

# Preface

Thank you for purchasing the GT30 series drive developed and produced by EASYDRIVE

The GT30 series drive is a universal high-performance drive with advanced control performance such as large low-frequency torque, self-identification of motor parameters, and optimal acceleration and deceleration control; it has functions to meet different process requirements, such as multi-step control and simple PLC control, PI control, fixed-length control, droop control, automatic energy-saving operation, flexible frequency setting method, diversified frequency combination methods and combination algorithms, and other practical functions. It can be used to drive machine tools, cables, textiles, papermaking, food, packaging, chemicals, municipal engineering and other automated production equipment to meet the performance and function requirements of different industrial equipment.

Before using this drive, the users and relevant technicians shall read this manual carefully to ensure that the drive can be properly installed and operated, so that the drive can perform its best performance.

If there is any change to this user manual, please refer to the new version without notice.

High-performance Drive

User Manual

Version: V1.1

**This product implements standards:**

The design and production of this product refer to the latest national standards (GB or GB/T), International Electrotechnical Commission Standards (IEC) and International System of Units (SI). The technical parameters of the relevant parts can meet the requirements of national standards (GB or GB/T) and International Electrotechnical Commission Standards (IEC). Main standards:

GB/T 12668.2-2002 Adjustable Speed Electrical Power Drive Systems - Part 2: General Requirements - Rating Specifications for Low Voltage Adjustable Frequency AC Power Drive Systems

GB 12668.3-2012 Adjustable Speed Electrical Power Drive Systems - Part 3: EMC Requirements and Specific Test Methods

GB 12668.501-2013 Adjustable Speed Electrical Power Drive Systems - Part 5: Safety Requirements - Electrical, Thermal and Energy

GB/T 2423.1-1998 Environmental Testing for Electric and Electronic Products - Part 1: Test Methods Tests A: Cold

GB/T 2423.2-2008 Environmental Testing for Electric and Electronic Products - Part 2: Test Methods Tests B: Dry Heat

GB/T 2423.3-2006 Environmental Testing - Part 2: Testing Method - Test Ca: Damp Test, Steady State

GB/T 2423.4-2008 Environmental Testing for Electric and Electronic Products - Part 2: Test method - Test Db: Damp heat, cyclic (12h+12h Cycle)

GB/T 2423.9-2006 Environmental Testing for Electric and Electronic Products - Part 9: Test Methods Tests Cb: Constant damp heat for equipment

GB/T 2423.7-1995 Environmental Testing for Electric and Electronic Products - Part 7: Test Methods Tests Ed: Free Fall

GB/T 2423.22-2012 Environmental Testing for Electric and Electronic Products - Part 2: Test method - Test N: Change of Temperature

GB/T4798.1-2005 Environmental Conditions Existing in the Application of Electric and Electronic Products - Storage

GB/T4798.2-2008 Environmental Conditions Existing in the Application of Electric and Electronic Products - Transport

GB/T4798.3-2007 Environmental Conditions Existing in the Application of Electric and Electronic Products - Work



## **Danger**

The drive must be reliably grounded. If the drive is not reliably grounded, there may be a potential danger of personal injury in the device.

### **Readers**

This user manual is suitable for the following readers.

Drive installers, engineering technicians (electrical engineers, electrical operators, etc.), designers, etc. Please ensure that this user manual reaches the end users.

### **Notational conventions in this manual**



**Caution:** Moderate or minor injuries may occur due to failure to operate as required.



**Danger:** Deaths or serious injuries may occur due to failure to operate as required.

# Table of Contents

|                                                                  |           |
|------------------------------------------------------------------|-----------|
| <b>Chapter I Product Specification and Ordering Instructions</b> | <b>6</b>  |
| 1.1 Drive series models                                          | 6         |
| 1.2 Product appearance and installation dimensions               | 7         |
| 1.3 Dimensions of optional base                                  | 8         |
| 1.4 Keyboard size                                                | 8         |
| 1.5 Installation of remote keyboard                              | 9         |
| 1.6 Name of each part of this series drives                      | 11        |
| 1.7 Braking resistors                                            | 11        |
| <b>Chapter II Installation and Wiring of Drive</b>               | <b>14</b> |
| 2.1 Drive installation environment                               | 14        |
| 2.2. Removal and installation of drive panel                     | 19        |
| 2.3 Wiring of main circuit terminals                             | 21        |
| 2.4 Control circuit configuration and wiring                     | 25        |
| <b>Chapter III Operation Instructions of Drive</b>               | <b>31</b> |
| 3.1 Key function description                                     | 31        |
| 3.2 Keyboard operation methods                                   | 31        |
| <b>Chapter IV Function Parameter Table</b>                       | <b>34</b> |
| 4.1 Function parameter table                                     | 34        |
| 4.2 Monitoring parameter group U0                                | 89        |
| 4.3 Fault record parameter group U1                              | 91        |
| 4.4 Fault code table                                             | 91        |
| <b>Chapter V Basic Operation Instructions</b>                    | <b>92</b> |
| 5.1 Start operation mode                                         | 92        |
| 5.2 Start-stop control                                           | 96        |
| 5.3 Frequency setting                                            | 99        |
| 5.4 Analog input                                                 | 100       |
| 5.5 Analog output                                                | 102       |

|                                                |            |
|------------------------------------------------|------------|
| 5.6 Digital input .....                        | 103        |
| 5.7 Digital output .....                       | 109        |
| 5.8 Simple PLC .....                           | 112        |
| 5.9 Multistage speed operation .....           | 115        |
| 5.10 PID control .....                         | 119        |
| 5.11 Troubleshooting .....                     | 124        |
| <b>Appendix I Communication Protocol .....</b> | <b>130</b> |

## Chapter I Product Specification and Ordering Instructions

### 1.1 Drive series models

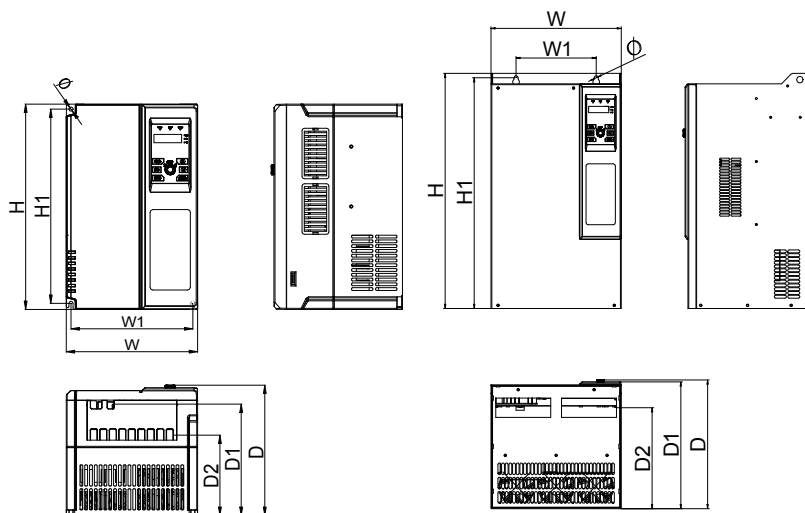
The input voltage range of this drive is 380V-440VAC. The adaptive motor power range is 2.2 kW ~ 160 kW. The models of this series drives are shown in Table 1-1.

Table 1-1 Drive Models

| Drive model | Rated capacity<br>(kVA) | Rated output<br>current<br>(A) | Adaptable motor<br>(kW) |
|-------------|-------------------------|--------------------------------|-------------------------|
| GT30-4T0022 | 3.7                     | 5.0                            | 2.2                     |
| GT30-4T0030 | 4.9                     | 7.5                            | 3.0                     |
| GT30-4T0040 | 7.5                     | 8.8                            | 4.0                     |
| GT30-4T0055 | 8.5                     | 13                             | 5.5                     |
| GT30-4T0075 | 11                      | 17                             | 7.5                     |
| GT30-4T0110 | 17                      | 25                             | 11                      |
| GT30-4T0150 | 21                      | 32                             | 15                      |
| GT30-4T0185 | 24                      | 37                             | 18.5                    |
| GT30-4T0220 | 30                      | 45                             | 22                      |
| GT30-4T0300 | 40                      | 60                             | 30                      |
| GT30-4T0370 | 50                      | 75                             | 37                      |
| GT30-4T0450 | 60                      | 90                             | 45                      |
| GT30-4T0550 | 72                      | 110                            | 55                      |
| GT30-4T0750 | 100                     | 157                            | 75                      |
| GT30-4T0900 | 116                     | 180                            | 90                      |
| GT30-4T1100 | 138                     | 214                            | 110                     |
| GT30-4T1320 | 167                     | 256                            | 132                     |
| GT30-4T1600 | 200                     | 307                            | 160                     |

 Note: If you need models of other power ranges, please consult the manufacturer before ordering!

## 1.2 Product appearance and installation dimensions



(a) A specification (b) B specification

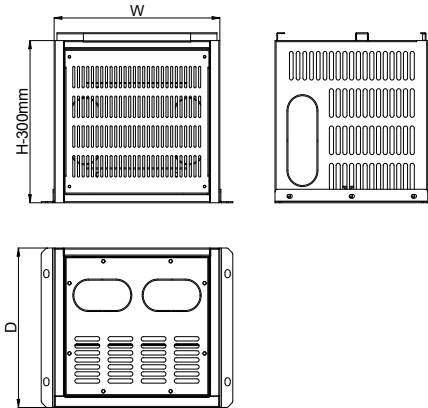
Table 1-2 Drive Appearance and Installation Series Dimensions (Unit: mm)

| Specification | W   | W1  | H   | H1  | D   | D1  | D2  | Mounting<br>hole diameter<br>(Φ) | Reference<br>picture |
|---------------|-----|-----|-----|-----|-----|-----|-----|----------------------------------|----------------------|
| GT30-4T0022   | 120 | 109 | 215 | 204 | 163 | 133 | 85  | 5.5                              | (a)                  |
| GT30-4T0030   |     |     |     |     |     |     |     |                                  |                      |
| GT30-4T0040   |     |     |     |     |     |     |     |                                  |                      |
| GT30-4T0055   |     |     |     |     |     |     |     |                                  |                      |
| GT30-4T0075   |     |     |     |     |     |     |     |                                  |                      |
| GT30-4T0110   | 150 | 138 | 259 | 248 | 181 | 150 | 104 | 5.5                              | (a)                  |
| GT30-4T0150   |     |     |     |     |     |     |     |                                  |                      |
| GT30-4T0185   | 205 | 188 | 322 | 305 | 215 | 176 | 130 | 6.5                              | (a)                  |
| GT30-4T0220   |     |     |     |     |     |     |     |                                  |                      |
| GT30-4T0300   | 235 | 218 | 370 | 350 | 235 | 200 | 146 | 7                                | (a)                  |
| GT30-4T0370   |     |     |     |     |     |     |     |                                  |                      |
| GT30-4T0450   | 305 | 200 | 490 | 470 | 275 | 270 | 211 | 10                               | (b)                  |
| GT30-4T0550   |     |     |     |     |     |     |     |                                  |                      |
| GT30-4T0750   | 320 | 197 | 560 | 543 | 307 | 302 | 240 | 10                               | (b)                  |
| GT30-4T0900   |     |     |     |     |     |     |     |                                  |                      |
| GT30-4T1100   |     |     |     |     |     |     |     |                                  |                      |

|             |     |     |     |     |     |     |     |    |     |
|-------------|-----|-----|-----|-----|-----|-----|-----|----|-----|
| GT30-4T1320 | 355 | 240 | 678 | 659 | 319 | 314 | 261 | 11 | (b) |
| GT30-4T1600 |     |     |     |     |     |     |     |    |     |

 Note: 1. The base of GT30-4T0450~GT30-4T1600 is optional.

1.3 Dimensions of optional base



Note: The dimensions of the base in W and D directions are consistent with the corresponding model, as shown in Table 1-2, and the H dimension is fixed at 300mm.

Table 1-3 Base Matching Table

| Base jacking model   | Adaptable models        |
|----------------------|-------------------------|
| GT200-4T0370 (black) | GT30-4T0450~GT30-4T0550 |
| GT200-4T0750 (black) | GT30-4T0750~GT30-4T1100 |
| GT200-4T1100(black)  | GT30-4T1320~GT30-4T1600 |

1.4 Keyboard size

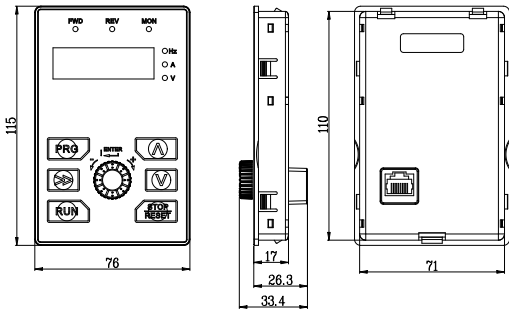
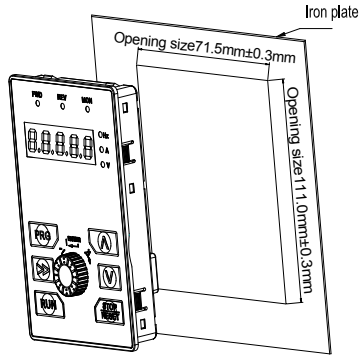


Figure 1-1 Keyboard Size

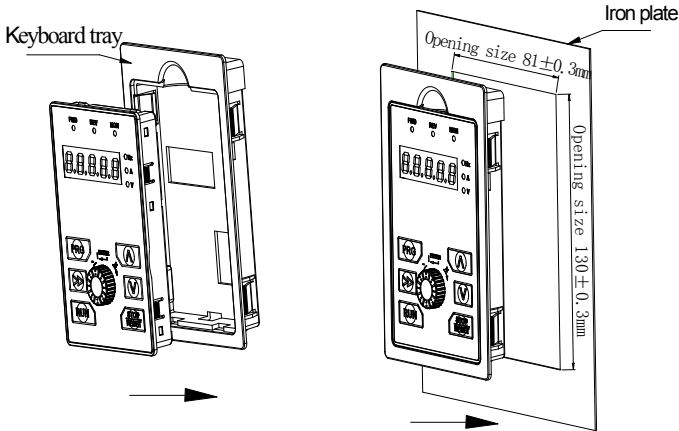


## 1.5 Installation of remote keyboard

The remote keyboard installation is divided into two ways, one is directly installed on an iron plate, and the other is installed on an optional keyboard tray.



When the remote keyboard is installed on an iron plate, the installation process is shown in the figure. Press down the keyboard in the direction of the arrow until a "click" sound is heard.



When the remote keyboard is installed on an optional keyboard tray, the installation process is shown in the figure. Place the keyboard into the tray in the direction of the arrow, and press down the entire keyboard in the direction of the arrow, until a "click" sound is heard.

1.5.1 Dust-proof sticker for optional parts (schematic diagram of outlet position of outgoing keyboard line)

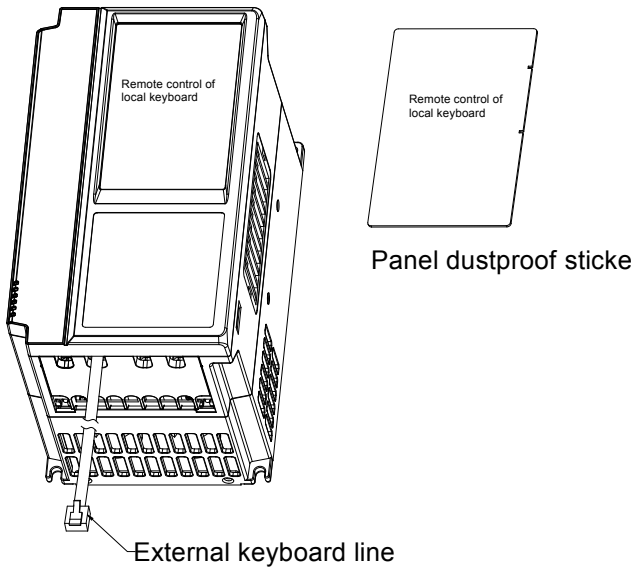


Table 1-4 Dustproof Sticker Model

| Dustproof sticker model | Adaptable models        |
|-------------------------|-------------------------|
| GT200-4T0040 (black)    | GT30-4T0022~GT30-4T1600 |

## 1.6 Name of each part of this series drives

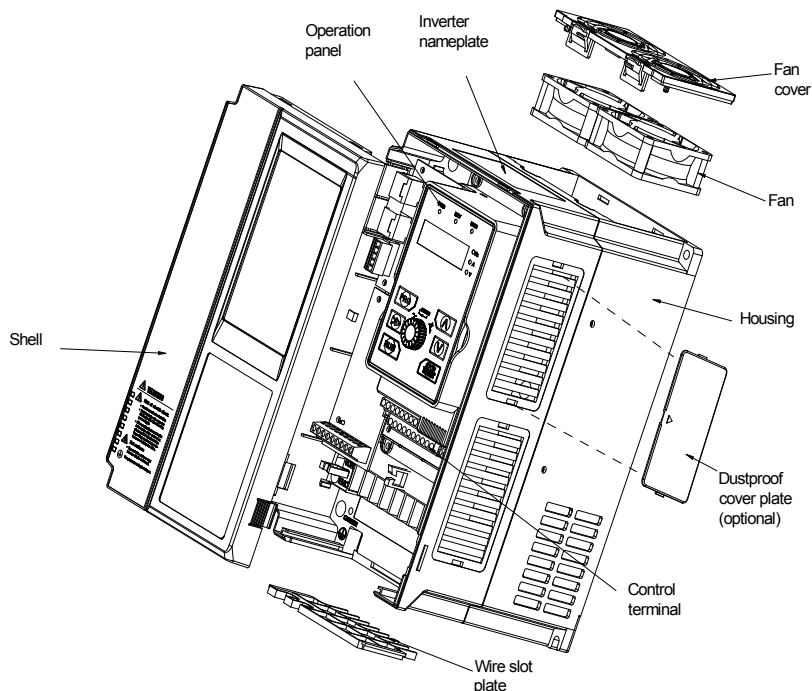


Table 1-5 Dustproof Cover Plate Model

| Dustproof cover plate model | Adaptable models        |
|-----------------------------|-------------------------|
| GT200-4T0220 (black)        | GT30-4T0022~GT30-4T0370 |

## 1.7 Braking resistors

Please select energy consumption braking resistors according to Table 1-6. The wiring of the braking resistors is shown in Figure 1-2.

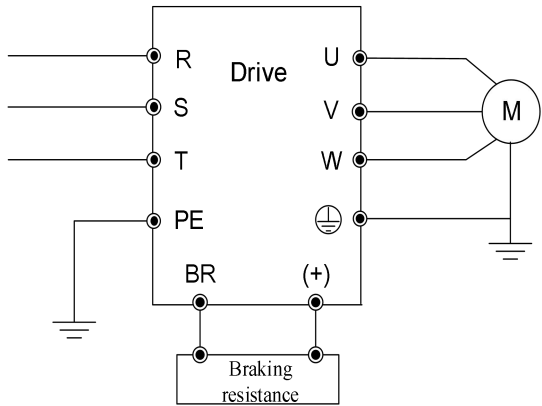


Figure 1-2 Drive and Braking Assembly Wiring Diagram

**Note:**

1. The power derating of the braking resistor shall not exceed 30%, otherwise there is a risk of fire;
2. For braking standard products of 37kW and below, the built-in braking unit can be used; for braking those of 45kW and above, an external braking unit needs to be added;
3. The wiring length of the braking resistor shall be less than 5m. During the energy consumption braking process, the braking resistor will cause temperature rise due to energy consumption. During installation, pay attention to safety protection and sound ventilation.

The braking resistor resistance and the power are selected according to the actual situation. The greater the system inertia, the shorter the deceleration time required, the more frequent the braking, the greater the power required by the braking resistor and the smaller the resistance required. Table 1-6 is recommended based on general applications.

Table 1-6 Braking Resistor Selection Table

| Specification | Suitable motor power (kW) | Braking resistor recommendation Resistance ( $\Omega$ ) | Braking resistor recommendation Power (W) |
|---------------|---------------------------|---------------------------------------------------------|-------------------------------------------|
| GT30-4T0022   | 2.2                       | 200                                                     | 100                                       |
| GT30-4T0030   | 3.0                       | 200                                                     | 200                                       |
| GT30-4T0040   | 4.0                       | 200                                                     | 300                                       |
| GT30-4T0055   | 5.5                       | 200                                                     | 300                                       |
| GT30-4T0075   | 7.5                       | $\geq 80$                                               | 750                                       |
| GT30-4T0110   | 11                        | $\geq 50$                                               | 1100                                      |
| GT30-4T0150   | 15                        | $\geq 50$                                               | 1500                                      |

|             |      |           |      |
|-------------|------|-----------|------|
| GT30-4T0185 | 18.5 | $\geq 45$ | 1800 |
| GT30-4T0220 | 22   | $\geq 45$ | 2200 |
| GT30-4T0300 | 30   | $\geq 24$ | 3000 |
| GT30-4T0370 | 37   | $\geq 24$ | 3000 |

## Chapter II Installation and Wiring of Drive

### 2.1 Drive installation environment

#### 2.1.1 Installation environment requirements

- (1) Install in a well-ventilated indoor place. The ambient temperature is required to be within the range of  $-10^{\circ}\text{C}$ – $40^{\circ}\text{C}$ . If the temperature exceeds  $40^{\circ}\text{C}$ , external forced cooling or derating is required.
- (2) Avoid installing in places with direct sunlight, dusty, floating fibers and metal powder.
- (3) Do not install in places with corrosive or explosive gases.
- (4) The humidity is required to be lower than 90%RH, without condensation of water droplets.
- (5) Install in places where the plane fixed vibration is less than  $5.9\text{ m/s}^2$ .
- (6) Try to keep away from electromagnetic interference sources and other electronic instruments and equipment that are sensitive to electromagnetic interference.

#### 2.1.2 Installation direction and space

- (1) Generally, vertical installation shall be adopted.
- (2) Minimum installation intervals and distances are shown in Figure 2-1.
- (3) When multiple drives are installed up and down, the baffle applied in the middle is shown in Figure 2-2.

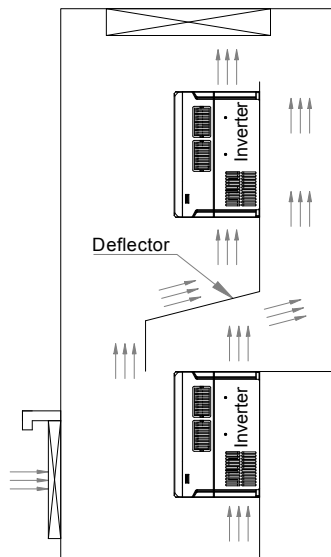
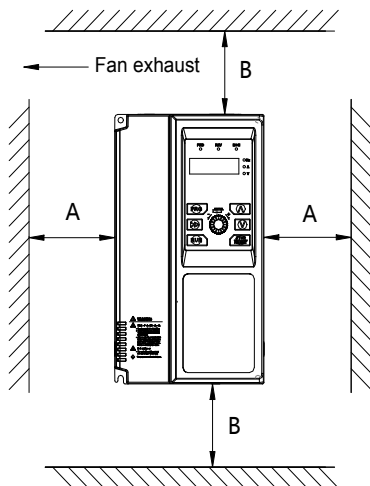


Figure 2-1 Installation Interval Diagram

Figure 2-2 Installation Diagram of Multiple Drives

Table 2-1 Installation Space Requirements

| Drive model             | Installation space (mm) |      |
|-------------------------|-------------------------|------|
|                         | A                       | B    |
| GT30-4T0022~GT30-4T0550 | ≥50                     | ≥100 |
| GT30-4T0750~GT30-4T1600 | ≥50                     | ≥200 |

### 2.1.3 Mechanical installation methods and steps

According to different power levels, GT30 series has two structures namely plastic and sheet metal. According to different installation applications, there are two installation methods: Wall-mounted and embedded.

#### 1. Wall mounting of plastic structure

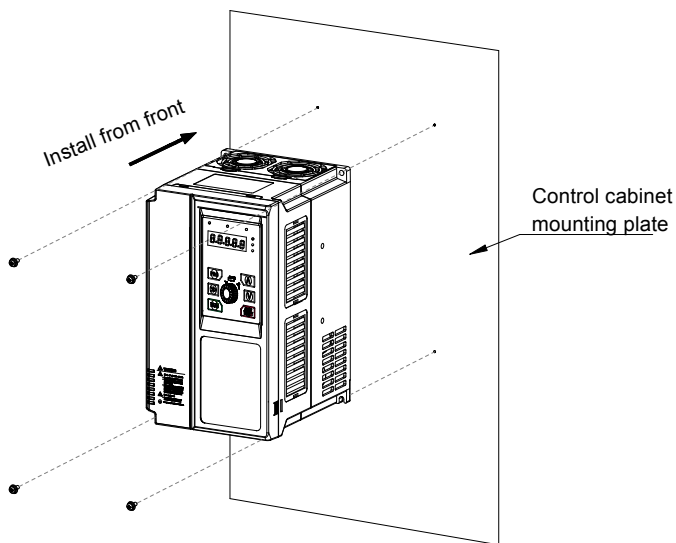


Figure 2-3 Wall-mounted Installation Diagram of Plastic Structure

#### 2. Embedded installation of plastic structure

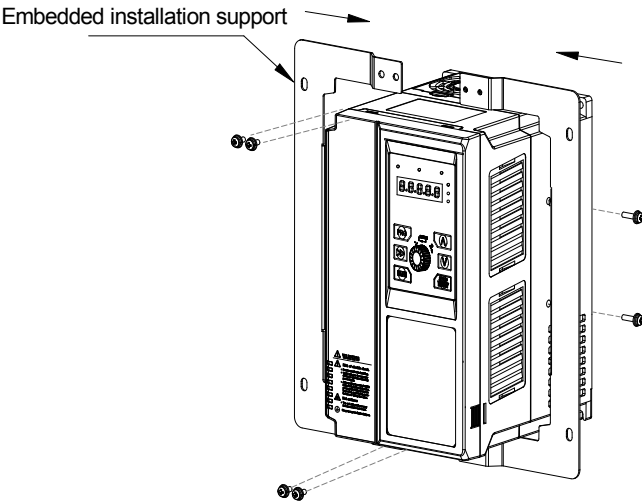


Figure 2-4 Embedded Support Installation Diagram of Plastic Structure



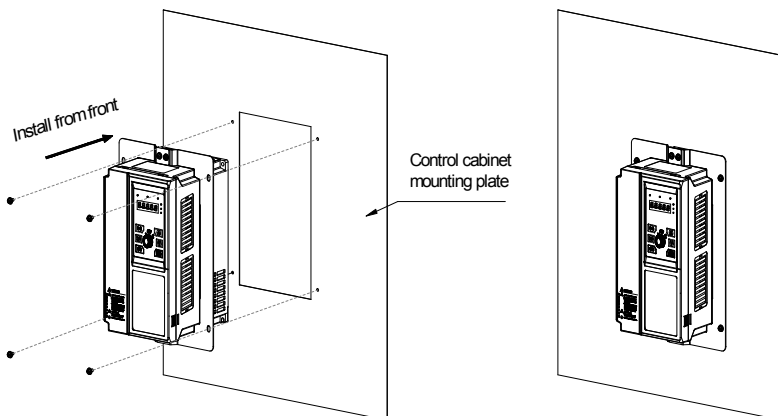


Figure 2-5 Embedded Installation Diagram of Plastic Structure

## 3. Wall mounting of sheet metal structure

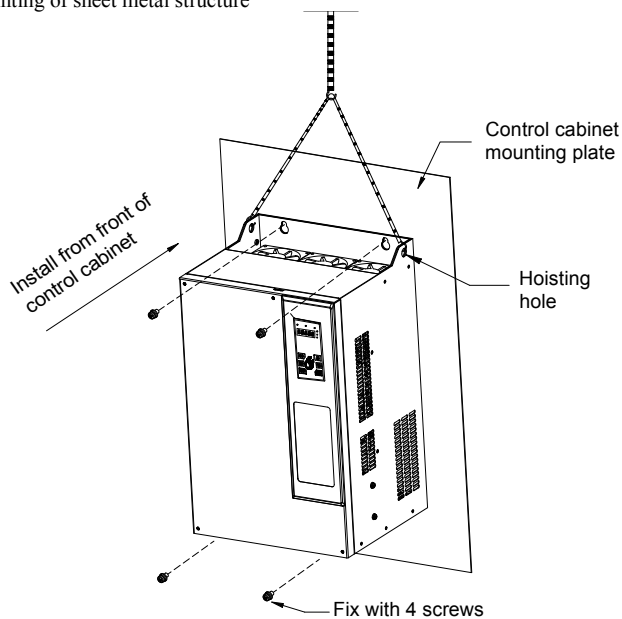


Figure 2-6 Wall-mounted Installation Diagram of Sheet Metal Structure

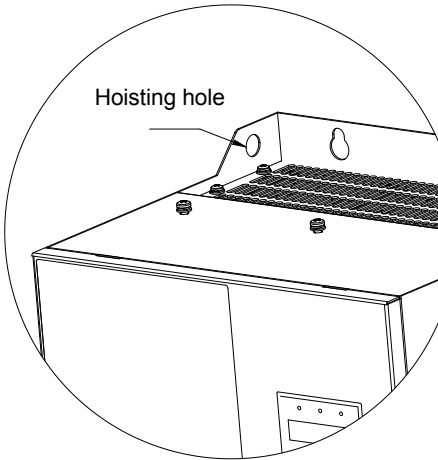


Figure 2-7 Hoisting Diagram of Sheet Metal Structure

4. Embedded installation of sheet metal structure

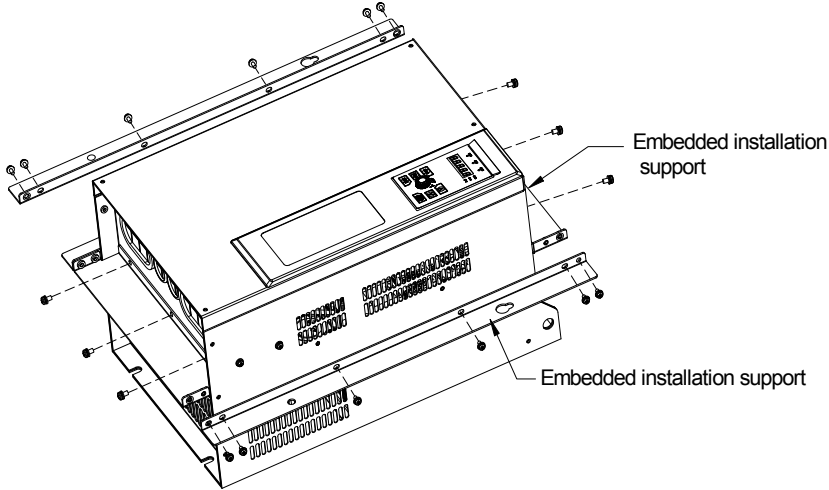


Figure 2-8 External Support Diagram of Sheet Metal Structure

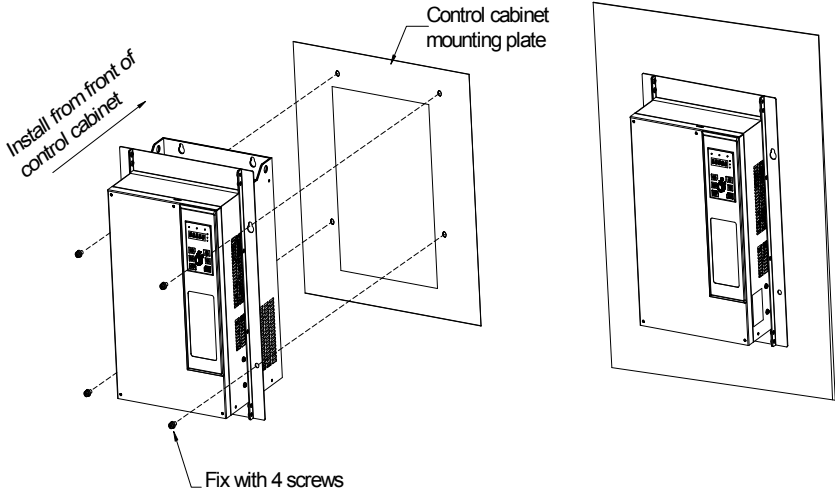


Figure 2-9 Embedded Installation Diagram of Sheet Metal Structure

Table 2-2 Matching Table of Embedded Installation Support

| Model of Embedded Installation Support | Adaptable models        |
|----------------------------------------|-------------------------|
| GT200-4T0040 (black)                   | GT30-4T0022~GT30-4T0075 |
| GT200-4T0075 (black)                   | GT30-4T0110~GT30-4T0150 |
| GT200-4T0150 (black)                   | GT30-4T0185~GT30-4T0220 |
| GT200-4T0220 (black)                   | GT30-4T0300~GT30-4T0370 |
| GT200-4T0370 (black)                   | GT30-4T0450~GT30-4T0550 |
| GT200-4T0750 (black)                   | GT30-4T0750~GT30-4T1100 |
| GT200-4T1320((black)                   | GT30-4T1320~GT30-4T1600 |

## 2.2. Removal and installation of drive panel

### 2.2.1 Removal and installation of drive cover plate with plastic case

#### ◆ Remove cover plate

Use tools to jack out the hooks on the left and right sides of the cover plate in direction 1 as shown in Figure 2-10, and then lift the cover plate in direction 2.

#### ◆ Install cover plate

Align the groove above the cover plate with the clip of the main body as shown in Figure 2-11, and press down the cover plate in direction 1 until a “click” sound is heard.

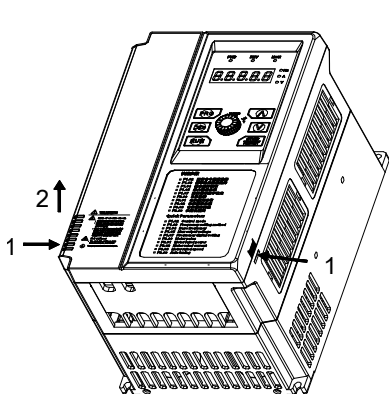


Figure 2-10 Removal of Cover Plate

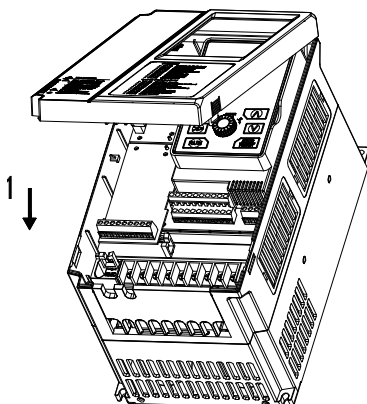


Figure 2-11 Installation of Cover Plate

### 2.2.2 Removal and installation of sheet metal box cover plate

#### ◆ Remove cover plate

Remove the mounting screws at cover plate 1 in Figure 2-12, and then lift it up in direction 2.

#### ◆ Install cover plate

Insert the clip of the cover plate into the groove of the main body as shown in Figure 2-13, install the cover plate in direction 1, and then fasten the screws at cover plate 2.

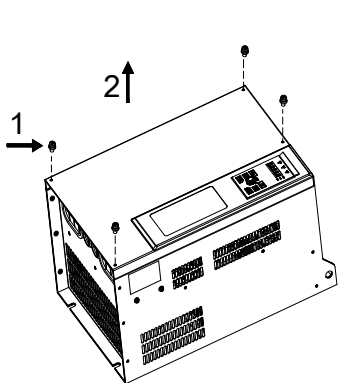


Figure 2-12 Removal of Cover Plate

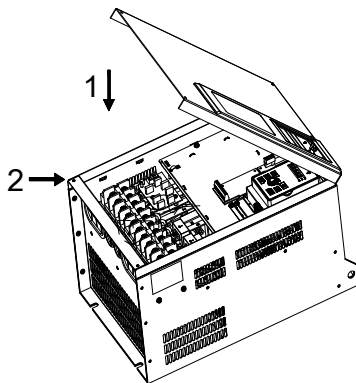


Figure 2-13 Installation of Cover Plate

### 2.2.3 Removal and installation of operation panel

#### ◆ Removal and installation of cover plate

#### ◆ Remove the operation panel

#### ◆ Please refer to 2-10 to 2-13 cover plates

Press groove 1 on both sides of the operation panel with your fingers as shown in Figure 2-14, and then take out the operation panel body in direction 2.

◆ Install the operation panel

Insert the network cable into the network port in the control box as shown in Figure 2-15, and insert the other end onto the keyboard, and then press down the operation panel in the arrow direction until a “click” sound is heard. Never install the operation panel from other directions, otherwise it may cause poor contact of the operation panel.

