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1 Overview

Thank you for purchasing the AP100 series air compressor integrated machine designed and manufactured by Suzhou VEICHI Electric Co., Ltd. This manual describes how to use this product correctly for good returns. Please read this manual carefully before using the product (installation, wiring, operation, maintenance, inspection, etc.). In addition, please use this product after fully understanding the safety precautions described in this manual.

AP100 series air compressor integrated machine adopts sheet metal structure, supports both floor-standing and wall-mounted installation methods, and is easy to install and debug. The control circuit terminals adopt pluggable plug-in terminals and are designed with error-proof insertion. High product integration, three-in-one design, including main unit, fan, motor cooling fan; built-in 220VAC AC power supply, transformer anti-overcurrent fuse, providing 24V external output; built-in integrated PT100, KTY84, PTC and other detection circuits and Protection circuit, etc. The product software uses special machine software. Communication with devices such as HMI and Internet of Things does not require debugging, enabling one-button activation.





1.1 Safety requirement and cautions

To ensure safe, reliable and reasonable use of this product, please use the product after fully understanding the safety precautions described in this manual.

1.1.1 Warning signs and meanings

This manual has used following signs which means there is an important part of security. While observing against the rules, there is a danger of injury even death or machine system damage.

| | |
|---|---|
|  Danger | Danger: Wrong operation may cause death or large accident. |
|  Caution | Caution: Wrong operation may cause minor wound. |

1.1.2 Warning signs position

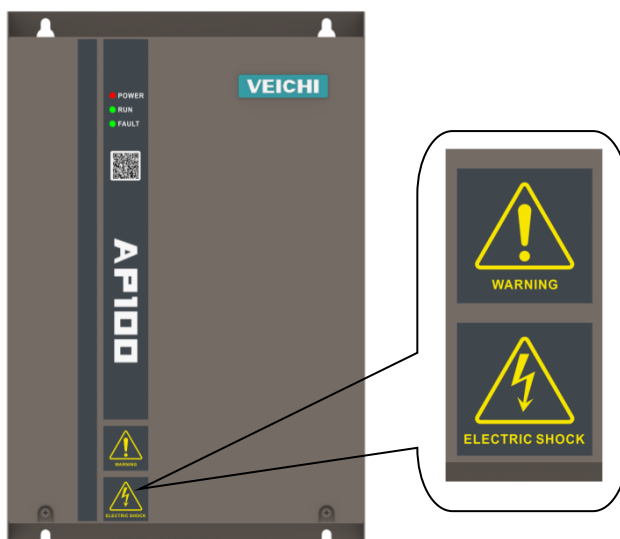


Figure 1.1: Shell warning signs position



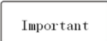
1.1.3Operational qualification

This product must be installed, wired, operated, maintained, etc. by trained personnel. The term “trained professionals” in this manual means that personnel working on this equipment must be trained in professional skills, familiar with the installation, wiring, operation and maintenance of the equipment, and properly respond to the various emergencies that arise during use. Happening.



1.2 Safety guidance

Safety rules and warning signs are provided for your safety. They are measures to prevent personal injury to the operator and damage to the product and associated systems. Please read this manual carefully before use and follow this manual carefully. Safety rules and warning signs operate. Safety rules and warning signs are divided into the following categories: general guidance, guidance for transportation and storage, instructions for installation wiring, instructions for operation, instructions for maintenance, and guidance for disassembly and disposal.



1.2.1General Guidance

| | |
|---|---|
|  | <ul style="list-style-type: none"> ● This product has a dangerous voltage and it controls a potentially dangerous sporting mechanism that, if not observed or not handled in accordance with the requirements of this manual, may result in personal injury or death, damage to the product and associated systems. ● Only trained personnel are allowed to operate this product, and before using this product, be familiar with all the safety instructions and operating instructions in this manual; correct operation and maintenance is a reliable guarantee for the safe and stable operation of this product. ● Do not perform wiring work with the power on. Otherwise, there is a danger of electric shock. In the wiring, inspection, maintenance, etc., please cut off the power of all related equipment and confirm that the DC voltage of the main circuit has dropped to safety. Level, wait 5 minutes before performing related work. |
|  | <ul style="list-style-type: none"> ● Prevent children and the public from coming into contact with or close to the product. ● This product can only be used in accordance with the manufacturer's specified use. It may not be used in special fields such as emergency, rescue, shipbuilding, medical, aviation, nuclear facilities, etc. without permission. ● Unauthorized modifications and use of spare parts not sold or recommended by the manufacturer of this product may result in malfunction. |
|  | <ul style="list-style-type: none"> ● Please be sure to deliver this manual to the actual user to ensure that the actual user can read this manual carefully before use. ● Before installing and debugging the drive, please read and fully understand these safety rules and warning signs. |


1.2.2 Guidance for transportation and storage.

| | |
|---|--|
|  | <ul style="list-style-type: none"> • Correct transportation, storage, installation, and careful operation and maintenance are critical to the safe operation of the drive. |
|  | <ul style="list-style-type: none"> • Ensure that the drive is protected from shock and vibration during transportation and storage. It must also be stored in a dry, non-corrosive atmosphere, non-conductive dust and ambient temperature less than 60 °C. |

1.2.3 Guidance for installation and wiring


| | |
|---|--|
|  | <ul style="list-style-type: none"> • Only trained professionals should operate this product. • The power cable, motor cable, and control cable must be tightly connected. The grounding terminal must be grounded reliably and the grounding resistance is less than 10Ω. • Before turning on the drive panel, cut off the power of all associated devices and confirm that the DC voltage of the main circuit has dropped to a safe level. Wait 5 minutes before performing related operations. • The static electricity of the human body may seriously damage the internal sensitive components. Before performing related work, please observe the measures and methods specified in the static electricity prevention measures (ESD), otherwise the drive may be damaged. • Since the output voltage of the driver is a pulse waveform, if the output side is equipped with a capacitor for improving the power factor or a varistor for lightning protection, be sure to remove or modify it on the input side of the driver. • Do not add switching devices such as circuit breakers and contactors on the output side of the driver. (If the switching device must be connected to the output side, the control must ensure that the output current of the driver is zero when the switch is activated). |
|  | <ul style="list-style-type: none"> • The power cable and motor cable specifications connected to the drive must meet the conditions shown in Table 3-7 3-8 of this manual. |

1.2.4 Operational guidance


| | |
|---|--|
|  | <ul style="list-style-type: none"> • The drive is operated at high voltages and dangerous voltages are inevitably present on certain parts of the product. • Regardless of where the fault occurs in the control device, it can cause major accidents or even personal injury, ie there are potentially dangerous faults; therefore, |
|---|--|

| | |
|--|--|
| | <p>additional external precautions or other means for ensuring safe operation must be taken, for example: Install independent current limiting switch, mechanical protection and other devices.</p> <ul style="list-style-type: none"> ● In order to ensure that the overload protection of the motor can operate correctly, the motor parameters of the input drive must be exactly the same as the actual motor used. |
|--|--|

1.2.5 Maintenance Guidance

| | |
|---|---|
|  | <ul style="list-style-type: none"> ● The maintenance of this product can only be trained and authorized by the service department of Suzhou VEICHI Electric Co., Ltd., or the repair center, the professional engineer should be familiar with the safety warnings and operating instructions presented in this manual. ● Any defective device must be replaced in time. ● Before turning on the equipment for maintenance, be sure to disconnect the power supply and confirm that the DC voltage of the main circuit has dropped to a safe level. Wait 5 minutes before performing related operations. |
|---|---|

1.2.6 Guidance on disassembly and waste disposal

| | |
|---|--|
|  | <ul style="list-style-type: none"> ● The drive box is reusable. Please keep the box for future use or return it to the manufacturer. ● The removed metal parts can be recycled and reused. ● Some devices may adversely affect the environment, such as electrolytic capacitors. Please dispose of such devices in accordance with the requirements of the environmental protection department. |
|---|--|

Technical specifications

Table 1.1: Technical specification

| Items | | Specifications |
|-------------|-----------------------|---|
| Power input | Voltage, Frequency | Three phase 380V 50/60Hz |
| | Allowable fluctuation | Voltage: $\pm 15\%$. Frequency: $\pm 5\%$, aberration rate: as IEC61800-2 |
| | Inrush current | Lower than rated current |
| | Efficiency | $\geq 96\%$ |
| Output | Output voltage | Output under rated condition: 3 phase, 0~input voltage, inaccuracy $< 5\%$ |

| | | |
|--------------------------|--|---|
| | Output frequency range | 0~600.00Hz |
| | Output frequency accuracy | Max frequency $\pm 0.5\%$. |
| | Overload capacity | 133% rated current / 30MIN |
| Main control performance | Motor control mode | VC Without PG, V/F Control |
| | Modulation | Optimized SVPWM |
| | Carrier frequency | 0.6~15.0kHz. Random carrier modulation |
| | Speed control range | VC With PG. Rated load 1: 100 |
| | Steady speed accuracy | VC without PG: $\leq 1\%$ rated Synchronous speed |
| | Frequency accuracy | Digital setting: Maximum frequency $\times \pm 0.01\%$. Analog setting: Maximum frequency $\times \pm 0.2\%$ |
| | Frequency resolution | Digital setting: 0.01Hz. Analog setting: max frequency $\times 0.05\%$ |
| | Torque boost | Auto torque upgrade 0.0%~100.0%; Manual torque upgrade 0.0%~25.0% |
| | Rated output voltage | Rely on power supply voltage compensate function, while motor rated voltage is 100%, set it at the range of 50-100%(output can not over input voltage). |
| | Auto-Volt adjustment | While power supply voltage fluctuates, it can auto-keep constant output voltage. |
| | Auto energy-saving running | While under V/F control mode, according to load situation, auto-optimize output voltage to save energy. |
| | Auto-limit current | Auto-limit the current while running to prevent over current break trouble. |
| | Instant power off treatment | While instant power off, realize continual operation by bus voltage control. |
| | Input signal | Motor temperature detection (Compatible PTC and KTY84). Oil temperature detection PT100. Pressure detection (4~20mA) |
| External output signal | 3 relay output, include load valve, oil pump start-stop switch, host cooling fan start and stop. | |

| | | |
|---------------------|-----------------------|---|
| Protection function | | Input/output phase loss protection, host over-current, over-load protection, Fan over-current, Motor cooling fan short-circuit protection, Over-heat protection, Preventing motor degaussing, etc.. |
| Environment | Install place | Altitude $\leq 1000\text{m}$, above 1000m down the rated amount, each increase of 100m down the rated amount of 1%; no condensation, ice, rain, snow, hail; solar radiation below $700\text{W}/\text{m}^2$, air pressure 70-106 kPa |
| | Temperature, humidity | -10~+50℃、20%~95%RH (No dewing) |
| | Vibration | Below 20Hz<0.5g |
| | Store temperature | -25~+60℃ |
| | Installation | Hanging type, cabinet type |
| | Cooling mode | Forced air cooling |

Product features

High product integration: three-in-one design (main motor, oil-cooled fan, motor fan), support single/dual frequency conversion scheme; integration of AC220V and DC24V power output, built-in anti-overcurrent fuse; single-frequency integration of oil-cooled fan control and overload protection functions, without additional contactors, thermal relays, transformers and other control devices;

AP100 series air compressor integrated machine supports wall mounting and vertical cabinet type installation, easy to install; product wiring debugging is simple and easy to operate;

Supports synchronous and asynchronous motors, supports open-loop and closed-loop control; and provides fast and stable pressure control. Eliminate extra waste and save energy; double-inverter fans use variable frequency control to further save energy;

3The double-inverter model of 30KW or above is equipped with a DC reactor as standard, which reduces external interference and improves the input side power factor;

The product software adopts special machine software, adopts HMI panel, special air compressor human-computer interaction interface, beautiful and easy to use; supports communication equipment such as Internet of Things, can realize remote monitoring operation and other functions;

Integrated motor temperature sampling protection function can effectively prevent motor over temperature and motor demagnetization;

Integrated separate oil pump control;

Integrated cooling fan control of servo motor;

Integrated pressure sampling control.

2 Before use

2.1 Purchase Inspection

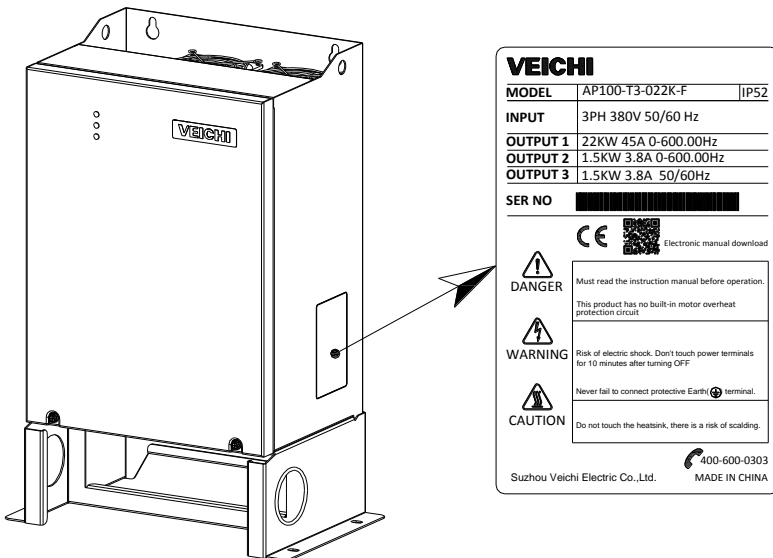
- On receiving your order, please check the package and confirm intact before opening, and check if there's any damage, scratch or dirt (damages caused during transportation are not within the company's warranty). If there's any damage caused during transportation, please contact us or the transport company immediately.

After confirming the receipt of the goods intact, please re-confirm if the product and your order are consistent. Model of the product is on the "MODEL" column. If you find the product model is not the one you ordered, please contact the dealer you purchased the product or the sales department of VEICHI immediately.

- Confirm that the equipment in the box matches the packing list.

2.2 Nameplate

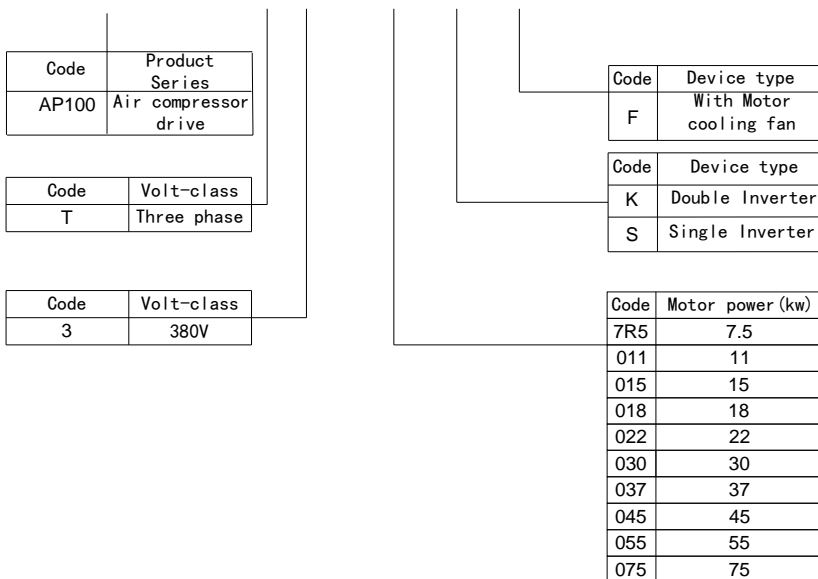
2.2.1 Nameplate Position and Content



Drawing 2-1: Nameplate Position and Content

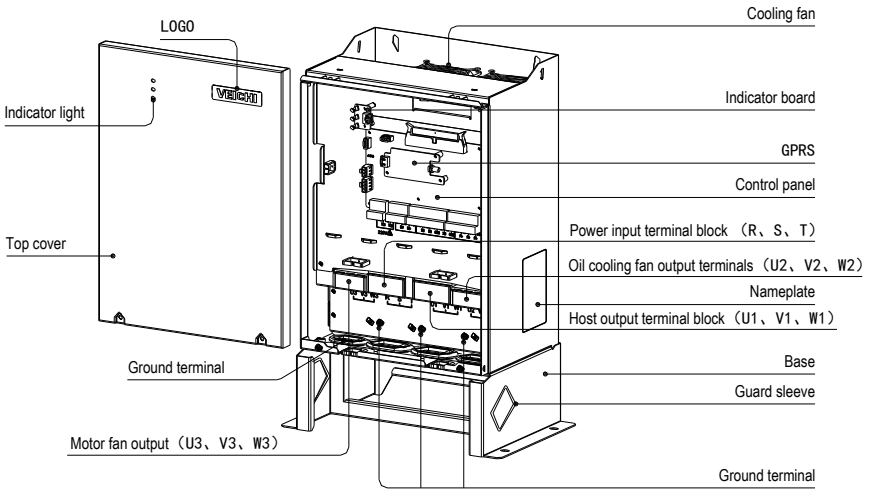
2.2.2 Model Specification

AP100 - T 3 - 037 K - F



Drawing 2-4: Meaning and Naming Rules of AC200 Series Inverter Nameplate

2.2.3 AP100 parts description



2.3 Air compressor integrated machine rated output current

| main motor power (KW) | Rated output current (A) | Oil cooling fan power (KW) | Rated output current (A) | Fan power (KW) | Rated output current (A) |
|-----------------------|--------------------------|----------------------------|--------------------------|----------------|--------------------------|
| 7.5 | 17 | 0.75 | 2.1 | \ | \ |
| 11 | 25 | 0.75 | 2.1 | 0.75 | 2.1 |
| 15 | 32 | 0.75 | 2.1 | 0.75 | 2.1 |
| 18 | 38 | 1.5 | 3.8 | 1.5 | 3.8 |
| 22 | 45 | 1.5 | 3.8 | 1.5 | 3.8 |
| 30 | 60 | 1.5 | 3.8 | 1.5 | 3.8 |
| 37 | 75 | 1.5 | 3.8 | 1.5 | 3.8 |
| 45 | 90 | 4 | 10 | 1.5 | 3.8 |
| 55 | 110 | 4 | 10 | 1.5 | 3.8 |
| 75 | 150 | 5.5 | 13 | 1.5 | 3.8 |

