave function code parameters

<table>
<tr><td>Function definition</td><td colspan="7">Get slave function code parameters</td></tr>
<tr><td>Meaning</td><td>Frame header</td><td>address</td><td>Command</td><td>auxiliary index</td><td>Data area</td><td>Checksum</td><td>End of frame</td></tr>
<tr><td>Master command</td><td>3AH</td><td>ADDR</td><td>10</td><td>See remarks</td><td>No</td><td>LRC</td><td>0DH、0AH</td></tr>
<tr><td>Bytes</td><td>1</td><td>2</td><td>2</td><td>4</td><td>0</td><td>2</td><td>2</td></tr>
<tr><td>Slave response</td><td>3AH</td><td>ADDR</td><td>10</td><td>See remarks</td><td>Function code parameters</td><td>LRC</td><td>0DH、0AH</td></tr>
<tr><td>Bytes</td><td>1</td><td>2</td><td>2</td><td>4</td><td>4</td><td>2</td><td>2</td></tr>
<tr><td>Remarks</td><td colspan="7">Index area: The auxiliary index is the function code group number: range 0~9, indicating P0~P9 group function code.
The command index is the function code number: the range varies according to the function code group.
E.g:
Read the parameter of P0.02 function code, index area=0002H, auxiliary index=00H, command index=02H.
Read the parameters of P1.11 function code, index area=010BH, auxiliary index=01H, command index=0BH.
Read the parameters of P2.16 function code, index area=0210H, auxiliary index=02H, command index=10H.
Data area: The host command frame has no data area. The data area of the slave response frame contains the specific value of the function code, with the high bit first and the low bit second. When the command frame is wrong, the slave responds the error frame to the master, the error frame is as follows：
1. The function code group number exceeds the limit error: the response frame command area is 90H (the highest bit of the byte is 1), and the high byte of the data area is 02H.
Function code number overrun error: The response frame command area is 90H (the most significant byte is 1), and the high byte of the data area is 03H.</td></tr>
<tr><td></td><td colspan="7">Correspondence between decimal and hexadecimal values of function code group number names</td></tr>
<tr><td></td><td>Function code group number</td><td>Decimal</td><td>Hex</td><td>Function code group number</td><td>Decimal</td><td colspan="2">Hex</td></tr>
<tr><td></td><td>P0</td><td>0</td><td>00H</td><td>P5</td><td>5</td><td colspan="2">05H</td></tr>
<tr><td></td><td>P1</td><td>1</td><td>01H</td><td>P6</td><td>6</td><td colspan="2">06H</td></tr>
<tr><td></td><td>P2</td><td>2</td><td>02H</td><td>P7</td><td>7</td><td colspan="2">07H</td></tr>
<tr><td></td><td>P3</td><td>3</td><td>03H</td><td>P8</td><td>8</td><td colspan="2">08H</td></tr>
<tr><td></td><td>P4</td><td>4</td><td>04H</td><td>P9</td><td>9</td><td colspan="2">09H</td></tr>
<tr><td>Send instance</td><td colspan="7">3A 30 31 31 30 30 32 30 31 45 43 0D 0A；(Check the start frequency P2.01 function code)</td></tr>
<tr><td>Example response</td><td colspan="7">3A 30 31 31 30 30 32 30 31 30 31 46 34 46 37 0D 0A；(P2.01 = 5.00Hz)</td></tr>
</table>

If the inverter is set with a user password, before setting the parameters of the user function code, the "user password" must be entered correctly through the serial port. Only then can the function code parameters be set.