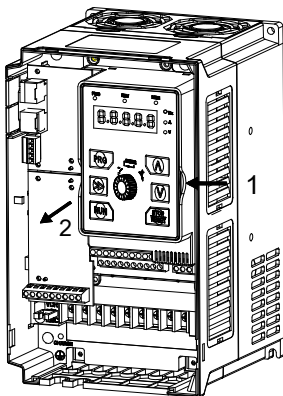


Figure 2-14 Removal of Operation Panel

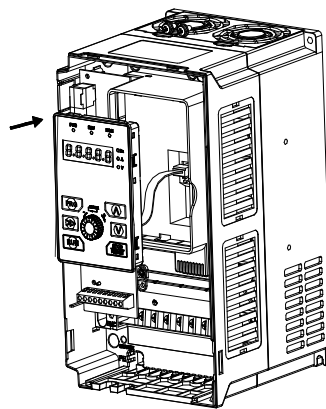


Figure 2-15 Installation of Operation Panel

## 2.3 Wiring of main circuit terminals

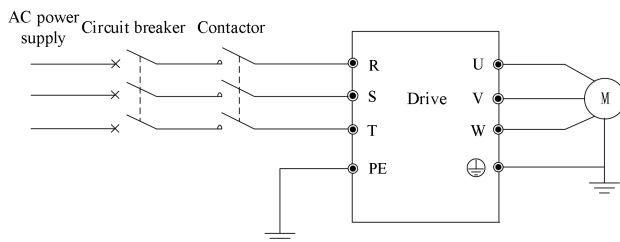
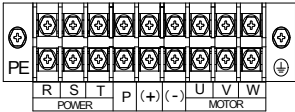
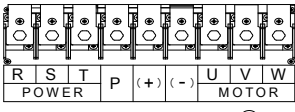


Figure 2-16 Basic Wiring of Main Circuit

2.3.1 Wiring of main circuit terminals

(1)The main circuit input and output terminals are shown in Table 2-3.

| Applicable models                                                                                                                   | Main circuit terminals | Terminal name | Function description                               |
|-------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------|----------------------------------------------------|
| GT30-4T0022<br>GT30-4T0030<br>GT30-4T0040<br>GT30-4T0055<br>GT30-4T0075<br>GT30-4T0110<br>GT30-4T0150<br>GT30-4T0185<br>GT30-4T0220 |                        | R, S, T       | Three-phase AC 380V input terminal                 |
|                                                                                                                                     |                        | U, V, W       | Three-phase AC output terminal                     |
|                                                                                                                                     |                        | (+), BR       | Braking resistor wiring terminal                   |
|                                                                                                                                     |                        | ⊕             | Motor ground terminal                              |
|                                                                                                                                     |                        | (+), (-)      | DC positive and negative bus output terminals, and |
|                                                                                                                                     |                        | PE            | Protective ground terminal                         |
|                                                                                                                                     |                        |               |                                                    |
| GT30-4T0300<br>GT30-4T0370                                                                                                          |                        | R, S, T       | Three-phase AC 380V input terminal                 |
|                                                                                                                                     |                        | U, V, W       | Three-phase AC output terminal                     |
|                                                                                                                                     |                        | (+), BR       | Braking resistor wiring terminal                   |
|                                                                                                                                     |                        | (+), (-)      | DC positive and negative bus output terminals, and |
|                                                                                                                                     |                        | ⊕             | Motor ground terminal                              |
|                                                                                                                                     |                        | PE            | Protective ground terminal                         |
| GT30-4T0450<br>GT30-4T0550                                                                                                          |                        | R, S, T       | Three-phase AC 380V input terminal                 |
|                                                                                                                                     |                        | U, V, W       | Three-phase AC output terminal                     |
|                                                                                                                                     |                        | P, (+)        | Reserved terminal of external DC reactor           |
|                                                                                                                                     |                        | (+), (-)      | DC positive and negative bus output terminals, and |
|                                                                                                                                     |                        | ⊕             | Motor ground terminal                              |
|                                                                                                                                     |                        | PE            | Protective ground terminal                         |

| Applicable models                                        | Main circuit terminals                                                            | Terminal name                                                                     | Function description                                                             |
|----------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| GT30-4T0750                                              |  | R, S, T                                                                           | Three-phase AC 380V input terminal                                               |
|                                                          |                                                                                   | U, V, W                                                                           | Three-phase AC output terminal                                                   |
|                                                          |                                                                                   | P, (+)                                                                            | Reserved terminal of external DC reactor                                         |
|                                                          |                                                                                   | (+), (-)                                                                          | DC positive and negative bus output terminals, and external brake unit terminals |
|                                                          |                                                                                   |  | Motor ground terminal                                                            |
|                                                          |                                                                                   | PE                                                                                | Protective ground terminal                                                       |
| GT30-4T0900<br>GT30-4T1100<br>GT30-4T1320<br>GT30-4T1600 |  | R, S, T                                                                           | Three-phase AC 380V input terminal                                               |
|                                                          |                                                                                   | U, V, W                                                                           | Three-phase AC output terminal                                                   |
|                                                          |                                                                                   | P, (+)                                                                            | Reserved terminal of external DC reactor                                         |
|                                                          |                                                                                   | (+), (-)                                                                          | DC positive and negative bus output terminals, and                               |
|                                                          |                                                                                   |  | Motor ground terminal                                                            |
|                                                          |                                                                                   | PE                                                                                | Protective ground terminal                                                       |

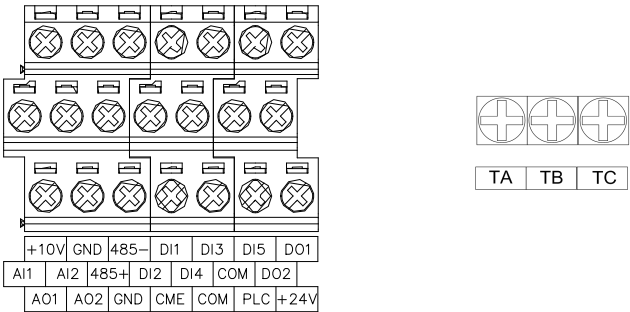
(2) The type selection of main circuit cable diameter, inlet protection circuit breaker QF or fuse in Table 2-4 is as follows:

| Model       | Circuit breaker<br>(A) | Recommend<br>ed contactor<br>(A) | Recommended<br>input and output<br>power wires<br>(mm <sup>2</sup> ) | Control<br>wire<br>(mm <sup>2</sup> ) |
|-------------|------------------------|----------------------------------|----------------------------------------------------------------------|---------------------------------------|
| GT30-4T0022 | 16                     | 10                               | 2.5                                                                  | 1.0                                   |
| GT30-4T0030 | 20                     | 16                               | 2.5                                                                  | 1.0                                   |
| GT30-4T0040 | 20                     | 16                               | 2.5                                                                  | 1.0                                   |
| GT30-4T0055 | 25                     | 25                               | 4                                                                    | 1.0                                   |
| GT30-4T0075 | 40                     | 32                               | 4                                                                    | 1.0                                   |
| GT30-4T0110 | 63                     | 38                               | 6                                                                    | 1.0                                   |
| GT30-4T0150 | 63                     | 40                               | 6                                                                    | 1.0                                   |
| GT30-4T0185 | 100                    | 50                               | 10                                                                   | 1.0                                   |
| GT30-4T0220 | 100                    | 65                               | 10                                                                   | 1.0                                   |
| GT30-4T0300 | 125                    | 80                               | 16                                                                   | 1.0                                   |
| GT30-4T0370 | 160                    | 95                               | 25                                                                   | 1.0                                   |
| GT30-4T0450 | 200                    | 115                              | 35                                                                   | 1.0                                   |
| GT30-4T0550 | 200                    | 170                              | 35                                                                   | 1.0                                   |
| GT30-4T0750 | 250                    | 205                              | 70                                                                   | 1.0                                   |
| GT30-4T0900 | 315                    | 245                              | 70                                                                   | 1.0                                   |
| GT30-4T1100 | 400                    | 300                              | 95                                                                   | 1.0                                   |
| GT30-4T1320 | 400                    | 300                              | 150                                                                  | 1.0                                   |
| GT30-4T1600 | 630                    | 410                              | 185                                                                  | 1.0                                   |

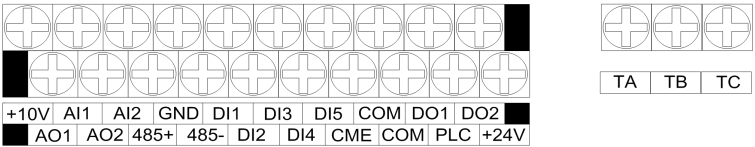


2.4 Control circuit configuration and wiring

2.4.1 Control circuit terminal arrangement is as follows



Note: Arrangement Sequence of control plate terminals ofGT30-4T0075 and below



Note: Arrangement Sequence of control plate terminals of GT30-4T0110 and above

Figure 2-17 Arrangement Sequence of Control Plate Terminals

**2.4.2 CN2 terminal function description is shown in Table 2-5.**

Table 2-5 Control Terminal Function Table

| Category                        | Terminal Label | Name                               | Terminal function description                                                                                                                                                                                                                     | Specification                                                                                                                                             |
|---------------------------------|----------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Communication                   | 485+           | RS485 communication                | RS485 differential signal positive terminal                                                                                                                                                                                                       | For standard RS485 communication interface,                                                                                                               |
|                                 | 485-           |                                    | RS485 differential signal negative terminal                                                                                                                                                                                                       |                                                                                                                                                           |
| Multifunctional output terminal | DO1<br>DO2     | Open collector output terminal     | It can be programmed and defined as switch output terminal with multiple functions, see terminal function parameters F6.11 and F6.12 for details, output terminal function introduction (common port: COM)                                        | Optocoupler isolated output<br>Working voltage range: 9-30V<br>Maximum output current: 50mA                                                               |
| Relay output terminal           | TA<br>TB<br>TC | Programmable relay Terminal output | Usually, TA-TB is normally off; TA-TC is normally on; during operating: TA-TB is normally on; TA-TC is normally off.<br>(See F6.13 for details)                                                                                                   | Contact rating<br>NO: 5A 250VAC<br>NC: 3A 250VAC                                                                                                          |
|                                 | RA<br>RB<br>RC | Programmable relay Terminal output | Normal: RA-RB normally off; RA-RC normally on; Action: RA-RB normally on; RA-RC normally off                                                                                                                                                      | Contact rating<br>NO: 5A 250VAC<br>NC: 3A 250VAC<br>(Note: Expansion card function)                                                                       |
| Analog Input                    | AI1            | Analog input AI1                   | Receive analog current and voltage input (reference ground: GND)                                                                                                                                                                                  | Input voltage range: 0~10V (input impedance: 100KΩ)<br>Resolution: 1/1000<br>Input current range: 0~20mA<br>(Input impedance: 500Ω)<br>Resolution: 1/1000 |
|                                 | AI2            | Analog input AI2                   | Receive analog current and voltage input (reference ground: GND)                                                                                                                                                                                  |                                                                                                                                                           |
| Analog output                   | AO1            | Analog output                      | Provide analog voltage output, which can correspond to 12 physical quantities, default output frequency when leaving the factory<br>(see F5.25 for details)                                                                                       | Voltage output range: 0~10V<br>Current output range: 0~20mA                                                                                               |
|                                 | AO2            | Analog output                      | Provide analog voltage output, which can correspond to 12 physical quantities, default output frequency when leaving the factory                                                                                                                  | Voltage output range: 0~10V<br>Current output range: 0~20mA                                                                                               |
| Multifunctional input terminal  | DI1            | Multifunctional                    | It can be programmed and defined as switch input terminal with multiple functions, see Chapter VI terminal function parameters (switch input and output) input terminal function introduction. (Common port: COM)<br>(See F6.00-6.04 for details) |                                                                                                                                                           |
|                                 | DI2            | Multifunctional                    |                                                                                                                                                                                                                                                   |                                                                                                                                                           |
|                                 | DI3            | Multifunctional                    |                                                                                                                                                                                                                                                   |                                                                                                                                                           |
|                                 | DI4            | Multifunctional                    |                                                                                                                                                                                                                                                   |                                                                                                                                                           |
|                                 | DI5            | Multifunctional                    |                                                                                                                                                                                                                                                   |                                                                                                                                                           |
|                                 | DI6            | Multifunctional                    | It can be programmed and defined as switch input terminal with multiple functions, see Chapter VI terminal function parameters (switch input and output) input terminal                                                                           | Note: Expansion card function                                                                                                                             |
|                                 | DI7            | Multifunctional                    |                                                                                                                                                                                                                                                   |                                                                                                                                                           |
|                                 | DI8            | Multifunctional input terminal 8   |                                                                                                                                                                                                                                                   |                                                                                                                                                           |
| Power supply                    | 10V            | +10V power supply                  | Provides +10V power supply for external                                                                                                                                                                                                           | Maximum output                                                                                                                                            |
|                                 | GND            | +10V power supply                  | Reference ground of analog signal and +10V                                                                                                                                                                                                        | COM and GND are internally isolated from                                                                                                                  |
|                                 | COM            | +24V power supply                  | Digital signal input and output common port                                                                                                                                                                                                       |                                                                                                                                                           |

|  |      |                   |                                        |                        |
|--|------|-------------------|----------------------------------------|------------------------|
|  | +24V | +24V power supply | Digital signal power supply            | Maximum output         |
|  | PLC  | Multifunctional   | Common port of DI1-DI5                 | Shot-circuited to 24V  |
|  | CME  | Digital output    | Multifunctional output terminal common | Short-circuited to COM |

### 2.4.3 Wiring of analog input and output terminals

AI1 and AI2 terminals receive analog signal input, and select input voltage (0~10V) or input current (0~20mA) through jumpers J1 and J2. Terminal wiring mode is shown in Figure 2-18(a):

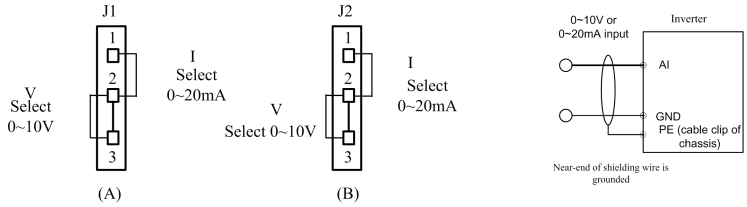


Figure 2-18(a) Analog Input Terminal Wiring

The analog outputs AO1 and AO2 can output both voltage and current, which can be selected by jumpers J3 and J4. AO1 and AO2 are default to 0~10v voltage output, and the corresponding output physical quantities are set by parameters F5.25 and f5.26.

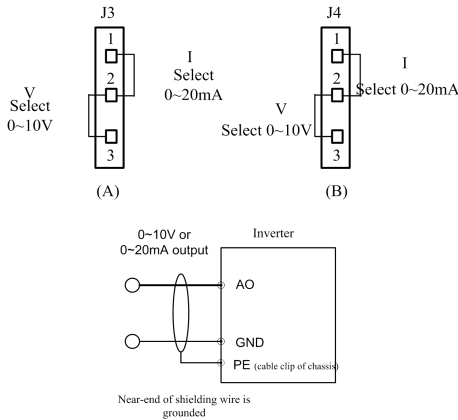


Figure 2-18(b) Analog Output Terminal Wiring

2.4.4 Wiring mode of drive control circuit

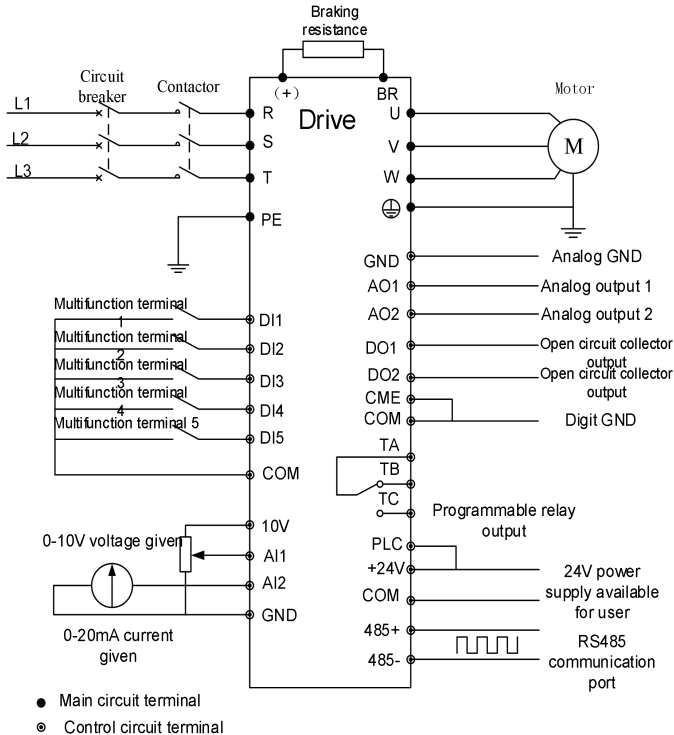
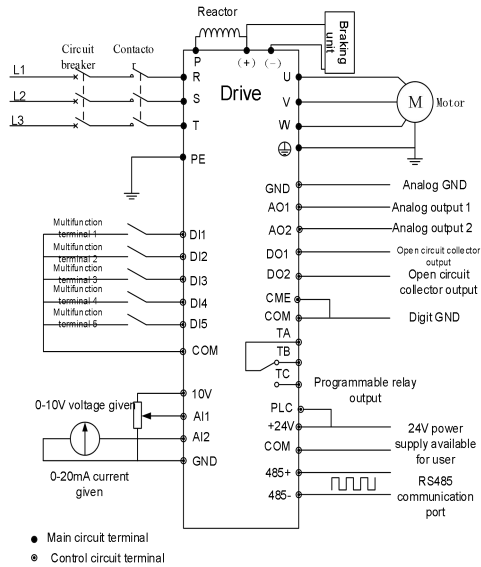


Figure 2-19 Basic Operation Wiring Diagram

Applicable models:GT30-4T0370 and below



## Figure 2-20 Basic Operation Wiring Diagram

Applicable models: GT30-4T0450 and above

### 2.4.5 Wiring of signal input terminal

NPN and PNP mode switching terminals are shown in Figure 2-21 to Figure 2-24.

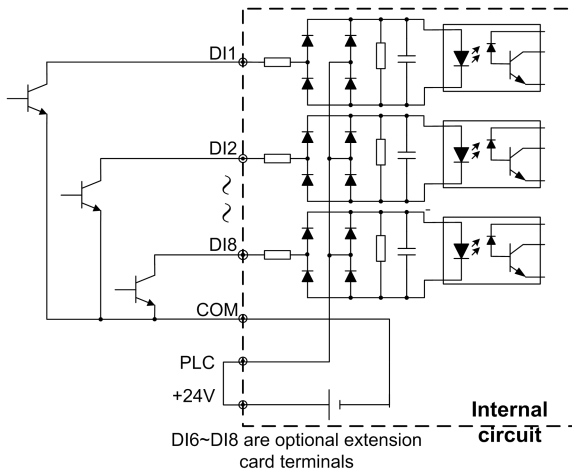


Figure 2-21 NPN Diagram of Internal Power Supply (OC)

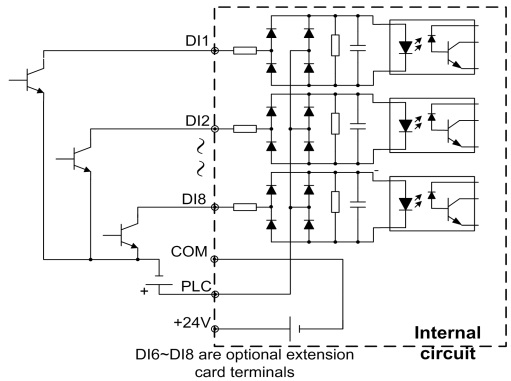


Figure 2-22 NPN Diagram of External Power Supply (OC)

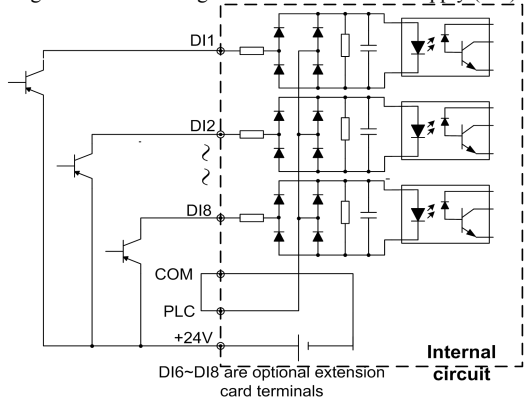


Figure 2-23 PNP Diagram of Internal Power Supply (OE)

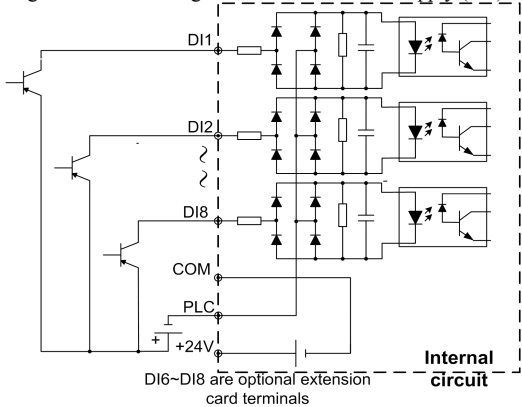


Figure 2-24 PNP Diagram of External Power Supply (OE)

# Chapter III Operation Instructions of Drive

## 3.1 Key function description

The drive operation panel is provided with 7 keys and 1 rotary encoder. The functions are defined in Table 3-1.

Table 3-1 Operation Panel Function Table

| Key                                                                               | Name             | Label in the manual                                                               | Function description                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | Program/Exit key |  | Enter or exit programming state                                                                                                                                                                                                                                                                                      |
|  | Run key          |  | In the operation panel mode, press this key to run the drive.                                                                                                                                                                                                                                                        |
|  | Stop key         |  | When the drive is in the normal running state, if the drive's running instruction channel is set to the keyboard stop effective mode, press this key and the drive will stop according to the set mode. When the drive is in the fault state, press this key to reset the drive and return to the normal stop state. |
|  | Increase key     |  | Increase data or function code                                                                                                                                                                                                                                                                                       |
|  | Decrease key     |  | Decrease data or function code                                                                                                                                                                                                                                                                                       |
|  | Shift key        |  | In the edit state, you can select the modification bit of the set data                                                                                                                                                                                                                                               |
|  | Rotary encoder   |  | When pressed down, it is the  key, you can enter the drop-down menu or data confirmation.<br><br>When the frequency channel is given by the operation panel, the rotary encoder can modify the set frequency of the drive.          |

## 3.2 Keyboard operation methods

You can perform various operations on the drive by operating the keyboard, as follows:

### 3.2.1 Shortcut monitoring parameter view

6 shortcut parameters are fixedly displayed in the shortcut monitoring interface, and the order can be switched by the Up or Down key. When the ENT key is pressed down in this interface, it will immediately return to the first shortcut parameter, and the 6 shortcut parameter sequence list is as follows.

|                      |                                   |
|----------------------|-----------------------------------|
| Shortcut parameter 1 | Determined by function code FC.17 |
| Shortcut parameter 2 | Output current                    |

|                            |                  |
|----------------------------|------------------|
| Shortcut<br>parameter<br>3 | Bus voltage      |
| Shortcut<br>parameter<br>4 | Set frequency    |
| Shortcut<br>parameter<br>5 | All              |
| Shortcut<br>parameter<br>6 | Terminal state 1 |

The above is the shortcut display in the general mode, which will vary with different industry characteristics in other industries.

### 3.2.2 Settings of function code parameters

The function parameter system of this drive includes function code F0~FF group, monitoring parameter U0 group, and fault record parameter U1 group. Each function group includes several function codes. The function code is identified by (function code group number + function code number). For example, “F5.08” indicates the 8th function code of the 5th function group.

Function code setting example:

Example 1: Change the forward jog frequency setting from 5Hz to 10Hz (F2.20 changed from 5.00Hz to 10.00Hz)

1) Press the **PRG** key to enter the programming state, the digital tube displays function parameter “-F0-”, and press the **▲** key to make the LED digital tube display “-F2-”.

2) Press **ENT**, you can see the digital tube displays function parameter “F2.00”.

3) Press the **▲** key to make the digital tube display function parameter “F2.20”.

4) Press the **ENT** key, you will see the data (5.00) corresponding to F2.20, meanwhile, the LED (Hz) corresponding to its unit frequency lights up.

5) Press the **▶▶** key, if flashes, shift to the highest bit “5”, and press the **▲** key five times, to change to 10.00.

6) Press the **ENT** key, if the parameter does not flash, it indicates the modification is successful.

7) Press the **PRG** key, to exit the programming state.

**Note: In P.off state, it is forbidden to modify the function code parameter.**

### 3.2.3 Jog function operation

Use the operation panel to perform the jog operation of the drive:

1) Press the **PRG** key three times to enter the jog operation state, and the digital tube displays function parameter “JOG-”.

2) Press and hold the Up key to forward and jog.

3) Press and hold the Down key to reverse and jog.

### 3.2.4 Parameter upload and download operations

The external keyboard has the function of uploading and downloading the function code.

1) On the external keyboard, press the **▶▶** key + the **▲** key, to execute the function code uploading function. The external keyboard reads all the function code values from the control board, and then writes into the keyboard memory chip.



2) On the external keyboard, press the  key + the  key, to execute the function code downloading function. The external keyboard reads all the function code values from the memory chip, and then writes into the drive control board chip. However, when downloading, the keyboard will automatically distinguish the software version, drive voltage level, and drive power level. The specific conditions are as follows:

- a. If the downloaded function code is inconsistent with the drive software version of the parameter to be downloaded, it will not be downloaded and an E028 fault will be reported.
- b. If the downloaded function code is inconsistent with the drive voltage level of the parameter to be downloaded (e.g. the downloaded function code is of 2S model, but the drive is of 4T model), it will not be downloaded and an E028 fault will be reported.
- c. If the downloaded function code is consistent with the drive voltage level of the parameter to be downloaded but the power level is inconsistent, the F3 group motor related parameters will not be downloaded, and other parameters will be downloaded normally.
- d. If the downloaded function code is consistent with the drive software version, voltage level, and power level of the parameter to be downloaded, all parameters will be downloaded.

# Chapter IV Function Parameter Table

## 4.1 Function parameter table

Description of symbols in the table:

× - Indicates this parameter cannot be changed during the operation.    ○ - Indicates this parameter can be changed during the operation.

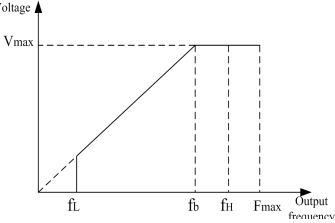
● - Indicates the actual test parameter, which cannot be changed.    \*- Indicates this parameter is the reserved parameter of the manufacturer, which is prohibited to be changed.

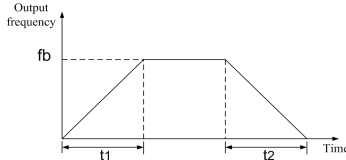
| Parameter Code                       | Parameter name                 | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Minimum Unit  | actory value  | Change |   |       |   |       |     |       |      |       |    |   |   |   |
|--------------------------------------|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|--------|---|-------|---|-------|-----|-------|------|-------|----|---|---|---|
| F0 group system management parameter |                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |               |        |   |       |   |       |     |       |      |       |    |   |   |   |
| F0.00                                | Parameter operation protection | 0: Password operation. You can view the function code value without entering a password, but you cannot change it. You need to enter the correct password in F0.05 before changing the function code.<br>1: Password operation. You cannot view the function code value when no password is entered, and the function code will display “-----”. You need to enter the correct password in F0.05 before viewing and changing the function code.<br><b>Note: This function will take effect only after setting the function code operation password in F0.05.</b> | 1             | 0             | ○      |   |       |   |       |     |       |      |       |    |   |   |   |
| F0.01                                | Reserved                       | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | -             | -             | *      |   |       |   |       |     |       |      |       |    |   |   |   |
| F0.02                                | Drive operation deadline       | Set range: 0~Maximum timing 65535h<br>0 indicates unlimited.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1h            | 0h            | ○      |   |       |   |       |     |       |      |       |    |   |   |   |
| F0.03                                | Parameter initialization       | 0: No operation<br>1: Restore the factory settings (the drive model, running time, and fault records will not be restored)<br>2: Clear the fault memory information (clear fault memory parameters of U1 group)                                                                                                                                                                                                                                                                                                                                                  | 1             | 0             | ×      |   |       |   |       |     |       |      |       |    |   |   |   |
| F0.04                                | Industry code                  | 0: Universal drive<br>1: Special drive for water supply<br><b>Note: Changing the industry code will restore other function codes to their factory settings.</b><br><b>The factory value of part of function codes of the special drive for water supply is restored according to the following list:</b> <table><tr><th>Function code</th><th>Factory value</th></tr><tr><td>F1.01</td><td>1</td></tr><tr><td>F1.02</td><td>8</td></tr><tr><td>F8.14</td><td>4ms</td></tr><tr><td>F8.15</td><td>5.0%</td></tr><tr><td>FC.17</td><td>14</td></tr></table>         | Function code | Factory value | F1.01  | 1 | F1.02 | 8 | F8.14 | 4ms | F8.15 | 5.0% | FC.17 | 14 | 1 | 0 | × |
| Function code                        | Factory value                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |               |        |   |       |   |       |     |       |      |       |    |   |   |   |
| F1.01                                | 1                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |               |        |   |       |   |       |     |       |      |       |    |   |   |   |
| F1.02                                | 8                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |               |        |   |       |   |       |     |       |      |       |    |   |   |   |
| F8.14                                | 4ms                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |               |        |   |       |   |       |     |       |      |       |    |   |   |   |
| F8.15                                | 5.0%                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |               |        |   |       |   |       |     |       |      |       |    |   |   |   |
| FC.17                                | 14                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |               |               |        |   |       |   |       |     |       |      |       |    |   |   |   |

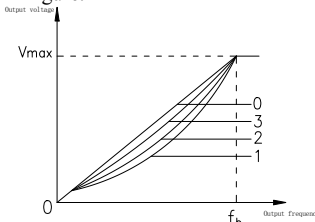
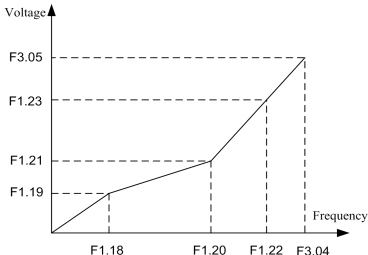
| Parameter Code                                | Parameter name                   | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Minimum Unit | Factory value | Change |
|-----------------------------------------------|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F0.05                                         | Function code operation password | <p>Setting range: 0–65535</p> <p>0 indicates no password, set any non-zero number, the password protection function will take effect immediately, please keep the set password in mind.</p> <p>After setting the password, if you want to clear the password, you must enter the correct password first, and then set the password value to 0.</p> <p>After setting the password, if you want to change the password, you must clear the password before you can set a new password.</p> <p><b>Note: The password protection authority is set in F0.00, which is used to prohibit unauthorized personnel from viewing and changing the function code parameters.</b></p>                       | 1            | 0             | ○      |
| <b>Basic operating parameters of F1 group</b> |                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |               |        |
| F1.00                                         | Control method                   | <p>0: Reserved</p> <p>1: V/F control: Sound versatility, and stable operation, can effectively improve low-frequency torque and suppress current oscillation, with slip compensation and automatic voltage adjustment functions, further improving control accuracy.</p>                                                                                                                                                                                                                                                                                                                                                                                                                       | 1            | 1             | ×      |
| F1.01                                         | Run command channel selection    | <p>0: Operation panel run command channel: By the <b>RUN</b> key, and the <b>STOP</b> key, you can control the drive to run and stop, press and hold the <b>▲</b> key and the <b>▼</b> key in the “<b>JOG-</b>” interface, you can perform forward jog and reverse jog.</p> <p>1: Terminal run command channel: Control the running and stopping of the drive through the multifunctional input terminal forward, reverse, forward jog, reverse jog, etc. (The corresponding multifunctional input terminal's function must be defined by the F6 and Fd parameter groups).</p> <p>2: Serial port run command channel: Control the running and stopping of the drive through communication.</p> | 1            | 0             | ○      |

| Parameter Code | Parameter name                                | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Minimum Unit | Factory value | Change |
|----------------|-----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F1.02          | Main frequency x given channel selection      | <p>0: Operation panel digital potentiometer given. The frequency is set by adjusting the digital potentiometer on the panel.</p> <p>1: Digital given 1, setting frequency by modifying function code F1.05 (corresponding to auxiliary frequency Y) or F1.07 (corresponding to main frequency X).</p> <p>2: Digital given 2. The frequency is adjusted by setting the UP/DN function through the multifunctional input terminal.</p> <p>3: Digital given 3, communication given. The frequency is set by the serial port frequency set command.</p> <p>4: AI1 given, frequency setting is determined by AI1 terminal analog voltage/current, input range: DC 0~10V or DC 0~20mA (J1 jumper selection), and the corresponding frequency curve is set in F5.00~F5.05 function code.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1            | 0             | ○      |
| F1.03          | Auxiliary frequency Y given channel selection | <p>5: AI2 given, frequency setting is determined by AI2 terminal analog voltage/current, input range: DC 0~10V or DC 0~20mA (AI2 jumper selection), and the corresponding frequency curve is set in F5.00~F5.05 function code.</p> <p>6: Terminal pulse given, the frequency setting is determined by the terminal pulse frequency (input by DI5, and the function code F6.19 needs to be set to “high-frequency pulse input” function before use), the input pulse signal frequency range is 0~50.0kHz, and the corresponding frequency curve is set in F5.19~F5.23 function code.</p> <p>7: Multistage instruction given, the drive runs in multistage instruction mode, selects multistage speed operation or simple PLC operation through function code F9.00. When multistage speed operation is selected, set the multistage speed terminal combination through group F6 and Fd to select the current running stage, and determine the current running frequency and acceleration/deceleration time through group F9 function code. When simple PLC operation is selected, determine the PLC operation mode, the number of operation stages, the phase operation frequency, the phase operation direction, and the phase operation time through group F9 function code.</p> <p>8: PID given, the drive operation mode is process PID control, and the operation</p> | 1            | 1             | ○      |

| Parameter Code | Parameter name                           | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Minimum Unit | Factory value | Change |
|----------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                |                                          | frequency is the frequency value after PID action. In this case, you need to set PID related functions through group F8.<br>9-15: Reserved                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |              |               |        |
| F1.04          | Frequency source combination mode        | <p>0: X, the current frequency is set to the main frequency X.</p> <p>1: Y, the current frequency is set to the auxiliary frequency Y.</p> <p>2: X+Y, the current frequency is set to the main frequency X + the auxiliary frequency Y.</p> <p>3: X-Y, the current frequency is set to the main frequency X + the auxiliary frequency Y.</p> <p>4: Max (X,Y). The larger of the main frequency X and the auxiliary frequency Y is the set frequency.</p> <p>5: Min (X,Y). The smaller of the main frequency X and the auxiliary frequency Y is the set frequency.</p> <p><b>Note: If the X and Y directions are not the same, the frequency direction after the combination of 2 and 3 is based on the main frequency X, while 4 and 5 is based on the selected frequency direction.</b></p> <p><b>Besides the calculation during combination is based on the absolute value of the main and auxiliary frequencies, if the calculated value is less than 0, it will run at zero frequency.</b></p> <p><b>The combination mode can be switched through the multifunctional input terminal (group F6).</b></p> | 1            | 0             | ○      |
| F1.05          | Digital setting of auxiliary frequency Y | <p>Set range: Lower limit frequency~upper limit frequency</p> <p>When the auxiliary frequency Y given channel is selected to "digital setting 1", this function code value is the frequency set value of the auxiliary frequency Y.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.01Hz       | 50.00Hz       | ○      |
| F1.06          | Maximum output frequency                 | <p>Set range: Upper limit frequency~650.00Hz</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.01Hz       | 50.00Hz       | ×      |

| Parameter Code | Parameter name                   | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Minimum Unit | Factory value | Change |
|----------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                |                                  |  <p>1. The maximum output frequency is the highest frequency allowed by the drive, such as fmax shown in the figure.</p> <p>2. The rated frequency of F3.04 is the corresponding minimum frequency when the drive outputs the highest voltage, such as fb shown in the figure.</p> <p>3. The maximum output voltage of F3.05 is the corresponding output voltage when the drive outputs the rated frequency, such as Vmax shown in the figure.</p> <p><b>Note: Be sure to set fmax, fb, and Vmax according to the motor parameters, otherwise the equipment may be damaged.</b></p> |              |               |        |
| F1.07          | Main frequency x digital setting | Set range: Lower limit frequency~upper limit frequency<br>When the main frequency X given channel is selected to “digital setting 1”, this function code value is the frequency set value of the main frequency X.                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.01Hz       | 50.00Hz       | ○      |
| F1.08          | Reserved                         | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | -            | -             | *      |
| F1.09          | Upper limit frequency            | Set range: Lower limit frequency~maximum output frequency<br>The upper limit frequency is the upper limit value of the output frequency of the drive. The value shall be less than or equal to the maximum output frequency. When the set frequency is higher than the upper limit frequency, it runs at the upper limit frequency.                                                                                                                                                                                                                                                                                                                                  | 0.01Hz       | 50.00Hz       | ○      |
| F1.10          | Lower limit frequency            | Set range: 0.00~upper limit frequency<br>The lower limit frequency is the lower limit value of the drive output frequency. When the set frequency is lower than the lower limit frequency, it runs at the lower limit frequency.<br><b>Note: Maximum output frequency ≥ upper limit frequency ≥ lower limit frequency</b>                                                                                                                                                                                                                                                                                                                                            | 0.01Hz       | 0.00Hz        | ○      |

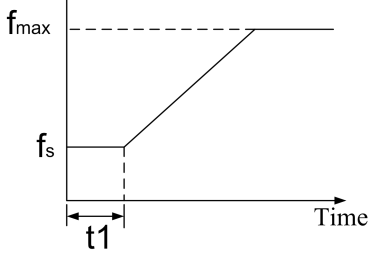
| Parameter Code | Parameter name                           | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Minimum Unit | Factory value       | Change |
|----------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|
| F1.11          | Acceleration time 1                      | <p>Set range: 0.01~600.00</p>  <p>1. The acceleration time refers to the time required for the drive to accelerate from zero frequency to the rated frequency of the motor, as shown in t1 in the figure.</p> <p>2. The deceleration time refers to the time required for the drive to decelerate from the rated frequency to zero frequency of the motor, as shown in t2 in the following figure.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.01         | Model determination | ○      |
| F1.12          | Deceleration time 1                      | <p>3. There are four groups of acceleration and deceleration time parameters for this series of drives. Other acceleration and deceleration time (2, 3, 4) are defined in parameters F2.14~F2.19. The factory default acceleration/deceleration time is acceleration/deceleration time 1. To select other acceleration and deceleration time groups, you must select them by terminal (see group F6 parameters). The acceleration and deceleration times during the motor parameter self-learning operation are set in F3.13 separately. The acceleration and deceleration times during jog operation are set in F2.22 and F2.23 separately.</p> <p>4. The acceleration time is only valid for normal acceleration process, excluding start DC braking time and start frequency hold time. The deceleration time is only valid for normal deceleration process, excluding stop DC braking time.</p> <p><b>Note: The default unit is s. For the selection of acceleration/deceleration time unit, see FC.07.</b></p> |              |                     | ○      |
| F1.13          | Acceleration/deceleration filtering time | <p>Set range: 0~1000ms (0 indicates on filter)</p> <p>Acceleration/deceleration filter time constant. The longer the filter time is, the longer the actual acceleration/deceleration time that set.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |                     | ○      |
| F1.14          | Reserved                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | -            | -                   | *      |
| F1.15          | Reserved                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | -            | -                   | *      |
| F1.16          | Reserved                                 | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | -            | -                   | *      |

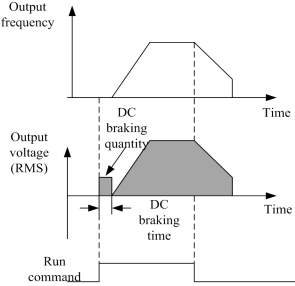
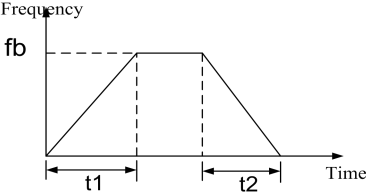
| Parameter Code | Parameter name         | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Minimum Unit | Factory value | Change |
|----------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F1.17          | V/F curve setting      | <p>The V/F setting mode is defined in this function code, to meet the needs of different load characteristics. According to the definition, you can select 4 fixed curves and 1 custom curve.</p> <p>0: Straight line VF, as shown in curve 0 in the figure.</p> <p>1: User-set V/F curve, see F1.18~F1.23 function code setting for details.</p> <p>2: Reduced torque characteristic curve 1 (2.0 power), as shown in curve 1 in the figure.</p> <p>3: Reduced torque characteristic curve 2 (1.7 power), as shown in curve 2 in the figure.</p> <p>4: Reduced torque characteristic curve 3 (1.2 power), as shown in curve 3 in the figure.</p>  <p><b>Note: Curves 1, 2, and 3 are suitable for variable torque loads of fans and pumps. Users can adjust according to the load characteristics to achieve the best energy saving effect.</b></p> | 1            | 0             | ×      |
| F1.18          | V/F frequency value F1 | F1.18 set range: 0.00~F1.20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.01Hz       | 12.50Hz       | ×      |
| F1.19          | V/F voltage value V1   | F1.19 set range: 0~F1.21<br>F1.20 set range: F1.18~F1.22<br>F1.21 set range: F1.19~F1.23<br>F1.22 set range: F1.20~F3.04<br>F1.23 set range: F1.21~100.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.1%         | 25.0%         | ×      |
| F1.20          | V/F frequency value F2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.01Hz       | 25.00Hz       | ×      |
| F1.21          | V/F voltage value V2   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.1%         | 50.0%         | ×      |
| F1.22          | V/F frequency value F3 | 1. When the F1.17V/F curve is set to 1, the user can customize the V/F curve through F1.18~F1.23, as shown in the figure. The                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.01Hz       | 37.50Hz       | ×      |