2.4 Product Size

2.4.1 Wall-Mounted Shape and Installation Dimensions

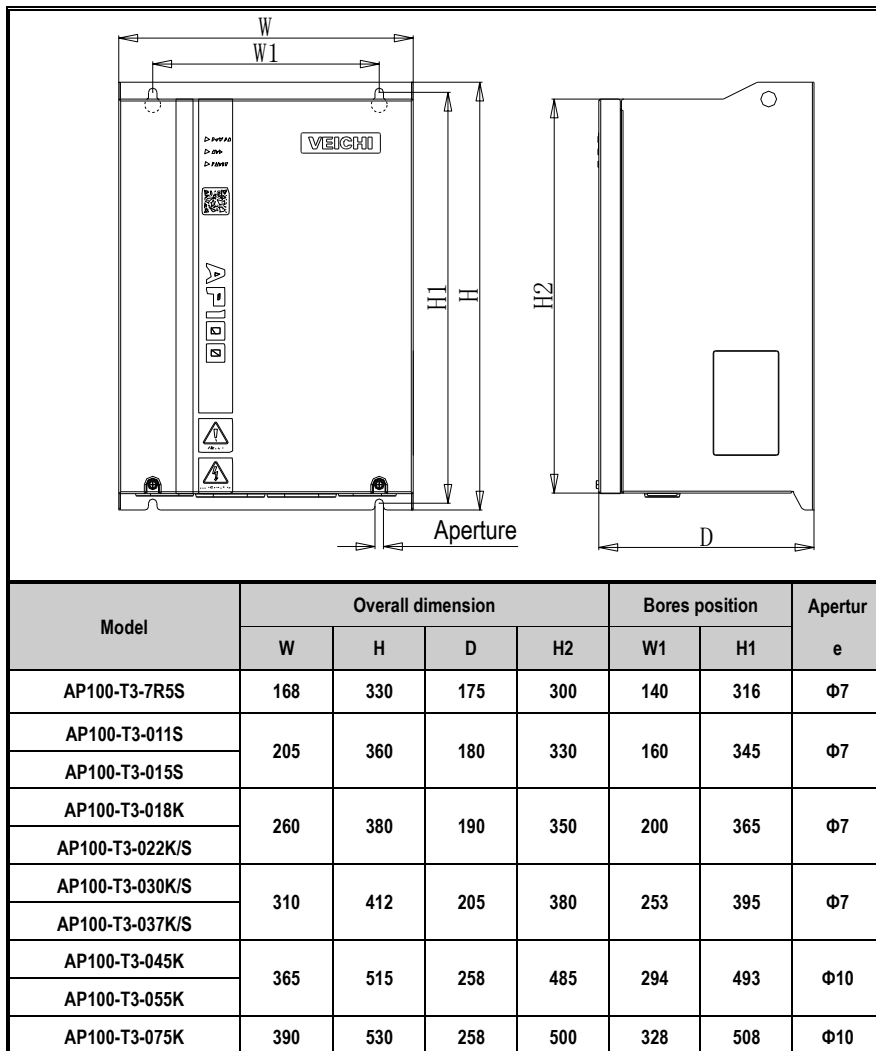


Figure 2-5: Diagram of wall-mounted shape and installation dimensions

2.4.2 Shape and Installation Dimension of Vertical Cabinet

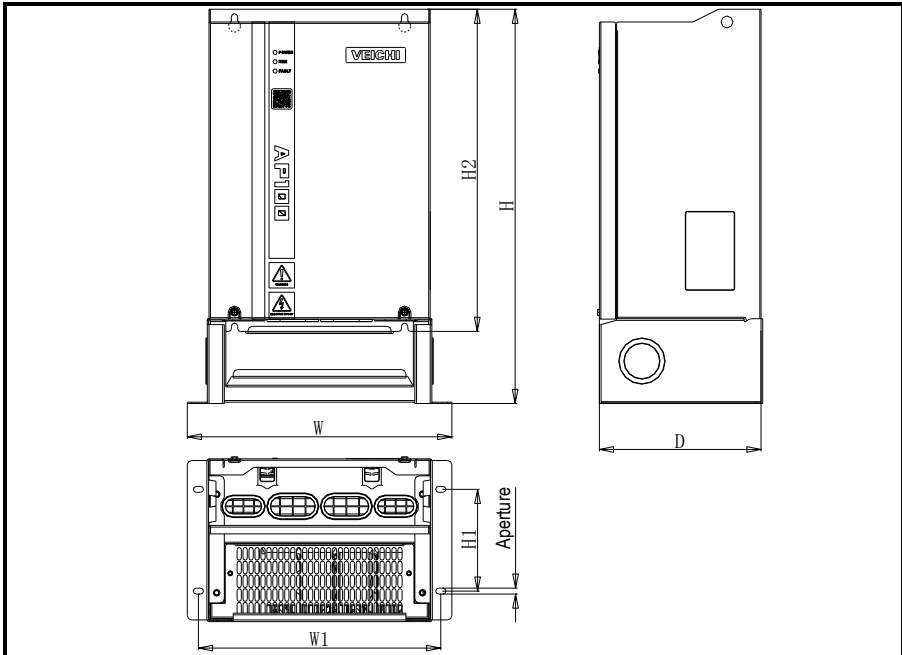


Figure 2-6: Drawing of the shape and installation dimensions of the vertical cabinet

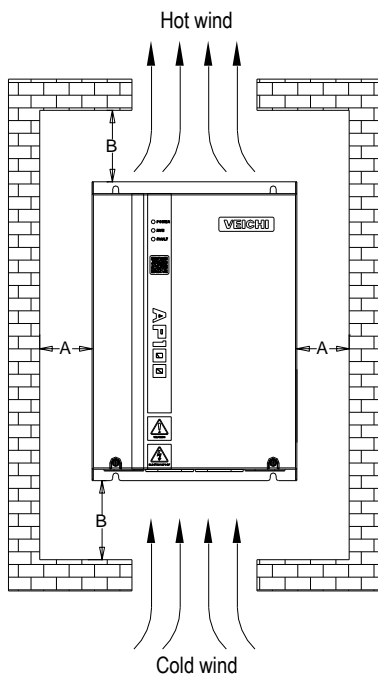
| Model | Overall dimension | | | | Bores position | | Aperture |
|-----------------|-------------------|-----|-----|-----|----------------|-----|----------|
| | W | H | D | H2 | W1 | H1 | |
| AP100-T3-7R5S | 219 | 395 | 177 | 330 | 193 | 130 | φ7 |
| AP100-T3-011S | 256 | 435 | 182 | 360 | 230 | 130 | φ7 |
| AP100-T3-015S | | | | | | | |
| AP100-T3-018K | 311 | 465 | 192 | 380 | 285 | 140 | Φ7 |
| AP100-T3-022K/S | | | | | | | |
| AP100-T3-030K/S | 361 | 495 | 207 | 412 | 335 | 155 | Φ7 |
| AP100-T3-037K/S | | | | | | | |
| AP100-T3-045K | 426 | 616 | 260 | 515 | 400 | 200 | Φ10 |

| | | | | | | | |
|---------------|-----|-----|-----|-----|-----|-----|-----|
| AP100-T3-055K | | | | | | | |
| AP100-T3-075K | 451 | 625 | 260 | 530 | 425 | 200 | Φ10 |

2.5 Mechanical Installation

2.5.1 Installation space requirements

In order to ensure the ventilation space and wiring space required for the cooling of the driver, it is important to observe the installation conditions shown in the figure below.



| Size | Size demand |
|------|-------------|
| A | ≥50mm |
| B | ≥150mm |

Figure 2-7: AP100 Series Installation Space Diagram

2.5.2 Disassembly and Installation of Cover Plate

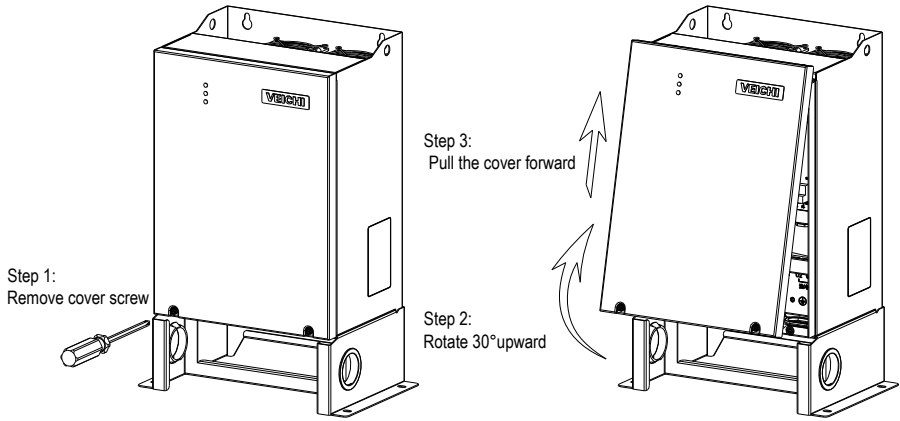
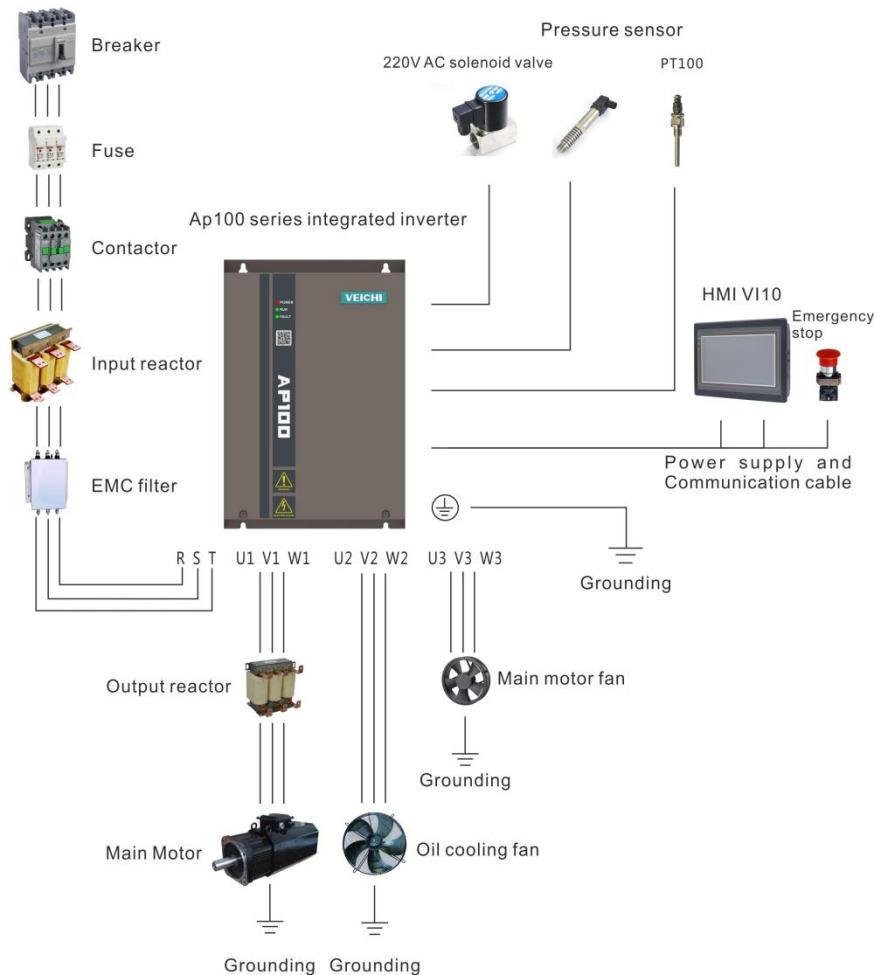




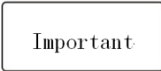
Figure 2-8: Diagram of removal and installation of cover plate

2.6 Electrical Installation

This section describes the various precautions and requirements that must be followed to ensure the safe use of the product by users, maximize the performance of the driver, and ensure the reliable operation of the drive

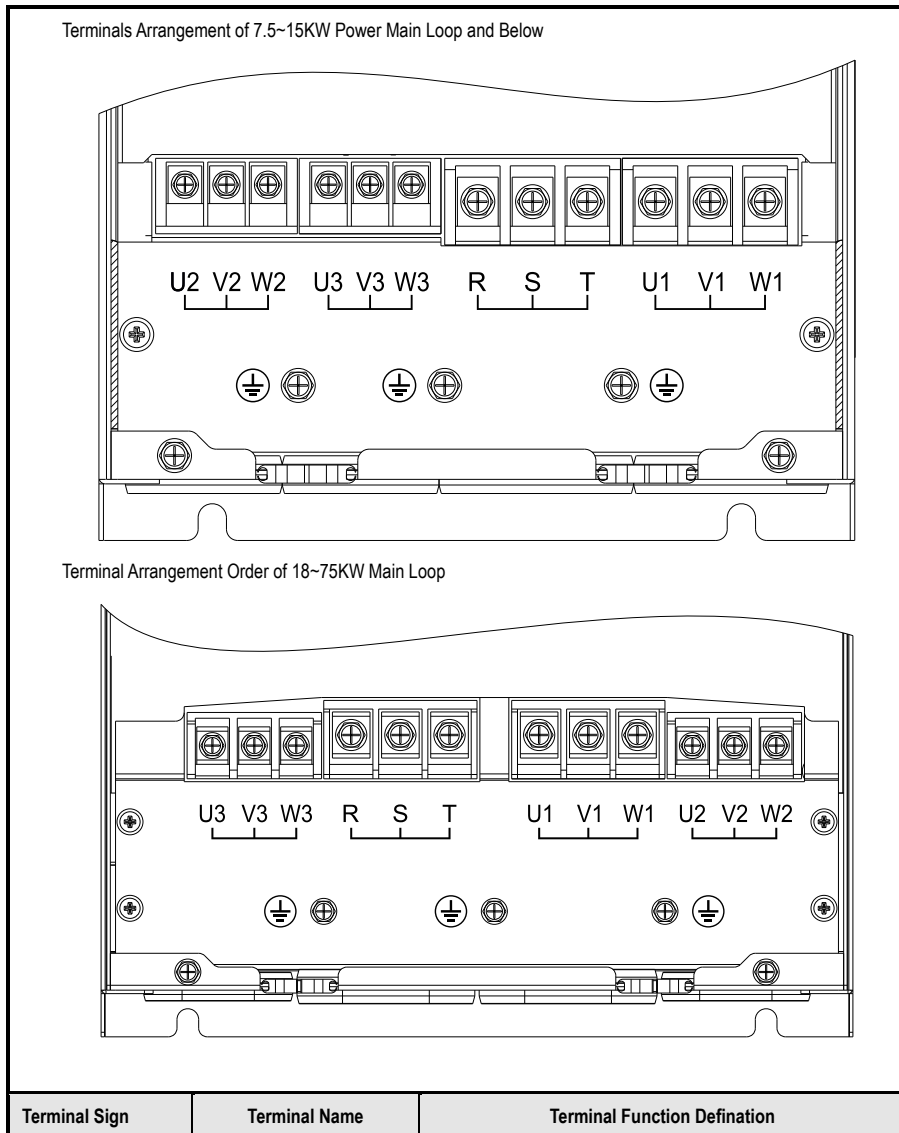


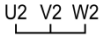
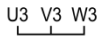
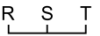
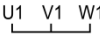

Safety Precautions

| | |
|---|--|
|  | <ul style="list-style-type: none"> ● Must earth reliably while inverter is running. Otherwise there is danger of casualty and unstable inverter performance. ● To ensure safe running, only trained professional person can do installation and wiring job. ● No operation under power connected state. Otherwise there is danger of electric shock even death. ● Before operation, please cut all related equipments power, ensure that the main circuit DC current has dropped to safe range. And please operate after 5 mins. |
|  | <ul style="list-style-type: none"> ● Control cable, power cable and motor cable must be separated. They can not be in the same cable trough or cable rack. ● This equipment can only be used as the maker states. Please consult Veichi while using in special case. |
|  | <ul style="list-style-type: none"> ● No insulation test for the inverter or the related cable by HV insulation test equipment. ● If the inverter or the peripheral equipment (filter, reactor and etc) needs insulation test, firstly 500V megohmmeter should be used to test the insulation resistance which should not be lower than 4MΩ. |

2.6.1 Main circuit terminal

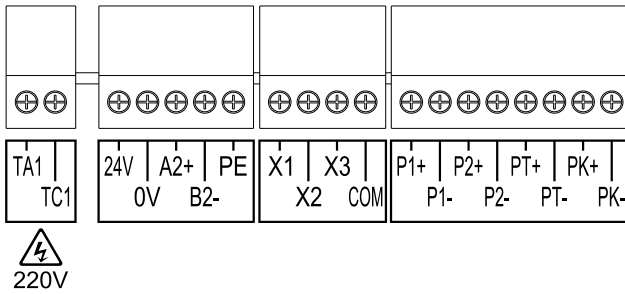
Definition and distribution of main circuit terminals (AP100-T3-7R5S, AP100-T3-022S, AP100-T3-037S model main circuit terminals are different)



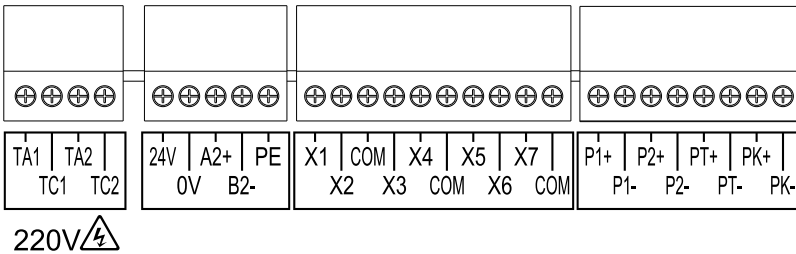
| | | |
|---|--|--|
|  | Output terminal of oil-cooling fan | Drive oil-cooling fan |
|  | Connection terminal of motor cooling fan | Drive the motor cooling fan |
|  | Driver input terminal | Connect to the 380V power supply |
|  | Host Output Terminal | Drive the main motor |
|  | Grounding terminal | Grounding terminal, grounding resistance < 10 ohms |

2.6.2 Control Terminal Definition

Distribution Diagram of Terminal of 7.5-37KW Single Frequency Inverter S Type Control Board



Distribution Diagram of Terminal of Control Board of 18-75KW Dual Frequency Inverter K Model




● Control Terminal Description

| Classification | Terminal Sign | Terminal Function Specification | Technical Specification |
|-----------------------------|---------------|---|--|
| Digital Input | X1~X7 | Multifunctional input terminal, X1 for emergency stop, X4 for fan overload protection, X5 for host overload protection. (Single frequency conversion X1 is emergency stop, X3 is motor overload protection) | Isolated bipolar digital signal input, level input voltage range: 10-30V, input impedance 4.4K |
| | COM | Multifunctional input terminal | |
| Power supply output | 24V | External 24V Power Supply | + 24V power supply output, accuracy (+5%), external output capacity 0.4A |
| | 0V | 24V Power Reference Ground | Internal independence from COM |
| | PE | The Ground Line of Touch Screen | Grounding terminal, grounding resistance < 10 ohms |
| RS485 | A+ | RS485 Communication+ | Semi-duplex RS485 communication, baud rate < 250KBPS, this 485 signal contact touch screen communication port. Compatible with PT100 and KTY84 temperature sensors. Temperature range of - 20 ~250 C is measured. Temperature error is (+5 C). |
| | B- | RS485 Communication- | |
| Temperature Detection Input | PK+,PK- | Terminal of Motor Temperature Detection | - Temperature range of 20 ~250, temperature error (+5) |
| | PT+,PT- | PT100 Oil Temperature Detection Terminal | 4-20mA input |
| Pressure Singal Input | P1+, P1- | Pressure sensor signal 1 | Output of 24Vdc power supply, accuracy (+1%), external output 0.1A |
| | P2+, P2- | Pressure sensor signal 2 | |

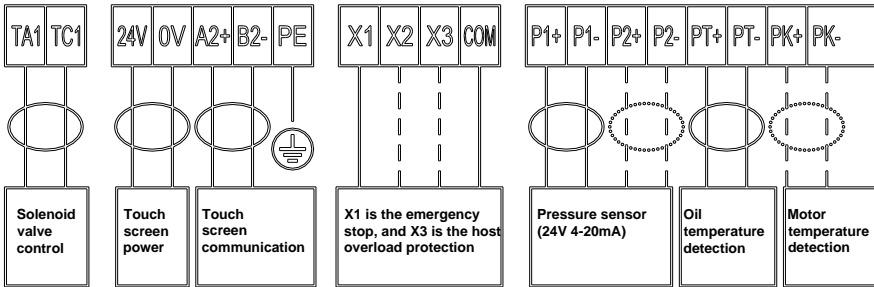
| | | | |
|--------------|---------|--|--------------------------------|
| Relay Output | TA1,TC1 | Relay output, where TA1 TC1 defaults to solenoid valve | Internal independence from COM |
| | TA2,TC2 | | |

2.63 Selection of Dial Switch on Control Board and Functional Explanation of Its Corresponding Position

| Switch number | Switch position | Functional description |
|---------------|--|--|
| S1 | KTY PT2  | KTY: Motor temperature detection is KTY84 PT2: Motor temperature detection is PT100 |

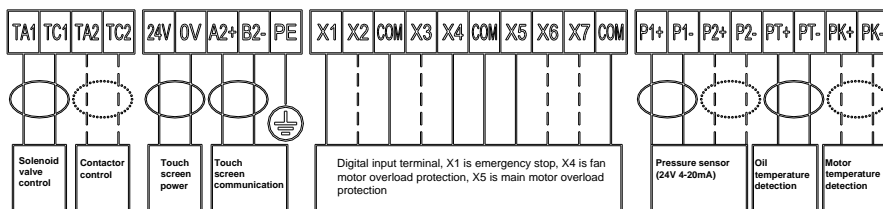
2.6.4 Control terminal wiring diagram

Terminal wiring diagram of 7.5-37KW single frequency S type control board



Hint: The solid line in the figure indicates the minimum recommended wiring when the system is running, and the dotted line indicates the optional wiring.