7－6　Set parameters of slave function code

Function definition	Read slave function code parameters: all function code parameters except user password and manufacturer password						
Meaning	Frame header	address	Command	command index	Setting data	Checksum	End of frame
Master command	3AH	ADDR	11	Check remarks	Set function code parameters	LRC	0DH、0AH
Bytes	1	2	2	4	4	2	2
Slave response	3AH	ADDR	11	Check remarks	Actually set function code parameters	LRC	0DH、0AH
Bytes	1	2	2	4	4	2	2

<table>
<tr><td>Remarks</td><td>
Index area: The auxiliary index is the function code group number: range 0~9, indicating P0~P9 group function code.
The command index is the function code number: the range varies according to the function code group.
E.g:
Set the parameter of P0.02 function code, index area=0002H, auxiliary index=00H, command index=02H.
Set the parameters of P1.11 function code, index area=010BH, auxiliary index=01H, command index=0BH.
Set the parameters of P2.16 function code, index area=0210H, auxiliary index=02H, command index=10H.
Data area: The host command frame data area is the set function code value. The data area of the slave response frame contains the actual set value of the function code, with the high bit first and the low bit last.
When the command frame is wrong, the slave responds the error frame to the master, the error frame is as follows：
1. User password is not equal to 0 error: the response frame command area is 91H (the most significant byte is 1), and the high byte of the data area is 02H. The user password needs to be entered first.
2. The code group number exceeds the limit error: the response frame command area is 91H (the highest bit of the byte is 1), and the high byte of the data area is 02H.
3. The function code number exceeds the limit error: the response frame command area is 91H (the highest bit of the byte is 1), the high byte of the data area is 03H.
4. User password input error: the response frame command area is 91H (the highest byte of the byte is 1), the high byte of the data area is 04H.
5. Function code data is greater than the maximum error: the response frame command area is 91H (the highest bit of the byte is 1), the high byte of the data area is 05H.
6. Function code data is less than the minimum error: the response frame command area is 91H (the most significant byte is 1), the high byte of the data area is 06H.
7. Function code data cannot be modified (read-only) error: the response frame command area is 91H (the most significant byte is 1), and the high byte of the data area is 07H.
8. Function code data cannot be modified during operation: the response frame command area is 91H (the highest byte is 1), the high byte of the data area is 08H.
Correspondence between decimal and hexadecimal values of function code group number names
<table>
<tr><th>Function code group number</th><th>Decimal</th><th>Hex</th><th>Function code group number</th><th>Decimal</th><th>Hex</th></tr>
<tr><td>P0</td><td>0</td><td>00H</td><td>P5</td><td>5</td><td>05H</td></tr>
<tr><td>P1</td><td>1</td><td>01H</td><td>P6</td><td>6</td><td>06H</td></tr>
<tr><td>P2</td><td>2</td><td>02H</td><td>P7</td><td>7</td><td>07H</td></tr>
<tr><td>P3</td><td>3</td><td>03H</td><td>P8</td><td>8</td><td>08H</td></tr>
<tr><td>P4</td><td>4</td><td>04H</td><td>P9</td><td>9</td><td>09H</td></tr>
</table>
</td></tr>
<tr><td>Send instance</td><td>3A 30 31 31 31 30 33 31 39 30 31 46 33 44 45 0D 0A；(P3.25=4.99Hz)</td></tr>
<tr><td>Example response</td><td>3A 30 31 31 31 30 33 31 39 30 31 46 33 44 45 0D 0A；(P3.25=4.99Hz)</td></tr>
</table>

7.4 RTU communication protocol

7.4.1 RTU Protocol Format:

Master Command Frame Format

1	3.5 characters or more pause
2	Slave address
3	Fault index
4	Fault index
5	Command index
6	Setting data
7	Setting data
8	Check
9	Check
10	3.5 characters or more pause

Slaves Response Frame Format

1	3.5 characters or more pause
2	Slave address
3	Fault index
4	Fault index
5	Command index
6	Setting data
7	Setting data
8	Check
9	Check
10	3.5 characters or more pause

Master Command Frame Format

Definition	Starting position	Address	Command	Index Area	Data area	Check Area	Closing arguments
Number of bytes	T1~T4	1	1	2	2	2	T1~T4

Slaves Response Frame Format

Definition	Starting position	Address	Response	Index Area	Data area	Check Area	Closing arguments
Number of bytes	T1~T4	1	1	2	2	2	T1~T4

Description:

(1) RTU mode message frame starts with a pause interval of at least 3.5 characters to send and calibrates the end of the message with a pause of at least 3.5 characters.