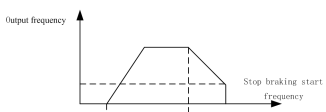
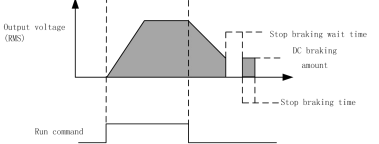


| Parameter Code    | Parameter name            | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Minimum Unit      | actory value | Change          |              |      |   |   |   |      |   |   |   |      |                     |   |
|-------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------|-----------------|--------------|------|---|---|---|------|---|---|---|------|---------------------|---|
| F1.23             | V/F voltage value V3      | V/F curve is defined by adding (V1, F1), (V2, F2), and (V3, F3) three-point broken line, to adapt to special load characteristics.<br><br>2. This function parameter group is used to flexibly set the V/F curve required by the user.<br><b>Note: V1&lt;V2&lt;V3, F1&lt;F2&lt;F3, setting the low-frequency voltage too high may cause the motor to overheat or even get burned, and the drive may also have overcurrent stall or overcurrent protection. It shall be set according to the load characteristics of the motor.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0.1%              | 75.0%        | ×               |              |      |   |   |   |      |   |   |   |      |                     |   |
| F1.24             | Running direction setting | 0: Forward<br>1: Reverse<br>The direction of the motor can be changed by changing this function code. Its function is equivalent to changing the direction of rotation of the motor by adjusting any two lines of the motor lines U, V, and W.<br><b>Note: After the function code parameters are restored to the factory setting, the motor running direction will be restored to the factory value. Use with caution on the occasions that it is forbidden to change the motor steering after system debugging.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1                 | 0            | ○               |              |      |   |   |   |      |   |   |   |      |                     |   |
| F1.25             | Carrier frequency setting | Set range: 1~15kHz<br><table border="1"><tr><td>Carrier frequency</td><td>Motor noise</td><td>Leakage current</td><td>Interference</td></tr><tr><td>Drop</td><td>↑</td><td>↓</td><td>↓</td></tr><tr><td>Rise</td><td>↓</td><td>↑</td><td>↑</td></tr></table><br>1. Advantages of high carrier frequency: Ideal current waveform, less current harmonics, and low motor noise.<br>2. Disadvantages of high carrier frequency: The switching loss increases, the drive temperature rise increases, and the output ability of the drive is affected. Under high carrier frequency, the drive needs to be derated; at the same time, the leakage current of the drive increases, and the external electromagnetic interference increases.<br>3. The use of low carrier frequency is contrary to the above situation. Too low carrier frequency will cause low frequency operation instability, torque decrease and even oscillation.<br>4. When the drive leaves the factory, the manufacturer has set the carrier frequency | Carrier frequency | Motor noise  | Leakage current | Interference | Drop | ↑ | ↓ | ↓ | Rise | ↓ | ↑ | ↑ | 1kHz | Model determination | ○ |
| Carrier frequency | Motor noise               | Leakage current                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Interference      |              |                 |              |      |   |   |   |      |   |   |   |      |                     |   |
| Drop              | ↑                         | ↓                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ↓                 |              |                 |              |      |   |   |   |      |   |   |   |      |                     |   |
| Rise              | ↓                         | ↑                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ↑                 |              |                 |              |      |   |   |   |      |   |   |   |      |                     |   |

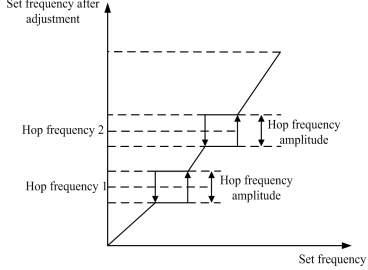
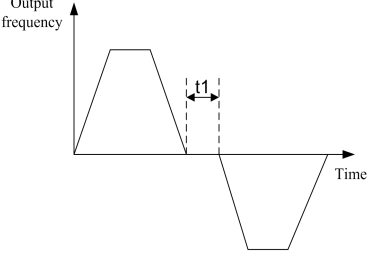
| Parameter Code                     | Parameter name       | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Minimum Unit | factory value | Change |
|------------------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                                    |                      | reasonably. Generally, users do not need to change this parameter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |               |        |
| <b>F2 group start-stop control</b> |                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |               |        |
| F2.00                              | Start operation mode | <p>LED single digit: Start mode</p> <p>0: Start from the start frequency: Start at the start frequency set by F2.01, and accelerate to the set frequency after running the hold time set by F2.02 at this frequency.</p> <p>1: Brake first and then start from the start frequency: First start with the DC braking current set in F2.03 and the DC braking time set in F2.04 for DC braking and then start from the start frequency.</p> <p>2: Speed tracking and restart: Track the current speed and direction of the motor, and perform smooth start without impact on the motor that is still rotating.</p> <p>LED tens digit: Speed tracking mode</p> <p>0: Track down from the frequency of shutdown, usually this method is used.</p> <p>1: Track down from the maximum frequency, suitable for power generation load.</p> | 11           | 00            | ×      |

| Parameter Code | Parameter Name            | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Minimum Unit | Factory Value | Change |
|----------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F2.01          | Start frequency           | <p>F2.01 set range: 0.20~60.00Hz<br/>F2.02 set range: 0.0~10.0s</p> <p>Frequency</p>                                                                                                                                                                                                                                                                                                                                          | 0.01Hz       | 0.50Hz        | ○      |
| F2.02          | Start frequency hold time | <p>1. The start frequency refers to the initial frequency of the drive at start. As shown in <math>f_s</math> in the figure, setting a proper start frequency can increase the torque at start.<br/>2. Within the hold time of the start frequency, as shown in <math>t_1</math> in the figure, the output frequency of the drive is the start frequency, and then operate from the start frequency to the target frequency.<br/>3. The start frequency value is not limited by the lower frequency limit.</p> | 0.1s         | 0.0s          | ○      |
| F2.03          | Start DC braking current  | <p>F2.03 set range: 0.0~150.0% drive rated current<br/>F2.04 set range: 0.0~30.0S (0.0 indicates the DC braking does not act)</p>                                                                                                                                                                                                                                                                                                                                                                              | 0.1%         | 100.0%        | ○      |

| Parameter Code | Parameter name                                               | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Minimum Unit | Factory value | Change |
|----------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F2.04          | Start DC braking time                                        | <p>The process of braking first and then restarting from the start frequency, as shown in the figure: When the drive is put into operation, first perform the DC braking before starting according to the DC braking current and the DC braking time set by F2.03 and F2.04; then start from this frequency and operate the set time according to the regulations of F2.01 and F2.02; then enter the normal acceleration phase according to parameters such as the set acceleration and deceleration times, the acceleration and deceleration time methods, etc. and accelerate to the set frequency.</p>  | 0.1s         | 0.0s          | ○      |
| F2.05          | Acceleration/deceleration mode selection                     | <p>Frequency change mode selection during starting and running.</p> <p>0: Linear acceleration/deceleration: The output frequency increases or decreases according to a constant slope.</p>  <p>1: Reserved</p>                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×      |
| F2.06          | Start protection selection (only valid for two-wire control) | <p>This function realizes whether the drive automatically starts running when the drive is powered on, the fault is cleared, or the command channel is switched to the terminal two-wire mode.</p> <p>0: If the run command is valid, the drive does start, and the drive is in the running protection state. The drive will not run until the run command terminal is canceled and</p>                                                                                                                                                                                                                                                                                                     | 1            | 0             | ×      |

| Parameter Code | Parameter name                     | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Minimum Unit | Factory value | Change |
|----------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                |                                    | then the terminal is enabled.<br>1: If the run command is valid, the drive speed tracking starts.<br><b>Note: For safety, be cautious when setting to 1.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                   |              |               |        |
| F2.07          | Start protection wait time         | Set range: 0.0~10.0s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.1s         | 0.0s          | ○      |
| F2.08          | Stop mode                          | 0: Deceleration stop: After receiving the stop command, the drive will gradually reduce the output frequency according to the deceleration time, and stop when the frequency decreases to zero.<br>1: Free running stop: After receiving the stop command, the drive immediately stops the output, and the load stops freely according to the mechanical inertia.<br>2: Deceleration stop + DC braking: After receiving the stop command, the drive reduces the output frequency according to the deceleration time, and starts the DC braking when reaching the stop braking start frequency. | 1            | 0             | ×      |
| F2.09          | DC braking start frequency at stop | F2.09 set range: 0.00~60.00Hz<br>F2.10 set range: 0.00~10.00s<br>F2.11 set range: 0.0~150.0% drive rated current<br>F2.12 set range: 0.0~60.0S (0.0 indicates the DC braking does not act)<br>F2.13 set range: 0~1                                                                                                                                                                                                                                                                                                                                                                             | 0.01Hz       | 0.00Hz        | ○      |
| F2.10          | DC braking wait time at stop       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.01s        | 0.10s         | ○      |
| F2.11          | DC braking current at stop         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.1%         | 100.0%        | ○      |
| F2.12          | DC braking time at stop            | 1. DC braking start frequency at stop: Means that the drive starts stop DC braking when reaching this frequency during the deceleration stop.<br>2. DC braking wait time at stop: During decelerating and stopping, the time interval from the moment when the operation frequency reaches the start frequency of braking to the moment when the DC braking amount is applied.                                                                                                                                                                                                                 | 0.1s         | 0.0s          | ○      |

| Parameter Code | Parameter name                                       | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Minimum Unit | Factory value       | Change |
|----------------|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|
| F2.13          | Action selection within DC braking wait time at stop | 3. DC braking current at stop: Refers to the DC braking amount that added. The larger the current, the stronger the DC braking effect.<br>4. DC braking time at stop: The duration of the DC braking amount. When the time is 0, there is no DC braking process.<br>5. Action selection during stop DC braking wait time: Refers to the operation status of the drive during the braking wait time. When set to 0, it indicates no output, when set to 1, it indicates to run at the braking start frequency. | 1            | 1                   | ○      |
| F2.14          | Acceleration time 2                                  | Set range: 0.01~600.00<br>For specific definition, see F1.11 and F1.12.<br><b>Note: The default unit is s. For the selection of acceleration/deceleration time unit, see FC.07.</b>                                                                                                                                                                                                                                                                                                                           | 0.01         | Model determination | ○      |
| F2.15          | Deceleration time 2                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     | ○      |
| F2.16          | Acceleration time 3                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     | ○      |
| F2.17          | Deceleration time 3                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     | ○      |
| F2.18          | Acceleration time 4                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     | ○      |
| F2.19          | Deceleration time 4                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     | ○      |
| F2.20          | Jog run frequency                                    | Set range: 0.10~50.00Hz<br>Define the set frequency during jog operation.                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.01Hz       | 5.00Hz              | ○      |
| F2.21          | Jog interval time                                    | Set range: 0.0~100.0s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.1s         | 0.0s                | ○      |
| F2.22          | Jog acceleration time                                | Set range: 0.01~600.00s<br>1. The acceleration time refers to the time required for the drive to accelerate from zero frequency to the rated frequency of the motor.                                                                                                                                                                                                                                                                                                                                          | 0.01s        | 6.00s               | ○      |
| F2.23          | Jog deceleration time                                | 2. The jog deceleration time refers to the time required for the drive to decelerate from the rated frequency to zero frequency of the motor.                                                                                                                                                                                                                                                                                                                                                                 |              |                     | ○      |
| F2.24          | Jump frequency 1                                     | F2.24 set range: 0.00~650.00Hz<br>F2.25 set range: 0.00~30.00Hz<br>F2.26 set range: 0.00~650.00Hz<br>F2.27 set range: 0.00~30.00Hz<br>F2.28 set range: 0.00~650.00Hz<br>F2.29 set range: 0.00~30.00Hz                                                                                                                                                                                                                                                                                                         | 0.01Hz       | 0.00Hz              | ×      |
| F2.25          | Jump frequency 1 range                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.01Hz       | 0.00Hz              | ×      |
| F2.26          | Jump frequency 2                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.01Hz       | 0.00Hz              | ×      |

| Parameter Code | Parameter name                     | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Minimum Unit | Factory value | Change |
|----------------|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F2.27          | Jump frequency 2 range             |  <p>1. Setting the hopping frequency can make the drive avoid the mechanical resonance point of the load. When the hopping frequency is set to 0, this function is invalid. Once these hopping points are set, the drive will automatically avoid stable operation at these frequency points during operation.</p> <p>2. During the acceleration and deceleration, the output frequency of the drive can cross the hopping frequency zone normally.</p> | 0.01Hz       | 0.00Hz        | ×      |
| F2.28          | Jump frequency 3                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.01Hz       | 0.00Hz        | ×      |
| F2.29          | Jump frequency 3 range             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.01Hz       | 0.00Hz        | ×      |
| F2.30          | Forward and reverse dead zone time | <p>Set range: 0.00~360.00s</p> <p>The forward and reverse dead zone time refers to the transition interval during which the drive waits at the output zero frequency during the transition from the current operating direction to the opposite operating direction after receiving the reverse run command, as shown in t1 in the figure.</p>                                                                                                         | 0.01s        | 0.01s         | ×      |
| F2.31          | Terminal Jog preferred             | 0:Invalid<br>1:valid                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |               |        |
| F2.32          | Zero frequency thresholds          | Setting range: 0.00~650.00Hz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |               |        |
| F2.33          | Display selection                  | <p>LED units digit: quick parameter display selection</p> <p>0: Display 6 quick parameters. check Chapter 3 for details</p> <p>1: Display 1 quick parameter, determined by FC.17</p>                                                                                                                                                                                                                                                                                                                                                     |              |               |        |

| Parameter Code                               | Parameter name   | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Minimum Unit | Factory value       | Change |               |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|----------------------------------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|---------------|--------------------------------------------------------------------------------------------------------------------------|-------|---------------------|---|----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|-----------|----|----------|----|----------|----|----------|----|----------|----|----------|----|----------|----|----------|----|----------|----|----------|
|                                              |                  | LED tens digit: U group display selection<br>0: Display group U<br>1: Group U is not displayed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |              |                     |        |               |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
| F3 group motor and torque control parameters |                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |                     |        |               |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
| F3.00                                        | Motor model code | Set range: 1~28<br>The motor model code indicates the power code.<br>Partial codes are as follows:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1            | Model determination | ×      |               |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | <table><tr><th>Model code</th><th>Motor power</th></tr><tr><td>8</td><td>4T 5.5KW</td></tr><tr><td>9</td><td>4T 7.5KW</td></tr><tr><td>10</td><td>4T 11.0KW</td></tr><tr><td>11</td><td>4T 15.0KW</td></tr><tr><td>12</td><td>4T 18.5KW</td></tr><tr><td>13</td><td>4T 22.0KW</td></tr><tr><td>14</td><td>4T 30.0KW</td></tr><tr><td>15</td><td>4T 37.0KW</td></tr><tr><td>16</td><td>4T 45.0KW</td></tr><tr><td>17</td><td>4T 55.0KW</td></tr><tr><td>18</td><td>4T 75.0KW</td></tr><tr><td>19</td><td>4T 90.0KW</td></tr><tr><td>20</td><td>4T 110KW</td></tr><tr><td>21</td><td>4T 132KW</td></tr><tr><td>22</td><td>4T 160KW</td></tr><tr><td>23</td><td>4T 185KW</td></tr><tr><td>24</td><td>4T 200KW</td></tr><tr><td>25</td><td>4T 220KW</td></tr><tr><td>26</td><td>4T 250KW</td></tr><tr><td>27</td><td>4T 280KW</td></tr><tr><td>28</td><td>4T 315KW</td></tr></table> |              |                     |        | Model code    | Motor power                                                                                                              | 8     | 4T 5.5KW            | 9 | 4T 7.5KW | 10 | 4T 11.0KW | 11 | 4T 15.0KW | 12 | 4T 18.5KW | 13 | 4T 22.0KW | 14 | 4T 30.0KW | 15 | 4T 37.0KW | 16 | 4T 45.0KW | 17 | 4T 55.0KW | 18 | 4T 75.0KW | 19 | 4T 90.0KW | 20 | 4T 110KW | 21 | 4T 132KW | 22 | 4T 160KW | 23 | 4T 185KW | 24 | 4T 200KW | 25 | 4T 220KW | 26 | 4T 250KW | 27 | 4T 280KW | 28 | 4T 315KW |
|                                              |                  | Model code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |                     |        | Motor power   |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 8                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                     |        | 4T 5.5KW      |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |              |                     |        | 4T 7.5KW      |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 11.0KW     |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 15.0KW     |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 18.5KW     |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 22.0KW     |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 30.0KW     |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 37.0KW     |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 45.0KW     |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 55.0KW     |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 18                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 75.0KW     |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 19                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 90.0KW     |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 110KW      |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 132KW      |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 160KW      |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 185KW      |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 24                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 200KW      |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 220KW      |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 26                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 250KW      |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 27                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 280KW      |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | 28                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |                     |        | 4T 315KW      |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | Note:<br>1. When the factory value is restored, this function code will be restored to the default parameters the same as the drive power.<br>2. When this function code is reset, F3.01~F3.10 motor parameters can be initialized.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |              |                     |        |               |                                                                                                                          |       |                     |   |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | F3.01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |                     |        | Rated power   | F3.01 set range: 0.4~999.9KW<br>F3.02 set range: 0.1~6553.5A<br>F3.03 set range: 1~6553rpm                               | 0.1KW | Model determination | × |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | F3.02                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |                     |        | Rated current | F3.04 set range: 1.00~650.00Hz<br>F3.05 set range: 1~480V<br>1. Set the parameters of the controlled asynchronous motor. | 0.1A  |                     | × |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |
|                                              |                  | F3.03                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |                     |        | Rated speed   | 2. In order to ensure the control performance, make sure to set the values of F3.01~F3.05 correctly according to         | 1rpm  |                     | × |          |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |           |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |    |          |

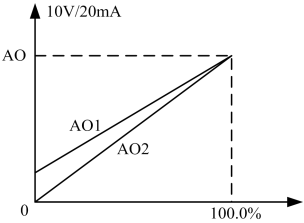


| Parameter Code | Parameter name                   | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Minimum Unit | Factory value       | Change |
|----------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|
| F3.04          | Rated frequency                  | the nameplate parameters of the asynchronous motor.<br>3. This drive provides parameter self-learning function. The accurate parameter self-learning comes from the accurate settings of the motor nameplate parameters.                                                                                                                                                                                                                                                                                                                                                                                        | 0.01Hz       |                     | ×      |
| F3.05          | Rated power                      | 4. In order to ensure the control performance, please configure the motor according to the standard adapter motor of the drive. If the gap between the motor power and the standard adapter motor is too large, the control performance of the drive will decrease significantly.                                                                                                                                                                                                                                                                                                                               | 1V           |                     | ×      |
| F3.06          | No-load current I <sub>0</sub>   | F3.06 set range: 0.1~6553.5A<br>F3.07 set range: 0.000~50.000Ω                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.1A         | Model determination | ×      |
| F3.07          | Stator resistance R1             | F3.-8 set range: 0.0~6553.5mH<br>F3.09 set range: 0.000~50.000Ω<br>F3.10 set range: 0.0~6553.5mH                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.001Ω       |                     | ○      |
| F3.08          | Leakage inductance X             | 1. After changing the motor model code F3.00, the drive automatically sets the parameters of F3.06~F3.10 to the parameters of the corresponding motor.                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.1mH        |                     | ○      |
| F3.09          | Rotor resistance R2              | 2. If the parameters of the motor are known, please write the values in F3.06~F3.10 accordingly. If the motor parameter self-learning is performed, the set values of F3.06~F3.10 will be updated automatically after the learning is completed normally.                                                                                                                                                                                                                                                                                                                                                       | 0.001Ω       |                     | ○      |
| F3.10          | Mutual inductance X <sub>m</sub> | 3. These parameters are the reference parameters for drive control and have direct impact on control performance.<br><b>Note: Users shall not change this group of parameters at random.</b>                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.1mH        |                     | ○      |
| F3.11          | Motor poles                      | 2~14                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 2            | 4                   | ×      |
| F3.12          | Parameter self-learning          | 0: No action<br>1: Action (motor rotation): Perform comprehensive self-learning of motor parameters. It is recommended to use rotary self-learning for occasions with high control accuracy requirements.<br><b>Note: Before starting the self-learning, make sure that the motor is stopped and remove the motor shaft from the load, otherwise the self-learning cannot be performed normally.</b><br>Parameter self-learning steps:<br>1. According to the characteristics of the motor, set the function codes "F3.01 rated power" and "F3.02 rated current", "F3.03 rated speed", "F3.04 rated frequency", | 1            | 0                   | ×      |

| Parameter Code                             | Parameter name                                     | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                       | Minimum Unit | Factory value       | Change |
|--------------------------------------------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|
|                                            |                                                    | <p>“F3.05 rated voltage”, and “F3.11 motor poles” correctly.</p> <p>2. Set F3.12 to 1, press the ENT key, and then press the RUN key to start parameter self-learning. In this case, the operation panel displays “STU--”.</p> <p>3. When the operation panel no longer displays “STU--”, it indicates that the parameter self-learning is completed, and the set value of F3.12 will be set to 0 automatically.</p> |              |                     |        |
| F3.13                                      | Self-learning acceleration and deceleration speeds | 0.01~600.00s<br>Set acceleration/deceleration time during self-learning no-load test.                                                                                                                                                                                                                                                                                                                                | 0.01s        | Model determination | ○      |
| F3.14                                      | Self-learning current                              | 1~100% motor rated current<br>Set the current during self-learning DC test.                                                                                                                                                                                                                                                                                                                                          | 1%           | 25%                 | ×      |
| <b>F5 group analog terminal parameters</b> |                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                      |              |                     |        |
| F5.00                                      | AI1 minimum value                                  | F5.00 set range: 0.00~F5.02                                                                                                                                                                                                                                                                                                                                                                                          | 0.01V        | 0.00V               | ○      |
| F5.01                                      | Set value corresponding to AI1 minimum value       | <p>F5.01 set range: -100.0%~100.0%</p> <p>F5.02 set range: F5.00~10.00V</p> <p>F5.03 set range: -100.0%~100.0%</p> <p>F5.04 set range: 0.00~10.00V</p> <p>F5.05 set range: 0~1000ms</p>                                                                                                                                                                                                                              | 0.1%         | 0.0%                | ○      |
| F5.02                                      | AI1 maximum value                                  | <p>F5.06 set range: 0.00~F5.08</p> <p>F5.07 set range: -100.0%~100.0%</p> <p>F5.08 set range: F5.06~10.00V</p>                                                                                                                                                                                                                                                                                                       | 0.01V        | 10.00V              | ○      |
| F5.03                                      | Set value corresponding to AI1 maximum value       | <p>F5.09 set range: -100.0%~100.0%</p> <p>F5.10 set range: 0.00~10.00V</p> <p>F5.11 set range: 0~1000ms</p> <p>1. The function code defines the relationship between the analog input voltage and the corresponding set value of the analog input.</p>                                                                                                                                                               | 0.1%         | 100.0%              | ○      |
| F5.04                                      | AI1 zero drift setting                             | When the analog input voltage exceeds the set maximum or minimum input range, it will be calculated with the maximum or minimum input.                                                                                                                                                                                                                                                                               | 0.01V        | 0.00V               | ○      |
| F5.05                                      | AI1 filter time                                    | 2. When analog input is current input, a current of 0~20mA corresponds to a voltage of 0~10V.                                                                                                                                                                                                                                                                                                                        | 1ms          | 10ms                | ○      |
| F5.06                                      | AI2 minimum value                                  | 3. In different applications, The nominal values corresponding to the analog setting 100.0% are different, please refer to the instructions of applications for details. The following legend illustrates the different settings:                                                                                                                                                                                    | 0.01V        | 0.00V               | ○      |
| F5.07                                      | Set value corresponding to AI2 minimum value       |                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.1%         | 0.0%                | ○      |

| Parameter Code | Parameter name                                | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Minimum Unit | Factory value | Change |
|----------------|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F5.08          | AI2 maximum value                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.01V        | 10.00V        | ○      |
| F5.09          | Set value corresponding to AI2 maximum value  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.1%         | 100.0%        | ○      |
| F5.10          | AI2 zero drift setting                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.01V        | 0.00V         | ○      |
| F5.11          | AI2 filter time                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1ms          | 10ms          | ○      |
|                |                                               | <p>4. Filter time of analog input: Adjust the sensitivity of the analog input. Increasing this value appropriately can enhance the anti-interference of the analog quantity, but will weaken the sensitivity of the analog input.</p> <p>5. Analog zero drift setting: Generally there will be some zero drift in the analog quantity. On some occasions with high accuracy requirements, the zero drift setting will achieve a better corresponding effect.</p> <p><b>Note: Analog AI1 supports 0~10V/0~20mA input (selected by jumper J1), and analog AI2 supports 0~10V/0~20mA input (selected by jumper J2).</b></p> |              |               |        |
| F5.12          | Reserved                                      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -            | -             | *      |
| F5.13          | Reserved                                      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -            | -             | *      |
| F5.14          | Reserved                                      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -            | -             | *      |
| F5.15          | Reserved                                      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -            | -             | *      |
| F5.16          | Reserved                                      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -            | -             | *      |
| F5.17          | Reserved                                      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | -            | -             | *      |
| F5.18          | Analog automatic zero drift adjustment        | <p>Set range: 0~1</p> <p>When set to 1, the automatic zero drift adjustment of the analog quantity must be performed. It must be ensured that there is no external analog input quantity input.</p>                                                                                                                                                                                                                                                                                                                                                                                                                      | 0            | 0             | ○      |
| F5.19          | PULSE minimum input                           | 0.00~F5.21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.01KHz      | 0.00KHz       | ○      |
| F5.20          | Correspondence setting of PULSE minimum input | -100.0%~100.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.1%         | 0.0%          | ○      |
| F5.21          | PULSE maximum input                           | F5.19~50.00KHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.01KHz      | 50.00KHz      | ○      |
| F5.22          | Correspondence setting of                     | -100.0%~100.0%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.1%         | 100.0%        | ○      |

| Parameter Code | Parameter name                                    | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Minimum Unit | Factory value | Change |
|----------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                | PULSE maximum input                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |               |        |
| F5.23          | PULSE filter time                                 | 0~1000ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1ms          | 10ms          | ○      |
| F5.24          | HDO function selection                            | 0: Running frequency (0~Maximum output frequency)<br>1: Set frequency (0~Maximum output frequency)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1            | 5             | ○      |
| F5.25          | AO1 function selection                            | 2: Output current (0~2 times rated current)<br>3: Output torque (0~2 times rated torque)<br>4: Output voltage (0~1.2 times rated voltage)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1            | 0             | ○      |
| F5.26          | AO2 function selection                            | 5: Bus voltage (0~1000V)<br>6: AI1 (0~10V/0~20mA)<br>7: AI2 (0~10V/0~20mA)<br>8: Reserved<br>9: Output power (0~2 times rated frequency)<br>10: Pulse input (0~50.00KHz)<br>11: Communication setting (0~1000)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1            | 1             | ○      |
| F5.27          | HDO output lower limit                            | F5.27 set range: 0.0~F5.29<br>F5.28 set range: 0.00~50.00KHz<br>F5.29 set range: F5.27~100.0%<br>F5.30 set range: 0.00~50.00KHz<br>F5.31 set range: 0.0~F5.33<br>F5.32 set range: 0.00~10.00V<br>F5.33 set range: F5.31~100.0%<br>F5.34 set range: 0.00~10.00V<br>F5.35 set range: 0.0~F5.37<br>F5.36 set range: 0.00~10.00V<br>F5.37 set range: F5.35~100.0%<br>F5.38 set range: 0.00~10.00V<br>1. The function code defines the corresponding relationship between the output value and the analog output. When the output value exceeds the set maximum output or minimum output range, it will be calculated with the upper limit output or lower limit output.<br>2. When the analog output is current output, 1mA current is equivalent to 0.5V voltage.<br>3. In different applications, the analog output corresponding to 100% of the output value is different. The following legend illustrates the different settings: | 0.1%         | 0.0%          | ○      |
| F5.28          | HDO output frequency corresponding to lower limit |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.01KHz      | 0.00KHz       | ○      |
| F5.29          | HDO output upper limit                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.1%         | 100.0%        | ○      |
| F5.30          | HDO output frequency corresponding to upper limit |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.01KHz      | 50.00KHz      | ○      |
| F5.31          | AO1 output lower limit                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.1%         | 0.0%          | ○      |
| F5.32          | Corresponding lower limit AO1 output voltage      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.01V        | 0.00V         | ○      |
| F5.33          | AO1 output upper limit                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.1%         | 100.0%        | ○      |
| F5.34          | Corresponding upper limit AO1 output voltage      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.01V        | 10.00V        | ○      |
| F5.35          | AO2 output lower limit                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.1%         | 0.0%          | ○      |

| Parameter Code                              | Parameter name                                          | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Minimum Unit | factory value | Change |
|---------------------------------------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F5.36                                       | Corresponding lower limit AO2 output voltage            |  <p><b>Note: AO1 supports 0~10V/0~20mA output (selected by jumper J3), and AO2 supports 0~10V/0~20mA output (selected by jumper J4).</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.01V        | 0.00V         | ○      |
| F5.37                                       | AO2 output lower limit                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.1%         | 100.0%        | ○      |
| F5.38                                       | Corresponding upper limit AO2 output voltage            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.01V        | 10.00V        | ○      |
| F5.39                                       | Reserved                                                | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | -            | -             | *      |
| F5.40                                       | Reserved                                                | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | -            | -             | *      |
| <b>F6 group digital terminal parameters</b> |                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |               |        |
| F6.00                                       | Function selection of multi-function input terminal DI1 | 0: No function<br>1: Forward running FWD (level + edge)<br>2: Reverse running REV (level + edge)<br>3: Three-wire running control Sin (level)<br>4: Forward jog (level)<br>5: Reverse jog (level)<br>6: Free stop (level)<br>7: Fault reset (edge signal)<br>8: Run pause (level)<br>9: External fault input<br>10: Frequency setting increase (UP)<br>11: Frequency setting decreases (DOWN)<br>12: Multistage speed terminal 1<br>13: Multistage speed terminal 2<br>14: Multistage speed terminal 3<br>15: Multistage speed terminal 4<br>16: Acceleration/deceleration time selection 1<br>17: Acceleration/deceleration time selection 2<br>18: PLC pause<br>19: PLC operation stop and reset<br>20: PID control pause<br>21: PID parameter switching<br>22: Counter trigger<br>23: Counter reset | 1            | 1             | ×      |

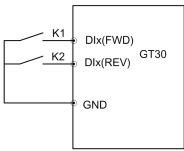
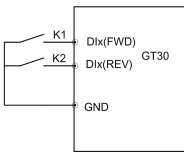
| Parameter Code | Parameter name                                          | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Minimum Unit | Factory value | Change |
|----------------|---------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F6.01          | Function selection of multi-function input terminal DI2 | 24: Length reset<br>25: Acceleration/deceleration prohibited (level)<br>26: Immediate DC braking<br>27: UP/DOWN setting cleared<br>28: Control command switched to keyboard<br>29: Control command switched to terminal<br>30: Control command switched to communication<br>31: Frequency source switched to the main frequency X<br>32: Frequency source switched to auxiliary frequency Y<br>33: High-frequency pulse count reset<br><b>Note: The function of each terminal cannot be the same. If the functions of the two terminals are set to the same, the DI ports ranked first will work first, and the latter ones will not work.</b> |              | 2             |        |
| F6.02          | Function selection of multi-function input terminal DI3 | Detailed description of terminal functions:<br>1~3: Forward running FWD, reverse running REV, three-wire running control Sin: For terminal two-wire and three-wire control signals, see function code F6.09 description for details.<br>4~5: Forward jog and reverse jog: Used for jog running control under terminal run command mode, the jog running frequency, jog interval time and jog acceleration/deceleration time are defined in F2.20~F2.23.                                                                                                                                                                                        |              | 7             |        |
| F6.03          | Function selection of multi-function input terminal DI4 | 6: Free stop: If the function of this terminal is valid, the drive immediately terminates the output, and the load stops freely according to the mechanical inertia.<br>7: Fault reset: When a fault alarm occurs in the drive, the fault can be reset through this terminal. Its function is consistent with the STOP key function of the keyboard.<br>8: Running pause: If this terminal is valid during running, the terminal will decelerate                                                                                                                                                                                               |              | 12            |        |

| Parameter Code | Parameter name                                          | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                          |  |  | Minimum Unit | actory value                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Change |  |  |  |    |    |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |
|----------------|---------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--------------------------|--|--|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--|--|--|----|----|----|----|-------------------|-----|-----|-----|-----|--------------------------|-----|-----|-----|----|--------------------------|-----|-----|----|-----|--------------------------|-----|-----|----|----|--------------------------|-----|----|-----|-----|--------------------------|-----|----|-----|----|--------------------------|-----|
| F6.04          | Function selection of multi-function input terminal DI5 | to zero frequency running according to the deceleration time. This function is invalid during jog running.<br>9: External fault input: The fault signals of external devices can be input through this terminal, which is convenient for the drive to monitor the faults of external devices. After receiving fault signals from external devices, the drive displays “E015”, which is the fault alarm of external devices.<br>10~11: Frequency setting increase UP, and frequency setting decrease DOWN: The frequency increase or decrease is realized through the control terminal, to perform remote control replacing the operation panel. Effective when the main frequency F1.02 = 2 or the auxiliary frequency F1.03 = 2, the acceleration/deceleration rate is set by F6.10.<br>12~15: Multistage speed terminals 1~4: By selecting the terminal ON/OFF combination of these functions, you can define up to 16 stages of speed running curves, the frequency of multistage instructions, the selection of acceleration/deceleration time, and the rotating direction are set in group F9. |     |                          |  |  |              | 13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |        |  |  |  |    |    |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |
| F6.05          | Reserved                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |                          |  |  |              | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |        |  |  |  |    |    |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |
| F6.06          | Reserved                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |     |                          |  |  |              | <table><tr><td>K4</td><td>K3</td><td>K2</td><td>K1</td><td>Frequency setting</td></tr><tr><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td><td>Multistage instruction 1</td></tr><tr><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td><td>Multistage instruction 2</td></tr><tr><td>OFF</td><td>OFF</td><td>ON</td><td>OFF</td><td>Multistage instruction 3</td></tr><tr><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>Multistage instruction 4</td></tr><tr><td>OFF</td><td>ON</td><td>OFF</td><td>OFF</td><td>Multistage instruction 5</td></tr><tr><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>Multistage instruction 6</td></tr><tr><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td><td>Multistage instruction 7</td></tr></table> |        |  |  |  | K4 | K3 | K2 | K1 | Frequency setting | OFF | OFF | OFF | OFF | Multistage instruction 1 | OFF | OFF | OFF | ON | Multistage instruction 2 | OFF | OFF | ON | OFF | Multistage instruction 3 | OFF | OFF | ON | ON | Multistage instruction 4 | OFF | ON | OFF | OFF | Multistage instruction 5 | OFF | ON | OFF | ON | Multistage instruction 6 | OFF |
| K4             | K3                                                      | K2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | K1  | Frequency setting        |  |  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |  |  |  |    |    |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |
| OFF            | OFF                                                     | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | OFF | Multistage instruction 1 |  |  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |  |  |  |    |    |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |
| OFF            | OFF                                                     | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ON  | Multistage instruction 2 |  |  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |  |  |  |    |    |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |
| OFF            | OFF                                                     | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | OFF | Multistage instruction 3 |  |  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |  |  |  |    |    |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |
| OFF            | OFF                                                     | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ON  | Multistage instruction 4 |  |  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |  |  |  |    |    |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |
| OFF            | ON                                                      | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | OFF | Multistage instruction 5 |  |  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |  |  |  |    |    |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |
| OFF            | ON                                                      | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | ON  | Multistage instruction 6 |  |  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |  |  |  |    |    |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |
| OFF            | ON                                                      | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | OFF | Multistage instruction 7 |  |  |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |        |  |  |  |    |    |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |

| Parameter Code | Parameter name | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                                          |     | Minimum Unit              | actory value | Change |
|----------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------------------------------------------|-----|---------------------------|--------------|--------|
| F6.07          | Reserved       | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ON  | ON                                       | ON  | Multistage instruction 8  | 0            |        |
|                |                | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OFF | OFF                                      | OFF | Multistage instruction 9  |              |        |
|                |                | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OFF | OFF                                      | ON  | Multistage instruction 10 |              |        |
|                |                | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OFF | ON                                       | OFF | Multistage instruction 11 |              |        |
|                |                | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OFF | ON                                       | ON  | Multistage instruction 12 |              |        |
|                |                | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ON  | OFF                                      | OFF | Multistage instruction 13 |              |        |
|                |                | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ON  | OFF                                      | ON  | Multistage instruction 14 |              |        |
|                |                | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ON  | ON                                       | OFF | Multistage instruction 15 |              |        |
|                |                | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ON  | ON                                       | ON  | Multistage instruction 16 |              |        |
| F6.08          | Reserved       | 16~17: Acceleration/deceleration time selection 1~2: The ON/OFF combination of acceleration/deceleration time terminals 1 and 2 can realize the selection of acceleration/deceleration time 1~4.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                          |     |                           | 0            |        |
|                |                | K2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | K1  | Acceleration/deceleration time selection |     |                           |              |        |
|                |                | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | OFF | Acceleration/deceleration time 1         |     |                           |              |        |
|                |                | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ON  | Acceleration/deceleration time 1         |     |                           |              |        |
|                |                | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | OFF | Acceleration/deceleration time 3         |     |                           |              |        |
|                |                | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ON  | Acceleration/deceleration time 4         |     |                           |              |        |
|                |                | 18: PLC pause: Used to realize the pause control of the PLC running process. When this terminal is valid, it runs at zero frequency. The PLC running is not counted.<br>19: PLC running stop and reset: PLC is prohibited from starting when the terminal is valid, deceleration and stop control is implemented for the PLC running process, and the PLC is reset to the initial state.<br>20: PID control pause: PID is temporarily invalid, and the drive maintains the current output frequency without performing PID adjustment.<br>21: PID parameter switching: When the PID parameter switching condition (F8.12) is set to 1 (via terminal switching), the F8.06~F8.08 are used for PID parameters when the terminal is invalid, and F8.09~F8.11 are used when the terminal is |     |                                          |     |                           |              |        |

