

Preface

Thank you for choosing the JT550 series of AC Drives developed by Juditech Electric Co., Ltd. Juditech designs and manufactures the JT550 Series of AC Drives for the industrial automation applications and focus on product quality improvement by launching the policy of continuous product development and gradual improvement.

The JT550 is a high-performance and multipurpose industrial product aiming to integrate synchronous motor drive with asynchronous motor drive, and torque control, speed control with position control. It is designed with advanced vector control technology and the latest digital processor dedicated for motor control, thus enhancing product reliability and adaptability to the environment.

The JT550 adopts customized and industrialized design to realize excellent control performance through optimized functions and flexible applications.

JT550 uses high power density design. Some power ranges carry built-in DC reactor and brake unit to save installation space. Through overall EMC design, it can satisfy the low noise and low electromagnetic interference requirements to cope with challenging grid, temperature, humidity and dust conditions, thus greatly improving product reliability.

This operation manual presents installation wiring, parameter setup, fault diagnosis and trouble shooting, and precautions related to daily maintenance. Read through this manual carefully before installation to ensure the AC Drive is installed and operated in a proper manner to give full play to its excellent performance and powerful functions.

It is the responsibility of the user or machine builder or installation contractor or electrical designer/engineer to take all necessary precautions to ensure that the system complies with current standards, and to provide any devices (including safety components), required to ensure the overall safety of the equipment and personnel.

If there is any doubt with regards to the software version or the manual contents, please contact us.

Safety Information and Precautions

Safety definition



DANGER

It is essential for avoiding a safety hazard. Serious physical injury or even death may occur if related requirements are not followed.



WARNING

It is necessary for avoiding a risk of damage to the product or other machine.



WARNING

As high voltage still presents in the bus capacitor after power off, wait for at least five minutes (or 15 min / 25 min, depending on the warning symbols on the machine) after power off to prevent electric shock.

Electrical Safety

Extreme care must be taken at all times when working with the AC Drive or within the area of the AC Drive. The voltages used in the AC Drive can cause severe electrical shock or burns and is potentially lethal. Only professional and qualified personnel should be allowed to work on AC Drives. Read the operation manual before operating on the equipment.

The guidelines and recommendations should be followed in order to gain long term trouble free operation as the lifetime of the AC Drive is dependent on the working environment and correct handling of the product in the initial installation stage.

Delivery and installation

Select appropriate tools for delivery and installation to ensure a safe and proper running of the AC Drive and avoid physical injury or death. To ensure physical safety, the installation staff should take mechanical protective measures, wearing exposure shoes and working uniforms;

R, S and T are the power input terminals, and U, V and W are output motor terminals. Connect the input power cables and motor cables properly; otherwise, damage to the AC Drive may occur. Connect the optional brake parts (brake resistors, brake units or feedback units) according to the wiring diagram. Do not touch the AC Drive with wet items or body parts; otherwise, electric shock may occur.

When using an earth leakage circuit breaker, use a residual current operated protective device (RCD) of type B (breaker which can detect both AC and DC). Leakage current can cause unprotected components to operate incorrectly. If this is a problem, lower the carrier frequency, replace the components in question with parts protected against harmonic current, or increase the sensitivity amperage of the leakage breaker to at least 200 mA per drive.

Adjusting AC Drive Parameters

Disconnect all power sources applied to the AC Drive before terminal wiring, and wait for at least the time designated on the AC Drive after disconnecting the power sources.

High voltage presents inside the AC Drive during running. Do not carry out any operation on the AC Drive during running except for keypad setup.

This manual provides a complete list of the parameters with functional description and care should always be taken whenever parameters are adjusted during a live running startup. Juditech can provide product training and if in doubt seek advice.

Maintenance and component replacement

Only well-trained and qualified professionals are allowed to perform maintenance, inspection, and component replacement on the AC Drive.

Take measures to prevent screws, cables and other conductive matters from falling into the AC Drive during maintenance and component replacement.

Do not perform wiring, inspection or component replacement when power supply is applied. Ensure all the input power supplies are disconnected before wiring and inspection, and wait for at least the time designated on the AC Drive or until the DC bus voltage is less than 36V. The minimum waiting time is listed in the table below.

| AC Drive Model | Minimum waiting time |
|----------------|----------------------|
| 0.75kW-110kW | 5min |
| 132kW-315kW | 15min |
| Above 355kW | 25min |

Contents

| | |
|---|---------|
| Preface | - 1 - |
| Safety Information and Precautions | - 2 - |
| Contents | - 4 - |
| Chapter 1 Product Information | - 5 - |
| 1.1 Product Type Identification | - 5 - |
| 1.2 Product Nameplate | - 5 - |
| 1.3 JT550 Inverter Series | - 6 - |
| 1.4 Product Description | - 7 - |
| 1.6 Product Appearance and Dimensions | - 10 - |
| 1.7 Keyboard Appearance and Dimensions | - 14 - |
| 1.8 Appearance and Hole Size of the Keyboard Tray | - 14 - |
| 1.9 Appearance and Dimensions of the Double Display Keyboard and Tray | - 15 - |
| Chapter 2 Mechanical Installation | - 16 - |
| 2.1 Installation Environment | - 16 - |
| 2.2 Installation Space and Directions | - 16 - |
| 2.3 Dismantling of the Cover Plate | - 18 - |
| Chapter 3 Electrical Installation | - 19 - |
| 3.1 Electrical Installation | - 19 - |
| 3.2 Description of Peripheral Electrical Devices | - 20 - |
| 3.3 Peripheral Electrical Components Selection Guidance | - 21 - |
| 3.4 Selection of Braking Unit and Braking Resistor | - 21 - |
| 3.5 Selection of Expansion Card | - 23 - |
| 3.6 Wiring Method | - 24 - |
| Chapter 4 Keyboard and Display | - 39 - |
| 4.1 Operation and Display Interface | - 39 - |
| 4.2 Keyboard Indicators Description | - 40 - |
| 4.3 Keyboard Button Description | - 40 - |
| 4.4 Viewing and Modifying Function Codes | - 40 - |
| 4.5 Selecting Menu Mode | - 41 - |
| Chapter 5 Basic Operation and Test Run | - 42 - |
| 5.1 Quick Adjustment Guidance | - 42 - |
| 5.2 Precautions Before Power-On | - 43 - |
| 5.3 Display Status After Power-On | - 43 - |
| 5.4 Motor Control Methods Selection | - 43 - |
| 5.5 Initialization of Parameters | - 45 - |
| 5.6 Operation Commands Source Selection | - 45 - |
| 5.7 Frequency Source Selection | - 46 - |
| 5.8 Stop Modes Selection | - 48 - |
| 5.9 Observation of Operation Status via DO and AO | - 48 - |
| Chapter 6 Function Parameter List | - 49 - |
| Chapter 7 Function Parameter List | - 78 - |
| Chapter 8 Maintenance and Troubleshooting | - 101 - |
| 8.1 Daily Maintenance and Inspection of JT550 | - 126 - |
| 8.2 Warranty | - 127 - |
| 8.3 Faults and Solutions | - 127 - |
| Appendix A: MODBUS Communication Protocol | - 133 - |
| 1.1 Protocol Contents | - 133 - |
| 1.2 Communication Frame Description | - 133 - |
| 1.3 Communication Data Address Definition | - 136 - |
| 1.4 Description of Group FD Communication Parameters | - 138 - |

Chapter 1 Product Information

1.1 Product Type Identification

This is an example of the nameplate of standard JT550 products.

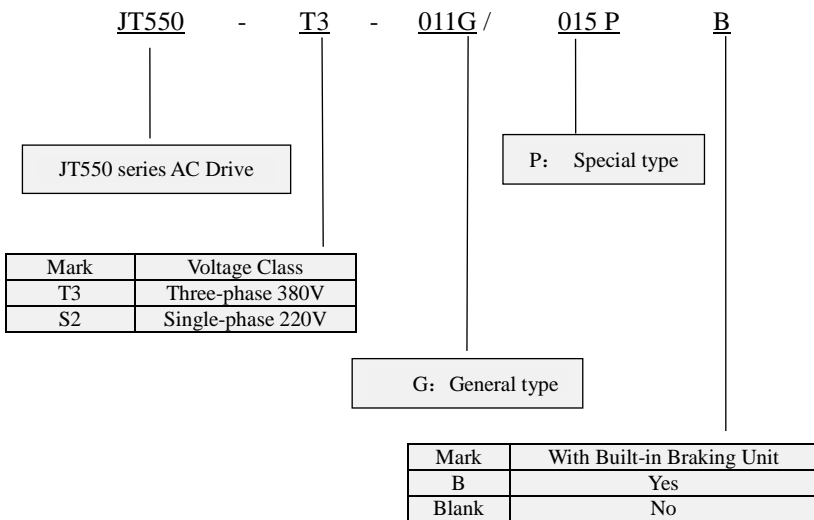


Figure 1.1 Product Model Name

1.2 Product Nameplate

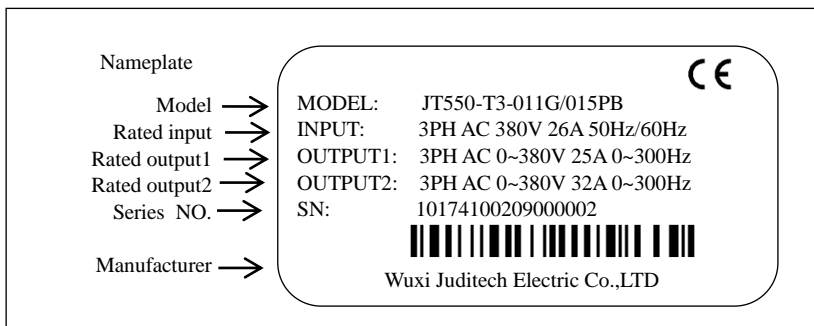


Figure 1.2 Product type identification

Note:

Built-in brake unit is included in standard configuration of 380V 22kW and below models; Brake unit is not included in standard configuration of 380V 30kW and 37kW models (optional built-in brake unit is available, suffix "-B" indicates optional built-in brake unit).

1.3 JT550 Inverter Series

| Product Model | Input current (A) | Output current (A) | Motor (kW) |
|---------------------|-------------------|--------------------|------------|
| JT550-T3-0R7G/1R5PB | 3.4 | 2.1 | 0.75 |
| JT550-T3-1R5G/2R2PB | 5 | 3.8 | 1.5 |
| JT550-T3-2R2G/4R0PB | 5.8 | 5.1 | 2.2 |
| JT550-T3-4R0G/5R5PB | 10.5 | 9 | 3.7 |
| JT550-T3-5R5G/7R5PB | 14.6 | 13 | 5.5 |
| JT550-T3-7R5G/011PB | 20.5 | 17 | 7.5 |
| JT550-T3-011G/015PB | 26 | 25 | 11 |
| JT550-T3-015G/018PB | 35 | 32 | 15 |
| JT550-T3-018G/022PB | 38.5 | 37 | 18.5 |
| JT550-T3-022G/030PB | 46.5 | 45 | 22 |
| JT550-T3-030G/037P | 62 | 60 | 30 |
| JT550-T3-037G/045P | 76 | 75 | 37 |
| JT550-T3-045G/055P | 92 | 91 | 45 |
| JT550-T3-055G/075P | 113 | 112 | 55 |
| JT550-T3-075G/090P | 157 | 150 | 75 |
| JT550-T3-090G/110P | 180 | 176 | 90 |
| JT550-T3-110G/132P | 214 | 210 | 110 |
| JT550-T3-132G/160P | 256 | 253 | 132 |
| JT550-T3-160G/185P | 307 | 304 | 160 |
| JT550-T3-200G/220P | 385 | 377 | 200 |
| JT550-T3-220G/250P | 430 | 426 | 220 |
| JT550-T3-250G/280P | 468 | 465 | 250 |
| JT550-T3-280G/315P | 525 | 520 | 280 |
| JT550-T3-315G/355P | 590 | 585 | 315 |
| JT550-T3-355G/400P | 665 | 650 | 355 |
| JT550-T3-400G/450P | 785 | 725 | 400 |
| JT550-T3-450G | 883 | 820 | 450 |
| JT550-T3-500G | 910 | 900 | 500 |
| JT550-T3-560G | 1100 | 1020 | 560 |
| JT550-T3-630G | 1160 | 1120 | 630 |
| JT550-T3-710G | 1171 | 1260 | 710 |

Table 1.1 JT550 Models and Specs

1.4 Product Description

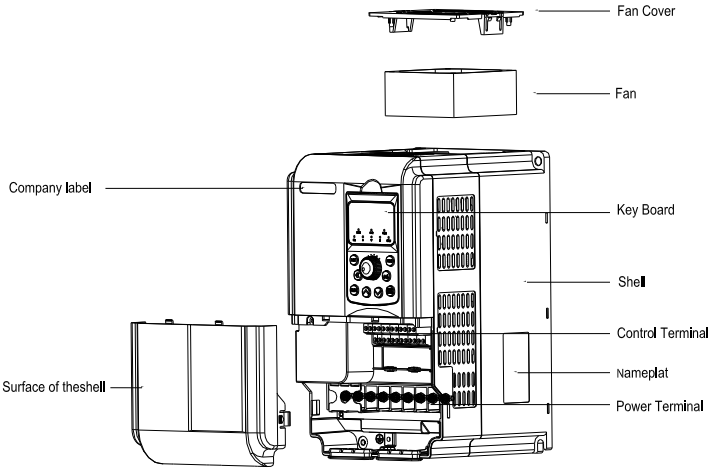


Figure 1.3 Components of Plastic Case Model

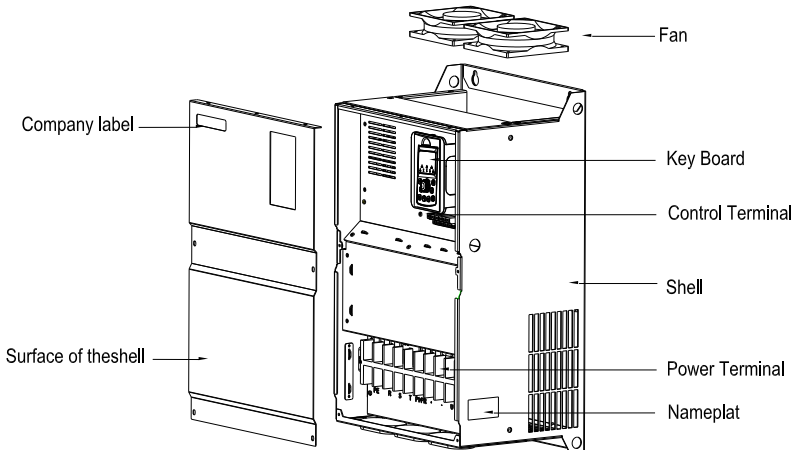


Figure 1.4 Components of the Metallic Case Model

1.5 Technical Specifications

Table 1.2 Technical Specifications of JT550

| Item | | Specification | | |
|--------------------|--------------------------------|---|-------------|--|
| Standard Functions | Maximum frequency | 320Hz | | |
| | Carrier frequency | 0.5kHz~8kHz Note: The carrier frequency may automatically lower depending upon the ambient temperature to protect the inverter. | | |
| | Frequency setting resolution | Digital setting: 0.01Hz Analog setting: Maximum frequency×0.025% | | |
| | Control mode | Voltage/Frequency(V/F) control Sensorless Vector Control (SVC) Vector control with sensor (FVC) | | |
| | Starting torque | G type: 0.25Hz/150%(SVC); 0 Hz/180%(FVC) P type: 0.5Hz/100% | | |
| | Speed regulation ratio | 1:100(SVC) | 1:1000(FVC) | |
| | Speed control precision | ±0.5%(SVC) | ±0.02%(FVC) | |
| | Torque control precision | FVC: ±3% SVC: ±5% above 5Hz | | |
| | Overload capacity | G type: 60s for 150% of rated current and 3s for 180% of rated current P type: 60s for 120% of rated current and 3s for 150% of rated current | | |
| | Torque boost | Auto torque boost Manual torque boost: The desired torque boost value (0.1%~30.0%) can be set. | | |
| | V/F Curve | Linear, Multi-point, Nth power V/F curve (1.2 power, 1.4 power, 1.6 power, 1.8 power, 2 power) | | |
| | Acceleration/Deceleration time | Acceleration/Deceleration pattern: Linear Acceleration/Deceleration, S curve acceleration/deceleration Setting range: Setting range from 0.00 to 6500s Switching: The four types of acceleration/deceleration time can be set or selected individually (switchable during operation). | | |
| | DC braking | DC braking frequency: 0.00Hz to max.frequency Braking time: 0.0~100.0s Braking current value: 0.0%~100.0% | | |
| | JOG control | JOG frequency range: 0.00~50.00 Hz JOG acceleration/deceleration time: 0.0~6500.0s | | |

| | | |
|--------------------------|---|---|
| | Simple PLC, multi-speed running | 16-speed operating through built-in PLC or control terminal |
| | Onboard PID | It realizes process-controlled closed loop control system easily. |
| | Auto voltage regulation (AVR) | Keep constant voltage automatically when the grid voltage transients. |
| | Over-voltage/Over-current stall control | The current and voltage are limited automatically during the running process so as to avoid frequent tripping due to over-voltage and over-current. |
| | Rapid current limit | It helps to avoid frequent over-current faults of the AC drive. |
| | Torque limit and control | Torque is automatically limited during the operation to prevent frequent overcurrent trips; Vector mode can realize torque control. |
| Individualized Functions | High performance | Realize asynchronous motor control with high-performance current vector control technology. |
| | Instantaneous power failure protective function | The inverter can continue operating if an instantaneous power failure. The load feedback energy is used to compensate for voltage drops to keep the inverter running for a short time. |
| | Timing control | Timing control function: time setting range(0 to 6500mins). |
| | RS-485 | Modbus-RTU |
| Running | Running command channel | Three channels: operation panel, control terminals, and serial communication port. They can be switched in a variety of ways. |
| | Frequency source | Digital, analog voltage, analog current, pulse, and serial port. They can be switched in a variety of ways. |
| | Auxiliary frequency source | Digital, analog voltage, analog current, pulse, and serial port. Auxiliary frequency fine-tuning and frequency synthesis can be flexibly realized. |
| | Input terminals | 5 digital inputs (X5 supports pulse input, pulse range: 1Hz~100kHz); 2 analog inputs, AI1 & AI2 support 0~10V voltage input or 0~20mA current input. |
| | Output terminals | 1 high-speed pulse output terminal (support 0~100kHz high-speed pulse output); 1 digital output terminal; 2 relay output terminals 2 analog output terminals, support 0~20mA current output or 0~10V voltage output |
| Display & Keypad | LED display | Display parameters (Three display modes: Basic mode, Quick menu mode, Non-factory value mode) |

| | | |
|-------------|----------------------|---|
| | Protection function | Power-on motor short circuit detection, input and output phase loss protection, overcurrent protection, overvoltage protection, undervoltage protection, overheat protection, overload protection, etc. |
| | Optional accessories | Braking unit, IO expansion card, RS-485 communication card, differential input PG card, OC input PG card, sin/cos PG card |
| Environment | Usage location | Indoors, no direct sunlight, dust, corrosive gas, flammable gas, oil mist, water vapor, drip, or salt, etc. |
| | Altitude | 1000m or less (Derating is required if higher than 1000m, the rated output current will be reduced by 1% for every 100m rise) |
| | Ambient temperature | -10 °C to +40 °C (Derating is required if the temperature exceeds 40 °C, the rated output current will be reduced by 1% for every 1 °C rise.) |
| | Ambient humidity | Less than 95%RH (avoid condensation) |
| | Vibration | Less than 5.9 m/s ² (0.6 g) |
| | Storage temperature | -20°C ~ +60°C |

1.6 Product Appearance and Dimensions

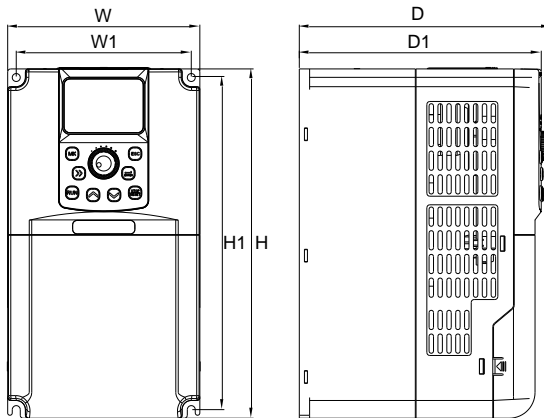


Figure 1.5 Plastic Case Mounting Dimensions

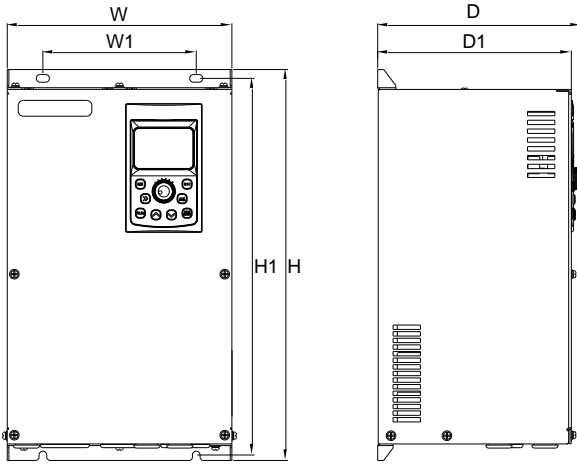


Figure 1.6 Metallic Case Mounting Dimensions

| Model | Mounting Holes Position | | Dimensions | | | | Diameter of Mounting Holes |
|---------------------|-------------------------|-------|------------|-----|-------|-------|----------------------------|
| | W1 | H1 | H | W | D1 | D | |
| JT550-T3-0R7G/1R5PB | 88.4 | 168.4 | 180 | 100 | 152 | 159 | φ5.5 |
| JT550-T3-1R5G/2R2PB | | | | | | | |
| JT550-T3-2R2G/4R0PB | | | | | | | |
| JT550-T3-4R0G/5R5PB | 118.4 | 224.5 | 236 | 130 | 163.5 | 170.5 | φ5.5 |
| JT550-T3-5R5G/7R5PB | | | | | | | |
| JT550-T3-7R5G/011PB | 141 | 243 | 260 | 155 | 175 | 182 | φ7 |
| JT550-T3-011G/015PB | | | | | | | |
| JT550-T3-015G/018PB | 190 | 273.5 | 291.5 | 197 | 175 | 182 | φ6 |
| JT550-T3-018G/022PB | | | | | | | |
| JT550-T3-022G/030PB | | | | | | | |
| JT550-T3-030G/037P | 220 | 392 | 405 | 253 | 180 | 187 | φ7 |
| JT550-T3-037G/045P | | | | | | | |
| JT550-T3-045G/055P | 260 | 555 | 575 | 340 | 250 | 259 | φ10 |
| JT550-T3-055G/075P | | | | | | | |
| JT550-T3-075G/090P | 260 | 590 | 610 | 410 | 270 | 279 | φ10 |
| JT550-T3-090G/110P | | | | | | | |
| JT550-T3-110G/132P | 320 | 690 | 720 | 455 | 325 | 334 | φ12 |
| JT550-T3-132G/160P | | | | | | | |
| JT550-T3-160G/185P | 360 | 845 | 880 | 530 | 367 | 376 | φ14 |
| JT550-T3-200G/220P | | | | | | | |
| JT550-T3-220G/250P | 480 | 1005 | 1040 | 650 | 411 | 420 | φ14 |
| JT550-T3-250G/280P | | | | | | | |
| JT550-T3-280G/315P | | | | | | | |
| JT550-T3-315G/355P | 600 | 1252 | 1300 | 815 | 427 | 436 | φ14 |
| JT550-T3-355G/400P | | | | | | | |
| JT550-T3-400G/450P | | | | | | | |
| JT550-T3-450G | | | | | | | |

1.6.2 Cabinet Installation Dimensions

Figure 1.7 Installation Diagram

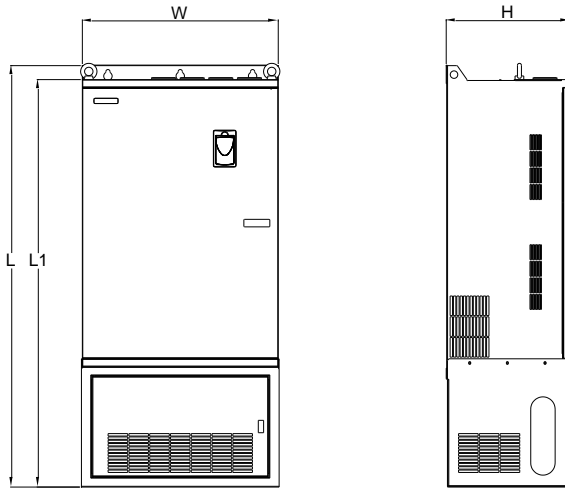
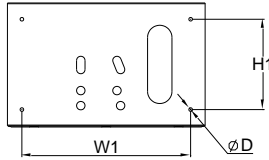


Figure 1.8 Cabinet Installation Dimensions

| Model | Appearance Dimensions (mm) | | | | Installation Dimensions | | Diameter of Mounting Holes |
|--------------------|----------------------------|------|------|------|-------------------------|------|----------------------------|
| | H | W | L | L1 | H1 | W1 | |
| JT550-T3-045G/055P | 249 | 340 | 850 | 810 | 180 | 280 | $\varnothing 12$ |
| JT550-T3-055G/075P | | | | | | | |
| JT550-T3-075G/090P | 265 | 416 | 880 | 840 | 190 | 350 | $\varnothing 10$ |
| JT550-T3-090G/110P | | | | | | | |
| JT550-T3-110G/132P | 327 | 461 | 980 | 935 | 220 | 380 | $\varnothing 12$ |
| JT550-T3-132G/160P | | | | | | | |
| JT550-T3-160G/185P | 367 | 536 | 1190 | 1142 | 290 | 460 | $\varnothing 12$ |
| JT550-T3-200G/220P | | | | | | | |
| JT550-T3-220G/280P | 412 | 656 | 1400 | 1354 | 300 | 560 | $\varnothing 12$ |
| JT550-T3-280G/315P | | | | | | | |
| JT550-T3-315G/400P | 428 | 815 | 1757 | 1702 | 300 | 730 | $\varnothing 12$ |
| JT550-T3-400G/450P | | | | | | | |
| JT550-T3-450G | 600 | 1150 | 1900 | / | 480 | 1050 | $\varnothing 18$ |
| JT550-T3-500G | | | | | | | |
| JT550-T3-560G | 600 | 1310 | 2208 | / | 480 | 1210 | $\varnothing 18$ |
| JT550-T3-630G | | | | | | | |
| JT550-T3-710G | | | | | | | |

1.7 Keyboard Appearance and Dimensions

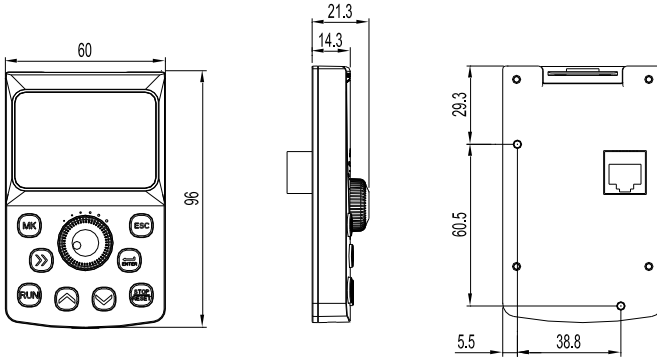


Figure 1.9 Appearance and Dimensions of the Keyboard (mm)

1.8 Appearance and Hole Size of the Keyboard Tray

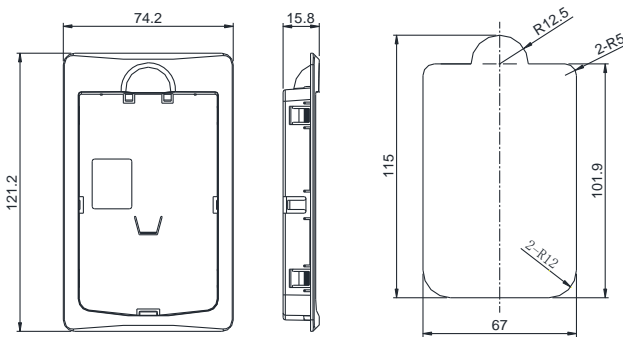


Figure 1.10 Keyboard Tray Appearance and Hole Size (mm)

1.9 Appearance and Dimensions of the Double Display Keyboard and Tray

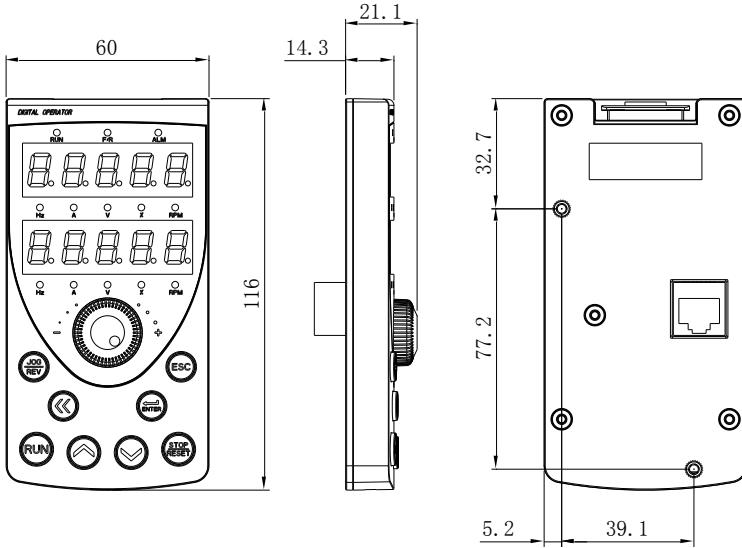


Figure 1.11 Appearance and Dimensions of the Double Display Keyboard

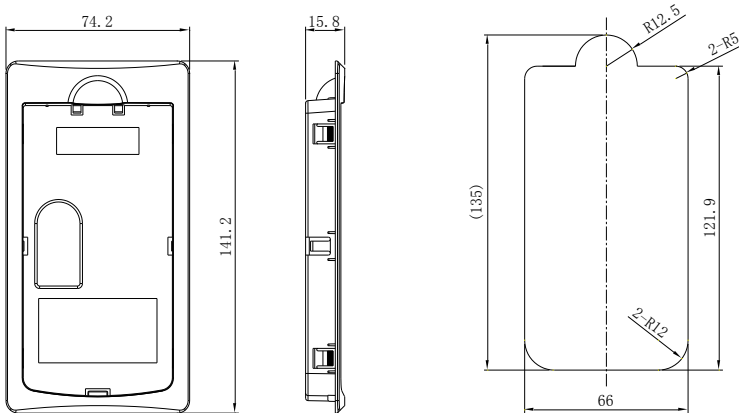


Figure 1.12 Appearance and Dimensions of the Double Display Keyboard Tray

Dimensions of the Tray

Hole Sizes of the Tray
(Square Hole 129.5mm*66mm)

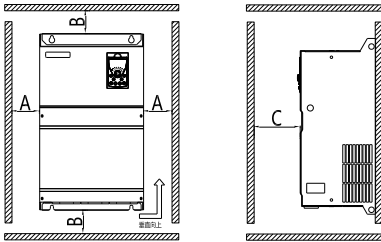
Chapter 2 Mechanical Installation

2.1 Installation Environment

1. Ambient Temperature: The temperature affects the life of product. It is prohibited to run the product out of ambient temperature range (-10°C ~50°C).
2. Please install the product on flame retardants and mount it vertically on mounting brackets using bolts or screws. Be sure to allow sufficient space around the inverter for heat dissipation since it generates heat while running.
3. Please install the inverter on a flat surface where the vibration should remain lower than 0.6g, away from punches, etc.
4. Avoid installing the inverter under direct sunlight or in humid places.
5. Avoid installing the inverter in places of corrosive, flammable and explosive gas.
6. Avoid installing the inverter in places full of oil, dust and metal particles.

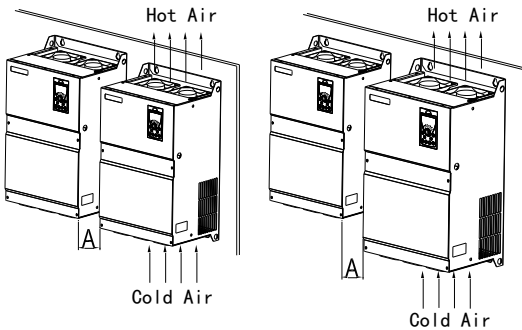
2.2 Installation Space and Directions

2.2.1 Single Inverter Installation: the installation and insulation space for an inverter has to be left out based on its different power ratings.



| Power level | Size Requirements | | |
|-------------|-------------------|-----------|----------|
| 0.75kW-22kW | A ≥ 10mm | B ≥ 100mm | C ≥ 40mm |
| 30kW-37kW | A ≥ 50mm | B ≥ 200mm | C ≥ 40mm |
| 45kW-75kW | A ≥ 50mm | B ≥ 200mm | C ≥ 40mm |
| 90kW-710kW | A ≥ 50mm | B ≥ 200mm | C ≥ 40mm |

2.2.2 Multiple Inverters Installation: Inverters dissipate from bottom to top. Therefore, when multiple inverters are operating, they are usually installed side by side and aligned to top, especially for different sizes of inverters.



| Power level | Size Requirements |
|-------------|-------------------|
| 0.75kW-22kW | A ≥ 10mm |
| 30kW-37kW | A ≥ 50mm |
| 45kW-75kW | A ≥ 50mm |
| 90kW-710kW | A ≥ 50mm |

2.2.3 Multiple Inverters Installed Vertically: In occasions where multiple inverters need installed vertically next to each other, the lower row of inverters' dissipation of heat will cause a temperature rise of the upper row of inverters, resulting in the overheat/overload errors of the upper row of inverters. Therefore, it is recommended to take measures such as installing an insulation plate in between as the following figure:

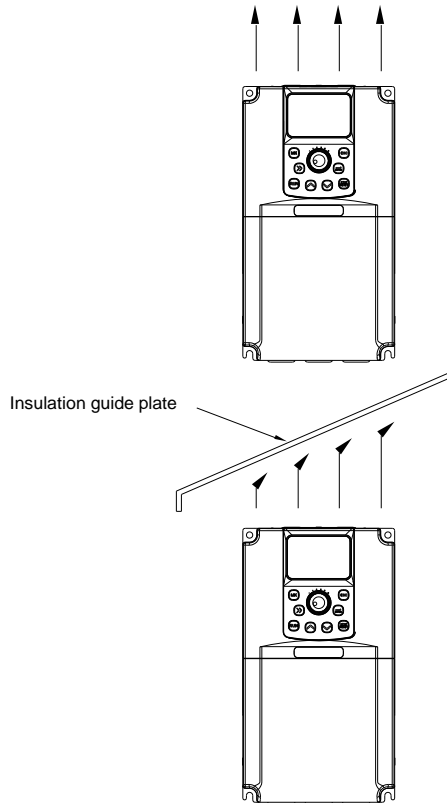


Figure 2.1 Inverter Installation Diagram

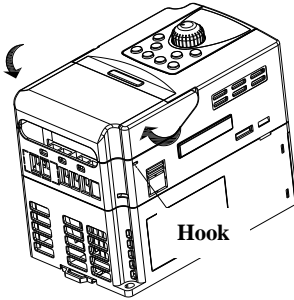
Note: Please install an insulation plate according to the figure above when installing two inverters vertically next to each other.

Attention Matters for Heat Dissipation of Mechanically Mounting:

- 1) The inverter should be installed vertically for heat dissipation but cannot be put upside down. Installing the inverters side by side is highly recommended for installing a number of them in one cabinet. Please refer to figure 3-1 when installing the insulation plate
- 2) Follow Figure3.1 to ensure the dissipation space for the inverters. The heat dissipation of other machines in the cabinet should be considered as well.
- 3) The mounting bracket must be flame retardant material.
- 4) Installing the radiator outside the cabinet is recommended if there are metal dusts at the installation location. Please make sure the sealed cabinet space is as large as possible.

2.3 Dismantling of the Cover Plate

1. Press inward to disconnect the hook from the hook slot.



2. Lift the cover to open the inverter.

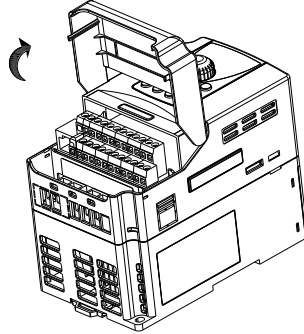
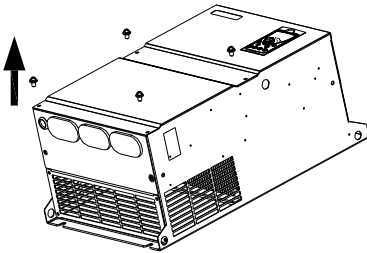


Figure 2.2 Remove the Cover Plate (Plastic Case)

1. Loosen the screws.



2. Lift the cover to open the inverter.

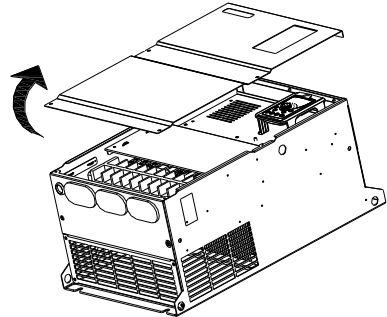


Figure 2.3 Remove the Cover Plate (Metallic Case)

Chapter 3 Electrical Installation

3.1 Electrical Installation

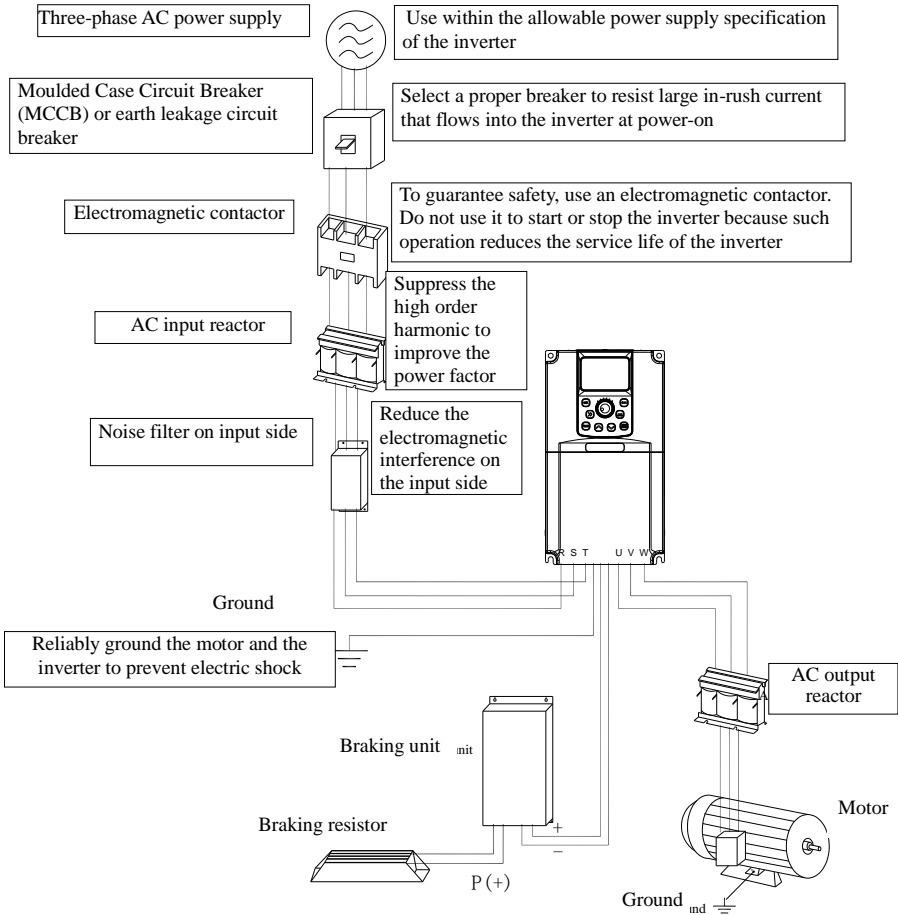


Figure 3.1 Peripheral Electrical Devices

- Do not install capacitors or surge suppressor on the output side of the inverter, which will lead to a breakdown or cause damage to the capacitor the surge suppressor.
- Input/Output (Major Loop) of the inverter contains harmonics, which may interfere with the communication devices connected to the inverter. Therefore, anti-interference filters are recommended to install in order to minimize the interference.
- Please refer to the selection manual of peripheral equipment for more details of peripheral devices and options.

3.2 Description of Peripheral Electrical Devices

| Items | Function Descriptions |
|---|--|
| MCCB | Disconnect the power supply when over current occurs on downstream devices |
| Residual Current Circuit Breaker (RCCB) | Since the output of the inverter is high-frequency pulse voltage, high-frequency leakage occurs sometimes; When installing an RCCB on the input side, it is recommended to choose the special-use RCCB. It is suggested to choose the model “B” for RCCB, and the leakage current is set to 300mA. |
| Contactor | Start and stop the inverter. Avoid starting and stopping the inverter frequently by switching the contactor on and off (less than twice per minute) nor use it to directly start the inverter. |
| EMC Input Filter | <ul style="list-style-type: none"> • Reduce the external conduction and radiation interference of the inverter. • Decrease the conducting interference flowing from the power terminals to the inverter and improve the anti-interference capability of the inverter. |
| AC Input Reactor | <ul style="list-style-type: none"> • Improve the power factor of the input side; • Eliminate the higher harmonics generation on the input side effectively and prevent other devices from being damaged due to distortion of the voltage waveform. • Eliminate the imbalance among the power phases that causes the imbalance of input current. |
| DC Reactor | <ul style="list-style-type: none"> • Improve the power factor of the input side. • Improve the efficiency and thermal stability of the inverter. • Eliminate the impact of higher harmonics of the inverter input side and reduce the external radiation and interference. |
| AC Output Reactor | <p>The output side of the inverter generally has much higher harmonics. When the motor is far from the inverter, there is distributed capacitance in the circuit and certain harmonics may cause resonance in the circuit, bringing the following two effects:</p> <ul style="list-style-type: none"> • Impair the motor insulation performance and damage the motor on the long run. • Generate large leakage current and cause frequent protection of tripping on the inverter. If the distance between the inverter and the motor is greater than 100 m, an AC output reactor is recommended. |

Table 3.1 Description of Peripheral Electrical Devices

3.3 Peripheral Electrical Components Selection Guidance

| Converter model | MCCB (A) | Contactora (A) | Power Input Cable (mm ²) | Power Output Cable (mm ²) | Control Circuit Wirings (mm ²) |
|---------------------|----------|----------------|--------------------------------------|---------------------------------------|--|
| JT550-T3-0R7G/1R5PB | 6 | 9 | 0.75 | 0.75 | 0.5 |
| JT550-T3-1R5G/2R2PB | 10 | 9 | 0.75 | 0.75 | 0.5 |
| JT550-T3-2R2G/4R0PB | 10 | 9 | 0.75 | 0.75 | 0.5 |
| JT550-T3-4R0G/5R5PB | 16 | 12 | 1.5 | 1.5 | 0.5 |
| JT550-T3-5R5G/7R5PB | 20 | 18 | 2.5 | 2.5 | 0.75 |
| JT550-T3-7R5G/011PB | 32 | 25 | 4.0 | 4.0 | 0.75 |
| JT550-T3-011G/015PB | 40 | 32 | 4.0 | 4.0 | 0.75 |
| JT550-T3-015G/018PB | 50 | 38 | 6.0 | 6.0 | 0.75 |
| JT550-T3-018G/022PB | 50 | 40 | 10 | 10 | 1.0 |
| JT550-T3-022G/030PB | 63 | 50 | 10 | 10 | 1.0 |
| JT550-T3-030G/037P | 100 | 65 | 16 | 16 | 1.0 |
| JT550-T3-037G/045P | 100 | 80 | 25 | 25 | 1.0 |
| JT550-T3-045G/055P | 125 | 95 | 35 | 35 | 1.0 |
| JT550-T3-055G/075P | 160 | 115 | 50 | 50 | 1.0 |
| JT550-T3-075G/090P | 225 | 170 | 70 | 70 | 1.0 |
| JT550-T3-090G/110P | 250 | 205 | 95 | 95 | 1.0 |
| JT550-T3-110G/132P | 315 | 245 | 120 | 120 | 1.0 |
| JT550-T3-132G/160P | 350 | 300 | 120 | 120 | 1.0 |
| JT550-T3-160G/185P | 400 | 300 | 150 | 150 | 1.0 |
| JT550-T3-200G/220P | 500 | 410 | 185 | 185 | 1.0 |
| JT550-T3-220G/250P | 630 | 475 | 2*120 | 2*120 | 1.0 |
| JT550-T3-250G/280P | 630 | 475 | 2*120 | 2*120 | 1.0 |
| JT550-T3-280G/315P | 700 | 620 | 2*120 | 2*120 | 1.0 |
| JT550-T3-315G/355P | 800 | 620 | 2*150 | 2*150 | 1.0 |
| JT550-T3-355G/400P | 1000 | 800 | 2*185 | 2*185 | 1.0 |
| JT550-T3-400G/450P | 1250 | 800 | 2*240 | 2*240 | 1.0 |
| JT550-T3-450G | 1250 | 1000 | 2*240 | 2*240 | 1.0 |
| JT550-T3-500G | 1600 | 1000 | 2*300 | 2*300 | 1.0 |
| JT550-T3-560G | 1600 | 1250 | 2*300 | 2*300 | 1.0 |
| JT550-T3-630G | 2000 | 1600 | 2*300 | 2*300 | 1.0 |
| JT550-T3-710G | 2500 | 2000 | 2*300 | 2*300 | 1.0 |

3.4 Selection of Braking Unit and Braking Resistor

◆ Value selection of the Braking Resistor

The AC drive transfers regenerative energy generated during braking of motor to external braking resistor.

According to the formula $U^* U/R = P_b$:

- U: the braking voltage at system stable braking.
- U: value varies with the system. The 380 VAC power system usually selects 700 V braking
- P_b: braking power.

◆ Power selection of the Braking Resistor

In theory, power of braking resistor is the same as braking power. But in consideration of derating, power of braking resistor is calculated from the following formula: according to the formula $:0.7 * P_r = P_b * D$.

- P_r: the power of resistor.
- D: the braking frequency (percentage of the regenerative process to the whole working process)

| Common Applications | Elevator | Uncoiling and Coiling | Centrifuge | Accidental Braking Load | General Occasions |
|-------------------------------------|----------|-----------------------|------------|-------------------------|-------------------|
| Selection of the Breaking Frequency | 20%-30% | 20%-30% | 50%-60% | 5% | 10% |

The following table provides data for reference. User may select different resistance and power based on their actual needs. However, the value of resistance must not be greater than the recommended value. The power may be larger than the recommended value.