(2) RTU mode valid command frame length is 8 or 6 bytes. response frame length is 8 bytes.

(3) RTU mode message frame takes hexadecimal bytes as valid data.

(4) RTU mode error check using CRC (loop lengthy detection) method. The error detection domain contains two check bytes.

(5) RTU mode serial data transmission format adopts three transmission formats:

1. 1 bit start bit ,8 bit data bit ,2 bit stop bit.
2. 1 bit start bit ,8 bit data bit ,1 bit odd check bit ,1 bit stop bit.
3. 1 bit start bit ,8 bit data bit ,1 bit even check bit ,1 bit stop bit.

(6) The RTU mode character transfer sequence is as follows:

No Parity Check

Start	1	2	3	4	5	6	7	8	Stop	Stop

With Parity Bits

Start	1	2	3	4	5	6	7	8	Parity	Stop

9.4.2 RTU protocol format interpretation

(1) Starting position

RTU mode message frame to send starts at a pause interval of at least 3.5 characters. the entire message frame must be input as a continuous flow. if there is a pause time of more than 1.5 characters before the frame is completed,

the receiver will refresh the incomplete message and assume that the next byte is the address domain of a new message.

(2) Address

RTU mode address domain contains a byte of hexadecimal number. range 0~247, where 0 is the broadcast address.

(3) Host command/slave response

Data meaning: the command sent by the host, a byte of hexadecimal number.

slave response to the command. a hexadecimal number of bytes.For the normal response, the slave only responds to the corresponding function code, the dissent response (produces some kind of error), the slave responds to the same command code, but the highest bit of the command byte becomes 1. For example:

485 Read slave power code parameter command:

00010000B (10 H hexadecimal)

The error response of the slave is:

10010000B (hexadecimal H 90)

(4) Index area

Data meaning: includes auxiliary index bytes and command index bytes.

For the host, auxiliary index, command index is used to cooperate with the host command to achieve specific functions.

For slave, auxiliary index, command index is used to report fault status code from slave, command index is not changed, report directly.

Data type: The number of hexadecimal bytes. .

command index takes up low bytes, data range :"00"~" FF"."

secondary index takes up high bytes, data range :"00"~" FF"."

the fault status of the slave takes up the "auxiliary index" byte, see schedule 2.

(5) Inspection area

data meaning: frame check. Double byte hexadecimal number.

CRC domain is two bytes and contains a 16-bit binary value. Calculated by the sender, it is added to the message; it is added with a low byte followed by a high byte, so the CRC high byte is the last byte of the message sent. the receiving device recalculates the CRC, of the received message and compares it with the values in the received CRC domain. if the two values are different, the receiving message has an error, discards the message frame, does not make any response, and continues to receive the next frame of data. CRC check

calculation method specific reference MODBUS protocol description.

(6) Terminals

RTU message frame after the last transfer character, a pause of at least 3.5 character times calibrates the end of the message. A new message can start after this pause.

7.4.3 RTU Protocol Command List

Table 7-7 RTU Protocol Command Table

Name of name		Host Command	Auxiliary Index	Command Index	Host sends an instance (slave address 01 H)	Machine response instances (slave address 01 H)	Number of operations Accuracy	Note
Query slave state		00	00	00	01 00 00 00 01D8	01 00 00 00 0F A0 04 42	1	Frequency converter currently allows host control, allows setting frequency, current setting frequency Hz 40.00
Read slave parameters	Current operating frequency	01	00	00	01 01 00 00 50 18	01 01 00 00 0F A0 39 82	Hz 0.01	A response frame data area is Hz 40.00 of the current operating frequency
	Current set frequency	01	00	01	01 01 00 01 91D8	01 01 00 01 01F 4 6D DD	Hz 0.01	Hz 5.00 of the current running frequency
	Output voltage	01	00	02	01 01 00 02D1D9	01 01 00 02 01 7B DC 7 9	1V	Current output voltage V 380
	Output current	01	00	03	01 01 00 03 10 19	01 01 00 03 00 05 0C 0 9	A 0.1	A response frame data area of 0.5 A of current output current
	Bus voltage	01	00	04	01 01 00 04 51DB	01 01 00 04 02 08 7D 6D	1V	A response frame data area of 520 V current bus voltage