Terminal Connection Diagram of 18~75KW Dual Frequency Converter K Type Control Board



Hint: The solid line in the figure indicates the minimum recommended wiring when the system is running, and the dotted line indicates the optional wiring.

2.7 Indicator Description

AP100 series air compressor has three LED display lights, which display power supply, operation and fault respectively. The position of the display lamp is shown in the following figure

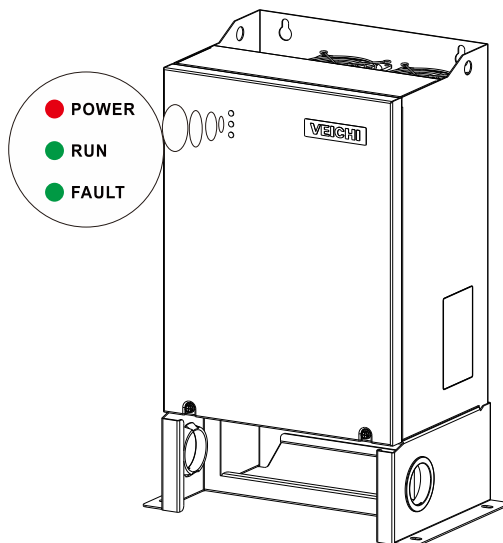








Figure 2-13: Indicator Position Diagram - Change Picture

| Indicator Status | | Status Description |
|------------------|---|-------------------------------|
| Power |  POWER | Lighting out: no power supply |
| Indicator |  POWER | Lighting: Power supply |
| Run |  RUN | Lighting out: shutdown |
| Indicator |  RUN | Lighting: Running |
| Fault |  FAULT | Lighting out: Normal state |
| Indicator |  FAULT | Lighting: Failure status |

3HMI Display and Operation

3.1 HMI Basic Operation and Display

The operation and display of AP100 are both completed on the HMI. The HMI enters the status display interface after power on.

3.1.1 Status Display

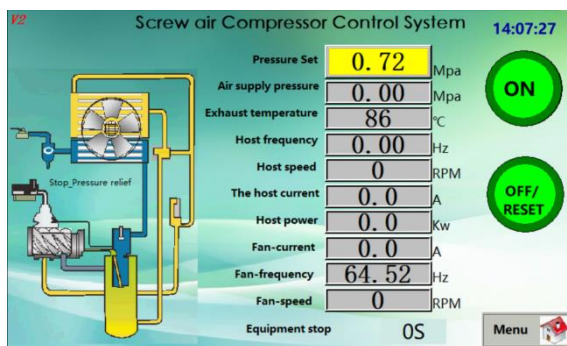


Fig. 3-1: Status Display Interface

The status display interface lists the basic information of air compressor and completes the operations: **Start & Stop** and **Pressure Setting**. Press and hold the "ON" button for more than 1 second at stop state to start the air compressor; press the "Stop/Reset" button while running to stop the air compressor; press the "OFF/Reset" button while faulty to releases the alarm after clearing all the faults.

Click "Pressure Set" to set the target pressure required by user. The air compressor is automatically loaded and unloaded according to the current pressure in the automatic loading mode. Click "Menu" to enter the corresponding parameters in the pop-up interface.

When the air compressor detects a fault, HMI will alarm and stop. And the air compressor can be only started normally after clearing the fault and resetting.

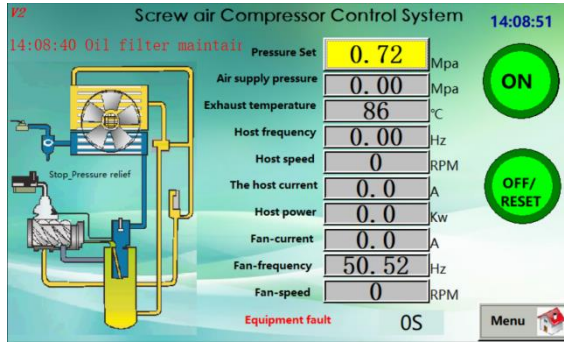


Fig. 3-2: Alarm Information

Note: Different power levels display slightly different in the oil cooling fan parameters.

3.1.2 Running Parameters

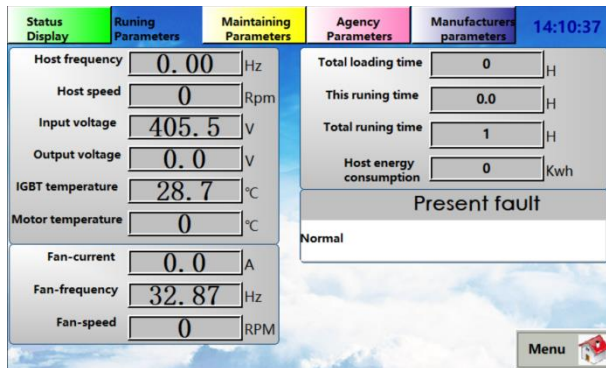


Fig. 3-3: Running Parameters Interface

The operating parameters show the detailed air compressor status. This fault displays the current air compressor fault information.

Note: Different power levels display slightly different in the fan parameters.

3.1.3 Maintaining parameters

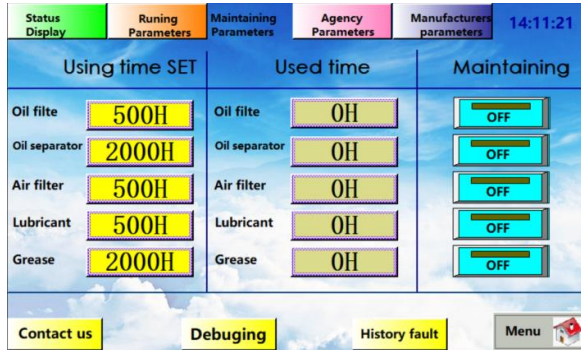


Fig. 3-4: Maintenance Parameters Interface

This interface shows the maintenance time and usage time of each component of the air compressor. When the "Used time" is more than "Using time", HMI will give a red prompt on the "Status Display" interface without stop when the "Maintaining" is off; and HMI will alarm and stop when the "Maintaining" is on. When the "Used time" is more than "Using time", user should replace the maintenance parts in time. Set the usage time to 0 to invalid the maintenance function and there is no alarm or stop when the "Used time" is more than "Using time".

The "Using time Setting", "Used time" and " Maintaining " can be modified after maintenance. Different types of operations require different level passwords. AP100 passwords adopts fixed passwords and random passwords. The passwords management is done by air compressor manufacturer and this manual does not explain for this.

There are three subpages on this page.

(1) **Contacts:**

The air compressor manufacturers or agents could edit their contact information on this page. The on-site staffs can contact relevant person when it reaches the maintenance time of each component.

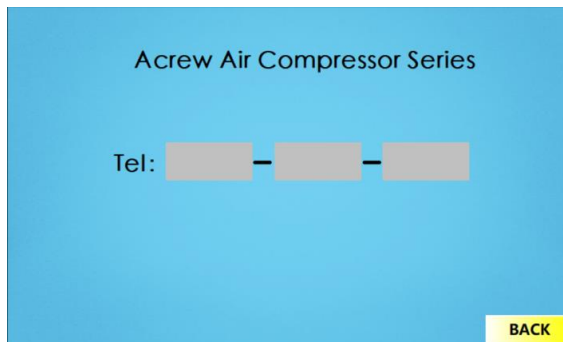


Fig. 3-5: Contacts

(2): History Fault

It is used to display the historical fault record and fault time of the air compressor, to help the technicians analyze the faults.

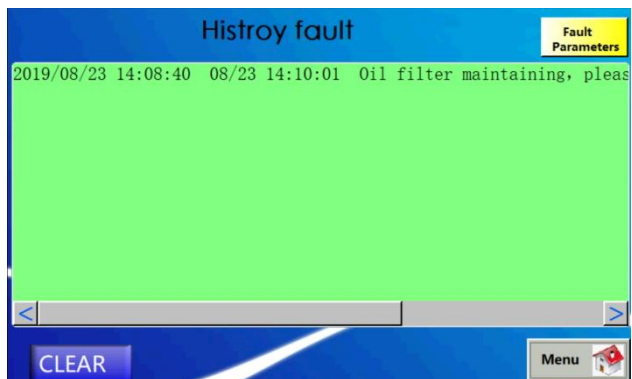


Fig. 3-6: History Fault

(3): Debugging Interface

It is used to display the status of analog and digital signals.

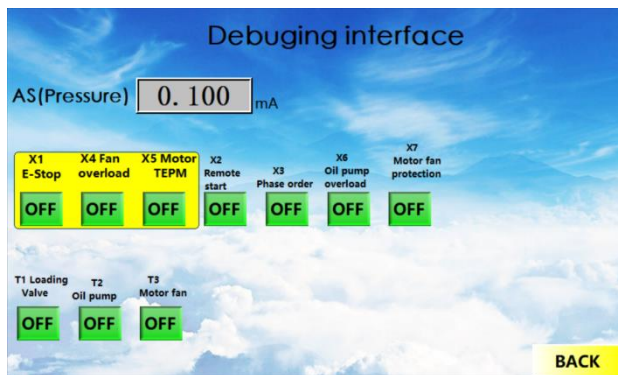


Fig. 3-7: Debugging Interface

3.1.4 Protection Parameters

No need password to enter the protection parameters. But the relevant password is needed when you need to modify the protection parameters, as shown in Fig. 3-6.



Fig. 3-8: Password Interface

The air compressor manufacturer will provide different operators with different passwords. The operators only need to enter the password provided by the manufacturer to perform corresponding operations. Please contact the air compressor manufacturer for dynamic password if the password level is not enough. All permissions will be cleared after returning to the status display interface. Please re-enter the password if you need to enter the "Protection Parameters" and "Manufacturer Parameters" again.

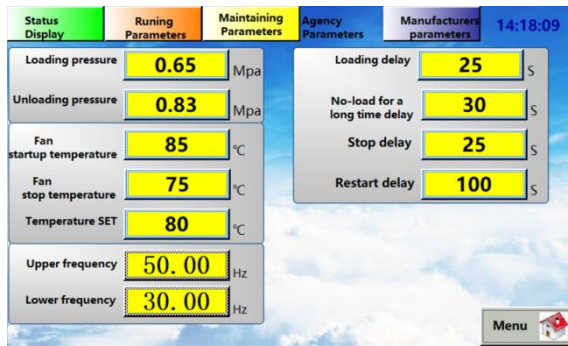


Fig. 3-9: Protection Parameters Interface

The protection parameter interface is mainly for the parameters set by air compressor manufacturer and agents, which can set the air compressor's loading/unloading pressure, fan start/stop temperature, loading valve and other things.

No-load for a long time delay: When the air compressor is in the unloading state, the controller starts timing. When the time exceeds the “**No-load for a long time delay**”, the host stops and enters the sleep state. When the air supply pressure is lower than the loading pressure, the host restarts from the sleep state.

Stop delay: When the stop button is pressed or whole machine protection acts, the controller starts timing. When the time exceeds “**Stop delay**”, the whole machine stops.

Restart delay: When air compressor is at stop, the controller starts timing. When the time exceeds the “Restart delay”, the host is ready for the second startup.

3.1.5 Manufacturer Parameters

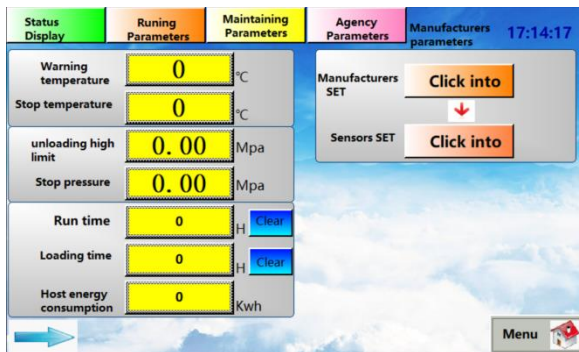


Fig. 3-10: Manufacturer Parameters Interface1

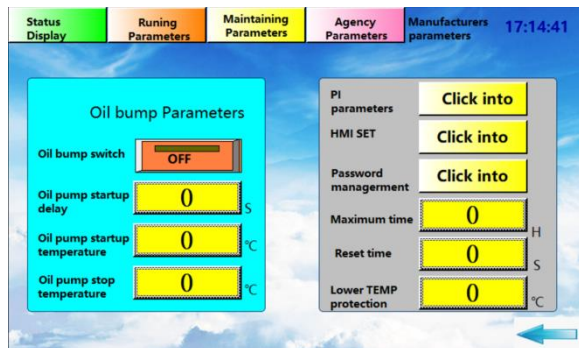


Fig. 3-11: Manufacturer Parameters Interface2

The manufacturer parameters are mainly the parameters set by air compressor manufacturer. Due to the different requirements of manufacturer, the parameters and password protection method are also different.

Warning temperature & Stop temperature: When the oil temperature is higher than the "Warning temperature", the status display interface will give a red prompt; when the oil temperature is higher than the "Stop temperature", HMI will alarm and stop.

Unloading high limit & Stop pressure: The **unloading high limit** is the maximum value of the unloading pressure, and the unloading pressure in protection parameter is limited by it. When the air pressure is higher than **Stop pressure**, air compressor will alarm and stop.

Oil pump switch: Sometimes a separate oil pump is needed for low-pressure air compressor. When the oil pump switch is turned on, the oil pump control is valid. When the oil temperature is higher than "Oil pump start up temperature", the oil pump is turned on; when the oil temperature is less than the "Oil pump stop temperature", the oil pump stops. The oil pump start delay is used to set the delay of the oil pump start signal.

PI parameters: Since the AP100 PID parameters can be adapted to various applications, this parameter does not need to be adjusted.

HMI SET: used to set parameters of the touch screen, such as: system clock, buzzer, etc.

Maximum time and Reset time: When the running time of air compressor is more than the maximum time, HMI will alarm and stop; the reset time is the time when the password needs to be re-authenticated. Password needs to be re-entered if it exceeds the reset time..

3.1.6 Manufacturer parameter setting

Show some internal information of the drive, as well as some important functions.

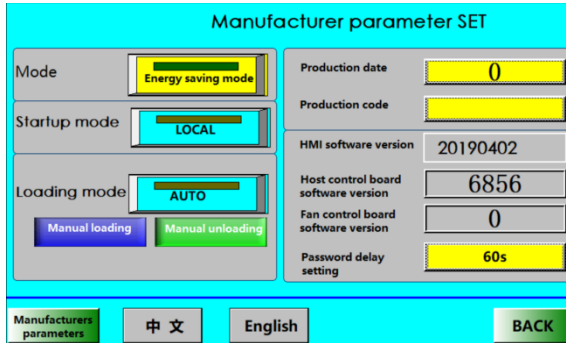


Fig. 3-12: Manufacturer parameter setting Interface

Startup mode: Please select "Local" when using HMI to operate the start/stop of air compressor; please select "Remote" when using X2 terminal external button to operate.

Loading mode: Select "Auto" and the air compressor will automatically load/unload according to the current pressure and time. Select "Manual" and the air compressor will not load under unloading condition. Only when "Air Supply pressure" is lower than "Loading pressure", click the "Manual loading" in the status display interface, the air compressor will be loaded. The manual loading mode can be used for intermittent and small amounts gas need, which can be stored in the gas tank and then manually refilled.

Mode selection: important parameters, please consult the drive manufacturer.

3.1.7 Sensor Parameters

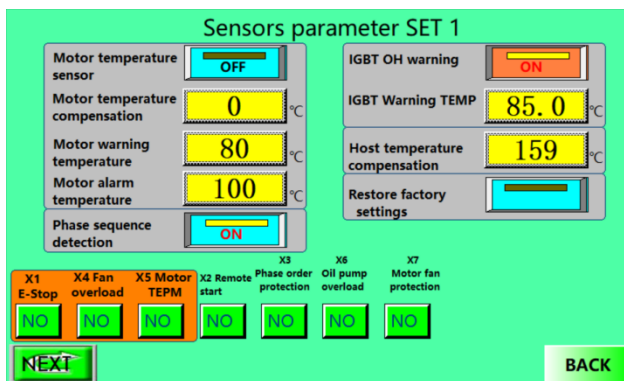


Fig. 3-13: Sensor Parameters 1

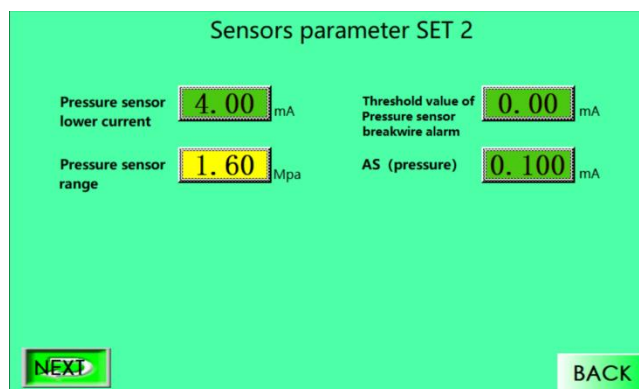


Fig. 3-14: Sensor Parameters 2

Click the sensor parameter option in the manufacturer parameter to enter the sensor parameter interface, which is mainly related to the air compressor digital input interface, temperature sensor and pressure sensor.