The braking resistor model depends on the generation power of the motor in the actual system and is also related to the system's inertia, deceleration time and potential energy load. The higher a system's inertia is, the shorter the deceleration time is. Frequent braking requires braking resistors of larger power and smaller resistance.

| Inverter Models | Recommended Braking Resistor Power | Recommended Braking Resistor Resistance | Braking Unit |
|---------------------|------------------------------------|---|---------------------|
| JT550-T3-0R7G/1R5PB | 150W | $\geq 300\Omega$ | Built-In (Standard) |
| JT550-T3-1R5G/2R2PB | 150W | $\geq 220\Omega$ | |
| JT550-T3-2R2G/4R0PB | 250W | $\geq 200\Omega$ | |
| JT550-T3-4R0G/5R5PB | 300W | $\geq 130\Omega$ | |
| JT550-T3-5R5G/7R5PB | 400W | $\geq 90\Omega$ | |
| JT550-T3-7R5G/011PB | 500W | $\geq 65\Omega$ | |
| JT550-T3-011G/015PB | 800W | $\geq 43\Omega$ | |
| JT550-T3-015G/018PB | 1.0kW | $\geq 32\Omega$ | |
| JT550-T3-018G/022PB | 1.3kW | $\geq 25\Omega$ | |
| JT550-T3-022G/030PB | 1.5kW | $\geq 22\Omega$ | |
| JT550-T3-030G/037P | 2.5kW | $\geq 16\Omega$ | Built-In (optional) |
| JT550-T3-037G/045P | 3.7 kW | $\geq 12.6\Omega$ | |
| JT550-T3-045G/055P | 4.5 kW | $\geq 9.4\Omega$ | External |
| JT550-T3-055G/075P | 5.5 kW | $\geq 9.4\Omega$ | |
| JT550-T3-075G/090P | 7.5 kW | $\geq 6.3\Omega$ | |
| JT550-T3-090G/110P | 4.5 kW $\times 2$ | $\geq 9.4\Omega \times 2$ | |
| JT550-T3-110G/132P | 5.5 kW $\times 2$ | $\geq 9.4\Omega \times 2$ | |
| JT550-T3-132G/160P | 6.5 kW $\times 2$ | $\geq 6.3\Omega \times 2$ | |
| JT550-T3-160G/200P | 16 kW | $\geq 6.3\Omega \times 2$ | |
| JT550-T3-200G/220P | 20 kW | $\geq 2.5\Omega$ | |
| JT550-T3-220G/250P | 22 kW | $\geq 2.5\Omega$ | |
| JT550-T3-250G/280P | 12.5 kW $\times 2$ | $\geq 2.5\Omega \times 2$ | |
| JT550-T3-280G/315P | 14 kW $\times 2$ | $\geq 2.5\Omega \times 2$ | |
| JT550-T3-315G /355P | 16 kW $\times 2$ | $\geq 2.5\Omega \times 2$ | |
| JT550-T3-355G /400P | 17 kW $\times 2$ | $\geq 2.5\Omega \times 2$ | |
| JT550-T3-400G /450P | 14 kW $\times 3$ | $\geq 2.5\Omega \times 3$ | |
| JT550-T3-450G | 15 kW $\times 3$ | $\geq 2.5\Omega \times 3$ | |
| JT550-T3-500G | 20 kW $\times 4$ | $\geq 2.5\Omega \times 4$ | |
| JT550-T3-560G | 25 kW $\times 4$ | $\geq 2.5\Omega \times 4$ | |
| JT550-T3-630G | 28 kW $\times 4$ | $\geq 2.5\Omega \times 4$ | |
| JT550-T3-710G | 32 kW $\times 4$ | $\geq 2.5\Omega \times 4$ | |

- "×2" indicates that two braking units with each braking resistor are connected in parallel.
- "×3" indicates the same as "×2"

3.5 Selection of Expansion Card

| Model | Supported Model | Name | Function Descriptions |
|---------|-----------------|--|---|
| A00E01 | All | 485 Communication Card | Expand RS485 Port, Support MODBUS Communication Protocol, Inverter as Slave |
| A00E02 | All | OC Output PG Card | Correspond to OC output encoder |
| A00E03 | All | Differential Output PG Card | Correspond to differential output encoder |
| A00E05 | All | I/O Expansion Card | Expand 5 digital inputs, support leakage and source pattern wiring methods, and support external power. |
| A00E08 | All | Resolver PG Card | Resolver Expansion Card |
| A00E12 | All | Injection Molding Machine Current Riser Card | Support proportional pressure and proportional data input 0-1A and 0-2A. Support touch screen's one-click parameters setting. |
| A00E13 | All | 485+3I Expansion Card | Expand RS485 port, support MODBUS Communication Protocol, inverter as slave, and expand 3 digital inputs |
| A00E15 | All | 485+Differential Output Expansion Card | Correspond to differential output encoders, and 485 communications. |
| A00E18 | All | Double PT100 Motor Temperature Collecting Card | Collecting Motor's Temperature |
| A00E19 | All | Rotary Encoder Expansion Card | Resolver Expansion Card |
| A00E20 | All | 485+3DI Expansion Card | Expand RS485 port, support MODBUS Communication Protocol, inverter as slave, and expand 2digital inputs |
| A00E25A | All | 485+Resolver+3-wire PT100 Expansion Card | Expand RS485 port, support MODBUS Communication Protocol; Support rotary encoder, 3-wire PT100 temperature acquisition function |

3.6 Wiring Method

A typical wiring method of JT550 Series Inverter is shown below:

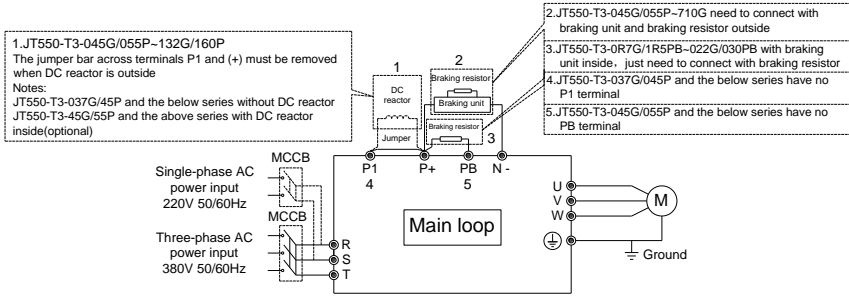


Figure 3.2 Inverter's Major Circuit Wiring Diagram

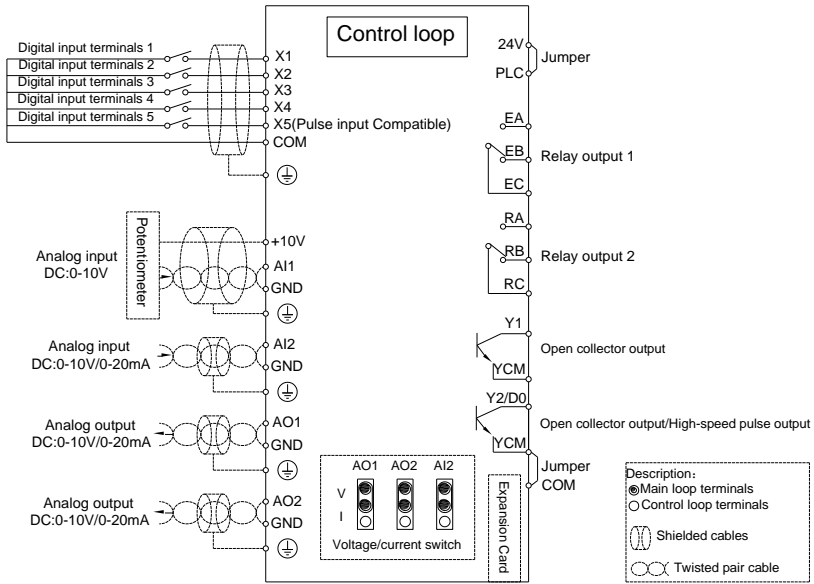


Figure 3.3 Inverter's Control Circuit Wiring Diagram

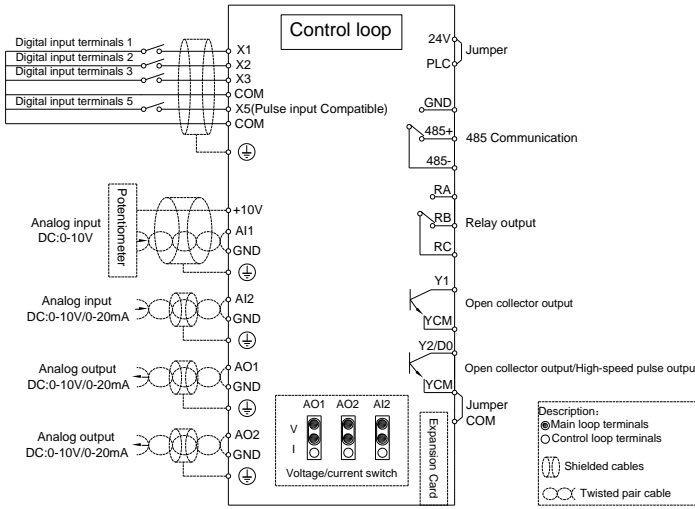


Figure 3.4 Inverter's Control Circuit+485 Wiring Diagram

Note:

- 1) Terminal ●: Major Loop Terminals. Terminal ○: Control Circuit Terminals.
- 2) The product models with "B" indicates the braking units.
- 3) Choose the braking resistors based on users' needs. Refer to Selection of Braking Unit and Braking Resistor (P22-24).
- 4) Signal wires and power wires must be routed separately. If the control cables and power cables cross together, it is best to make them crossed as 90 degrees. The analog signal line is best to use shielded twisted pair; The power cable is best to use shielded three-core cable (its specifications are higher than the average motor cable's) or to follow the user manual.
- 5) R is the standard relay, the relay E is optional.

3.6.1 Product Terminals and Wiring

1) Three-Phase Inverter's Terminal Layout of Major Circuit and Size Description:

| Symbol | Name | Function Descriptions |
|---------|---|--|
| R、S、T | Three-Phase Power Supply Input Terminals | Connect to the three-phase AC power supply |
| +、- | Positive and Negative Terminals of DC Bus | Common DC Bus Input point Connect the external braking units to the inverters of 45 kW and above |
| +、PB | Connecting Terminals of Braking Resistors | Connect the braking resistors to the inverters of 37 kW and below |
| P1/PR、+ | Connecting Terminals of External Reactor | Connect to an external reactor |
| U、V、W | Inverter Output Terminals | Connect to a three-phase motor |
| ⊕ | Ground Terminal | Must be grounded |

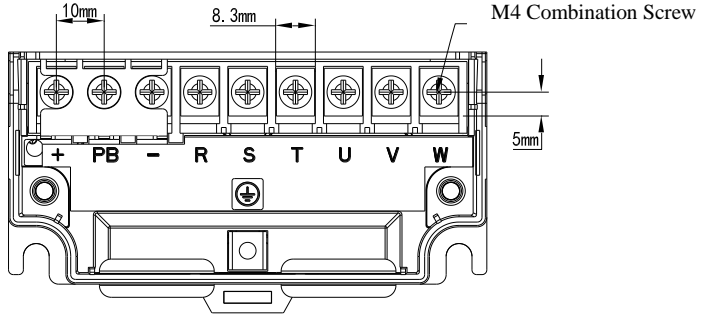


Figure 3.5 Three-Phase 0.75-2.2kW Inverter’s Terminal Layout of Major Circuit and Size Diagram

| Model | Rated Input Current A | Recommended Input Output Power Cable mm ² | Recommended Solderless Terminal Models | Recommended Ground Cable mm ² | Recommended Solderless Terminal Models |
|----------------------|-----------------------|--|--|--|--|
| JT550-T3-0R75G/1R5PB | 3.4 | 0.75 | SNB1.25-4S | 0.75 | SNB1.25-4S |
| JT550-T3-1R5G/2R2PB | 5 | 0.75 | SNB1.25-4S | 0.75 | SNB1.25-4S |
| JT550-T3-2R2G/4R0PB | 5.8 | 0.75 | SNB1.25-4S | 0.75 | SNB1.25-4S |

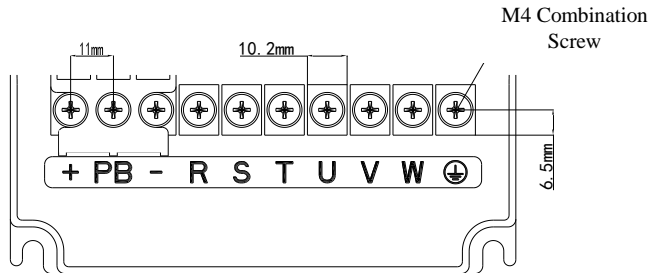


Figure 3.6 Three-Phase 4.0-5.5kW Inverter’s Terminal Layout of Major Circuit and Size Diagram

| Model | Rated Input Current A | Recommended Input Output Power Cable mm ² | Recommended Solderless Terminal Models | Recommended Ground Cable mm ² | Recommended Solderless Terminal Models |
|---------------------|-----------------------|--|--|--|--|
| JT550-T3-4R0G/5R5PB | 10.5 | 1.5 | SNB2-4S | 1.5 | SNB2-4S |
| JT550-T3-5R5G/7R5PB | 14.6 | 2.5 | SNB2-4S | 2.5 | SNB2-4S |

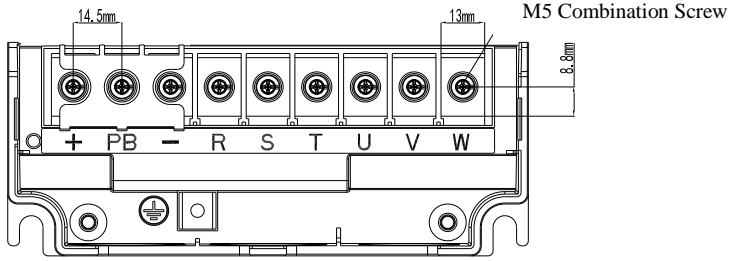


Figure 3.7 Three-Phase 7.5-11kW Inverter’s Terminal Layout of Major Circuit and Size Diagram

| Model | Rated Input Current A | Recommended Input Output Power Cable mm ² | Recommended Solderless Terminal Models | Recommended Ground Cable mm ² | Recommended Solderless Terminal Models |
|---------------------|-----------------------|--|--|--|--|
| JT550-T3-7R5G/011PB | 20.5 | 4.0 | SNB3.5-5 | 4.0 | SNB3.5-5 |
| JT550-T3-011G/015PB | 26 | 4.0 | SNB3.5-5 | 4.0 | SNB3.5-5 |

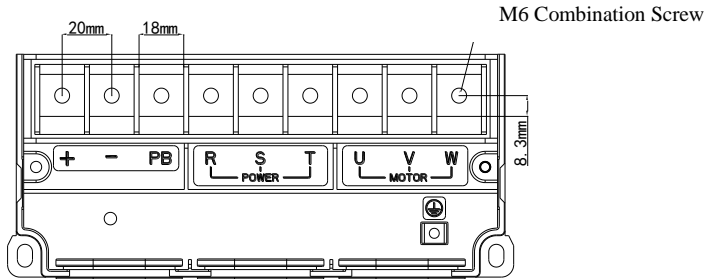


Figure 3.8 Three-Phase 15-22kW Inverter’s Terminal Layout of Major Circuit and Size Diagram

| Model | Rated Input Current A | Recommended Input Output Power Cable mm ² | Recommended Solderless Terminal Models | Recommended Ground Cable mm ² | Recommended Solderless Terminal Models |
|---------------------|-----------------------|--|--|--|--|
| JT550-T3-015G/018PB | 35 | 6.0 | SNB5.5-6S | 6.0 | SNB5.5-6S |
| JT550-T3-018G/022PB | 38.5 | 10 | SNB8-6 | 10 | SNB8-6 |
| JT550-T3-022G/030PB | 46.5 | 10 | SNB8-6 | 10 | SNB8-6 |

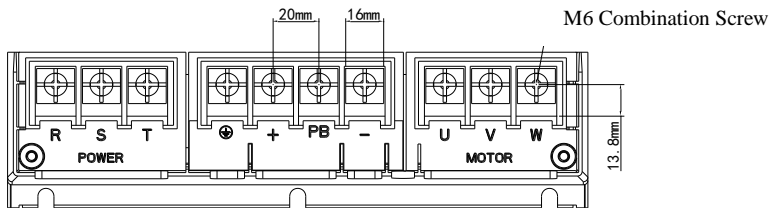


Figure 3.9 Three-Phase 30-37kW Inverter’s Terminal Layout of Major Circuit and Size Diagram

| Model | Rated Input Current A | Recommended Input Output Power Cable mm ² | Recommended Solderless Terminal Models | Recommended Ground Cable mm ² | Recommended Solderless Terminal Models |
|--------------------|-----------------------|--|--|--|--|
| JT550-T3-030G/037P | 62 | 16 | SNB14-6 | 16 | SNB14-6 |
| JT550-T3-037G/045P | 76 | 25 | SNB22-8 | 16 | SNB14-6 |

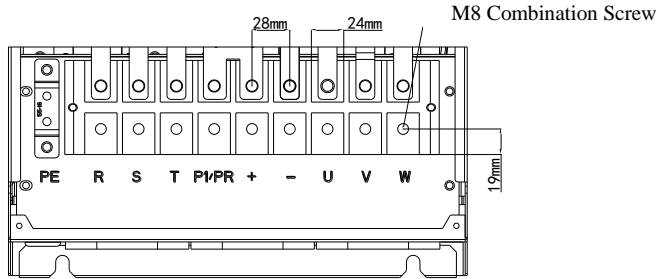


Figure 3.10 Three-Phase 45-55kW Inverter's Terminal Layout of Major Circuit and Size Diagram

| Model | Rated Input Current A | Recommended Input Output Power Cable mm ² | Recommended Solderless Terminal Models | Recommended Ground Cable mm ² | Recommended Solderless Terminal Models |
|--------------------|-----------------------|--|--|--|--|
| JT550-T3-045G/055P | 92 | 35 | RNB38-8S | 16 | SNB14-6 |
| JT550-T3-055G/075P | 113 | 50 | RNB38-8S | 25 | SNB22-6 |

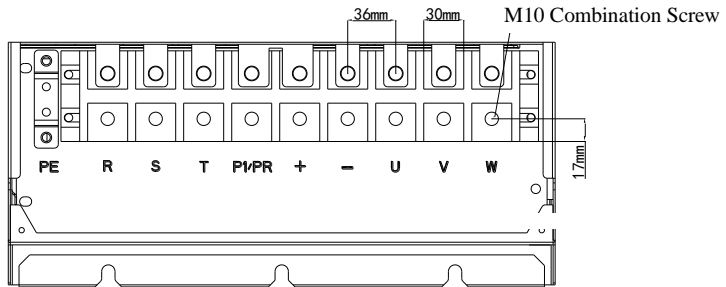


Figure 3.11 Three-Phase 75-90kW Inverter's Terminal Layout of Major Circuit and Size Diagram

| Model | Rated Input Current A | Recommended Input Output Power Cable mm ² | Recommended Solderless Terminal Models | Recommended Ground Cable mm ² | Recommended Solderless Terminal Models |
|--------------------|-----------------------|--|--|--|--|
| JT550-T3-075G/090P | 157 | 70 | RNB60-10 | 35 | RNB38-10S |
| JT550-T3-090G/110P | 180 | 95 | RNB80-10 | 50 | RNB38-10S |

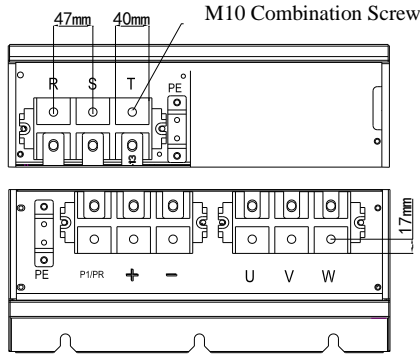


Figure 3.12 Three-Phase 110-132kW Inverter’s Terminal Layout of Major Circuit and Size Diagram

| Model | Rated Input Current A | Recommended Input Output Power Cable mm ² | Recommended Solderless Terminal Models | Recommended Ground Cable mm ² | Recommended Solderless Terminal Models |
|--------------------|-----------------------|--|--|--|--|
| JT550-T3-110G/132P | 214 | 120 | DT120-10 | 70 | RNB60-10 |
| JT550-T3-132G/160P | 256 | 150 | DT150-10 | 70 | RNB60-10 |

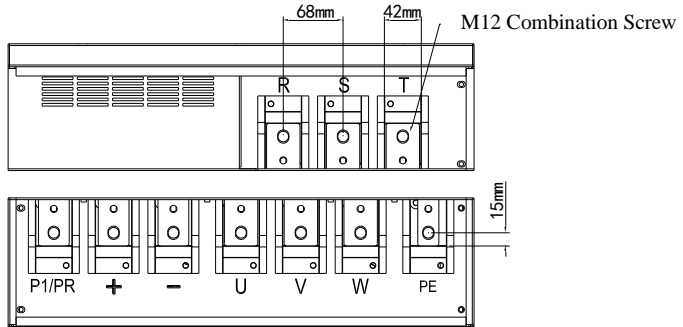


Figure 3.13 Three-Phase 160-200kW Inverter’s Terminal Layout of Major Circuit and Size Diagram

| Model | Rated Input Current A | Recommended Input Output Power Cable mm ² | Recommended Solderless Terminal Models | Recommended Ground Cable mm ² | Recommended Solderless Terminal Models |
|--------------------|-----------------------|--|--|--|--|
| JT550-T3-160G/185P | 307 | 185 | DT185-12 | 95 | RNB80-12 |
| JT550-T3-200G/220P | 385 | 2*120 | DT240-12 | 120 | DT120-12 |

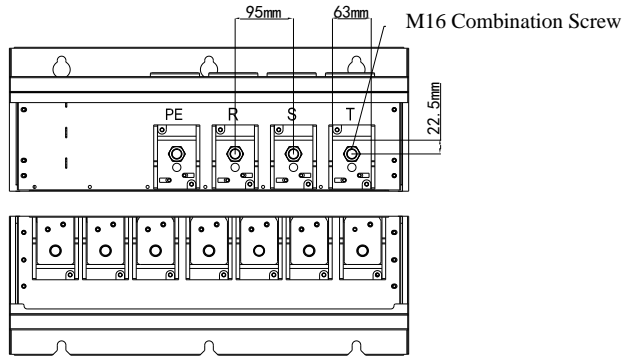


Figure 3.14 Three-Phase 220-280kW Inverter’s Terminal Layout of Major Circuit and Size Diagram

| Model | Rated Input Current A | Recommended Input Output Power Cable mm ² | Recommended Solderless Terminal Models | Recommended Ground Cable mm ² | Recommended Solderless Terminal Models |
|--------------------|-----------------------|--|--|--|--|
| JT550-T3-220G/250P | 430 | 2*120 | DT240-16 | 120 | DT120-16 |
| JT550-T3-250G/280P | 468 | 2*120 | DT240-16 | 120 | DT120-16 |
| JT550-T3-280G/315P | 525 | 2*150 | DT300-16 | 150 | DT150-16 |

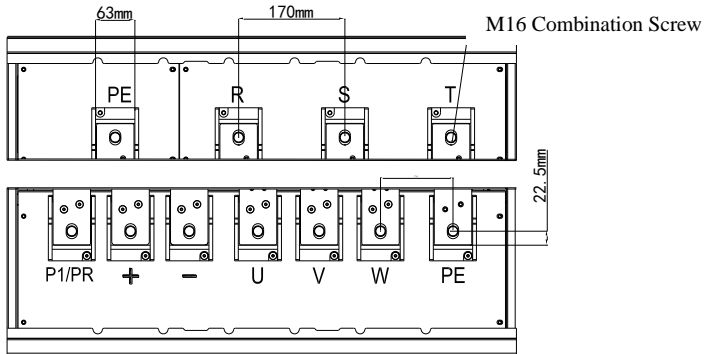


Figure 3.15 Three-Phase 315-450kW Inverter’s Terminal Layout of Major Circuit and Size Diagram

| Model | Rated Input Current A | Recommended Input Output Power Cable mm ² | Recommended Solderless Terminal Models | Recommended Ground Cable mm ² | Recommended Solderless Terminal Models |
|--------------------|-----------------------|--|--|--|--|
| JT550-T3-315G/355P | 590 | 2*150 | DT300-16 | 150 | DT150-16 |
| JT550-T3-355G/400P | 665 | 2*185 | DT400-16 | 185 | DT185-16 |
| JT550-T3-400G | 785 | 2*200 | DT400-16 | 200 | DT200-16 |
| JT550-T3-450G | 883 | 2*300 | 2*DT300-16 | 300 | DT300-16 |

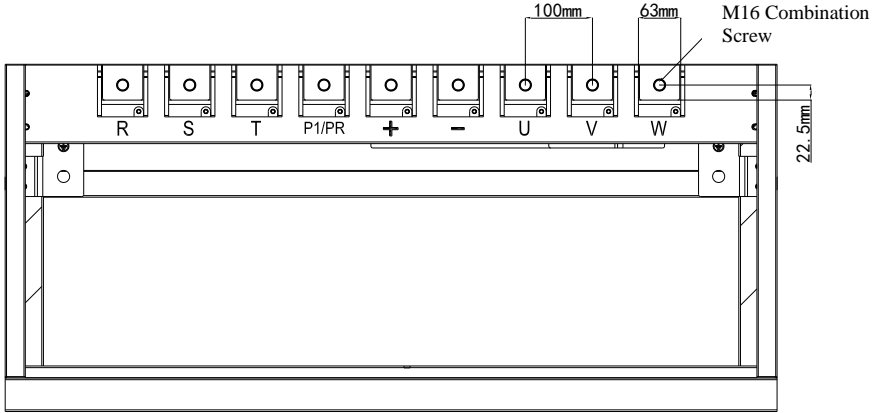


Figure 3.16 Three-Phase 500-560kW Inverter’s Terminal Layout of Major Circuit and Size Diagram

| Model | Rated Input Current A | Recommended Input Output Power Cable mm ² | Recommended Solderless Terminal Models | Recommended Ground Cable mm ² | Recommended Solderless Terminal Models |
|---------------|-----------------------|--|--|--|--|
| JT550-T3-500G | 900 | 2*300 | 2*DT300-16 | 300 | DT300-16 |
| JT550-T3-560G | 1020 | 2*300 | 2*DT300-16 | 300 | DT300-16 |

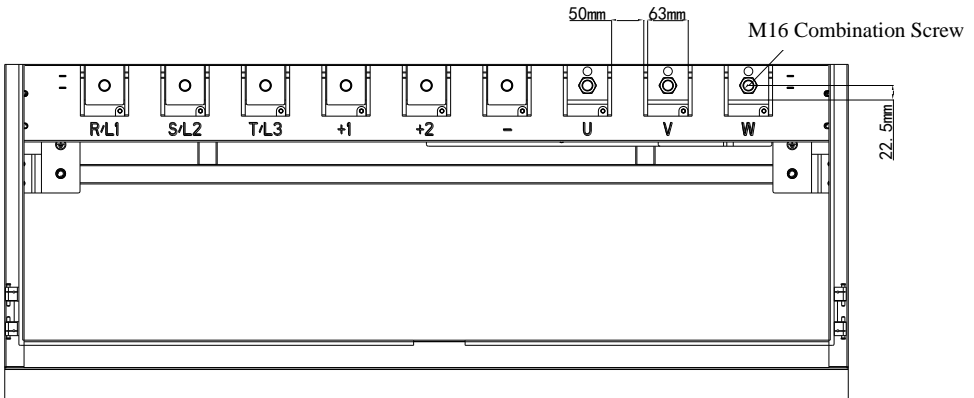


Figure 3.17 Three-Phase 630-710kW Inverter’s Terminal Layout of Major Circuit and Size Diagram

| Model | Rated Input Current A | Recommended Input Output Power Cable mm ² | Recommended Solderless Terminal Models | Recommended Ground Cable mm ² | Recommended Solderless Terminal Models |
|---------------|-----------------------|--|--|--|--|
| JT550-T3-630G | 1120 | 2*300 | 2*DT300-16 | 300 | DT300-16 |
| JT550-T3-710G | 1260 | 2*300 | 2*DT300-16 | 300 | DT300-16 |

Note: In the lists above, 2*120 represents 2 cables of 120mm²

All the recommended solderless terminals above are manufactured by Shenzhen Goldsite (RNB series and DT Series Solderless Terminals)

Precautions on Wiring

a) Power Input Terminals L1, L2 or R, S, T

No Phase Sequence Requirements.

b) DC Bus Terminals (+), (-)

- Terminals (+) and (-) of DC bus still have remaining charge with hazardous voltages after the inverter is switched off. After the indicator “CHARGE” goes off, wait at least 10 minutes before touching the inverter. Otherwise, you might get electric shock.
- Be sure to connect the external braking components to the corresponding terminals(+) and (-). Otherwise it could cause a fire.
- The cable length of the braking units shall be no longer than 10m. Use twisted-pair cables or pair wires for parallel connection.
- Do not connect the braking resistors directly to the DC bus. Otherwise, it may damage the inverter and even cause a fire.

c) Connecting Terminals of Braking Resistor (+), PB

- The connecting terminals of the braking resistor are effective only for the inverters of 37kW or below with a built-in braking unit.
- The cable length of the braking resistor shall be less than 5 m. Otherwise, it may damage the inverter.

d) Connecting Terminals of External Reactor P1/PR, (+)

- For the inverter of 45 kW and above, remove the jumper bar across terminals P1 /PR and (+) and install the reactor between the two terminals.

e) Output Terminals of Inverter: U, V, W

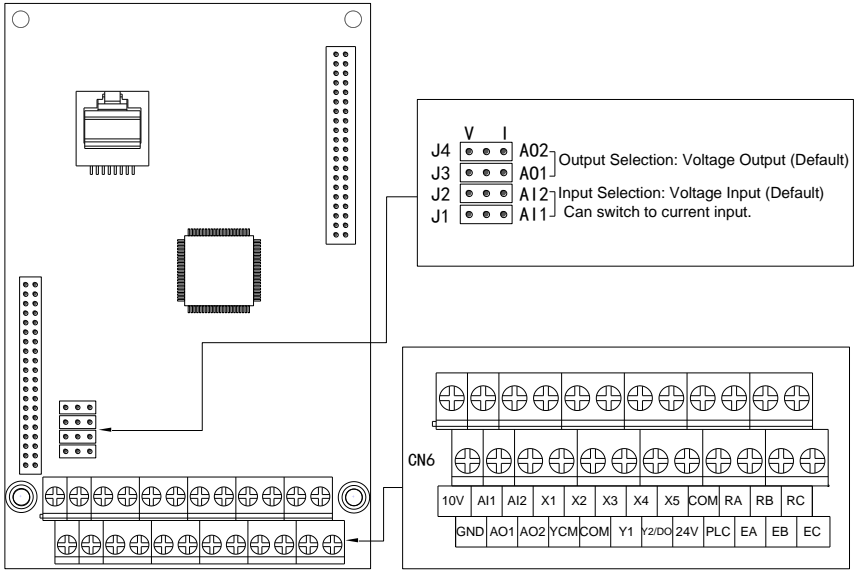
- The specification and installation method of external power cables must comply with the local safety regulations and IEC standards.
- The capacitor or surge absorber must not be connected to the output side of the inverter. Otherwise, it may cause frequent errors or even damage the inverter.
- If the motor cable is too long, electrical resonance will be generated due to the impact of distributed capacitance. This will damage the motor insulation or generate higher leakage current, causing over current protection on the inverter. If the motor cable is greater than 100 m long, an AC output reactor must be installed close to the inverter.

f) Terminal PE:

- This terminal must be properly grounded. Otherwise, it may cause electric shock, malfunction or even damage to the inverter.
- Do not connect the ground terminal to the neutral terminal of the power supply.

3.6.2 Control Terminals and Wiring

1) Terminal Arrangement of Control Circuit:



3.18 Control Circuit Terminals Layout

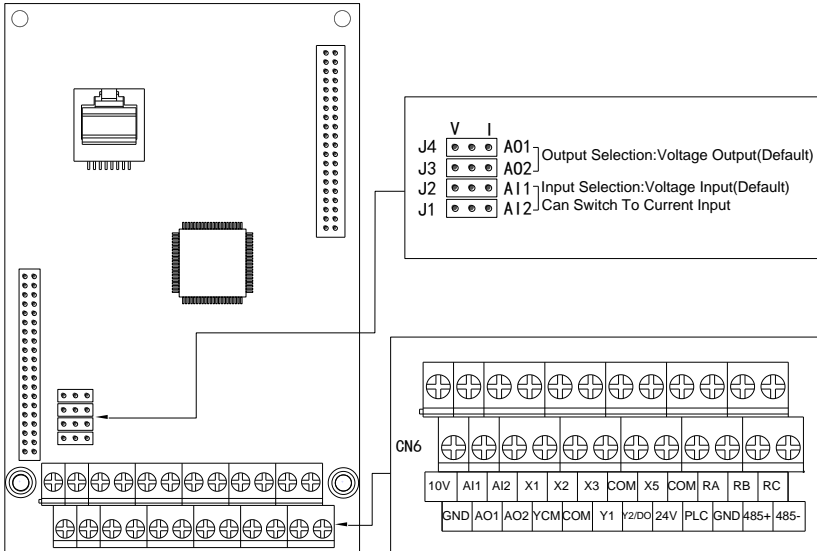
2) Description of Control Circuit Terminals:

| Type | Terminal | Name | Function Description |
|--------------|----------|-------------------------------|---|
| Power supply | +10V-GND | External +10 V power supply | Provide +10 V power supply to external unit. Generally, it provides power supply to external potentiometer with resistance range of 1–5 kΩ. Maximum output current: 10 mA |
| | 24V-COM | External +24V power supply | Provide +24 V power supply to external unit. Generally, it provides power supply to input and output terminals and external sensors. Maximum output current: 200 mA |
| Power supply | PLC | External power input terminal | X input terminal of the power connector, the factory default control panel 24V with short, if you need an external 24V power supply, you need to jumper terminals on the control panel to remove the external 24V power to the PLC terminal |
| | YCM | Yn output common terminal | Y1, Y2 two output terminals can be individually grounded, and control panel factory default COM shorted to ground alone if necessary, the need to control board jumpers removed, the terminal will be connected to the YCM |

| Type | Terminal | Name | Function Description |
|----------------|----------|----------------------------------|--|
| Analog input | AI1-GND | Analog input terminal 1 | 1、 Input voltage range:DC 0V~10V 2、 Input impedance :22kΩ |
| | AI2-GND | Analog input terminal 2 | 1、 Input range: DC 0V ~10V /0mA ~20mA, decided by the AI2 jumper on the control board. 2、 Input impedance: 22 kΩ (voltage input), 500 Ω (current input) |
| Digital input | X1-COM | Digital input1 | 1、 Optical coupling isolation, compatible with dual polarity input 2、 Impedance: 2.4 kΩ 3、 Voltage range for level input: 9–30 V |
| | X2-COM | Digital input2 | |
| | X3-COM | Digital input3 | |
| | X4-COM | Digital input4 | |
| | X5-COM | High-speed pulse input terminal | Besides features of X1 - X4, it can be used for high-speed pulse input. Maximum input frequency: 100 kHz |
| Analog output | AO1-GND | Analog output 1 | Voltage or current output is decided by jumper AO1. Output voltage range: 0–10 V Output current range: 0–20 mA |
| | AO2-GND | Analog output 2 | Output range:0V~10V/0mA~20mA Using the AO2 jumper on the left side of the control board to determine the voltage or current output. |
| Digital output | Y1-YCM | Digital output 1 | Optical coupling isolation, dual polarity open collector output Output voltage range: 0–24 V Output current range: 0–50 mA Note that YCM and COM are internally insulated, but they are shorted by jumper externally. |
| | Y2-YCM | High-speed pulse output terminal | It is limited by F3.00 As high-speed pulse output, the maximum frequency hits 100 kHz. As open-collector output, it specification is the same as that of Y1 |
| Relay output | R/B-R/C | R relay normally closed terminal | Contact actuation capability: AC250V, 3A, COSφ=0.4. Relay E matching |
| | R/A-R/C | R relay normally open terminal | |
| Relay output | E/B-E/C | E relay normally closed terminal | Contact actuation capability: AC250V, 3A, COSφ=0.4. Relay E matching |
| | E/A-E/C | E relay normally open terminal | |

Table 3.19 Description of Control Circuit Terminals

3) Terminal Arrangement of Control Circuit:



3.20 +485 Control Circuit Terminals Layout

4) Description of Control Circuit Terminals:

| Type | Terminal | Name | Function Description |
|--------------|----------|-------------------------------|---|
| Power supply | +10V-GND | External +10 V power supply | Provide +10 V power supply to external unit. Generally, it provides power supply to external potentiometer with resistance range of 1–5 kΩ. Maximum output current: 10 mA |
| | 24V-COM | External +24V power supply | Provide +24 V power supply to external unit. Generally, it provides power supply to input and output terminals and external sensors. Maximum output current: 200 mA |
| Power supply | PLC | External power input terminal | X input terminal of the power connector, the factory default control panel 24V with short, if you need an external 24V power supply, you need to jumper terminals on the control panel to remove the external 24V power to the PLC terminal |
| | YCM | Yn output common terminal | Y1, Y2 two output terminals can be individually grounded, and control panel factory default COM shorted to ground alone if necessary, the need to control board jumpers removed, the terminal will be connected to the YCM |

| Type | Terminal | Name | Function Description |
|-------------------|----------|----------------------------------|--|
| Analog input | AI1-GND | Analog input terminal 1 | 1、 Input voltage range:DC 0V~10V 2、 Input impedance :22kΩ |
| | AI2-GND | Analog input terminal 2 | 1、 Input range: DC 0V ~10V /0mA ~20mA, decided by the AI2 jumper on the control board. 2、 Input impedance: 22 kΩ (voltage input), 500 Ω (current input) |
| Digital input | X1-COM | Digital input1 | 1、 Optical coupling isolation, compatible with dual polarity input 2、 Impedance: 2.4 kΩ 3、 Voltage range for level input: 9–30 V |
| | X2-COM | Digital input2 | |
| | X3-COM | Digital input3 | |
| | X5-COM | High-speed pulse input terminal | Besides features of X1 - X3, it can be used for high-speed pulse input. Maximum input frequency: 100 kHz |
| Analog output | AO1-GND | Analog output 1 | Voltage or current output is decided by jumper AO1. Output voltage range: 0–10 V Output current range: 0–20 mA |
| | AO2-GND | Analog output 2 | Output range:0V~10V/0mA~20mA Using the AO2 jumper on the left side of the control board to determine the voltage or current output. |
| Digital output | Y1-YCM | Digital output 1 | Optical coupling isolation, dual polarity open collector output Output voltage range: 0–24 V Output current range: 0–50 mA Note that YCM and COM are internally insulated, but they are shorted by jumper externally. |
| | Y2-YCM | High-speed pulse output terminal | It is limited by F3.00 As high-speed pulse output, the maximum frequency hits 100 kHz. As open-collector output, it specification is the same as that of Y1 |
| Relay output | R/B-R/C | R relay normally closed terminal | Contact actuation capability: AC250V, 3A, COSφ=0.4. Relay E matching |
| | R/A-R/C | R relay normally open terminal | |
| 485 communication | 485+ | 485 Port | RS485 port, support MODBUS Communication Protocol, inverter as slave |
| | 485- | 485 Port | |

Table 3.21 Description of Control Circuit Terminals

5) Wiring of Control Circuit Terminals

a) AI Terminals: Weak analog voltage signals are easily interfered, and therefore the shielded cable must be used and the cable length must be less than 20 m, as shown in following figure.

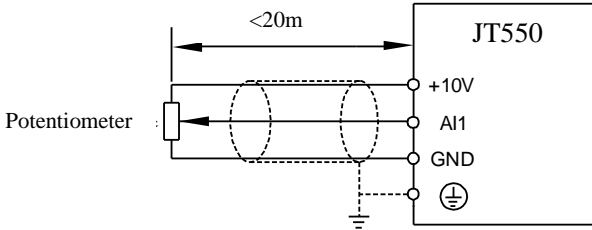


Figure 3.22 Diagram of AI Terminals

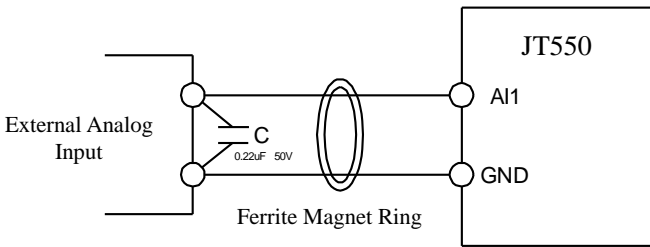


Figure 3.23 Wiring of AI Terminals

b) Wiring of DI terminals

Generally, select a shielded cable that is no longer than 20 m. When active drive is adopted, it is necessary to apply filtering in order to prevent the interference to the power supply. It is recommended to use the contact control mode.

SINK Wiring

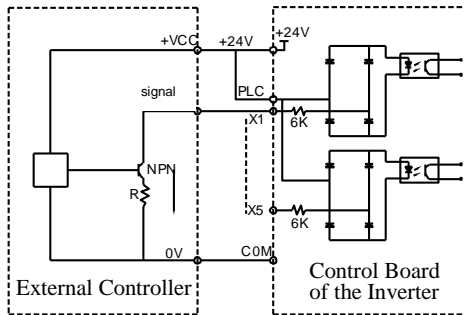


Figure 3.24 Wiring in SINK Mode

This is one of the most commonly used connection mode. If you use an external power supply, you must remove the jumper bar between +24V and PLC. Anode of the external power needs to be connected to PLC terminal, and cathode needs to be connected to COM terminal.

c) SOURCE Wiring

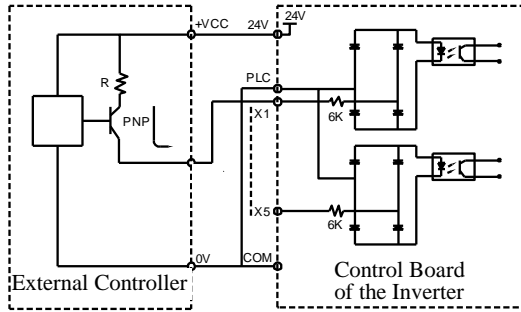


Figure 3.25 Wiring in SOURCE Mode

This wiring must jump the jumper J12 of PLC to COM, and Connect the + 24V and the COM terminal of the external controller together. If you use an external power supply, the cathode of the power supply must be connected to PLC.

d) Wiring of DO Terminal

When the digital output terminals need to drive the relay, an absorption diode shall be installed around the relay coil. Otherwise, it may cause damage to the 24V DC power supply.

Note: The polarity of the absorption diode must be installed properly. As shown in Figure 3.9, failure to comply will lead to burning the 24V DC power supply whenever the digital output terminal is active.

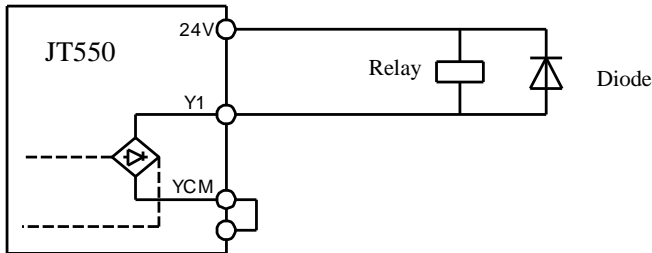


Figure 3.26 DO Terminal Wiring Diagram

3.7 Major Circuit Terminals Screw Specs and Tightening Torque Standard

| Inverter Powers | Terminal Specs | Screw Specs | Torque Standard |
|-----------------|------------------------|-------------|-----------------|
| 0.75-2.2kW | BA5-09-10.0-06 | M4 | 2N.m |
| 4.0-5.5kW | BA5-10-11.0-09 | M4 | 2N.m |
| 7.5-11kW | BA8-09-14.5-01-C | M5 | 4N.m |
| 15-22kW | BA20-09-20.0-01 | M6 | 8N.m |
| 30-37kW | BA20-03-20.0-01 | M6 | 8N.m |
| 45-55kW | DRTB50-NR-09-CNNT | M8 | 20N.m |
| 75-90kW | DRTB100-RHC-09-CNNT | M10 | 35N.m |
| 110-132kW | RD300-01 600V 300A | M10 | 35N.m |
| 160-200kW | SET420-B(Nut included) | M12 | 60N.m |
| 220-280kW | SET630(Nut included) | M16 | 130N.m |
| 315-710kW | SET630(Nut included) | M16 | 130N.m |

Chapter 4 Keyboard and Display

4.1 Operation and Display Interface

Through the operation panel, user may perform such operations such as modifying the function parameters, monitoring the status of inverter, and controlling the operation of inverter (start and stop). Its appearance and function area are shown below:

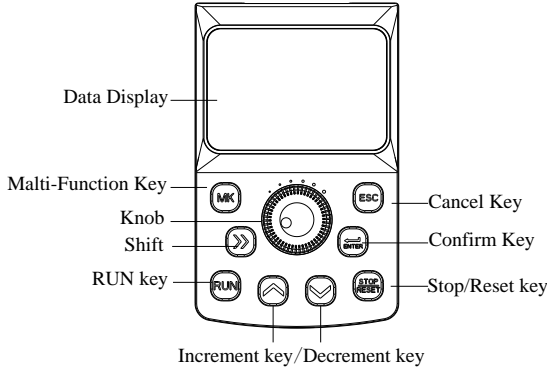


Figure 4.1 Keyboard Layout

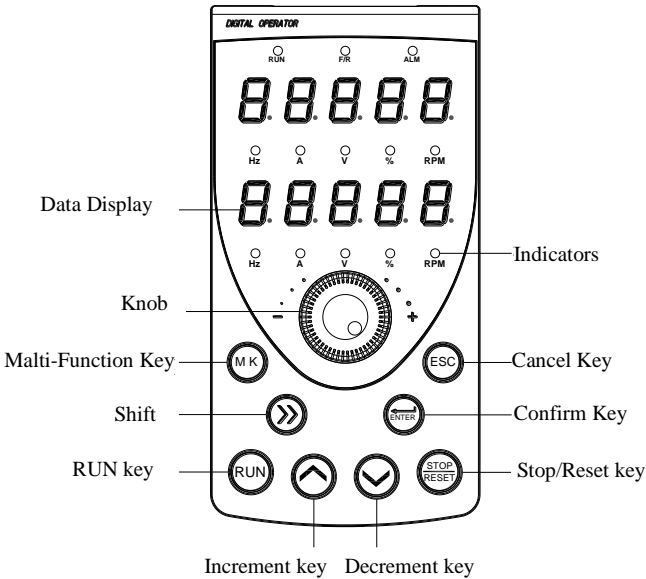


Figure 4.2 Double Display Keyboard Layout

4.2 Keyboard Indicators Description

- RUN: ON indicates that the inverter is in the Operating state, and OFF indicates that it is in the stop state;
- ALM: Malfunction Indicator. When an error occurs, the indicator turns on. Normally it is off;
- Hz : Unit of frequency, ON indicates the corresponding parameter values of the units;
- A : Unit of current;
- V :Unit of voltage;
- % : Percentage;
- Rpm: Revolutions Per Minute;
- F/R: Forward/Reverse.