	Module temperature	01	00	05	01 01 00 05 90 1B	01 01 00 05 00 28 2C 15	1°C	Response Frame Data Area Current Module Temperature 40°C
	Speed of load motor	01	00	06	01 01 00 06D0 1A	01 01 00 06 03E8DC B5	rpm 1	A response frame data area of 1000 rpm of current load motor speed
	Input and output terminal status	01	00	07	01 01 00 07 11DA		None	
	Analog input AI1	01	00	08	01 01 00 08 51DE	01 01 00 08 00 64BC 23	V 0.01	A response frame data area AI1：1.00V analog input
	Analog input AI2	01	00	09	01 01 00 09 90 1E	01 01 00 09 00 64ED E3	V 0.01	A response frame data area AI2：1.00V analog input
	Running time	01	00	0A	01 01 00 0A D0 1F	01 01 00 0A 00 09DC 0E	Hours	Response Frame Data Area runs 9 hours
	Read the frequency converter running state	01	00	0F	01 01 00 0F 10 1C	01 01 00 0F 00 05CC 0A	None	The current inverter reverse operation, BIT0=1, BIT2BIT0=1
Operation control and regulation function	Running from machine	02	00	00	01 02 00 00A0 18	01 02 00 00 01F 4 78 1D	HZ 0.01	HZ 5.00 of the current set frequency
	Set the current running frequency of the slave	03	00	00	01 03 00 00 01F 4 45DD	01 03 00 00 01F 4 45DD	Hz 0.01	Command frame, response frame data area set frequency 5.00 Hz..
	Given the running frequency of the machine	04	00	00	01 04 00 00 02 58F 0 90	01 04 00 00 02 58F 0 90	Hz 0.01	Command frame, response frame data area set frequency 6.00 Hz.

	Forwarding from aircraft	05	00	00	01 05 00 00 11D9	01 05 00 00 02 58CD 50	Hz 0.01	HZ 6.00 of the current set frequency
	Reverse run	06	00	00	01 06 00 00E1D9	01 06 00 00 02 58 89 50	Hz 0.01	HZ 6.00 of the current set frequency
	A given frequency in a positive transport line	07	00	00	01 07 00 00 13 88B9 5C	01 07 00 00 13 88B9 5C	Hz 0.01	Setting frequency =50.00 Hz
	Given the frequency of the inversion belt	08	00	00	01 08 00 00 01F 4E0 1C	01 08 00 00 01F 4E0 1C	Hz 0.01	Reverse run set frequency =5.00 Hz
	Shutdown	09	00	00	01 09 00 00D1DA	01 09 00 00 02 58DD 51	Hz 0.01	HZ 6.00 of the current set frequency
	Operation of the machine	0A	00	00	01 0A 00 00 21DA	01 0A 00 00 01F 4 99DC	Hz 0.01	A response frame data area sets a frequency of 5.00 HZ at the current point
	Operation at positive turn point	0B	00	00	01 0B 00 00 70 1A	01 0B 00 00 01F 4A4 1C	Hz 0.01	A response frame data area sets a frequency of 5.00 HZ at the current point
	Reverse point operation	0C	00	00	01 0C 00 00C1DB	01 0C 00 00 01F 4 11DC	Hz 0.01	A response frame data area sets a frequency of 5.00 HZ at the current point
	Stopping operation	0D	00	00	01 0D 00 00 90 1B	01 0D 00 00 01F 4 2C 1C	Hz 0.01	A response frame data area sets a frequency of 5.00 HZ at the current point
	Reset from fault	0E	00	00	01 0E 00 00 60 1B	01 0E 07 00 13 88 64 29	Hz 0.01	HZ 50.00 of the current set frequency