Digital input polarity: Some digital switches of the air compressor are normally open, some are normally closed.

Please set the polarity of digital input terminals as needed. **For some unused terminals, please set to normally open, otherwise it will cause malfunction or false alarm of air compressor.**

Motor temperature sensor: Click to select the motor temperature sensor (KTY84-130 or PT100) to measure the motor temperature in real time. When the motor temperature is higher than "Motor Pre-alarm Temperature", the status interface will give a prompt; when the motor temperature is higher than "Motor Alarm Temperature", HMI will alarm and stop.

Temperature compensation: There is a certain error between the motor temperature and oil temperature and the

correction is needed when the deviation is too large. The oil temperature is: the temperature measured by the oil temperature sensor + "**Host Temperature Compensation**"; the motor temperature is: the temperature measured by motor temperature sensor + "**Motor Temperature Compensation**".

Phase sequence protection: AP100 has its own phase sequence detection function. The default state is on.

Module overheat pre-alarm: When it is on, the status display interface gives a prompt but without stop when the drive module temperature exceeds the "**Module Pre-alarm Temperature**". This function is used in the harsh environment. When the drive air duct is blocked, the user is prompted to clean the air duct to avoid the driver's shutdown protection due to excessive temperature, which may cause unnecessary loss to users.

Factory default settings: Click the factory default settings to restore the HMI factory parameters of air compressor, including maintenance parameters, but the fault record will not be cleared. Before restoring the factory settings, the maintenance parameter values should be recorded and then manually entered. (This is to prevent missing air compressor parts maintenance time)

Pressure Sensor

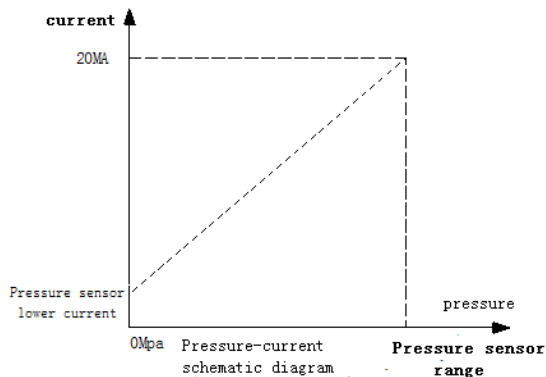


Fig. 3-15: Pressure-Current Diagram

Fig. 3-15 shows the relationship between the pressure sensor current and the corresponding pressure. The "**Pressure sensor minimum current**" is corresponding to the output current of pressure sensor at 0Mpa. The "**Pressure sensor maximum range**" is corresponding to the pressure of pressure sensor at 20ma, When the AS detection current is less than "**Pressure disconnection threshold**", the system determines the disconnection of pressure sensor and alarms to stop. AS value is the detected current at present; when there is error with pressure sensor sampling, the "**Pressure sensor minimum current**" and "**Pressure sensor maximum range**" can be adjusted to correct it.

3.1.8 Inverter Debugging

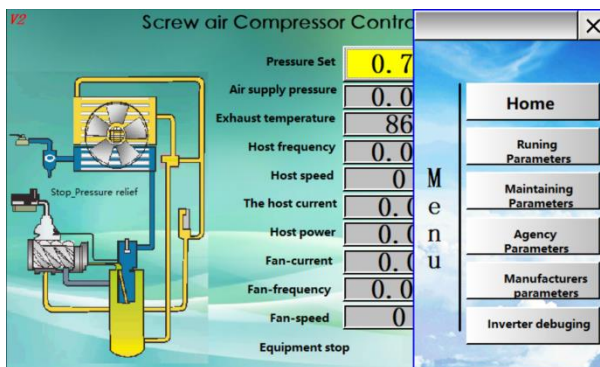


Fig. 3-16: Inverter Debugging

Click "Menu" in any interface and select the "Inverter Debugging" button to enter the inverter debugging interface. The drive parameter settings and trial running can be completed in this interface.

3.2 Motor Parameters

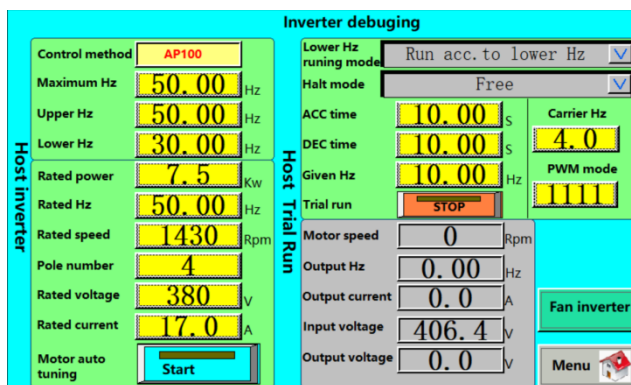


Fig. 3-17: Main motor – Motor Parameters Setting

Select the motor control mode and input motor parameters as per the nameplate into the corresponding input box. It does not need to input motor poles, which can be calculated automatically according to the speed and frequency. Clicking the "Start" button, drive will start to learn motor parameters, and the "Start" button will become "Learning". After 10S to complete the learning, "Learning" returns to "Start". If there is anything wrong during the learning process, click the "Learning" button to stop the motor self-learning immediately.

Notes: (1) The control mode is usually set by default and does not need to be set.

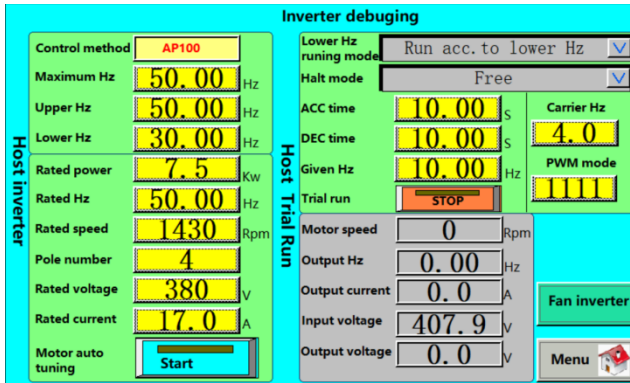


Fig. 3-18: Main Motor – Trial Running

After learning motor parameters, you can also complete the motor trial running in this interface. Set the “Given frequency” at first, and then click the host trial running button to check the motor running direction. If it is not correct, please click the trial running button again to stop the drive and exchange any two phases of the motor cables. Set the upper/lower limit frequency, the lower limit frequency operation mode, and the stop mode after the normal trial running of the drive.

3.2.1 Fan Parameters

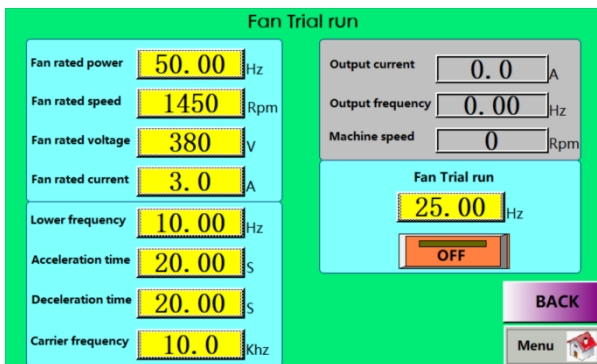


Fig. 3-20: Fan - Parameters Setting

The fan parameters are the drive parameter settings of dual-inverter oil-cooling fan. The single-inverter only displays the trial running button, and other parameters are not displayed. Enter the fan motor nameplate parameters into the fan parameters, set the frequency in the trial running box (usually 20 to 25Hz), and click the button below to check the fan direction. If it is not correct, please stop and change the fan phase sequence. Set the “Frequency Setting” to 50Hz to check the fan current.

3.2.2 Fault Parameters

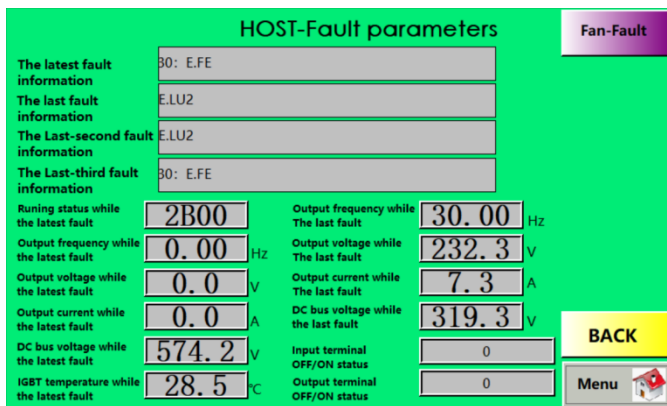


Fig. 3-22: Main Motor – Fault Parameters

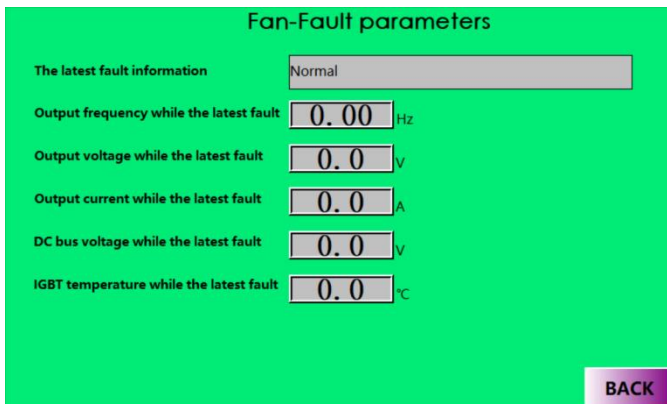


Fig. 3-23: Fan – Fault Parameters

The fault parameters record the current and previous fault status of the host drive and the oil-cooling fan drive for the manufacturer's reference.

4. Functional parameter table

4.1 External Keyboard

For debugging conveniently, AP100 driver's host frequency conversion control board and fan frequency conversion control board have keyboard interface. Users can use external keyboard to view and modify the host frequency conversion and fan frequency conversion parameters in more detail. The related parameters of the compressor are described below.

4.2 Main engine function parameter table of air compressor

- “●” : Indicates that this parameter can be changed when the driver is running;
- “○” : Indicates that this parameter is not changeable when the driver is running;
- “×” : Indicates that this parameter can only be read and cannot be changed;
- “-” : Indicates that this parameter is "factory parameter" and is limited to factory settings.;
- “※” : Indicates that this parameter is related to the model of driver;

Basic parameter group

| Function Code Number | Function Code Name | Scope and Definition of Settings | | Factory Setting | Attribute | address |
|----------------------|----------------------------------|---|--|-----------------|-----------|---------|
| F00.00 | Motor Control Mode | Asynchronous motor control mode: 0:VF control 3: High Performance Vector Control without PG 4: High Performance Vector Control with PG Synchronous motor control mode: 6: High Performance Vector Control without PG 7: PG vector control 1, 2 and 5: Reservations | | 6 | ○ | 0x000 |
| F00.01 | Reservations | | | | | 0x001 |
| F00.02 | Running Command Channel | 0:Keyboard Control 1:Terminal Control | 2:RS485 Communication Control 3:Reservation | 2 | ● | 0x002 |
| F00.03 | Frequency Given Source Channel A | 0: Keyboard number given frequency 1: Reservation | | 0 | ● | 0x003 |
| F00.04 | Frequency Given Source Channel B | 2: Current/Voltage Analog AI1 Given 3: Current/Voltage Analog AI2 Given | | 1 | ● | 0x004 |

| | | | | | |
|--------|--------------------------------------|---|---|---|-------|
| | | <p>4: Reservations</p> <p>5: Terminal Pulse PUL Given</p> <p>6:RS485 Communication Given</p> <p>7: Terminal UP/DW control</p> <p>8:PID Control Given</p> <p>9: Program Control (PLC) Given</p> <p>10: Optional Card</p> <p>11:Multistage Velocity Given</p> | | | |
| FOO.05 | Frequency Channel B Reference Source | <p>00:With the maximum output frequency as the reference source</p> <p>1: Using A set frequency as reference source</p> | 0 | ● | 0x005 |
| FOO.06 | Frequency Given Source Selection | <p>0:Channel A</p> <p>1: Channel B</p> <p>2: Channel A + Channel B</p> <p>3: Channel A-Channel B</p> <p>4: Maximum of channel A and B</p> <p>5: Minimum of Channel A and B</p> | 0 | ● | 0x006 |

| | | | | | |
|--------|--|---|---------|---|-------|
| FOO.07 | Run command bundling | Personal Bit: Keyboard Command Instruction Binding Ten Bits: Terminal Command Instruction Binding 100 bits: communication command instruction Binding Thousand Bits: Buy Card Command Binding 0: No bundles 1: Keyboard number given frequency 2: Reservations 3: Current/Voltage Analog AI1 Given 4: Current/Voltage Analog AI2 Given 5: Reservations 6: Terminal Pulse PUL Given 7:RS485 Communication Given 8: Terminal UP/DW Control 9:PID Control Given A: Program Control (PLC) Given B: Optional Card C: Multi-segment speed setting | 0000 | ● | 0x007 |
| FOO.08 | Keyboard Number Setting Frequency | 0.00~upper limit frequency | 50.00Hz | ● | 0x008 |
| FOO.09 | Maximum frequency | Upper Limit Frequency to 600.00Hz | 50.00Hz | ○ | 0x009 |
| FOO.10 | Upper Limit Frequency Source Selection | 0: Digital setting of upper limit frequency 1: Reservation 2: Current/Voltage Analog AI1 Given 3: Current/Voltage Analog AI2 Given 4: Reservations 5: Terminal Pulse PUL Given 6:RS485 Communication Given 7: Optional Card | 0 | ● | 0x00A |
| FOO.11 | Digital Setting of Upper Limit Frequency | Lower Limit Frequency to Maximum Frequency | 50.00Hz | ● | 0x00B |
| FOO.12 | Lower Limit Frequency | 0.00~upper limit frequency | 0.00Hz | ● | 0x00C |
| FOO.13 | Lower Limit Frequency Operation Mode | 0: Stop the output and enter the suspension state | 1 | ○ | 0x00D |

| | | | | | | |
|--------|---------------------------------|--|------------|--------------------|---|-------|
| | | 1: Operate at the lower limit frequency | | | | |
| F00.14 | Acceleration time 1 | 0.01~650.00s | | According to model | ※ | 0x00E |
| F00.15 | Deceleration time 1 | 0.01~650.00s | | According to model | ※ | 0x00F |
| F00.16 | Selection of Rotation Direction | <p>LED Bit: Operating Direction Reverse 0: Direction unchanged 1: Direction reversed</p> <p>LED Ten Bits: Operating Direction Prohibited 0: Allow positive and negative commands 1: Only positive commands are allowed</p> <p>2: Only reverse commands are allowed</p> <p>LED 100 Bits: Frequency Control Command Direction 0: Frequency control direction is invalid 1: Frequency control direction is effective</p> <p>LED 1000 bits: reserved</p> | | 0000 | ○ | 0x010 |
| F00.17 | G/P Model Setting | 0: G Model | 1: P Model | 0 | ● | 0x011 |
| F00.18 | Reservation | | | | | 0x012 |
| F00.19 | Parameter initialization | <p>0: no operation</p> <p>1: Restore factory value (without restoring motor parameters)</p> <p>2: Restore factory value (restore motor parameters)</p> <p>3: Clear the fault record</p> | | 0 | ○ | 0x013 |

Operational Control Parameter Group

| Function Code Number | Function Code Name | Scope and Definition of Settings | Factory Setting | Attribute | address |
|----------------------|------------------------------|--|-----------------|-----------|---------|
| F01.00 | Start-up operation mode | <p>0: Started by startup frequency</p> <p>1: First DC brake and then start from start frequency</p> <p>2: Re-start after speed tracking and direction judgment</p> | 0 | ○ | 0x100 |
| F01.01 | Start-up pre-excitation time | 0.00~60.00s | 0.00s | ○ | 0x101 |
| F01.02 | Start-up frequency | 0.00~60.00Hz | 0.50Hz | ○ | 0x102 |

| | | | | | |
|--------|--|--|--------|---|-------|
| F01.03 | Start duration frequency | 0.0~50.0s | 0.0s | ○ | 0x103 |
| F01.04 | Pre-start braking current | 0.0~150.0% | 60.0% | ○ | 0x104 |
| F01.05 | Pre-start braking time | 0.0~60.0s | 0.0s | ○ | 0x105 |
| F01.06 | Speed tracking | 0.00~60.00s | 0.50s | ○ | 0x106 |
| F01.07 | Speed tracking shutdown delay | 0.00~60.00s | 1.00s | ○ | 0x107 |
| F01.08 | Reservation | | | | |
| F01.09 | Reservation | | | | |
| F01.10 | Stop Mode | 0 : 1: Free Shutdown | 0 | ● | 0x10A |
| F01.11 | Starting Frequency of DC Brake in Stop | 0.00~50.00Hz | 1.00Hz | ○ | 0x10B |
| F01.12 | DC braking current during shutdown | 0.0~150.0% | 60.0% | | 0x10C |
| F01.13 | Reservation | | | | 0x10D |
| F01.14 | DC Brake Duration of Shutdown | 0.0~60.0s | 0.0s | ○ | 0x10E |
| F01.15 | Outage frequency detection frequency | 0.00~50.00Hz | 0.50Hz | ● | 0x10F |
| F01.16 | Acceleration and deceleration | <p>LED bits: time benchmark selection 0: Maximum Frequency 1: Fixed Frequency 50Hz 2: Set Frequency</p> <p>LED Ten Bits: S Acceleration and Deceleration Selection 0:linear acceleration and deceleration 1:S curve acceleration and deceleration</p> <p>LED 100 bits, 1000 bits: reserved</p> | 0010 | ○ | 0x110 |
| F01.17 | Accelerated Start S Curve Time | 0.00~10.00 | 0.20s | ○ | 0x111 |
| F01.18 | Accelerated End S Curve Time | 0.00~10.00 | 0.20s | ○ | 0x112 |
| F01.19 | Starting S-curve time of deceleration | 0.00~10.00 | 0.20s | ○ | 0x113 |
| F01.20 | S-curve time at deceleration end | 0.00~10.00 | 0.20s | ○ | 0x114 |
| F01.21 | Acceleration time 2 | 0.01~650.00s | 10.00s | ● | 0x115 |
| F01.22 | Deceleration time 2 | 0.01~650.00s | 10.00s | ● | 0x116 |
| F01.23 | Acceleration time 3 | 0.01~650.00s | 10.00s | ● | 0x117 |
| F01.24 | Deceleration time 3 | 0.01~650.00s | 10.00s | ● | 0x118 |

| | | | | | |
|---------------|---------------------------------------|---|--------|---|-------|
| F01.25 | Acceleration time 4 | 0.01~650.00s | 10.00s | ● | 0x119 |
| F01.26 | Deceleration time 4 | 0.01~650.00s | 10.00s | ● | 0x11A |
| F01.27 | Emergency parking deceleration time | 0.01~650.00s | 1.00s | ● | 0x11B |
| F01.28 | Positive and Reverse Dead Zone Time | 0.0~120.0s | 0.0s | ○ | 0x11C |
| F01.29 | Zero-speed Torque Frequency Threshold | 0.00~10.00Hz | 0.50Hz | ● | 0x11D |
| F01.30 | Zero-speed Torque Holding Coefficient | 0.0~150.0% | 60.0% | ● | 0x11E |
| F01.31 | Zero-speed Torque Holding Time | 0.0~6000.0s When set to 6000.0s, keep it | 0 | ● | 0x11F |
| F01.32-F01.34 | Reservation | | | | |
| F01.35 | Power outage restart action | 0: Invalid 1: Valid | 0 | ○ | 0x123 |
| F01.36 | Waiting time for power outage restart | 0.00~60.00s | 0.50s | ○ | 0x124 |
| F01.37 | Reservation | | | | 0x125 |
| F01.38 | Frequency setting of point operation | 0.00-max frequency | 5.00Hz | ● | 0x126 |
| F01.39 | Point acceleration time | 0.01~650.00s | 10.00s | ● | 0x127 |
| F01.40 | Point deceleration time | 0.01~650.00s | 10.00s | ● | 0x128 |
| F01.41 | Jump frequency 1 | 0.00-max frequency | 0.00Hz | ● | 0x129 |
| F01.42 | Jump frequency amplitude 1 | 0.00-max frequency | 0.00Hz | ● | 0x12A |
| F01.43 | Jump frequency 2 | 0.00-max frequency | 0.00Hz | ● | 0x12B |
| F01.44 | Jump frequency amplitude 2 | 0.00-max frequency | 0.00Hz | ● | 0x12C |