4.3 Keyboard Button Description

| Button | Name | Function |
|------------|--------------------|---|
| ESC | Escape key | Enter the primary menu or exit |
| ENTER | Confirm Key | Enter the next interface; Confirm the setting of parameters |
| ∧ | Increment key | Increase the parameter number or function code by one unit |
| ∨ | Decrement key | Decrease the parameter number or function code by one unit |
| >> | Shift Key | Select the displayed parameters in turn in the stop or Operating state, and shift through each unit when changing the parameters. |
| RUN | RUN key | Start the inverter. |
| STOP/RESET | Stop / Reset key | Stop the inverter when it is in the Operating state and reset the inverter when it is in the fault state. |
| MK | Multi-Function Key | Switch functions according to F8.01 |

Table 4.1 Keyboard Functions Table

4.4 Viewing and Modifying Function Codes

The operation panel of JT550 series features three-level menu mode: function parameters group (first level of menu), function codes (second level of menu), and function codes modification (third level of menu). The float chart is shown as below:

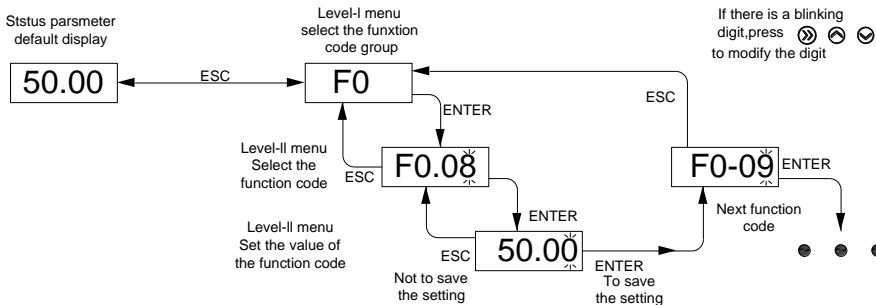


Figure 4.3 Three-Level Menu Float Chart of Operation Procedure

When changing parameters on the third level menu, you can press “ESC” or “ENTER” to return to the second menu. The difference is that pressing “ENTER” saves the modified parameters while pressing “ESC” does not save them.

For example: the function code F2.03 changed from 12 set to 22.

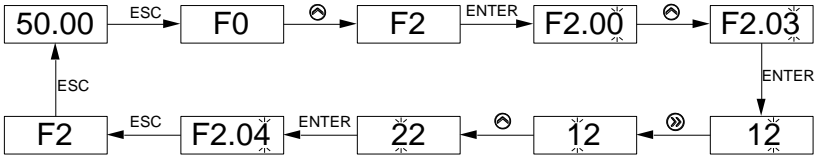


Figure 4.4 Example of Changing the Parameter Value

4.5 Selecting Menu Mode

JT550 series inverter offers three menu modes to select from. User may set the corresponding bit of the menu mode he/she needs as "1" according to F0.25 and switch using the button "MK". Follow figure 3-4 to switch the menus after setting the function parameters.

Note: Only when F8.01 is set to 1, "MK" button selects menu modes.

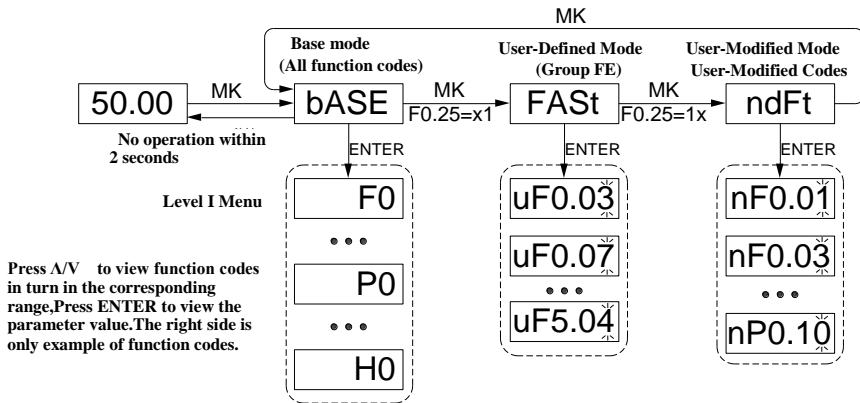


Figure 4.5 Menu Switching

Chapter 5 Basic Operation and Test Run

5.1 Quick Adjustment Guidance

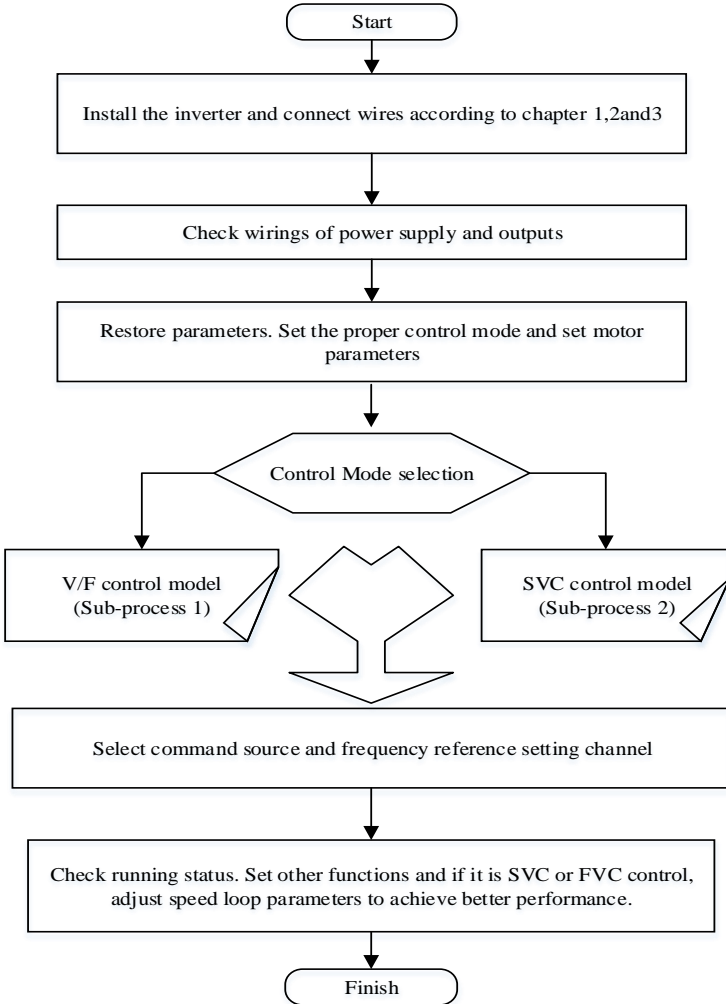


Figure 5.1 Quick Adjustment Procedure


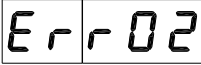
5.2 Precautions Before Power-On

Please execute the following steps before power-on.

| Items | Contents |
|---|--|
| Check the power voltage | Make sure the power voltage is correct |
| | Properly connect the input terminals (R/S/T) of power supply |
| | Correctly ground inverter and motor |
| Check the connection between the output terminals of inverter and the motor terminals | Make sure the output terminals(U/V/W) is firmly connected to the motor terminals |
| Check the connection on inverter's control circuit terminals. | Please confirm if the control circuit terminals are firmly connected to other control devices. |
| Check the status of inverter's control circuit terminals. | Make sure all of the terminals are OFF (Inverter is in an inactive mode) |
| Load Check | Make sure the motor is in no-load status and unconnected to mechanical system |

5.3 Display Status After Power-On

After power-on, the display on the operation panel in normal status is shown as below:

| Status | Display | Description |
|--------|---|--|
| Normal |  | Default Display of Digital Setting of 50Hz |
| Faulty |  | Inverter stops working when an error occur and displays the error type |

5.4 Motor Control Methods Selection

5.4.1 Selection References of Motor Control Methods

| Parameters | Description | Application |
|----------------------------|--|--|
| Motor Control Mode (F0.01) | 0: Sensorless Vector Control (SVC) | It indicates open-loop vector control, and is applicable to high-performance control applications such as machine tool, centrifuge, wire drawing machine and injection moulding machine. One inverter can operate only one motor. |
| | 1: Flux Vector Control (FVC) | It refers to closed-loop vector control. It is applicable to high-accuracy speed control or torque control applications such as high-speed paper making machine, crane and elevator. One inverter can operate only one motor. An encoder must be installed at the motor side, and a PG card matching the encoder must be installed at the inverter side. |
| | 2: Voltage/Frequency (V/F) control (Open-Loop Control) | It is applicable to applications with low load requirements or applications where one inverter operates multiple motors, such as a fan and a pump. |

5.4.2 Control and Adjustment Flow Chart of V/f and SVC

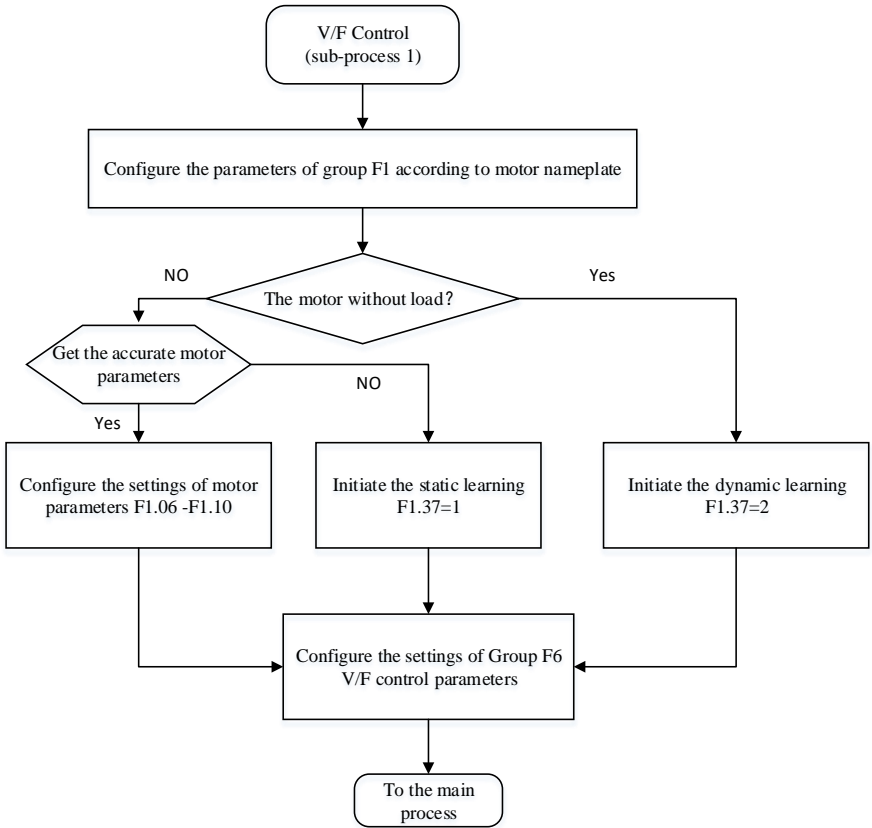


Figure 5.2 Inverter's Adjustment Sub-Process Flow (V/f Control)

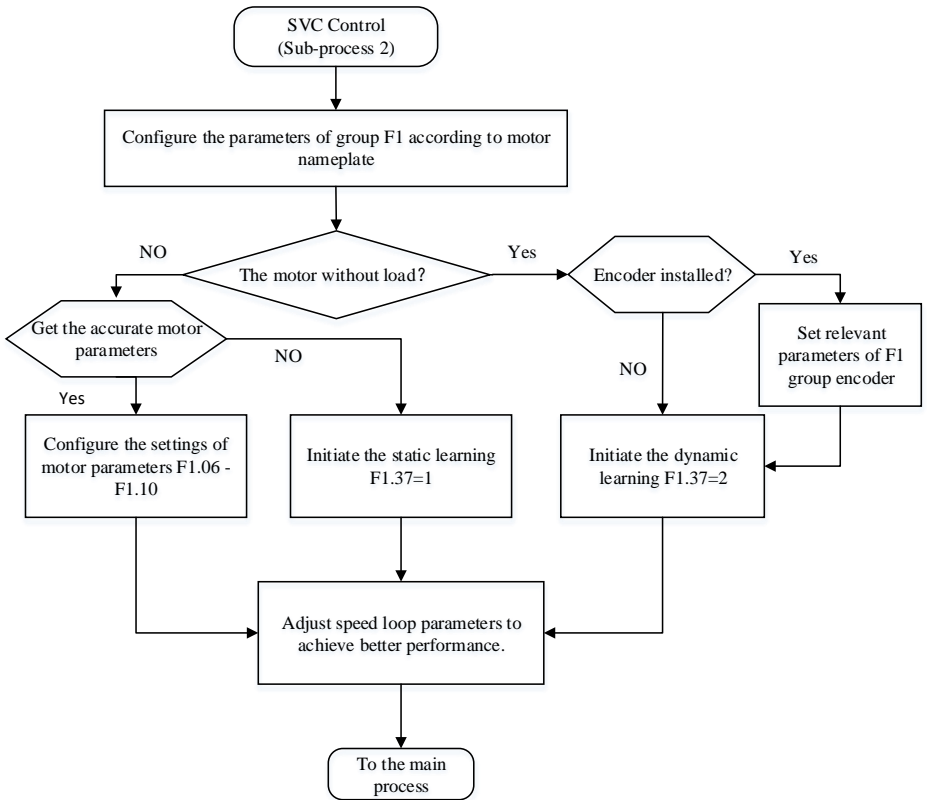


Figure 5.3 Inverter's Adjustment Sub-Process Flow (Vector Control)

5.5 Initialization of Parameters

Restore all of settings to default values. After the initialization, F0.24 is automatically set to 0.

| | | | |
|-------|--------------------------|--------------|------------|
| F0.24 | Restore Default Settings | Range: 0~501 | Default: 0 |
|-------|--------------------------|--------------|------------|

1: Restore default settings except motor parameters

If F0.24 is set to 1, most function codes are restored to the default settings except motor parameters, frequency reference resolution, errors records, accumulated operating time, accumulated power-on time and accumulated power consumption .

2: Clear records

If F0.24 is set to 2, the fault records, accumulated running time , accumulated power-on time and accumulated power consumption are cleared.

5.6 Operation Commands Source Selection

| | | | |
|-------|------------------------|------------|------------|
| F0.02 | Command Source Options | Range: 0~2 | Default: 0 |
|-------|------------------------|------------|------------|

0: Operation panel control

Commands are given by pressing keys “RUN,STOP” on the operation panel.

1: Terminal control

Commands are given by means of multifunctional input terminals with functions such as “FWD, REV, JOGF, and JOGR”.

2: Communication control

Commands are given from the host computer.

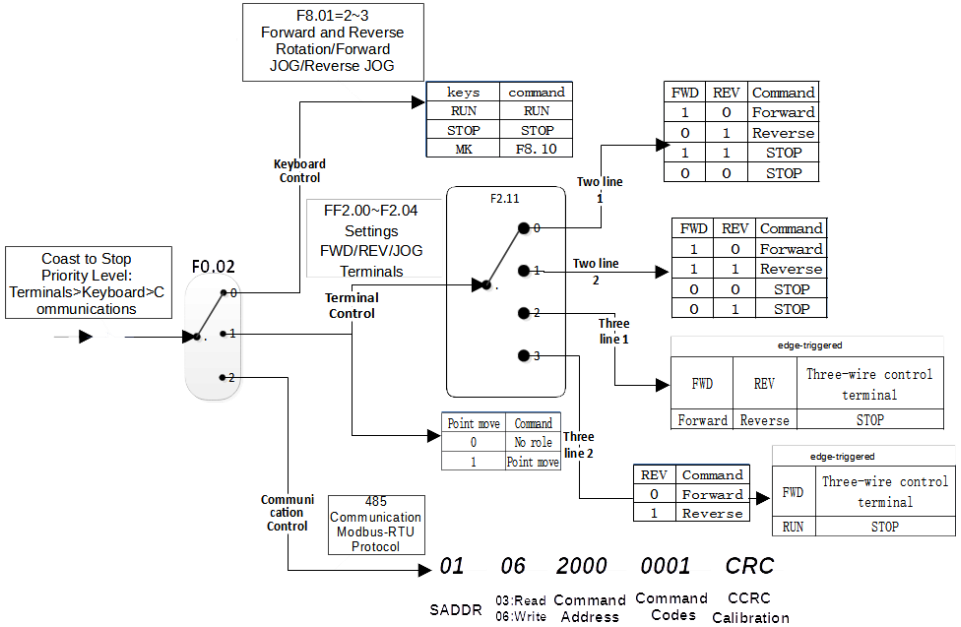


Figure 5.4 Operation Commands Source Selection

5.7 Frequency Source Selection

| | | | |
|-------|---------------------------------------|------------|-----------|
| F0.03 | Main Frequency(X) Source Selection | Range:0~13 | Default:4 |
|-------|---------------------------------------|------------|-----------|

0: Digital setting (No saving at power failure)

The initial value of the set frequency is the value of F0.08 (Preset frequency). You can change the set frequency by pressing Δ 、V on the operation panel (or using the UP/DOWN function of input terminals).When the inverter is powered on again after power failure, the set frequency reverts to the value of F0.08.

1: Digital setting (save at power failure)

Basic operations are same as "0: Digital setting".

The only difference is that when the inverter is powered on again after power failure, the set frequency is the value memorized at the moment that power goes out.

Note: The hidden parameters set down by F0.20 cleared or unclear 0, factory default is cleared down.

2: AI1 (0~10 V voltage input)

3: AI2 (0~10 V voltage input or 4~20 mA current input, determined by jumper)

4: AI3 (0~10 V voltage input)

The frequency is set by analog input.

5: Pulse setting (X5)

The frequency is set by X5 (high-speed pulse). The signal specification of pulse setting is 9~30 V (voltage range) and 0~100 kHz (frequency range). The corresponding value 100% of pulse setting corresponds to the value of F0.10 (Maximum frequency).

6: Multi-command

In multi-command mode, combinations of different terminal X statuses correspond to different set frequencies. The JT550 supports a maximum of 16 speeds implemented by 16 state combinations of four X terminals (allocated with functions 12 to 15)in Group FC. The multiple references indicate percentages of the value of F0.10(Maximum frequency).

If a terminal X is used for the multi-command function, you will have to adjust settings in group F2, referring to the function explanations for group F2.

7: Simple PLC

When the simple programmable logic controller (PLC) mode is set as the frequency source, the operating frequency of the inverter can be switched over among the 16 frequency references. You can set the holding time and acceleration/deceleration time of the 16 frequency references. For more details, refer to the descriptions of Group FC.

8: PID

The output of PID control is used as the operating frequency. PID control is generally used in on-site closed-loop control, such as constant pressure closed-loop control and constant tension closed-loop control. When applying PID as the frequency source, you need to set parameters of PID function in group FA.

9: Communication setting

The frequency is set by the means of communication. In other conditions, data is given by the host computer through the communication address 0x1000. The data format is -100.00% to 100.00%. 100.00% corresponds to the value of maximum frequency in F0.10.

10:AI1+AI2

11:AI1-AI2

12:max(AI1,AI2)

13:min(AI1,AI2)

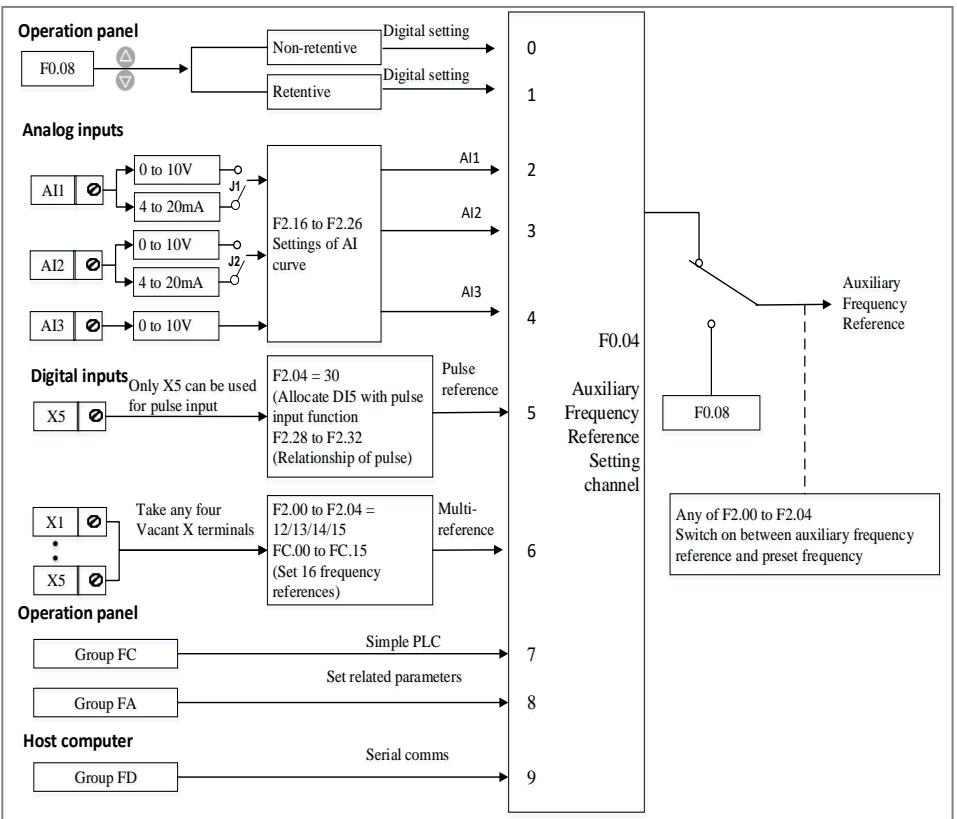


Figure 5.5 Frequency Source Selection

5.8 Stop Modes Selection

| | | | |
|-------|------------|-----------|-----------|
| F7.10 | Stop Modes | Range:0~1 | Default:0 |
|-------|------------|-----------|-----------|

0: Decelerate to Stop

After the stop command is enabled, the inverter decreases the output frequency according to the deceleration time and stops when the frequency decreases to zero.

1: Coast to Stop

After the stop command is enabled, the inverter immediately stops the output. The motor will coast to stop due to the mechanical inertia.

5.9 Observation of Operation Status via DO and AO

5.9.1 Digital Output DO

JT550 series inverter comes standard with two digital output terminal Y1, Y2 (Y2 which can be used as high-speed pulse output DO), 2 relay outputs R, E, 2 analog outputs AO1, AO2 (can be selected as the current output).

| | | | |
|-------|----------------------------|-----------|-----------|
| F3.00 | Y2/DO Terminal Output Mode | Range:0~1 | Default:1 |
|-------|----------------------------|-----------|-----------|

Y2 / DO terminal is re-programmable terminals and can be used as high-speed pulse output terminal (DO). It also can be used as an open-collector terminal (Y2) of digital output.

0: Pulse Output (FMP)

1: Switch Signal Output (FMR)

When DO is set as a pulse output, the maximum frequency of the output pulse is 100kHz. To see more DO-related functions, please refer to Note F3.06.

| | | | |
|-------|-----------------------------------|------------|-----------|
| F3.01 | Y1 Output Function Selection | Range:0~45 | Default:1 |
| F3.02 | Y2 Output Function Selection | Range:0~45 | Default:0 |
| F3.03 | Relay R Output Function Selection | Range:0~45 | Default:2 |
| F3.04 | Relay E Output Function Selection | Range:0~45 | Default:0 |

Defined digital output terminal Y1, Y2 and relay R, E functions. When Y2/DO terminal is the high-speed pulse output, configure its settings in F3.06 rather than F3.02.

5.9.2 Analog Output AO

| | | | |
|-------|------------------------|---------------------|--------------|
| F3.10 | AO1 Offset Coefficient | Range:-100.0~+100.0 | Default:0.0 |
| F3.11 | AO1 Gain | Range:-10.00~+10.00 | Default:1.00 |

These parameters correct the zero drift of analog output and the output amplitude deviation. They can also be used to customize the desired AO curve.

If "b" represents zero offset, "k" represents the gain, "Y" represents the actual output, and "X" represents the standard output, then the actual output is: $Y = kX + b$.

The zero offset coefficient 100% of AO1 and AO2 corresponds to 10 V (or 20 mA). The standard output refers to the value corresponding to the analog output of 0 to 10 V (or 0 to 20 mA) with no zero offset or gain adjustment.

For example, if the analog output is used as the operating frequency, and it is expected that the output is 8 V when the frequency is 0 and 3 V at the maximum frequency, the gain shall be set to -0.50, and the zero offset shall be set to 80%.

| | | | |
|-------|------------------------|---------------------|--------------|
| F3.12 | AO2 Offset Coefficient | Range:-100.0~+100.0 | Default:0.0 |
| F3.13 | AO2 Gain | Range:-10.00~+10.00 | Default:1.00 |

Refer to F3.10 and F3.11.

Chapter 6 Function Parameter List

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

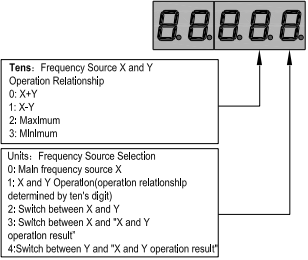
“●” : represents the parameter can be modified while the inverter is operating;

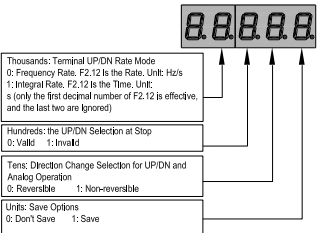
“○” : represents the parameter cannot be modified while the inverter is operating;

“◇” : represents the parameter is the measured value and cannot be modified;

“X” : represents “Factory Parameter”, which is subject to the manufacturer only.

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|----------------|--|---|-----------------|----------|
| F0.00 | G/P Type Display | 1: G Type (Constant Torque Load) 2: P Type (Variable Torque Load e.g. Fan and Pump) | Model Dependent | ○ |
| F0.01 | Motor Control Mode | 0: Sensor-less Flux Vector Control(SVC) 1: Closed-Loop Vector Control(FVC) 2: Voltage/Frequency (V/F)Control | 2 | ○ |
| F0.02 | Operation Command Source Selection | 0: Keyboard Control 1: Terminal Control 2: Communication Control | 0 | ● |
| F0.03 | Main Frequency(X) Source Selection | 0:Digital Setting (don't save at power failure) 1: Digital Setting (save at power failure) 2: AI1 3: AI2 4: AI3 5: Pulse Setting (X5) 6: Multiple Commands 7: Simple PLC 8: PID 9: Communication Setting 10:AI1+AI2 11:AI1-AI2 12:max(AI1,AI2) 13:min(AI1,AI2) | 4 | ○ |
| F0.04 | Auxiliary Frequency(Y) Source Selection | Same as F0.03 | 0 | ○ |
| F0.05 | Selection Range of Auxiliary Frequency Y for X and Y | 0:Relative to the Maximum Frequency 1:Relative to the Main Speed | 0 | ● |
| F0.06 | Range of Auxiliary Frequency Y for X and Y | 0%~150% | 100% | ● |

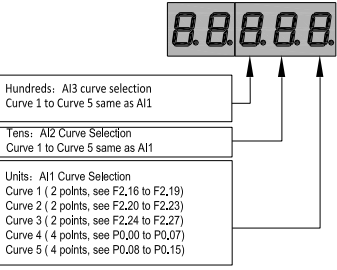
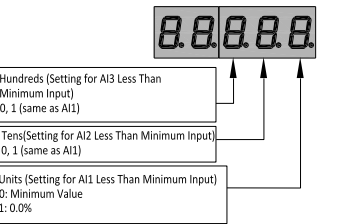
| Function Codes | Parameter Name | Range of Settings | Default | Property |
|----------------|--|--|-----------------|----------|
| F0.07 | Frequency Source Selection |  <p>Tens: Frequency Source X and Y Operation Relationship 0: X+Y 1: X-Y 2: Maximum 3: Minimum</p> <p>Units: Frequency Source Selection 0: Main frequency source X 1: X and Y Operation(operation relationship determined by ten's digit) 2: Switch between X and Y 3: Switch between X and "X and Y operation result" 4: Switch between Y and "X and Y operation result"</p> | 00 | ● |
| F0.08 | Digital Frequency | 0.00 to Maximum Frequency (valid when frequency source is set as digital) | 50.00Hz | ● |
| F0.09 | Rotation Direction | 0: Forward 1: Reverse | 0 | ● |
| F0.10 | Maximum Frequency | 50.00 Hz~320.00 Hz | 50.00Hz | ○ |
| F0.11 | Source of Frequency Upper Limit | 0: Set by F0.12 1: AI1 2: AI2 3: AI3 4: Pulse Setting (X5) 5: Communication Setting | 0 | ○ |
| F0.12 | Upper Limit of Frequency | Lower Limit of Frequency (F0.14) to Maximum Frequency (F0.10) | 50.00 Hz | ● |
| F0.13 | Upper Limit Offset of Frequency | 0.00 Hz to Maximum Frequency(F0.10) | 0.00 Hz | ● |
| F0.14 | Lower Limit of Frequency | 0.00 Hz to Upper Limit of Frequency(F0.12) | 0.00 Hz | ● |
| F0.15 | Carrier Frequency | 0.5kHz~16.0 kHz | Model Dependent | ● |
| F0.16 | Adjust with Temperature (Carrier Frequency) | 0: No 1: Yes | 1 | ● |
| F0.17 | Acceleration Time 1 | 0.00s~65000s | Model Dependent | ● |
| F0.18 | Deceleration Time 1 | 0.00s~65000s | Model Dependent | ● |
| F0.19 | Frequency Offset of Auxiliary Frequency Source for X and Y Operation | 0.00 Hz to Maximum Frequency (F0.10) | 0.00 Hz | ● |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|-----------------------------------|--|---|-----------------|----------|
| F0.20 | Digital Frequency Property Selection |  <p>Thousands: Terminal UP/DN Rate Mode 0: Frequency Rate, F2; 12 is the Rate, Unit: Hz/s 1: Integral Rate, F2; 12 is the Time, Unit: s (only the first decimal number of F2; 12 is effective, and the last two are ignored)</p> <p>Hundreds: the UP/DN Selection at Stop 0: Valid; 1: Invalid</p> <p>Tens: Direction Change Selection for UP/DN and Analog Operation 0: Reversible; 1: Non-reversible</p> <p>Units: Save Options 0: Don't Save; 1: Save</p> | 0 | ● |
| F0.21 | Base Frequency of Acceleration/Deceleration time | 0: Maximum Frequency (F0.10) 1: Set Frequency 2: 100 Hz | 0 | ○ |
| F0.22 | Frequency Reference for UP/DOWN During Operation | 0: Operating Frequency 1: Set Frequency | 0 | ○ |
| F0.23 | User Password | 0-65535 | 0 | ● |
| F0.24 | Restore Default Settings | 0: No Operation 1: Restore factory settings except motor parameters 2: Clear records | 0 | ○ |
| F0.25 | Personalized Menu Display Options | Units(Quick Menu Display Selection) 0: No Display 1: Display Tens(User-modified Menu Display Selection) 0: No Display 1: Display | 00 | ● |
| F0.26 | Parameter Modification Property | 0: Modifiable 1: Non-modifiable | 0 | ● |
| F0.28 | The Number of Decimal Places | 1: 1 Decimal Places 2: 2 Decimal Places | 2 | ○ |
| Group F1: Motor Parameters | | | | |
| F1.00 | Motor Model | 0: Common Asynchronous Motor 1: Variable Frequency Motor | 0 | ○ |
| F1.01 | Motor Rated Power | 0.1kW~1000.0kW | Model Dependent | ○ |
| F1.02 | Motor Rated Voltage | 1V~2000V | Model Dependent | ○ |
| F1.03 | Motor Rated Current | 0.01~655.35 A (Inverter Power ≤ 55 kW) 0.1~6553.5 A (Inverter Power > 55 kW) | Model Dependent | ○ |
| F1.04 | Motor Rated Frequency | 0.01 Hz to Maximum Frequency | Model Dependent | ○ |
| F1.05 | Motor Rated Speed | 1~65535 RPM | Model Dependent | ○ |

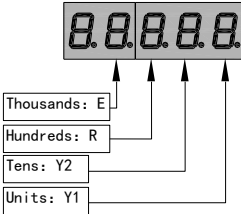
| Function Codes | Parameter Name | Range of Settings | Default | Property |
|----------------|---|--|---------------------|----------|
| F1.06 | Motor Stator Resistance | 0.001–65.535 Ω (Inverter Power \leq 55 kW) 0.0001–6.5535 Ω (Inverter Power > 55 kW) | Harmonic Parameters | ○ |
| F1.07 | Rotor Resistance | 0.001–65.535 Ω (Inverter Power \leq 55 kW) 0.0001–6.5535 Ω (Inverter Power > 55 kW) | Harmonic Parameters | ○ |
| F1.08 | Motor Leakage Inductance | 0.01–655.35 mH (Inverter Power \leq 55 kW) 0.001–65.535 mH (Inverter Power > 55 kW) | Harmonic Parameters | ○ |
| F1.09 | Motor Mutual Inductance | 0.1–6553.5 mH (Inverter Power \leq 55 kW) 0.01–655.35 mH (Inverter Power > 55 kW) | Harmonic Parameters | ○ |
| F1.10 | No-Load Current | 0.01 to F1-03 (Inverter Power \leq 55 kW) 0.1 to F1-03 (Inverter Power > 55 kW) | Harmonic Parameters | ○ |
| F1.27 | Encoder Pulses per Revolution | 1–65535 | 1024 | ○ |
| F1.30 | A/B Phase Sequence of ABZ Incremental Encoder | 0: Forward 1: Reserve | 0 | ○ |
| F1.37 | Self-Identification of Motor Parameters | 0: No Identification 1: Static Self-Identification 2: Complete Self-Identification | 0 | ○ |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|---------------------------|------------------------|---|---------|----------|
| Group F2: Input Terminals | | | | |
| F2.00 | X1 Function Selection | 0: No Function | 1 | ○ |
| F2.01 | X2 Function Selection | 1: Forward RUN (FWD) | 4 | ○ |
| F2.02 | X3 Function Selection | 2: Reverse RUN (REV) | 9 | ○ |
| F2.03 | X4 Function Selection | 3: Three-Wire Control | 12 | ○ |
| F2.04 | X5 Function Selection | 4: Forward JOG (FJOG) | 13 | ○ |
| F2.05 | X6 Function Selection | 5: Reverse JOG (RJOG) | 0 | ○ |
| F2.06 | X7 Function Selection | 6: Terminal UP | 0 | ○ |
| F2.07 | X8 Function Selection | 7: Terminal DOWN | 0 | ○ |
| F2.08 | X9 Function Selection | 8: Coasting to Stop | 0 | ○ |
| | | 9: Fault Reset (RESET) | 0 | ○ |
| | | 10: Operation Pause | 0 | ○ |
| F2.09 | X10 Function Selection | 11: Normally Open (NO) Input of External Fault 12: Multi-Command Terminal 1 13: Multi-Command terminal 2 14: Multi-Command terminal 3 15: Multi-Command terminal 4 16: Terminal 1 for Acceleration/Deceleration Time Selection 17: Terminal 2 for Acceleration/Deceleration Time Selection 18: Frequency Source Switch 19: UP and DOWN Settings Clear 20: Switch to keyboard control 21: Acceleration /Deceleration Prohibition 22: PID Pause 23: PLC Status Reset 24: Swing Frequency Pause 25: Counter Input 26: Counter Reset 27: Length Count Input 28: Length Reset 29: Torque Control Prohibition 30: Pulse Input (Enabled Only for X5) 31:Reserved 32: Immediate DC Braking 33: Normally Closed (NC) Input of External Fault 34: Frequency Modification Enabling 35: Reverse PID Direction 36: External STOP Terminal 1 37: Switch Over Terminals by Command Source 38: PID Integral Pause 39: Switch between main frequency source X and digital Frequency 40: Switch between auxiliary frequency source Y and digital freq. 41: PID Parameters Switch 42: User-Defined Fault 1 43: User-Defined Fault 2 44: Speed Control / Torque Control Switch 45:Emergency Stop 46: External STOP Terminal 2 47: Deceleration DC Braking 48: Current Operating Time Clear | 0 | ○ |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|----------------|---|--|----------|----------|
| F2.10 | Terminal X Filter Time | 0.000s~1.000s | 0.010s | ● |
| F2.11 | Terminal Command Mode | 0: Two-Wire Mode 1 1: Two-Wire Mode 2 2: Three-Wire Mode 1 3: Three-Wire Mode 2 | 0 | ○ |
| F2.12 | Terminal UP/DOWN Rate of Change | 0.01Hz/s~65.535 Hz/s | 1.00Hz/s | ● |
| F2.13 | AI1 Filter Time | 0.00s~10.00s | 0.10s | ● |
| F2.14 | AI2 Filter Time | 0.00s~10.00s | 0.10s | ● |
| F2.15 | AI3 Filter Time | 0.00s~10.00s | 0.10s | ● |
| F2.16 | AI Curve 1 Minimum Input | 0.00V~F2.18 | 0.20V | ● |
| F2.17 | Corresponding Setting of AI Curve 1 Minimum Input | -100.0%~+100.0% | 0.0% | ● |
| F2.18 | AI Curve 1 Maximum Input | F2.16~+10.00V | 10.00V | ● |
| F2.19 | Corresponding Setting of AI Curve 1 Maximum Input | -100.0%~+100.0% | 100.0% | ● |
| F2.20 | AI Curve 2 Minimum Input | 0.00V~F2.22 | 0.20V | ● |
| F2.21 | Corresponding Setting of AI Curve 2 Minimum Input | -100.0%~+100.0% | 0.0% | ● |
| F2.22 | AI Curve 2 Maximum Input | F2.20~+10.00V | 10.00V | ● |
| F2.23 | Corresponding Setting of AI Curve 2 Maximum Input | -100.0%~+100.0% | 100.0% | ● |
| F2.24 | AI Curve 3 Minimum Input | 0.00V~F2.26 | 0.20V | ● |
| F2.25 | Corresponding Setting of AI Curve 3 Minimum Input | -100.0%~+100.0% | 0.0% | ● |
| F2.26 | AI Curve 3 Maximum Input | F2.24~+10.00V | 10.00V | ● |
| F2.27 | Corresponding Setting of AI Curve 3 Maximum Input | -100.0%~+100.0% | 100.0% | ● |
| F2.28 | PULSE Minimum Input | 0.00kHz~F2.30 | 0.00kHz | ● |
| F2.29 | Corresponding Setting of PULSE Minimum Input | -100.0%~100.0% | 0.0% | ● |
| F2.30 | PULSE Maximum Input | F2.28~100.00kHz | 50.00kHz | ● |
| F2.31 | Corresponding Setting of PULSE Maximum Input | -100.0%~100.0% | 100.0% | ● |