	Emergency stopover	0F	00	00	01 0F 00 00 31DB	01 0F 00 00 01F 4 55DC	Hz 0.01	inverter directly block the output. HZ 5.00 of the current set frequency
Read the function code parameter command.	P0.01 of Read Frequency Input Channel	10	00	01	01 10 00 01C1DD	01 10 00 01 00 03D1C8	1	Auxiliary index is function code number 0, command index is function code number 01 H.
	P0.02 of Reading Frequency Digital Settings	10	00	02	01 10 00 02 81DC	01 10 00 02 0F A0 64 41	Hz 0.01	The auxiliary index is the function code number 0, and the command index is the function code number 2. HZ P0.02=40.00
	P2.01 of Read Start Frequency	10	02	01	01 10 02 01C0BD	01 10 02 01 00 02 11B0	Hz 0.01	The auxiliary index is function code number 2, and the command index is function code number 1. P2.01= HZ 0.02
	Read function code (function code number over range)	10	10	0A	01 10 10 0A 8D DA	01 90 10 0A 0 2 00E4 75	1	The function code group number 10 is out of range, the response frame data area is 8 bits high =02 H(the function code group number exceeds the limit error code).

	Read function code (function code beyond range)	10	01	21	01 10 01 21C1 95	01 90 01 21 03 00 90D1	1	function code number 21 H out of range, response frame data area high 8 bits =03 H(function code number out of range error code).
Sets the function code parameter command	Setting P0.02=5.00 HZ frequency	11	00	02	01 11 00 02 01F 4 5C 1E	01 11 00 02 01F 4 5C 1E	Hz 0.01	The auxiliary index is the function code number 0, and the command index is the function code number 2. P0.02= Hz 5.00
	P3.25= set for multistage frequency 1 HZ 4.99	11	03	19	01 11 03 19 01F 3 6D 9F	01 11 03 19 01F 3 6D 9F	Hz 0.01	The auxiliary index is the function code number 3, and the command index is the function code number 25. P3.25= Hz 4.99
	Enter user password P0.00=3. Unprotected.	11	00	00	01 11 00 00 00 03BD C8	01 11 00 00 00 00F D C9	1	Enter user password, password input is correct, user password P0.00 become 0. Password protected.

	Enter user password P0.00=3. Password input error.	11	00	00	01 11 00 00 00 03BD C8	01 91 00 00 04 00F E D7	1	input user password, password input error, response frame data area high 8 bits =04 H(user password input error).
	Frequency numbers P 002=500, but the user password is not equal to 0.	11	00	02	01 11 00 02 01F 4 5C 1E	01 91 00 02 01 00 5C 47	1	Since the user password is not equal to 0, the response frame data area is 8 bits high =01 H(the user password is not equal to 0 error code).
	Write function code (function code group number over range)	11	0A	00	01 11 0A 00 00 03BE 10	01 91 0A 00 02 00F E A F	1	The function code number 0 AH out of range, the response frame data area is 8 bits high =02 H(function code number out of range error code).
	Write function code (function code beyond range)	11	02	30	01 11 02 30 00 03BC 7F	01 91 02 30 03 00F D 50	1	function code number 30 H out of range, response frame data area high 8 bits =03 H(function code number out of range error code).