Switching terminal parameter group

| Function Code Number | Function code name | Scope and Definition of Settings | Factory Setting | Attribute | address |
|----------------------|---------------------------------|---|-----------------|-----------|---------|
| F02.00 | Input terminal 1 (X1) | Refer to the 4.2 Function Selection Table | 6 | ○ | 0x200 |
| F02.01 | Input terminal 2 (X2) | Refer to the 4.2 Function Selection Table | 1 | ○ | 0x201 |
| F02.02 | Input terminal 3 (X3) | Refer to the 4.2 Function Selection Table | 80/82 | ○ | 0x202 |
| F02.03 | Input terminal 4 (X4) | Refer to the 4.2 Function Selection Table | 81 | ○ | 0x203 |
| F02.04 | Input terminal 5 (X5) | Refer to the 4.2 Function Selection Table | 82 | ○ | 0x204 |
| F02.05 | Input terminal 6 (X6 extension) | Refer to the 4.2 Function Selection Table | 86 | ○ | 0x205 |

| | | | | | | |
|--------|--------------------------------------|--|---|-------|---|-------|
| F02.06 | Input terminal 7 (X7 extension) | Refer to the 4.2 Function Selection Table | | 87 | ○ | 0x206 |
| F02.07 | Input terminal 8 (X8 extension) | Refer to the 4.2 Function Selection Table | | 0 | ○ | 0x207 |
| F02.08 | Input terminal 9 (X9 extension) | Refer to the 4.2 Function Selection Table | | 0 | ○ | 0x208 |
| F02.09 | Input terminal 10 (X10 extension) | Refer to the 4.2 Function Selection Table | | 0 | ○ | 0x209 |
| F02.10 | Selection of X1-X4 Terminals | 0: Closure is effective 1: Disconnection is effective Personal: X1 | Ten: X2 Hundred: X3 1000 bits: X4 | 0001 | ● | 0x20A |
| F02.11 | Selection of X5-X8 Terminals | 0: Closure is effective 1: Disconnection is effective Personal: X5 | Ten: X6 Hundred: X7 1000 bits: X8 | 0000 | ● | 0x20B |
| F02.12 | Selection of X9-X10 Terminals | 0: Closure is effective 1: Disconnection is effective Personal: X9 | Ten: X10 Hundreds: Reservations Thousands: Reservations | 0000 | ● | 0x20C |
| F02.13 | Effective detection delay of X1 | 0.000~6.000s | | 0.010 | ● | 0x20D |
| F02.14 | Invalid Detection Delay of X1 | 0.000~6.000s | | 0.010 | ● | 0x20E |
| F02.15 | Effective detection delay of X2 | 0.000~6.000s | | 0.010 | ● | 0x20F |
| F02.16 | Invalid Detection Delay of X2 | 0.000~6.000s | | 0.010 | ● | 0x210 |
| F02.17 | Effective detection delay of X3 | 0.000~6.000s | | 0.010 | ● | 0x211 |
| F02.18 | Invalid Detection Delay of X3 | 0.000~6.000s | | 0.010 | ● | 0x212 |
| F02.19 | Effective detection delay of X4 | 0.000~6.000s | | 0.010 | ● | 0x213 |

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|---------------------------|------------------------------------|---|--|-------|---|-------|
| F02.20 | Invalid Detection Delay of X4 | 0.000~6.000s | | 0.010 | ● | 0x214 |
| F02.21 | Effective detection delay of X5 | 0.000~6.000s | | 0.010 | ● | 0x215 |
| F02.22 | Invalid Detection Delay of X5 | 0.000~6.000s | | 0.010 | ● | 0x216 |
| F02.23 | Terminal Control Operation Mode | 0: Two-wire system 1: Two-wire system 2 | 2: Three-wire system 1 3: Three-wire system 2 | 0 | ○ | 0x217 |
| F02.24 | Terminal Start Protection | 0: Close 1: Open LED Bit: Start Protection when Exit Abnormal LED Ten Bits: Point Protection when Exit Abnormal LED 100 bits: Start protection when command channel is switched to terminal | | 0111 | ○ | 0x218 |
| F02.56-F02.59 Reservation | | | | | | |
| F02.42 | Output terminal polarity selection | 0: Positive polarity 1: Negative polarity LED Bit: Relay Output T1 LED Ten Bits: Relay Output T2 LED 100 bits: Relay output T3 LED 1000 bit: Extended Relay Output 2 | | 0000 | ● | 0x22A |

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|--------|-----------------------------------|------------------------------|--------------|-------|---|-------|
| F02.43 | Relay Output T1/Loading Valve | Refer to the Selection Table | 4.2 Function | 40 | ● | 0x22B |
| F02.44 | Relay Output T2/Oil Secondary Fan | Refer to the Selection Table | 4.2 Function | 43/41 | ● | 0x22C |
| F02.45 | Relay Output T3/Motor Fan | Refer to the Selection Table | 4.2 Function | 42 | ● | 0x22D |
| F02.46 | | | | | ● | 0x22E |
| F02.47 | Relay Output T1 | 0.000~6.000s | | 0.010 | ● | 0x22F |
| F02.48 | Relay Output T2 | 0.000~6.000s | | 0.010 | ● | 0x230 |
| F02.49 | Relay Output T3 | 0.000~6.000s | | 0.010 | ● | 0x231 |
| F02.50 | | | | | ● | 0x232 |
| F02.51 | Output Frequency Level 1 (FDT1) | 0.00-max frequency | | 30.00 | ● | 0x233 |
| F02.52 | FDT1 hysteresis | 0.00-max frequency | | 1.00H | ● | 0x234 |

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|--------|--|--------------------|------------|---|-------|
| F02.53 | Output Frequency Level 2 (FDT2) | 0.00-max frequency | 50.00 | ● | 0x235 |
| F02.54 | FDT2 hysteresis | 0.00-max frequency | 1.00H | ● | 0x236 |
| F02.55 | Given frequency to reach detection value | 0.00~50.00Hz | 2.00H z | ● | 0x237 |

Analog terminal parameter set

| Function Code Number | Function Code Name | Scope and Definition of Settings | | Factory Setting | Attribute | address |
|----------------------|---|---|---|-----------------|-----------|---------|
| F03.00 | P1 Lower Limit Value | 0.00~10.00V | | 0.00V | ● | 0x300 |
| F03.01 | P1 Lower Limit Correspondence Setting | -100.00~100.00% | | 0.00% | ● | 0x301 |
| F03.02 | P1 upper limit | 0.00~10.00V | | 10.00V | ● | 0x302 |
| F03.03 | P1 Upper Limit Correspondence Setting | -100.00~100.00% | | 100.00% | ● | 0x303 |
| F03.04 | P1 filtering time | 0.000~6.000s | | 0.100s | ● | 0x304 |
| F03.05 | Reservation | | | | | |
| F03.06 | P2 Lower Limit Value | 0.00~10.00V | | 0.00V | ● | 0x306 |
| F03.07 | P2 Lower Limit Correspondence Setting | -100.00~100.00% | | 0.00% | ● | 0x307 |
| F03.08 | P2 upper limit | 0.00~10.00V | | 10.00V | ● | 0x308 |
| F03.09 | P2 Upper Limit Correspondence Setting | -100.00~100.00% | | 100.00% | ● | 0x309 |
| F03.10 | P2 filtering time | 0.000~6.000s | | 0.100s | ● | 0x30A |
| F03.11 | Reservation | | | | | |
| F03.12 | Functional Selection of A11 Terminals | Refer to X terminal function | | 0 | ○ | 0x30C |
| F03.13 | A11 High Level Setting | 0.00~100.00% | | 70.00% | ● | 0x30D |
| F03.14 | A11 Low Level Setting | 0.00~100.00% | | 30.00% | ● | 0x30E |
| F03.15 | Functional Selection of A12 Terminals | See X terminal function | | 0 | ○ | 0x30F |
| F03.16 | A12 High Level Setting | 0.00~100.00% | | 70.00% | ● | 0x310 |
| F03.17 | A12 Low Level Setting | 0.00~100.00% | | 30.00% | ● | 0x311 |
| F03.18 | Analog Setting Effective State Quantity Terminal | 0:Low level 1: High level LED bit: A1 | LED Ten Bits: A12 LED 100 bits: Keep 1000 bits Keep LED 1000 bits | 0000 | ● | 0x312 |

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|--------|---|--|---------|---|-------|
| F03.19 | Selection of Analog Input Curve | LED bit: A11 0: Line (default) 1: Curve 1: Curve 12: Curve 2 LED Ten Bits: A12 LED 100 bits: reserved LED 1000 bits: reserved | 0000 | ● | 0x313 |
| F03.20 | Reservation | | | | 0x314 |
| F03.21 | Lower Limit Value of Curve 1 | 0.00~10.00V | 0.00V | ● | 0x315 |
| F03.22 | Corresponding Setting of Lower Limit of Curve 1 | 0.00~100.00% | 0.0% | ● | 0x316 |
| F03.23 | Curve 1 inflection point 1 input voltage | 0.00~10.00V | 3.00V | ● | 0x317 |
| F03.24 | Corresponding Setting of Curve 1 Inflection Point 1 | 0.00~100.00% | 30.00% | ● | 0x318 |
| F03.25 | Curve 1 inflection point 2 input voltage | 0.00~10.00V | 6.00V | ● | 0x319 |
| F03.26 | Corresponding Setting of Curve 1 Inflection Point 2 | 0.00~100.00% | 60.00% | ● | 0x31A |
| F03.27 | Curve 1 upper limit | 0.00~10.00V | 10.0V | ● | 0x31B |
| F03.28 | Correspondence Setting of Curve 1 Upper Limit | 0.00~100.00% | 100.00% | ● | 0x31C |
| F03.29 | Lower Limit Value of Curve 2 | 0.00~10.00V | 0.00V | ● | 0x31D |
| F03.30 | Corresponding Setting of Lower Limit of Curve 2 | 0.00~100.00% | 0.00% | ● | 0x31E |
| F03.31 | Curve 2 inflection point 1 input voltage | 0.00~10.00V | 3.00V | ● | 0x31F |
| F03.32 | Corresponding Setting of Curve 2 Inflection Point 1 | 0.00~100.00% | 30.00% | ● | 0x320 |
| F03.33 | Curve 2 inflection point 2 input voltage | 0.00~10.00V | 6.00V | ● | 0x321 |
| F03.34 | Curve 2 inflection point 2 corresponding setting | 0.00~100.00% | 60.00% | ● | 0x322 |
| F03.35 | Curve 2 upper limit | 0.00~10.00V | 10.00V | ● | 0x323 |
| F03.36 | Correspondence Setting of Curve 2 Upper Limit | 0.00~100.00% | 100.00% | ● | 0x324 |

System parameter group

| Function Code Number | Function Code Name | Scope and Definition of Settings | Factory Setting | Attribute | address |
|----------------------|---|---|-----------------|-----------|---------|
| F04.00 | Selection of parameters and key lock | 0: Not locked 1: Functional parameter locking 2: Functional parameters and key lock (except RUN/STOP/JOG) 3: Full lock of function parameters and keys | 0 | ● | 0x400 |
| F04.01 | Parametric group password | 0~65535 | 0 | ● | 0x401 |
| F04.02-F04.04 | Reservation | | | | |
| F04.05 | Copy of parameters | 0: No function 1: Transducer parameter value is transferred to keyboard and saved 2: Keyboard saved parameters are transferred to frequency converter | 0 | ○ | 0x405 |
| F04.06 | Selection of Keyboard Special Functions | LED bits: built-in and external keyboard key commands 0: External priority, when the external is valid, the built-in is invalid 1: Built-in priority. When built-in is valid, the built-in is invalid. 2: Both internal and external devices are valid, and stop/reset commands are preferred. LED Ten Bits: Reserved LED 100 bits: reserved | 0000 | ○ | 0x406 |
| F04.07 | Keyboard REV/JOG Selection | 0:REV (inversion) 1:JOG (click) | 0 | ○ | 0x407 |
| F04.08 | Keyboard STOP Key Settings | 0: Invalid non-keyboard control 1: Non-keyboard control mode shutdown mode 2: Non-keyboard control mode shutdown in free mode | 1 | ○ | 0x408 |

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|---------------|---|--|------|---|-------|
| F04.09 | Keyboard Up and Down Key Selection | <p>LED Bit: Keyboard Up and Down Key (Digital Potentiometer) Modification Selection</p> <p>0: Invalid</p> <p>1: Keyboard for frequency adjustment given F00.08</p> <p>2: Used to adjust P</p> <p>LED Ten Bits: Power-off Storage</p> <p>0: Frequency power off without storage</p> <p>1: Frequency power-off storage</p> <p>LED 100 bits: movement limitation</p> <p>0: Operational shutdown adjustable</p> <p>1: Only adjustable in operation and maintained during downtime.</p> | 0011 | ○ | 0x409 |
| F04.10 | Keyboard Up and Down Keys Modify Parameter Number Settings | <p>Ten bits of LED: YY setting in Fxx.yy</p> <p>LED 100-bit 1000-bit: XX settings in Fxx.yy</p> <p>For example, "0008" means F00.08</p> | 0008 | ○ | 0x40A |
| F04.11-F04.13 | Reservation | | | | |
| F04.14 | The first line of keyboard shows parameter 1 circularly | <p>Ten bits of LED: YY setting in Cxx.yy</p> <p>LED 100-bit 1000-bit: XX settings in Cxx.yy</p> <p>For example, "0000" means C00.00</p> | 0000 | ● | 0x40E |
| F04.15 | The first line of keyboard shows parameter 2 in a loop | Same as above | 0001 | ● | 0x40F |
| F04.16 | The first line of the keyboard shows the parameter 3 in a loop. | Same as above | 0002 | ● | 0x410 |
| F04.17 | The first line of keyboard shows parameter 4 in a loop | Same as above | 0011 | ● | 0x411 |
| F04.18 | Keyboard second line circular display parameter 1 | Same as above | 0002 | ● | 0x412 |

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|--------|---|---|--------|---|-------|
| F04.19 | Keyboard second line circular display parameter 2 | Same as above | 0004 | ● | 0x413 |
| F04.20 | Keyboard second line circular display parameter 3 | Same as above | 0010 | ● | 0x414 |
| F04.21 | Keyboard second line circular display parameter 4 | Same as above | 0012 | ● | 0x415 |
| F04.22 | Keyboard Display Item Settings | LED Bit: Output Frequency Display 0:Target Frequency 1:Operating Frequency LED 100 Bits: Power Display Dimension 0:Percentage 1:KW | 0000 | ● | 0x416 |
| F04.23 | Monitoring Display Selection | LED bits: self-learning display monitoring parameters 0: invalid 1: valid LED Bit: C05 Group Display Selection Relevant parameters of 0-1:VF mode 2:VC Mode Related Parameters LED 100 bits: C00.40~C00.69 display selection 0:No Display 1:Display | 0000 | ● | 0x417 |
| F04.24 | Speed Display Coefficient | 0.0~500.0% | 100.0% | ● | 0x418 |
| F04.25 | Power Display Coefficient | 0.0~500.0% | 100.0% | ● | 0x419 |
| F04.26 | Alarm Selection 1 | LED bits: E.EEP failure (EEPROM storage failure) 0:Alarm and shut down freely 1: Alarm and continue operation | 0000 | ○ | 0x41A |
| F04.27 | Reservation | | | | 0x41B |
| F04.28 | FAN Control | 0: The Fan runs after that inverter is powered on 1: shutdown is dependent with temperature, running means working 2: not running means not working, running is dependent with temperature | 1 | ● | 0x41C |

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|--------|---|---|-----------|---|-------|
| F04.29 | Energy brake enable | 0: off 1: Turn on the energy brake and turn off the overvoltage suppression 2: Simultaneously enable energy braking and overvoltage suppression | 2 | ● | 0x41D |
| F04.30 | Energy consumption braking action voltage | T3: 650-800V (default 740V) T2/S2: 350-390V (default 360V) | Model set | ● | 0x41E |
| F04.31 | Reservation | | | | 0x41F |
| F04.32 | PWM Carrier | 0.7~16.0kHz | Model set | ※ | 0x420 |
| F04.33 | PWM Control model | LED bits: carrier is related with temperature 0: not related with temperature 1: related with temperature LED 10 bits: carrier is related with output frequency 0: not related 1: related LED100 bits: random PWM enable 0: prohibited 1: enable LED 1000 bits: PWM modulation 0: only use 3 phase modulation 1: 2 phase and 3 phase modulation switch automatically | 1111 | ● | 0x421 |

Motor parameter group

| Function No. | Function code name | Set value range and definition | | Factory setting | Attributes | address |
|--------------|-----------------------|--------------------------------|--|-----------------|------------|---------|
| F05.00 | Motor type | 0: Asynchronous motor (AM) | 1: Permanent magnet synchronous motor (PM) | 0 | × | 0x500 |
| F05.01 | Number of motor poles | 2~98 | | Model set | ○ | 0x501 |
| F05.02 | Motor rated power | 0.1~1000.0kW | | Model set | ※ | 0x502 |
| F05.03 | Motor rated frequency | 0.01~最大频率 | | Model set | ※ | 0x503 |
| F05.04 | Motor rated speed | 1~6500rpm | | Model set | ※ | 0x504 |
| F05.05 | Motor rated voltage | 1~1500V | | Model set | ※ | 0x505 |
| F05.06 | Motor rated current | 0.1~3000.0A | | Model set | ※ | 0x506 |
| F05.07 | AM no-load current | 0.1~3000.0A | | Model set | ※ | 0x507 |
| F05.08 | AM Stator resistance | 0.01~50.00% | | Model set | ※ | 0x508 |