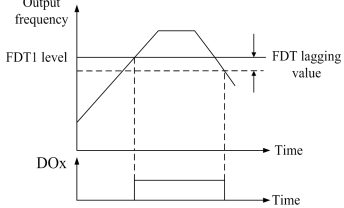
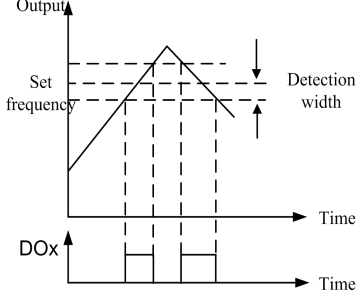


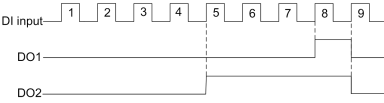
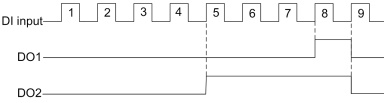
| Parameter Code | Parameter name | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Minimum Unit | Factory value | Change |
|----------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                |                | <p>valid.</p> <p>22: Counter trigger: Count pulse input port of the built-in counter, the highest pulse frequency: 200Hz, and the current count value can be stored and memorized when power is off. See function codes F6.22 and F6.23 for details.</p> <p>23: Counter reset: Clear the built-in counter of the drive and use it in conjunction with function 22 (counter trigger signal input).</p> <p>24: Length reset: When the function terminal is valid, the actual length is cleared to zero.</p> <p>25: Acceleration/deceleration prohibition: Keep the motor from being affected by any external signal (except stop command), maintain operating at the current speed. This function is invalid during jog running.</p> <p>26: Immediate DC brake: When the stop mode is decelerate and stop + DC brake, it is switched to DC brake status when the terminal is valid during stop.</p> <p>27: UP/DOWN setting is cleared: When the frequency given channel is set to terminal UP/DN, this function terminal can directly clear the frequency set by UP/DN.</p> <p>28: Control command switched to keyboard</p> <p>29: Control command switched to terminal</p> <p>30: Control command switched to communication</p> <p>If the above three terminals or two of them are closed at the same time, the priority is keyboard&gt; terminal&gt; communication.</p> <p><b>Note: When switching to terminal two-wire control, the running state changes are affected by the F2.06 parameter; when switching to other control modes, the current running state is maintained.</b></p> <p>31: Frequency source switched to the main frequency X</p> <p>32: Frequency source switched to auxiliary frequency Y</p> <p>If the above two terminals are closed at the same time, the priority is switching to the main frequency X&gt; switching to the</p> |              |               |        |

| Parameter Code | Parameter name                       | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Minimum Unit | Factory value | Change      |   |   |      |   |   |     |   |   |     |   |   |      |    |    |             |   |   |      |   |   |      |   |   |     |   |   |     |   |   |   |
|----------------|--------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|-------------|---|---|------|---|---|-----|---|---|-----|---|---|------|----|----|-------------|---|---|------|---|---|------|---|---|-----|---|---|-----|---|---|---|
|                |                                      | auxiliary frequency Y<br>33: High-frequency pulse count reset: The high-frequency pulse count value recorded by function code U0.16 is cleared.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |               |             |   |   |      |   |   |     |   |   |     |   |   |      |    |    |             |   |   |      |   |   |      |   |   |     |   |   |     |   |   |   |
| F6.09          | Forward/reverse running mode setting | <p>0: Two-wire control mode 1: This mode is the most commonly used two-wire mode. The forward and reverse of the motor are determined by the defined FWD and REV terminal commands.</p> <table><tr><td>K2</td><td>K1</td><td>Run command</td></tr><tr><td>0</td><td>0</td><td>Stop</td></tr><tr><td>1</td><td>0</td><td>REV</td></tr><tr><td>0</td><td>1</td><td>FWD</td></tr><tr><td>1</td><td>1</td><td>Stop</td></tr></table>  <p>1: Two-wire control mode 2: This mode uses the defined FWD as the running terminal and the direction is determined by the REV status that defined.</p> <table><tr><td>K2</td><td>K1</td><td>Run command</td></tr><tr><td>0</td><td>0</td><td>Stop</td></tr><tr><td>1</td><td>0</td><td>Stop</td></tr><tr><td>0</td><td>1</td><td>FWD</td></tr><tr><td>1</td><td>1</td><td>REV</td></tr></table>  <p>2: Three-wire operation control 1: This mode uses the defined Sin as the enable terminal, the run command is generated by FWD or REV, and both control the operation direction. When the drive operates, the terminal Sin must be closed. The terminal FWD or REV generates a rising edge signal to control the operation and direction of the drive. When the drive stops, the terminal Sin must be disconnected to complete the stop.</p> | K2           | K1            | Run command | 0 | 0 | Stop | 1 | 0 | REV | 0 | 1 | FWD | 1 | 1 | Stop | K2 | K1 | Run command | 0 | 0 | Stop | 1 | 0 | Stop | 0 | 1 | FWD | 1 | 1 | REV | 1 | 0 | × |
| K2             | K1                                   | Run command                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |               |             |   |   |      |   |   |     |   |   |     |   |   |      |    |    |             |   |   |      |   |   |      |   |   |     |   |   |     |   |   |   |
| 0              | 0                                    | Stop                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |              |               |             |   |   |      |   |   |     |   |   |     |   |   |      |    |    |             |   |   |      |   |   |      |   |   |     |   |   |     |   |   |   |
| 1              | 0                                    | REV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |               |             |   |   |      |   |   |     |   |   |     |   |   |      |    |    |             |   |   |      |   |   |      |   |   |     |   |   |     |   |   |   |
| 0              | 1                                    | FWD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |               |             |   |   |      |   |   |     |   |   |     |   |   |      |    |    |             |   |   |      |   |   |      |   |   |     |   |   |     |   |   |   |
| 1              | 1                                    | Stop                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |              |               |             |   |   |      |   |   |     |   |   |     |   |   |      |    |    |             |   |   |      |   |   |      |   |   |     |   |   |     |   |   |   |
| K2             | K1                                   | Run command                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |               |             |   |   |      |   |   |     |   |   |     |   |   |      |    |    |             |   |   |      |   |   |      |   |   |     |   |   |     |   |   |   |
| 0              | 0                                    | Stop                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |              |               |             |   |   |      |   |   |     |   |   |     |   |   |      |    |    |             |   |   |      |   |   |      |   |   |     |   |   |     |   |   |   |
| 1              | 0                                    | Stop                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |              |               |             |   |   |      |   |   |     |   |   |     |   |   |      |    |    |             |   |   |      |   |   |      |   |   |     |   |   |     |   |   |   |
| 0              | 1                                    | FWD                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |               |             |   |   |      |   |   |     |   |   |     |   |   |      |    |    |             |   |   |      |   |   |      |   |   |     |   |   |     |   |   |   |
| 1              | 1                                    | REV                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |               |             |   |   |      |   |   |     |   |   |     |   |   |      |    |    |             |   |   |      |   |   |      |   |   |     |   |   |     |   |   |   |

| Parameter Code | Parameter name                     | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                            | Minimum Unit | Factory value | Change |
|----------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                |                                    | <p>3: Three-wire operation control 2: This mode uses the defined Sin as the enable terminal, the run command is generated by FWD, and the direction is controlled by REV. When the drive operates, the terminal Sin must be closed. The terminal FWD generates a rising edge signal, and the drive starts operating. The status of terminal REV determines the operation direction. When the drive stops, the terminal Sin must be disconnected to complete the stop.</p> |              |               |        |
| F6.10          | UP/DN rate                         | 0.01~99.99Hz/s<br>This function code defines the change rate of the set frequency modified by the UP/DN terminal.                                                                                                                                                                                                                                                                                                                                                         | 0.01Hz/s     | 1.00Hz/s      | ○      |
| F6.11          | Open collector output terminal DO1 | 0: No output<br>1: Drive running signal (RUN)<br>2: Frequency arrival signal (FAR)                                                                                                                                                                                                                                                                                                                                                                                        | 1            | 0             | ×      |

| Parameter Code | Parameter name                                   | Parameter detailed description                                                                                                       | Minimum Unit | factory value | Change |
|----------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F6.12          | Open collector output terminal DO (HDO terminal) |                                                                                                                                      | 1            | 1             | ×      |
| F6.13          | Relay output function (TA/TB/TC)                 |                                                                                                                                      | 1            | 17            | ×      |
| F6.14          | FDT1 level                                       | F6.14 set range: 0.00~650.00Hz<br>F6.15 set range: 0.00~650.00Hz<br>F6.16 set range: 0.00~650.00Hz<br>F6.17 set range: 0.00~650.00Hz | 0.01Hz       | 50.00Hz       | ○      |

| Parameter Code | Parameter name                           | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                      | Minimum Unit | Factory value | Change |
|----------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F6.15          | FDT1 lag                                 | F6.14~F6.15 are supplementary definitions for No. 3 function FDT1 in the terminal output function, F6.16~F6.17 are supplementary definitions for No. 4 function FDT2 in the terminal output function. The usage of both is the same. In the following, F6.14~F6.15 are taken as an example:                                                                                         | 0.01Hz       | 1.00Hz        | ○      |
| F6.16          | FDT2 level                               | When the output frequency is greater than or equal to a certain set frequency (FDT1 level), an indication signal is output until the output frequency drops to a certain frequency (FDT1 level - FDT1 lag) lower than FDT1 level, as shown in the figure.                                                                                                                           | 0.01Hz       | 25.00Hz       | ○      |
| F6.17          | FDT2 lag                                 |                                                                                                                                                                                                                                                                                                    | 0.01Hz       | 1.00Hz        | ○      |
| F6.18          | Frequency arrival (FAR) detection width  | <p>0.00~650.00Hz</p> <p>This parameter is a supplementary definition for No. 2 function in the terminal output function. As shown in the figure, when the output frequency of the drive is within the positive and negative detection widths of the set frequency, a pulse signal is output.</p>  | 0.01Hz       | 2.50Hz        | ○      |
| F6.19          | HDI terminal input mode selection (DI5)  | 0: Switch input<br>1: High-frequency pulse input (see F5.19~F5.23)                                                                                                                                                                                                                                                                                                                  | 1            | 0             | ×      |
| F6.20          | HDO terminal output mode selection (DO2) | 0: Switch output<br>1: High-frequency pulse output (see F5.27~F5.30)                                                                                                                                                                                                                                                                                                                | 1            | 0             | ×      |
| F6.21          | Reserved                                 | -                                                                                                                                                                                                                                                                                                                                                                                   | -            | -             | *      |

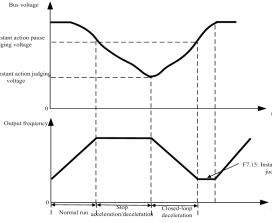
| Parameter Code | Parameter name                                                  | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Minimum Unit | Factory value | Change |
|----------------|-----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F6.22          | Counter reset value setting (set count value arrival)           | <p>F6.22 set range: F6.23~9999<br/> F6.23 set range: 0~F6.22<br/> F6.21 and F6.22 are supplementary definitions for No. 13 and No. 14 functions in the terminal output function.</p> <p>1. The set count value given refers to the number of input pulses from DIx (count trigger signal input function terminal), before the DOx (open collector output terminal) or the relay outputs an indication signal. As shown in the figure, when DIx inputs the 8th pulse, DO1 outputs an indication signal, and F6.22 = 8 in this case.</p> <p>2. The specified count value given refers to the number of input pulses from DIx, before the DOx or the relay outputs an indication signal, till the set count value is reached. As shown in the figure, when DIx inputs the 5th pulse, DO2 outputs an indication signal, till the set count value 8 is reached, in this case F6.23 = 5.</p> <p>3. When the specified count value is greater than the set count value, the specified count value is invalid.</p>  | 1            | 0             | ○      |
| F6.23          | Counter detection value setting (specified count value arrival) | <p>1. The set count value given refers to the number of input pulses from DIx (count trigger signal input function terminal), before the DOx (open collector output terminal) or the relay outputs an indication signal. As shown in the figure, when DIx inputs the 8th pulse, DO1 outputs an indication signal, and F6.22 = 8 in this case.</p> <p>2. The specified count value given refers to the number of input pulses from DIx, before the DOx or the relay outputs an indication signal, till the set count value is reached. As shown in the figure, when DIx inputs the 5th pulse, DO2 outputs an indication signal, till the set count value 8 is reached, in this case F6.23 = 5.</p> <p>3. When the specified count value is greater than the set count value, the specified count value is invalid.</p>                                                                                                                                                                                       | 1            | 0             | ○      |
| F6.24          | DI input switch polarity 1                                      | <p>00000~11111<br/> LED single digit: DI1 positive/negative logic definition<br/> LED tens digit: DI2 positive/negative logic definition<br/> LED hundreds digit: DI3 positive/negative logic definition<br/> LED thousands digit: DI4 positive/negative logic definition<br/> LED 10 thousands digit: DI5 positive/negative logic definition<br/> This function code is used to set the polarity of the input switch. When the bit is set to 1, the input switch is positive logic (valid when connected to the common port, and invalid when disconnected); when the bit is set to 0, the input switch is negative logic (invalid when connected to the common port, and valid when disconnected).</p>                                                                                                                                                                                                                                                                                                                                                                                     | 11111        | 11111         | ○      |
| F6.25          | DI input switch polarity 2                                      | <p>00000~11111<br/> LED single digit: Reserved<br/> LED tens digit: Reserved<br/> LED hundreds digit: Reserved<br/> LED thousands digit: Reserved</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 11111        | 11111         | ○      |

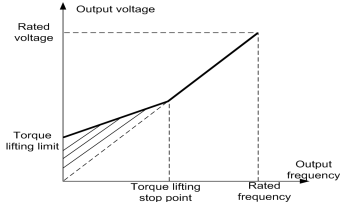
| Parameter Code                        | Parameter name              | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                               | Minimum Unit | Factory value       | Change |
|---------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|
|                                       |                             | LED 10 thousands digit: Reserved                                                                                                                                                                                                                                                                                                                                                                                                                                             |              |                     |        |
| F6.26                                 | DO output switch polarity 1 | 00000~11111<br>LED single digit: DO1 positive/negative logic definition<br>LED tens digit: DO2 positive/negative logic definition<br>LED hundreds digit: Relay positive/negative logic definition<br>LED thousands digit: Reserved<br>LED 10 thousands digit: Reserved<br>This function code is used to set the polarity of the output switch. When the bit is set to 1, the output switch is positive logic, when the bit is set to 0, the output switch is negative logic. | 11111        | 11111               | ○      |
| F6.27                                 | Reserved                    | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -            | -                   | *      |
| F6.28                                 | DI filter time              | 0~1000ms<br>Set DI1~DI5 common terminal function input filter time. In the case of large interference, you shall increase the set value of this function code to prevent misoperation.                                                                                                                                                                                                                                                                                       | 1ms          | 5ms                 | ○      |
| F6.29                                 | DO1 output on delay         | Set range: 0.0~600.0s<br>This function code defines the delay from the status change of the switch output terminal and the relay to the output change.                                                                                                                                                                                                                                                                                                                       | 0.1s         | 0.0s                | ○      |
| F6.30                                 | DO1 output off delay        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.1s         | 0.0s                | ○      |
| F6.31                                 | DO2 output on delay         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.1s         | 0.0s                | ○      |
| F6.32                                 | DO2 output off delay        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.1s         | 0.0s                | ○      |
| F6.33                                 | Relay output on delay       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.1s         | 0.0s                | ○      |
| F6.34                                 | Relay output off delay      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.1s         | 0.0s                | ○      |
| F7 group advanced function parameters |                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |              |                     |        |
| F7.00                                 | Overpressure stall point    | F7.00 set range: 100.0~160.0%Udc<br>F7.01 set range: 0.000~10.000V<br>F7.02 set range: 0~1000<br>F7.03 set range: 1~1000ms<br>1. The overvoltage stall protection function detects the bus voltage during the decelerating operation of the drive and compares with the overvoltage stall point defined by F7.00 (relative to the standard bus voltage) and the overvoltage control voltage defined by F7.01 (relative to the bus                                            | 0.1% Udc     | Model determination | ○      |
| F7.01                                 | Overvoltage control voltage |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0.001        | 5.000V              | ○      |

| Parameter Code | Parameter name                     | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Minimum Unit | Factory value | Change |
|----------------|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F7.02          | Overvoltage stall gain Kp          | voltage change rate), if the bus voltage exceeds the overvoltage stall point or the bus voltage change rate exceeds the overvoltage control voltage, the drive will adjust the deceleration time to make the output frequency slow down.                                                                                                                                                                                                                                                                                                                                                               | 1            | 5             | ○      |
| F7.03          | Overvoltage stall integration time | 2. Overvoltage stall gain, and overvoltage stall integration time: Used to adjust the drive's ability to suppress overvoltage during deceleration. The larger the gain, and the longer the integration time, the stronger the ability to suppress overvoltage, and the drive's deceleration time becomes longer accordingly. So, under the premise of no overvoltage, the smaller the gain and the longer the integration time, the better the deceleration effect.<br><b>Note: When the set stall point is low, it is suggested that the user shall increase the deceleration time appropriately.</b> | 1ms          | 200ms         | ○      |
| F7.04          | Overcurrent stall level            | F7.04 set range: 80.0~230.0%<br>F7.05 set range: 0~1<br>F7.06 set range: 0~1000<br>F7.07 set range: 1~1000ms<br>1. The overcurrent stall function is to automatically limit the overcurrent stall level (F7.04) not exceeding the setting, through the real-time control of the load current, to prevent fault trips caused by current overshoot. For load occasions with large inertia or intense changes, this function is especially suitable.                                                                                                                                                      | 0.1%         | 180.0         | ○      |
| F7.05          | Overcurrent stall action selection | 2. The overcurrent stall level (F7.04) defines the current threshold of the overcurrent stall action, and its setting range is relative to the percentage of the drive rated current. When this parameter value is exceeded, the drive starts to implement the overcurrent stall protection function.                                                                                                                                                                                                                                                                                                  | 1            | 1             | ○      |
| F7.06          | Overcurrent stall gain Kp          | 3. Overcurrent stall gain, and overcurrent stall integration time: Used to adjust the drive's ability to suppress overcurrent during acceleration and deceleration. The larger the gain, and the longer the integration time, the stronger the ability to suppress overcurrent, and the drive's acceleration/deceleration time becomes longer accordingly. So, under the premise of no overcurrent, the smaller the gain and the longer the integration time, the better the effect.                                                                                                                   | 1            | 5             | ○      |
| F7.07          | Overcurrent stall integration time | 4. The overcurrent stall function is always effective under the acceleration/deceleration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1ms          | 60ms          | ○      |



| Parameter Code | Parameter name                                         | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                   | Minimum Unit | Factory value | Change |
|----------------|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                |                                                        | status. Whether the overcurrent stall function is effective during constant speed operation is determined by the overcurrent stall action selection (F7.05).<br>F7.05=0 overcurrent stall is invalid during constant speed operation;<br>F7.05=1 overcurrent stall is valid during constant speed operation.                                                                                                                     |              |               |        |
| F7.08          | Speed tracking gain Kp                                 | F7.08 set range: 0~100<br>F7.09 set range: 1~1000ms<br>F7.10 set range: 0.1~600.0s                                                                                                                                                                                                                                                                                                                                               | 1            | 10            | ○      |
| F7.09          | Speed tracking integration time                        | F7.11 set range: 1~100%<br>F7.12 set range: 1~100%<br>1. Speed tracking acceleration/deceleration: The faster the acceleration/deceleration, the faster the speed tracking, but too fast setting may cause the speed tracking result unreliable.                                                                                                                                                                                 | 1ms          | 50ms          | ○      |
| F7.10          | Speed tracking acceleration and deceleration           | 2. Speed tracking judgment threshold: When the torque current is smaller than the F7.11 judgment threshold (relative to the motor rated current) during speed tracking, the tracking is considered successful.                                                                                                                                                                                                                   | 0.1s         | 20.0s         | ○      |
| F7.11          | Speed tracking judgment threshold                      | 3. Judgment threshold for speed tracking switching completion: After speed tracking has successfully tracked the current frequency, the expected output voltage is calculated based on this frequency and the output voltage is gradually increased until the difference between the applied voltage and the expected output voltage is less than F7.12 judgment threshold, in this case, it will enter normal operation status. | 1%           | 10%           | ○      |
| F7.12          | Speed tracking switching completion judgment threshold |                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1%           | 3%            | ○      |
| F7.13          | Instant stop/nonstop function selection                | F7.13 set range: 0~1<br>F7.14 set range: 80.0~100.0%<br>F7.15 set range: 0.00~100.00s                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ○      |
| F7.14          | Instant stop action pause judgment voltage             | F7.16 set range: 70.0~100.0%<br>F7.17 set range: 0~1000<br>F7.18 set range: 1~1000ms<br>F7.19 set range: 0~300.0s                                                                                                                                                                                                                                                                                                                | 0.1%         | 90.0%         | ○      |
| F7.15          | Instant stop voltage rise judgment time                | The instant stop/nonstop function is used to determine whether the drive will automatically perform low voltage compensation when the voltage drops or instant undervoltage. Reduce the output frequency appropriately and feed back the energy through the load to maintain the drive operate without tripping.                                                                                                                 | 0.01s        | 0.50s         | ○      |
| F7.16          | Instant stop action judgment voltage                   |                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0.1%         | 80.0%         | ○      |

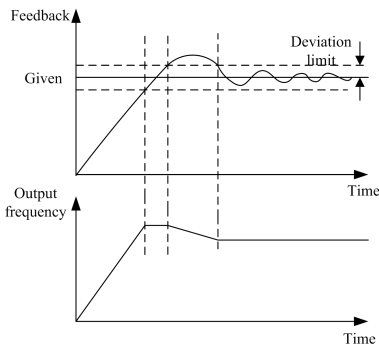
| Parameter Code | Parameter name                              | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Minimum Unit | Factory value       | Change |
|----------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|
| F7.17          | Instant stop gain Kp                        | <p>F7.13 is set to 0, no action.<br/>F7.13 is set to 1, action (deceleration). In case of a momentary outage or a sudden drop in voltage, the drive decelerates. When the bus voltage returns to normal, the drive will normally accelerate to the set frequency.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1            | 5                   | ○      |
| F7.18          | Instant stop integration time               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1ms          | 100ms               | ○      |
| F7.19          | Instant stop deceleration time setting      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.1s         | 20.0s               | ○      |
| F7.20          | Overcurrent stall speed recovery time limit | <p>Set range: 0.01~600.00s<br/>After the overcurrent stall is canceled, the drive output frequency will resume to the set frequency, but the fastest acceleration / deceleration time for recovery is limited by this function code.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.01s        | 0.20s               | ○      |
| F7.21          | Torque boost limit                          | <p>F7.21 set range: 0.1~30.0%<br/>F7.22 set range: 0.00~F3.04<br/>F7.23 set range: 0~500 (when set to 0, it is manual torque boost)<br/>F7.24 set range: 1~10000ms<br/>F7.25 set range: 0.00~F3.04<br/>F7.26 set range: 0~500<br/>F7.27 set range: 1~10000ms<br/>F7.28 set range: 0~100%</p> <p>1. The torque boost is to compensate the output voltage of the drive when the drive is running at low frequency. The torque boost can improve the low frequency characteristics in V/F control mode.<br/>2. The torque boost amount shall be set appropriately according to the load. The load can increase the boost amount, but the boost amount shall not be set too large. When the torque boost is too large, the motor will run over-excitation and the drive output current will increase. The motor heats up and the efficiency decreases.<br/>3. Torque boost cutoff point: At this frequency point, the torque boost is valid, and is invalid when the set frequency is exceeded.</p> | 0.1%         | 10.0%               | ○      |
| F7.22          | Torque boost cutoff point                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.01Hz       | 50.00Hz             | ○      |
| F7.23          | Torque boost gain 1                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1            | 20                  | ○      |
| F7.24          | Torque boost integral time 1                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1ms          | 1500ms              | ○      |
| F7.25          | Torque boost gain switching frequency point |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.01Hz       | Model determination | ○      |

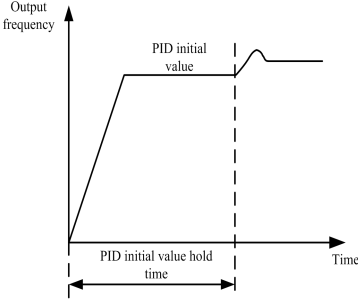
| Parameter Code                         | Parameter name                            | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Minimum Unit | Factory value       | Change |
|----------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|
| F7.26                                  | Torque boost gain 2                       | 4. Torque boost gain switching frequency point: Switching frequency point during high-speed and low-speed variable gains.<br>5. Setting of the torque boost gain and integration time: Increasing the gain can speed up the system's dynamic response, but if the gain is too large, the system is easy to generate oscillation; reducing the integration time can speed up the system's dynamic response, but if the integration is too small, the system overshoot is large and is easy to generate oscillation. Usually, the proportional gain is adjusted first to maximize under the premise that the system is not oscillating; then the integration time is adjusted to make the system have a fast dynamic response and reduce the system overshoot. | 1            | 10                  | ○      |
| F7.27                                  | Torque boost integral time 2              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1ms          | 500ms               | ○      |
| F7.28                                  | Automatic torque boost factor             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 1%           | 30%                 | ○      |
| F7.29                                  | Motor oscillation suppression methods     | F7.29 set range: 0~1<br>F7.30 set range: 0~1000<br>F7.31 set range: 0~10000ms<br>In V/F control mode, it is easy to generate current oscillation at certain frequency. In minor cases, the motor cannot run stably, in serious cases, it will cause the drive overcurrent. The oscillation suppression function is used to suppress the natural oscillation generated when the drive cooperates with the motor. If the output current changes repeatedly during constant load operation, properly adjusting the oscillation suppression parameters based on the factory parameters can eliminate oscillation and make the motor operate stably.                                                                                                              | 1            | 0                   | ○      |
| F7.30                                  | Motor oscillation suppression coefficient |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1            | Model determination | ○      |
| F7.31                                  | Motor oscillation suppression filter time |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1ms          | 100ms               | ○      |
| <b>Group F8 PID control parameters</b> |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |              |                     |        |
| F8.00                                  | PID operation control selection           | 0: PID standby (not acting)<br>1: PID standby (acting)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1            | 0                   | ×      |

| Parameter Code | Parameter name                 | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Minimum Unit         | Factory value        | Change |
|----------------|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------|
| F8.01          | Given channel selection        | <p>When the frequency given channel is selected to 8, the drive operation mode is process PID control.</p> <p>0: F8.05 digital given;<br/> 1: AI1;<br/> 2: AI2;<br/> 3: Reserved<br/> 4: PULSE setting;<br/> 5: Communication setting<br/> 6: Multistage instruction setting<br/> 7: Operation panel digital potentiometer given<br/> 8: Reserved</p> <p>This function code determines the target given channel of PID.<br/> The set target of PID is a relative value, and the set 100% corresponds to 100% of the feedback signal of the controlled system. The system always performs calculation based on relative value (0 to 100.0%).</p> | 1                    | 0                    | ×      |
| F8.02          | Feedback channel selection     | <p>This function code is used to select the PID feedback channel.</p> <p>0: AI1;<br/> 1: AI2;<br/> 2: Reserved<br/> 3: Pulse<br/> 4: Communication setting</p> <p><b>Note: The given channel and the feedback channel cannot be the same, otherwise, the PID cannot be controlled effectively.</b></p>                                                                                                                                                                                                                                                                                                                                          | 1                    | 0                    | ×      |
| F8.03          | Given channel filter           | <p>Set range: 0~1000ms</p> <p>The external given signal and feedback signal often overlap a certain interference. The channel is filtered by setting the filter time. The longer the filter time, the stronger the anti-interference ability, but the response becomes slower; the faster the filter time, the faster the response, but the anti-interference ability weakens.</p>                                                                                                                                                                                                                                                              | 1ms                  | 10ms                 | ○      |
| F8.04          | Feedback channel filter        | <p>The channel is filtered by setting the filter time. The longer the filter time, the stronger the anti-interference ability, but the response becomes slower; the faster the filter time, the faster the response, but the anti-interference ability weakens.</p>                                                                                                                                                                                                                                                                                                                                                                             | 1ms                  | 10ms                 | ○      |
| F8.05          | Given quantity digital setting | <p>Universal drive mode setting range:<br/> 0.0~100.0%</p> <p>Set range of professional drive mode for water supply :<br/> 0.0~F8.23</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.1%<br>Or<br>0.1bar | 0.0%<br>Or<br>0.0bar | ○      |
| F8.06          | Proportional gain Kp1          | <p>Set range: 0~1000</p> <p>Determine the adjustment intensity of the entire PID. The larger the proportional gain, the stronger the adjustment intensity. When there is a deviation between the feedback and the given, the output and the deviation are adjusted in proportion. If the deviation is constant, the adjustment amount</p>                                                                                                                                                                                                                                                                                                       | 1                    | 10                   | ○      |

| Parameter Code | Parameter name       | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Minimum Unit | Factory value | Change |
|----------------|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                |                      | <p>is also constant. Proportional adjustment can quickly respond to changes in feedback, but just proportional adjustment cannot achieve non-differential control. The larger the proportional gain, the faster the adjustment speed of the system, but if it is too large, oscillation will occur.</p> <p>The adjustment method is to first set the integration time to be very long and the differential time to zero. Use only proportional adjustment to make the system run, change the given quantity, and observe the stable deviation (static difference) between the feedback signal and the given quantity. If the static difference is in the direction of given quantity changes (for example, increasing the given quantity, the feedback quantity is always less than the given quantity after the system is stable), continue to increase the proportional gain, otherwise decrease the proportional gain, and repeat the above process until the static difference is relatively small.</p>                                                                                                                                   |              |               |        |
| F8.07          | Integration time Ti1 | <p>Set range: 1~10000ms</p> <p>Determine how fast the PID regulator performs integral adjustment on the deviation between the PID feedback quantity and the given quantity. The shorter the integration time, the greater the adjustment intensity.</p> <p>When there is a deviation between the feedback and the given value, the output adjustment accumulates continuously. If the deviation persists, the adjustment increases constantly, until there is no deviation. The integral regulator can effectively eliminate static difference. If the integral regulator is too strong, there will be repeated overshoot, making the system unstable until oscillation occurs. The characteristics of the oscillation caused by excessive integration are as follows: The feedback signal swings up and down at a given quantity, and the swing gradually increases until it oscillates.</p> <p>The adjustment of the integration time parameter is generally from large to small, gradually adjust the integration time, and observe the effect of the system adjustment until the stable speed of the system reaches the requirements.</p> | 1ms          | 500ms         | ○      |
| F8.08          | Differential         | Set range: 0~10000ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1ms          | 0ms           | ○      |

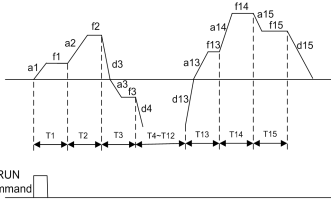
| Parameter Code | Parameter name            | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Minimum Unit | Factory value | Change |
|----------------|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                | time Td1                  | Determine how strong the PID regulator performs adjustment on the deviation change rate between the PID feedback quantity and the given quantity. The shorter the differential time, the greater the adjustment intensity.<br>When the deviation between feedback and given changes, an adjustment proportional to the deviation change rate is output. The adjustment is only related to the direction and magnitude of the deviation change, and has nothing to do with the direction and magnitude of the deviation itself. The function of differential adjustment is to adjust according to the changing trend when the feedback signal changes, thus to suppress the change of the feedback signal. Please use the differential regulator with caution, because the differential regulation is easy to amplify the interference of the system, especially the interference with a higher change frequency. |              |               |        |
| F8.09          | Proportional gain Kp2     | F8.09 set range: 0~1000<br>F8.10 set range: 1~10000ms                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 5             | ○      |
| F8.10          | Integration time Ti2      | F8.11 set range: 0~10000ms<br>The parameter functions are the same as F8.06~F8.08, when used to switch the two groups of PID parameters, the switch method is shown in F8.12 setting.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1ms          | 2000ms        | ○      |
| F8.11          | Differential time Td2     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1ms          | 0ms           | ○      |
| F8.12          | Gain switching conditions | 0: Do not switch<br>1: Switch through the DI terminal: The function of the DI terminal is set to 21 (PID parameter switch). When the terminal is invalid, select parameter group 1 (F8.06~F8.08). When the terminal is valid, select parameter group 2 (F8.09~F8.11).<br>2: Automatic switch based on the deviation: Select the parameter group 1 (F8.06~F8.08) when the absolute value of the deviation between the given quantity and the feedback quantity is less than the switch threshold (F8.13), and select the parameter group 2 (F8.09~F8.11) when greater than the switch threshold (F8.13).<br>3: Switch automatically according to PID output: When the PID output (0~maximum output frequency corresponds to 0.0~100.0%) is less than the switch threshold (F8.13), select parameter group 1 (F8.06~                                                                                               | 1            | 0             | ○      |