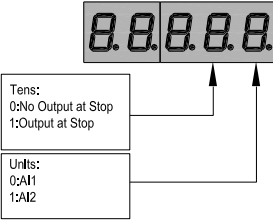
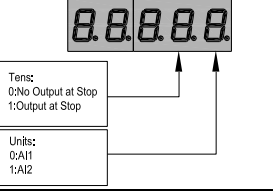
| Function Codes | Parameter Name | Range of Settings | Default | Property |
|----------------|--|---|---------|----------|
| F2.32 | PULSE Filter Time | 0.00s~10.00s | 0.10s | ● |
| F2.33 | AI Curve Selection |  | 321 | ● |
| F2.34 | Setting for AI Less Than Minimum Input |  | 000 | ● |
| F2.35 | X1 switch-on delay | 0.0s~3600.0s | 0.0s | ● |
| F2.36 | X1 switch-off delay | 0.0s~3600.0s | 0.0s | ● |
| F2.37 | X2 switch-on delay | 0.0s~3600.0s | 0.0s | ● |
| F2.38 | X2 switch-off delay | 0.0s~3600.0s | 0.0s | ● |
| F2.39 | X3 switch-on delay | 0.0s~3600.0s | 0.0s | ● |
| F2.40 | X3 switch-off delay | 0.0s~3600.0s | 0.0s | ● |
| F2.41 | Terminal X Valid Mode Selection | 0: High Level Valid 1: Low Level Valid Units:X1 Tens:X2 Hundreds:X3 Thousands:X4 Ten thousands:X5 | 00000 | ○ |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|---------------------------|-----------------------------------|---|---------|----------|
| Group F3:Output Terminals | | | | |
| F3.00 | Y2/DO Terminal Output Mode | 0:Pulse Output (DO) 1:Switch Signal Output (Y2) | 1 | ● |
| F3.01 | Y1 Output Function Selection | 0: No Output 1: Inverter Running 2: Output Errors (Stop) 3: Frequency Level Detection of FDT1 Output 4: Frequency Reached 5: Zero-Speed (No Output at Stop) 6: Motor Overload Pre-alarm 7: Inverter Overload Pre-alarm 8: Set count value reached 9: Designated count value reached 10: Length Reached 11: PLC Cycle Complete 12: Accumulated Operating Time Reached 13: Frequency Limited 14: Torque Limited 15: Ready for RUN 16: AI1 > AI2 17: Frequency Upper Limit Reached 18: Frequency Lower Limit Reached(No Output at Stop) | 1 | ● |
| F3.02 | Y2 Output Function Selection | 19: Under Voltage State Output 20: Communication Setting 21: Reserved 22: Forward Running 23: Zero-Speed Operating 2 (Having Output at Stop) 24: Accumulated Power-On Time Reached 25: Frequency Level Detection FDT2 Output 26: Frequency 1 Reached 27: Frequency 2 Reached 28: Current 1 Reached 29: Current 2 Reached 30: Timing Reached 31: AI1 Input Limit Exceeded 32: Load Becoming 0 33: Reverse Operation 34: Zero Current Status 35: Module Temperature Reached 36: Output Current Limit Exceeded 37: Frequency Lower Limit Reached (Having Output at Stop) 38: Alarm Output 39: Motor Overheat Warning 40: Current Operating Time Reached 41:Analog Levels:ADT1 42:Analog Levels:ADT2 44:X1 Status 45:X2 Status | 0 | ● |
| F3.03 | Relay R Output Function Selection | 19: Under Voltage State Output 20: Communication Setting 21: Reserved 22: Forward Running 23: Zero-Speed Operating 2 (Having Output at Stop) 24: Accumulated Power-On Time Reached 25: Frequency Level Detection FDT2 Output 26: Frequency 1 Reached 27: Frequency 2 Reached 28: Current 1 Reached 29: Current 2 Reached 30: Timing Reached 31: AI1 Input Limit Exceeded 32: Load Becoming 0 33: Reverse Operation 34: Zero Current Status 35: Module Temperature Reached 36: Output Current Limit Exceeded 37: Frequency Lower Limit Reached (Having Output at Stop) 38: Alarm Output 39: Motor Overheat Warning 40: Current Operating Time Reached 41:Analog Levels:ADT1 42:Analog Levels:ADT2 44:X1 Status 45:X2 Status | 2 | ● |
| F3.04 | Relay E Output Function Selection | 19: Under Voltage State Output 20: Communication Setting 21: Reserved 22: Forward Running 23: Zero-Speed Operating 2 (Having Output at Stop) 24: Accumulated Power-On Time Reached 25: Frequency Level Detection FDT2 Output 26: Frequency 1 Reached 27: Frequency 2 Reached 28: Current 1 Reached 29: Current 2 Reached 30: Timing Reached 31: AI1 Input Limit Exceeded 32: Load Becoming 0 33: Reverse Operation 34: Zero Current Status 35: Module Temperature Reached 36: Output Current Limit Exceeded 37: Frequency Lower Limit Reached (Having Output at Stop) 38: Alarm Output 39: Motor Overheat Warning 40: Current Operating Time Reached 41:Analog Levels:ADT1 42:Analog Levels:ADT2 44:X1 Status 45:X2 Status | 0 | ● |
| F3.05 | Reserved | | 0 | ● |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|----------------|--------------------------------|---|----------|----------|
| F3.06 | DO Output Function Selection | 0: Operating Frequency | 0 | ● |
| F3.07 | AO1 Output Function Selection | 1: Set Frequency | 0 | ● |
| F3.08 | AO2 Output Function Selection | 2: Output Current 3: Output Torque (Absolute Value) 4: Output Power 5: Output Voltage 6: Pulse Input 7: AI1 8: AI2 9: AI3 10: Length 11: Count Value 12: Communication Setting 13: Motor Rotational Speed 14: Output Current 15: Output Voltage 16: Reservation | 1 | ● |
| F3.09 | Maximum Output Frequency of DO | 0.01kHz~100.00kHz | 50.00kHz | ● |
| F3.10 | AO1 Offset Coefficient | -100.0%~+100.0% | 0.0% | ● |
| F3.11 | AO1 Gain | -10.00~+10.00 | 1.00 | ● |
| F3.12 | AO2 Offset Coefficient | -100.0%~+100.0% | 0.0% | ● |
| F3.13 | AO2 Gain | -10.00~+10.00 | 1.00 | ● |
| F3.14 | Y1 switch-on delay | 0.0s~3600.0s | 0.0s | ● |
| F3.15 | Y1 switch-off delay | 0.0s~3600.0s | 0.0s | ● |
| F3.16 | Y2 switch-on delay | 0.0s~3600.0s | 0.0s | ● |
| F3.17 | Y2 switch-off delay | 0.0s~3600.0s | 0.0s | ● |
| F3.18 | R-relay switch-on delay | 0.0s~3600.0s | 0.0s | ● |
| F3.19 | R-relay switch-off delay | 0.0s~3600.0s | 0.0s | ● |
| F3.20 | E-relay switch-on delay | 0.0s~3600.0s | 0.0s | ● |
| F3.21 | E-relay switch-off delay | 0.0s~3600.0s | 0.0s | ● |
| F3.22 | Monopulse Output Time Y1 | 0.0s~30.0s | 0.0s | ● |
| F3.23 | Monopulse Output Time Y2 | 0.0s~30.0s | 0.0s | ● |
| F3.24 | Monopulse Output Time Relay R | 0.0s~30.0s | 0.0s | ● |
| F3.25 | Monopulse Output Time Relay E | 0.0s~30.0s | 0.0s | ● |
| F3.27 | DO Valid Mode Selection | 0: Positive Logic 1: Negative Logic  | 0000 | ● |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|--------------------------------|---|--|-----------------|----------|
| Group F4: Auxiliary Parameters | | | | |
| F4.00 | JOG Operating Frequency | 0.00 Hz to Maximum Frequency | 2.00Hz | ● |
| F4.01 | JOG Acceleration Time | 0.0s~6500.0s | 20.0s | ● |
| F4.02 | JOG Deceleration Time | 0.0s~6500.0s | 20.0s | ● |
| F4.03 | Acceleration Time 2 | 0.0s~6500.0s | Model Dependent | ● |
| F4.04 | Deceleration Time 2 | 0.0s~6500.0s | Model Dependent | ● |
| F4.05 | Acceleration Time 3 | 0.0s~6500.0s | Model Dependent | ● |
| F4.06 | Deceleration Time 3 | 0.0s~6500.0s | Model Dependent | ● |
| F4.07 | Acceleration Time 4 | 0.0s~6500.0s | 0 | ● |
| F4.08 | Deceleration Time 4 | 0.0s~6500.0s | 0 | ● |
| F4.09 | Jump Frequency 1 | 0.00 Hz to Maximum Frequency | 0.00Hz | ● |
| F4.10 | Jump Frequency 2 | 0.00 Hz to Maximum Frequency | 0.00Hz | ● |
| F4.11 | Jump Frequency Amplitude | 0.00 Hz to Maximum Frequency | 0.01Hz | ● |
| F4.12 | Forward/Reverse Rotation Dead time | 0.0s~3000.0s | 0.0s | ● |
| F4.13 | Reverse Control | 0: Enabled 1 1: Disabled 1 2: Disabled 2 | 0 | ● |
| F4.14 | Operating Mode (Set frequency is lower than the lower limit of frequency) | 0: Run at frequency lower limit 1: Stop 2: Run at zero speed | 0 | ● |
| F4.15 | Droop Control | 0.00Hz~10.00Hz | 0.00Hz | ● |
| F4.16 | Accumulated Power-On Time Threshold | 0h~65000h | 0h | ● |
| F4.17 | Accumulated Operating Time Threshold | 0h~65000h | 0h | ● |
| F4.18 | Start-Up Protection | 0: No 1: Yes | 0 | ● |
| F4.19 | Frequency Detection Value (FDT1) | 0.00 Hz to Maximum Frequency | 50.00Hz | ● |
| F4.20 | Frequency Detection Hysteresis(FDT 1) | 0.0%~100.0% (F4.19) | 5.0% | ● |
| F4.21 | Detection Range of | 0.0%~100.0 | 0.0% | ● |
| | Frequency Reached | (Maximum Frequency) | | |
| F4.22 | Jump Frequency During Acceleration /Deceleration | 0: Disabled 1: Enabled | 0 | ● |
| F4.25 | Frequency Points Switch Between Acceleration Time 1 and Acceleration Time 2 | 0.00 Hz to Maximum Frequency | 0.00Hz | ● |
| F4.26 | Frequency Points Switch Between Deceleration Time 1 and Deceleration Time 2 | 0.00 Hz to Maximum Frequency | 0.00Hz | ● |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|----------------|--|---|---------|----------|
| F4.27 | Terminal JOG Preferred | 0: Disabled 1: Enabled | 0 | ● |
| F4.28 | Frequency Detection Value(FDT2) | 0.00 Hz to Maximum Frequency | 50.00Hz | ● |
| F4.29 | Frequency Detection Hysteresis(FDT 2) | 0.0%~100.0% (FDT2 Level) | 5.0% | ● |
| F4.30 | Any Frequency Reaching Detection Value 1 | 0.00 Hz to Maximum Frequency | 50.00Hz | ● |
| F4.31 | Any Frequency Reaching Detection Amplitude 1 | 0.0%~100.0% (Maximum Frequency) | 0.0% | ● |
| F4.32 | Any Frequency Reaching Detection Value 2 | 0.00 Hz to Maximum Frequency | 50.00Hz | ● |
| F4.33 | Any Frequency Reaching Detection Amplitude 2 | 0.0%~100.0% (Maximum Frequency) | 0.0% | ● |
| F4.34 | Zero Current Detection Level | 0.0%~300.0% 100.0% corresponds to rated motor current. | 5.0% | ● |
| F4.35 | Zero Current Detection Delay Time | 0.01s~600.00s | 0.10s | ● |
| F4.36 | Output Over current Threshold | 0.0% (No Detection) 0.1%~300.0% (Rated Motor Current) | 200.0% | ● |
| F4.37 | Output Over current Detection Delay Time | 0.00s~600.00s | 0.00s | ● |
| F4.38 | Any Current Reaching 1 | 0.0%~300.0%(Rated Motor Current) | 100.0% | ● |
| F4.39 | Any Current Reaching 1 Amplitude | 0.0%~300.0%(Rated Motor Current) | 0.0% | ● |
| F4.40 | Any Current Reaching2 | 0.0%~300.0%(Rated Motor Current) | 100.0% | ● |
| F4.41 | Any Current Reaching 2 Amplitude | 0.0%~300.0%(Rated Motor Current) | 0.0% | ● |
| F4.42 | Timing Function | 0: Disabled 1: Enabled | 0 | ● |
| F4.43 | Timer Selection of Operating Time | 0:F4.44 1:A11 2:A12 3:A13(Analog input corresponds to F4.14) | 0 | ● |
| F4.44 | Timing Duration | 0.0 Min~6500.0 Min | 0.0 Min | ● |
| F4.45 | Lower Limit of A11 Input Voltage Protection | 0.00V~F4.46 | 3.10V | ● |
| F4.46 | Upper Limit of A11 Input Voltage Protection | F4.45~10.00V | 6.80V | ● |
| F4.47 | Module Temperature Threshold | 0℃~100℃ | 75℃ | ● |
| F4.48 | Cooling Fan Control | 0: Fan working during operating 1: Fan working continuously | 0 | ● |
| F4.49 | Wakeup Frequency | Dormancy frequency (F4.51) to Maximum Frequency (F0.10) | 0.00Hz | ● |
| F4.50 | Wakeup Delay Time | 0.0s~6500.0s | 0.0s | ● |
| F4.51 | Dormancy Frequency | 0.00Hz to Wakeup Frequency (F4.49) | 0.00Hz | ● |
| F4.52 | Dormancy Delay Time | 0.0s~6500.0s | 0.0s | ● |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|-------------------------------------|---|--|---------|----------|
| F4.53 | Current Operating Time Reached | 0.0Min~6500.0Min | 0.0Min | ● |
| F4.54 | ADT1 Channel Selection |  | 00 | ● |
| F4.55 | ADT2 Channel selection |  | 01 | ● |
| F4.56 | ADT1 Output Upper Limit | F4.57~10.00 | 10.00V | ● |
| F4.57 | ADT1 Output Lower Limit | 0.00~F4.56 | 0.00V | ● |
| F4.58 | ADT2 Output Upper Limit | F4.59~10.00 | 10.00V | ● |
| F4.59 | ADT2 Output Lower Limit | 0.00~F4.58 | 0.00V | ● |
| Group F5: Vector Control Parameters | | | | |
| F5.00 | Speed Loop Proportion Gain 1 | 1~100 | 30 | ● |
| F5.01 | Speed Loop Integral Time 1 | 0.01s~10.00s | 0.50s | ● |
| F5.02 | Frequency Switch1 | 0.00~A2.05 | 5.00Hz | ● |
| F5.03 | Speed Loop Proportion Gain 2 | 1~100 | 20 | ● |
| F5.04 | Speed Loop Integral Time 2 | 0.01s~10.00s | 1.00s | ● |
| F5.05 | Frequency Switch 2 | F5.02 to Maximum Output Frequency | 10.00Hz | ● |
| F5.06 | Slip Gain of Vector Control | 50%~200% | 100% | ● |
| F5.07 | Time Constant of Speed Loop Filter | 0.000s~0.100s | 0.000s | ● |
| F5.08 | Over excitation Gain of Vector Control | 0~200 | 64 | ● |
| F5.09 | Upper Limit of Torque Source in Speed Control Mode | 0: F5.10 1: AI1 2: AI2 3: AI3 4: Pulse Setting (X5) 5:Communication Setting 6: MIN(AI1,AI2) 7: MAX(AI1,AI2) | 0 | ● |
| F5.10 | Digital Setting of Torque Upper Limit in Speed Control Mode | 0.0%~200.0% | 150.0% | ● |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|---|--|---|-----------------|----------|
| F5.11 | Upper Limit of Torque Source in Speed Control Mode(In Regenerative State) | 0: F5.12 1: AI1 2: AI2 3: AI3 4: Pulse Setting (X5) 5: Communication Setting 6: MIN(AI1, AI2) 7: MAX(AI1, AI2) | 0 | ● |
| F5.12 | Digital Setting of Torque Upper Limit in Speed Control Mode(In Regenerative State) | 0.0%~200.0% | 150.0% | ● |
| F5.13 | Proportion Gain of Excitation Adjustment | 0~60000 | 2000 | ● |
| F5.14 | Integral Gain of Excitation Adjustment | 0~60000 | 1300 | ● |
| F5.15 | Proportion Gain of Torque Adjustment | 0~60000 | 2000 | ● |
| F5.16 | Integral Gain of Torque Adjustment | 0~60000 | 1300 | ● |
| F5.17 | Integral Separation of Speed Loop | 0: Invalid 1: Valid | 0 | ● |
| F5.18 | Torque Limit Coefficient of Field Weakening | 50~150 | 80 | ● |
| F5.19 | Bandwidth of Flux Closed Loop | 0~5.00 | 2.00 | ● |
| F5.20 | Minimum Set Value of Flux | 30~100 | 30 | ○ |
| F5.21 | Torque Switch | 0~50.0 | 20.0 | ● |
| F5.22 | Over excitation Enabling | 0: Invalid 1: Valid | 0 | ● |
| Group F6: V/F Control Parameters | | | | |
| F6.00 | V/F Curve Setting | 0: Linear V/F 1: Multipoint V/F 2: Square V/F 3: 1.2-power V/F 4: 1.4-power V/F 6: 1.6-power V/F 8: 1.8-power V/F | 0 | ○ |
| F6.01 | Torque Boost | 0.0%: (Automatic Torque Boost) 0.1%~30.0% | Model Dependent | ● |
| F6.02 | Cut-off Frequency of Torque Boost | 0.00 Hz to Maximum Output Frequency | 50.00Hz | ○ |
| F6.03 | Multi-point V/F Freq. 1 | 0.00Hz~F6.05 | 0.00Hz | ○ |
| F6.04 | Multi-point V/F Voltage 1 | 0.0%~100.0% | 0.0% | ○ |
| F6.05 | Multi-point V/F Freq. 2 | F6.03~F6.07 | 0.00Hz | ○ |
| F6.06 | Multi-point V/F Voltage 2 | 0.0%~100.0% | 0.0% | ○ |
| F6.07 | Multi-point V/F Freq. 3 | F6.05 to Rated Motor Freq. (F1.04) | 0.00Hz | ○ |
| F6.08 | Multi-point V/F Voltage 3 | 0.0%~100.0% | 0.0% | ○ |




| Function Codes | Parameter Name | Range of Settings | Default | Property |
|--|--|---|-----------------|----------|
| F6.09 | V/F Slip Compensation Gain | 0.0%~200.0% | 0.0% | ● |
| F6.10 | V/F Over-excitation Gain | 0~200 | 64 | ● |
| F6.11 | V/F Oscillation Suppression Gain | 0~100 | Model Dependent | ● |
| F6.13 | Selection for Limited Current Protection | 0~1 | 0 | ○ |
| F6.14 | Limited Current Protection Value | 0~600 | 70A | ● |
| F6.15 | Limited Current Protection Time | 0.0~60.0 | 02.0s | ● |
| F6.16 | V/F Current limit selection | 0: Invalid 1: Valid | 1 | ● |
| F6.17 | V/F Current limit level | 50%~200% | 150% | ● |
| F6.18 | Current limit gain | 0~100 | 20 | ● |
| F6.19 | Compensation factor of speed multiplying current limit level | 50%~200% | 50% | ● |
| F6.20 | Voltage limit selection | 0: Invalid 1: Valid (V/F and SVC) | 0 | ● |
| F6.21 | Voltage limit | 120%~150% (V/F and SVC) | 130% | ● |
| F6.22 | Frequency gain for voltage limit | 0~100 (V/F and SVC) | 30 | ● |
| F6.23 | Voltage gain for voltage limit | 0~100 | 40 | ● |
| F6.24 | Frequency rise threshold during voltage limit | 0~50.00 | 5.00 | ● |
| F6.25 | Filter Time of V/f Slip Compensation | 0~10.0 | 4.0 | ● |
| F6.26 | Auto-Torque Boost Coefficient | 0~200 | 100 | ● |
| Group F7: Start/Stop Control Parameters | | | | |
| F7.00 | Start Mode | 0: Direct Start 1: Speed tracking then start 2: DC braking then start | 0 | ● |
| F7.01 | Speed Tracking Mode | 0: Start from the frequency at stop 1: Start from zero speed 2: Start from the maximum frequency | 0 | ○ |
| F7.02 | Speed of Speed Tracking | 1~100 | 20 | ● |
| F7.03 | Startup Frequency | 0.00Hz~10.00Hz | 0.00Hz | ● |
| F7.04 | Hold Time of Startup Frequency | 0.0s~100.0s | 0.0s | ○ |
| F7.05 | Startup DC Braking Current | 0%~100% | 0% | ○ |
| F7.06 | Startup DC Braking Time | 0.0s~100.0s | 0.0s | ○ |
| F7.07 | Acceleration / Deceleration Mode | 0: Linear Acceleration / Deceleration 1: S-curve Acceleration / Deceleration A 2: S-curve Acceleration / Deceleration B | 0 | ○ |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|---|---|---|---------|----------|
| F7.08 | Time Proportion of the Start Segment of S-curve | 0.0%~ (100.0%-F7.09) | 30.0% | ○ |
| F7.09 | Time Proportion of the End Segment of S-curve | 0.0%~ (100.0%-F7.08) | 30.0% | ○ |
| F7.10 | Stop Mode | 0: Decelerate to Stop 1: Coast to Stop | 0 | ● |
| F7.11 | Initial Frequency of DC Braking at Stop | 0.00 Hz to maximum frequency | 0.00Hz | ● |
| F7.12 | Waiting Time of DC Braking at Stop | 0.0s~100.0s | 0.0s | ● |
| F7.13 | DC Braking Current at Stop | 0%~100% | 0% | ● |
| F7.14 | DC Braking Time at Stop | 0.0s~100.0s | 0.0s | ● |
| F7.15 | Use Rate of Braking | 0%~100% | 100% | ● |
| F7.16 | Rotational Speed Tracking Current | 20%~200% | 100% | ● |
| F7.17 | Rotational Speed Tracking KP | 0~1000 | 500 | ● |
| F7.18 | Rotational Speed Tracking KI | 0~1000 | 800 | ● |
| F7.19 | Rotational Speed Tracking Demagnetization Time | 0.00s~10.00s | 1.00 | ● |
| F7.20 | 0Hz Output Enable | 0:No Output 1:Output | | ● |
| Group F8: Operation Panel and Display Parameters | | | | |
| F8.01 | MK Key Function Selection | 0: Menu Switch 1:Switch Between Operation Panel Control and Remote Command Control (Terminals or Communication) 2:Switch Between Forward and Reverse Rotation 3: Forward JOG 4: Reverse JOG | 0 | ○ |
| F8.03 | LED Display Parameters in Operation 1 | 0000~FFFF Bit00: Operating Frequency (Hz) Bit01: Set Frequency (Hz) Bit02: Output Current (A) Bit03: Output Voltage (V) Bit04:Output Power (kW) Bit05: Output Torque (%) Bit06: Bus Voltage (V) Bit07: Terminal X Input Status 1 Bit08: Reserved Bit09: Digital Output Status Bit10:AI1 Voltage (V) Bit11: AI2 Voltage (V) Bit12: AI3 Voltage (V) Bit13:Pulse Input Frequency(kHz) Bit14: PID Setting Bit15: PID Feedback | 1F | ● |

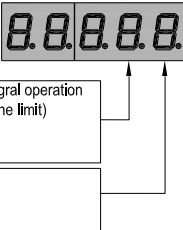
| Function Codes | Parameter Name | Range of Settings | Default | Property |
|--|---|---|---------|----------|
| F8.04 | LED Display Operating Parameters 2 | 0000–FFFF Bit00: PID Output Bit01: Load Speed Display Bit02: Main Frequency Display(Hz) Bit03: Auxiliary Frequency Display Bit04: Feedback Speed Bit05: Count Value Bit06: Length Value Bit07: Linear speed Bit08: Current Power-On Time(Hour) Bit09: Current Operating Time (Min) Bit10:Overload Count Bit11:Output Current Percentage(%) Bit12:Remaining Operating Time Bit13: PLC Phase Bit14:Communication Setting Value | 0 | ● |
| F8.05 | LED Display Parameters at Stop | 0000–FFFF Bit00: Set Frequency (Hz) Bit01: Bus Voltage (V) Bit02: Terminal X Input Status Bit03: Digital Output Status Bit04: AI1 Voltage (V) Bit05: AI2 Voltage (V) Bit06: AI3 Voltage (V) Bit07: Count Value Bit08: Length Value Bit09: PLC Phase Bit10: Load Speed Bit11: PID Setting Bit12:Pulse Setting Frequency (kHz) | 33 | ● |
| F8.06 | Display Coefficient of Load Speed | 0.0001~6.5000 | 3.0000 | ● |
| F8.07 | Radiator Temperature of Inverter Module | 0.0°C~100.0°C | | ◇ |
| F8.09 | Accumulated Operating Time | 0h~65535h | | ◇ |
| F8.11 | Software Version | | | ◇ |
| F8.12 | Number of Decimal Places for Load Speed Display | 0: 0 Decimal Places 1: 1 Decimal Place 2: 2 Decimal Places 3: 3 Decimal Places | 1 | ● |
| F8.13 | Accumulated Power-On Time | 0h~65535h | | ◇ |
| F8.14 | Accumulated Power Consumption | 0~65535 kWh | | ◇ |
| Group F9: Fault and Protection Parameters | | | | |
| F9.00 | Motor Overload Protection | 0: Disabled 1: Enabled | 1 | ● |
| F9.01 | Motor Overload Protection Gain | 0.20~10.00 | 1.00 | ● |
| F9.02 | Motor Overload Pre-warning Coefficient | 50%~100% | 80% | ● |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|----------------|--|---|---------|----------|
| F9.07 | Detection of short-circuit to ground upon power-on | 0: Disabled 1: Enabled | 1 | ● |
| F9.09 | Auto Reset times | 0~20 | 0 | ● |
| F9.10 | Selection of DO action during auto reset | 0: Not act 1: Act | 0 | ● |
| F9.11 | Time Interval of Fault Auto Reset | 0.1s~100.0s | 1.0s | ● |
| F9.12 | Input phase Loss / pre-charge relay Protection | Units: Input Phase Loss Protection Tens: pre-charge relay Protection 0: Disabled 1: Enabled | 10 | ● |
| F9.13 | Output Phase Loss Protection | 0: Disabled 1: Enabled | 1 | ● |
| F9.09 | Times of Faults Auto Reset | 0~20 | 0 | ● |
| F9.14 | 1st fault type | 0: No Error 1: Reserved 2:Over-current during Acceleration 3:Over-current during Deceleration 4: Over-current at a Constant Speed 5: Over-voltage during Acceleration 6: Over-voltage during Deceleration 7: Over-voltage at a Constant Speed 8:Buffer Resistor Overload | | |
| F9.15 | 2nd fault type | 9: Under-voltage 10: Inverter Overload 11: Motor Overload 12:Power Input Phase Loss 13: Power Output Phase Loss 14: Module Overheated 15: External Parts Error 16: Communication Errors 17: pre-charge relay Fault 18: Current Detection Errors 19: Motor Auto-tuning Errors 20: Encoder/PG Card Errors 21: EEPROM Read-Write Errors 22: Inverter Hardware Errors 23: Motor Short to Ground 24: Reserved | | |
| F9.16 | 3rd (latest) fault type | 25: Reserved 27: User-Defined Fault 1 28: User-Defined Fault 2 29:Accumulated Power-On Time Reached 30: Load Drop 31:PID Feedback Lost during Operating 40: Fault Current Limit Over-time 42: Large Speed Deviation 43: Motor Over-speed 51: Faulty Initial Position | | |
| F9.17 | Frequency upon 3rd Error | — | — | ◇ |

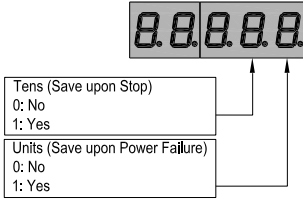
| Function Codes | Parameter Name | Range of Settings | Default | Property |
|----------------|--------------------------------------|-------------------|---------|----------|
| F9.18 | Current upon 3rd Error | — | — | ◇ |
| F9.19 | Bus Voltage upon 3rd Error | — | — | ◇ |
| F9.20 | Input Terminal Status upon 3rd Error | — | — | ◇ |
| F9.21 | Inverter Temperature upon 3rd Error | — | — | ◇ |
| F9.22 | Inverter Status upon 3rd Error | — | — | ◇ |
| F9.23 | Power-on Time upon 3rd Error | — | — | ◇ |
| F9.24 | Operating Time upon 3rd Error | — | — | ◇ |
| F9.27 | Frequency upon 2nd Error | — | — | ◇ |
| F9.28 | Current upon 2nd Error | — | — | ◇ |
| F9.29 | Bus Voltage upon 2nd Error | — | — | ◇ |
| F9.30 | X Status upon 2nd Error | — | — | ◇ |
| F9.31 | Inverter Temperature upon 2nd Error | — | — | ◇ |
| F9.32 | Inverter Status upon 2nd Error | — | — | ◇ |
| F9.33 | Power-on Time upon 2nd Error | — | — | ◇ |
| F9.34 | Operating Time upon 2nd Error | — | — | ◇ |
| F9.37 | Frequency upon 1st Error | — | — | ◇ |
| F9.38 | Current upon 1st Error | — | — | ◇ |
| F9.39 | Bus Voltage upon 1st Error | — | — | ◇ |
| F9.40 | X Status upon 1st Error | — | — | ◇ |
| F9.41 | Inverter Temperature upon 1st Error | — | — | ◇ |
| F9.42 | Inverter Status upon 1st Error | — | — | ◇ |
| F9.43 | Power-on Time upon 1st Error | — | — | ◇ |
| F9.44 | Operating Time upon 1st Error | — | — | ◇ |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|----------------|---|--|---------|----------|
| F9.47 | Selection for Fault Protection Actions 1 |  <p>Ten Thousands (Communication Error, Err16)</p> <p>Thousands(External Parts Error, Err15)</p> <p>Hundreds(Power Output Phase Loss, Err13)</p> <p>Tens (Power Input Phase Loss, Err12)</p> <p>Units (Motor Overload, Err11) 0: Coast to Stop 1: Stop (Stop Mode) 2: Continue to Run</p> | 00000 | ● |
| F9.48 | Selection for Fault Protection Actions 2 |  <p>Ten Thousands: (Accumulated Operating Time Reached)</p> <p>Thousands; Reserved</p> <p>Hundreds; Reserved</p> <p>Tens (EEPROM Read -Write Error, Err21) 0: Coast to stop 1: Stop (Stop Mode)</p> <p>Units (Encoder Error, Err20) 0: Coast to Stop</p> | 00000 | ● |
| F9.49 | Selection for Fault Protection Actions 3 |  <p>Ten Thousands (PID Feedback Lost during Operating, Err31) 0: Coast to Stop</p> <p>Thousands (Load becoming 0, Err30) 0: Coast to Stop 1: Stop (Stop Mode) 2: Reduce the frequency to 7% of rated motor frequency and resume to the set frequency if the load recovers</p> <p>Hundreds (Accumulated Power-on-Time Reached, Err29) 0: Coast to Stop 1: Stop (Stop Mode) 2: Continue to Run</p> <p>Tens (User-Defined Fault 2, Err28) 0: Coast to Stop 1: Stop (Stop Mode) 2: Continue to Run</p> <p>Units (User-Defined Fault 1, Err27) 0: Coast to Stop 1: Stop (Stop Mode) 2: Continue to Run</p> | 00000 | ● |
| F9.50 | Selection for Fault Protection Actions 4 | Units (Large Speed Deviation,Err42) 0: Coast to Stop 1: Stop (Stop Mode) 2: Continue to Run | 00000 | ● |
| F9.54 | Selection for Operating Frequency When Error Occurs | 0:Current Operating Frequency 1: Set Frequency 2: Frequency Upper Limit 3: Frequency Lower Limit 4: Backup Frequency Upon Faults | 0 | ● |
| F9.55 | Backup Frequency Upon Faults | 60.0%~100.0% 100.0%: Maximum Frequency (F0.10) | 100.0% | ● |
| F9.59 | Action Selection at Instantaneous Power Failure | 0: Invalid 1: PI Automatic Voltage Stabilization 2: Decelerate According to F4.08 | 0 | ● |
| F9.60 | Voltage Check at Instantaneous Power | 80.0%~F9.61 (Standard Bus Voltage) | 90.0% | ● |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|--|---|---|---------|----------|
| F9.61 | Voltage Check at Instantaneous Power Recovery | F9.60~100.0% (Standard Bus Voltage) | 85.0% | ● |
| F9.62 | Voltage Recovery Check Time at Instantaneous Power Failure | 0.00s~100.00s | 0.50s | ● |
| F9.63 | Adjusting KP when Inverter does not stop at Instantaneous Power Failure | 1~100 | 40 | ● |
| F9.64 | Adjusting KI when Inverter does not stop at Instantaneous Power Failure | 1~100 | 30 | ● |
| F9.65 | Protection upon Load Becoming 0 | 0: Invalid 1: Valid | 0 | ● |
| F9.66 | Detection Level of Load Becoming 0 | 0.0~100.0% | 10.0% | ● |
| F9.67 | Detection Time of Load Becoming 0 | 0.0~60.0s | 1.0s | ● |
| F9.69 | Over-speed Detection Value | 0.0%~50.0% (Maximum Frequency) | 20.0% | ● |
| F9.70 | Over-speed Detection Time | 0.0s~60.0s | 1.0s | ● |
| F9.71 | Detection Value of Large Speed Deviation | 0.0%~50.0% (Maximum Frequency) | 20.0% | ● |
| F9.72 | Detection Time of Large Speed Deviation | 0.0s~60.0s | 5.0s | ● |
| F9.61 | Voltage Check at Instantaneous Power Recovery | F9.60~100.0% (Standard Bus Voltage) | 85.0% | ● |
| Group FA: PID Function Parameters | | | | |
| FA.00 | PID Setting Source | 0: FA.01 1: AI1 2: AI2 3: AI3 4: Pulse Setting (DI5) 5: Communication Setting 6: Multi-Command | 0 | ● |
| FA.01 | PID Digital Setting | 0.0%~100.0% | 50.0% | ● |
| FA.02 | PID Feedback Source | 0: AI1 1: AI2 2: AI3 3: AI1-AI2 4: Pulse setting (X5) 5: Communication Setting 6: AI1 + AI2 7: MAX (AI1, AI2) 8: MIN (AI1, AI2) | 0 | ● |
| FA.03 | PID Direction | 0: Forward 1: Reverse | 0 | ● |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|----------------|---|---|---------|----------|
| FA.04 | PID Feedback Range | 0~65535 | 1000 | ● |
| FA.05 | Proportional Gain Kp1 | 0.0~100.0 | 20.0 | ● |
| FA.06 | Integral Time Ti1 | 0.01s~10.00s | 2.00s | ● |
| FA.07 | Differential Time Td1 | 0.000s~10.000s | 0.000s | ● |
| FA.08 | Reverse Cut-off Frequency of PID | 0.00 to Maximum Frequency | 0.00Hz | ● |
| FA.09 | PID Deviation Limit | 0.0%~100.0% | 0.0% | ● |
| FA.10 | PID Differential Limit | 0.00%~100.00% | 0.10% | ● |
| FA.11 | PID Set Time of Change | 0.00~650.00s | 0.00s | ● |
| FA.12 | PID Feedback Filter Time | 0.00~60.00s | 0.00s | ● |
| FA.13 | PID Output Filter Time | 0.00~60.00s | 0.00s | ● |
| FA.15 | Proportional Gain Kp2 | 0.0~100.0 | 20.0 | ● |
| FA.16 | Integral Time Ti2 | 0.01s~10.00s | 2.00s | ● |
| FA.17 | Differential Time Td2 | 0.000s~10.000s | 0.000s | ● |
| FA.18 | PID Parameter Switch Condition | 0: No Switch 1: Switch via Terminal X 2: Automatic Switch Based on Deviation | 0 | ● |
| FA.19 | PID Parameter Switch Deviation 1 | 0.0%~FA.20 | 20.0% | ● |
| FA.20 | PID Parameter Switch Deviation 2 | FA.19~100.0% | 80.0% | ● |
| FA.21 | PID Initial Value | 0.0%~100.0% | 0.0% | ● |
| FA.22 | Hold Time of PID Initial Value | 0.00~650.00s | 0.00s | ● |
| FA.23 | Maximum Value of Two PID Outputs Deviation in Forward Direction | 0.00%~100.00% | 1.00% | ● |
| FA.24 | Maximum Value of Two PID Outputs Deviation in Reverse Direction | 0.00%~100.00% | 1.00% | ● |
| FA.25 | PID Integral Property |  <p>Tens(Whether to stop integral operation when the output reaches the limit) 0: Continue the operation 1: Stop the operation</p> <p>Units (Integral Separated) 0: Invalid 1: Valid</p> | 00 | ● |
| FA.26 | Detection Value of PID Feedback Loss | 0.0% : No Judging Feedback Loss 0.1% - 100.0% | 0.0% | ● |
| FA.27 | Detection Time of PID Feedback Loss | 0.0s~20.0s | 0.0s | ● |
| FA.28 | PID Operation at Stop | 0: No PID Operation at Stop 1: PID Operation at Stop | 0 | ● |

| Group Fb: Swing Frequency, Fixed Length, Count and Torque Control and Restricting Parameters | | | | |
|--|--|---|---------|----------|
| Function Codes | Parameter Name | Range of Settings | Default | Property |
| Fb.00 | Swing Frequency Setting mode | 0: Relative to the Central Frequency 1: Relative to the Maximum Frequency | 0 | ● |
| Fb.01 | Swing Frequency Amplitude | 0.0%~100.0% | 0.0% | ● |
| Fb.02 | Jump Frequency Amplitude | 0.0%~50.0% | 0.0% | ● |
| Fb.03 | Swing Frequency Cycle | 0.1s~3000.0s | 10.0s | ● |
| Fb.04 | Rise Time Coefficient of Triangular Wave | 0.1%~100.0% | 50.0% | ● |
| Fb.05 | Set Length | 0m~65535m | 1000m | ● |
| Fb.06 | Actual Length | 0m~65535m | 0m | ● |
| Fb.07 | Number of Pulses Per Meter | 0.1~6553.5 | 100.0 | ● |
| Fb.08 | Set Count Value | 1~65535 | 1000 | ● |
| Fb.09 | Designated Count Value | 1~65535 | 1000 | ● |
| Fb.10 | Speed/Torque Control Selection | 0: Speed Control 1: Torque Control | 0 | ○ |
| Fb.11 | Setting Source of Torque in Torque Control Mode | 0: Digital setting (Fb.12) 1: AI1 2: AI2 3: AI3 4: Pulse Setting (DI5) 5: Communication Setting 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) (Full range of values 1-7 corresponds to the digital setting of Fb.12). | 0 | ○ |
| Fb.12 | Digital Setting of Torque in Torque Control Mode | -200.0%~200.0% | 150.0% | ● |
| Fb.13 | Forward Maximum Frequency in Torque Control Mode | 0.00Hz to Maximum Frequency | 50.00Hz | ● |
| Fb.14 | Reverse Maximum Frequency in Torque Control | 0.00Hz to Maximum Frequency | 50.00Hz | ● |
| Fb.15 | Acceleration Time in Torque Control Mode | 0.00s~65000s | 0.00s | ● |
| Fb.16 | Deceleration Time in Torque Control Mode | 0.00s~65000s | 0.00s | ● |

| Group FC: Multi-Reference and Simple PLC Function | | | | |
|---|--|--|----------|----------|
| Function Codes | Parameter Name | Range of Settings | Default | Property |
| FC.00 | Command 0 | -100.0%~100.0% | 0.0% | ● |
| FC.01 | Command 1 | -100.0%~100.0% | 0.0% | ● |
| FC.02 | Command 2 | -100.0%~100.0% | 0.0% | ● |
| FC.03 | Command 3 | -100.0%~100.0% | 0.0% | ● |
| FC.04 | Command 4 | -100.0%~100.0% | 0.0% | ● |
| FC.05 | Command 5 | -100.0%~100.0% | 0.0% | ● |
| FC.06 | Command 6 | -100.0%~100.0% | 0.0% | ● |
| FC.07 | Command 7 | -100.0%~100.0% | 0.0% | ● |
| FC.08 | Command 8 | -100.0%~100.0% | 0.0% | ● |
| FC.09 | Command 9 | -100.0%~100.0% | 0.0% | ● |
| FC.10 | Command10 | -100.0%~100.0% | 0.0% | ● |
| FC.11 | Command11 | -100.0%~100.0% | 0.0% | ● |
| FC.12 | Command12 | -100.0%~100.0% | 0.0% | ● |
| FC.13 | Command13 | -100.0%~100.0% | 0.0% | ● |
| FC.14 | Command14 | -100.0%~100.0% | 0.0% | ● |
| FC.15 | Command15 | -100.0%~100.0% | 0.0% | ● |
| FC.16 | Simple PLC Operation Mode | 0: Stop after one cycle 1: Keep the final values after one cycle 2: Repeat | 0 | ● |
| FC.17 | Simple PLC Saving Options |  <p>Tens (Save upon Stop) 0: No 1: Yes</p> <p>Units (Save upon Power Failure) 0: No 1: Yes</p> | 00 | ● |
| FC.18 | Operating Time of Simple PLC Command 0 | 0.0s(h)~6500.0s(h) | 0.0s (h) | ● |
| FC.19 | Acceleration / Deceleration Time of Simple PLC Command 0 | 0~3 | 0 | ● |
| FC.20 | Operating Time of Simple PLC Command 1 | 0.0s(h)~6500.0s(h) | 0.0s (h) | ● |
| FC.21 | Acceleration / Deceleration Time of Simple PLC Command 1 | 0~3 | 0 | ● |
| FC.22 | Operating Time of Simple PLC Command 2 | 0.0s(h)~6500.0s(h) | 0.0s (h) | ● |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|----------------|---|-----------------------|----------|----------|
| FC.23 | Acceleration / Deceleration Time of Simple PLC Command 2 | 0~3 | 0 | ● |
| FC.24 | Operating Time of Simple PLC Command 3 | 0.0s(h)~6500.0s(h) | 0.0s (h) | ● |
| FC.25 | Acceleration / Deceleration Time of Simple PLC Command 3 | 0~3 | 0 | ● |
| FC.26 | Operating Time of Simple PLC Command 4 | 0.0s(h)~6500.0s(h) | 0.0s (h) | ● |
| FC.27 | Acceleration / Deceleration Time of Simple PLC Command 4 | 0~3 | 0 | ● |
| FC.28 | Operating Time of Simple PLC Command 5 | 0.0s(h)~6500.0s(h) | 0.0s (h) | ● |
| FC.29 | Acceleration / Deceleration Time of Simple PLC Command 5 | 0~3 | 0 | ● |
| FC.30 | Operating Time of Simple PLC Command 6 | 0.0s(h)~6500.0s(h) | 0.0s (h) | ● |
| FC.31 | Acceleration / Deceleration Time of Simple PLC Command 6 | 0~3 | 0 | ● |
| FC.32 | Operating Time of Simple PLC Command 7 | 0.0s(h)~6500.0s(h) | 0.0s (h) | ● |
| FC.33 | Acceleration / Deceleration Time of Simple PLC Command 7 | 0~3 | 0 | ● |
| FC.34 | Operating Time of Simple PLC Command 8 | 0.0s(h)~6500.0s(h) | 0.0s (h) | ● |
| FC.35 | Acceleration / Deceleration Time of Simple PLC Command 8 | 0~3 | 0 | ● |
| FC.36 | Operating Time of Simple PLC Command 9 | 0.0s(h)~6500.0s(h) | 0.0s (h) | ● |
| FC.37 | Acceleration / Deceleration Time of Simple PLC Command 9 | 0~3 | 0 | ● |
| FC.38 | Operating Time of Simple PLC Command 10 | 0.0s(h)~6500.0s(h) | 0.0s (h) | ● |
| FC.39 | Acceleration / Deceleration Time of Simple PLC Command10 | 0~3 | 0 | ● |
| FC.40 | Operating Time of Simple PLC Command 11 | 0.0s (h) ~6500.0s (h) | 0.0s (h) | ● |
| FC.41 | Acceleration / Deceleration Time of Simple PLC Command 11 | 0~3 | 0 | ● |
| FC.42 | Operating Time of Simple PLC Command 12 | 0.0s (h) ~6500.0s (h) | 0.0s (h) | ● |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|------------------------------------|---|---|----------|----------|
| FC.43 | Acceleration / Deceleration Time of Simple PLC Command 12 | 0~3 | 0 | ● |
| FC.44 | Operating Time of Simple PLC Command 13 | 0.0s (h) ~6500.0s (h) | 0.0s (h) | ● |
| FC.45 | Acceleration / Deceleration Time of Simple PLC Command 13 | 0~3 | 0 | ● |
| FC.46 | Operating Time of Simple PLC Command 14 | 0.0s (h) ~6500.0s (h) | 0.0s (h) | ● |
| FC.47 | Acceleration / Deceleration Time of Simple PLC Command 14 | 0~3 | 0 | ● |
| FC.48 | Operating Time of Simple PLC Command 15 | 0.0s (h) ~6500.0s (h) | 0.0s (h) | ● |
| FC.49 | Acceleration / Deceleration Time of Simple PLC Command 15 | 0~3 | 0 | ● |
| FC.50 | Time unit of simple PLC running | 0: s 1: h | 0 | ● |
| FC.51 | Reference 0 source | 1: AI1 2: AI2 3: AI3 4: Pulse setting 5: PID 6: Set by preset frequency (F0.08), modified via terminal UP/DOWN | 0 | ● |
| Group Fd: Communication Parameters | | | | |
| Fd.00 | Baud Rate | 0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS | 5 | ● |
| Fd.01 | Data Format | 0: No Check, Data Format <8,N,2> 1: Even Parity Check, Data Format <8,E,1> 2: Upper Limit, Data Format <8,N,1> | 0 | ● |
| Fd.02 | Local Address | 1~247 0: Broadcast Address | 1 | ● |
| Fd.03 | Response Delay | 0ms~20ms | 2 | ● |
| Fd.04 | Communication Timeout | 0.0(Invalid) ,0.1s~60.0s | 0.0 | ● |

| Function Codes | Parameter Name | Range of Settings | Default | Property |
|--|---|---|---------|----------|
| Fd.05 | Modbus Protocol Selection Data Format | Units: MODBUS 0:Non-Standard Modbus Protocol 1:Standard Modbus Protocol | 1 | ● |
| Fd.06 | Current Resolution of Communication Reading | 0:0.01A 1:0.1A | 0 | ● |
| Group FE: Quick Menu Parameters | | | | |
| FE.00 | Quick Menu 0 | F0.00~FF.xx P0.00~P1.xx H0.00~H0.xx | F0.01 | ● |
| FE.01 | Quick Menu 1 | | F0.02 | ● |
| FE.02 | Quick Menu 2 | | F0.03 | ● |
| FE.03 | Quick Menu 3 | | F0.07 | ● |
| FE.04 | Quick Menu 4 | | F0.08 | ● |
| FE.05 | Quick Menu 5 | | F0.17 | ● |
| FE.06 | Quick Menu 6 | | F0.18 | ● |
| FE.07 | Quick Menu 7 | | F3.00 | ● |
| FE.08 | Quick Menu8 | | F3.01 | ● |
| FE.09 | Quick Menu 9 | | F4.00 | ● |
| FE.10 | Quick Menu 10 | | F4.01 | ● |
| FE.11 | Quick Menu 11 | | F4.02 | ● |
| FE.12 | Quick Menu 12 | | F5.04 | ● |
| FE.13 | Quick Menu 13 | | F5.07 | ● |
| FE.14 | Quick Menu 14 | | F6.00 | ● |
| FE.15 | Quick Menu 15 | | F6.10 | ● |
| FE.16 | Quick Menu 16 | | F0.00 | ● |
| FE.17 | Quick Menu 17 | | F0.00 | ● |
| FE.18 | Quick Menu 18 | | F0.00 | ● |
| FE.19 | Quick Menu 19 | | F0.00 | ● |
| FE.20 | Quick Menu 20 | | F0.00 | ● |
| FE.21 | Quick Menu 21 | | F0.00 | ● |
| FE.22 | Quick Menu 22 | | F0.00 | ● |
| FE.23 | Quick Menu 23 | | F0.00 | ● |
| FE.24 | Quick Menu 24 | | F0.00 | ● |
| FE.25 | Quick Menu 25 | | F0.00 | ● |
| FE.26 | Quick Menu 26 | | F0.00 | ● |
| FE.27 | Quick Menu 27 | | F0.00 | ● |
| FE.28 | Quick Menu 28 | | F0.00 | ● |
| FE.29 | Quick Menu 29 | F0.00 | ● | |

| Group P0: Analog Four-Point Offset Parameters | | | | |
|---|--|-------------------|---------|----------|
| Function Codes | Parameter Name | Range of Settings | Default | Property |
| P0.00 | AI Curve 4 Minimum Input | -10.00V~P0.02 | 0.00V | ● |
| P0.01 | Corresponding Setting of AI Curve 4 Minimum Input | -100.0%~+100.0% | 0.0% | ● |
| P0.02 | AI Curve 4 Inflection Point 1 Input | P0.00~P0.04 | 3.00V | ● |
| P0.03 | Corresponding Setting of AI Curve 4 Inflection Point 1 Input | -100.0%~+100.0% | 30.0% | ● |
| P0.04 | AI Curve 4 Inflection Point 2 Input | P0.02~P0.06 | 6.00V | ● |
| P0.05 | Corresponding Setting of AI Curve 4 Inflection Point 2 Input | -100.0%~+100.0% | 60.0% | ● |
| P0.06 | AI Curve 4 Maximum Input | P0.04~+10.00V | 10.00V | ● |
| P0.07 | Corresponding Setting of AI curve 4 Maximum Input | -100.0%~+100.0% | 100.0% | ● |
| P0.08 | AI curve 5 Minimum Input | -10.00V~P0.10 | -10.00V | ● |
| P0.09 | Corresponding Setting of AI Curve 5 Minimum Input | -100.0%~+100.0% | -100.0% | ● |
| P0.10 | AI Curve 5 Inflection Point 1 Input | P0.08~P0.12 | -3.00V | ● |
| P0.11 | Corresponding Setting of AI Curve 5 Inflection Point 1 Input | -100.0%~+100.0% | -30.0% | ● |
| P0.12 | AI Curve 5 Inflection Point 2 Input | P0.10~P0.14 | 3.00V | ● |
| P0.13 | Corresponding Setting of AI Curve 5 Inflection Point 2 input | -100.0%~+100.0% | 30.0% | ● |
| P0.14 | AI Curve 5 Maximum Input | P0.12~+10.00V | 10.00V | ● |
| P0.15 | Corresponding Setting of AI Curve 5 Maximum Input | -100.0%~+100.0% | 100.0% | ● |
| P0.24 | Jump Point of AI1 Input Setting | -100.0%~100.0% | 0.0% | ● |
| P0.25 | Jump Amplitude of AI1 Input Setting | 0.0%~100.0% | 0.5% | ● |
| P0.26 | Jump Point of AI2 Input Setting | -100.0%~100.0% | 0.0% | ● |
| P0.27 | Jump Amplitude of AI2 Input Setting | 0.0%~100.0% | 0.5% | ● |
| P0.28 | Jump Point of AI3 Input Setting | -100.0%~100.0% | 0.0% | ● |
| P0.29 | Jump Amplitude of AI3 Input Setting | 0.0%~100.0% | 0.5% | ● |

| Group P1: AI/AO Correction Parameters | | | | |
|---------------------------------------|-------------------------|-------------------|-------------------|----------|
| Function Codes | Parameter Name | Range of Settings | Default | Property |
| P1.00 | AI1 Measured Voltage 1 | 0.500V~4.000V | Factory Corrected | ● |
| P1.01 | AI1 Displayed Voltage 1 | 0.500V~4.000V | Factory Corrected | ● |
| P1.02 | AI1 Measured Voltage 2 | 6.000V~9.999V | Factory Corrected | ● |
| P1.03 | AI1 Displayed Voltage 2 | 6.000V~9.999V | Factory Corrected | ● |
| P1.04 | AI2 Measured Voltage 1 | 0.000V~5.000V | Factory Corrected | ● |
| P1.05 | AI2 Displayed Voltage 1 | 0.000V~5.000V | Factory Corrected | ● |
| P1.06 | AI2 Measured Voltage 2 | 5.000V~10.000V | Factory Corrected | ● |
| P1.07 | AI2 Displayed Voltage 2 | 5.000V~10.000V | Factory Corrected | ● |
| P1.08 | AI3 Measured Voltage 1 | 0.000V~5.000V | Factory Corrected | ● |
| P1.09 | AI3 Displayed Voltage 1 | 0.000V~5.000V | Factory Corrected | ● |
| P1.10 | AI3 Measured Voltage 2 | 5.000V~10.000V | Factory Corrected | ● |
| P1.11 | AI3 Displayed Voltage 2 | 5.000V~10.000V | Factory Corrected | ● |
| P1.12 | AO1 Target Voltage 1 | 0.000V~5.000V | Factory | ● |
| P1.13 | AO1 Measured Voltage 1 | 0.000V~5.000V | Factory Corrected | ● |
| P1.14 | AO1 Target Voltage 2 | 5.000V~10.000V | Factory Corrected | ● |
| P1.15 | AO1 Measured Voltage 2 | 5.000V~10.000V | Factory Corrected | ● |
| P1.16 | AO2 Target Voltage 1 | 0.000V~5.000V | Factory Corrected | ● |
| P1.17 | AO2 Measured Voltage 1 | 0.000V~5.000V | Factory Corrected | ● |
| P1.18 | AO2 Target Voltage 2 | 5.000V~10.000V | Factory Corrected | ● |
| P1.19 | AO2 Measured Voltage 2 | 5.000V~10.000V | Factory Corrected | ● |
| P1.20 | AI1 Filtering Dead Zone | 0~255 | 0 | ● |
| P1.21 | AI2 Filtering Dead Zone | 0~255 | 0 | ● |
| P1.22 | AI3 Filtering Dead Zone | 0~255 | 66 | ● |

| Function Code | Parameter Name | Minimum Unit |
|--|-------------------------------|--------------|
| Group H0: Standard Monitoring Parameters | | |
| H0.00 | Operating Frequency (Hz) | 0.01Hz |
| H0.01 | Set Frequency (Hz) | 0.01Hz |
| H0.02 | Output Current(A) | 0.01A |
| H0.03 | Output Voltage (V) | 1V |
| H0.04 | Output Power (kW) | 0.1kW |
| H0.05 | Output Torque (%) | 0.1% |
| H0.06 | Bus Voltage (V) | 0.1V |
| H0.07 | X Input Status1 | 1 |
| H0.08 | X Input Status 2 | 1 |
| H0.09 | DO Output State | 1 |
| H0.10 | AI1 Voltage (V) | 0.01V |
| H0.11 | AI2 Voltage (V) | 0.01V |
| H0.12 | AI3 Voltage (V) | 0.01V |
| H0.13 | Input Pulse Frequency (kHz) | 0.01kHz |
| H0.14 | PID Setting | 1 |
| H0.15 | PID Feedback | 1 |
| H0.16 | PID Output | 1 |
| H0.17 | Load Speed | 1 |
| H0.18 | Main Frequency | 0.01Hz |
| H0.19 | Auxiliary Frequency | 0.01Hz |
| H0.20 | Feedback Speed | 0.1Hz |
| H0.21 | Count Value | 1 |
| H0.22 | Length Value | 1 |
| H0.23 | Linear Speed | 1m/Min |
| H0.24 | Accumulated Power-On Time | 1Min |
| H0.25 | Accumulated Operating Time | 0.1Min |
| H0.26 | Motor Overload Count | 0.1% |
| H0.27 | Motor Current Percentage | 0.1% |
| H0.28 | Remaining Operating Time | 0.1Min |
| H0.29 | PLC Phase | 1 |
| H0.30 | Communication Setting Value | 0.01% |
| H0.31 | AI1 Voltage Before Correction | 0.01V |
| H0.32 | AI2 Voltage Before correction | 0.01V |
| H0.33 | AI3 Voltage Before Correction | 0.01V |
| H0.34 | Inverter Overload Count | 0.1% |
| H0.35 | Inverter Current Percentage | 0.1% |

Chapter 7 Description of Parameters

Group F0: Basic Function

| | | | |
|-------|----------|-----------|-----------|
| F0.00 | G/P type | Range:1~2 | Default:1 |
|-------|----------|-----------|-----------|

- 1: G type (constant torque load)
- 2: P type (variable torque load e.g. Fan and pump)

| | | | |
|-------|--------------------|-----------|-----------|
| F0.01 | Motor control mode | Range:0~2 | Default:2 |
|-------|--------------------|-----------|-----------|

- 0: Sensorless flux vector control (SFVC)

It indicates open-loop vector control, and is applicable to high-performance control applications such as machine tool, centrifuge, wire drawing machine and injection moulding machine. One inverter can operate only one motor.