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|---------------------------|---|---|--|------|-------|-------|
| F05.09 | AM rotor resistance | 0.01~50.00% | Model set | ※ | 0x509 | |
| F05.10 | AM stator leakage inductance | 0.01~50.00% | Model set | ※ | 0x50A | |
| F05.11 | AM stator inductance | 0.1~2000.0% | Model set | ※ | 0x50B | |
| F05.12 | Synchronous stator resistance | 0.01~50.00% | Model set | ※ | 0x50C | |
| F05.13 | Synchronous machine d-axis inductance | 0.01~200.00% | Model set | ※ | 0x50D | |
| F05.14 | Synchronous machine q-axis inductance | 0.01~200.00% | Model set | ※ | 0x50E | |
| F05.15 | Synchronous back electromotive force | 1~1500V | Model set | ※ | 0x50F | |
| F05.16 | Synchronous encoder mounting angle | 0.0°~360.0° | Model set | ※ | 0x510 | |
| F05.17-F05.19 Reservation | | | | | | |
| F05.20 | Motor parameter auto-tuning selection | 0: no operation 1: Rotary self-learning | 2: Static self-learning 3: Stator resistance learning | 0 | ○ | 0x514 |
| F05.21 | Synchronous motor magnetic pole search function | LED bits: closed loop vector 0: turn off 1: turn on 2: turn on at first power-on LED 10bits: open loop vector 0: turn off 1: turn on 2: turn on at first power-on | | 0010 | ○ | 0x515 |
| F05.22-F05.29 Reservation | | | | | | |
| F05.30 | Speed feedback or encoder type | LED bits: encoder 0: ABZ encoder 1: resolver LED10 bits: encoder direction 0: Consistent direction; 1: Opposite direction LED100 bits: Wire break detection 0: turn off 1: turn on LED 1000 bits: Z Pulse correction 0: turn off 1: turn on | | 0000 | ○ | 0x51E |
| F05.31 | ABZ encoder line number | 1~10000 | 1024 | ○ | 0x51F | |
| F05.32 | Wire break detection time | 0.100~60.000s | 2.000s | ● | 0x520 | |
| F05.33 | No. of resolver poles | 2~128 | 2 | ○ | 0x521 | |
| F05.34 | Encoder transmission ratio molecule | 1~32767 | 1 | ○ | 0x522 | |
| F05.35 | Encoder | 1~32767 | 1 | ○ | 0x523 | |

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|---------------|-------------------------------------|--|-------|---|-------|
| | Transmission ratio denominator | | | | |
| F05.36 | Encoder speed first-order filtering | 0.0~100.0ms | 1.0ms | ● | 0x524 |
| F05.39 | PG feedback monitoring selection | bits: C00.29 monitors PG feedback speed 0: no effective, 1: effective | 0 | ● | 0x527 |
| F05.40-F05.49 | Reservation | | | | |

Motor vector control group

| Function No. | Function code name | Set value range and definition | Factory setting | Attributes | address |
|--------------|---------------------------------------|--------------------------------|-----------------|------------|---------|
| F06.00 | ASR (speed loop) proportional gain 1 | 0.01~100.00 | 10.00 | ● | 0x600 |
| F06.01 | ASR(speed loop) Integration time 1 | 0.000~6.000s | 0.200s | ● | 0x601 |
| F06.02 | ASR Filtering time 1 | 0.0~100.0ms | 0.0ms | ● | 0x602 |
| F06.03 | ASR Switching frequency 1 | [F6.07]~Maximum frequency | 0.00Hz | ● | 0x603 |
| F06.04 | ASR(speed loop) proportional gain 2 | 0.01~100.00 | 10.00 | ● | 0x604 |
| F06.05 | ASR(speed loop) Integral time 2 | 0.000~6.000s | 0.200s | ● | 0x605 |
| F06.06 | ASR Filtering time 2 | 0.0~100.0ms | 0.0ms | ● | 0x606 |
| F06.07 | ASR Switching frequency 2 | 0.00~[F6.03] | 5.00Hz | ● | 0x607 |
| F06.08 | Electric torque limit | 0.0~250.0% | 180.0% | ● | 0x608 |
| F06.09 | Power generation torque limit | 0.0~250.0% | 180.0% | ● | 0x609 |
| F06.10 | Current loop D-axis proportional gain | 0.001~4.000 | 1.000 | ● | 0x60A |
| F06.11 | Current loop D-axis integral gain | 0.001~4.000 | 1.000 | ● | 0x60B |
| F06.12 | Current loop Q-axis proportional gain | 0.001~4.000 | 1.000 | ● | 0x60C |
| F06.13 | Current loop Q-axis integral gain | 0.001~4.000 | 1.000 | ● | 0x60D |
| F06.15 | Vector control slip compensation | 0.0~250.0% | 100.0% | ● | 0x60F |
| F06.16 | Reservation | | | | |
| F06.18 | Position compensation control | 0: turn off 1: turn on | 0 | ○ | 0x612 |
| F06.19 | Compensation gain | 0.0~250.0% | 0.0% | ○ | 0x613 |
| F06.20 | Compensation limit | 0.0~100.0% | 0.0% | ○ | 0x614 |
| F06.21 | Compensation range | 0.0~100.0% | 10.0% | ○ | 0x615 |
| F06.22 | Overexcitation braking gain | 0.0~500.0% | 100.0% | ○ | 0x616 |
| F06.23 | Overexcitation braking limit | 0.0~250.0% | 100.0% | ○ | 0x617 |

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|---------------------------|---------------------------------------|---|--------|---|-------|
| F06.24 | Vctor control energy savig function | 0: turn off 1: only valid at constant speed 2: valid at constand speed, acceleration and deceleration | 0 | ○ | 0x618 |
| F06.25 | Energy saving control gain | 0.0~80.0% | 50.0% | ● | 0x619 |
| F06.26 | Energy saving low-pass filtering | 0.000~6.000s | 0.010s | ● | 0x61A |
| F06.27 | Motor constant power aone power limit | 0.0~250.0% | 200.0% | ● | 0x61B |
| F06.28 | Motor weak current upper limit | 0.0~250.0% | 60.0% | ○ | 0x61C |
| F06.29 | Motor weak magnetic Feedforward gain | 0.0~200.0% | 10.0% | ● | 0x61D |
| F06.30 | Motor weak magnetic | 0.0~500.0% | 10.0% | ● | 0x61E |
| F06.32 | MTPA gain | 0.0~400.0% | 100.0% | ● | 0x620 |
| F06.33 | MTPA filtering time | 0.0~100.0ms | 1.0ms | ● | 0x621 |
| F06.34 | Reservation | | | | 0x622 |
| F06.35 | Low frequency pull-in current | 0.0~50.0% | 10.0% | ● | 0x623 |
| F06.36 | High frequency pull-in current | 0.0~50.0% | 10.0% | ● | 0x624 |
| F06.37 | Pull-in current frequency | 0.0~100.0% | 10.0% | ● | 0x625 |
| F06.38-F06.69 Reservation | | | | | |

Motor V/F control parameter

| Function No. | Function code name | Set value range and definition | Factory setting | Attributes | address |
|--------------|----------------------------|--|-----------------|------------|---------|
| F08.00 | Linear VF curve selection | 0: straight line VFcurve ; 1-9: separately power of 1.1-1.9 VFcurve; 10: square VFcurve; 11: customize VFcurve; | 0 | ○ | 0x800 |
| F08.01 | Self-setting voltage V1 | 0.0~100.0% | 3.0% | ○ | 0x801 |
| F08.02 | Self-setting frequency F01 | 0.00~Maximum frequency | 1.00Hz | ○ | 0x802 |
| F08.03 | Self-setting voltage V2 | 0.0~100.0% | 28.0% | ○ | 0x803 |
| F08.04 | Self-setting frequency F02 | 0.00~Maximum frequency | 10.00Hz | ○ | 0x804 |
| F08.05 | Self-setting voltage V3 | 0.0~100.0% | 55.0% | ○ | 0x805 |
| F08.06 | Self-setting frequency F03 | 0.00~Maximum frequency | 25.00Hz | ○ | 0x806 |
| F08.07 | Self-setting voltage V4 | 0.0~100.0% | 78.0% | ○ | 0x807 |
| F08.08 | Self-setting frequency F04 | 0.00~Maximum frequency | 37.50Hz | ○ | 0x808 |
| F08.09 | Self-setting voltage V5 | 0.0~100.0% | 100.0% | ○ | 0x809 |
| F08.10 | Self-setting frequency F05 | 0.00~Maximum frequency | 50.00Hz | ○ | 0x80A |

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|---------------------------|---|--------------------------|-----------|---|-------|
| F08.11 | Output voltage percentage | 25.0~120.0% | 100.0% | ○ | 0x80B |
| F08.12 | Torque boost | 0.0~30.0% | 0.0% | ● | 0x80C |
| F08.13 | Torque boost cutoff frequency | 0.0~100.0% | 100.0% | ● | 0x80D |
| F08.14 | Slip compensation gain | 0.0~200.0% | 100.0% | ● | 0x80E |
| F08.15 | Slip compensation limit | 0.0~300.0% | 100.0% | ● | 0x80F |
| F08.16 | Slip compensation filter time | 0.000~6.000s | 0.200s | ● | 0x810 |
| F08.17 | Oscillation suppression gain | 0.0~900.0% | 100.0% | ● | 0x811 |
| F08.19 | Automatic energy saving control | 0: turn off 1: turn on | 0 | ○ | 0x813 |
| F08.20 | Energy saving step down lower frequency limit | 0.0~50.00Hz | 15.00Hz | ○ | 0x814 |
| F08.21 | Energy saving step down lower voltage limit | 20.0~100.0% | 50.0% | ○ | 0x815 |
| F08.22 | Energy saving step down Voltage regulation rate | 0.000~0.200V/MS | 0.010V/MS | ● | 0x816 |
| F08.23 | Energy saving step down Voltage recovery rate | 0.000~2.000V/MS | 0.200V/MS | ● | 0x817 |
| F08.24-F08.34 Reservation | | | | | |

Protection and fault parameter set

| Function No. | Function code name | Set value range and definition | Factory setting | Attributes | address |
|--------------|--------------------------------------|---|-----------------|------------|---------|
| F10.00 | Overcurrent suppression | 0: suppression continues to work 1: valid at acceleration; invalid at constant speed | 0 | ● | 0xA00 |
| F10.01 | Overcurrent suppression point | 0.0 ~ 300.0% | 160.0% | ● | 0xA01 |
| F10.02 | Overcurrent suppression gain | 0.0 ~ 500.0% | 100.0% | ● | 0xA02 |
| F10.03 | Current hardware protection settings | LED bits: current limit by filterings 0: turn off 1: turn on LED 100 bits: OC interference suppression 0: turn off 1: primary interference suppression 2: Secondary interference suppression LED 100 bits: SC interference suppression 0: turn off 1: primary interference suppression 2: Secondary interference suppression LED 1000 bits: SC、OC reset delay function 0: not effective 1: effective | 1001 | ○ | 0xA03 |
| F10.04 | Reservation | | | | 0xA04 |
| F10.05 | Reservation | | | | 0xA05 |

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|--------|--|--|-----------|---|-------|
| F10.06 | Bus overvoltage suppression | LED bit: overvoltage suppression 0: prohibited 1: Only enabled during deceleration 2: Enable under acceleration and deceleration LED 10 bits: overexcitation control 0: turn off 1: turn on LED 100 and 1000 bits: Reservation | 0012 | ○ | 0xA06 |
| F10.07 | Bus overvoltage suppression point | T3: 650-780V(default 750) T2/S2: 340-380V (default 365) | Model set | ※ | 0xA07 |
| F10.08 | Bus overvoltage suppression gain | 0.0 ~ 500.0% | 100.0% | ● | 0xA08 |
| F10.09 | Bus undervoltages suppression function | 0: prohibited 1: enable | 0 | ○ | 0xA09 |
| F10.10 | Bus undervoltage suppression point | T3: 350-450V (default 430) T2/S2: 180-260V (default 240) | Model set | ※ | 0xA0A |
| F10.11 | Bus undervoltage suppression gain | 0.0 ~ 500.0% | 100.0% | ● | 0xA0B |
| F10.12 | Bus undervoltage protection point | T3: 300-400V (default 320) T2/S2: 160-240V (default 190) | Model set | ※ | 0xA0C |
| F10.13 | Input phase loss threshold | 0.0 ~ 30.0% | 10.0% | ○ | 0xA0D |
| F10.14 | Power-on short circuit detection | LED bit: power-on short circuit detection to ground 0: turn off 1: power-on detection 2: detect when runs every time LED 10 bits: power-on fan short circuit detection 0: turn off 1: turn on | 11 | ○ | 0xA0E |
| F10.15 | Phase loss protection | LED bit: output phase loss 0: turn off 1: turn on LED10 bits: input phase loss 0: turn off 1: turn on fault warning 2: turn on fault alarm LED 100 and 1000 bits : Reservation | 0021 | ○ | 0xA0F |
| F10.16 | Motor overload protection ratio | 0.0~250.0% | 100.0% | ○ | 0xA10 |

| | | | | | |
|--------|---|---|--------|---|-------|
| F10.17 | Load warning checkout setting | <p>LED bit: checkout selection (protection 1)</p> <p>0: not detecting 1: excessive detecting load</p> <p>2: excessive detecting load only at constant speed</p> <p>3: insufficient detecting load</p> <p>4: Insufficient load detection only at constant speed</p> <p>LED10 bits: alarm selection</p> <p>0: turn on fault warning, keep running</p> <p>1: turn on fault alarm protection, and free parking</p> <p>LED 100bits:checkout selection (protection2)</p> <p>0: not detecting 1: excessive detecting load</p> <p>2: excessive detecting load only at constant speed</p> <p>3: insufficient detecting load</p> <p>4: Insufficient load detection only at constant speed</p> | 0000 | ○ | 0xA11 |
| F10.18 | Load warning detection level 1 | 0.0~200.0% | 130.0% | ○ | 0xA12 |
| F10.19 | Load warning detection time 1 | 0.0~60.0s | 5.0s | ○ | 0xA13 |
| F10.20 | Load warning detection level 2 | 0.0~200.0% | 30.0% | ○ | 0xA14 |
| F10.21 | Load warning detection time 2 | 0.0~60.0s | 5.0s | ○ | 0xA15 |
| F10.22 | Reservation | | | | 0xA16 |
| F10.23 | Excessive speed deviation protection action | <p>LED bits: detecting selection</p> <p>0: not detecting 1: detecting only at constant speed</p> <p>2: always detecting</p> <p>LED 10bits: alarm selection</p> <p>0: free stop and fault alarm</p> <p>1: turn on fault warning and continue to run</p> <p>LED 100 and 1000bits: reservation</p> | 0000 | ○ | 0xA17 |
| F10.24 | Excessive speed deviation detection threshold | 0.0~60.0% | 10.0% | ○ | 0xA18 |
| F10.25 | Excessive speed deviation detection time | 0.0~60.0s | 2.0s | ○ | 0xA19 |
| F10.26 | High speed protection action | <p>LED bits: detecting selection</p> <p>0: not detecting 1: detecting only at constant speed</p> <p>2: always detecting</p> <p>L LED 10bits: alarm selection</p> <p>0: free stop and fault alarm</p> <p>1: turn on fault warning and continue</p> | 0002 | ○ | 0xA1A |

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|---------------------------|--|---|--------|---|-------|
| F10.27 | High speed detection threshold | 0.0~150.0% | 110.0% | ○ | 0xA1B |
| F10.28 | High speed detection time | 0.000~2.000s | 0.050s | ○ | 0xA1C |
| F10.29 | Motor overheat protection selection (extended) | LEDbits: Temperature detection type selection 0: PT1000 1: KTY84 (PT100 preferred by the dial switch) LED10bits: temperature detection action 0: not detecting 1: warn and free parking | 0001 | ○ | 0xA1D |
| F10.30 | Motor overheat protection threshold (extended) | 0.0~200.0 °C (fault alarm exceeded the threshold E.oH3) | 110.0 | ○ | 0xA1D |
| F10.31 | Motor overheat warning threshold (extended) | 0.0~200.0 °C (fault alarm exceeded the threshold A.oH3) | 90.0 | ○ | 0xA1E |
| F10.32-F10.37 reservation | | | | | |

Communication control function parameter group

| Function No. | Function code name | Set value range and definition | | Factory setting | Attributes | address |
|--------------|---|---|---|-----------------|------------|---------|
| F13.00 | Master-slave selection | LED bits: Modbus communication master-slave selection 0: slave 1: master LED 10 to 1000bits: reservation | | 0000 | ○ | 0xD00 |
| F13.01 | 485 communication address | 1~247 | | 1 | ○ | 0xD01 |
| F13.02 | Communication baud rate selection | LED bits: 485 communication 0: 1200 bps 1: 2400 bps 2: 4800 bps 3: 9600 bps 4: 19200 bps 5: 38400 bps LED 10 to 1000bits: reservation | | 0004 | ○ | 0xD02 |
| F13.03 | Modbus data format | 0: (N, 8, 1) format 1: (E, 8, 1) format 2: (O, 8, 1) format | 3: (N, 8, 2) format 4: (E, 8, 2) format 5: (O, 8, 2) format | 0 | ○ | 0xD03 |
| F13.04 | Communication ratio setting | 0.00~5.00 | | 1.00 | ● | 0xD04 |
| F13.05 | Communication respond delay | 0~500ms | | 0ms | ● | 0xD05 |
| F13.06 | Communication timeout fault time | 0.1~100.0s | | 1.0s | ● | 0xD06 |
| F13.07 | Communication fault action mode selection | 0: do not detect timeouts 1: warn and free parking | 2: warn and keep running 3: forced shutdown | 0 | ● | 0xD07 |

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|--------|--|---|---------------------------------------|------|---|-------|
| F13.08 | Modbus response processing | 0: have response | 1:no response | 0 | ● | 0xD08 |
| F13.09 | Master send selection | LEDbit: first group send selection 0: not effective 1: run command 2: give precise frequency 3: output frequency 4: upper limit frequency 5: give precise torque 6: master output torque 7-8: reservation 9: master give precise PID A: master feedback PID LED 10bits: second group send selection LED 100bits: third group send selection LED 1000bits: fourth group send selection same as above | | 0031 | ● | 0xD09 |
| F13.10 | RS485 communication port configuration | 0: configured as Modbus communication | 1: configured as series communication | 0 | ● | 0xD0A |