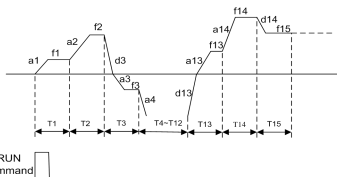
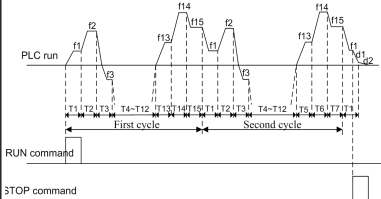
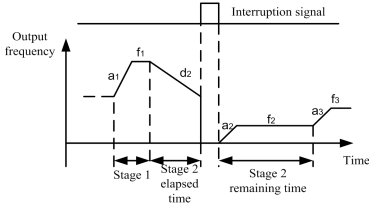
| Parameter Code | Parameter name                  | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                               | Minimum Unit | Factory value | Change |
|----------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                |                                 | F8.08), and select parameter group 2 (F8.09~F8.11) when greater than the switch threshold (F8.13)                                                                                                                                                                                                                                                                                                                                                            |              |               |        |
| F8.13          | Gain switching threshold        | Set range: 0.0~100.0%<br>The PID parameter switch threshold is valid when the gain switch condition (F8.12) is set to 2 or 3.                                                                                                                                                                                                                                                                                                                                | 0.1%         | 0.0%          | ○      |
| F8.14          | PID sampling period             | Set range: 1~6000ms<br>The sampling period T is a sampling period of the feedback quantity, and the PID regulator operates once in each sampling period. The greater the sampling period, the slower the response.                                                                                                                                                                                                                                           | 1ms          | 1ms           | ○      |
| F8.15          | Deviation limit                 | <p>Set range: 0.0~50.0%<br/>The deviation limit corresponds to a closed-loop given value. When the absolute value of the deviation between the given quantity and the feedback quantity is within this range, the PID stops adjusting, as shown in the figure. The proper setting of this function helps to consider the accuracy and stability of the system output.</p>  | 0.1%         | 0.0%          | ○      |
| F8.16          | Closed-loop regulation features | <p>0: Positive action. When the feedback signal is less than the given quantity, the output frequency of the drive rises to make the PID reach balance. Such as rewinding tension PID control.</p> <p>1: Negative action. When the feedback signal is less than the given quantity, the output frequency of the drive drops to make the PID reach balance. Such as unwinding tension PID control.</p>                                                        | 1            | 0             | ○      |

| Parameter Code | Parameter name                        | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                             | Minimum Unit | Factory value | Change |
|----------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F8.17          | PID initial value                     | F8.17 set range: 0.0~100.0%<br>F8.18 set range: 0.00~600.00s<br>1. After the drive starts, accelerate to the initial PID value (F8.17) according to the acceleration time. After running for a period of time at this initial value (F8.18), the PID starts the closed-loop adjustment operation.<br>2. This function allows the closed-loop adjustment to quickly enter the stable phase. | 0.1%         | 0.0%          | ×      |
| F8.18          | PID initial value hold time           |                                                                                                                                                                                                                                                                                                           | 0.01s        | 0.00s         | ×      |
| F8.19          | Closed-loop output polarity selection | 0: Closed-loop output is negative, run at zero-frequency<br>1: Closed-loop output is negative, reverse                                                                                                                                                                                                                                                                                     | 1            | 0             | ○      |
| F8.20          | PID reverse cutoff frequency          | Set range: 0.00~upper limit frequency<br>When the PID output frequency is negative (i.e. the drive reverses), determine the upper limit of the reverse frequency.                                                                                                                                                                                                                          | 0.01Hz       | 2.00Hz        | ×      |
| F8.21          | PID feedback loss detection value     | F8.21 set range: 0.0~100.0%<br>F8.22 set range: 0.0~200.0s (0.0s indicates no detection)                                                                                                                                                                                                                                                                                                   | 0.1%         | 10.0%         | ○      |
| F8.22          | PID feedback loss detection time      | When the feedback value is less than the feedback loss detection value and the feedback loss detection time has passed, the drive reports a closed-loop feedback loss fault (E020).                                                                                                                                                                                                        | 0.1s         | 0.0s          | ○      |
| F8.23          | Maximum sensor range                  | Set range: 0.0~200.0bar<br>The maximum range of the sensor corresponds to the maximum value of the closed-loop given value.                                                                                                                                                                                                                                                                | 0.1bar       | 10.0bar       | ○      |
| F8.24          | Water supply sleep selection          | 0: Automatic sleep<br>1: Run at lower limit frequency                                                                                                                                                                                                                                                                                                                                      | 1            | 0             | ○      |
| F8.25          | Water supply sleep detection time     | F8.25 set range: 0.0~3600.0s<br>F8.26 set range: 0.01~600.00s<br>Sleep detection pressure = (100.0%-F8.15) * set pressure value.<br>When the drive is running, it will detect                                                                                                                                                                                                              | 0.1s         | 10.0s         | ○      |



| Parameter Code | Parameter name                                    | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Minimum Unit | Factory value | Change |
|----------------|---------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F8.26          | Water supply sleep deceleration time              | whether the feedback pressure is higher than the sleep detection pressure. If the feedback pressure is higher than the sleep detection pressure, the drive starts the sleep detection. After the water supply sleep detection delay time set by F8.25, if the feedback pressure is still greater than the sleep detection pressure, it enters the sleep status, and the drive gradually reduces the output frequency according to the water supply sleep deceleration time defined by F8.26. If the feedback pressure becomes lower than the sleep detection pressure in the above process, the drive determines that the sleep detection has failed, and the drive returns to the PID adjustment status.                                | 0.01s        | 10.00s        | ○      |
| F8.27          | Water supply wake pressure tolerance              | F8.27 set range: 0.0~100.0% (100.0% is the set pressure value)<br>F8.28 set range: 0.0~3600.0s<br>1. Water supply wake-up pressure = (100.0%-F8.27) * set pressure value.<br>2. When the drive enters the sleep status, if the feedback pressure is lower than the water supply wake-up pressure, the drive starts wake-up detection. After the water supply wake-up detection time set by F8.28, if the feedback pressure is still lower than the wake-up pressure, the wake-up is successful and the drive returns to the PID adjustment status, otherwise the wake-up fails. Setting the wake-up pressure too high may cause the drive to start and stop frequently. Setting it too low may cause insufficient water supply pressure. | 0.1%         | 10.0%         | ○      |
| F8.28          | Water supply wake detection time                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0.1s         | 2.0s          | ○      |
| F8.29          | Water pressure overpressure alarm detection value | Set range: 0.0~100.0% (Do not test when set to 0, 100.0% is the maximum range of pressure sensor)<br>When the feedback pressure is greater than or equal to this set value, and after the F8.31 pressure abnormal alarm detection time, a water pipe overpressure indication is output (the terminal outputs No. 24 function).                                                                                                                                                                                                                                                                                                                                                                                                           | 0.1%         | 90.0%         | ○      |
| F8.30          | Water pressure undervoltage alarm detection value | Set range: 0.0~100.0% (Do not test when set to 0, 100.0% is the maximum range of pressure sensor)<br>When the feedback pressure is less than or equal to this set value, and after the F8.31                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.1%         | 0.0%          | ○      |

| Parameter Code                                      | Parameter name                               | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Minimum Unit | Factory value | Change |
|-----------------------------------------------------|----------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                                                     |                                              | pressure abnormal alarm detection time, a water pipe underpressure indication is output (the terminal outputs No. 25 function).                                                                                                                                                                                                                                                                                                                                                                                                       |              |               |        |
| F8.31                                               | Water pressure abnormal alarm detection time | Set range: 0.0~3600.0s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.1s         | 50.0s         | ○      |
| F8.32                                               | Water shortage alarm set value               | F8.32 set range: 0.0~100.0% (100.0% is the set pressure value)<br>F8.33 set range: 0.0~3600.0s                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.1%         | 20.0%         | ○      |
| F8.33                                               | Water shortage alarm detection time          | F8.34 set range: 0~10000min (0min indicate there's no water shortage restart function)                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.1s         | 20.0s         | ○      |
| F8.34                                               | Water shortage restart wait time             | When the output frequency reaches the upper limit, the feedback pressure is still less than or equal to F8.32 water shortage set value and after F8.33 water shortage alarm detection time, a water pipe water shortage indication (the terminal outputs No. 26 function) will be output and the E023 water shortage fault will be reported. When the E023 water shortage fault occurs, without resetting the fault manually, it will automatically reset and restart the operation after the F8.34 water shortage restart wait time. | 1min         | 0min          | ○      |
| F8.35                                               | Water supply dormancy detection time         | Set range:0~3600.0s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.1s         | 10.0s         | ○      |
| <b>Group F9 multistage speed control parameters</b> |                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |              |               |        |
| F9.00                                               | Simple PLC run mode selection                | <p>LED single digit: PLC run mode</p> <p>0: No action</p> <p>1: Stop after a single cycle: The drive will stop automatically after completing one cycle. You need to give a run command again to start.</p>  <p>2: Keep the final value after a single cycle: The drive will automatically keep the operation frequency and direction of the last stage after completing one cycle.</p>                                                            | 1111         | 0000          | ×      |

| Parameter Code | Parameter name | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Minimum Unit | actory value | Change |
|----------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------|
|                |                |  <p>3: Continuous cycle: The drive will automatically start the next cycle after completing one cycle, till there's a stop command.</p>  <p>4: DI selection operation: Determine the current operation stage by selecting the ON/OFF combination of input terminal functions 12~15. For the combination method, please refer to No. 12~15 function description of group F6 multifunctional input terminals.</p> <p>LED tens digit: Start mode</p> <p>0: Restart from the first stage: Stop during operation (caused by stop command, fault or power failure), and start from the first stage after restart.</p> <p>1: Continue operation from the stage of interruption: Stop during operation (caused by stop command or fault), the drive automatically records the run time of the current stage, and automatically enters this stage after restarting, and continues the operation in the remaining time at the frequency defined by this stage.</p>  <p>LED hundreds digit: Stage time unit selection</p> <p>0: Second</p> <p>1: Minute</p> |              |              |        |

| Parameter Code | Parameter name                   | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Minimum Unit | Factory value | Change |
|----------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                |                                  | LED thousands digit: Store at power failure<br>0: Do not store at power failure<br>1: Stage at power failure storage interruption                                                                                                                                                                                                                                                                                                                                                                                                       |              |               |        |
| F9.01          | Running stages                   | Set range: 1~16<br>Number of stages in a single PLC cycle.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1            | 16            | ○      |
| F9.02          | Multistage instruction 1         | Lower limit frequency~upper limit frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.01Hz       | 20.00Hz       | ○      |
| F9.03          | Stage 1 instruction setting      | LED single digit:<br>0: Multistage instruction 1 (F9.02)<br>1: AI1<br>2: AI2<br>3: Pulse frequency<br>4: Communication<br>5: Operation panel digital potentiometer given<br>6: Reserved<br>LED tens digit:<br>0: Acceleration/deceleration time 1<br>1: Acceleration/deceleration time 2<br>2: Acceleration/deceleration time 3<br>3: Acceleration/deceleration time 4<br>LED hundreds digit:<br>0: Forward running<br>1: Reverse running<br><b>Note: Only the LED single digit frequency source of stage 1 instruction can be set.</b> | 111          | 000           | ○      |
| F9.04          | Stage 1 instruction running time | Set range: 0.1~6000.0<br><b>Note: For the time unit selection, see F9.00 hundreds digit setting.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.1          | 10.0          | ○      |
| F9.05          | Multistage instruction 2         | Stage X instruction (F9.05, F9.08, F9.11, F9.14, F9.17, F9.20, F9.23, F9.26, F9.29, F9.32, F9.35, F9.38, F9.41, F9.44, and F9.47) setting range:                                                                                                                                                                                                                                                                                                                                                                                        | 0.01Hz       | 20.00Hz       | ○      |
| F9.06          | Stage 2 instruction setting      | Lower limit frequency~upper limit frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 111          | 000           | ○      |
| F9.07          | Stage 2 instruction running time | Stage X instruction (F9.06, F9.09, F9.12, F9.15, F9.18, F9.21, F9.24, F9.27, F9.30, F9.33, F9.36, F9.39, F9.42, F9.45, and F9.48) setting range:                                                                                                                                                                                                                                                                                                                                                                                        | 0.1          | 10.0          | ○      |
| F9.08          | Multistage instruction 3         | LED single digit:<br>0: Multistage instruction x<br>1: Reserved                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.01Hz       | 20.00Hz       | ○      |
| F9.09          | Stage 3 instruction setting      | LED tens digit:<br>0: Acceleration/deceleration time 1<br>1: Acceleration/deceleration time 2<br>2: Acceleration/deceleration time 3<br>3: Acceleration/deceleration time 4                                                                                                                                                                                                                                                                                                                                                             | 111          | 000           | ○      |
| F9.10          | Stage 3 instruction running time |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.1          | 10.0          | ○      |
| F9.11          | Multistage                       | LED hundreds digit:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.01Hz       | 20.00Hz       | ○      |

| Parameter Code | Parameter name                   | Parameter detailed description                                                                                                                                                                                                                          | Minimum Unit | Factory value | Change |
|----------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                | instruction 4                    | 0: Forward running<br>1: Reverse running                                                                                                                                                                                                                |              |               |        |
| F9.12          | Stage 4 instruction setting      | Stage X instruction running time (F9.07, F9.10, F9.13, F9.16, F9.19, F9.22, F9.25, F9.28, F9.31, F9.34, F9.37, F9.40, F9.43, F9.46, and F9.49) setting range: 0.1~6000.0<br><b>Note: For the time unit selection, see F9.00 hundreds digit setting.</b> | 111          | 000           | ○      |
| F9.13          | Stage 4 instruction running time |                                                                                                                                                                                                                                                         | 0.1          | 10.0          | ○      |
| F9.14          | Multistage instruction 5         |                                                                                                                                                                                                                                                         | 0.01Hz       | 20.00Hz       | ○      |
| F9.15          | Stage 5 instruction setting      |                                                                                                                                                                                                                                                         | 111          | 000           | ○      |
| F9.16          | Stage 5 instruction running time |                                                                                                                                                                                                                                                         | 0.1          | 10.0          | ○      |
| F9.17          | Multistage instruction 6         |                                                                                                                                                                                                                                                         | 0.01Hz       | 20.00Hz       | ○      |
| F9.18          | Stage 6 instruction setting      |                                                                                                                                                                                                                                                         | 111          | 000           | ○      |
| F9.19          | Stage 6 instruction running time |                                                                                                                                                                                                                                                         | 0.1          | 10.0          | ○      |
| F9.20          | Multistage instruction 7         |                                                                                                                                                                                                                                                         | 0.01Hz       | 20.00Hz       | ○      |
| F9.21          | Stage 7 instruction setting      |                                                                                                                                                                                                                                                         | 111          | 000           | ○      |
| F9.22          | Stage 7 instruction running time |                                                                                                                                                                                                                                                         | 0.1          | 10.0          | ○      |
| F9.23          | Multistage instruction 8         |                                                                                                                                                                                                                                                         | 0.01Hz       | 20.00Hz       | ○      |
| F9.24          | Stage 8 instruction setting      |                                                                                                                                                                                                                                                         | 111          | 000           | ○      |
| F9.25          | Stage 8 instruction running time |                                                                                                                                                                                                                                                         | 0.1          | 10.0          | ○      |
| F9.26          | Multistage instruction 9         |                                                                                                                                                                                                                                                         | 0.01Hz       | 20.00Hz       | ○      |
| F9.27          | Stage 9 instruction setting      |                                                                                                                                                                                                                                                         | 111          | 000           | ○      |
| F9.28          | Stage 9 instruction running time |                                                                                                                                                                                                                                                         | 0.1          | 10.0          | ○      |

| Parameter Code | Parameter name                    | Parameter detailed description | Minimum Unit | factory value | Change |
|----------------|-----------------------------------|--------------------------------|--------------|---------------|--------|
| F9.29          | Multistage instruction 10         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.30          | Stage 10 instruction setting      |                                | 111          | 000           | ○      |
| F9.31          | Stage 10 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.32          | Multistage instruction 11         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.33          | Stage 11 instruction setting      |                                | 111          | 000           | ○      |
| F9.34          | Stage 11 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.35          | Multistage instruction 12         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.36          | Stage 12 instruction setting      |                                | 111          | 000           | ○      |
| F9.37          | Stage 12 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.38          | Multistage instruction 13         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.39          | Stage 13 instruction setting      |                                | 111          | 000           | ○      |
| F9.40          | Stage 13 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.41          | Multistage instruction 14         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.42          | Stage 14 instruction setting      |                                | 111          | 000           | ○      |
| F9.43          | Stage 14 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.44          | Multistage instruction 15         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.45          | Stage 15 instruction setting      |                                | 111          | 000           | ○      |
| F9.46          | Stage 15 instruction running time |                                | 0.1          | 10.0          | ○      |

| Parameter Code                          | Parameter name                                      | Parameter detailed description                                                                                                                                                                                                                                                                                 | Minimum Unit | Factory value       | Change |
|-----------------------------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|
| F9.47                                   | Multistage instruction 16                           |                                                                                                                                                                                                                                                                                                                | 0.01Hz       | 20.00Hz             | ○      |
| F9.48                                   | Stage 16 instruction setting                        |                                                                                                                                                                                                                                                                                                                | 111          | 000                 | ○      |
| F9.49                                   | Stage 16 instruction running time                   |                                                                                                                                                                                                                                                                                                                | 0.1          | 10.0                | ○      |
| Group FA protection function parameters |                                                     |                                                                                                                                                                                                                                                                                                                |              |                     |        |
| FA.00                                   | DC bus undervoltage protection point                | Set range: 50~999V<br>This function code specifies the allowed lower limit voltage of the DC bus when the drive works normally.<br><b>Note: When the grid voltage is too low, the output torque of the motor will decrease. So, the drive needs to be derated for long-term operation at low grid voltage.</b> | 1V           | Model determination | ×      |
| FA.01                                   | Undervoltage fault action selection                 | 0: During running, the voltage is lower than the undervoltage point, and an undervoltage fault E007 is reported.<br>1: During running, the voltage is lower than the undervoltage point, and P.off is reported.                                                                                                | 1            | 0                   | ×      |
| FA.02                                   | Motor overload protection action selection          | 0: No action<br>1: Action, E008 fault is reported when the motor is overloaded.                                                                                                                                                                                                                                | 1            | 1                   | ×      |
| FA.03                                   | Reserved                                            | -                                                                                                                                                                                                                                                                                                              | -            | -                   | *      |
| FA.04                                   | Reserved                                            | -                                                                                                                                                                                                                                                                                                              | -            | -                   | *      |
| FA.05                                   | Input phase loss protection action selection        | 0: No action<br>1: Action, E011 fault is reported during input phase loss                                                                                                                                                                                                                                      | 1            | 0                   | ×      |
| FA.06                                   | Output phase loss protection delay time             | Set range: 0.0~6000.0S (0.0s indicates no detection for output phase loss)                                                                                                                                                                                                                                     | 0.1s         | 6.0s                | ×      |
| FA.07                                   | 485 communication fault protection action selection | 0: No action<br>1: Action, E016 fault is reported when 485 communication is abnormal.                                                                                                                                                                                                                          | 1            | 0                   | ×      |

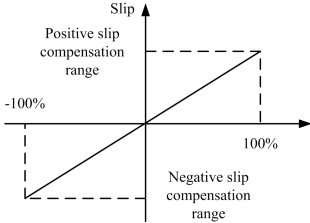
| Parameter Code                                  | Parameter name                                      | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Minimum Unit | Factory value | Change |
|-------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| FA.08                                           | Number of automatic resets                          | FA.08 set range: 0~100 (0 indicates no automatic reset function)<br>FA.09 set range: 0.1~1000.0s<br>1. Number of automatic resets: When the drive selects automatic reset for faults, it is used to set the number of automatic resets. When the number of continuous resets exceeds this value, the drive will report a fault and stop and will not reset automatically.                                                                                                                                                                                                                                                                                                                                                                                                                                          | 1            | 0             | ×      |
| FA.09                                           | Automatic reset interval time                       | 2. Fault automatic reset interval time: Select the time interval from the fault occurrence to the automatic reset action.<br>3. Within 2 minutes after the drive operates, if there is no fault, it will automatically clear the number of resets, and accumulate the number of resets from the beginning.<br>4. When the number of automatic resets is set to 0, it indicates that automatic reset is prohibited and fault protection is performed immediately.<br><b>Note: The drive module protection (E010) and external equipment failure (E015) have no automatic reset function. After the automatic reset is completed, it will automatically start and run at the speed tracking. Use the automatic fault reset function with caution, otherwise, it may cause personal injuries and property losses.</b> | 0.1s         | 5.0s          | ×      |
| FA.10                                           | Wave-by-wave current limiting points setting        | FA.10 set range: 0.0~250.0% (0.0% indicates there is no wave-by-wave current limiting function)<br>FA.11 set range: 0~60000 ms (0 ms indicates no fault alarm function of wave-by-wave current limiting)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.1%         | 0.0%          | ×      |
| FA.11                                           | Wave-by-wave current limiting time                  | When the output current is greater than the wave-by-wave current limiting point set by FA.10, perform wave-by-wave current limiting, and when the current limiting time exceeds the wave-by-wave current limiting time set by FA.11, report the E029 fault.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1ms          | 0ms           | ×      |
| FA.12                                           | Delay time of abnormal protection of buffer circuit | Set range: 0.0~20.0s (0.0s indicates no detection function for abnormal buffer circuit)<br>In the running state, if the buffer circuit is abnormal and exceeds the delay time set by FA.12, report the E026 fault.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0.1s         | 1.0s          | ○      |
| <b>Group Fb serial communication parameters</b> |                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |               |        |
| Fb.00                                           | Local address                                       | Set range: 0~247                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1            | 1             | ×      |

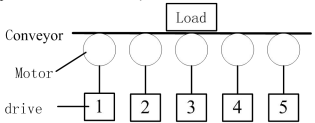
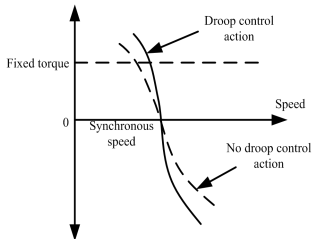


| Parameter Code | Parameter name                       | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Minimum Unit | Factory value | Change |
|----------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                |                                      | The local address is unique in the communication network, which is the basis for the point-to-point communication between the host computer and the drive.<br><b>Note: 0 is the broadcast address</b>                                                                                                                                                                                                                                                                                                                                                               |              |               |        |
| Fb.01          | Communication configuration          | LED single digit: Baud rate selection<br>0: 1200BPS<br>1: 2400BPS<br>2: 4800BPS<br>3: 9600BPS<br>4: 19200BPS<br>5: 38400BPS<br>LED tens digit: Data format<br>0: 1-8-2-N format, RTU<br>1: 1-8-1-E format, RTU<br>2: 1-8-1-O format, RTU<br>3: 1-7-2-N format, ASCII<br>4: 1-7-1-E format, ASCII<br>5: 1-7-1-O format, ASCII<br>6: 1-8-1-N format, RTU<br><b>Note: The baud rate set by the upper computer and the drive must be consistent, otherwise, the communication cannot be carried out. The greater the baud rate, the faster the communication speed.</b> | 11           | 03            | ×      |
| Fb.02          | Reserved                             | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | -            | -             | *      |
| Fb.03          | Local response delay                 | Set range: 0~1000ms<br>The local response delay refers to the interval between the end of drive data receiving and the sending of response data to the host computer. If the response delay is less than the system processing time, the response delay is based on the system processing time. If the response delay is greater than the system processing time, after the system has processed the data, it must wait until the response delay time is reached before sending data to the host computer.                                                          | 1ms          | 5ms           | ×      |
| Fb.04          | Communication timeout detection time | Set range: 0.0~100.0s<br>If the communication timeout fault time is set to 0, this function is invalid. If the time interval between two communications exceeds the communication timeout fault time, the system reports a communication fault E016, and the communication condition can be monitored. Usually, it is set to invalid. If this parameter is set in a continuous communication system, the communication condition can be monitored.                                                                                                                  | 0.1s         | 0.0s          | ×      |

| Parameter Code | Parameter name                | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Minimum Unit | Factory value | Change |
|----------------|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| Fb.05          | Host send selection           | <p>LED single digit: Current host running status<br/>0: Invalid<br/>1: Valid</p> <p>LED tens digit: Current host running frequency<br/>0: Invalid<br/>1: Valid</p> <p>1. When the drive is set as the communication master (Fb.00 is set to 0), it can send data to the slave. In this case, the master drive sends a broadcast command, and all slaves will receive the command sent by the master.</p> <p>2. The master can send up to 2 frames of data in a polling manner. When set to invalid, no data is sent.</p> <p><b>Note: Only RTU communication mode supports host sending.</b></p> | 11           | 11            | ×      |
| Fb.06          | Network port enable           | 0: Disable<br>1: Enable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1            | 0             | ○      |
| Fb.07          | Network protocol              | 0: Modbus TCP protocol<br>1: Easy UDP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1            | 0             | ○      |
| Fb.08          | Reserved                      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | -            | -             | *      |
| Fb.09          | Segment 1 of local IP address | <p>Set range: 0~255</p> <p>Set the local IP address of Ethernet communication.</p> <p>Format of local IP address:<br/>Fb.09.Fb.10.Fb.11.Fb.12.<br/>Example: The local IP address is 192.168.1.30.</p>                                                                                                                                                                                                                                                                                                                                                                                           | 1            | 192           | ○      |
| Fb.10          | Segment 2 of local IP address |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1            | 168           | ○      |
| Fb.11          | Segment 3 of local IP address |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1            | 1             | ○      |
| Fb.12          | Segment 4 of local IP address |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1            | 30            | ○      |
| Fb.13          | Segment 1 of subnet mask      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1            | 255           | ○      |
| Fb.14          | Segment 2 of subnet mask      | <p>Set the subnet mask of Ethernet communication.</p> <p>Format of subnet mask:<br/>Fb.13.Fb.14.Fb.15.Fb.16.<br/>Example: The subnet mask is 255.255.255.0.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1            | 255           | ○      |
| Fb.15          | Segment 3 of subnet mask      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1            | 255           | ○      |
| Fb.16          | Segment 4 of subnet mask      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1            | 0             | ○      |
| Fb.17          | Gateway segment 1             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1            | 192           | ○      |
| Fb.18          | Gateway segment 2             | Gateway format:<br>Fb.17.Fb.18.Fb.19.Fb.20.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1            | 168           | ○      |

| Parameter Code                                | Parameter name                        | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Minimum Unit | Factory value       | Change |
|-----------------------------------------------|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|
| Fb.19                                         | Gateway segment 3                     | Example: The gateway is 192.168.1.1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1            | 1                   | ○      |
| Fb.20                                         | Gateway segment 4                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1            | 1                   | ○      |
| Fb.21                                         | Reserved                              | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -            | -                   | *      |
| Fb.22                                         | Reserved                              | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -            | -                   | *      |
| Fb.23                                         | Reserved                              | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -            | -                   | *      |
| Fb.24                                         | Reserved                              | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | -            | -                   | *      |
| <b>Group FC auxiliary function parameters</b> |                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |                     |        |
| FC.00                                         | Energy consumption braking threshold  | FC.00 set range: 350~800V<br>FC.01 set range: 0~100%<br>1. Energy consumption braking function. If the drive bus voltage is higher than the energy consumption braking threshold, the built-in braking unit will act. In this case, if a braking resistor is connected, the pumping voltage energy at the drive internal current side will be released through the braking resistor to make the bus voltage drop.                                                                                                                                                                       | 1V           | Model determination | ×      |
| FC.01                                         | Energy consumption braking duty cycle | 2. The energy consumption braking duty cycle is used to adjust the duty cycle of the braking unit. If the braking utilization rate is high, the braking unit action duty cycle is high and the braking effect is strong, but the drive bus voltage fluctuates greatly during the braking process.<br><b>Note: The setting of this function shall consider the resistance and power of the braking resistor. Be sure to set the function parameters correctly according to the actual use.</b>                                                                                           | 1%           | 50%                 | ×      |
| FC.02                                         | AVR function                          | 0: No action<br>1: Act always<br>2: Do not act only during deceleration<br>When the input voltage deviates from the rated value, this function can keep the output voltage constant, so generally the AVR shall operate, especially when the input voltage is higher than the rated value.<br><b>Note: When decelerating and stopping, the AVR does not act, the deceleration time is short, but the running current is slightly larger; when the AVR acts all the time, the motor decelerates smoothly and the running current is small, but the deceleration time becomes longer.</b> | 1            | 2                   | ×      |
| FC.03                                         | Automatic energy-saving operation     | 0: No action<br>1: Action<br>During the no-load or light-load operation,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1            | 0                   | ○      |

| Parameter Code | Parameter name                      | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Minimum Unit | Factory value | Change |
|----------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                |                                     | the motor detects the load current and adjusts the output voltage appropriately to achieve the purpose of energy saving.                                                                                                                                                                                                                                                                                                                                                                                                             |              |               |        |
| FC.04          | Slip compensation gain              | FC.04 set range: 0~1000 (0 indicates no compensation)<br>FC.05 set range: 0.1~20.0ms<br>1. The change of the motor load torque will affect the motor slip and cause the motor speed to change. Through slip compensation, the output frequency of the drive is automatically adjusted according to the load torque of the motor, which can reduce the speed change of the motor caused by load changes, as shown in the figure.                                                                                                      | 1            | 0             | ○      |
| FC.05          | Slip compensation filter time       |  <p>2. Electric status: When the actual speed is lower than the given speed, gradually increase the compensation gain (FC.04).<br/>3. Generation status: When the actual speed is higher than the given speed, gradually increase the compensation gain (FC.04).<br/>4. The filter time constant of slip compensation. The shorter the filter time, the faster the response, but too short will easily cause oscillation and speed instability.</p> | 0.1ms        | 10.0ms        | ○      |
| FC.06          | Cooling fan control                 | 0: Run in automatic mode<br>Note: The fan is turned off at least 3 minutes after stop and when the temperature is lower than 40 degrees.<br>1: The fan keeps rotating during power-on                                                                                                                                                                                                                                                                                                                                                | 1            | 0             | ×      |
| FC.07          | Acceleration/deceleration time unit | 0: Second<br>1: Minute                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 1            | 0             | ×      |

| Parameter Code | Parameter name               | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Minimum Unit | Factory value | Change |
|----------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| FC.08          | Droop control frequency      | <p>Set range: 0.00~10.00Hz</p> <p>1. The droop control is suitable for the occasions where multiple drives drive the same load. By setting this function, multiple drives can reach a uniform distribution of power when driving the same load. Transmission gears are shown in the following figure (5 drives drive the conveyors of 5 motors)</p>  <p>2. When the load of a certain drive is heavy, the drive will automatically reduce the output frequency appropriately according to the parameters set by this function to unload part of the load. This value can be adjusted gradually from small to large during debugging. The relationship between load and output frequency is shown in the following figure:</p>  | 0.01Hz       | 0.00Hz        | ○      |
| FC.09          | Deceleration factor          | <p>Set range: 50.0%~180.0%</p> <p>For the coefficient of voltage-frequency ratio during deceleration, increase the voltage-frequency ratio during deceleration, in this case, the output voltage increases and the deceleration will be faster, which is good for quick stop without reporting overvoltage.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0            | 100.0%        | ○      |
| FC.10          | Zero frequency arrival range | <p>Set range: 0.00~10.00Hz</p> <p>When the output frequency is less than or equal to the set value of this function code, an indication signal is output (the terminal outputs No. 10 function).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0.01Hz       | 0.00Hz        | ○      |

| Parameter Code | Parameter name                                     | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Minimum Unit | Factory value       | Change |
|----------------|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|
| FC.11          | Set length                                         | FC.11 set range: 0~65535m (0 indicates the fixed-length stop function is invalid)<br>FC.12 set range: 0.001~10.000m<br>FC.13 set range: 1~9999<br>1. This group of functions is used to realize the fixed-length stop function.<br>2. The drive inputs counting pulses from DI5 (F6.19 needs to be set to 1), and obtains the actual length according to the number of pulses per revolution of the speed measuring shaft (FC.13) and the shaft circumference (FC.12).<br>3. Actual length = Number of counting pulses/number of pulses per revolution × circumference of the measuring shaft.<br>4. When the actual length (U0.15) ≥ the set length (FC.11), the drive will automatically send a stop command to stop. You need to clear the actual length before running again, otherwise it will not start. | 1m           | 0m                  | ○      |
| FC.12          | Measuring shaft circumference                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 0.001m       | 0.100m              | ○      |
| FC.13          | Pulse per revolution                               | <b>Note: The multifunctional input terminal can be used to clear the actual length (DIx is defined to No. 24 function), the normal counting and the actual length calculation can be performed only after the terminal is disconnected. The actual length is U0.15, and it is automatically stored during power failure.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1            | 1                   | ○      |
| FC.14          | Dead zone compensation coefficient                 | Set range: 0~20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1            | Model determination | ×      |
| FC.15          | STOP key stop function selection                   | 0: Only valid for keyboard control<br>1: Valid for all control modes (invalid in two-wire control mode)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1            | 0                   | ○      |
| FC.16          | Digital potentiometer power failure save selection | 0: The digital potentiometer frequency is not saved during power failure, and will start from 0.00Hz after power-on.<br>1: The digital potentiometer frequency is saved during power failure, and will start from the power failure frequency after power-on.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1            | 1                   | ○      |
| FC.17          | The first shortcut parameter display selection     | Set range: 0~29<br>When set to 0~28, it corresponds to group U0 parameter number; when set to 29, it displays the operation frequency during fixed operation, and displays the instruction frequency during standby; when set to 4, it displays the operation speed during fixed operation, and displays the instruction speed during standby; when set to 5, it displays the operating linear speed during fixed                                                                                                                                                                                                                                                                                                                                                                                              | 1            | 29                  | ○      |

| Parameter Code | Parameter name              | Parameter detailed description                                                                                                                                                                                                                                                                                                                                        | Minimum Unit | Factory value | Change |
|----------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                |                             | operation, and displays the instruction linear speed during standby.                                                                                                                                                                                                                                                                                                  |              |               |        |
| FC.18          | Speed display factor        | Set range: 0.01~100.00<br>This function code is used to correct the display error of the rotation speed and has no effect on the actual rotation speed.<br><b>Note: Speed = 120*frequency*FC.18/number of motor poles (F3.11)</b>                                                                                                                                     | 0.01         | 1.00          | ○      |
| FC.19          | Linear speed display factor | Set range: 0.01~100.00<br>This function code is used to correct the display error of the linear speed and has no effect on the actual linear speed.<br><b>Note: Linear speed = speed*FC.19</b>                                                                                                                                                                        | 0.01         | 1.00          | ○      |
| FC.20          | Frequency linkage selection | 0: No linkage ratio<br>1: FC.21 is the coefficient linkage instruction frequency and acceleration/deceleration 1<br>2: FC.21 is used as the factor linkage instruction frequency<br>3: All voltage value is the coefficient linkage instruction frequency and acceleration/deceleration 1<br>4: All voltage value is used as the factor linkage instruction frequency | 1            | 0             | ○      |
| FC.21          | Linkage ratio factor        | Set range: 0.000~10.000                                                                                                                                                                                                                                                                                                                                               | 0.001        | 1.000         | ○      |
| FC.22          | PI deviation limit          | 0.0~100.0%                                                                                                                                                                                                                                                                                                                                                            | 0.1%         | 0.0%          |        |
| FC.23          | PI output upper frequency   | The PI output target frequency shall not be greater than this upper limit frequency                                                                                                                                                                                                                                                                                   | 0.01Hz       | 50Hz          |        |
| FC.24          | PI output lower frequency   | The PI output target frequency shall not be less than this lower limit frequency                                                                                                                                                                                                                                                                                      | 0.01Hz       | 50Hz          |        |
| FC.25          | KP1                         | KP1,KP2:Proportional coefficient of target frequency.The bigger value is, the faster adjustment is.                                                                                                                                                                                                                                                                   | 1            | 300           |        |
| FC.26          | KI1                         |                                                                                                                                                                                                                                                                                                                                                                       | 1            | 300           |        |
| FC.27          | KP2                         |                                                                                                                                                                                                                                                                                                                                                                       | 1            | 100           |        |
| FC.28          | KI2                         | KI1,KI2:Integral coefficient of the target frequency<br>KP1, KI1 and KP2 ,KI2 are switched by FE-10                                                                                                                                                                                                                                                                   | 1            | 1000          |        |
| FC.29          | PI Switching point          | If the absolute value of bus voltage minus the reference value is bigger than this value, it will switch to KP2、KI2; otherwise it is KP1、KI1                                                                                                                                                                                                                          | 1v           | 30v           |        |
| FC.30          | MPPT search interval        | The shorter the time is, the faster the tracking is, but also the faster the solar voltage fluctuations                                                                                                                                                                                                                                                               | 0.1s         | 2.0s          |        |

| Parameter Code                                      | Parameter name                    | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Minimum Unit | Factory value | Change |
|-----------------------------------------------------|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| <b>Group Fd virtual terminal parameter function</b> |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |               |        |
| Fd.00                                               | VDI1 terminal function selection  | <p>Same as F6.00~F6.08 function code setting.</p> <p><b>Note: The VDI virtual terminal is an extension of the physical input terminal. The communication sends instructions to simulate the actual terminal. Each bit in the communication data represents a terminal, and the value of each bit represents the status of the corresponding terminal. For specific bit definition, please refer to the communication address 0x1206 description. The function of each terminal cannot be the same. If the functions of the two terminals are set to the same, the physical terminal will act prior to the virtual terminal in order, the DI ports ranked first will work first, and the latter ones will not work.</b></p> | 1            | 0             | ×      |
| Fd.01                                               | VDI2 terminal function selection  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×      |
| Fd.02                                               | VDI3 terminal function selection  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×      |
| Fd.03                                               | VDI4 terminal function selection  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×      |
| Fd.04                                               | VDI5 terminal function selection  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×      |
| Fd.05                                               | VDI6 terminal function selection  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×      |
| Fd.06                                               | VDI7 terminal function selection  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×      |
| Fd.07                                               | VDI8 terminal function selection  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×      |
| Fd.08                                               | VDI9 terminal function selection  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×      |
| Fd.09                                               | VDI10 terminal function selection |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×      |
| Fd.10                                               | VDO1 terminal function selection  | <p>Same as F6.11~F6.13 function code setting.</p> <p><b>Note: The VDO virtual terminal is an extension of the physical output terminal. The virtual terminal status can be read only through communication. Each bit in the communication data represents a terminal, and the value of each bit represents the status of the corresponding terminal. For specific bit definition, please refer to the communication address 0x1207 description.</b></p>                                                                                                                                                                                                                                                                    | 1            | 0             | ×      |
| Fd.11                                               | VDO2 terminal function selection  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×      |
| Fd.12                                               | VDO3 terminal function selection  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×      |
| Fd.13                                               | VDO4 terminal function selection  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×      |



| Parameter Code | Parameter name                   | Parameter detailed description             | Minimum Unit | Factory value | Change |
|----------------|----------------------------------|--------------------------------------------|--------------|---------------|--------|
|                | selection                        |                                            |              |               |        |
| Fd.14          | VDO5 terminal function selection |                                            | 1            | 0             | ×      |
| Fd.15          | VDO1 output on delay             | Same as F6.29~F6.34 function code setting. | 0.1s         | 0.0s          | ○      |
| Fd.16          | VDO2 output on delay             |                                            | 0.1s         | 0.0s          | ○      |
| Fd.17          | VDO3 output on delay             |                                            | 0.1s         | 0.0s          | ○      |
| Fd.18          | VDO4 output on delay             |                                            | 0.1s         | 0.0s          | ○      |
| Fd.19          | VDO5 output on delay             |                                            | 0.1s         | 0.0s          | ○      |

#### 4.2 Monitoring parameter group U0

| Parameter Code | Parameter name               | Parameter detailed description                                                                                                                             |
|----------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| U0.00          | Output frequency             | Displays the output frequency of the current drive                                                                                                         |
| U0.01          | Set frequency                | Displays the set frequency of the current drive                                                                                                            |
| U0.02          | Output current               | Displays the output current of the current drive                                                                                                           |
| U0.03          | Bus voltage                  | Displays the bus voltage of the current drive                                                                                                              |
| U0.04          | Running speed                | Displays the running speed of the current drive<br><b>Note: Speed = 120*frequency*speed display factor (FC.18)/number of motor poles (F3.11)</b>           |
| U0.05          | Linear running speed         | Displays the linear running speed of the current drive<br><b>Note: Linear speed = speed*linear speed display factor (FC.19)</b>                            |
| U0.06          | Output power                 | Displays the output power of the current drive                                                                                                             |
| U0.07          | Output torque                | Displays the output torque of the current drive                                                                                                            |
| U0.08          | Output voltage               | Displays the output voltage of the current drive                                                                                                           |
| U0.09          | AI1                          | Displays the actual input voltage/current of AI1 of the current drive (when the input is of current type, 1mA current corresponds to 0.5V voltage display) |
| U0.10          | AI2                          | Displays the actual input voltage of AI2 of the current drive (when the input is of current type, 1mA current corresponds to 0.5V voltage display)         |
| U0.11          | PID setting                  | Displays the PID set value of the current drive                                                                                                            |
| U0.12          | PID feedback                 | Displays the PID feedback value of the current drive                                                                                                       |
| U0.13          | Counter value                | Displays the counter value of the current drive                                                                                                            |
| U0.14          | Closed-loop pressure display | Displays the closed-loop pressure value of the current drive<br><b>Note: Closed-loop pressure = PID feedback value*pressure sensor range (F8.23)</b>       |
| U0.15          | Actual length                | Displays the actual length accumulated by the fixed length control function of the current drive                                                           |

| Parameter Code | Parameter name                   | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                |
|----------------|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| U0.16          | High-frequency pulse count value | Displays the accumulated pulse count value of the DI5 high-speed input signal of the current drive (not saved after power failure)                                                                                                                                                                                                                                                                            |
| U0.17          | Pulse frequency display          | Displays the pulse frequency of the DI5 high-speed input signal of the current drive                                                                                                                                                                                                                                                                                                                          |
| U0.18          | Drive rated power                | Displays the rated power of the drive                                                                                                                                                                                                                                                                                                                                                                         |
| U0.19          | Drive rated voltage              | Displays the rated voltage of the drive                                                                                                                                                                                                                                                                                                                                                                       |
| U0.20          | Drive rated current              | Displays the rated current of the drive                                                                                                                                                                                                                                                                                                                                                                       |
| U0.21          | Rectifier bridge temperature     | Displays the rectifier bridge temperature of the current drive<br><b>Note: This function is only available for models of 45KW and above</b>                                                                                                                                                                                                                                                                   |
| U0.22          | IGBT temperature                 | Displays the IGBT temperature of the current drive                                                                                                                                                                                                                                                                                                                                                            |
| U0.23          | DI terminal status 1             | Displays current input terminal function status (defined by bit, 0 indicates that the current terminal input function is invalid, and 1 indicates that the current terminal input function is valid):<br>LED single digit: DI1 input status<br>LED tens digit: DI2 input status<br>LED hundreds digit: DI3 input status<br>LED thousands digit: DI4 input status<br>LED ten thousands digit: DI5 input status |
| U0.24          | Reserved                         | -                                                                                                                                                                                                                                                                                                                                                                                                             |
| U0.25          | DO terminal status               | Displays current output terminal function status (defined by bit, 0 indicates that the current terminal output function is invalid, and 1 indicates that the current terminal output function is valid):<br>LED single digit: DO1 output status<br>LED tens digit: DO2 output status<br>LED hundreds digit: Relay output status<br>LED thousands digit: Reserved<br>LED 10 thousands digit: Reserved          |
| U0.26          | Reserved                         | -                                                                                                                                                                                                                                                                                                                                                                                                             |
| U0.27          | Running time accumulation        | Displays the accumulated running time of the current drive                                                                                                                                                                                                                                                                                                                                                    |
| U0.28          | Software version number          | Displays the software version number of the current drive                                                                                                                                                                                                                                                                                                                                                     |
| U0.29          | Operating state of solar pump    | 0 :Normal<br>1 :Empty water state<br>2 :Full water state<br>3 :Weak light state                                                                                                                                                                                                                                                                                                                               |

### 4.3 Fault record parameter group U1

| Parameter Code | Parameter name                   | Parameter detailed description                                                                                                                                                                                                 | Factory value | Change |
|----------------|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------|
| U1.00          | Historical fault number          | Set range: 0~9<br>According to the setting of this function code, you can view the fault record information of the last 10 times. By setting different values within U1.01~U1.06, the corresponding fault record will display. | 0             | ○      |
| U1.01          | Fault code during fault          | Fault record information at the xth fault (x is the set value of U1.00)                                                                                                                                                        | -             | *      |
| U1.02          | Bus voltage during fault         |                                                                                                                                                                                                                                | -             | *      |
| U1.03          | Output current during fault      |                                                                                                                                                                                                                                | -             | *      |
| U1.04          | Running frequency during fault   |                                                                                                                                                                                                                                | -             | *      |
| U1.05          | Running temperature during fault |                                                                                                                                                                                                                                | -             | *      |
| U1.06          | Fault occurrence time            |                                                                                                                                                                                                                                | -             | *      |

### 4.4 Fault code table

| Fault code | Fault type                               | Fault code | Fault type                                 |
|------------|------------------------------------------|------------|--------------------------------------------|
| E001       | Drive accelerated running overcurrent    | E016       | 485 communication error alarm              |
| E002       | Drive decelerated running overcurrent    | E017       | Current detection circuit fault alarm      |
| E003       | Drive constant-speed running overcurrent | E018       | Reserved                                   |
| E004       | Drive accelerated running overvoltage    | E019       | Reserved                                   |
| E005       | Drive decelerated running overvoltage    | E020       | Closed-loop feedback loss alarm            |
| E006       | Drive constant-speed running overvoltage | E021       | Water pressure overpressure alarm          |
| E007       | Undervoltage alarm during running        | E022       | Reserved                                   |
| E008       | Motor overload alarm                     | E023       | Water shortage alarm                       |
| E009       | Drive overload alarm                     | E024       | Reserved                                   |
| E010       | Drive module protection alarm            | E025       | Underload alarm                            |
| E011       | Phase loss alarm at input side           | E026       | Reserved                                   |
| E012       | Phase loss alarm at output side          | E027       | Reserved                                   |
| E013       | Drive module radiator overheat alarm     | E028       | Operation panel parameter copy error alarm |
| E014       | Rectifier module radiator overheat alarm | E029       | Wave-by-wave current limiting alarm        |
| E015       | External fault alarm                     | E099       | Reserved                                   |

# Chapter V Basic Operation Instructions

## 5.1 Start operation mode

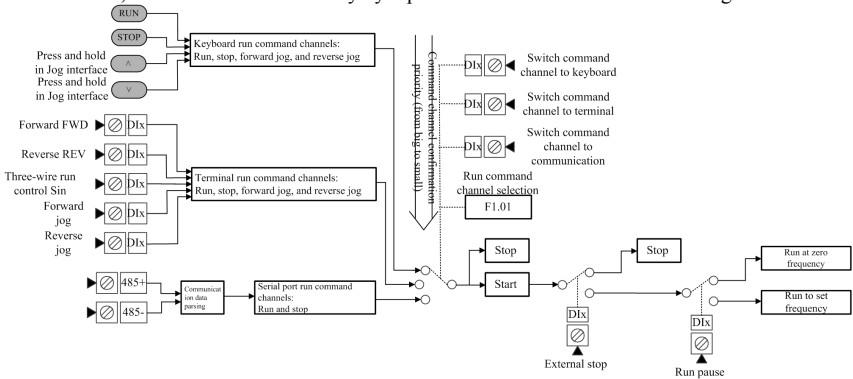
TheGT30 series drive's start operation control includes three different ways as follows:

1. Start when the drive gives a run command normally;
2. Start after the automatic fault reset of the drive;
3. Start under the terminal two-wire start protection (the drive starts automatically when the drive is powered on, the fault is cleared or the command channel is switched to the terminal two-wire mode, which is only valid to terminal two-wire control).