- 1: Closed-loop vector control (CLVC)

It is applicable to high-accuracy speed control or torque control applications such as high-speed paper making machine, crane and elevator. One inverter can operate only one motor. An encoder must be installed at the motor side, and a PG card matching the encoder must be installed at the inverter side.

- 2: Voltage/Frequency (V/F) control

It is applicable to applications with low load requirements or applications where one inverter operates multiple motors, such as fan and pump.

| | | | |
|-------|------------------------|-----------|-----------|
| F0.02 | Command source options | Range:0~2 | Default:0 |
|-------|------------------------|-----------|-----------|

- 0: Operation panel control

Commands are given by pressing keys "RUN,STOP" on the operation panel.

- 1: Terminal control

Commands are given by means of multifunctional input terminals with functions such as "FWD, REV, JOGF, and JOGR".

- 2: Communication control

Commands are given from host computer.

| | | | |
|-------|------------------------------------|------------|-----------|
| F0.03 | Main frequency(X) source selection | Range:0~13 | Default:4 |
|-------|------------------------------------|------------|-----------|

- 0: Digital setting (non-retentive at power failure)

The initial value of the set frequency is the value of F0.08 (Preset frequency). You can change the set frequency by pressing Δ V on the operation panel (or using the UP/DOWN function of input terminals).

When the inverter is powered on again after power failure, the set frequency reverts to the value of F0.08.

- 1: Digital setting (retentive at power failure)

Basic operations are the same as "0: Digital setting".

The only difference is that when the inverter is powered on again after power failure, the set frequency is the value memorized at the moment of the last power failure.

Note: The hidden parameters set down by F0.20 cleared or unclear 0, factory default is cleared down.

- 2: AI1 (0–10 V voltage input)

- 3: AI2 (0–10 V voltage input or 4–20 mA current input, determined by jumper)

- 4: AI3 (0–10 V voltage input)

The frequency is set by analog input.

- 5: Pulse setting (X5)

The frequency is set by X5 (high-speed pulse). The signal specification of pulse setting is 9–30 V (voltage range) and 0–100 kHz (frequency range). The corresponding value 100% of pulse setting corresponds to the value of F0.10 (Maximum frequency).

- 6: Multi-reference

In multi-reference mode, combinations of different X terminal states correspond to different set frequencies. The JT550 supports a maximum of 16 speeds implemented by 16 state combinations of four X terminals (allocated with functions 12 to 15) in Group FC. The multiple references indicate percentages of the value of F0.10 (Maximum frequency).

If X terminal is used for the multi-reference function, you need to perform related setting in group F2

7: Simple PLC

When the simple programmable logic controller (PLC) mode is used as the frequency source, the running frequency of the inverter can be switched over among the 16 frequency references. You can set the holding time and acceleration/deceleration time of the 16 frequency references. For details, refer to the descriptions of Group FC.

8: PID

The output of PID control is used as the running frequency. PID control is generally used in on-site closed-loop control, such as constant pressure closed-loop control and constant tension closed-loop control. When applying PID as the frequency source, you need to set parameters of PID function in group FA.

9: Communication setting

The frequency is set by means of communication. In other conditions, data is given by the host computer through the communication address 0x1000. The data format is -100.00% to 100.00%. 100.00% corresponds to the value of F0.10 (Maximum frequency).

10: AI1+AI2

11: AI1-AI2

12: max(AI1, AI2)

13: min(AI1, AI2)

| F0.04 | Auxiliary frequency(Y) given ways | Range:0~9 | Default:0 |
|-------|-----------------------------------|-----------|-----------|
|-------|-----------------------------------|-----------|-----------|

When used as an independent frequency input channel (frequency source switched over from X to Y), the auxiliary frequency source Y is used in the same way as the main frequency source X (refer to F0.03).

When the auxiliary frequency source is used for operation (frequency source is "X and Y operation"), pay attention to the following aspects:

1) If the auxiliary frequency source Y is digital setting, the preset frequency (F0.08) does not take effect. You can directly adjust the set main frequency by pressing keys Δ 、 ∇ on the operation panel (or using the UP/DOWN function of input terminals).

2) If the auxiliary frequency source is analog input (AI1, AI2 and AI3) or pulse setting, 100% of the input corresponds to the range of the auxiliary frequency Y (set in F0.05 and F0.06).

3) If the auxiliary frequency source is pulse setting, it is similar to analog input.

The main frequency source X and auxiliary frequency source Y must not use the same channel. That is, F0.03 and F0.04 cannot be set to the same value.

| F0.05 | Auxiliary speed range selection | Range:0~1 | Default:0 |
|-------|---------------------------------|-------------|--------------|
| F0.06 | Auxiliary speed range | Range:0~150 | Default:100% |

If X and Y operation is used, F0.05 and F0.06 are used to set the adjustment range of the auxiliary frequency source. You can set the auxiliary frequency to be relative to either maximum frequency or main frequency X. If relative to main frequency X, the setting range of the auxiliary frequency Y varies according to the main frequency X.

| F0.07 | Frequency source selection | Range:0~34 | Default:0 |
|-------------|---|------------|-----------|
| Ten's digit | Unit's digit | | |
| 0: X+Y | 0: Main frequency source | | |
| 1: X-Y | 1: Main frequency (X) and auxiliary frequency(Y) operation (operation relationship determined by ten's digit) | | |
| 2: Maximum | 2: Switch over between main frequency and auxiliary frequency | | |
| 3: Minimum | 3: Switch over between main frequency and "main frequency and auxiliary frequency operation" | | |
| | 4: Switch over between auxiliary frequency and "main frequency and auxiliary frequency operation" | | |

It is used to select the frequency setting channel. If the frequency source involves X and Y operation, you can set the frequency offset in F0.21 for superposition to the X and Y operation result, flexibly satisfying various requirements.

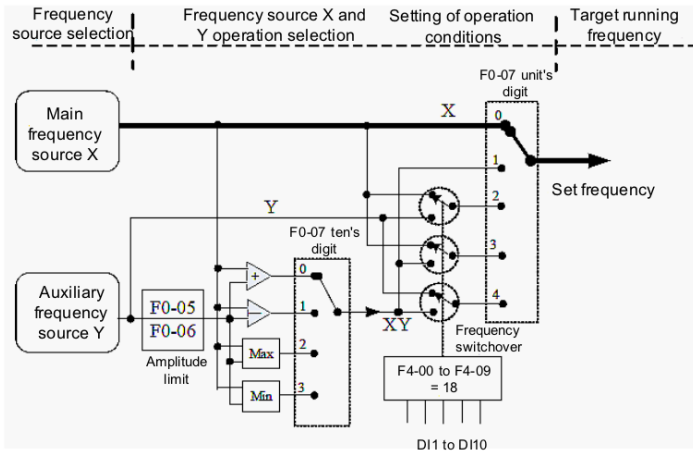


Figure7.1 Frequency setting

| | | | |
|-------|-------------------|-----------------------|-----------------|
| F0.08 | Digital frequency | Range:0.00Hz~max.freq | Default:50.00Hz |
|-------|-------------------|-----------------------|-----------------|

If the frequency source is digital setting or terminal UP/DOWN, the value of this parameter is the initial frequency of the inverter (digital setting).

| | | | |
|-------|--------------------|-----------|-----------|
| F0.09 | Rotation direction | Range:0~1 | Default:0 |
|-------|--------------------|-----------|-----------|

- 0: Same direction
- 1: Reverse direction

You can change the rotation direction of the motor just by modifying this parameter without changing the motor wiring. Modifying this parameter is equivalent to exchanging any two of the motor's U, V, W wires.

| | | | |
|-------|-------------------|------------------------|-----------------|
| F0.10 | Maximum frequency | Range:50.00Hz~320.00Hz | Default:50.00Hz |
|-------|-------------------|------------------------|-----------------|

When the frequency source is AI, pulse setting (X5), or multi-reference, 100% of the input corresponds to the value of this parameter.

| | | | |
|-------|---------------------------------|-----------|-----------|
| F0.11 | Source of frequency upper limit | Range:0~5 | Default:0 |
|-------|---------------------------------|-----------|-----------|

It is used to set the source of the frequency upper limit, including digital setting (F0.12), AI,pulse setting or communication setting. If the frequency upper limit is set by means of AI1,AI2, AI3, DI5 or communication, the setting is similar to that of the main frequency source X.For details, see the description of F0.03.

| | | | |
|-------|-----------------------|--|-----------------|
| F0.12 | Frequency upper limit | Range:lower limit(F0.14) ~max.freq (F0.10) | Default:50.00Hz |
|-------|-----------------------|--|-----------------|

This parameter is used to set the frequency upper limit.

| | | | |
|-------|------------------------------|------------------------------|-----------------|
| F0.13 | Frequency upper limit offset | Range:0.00~maximum frequency | Default:0.00 Hz |
|-------|------------------------------|------------------------------|-----------------|

If the source of the frequency upper limit is analog input or pulse setting, the final frequency upper limit is obtained by adding the offset in this parameter to the frequency upper limit set in F0.11.

| | | | |
|-------|-----------------------|----------------------------------|-----------------|
| F0.14 | Frequency lower limit | Range:0.00~frequency upper limit | Default:0.00 Hz |
|-------|-----------------------|----------------------------------|-----------------|

If the frequency reference is lower than the value of this parameter, the inverter can stop, run at the frequency lower limit, or run at zero speed, determined by F4.14.

| | | | |
|-------|-------------------|-----------------------|-------------------------|
| F0.15 | Carrier frequency | Range:0.5kHz ~16.0kHz | Default:Model Dependent |
|-------|-------------------|-----------------------|-------------------------|

It is used to adjust the carrier frequency of the inverter, helping to reduce the motor noise, avoiding the resonance of the mechanical system, and reducing the leakage current to the earth and interference generated by the inverter.

If the carrier frequency is low, output current has high harmonics, and the power loss and temperature rise of the motor increase.

If the carrier frequency is high, power loss and temperature rise of the motor declines. However, the inverter has an increase in power loss, temperature rise and interference.

Adjusting the carrier frequency will exert influences on the aspects listed in the following table.

| | | |
|---------------------------------|-------|-------|
| Carrier frequency | Low | High |
| Motor noise | Large | Small |
| Output current waveform | Bad | Good |
| Motor temperature rise | High | Low |
| AC drive temperature rise | Low | High |
| Leakage current | Small | Large |
| External radiation interference | Small | Large |

The factory setting of carrier frequency varies with the inverter power. If you need to modify the carrier frequency, note that if the set carrier frequency is higher than factory setting, it will lead to an increase in temperature rise of the inverter's heatsink. In this case, you need to derate the inverter. Otherwise, the inverter may overheat and alarm.

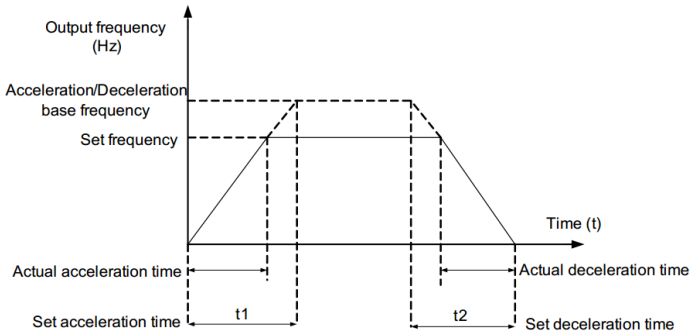
| | | | |
|-------|---|-----------|-----------|
| F0.16 | Carrier frequency adjustment with temperature | Range:0~1 | Default:1 |
|-------|---|-----------|-----------|

0: No

1: Yes

It is used to set whether the carrier frequency is adjusted based on the temperature. The inverter automatically reduces the carrier frequency when detecting that the heatsink temperature is high. The inverter resumes the carrier frequency to the set value when the heatsink temperature becomes normal. This function reduces the overheat alarms.

| | | | |
|-------|---------------------|--------------------|-------------------------|
| F0.17 | Acceleration time 1 | Range:0.0s~6500.0s | Default:Model Dependent |
| F0.18 | Deceleration time 1 | Range:0.0s~6500.0s | Default:Model Dependent |



The JT550 provides totally four groups of acceleration/deceleration time for selection. You can perform switchover by using a X terminal.

- Group 1: F0.17, F0.18
- Group 2: F4.03, F4.04
- Group 3: F4.05, F4.06
- Group 4: F4.07, F4.08

| | | | | |
|---|--|--|--|--|
| F0.19 | Frequency offset of auxiliary frequency source for X and Y operation | Range:0.00Hz~maximum frequency | | Default:0.00Hz |
| F0.20 | Digital set frequency attribute selection | Range:0~1 | | Default:0 |
| Thousand's digit | | Hundred's digit | Ten's digit | Units' digit |
| terminal UP/DN rate 0: frequency rate.F2.12 is rate, the unit for Hz/s 1: integral rate.F2.12 is time, the unit is "s", F2.12 only one decimal of F2.12 IS effectively, the last two are ignored. | | when stop the UP/DN effective choice 0: Valid 1: Invalid | the UP/DN and reversing choice when analog superposition 0: can the reversing 1: not the reversing | stop memory options 0: no. 1: memory |
| F0.21 | Acceleration/Deceleration time base frequency | Range:0~2 | | Default:0 |

0: Maximum frequency (F0.10)
1: Set frequency
2: 100 Hz

The acceleration/deceleration time indicates the time for the inverter to increase from 0 Hz to the frequency set in F0.21. If this parameter is set to 1, the acceleration/deceleration time is related to the set frequency. If the set frequency changes frequently, the motor's acceleration/deceleration also changes.

| | | | |
|-------|----------------------------|-----------|-----------|
| F0.22 | Base frequency for UP/DOWN | Range:0~1 | Default:0 |
|-------|----------------------------|-----------|-----------|

0: Running frequency
1: Set frequency

This parameter is valid only when the frequency source is digital setting.It is used to set the base frequency to be modified by using keys and or the terminal UP/DOWN function. If the running frequency and set frequency are different, there will be a large difference between the inverter's performance during the acceleration/deceleration process.

| | | | |
|-------|---------------|---------------|-----------|
| F0.23 | User password | Range:0~65536 | Default:0 |
|-------|---------------|---------------|-----------|

If it is set to any non-zero number, the password protection function is enabled. After a password has been set and taken effect, you must enter the correct password in order to enter the menu. If the entered password is incorrect you cannot view or modify parameters.

If F0.23 is set to 00000, the previously set user password is cleared, and the password function is disabled.

| | | | |
|-------|--------------------------|-----------|-----------|
| F0.24 | Restore default settings | Range:0~2 | Default:0 |
|-------|--------------------------|-----------|-----------|

1: Restore default settings except motor parameters

If F0.24 is set to 1, most function codes are restored to the default settings except motor parameters, frequency reference resolution, fault records, accumulative running time, accumulative power-on time and accumulative power consumption .

2: Clear records

If F0.24 is set to 2, the fault records, accumulative running time , accumulative power-on time and accumulative power consumption are cleared.

| | | | |
|-------|---|------------|------------|
| F0.25 | Individualized parameter display property | Range:0~11 | Default:00 |
|-------|---|------------|------------|

The setting of parameter display mode aims to facilitate you to view different types of parameters based on actual requirements. The JT550 provides the following three parameter display modes.

Unit's digit: User-defined parameter display selection.This mode displays only the parameters user needs. Up to 30 parameters set by the FE group.

Ten's digit: Non-factory value menu, and the user to modify the parameters, this mode displays only the user modified parameters.

| | |
|------------------------------|------------------------------|
| Ten's digit | Unit's digit |
| 0: Not display 1: Display | 0: Not display 1: Display |

Menu mode switch over by MK.

| | | | |
|-------|---------------------------------|-----------|-----------|
| F0.26 | Parameter modification property | Range:0~1 | Default:0 |
|-------|---------------------------------|-----------|-----------|

0: Modifiable

1: Not modifiable

It is used to set whether the parameters are modifiable to avoid mal-function. If it is set to 0, all parameters are modifiable. If it is set to 1, all parameters can only be viewed.

Group F1: Motor parameters

| | | | |
|-------|-------------|-----------|-----------|
| F1.00 | Motor model | Range:0~1 | Default:0 |
|-------|-------------|-----------|-----------|

0: Common asynchronous motor

1: Variable frequency asynchronous motor

| | | | |
|-------|-----------------------------|--|-----------------------------|
| F1.01 | Motor rated power | Range:0.1kW~1000.0kW | Default: Model dependent |
| F1.02 | Motor rated voltage | Range:1V~2000V | Default: Model dependent |
| F1.03 | Motor rated current | Range: 0.01A~655.35A(≤ 55 kW) 0.1A~6553.5A (> 55 kW) | Default: Model dependent |
| F1.04 | Motor rated frequency | Range:0.01Hz~maximum frequency | Default: Model dependent |
| F1.05 | Motor nominal speed | Range:1rpm~65535rpm | Default: Model dependent |
| F1.06 | Motor stator resistance | Range: 0.001 Ω ~65.535 Ω (≤ 55 kW) 0.0001 Ω ~6.5535 Ω (> 55 kW) | Default: Model dependent |
| F1.07 | Rotor resistance | Range: 0.001 Ω ~65.535 Ω (≤ 55 kW) 0.0001 Ω ~6.5535 Ω (> 55 kW) | Default: Model dependent |
| F1.08 | Leakage inductive reactance | Range: 0.01mH~655.35mH(≤ 55 kW) 0.001mH~65.535mH(> 55 kW) | Default: Model dependent |
| F1.09 | Mutual inductive reactance | Range: 0.1mH~6553.5mH(≤ 55 kW) 0.01mH~655.35mH(> 55 kW) | Default: Model dependent |
| F1.10 | No-load current | Range: 0.01A~655.35A(≤ 55 kW) 0.1A~6553.5A (> 55 kW) | Default: Model dependent |

After the end of normal motor parameter identification, setting F1.06 ~ F1.10 will be updated. Change the motor rated power (F1.01) or motor rated voltage (F1.02), the drive will F1.06 ~ F1.10 parameter is set to the default standard motor parameters.

| | | | |
|-------|-------------------------------|---------------|-----------|
| F1.27 | Encoder pulses per revolution | Range:0~65535 | Default:0 |
|-------|-------------------------------|---------------|-----------|

This parameter is used to set the pulses per revolution (PPR) of ABZ or UVW incremental encoder. In CLVC mode, the motor cannot run properly if this parameter is set incorrectly.

| | | | |
|-------|---|-----------|-----------|
| F1.30 | A/B phase sequence of ABZ incremental encoder | Range:0~1 | Default:0 |
|-------|---|-----------|-----------|

It is valid for both asynchronous motor and synchronous motor. The A/B phase sequence can be obtained through "Asynchronous motor complete auto-tuning" or "Synchronous motor no-load auto-tuning".

| | | | |
|-------|------------------------------------|-----------|-----------|
| F1.37 | The parameters self-identification | Range:0~2 | Default:0 |
|-------|------------------------------------|-----------|-----------|

0: No operation, which prohibits self-identification parameters

1: static self identification, suitable for induction motor and the load is not easy to disengage, but not a complete self-identification of the occasion

Asynchronous machine standstill since the previous identification, you must set the correct motor type and motor nameplate parameters F1.00 ~ F1.05. Stationary self-identification, the drive can get F1.06 ~ F1.08 three parameters.

Action Description: Set the function code is 1, then press the RUN key, the drive will still self-identify.
2: complete self-identification

To ensure the dynamic control performance of the inverter, please choose the complete self-identification, and the motor must be separated from the load to keep the motor for the no-load condition. Complete self-identification process, the inverter will be stationary self identification, and then follow the acceleration time to accelerate to 80% F0.17 rated motor frequency, after a period of time, according to the deceleration time F0.18 deceleration stop and end self identification.

Asynchronous machine complete self-identification, the drive can get F1.06 ~ F1.10 five motor parameters, and the encoder AB phase sequence F1.30, vector control current loop PI parameters F5.13 ~ F5.16.

Action Description: Set the function code is 2, then press the RUN key, the drive will be a complete self-identification.

Group F2:Input Terminal

JT550 series inverter have five multi-function input terminals X1 ~ X5 (X5 which can be used as high-speed pulse input), two analog input terminal AI1, AI2 (which can be used as a voltage input AI2, but also as a current input), a keyboard potentiometer.

| | | | |
|-------|------------------------|------------|------------|
| F2.00 | X1 function selection | Range:0~50 | Default:1 |
| F2.01 | X2 function selection | Range:0~50 | Default:4 |
| F2.02 | X3 function selection | Range:0~50 | Default:9 |
| F2.03 | X4 function selection | Range:0~50 | Default:12 |
| F2.04 | X5 function selection | Range:0~50 | Default:13 |
| F2.05 | X6 function selection | Range:0~50 | Default:0 |
| F2.06 | X7 function selection | Range:0~50 | Default:0 |
| F2.07 | X8 function selection | Range:0~50 | Default:0 |
| F2.08 | X9 function selection | Range:0~50 | Default:0 |
| F2.09 | X10 function selection | Range:0~50 | Default:0 |

Input Terminal Setting list:

| value | Function | Description |
|-------|--------------------|---|
| 0 | No function | |
| 1 | Forward RUN (FWD) | The terminal is used to control forward or reverse RUN of the inverter. |
| 2 | Reverse RUN (REV) | |
| 3 | Three-line control | The terminal determines three-line control of the inverter. For details, see the description of F2.11. |
| 4 | Forward JOG (FJOG) | FJOG indicates forward JOG running, while RJOG indicates reverse JOG running. The JOG frequency,acceleration time and deceleration time are described respectively in F4.00,F4.01,F4.02. |
| 5 | Reverse JOG (RJOG) | |
| 6 | Terminal UP | If the frequency is determined by external terminals, the terminals with the two functions are used as increment and decrement commands for frequency modification.When the frequency source is digital setting, they are used to adjust the frequency. |
| 7 | Terminal DOWN | |
| 8 | Coast to stop | The inverter blocks its output, the motor coasts to rest and is not controlled by the inverter. |

| | | |
|----|---|--|
| 9 | Fault reset (RESET) | The terminal is used for fault reset function, the same as the function of RESET key on the operation panel. |
| 10 | RUN pause | The inverter decelerates to stop, but the running parameters are all memorized, such as PLC, swing frequency and PID parameters. After this function is disabled, the inverter resumes its status before stop. |
| 11 | Normally open (NO) input of external fault | If this terminal becomes ON, the inverter reports Err15 and performs the fault protection action. For more details, see the description of F9.47. |
| 12 | Multi-reference terminal 1 | The setting of 16 speeds or 16 other references can be implemented through combinations of 16 states of these four terminals. |
| 13 | Multi-reference terminal 2 | |
| 14 | Multi-reference terminal 3 | |
| 15 | Multi-reference terminal 4 | |
| 16 | Terminal 1 for acceleration/deceleration time selection | Totally four groups of acceleration/deceleration time can be selected through combinations of two states of these two terminals. |
| 17 | Terminal 2 for acceleration/deceleration time selection | |
| 18 | Frequency source switch over | The terminal is used to perform switchover between two frequency sources according to the setting in F0.07 |
| 19 | UP and DOWN setting clear (terminal, operation panel) | If the frequency source is digital setting, the terminal is used to clear the modification by using the UP/DOWN function or the increment/decrement key on the operation panel, returning the set frequency to the value of F0.08. |
| 20 | Command source switch over keyboard | If the command source is set to terminal control (F0.02 = 1), this terminal is used to perform switchover between terminal control and operation panel control. If the command source is set to communication control (F0.02 = 2), this terminal is used to perform switchover between communication control and operation panel control. |
| 21 | Acceleration/Deceleration prohibited | It enables the inverter to maintain the current frequency output without being affected by external signals (except the STOP command). |
| 22 | PID pause | PID is invalid temporarily. The inverter maintains the current frequency output without supporting PID adjustment of frequency source. |
| 23 | PLC status reset | The terminal is used to restore the original status of PLC control for the inverter when PLC control is started again after a pause |
| 24 | Swing pause | The inverter outputs the central frequency, and the swing frequency function pauses |
| 25 | Counter input | This terminal is used to count pulses |
| 26 | Counter reset | This terminal is used to clear the counter status. |
| 27 | Length count input | This terminal is used to count the length |
| 28 | Length reset | This terminal is used to clear the length |
| 29 | Torque control prohibited | The inverter is prohibited from torque control and enters the speed control mode. |
| 30 | Pulse input (only for X5) | X5 is used for pulse input. |

| | | |
|----|--|--|
| 32 | Immediate DC braking | After this terminal becomes ON, the inverter directly switches over to the DC braking state. |
| 33 | Normally closed (NC) input of external fault | After this terminal becomes ON, the inverter reports Err15 and stops. |
| 34 | Frequency modification forbidden | After this terminal becomes ON, the inverter does not respond to any frequency modification. |
| 35 | Reverse PID action direction | After this terminal becomes ON, the PID action direction is reversed to the direction set in FA.03. |
| 36 | External STOP terminal 1 | In operation panel mode, this terminal can be used to stop the inverter, equivalent to the function of the STOP key on the operation panel. |
| 37 | Command source switch over terminal | It is used to perform switchover between terminal control and communication control. If the command source is terminal control, the system will switch over to communication control after this terminal becomes ON. |
| 38 | PID integral pause | After this terminal becomes ON, the integral adjustment function pauses. However, the proportional and differentiation adjustment functions are still valid. |
| 39 | Switch over between main frequency source X and digital Frequency | After this terminal becomes ON, the frequency source X is replaced by the preset frequency set in F0.08. |
| 40 | Switch over between auxiliary frequency source Y and digital frequency | After this terminal is enabled, the frequency source Y is replaced by the preset frequency set in F0.08 |
| 41 | Switch over between PID parameters | If the PID parameters switchover performed by means of DI terminal (FA.18 = 1), the PID parameters are FA.05 to FA.07 when the terminal becomes OFF; the PID parameters are FA.15 to FA.17 when this terminal becomes ON. |
| 42 | User-defined fault 1 | If these two terminals become ON, the inverter reports Err27 and Err28 respectively, and performs fault protection actions based on the setting in F9.49. |
| 43 | User-defined fault 2 | |
| 44 | Speed control/Torque control switchover | This terminal enables the inverter to switch over between speed control and torque control. When this terminal becomes OFF, the inverter runs in the mode set in Fb.10. When this terminal becomes ON, the inverter switches over to the other control mode. |
| 45 | Emergency stop | When this terminal becomes ON, the inverter stops within the shortest time. During the stop process, the current remains at the set current upper limit. This function is used to satisfy the requirement of stopping the inverter in emergency state. |
| 46 | External STOP terminal 2 | In any control mode, it can be used to make the inverter decelerate to stop. In this case, the deceleration time is deceleration time 4. |
| 47 | Deceleration DC braking | When this terminal becomes ON, the inverter decelerates to the initial frequency of stop DC braking and then switches over to DC braking state. |
| 48 | Clear the current running time | When this terminal becomes ON, the inverter's current running time is cleared. This function must be supported by F4.42 and F4.53 |

Table 7-1 Input Terminal Setting list

| Multi-reference Setting | | | | | |
|----------------------------|-----------------------------|-----------------------------|-----------------------------|-------------------|-------------------------|
| multi-reference terminal 4 | Multi -reference terminal 3 | Multi -reference terminal 2 | Multi -reference terminal 1 | Frequency setting | Corresponding parameter |
| OFF | OFF | OFF | OFF | Reference 0 | FC.51 |
| OFF | OFF | OFF | ON | Reference 1 | FC.01 |
| OFF | OFF | ON | OFF | Reference 2 | FC.02 |
| OFF | OFF | ON | ON | Reference 3 | FC.03 |
| OFF | ON | OFF | OFF | Reference 4 | FC.04 |
| OFF | ON | OFF | ON | Reference 5 | FC.05 |
| OFF | ON | ON | OFF | Reference 6 | FC.06 |
| OFF | ON | ON | ON | Reference 7 | FC.07 |
| ON | OFF | OFF | OFF | Reference 8 | FC.08 |
| ON | OFF | OFF | ON | Reference 9 | FC.09 |
| ON | OFF | ON | OFF | Reference 10 | FC.10 |
| ON | OFF | ON | ON | Reference 11 | FC.11 |
| ON | ON | OFF | OFF | Reference 12 | FC.12 |
| ON | ON | OFF | ON | Reference 13 | FC.13 |
| ON | ON | ON | OFF | Reference 14 | FC.14 |
| ON | ON | ON | ON | Reference 15 | FC.15 |

Table 7-2 Multi-reference Setting

| Acceleration/Deceleration Time Selection | | | |
|--|---|---|-------------------------|
| acceleration/ deceleration time terminal 2 | Acceleration/deceleration time terminal 1 | Acceleration /deceleration time selection | Corresponding parameter |
| OFF | OFF | Acceleration time1 | F0.17、F0.18 |
| OFF | ON | Acceleration time2 | F4.03、F4.04 |
| ON | OFF | Acceleration time3 | F4.05、F4.06 |
| ON | ON | Acceleration time4 | F4.07、F4.08 |

Acceleration/Deceleration Time Selection

| | | | |
|-------|---------------|---------------------|----------------|
| F2.10 | X filter time | Range:0.000s~1.000s | Default:0.010s |
|-------|---------------|---------------------|----------------|

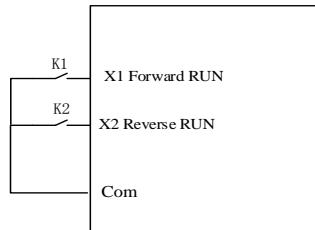
It is used to set the software filter time of X terminal status. If X terminals are liable to interference and may cause malfunction, increase the value of this parameter to enhance the anti-interference capability. However, increase of X filter time will reduce the response of X terminals.

| | | | |
|-------|-----------------------|-----------|-----------|
| F2.11 | Terminal command mode | Range:0~3 | Default:0 |
|-------|-----------------------|-----------|-----------|

0: Two-line mode 1

It is the most commonly used two-line mode, in which the forward/reverse rotation of the motor is decided by X1 and X2.

| K1 | K2 | RUN Command |
|----|----|-------------|
| 1 | 0 | Forward RUN |
| 0 | 1 | Reverse RUN |
| 1 | 1 | STOP |
| 0 | 0 | STOP |



1: Two-line mode 2

In this mode, DI1 is RUN enabled terminal, and DI2 determines the running direction.

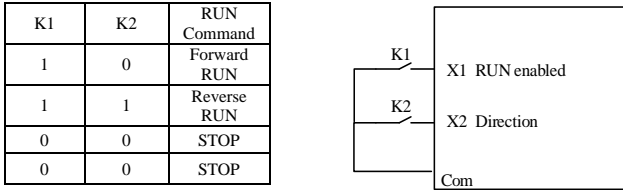


Figure7.4 Setting of two-line mode 2

As shown in the preceding Figure , if K1 is ON, the inverter instructs forward rotation when K2 is OFF, and instructs reverse rotation when K2 is ON. If K1 is OFF, the inverter stops.

2: Three-line mode 1

In this mode, X3 is RUN enabled terminal, and the direction is decided by X1 and X2.

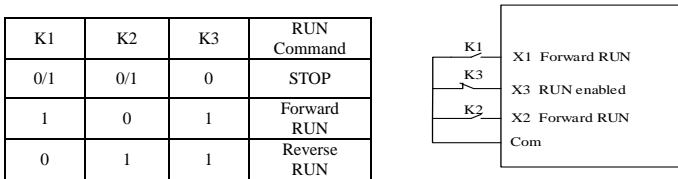


Figure7.5 Setting of three-line mode 1

3: Three-line mode 2

In this mode, X3 is RUN enabled terminal. The RUN command is given by X1 and the direction is decided by X2.

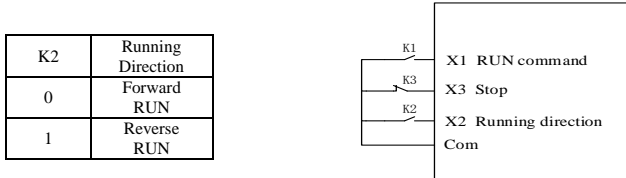


Figure7.6 Setting of three-line mode 2

| | | | |
|-------|-----------------------|--------------------|---------------|
| F2.12 | Terminal UP/DOWN rate | Range:0.001~65.353 | Default:1.000 |
|-------|-----------------------|--------------------|---------------|

It is used to adjust the rate of change of frequency when the frequency is adjusted by means of terminal UP/DOWN.

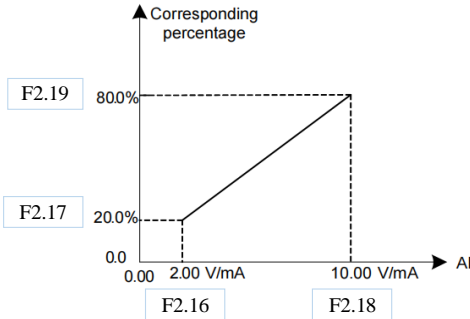
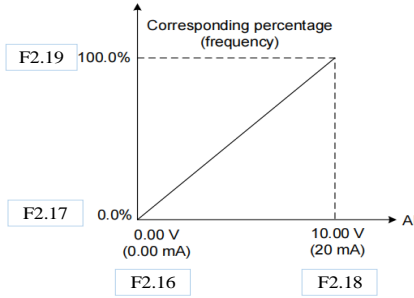
| | | | |
|-------|-----------------|--------------------|---------------|
| F2.13 | AI1 filter time | Range:0.00s~10.00s | Default:0.10s |
| F2.14 | AI2 filter time | Range:0.00s~10.00s | Default:0.10s |
| F2.15 | AI3 filter time | Range:0.00s~10.00s | Default:0.10s |

Definition analog input terminal AI1, AI2 and keyboard potentiometer filter time, the input signal filtering. Long filtering time, the anti-interference ability, but the slow response; filtering the fast response time is short, but weak anti-interference ability.

| | | | |
|-------|---|----------------------|----------------|
| F2.16 | AI curve 1 minimum input | Range:0.00V~F2.18 | Default:0.20V |
| F2.17 | Corresponding setting of AI curve 1 minimum input | Range:-100.0%~100.0% | Default:0.0% |
| F2.18 | AI curve 1 maximum input | Range:F2.16~+10.00V | Default:10.00V |
| F2.19 | Corresponding setting of AI curve 1 maximum input | Range:-100.0%~100.0% | Default:100.0% |

These parameters are used to define the relationship between the analog input voltage and the corresponding setting. When the analog input voltage exceeds the maximum value (F2.16), the maximum value is used. When the analog input voltage is less than the minimum value (F2.18), the value set in F2.34 (Setting for AI less than minimum input) is used.

Two typical setting examples are shown in the following Figure .



| | | | |
|-------|---|-----------------------|----------------|
| F2.20 | AI curve 2 minimum input | Range:0.00V~F2.22 | Default:0.20V |
| F2.21 | Corresponding setting of AI curve 2 minimum input | Range:-100.0%~+100.0% | Default:0.0% |
| F2.22 | AI curve 2maximum input | Range:F2.20~+10.00V | Default:10.00V |
| F2.23 | Corresponding setting of AI curve 2maximum input | Range:-100.0%~+100.0% | Default:100.0% |
| F2.24 | AI curve 3 minimum input | Range:0.00V~F2.26 | Default:0.20V |
| F2.25 | Corresponding setting of AI curve 3 minimum input | Range:-100.0%~+100.0% | Default:0.0% |
| F2.26 | AI curve 3 maximum input | Range:F2.24~+10.00V | Default:10.00V |
| F2.27 | Corresponding setting of AI curve 3 maximum input | Range:-100.0%~+100.0% | Default:100.0% |

Please refer to the AII when use AI2 and AI3 curve function.

| | | | |
|-------|--|-----------------------|------------------|
| F2.28 | PULSE minimum input | Range:0.00kHz~F2.30 | Default:0.00kHz |
| F2.29 | Corresponding setting of PULSE minimum input | Range:-100.0%~100.0% | Default:0.0% |
| F2.30 | PULSE maximum input | Range:F2.28~100.00kHz | Default:50.00kHz |
| F2.31 | Corresponding setting of PULSE maximum input | Range:-100.0%~100.0% | Default:100.0% |

This group function code is used to set the relationship between the pulse frequency and the corresponding set X5 between. Pulse frequency inverter can only enter through X5 channel.

| | | | |
|-------|-------------------|--------------------|---------------|
| F2.32 | PULSE filter time | Range:0.00s~10.00s | Default:0.10s |
|-------|-------------------|--------------------|---------------|

PULSE input filtering time is defined on the input signal filtering. Long filtering time the strong anti-interference ability, but the corresponding slowdowns; filtering the fast response time is short, but immunity is weakened.

| | | | |
|---|--------------------|---|---|
| F2.33 | AI curve selection | Range:000~555 | Default:321 |
| Hundred's digit(AI3curve selection) | | Ten's digit (AI2 curve selection) | Unit's digit (AI1 curve selection) |
| 1:Curve 1:F2.16~F2.19 2:Curve 2:F2.20~F2.23 3:Curve 3:F2.24~F2.27 4:Curve 4:P0.00~P0.07 5:Curve 5:P0.08~P0.15 | | 1:Curve 1:F2.16~F2.19 2:Curve2:F2.20~F2.23 3:Curve3:F2.24~F2.27 4:Curve4:P0.00~P0.07 5:Curve5:P0.08~P0.15 | 1:Curve 1:F2.16~F2.19 2:Curve2:F2.20~F2.23 3:Curve3:F2.24~F2.27 4:Curve4:P0.00~P0.07 5:Curve5:P0.08~P0.15 |

The unit's digit, ten's digit and hundred's digit of this parameter are respectively used to select the corresponding curve of AI1, AI2 and AI3. Any of the five curves can be selected for AI1, AI2 and AI3.

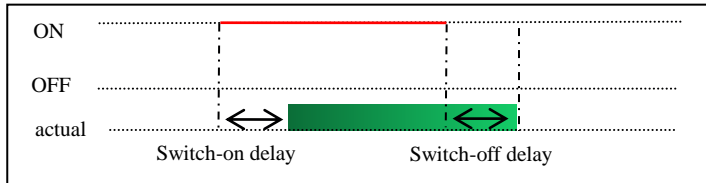
| | | | |
|-------|--|---------------|-------------|
| F2.34 | Setting for AI less than minimum input | Range:000~111 | Default:000 |
|-------|--|---------------|-------------|

This parameter is used to determine the corresponding setting when the analog input voltage is less than the minimum value. The unit's digit, ten's digit and hundred's digit of this parameter respectively correspond to the setting for AI2, AI2 and AI3.

If the value of a certain digit is 0, when analog input voltage is less than the minimum input, the corresponding setting of the minimum input (F2.17,F2.21,F2.25) is used.

If the value of a certain digit is 1, when analog input voltage is less than the minimum input, the corresponding value of this analog input is 0.0%.

| | | | |
|-------|---------------------|--------------|------|
| F2.35 | X1 switch-on delay | 0.0s~3600.0s | 0.0s |
| F2.36 | X1 switch-off delay | 0.0s~3600.0s | 0.0s |
| F2.37 | X2 switch-on delay | 0.0s~3600.0s | 0.0s |
| F2.38 | X2 switch-off delay | 0.0s~3600.0s | 0.0s |
| F2.39 | X3 switch-on delay | 0.0s~3600.0s | 0.0s |
| F2.40 | X3 switch-off delay | 0.0s~3600.0s | 0.0s |



| | | | | | |
|----------------------|------------------------|-------------------|-----------------|-------------|--------------|
| F2.41 | X valid mode selection | Range:00000~11111 | Default:00000 | | |
| Ten thousand's digit | | Thousand's digit | Hundred's digit | Ten's digit | Unit's digit |
| X5 | | X4 | X3 | X2 | X1 |

0: High level valid

The X terminal is valid when connected with COM, and invalid when disconnected from COM.

1: Low level valid

The X terminal is invalid when connected with COM, and invalid when disconnected from COM.

Group F3:Output Terminals

| | | | |
|-------|----------------------------|-----------|-----------|
| F3.00 | Y2/DO terminal output mode | Range:0~1 | Default:1 |
|-------|----------------------------|-----------|-----------|

Y2 / DO terminal is re-programmable terminals, can be used as high-speed pulse output terminal (DO), can be used as an open-collector digital output terminal (Y2).

0: Pulse output (FMP)

1: Switch signal output (FMR)

DO as a pulse output, the maximum frequency of the output pulse is 100kHz, DO-related functions, see Note F3.06.

| | | | |
|-------|--|------------|-----------|
| F3.01 | Y1 function (open collector output terminal) | Range:0~45 | Default:1 |
| F3.02 | Y2 function (open collector output terminal) | Range:0~45 | Default:0 |
| F3.03 | R relay output function selection | Range:0~45 | Default:2 |
| F3.04 | E relay output function selection | Range:0~45 | Default:0 |

Functions of output terminals:

| Value | Function | Description |
|-------|---|---|
| 0 | No output | |
| 1 | inverter running | When the inverter is running and has output frequency(can be zero), the terminal becomes ON. |
| 2 | Fault output (stop) | When the inverter stops due to a fault, the terminal becomes ON. |
| 3 | Frequency-level detection FDT1 output | Refer to the descriptions of F4.19,F4.20. |
| 4 | Frequency reached | When the output frequency and set frequency error is less than F4.21 (percentage of the maximum frequency with respect to) the set value, the output ON. |
| 5 | Zero-speed running (no output at stop) | If the inverter runs with the output frequency of 0, the terminal becomes ON. If the inverter is in the stop state,the terminal becomes OFF. |
| 6 | Motor overload pre-warning | The inverter judges whether the motor load exceeds the overload pre-warning threshold before performing the protection action. If the pre-warning threshold is exceeded,the terminal becomes ON. For motor overload parameters,see the descriptions of F9.00~F9.02. |
| 7 | inverter overload pre-warning | The terminal becomes ON 10s before the inverter overload protection action is performed. |
| 8 | Set count value reached | The terminal becomes ON when the count value reaches the value set in Fb.08 |
| 9 | Designated count value reached | The terminal becomes ON when the count value reaches the value set in group Fb |
| 10 | Length reached | The terminal becomes ON when the detected actual length exceeds the value set in Fb.05 |
| 11 | PLC cycle complete | When simple PLC completes one cycle, the terminal outputs a pulse signal with width of 250 ms. |
| 12 | Accumulative running time reached | If the accumulative running time of the inverter exceeds the time set in F4.17, the terminal becomes ON |
| 13 | Frequency limited | If the set frequency exceeds the frequency upper limit or lower limit and the output frequency of the inverter reaches the upper limit or lower limit, the terminal becomes ON. |
| 14 | Torque limited | In speed control mode, if the output torque reaches the torque limit, the inverter enters the stall protection state and meanwhile the terminal becomes ON. |
| 15 | Ready for RUN | If the inverter main circuit and control circuit become stable, and the inverter detects no fault and is ready for RUN, the terminal becomes ON. |
| 16 | AI1>AI2 | When the input of AI1 is larger than tAI2, the terminal ON. |
| 17 | Frequency upper limit reached | If the running frequency reaches the upper limit, the terminal becomes ON. |
| 18 | Frequency lower limit reached (no output at stop) | If the running frequency reaches the lower limit, the terminal becomes ON. In the stop state, the terminal becomes OFF. |
| 19 | Under voltage state output | If the inverter is in undervoltage state, the terminal becomes ON. |
| 20 | Communication setting | Refer to the communication protocol. |
| 22 | Forward Running | If the inverter is running forward, the output is ON |
| 23 | Zero-speed running 2 | If the output frequency of the inverter is 0, the terminal becomes ON. In the state of stop, the signal is still ON. |

| | | |
|----|---------------------------------------|---|
| 24 | Accumulative power-on time reached | If the inverter accumulative power-on time (F8.13)exceeds the value set in F4.16, the terminal becomes ON. |
| 25 | Frequency level detection FDT2 output | Refer to the descriptions of F4.28 and F4.29 |
| 26 | Frequency 1 reached | Refer to the descriptions of F4.30 and F4.31 |
| 27 | Frequency 2 reached | Refer to the descriptions of F4.32 and F4.33 |
| 28 | Current 1 reached | Refer to the descriptions of F4.38 and F4.39 |
| 29 | Current 2 reached | Refer to the descriptions of F4.40 and F4.41 |
| 30 | Timing reached | If the timing function (F4.42) is valid, the terminal becomes ON after the current running time of the inverter reaches the set time. |
| 31 | AII input limit exceeded | If AII input is larger than the value of F4.46 (AII input voltage upper limit) or lower than the value of F4.45 (AII input voltage lower limit), the terminal becomes ON. |
| 32 | Load becoming 0 | If the load becomes 0, the terminal becomes ON. |
| 33 | Reverse running | If the inverter is in the reverse running state, the terminal becomes ON. |
| 34 | Zero current state | Refer to the descriptions of F4.34 ,F4.35 |
| 35 | Module temperature reached | If the heatsink temperature of the inverter module (F8.07)reaches the set module temperature threshold (F4.47), the terminal becomes ON |
| 36 | Software current limit exceeded | Refer to the descriptions of F4.36,F4.37 |
| 37 | Frequency lower limit reached | If the running frequency reaches the lower limit, the terminal becomes ON. In the stop state, the signal is still ON |
| 38 | Alarm output | If a fault occurs on the inverter and the inverter continues to run, the terminal outputs the alarm signal. |
| 40 | Current running time reached | If the current running time of inverter exceeds the value of F4.53, the terminal becomes ON. |
| 41 | Analog levels:ADT1 | Output OFF when the analog input voltage is higher than F4.57, the output is ON, less than F4.56 |
| 42 | Analog levels:ADT2 | When the analog input voltage is higher than F4.59, output ON, OFF output below the F4.58 |
| 44 | The X1 state | The X1 current state |
| 45 | The X2 state | The X2 current state |

Table 7-4 Functions of output terminals

| | | | |
|-------|------------------------------|------------|-----------|
| F3.06 | DO output function selection | Range:0~16 | Default:0 |
| F3.07 | AO1output function selection | Range:0~16 | Default:0 |
| F3.08 | AO2output function selection | Range:0~16 | Default:1 |

DO terminal output pulse frequency range of 0.01kHz ~ F3.09 (DO maximum output frequency),

F3.09 can be set between 0.01kHz ~ 100.00kHz.