	Write frequency input channel selection P0.01=500	11	00	01	01 11 00 01 01F 4AC 1E	01 91 00 01 05 00AE 87	1	response frame data area high 8 bits =05 H(function code data out of maximum error).
	Write fault setting frequency function code P601=19 H	11	06	01	01 11 06 01 00 19 6D 4B	01 91 06 01 07 00A F 6F	1	response frame data area high 8 bits =07 H(function code data for error-only).
	write acceleration and deceleration mode select function code P013=1. but the inverter is in operation.	11	00	0C	01 11 00 0C 00 01F C 0A	01 91 00 0C 0 8 00 3B D4	1	P013 function code can not be written in operation, the response frame data area is 8 bits high =08 H(function code data can not be written error code in operation).
Version number	Query slave software version command	12	00	00	01 12 00 00A1DD	01 12 00 00 01 01 79 99	1	A response frame data area V1.01 slave software version number

Table 7-8 RTU query slave state

<table>
<tr><td>Functional definitions</td><td colspan="6">Query slave state</td></tr>
<tr><td>Meaning</td><td>Address</td><td>Command</td><td>Auxiliary Index</td><td>Command Index</td><td>Data area</td><td>Verification</td></tr>
<tr><td>Host command</td><td>ADDR</td><td>00</td><td>00</td><td>00</td><td>None</td><td>CRC</td></tr>
<tr><td>Number of bytes</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td><td>2</td></tr>
<tr><td>Machine Response</td><td>ADDR</td><td>00</td><td>Fault code</td><td>Status code</td><td>Current set frequency</td><td>CRC</td></tr>
<tr><td>Number of bytes</td><td>1</td><td>1</td><td>1</td><td>1</td><td>2</td><td>2</td></tr>
<tr><td rowspan="8">Remarks</td><td colspan="6">index area: command frame index area is full zero.
The response frame auxiliary index is slave fault code, and the command index area is slave current status code. The specific code meaning is as follows:
Data area: The host command frame has no data area. The slave response frame data area is the slave's current set frequency value, high in front, low in back.</td></tr>
<tr><td colspan="6">Type and Example of Response Frame</td></tr>
<tr><td>Status code</td><td colspan="2">Response frame instances</td><td colspan="3">Note</td></tr>
<tr><td>00H</td><td colspan="2">01 00 07 00 0F A0 05 36</td><td colspan="3">the slave is not ready. E007 malfunction.</td></tr>
<tr><td>01H</td><td colspan="2">01 00 00 01 0F A0 55 82</td><td colspan="3">Allow host control, allow setting frequency.</td></tr>
<tr><td>02H</td><td colspan="2">01 00 00 02 0F A0A5 82</td><td colspan="3">allows host control and does not allow frequency setting.</td></tr>
<tr><td>03H</td><td colspan="2">01 00 00 03 0F A0F 4 42</td><td colspan="3">host control is not allowed and frequency is allowed.</td></tr>
<tr><td>04H</td><td colspan="2">01 00 00 04 0F A0 45 83</td><td colspan="3">host control is not allowed and frequency setting is not allowed.</td></tr>
<tr><td>Send instance</td><td colspan="6">01 00 00 00 01D8;</td></tr>
<tr><td>Response examples</td><td colspan="6">01 00 00 01 0F A0 55 82;(current set frequency Hz 40.00)</td></tr>
</table>