The three different start-stop control statuses are described in the following.

### 5.1.1 Logic block diagram of start when the drive gives a run command normally

TheGT30 series drive's run command input has three channels namely keyboard, terminal and communication, and can be switched freely by input terminal and function code settings.

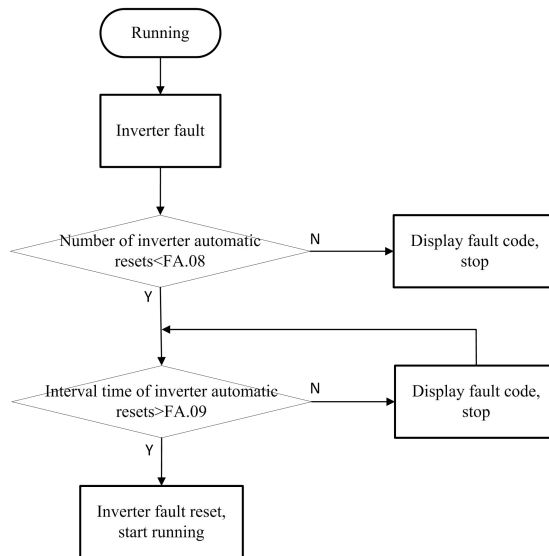


### 5.1.2 Logic block diagram of start after the automatic fault reset of the drive

The automatic reset function can automatically reset the running faults according to the set times and intervals. When the number of automatic resets is set to 0, it indicates that automatic reset is prohibited and fault protection is performed immediately. Within 2 minutes after the drive operates, if there is no fault, it will automatically clear the number of resets, and accumulate the number of resets from the beginning.

The drive module protection (E010) and external equipment failure (E015) have no automatic reset function. After the automatic reset is completed, it will automatically start and run at the speed tracking.

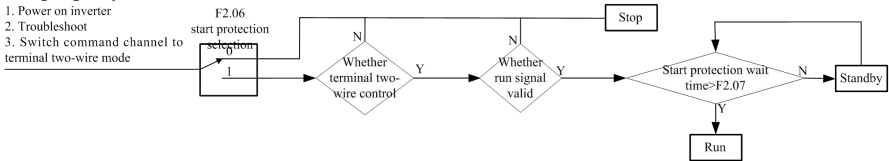
**For safety's sake, use this function with caution, otherwise, it may cause personal injuries and property losses.**



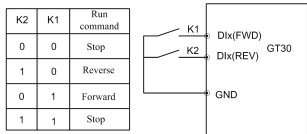
5.1.3 Terminal two-wire start protection and start logic block diagram

The terminal two-wire start protection start can realize that the drive automatically starts when the drive is powered on, the fault is cleared, or the command channel is switched to the terminal two-wire mode, if the terminal run command is valid.

**For safety's sake, use this function with caution, otherwise, it may cause personal injuries and property losses.**



Related parameter table:

| Parameter Code | Parameter name                                               | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Minimum Unit | Factory value | Change      |   |   |      |   |   |         |   |   |         |   |   |      |   |   |   |
|----------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|-------------|---|---|------|---|---|---------|---|---|---------|---|---|------|---|---|---|
| F1.01          | Run command channel selection                                | 0: Operation panel run command channel<br>1: Terminal run command channel<br>2: Serial port run command channel                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1            | 0             | ○           |   |   |      |   |   |         |   |   |         |   |   |      |   |   |   |
| F1.24          | Running direction setting                                    | 0: Forward<br>1: Reverse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1            | 0             | ○           |   |   |      |   |   |         |   |   |         |   |   |      |   |   |   |
| F2.06          | Start protection selection (only valid for two-wire control) | This function realizes whether the drive automatically starts running when the drive is powered on, the fault is cleared, or the command channel is switched to the terminal two-wire mode.<br>0: If the run command is valid, the drive does start, and the drive is in the running protection state. The drive will not run until the run command terminal is canceled and then the terminal is enabled.<br>1: If the run command is valid, the drive speed tracking starts.<br><b>Note: For safety, be cautious when setting to 1.</b>                                    | 1            | 0             | ×           |   |   |      |   |   |         |   |   |         |   |   |      |   |   |   |
| F2.07          | Start protection wait time                                   | Set range: 0.0～10.0s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.1s         | 0.0s          | ○           |   |   |      |   |   |         |   |   |         |   |   |      |   |   |   |
| F2.30          | Forward and reverse dead zone time                           | Set range: 0.00～360.00s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0.01s        | 0.01s         | ×           |   |   |      |   |   |         |   |   |         |   |   |      |   |   |   |
| F6.09          | Forward/reverse running mode setting                         | 0: Two-wire control mode 1: This mode is the most commonly used two-wire mode. The forward and reverse of the motor are determined by the defined FWD and REV terminal commands.<br><table border="1"><tr><td>K2</td><td>K1</td><td>Run command</td></tr><tr><td>0</td><td>0</td><td>Stop</td></tr><tr><td>1</td><td>0</td><td>Reverse</td></tr><tr><td>0</td><td>1</td><td>Forward</td></tr><tr><td>1</td><td>1</td><td>Stop</td></tr></table> <br>1: Two-wire control mode 2: This mode | K2           | K1            | Run command | 0 | 0 | Stop | 1 | 0 | Reverse | 0 | 1 | Forward | 1 | 1 | Stop | 1 | 0 | × |
| K2             | K1                                                           | Run command                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |              |               |             |   |   |      |   |   |         |   |   |         |   |   |      |   |   |   |
| 0              | 0                                                            | Stop                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |               |             |   |   |      |   |   |         |   |   |         |   |   |      |   |   |   |
| 1              | 0                                                            | Reverse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |               |             |   |   |      |   |   |         |   |   |         |   |   |      |   |   |   |
| 0              | 1                                                            | Forward                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |              |               |             |   |   |      |   |   |         |   |   |         |   |   |      |   |   |   |
| 1              | 1                                                            | Stop                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |               |             |   |   |      |   |   |         |   |   |         |   |   |      |   |   |   |

| Parameter Code | Parameter name             | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Minimum Unit | Factory value | Change      |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
|----------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|-------------|-------------|---|------|---|------|------|---|---|---------|---|---|---------|---------|--|--|--|
|                |                            | <p>uses the defined FWD as the running terminal and the direction is determined by the REV status that defined.</p> <table><tr><td>K2</td><td>K1</td><td>Run command</td></tr><tr><td>0</td><td>0</td><td>Stop</td></tr><tr><td>1</td><td>0</td><td>Stop</td></tr><tr><td>0</td><td>1</td><td>Forward</td></tr><tr><td>1</td><td>1</td><td>Reverse</td></tr></table>                                                                                                                                                                                                                                                                                                                                                        | K2           | K1            | Run command | 0           | 0 | Stop | 1 | 0    | Stop | 0 | 1 | Forward | 1 | 1 | Reverse |         |  |  |  |
| K2             | K1                         | Run command                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |              |               |             |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
| 0              | 0                          | Stop                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |               |             |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
| 1              | 0                          | Stop                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |              |               |             |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
| 0              | 1                          | Forward                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |               |             |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
| 1              | 1                          | Reverse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |              |               |             |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
|                |                            | <p>2: Three-wire operation control 1: This mode uses the defined Sin as the enable terminal, the run command is generated by FWD or REV, and both control the operation direction. When the drive operates, the terminal Sin must be closed. The terminal FWD or REV generates a rising edge signal to control the operation and direction of the drive. When the drive stops, the terminal Sin must be disconnected to complete the stop.</p> <table><tr><td>SB3</td><td>SB2</td><td>SB1</td><td>Run command</td></tr><tr><td>X</td><td>X</td><td>0</td><td>Stop</td></tr><tr><td>X</td><td>↑</td><td>1</td><td>Forward</td></tr><tr><td>↑</td><td>X</td><td>1</td><td>Reverse</td></tr></table>                           | SB3          | SB2           | SB1         | Run command | X | X    | 0 | Stop | X    | ↑ | 1 | Forward | ↑ | X | 1       | Reverse |  |  |  |
| SB3            | SB2                        | SB1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Run command  |               |             |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
| X              | X                          | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Stop         |               |             |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
| X              | ↑                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Forward      |               |             |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
| ↑              | X                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Reverse      |               |             |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
|                |                            | <p>3: Three-wire operation control 2: This mode uses the defined Sin as the enable terminal, the run command is generated by FWD, and the direction is controlled by REV. When the drive operates, the terminal Sin must be closed. The terminal FWD generates a rising edge signal, and the drive starts operating. The status of terminal REV determines the operation direction. When the drive stops, the terminal Sin must be disconnected to complete the stop.</p> <table><tr><td>K1</td><td>SB2</td><td>SB1</td><td>Run command</td></tr><tr><td>X</td><td>X</td><td>0</td><td>Stop</td></tr><tr><td>0</td><td>↑</td><td>1</td><td>Forward</td></tr><tr><td>1</td><td>↑</td><td>1</td><td>Reverse</td></tr></table> | K1           | SB2           | SB1         | Run command | X | X    | 0 | Stop | 0    | ↑ | 1 | Forward | 1 | ↑ | 1       | Reverse |  |  |  |
| K1             | SB2                        | SB1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Run command  |               |             |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
| X              | X                          | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Stop         |               |             |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
| 0              | ↑                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Forward      |               |             |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
| 1              | ↑                          | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Reverse      |               |             |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |
| FA.08          | Number of automatic resets | FA.08 set range: 0~100 (0 indicates no automatic reset function)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 0             | ×           |             |   |      |   |      |      |   |   |         |   |   |         |         |  |  |  |

| Parameter Code | Parameter name                | Parameter detailed description | Minimum Unit | Factory value | Change |
|----------------|-------------------------------|--------------------------------|--------------|---------------|--------|
| FA.09          | Automatic reset interval time | FA.09 set range: 0.1~1000.0s   | 0.1s         | 5.0s          | ×      |

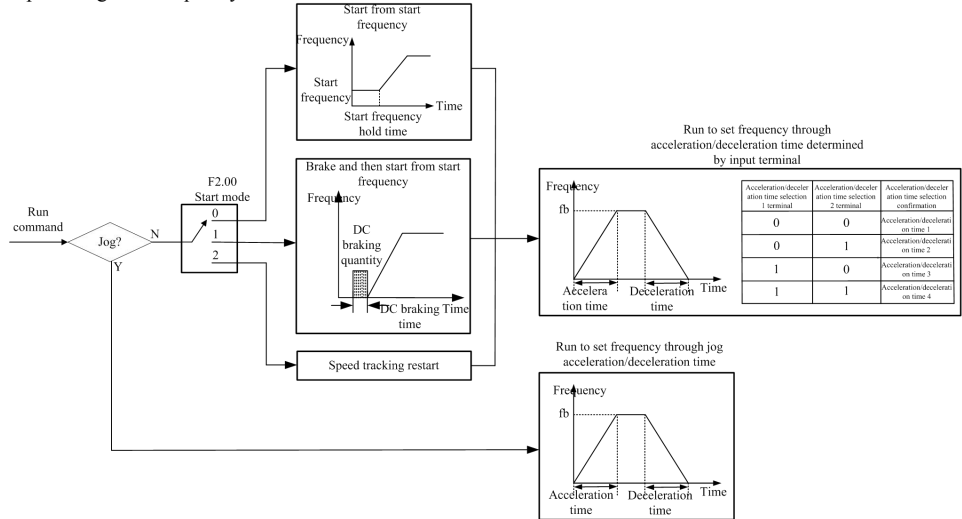
5.2 Start-stop control

There are three ways to start theGT30 series drive:

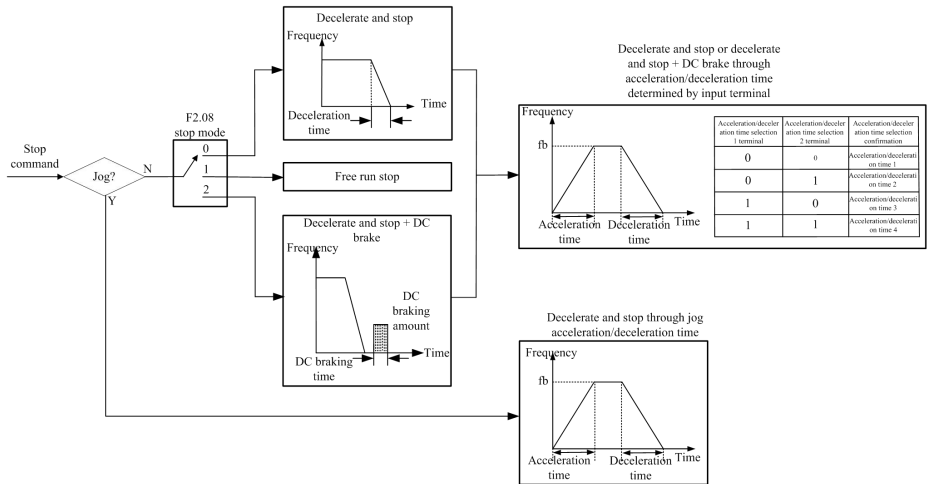
- 1. Start from the start frequency: Start at the start frequency set by F2.01, and accelerate to the set frequency after running the hold time set by F2.02 at this frequency.
- 2. Brake first and then start from the start frequency: First start with the DC braking current set in F2.03 and the DC braking time set in F2.04 for DC braking and then start from the start frequency.
- 3. Speed tracking and restart: Track the current speed and direction of the motor, and perform smooth start without impact on the motor that is still rotating.

There are three ways to stop theGT30 series drive:

- 1. Deceleration stop: After receiving the stop command, the drive will gradually reduce the output frequency according to the deceleration time, and stop when the frequency decreases to zero.
- 2. Free running stop: After receiving the stop command, the drive immediately stops the output, and the load stops freely according to the mechanical inertia.
- 3. Deceleration stop + DC braking: After receiving the stop command, the drive reduces the output frequency according to the deceleration time, and starts the DC braking when reaching the stop braking start frequency.







Related parameter table:

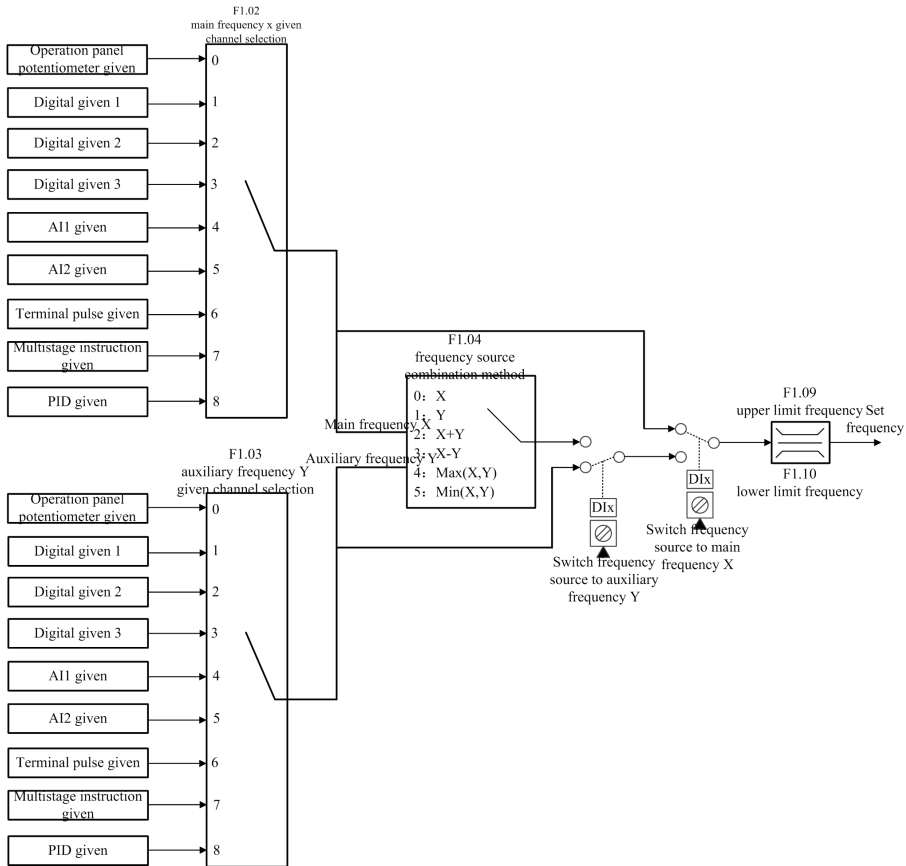
| Parameter Code | Parameter name                           | Parameter detailed description                                                                                                                                                                                                                                                                                                                          | Minimum Unit | Factory value       | Change |
|----------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|
| F1.11          | Acceleration time 1                      | Set range: 0.01~600.00                                                                                                                                                                                                                                                                                                                                  | 0.01         | Model determination | ○      |
| F1.12          | Deceleration time 1                      |                                                                                                                                                                                                                                                                                                                                                         |              |                     | ○      |
| F1.13          | Acceleration/deceleration filtering time | Set range: 0~1000ms (0 indicates on filter)                                                                                                                                                                                                                                                                                                             | 1ms          | 0ms                 | ○      |
| F2.00          | Start operation mode                     | LED single digit: Start mode<br>0: Start from start frequency.<br>1: Brake and then start from the start frequency.<br>2: Speed tracking restart.<br>LED tens digit: Speed tracking mode<br>0: Track down from the frequency of shutdown, usually this method is used.<br>1: Track down from the maximum frequency, suitable for power generation load. | 11           | 00                  | ×      |
| F2.01          | Start frequency                          | F2.01 set range: 0.20~60.00Hz                                                                                                                                                                                                                                                                                                                           | 0.01Hz       | 0.50Hz              | ○      |
| F2.02          | Start frequency hold time                | F2.02 set range: 0.0~10.0s                                                                                                                                                                                                                                                                                                                              | 0.1s         | 0.0s                | ○      |
| F2.03          | Start DC braking current                 | F2.03 set range: 0.0~150.0% drive rated current                                                                                                                                                                                                                                                                                                         | 0.1%         | 100.0%              | ○      |
| F2.04          | Start DC braking time                    | F2.04 set range: 0.0~30.0S (0.0 indicates the DC braking does not act)                                                                                                                                                                                                                                                                                  | 0.1s         | 0.0s                | ○      |
| F2.05          | Acceleration/deceleration mode           | 0: Linear acceleration/deceleration: The output frequency increases or decreases                                                                                                                                                                                                                                                                        | 1            | 0                   | ×      |

| Parameter Code | Parameter name                                       | Parameter detailed description                                                                                                                                                                                     | Minimum Unit | Factory value       | Change |
|----------------|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|--------|
|                | selection                                            | according to a constant slope.<br>1: Reserved                                                                                                                                                                      |              |                     |        |
| F2.08          | Stop mode                                            | 0: Decelerate and stop<br>1: Run freely and stop<br>2: Decelerate and stop + DC brake                                                                                                                              | 1            | 0                   | ×      |
| F2.09          | DC braking start frequency at stop                   | F2.09 set range: 0.00~60.00Hz<br>F2.10 set range: 0.00~10.00s<br>F2.11 set range: 0.0~150.0% drive rated current<br>F2.12 set range: 0.0~60.0S (0.0 indicates the DC braking does not act)<br>F2.13 set range: 0~1 | 0.01Hz       | 0.00Hz              | ○      |
| F2.10          | DC braking wait time at stop                         |                                                                                                                                                                                                                    | 0.01s        | 0.10s               | ○      |
| F2.11          | DC braking current at stop                           |                                                                                                                                                                                                                    | 0.1%         | 100.0%              | ○      |
| F2.12          | DC braking time at stop                              |                                                                                                                                                                                                                    | 0.1s         | 0.0s                | ○      |
| F2.13          | Action selection within DC braking wait time at stop |                                                                                                                                                                                                                    | 1            | 1                   | ○      |
| F2.14          | Acceleration time 2                                  | Set range: 0.01~600.00                                                                                                                                                                                             | 0.01         | Model determination | ○      |
| F2.15          | Deceleration time 2                                  |                                                                                                                                                                                                                    |              |                     | ○      |
| F2.16          | Acceleration time 3                                  |                                                                                                                                                                                                                    |              |                     | ○      |
| F2.17          | Deceleration time 3                                  |                                                                                                                                                                                                                    |              |                     | ○      |
| F2.18          | Acceleration time 4                                  |                                                                                                                                                                                                                    |              |                     | ○      |
| F2.19          | Deceleration time 4                                  |                                                                                                                                                                                                                    |              |                     | ○      |
| F2.20          | Jog run frequency                                    | Set range: 0.10~50.00Hz                                                                                                                                                                                            | 0.01Hz       | 5.00Hz              | ○      |
| F2.21          | Jog interval time                                    | Set range: 0.0~100.0s                                                                                                                                                                                              | 0.1s         | 0.0s                | ○      |
| F2.22          | Jog acceleration time                                | Set range: 0.01~600.00s                                                                                                                                                                                            | 0.01s        | 6.00s               | ○      |
| F2.23          | Jog deceleration time                                |                                                                                                                                                                                                                    |              |                     | ○      |
| F7.08          | Speed tracking gain Kp                               | F7.08 set range: 0~100<br>F7.09 set range: 1~1000ms<br>F7.10 set range: 0.1~600.0s<br>F7.11 set range: 1~100%<br>F7.12 set range: 1~100%                                                                           | 1            | 10                  | ○      |
| F7.09          | Speed tracking integration time                      |                                                                                                                                                                                                                    | 1ms          | 50ms                | ○      |
| F7.10          | Speed tracking acceleration and deceleration         |                                                                                                                                                                                                                    | 0.1s         | 20.0s               | ○      |
| F7.11          | Speed tracking judgment threshold                    |                                                                                                                                                                                                                    | 1%           | 10%                 | ○      |
| F7.12          | Speed tracking switching completion                  |                                                                                                                                                                                                                    | 1%           | 3%                  | ○      |

| Parameter Code | Parameter name     | Parameter detailed description | Minimum Unit | Factory value | Change |
|----------------|--------------------|--------------------------------|--------------|---------------|--------|
|                | judgment threshold |                                |              |               |        |

### 5.3 Frequency setting

There're many ways for the GT30 series drive frequency given, and its given channels can be divided into three types namely the main frequency X, the auxiliary frequency Y, and the combination given. It can be switched freely by setting the terminal function.

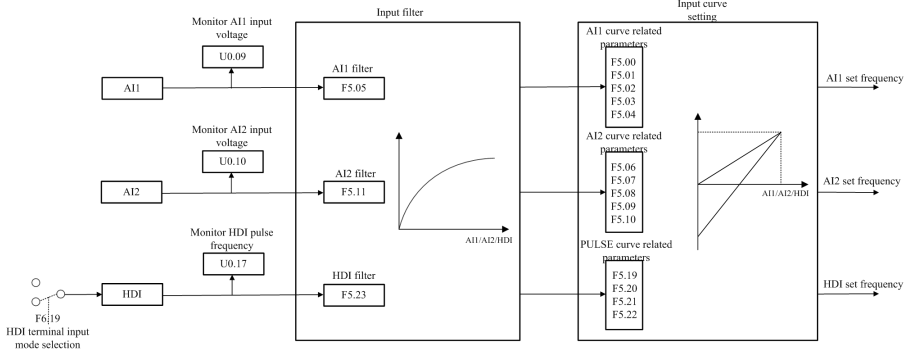


Related parameter table:

| Parameter Code | Parameter name                                | Parameter detailed description                                                                                               | Minimum Unit | Factory value | Change |
|----------------|-----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F1.02          | Main frequency x given channel selection      | 0: Operation panel digital potentiometer given<br>1: Digital given 1<br>2: Digital given 2<br>3: Digital given 3             | 1            | 0             | ○      |
| F1.03          | Auxiliary frequency Y given channel selection | 4: AI1 given<br>5: AI2 given<br>6: Terminal pulse given<br>7: Multistage instruction given<br>8: PID given<br>9-15: Reserved | 1            | 1             | ○      |
| F1.04          | Frequency source combination mode             | 0: X<br>1: Y<br>2: X+Y<br>3: X-Y<br>4: Max(X,Y)<br>5: Min(X,Y)                                                               | 1            | 0             | ○      |
| F1.05          | Digital setting of auxiliary frequency Y      | Lower limit frequency~upper limit frequency                                                                                  | 0.01Hz       | 50.00Hz       | ○      |
| F1.06          | Maximum output frequency                      | Upper limit frequency~650.00Hz                                                                                               | 0.01Hz       | 50.00Hz       | ×      |
| F1.07          | Main frequency x digital setting              | Lower limit frequency~upper limit frequency                                                                                  | 0.01Hz       | 50.00Hz       | ○      |
| F1.09          | Upper limit frequency                         | Lower limit frequency~maximum output frequency                                                                               | 0.01Hz       | 50.00Hz       | ○      |
| F1.10          | Lower limit frequency                         | 0.00~upper limit frequency                                                                                                   | 0.01Hz       | 0.00Hz        | ○      |

### 5.4 Analog input

TheGT30 series is configured with 2 analog input terminals (AI1 and AI2 are of 0~10V/0~20mA input, AI1 can select voltage input or current input through jumper J1, and AI2 can select voltage input or current input through jumper J2) and 1 high-speed pulse input terminal. Each input can be filtered independently, and be adjusted. The corresponding given curve can be set by setting the given corresponding to the maximum and minimum values.



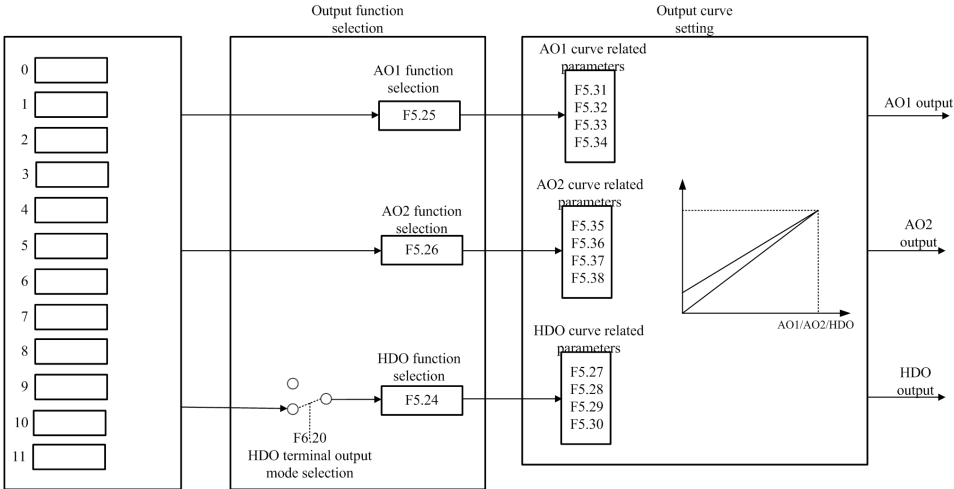
Related parameter table:

| Parameter Code | Parameter name                               | Parameter detailed description | Minimum Unit | Factory value | Change |
|----------------|----------------------------------------------|--------------------------------|--------------|---------------|--------|
| F5.00          | AI1 minimum value                            | 0.00~F5.02                     | 0.01V        | 0.00V         | ○      |
| F5.01          | Set value corresponding to AI1 minimum value | -100.0%~100.0%                 | 0.1%         | 0.0%          | ○      |
| F5.02          | AI1 maximum value                            | F5.00~10.00V                   | 0.01V        | 10.00V        | ○      |
| F5.03          | Set value corresponding to AI1 maximum value | -100.0%~100.0%                 | 0.1%         | 100.0%        | ○      |
| F5.04          | AI1 zero drift setting                       | 0.00~10.00V                    | 0.01V        | 0.00V         | ○      |
| F5.05          | AI1 filter time                              | 0~1000ms                       | 1ms          | 10ms          | ○      |
| F5.06          | AI2 minimum value                            | 0.00~F5.08                     | 0.01V        | 0.00V         | ○      |
| F5.07          | Set value corresponding to AI2 minimum value | -100.0%~100.0%                 | 0.1%         | 0.0%          | ○      |
| F5.08          | AI2 maximum value                            | F5.06~10.00V                   | 0.01V        | 10.00V        | ○      |
| F5.09          | Set value corresponding to AI2 maximum value | -100.0%~100.0%                 | 0.1%         | 100.0%        | ○      |
| F5.10          | AI2 zero drift setting                       | 0.00~10.00V                    | 0.01V        | 0.00V         | ○      |
| F5.11          | AI2 filter time                              | 0~1000ms                       | 1ms          | 10ms          | ○      |

| Parameter Code | Parameter name                                | Parameter detailed description                                     | Minimum Unit | Factory value | Change |
|----------------|-----------------------------------------------|--------------------------------------------------------------------|--------------|---------------|--------|
| F5.18          | Analog automatic zero drift adjustment        | 0~1                                                                | 0            | 0             | ○      |
| F5.19          | PULSE minimum input                           | 0.00~F5.21                                                         | 0.01KHz      | 0.00KHz       | ○      |
| F5.20          | Correspondence setting of PULSE minimum input | -100.0%~100.0%                                                     | 0.1%         | 0.0%          | ○      |
| F5.21          | PULSE maximum input                           | F5.19~50.00KHz                                                     | 0.01KHz      | 50.00KHz      | ○      |
| F5.22          | Correspondence setting of PULSE maximum input | -100.0%~100.0%                                                     | 0.1%         | 100.0%        | ○      |
| F5.23          | PULSE filter time                             | 0~1000ms                                                           | 1ms          | 10ms          | ○      |
| F6.19          | HDI terminal input mode selection (DI5)       | 0: Switch input<br>1: High-frequency pulse input (see F5.19~F5.23) | 1            | 0             | ×      |

5.5 Analog output

TheGT30 series is configured with 2 analog output terminals (AO1 and AO2 are of 0~10V/0~20mA output, AO1 can select voltage input or current input through jumper J3, and AO2 can select voltage input or current input through jumper J4) and 1 high-speed pulse output terminal. The proportional relationship can be adjusted by setting the maximum and minimum values and their corresponding output percentages. The analog output signal can output the operation frequency, output current, output voltage and output power in a certain proportion.

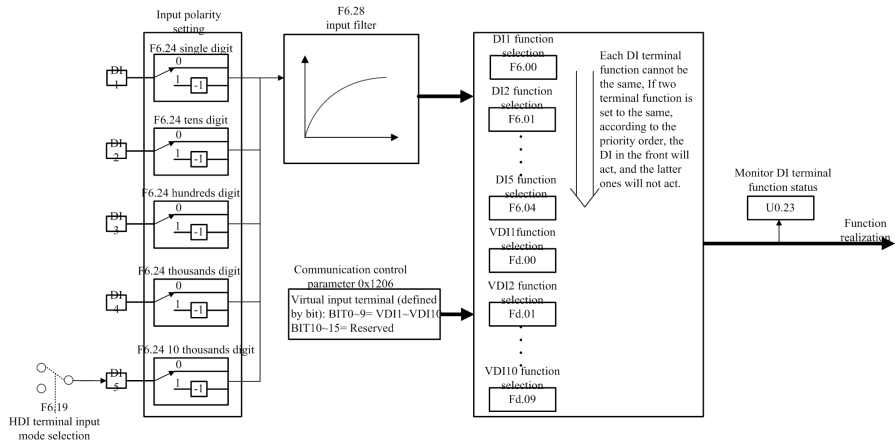


Related parameter table:

| Parameter Code | Parameter name                                    | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                        | Minimum Unit | Factory value | Change |
|----------------|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F5.24          | HDO function selection                            | 0: Running frequency (0~Maximum output frequency)                                                                                                                                                                                                                                                                                                                                                     | 1            | 5             | ○      |
| F5.25          | AO1 function selection                            | 1: Set frequency (0~Maximum output frequency)<br>2: Output current (0~2 times rated current)<br>3: Output torque (0~2 times rated torque)<br>4: Output voltage (0~1.2 times rated voltage)<br>5: Bus voltage (0~1000V)<br>6: AI1 (0~10V/0~20mA)<br>7: AI2 (0~10V)<br>8: Reserved<br>9: Output power (0~2 times rated frequency)<br>10: Pulse input (0~50.00KHz)<br>11: Communication setting (0~1000) | 1            | 0             | ○      |
| F5.26          | AO2 function selection                            |                                                                                                                                                                                                                                                                                                                                                                                                       |              |               |        |
| F5.27          | HDO output lower limit                            | 0.0~F5.29                                                                                                                                                                                                                                                                                                                                                                                             | 0.1%         | 0.0%          | ○      |
| F5.28          | HDO output frequency corresponding to lower limit | 0.00~50.00KHz                                                                                                                                                                                                                                                                                                                                                                                         | 0.01KHz      | 0.00KHz       | ○      |
| F5.29          | HDO output upper limit                            | F5.27~100.0%                                                                                                                                                                                                                                                                                                                                                                                          | 0.1%         | 100.0%        | ○      |
| F5.30          | HDO output frequency corresponding to upper limit | 0.00~50.00KHz                                                                                                                                                                                                                                                                                                                                                                                         | 0.01KHz      | 50.00KHz      | ○      |
| F5.31          | AO1 output lower limit                            | 0.0~F5.33                                                                                                                                                                                                                                                                                                                                                                                             | 0.1%         | 0.0%          | ○      |
| F5.32          | Corresponding lower limit AO1 output voltage      | 0.00~10.00V                                                                                                                                                                                                                                                                                                                                                                                           | 0.01V        | 0.00V         | ○      |
| F5.33          | AO1 output upper limit                            | F5.31~100.0%                                                                                                                                                                                                                                                                                                                                                                                          | 0.1%         | 100.0%        | ○      |
| F5.34          | Corresponding upper limit AO1 output voltage      | 0.00~10.00V                                                                                                                                                                                                                                                                                                                                                                                           | 0.01V        | 10.00V        | ○      |
| F5.35          | AO2 output lower limit                            | 0.0~F5.37                                                                                                                                                                                                                                                                                                                                                                                             | 0.1%         | 0.0%          | ○      |
| F5.36          | Corresponding lower limit AO2 output voltage      | 0.00~10.00V                                                                                                                                                                                                                                                                                                                                                                                           | 0.01V        | 0.00V         | ○      |
| F5.37          | AO2 output upper limit                            | F5.35~100.0%                                                                                                                                                                                                                                                                                                                                                                                          | 0.1%         | 100.0%        | ○      |
| F5.38          | Corresponding upper limit AO2 output voltage      | 0.00~10.00V                                                                                                                                                                                                                                                                                                                                                                                           | 0.01V        | 10.00V        | ○      |
| F6.20          | HDO terminal output mode selection (DO2)          | 0: Switch output<br>1: High-frequency pulse output (see F5.27~F5.30)                                                                                                                                                                                                                                                                                                                                  | 1            | 0             | ×      |

## 5.6 Digital input

TheGT30 series is equipped with 5 DI input terminals and 10 VDI virtual input terminals. All input terminal functions can be programmed through function codes. Among them, DI5 can be selected as a high-frequency pulse input terminal or an ordinary switch input terminal through function code; when it is selected as a high-speed pulse input terminal (HDI), the user can also use the HDI high-speed pulse input as frequency given, count input, or length pulse input.