Air compressor dedicated parameter setting

| Function No. | Function code name | Set value range and definition | Factory setting | Attributes | address |
|--------------|---------------------------------------|--|-----------------|------------|---------|
| F14.00 | Air compressor control mode selection | LED bits: Air compressor control mode 0: general model 1: air compressor LED 10 to 1000bits: reservation | 0001 | ○ | 0xE00 |
| F14.01 | Loading pressure | 0.00Mpa~Setting pressure | 0.65Mpa | ● | 0xE01 |
| F14.02 | Setting pressure | Loading pressure~Unload pressure | 0.72Mpa | ● | 0xE02 |
| F14.03 | Unload pressure | Setting pressure~Upper limit pressure | 0.78Mpa | ● | 0xE03 |
| F14.04 | Upper limit pressure | Unload pressure~Shutdown | 0.85Mpa | ● | 0xE04 |
| F14.05 | Shutdown alarm | Shutdown alarm pressure~ | 0.90Mpa | ● | 0xE05 |
| F14.06 | Oil cooling fan stop temperature | 0℃~setting temperature | 75℃ | ● | 0xE06 |
| F14.07 | Setting temperature | Oil cooling fan stop temperature ~Oil cooling fan start temperature | 80℃ | ● | 0xE07 |
| F14.08 | Oil cooling fan start temperature | setting temperature~150℃ | 85℃ | ● | 0xE08 |
| F14.09 | Warning temperature | 0℃~shutdown alarm temperature | 95℃ | ● | 0xE09 |
| F14.10 | Shutdown alarm temperature | Warning temperature~200℃ | 105℃ | ● | 0xE0A |
| F14.11 | Used Oil filter time | 0~65535h | 0 | ● | 0xE0B |

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|--------|-----------------------------------|---|---------|---|-------|
| F14.12 | Oil filter maintenance time | 0~65535h :0 Invalid representative | 500 | ● | 0xE0C |
| F14.13 | Used oil separator time | 0~65535h | 0 | ● | 0xE0D |
| F14.14 | oil separator maintenance time | 0~65535h :0 Invalid representative | 2500 | ● | 0xE0E |
| F14.15 | Used air filter time | 0~65535h | 0 | ● | 0xE0F |
| F14.16 | Air filter maintenance time | 0~65535h :0 Invalid representative | 500 | ● | 0xE10 |
| F14.17 | Used lubricant oil time | 0~65535h | 0 | ● | 0xE11 |
| F14.18 | lubricant oil maintenance time | 0~65535h :0 Invalid representative | 0 | ● | 0xE12 |
| F14.19 | Used lubricant grease time | 0~65535h3 | 0 | ● | 0xE13 |
| F14.20 | lubricant grease maintenance time | 0~65535h :0 Invalid representative | 0 | ● | 0xE14 |
| F14.21 | maintenance action setting 1 | LED bits: oil filter 0: warning remind 1: Alarm and shutdown LED 10bits: oil separator 0: warning remind 1: Alarm and shutdown LED 100 bits: Air filter 0: warning remind 1: Alarm | 0 | ● | 0xE15 |
| F14.22 | maintenance action setting 2 | LED bits: lubricant grease 0: warning remind 1: Alarm and shutdown LED 10 to 1000bits: reservation | 0 | ● | 0xE16 |
| F14.23 | Fault self-recovery times | 0~10 times | 3 times | ● | 0xE17 |
| F14.24 | Fault self-recovery time | 0~1000S | 10S | ● | 0xE18 |
| F14.25 | System setting function | LED ones: 0: Off fault self-reset; 1: Reset except OC, SC fault; 2: Reset except SC fault; 3: Reset all faults LED ten: overspeed function 0: off 1: open LED hundred to thousands: reserved | 0002 | ● | 0xE19 |
| F14.26 | Load delay | 0~5000S | 10S | ● | 0xE1A |
| F14.27 | Empty car delay | 0~5000S | 300S | ● | 0xE1B |
| F14.28 | Stop delay | 0~5000S | 15S | ● | 0xE1C |
| F14.29 | Restart delay | 0~5000S | 30S | ● | 0xE1D |
| F14.30 | Reserved | | | ● | 0xE1E |

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|--------|--|--|---------|---|-------|
| F14.31 | operation time | 0~65535h | 0h | ● | 0xE1F |
| F14.32 | Cumulative power consumption | 0~65535Kwh | 0Kwh | ● | 0xE20 |
| F14.33 | Maximum running time setting | 0~65535h: 0 means invalid | 0h | ● | 0xE21 |
| F14.34 | Load time | 0~65535h | 0h | ● | 0xE22 |
| F14.35 | Start load mode setting | LED ones: loading mode 0: Auto 1: Manual LED ten: manual loading and unloading 0: No action 1: Action LED Hundreds: Reserved LED Thousands: Control Mode 0: short range 1: remote | 0000 | ● | 0xE23 |
| F14.36 | Sensor channel selection | LED unit position: pressure sensor channel 0: P1 1: P2 LED ten: PK channel selection 0: PT100 1: KTY84-130 LED Hundreds: Oil Temperature Sensor Channel 0: PT 1: PK LED Thousands: Motor Temperature Sensor Channel 0: None 0: PK 1: PT | 0010 | ● | 0xE24 |
| F14.37 | Pressure sensor lower limit | 0.00~20.00ma | 4.00ma | ● | 0xE25 |
| F14.38 | Pressure sensor maximum range | 0.00~10.00Mpa | 1.60Mpa | ● | 0xE26 |
| F14.39 | Pressure disconnection alarm threshold | 0.00~10.00ma | 1.00ma | ● | 0xE27 |
| F14.40 | Host temperature compensation | -50~50℃ | 0℃ | ● | 0xE28 |
| F14.41 | Motor warning temperature | 20℃ ~ Motor alarm temperature | 80℃ | ● | 0xE29 |
| F14.42 | Motor alarm temperature | Motor warning temperature ~ 200℃ | 100℃ | ● | 0xE2A |
| F14.43 | Motor temperature compensation | -50~50℃ | 0℃ | ● | 0xE2B |
| F14.44 | Motor fan start delay | 0~5000S | 3S | ● | 0xE2C |
| F14.45 | Motor fan stop delay | 0~5000S | 10S | ● | 0xE2D |
| F14.46 | Oil pump start delay | 0~5000S | 5S | ● | 0xE2E |
| F14.47 | Oil pump shutdown temperature | 0℃ ~ Oil pump opening temperature | 77℃ | ● | 0xE2F |

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|--------|--|--|--------|---|-------|
| F14.48 | Oil pump opening temperature | Oil pump shutdown temperature~200℃ | 87℃ | ● | 0xE30 |
| F14.49 | Reserved | | | ● | 0xE31 |
| F14.50 | Reserved | | | ● | 0xE32 |
| F14.51 | Module warning temperature | 0~200.0℃ | 70.0℃ | ● | 0xE33 |
| F14.52 | Low temperature protection temperature | -30~100℃ | -20℃ | ● | 0xE34 |
| F14.53 | Sensor channel selection | LED unit: reserved LED ten: phase sequence protection 0: off 1: forward 2: reverse LED Hundreds: Module Temperature Warning 0: off 1: open LED Thousands: Motor Temperature Warning 0: off 1: open | 0110 | ● | 0xE35 |
| F14.54 | Current phase sequence | 0: None 1: Forward 2: Reverse | 0 | × | 0xE36 |
| F14.55 | Phase detection voltage | 0~999.9V | 0V | × | 0xE37 |
| F14.56 | Pressure control proportional gain KP | 0.00~10.00 | 2.00 | ● | 0xE38 |
| F14.57 | Pressure control integral gain KI | 0.00~10.00 | 5.00 | ● | 0xE39 |
| F14.58 | Pressure filtering | 0.00~50.000S | 0.100S | ● | 0xE3A |
| F14.59 | PID function setting | LED unit position: pressure nonlinear PI 0: On 1: Off LED ten: pressure PI lower limit 0:3/4 lower limit frequency 1:0 LED Hundreds: Reserved LED Thousands: Reserved | 0110 | ● | 0xE3B |
| F14.60 | Reserved | | | ● | 0xE3C |
| F14.61 | Temperature control proportional gain KP | 0.00~10.00 | 2.00 | ● | 0xE3D |

| | | | | | |
|--------|--------------------------------------|---|---------|---|-------|
| F14.62 | Temperature control integral gain KI | 0.00~10.00 | 1.00 | ● | 0xE3E |
| F14.63 | PT temperature filter | 0.00~50.00S | 1.00S | ● | 0xE3F |
| F14.64 | PK temperature filtering | 0.00~50.00S | 1.00S | ● | 0xE40 |
| F14.65 | Reserved | | | ● | 0xE41 |
| FE.66 | Fan frequency conversion power | According to the model settings | | ※ | 0xE42 |
| FE.67 | Modify parameter address | 0~0xFFFF | 0xFFFF | ● | 0xE43 |
| FE.68 | Modify parameter values | 0~65535 | 0 | ● | 0xE44 |
| F14.69 | Fan control parameters | LED unit position: oil cooling fan control 0: Auto 1: Manual LED ten: oil cooling fan operation 0: Stop 1: Run LED Hundreds: Motor Fan Control 0: automatic operation 1: forced operation LED Thousands: Reserved | 0000 | ● | 0xE45 |
| F14.70 | Fan setting frequency | 0.00~300.00Hz | 25.00Hz | ※ | 0xE46 |
| F14.71 | Fan lower limit frequency | 0.00~50.00Hz | 15.00Hz | ※ | 0xE47 |
| F14.72 | Fan acceleration time | 0.00~600.00 | 20.00S | ※ | 0xE48 |
| F14.73 | Fan deceleration time | 0.00~600.00 | 20.00S | ※ | 0xE49 |
| F14.74 | Fan carrier | 1.0~10.0Khz | 4.0Khz | ※ | 0xE4A |
| F14.75 | Fan motor rated frequency | 0.00~300.00Hz | 50.00hz | ※ | 0xE4B |
| F14.76 | Fan motor rated voltage | 0~1500V | 380v | ※ | 0xE4C |

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|---------------|--|-------------------------------|---------|---|-------|
| F14.77 | Fan motor rated current | 0~100.0A | 3.0A | ※ | 0xE4D |
| F14.78 | Fan motor rated | 0~5000RPM | 1450RPM | ※ | 0xE4E |
| F14.79 | Reserved | | | | 0xE4F |
| F14.80 | Reserved | | | | 0xE50 |
| F14.81 | Consumables maintenance timeout shutdown setting | 0~30000h(0 means no effect) | 0h | ● | 0xE51 |
| F14.82 | Warning time | 0~30000h(0 means no effect) | 0h | ● | 0xE52 |
| F14.83 | Minimum frequency delay | 0~5000S(0 means no effect) | 0S | ● | 0xE53 |
| F14.84 | Pressure correction factor | 50%-200% | 100% | ● | 0xE54 |
| F14.85 | Inverter overvoltage point | 0.0~600.0V(0 means no effect) | 0V | ● | 0xE55 |
| F14.86 | Inverter undervoltage point | 0.0~600.0V(0 means no effect) | 0V | ● | 0xE56 |
| F14.87 | Reserved | | | | 0xE57 |
| F14.88 | Reserved | | | | 0xE58 |
| F14.89 | Reserved | | | | 0xE59 |
| F14.87-F14.99 | Reserved | | | ● | |

Terminal input and output function selection Terminal input and output function selection

| X definition | Functional interpretation | X definition | Functional interpretation | X definition | Functional interpretation |
|--------------|---------------------------|--------------|---------------------------------|--------------|-------------------------------|
| 0 | No function | 34 | Suspension acceleration | 80 | External phase sequence error |
| 1 | Forward running | 35-43 | Reserved | 81 | Oil cooling fan overload |
| 2 | Reverse run | 44 | DC brake command | 82 | Main motor over temperature |
| 3 | Three-wire operation (Xi) | 45 | Pre-excitation command terminal | 83 | Oil filter plug |
| 4 | Forward turn | 46 | Motor selection terminal | 84 | Oil blockage |
| 5 | Reverse jog | 47-51 | Reserved | 85 | Air filter blockage |

| 6 | Free parking | 52 | Run prohibition | 86 | Oil pump motor overload |
|----------|--|----------|---------------------------------------|----------|---------------------------|
| 7 | emergency pull over | 53 | Forward prohibition | 87 | Main motor fan overload |
| 8 | Fault reset | 54 | Reverse prohibition | | |
| 9 | External fault input | 55-79 | Reserved | | |
| 10-31 | Reserved | 46 | Motor selection terminal | | |
| 32 | Acceleration/deceleration time selection terminal 1 | 48-51 | Reserved | | |
| 33 | Acceleration/deceleration time selection terminal 2 | 52 | Run prohibition | | |
| Y/ Relay | Functional interpretation | Y/ Relay | Functional interpretation | Y/ Relay | Functional interpretation |
| 0 | no output | 10 | Output frequency level check 2 (FDT2) | 40 | load |
| 1 | The inverter is running | 11 | Arrived at a given frequency | 41 | Oil cooling fan |
| 2 | Inverter reverse | 12 | Zero speed operation | 42 | Motor fan |
| 3 | The inverter is turning in the middle | 13 | Upper limit frequency arrival | 43 | Oil pump |
| 4 | Fault trip alarm 1 (alarm during fault self-recovery) | 14 | Lower limit frequency arrival | 44 | Cold dryer |
| 5 | Fault trip alarm 2 (no alarm during fault self-recovery) | 15-26 | Reserved | | |
| 6 | External downtime | 27 | Load pre-alarm output 1 | | |
| 7 | Inverter undervoltage | 28 | Load pre-alarm output 2 | | |
| 8 | The inverter is ready for operation | 29 | Motor overload pre-alarm | | |
| 9 | Output frequency level detection 1 (FDT1) | 30-39 | Reserved | | |

Monitor Code

Access 'C' parameter group by pressing 'PRG' for more than 2s; check the current state of VFD

1. C00-Basic Parameter Monitor Group:

| Function code | Function name | Unit and definition | Address | Function Code | Function name | Unit and definition | Address |
|---------------|----------------------------|-----------------------------|---------|---------------|-----------------------------------|------------------------|---------|
| C00.00 | Given frequency | 0.01Hz | 0x2100 | C00.20 | Analog output AO1 | 0.01V/0.01 mA/0.01 kHz | 0x2114 |
| C00.01 | Output frequency | 0.01Hz | 0x2101 | C00.21 | Analog output AO2(extend) | 0.01V/0.01 mA/0.01 kHz | 0x2115 |
| C00.02 | Output current | 0.1A | 0x2102 | C00.22 | Counting value of counter | | 0x2116 |
| C00.03 | Input voltage | 0.1V | 0x2103 | C00.23 | Running time after power on | 0.1 hour | 0x2117 |
| C00.04 | Output voltage | 0.1V | 0x2104 | C00.24 | Local accumulative running time | hour | 0x2118 |
| C00.05 | Machine speed | 1RPM | 0x2105 | C00.25 | VFD power level | kW | 0x2119 |
| C00.06 | Given torque | 0.1% | 0x2106 | C00.26 | VFD rated voltage | V | 0x211A |
| C00.07 | Output torque | 0.1% | 0x2107 | C00.27 | VFD rated current | A | 0x211B |
| C00.08 | PID given value | 0.1% | 0x2108 | C00.28 | Software version | | 0x211C |
| C00.09 | PID feedback value | 0.1% | 0x2109 | C00.29 | PG feedback frequency | 0.01Hz | 0x211D |
| C00.10 | Output power | 0.1% | 0x210A | C00.30 | Counted time of timer | sec/min/hour | 0x211E |
| C00.11 | Bus voltage | 0.1V | 0x210B | C00.31 | PID output value | 0.00% | 0x211F |
| C00.12 | Module temperature 1 | 0.1℃ | 0x210C | C00.32 | Software sub-version | | 0x2120 |
| C00.13 | Module temperature 2 | 0.1℃ | 0x210D | C00.33 | Encoder angle | 0.1° | 0x2121 |
| C00.14 | Input terminal X on state | See input terminal diagram | 0x210E | C00.34 | Encoder deviation accumulative | 1 | 0x2122 |
| C00.15 | Output terminal Y on state | See output terminal diagram | 0x210F | C00.35 | Encoder Z signal pulse count | 1 | 0x2123 |
| C00.16 | Analog AI1 input value | 0.001V/0.001mA | 0x2110 | C00.36 | Fault pre alarm code | 1 | 0x2124 |
| C00.17 | Analog AI2 input value | 0.001V/0.001mA | 0x2111 | C00.37 | Total power consumption (low bit) | 1° | 0x2125 |




















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|--------|-------------------------------|----------|--------|--------|------------------------------------|--------|--------|
| C00.18 | Reserved | | 0x2112 | C00.38 | Total power consumption (high bit) | 10000° | 0x2126 |
| C00.19 | Pulse input value of PUL port | 0.001kHz | 0x2113 | C00.39 | Power factor angle | 1° | 0x2127 |

2. C01-Malfunction Diagnosis Monitor Group

| Function code | Function name | Unit and definition | Address |
|---------------|---|--|---------|
| C01.00 | Malfunction types | See fault code table | 0x2200 |
| C01.01 | Malfunction diagnosis information | See fault code table | 0x2201 |
| C01.02 | Malfunction running frequency | 0.00~Max frequency | 0x2202 |
| C01.03 | Malfunction output Voltage | 0~1500V | 0x2203 |
| C01.04 | Malfunction out Current | 0.1~1000.0A | 0x2204 |
| C01.05 | Malfunction Bus Voltage | 0~3000V | 0x2205 |
| C01.06 | Malfunction module temperature | 0~100℃ | 0x2206 |
| C01.07 | Malfunction machine state | LED “0” digit: Running direction 0: FWD 1: REV LED “00” digit: Running status 0: Stop 1: ACC 2: DEC 3: Constant speed LED “000” digit: Reserved LED “0000” digit: Reserved | 0x2207 |
| C01.08 | Malfunction input terminal status | See input terminal chart | 0x2208 |
| C01.09 | Malfunction output terminal status | See output terminal chart | 0x2209 |
| C01.10 | The last malfunction types | Please see malfunction code table | 0x220A |
| C01.11 | The first diagnosis information | Please see malfunction code table | 0x220B |
| C01.12 | The last malfunction running frequency | 0.00~Maxfrequency | 0x220C |
| C01.13 | The last malfunction output voltage | 0~1500V | 0x220D |
| C01.14 | The last malfunction output current | 0.1~2000.0A | 0x220E |
| C01.15 | The last malfunction bus voltage | 0~3000V | 0x220F |
| C01.16 | The last malfunction module temperature | 0~100℃ | 0x2210 |

| | | | |
|--------|--|---|--------|
| C01.17 | The last malfunction machine state | LED "0" digit: Running direction 0: FWD 1: REV LED "00" digit: Running status 0: Stop 1: Constant speed 2: ACC 3: DEC LED "000" digit: Reserved LED "0000" digit: Reserved | 0x2211 |
| C01.18 | The last malfunction input terminal state | See input terminal chart | 0x2212 |
| C01.19 | The last malfunction output terminal state | See output terminal chart | 0x2213 |
| C01.20 | The first two malfunction types | Please see malfunction information code table | 0x2214 |
| C01.21 | The first two diagnosis information | | 0x2215 |
| C01.22 | The first three malfunction types | | 0x2216 |
| C01.23 | The first three diagnosis information | | 0x2217 |