Analog output AO1 and AO2 output range of 0V ~ 10V, or 0mA ~ 20mA.

| Value | Function | Range |
|-------|------------------------|--|
| 0 | Running frequency | 0 to maximum output frequency |
| 1 | Set frequency | 0 to maximum output frequency |
| 2 | Output current | 0 to 2 times of rated motor current |
| 3 | Output torque | 0 to 2 times of rated motor torque |
| 4 | Output power | 0 to 2 times of rated power |
| 5 | Output voltage | 0 to 1.2 times of rated inverter voltage |
| 6 | Pulse input | 0.01kHz~100.00kHz |
| 7 | AII | 0V~10V |
| 8 | AI2 | 0V~10V (0~20mA) |
| 9 | AI3 | 0V~10V |
| 10 | Length | 0 to maximum set length |
| 11 | Count value | 0 to maximum count value |
| 12 | Communication setting | 0.0%~100.0% |
| 13 | Motor rotational speed | 0 to rotational speed corresponding to output max.freq |
| 14 | Output current | 0.0A~1000.0A |
| 15 | Output voltage | 0.0V~1000.0V |

| | | | |
|--|------------------------|-------------------------|-----------------|
| F3.09 | Output max.Freq of DO | Range:0.01kHz~100.00kHz | Default:50.00Hz |
| If the Y2/DO terminal is used for pulse output, this parameter is used to set the maximum frequency of pulse output. | | | |
| F3.10 | AO1 offset coefficient | Range:-100.0~+100.0 | Default:0.0 |
| F3.11 | AO1 gain | Range:-10.00~+10.00 | Default:1.00 |
| F3.12 | AO2 offset coefficient | Range:-100.0~+100.0 | Default:0.0 |
| F3.13 | AO2 gain | Range:-10.00~+10.00 | Default:1.00 |

These four function parameters generally correct zero offset of analog output and output amplitude error. They also define required AO curve.

Zero offset coefficient 100% of AO1 and AO2 corresponds to 10 V or 20 mA. You can calculate the gain and the zero offset coefficient from the following formulas:

$$K = \frac{(Y1 - Y2) * X \text{ max}}{(X1 - X2) * Y \text{ max}} \quad b = \frac{(X1 * Y2 - X2 * Y1)}{(X1 - X2) * Y \text{ max}} * 100\%$$

For example, AO1 is used for output of frequency reference. To implement output of 2 V (Y1) at 0 Hz (x1) and output of 10 V (Y2) at 50 Hz (X2) according to the formulas, you can obtain gain and zero offset coefficient as follows:

$$K = \frac{(2 - 10) * 50}{(0 - 50) * 10} = 0.8 \quad b = \frac{(0 * 10 - 50 * 2)}{(0 - 50) * 10} * 100\% = 20\%$$

Then you can set F3.10 to 20 and set F3.11 to 0.8

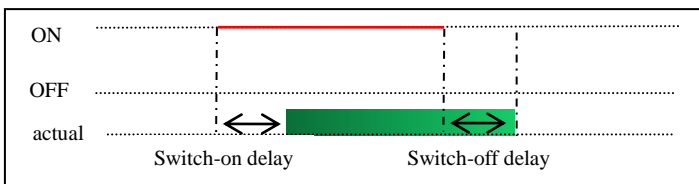
In the formulas:

- "b" represents zero offset.
- "k" represents gain.
- "X" represents output frequency.
- "Y" represents actual output of the AO.
- "Xmax " represents max. output frequency (determined by F0-10).
- "Ymax" represents max. output 10 V or 20 mA.

AO output signal type and corresponding max. value are as follows:

| AO output signal | Corresponding Max. Output (Ymax) |
|------------------|----------------------------------|
| Voltage | 10 V |
| Current | 20 mA |

| | | | |
|-------|-------------------------------|--------------|------|
| F3.14 | Y1 switch-on delay | 0.0s~3600.0s | 0.0s |
| F3.15 | Y1 switch-off delay | 0.0s~3600.0s | 0.0s |
| F3.16 | Y2 switch-on delay | 0.0s~3600.0s | 0.0s |
| F3.17 | Y2 switch-off delay | 0.0s~3600.0s | 0.0s |
| F3.18 | R-relay switch-on delay | 0.0s~3600.0s | 0.0s |
| F3.19 | R-relay switch-off delay | 0.0s~3600.0s | 0.0s |
| F3.20 | E-relay switch-on delay | 0.0s~3600.0s | 0.0s |
| F3.21 | E-relay switch-off delay | 0.0s~3600.0s | 0.0s |
| F3.22 | Monopulse Output Time Y1 | 0.0s~30.0s | 0.0s |
| F3.23 | Monopulse Output Time Y2 | 0.0s~30.0s | 0.0s |
| F3.24 | Monopulse Output Time Relay R | 0.0s~30.0s | 0.0s |
| F3.25 | Monopulse Output Time Relay E | 0.0s~30.0s | 0.0s |



| | | | |
|-------|---------------------------------------|-----------------|--------------|
| F3.27 | Output terminals valid mode selection | Range:0000~1111 | Default:0000 |
|-------|---------------------------------------|-----------------|--------------|

It is used to set the logic of output terminals Y1, Y2, relay R, .relay R

0: Positive logic

1: Positive logic

Group F4: Auxiliary Functions

| | | | |
|-------|-----------------------|---------------------------|----------------|
| F4.00 | JOG running frequency | Range:0.00Hz~the max.freq | Default:2.00Hz |
| F4.01 | JOG acceleration time | Range:0.0s~6500.0s | Default:20.0s |
| F4.02 | JOG deceleration time | Range:0.0s~6500.0s | Default:20.0s |

These parameters are used to define the set frequency and acceleration/deceleration time of the inverter when jogging. The startup mode is "Direct start" (F7.00 = 0) and the stop mode is "Decelerate to stop" (F7.10 = 0) during jogging.

| | | | |
|-------|---------------------|--------------------|-------------------------|
| F4.03 | Acceleration time 2 | Range:0.0s~6500.0s | Default:Model dependent |
| F4.04 | Deceleration time 2 | Range:0.0s~6500.0s | Default:Model dependent |
| F4.05 | Acceleration time 3 | Range:0.0s~6500.0s | Default:Model dependent |
| F4.06 | Deceleration time 3 | Range:0.0s~6500.0s | Default:Model dependent |
| F4.07 | Acceleration time 4 | Range:0.0s~6500.0s | Default:Model dependent |
| F4.08 | Deceleration time 4 | Range:0.0s~6500.0s | Default:Model dependent |

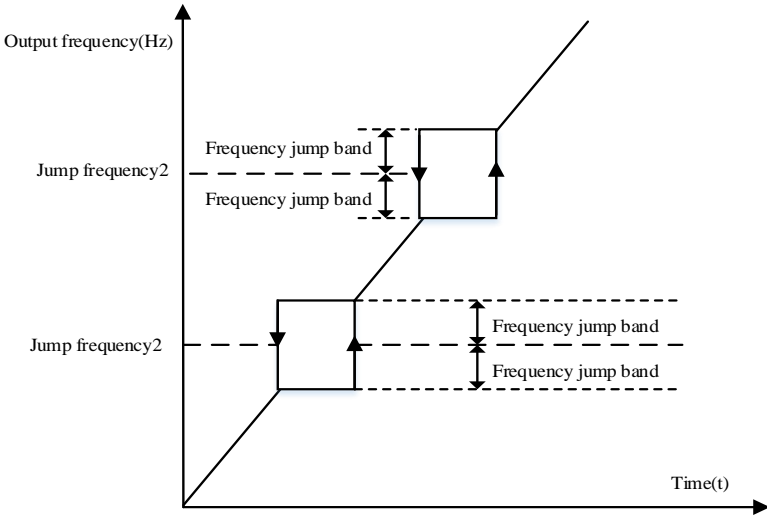
TJT550 provides four groups of acceleration/deceleration time, that is, the preceding three groups and the group defined by F0.17/F0.18. Definitions of the four groups are exactly the same, refer to the relevant instructions of F0.17 and F0.18. During torque control, Acceleration time 4 and Deceleration time 4 are the frequency acceleration/deceleration time.

You can switch over between the four groups of acceleration/deceleration time through different state combinations of X terminals. For more details, see the descriptions of F2.00 to F2.05.

| | | | |
|-------|--------------------------|---------------------------|----------------|
| F4.09 | Jump frequency 1 | Range:0.00Hz~the max.freq | Default:0.00Hz |
| F4.10 | Jump frequency 2 | Range:0.00Hz~the max.freq | Default:0.00Hz |
| F4.11 | Frequency jump amplitude | Range:0.00Hz~the max.freq | Default:0.01Hz |

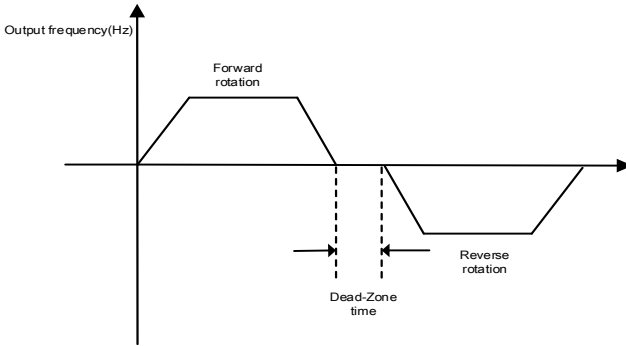
If the set frequency is within the frequency jump range, the actual running frequency is the jump frequency close to the set frequency. Setting the jump frequency helps to avoid the mechanical resonance point of the load.

The JT550 supports two jump frequencies. If both are set to 0, the frequency jump function is disabled. The principle of the jump frequencies and jump amplitude is shown in the following Figure .



| | | | |
|-------|---|--------------------|--------------|
| F4.12 | Forward/Reverse rotation dead-zone time | Range:0.0s~3000.0s | Default:0.0s |
|-------|---|--------------------|--------------|

It is used to set the time when the output is 0 Hz at transition of the inverter forward rotation and reverse rotation, as shown in the following Figure .



| | | | |
|-------|-----------------|-----------|-----------|
| F4.13 | Reverse control | Range:0~1 | Default:0 |
|-------|-----------------|-----------|-----------|

1:Reversal Disabled

Reverse rotation is disabled during forward rotation, and forward rotation is disabled during reverse rotation. Use this parameter to set whether the inverter is allowed to run in the reverse state. If the motor is not allowed to run in reverse, set F4.13=1.

| | | | |
|-------|--|-----------|-----------|
| F4.14 | Running mode when set frequency lower than frequency lower limit | Range:0~2 | Default:0 |
|-------|--|-----------|-----------|

It is used to set the inverter running mode when the set frequency is lower than the frequency lower limit. The JT550 provides three running modes to satisfy requirements of various applications

- 0: Run at frequency lower limit
- 1: Stop
- 2: Run at zero speed

| | | | |
|-------|---------------|----------------------|----------------|
| F4.15 | Droop control | Range:0.00Hz~10.00Hz | Default:0.00Hz |
|-------|---------------|----------------------|----------------|

The function is typically used for load sharing with multiple motors drag a load. Droop control refers to as the load increases, the inverter output frequency decreases, so more than one motor drive the same load, the load of the motor output frequency drops more, which can reduce the load on the motor to achieve multiple motors load evenly. This parameter refers to the inverter rated output load, the output frequency decreases value.

| | | | |
|-------|--------------------------------------|-----------------|------------|
| F4.16 | Accumulative power-on time threshold | Range:0s~65000h | Default:0h |
|-------|--------------------------------------|-----------------|------------|

If the accumulative power-on time (F8.13) reaches the value set in this parameter, the corresponding DO terminal becomes ON.

| | | | |
|-------|-------------------------------------|-----------------|------------|
| F4.17 | Accumulative running time threshold | Range:0s~65000h | Default:0h |
|-------|-------------------------------------|-----------------|------------|

It is used to set the accumulative running time threshold of the inverter. If the accumulative running time (F8.13) reaches the value set in this parameter, the corresponding digital output terminal becomes ON.

| | | | |
|-------|--------------------|-----------|-----------|
| F4.18 | Startup protection | Range:0~1 | Default:0 |
|-------|--------------------|-----------|-----------|

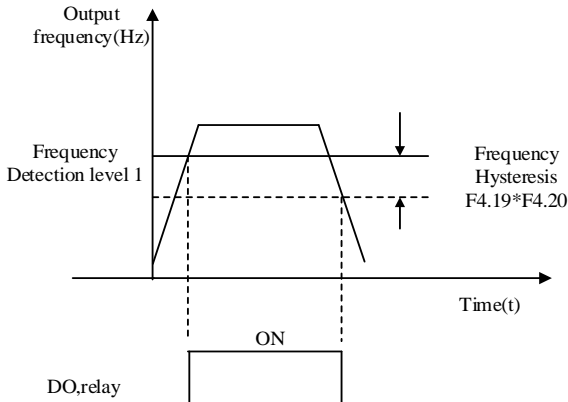
This parameter is used to set whether to enable the safety protection. If it is set to 1, the inverter does not respond to the run command valid upon inverter power-on (for example, an input terminal is ON before power-on). The inverter responds only after the run command is canceled and becomes valid again. In addition, the inverter does not respond to the run command valid upon fault reset of the inverter. The run protection can be disabled only after the run command is canceled.

In this way, the motor can be protected from responding to run commands upon power-on or fault reset in unexpected conditions.

| | | | |
|-------|---|-----------------------|-----------------|
| F4.19 | Frequency detection value (FDT1) | Range:0.00Hz~max.freq | Default:50.00Hz |
| F4.20 | Frequency detection hysteresis (FDT hysteresis 1) | Range:0.0%~100.0% | Default:5.0% |

If the running frequency is higher than the value of F4.19, the corresponding Y terminal becomes ON. If the running frequency is lower than value of F4.19, the DO terminal goes OFF.

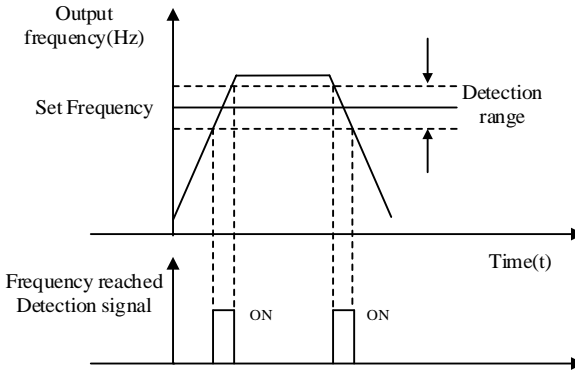
These two parameters are respectively used to set the detection value of output frequency and hysteresis value upon cancellation of the output. The value of F4.20 is a percentage of the hysteresis frequency to the frequency detection value (F4.19). The FDT function is shown in the following Figure .



| | | | |
|-------|--------------------------------------|-------------------|--------------|
| F4.21 | Detection range of frequency reached | Range:0.0%~100.0% | Default:0.0% |
|-------|--------------------------------------|-------------------|--------------|

If the inverter running frequency is within the certain range of the set frequency, the corresponding DO terminal becomes ON.

This parameter is used to set the range within which the output frequency is detected to reach the set frequency. The value of this parameter is a percentage relative to the maximum frequency. The detection range of frequency reached is shown in the following figure .



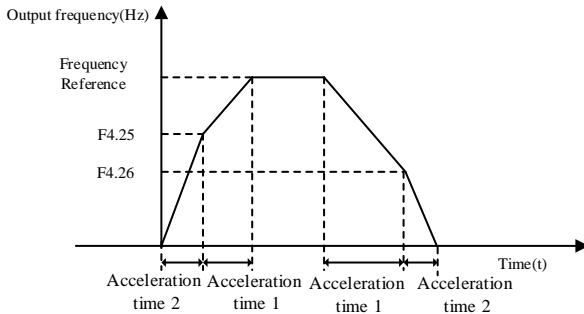
| | | | |
|-------|---|-----------|-----------|
| F4.22 | Jump frequency during acceleration/deceleration | Range:0~1 | Default:0 |
|-------|---|-----------|-----------|

- 0: Disabled
- 1: Enabled

It is used to set whether the jump frequencies are valid during acceleration/deceleration. When the jump frequencies are valid during acceleration/deceleration, and the running frequency is within the frequency jump range, the actual running frequency will jump over the set frequency jump amplitude.

| | | | |
|-------|---|-----------------------|----------------|
| F4.25 | Frequency switchover of acceleration time 1 and acceleration time 2 | Range:0.00Hz~max.freq | Default:0.00Hz |
| F4.26 | Frequency switchover of deceleration time 1 and deceleration time 2 | Range:0.00Hz~max.freq | Default:0.00Hz |

This function is valid when acceleration/deceleration time switchover is not performed by means of X terminal. It is used to select different groups of acceleration/deceleration time based on the running frequency range rather than X terminal during the running process of the inverter.



| | | | |
|-------|------------------------|-----------|-----------|
| F4.27 | Terminal JOG preferred | Range:0~1 | Default:0 |
|-------|------------------------|-----------|-----------|

- 0: Disabled
- 1: Enabled

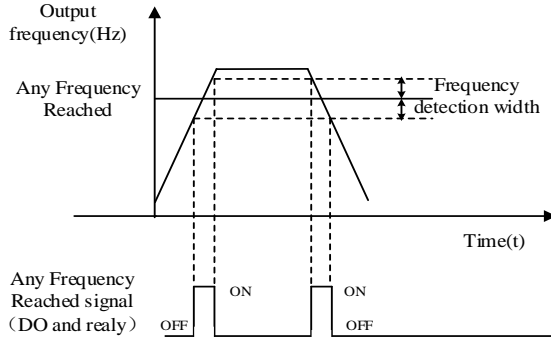
It is used to set whether terminal JOG is preferred.

If terminal JOG is preferred, the inverter switches to terminal JOG running state when there is a terminal JOG command during the running process of the inverter.

| | | | |
|-------|---|-----------------------|-----------------|
| F4.28 | Frequency detection value (FDT2) | Range:0.00Hz~max.freq | Default:50.00Hz |
| F4.29 | Frequency detection hysteresis (FDT hysteresis 2) | Range:0.0%~100.0% | Default:5.0% |

Refer to description of F4.19, F4.20

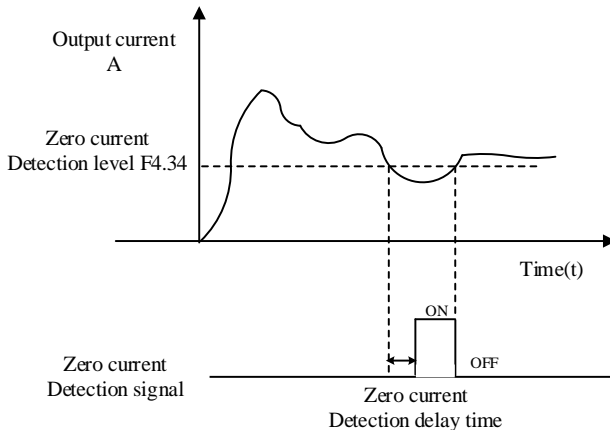
| | | | |
|-------|--|-----------------------|-----------------|
| F4.30 | Any frequency reaching detection value 1 | Range:0.00Hz~max.freq | Default:50.00Hz |
| F4.31 | Any frequency reaching detection amplitude 1 | Range:0.0%~100.0% | Default:0.0% |
| F4.32 | Any frequency reaching detection value 2 | Range:0.00Hz~max.freq | Default:50.00Hz |
| F4.33 | Any frequency reaching detection amplitude 2 | Range:0.0%~100.0% | Default:0.0% |



If the output frequency of the inverter is within the positive and negative amplitudes of the any frequency reaching detection value, the corresponding digital output becomes ON.

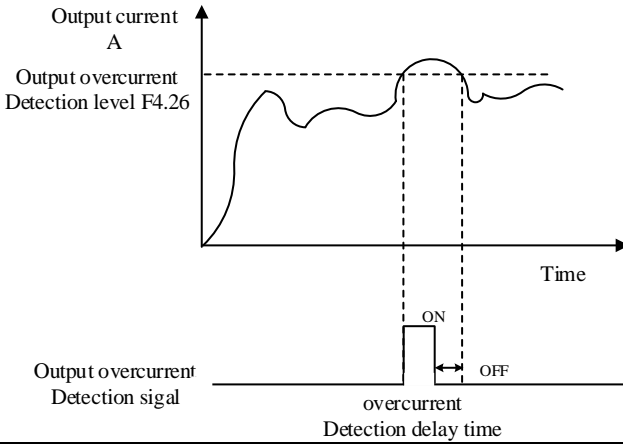
| | | | |
|-------|-----------------------------------|---------------------|---------------|
| F4.34 | Zero current detection level | Range:0.0%~300.0% | Default:5.0% |
| F4.35 | Zero current detection delay time | Range:0.01s~600.00s | Default:0.10s |

If the output current of the inverter is equal to or less than the zero current detection level and the duration exceeds the zero current detection delay time, the corresponding output terminal becomes ON. The zero current detection is shown in the following figure .



| | | | |
|-------|---|---------------------|----------------|
| F4.36 | Output overcurrent threshold | Range: 0.0%~300.0% | Default:200.0% |
| F4.37 | Output overcurrent detection delay time | Range:0.00s~600.00s | Default:0.00s |

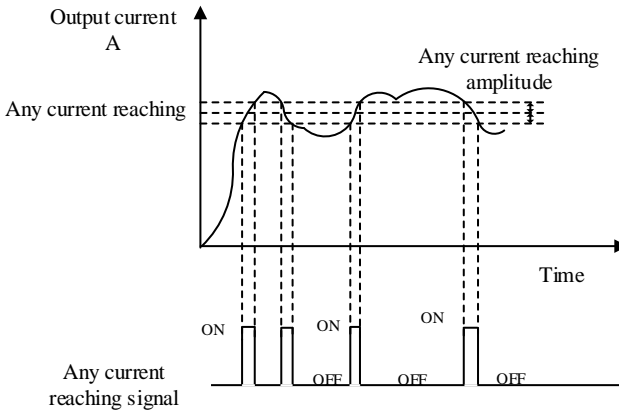
If the output current of the inverter is equal to or higher than the overcurrent threshold and the duration exceeds the detection delay time, the corresponding output terminal becomes ON. The output overcurrent detection function is shown in the following Figure .



| | | | |
|-------|----------------------------------|-------------------|----------------|
| F4.38 | Any current reaching 1 | Range:0.0%~300.0% | Default:100.0% |
| F4.39 | Any current reaching 1 amplitude | Range:0.0%~300.0% | Default:0.0% |
| F4.40 | Any current reaching 2 | Range:0.0%~300.0% | Default:100.0% |
| F4.41 | Any current reaching 2 amplitude | Range:0.0%~300.0% | Default:0.0% |

If the output current of the inverter is within the positive and negative amplitudes of any current reaching detection value, the corresponding output terminal becomes ON.

The JT550 provides two groups of any current reaching detection parameters, including current detection value and detection amplitudes, as shown in the following Figure .



| | | | |
|-------|-----------------|-----------|-----------|
| F4.42 | Timing function | Range:0~1 | Default:0 |
|-------|-----------------|-----------|-----------|

0: Disabled

1: Enabled

| | | | |
|-------|------------------------|-----------|-----------|
| F4.43 | Timing duration source | Range:0~3 | Default:0 |
|-------|------------------------|-----------|-----------|

0:F4.44

1:AI1

2:AI2

3:AI3(100% of analog input corresponds to the value of F4.44)

| | | | |
|-------|-----------------|------------------------|----------------|
| F4.44 | Timing duration | Range:0.0Min~6500.0Min | Default:0.0Min |
|-------|-----------------|------------------------|----------------|

These parameters are used to implement the inverter timing function.

If F4.42 is set to 1, the inverter starts to time at startup. When the set timing duration is reached, the inverter stops automatically and meanwhile the corresponding DO becomes ON.

The inverter starts timing from 0 each time it starts up and the remaining timing duration can be queried by H0.28.

The timing duration is set in F4.43 and F4.44, in unit of minute.

| | | | |
|-------|-------------------------------|--------------------|---------------|
| F4.45 | All input voltage lower limit | Range:0.00V~F4.46 | Default:3.10V |
| F4.46 | All input voltage upper limit | Range:F4.45~10.00V | Default:6.80V |

These two parameters are used to set the limits of the input voltage to provide protection on the inverter. When the All input is larger than the value of F4.46 or smaller than the value of F4.45, the corresponding output terminal becomes ON, indicating that All input exceeds the limit.

| | | | |
|-------|------------------------------|-------------|--------------|
| F4.47 | Module temperature threshold | Range:0~100 | Default:75°C |
|-------|------------------------------|-------------|--------------|

When the heatsink temperature of the inverter reaches the value of this parameter, the corresponding output terminal becomes ON, indicating that the module temperature reaches the threshold.

| | | | |
|-------|---------------------|-----------|-----------|
| F4.48 | Cooling fan control | Range:0~1 | Default:0 |
|-------|---------------------|-----------|-----------|

It is used to set the working mode of the cooling fan. If this parameter is set to 0, the fan works when the inverter is in running state. When the inverter stops, the cooling fan works if the heatsink temperature is higher than 40° C, and stops working if the heatsink temperature is lower than 40° C.

If this parameter is set to 1, the cooling fan keeps working after power on.

| | | | |
|-------|--------------------|--------------------|----------------|
| F4.49 | Wakeup frequency | Range:F4.51~F0.10 | Default:0.00Hz |
| F4.50 | Wakeup delay time | Range:0.0s~6500.0s | Default:0.0s |
| F4.51 | Dormant frequency | Range:0.00Hz~F4.49 | Default:0.00Hz |
| F4.52 | Dormant delay time | Range:0.0~6500.0s | Default:0.0s |

These parameters are used to implement the dormant and wakeup functions in the water supply application.

When the inverter is in running state, the inverter enters the dormant state and stops automatically after the dormant delay time (F4.52) if the set frequency is lower than or equal to the dormant frequency (F4.51).

When the inverter is in dormant state and the current running command is effective, the inverter starts up after the wakeup delay time (F4.50) if the set frequency is higher than or equal to the wakeup frequency (F4.49).

Generally, set the wakeup frequency equal to or higher than the dormant frequency. If the wakeup frequency and dormant frequency are set to 0, the dormant and wakeup functions are disabled.

When the dormant function is enabled, if the frequency source is PID, whether PID operation is performed in the dormant state is determined by FA.28. In this case, select PID operation enabled in the stop state (FA.28 = 1).

| | | | |
|-------|------------------------------|------------------------|----------------|
| F4.53 | Current running time reached | Range:0.0Min~6500.0Min | Default:0.0Min |
|-------|------------------------------|------------------------|----------------|

If the current running time reaches the value set in this parameter, the corresponding output terminal becomes ON, indicating that the current running time is reached.

| | | | |
|-------|------------------------|--|------------|
| F4.54 | ADT1 channel selection | Unit's digit: 0:A11 1:A12 Ten's digit: 0:No output when stop 1:Output when stop | Default:00 |
| F4.55 | ADT2 channel selection | Unit's digit: 0:A11 1:A12 Ten's digit: 0:No output when stop 1:Output when stop | Default:01 |

| | | | |
|-------|-------------------------|-------------|----------------|
| F4.56 | ADT1 output upper limit | F4.57~10.00 | Default:10.00V |
| F4.57 | ADT1 output lower limit | 0.00~F4.56 | Default:0.00V |
| F4.58 | ADT2 output upper limit | F4.59~10.00 | Default:10.00V |
| F4.59 | ADT2 output lower limit | 0.00~F4.58 | Default:0.00V |

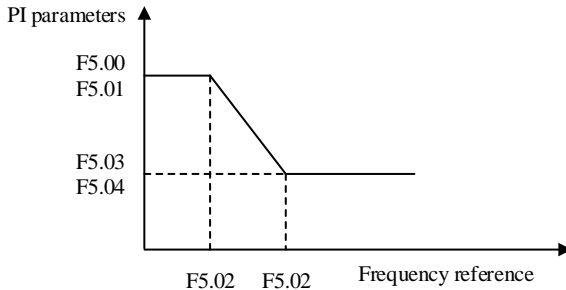
When the AI voltage is higher than the ADT upper limit value, the inverter function output terminal (41/42: Frequency detection ADT1 / ADT2 output) will be ON , and the frequency is below the lower limit value of ADT, the ON signal is canceled.

Group F5: Vector Control Parameters

| | | | |
|-------|--------------------------------|----------------|-----------------|
| F5.00 | Speed loop proportional gain 1 | 1~100 | Default:30 |
| F5.01 | Speed loop integral time 1 | 0.01s~10.00s | Default:0.50s |
| F5.02 | Switchover frequency 1 | 0.00~F5.05 | Default:5.00Hz |
| F5.03 | Speed loop proportional gain 2 | 1~100 | Default:20 |
| F5.04 | Speed loop integral time 2 | 0.01s~10.00s | Default:1.00s |
| F5.05 | Switchover frequency 2 | F5.02~max.freq | Default:10.00Hz |

F5-00 to F5-05 are speed loop PI parameters.

- If running frequency \leq F5-02 (Switchover frequency 1), PI parameters are F5-00 and F5-01.
- If running frequency \geq F5-05 (Switchover frequency 2), PI parameters are F5-03 and F5-04.
- If running frequency is between F5-02 and F5-05, PI parameters are obtained from linear switchover between two groups of PI parameters, as shown in Figure.



To improve the system response, increase the proportional gain or reduce the integral time. Remember to increase proportional gain first to ensure that the system does not oscillate, and then reduce integral time to ensure that the system has quick response and small overshoot.

Note:Incorrect PI setting may cause large speed overshoots and a fast falling speed drop may cause an over voltage on the DC bus.

| | | | |
|-------|--------------------------|----------------|--------------|
| F5.06 | Vector control slip gain | Range:50%~200% | Default:100% |
|-------|--------------------------|----------------|--------------|

This function improves control performance in SVC/FVC (F0-01 = 0/1).

For FVC (F0-01 = 1), it can adjust output current of the AC drive. Decrease this parameter gradually when a large rating AC drive is controlling a lightly loaded motor. Adjustment of this parameter is not required normally.

| | | | |
|-------|------------------------------------|---------------------|----------------|
| F5.07 | Time constant of speed loop filter | Range:0.000s~0.100s | Default:0.000s |
|-------|------------------------------------|---------------------|----------------|

This parameter takes effect only when F0-01 = 0. You can improve motor stability by increasing F5.07. Be aware that this may slow dynamic response. Decreasing it will obtain quick system response but may lead to motor oscillation. Adjustment of this parameter is not required normally.

| | | | |
|-------|-------------------------------------|-------------|------------|
| F5.08 | Vector control over excitation gain | Range:0~200 | Default:64 |
|-------|-------------------------------------|-------------|------------|

During deceleration, over-excitation control can restrain rise of the bus voltage to avoid the over-voltage fault. The larger the over-excitation gain is, the better the restraining effect is.

Increase the over-excitation gain if the inverter is liable to over-voltage error during deceleration. Too large over-excitation gain, however, may lead to an increase in output current. Therefore, set this parameter to a proper value in actual applications.

Set the over-excitation gain to 0 in applications of small inertia (the bus voltage will not rise during deceleration) or where there is a braking resistor.

| | | | |
|-------|---|-------------------|----------------|
| F5.09 | Torque upper limit source in speed control mode | Range:0~7 | Default:0 |
| F5.10 | Digital setting of torque upper limit in speed control mode | Range:0.0%~200.0% | Default:150.0% |

0: Set by F5.10

1: AI1

2: AI2

3: AI3

4: Pulse setting (X5)

5: Via communication

6: MIN(AI1,AI2)

7: MAX(AI1,AI2)

When the inverter is in communication with the master, if F5.09 is set to 5 “communication setting”, F5.10 “Digital setting of torque upper limit in speed control mode” can be set via communication from the master.

In other conditions, the host computer writes data -100.00% to 100.00% by the communication address 0x1000, where 100.0% corresponds to the value of F5.10.

| | | | |
|-------|---|--------------------|----------------|
| F5.11 | Torque upper limit source in speed control mode(In Regenerative State) | Range:0~7 | Default:0 |
| F5.12 | Digital setting of torque upper limit in speed control mode (In Regenerative State) | Range:0.0%~200.0 % | Default:150.0% |

0: Set by F5.12

1: AI1

2: AI2

3: AI3

4: Pulse setting (X5)

5: Via communication

6: MIN(AI1,AI2)

7: MAX(AI1,AI2)

When the inverter is in communication with the master, if F5.11 is set to 5 “communication setting”, F5.12 “Digital setting of torque upper limit in speed control mode” can be set via communication from the master.

In other conditions, the host computer writes data -100.00% to 100.00% by the communication address 0x1000, where 100.0% corresponds to the value of F5.12.

| | | | |
|-------|---|---------------|--------------|
| F5.13 | Excitation adjustment proportional gain | Range:0~60000 | Default:2000 |
| F5.14 | Excitation adjustment integral gain | Range:0~60000 | Default:1300 |
| F5.15 | Torque adjustment proportional gain | Range:0~60000 | Default:2000 |
| F5.16 | Torque adjustment integral gain | Range:0~60000 | Default:1300 |

These function parameters are vector control current loop PI parameters. They are obtained from motor auto-tuning. Adjustment of these parameter is not required normally.

The dimension of current loop integral regulator is integral gain rather than integral time. Very large current loop PI gain may lead to control loop oscillation. When current oscillation or torque fluctuation is great, decrease the proportional gain or integral gain.

Group F6: V/F Control Parameters

| | | | |
|-------|-------------------|-----------|-----------|
| F6.00 | V/F curve setting | Range:0~8 | Default:0 |
|-------|-------------------|-----------|-----------|

0: Linear V/F

It is applicable to common constant torque load.

1: Multi-point V/F

It is applicable to special load such as dehydrator and centrifuge. Any such V/F curve can be obtained by setting parameters of F6.03 to F6.08.

2: Square V/F

3: 1.2-power V/F

4: 1.4-power V/F

6: 1.6-power V/F

8: 1.8-power V/F

2 to 8 is suitable for fans, pumps, centrifugal loads

| | | | |
|-------|-----------------------------------|-----------------------|-------------------------|
| F6.01 | Torque boost | Range:0.0~30.0 | Default:Model dependent |
| F6.02 | Cut-off frequency of torque boost | Range:0.00Hz~max.freq | Default:50.00Hz |

The torque compensation function compensates for insufficient torque production at low frequency.

F6-01 compensates for insufficient torque production by boosting output voltage of the AC drive. But very large setting will result in motor overheat and AC drive over-current.

- On starting a heavy load and insufficient torque is experienced, increase the torque boost in F6-01.
- Decrease this parameter on light loads to avoid overheating the motor. F6-02 sets the cutoff frequency.

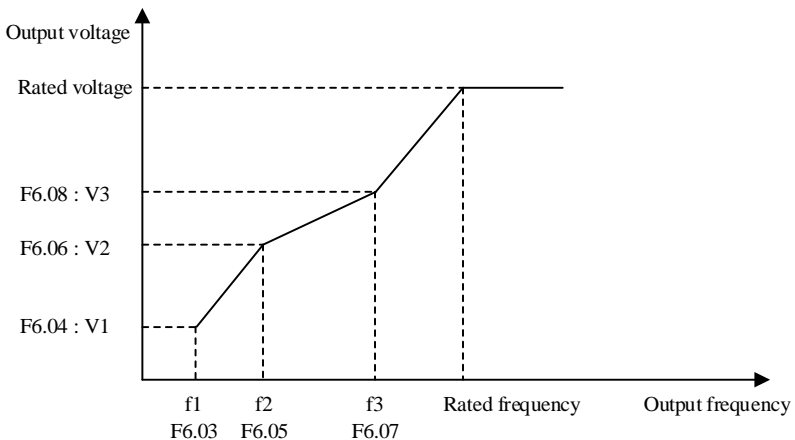
The torque boost function is disengaged when the output frequency exceeds the cutoff point.

| | | | |
|-------|-----------------------------|---|----------------|
| F6.03 | Multi-point V/F frequency 1 | Range:0.00Hz~F6.05 | Default:0.00Hz |
| F6.04 | Multi-point V/F voltage 1 | Range:0.0%~100.0% | Default:0.0% |
| F6.05 | Multi-point V/F frequency 2 | Range:F6.03~F6.07 | Default:0.00Hz |
| F6.06 | Multi-point V/F voltage 2 | Range:0.0%~100.0% | Default:0.0% |
| F6.07 | Multi-point V/F frequency 3 | Range:F6.05~rated motor frequency (F1.04) | Default:0.00Hz |
| F6.08 | Multi-point V/F voltage 3 | Range:0.0%~100.0% | Default:0.0% |

These six parameters are used to define the multi-point V/F curve.

The multi-point V/F curve is set based on the motor's load characteristic. The relationship between voltages and frequencies is: $V1 < V2 < V3$, $F1 < F2 < F3$

At low frequency, higher voltage may cause overheat or even burnt out of the motor and overcurrent stall or overcurrent protection of the inverter.



| | | | |
|-------|----------------------------|-------------------|--------------|
| F6.09 | V/F slip compensation gain | Range:0.0%~200.0% | Default:0.0% |
|-------|----------------------------|-------------------|--------------|

It can compensate the rotational speed slip of the asynchronous motor when the load of the motor increases, stabilizing the motor speed in case of load change. If this parameter is set to 100%, it indicates that the compensation when the motor bears rated load is the rated motor slip. The rated motor slip is automatically obtained by the inverter through calculation based on the rated motor frequency and rated motor rotational speed in group F1.

Generally, if the motor rotational speed is different from the target speed, slightly adjust this parameter.

| | | | |
|-------|--------------------------|-------------|------------|
| F6.10 | V/F over-excitation gain | Range:0~200 | Default:64 |
|-------|--------------------------|-------------|------------|

If actual deceleration time cannot satisfy the requirement, increase the value of F3-10 (V/F over excitation gain) adequately.

When using braking resistor, braking unit or energy feedback unit, set F6.10 (V/F over-excitation gain) to 0. Otherwise, too large current may occur during drive running.

| | | | |
|-------|----------------------------------|-------------|------------------------|
| F6.11 | V/F oscillation suppression gain | Range:0~100 | Default:Mode dependent |
|-------|----------------------------------|-------------|------------------------|

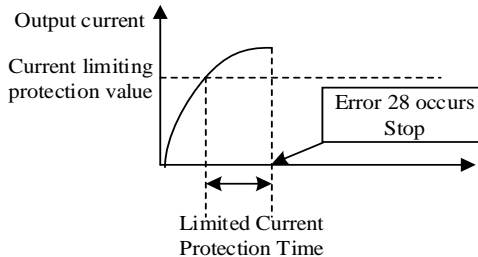
Set this parameter to a value as small as possible in the prerequisite of efficient oscillation suppression to avoid influence on V/F control.

Set this parameter to 0 if the motor has no oscillation. Increase the value properly only when the motor has obvious oscillation. The larger the value is, the better the oscillation suppression result will be.

When the oscillation suppression function is enabled, the rated motor current and noload current must be correct. Otherwise, the V/F oscillation suppression effect will not be Satisfactory.

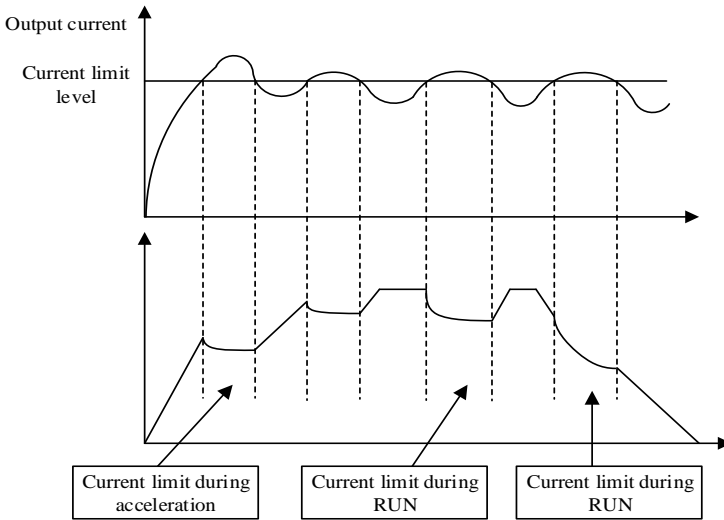
| | | | |
|-------|--|---------------------|---------------|
| F6.13 | Limited flow protection function selection | Range: 0~1 | Default: 0 |
| F6.14 | Current limiting protection value | Range: 0~600 (A) | Default: 70 |
| F6.15 | Limited current protection action time | Range: 0.0~60.0 (s) | Default: 02.0 |

When F6.13=1 and output current exceeds the value set in F6.14, the duration greater than f6.15, the inverter will show Error 28 and stop.



| | | | |
|-------|-------------------------|-------------------------------------|---------------|
| F6.16 | Current limit selection | Range: 0: Disabled 1: Enabled | Default: 1 |
| F6.17 | Current limit level | Range: 50% to 200% | Default: 150% |
| F6.18 | Current limit gain | Range: 0 to 100 | Default: 20 |

When output current exceeds the value set in F6.17 during acceleration, constant running or deceleration, current limit is enabled and output frequency starts to drop. Until output current recovers below the current limit level, output frequency starts to rise to target frequency again.



| | | | |
|-------|--|--------------------|--------------|
| F6.19 | Compensation factor of speed multiplying current limit | Range: 50% to 200% | Default: 50% |
|-------|--|--------------------|--------------|

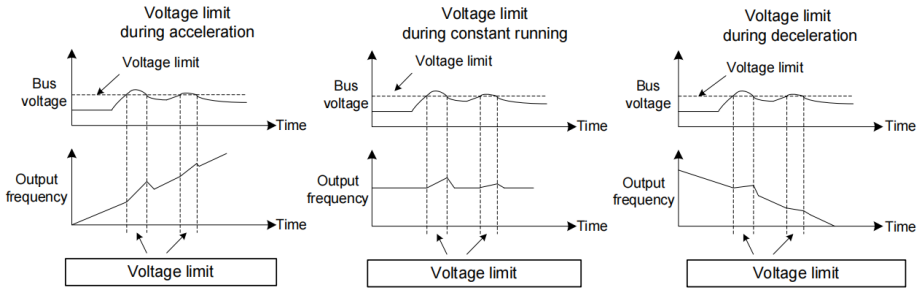
In high frequency area, motor drive current is small. Bigger motor speed dip is caused by current limit level compared with below rated frequency. To improve motor running characteristic, you can lower current limit level above rated frequency.

The current limit function above rated frequency helps to improve acceleration performance in the applications, such as centrifuge, where high running frequency and several times of field weakening are required, and load inertia is large.

| | | | |
|-------|---|-------------------------------------|---------------|
| F6.20 | Voltage limit selection | Range: 0: Disabled 1: Enabled | Default: 1 |
| F6.21 | Voltage limit | Range: 120% to 150% | Default: 130% |
| F6.22 | Frequency gain for voltage limit | Range: 0 to 100 | Default: 30 |
| F6.23 | Voltage gain for voltage limit | Range: 0 to 100 | Default: 30 |
| F6.24 | Frequency rise threshold during voltage limit | Range: 0 to 50 Hz | Default: 5 |

When bus voltage rises above the value set in F6.21, the motor becomes regenerative. This function prevents over-voltage trips by adjusting the output frequency to extend deceleration time in this case.

If actual deceleration time cannot satisfy the requirement, increase the value of F6.10 (V/F over excitation gain) adequately.



| | | | |
|-------|--------------------------------------|--------|-----|
| F6.25 | Filter Time of V/f Slip Compensation | 0~10.0 | 4.0 |
|-------|--------------------------------------|--------|-----|

Used to set the filtering time of V / F slip compensation.

| | | | |
|-------|-------------------------------|-------|-----|
| F6.26 | Auto-Torque Boost Coefficient | 0~200 | 100 |
|-------|-------------------------------|-------|-----|

Adjust the value of automatic torque lifting.

Group F7: Start/Stop Control

| | | | |
|-------|------------|-----------|-----------|
| F7.00 | Start mode | Range:0~2 | Default:0 |
|-------|------------|-----------|-----------|

◆ F7.00=0: Direct start

It is applicable to most small-inertia loads, Start frequency is applicable to drive equipment which requires startup torque, such as cement mixer

◆ 1: Rotational speed tracking restart

To catch a spinning motor, the inverter detects speed and direction of spinning motor, and then starts to run from the spinning motor frequency.

In this start mode, ensure that motor parameters in group F1 are set correctly

◆ 2: DC braking restart

The DC injection braking function is applicable to drive load such as elevator and crane

| | | | |
|-------|--------------------------------|-----------|-----------|
| F7.01 | Rotational speed tracking mode | Range:0~2 | Default:0 |
|-------|--------------------------------|-----------|-----------|

To complete the rotational speed tracking process within the shortest time, select the proper mode in which the inverter tracks the motor rotational speed.

● 0: From frequency at stop

It is the commonly selected mode.

● 1: From zero frequency

It is applicable to restart after a long time of stop.

● 2: From the maximum frequency

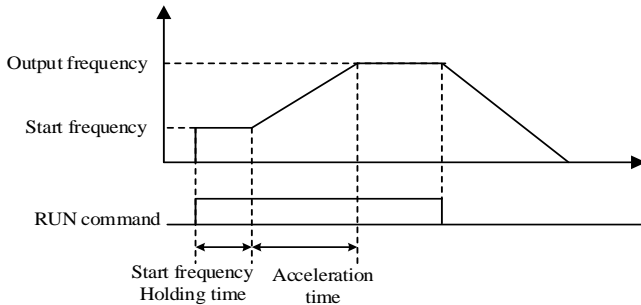
It is applicable to the larger mechanical inertia.

| | | | |
|-------|---------------------------------|-------------|------------|
| F7.02 | Rotational speed tracking speed | Range:1~100 | Default:20 |
|-------|---------------------------------|-------------|------------|

In the rotational speed tracking restart mode, select the rotational speed tracking speed. The larger the value is, the faster the tracking is. However, too large value may cause unreliable tracking.

| | | | |
|-------|-------------------|----------------------|----------------|
| F7.03 | Startup frequency | Range:0.00Hz~10.00Hz | Default:0.00Hz |
|-------|-------------------|----------------------|----------------|

| | | | |
|-------|--------------------------------|-------------------|--------------|
| F7.04 | Startup frequency holding time | Range:0.0s~100.0s | Default:0.0s |
|-------|--------------------------------|-------------------|--------------|



| | | | |
|-------|----------------------------|-------------|------|
| F7.05 | Startup DC braking current | 0%~100% | 0% |
| F7.06 | Startup DC braking time | 0.0s~100.0s | 0.0s |

Startup DC braking is generally used during restart of the inverter after the rotating motor stops. Startup DC braking is valid only for direct start (F7.00 = 0). In this case, the inverter performs DC braking at the set startup DC braking current. After the startup DC braking time, the inverter starts to run. If the startup DC braking time is 0, the inverter starts directly without DC braking.

| | | | |
|-------|--------------------------------|-----------|-----------|
| F7.07 | Acceleration/Deceleration mode | Range:0~2 | Default:0 |
|-------|--------------------------------|-----------|-----------|

It is used to set the frequency change mode during the inverter start and stop process.