Input function description:

| Set value | Function                               | Description                                                                                                                                                                                                                                                                          |
|-----------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0         | No function                            | The drive does not operate even if there is a signal input. Unused terminals can be set to having no function to prevent malfunction.                                                                                                                                                |
| 1         | Forward running FWD (level + edge)     | For terminal two-wire and three-wire control signals, see function code F6.09 description for details.                                                                                                                                                                               |
| 2         | Reverse running REV (level + edge)     |                                                                                                                                                                                                                                                                                      |
| 3         | Three-wire running control Sin (level) |                                                                                                                                                                                                                                                                                      |
| 4         | Forward jog (level)                    | Used for jog running control under terminal run command mode, the jog running frequency, jog interval time and jog acceleration/deceleration time are defined in F2.20~F2.23.                                                                                                        |
| 5         | Reverse jog (level)                    |                                                                                                                                                                                                                                                                                      |
| 6         | Free stop (level)                      | If the function of this terminal is valid, the drive immediately terminates the output, and the load stops freely according to the mechanical inertia.                                                                                                                               |
| 7         | Fault reset (edge signal)              | When a fault alarm occurs in the drive, the fault can be reset through this terminal. Its function is consistent with the STOP key function of the keyboard.                                                                                                                         |
| 8         | Run pause (level)                      | If this terminal is valid during running, the terminal will decelerate to zero frequency running according to the deceleration time. This function is invalid during jog running.                                                                                                    |
| 9         | External fault input                   | The fault signals of external devices can be input through this terminal, which is convenient for the drive to monitor the faults of external devices. After receiving fault signals from external devices, the drive displays “E015”, which is the fault alarm of external devices. |
| 10        | Frequency setting increase (UP)        | The frequency increase or decrease is realized through the control terminal, to perform remote control replacing the operation panel. Effective when the main frequency                                                                                                              |
| 11        | Frequency setting decreases            |                                                                                                                                                                                                                                                                                      |



| Set value | Function                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                           |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
|-----------|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------------------------|----|----|-------------------|-----|-----|-----|-----|--------------------------|-----|-----|-----|----|--------------------------|-----|-----|----|-----|--------------------------|-----|-----|----|----|--------------------------|-----|----|-----|-----|--------------------------|-----|----|-----|----|--------------------------|-----|----|----|-----|--------------------------|-----|----|----|----|--------------------------|----|-----|-----|-----|--------------------------|----|-----|-----|----|---------------------------|----|-----|----|-----|---------------------------|----|-----|----|----|---------------------------|----|----|-----|-----|---------------------------|----|----|-----|----|---------------------------|----|----|----|-----|---------------------------|----|----|----|----|---------------------------|
|           | (DOWN)                                     | F1.02 = 2 or the auxiliary frequency F1.03 = 2, the acceleration/deceleration rate is set by F6.10.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |                           |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| 12        | Multistage speed terminal 1                | By selecting the terminal ON/OFF combination of these functions, you can define up to 16 stages of speed running curves, the frequency of multistage instructions, the selection of acceleration/deceleration time, and the rotating direction are set in group F9.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |                           |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| 13        | Multistage speed terminal 2                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                           |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| 14        | Multistage speed terminal 3                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                           |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| 15        | Multistage speed terminal 4                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                           |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
|           |                                            | <table><tr><td>K4</td><td>K3</td><td>K2</td><td>K1</td><td>Frequency setting</td></tr><tr><td>OFF</td><td>OFF</td><td>OFF</td><td>OFF</td><td>Multistage instruction 1</td></tr><tr><td>OFF</td><td>OFF</td><td>OFF</td><td>ON</td><td>Multistage instruction 2</td></tr><tr><td>OFF</td><td>OFF</td><td>ON</td><td>OFF</td><td>Multistage instruction 3</td></tr><tr><td>OFF</td><td>OFF</td><td>ON</td><td>ON</td><td>Multistage instruction 4</td></tr><tr><td>OFF</td><td>ON</td><td>OFF</td><td>OFF</td><td>Multistage instruction 5</td></tr><tr><td>OFF</td><td>ON</td><td>OFF</td><td>ON</td><td>Multistage instruction 6</td></tr><tr><td>OFF</td><td>ON</td><td>ON</td><td>OFF</td><td>Multistage instruction 7</td></tr><tr><td>OFF</td><td>ON</td><td>ON</td><td>ON</td><td>Multistage instruction 8</td></tr><tr><td>ON</td><td>OFF</td><td>OFF</td><td>OFF</td><td>Multistage instruction 9</td></tr><tr><td>ON</td><td>OFF</td><td>OFF</td><td>ON</td><td>Multistage instruction 10</td></tr><tr><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td><td>Multistage instruction 11</td></tr><tr><td>ON</td><td>OFF</td><td>ON</td><td>ON</td><td>Multistage instruction 12</td></tr><tr><td>ON</td><td>ON</td><td>OFF</td><td>OFF</td><td>Multistage instruction 13</td></tr><tr><td>ON</td><td>ON</td><td>OFF</td><td>ON</td><td>Multistage instruction 14</td></tr><tr><td>ON</td><td>ON</td><td>ON</td><td>OFF</td><td>Multistage instruction 15</td></tr><tr><td>ON</td><td>ON</td><td>ON</td><td>ON</td><td>Multistage instruction 16</td></tr></table> | K4  | K3                        | K2 | K1 | Frequency setting | OFF | OFF | OFF | OFF | Multistage instruction 1 | OFF | OFF | OFF | ON | Multistage instruction 2 | OFF | OFF | ON | OFF | Multistage instruction 3 | OFF | OFF | ON | ON | Multistage instruction 4 | OFF | ON | OFF | OFF | Multistage instruction 5 | OFF | ON | OFF | ON | Multistage instruction 6 | OFF | ON | ON | OFF | Multistage instruction 7 | OFF | ON | ON | ON | Multistage instruction 8 | ON | OFF | OFF | OFF | Multistage instruction 9 | ON | OFF | OFF | ON | Multistage instruction 10 | ON | OFF | ON | OFF | Multistage instruction 11 | ON | OFF | ON | ON | Multistage instruction 12 | ON | ON | OFF | OFF | Multistage instruction 13 | ON | ON | OFF | ON | Multistage instruction 14 | ON | ON | ON | OFF | Multistage instruction 15 | ON | ON | ON | ON | Multistage instruction 16 |
| K4        | K3                                         | K2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | K1  | Frequency setting         |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| OFF       | OFF                                        | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | OFF | Multistage instruction 1  |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| OFF       | OFF                                        | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ON  | Multistage instruction 2  |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| OFF       | OFF                                        | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | OFF | Multistage instruction 3  |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| OFF       | OFF                                        | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ON  | Multistage instruction 4  |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| OFF       | ON                                         | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | OFF | Multistage instruction 5  |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| OFF       | ON                                         | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ON  | Multistage instruction 6  |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| OFF       | ON                                         | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | OFF | Multistage instruction 7  |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| OFF       | ON                                         | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ON  | Multistage instruction 8  |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| ON        | OFF                                        | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | OFF | Multistage instruction 9  |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| ON        | OFF                                        | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ON  | Multistage instruction 10 |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| ON        | OFF                                        | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | OFF | Multistage instruction 11 |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| ON        | OFF                                        | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ON  | Multistage instruction 12 |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| ON        | ON                                         | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | OFF | Multistage instruction 13 |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| ON        | ON                                         | OFF                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | ON  | Multistage instruction 14 |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| ON        | ON                                         | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | OFF | Multistage instruction 15 |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| ON        | ON                                         | ON                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | ON  | Multistage instruction 16 |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| 16        | Acceleration/deceleration time selection 1 | The ON/OFF combination of acceleration/deceleration time terminals 1 and 2 can realize the selection of acceleration/deceleration time 1~4.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                           |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| 17        | Acceleration/deceleration time selection 2 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                           |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
|           |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                           |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
|           |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                           |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
|           |                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                           |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |
| 18        | PLC pause                                  | Used to realize the pause control of the PLC running                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |     |                           |    |    |                   |     |     |     |     |                          |     |     |     |    |                          |     |     |    |     |                          |     |     |    |    |                          |     |    |     |     |                          |     |    |     |    |                          |     |    |    |     |                          |     |    |    |    |                          |    |     |     |     |                          |    |     |     |    |                           |    |     |    |     |                           |    |     |    |    |                           |    |    |     |     |                           |    |    |     |    |                           |    |    |    |     |                           |    |    |    |    |                           |

| Set value | Function                                           | Description                                                                                                                                                                                                                                                                                                                       |
|-----------|----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|           |                                                    | process. When this terminal is valid, it runs at zero frequency. The PLC running is not counted.                                                                                                                                                                                                                                  |
| 19        | PLC operation stop and reset                       | PLC is prohibited from starting when the terminal is valid, deceleration and stop control is implemented for the PLC running process, and the PLC is reset to the initial state.                                                                                                                                                  |
| 20        | PID control pause                                  | PID is temporarily invalid, and the drive maintains the current output frequency without performing PID adjustment.                                                                                                                                                                                                               |
| 21        | PID parameter switching                            | When the PID parameter switching condition (F8.12) is set to 1 (via terminal switching), the F8.06~F8.08 are used for PID parameters when the terminal is invalid, and F8.09~F8.11 are used when the terminal is valid.                                                                                                           |
| 22        | Counter trigger                                    | Count pulse input port of the built-in counter, the highest pulse frequency: 200Hz, and the current count value can be stored and memorized when power is off. See function codes F6.22 and F6.23 for details.                                                                                                                    |
| 23        | Counter reset                                      | Clear the built-in counter of the drive and use it in conjunction with function 22 (counter trigger signal input).                                                                                                                                                                                                                |
| 24        | Length reset                                       | When the function terminal is valid, the actual length is cleared to zero.                                                                                                                                                                                                                                                        |
| 25        | Acceleration/deceleration prohibited (level)       | Keep the motor from being affected by any external signal (except stop command), maintain operating at the current speed. This function is invalid during jog running.                                                                                                                                                            |
| 26        | Immediate DC braking                               | When the stop mode is decelerate and stop + DC brake, it is switched to DC brake status when the terminal is valid during stop.                                                                                                                                                                                                   |
| 27        | UP/DOWN setting cleared                            | When the frequency given channel is set to terminal UP/DN, this function terminal can directly clear the frequency set by UP/DN.                                                                                                                                                                                                  |
| 28        | Control command switched to keyboard               | If the three terminals or two of them are closed at the same time, the priority is keyboard> terminal> communication.<br><b>Note: When switching to terminal two-wire control, the running state changes are affected by the F2.06 parameter; when switching to other control modes, the current running state is maintained.</b> |
| 29        | Control command switched to terminal               |                                                                                                                                                                                                                                                                                                                                   |
| 30        | Control command switched to communication          |                                                                                                                                                                                                                                                                                                                                   |
| 31        | Frequency source switched to the main frequency X  | If the above two terminals are closed at the same time, the priority is switching to the main frequency X> switching to the auxiliary frequency Y                                                                                                                                                                                 |
| 32        | Frequency source switched to auxiliary frequency Y |                                                                                                                                                                                                                                                                                                                                   |
| 33        | High-frequency pulse count reset                   | When the function terminal is valid, the high-frequency pulse count value recorded by function code U0.16 is cleared.                                                                                                                                                                                                             |
| 34~50     | Reserved                                           | Reserved function                                                                                                                                                                                                                                                                                                                 |

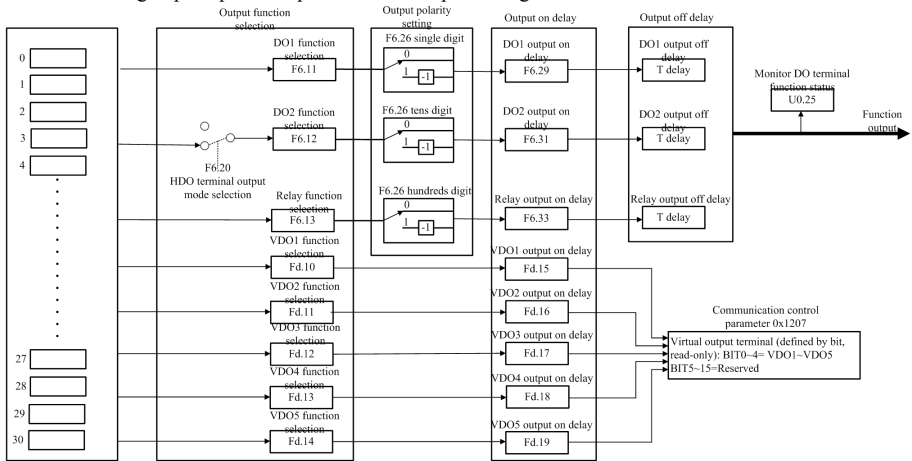
Related parameter table:

| Parameter Code | Parameter name                                          | Parameter detailed description                                                                                                                                                                                                                                                                                                 | Minimum Unit | Factory value | Change |
|----------------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F6.00          | Function selection of multi-function input terminal DI1 | 0: No function<br>1: Forward running FWD (level + edge)<br>2: Reverse running REV (level + edge)<br>3: Three-wire running control Sin (level)<br>4: Forward jog (level)<br>5: Reverse jog (level)<br>6: Free stop (level)<br>7: Fault reset (edge signal)                                                                      | 1            | 1             | ×      |
| F6.01          | Function selection of multi-function input terminal DI2 | 8: Run pause (level)<br>9: External fault input<br>10: Frequency setting increase (UP)<br>11: Frequency setting decreases (DOWN)<br>12: Multistage speed terminal 1<br>13: Multistage speed terminal 2<br>14: Multistage speed terminal 3<br>15: Multistage speed terminal 4<br>16: Acceleration/deceleration time selection 1 |              | 2             |        |
| F6.02          | Function selection of multi-function input terminal DI3 | 17: Acceleration/deceleration time selection 2<br>18: PLC pause<br>19: PLC operation stop and reset<br>20: PID control pause<br>21: PID parameter switching                                                                                                                                                                    |              | 7             |        |
| F6.03          | Function selection of multi-function input terminal DI4 | 22: Counter trigger<br>23: Counter reset<br>24: Length reset<br>25: Acceleration/deceleration prohibited (level)<br>26: Immediate DC braking<br>27: UP/DOWN setting cleared<br>28: Control command switched to keyboard                                                                                                        |              | 12            |        |
| F6.04          | Function selection of multi-function input terminal DI5 | 29: Control command switched to terminal<br>30: Control command switched to communication<br>31: Frequency source switched to the main frequency X<br>32: Frequency source switched to auxiliary frequency Y<br>33: High-frequency pulse count reset<br>34-50: Reserved                                                        |              | 13            |        |
| F6.19          | HDI terminal input mode selection (DI5)                 | 0: Switch input<br>1: High-frequency pulse input (see F5.19~F5.23)                                                                                                                                                                                                                                                             | 1            | 0             | ×      |
| F6.24          | DI input switch polarity 1                              | 00000~11111<br>LED single digit: DI1 positive/negative logic definition<br>LED tens digit: DI2 positive/negative logic definition<br>LED hundreds digit: DI3 positive/negative logic definition                                                                                                                                | 11111        | 11111         | ○      |

| Parameter Code | Parameter name                    | Parameter detailed description                                                                                                | Minimum Unit | Factory value | Change |
|----------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                |                                   | LED thousands digit: DI4 positive/negative logic definition<br>LED 10 thousands digit: DI5 positive/negative logic definition |              |               |        |
| F6.28          | DI filter time                    | 0~1000ms                                                                                                                      | 1ms          | 5ms           | ○      |
| Fd.00          | VDI1 terminal function selection  | Same as F6.00~F6.08 function code setting.                                                                                    | 1            | 0             | ×      |
| Fd.01          | VDI2 terminal function selection  |                                                                                                                               | 1            | 0             | ×      |
| Fd.02          | VDI3 terminal function selection  |                                                                                                                               | 1            | 0             | ×      |
| Fd.03          | VDI4 terminal function selection  |                                                                                                                               | 1            | 0             | ×      |
| Fd.04          | VDI5 terminal function selection  |                                                                                                                               | 1            | 0             | ×      |
| Fd.05          | VDI6 terminal function selection  |                                                                                                                               | 1            | 0             | ×      |
| Fd.06          | VDI7 terminal function selection  |                                                                                                                               | 1            | 0             | ×      |
| Fd.07          | VDI8 terminal function selection  |                                                                                                                               | 1            | 0             | ×      |
| Fd.08          | VDI9 terminal function selection  |                                                                                                                               | 1            | 0             | ×      |
| Fd.09          | VDI10 terminal function selection |                                                                                                                               | 1            | 0             | ×      |

## 5.7 Digital output

TheGT30 series is equipped with two open collector output terminals, one relay output terminal, and five VDO virtual output terminals. All digital output terminal functions can be programmed through function codes. Among them, the high-speed pulse output terminal HDO can also be set to high-speed pulse output or switch output through function code selection.



Output function description:

| Set value | Function                                | Description                                                                                                                                                  |
|-----------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0         | No output                               | The output terminal has no function.                                                                                                                         |
| 1         | Drive running signal (RUN)              | The drive is under the running status and outputs an indication signal.                                                                                      |
| 2         | Frequency arrival signal (FAR)          | Refer to the function description of F6.18.                                                                                                                  |
| 3         | Frequency level detection signal (FDT1) | Refer to the function description of F6.14~F6.15.                                                                                                            |
| 4         | Frequency level detection signal (FDT2) | Refer to the function description of F6.16~F6.17.                                                                                                            |
| 5         | Reserved                                | Reserved function.                                                                                                                                           |
| 6         | Undervoltage lockout stopping (LU)      | When the DC bus voltage is lower than the undervoltage limit level, an indication signal is output, and the LED displays "P.oFF".                            |
| 7         | External fault stop (EXT)               | When the drive has an external fault trip alarm (E015), it outputs an indication signal.                                                                     |
| 8         | Frequency upper limit (FHL)             | When the set frequency $\geq$ the upper limit frequency and the operation frequency reaches the upper limit, an indication signal is output.                 |
| 9         | Frequency lower limit (FLL)             | When the set frequency $\leq$ the lower limit frequency and the operation frequency reaches the lower limit, an indication signal is output.                 |
| 10        | Drive running at zero frequency         | When the drive output frequency is less than or equal to FC.10 zero frequency arrival range, and under the operation status, an indication signal is output. |
| 11        | PLC phase running completion            | After the simple PLC phase operation is completed, an indication signal (single pulse signal, width 250ms) is output.                                        |

| Set value | Function                              | Description                                                                                                                                                                                                      |
|-----------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12        | PLC cycle completion                  | After the simple PLC completes one operation cycle, an indication signal (single pulse signal, width 250ms) is output.                                                                                           |
| 13        | Set count value arrival               | Refer to F6.22~F6.23 function description.                                                                                                                                                                       |
| 14        | Specified count value arrival         |                                                                                                                                                                                                                  |
| 15        | Set length arrival                    | When the actual length $U0.15 \geq FC.11$ set length, an indication signal is output.                                                                                                                            |
| 16        | Drive ready to run                    | When this signal output is valid, it indicates that the drive has no fault, the bus voltage is normal, and the drive operation prohibition terminal is invalid. In this case, the start command can be accepted. |
| 17        | Drive fault                           | If the drive fails, an indication is output.                                                                                                                                                                     |
| 18        | Reserved                              | Reserved function.                                                                                                                                                                                               |
| 19        | Set cumulative running time arrival   | When the accumulated running time of the drive (U0.27) reaches the running cutoff time (F0.02) of the drive, an indication signal is output.                                                                     |
| 20        | Forward running                       | The drive is under the forward running status and outputs an indication signal.                                                                                                                                  |
| 21        | Reverse running                       | The drive is under the reserve running status and outputs an indication signal.                                                                                                                                  |
| 22        | Reserved                              | Reserved function.                                                                                                                                                                                               |
| 23        | Water supply sleep running indication | During water supply application, the drive is under the sleep status and outputs an indication signal.                                                                                                           |
| 24        | Water pipe overpressure indication    | During water supply application, the drive judges that the water pipe is overpressure at the time and outputs an indication signal.                                                                              |
| 25        | Water pipe underpressure indication   | During water supply application, the drive judges that the water pipe is underpressure at the time and outputs an indication signal.                                                                             |
| 26        | Water pipe shortage indication        | During water supply application, the drive judges that the water pipe is short of water at the time and outputs an indication signal.                                                                            |
| 27~30     | Reserved                              | Reserved function.                                                                                                                                                                                               |

Related parameter table:

| Parameter Code | Parameter name                     | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                    | Minimum Unit | Factory value | Change |
|----------------|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F6.11          | Open collector output terminal DO1 | 0: No output<br>1: Drive running signal (RUN)<br>2: Frequency arrival signal (FAR)<br>3: Frequency level detection signal (FDT1)<br>4: Frequency level detection signal (FDT2)<br>5: Reserved<br>6: Undervoltage lockout stopping (LU)<br>7: External fault stop (EXT)<br>8: Frequency upper limit (FHL)<br>9: Frequency lower limit (FLL)<br>10: Drive running at zero frequency | 1            | 0             | ×      |
| F6.12          | Open collector output terminal     | 11: PLC phase running completion<br>12: PLC cycle completion<br>13: Set count value arrival<br>14: Specified count value arrival<br>15: Set length arrival<br>16: Drive ready to run (RDY)                                                                                                                                                                                        | 1            | 1             | ×      |

| Parameter Code | Parameter name                   | Parameter detailed description                                                                                                                                                          | Minimum Unit | Factory value | Change |
|----------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                | DO (HDO terminal)                | 17: Drive fault<br>18: Reserved<br>19: Set cumulative running time arrival<br>20: Forward running<br>21: Reverse running<br>22: Reserved                                                |              |               |        |
| F6.13          | Relay output function (TA/TB/TC) | 23: Water supply sleep running indication<br>24: Water pipe overpressure indication<br>25: Water pipe underpressure indication<br>26: Water pipe shortage indication<br>27-30: Reserved | 1            | 17            | ×      |
| F6.26          | DO output switch polarity 1      | 00000~11111                                                                                                                                                                             | 11111        | 11111         | ○      |
| F6.29          | DO1 output on delay              | Set range: 0.0~600.0s<br>This function code defines the delay from the status change of the switch output terminal and the relay to the output change.                                  | 0.1s         | 0.0s          | ○      |
| F6.30          | DO1 output off delay             |                                                                                                                                                                                         | 0.1s         | 0.0s          | ○      |
| F6.31          | DO2 output on delay              |                                                                                                                                                                                         | 0.1s         | 0.0s          | ○      |
| F6.32          | DO2 output off delay             |                                                                                                                                                                                         | 0.1s         | 0.0s          | ○      |
| F6.33          | Relay output on delay            |                                                                                                                                                                                         | 0.1s         | 0.0s          | ○      |
| F6.34          | Relay output off delay           |                                                                                                                                                                                         | 0.1s         | 0.0s          | ○      |
| Fd.10          | VDO1 terminal function selection | Same as F6.11~F6.13 function code setting.                                                                                                                                              | 1            | 0             | ×      |
| Fd.11          | VDO2 terminal function selection |                                                                                                                                                                                         | 1            | 0             | ×      |
| Fd.12          | VDO3 terminal function selection |                                                                                                                                                                                         | 1            | 0             | ×      |
| Fd.13          | VDO4 terminal function selection |                                                                                                                                                                                         | 1            | 0             | ×      |
| Fd.14          | VDO5 terminal function selection |                                                                                                                                                                                         | 1            | 0             | ×      |
| Fd.15          | VDO1 output on delay             | Same as F6.29~F6.34 function code setting.                                                                                                                                              | 0.1s         | 0.0s          | ○      |
| Fd.16          | VDO2 output on delay             |                                                                                                                                                                                         | 0.1s         | 0.0s          | ○      |
| Fd.17          | VDO3 output on delay             |                                                                                                                                                                                         | 0.1s         | 0.0s          | ○      |

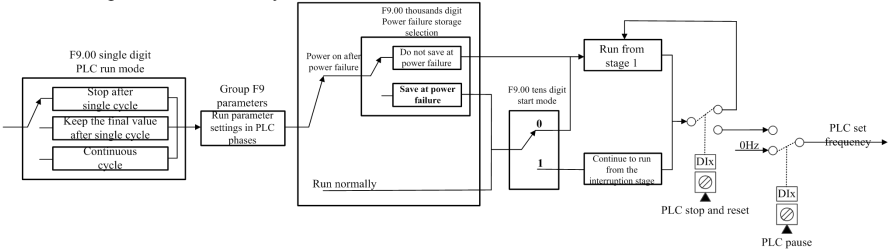
| Parameter Code | Parameter name       | Parameter detailed description | Minimum Unit | Factory value | Change |
|----------------|----------------------|--------------------------------|--------------|---------------|--------|
| Fd.18          | VDO4 output on delay |                                | 0.1s         | 0.0s          | ○      |
| Fd.19          | VDO5 output on delay |                                | 0.1s         | 0.0s          | ○      |

5.8 Simple PLC

The simple PLC function is a multistage speed generator. The drive can automatically change the operation frequency and direction according to the run time to meet the process requirements. This function used to be completed under the assistance of an external PLC. Now it can be realized by the drive itself.

This series of drives can realize 16-stage speed control, and there are 4 groups of acceleration/deceleration time for selection.

When the set PLC completes a cycle (or a stage), an ON signal can be output from the open collector output terminal or relay.



Related parameter table:

| Parameter Code | Parameter name                | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Minimum Unit | Factory value | Change |
|----------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F9.00          | Simple PLC run mode selection | LED single digit: PLC run mode<br>0: No action<br>1: Stop after a single cycle<br>2: Keep the final value after a single cycle<br>3: Continuous cycle<br>4: DI selective operation<br>LED tens digit: Start mode<br>0: Start running from the first stage<br>1: Continue running from the stage of interruption<br>LED hundreds digit: Stage time unit selection<br>0: Second<br>1: Minute<br>LED thousands digit: Store at power failure<br>0: Do not store at power failure<br>1: Stage at power failure storage interruption | 1111         | 0000          | ×      |
| F9.01          | Running stages                | 1~16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 16            | ○      |
| F9.02          | Multistage instruction 1      | Lower limit frequency~upper limit frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0.01Hz       | 20.00Hz       | ○      |



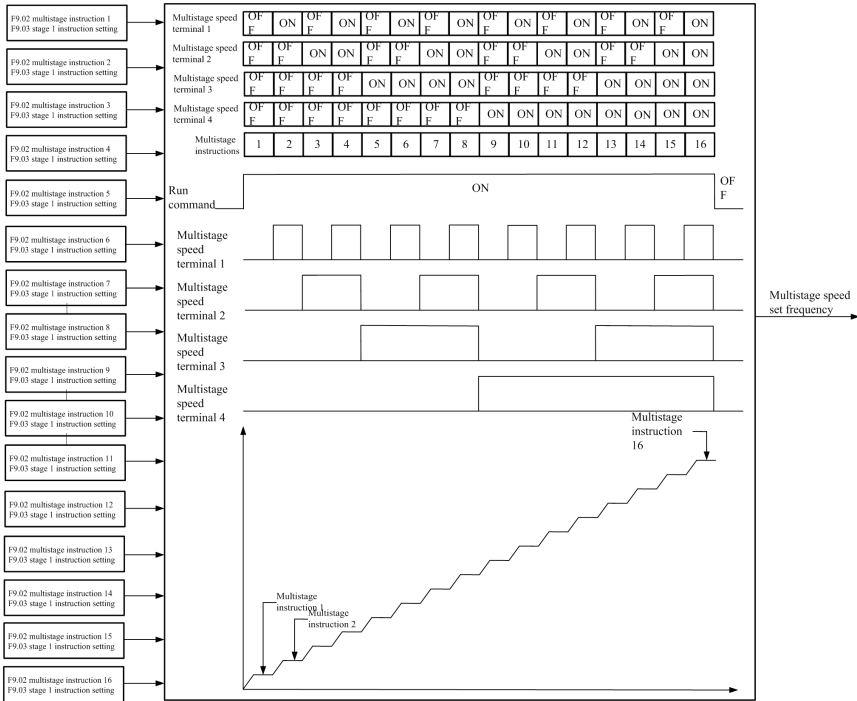
| Parameter Code | Parameter name                   | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Minimum Unit | Factory value | Change |
|----------------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F9.03          | Stage 1 instruction setting      | LED single digit:<br>0: Multistage instruction 1 (F9.02)<br>1: AI1<br>2: AI2<br>3: Pulse frequency<br>4: Communication<br>5: Operation panel digital potentiometer given<br>6: Reserved<br>LED tens digit:<br>0: Acceleration/deceleration time 1<br>1: Acceleration/deceleration time 2<br>2: Acceleration/deceleration time 3<br>3: Acceleration/deceleration time 4<br>LED hundreds digit:<br>0: Forward running<br>1: Reverse running<br><b>Note: Only the LED single digit frequency source of stage 1 instruction can be set.</b>                                                                                                                                                                                                                                                                                                                                                                                                | 111          | 000           | ○      |
| F9.04          | Stage 1 instruction running time | Set range: 0.1~6000.0<br><b>Note: For the time unit selection, see F9.00 hundreds digit setting.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0.1          | 10.0          | ○      |
| F9.05          | Multistage instruction 2         | Stage X instruction (F9.05, F9.08, F9.11, F9.14, F9.17, F9.20, F9.23, F9.26, F9.29, F9.32, F9.35, F9.38, F9.41, F9.44, and F9.47) setting range:<br>Lower limit frequency~upper limit frequency<br>Stage X instruction (F9.06, F9.09, F9.12, F9.15, F9.18, F9.21, F9.24, F9.27, F9.30, F9.33, F9.36, F9.39, F9.42, F9.45, and F9.48) setting range:<br>LED single digit:<br>0: Multistage instruction x<br>1: Reserved<br>LED tens digit:<br>0: Acceleration/deceleration time 1<br>1: Acceleration/deceleration time 2<br>2: Acceleration/deceleration time 3<br>3: Acceleration/deceleration time 4<br>LED hundreds digit:<br>0: Forward running<br>1: Reverse running<br>Stage X instruction running time (F9.07, F9.10, F9.13, F9.16, F9.19, F9.22, F9.25, F9.28, F9.31, F9.34, F9.37, F9.40, F9.43, F9.46, and F9.49) setting range:<br>0.1~6000.0<br><b>Note: For the time unit selection, see F9.00 hundreds digit setting.</b> | 0.01Hz       | 20.00Hz       | ○      |
| F9.06          | Stage 2 instruction setting      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 111          | 000           | ○      |
| F9.07          | Stage 2 instruction running time |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.1          | 10.0          | ○      |
| F9.08          | Multistage instruction 3         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.01Hz       | 20.00Hz       | ○      |
| F9.09          | Stage 3 instruction setting      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 111          | 000           | ○      |
| F9.10          | Stage 3 instruction running time |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.1          | 10.0          | ○      |
| F9.11          | Multistage instruction 4         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.01Hz       | 20.00Hz       | ○      |
| F9.12          | Stage 4 instruction setting      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 111          | 000           | ○      |
| F9.13          | Stage 4 instruction running time |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.1          | 10.0          | ○      |
| F9.14          | Multistage instruction 5         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.01Hz       | 20.00Hz       | ○      |
| F9.15          | Stage 5 instruction setting      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 111          | 000           | ○      |
| F9.16          | Stage 5                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0.1          | 10.0          | ○      |

| Parameter Code | Parameter name                    | Parameter detailed description | Minimum Unit | Factory value | Change |
|----------------|-----------------------------------|--------------------------------|--------------|---------------|--------|
|                | instruction running time          |                                |              |               |        |
| F9.17          | Multistage instruction 6          |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.18          | Stage 6 instruction setting       |                                | 111          | 000           | ○      |
| F9.19          | Stage 6 instruction running time  |                                | 0.1          | 10.0          | ○      |
| F9.20          | Multistage instruction 7          |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.21          | Stage 7 instruction setting       |                                | 111          | 000           | ○      |
| F9.22          | Stage 7 instruction running time  |                                | 0.1          | 10.0          | ○      |
| F9.23          | Multistage instruction 8          |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.24          | Stage 8 instruction setting       |                                | 111          | 000           | ○      |
| F9.25          | Stage 8 instruction running time  |                                | 0.1          | 10.0          | ○      |
| F9.26          | Multistage instruction 9          |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.27          | Stage 9 instruction setting       |                                | 111          | 000           | ○      |
| F9.28          | Stage 9 instruction running time  |                                | 0.1          | 10.0          | ○      |
| F9.29          | Multistage instruction 10         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.30          | Stage 10 instruction setting      |                                | 111          | 000           | ○      |
| F9.31          | Stage 10 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.32          | Multistage instruction 11         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.33          | Stage 11 instruction setting      |                                | 111          | 000           | ○      |
| F9.34          | Stage 11 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.35          | Multistage instruction 12         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.36          | Stage 12                          |                                | 111          | 000           | ○      |

| Parameter Code | Parameter name                    | Parameter detailed description | Minimum Unit | Factory value | Change |
|----------------|-----------------------------------|--------------------------------|--------------|---------------|--------|
|                | instruction setting               |                                |              |               |        |
| F9.37          | Stage 12 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.38          | Multistage instruction 13         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.39          | Stage 13 instruction setting      |                                | 111          | 000           | ○      |
| F9.40          | Stage 13 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.41          | Multistage instruction 14         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.42          | Stage 14 instruction setting      |                                | 111          | 000           | ○      |
| F9.43          | Stage 14 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.44          | Multistage instruction 15         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.45          | Stage 15 instruction setting      |                                | 111          | 000           | ○      |
| F9.46          | Stage 15 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.47          | Multistage instruction 16         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.48          | Stage 16 instruction setting      |                                | 111          | 000           | ○      |
| F9.49          | Stage 16 instruction running time |                                | 0.1          | 10.0          | ○      |

### 5.9 Multistage speed operation

Set the parameters when using the drive for multistage speed operation. TheGT30 drive can set 16-stage speed, which is selected by the combination code of multistage speed terminals 1~4, corresponding to multistage speed 1 to multistage speed 16 respectively.