Fault code table

| Keyboard display | code | Fault type | Keyboard display | code | Fault type | Keyboard display | code | Fault type |
|--|-------|------------------------------|--|-------|---|---|------|----------------------------------|
|  | 1 | System exception |  | 4 | Overcurrent in acceleration |  | 5 | Deceleration over current |
|  | 6 | Constant speed overcurrent |  | 7 | Accelerated overvoltage |  | 8 | Overpressure during deceleration |
|  | 9 | Constant speed overpressure |  | 10 | Undervoltage in operation |  | 11 | Motor overload |
|  | 12 | Inverter overload |   | 13/65 | Input phase missing phase (alarm/warning) |  | 14 | Output phase missing |
|  | 15 | Rectifier bridge overheating |  | 16 | Inverter overheating |  | 17 | External fault of the inverter |
|  | 18/74 | Rs485 communication |  | 19 | Current detection fault |  | 20 | Motor detection failure |

| | | | | | | | | |
|--------------|-------|--|--------------|-------|--|----------------|-------|--|
| R. CE | | error | | | | | | |
| EEEE REEP | 21/69 | Storage failure | EFE1 | 25 | Motor detection failure | ECPE | 26 | Parameter copy exception |
| E. PG | 27 | PG card connection error (alarm/warning) | EoU4 | 28 | Overpressure during shutdown | E.PAn | / | Keyboard communication failure |
| L.FE | 30 | Reserved | E.AE | 31 | Initial position angle learning failed | E.dEF R.dEF | 32/70 | Speed deviation is too large (alarm/warning) |
| ESPd RSPd | 33/71 | Speed protection | ELd1 RLd1 | 34/67 | Load protection 1 | ELd2 RLd2 | 35/68 | Load protection 2 |
| ECPU | 36 | CPU timeout | ELoC | 37 | OTPverification failure | E.D38 | 38 | Synchronous machine out of |
| LU1 | 64 | Low downtime | RO72 | 72 | GPS machine lock | RO73 | 73 | GPS disconnection |
| EoH3 RoH3 | 41/76 | Motor overheating | E.50 | 39 | Short circuit to ground | E.F50 | 40 | Fan short circuit |

Air compressor fault subcode:

| error code | Fault interpretation | error code | Fault interpretation | error code | Fault interpretation |
|------------|--|------------|-------------------------------|------------|---|
| 3001 | External phase sequence error | 3011 | Lubricant maintenance | 3021 | Module temperature is high |
| 3002 | Oil cooling fan overload | 3012 | Grease maintenance | 3022 | Main motor temperature is high(temperature detection) |
| 3003 | Main motor overheating (external terminal) | 3013 | Belt maintenance | 3023 | Motor fan overload |
| 3004 | Frequency conversion fault | 3014 | Pressure sensor failure | 3024 | Internal phase sequence failure |
| 3005 | Excessive pressure | 3015 | Reserved | 3025 | Reserved |
| 3006 | Oil temperature is too | 3016 | Oil filter failure | 3026 | Reserved |
| 3007 | Oil temperature is too low | 3017 | Oil and gas separator failure | 3027 | Reserved |
| 3008 | Oil filter maintenance | 3018 | Air filter failure | 3028 | Reserved |

| | | | | | |
|------|------------------------|------|-------------------|------|----------|
| 3009 | Oil maintenance | 3019 | Arrears | 3029 | Reserved |
| 3010 | Air filter maintenance | 3020 | Oil pump overload | 3030 | Reserved |

C04-Air compressor application monitoring group

| Function code | Function code | Unit and definition | address |
|---------------|-------------------------|--|---------|
| C04.00 | Gas supply pressure | 0.01Mpa | 0x2500 |
| C04.01 | Exhaust gas temperature | 1℃ | 0x2501 |
| C04.02 | Motor temperature | 1℃ | 0x2502 |
| C04.03 | Machine state | 0: Stop 1: No load 2: Load 3: Sleep | 0x2503 |
| C04.04 | Air compressor status | | 0x2504 |
| C04.05 | Countdown information | 1Sec | 0x2505 |
| C04.06 | Image display | | 0x2506 |
| C04.07 | Alarm information | | 0x2507 |
| C04.08 | Set pressure | 0.01Mpa | 0x2508 |
| C04.09 | Fan speed | 1RPM | 0x2509 |

| Function code | Function code | Unit and definition | address |
|---------------|--------------------------------------|---------------------|---------|
| C04.10 | Fan frequency conversion frequency | 0.01Hz | 0x250A |
| C04.11 | Fan current | 0.1A | 0x250B |
| C04.12 | Fan current failure | --- | 0x250C |
| C04.13 | Fan frequency conversion temperature | 0.1℃ | 0x250D |
| C04.14 | Fan program version | --- | 0x250E |
| C04.15 | Current power consumption | 1kWh | 0x250F |
| C04.16 | Total running time | Min | 0x2510 |
| C04.17 | Total running time seconds | Sec | 0x2511 |
| C04.18 | Total load time | Min | 0x2512 |
| C04.19 | Total load time seconds | Sec | 0x2513 |

5 debugging guidance

This chapter mainly introduces the field installation wiring and touch screen debugging process and analysis.

5.1 Installation wiring diagram

5.1.1 Main power cable

According to the following figure, the main power cable connection is required. The main motor input and output wiring and the oil temperature fan wiring are required to be grounded.

The main circuit wiring of the AP100 series air compressor is shown in the following figure:

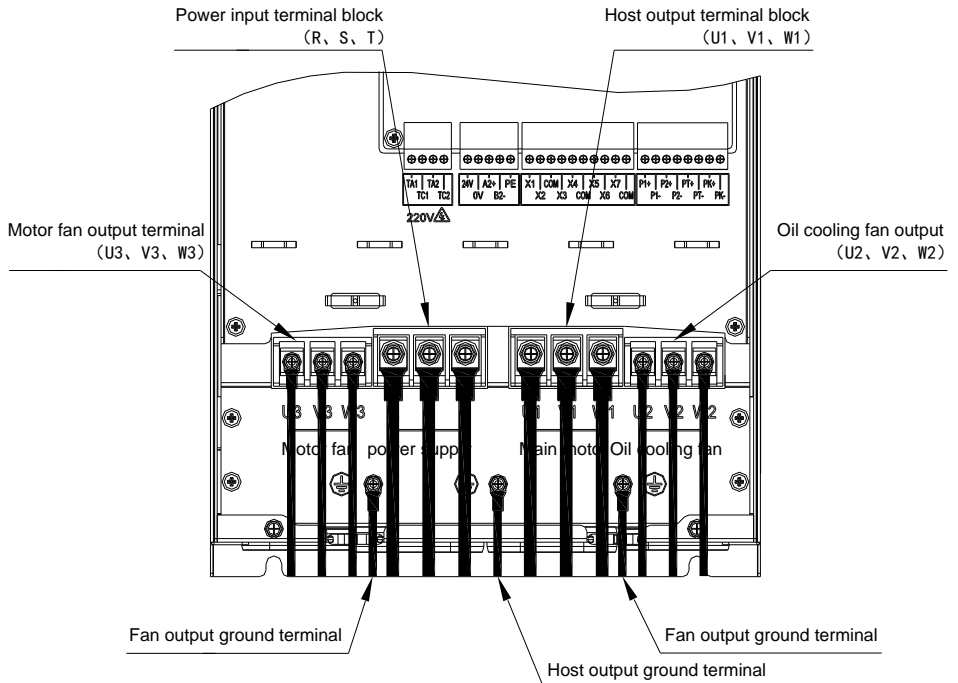


Figure 5-1: Main circuit wiring diagram

The main power cable selection requirements of AP100 series air compressors are as follows:

| Drive model | Rated input current (A) | Input voltage, main motor cable (mm ²) | Oil temperature fan, output power cable (mm ²) | Input voltage, main motor terminal screw type | Oil temperature fan, output power terminal screw type | Ground terminal screw type |
|-----------------|-------------------------|--|--|---|---|----------------------------|
| AP100-T3-7R5S | 17 | 6 | 0.75 | M5 | M5 | M5 |
| AP100-T3-011S | 25 | 10 | 0.75 | M5 | M5 | M5 |
| AP100-T3-015S | 32 | 10 | 0.75 | M6 | M4 | M6 |
| AP100-T3-018K/S | 38 | 16 | 0.75 | M6 | M4 | M6 |
| AP100-T3-022K/S | 45 | 16 | 0.75 | M6 | M4 | M6 |
| AP100-T3-030K/S | 60 | 25 | 0.75 | M8 | M4 | M8 |
| AP100-T3-037K/S | 75 | 25 | 0.75 | M8 | M4 | M8 |
| AP100-T3-045K | 90 | 35 | 0.75 | M8 | M4 | M8 |
| AP100-T3-055K | 110 | 35 | 0.75 | M8 | M4 | M8 |
| AP100-T3-075K | 150 | 50 | 0.75 | M8 | M4 | M8 |

5.1.2 Control Terminal Cable

Connect the control terminal cable separately from the main power cable to ensure that the wiring is secure and reliable.

The control terminal wiring of AP100 air compressor is as shown below:

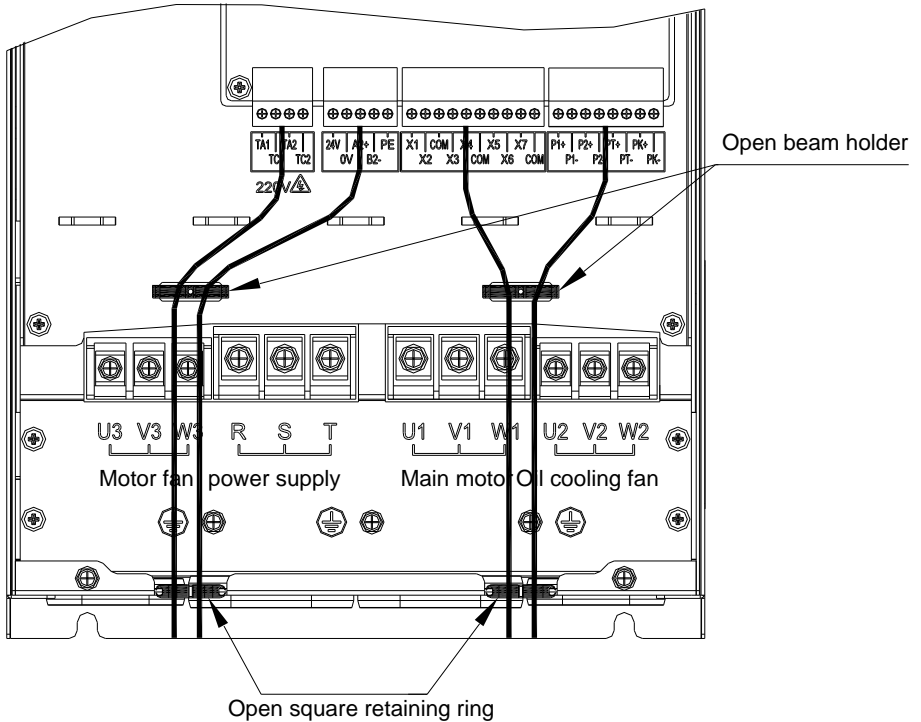


Figure 5-2: Wiring diagram of the control terminal

5.2 Touch screen debugging case analysis

The AP100 driver parameter debugging part is all completed on the touch screen. For detailed operation of the touch screen, please refer to Chapter 3, Touch Screen Display and Operation. The following only describes the parts related to driver debugging.

5.2.1 Frequency conversion debugging

Go to Menu > Frequency Debugging and the touch screen will display the frequency conversion debugging interface. Please follow the interface input parameters to complete the debugging of the host driver and fan driver step by step.

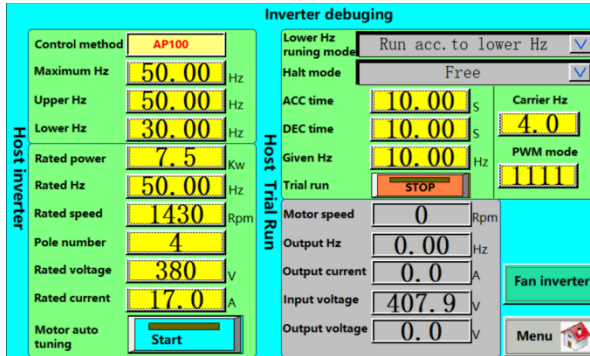


Figure 5-3: Frequency conversion debugging

5.2.2 Host motor parameter setting

Click menu -> frequency conversion debugging, the main motor parameter setting and self-learning are displayed on the left side of the touch screen.

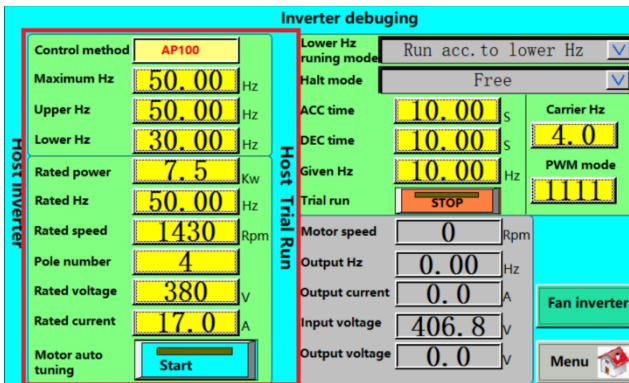


Figure 5-4: Main Motor - Motor Parameter Settings

Take the synchronous motor as an air compressor and set the motor parameters as an example.

(1) Input motor parameters: Select the control mode as open-loop permanent magnet air compressor, please input the rated power, rated frequency, rated speed, rated voltage and rated current on the motor nameplate. (The number of motor poles does not need to be input, the system will calculate according to the rated frequency and rated speed)

(2) Motor self-learning: After confirming that the motor parameter input is correct, press the motor self-learning button, the driver starts self-learning, and the learning is completed after about 10 seconds. If the travel abnormality occurs during the learning process, the motor self-learning button is clicked and the motor self-learning is immediately stopped.

5.2.3 Host motor trial run

After the learning is completed, on the right side of the above screen is the test run interface.

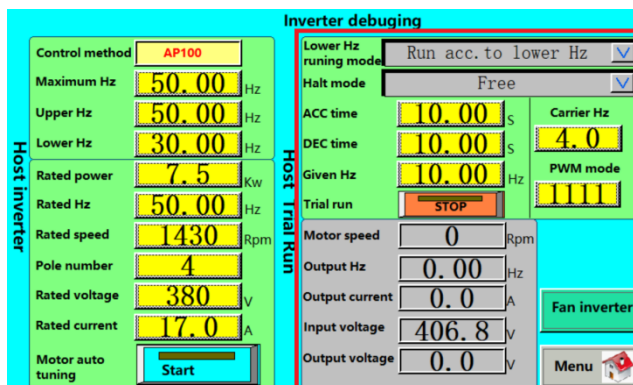


Figure 5-5: Main motor - commissioning.

(1) Determine the motor steering: set the "given frequency" to 10Hz and the lower limit frequency to 0. Click the trial run button to check whether the motor running direction is correct. If it is not correct, please click the trial run button to stop the motor and then the motor. Any two phases of the line are exchanged.

(2) Motor trial run: set "given frequency" to run to half of the rated frequency and rated frequency, check whether the motor is running normally, then set the upper/lower limit frequency, lower limit frequency operation mode, stop mode, etc.

5.2.4 Parameter setting of fan driver

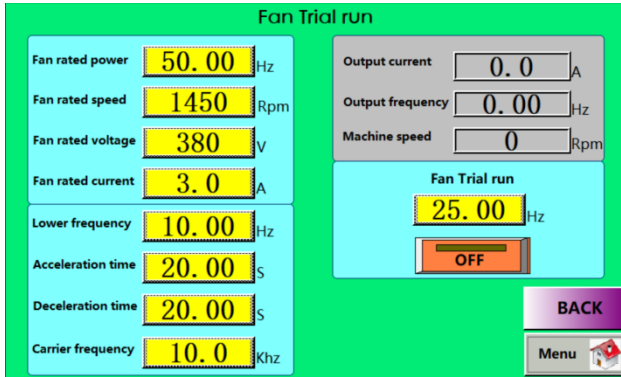


Figure 5-7: Fan - Parameter Settings

The fan parameters are the dual-inverter fan driver parameter settings, the single-conversion only shows the trial run button, and other parameters are not displayed. Enter the nameplate parameter of the fan motor into the fan parameter. Set the "Test run frequency setting" to 25Hz. Click the button in the test run box to see if the fan direction is correct. If it is not correct, please stop the fan phase sequence after stopping. Set the "Test Run Frequency Setting" to 50Hz to check whether the fan current is running normally. This interface can also observe the current, frequency and running speed of the oil cooling fan.

6 . Quality Assurance

6.1 Warranty period and scope

6.1.1 Warranty period

From the date of purchase of this product, users can enjoy the following three packages due to product quality issues:

- Retirement, replacement, and repair within 30 days after shipment;
- Replacement and repair within 90 days after shipment;
- Repair within 18 months after shipment;
- Except when exporting abroad;

6.1.2 Guaranteed range

Installation and commissioning: Installation and commissioning are implemented by the user in principle, and the company provides relevant technical support services. However, at the request of your company, the company or the company's service outlets can provide installation and commissioning services for a fee.

On-site diagnosis: Installation diagnosis is implemented by the user in principle, and the company provides relevant technical support services. However, at the request of your company, the company or the company's service network can provide on-site diagnostic services at a charge, and according to the diagnosis results, it is a free service that confirms the responsibility of the company.

Fault repair: For faulty products, products that are genuine product quality and under warranty, the company provides free repair service; but in the following cases, even if the equipment is still under warranty, the related services are covered by paid repair services. .

- Product failure caused by improper storage and use by the customer;
- Product failure caused by unauthorized modification and disassembly without the permission of the company;
- Product failure caused by the use range allowed by this product;
- Products that exceed the warranty period;
- Product failure caused by natural causes.

6.2 Liability exemption

Due to the failure of the company's products, the company only bears the corresponding responsibilities according to the terms stipulated in the warranty period and the scope of the guarantee. If the user needs more responsibility,

please insure the insurance company for the corresponding commercial insurance. Other extension losses caused by the failure of this product are not covered by the company.

For the following cases, whether within the guarantee period or not, it is not within the scope of the company's guarantee. If the user has the service demand, it belongs to the paid maintenance service.

- Product failure caused by improper storage and use by the customer;
- Product failure caused by unauthorized modification and disassembly without the permission of the company;
- Product failure caused by the use range allowed by this product;
- Products that exceed the warranty period;
- Product failure caused by natural causes;
- The company's payment was not paid as required by the contract.

6.3 Product Scope

- This product is not designed and manufactured for use in equipment that is used in a life-critical situation.
- If you need to use this product for special purposes such as manned mobile, medical, aerospace, nuclear power, electric power, submarine relay communication equipment or systems, please contact our sales department and use it without permission. Our company is not responsible for any accidents.
- This product is manufactured under strict quality control, but there is no guarantee that this product will never malfunction. If the user has more security requirements and reliability requirements, configure the backup device. If the user has more guarantees and requirements, please apply for the corresponding commercial insurance.