- 0: Linear acceleration/deceleration
- 1: S-curve acceleration/deceleration A
- 2: S-curve acceleration/deceleration B

| | | | |
|-------|--|---------------------------|---------------|
| F7.08 | Time proportion of S-curve start segment | Range:0.0%~(100.0%-F7.09) | Default:30.0% |
| F7.09 | Time proportion of S-curve end segment | Range:0.0%~(100.0%-F7.08) | Default:30.0% |

These two parameters respectively define the time proportions of the start segment and the end segment of S-curve acceleration/deceleration. They must satisfy the requirement: $F7.08 + F7.09 \leq 100.0\%$.

| | | | |
|-------|-----------|-----------|-----------|
| F7.10 | Stop mode | Range:0~1 | Default:0 |
|-------|-----------|-----------|-----------|

- 0: Decelerate to stop

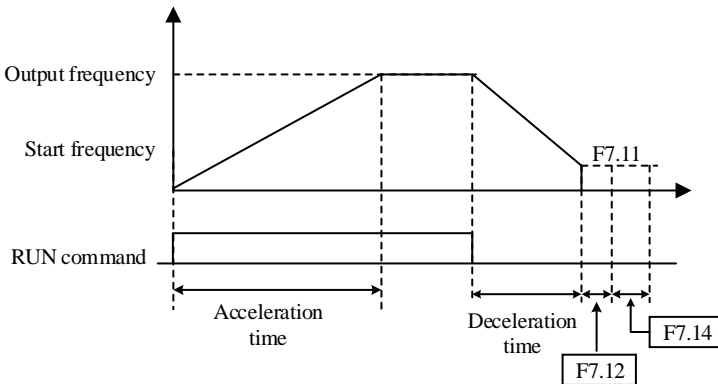
After the stop command is enabled, the inverter decreases the output frequency according to the deceleration time and stops when the frequency decreases to zero.

- 1: Coast to stop

After the stop command is enabled, the inverter immediately stops the output. The motor will coast to stop based on the mechanical inertia.

| | | | |
|-------|--------------------------------------|------------------------|----------------|
| F7.11 | Initial frequency of stop DC braking | Range:0.00Hz~max. freq | Default:0.00Hz |
| F7.12 | Waiting time of stop DC braking | Range:0.0s~100.0s | Default:0.0s |
| F7.13 | Stop DC braking current | Range:0%~100% | Default:0% |
| F7.14 | Stop DC braking time | Range:0.0%~100.0% | Default:0.0s |

The inverter starts DC injection braking when the running frequency decreases to the value set in this parameter in the process of deceleration to stop.



| | | | |
|-------|-----------------|---------------|--------------|
| F7.15 | Brake use ratio | Range:0%~100% | Default:100% |
|-------|-----------------|---------------|--------------|

It is valid only for the inverter with internal braking unit and used to adjust the duty ratio of the braking unit. The larger the value of this parameter is, the better the braking result will be. However, too larger value causes great fluctuation of the inverter bus voltage during the braking process.

Group F8: Operation Panel and Display

| | | | |
|-------|---------------------------|-----------|-----------|
| F8.01 | MK Key function selection | Range:0~4 | Default:0 |
|-------|---------------------------|-----------|-----------|

MK key refers to multifunctional key. You can set the function of the MK key by using this parameter. You can perform switchover by using this key both in stop or running state.

0: MK key disabled

This key is disabled.

1: Switchover between operation panel control and remote command control

You can perform switchover from the current command source to the operation panel control (local operation). If the current command source is operation panel control, this key is invalid.

2: Switchover between forward rotation and reverse rotation

You can change the direction of the frequency reference by using the MK key. It is valid only when the current command source is operation panel control.

3: Forward JOG

You can perform forward JOG (FJOG) by using the MK key.

4: Reverse JOG

You can perform reverse JOG (FJOG) by using the MK key.

| | | | |
|-------|-------------------------|-----------|-----------|
| F8.02 | STOP/RESET key function | Range:0~1 | Default:1 |
|-------|-------------------------|-----------|-----------|

0: STOP/RESET key enabled only in operation panel control

1: STOP/RESET key enabled in any operation mode

| | | | |
|-------|----------------------------------|---------------------|----------------|
| F8.03 | LED display running parameters 1 | Range:0x0000~0xFFFF | Default:0x001F |
|-------|----------------------------------|---------------------|----------------|

A maximum of 32 parameters in the running status can be viewed in F8.03 and F8.04. The display starts from the lowest bit of F8.03. A total of 13 parameters in the stop can be viewed in F8.05.

| Bit07 | Bit06 | Bit05 | Bit04 | Bit03 | Bit02 | Bit01 | Bit00 |
|----------------|-------------|-------------------------|--------------|----------------|----------------|------------------|-------------------|
| X input status | Bus voltage | Output torque | Output power | Output voltage | Output current | Set frequency | Running frequency |
| Bit15 | Bit14 | Bit13 | Bit12 | Bit11 | Bit10 | Bit09 | Bit08 |
| PID feedback | PID setting | Pulse setting frequency | AI3 voltage | AI2 voltage | AI1 voltage | DO output status | Reserved |

| F8.04 | LED display running parameters 2 | | | Range:0x0000~0xFFFF | | | Default:0x0000 | |
|--------------|----------------------------------|-------------|------------------------|-----------------------------|------------------------|----------------------|-----------------------|--|
| Bit07 | Bit06 | Bit05 | Bit04 | Bit03 | Bit02 | Bit01 | Bit00 | |
| Linear speed | Length value | Count value | feedback speed | Auxiliary frequency display | Main frequency display | Load speed display | PID output | |
| Bit15 | Bit14 | Bit13 | Bit12 | Bit11 | Bit10 | Bit09 | Bit08 | |
| Reserved | Communication setting value | PLC stage | Remaining running time | Output current percentage | Overload count | Current running time | Current power-on time | |

| F8.05 | LED display stop parameters | | | Range:0x0000~0xFFFF | | | Default:0x0033 | |
|-------------|-----------------------------|-------------|-------------------------|-----------------------|----------------|-------------|----------------|--|
| Bit07 | Bit06 | Bit05 | Bit04 | Bit03 | Bit02 | Bit01 | Bit00 | |
| Count value | AI3 voltage | AI2 voltage | AI1 voltage | Digital output status | X input status | Bus voltage | Set frequency | |
| Bit15 | Bit14 | Bit13 | Bit12 | Bit11 | Bit10 | Bit09 | Bit08 | |
| | | | Pulse setting frequency | PID setting | Load speed | PLC stage | Length value | |

| | | | |
|-------|--------------------------------|---------------------|----------------|
| F8.06 | Load speed display coefficient | Range:0.0001~6.5000 | Default:1.0000 |
|-------|--------------------------------|---------------------|----------------|

This parameter is used to adjust the relationship between the output frequency of the inverter and the load speed. For details, see the description of F8.12.

| | | | |
|-------|---------------------|---------------------|-----------|
| F8.07 | temperature of IGBT | Range:0.0°C~100.0°C | Default:- |
|-------|---------------------|---------------------|-----------|

It is used to display the insulated gate bipolar transistor (IGBT) temperature of the Inverter module, and the IGBT overheat protection value of the Inverter module depends on the model.

| | | | |
|-------|---------------------------|---------------|-----------|
| F8.09 | Accumulative running time | Range:0~65535 | Default:- |
|-------|---------------------------|---------------|-----------|

It is used to display the accumulative running time of the inverter. After the accumulative running time reaches the value set in F4.17, the terminal with the digital output function 12 becomes ON.

| | | | |
|-------|---|-----------|-----------|
| F8.12 | Number of decimal places for load speed display | Range:0~3 | Default:1 |
|-------|---|-----------|-----------|

F8.12 is used to set the number of decimal places for load speed display. The following gives an example to explain how to calculate the load speed:

Assume that F8.06 (Load speed display coefficient) is 2.000 and F8.12 is 2 (2 decimal places). When the running frequency of the inverter is 40.00 Hz, the load speed is $40.00 * 2.000 = 80.00$. If the inverter is at the stop state, the load speed is the speed corresponding to the set frequency, namely, "set load speed". If the set frequency is 50.00 Hz, the load speed in the stop state is $50.00 * 2.000 = 100.000$: 0 decimal place

- 1: 1 decimal place
- 2: 2 decimal places
- 3: 3 decimal places

| | | | |
|-------|----------------------------|----------------|-----------|
| F8.13 | Accumulative power-on time | Range:0~65535h | Default:- |
|-------|----------------------------|----------------|-----------|

It is used to display the accumulative power-on time of the inverter since the delivery. If the time reaches the set power-on time (F4.17), the terminal with the digital output function 24 becomes ON.

| | | | |
|-------|--------------------------------|------------------|-----------|
| F8.14 | Accumulative power consumption | Range:0~65535kwh | Default:- |
|-------|--------------------------------|------------------|-----------|

It is used to display the accumulative power consumption of the inverter until now.

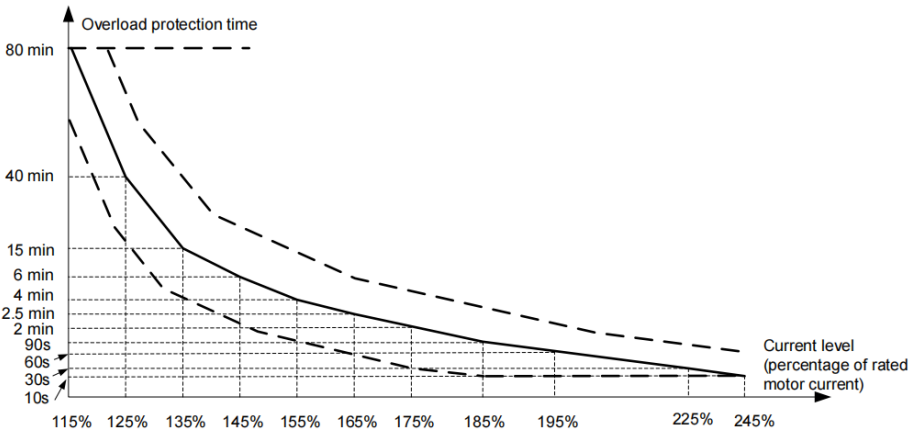
Group F9: Fault and Protection

| | | | |
|-------|-------------------------------------|-----------|-----------|
| F9.00 | Motor overload protection selection | Range:0~1 | Default:1 |
|-------|-------------------------------------|-----------|-----------|

| | | | |
|-------|--------------------------------|------------------|--------------|
| F9.01 | Motor overload protection gain | Range:0.20~10.00 | Default:1.00 |
|-------|--------------------------------|------------------|--------------|

F9.00 = 0: The motor overload protection is disabled. In this case, install a thermal relay between the AC drive output (U, V, W) and the motor.

F9.00 = 1: The motor overload protection function has an inverse load-time characteristics. If the motor overload current level and overload protection time need be adjusted, modify setting of F9.01.



When motor running current reaches 175% of rated motor current and motor runs at this level for 2 minutes, Err11 (motor overload) is detected. When motor running current reaches 115% of rated motor current and motor runs at this level for 80 minutes, Err11 is detected.

Suppose that rated motor current is 100 A.

- F9.01 = 1.00: According to the Figure , when motor running current reaches 125 A (125% of 100 A) and motor runs at 125 A for 40 minutes, Err11 is detected.
- F9-01 = 1.20: According to the Figure, when motor running current reaches 125 A (125% of 100 A) and motor runs at 125 A for $40 \times 1.2 = 48$ minutes,Err11 is detected.

| | | | |
|-------|------------------------------------|--------------|-------------|
| F9.02 | Motor overload warning coefficient | Range:50~100 | Default:80% |
|-------|------------------------------------|--------------|-------------|

The AC drive has the motor overload pending function that reminds of motor overload in advance through digital output function 6. On the condition that F9.01 = 1.00 and F9.02 = 80%, when motor running current reaches 145% of rated motor current and motor runs at this level for $80\% \times 6 = 4.8$ minutes, DO terminal or fault relay outputs the motor overload pending signal.

When F9.02 = 100%, the motor overload pending and the motor overload protection are performed simultaneously.

| | | | |
|-------|---------------------------------------|-----------|-----------|
| F9.07 | Short-circuit to ground upon power-on | Range:0~1 | Default:1 |
|-------|---------------------------------------|-----------|-----------|

0: Disabled

1: Enabled

It is used to determine whether to check the motor is short-circuited to ground at power-on of the inverter. If this function is enabled, the inverter's UVW will have voltage output a while after power-on.

| | | | |
|-------|------------------------|------------|-----------|
| F9.09 | Fault auto reset times | Range:0~20 | Default:0 |
|-------|------------------------|------------|-----------|

This function parameter sets permissible times of auto fault reset. If reset times exceed the value set in this parameter, the inverter will keep fault status.

Undervoltage (Err09) is reset automatically when bus voltage recovers to normal. It is not included in auto reset times.

Short-circuit to ground (Err23) cannot be reset automatically or manually. It can only be reset after power down.

| | | | |
|-------|--|-----------|-----------|
| F9.10 | Selection of DO action during auto reset | Range:0~1 | Default:0 |
|-------|--|-----------|-----------|

0: Not act

1: Act

This function parameter decides whether digital output terminal set for fault output acts during the fault reset.

| | | | |
|-------|-----------------------------------|-------------------|--------------|
| F9.11 | Time interval of fault auto reset | Range:0.1s~100.0s | Default:1.0s |
|-------|-----------------------------------|-------------------|--------------|

It is used to set the waiting time from the alarm of the inverter to fault auto reset.

| | | | |
|-------|---|------------|------------|
| F9.12 | Input phase loss protection/contactor energizing protection selection | Range:0~11 | Default:10 |
|-------|---|------------|------------|

Unit's digit: Input phase loss protection

Ten's digit: Contactor energizing protection

0: Disabled

1: Enabled

It is used to determine whether to perform input phase loss or contactor energizing protection. When F9.12 = 1, only the three-phase 380V, 018G and above models have the fault.

| | | | |
|-------|--|-----------|-----------|
| F9.13 | Output phase loss protection selection | Range:0~1 | Default:1 |
|-------|--|-----------|-----------|

It is used to determine whether to perform output phase loss protection.

0: Disabled

1: Enabled

| | | | | | |
|---|--|--|--|---|--|
| F9.47 | Fault protection action selection 1 | | Range:0000~2222 | Default:0000 | |
| Ten thousand's digit(Communication fault, Err16) | Thousand's digit (External equipment fault, Err15) | Hundred's digit (Power output phase loss, Err13) | Ten's digit (Power input phase loss, Err12) | Unit's digit : (Motor overload, Err11) | |
| 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | |
| F9.48 | Fault protection action selection 2 | | Range:0000~2222 | Default:0000 | |
| Ten thousand's digit(accumulative running time reached) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | Thousand's digit: reserved | Hundred's digit: reserved | Ten's digit (EEPROM read-write fault, Err21) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | Unit's digit (Encoder fault, Err20) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | |
| F9.49 | Fault protection action selection 3 | | Range:0000~2222 | Default:0000 | |
| Ten thousand's digit (PID feedback lost during running) | Thousand's digit (Load becoming 0, Err30) | Hundred's digit (Accumulative power-on time reached, Err29) | Ten's digit (User-defined fault 2, Err28) | Unit's digit (User-defined fault 1, Err27) | |
| 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run at 7% of rated motor frequency and resume to the set frequency if the load recovers | 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | |

- 0: Coast to stop inverter displays Err **, and directly down
- 1: Stop according to the stop mode Drive Show A **, then stop mode, the display Err ** after the shutdown.
- 2: Continue to run The drive continues to run and display A **, the operating frequency is set by F9.54.

| | | | |
|--|-------------------------------------|--|-------------|
| F9.50 | Fault protection action selection 4 | Range:000~222 | Default:000 |
| Ten's digit (Motor over-speed, Err43) | | Unit's digit (Too large speed deviation, Err42) | |
| 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | | 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run | |

| | | | |
|--|--|-----------|-----------|
| F9.54 | Frequency selection for continuing to run upon fault | Range:0~4 | Default:0 |
| 0: Current running frequency 1: Set frequency 2: Frequency upper limit 3: Frequency lower limit 4: Backup frequency upon abnormality | | | |

| | | | |
|-------|-----------------------------------|--------------------|----------------|
| F9.55 | Backup frequency upon abnormality | Range:60.0%~100.0% | Default:100.0% |
|-------|-----------------------------------|--------------------|----------------|

If a fault occurs during the running of the inverter and the handling of fault is set to "Continue to run", the inverter displays A** and continues to run at the frequency set in F9.54.

The setting of F9.55 is a percentage relative to the maximum frequency.

| | | | |
|-------|---|---------------------|---------------|
| F9.59 | Action selection at instantaneous power failure | Range:0~2 | Default:0 |
| F9.60 | Action pause judging voltage at instantaneous power failure | Range:80.0%~100.0% | Default:90.0% |
| F9.61 | Voltage rally judging time at instantaneous power failure | Range:0.00s~100.00s | Default:0.50s |
| F9.62 | Action judging voltage at instantaneous power failure | Range:60.0%~100.0% | Default:80.0% |

Upon instantaneous power failure or sudden voltage dip, the DC bus voltage of the inverter reduces. This function enables the inverter to compensate the DC bus voltage reduction with the load feedback energy by reducing the output frequency so as to keep the inverter running continuously.

If F9.59 = 1, upon instantaneous power failure or sudden voltage dip, the inverter decelerates. Once the bus voltage resumes to normal, the inverter accelerates to the set frequency. If the bus voltage remains normal for the time exceeding the value set in F9.61, it is considered that the bus voltage resumes to normal.

If F9.59 = 2, upon instantaneous power failure or sudden voltage dip, the inverter decelerates to stop.

| | | | |
|-------|------------------------------------|-------------------|---------------|
| F9.63 | Protection upon load becoming 0 | Range:0~1 | Default:0 |
| F9.64 | Detection level of load becoming 0 | Range:0.0%~100.0% | Default:10.0% |
| F9.65 | Detection time of load becoming 0 | Range:0.0s~60.0s | Default:1.0s |

If protection upon load becoming 0 is enabled, when the output current of the inverter is lower than the detection level (F9.64) and the lasting time exceeds the detection time (F9.65), the output frequency of the inverter automatically declines to 7% of the rated frequency. During the protection, the inverter automatically accelerates to the set frequency if the load resumes to normal.

| | | | |
|-------|----------------------------|----------------------------|---------------|
| F9.67 | Over-speed detection value | Range:0.0%~50.0%(max.freq) | Default:20.0% |
| F9.68 | Over-speed detection time | Range:0.0s~60.0s | Default:5.0s |

This function is valid only when the inverter runs in the FVC mode.

If the actual motor rotational speed detected by the inverter exceeds the maximum frequency and the excessive value is greater than the value of F9.67 and the lasting time exceeds the value of F9.68, the inverter reports Err43 and acts according to the selected fault protection action.

If the over-speed detection time is 0.0s, the over-speed detection function is disabled.

| | | | |
|-------|--|-------------------------------------|---------------|
| F9.69 | Detection value of too large speed deviation | Range:0.0%~50.0%(maximum frequency) | Default:20.0% |
| F9.70 | Detection time of too large speed deviation | Range:0.0s~60.0s | Default:0.0s |

This function is valid only when the inverter runs in the CLVC mode.

If the inverter detects the deviation between the actual motor rotational speed detected by the inverter and the set frequency is greater than the value of F9.69 and the lasting time exceeds the value of F9.70, the inverter reports Err42 and according to the selected fault protection action.

If F9.70 (Detection time of too large speed deviation) is 0.0s, this function is disabled.

Group FA: Process Control PID Function

| | | | |
|-------|---------------------|-------------------|---------------|
| FA.00 | PID setting source | Range:0~6 | Default:0 |
| FA.01 | PID digital setting | Range:0.0%~100.0% | Default:50.0% |

FA.00 is used to select the channel of target process PID setting. The PID setting is a relative value and ranges from 0.0% to 100.0%. The PID feedback is also a relative value. The purpose of PID control is to make the PID setting and PID feedback equal.

- 0: FA-01
- 1: AI1
- 2: AI2
- 3: AI3
- 5: Communication setting
- 6: Multi-reference

| | | | |
|-------|---------------------|-----------|-----------|
| FA.02 | PID feedback source | Range:0~8 | Default:0 |
|-------|---------------------|-----------|-----------|

This parameter is used to select the feedback signal channel of process PID.

- 0: AI1
- 1: AI2
- 2: AI3
- 3: AI1 - AI2
- 4: Pulse setting (DI5)
- 5: Communication setting
- 6: AI1 + AI2
- 7: MAX (AI1, AI2)
- 8: MIN (AI1, AI2)

| | | | |
|-------|----------------------|-----------|-----------|
| FA.03 | PID action direction | Range:0~1 | Default:0 |
|-------|----------------------|-----------|-----------|

- 0: Forward action

When the feedback value is smaller than the PID setting, the inverter's output frequency rises. For example, the winding tension control requires forward PID action.

- 1: Reverse action

When the feedback value is smaller than the PID setting, the inverter's output frequency reduces. For example, the unwinding tension control requires reverse PID action.

Note that this function is influenced by the DI function 35 "Reverse PID action direction".

| | | | |
|-------|----------------------------|---------------|--------------|
| FA.04 | PID setting feedback range | Range:0~65535 | Default:1000 |
|-------|----------------------------|---------------|--------------|

This parameter is a non-dimensional unit. It is used for PID setting display (H0.14) and PID feedback display (H0.15).

Relative value 100% of PID setting feedback corresponds to the value of FA.04. If FA-04 is set to 2000 and PID setting is 100.0%, the PID setting display (H0.14) is 2000.

| | | | |
|-------|-----------------------|----------------------|----------------|
| FA.05 | Proportional gain Kp1 | Range:0.0~100.0 | Default:20 |
| FA.06 | Integral time Ti1 | Range:0.01s~10.00s | Default:2.00s |
| FA.07 | Differential time Td1 | Range:0.000s~10.000s | Default:0.000s |

Proportional gain Kp1:

It decides the regulating intensity of the PID regulator. The higher the Kp1 is, the larger the regulating intensity is. The value 100.0 indicates when the deviation between PID feedback and PID setting is 100.0%, the adjustment amplitude of the PID regulator on the output frequency reference is the maximum frequency.

Integral time Ti1:

It decides the integral regulating intensity. The shorter the integral time is, the larger the regulating intensity is. When the deviation between PID feedback and PID setting is 100.0%, the integral regulator performs continuous adjustment for the time set in FA.06. Then the adjustment amplitude reaches the maximum frequency.

Differential time Td1:

It decides the regulating intensity of the PID regulator on the deviation change. The longer the differential time is, the larger the regulating intensity is. Differential time is the time within which the feedback value change reaches 100.0%, and then the adjustment amplitude reaches the maximum frequency.

| | | | |
|-------|---|------------------------|----------------|
| FA.08 | Cut-off frequency of PID reverse rotation | Range:0.00 to max.freq | Default:2.00Hz |
|-------|---|------------------------|----------------|

In some situations, only when the PID output frequency is a negative value (inverter reverse rotation), PID setting and PID feedback can be equal. However, too high reverse rotation frequency is prohibited in some applications, and FA-08 is used to determine the reverse rotation frequency upper limit.

| | | | |
|-------|---------------------|-------------------|--------------|
| FA.09 | PID deviation limit | Range:0.0%~100.0% | Default:0.0% |
|-------|---------------------|-------------------|--------------|

If the deviation between PID feedback and PID setting is smaller than the value of FA.09, PID control stops. The small deviation between PID feedback and PID setting will make the output frequency stabilize, effective for some closed-loop control applications.

| | | | |
|-------|------------------------|---------------------|---------------|
| FA.10 | PID differential limit | Range:0.00%~100.00% | Default:0.10% |
|-------|------------------------|---------------------|---------------|

It is used to set the PID differential output range. In PID control, the differential operation may easily cause system oscillation. Thus, the PID differential regulation is restricted to a small range.

| | | | |
|-------|-------------------------|--------------------|---------------|
| FA.11 | PID setting change time | Range:0.00~650.00s | Default:0.00s |
|-------|-------------------------|--------------------|---------------|

The PID setting change time indicates the time required for PID setting changing from 0.0% to 100.0%. The PID setting changes linearly according to the change time, reducing the impact caused by sudden setting change on the system.

| | | | |
|-------|--------------------------|-------------------|---------------|
| FA.12 | PID feedback filter time | Range:0.00~60.00s | Default:0.00s |
|-------|--------------------------|-------------------|---------------|

| | | | |
|-------|------------------------|-------------------|---------------|
| FA.13 | PID output filter time | Range:0.00~60.00s | Default:0.00s |
|-------|------------------------|-------------------|---------------|

FA.12 is used to filter the PID feedback, helping to reduce interference on the feedback but slowing the response of the process closed-loop system.

FA.13 is used to filter the PID output frequency, helping to weaken sudden change of the inverter output frequency but slowing the response of the process closed-loop system.

| | | | |
|-------|-----------------------|-----------------|--------------|
| FA.15 | Proportional gain Kp2 | Range:0.0~100.0 | Default:20.0 |
|-------|-----------------------|-----------------|--------------|

| | | | |
|-------|-------------------|--------------------|---------------|
| FA.16 | Integral time Ti2 | Range:0.01s~10.00s | Default:2.00s |
|-------|-------------------|--------------------|---------------|

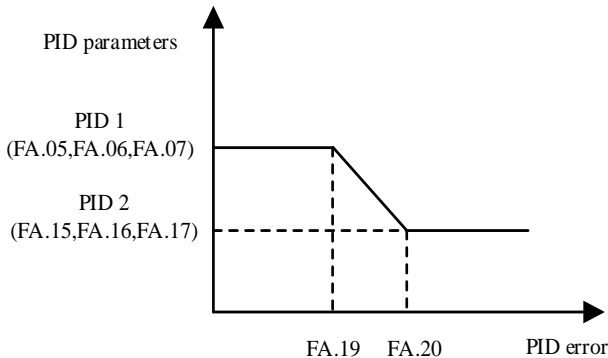
| | | | |
|-------|-----------------------|----------------------|----------------|
| FA.17 | Differential time Td2 | Range:0.000s~10.000s | Default:0.000s |
|-------|-----------------------|----------------------|----------------|

| | | | |
|-------|------------------------------------|-----------|-----------|
| FA.18 | PID parameter switchover condition | Range:0~2 | Default:0 |
|-------|------------------------------------|-----------|-----------|

| | | | |
|-------|--------------------------------------|------------------|---------------|
| FA.19 | PID parameter switchover deviation 1 | Range:0.0%~FA.20 | Default:20.0% |
|-------|--------------------------------------|------------------|---------------|

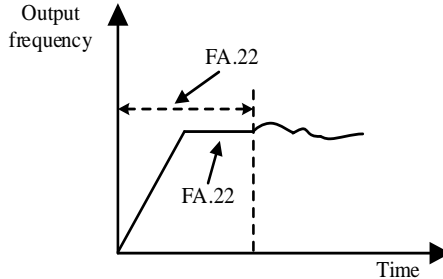
| | | | |
|-------|--------------------------------------|--------------------|---------------|
| FA.20 | PID parameter switchover deviation 2 | Range:FA.19~100.0% | Default:80.0% |
|-------|--------------------------------------|--------------------|---------------|

FA-15 to FA-20: On some applications, switchover to another set of PID parameters may be required to fine tune the overall performance as load conditions can vary during the different machine cycles. These parameters are used for switchover between two groups of PID parameters. Switchover can be implemented via a DI terminal or automatically implemented according to PID error level..



| | | | |
|-------|--------------------------------|--------------------|---------------|
| FA.21 | PID initial value | Range:0.0%~100.0% | Default:0.0% |
| FA.22 | PID initial value holding time | Range:0.00~650.00s | Default:0.00s |

When the inverter starts up, the PID starts closed-loop algorithm only after the PID output is fixed to the PID initial value (FA.21) and lasts the time set in FA.22.



| | | | |
|-------|--|---------------------|---------------|
| FA.23 | Maximum deviation between two PID outputs in forward direction | Range:0.00%~100.00% | Default:1.00% |
| FA.24 | Maximum deviation between two PID outputs in reverse direction | Range:0.00%~100.00% | Default:1.00% |

This function is used to limit the deviation between two PID outputs (2 ms per PID output) to suppress the rapid change of PID output and stabilize the running of the inverter.

FA.23 and FA.24 respectively correspond to the maximum absolute value of the output deviation in forward direction and in reverse direction.

| | | | |
|-------|-----------------------|----------|------------|
| FA.25 | PID integral property | Range:11 | Default:00 |
|-------|-----------------------|----------|------------|

Unit's digit (Integral separated)

0: Invalid

1: Valid

If it is set to valid, the PID integral operation stops when the X allocated with function 38 "PID integral pause" is ON. In this case, only proportional and differential operations take effect.

If it is set to invalid, integral separated remains invalid no matter whether the X allocated with function 38 "PID integral pause" is ON or not.

Ten's digit (Whether to stop integral operation when the output reaches the limit)

0: Continue integral operation

1: Stop integral operation

Whether to stop integral operation when the output reaches the limit

If "Stop integral operation" is selected, the PID integral operation stops, which may help to reduce the PID overshoot.

| | | | |
|-------|--------------------------------------|---|--------------|
| FA.26 | Detection value of PID feedback loss | Range:0.0%: Not judging feedback loss 0.1%~100.0% | Default:0.0% |
| FA.27 | Detection time of PID feedback loss | Range:0.0s~20.0s | Default:0.0s |

These parameters are used to judge whether PID feedback is lost.

If the PID feedback is smaller than the value of FA.26 and the lasting time exceeds the value of FA.27, the inverter reports Err31 and acts according to the selected fault protection action.

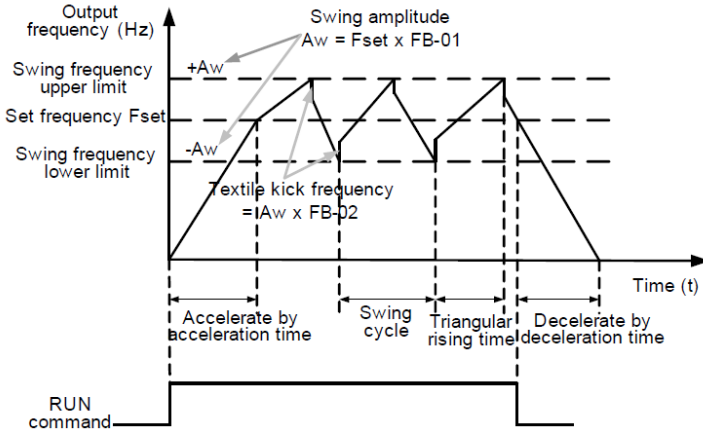
| | | | |
|-------|-----------------------|---|---|
| FA.28 | PID operation at stop | 0: No PID operation at stop 1: PID operation at stop | 0 |
|-------|-----------------------|---|---|

It is used to select whether to continue PID operation in the state of stop. Generally, the PID operation stops when the inverter stops.

Group FB: Swing Frequency, Fixed Length ,Count and Torque Control

The swing frequency function is applied to the textile and chemical fiber fields and the applications where traversing and winding functions are required.

The swing frequency function indicates that the output frequency of the inverter swings up and down with the set frequency as the center. The trace of running frequency at the time axis is shown in the Figure .



| | | | |
|-------|------------------------------|-----------|-----------|
| Fb.00 | Swing frequency setting mode | Range:0~1 | Default:0 |
|-------|------------------------------|-----------|-----------|

This parameter is used to select the base value of the swing amplitude.

0: Relative to the central frequency (F0.07 frequency source selection)

It is variable swing amplitude system. The swing amplitude varies with the central frequency (set frequency).

1: Relative to the maximum frequency (F0.10 maximum output frequency)

It is fixed swing amplitude system. The swing amplitude is fixed.

| | | | |
|-------|---------------------------|-------------------|--------------|
| Fb.01 | Swing frequency amplitude | Range:0.0%~100.0% | Default:0.0% |
| Fb.02 | Jump frequency amplitude | Range:0.0%~50.0% | Default:0.0% |

This parameter is used to determine the swing amplitude and jump frequency amplitude. The swing frequency is limited by the frequency upper limit and frequency lower limit.

- If relative to the central frequency (Fb.00 = 0), the actual swing amplitude AW is the calculation result of F0.07 (Frequency source selection) multiplied by FB.01.

- If relative to the maximum frequency (Fb.00 = 1), the actual swing amplitude AW is the calculation result of F0.10 (Maximum frequency) multiplied by FB.01.

Jump frequency = Swing amplitude AW * Fb.02 (Jump frequency amplitude).

- If relative to the central frequency (Fb.00 = 0), the jump frequency is a variable value.

- If relative to the maximum frequency (Fb.00 = 1), the jump frequency is a fixed value.

The swing frequency is limited by the frequency upper limit and frequency lower limit.

| | | | |
|-------|---|--------------------|---------------|
| Fb.03 | Swing frequency cycle | Range:0.1s~3000.0s | Default:10.0s |
| Fb.04 | Triangular wave rising time coefficient | Range:0.1%~100.0% | Default:50.0% |

FB.03 specifies the time of a complete swing frequency cycle.

FB.04 specifies the time percentage of triangular wave rising time to FB.03 (Swing frequency cycle).

- Triangular wave rising time = FB.03 (Swing frequency cycle) * FB.04 (Triangular wave rising time coefficient, unit: s)

- Triangular wave falling time = FB.03 (Swing frequency cycle) * (1 - FB.04 Triangular wave rising time coefficient ,unit: s)

| | | | |
|-------|----------------------------|------------------|---------------|
| Fb.05 | Set length | Range:0m~65535m | Default:1000m |
| Fb.06 | Actual length | Range:0m~65535m | Default:0m |
| Fb.07 | Number of pulses per meter | Range:0.1~6553.5 | Default:100.0 |

The preceding parameters are used for fixed length control.

The length information is collected by X terminals. Fb.06 (Actual length) is calculated by dividing the number of pulses collected by the X terminal by Fb.07 (Number of pulses each meter).

When the actual length Fb.06 exceeds the set length in Fb.05, the output terminal allocated with function 10 (Length reached) becomes ON.

During the fixed length control, the length reset operation can be performed via the X terminal allocated with function 28. For details, see the descriptions of F4.00 to F4.09.

Allocate corresponding X terminal with function 27 (Length count input) in applications. If the pulse frequency is high, X5 must be used.

| | | | |
|-------|------------------------|---------------|--------------|
| Fb.08 | Set count value | Range:1~65535 | Default:1000 |
| Fb.09 | Designated count value | Range:1~65535 | Default:1000 |

The count value needs to be collected by X terminal. Allocate the corresponding X terminal with function 25 (Counter input) in applications. If the pulse frequency is high, X5 must be used.

When the count value reaches the set count value (Fb.08), the output terminal allocated with function 8 (Set count value reached) becomes ON. Then the counter stops counting.

When the counting value reaches the designated counting value (Fb.09), the output terminal allocated with function 9 (Designated count value reached) becomes ON. Then the counter continues to count until the set count value is reached.

Fb.09 should be equal to or smaller than Fb.08.

| | | | |
|-------|--------------------------------|-----------|-----------|
| Fb.10 | Speed/Torque control selection | Range:0~1 | Default:0 |
|-------|--------------------------------|-----------|-----------|

It is used to select the inverter's control mode: speed control or torque control.

0: speed control

1: torque control, when using this mode, you need to set F0.01 to 0 or 1.

The JT550 provides DI terminals with two torque related functions, function 29 (Torque control prohibited) and function 46 (Speed control/Torque control switchover). The two DI terminals need to be used together with A0.00 to implement speed control/torque control switchover. If the DI terminal allocated with function 46 (Speed control/Torque control switchover) is OFF, the control mode is determined by Fb.00. If the DI terminal allocated with function 46 is ON, the control mode is reverse to the value of Fb.00.

However, if the DI terminal with function 29 (Torque control prohibited) is ON, the inverter is fixed to run in the speed control mode.

| | | | |
|-------|--|----------------------|----------------|
| Fb.11 | Torque setting source in torque control | Range:0~7 | Default:0 |
| Fb.12 | Torque digital setting in torque control | Range:-200.0%~200.0% | Default:150.0% |

Fb.11 is used to set the torque setting source. There are a total of eight torque setting sources.

The torque setting is a relative value. 100.0% corresponds to the inverter's rated torque. The setting range is -200.0% to 200.0%, indicating the inverter's maximum torque is twice of the inverter's rated torque.

If the torque setting is positive, the inverter rotates in forward direction. If the torque setting is negative, the inverter rotates in reverse direction.

- 1: Digital setting (Fb.12) : The target torque directly uses the value set in Fb.12.
- 2: A11
- 3: A12
- 4: A13
- 5: Pulse setting (DI5)
- 6: Communication setting

The target torque is set by means of communication.

The data format is -100.00% to 100.00%. 100% corresponds to the value of Fb.12.

| | | | |
|-------|------------------------------------|-----------------------------------|-----------------|
| Fb.13 | Forward max.freq in torque control | Range:0.00Hz to maximum frequency | Default:50.00Hz |
| Fb.14 | Reverse max.freq in torque control | Range:0.00Hz to maximum frequency | Default:50.00Hz |

Two parameters are used to set the max.freq in forward or reverse rotation in torque control mode.

In torque control, if the load torque is smaller than the motor output torque, the motor's rotational speed will rise continuously. To avoid runaway of the mechanical system, the motor maximum rotating speed must be limited in torque control.

You can implement continuous change of the maximum frequency in torque control dynamically by controlling the frequency upper limit.

| | | | |
|-------|-------------------------------------|--------------------|---------------|
| Fb.15 | Acceleration time in torque control | Range:0.00s~65000s | Default:0.00s |
| Fb.16 | Deceleration time in torque control | Range:0.00s~65000s | Default:0.00s |

In torque control, the difference between the motor output torque and the load torque determines the speed change rate of the motor and load. The motor rotational speed may change quickly and this will result in noise or too large mechanical stress. The setting of acceleration/deceleration time in torque control makes the motor rotational speed change softly.

However, in applications requiring rapid torque response, set the acceleration/deceleration time in torque control to 0.00s. For example, two inverters are connected to drive the same load. To balance the load allocation, set one inverter as master in speed control and the other as slave in torque control. The slave receives the master's output torque as the torque command and must follow the master rapidly. In this case, the acceleration/deceleration time of the slave in torque control is set to 0.0s.

Group FC: Multi-Reference and Simple PLC Function Parameters

| | | | |
|-------|-------------|----------------------|--------------|
| FC.00 | Reference 0 | Range:-100.0%~100.0% | Default:0.0% |
| FC.01 | Reference 1 | Range:-100.0%~100.0% | Default:0.0% |
| FC.02 | Reference 2 | Range:-100.0%~100.0% | Default:0.0% |
| FC.03 | Reference 3 | Range:-100.0%~100.0% | Default:0.0% |
| FC.04 | Reference 4 | Range:-100.0%~100.0% | Default:0.0% |
| FC.05 | Reference 5 | Range:-100.0%~100.0% | Default:0.0% |
| FC.06 | Reference 6 | Range:-100.0%~100.0% | Default:0.0% |
| FC.07 | Reference 7 | Range:-100.0%~100.0% | Default:0.0% |
| FC.08 | Reference 8 | Range:-100.0%~100.0% | Default:0.0% |
| FC.09 | Reference 9 | Range:-100.0%~100.0% | Default:0.0% |
| FC.10 | Reference10 | Range:-100.0%~100.0% | Default:0.0% |
| FC.11 | Reference11 | Range:-100.0%~100.0% | Default:0.0% |
| FC.12 | Reference12 | Range:-100.0%~100.0% | Default:0.0% |
| FC.13 | Reference13 | Range:-100.0%~100.0% | Default:0.0% |
| FC.14 | Reference14 | Range:-100.0%~100.0% | Default:0.0% |
| FC.15 | Reference15 | Range:-100.0%~100.0% | Default:0.0% |

Multi-reference can be the setting source of frequency, V/F separated voltage and process PID. The multi-reference is relative value and ranges from -100.0% to 100.0%.

As frequency source, it is a percentage relative to the maximum frequency. As V/F separated voltage source, it is a percentage relative to the rated motor voltage. As process PID setting source, it does not require conversion.

Multi-reference can be switched over based on different states of DI terminals. For details, see the descriptions of group F2.

| | | | |
|-------|-------------------------|-----------|-----------|
| FC.16 | Simple PLC running mode | Range:0~2 | Default:0 |
|-------|-------------------------|-----------|-----------|

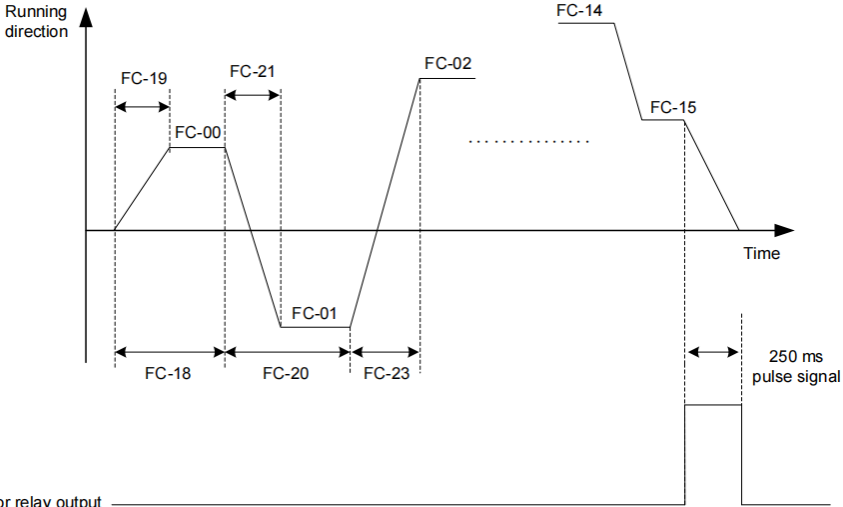
- 0: Stop after the inverter runs one cycle
- 1: Keep final values after the inverter runs one cycle
- 2: Repeat after the inverter runs one cycle

When simple PLC is used as the frequency source, whether parameter values of FC.00 to FC.15 are positive or negative determines the running direction. If the parameter values are negative, it indicates that the inverter runs in reverse direction.

| | | | |
|-------|--------------------------------|-------------|------------|
| FC.17 | Simple PLC retentive selection | Range:00~11 | Default:00 |
|-------|--------------------------------|-------------|------------|

PLC retentive upon power failure indicates that the inverter memorizes the PLC running moment and running frequency before power failure and will continue to run from the memorized moment after it is powered on again. If the unit's digit is set to 0, the inverter restarts the PLC process after it is powered on again.

PLC retentive upon stop indicates that the inverter records the PLC running moment and running frequency upon stop and will continue to run from the recorded moment after it starts up again. If the ten's digit is 0, the inverter restarts the PLC process after it starts up again.



DO or relay output

| | | | |
|-------|--------------------------------|-------------|------------|
| FC.17 | Simple PLC retentive selection | Range:00~11 | Default:00 |
|-------|--------------------------------|-------------|------------|

0: Not retentive

1: Retentive

Unit position: Retentive at power down

Tens position: Retentive at stop

| | | | |
|-------|--|---------------------------------|------------------|
| FC.18 | Running time of simple PLC reference 0 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.19 | Acceleration/deceleration time of simple PLC reference 0 | Range:0~3 | Default:0 |
| FC.20 | Running time of simple PLC reference 1 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.21 | Acceleration/deceleration time of simple PLC reference 1 | Range:0~3 | Default:0 |
| FC.22 | Running time of simple PLC reference 2 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.23 | Acceleration/deceleration time of simple PLC reference 2 | Range:0~3 | Default:0 |
| FC.24 | Running time of simple PLC reference 3 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.25 | Acceleration/deceleration time of simple PLC reference 3 | Range:0~3 | Default:0 |
| FC.26 | Running time of simple PLC reference 4 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |

| | | | |
|-------|--|---------------------------------|------------------|
| FC.27 | Acceleration/deceleration time of simple PLC reference 4 | Range:0~3 | Default:0 |
| FC.28 | Running time of simple PLC reference 5 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.29 | Acceleration/deceleration time of simple PLC reference 5 | Range:0~3 | Default:0 |
| FC.30 | Running time of simple PLC reference 6 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.31 | Acceleration/deceleration time of simple PLC reference 6 | Range:0~3 | Default:0 |
| FC.32 | Running time of simple PLC reference 7 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.33 | Acceleration/deceleration time of simple PLC reference 7 | Range:0~3 | Default:0 |
| FC.34 | Running time of simple PLC reference 8 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.35 | Acceleration/deceleration time of simple PLC reference 8 | Range:0~3 | Default:0 |
| FC.36 | Running time of simple PLC reference 9 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.37 | Acceleration/deceleration time of simple PLC reference 9 | Range:0~3 | Default:0 |
| FC.38 | Running time of simple PLC reference 10 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.39 | Acceleration/deceleration time of simple PLC reference 10 | Range:0~3 | Default:0 |
| FC.40 | Running time of simple PLC reference 11 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.41 | Acceleration/deceleration time of simple PLC reference 11 | Range:0~3 | Default:0 |
| FC.42 | Running time of simple PLC reference 12 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.43 | Acceleration/deceleration time of simple PLC reference 12 | Range:0~3 | Default:0 |
| FC.44 | Running time of simple PLC reference 13 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.45 | Acceleration/ deceleration time of simple PLC reference 13 | Range:0~3 | Default:0 |
| FC.46 | Running time of simple PLC reference 14 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.47 | Acceleration/deceleration time of simple PLC reference 14 | Range:0~3 | Default:0 |
| FC.48 | Running time of simple PLC reference 15 | Range: 0.0s (h) ~6553.5s (h) | Default:0.0s (h) |
| FC.49 | Acceleration/deceleration time of simple PLC reference 15 | Range:0~3 | Default:0 |
| FC.50 | Time unit of simple PLC running | Range:0~1 | Default:0 |
| FC.51 | Reference 0 source | Range:0~6 | Default:0 |

FC-50 sets running time unit in simple PLC mode. FC-51 selects the setting channel of reference 0.