Table 7-9 Query current running status of slave

<table>
<tr><td>Functional definitions</td><td colspan="6">Query current running status of slave</td></tr>
<tr><td>Meaning</td><td>Address</td><td>Command</td><td>Auxiliary Index</td><td>Command Index</td><td>Data area</td><td>Verification</td></tr>
<tr><td>Host command</td><td>ADDR</td><td>01</td><td>00</td><td>0F</td><td>None</td><td>CRC</td></tr>
<tr><td>Number of bytes</td><td>1</td><td>1</td><td>1</td><td>1</td><td>0</td><td>2</td></tr>
<tr><td>Machine Response</td><td>ADDR</td><td>01</td><td>Fault code</td><td>0F</td><td>Current running state word</td><td>CRC</td></tr>
<tr><td>Number of bytes</td><td>1</td><td>1</td><td>1</td><td>1</td><td>2</td><td>2</td></tr>
<tr><td rowspan="15">Remarks</td><td colspan="6">index area: command frame auxiliary index area is 00 H, command index is 0 FH.
A response frame auxiliary index is a slave fault code with a command index FH.0
Data area: The host command frame has no data area. The slave response frame data area is the slave current running status word. High in front, low in back. The specific code means the following table:</td></tr>
<tr><td colspan="6">Run status word meaning of slave callback frame</td></tr>
<tr><td>Position</td><td colspan="2">Note</td><td>0</td><td colspan="2">1</td></tr>
<tr><td>BIT0</td><td colspan="2">Stop/run status</td><td>Shutdown</td><td colspan="2">Running</td></tr>
<tr><td>BIT1</td><td colspan="2">Under pressure signs</td><td>Normal</td><td colspan="2">Under pressure</td></tr>
<tr><td>BIT2</td><td colspan="2">Positive/reverse mode flag</td><td>Positive turn</td><td colspan="2">Reverse reversal</td></tr>
<tr><td>BIT3</td><td colspan="2">Swing Mode Signage</td><td>Invalid</td><td colspan="2">Effective</td></tr>
<tr><td>BIT4</td><td colspan="2">Point Operation Status Mark</td><td>No</td><td colspan="2">Point movement</td></tr>
<tr><td>BIT5</td><td colspan="2">PI Closed-loop Operation Mode Sign</td><td>No</td><td colspan="2">Yes</td></tr>
<tr><td>BIT6</td><td colspan="2">PLC operation mode</td><td>No</td><td colspan="2">Yes</td></tr>
<tr><td>BIT7</td><td colspan="2">Multi-segment frequency mode</td><td>No</td><td colspan="2">Yes</td></tr>
<tr><td>BIT8</td><td colspan="2">Specify count value arrival flag</td><td>No</td><td colspan="2">Yes</td></tr>
<tr><td>BIT9</td><td colspan="2">Set count to reach mark</td><td>No</td><td colspan="2">Yes</td></tr>
<tr><td>BIT10~15</td><td colspan="2">Reservations</td><td>—</td><td colspan="2">—</td></tr>
<tr><td>Send instance</td><td colspan="6">01 01 00 0F 10 1C;</td></tr>
<tr><td>Response examples</td><td colspan="6">01 01 00 0F 00 05CC 0A ;(current inverter reverse operation)</td></tr>
</table>

Table 7-10 RTU read slave power code parameters

Functional definitions	Read slave power code parameters					
Meaning	Address	Command	Auxiliary Index	Command Index	Data area	Verification
Host command	ADDR	10	None	None	None	CRC
Number of bytes	1	1	1	1	0	2
Machine Response	ADDR	10	Functional symbol number	Functional symbol	Functional code parameters	CRC
Number of bytes	1	1	1	1	2	2

Remarks

index area: the auxiliary index is the function code group number: range 0~9, representing P0~P9 group function code.

The command index is the function code number: the range varies according to the function code group.

For example:

Read P0.02 function code parameters, index area =0002 H, auxiliary index =00 H, command index 02

Read P1.11 function code parameter, index area =010 BH, auxiliary index =01 H, command index :0 BH..

Reads P2.16 function code parameter, index area =0210 H, auxiliary index =02 H, command index =10.

Data area: The host command frame has no data area. The data area of the slave response frame contains the specific value of the function code, and the high position is in the front low position and the back. When the command frame error, slave response error frame to the host, error frame as follows:

1. Functional code group number overrun error: response frame command area is 90 H(byte highest bit is 1), data area high byte is 02 H.)
2. function code number overrun error: response frame command area 90 H(byte highest bit 1), data area high byte H.03)

The relationship between the decimal and hexadecimal values of the name of the functional code group number

Functional symbol number	Decimal	Hexadecimal	Functional symbol number	Decimal	Hexadecimal
P0	0	00H	P5	5	05H
P1	1	01H	P6	6	06H
P2	2	02H	P7	7	07H
P3	3	03H	P8	8	08H
P4	4	04H	P9	9	09H

Send instance	01 10 02 01C0BD ;(read starting frequency P2.01C0BD; function code)
Response examples	01 10 02 01 01F4 90 66;(P2.01= Hz 5.00)

If the frequency converter sets the user password, before setting the parameters of the user function code, the user password must be entered correctly through the serial port. then the function code parameter can be set.

Table 7-11 RTU Setting parameters of slave power code

Functional definitions	Read slave function code parameters: user password and all function code parameters outside the manufacturer password					
Meaning	Address	Command	Auxiliary Index	Command Index	Set data	Checksum
Host command	ADDR	11	Functional symbol number	Functional symbol	Setting function code parameters	CRC
Number of bytes	1	1	1	1	2	2
Machine Response	ADDR	11	Functional symbol number	Functional symbol	Actual set function code parameters	CRC
Number of bytes	1	1	1	1	2	2

<table>
<tr><td rowspan="2">Remarks</td><td>index area: the auxiliary index is the function code group number: range 0~9, representing P0~P9 group function code.
The command index is the function code number: the range varies according to the function code group.
For example:
Set parameters of P0.02 function code, index area =0002 H, auxiliary index =00 H, command index :02 H..
Set parameters of P1.11 function code, index area =010 BH, auxiliary index =01 H, command index :0 BH..
Set parameters of P2.16 function code, index area =0210 H, auxiliary index =02 H, command index =10.
Data area: The host command frame data area is the set function code value. The slave response frame data area contains the actual set value of the function code, high in front, low in back. When the command frame error, slave response error frame to the host, error frame as follows:
9. User password is not equal to 0 error: response frame command area is 91 H(byte highest bit is 1), data area high byte is 02 H. Need to enter user password first.
10. Response frame command area is 91 H(byte highest bit is 1), data area high byte is 02 H.)
11. function code number overrun error: response frame command area 91 H(byte highest bit 1), data area high byte H.03)
12. User password input error: response frame command area is 91 H(byte highest bit is 1), data area high byte H.04)
13. The function code data is greater than the maximum error: the response frame command area is 91 H(byte highest bit is 1), the data area high byte H.05)
14. The function code data is less than the minimum value error: the response frame command area is 91 H(byte highest bit is 1), the data area high byte is 06 H.)
15. functional code data can not be modified (read-only) error: response frame command area is 91 H(byte highest bit is 1), data area high byte is 07 H..
16. The function code data run can not modify the error: the response frame command area is 91 H(byte highest bit is 1), the data area high byte H.08)</td></tr>
<tr><td>The relationship between the decimal and hexadecimal values of the name of the functional code group number
<table>
<tr><th>Functional symbol number</th><th>Decimal</th><th>Hexadecimal</th><th>Functional symbol number</th><th>Decimal</th><th>Hexade cimal</th></tr>
<tr><td>P0</td><td>0</td><td>00H</td><td>P5</td><td>5</td><td>05H</td></tr>
<tr><td>P1</td><td>1</td><td>01H</td><td>P6</td><td>6</td><td>06H</td></tr>
<tr><td>P2</td><td>2</td><td>02H</td><td>P7</td><td>7</td><td>07H</td></tr>
<tr><td>P3</td><td>3</td><td>03H</td><td>P8</td><td>8</td><td>08H</td></tr>
<tr><td>P4</td><td>4</td><td>04H</td><td>P9</td><td>9</td><td>09H</td></tr>
</table></td></tr>
<tr><td>Send instance</td><td>01 11 03 19 01F3 6D 9F ;(P3.25=4.99 Hz)</td></tr>
<tr><td>Response examples</td><td>01 11 03 19 01F3 6D 9F ;(P3.25=4.99 Hz)</td></tr>
</table>

Customer Service Guide

If you have any questions.
Whether about the machine or other aspects.
You can contact our online customer service or email us.
And we will reply to you within 24 hours.

This is our customer service email:
Wzxs_2020@163.com.