Group FD: User-defined Parameters

Reference to Appendix A: MODBUS Communication Protocol

Group FE:Quick Menu parameters

| | | | |
|-------|---------------|---|---------------|
| FE.00 | Quick Menu 0 | F0.00~FF.xx P0.00~P1.xx H0.00~H0.xx | Default:F0.10 |
| FE.01 | Quick Menu 1 | | Default:F0.02 |
| FE.02 | Quick Menu 2 | | Default:F0.03 |
| FE.03 | Quick Menu 3 | | Default:F0.07 |
| FE.04 | Quick Menu 4 | | Default:F0.08 |
| FE.05 | Quick Menu 5 | | Default:F0.17 |
| FE.06 | Quick Menu 6 | | Default:F0.18 |
| FE.07 | Quick Menu 7 | | Default:F3.00 |
| FE.08 | Quick Menu 8 | | Default:F3.01 |
| FE.09 | Quick Menu 9 | | Default:F4.00 |
| FE.10 | Quick Menu 10 | | Default:F4.01 |
| FE.11 | Quick Menu 11 | | Default:F4.02 |
| FE.12 | Quick Menu 12 | | Default:F5.04 |
| FE.13 | Quick Menu 13 | | Default:F5.07 |
| FE.14 | Quick Menu 14 | | Default:F6.00 |
| FE.15 | Quick Menu 15 | | Default:F6.10 |
| FE.16 | Quick Menu 16 | | Default:F0.00 |
| FE.17 | Quick Menu 17 | | Default:F0.00 |
| FE.18 | Quick Menu 18 | | Default:F0.00 |
| FE.19 | Quick Menu 19 | | Default:F0.00 |
| FE.20 | Quick Menu 20 | | Default:F0.00 |
| FE.21 | Quick Menu 21 | | Default:F0.00 |
| FE.22 | Quick Menu 22 | | Default:F0.00 |
| FE.23 | Quick Menu 23 | | Default:F0.00 |
| FE.25 | Quick Menu 24 | | Default:F0.00 |
| FE.26 | Quick Menu 24 | | Default:F0.00 |
| FE.27 | Quick Menu 24 | | Default:F0.00 |
| FE.28 | Quick Menu 24 | | Default:F0.00 |
| FE.29 | Quick Menu 24 | | Default:F0.00 |

FE is user-defined parameter group. You can select the required parameters from all JT550 functions codes and add them into this group, convenient for view and modification.

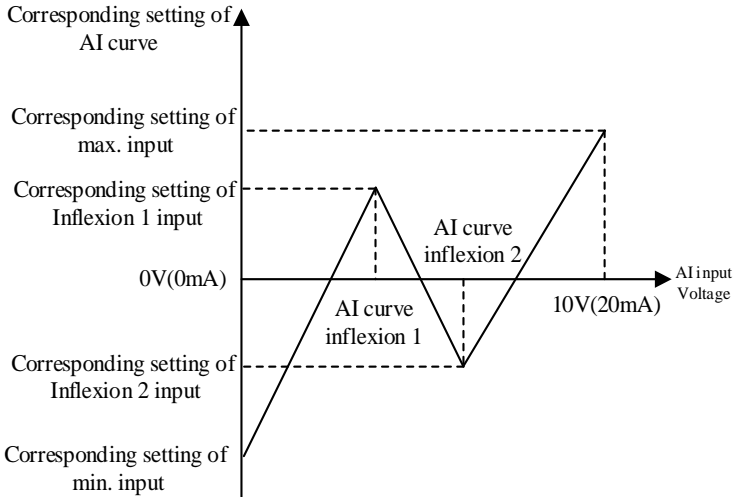
Group FE provides a maximum of 30 user-defined parameters. If "FE.00" is displayed,it indicates that group FE is null. After you enter Quick Menu mode, the displayed parameters are defined by FE.00 to FE.29 and the sequence is consistent with that in group FE.

Group P0:Analog four points offset parameters

| | | | |
|-------|---|-----------------------|-----------------|
| P0.00 | AI curve 4 minimum input | Range:-10.00V~P0.02 | Default:0.00V |
| P0.01 | Corresponding setting of AI curve 4 minimum input | Range:-100.0%~+100.0% | Default:0.0% |
| P0.02 | AI curve 4 inflexion 1 input | Range:P0.00~P0.04 | Default:3.00V |
| P0.03 | Corresponding setting of AI curve 4 inflexion 1 input | Range:-100.0%~+100.0% | Default:30.0% |
| P0.04 | AI curve 4 inflexion 1 input | Range:P0.02~P0.06 | Default:6.00V |
| P0.05 | Corresponding setting of AI curve 4 inflexion 1 input | Range:-100.0%~+100.0% | Default:60.0% |
| P0.06 | AI curve 4 maximum input | Range:P0.06~+10.00V | Default: 10.00V |

| | | | |
|-------|---|-----------------------|-----------------|
| P0.07 | Corresponding setting of AI curve 4 maximum input | Range:-100.0%~+100.0% | Default:100.0% |
| P0.08 | AI curve 5 minimum input | Range:-10.00V~P0.10 | Default:-10.00V |
| P0.09 | Corresponding setting of AI curve 5 minimum input | Range:-100.0%~+100.0% | Default:-100.0% |
| P0.10 | AI curve 5 inflexion 1 input | Range:P0.08~P0.12 | Default:-3.00V |
| P0.11 | Corresponding setting of AI curve 5 inflexion 1 input | Range:-100.0%~+100.0% | Default:-30.0% |
| P0.12 | AI curve 5 inflexion 1 input | Range:P0.10~P0.14 | Default:3.00V |
| P0.13 | Corresponding setting of AI curve 5 inflexion 1 input | Range:-100.0%~+100.0% | Default:30.0% |
| P0.14 | AI curve 5 maximum input | Range:P0.12~+10.00V | Default:10.00V |
| P0.15 | Corresponding setting of AI curve 5 maximum input | Range:-100.0%~+100.0% | Default:100.0% |

P0.00 to P0.15 define AI curve 4 and AI curve 5, which have the similar function of AI curve 1 to AI curve 3. AI curve 1 to AI curve 3 are linear correspondence and AI curve 4 and AI curve 5 are four-point correspondence.



Group P1: Analog calibration parameters

| | | | |
|-------|-------------------------|---------------------|-------------------|
| P1.00 | AI1 measured voltage 1 | Range:0.500V~4.000V | Factory corrected |
| P1.01 | AI1 displayed voltage 1 | Range:0.500V~4.000V | Factory corrected |
| P1.02 | AI1 measured voltage 2 | Range:6.000V~9.999V | Factory corrected |
| P1.03 | AI1 displayed voltage 2 | Range:6.000V~9.999V | Factory corrected |
| P1.04 | AI2 measured voltage 1 | Range:0.500V~4.000V | Factory corrected |
| P1.05 | AI2 displayed voltage 1 | Range:0.500V~4.000V | Factory corrected |
| P1.06 | AI2 measured voltage 2 | Range:6.000V~9.999V | Factory corrected |
| P1.07 | AI2 displayed voltage 2 | Range:6.000V~9.999V | Factory corrected |
| P1.08 | AI3 measured voltage 1 | Range:0.500V~4.000V | Factory corrected |
| P1.09 | AI3 displayed voltage 1 | Range:0.500V~4.000V | Factory corrected |
| P1.10 | AI3 measured voltage 2 | Range:6.000V~9.999V | Factory corrected |
| P1.11 | AI3 displayed voltage 2 | Range:6.000V~9.999V | Factory corrected |

These parameters are used to correct the AI to eliminate the impact of AI zero offset and gain.

They have been corrected upon delivery. When you resume the factory values, these parameters will be restored to the factory-corrected values. Generally, you need not perform correction in the applications.

Measured voltage indicates the actual output voltage value measured by instruments such as the multimeter. Displayed voltage indicates the voltage display value sampled by the inverter. For details, refer to H0.31, H0.32 and H0.33.

During correction, send two voltage values to each AI terminal, and save the measured values and displayed values to the function codes P1.00 to P1.11. Then the inverter will automatically perform AI zero offset and gain correction.

If the input voltage and the actual voltage sampled by the inverter are inconsistent, perform correction on site. Take AI1 as an example. The on-site correction is as follows:

- 1) Send a voltage signal (approximately 2 V) to AI1.
- 2) Measure the AI1 voltage and save it to P1.00.
- 3) View the displayed value of H0.31 and save the value to P1.01.
- 4) Send a voltage signal (approximately 8 V) to AI1.
- 5) Measure AI1 voltage and save it to P1.02.
- 6) View the displayed value of H0.31 and save the value to P1.03.

At correction of AI2 and AI3, the actually sampled voltage is respectively queried in H0.32 and H0.33.

For AI1 and AI2, 2 V and 8 V are suggested as the correction voltages. For AI3, -8 V and 8 V are suggested.

| | | | |
|-------|------------------------|---------------------|-------------------|
| P1.12 | AO1 target voltage 1 | Range:0.500V~4.000V | Factory corrected |
| P1.13 | AO1 measured voltage 1 | Range:0.500V~4.000V | Factory corrected |
| P1.14 | AO1 target voltage 2 | Range:6.000V~9.999V | Factory corrected |
| P1.15 | AO1 measured voltage 2 | Range:6.000V~9.999V | Factory corrected |
| P1.16 | AO2 target voltage 1 | Range:0.500V~4.000V | Factory corrected |
| P1.17 | AO2 measured voltage 1 | Range:0.500V~4.000V | Factory corrected |
| P1.18 | AO2 target voltage 2 | Range:6.000V~9.999V | Factory corrected |
| P1.19 | AO2 measured voltage 2 | Range:6.000V~9.999V | Factory corrected |

These parameters are used to correct the AO.

They have been corrected upon delivery. When you resume the factory values, these parameters will be restored to the factory-corrected values. You need not perform correction in the applications.

Target voltage indicates the theoretical output voltage of the inverter. Measured voltage indicates the actual output voltage value measured by instruments such as the multimeter.

| | | | |
|-------|-------------------------|-------------|------------|
| P1.20 | AI1 filtering dead zone | Range:0~255 | Default:0 |
| P1.21 | AI2 filtering dead zone | Range:0~255 | Default:0 |
| P1.22 | AI3 filtering dead zone | Range:0~255 | Default:66 |

The group function is used to eliminate analog input jitter.the larger the set value, analog jitter smaller, but the larger the error.

Group H0: Monitoring Parameters

You can view parameter values by using operation panel, convenient for on-site commissioning, or from the host computer by means of communication (address: 0x7000-0x7044).

| | | |
|-------|------------------------|--------|
| H0.00 | Running frequency (Hz) | 0.01Hz |
| H0.01 | Set frequency (Hz) | 0.01Hz |
| H0.02 | Output current (A) | 0.01A |
| H0.03 | Output voltage (V) | 1V |
| H0.04 | Output power (kW) | 0.1kW |
| H0.05 | Output torque (%) | 0.1% |
| H0.06 | Bus voltage (V) | 0.1V |
| H0.07 | X input state1 | 1 |

It displays state of DI terminals. "1" indicates high level signal, and "0" indicates low level signal.

| | | | | |
|------|------|------|------|------|
| Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
| X5 | X4 | X3 | X2 | X1 |

| | | |
|-------|-------------------------------|---|
| H0.08 | Monitor the IO expansion card | 1 |
|-------|-------------------------------|---|

It displays state of DI terminals. “1” indicates high level signal, and “0” indicates low level signal.

| | | | | |
|------|------|------|------|------|
| Bit4 | Bit3 | Bit2 | Bit1 | Bit0 |
| X10 | X9 | X8 | X7 | X6 |

| | | |
|-------|-----------------|---|
| H0.09 | DO output state | 1 |
|-------|-----------------|---|

It displays state of DO terminals. “1” indicates high level signal, and “0” indicates low level signal.

| | | | |
|------|------|------|------|
| Bit3 | Bit2 | Bit1 | Bit0 |
| R2 | R1 | Y2 | Y1 |

| | | |
|-------|-----------------|-------|
| H0.10 | AI1 voltage (V) | 0.01V |
| H0.11 | AI2 voltage (V) | 0.01V |
| H0.12 | AI3 voltage (V) | 0.01V |

Whether AI1 and AI2 receives voltage input or current input is determined by setting of jumper J1 and J2 on the control board. The input current 1mA correspond to 0.5V.

| | | |
|-------|-----------------------------|---------|
| H0.13 | Input pulse frequency (kHz) | 0.01kHz |
|-------|-----------------------------|---------|

It displays DI5 high-speed pulse sampling frequency, in minimum unit of 10 Hz.

| | | |
|-------|--------------|---|
| H0.14 | PID setting | 1 |
| H0.15 | PID feedback | 1 |
| H0.16 | PID output | 1 |

They display the PID setting value and PID feedback value.

PID setting = PID setting (percentage) *FA-04

PID feedback = PID feedback (percentage) * FA-04

PID output= PID output (percentage)*FA.04

| | | |
|-------|------------|---|
| H0.17 | Load speed | 1 |
|-------|------------|---|

Displayed value reference to F8.12.

| | | |
|-------|---------------------|--------|
| H0.18 | Main frequency | 0.01Hz |
| H0.19 | Auxiliary frequency | 0.01Hz |

H0.18 displays the setting of main frequency.H0.19 displays the setting of auxiliary frequency.

| | | |
|-------|-----------------------------|-------|
| H0.20 | Feedback speed (unit:0.1Hz) | 0.1Hz |
|-------|-----------------------------|-------|

It displays the actual output frequency of the inverter.

| | | |
|-------|-------------|---|
| H0.21 | Count value | 1 |
|-------|-------------|---|

It displays the current count value.Please refer to Fb.08 and Fb.09.

| | | |
|-------|--------------|---|
| H0.22 | Length value | 1 |
|-------|--------------|---|

It displays the current length value.Please refer to Fb.05~Fb.07

| | | |
|-------|--------------|--------|
| H0.23 | Linear speed | 1m/Min |
|-------|--------------|--------|

It displays the current linear speed.Please refer to Fb.06,Fb.07

| | | |
|-------|----------------------------|------|
| H0.24 | Accumulative power-on time | 1Min |
|-------|----------------------------|------|

It displays the current accumulative power-on time

| | | |
|-------|---------------------------|--------|
| H0.25 | Accumulative running time | 0.1Min |
|-------|---------------------------|--------|

It displays the current accumulative running time

| | | |
|-------|----------------------|---|
| H0.26 | Motor overload count | 1 |
|-------|----------------------|---|

It displays the current overload degree

| | | |
|-------|---------------------------------|-------|
| H0.27 | Motor output current percentage | 0.01% |
|-------|---------------------------------|-------|

It displays the output current percentage (Relative to motor rated current)

| | | |
|-------|--------------------------|--------|
| H0.28 | Remaining operating time | 0.1Min |
|-------|--------------------------|--------|

It displays the remaining operating time when it is timing running.

The description of timing running is refer to F4.42~F4.44.

| | | |
|-------|-----------|---|
| H0.29 | PLC stage | 1 |
|-------|-----------|---|

It displays the current PLC stage

| | | |
|-------|-----------------------------|-------|
| H0.30 | Communication setting value | 0.01% |
|-------|-----------------------------|-------|

It displays the data written by means of the communication address 0x1000.

| | | |
|-------|---------------------------------------|-------|
| H0.31 | AI1 input voltage (Before correction) | 0.01V |
| H0.32 | AI2 input voltage (Before correction) | 0.01V |
| H0.33 | AI3 input voltage (Before correction) | 0.01V |

It displays the AI1 input voltage, AI2 input voltage, AI3 input voltage before correction

The input current 1mA correspond to 0.5V.

Chapter 8 Maintenance and Troubleshooting

8.1 Daily Maintenance and Inspection of JT550

8.1.1 Daily Maintenance

Due to the effect of ambient temperature, humidity, dust and vibration, inverter's components age over time, leading to potential errors or shorter life of the motor drive. Therefore, it is necessary to perform maintenance on the inverter on daily basis. Below is the list of daily inspection:

- 1) if the inverter makes unusual sound while running;
- 2) if the motor vibrates while running;
- 3) if the installation environment have changes;
- 4) if the cooling fans are working properly;
- 5) if the inverter is overheated.

Daily Cleaning:

- 6) Keep the inverter clean;
- 7) Clean the dust on the surface of inverter, keeping them, especially the metal particles, from going inside inverter;
- 8) Clean the greasy dirt on the cooling fans.

8.1.2 Periodic Inspection

Please inspect the places that is hard to spot. Below is the list of places that need to inspect periodically:

- 1) Inspect the vents and clean them regularly;
- 2) Check loose screws;
- 3) Check if the inverter corrodes;
- 4) Check if there are any arc marks on terminals
- 5) Main Circuit Insulation Test

Note: Disconnect the inverter and main circuit when measuring insulation resistance using a megohmmeter (DC 500V Megohmmeter). Do not test the control circuit insulation using an insulation resistance meter. No need to perform High Voltage Test since it has been done before leaving the factory

8.1.3 Wear and Tear Parts Change

Inverter's wear and tear parts include cooling fans and electrolytic capacitor for filtering, and their life is closely related to ambient conditions and maintenance. Below are their life span:

Cooling Fans: 2-3 years

Electrolytic Capacitor: 4-5 years

Note: Standard life span is only valid under the conditions below. User may determine when to change parts according to their situation.

- Ambient Temperature: Annual average temperature is around 30°C.
- Duty Cycle: Less than 80%
- Operating Rate: Less than 20 hours per day

1) Cooling Fans

Possible Damage Reasons: Worn bearings and aged fan blades

Criteria: if fan blades have cracks; if there is an unusual vibration sound at start-up

2) Electrolytic Capacitor for Filtering

Possible Damage Reasons: Bad Input Power Supply, High Ambient Temperature, Frequent Load Jump, and Aged Electrolytes.

Criteria: If there is a leakage of liquid, If there is a bulge on safety valve, test of electrostatic capacitance, and test of insulation resistance.

8.1.4 Storage for Inverter

A few notes that users need to know if they plan to store the inverter for a long or short period:

- 1) Put the product in the original package when storing it.

- 2) Long period of storage may result in the deterioration of electrolyte capacitance. Therefore, it is necessary to power it on in 2 years and have it stay on for at least 5 hours. Input voltage must slowly rise to the set value using a voltage regulator.

8.2 Warranty

- 1) Warranty may only apply to this inverter itself.
- 2) This Limited Warranty covers any defects in material or workmanship under normal use during the Warranty Period (please refer to the bar code on the product for the manufacture date) at no charge. After the Warranty Period, a reasonable charge will be applied.
- 3) During the Warranty Period, the following actions will result in a charge:
 - a) User does not follow the instruction manual and causes damage to the product;
 - b) Damage caused by fire, flood and abnormal voltage;
 - c) Damage caused by using the product improperly.
- 4) Any charge is subject to the company's standard. If an agreement is made, the agreement is prioritized.

8.3 Faults and Solutions

The JT550 provides a total of 24 pieces of fault information and protective functions. After a fault occurs, the inverter implements the protection function, and displays the fault code on the operation panel (if the operation panel is available).

Before contacting Juditech for technical support, you can first determine the fault type, analyze the causes, and perform troubleshooting according to the following tables. If the fault cannot be rectified, contact the agent or Juditech. Err22 is the inverter hardware overcurrent or overvoltage signal. In most situations, hardware overvoltage fault causes Err22.

| Name | Display | Possible Causes | Solutions |
|---------------------------------|---------|---|--|
| Overcurrent During Acceleration | Err02 | 1: Inverter's output circuit is grounded or short; 2: Control mode is vector and no parameters identification; 3: Acceleration time is too short; 4: Voltage is too low; 5: Initiate start on the motor while it is still running; 6: Sudden load added while accelerating; 7: The model of inverter is too small; 8: The braking resistor is short. | 1: Eliminate the peripheral failure; 2: Initiate the identification of motor parameters; 3: Increase acceleration time; 4: Adjust the voltage to the normal range; 5: Choose rotational speed tracking start or start it after the motor stops; 6: Cancel the sudden load addition; 7: Use the inverter that has a higher power level; 8: Check if the braking resistance is normal |
| Overcurrent During Deceleration | Err03 | 1: Inverter's output circuit is grounded or short; 2: Control mode is vector and no parameters identification; 3: Deceleration time is too short. 4: Voltage is too low; 5: Sudden load added while decelerating; 6: No braking units or braking resistors added 7: The braking resistor is short. | 1: Eliminate the peripheral failure; 2: Initiate the identification of motor parameters; 3: Increase deceleration time; 4: Adjust the voltage to the normal range; 5: Choose rotational speed tracking start or start it after the motor stops; 6: Cancel the sudden load addition; 7: Check if the braking resistance is normal. |

| | | | |
|---------------------------------|-------|--|---|
| Overcurrent at Constant Speed | Err04 | <ol style="list-style-type: none"> 1: Inverter's output circuit is grounded or short; 2: Control mode is vector and no parameters identification; 3: Voltage is too low; 4: Sudden load added during operation; 5: The model of inverter is too small; 6: The braking resistor is short. | <ol style="list-style-type: none"> 1: Eliminate the peripheral failure; 2: Initiate the identification of motor parameters; 3: Adjust the voltage to the normal range; 4: Choose rotational speed tracking start or start it after the motor stops; 5: Cancel the sudden load addition; 6: Use the inverter that has a higher power level; 7: Check if the braking resistance is normal. |
| Overvoltage During Acceleration | Err05 | <ol style="list-style-type: none"> 1: Input voltage is too high; 2: An external force drags the motor during acceleration; 3: Acceleration time is too short; 4: No braking units or braking resistors added | <ol style="list-style-type: none"> 1: Adjust the voltage to the normal range; 2: Remove the external force or add braking resistors; 3: Increase acceleration time; 4: Add braking units and braking resistors. |
| Overvoltage During Deceleration | Err06 | <ol style="list-style-type: none"> 1: Input voltage is too high; 2: An external force drags the motor during deceleration; 3: Deceleration time is too short; 4: No braking units or braking resistors added | <ol style="list-style-type: none"> 1: Adjust the voltage to the normal range; 2: Remove the external force or add braking resistors; 3: Increase deceleration time; 4: Add braking units and braking resistors. |
| Overvoltage at Constant Speed | Err07 | <ol style="list-style-type: none"> 1: Input voltage is too high; 2: An external force drags the motor during deceleration; | <ol style="list-style-type: none"> 1: Adjust the voltage to the normal range; 2: Remove the external force or add braking resistors; |
| Power Supply Failure | Err08 | Input voltage is not within the range of regulation. | Adjust input voltage to the range of regulation. |
| undervoltage | Err09 | <ol style="list-style-type: none"> 1: Sudden power outages; 2: Input voltage of the inverter is not within the range of regulation; 3: Unusual bus voltage; 4: Bridge rectifiers and snubber resistor malfunctions; 5: Drive board malfunctions; 6: Control board malfunctions. | <ol style="list-style-type: none"> 1: Fault reset; 2: Adjust the voltage to the normal range; 3: Contact tech support; 4: Contact tech support; 5: Contact tech support; 6: Contact tech support; |
| Inverter Overload | Err10 | <ol style="list-style-type: none"> 1: Excessive load or motor stalling; 2: The model of inverter is too small. | <ol style="list-style-type: none"> 1: Reduce load and inspect the motor and mechanical conditions; 2: Use the inverter that has a higher power level. |

| | | | |
|---------------------------|-------|--|--|
| Motor Overload | Err11 | <ol style="list-style-type: none"> 1: Check if F9.01: motor protection parameter is appropriately set; 2: Excessive load or motor stalling; 3: The model of inverter is too small. | <ol style="list-style-type: none"> 1: Set the parameter correctly; 2: Reduce load and inspect the motor and mechanical conditions; 3: Use the inverter that has a higher power level. |
| Input Phase Loss | Err12 | <ol style="list-style-type: none"> 1: Abnormal three-phase input power; 2: Drive board malfunctions; 3: Lightning protection board malfunctions; 4: Main control board malfunctions | <ol style="list-style-type: none"> 1: Check and eliminate the problems in the peripheral circuit; 2: Contact tech support; 3: Contact tech support; 4: Contact tech support. |
| Output Phase Loss | Err13 | <ol style="list-style-type: none"> 1: Abnormal wiring from inverter to motor; 2: Unbalanced three-phase output of inverter when motor operates; 3: Drive board malfunctions; 4: Modules malfunction. | <ol style="list-style-type: none"> 1: Eliminate peripheral errors; 2: Inspect three-phase winding and eliminate errors; 3: Contact tech support; 4: Contact tech support. |
| Modules Overheat | Err14 | <ol style="list-style-type: none"> 1: Ambient temperature is too high; 2: Clogged vents; 3: Broken fans; 4: Broken thermistor modules; 5: Broken inverter module; | <ol style="list-style-type: none"> 1: Lower ambient temperature; 2: Clean the vents; 3: Replace the fans; 4: Replace the thermistor modules; 5: Replace the inverter modules. |
| External Equipment Fault | Err15 | <ol style="list-style-type: none"> 1: External fault signal input via Terminal X. 2: External fault signal input via virtual I/O. | Reset the operation. |
| Communication Failure | Err16 | <ol style="list-style-type: none"> 1: Host computer malfunctions; 2: Communication wires malfunction; 3: Incorrect setting of FD group of communication parameters. | <ol style="list-style-type: none"> 1: Check the wiring of host computer; 2: Check the wiring of communication; 3: Correctly set the communication parameters. |
| Contactors Failure | Err17 | <ol style="list-style-type: none"> 1: Drive board and power malfunction; 2: Contactors malfunction. | <ol style="list-style-type: none"> 1: Change the drive board or power board; 2: Change the contactors. |
| Current Detection Failure | Err18 | <ol style="list-style-type: none"> 1: Check hall devices; 2: Check drive board. | <ol style="list-style-type: none"> 1: Replace the hall devices; 2: Replace the drive board. |
| Motor Auto-tuning Fault | Err19 | <ol style="list-style-type: none"> 1: The motor parameters are not properly set according to the nameplate. 2: The motor auto-tuning times out | <ol style="list-style-type: none"> 1: Set the motor parameters according to the nameplate properly. 2: Check the cable connection between the inverter and the motor. |

| | | | |
|------------------------------------|-------|--|--|
| Encoder Fault | Err20 | 1: The encoder model does not match. 2: The cable connection of the encoder is incorrect. 3: The encoder is damaged. 4: The PG card is faulty | 1: Set the encoder type correctly based on the actual situation. 2: Eliminate external faults. 3: Replace the damaged encoder. 4: Replace the faulty PG card. |
| EEPROM Read and Write Failure | Err21 | Damaged EEPROM Chip | Replace the main control board. |
| Inverter Hardware Malfunctions | Err22 | 1: Overvoltage; 2: Overcurrent. | 1: Deal it as overvoltage error; 2: Deal it as overcurrent error. |
| Ground Fault Errors | Err23 | Ground fault of the motor | Change electric cables or motors. |
| User-Defined Fault 1 | Err27 | The user-defined fault 1 signal is input via Terminal X. | Reset the operation |
| User-Defined Fault 2 | Err28 | The user-defined fault 2 signal is input via Terminal X. | Reset the operation |
| Reach the set total Power-On Time | Err29 | Accumulated power-on time (F8.13) reaches the set value (F4.16). | Clear the records using the initiation of parameters. |
| Offload Errors | Err30 | Operation current of inverter is smaller than F9.64. | Confirm the removal of load or if parameters setting of F9.64 and F9.65 matches real situation. |
| PID Feedback Lost During Operating | Err31 | The PID feedback is lower than the setting of FA.26. | Check the PID feedback signal or set FA.26 to a proper value. |
| CBC Errors | Err40 | 1: Excessive load or motor stalling; 2: The model of inverter is too small. | 1: Reduce load and inspect the motor and mechanical conditions; 2: Use the inverter that has a higher power level. |
| Large Speed Deviation | Err42 | 1: The encoder parameters are set incorrectly. 2: The motor auto-tuning is not activated. 3: F9-69 and F9-70 are set incorrectly. | 1: Set the encoder parameters properly. 2: Perform the motor auto-tuning. 3: Set F9.69 and F9.70 correctly based on the actual situation. |
| Motor over-speed | Err43 | 1: The encoder parameters are set incorrectly. 2: The motor auto-tuning is not activated. 3: F9.67 and F9.68 are set incorrectly | 1: Set the encoder parameters properly. 2: Perform the motor auto tuning. 3: Set F9.67 and F9.68 correctly based on the actual situation. |

8.4 Common Errors and Solutions

| SN | Error Types | Possible Causes | Solutions |
|----|--|--|--|
| 1 | No Display With Power On | No power grid voltage or voltage is too low; Broken power switch on the drive board; Broken bridge rectifiers; Broken snubber resistors of motor drive; Broken control board and keypad; Control board is disconnected to drive board and keypad. | Inspect input power; Check bus voltage; Unplug and plug the wires on pin 8 and pin 28; Contact tech support. |
| 2 | Garbled Codes On the Display | Bad connection between drive board and control board; Damaged parts on control board; Short motor or motor cables ground fault; Hall errors; Power grid voltage too low; | Unplug and plug the wires on pin 8 and pin 28; Contact tech support. |
| 3 | Err23” Alert on the Display | Short motor or motor cables ground fault; Broken motor drive; | Measure the insulation of the motor and the output cable using a megohmmeter; Contact tech support. |
| 4 | Frequent “Err14” Module Overheated Alert | The setting of carrier frequency is too high; Broken fans or clogged vents; Internal damaged parts of motor drive (Thermocouple, etc.); | Lower the carrier frequency (F0.15); Replace fans, and clean the vents; Contact tech support. |
| 5 | Motor Does Not Work After Starting The Motor Drive | Motor and motor cables; Incorrect motor drive parameters setting (Motor parameters); Bad connection between drive board and control board; Drive board malfunctions. | Check the connection between motor drive and motor; Change the motor or eliminate mechanic errors; Check and reset the motor parameters. |
| 6 | X Terminal Failure | Parameter setting errors; External signal errors; PLC and loose +24V jump wire; Control board errors. | Check and reset group F2 parameters; Reconnect external signal wires; Reconfirm PLC and +24V jump wire; Contact tech support. |
| 7 | The motor speed cannot be increased in CLVC mode | The encoder is faulty. The encoder cable is connected incorrectly or in poor contact. The PG card is faulty. The drive board is faulty. | Replace the encoder and ensure the cabling is proper. Replace the PG card. Contact the agent or Juditech for technical support. |
| 8 | Frequent Error Reports of Overcurrent and Overvoltage By Motor Drive | Incorrect motor parameters setting; Inappropriate Acceleration /Deceleration Time; Load Fluctuation. | Reset motor parameters or tune the motor; Set a proper acceleration /deceleration time; Contact tech support |

| | | | |
|----|-----------------------|-------------------------------------|--|
| 9 | Err17 Alert | Soft-starter does not pull in; | Check if there are the loose wires on the contactor; Check if the contactor malfunctions; Check if 24V power supply can normally power the contactor; Contact tech support. |
| 10 | Display “8.8.8.8.” | Damaged parts on the control board; | Change the control board. |

Appendix A: MODBUS Communication Protocol

JT550 series inverters provides RS485 communication port and supports the Modbus-RTU slave communication protocol. Central control may be realized via computers or PLC. Through this communication protocol, it is possible to change the settings of inverter’s operation commands, to modify or read function parameters, and to read inverter’s operation status and error information, etc.

1.1 Protocol Contents

This serial communication protocol defines the contents and use format that transmits in the serial communication, which includes polling (or broadcasting) format; for encoding methods of host, it includes the functions requiring actions, transmitting data and error calibration, etc. For the response of slave, it has the same structure, including actions confirmed, returning data, and error calibration, etc. If error occurs while slave is receiving information or it can not complete the actions host requires, it will return an error information to host as feedback.

1.1.1 Application

A PC/PLC control network that has “single host and multiple slaves” of RS485 bus is connected to inverter as a communication slave.

1.1.2 Bus Structure

1). Hardware Connection

RS485 needs connected to inverter.

2). Topology Structure

A system of single host and multiple slaves. Each communication device has only one slave address in the network, and one device as the communication host (PC Host , PLC and HMI, etc) spontaneously initiate the communication to read or write the parameters on slaves. Other devices as the communication slaves respond to the access from the host or communication operations. Only one device can send out data at one time, and other devices are receiving data.

The setting range of slave address is 1~247 of which 0 is the broadcasting communication address. The slave address in the network has to be unique.

3). Communication Transmission Methods

Asynchronous serial communication and two-way alternating communication. While transmitting data through asynchronous serial communication, the data is sent out as messages, one frame at a time. According to MODBUS-RTU protocol, when the free time of no data on communication cables is larger than the transmission time of 3.5 Byte, it indicates a new beginning of a communication frame.

JT550 series inverter’s built-in communication protocol is Modbus-RTU slave communication protocol, responding to host’s “reading/commands” or doing the corresponding actions according to host’s “reading/commands” then responding with communication data.

Hosts can be referred to personal computer (PC), industrial control device or programmable logic controller (PLC),etc. The hosts can either communicate with one slave alone or send out some broadcasting information to all the slaves. For the individual "query/command" of the host, the accessed slave must return a response frame. For the broadcasting information the host sends out, the slaves do not have to return a feedback.

1.2 Communication Frame Description

1.2.1 Communication Frame Format

JT550 series inverter’s Modbus communication data format is RTU mode as below:

A byte contains: initial bit, 8 bits of data, check bit and stop bit.

| | | | | | | | | | | |
|-------------|------|------|------|------|------|------|------|------|-----------|----------|
| Initial Bit | Bit1 | Bit2 | Bit3 | Bit4 | Bit5 | Bit6 | Bit7 | Bit8 | Check Bit | Stop Bit |
|-------------|------|------|------|------|------|------|------|------|-----------|----------|

In the RTU mode, messages have to sent out in between of the pause intervals of at least 3.5 characters time, which can be easily realized given the various character time in the network baud rates.

The first domain transmitted is device address where hexadecimal is used during the transmission. Network devices continuously monitor the network bus, including pause intervals. When the first domain (address domain) receives messages, each device will decode them to decide if the messages are sent to them. After the last transmitted character, an pause of at least 3.5 characters time indicates the end of a message. A new message may start after the pause. If a new message is sent out before the pause of 3.5 characters time ends, the receiving device will consider it as a continuation of the previous message. Such action will lead to an error because the last value of CRC domain is incorrect.

RTU Data Frame Format as below:

| | | | | | | |
|------------|---------------|---------------|----------------|------|-------|-----|
| Frame Head | Slave Address | Command Codes | Function Codes | Data | Check | End |
|------------|---------------|---------------|----------------|------|-------|-----|

Data Frame Bits Descriptions:

| | |
|--------------------------|--|
| Frame Head START | Larger than the transmission time of 3.5 characters |
| Slave Address ADR | Communication Addresses Range: 1~247; 0=Broadcast Address |
| Command Codes CMD | 03: Read Slave Parameters; 06: Write Slave Parameters |
| Function Codes Address H | Inverter's built-in parameter address which is represented by hexadecimal is divided into function code parameters and non-function code parameters. Please refer to address definitions for more info. While transmitting, high bit is in front of low bit. |
| Function Codes Address L | |
| Function Codes Count H | This frame reads the number of function codes. If it's 1, it means 1 function code is detected. High bit is in front of low bit while transmitting. This protocol can only rewrite 1 function code. |
| Function Codes Count L | |
| Data H | Response data or data to write in. High bit is in front of low bit while transmitting. |
| Data L | |
| CRC CHK Low Bit | Detection Value: CRC16 Check Value. Low bit is in front of high bit while transmitting. Refer to CRC Check Description for calculation methods. |
| CRC CHK High Bit | |
| END | 3.5 Characters |

1.1.2 Command Codes and Communication Data Description

Inverter supports read and write of word parameters. Operation Command for Read: 0x03; Operation Command for Write:0x06. Byte or bit read/write operations are not supported.

1) Command Code: 03H, read N words (Up to 12 words).

For example: An inverter's slave address is 01 and its start address is F003. Read 1 word from the start address, and this frame's structure is described as the following:

Host Command Information:

| | |
|-------------------------|----------------------------------|
| ADR | 01H |
| CMD | 03H |
| Start Address High Bit | F0H |
| Start Address Low Bit | 03H |
| Register Count High Bit | 00H |
| Register Count Low Bit | 01H |
| CRC CHK Low Bit | CRC CHK's value to be calculated |
| CRC CHK High Bit | |

Slave's Response Message:

When Fd.05 is 0 (Non-Standard Modbus Protocol):

| | |
|---------------------|-----|
| ADR | 01H |
| CMD | 03H |
| Byte Count High Bit | 00H |
| Byte Count Low Bit | 02H |
| F003H High Bit | 00H |
| F003H Low Bit | 04H |
| CRC CHK Low Bit | E5 |
| CRC CHK High Bit | C9 |

When Fd.05 is 1 (Standard Modbus Protocol):

| | |
|--------------------|-----|
| ADR | 01H |
| CMD | 03H |
| Byte Count Low Bit | 02H |
| F003H High Bit | 00H |
| F003H Low Bit | 04H |
| CRC CHK Low Bit | B9 |
| CRC CHK High Bit | 87 |

2) Command Code 06H. Write 1 word.

Function: Write the data of a word to the designated data address in order to modify the parameters of inverter.

For example: Write 5000(1388H) to the address F00A ([F0.10]) of Inverter (Slave address: 01H).

This frame is described as the following:

Host Command Information:

| | |
|-----------------------|----------------------------------|
| ADR | 01H |
| CMD | 06H |
| Data Address High Bit | F0H |
| Data Address Low Bit | 0AH |
| Data Content High Bit | 13H |
| Data Content Low Bit | 88H |
| CRC CHK Low Bit | CRC CHK's value to be calculated |
| CRC CHK High Bit | |

Slave Response Information:

| | |
|-----------------------|-----|
| ADR | 01H |
| CMD | 06H |
| Data Address High Bit | F0H |
| Data Address Low Bit | 0AH |
| Data Content High Bit | 13H |
| Data Content Low Bit | 88H |
| CRC CHK Low Bit | 97 |
| CRC CHK High Bit | 9E |

1.2.3 CRC Check Methods

CRC(Cyclical Redundancy Check) utilizes RTU frame format, and its messages include the error check domain based on CRC method. CRC domain is able to detect the content of messages. CRC domain has two bytes, including 16 bits of binary value. It is added to the messages after CRC is calculated by transmission device. Receiving device will recalculate CRC in the messages and compare it with the value received in CRC domain. If they are not equal, it indicates an error occurs during the transmission.

1.3 Communication Data Address Definition

Function Code Parameters Read/Write (Some function codes are non-modifiable and subject to the manufacturers or for the purpose of monitoring.

1.3.1 Labeling Rules of Function Code Parameters Address

Register address is divided into higher bytes and lower bytes depending on the inverter's function codes sequence. Higher bytes represents the group sequence of function parameters, and lower bytes represents the sequence of function parameters inside a group. Both of them need converted into hexadecimal.

Higher Bytes: F0~FF(Group F)、70 (Group H)

Lower Bytes: 00~FF

Function codes group number and their communication access addresses:

Communication Access Address for F0-FE: 0xF000~0xFEFF; Communication Access Address for H0: 0x7000~0x70FF.

For example, if the function code is F3.12, then its access address is 0xF30C.

Note: Group FF: No reading or modification of parameters.

Group H: Parameters can be read only. No modification of parameters.

Some parameters is not modifiable during the operation of inverter; Some can not be modified under any circumstances; Please note the range and units of parameters and their description when modifying them.

In addition, frequent use of EEPROM will reduce the life span of it. Therefore, you may change the values of some function codes in RAM instead of saving them at EEPROM. It is possible to do so by changing the high bit F of the function code's address to 0. For example, if the function code F3-12 is not to be saved at EEPROM, the address can be written as 030C.

1.3.2 Address Description of Other Function Parameters

1). Halt/Operating

| Parameter Address | Parameter Description | Parameter Address | Parameter Description |
|-------------------|---|-------------------|--|
| 1000H | *Communication Setting Value (Decimal) -10000~10000 | 1010H | PID Setting |
| 1001H | Operating Frequency | 1011H | PID Feedback |
| 1002H | Bus Voltage | 1012H | PLC Procedures |
| 1003H | Output Voltage | 1013H | PULSE Input Pulse Frequency, Unit: 0.01kHz |
| 1004H | Output Current | 1014H | Feedback Speed, Unit: 0.1Hz |
| 1005H | Output Power | 1015H | Remaining Operating Time |
| 1006H | Output Torque | 1016H | AI1 Voltage Before Calibration |
| 1007H | Operating Speed | 1017H | AI2 Voltage Before Calibration |
| 1008H | DI Input Sign | 1018H | AI3 Voltage Before Calibration |
| 1009H | DO Output Sign | 1019H | Linear Speed |
| 100AH | AI1 Voltage | 101AH | Current Power-On Voltage |
| 100BH | AI2 Voltage | 101BH | Current Operating Time |

| | | | |
|-------|--------------|-------|----------------------------------|
| 100CH | AI3 Voltage | 101CH | Input Pulse Frequency, Unit: 1Hz |
| 100DH | Count Input | 101DH | Communication Setting Value |
| 100EH | Length Input | 101EH | Actual Feedback Speed |
| 100FH | Load Speed | 101FH | Main Frequency X Display |
| - | - | 1020H | Auxiliary Frequency Y Display |

Note:

Communication setting value is a relative value of 100 percentage. 10000 corresponds to 100.00% while -10000 to -100.00%.

For the frequency dimension, this percentage is relative to the percentage of the max frequency (F0.10).

2). Inverter Receiving Control Commands: (Write Only)

| Command Address | Command Function |
|-----------------|----------------------------|
| 2000H | 0001: Forward Operation |
| | 0002: Reverse Operation |
| | 0003: Forward JOG |
| | 0004: Reverse JOG |
| | 0005: Coasting to Stop |
| | 0006: Decelerating to Stop |
| | 0007: Fault Reset |

3). Reading Inverter’s Status: (Read Only)

| Status Address | Status Function |
|----------------|-------------------------|
| 3000H | 0001: Forward Operation |
| | 0002: Reverse Operation |
| | 0003: Halt |

4) Digital Output Terminals Control: (Write Only)

| Command Address | Command Contents |
|-----------------|--|
| 2001H | BIT0: Y1 Output Control BIT1: Y2 Output Control BIT2: RELAY1 Output Control BIT3: RELAY2 Output Control BIT4: FMR Output Control |

5) Analog Output AO1 Control: (Write Only)

| Command Address | Command Contents |
|-----------------|---------------------------|
| 2002H | 0~7FFF represents 0%~100% |

6). Analog Output AO2 Control: (Write Only)

| Command Address | Command Contents |
|-----------------|---------------------------|
| 2003H | 0~7FFF represents 0%~100% |

7) Pulse Output Control: (Write Only)

| Command Address | Command Contents |
|-----------------|---------------------------|
| 2004H | 0~7FFF represents 0%~100% |

8) Faults Description of Inverter

| Faults Address | Faults Information | |
|----------------|---|---|
| 8000H | 0000: No Error 0001: Reserved 0002: Over current during Acceleration 0003: Over current during Deceleration 0004: Over current at a Constant Speed 0005: Over voltage during Acceleration 0006: Over voltage during Deceleration 0007: Over voltage at a Constant Speed 0008: Buffer Resistor Overload 0009: Under voltage 000A: Inverter Overload 000B: Motor Overload 000C: Power Input Phase Loss 000D: Power Output Phase Loss 000E: Module Overheated 000F: External Parts Error 0010: Communication Errors 0011: Contactor Fault 0012: Current Detection Errors 0013: Motor Auto-tuning Errors 0014: Encoder/PG Card Errors | 0015: EEPROM Read-Write Error 0016: Inverter Hardware Errors 0017: Motor Short to Ground 0018: Reserved 0019: Reserved 001A: Operating Time Reached 001B: User-Defined Fault 1 001C: User-Defined Fault 2 001D: Accumulated Power-On Time Reached 001E: Load Drop 001F: PID Feedback Lost during Operating 0028: Rapid Current Limit Over-Time Fault 002A: Large Speed Deviation 002B: Motor Over-speed 005A: Encoders PPR Setting Fault 005B: Encoder Disconnected 005C: Faulty Initial Position |

| Communication Error Address | Error Descriptions |
|-----------------------------|--|
| 8001 | 0000: No Error 0001: Incorrect Password 0002: Incorrect Command Codes 0003: CRC Check Error 0004: Invalid Address 0005: Invalid Parameters 0006: Invalid Parameters Modification 0007: System is locked 0008: EEPROM is in operation |

1.4 Description of Group FD Communication Parameters

| | Baud Rate | Factory Value | 5 |
|-------|-------------------|---|---|
| Fd.00 | Range of Settings | 0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: 115200BPS | |

This parameter is used to set the data transmission rate between host and inverter. Note: The baud rates of host and inverter have to be equal in order to communicate properly. The larger the baud rate is, the faster the communication is.

| | | | |
|-------|-------------------|---|---|
| Fd.01 | Data Format | Factory Value | 0 |
| | Range of Settings | 0: No Check: Data Format <8,N,2> 1: Even Parity Check: Data Format <8,E,1> 2: Odd Parity Check: Data Format <8,O,1> 3: No Check: Data Format <8-N-1> | |

The data format of host has to match that of inverter. Otherwise, the communication will fail.

| | | | |
|-------|-------------------|--------------------------------------|---|
| Fd.02 | Address | Factory Value | 1 |
| | Range of Settings | 1~247, 0 is the broadcasting address | |

When the address of this inverter is set to 0, it is the broadcasting address and able to broadcast by the host.

The address of this inverter is unique (except the broadcasting address), which is the foundation of point-to-point communication between the host and inverter.

| | | | |
|-------|-------------------|---------------|-----|
| Fd.03 | Response Delay | Factory Value | 2ms |
| | Range of Settings | 0~20ms | |

Response Delay: It indicates the time interval between the end of inverter receiving data and sending it to the host. If the response delay is less than the time of system processing, then the delay is consistent with the time of system processing; if the response delay is larger than the time of system processing, then it will have to wait until the response time is reached and sends data to the host.

| | | | |
|-------|-------------------------|----------------------------|------|
| Fd.04 | Communication Over-time | Factory Value | 0.0s |
| | Range of Settings | 0.0s (invalid); 0.1s~60.0s | |

When the function code is set to 0.0s, the parameter becomes invalid.

When this function code is set as valid, if the time interval between this communication and next communication is larger than the communication over-time, it will report communication error (Err16). Usually it is set as invalid. This parameter can also be set to monitoring the status of communication in a system of continuous communication

| | | | |
|-------|----------------------------------|---|---|
| Fd.05 | Communication Protocol Selection | Factory Value | 0 |
| | Range of Settings | 0: Non-standard Modbus Protocol; 1: Standard Modbus Protocol | |

Fd.05=1: Select standard Modbus protocol.

Fd.05=0: Select non-standard Modbus protocol. When reading commands, the number of the bytes received from the slave is one byte longer than the standard Modbus protocol

| | | | |
|-------|--|---------------------|---|
| Fd.06 | Communication Reading Current Resolution | Factory Value | 0 |
| | Range of Settings | 0: 0.01A 1: 0.1A | |

It determines the output unit of current value when communication reading the current.