Related parameter table:

| Parameter Code | Parameter name                | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Minimum Unit | Factory value | Change |
|----------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
| F9.00          | Simple PLC run mode selection | LED single digit: PLC run mode<br>0: No action<br>1: Stop after a single cycle<br>2: Keep the final value after a single cycle<br>3: Continuous cycle<br>4: DI selective operation<br>LED tens digit: Start mode<br>0: Start running from the first stage<br>1: Continue running from the stage of interruption<br>LED hundreds digit: Stage time unit selection<br>0: Second<br>1: Minute<br>LED thousands digit: Store at power failure<br>0: Do not store at power failure<br>1: Stage at power failure storage interruption | 1111         | 0000          | ×      |
| F9.01          | Running stages                | 1~16                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 1            | 16            | ○      |
| F9.02          | Multistage                    | Lower limit frequency~upper limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 0.01Hz       | 20.00Hz       | ○      |

| Parameter Code | Parameter name                   | Parameter detailed description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Minimum Unit | Factory value | Change |
|----------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                | instruction 1                    | frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |              |               |        |
| F9.03          | Stage 1 instruction setting      | LED single digit:<br>0: Multistage instruction 1 (F9.02)<br>1: AI1<br>2: AI2<br>3: Pulse frequency<br>4: Communication<br>5: Operation panel digital potentiometer given<br>6: Reserved<br>LED tens digit:<br>0: Acceleration/deceleration time 1<br>1: Acceleration/deceleration time 2<br>2: Acceleration/deceleration time 3<br>3: Acceleration/deceleration time 4<br>LED hundreds digit:<br>0: Forward running<br>1: Reverse running<br><b>Note: Only the LED single digit frequency source of stage 1 instruction can be set.</b> | 111          | 000           | ○      |
| F9.04          | Stage 1 instruction running time | Set range: 0.1~6000.0<br><b>Note: For the time unit selection, see F9.00 hundreds digit setting.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0.1          | 10.0          | ○      |
| F9.05          | Multistage instruction 2         | Stage X instruction (F9.05, F9.08, F9.11, F9.14, F9.17, F9.20, F9.23, F9.26, F9.29, F9.32, F9.35, F9.38, F9.41, F9.44, and F9.47) setting range:                                                                                                                                                                                                                                                                                                                                                                                        | 0.01Hz       | 20.00Hz       | ○      |
| F9.06          | Stage 2 instruction setting      | Lower limit frequency~upper limit frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 111          | 000           | ○      |
| F9.07          | Stage 2 instruction running time | Stage X instruction (F9.06, F9.09, F9.12, F9.15, F9.18, F9.21, F9.24, F9.27, F9.30, F9.33, F9.36, F9.39, F9.42, F9.45, and F9.48) setting range:                                                                                                                                                                                                                                                                                                                                                                                        | 0.1          | 10.0          | ○      |
| F9.08          | Multistage instruction 3         | LED single digit:<br>0: Multistage instruction x<br>1: Reserved                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.01Hz       | 20.00Hz       | ○      |
| F9.09          | Stage 3 instruction setting      | LED tens digit:<br>0: Acceleration/deceleration time 1<br>1: Acceleration/deceleration time 2<br>2: Acceleration/deceleration time 3<br>3: Acceleration/deceleration time 4                                                                                                                                                                                                                                                                                                                                                             | 111          | 000           | ○      |
| F9.10          | Stage 3 instruction running time | LED hundreds digit:<br>0: Forward running<br>1: Reverse running                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.1          | 10.0          | ○      |
| F9.11          | Multistage instruction 4         | Stage X instruction running time (F9.07, F9.10, F9.13, F9.16, F9.19, F9.22, F9.25, F9.28, F9.31, F9.34, F9.37, F9.40, F9.43, F9.46, and F9.49) setting range:                                                                                                                                                                                                                                                                                                                                                                           | 0.01Hz       | 20.00Hz       | ○      |
| F9.12          | Stage 4 instruction setting      | 0.1~6000.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 111          | 000           | ○      |
| F9.13          | Stage 4 instruction running time | <b>Note: For the time unit selection, see</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 0.1          | 10.0          | ○      |
| F9.14          | Multistage instruction 5         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |               |        |
| F9.15          | Stage 5 instruction setting      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |               |        |
| F9.16          | Stage 5 instruction              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |              |               |        |

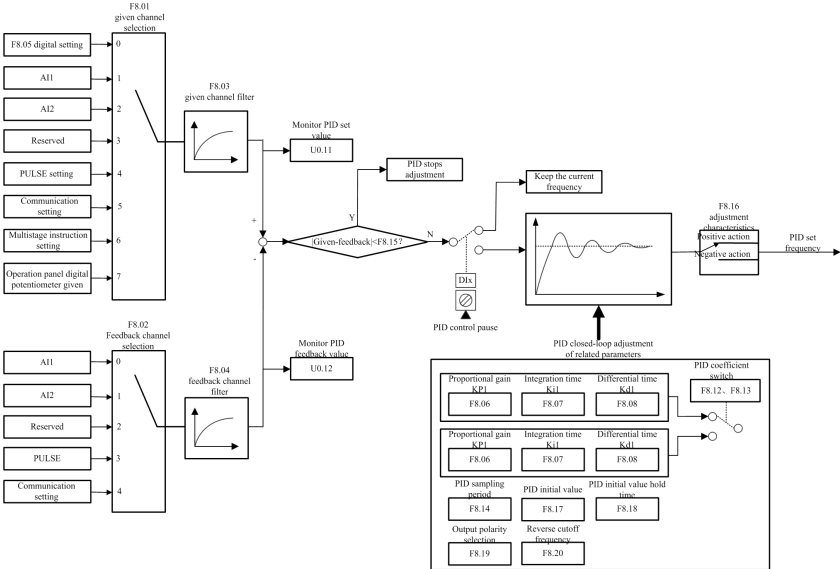
| Parameter Code | Parameter name                    | Parameter detailed description       | Minimum Unit | Factory value | Change |
|----------------|-----------------------------------|--------------------------------------|--------------|---------------|--------|
|                | running time                      | <b>F9.00 hundreds digit setting.</b> |              |               |        |
| F9.17          | Multistage instruction 6          |                                      | 0.01Hz       | 20.00Hz       | ○      |
| F9.18          | Stage 6 instruction setting       |                                      | 111          | 000           | ○      |
| F9.19          | Stage 6 instruction running time  |                                      | 0.1          | 10.0          | ○      |
| F9.20          | Multistage instruction 7          |                                      | 0.01Hz       | 20.00Hz       | ○      |
| F9.21          | Stage 7 instruction setting       |                                      | 111          | 000           | ○      |
| F9.22          | Stage 7 instruction running time  |                                      | 0.1          | 10.0          | ○      |
| F9.23          | Multistage instruction 8          |                                      | 0.01Hz       | 20.00Hz       | ○      |
| F9.24          | Stage 8 instruction setting       |                                      | 111          | 000           | ○      |
| F9.25          | Stage 8 instruction running time  |                                      | 0.1          | 10.0          | ○      |
| F9.26          | Multistage instruction 9          |                                      | 0.01Hz       | 20.00Hz       | ○      |
| F9.27          | Stage 9 instruction setting       |                                      | 111          | 000           | ○      |
| F9.28          | Stage 9 instruction running time  |                                      | 0.1          | 10.0          | ○      |
| F9.29          | Multistage instruction 10         |                                      | 0.01Hz       | 20.00Hz       | ○      |
| F9.30          | Stage 10 instruction setting      |                                      | 111          | 000           | ○      |
| F9.31          | Stage 10 instruction running time |                                      | 0.1          | 10.0          | ○      |
| F9.32          | Multistage instruction 11         |                                      | 0.01Hz       | 20.00Hz       | ○      |
| F9.33          | Stage 11 instruction setting      |                                      | 111          | 000           | ○      |
| F9.34          | Stage 11 instruction running time |                                      | 0.1          | 10.0          | ○      |
| F9.35          | Multistage instruction 12         |                                      | 0.01Hz       | 20.00Hz       | ○      |
| F9.36          | Stage 12 instruction setting      |                                      | 111          | 000           | ○      |
| F9.37          | Stage 12 instruction running time |                                      | 0.1          | 10.0          | ○      |
| F9.38          | Multistage instruction 13         |                                      | 0.01Hz       | 20.00Hz       | ○      |
| F9.39          | Stage 13                          |                                      | 111          | 000           | ○      |

| Parameter Code | Parameter name                    | Parameter detailed description | Minimum Unit | Factory value | Change |
|----------------|-----------------------------------|--------------------------------|--------------|---------------|--------|
|                | instruction setting               |                                |              |               |        |
| F9.40          | Stage 13 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.41          | Multistage instruction 14         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.42          | Stage 14 instruction setting      |                                | 111          | 000           | ○      |
| F9.43          | Stage 14 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.44          | Multistage instruction 15         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.45          | Stage 15 instruction setting      |                                | 111          | 000           | ○      |
| F9.46          | Stage 15 instruction running time |                                | 0.1          | 10.0          | ○      |
| F9.47          | Multistage instruction 16         |                                | 0.01Hz       | 20.00Hz       | ○      |
| F9.48          | Stage 16 instruction setting      |                                | 111          | 000           | ○      |
| F9.49          | Stage 16 instruction running time |                                | 0.1          | 10.0          | ○      |

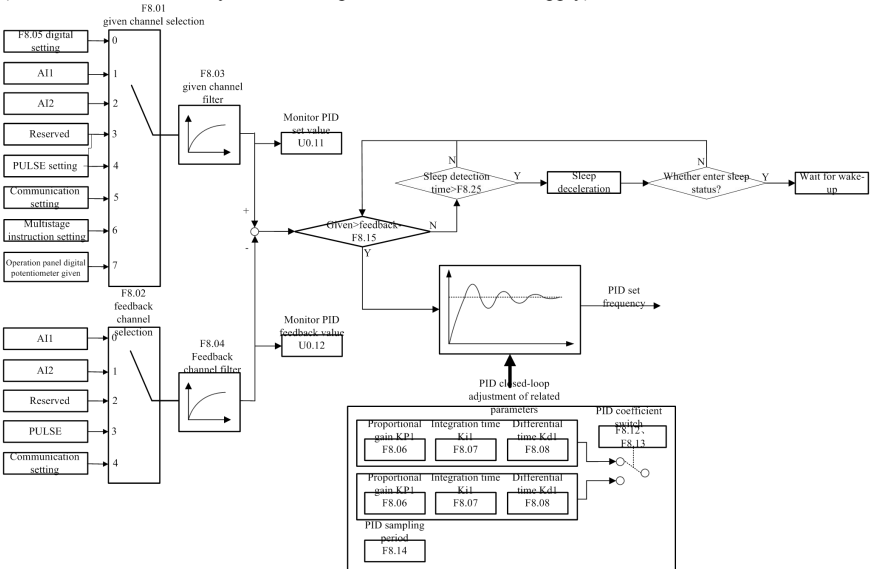
### 5.10 PID control

The PID control is a commonly used method for process control. By performing proportional, integral, and differential operations on the feedback signal of the controlled quantity and the quantity of the target quantity signal, the output frequency of the drive is adjusted to form a negative feedback system, so that the controlled quantity is stable on the target quantity. Suitable for process control such as flow control, pressure control and temperature control.

The basic principle block diagram of traditional PID control is as follows:



The basic principle block diagram of PID control for water supply application is as follows (used when F0.04 industry code is the special drive for water supply):



The brief of PID control working principle and the introduction of adjustment method:

Proportional adjustment (Kp): When there is a deviation between the feedback and the given, the output and the deviation are adjusted in proportion. If the deviation is constant, the adjustment amount is also constant. Proportional adjustment can quickly respond to changes in feedback, but just proportional adjustment cannot achieve non-differential control. The larger the proportional



gain, the faster the adjustment speed of the system, but if it is too large, oscillation will occur. The adjustment method is to first set the integration time to be very long and the differential time to zero. Use only proportional adjustment to make the system run, change the given quantity, and observe the stable deviation (static difference) between the feedback signal and the given quantity. If the static difference is in the direction of given quantity changes (for example, increasing the given quantity, the feedback quantity is always less than the given quantity after the system is stable), continue to increase the proportional gain, otherwise decrease the proportional gain, and repeat the above process until the static difference is relatively small.

Integration time (Ti): When there is a deviation between the feedback and the given value, the output adjustment accumulates continuously. If the deviation persists, the adjustment increases constantly, until there is no deviation. The integral regulator can effectively eliminate static difference. If the integral regulator is too strong, there will be repeated overshoot, making the system unstable until oscillation occurs. The characteristics of the oscillation caused by excessive integration are as follows: The feedback signal swings up and down at a given quantity, and the swing gradually increases until it oscillates. The adjustment of the integration time parameter is generally from large to small, gradually adjust the integration time, and observe the effect of the system adjustment until the stable speed of the system reaches the requirements.

Differential time (Td): When the deviation between feedback and given changes, an adjustment proportional to the deviation change rate is output. The adjustment is only related to the direction and magnitude of the deviation change, and has nothing to do with the direction and magnitude of the deviation itself. The function of differential adjustment is to adjust according to the changing trend when the feedback signal changes, thus to suppress the change of the feedback signal. Please use the differential regulator with caution, because the differential regulation is easy to amplify the interference of the system, especially the interference with a higher change frequency.

General steps for PID parameter setting

a. Determine the proportional gain Kp

When determining the proportional gain Kp, first remove the integral and differential items of PID. Generally, assumed Ti = 0 and Td = 0 (for details, see the description of PID parameter setting), so that the PID is of pure proportional adjustment. The input is set to 60%~70% of the maximum value allowed by the system. The proportional gain Kp is increased from 0 gradually until the system oscillates; in turn, the proportional gain Kp is gradually decreased from this time until the system oscillation disappears. In this case, the proportional gain Kp is recorded, and the proportional gain Kp of PID is set to 60%~70% of the current value. The proportional gain Kp debugging is completed.

b. Determine the integration time Ti

After the proportional gain Kp is determined, set a larger initial value of the integration time Ti, and then gradually decrease Ti until the system oscillates, and then in turn, increase Ti gradually until the system oscillation disappears. Record the Ti at this time and set the integration time constant Ti of PID to 150%~180% of the current value. The integration time constant Ti debugging is completed.

c. Determine the differential time Td

Generally, the differential time Td needs not to be set (0). To set, the method is the same with that of determining Kp and Ti, taking 30% without oscillation.

d. The system is debugged with or without load, and then the PID parameters are fine-tuned until the requirements are met.

Related parameter table:

| Parameter Code | Parameter name                  | Parameter detailed description                         | Minimum Unit | Factory value | Change |
|----------------|---------------------------------|--------------------------------------------------------|--------------|---------------|--------|
| F8.00          | PID operation control selection | 0: PID standby (not acting)<br>1: PID standby (acting) | 1            | 0             | ×      |

| Parameter Code | Parameter name                 | Parameter detailed description                                                                                                                                                                                      | Minimum Unit         | Factory value        | Change |
|----------------|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------|--------|
| F8.01          | Given channel selection        | 0: F8.05 digital given;<br>1: AI1;<br>2: AI2;<br>3: Reserved<br>4: PULSE setting;<br>5: Communication setting<br>6: Multistage instruction setting<br>7: Operation panel digital potentiometer given<br>8: Reserved | 1                    | 0                    | ×      |
| F8.02          | Feedback channel selection     | 0: AI1;<br>1: AI2;<br>2: Reserved<br>3: Pulse<br>4: Communication setting                                                                                                                                           | 1                    | 0                    | ×      |
| F8.03          | Given channel filter           | Set range: 0~1000ms                                                                                                                                                                                                 | 1ms                  | 10ms                 | ○      |
| F8.04          | Feedback channel filter        |                                                                                                                                                                                                                     | 1ms                  | 10ms                 | ○      |
| F8.05          | Given quantity digital setting | Universal drive mode setting range:<br>0.0~100.0%<br>Set range of professional drive mode for water supply :<br>0.0~F8.23                                                                                           | 0.1%<br>Or<br>0.1bar | 0.0%<br>Or<br>0.0bar | ○      |
| F8.06          | Proportional gain Kp1          | Set range: 0~1000                                                                                                                                                                                                   | 1                    | 10                   | ○      |
| F8.07          | Integration time Ti1           | Set range: 1~10000ms                                                                                                                                                                                                | 1ms                  | 500ms                | ○      |
| F8.08          | Differential time Td1          | Set range: 0~10000ms                                                                                                                                                                                                | 1ms                  | 0ms                  | ○      |
| F8.09          | Proportional gain Kp2          | F8.09 set range: 0~1000<br>F8.10 set range: 1~10000ms<br>F8.11 set range: 0~10000ms                                                                                                                                 | 1                    | 5                    | ○      |
| F8.10          | Integration time Ti2           |                                                                                                                                                                                                                     | 1ms                  | 2000ms               | ○      |
| F8.11          | Differential time Td2          |                                                                                                                                                                                                                     | 1ms                  | 0ms                  | ○      |
| F8.12          | Gain switching conditions      | 0: Do not switch<br>1: Switch through DI terminal<br>2: Switch automatically based on deviation<br>3: Switch automatically according to PID output                                                                  | 1                    | 0                    | ○      |
| F8.13          | Gain switching threshold       | Set range: 0.0~100.0%                                                                                                                                                                                               | 0.1%                 | 0.0%                 | ○      |
| F8.14          | PID sampling period            | Set range: 1~60000ms                                                                                                                                                                                                | 1ms                  | 1ms                  | ○      |
| F8.15          | Deviation limit                | Set range: 0.0~50.0%                                                                                                                                                                                                | 0.1%                 | 0.0%                 | ○      |
| F8.16          | Closed-loop regulation         | 0: Positive action<br>1: Negative action                                                                                                                                                                            | 1                    | 0                    | ○      |

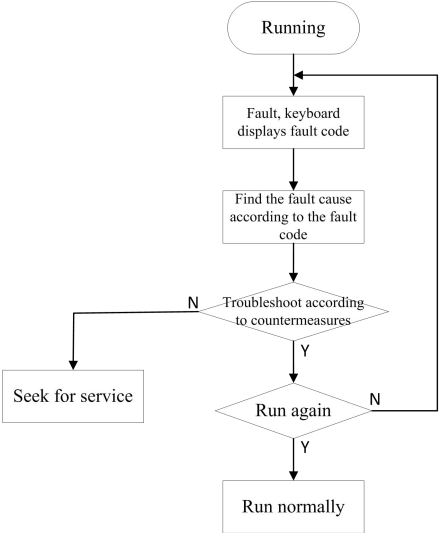
| Parameter Code | Parameter name                                    | Parameter detailed description                                                                         | Minimum Unit | Factory value | Change |
|----------------|---------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------|---------------|--------|
|                | features                                          |                                                                                                        |              |               |        |
| F8.17          | PID initial value                                 | F8.17 set range: 0.0~100.0%<br>F8.18 set range: 0.00~600.00s                                           | 0.1%         | 0.0%          | ×      |
| F8.18          | PID initial value hold time                       |                                                                                                        | 0.01s        | 0.00s         | ×      |
| F8.19          | Closed-loop output polarity selection             | 0: Closed-loop output is negative, run at zero-frequency<br>1: Closed-loop output is negative, reverse | 1            | 0             | ○      |
| F8.20          | PID reverse cutoff frequency                      | Set range: 0.00~upper limit frequency                                                                  | 0.01Hz       | 2.00Hz        | ×      |
| F8.21          | PID feedback loss detection value                 | F8.21 set range: 0.0~100.0%<br>F8.22 set range: 0.0~200.0s (0.0s indicates no detection)               | 0.1%         | 10.0%         | ○      |
| F8.22          | PID feedback loss detection time                  |                                                                                                        | 0.1s         | 0.0s          | ○      |
| F8.23          | Maximum sensor range                              | Set range: 0.0~200.0bar                                                                                | 0.1bar       | 10.0bar       | ○      |
| F8.24          | Water supply sleep selection                      | 0: Automatic sleep<br>1: Run at lower limit frequency                                                  | 1            | 0             | ○      |
| F8.25          | Water supply sleep detection time                 | F8.25 set range: 0.0~3600.0s<br>F8.26 set range: 0.01~600.00s                                          | 0.1s         | 10.0s         | ○      |
| F8.26          | Water supply sleep deceleration time              |                                                                                                        | 0.01s        | 10.00s        | ○      |
| F8.27          | Water supply wake pressure tolerance              | F8.27 set range: 0.0~100.0% (100.0% is the set pressure value)<br>F8.28 set range: 0.0~3600.0s         | 0.1%         | 10.0%         | ○      |
| F8.28          | Water supply wake detection time                  |                                                                                                        | 0.1s         | 2.0s          | ○      |
| F8.29          | Water pressure overpressure alarm detection value | Set range: 0.0~100.0% (Do not test when set to 0, 100.0% is the maximum range of pressure sensor)      | 0.1%         | 90.0%         | ○      |
| F8.30          | Water pressure undervoltage alarm detection value | Set range: 0.0~100.0% (Do not test when set to 0, 100.0% is the maximum range of pressure sensor)      | 0.1%         | 0.0%          | ○      |
| F8.31          | Water pressure abnormal alarm detection time      | Set range: 0.0~3600.0s                                                                                 | 0.1s         | 50.0s         | ○      |
| F8.32          | Water shortage alarm set value                    | F8.32 set range: 0.0~100.0% (100.0% is the set pressure value)<br>F8.33 set range: 0.0~3600.0s         | 0.1%         | 20.0%         | ○      |
| F8.33          | Water shortage                                    |                                                                                                        | 0.1s         | 20.0s         | ○      |

| Parameter Code | Parameter name                   | Parameter detailed description                                                         | Minimum Unit | Factory value | Change |
|----------------|----------------------------------|----------------------------------------------------------------------------------------|--------------|---------------|--------|
|                | alarm detection time             | F8.34 set range: 0~10000min (0min indicate there's no water shortage restart function) |              |               |        |
| F8.34          | Water shortage restart wait time |                                                                                        | 1min         | 0min          | ○      |

5.11 Troubleshooting

TheGT30 series drive provides rich fault handling information. When the drive fails, the keyboard will display the fault code and stop output. The fault record parameter group U1 can record the last 10 fault information. After the fault occurs, the processing steps are as follows:

- 1. When the drive fails, check whether the keyboard display is abnormal? If yes, seek for service;
- 2. If there is no abnormality, please check the group U1 function code, confirm the corresponding fault record parameters, and determine the actual status at occurrence of the current fault through all parameters;
- 3. Check the fault alarm content and countermeasure table, and check whether there is a corresponding abnormal status according to the specific countermeasures?
- 4. Do troubleshooting or ask relevant personnel for help;
- 5. After confirming the troubleshooting, reset the fault and start running.



Related parameter table:

| Parameter Code | Parameter name          | Parameter detailed description                                                                                                                                                                                                 | factory value | Change |
|----------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------|
| U1.00          | Historical fault number | Set range: 0~9<br>According to the setting of this function code, you can view the fault record information of the last 10 times. By setting different values within U1.01~U1.06, the corresponding fault record will display. | 0             | ○      |

| Parameter Code | Parameter name                   | Parameter detailed description                                          | Factory value | Change |
|----------------|----------------------------------|-------------------------------------------------------------------------|---------------|--------|
| U1.01          | Fault code during fault          | Fault record information at the xth fault (x is the set value of U1.00) | -             | *      |
| U1.02          | Bus voltage during fault         |                                                                         | -             | *      |
| U1.03          | Output current during fault      |                                                                         | -             | *      |
| U1.04          | Running frequency during fault   |                                                                         | -             | *      |
| U1.05          | Running temperature during fault |                                                                         | -             | *      |
| U1.06          | Fault occurrence time            |                                                                         | -             | *      |

Fault alarm content and countermeasure table:

| Fault code | Fault type                               | Possible cause of failure                                   | Countermeasures                                                                                                                                         |
|------------|------------------------------------------|-------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| E001       | Drive accelerated running overcurrent    | The acceleration time is too short.                         | Extend the acceleration time                                                                                                                            |
|            |                                          | The V/F curve is improper.                                  | Adjust the V/F curve setting, adjust the manual torque boost or set the motor parameters correctly to ensure that the automatic torque boost is normal. |
|            |                                          | When an instant stop occurs, restart the motor in rotation. | Set the start mode F2.00 to speed tracking restart function.                                                                                            |
|            |                                          | Low power grid voltage                                      | Check the input power.                                                                                                                                  |
|            |                                          | The drive power is too small.                               | Use an drive with a large power level.                                                                                                                  |
| E002       | Drive decelerated running overcurrent    | The deceleration time is too short.                         | Extend the deceleration time.                                                                                                                           |
|            |                                          | Load with potential energy or large inertia torque          | Externally add a proper energy consumption braking component.                                                                                           |
|            |                                          | The drive power is small.                                   | Use an drive with a large power level.                                                                                                                  |
| E003       | Drive constant-speed running overcurrent | Sudden change of load                                       | Reduce the sudden change of load.                                                                                                                       |
|            |                                          | The acceleration/deceleration                               | Extend the acceleration/deceleration time as appropriate.                                                                                               |

| Fault code | Fault type                               | Possible cause of failure                                                    | Countermeasures                                                      |
|------------|------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------|
|            |                                          | time is set to short.                                                        |                                                                      |
|            |                                          | Abnormal load                                                                | Perform load check.                                                  |
|            |                                          | Low power grid voltage                                                       | Check the input power.                                               |
|            |                                          | The drive power is small.                                                    | Use an drive with a large power level.                               |
| E004       | Drive accelerated running overvoltage    | Abnormal input voltage                                                       | Check the input power.                                               |
|            |                                          | The acceleration time is set to short.                                       | Extend the acceleration time as appropriate.                         |
|            |                                          | When an instant stop occurs, restart the motor in rotation.                  | Set the start mode F2.00 to speed tracking restart function.         |
| E005       | Drive decelerated running overvoltage    | The deceleration time is too short (relative to regenerative energy).        | Extend the deceleration time.                                        |
|            |                                          | Load with potential energy or large inertia torque                           | Select a proper energy consumption braking component.                |
| E006       | Drive constant-speed running overvoltage | Abnormal input voltage                                                       | Check the input power.                                               |
|            |                                          | The acceleration/deceleration time is set to short.                          | Extend the acceleration/deceleration time as appropriate.            |
|            |                                          | Abnormal change of the input voltage                                         | Install an input reactor.                                            |
|            |                                          | Large load inertia                                                           | Consider using an energy-saving brake component.                     |
| E007       | Undervoltage during running              | Abnormal input voltage                                                       | Check the power voltage.                                             |
| E008       | Motor overload alarm                     | The V/F curve is improper.                                                   | Set the V/F curve and the torque boost correctly.                    |
|            |                                          | Extremely low power grid voltage                                             | Check the power grid voltage.                                        |
|            |                                          | The general motor operates for a long time at a low speed with a large load. | Special motor can be selected for long-term and low-speed operation. |
|            |                                          | Incorrect motor rated current                                                | Set the motor rated current correctly.                               |
|            |                                          | Motor stalled or a large sudden change of load                               | Check the load.                                                      |
| E009       | Drive overload alarm                     | The acceleration time is too short.                                          | Extend the acceleration time                                         |
|            |                                          | Excessive DC braking capacity                                                | Reduce the DC braking current, and extend the braking time.          |
|            |                                          | The V/F curve is improper.                                                   | Adjust the V/F curve and the torque boost.                           |

| Fault code | Fault type                               | Possible cause of failure                                                              | Countermeasures                                              |
|------------|------------------------------------------|----------------------------------------------------------------------------------------|--------------------------------------------------------------|
|            |                                          | When an instant stop occurs, restart the motor in rotation.                            | Set the start mode F2.00 to speed tracking restart function. |
|            |                                          | Extremely low power grid voltage                                                       | Check the power grid voltage.                                |
|            |                                          | Excessive load                                                                         | Select an drive with a larger power.                         |
| E010       | Drive module protection                  | Instantaneous overcurrent of drive                                                     | See overcurrent countermeasures                              |
|            |                                          | The output three phases have phase-to-phase short circuit<br>Or grounded short circuit | Rewiring                                                     |
|            |                                          | Blocked air duct or damaged fan                                                        | Clear the air duct or replace the fan                        |
|            |                                          | Too high ambient temperature                                                           | Reduce the ambient temperature.                              |
|            |                                          | Loose wire connection or plug-in of control board                                      | Check and reconnect the wire                                 |
|            |                                          | Abnormal current waveform caused by output phase loss etc.                             | Check wiring                                                 |
|            |                                          | Damaged auxiliary power supply, undervoltage of drive                                  | Seek for service.                                            |
|            |                                          | Drive module arm straight-through                                                      | Seek for service.                                            |
|            |                                          | Abnormal control board                                                                 | Seek for service.                                            |
| E011       | Phase loss alarm at input side           | Phase loss of input R, S, and T                                                        | Check the installation wiring<br>Check the input voltage     |
| E012       | Phase loss alarm at output side          | Phase loss of output U, V, and W                                                       | Check the output wiring.<br>Check the motor and the cable.   |
| E013       | Drive module radiator overheat alarm     | Too high ambient temperature                                                           | Reduce the ambient temperature.                              |
|            |                                          | Blocked air duct                                                                       | Clear the air duct.                                          |
|            |                                          | Damaged fan                                                                            | Replace the fan.                                             |
|            |                                          | Abnormal drive module                                                                  | Seek for service.                                            |
| E014       | Rectifier module radiator overheat alarm | Too high ambient temperature                                                           | Reduce the ambient temperature.                              |
|            |                                          | Blocked air duct                                                                       | Clear the air duct.                                          |
|            |                                          | Damaged fan                                                                            | Replace the fan.                                             |
| E015       | External fault alarm                     | External fault emergency stop terminal closed                                          | Check the external equipment input.                          |
| E016       | 485 communication error alarm            | Improper baud rate setting                                                             | Set the baud rate properly.                                  |

| Fault code | Fault type                            | Possible cause of failure                                                | Countermeasures                                                                  |
|------------|---------------------------------------|--------------------------------------------------------------------------|----------------------------------------------------------------------------------|
|            |                                       | Serial port communication error                                          | Press the <b>STOP</b> key to reset, and seek for service.                        |
|            |                                       | Improper fault alarm parameter setting                                   | Modify the settings of Fb.04, Fb.03 and FA.07.                                   |
|            |                                       | The host computer doesn't work.                                          | Check whether the host computer works or not, and whether the wiring is correct. |
| E017       | Current detection circuit fault alarm | Damaged auxiliary power supply                                           | Seek for service.                                                                |
|            |                                       | Damaged Hall device                                                      | Seek for service.                                                                |
|            |                                       | Abnormal amplification circuit                                           | Seek for service.                                                                |
| E018       | Reserved                              | -                                                                        | -                                                                                |
| E019       | Reserved                              | -                                                                        | -                                                                                |
| E020       | Closed-loop feedback loss alarm       | Feedback circuit disconnected                                            | Check the feedback circuit.                                                      |
| E021       | Water pressure overpressure alarm     | Abnormal sensor feedback signal                                          | Check the sensor wiring.                                                         |
|            |                                       | Too low overvoltage alarm value                                          | Modify the F8.29 setting.                                                        |
|            |                                       | Too short alarm detection time                                           | Modify the F8.31 setting.                                                        |
| E022       | Reserved                              | -                                                                        | -                                                                                |
| E023       | Water shortage alarm                  | Abnormal water pressure/water level                                      | Check whether the water pressure at the pump inlet is abnormal.                  |
|            |                                       | Broken line or poor contact of the sensor, system has no feedback signal | Check the sensor installation and wiring.                                        |
|            |                                       | Too low water shortage alarm value.                                      | Modify the F8.32 setting.                                                        |
|            |                                       | Too short water shortage detection time                                  | Modify the F8.33 setting.                                                        |
| E024       | Reserved                              | -                                                                        | -                                                                                |
| E025       | Underload alarm                       | The reservoir is empty                                                   | Check the reservoir.                                                             |



| <b>Fault code</b> | <b>Fault type</b>                          | <b>Possible cause of failure</b>                                                                        | <b>Countermeasures</b>                                                                                                                                                     |
|-------------------|--------------------------------------------|---------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| E026              | Hydraulic probe damage of empty water      | Hydraulic probe damage                                                                                  | Hydraulic probe damage                                                                                                                                                     |
| E027              | Hydraulic probe damage of full water       | Hydraulic probe damage                                                                                  | Hydraulic probe damage                                                                                                                                                     |
| E028              | Operation panel parameter copy error alarm | The operation panel parameters are incomplete.                                                          | Re-upload the parameters in the backup operation panel.                                                                                                                    |
|                   |                                            | The operation panel parameters are inconsistent with the main control board parameter software version. | The parameter software version is inconsistent, and you cannot execute the parameter downloading, please re-upload the parameters in the backup operation panel.           |
|                   |                                            | The operation panel parameters are of 2S model, but the main control board parameters are of 4T model.  | The model corresponding to the parameter is inconsistent, and you cannot execute the parameter downloading, please re-upload the parameters in the backup operation panel. |
| E029              | Wave-by-wave current limiting alarm        | Excessive load                                                                                          | Check whether the grid voltage is normal                                                                                                                                   |
|                   |                                            |                                                                                                         | Check whether the motor is locked                                                                                                                                          |
|                   |                                            |                                                                                                         | Seek for service.                                                                                                                                                          |
| E099              | Reserved                                   | -                                                                                                       | -                                                                                                                                                                          |

## Appendix I Communication Protocol

### Networking mode

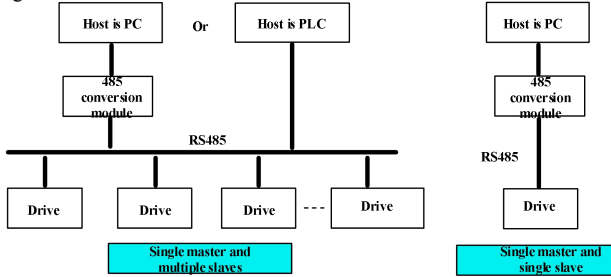


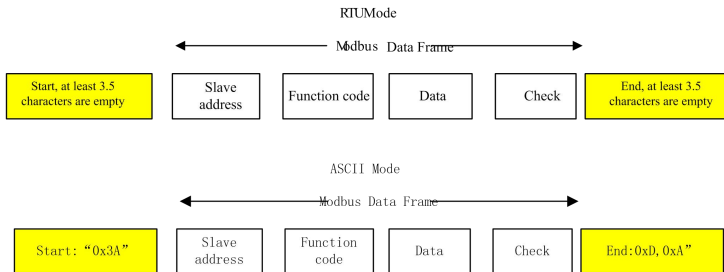
Figure 1 Schematic Diagram of Drive Networking Mode

### Interface mode

RS485: asynchronous, half-duplex. Default: 8-N-2, 9600bps. For parameter setting, please refer to group Fb description.

### Protocol format

The Modbus protocol supports both RTU mode and ASCII mode. The corresponding frame format is as follows:



### Protocol function:

The main function of Modbus is to read and write parameters. Different function codes determine different operation requests. The drive Modbus protocol supports the following function code operations:

| Function code | Function code significance                                      |
|---------------|-----------------------------------------------------------------|
| 0x03          | Read drive function code parameter and running status parameter |
| 0x06          | Rewrite function code or control parameter of single drive      |
| 0x10          | Rewrite function code or control parameter of multiple drives   |

The function code parameter, control parameter and status parameter of the drive are mapped as Modbus read-write registers. The read-write characteristics and range of the function code parameters follow the instructions in the drive user manual. The group number of the drive function code is mapped to the high byte address of the register, and the index in the group is mapped to the low byte address of the register. The control parameter of the drive is virtualized to the drive function code group 18, and the status parameter of the drive is virtualized to the drive function code group 19. The correspondence between the function code group number and the high byte of its mapped register address is as follows:

Group F0: 0x00; group F1: 0x01; group F2: 0x02; group F3: 0x03; group F4: 0x04; group F5: 0x05; group F6: 0x06; group F7: 0x07; group F8: 0x08; group F9: 0x09; FA group: 0x0A; Fb group: 0x0B; FC group: 0x0C; Fd group: 0x0D; FE group: 0x0E; FF group: 0x0F; U0 group: 0x10; U1 group: 0x11; drive control parameter group: 0x12; drive status parameter group: 0x13.

For example, the register address of the drive function code parameter F3.02 is 0x0302, and the register address of the drive function code parameter FE.01 is 0x0E01.

If the operation request fails, the response is an error code and an exception code. The error code is equal to (function code + 0x80), and the exception code indicates the error reason. The exception code is listed as follows:

| Exception code | Exception code significance                                                                                               |
|----------------|---------------------------------------------------------------------------------------------------------------------------|
| 0x1            | Illegal function code.                                                                                                    |
| 0x2            | Illegal register address.                                                                                                 |
| 0x3            | Data error, that is, the data exceeds the upper or lower limit.                                                           |
| 0x4            | Slave operation failed (including errors caused by invalid data, although the data is within the upper and lower limits). |
| 0x18           | Information frame error: Including information length error and check error.                                              |
| 0x20           | Parameters cannot be modified.                                                                                            |
| 0x21           | Out of the range of function group.                                                                                       |

The drive control parameters can complete functions to start, stop, and set running frequency of the drive. By searching drive status parameters, parameters such as operating frequency, output current, and output torque of the drive can be obtained. The specific drive control parameters and status parameters are enumerated as follows (except 0x1207 virtual output terminal is read-only, other parameters are readable and writable):

GT30 drive control parameter index

| Register address | Parameter name                                                                                 | Whether save after power failure |
|------------------|------------------------------------------------------------------------------------------------|----------------------------------|
| 0x1200           | Control command word 1                                                                         | No                               |
| 0x1201           | Main frequency setting                                                                         | Yes                              |
| 0x1202           | Reserved                                                                                       | -                                |
| 0x1203           | PID given                                                                                      | Yes                              |
| 0x1204           | PID feedback                                                                                   | Yes                              |
| 0x1205           | Analog output AO, high-speed DO2 setting                                                       | No                               |
| 0x1206           | Virtual input terminal:<br>Define by bit: BIT0~9 = VDI1~VDI10, BIT10~15 = Reserved             | No                               |
| 0x1207           | Virtual output terminals (read-only):<br>Define by bit: BIT0~4 = VDO1~VDO5, BIT5~15 = Reserved | No                               |
| 0x2000           | Control command word 2                                                                         | No                               |
| 0x2001           | Main frequency setting                                                                         | Yes                              |

GT30 drive status parameter index

| Register address | Parameter name      |
|------------------|---------------------|
| 0x1300           | Running status word |
| 0x1301           | Drive model         |

The drive control word 1 (register address 0x1200) bit is defined as follows:

| Control word (bit) | Value         | Significance        | Function description                                                              |
|--------------------|---------------|---------------------|-----------------------------------------------------------------------------------|
| Bit2, 1, 0         | 111B          | Run command         | Start the drive                                                                   |
|                    | 110B          | Stop command        | Stop according to the way set by function code F2.08                              |
|                    | Remainin<br>g | No command          |                                                                                   |
| Bit3               | 1             | Reverse             | Set the running direction when the run command is valid (invalid for jog command) |
|                    | 0             | Forward             |                                                                                   |
| Bit8~Bit4          | 0             | Reserved            | -                                                                                 |
| Bit9               | 1             | Fault reset valid   |                                                                                   |
|                    | 0             | Fault reset invalid |                                                                                   |
| Bit15~Bit5         | 0             | Reserved            | -                                                                                 |

The drive control word 2 (register address 0x2000) bit is defined as follows:

| Control word (bit) | Value | Significance        | Function description                                 |
|--------------------|-------|---------------------|------------------------------------------------------|
| Bit1, 0            | 00B   | No function         | Stop according to the way set by function code F2.08 |
|                    | 01B   | Stop                |                                                      |
|                    | 10B   | Start               | Start the drive                                      |
|                    | 11B   | No function         |                                                      |
| Bit3, 2            | 0     | Reserved            | -                                                    |
| Bit5, 4            | 00B   | No function         |                                                      |
|                    | 01B   | Forward instruction |                                                      |
|                    | 10B   | Reverse instruction |                                                      |
|                    | 11B   | Fault reset         |                                                      |
| Bit15~Bit5         | 0     | Reserved            | -                                                    |

The drive status word (register address 0x1300) bit is defined as follows:

| Status word (bit) | Value   | Significance               | Remarks                                                                                                                                                                                                                                                    |
|-------------------|---------|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bit0              | 1       | Drive operation            |                                                                                                                                                                                                                                                            |
|                   | 0       | Drive stop                 |                                                                                                                                                                                                                                                            |
| Bit1              | 1       | Drive reverse              |                                                                                                                                                                                                                                                            |
|                   | 0       | Drive forward              |                                                                                                                                                                                                                                                            |
| Bit2              | 1       | Reach the main setting     |                                                                                                                                                                                                                                                            |
|                   | 0       | Not reach the main setting |                                                                                                                                                                                                                                                            |
| Bit7~Bit3         | 0       | Reserved                   |                                                                                                                                                                                                                                                            |
| Bit15~Bit8        | 00~0xFF | Fault code                 | 0: Indicates the drive is normal;<br>Not 0: Indicates a fault, and refer to the user manual of the drive of relevant type for detailed fault code significance. For example, the fault code for motor overload E008 is 0x08, and for undervoltage is 0x1F. |

Application example

The command to start the 1# drive to run in the forward direction and set the speed to 50.00HZ (internally indicated as 5000) is as follows:

|          | Address | Function code | Register address | Register number | Register content bytes | Register content | Verification code |
|----------|---------|---------------|------------------|-----------------|------------------------|------------------|-------------------|
| Request  | 0x01    | 0x10          | 0x1200           | 0x0002          | 0x04                   | 0x0007, 0x1388   | 0x9B98            |
| Response | 0x01    | 0x10          | 0x1200           | 0x0002          | None                   | None             | 0x44B0            |

5# drive fault reset:

| Address | Function code | Register address | Register content | Verification code |
|---------|---------------|------------------|------------------|-------------------|
| 0x05    | 0x06          | 0x1200           | 0x0200           | 0x8C56            |
| 0x05    | 0x06          | 0x1200           | 0x0200           | 0x8C56            |

Read the running frequency of the 4# drive, and the drive response running frequency is 50.00HZ:

| Address | Function code | Register address | Register number or read bytes | Register content | Verification code |
|---------|---------------|------------------|-------------------------------|------------------|-------------------|
| 0x04    | 0x03          | 0x1000           | 0x0001                        | None             | 0x809F            |
| 0x04    | 0x03          | None             | 0x02                          | 0x1388           | 0x7912            |

Write the acceleration time 1 (i.e. function code F1.11) of 5# drive to 1.00s, and do not save after power failure.

| Address | Function code | Register address | Register content | Verification code |
|---------|---------------|------------------|------------------|-------------------|
| 0x05    | 0x06          | 0x010B           | 0x0064           | 0xF99B            |
| 0x05    | 0x06          | 0x010B           | 0x0064           | 0XF99B            |

Read the output current of 5# drive, and the drive response output current is 3.00A.

| Address | Function code | Register address | Register number or read bytes | Register content | Verification code |
|---------|---------------|------------------|-------------------------------|------------------|-------------------|
| 0x05    | 0x03          | 0x1002           | 0x0001                        | None             | 0x208E            |
| 0x05    | 0x03          | None             | 0x02                          | 0x012C           | 0x49C9            |

Calibration relationship of the drive

A) The calibration of the frequency is 1:100

To make the drive run at 50Hz, the main setting shall be 0x1388 (5000).

B) The calibration of the time is 1:100

To make the drive acceleration time be 3s, the function code setting shall be 0x012C (300).

C) The calibration of the current is 1:100

If the drive feedback current is 0x012C (300), the current of the drive is 3A.

## Warranty Agreement

1. The warranty covers only the drive itself.
2. During normal use, if the drive fails or is damaged within 18 months, the company shall be responsible for repairing;  
If above 18 months, a reasonable maintenance fee will be charged.
3. The start of the warranty period is the date of manufacture of our company.
4. Within 18 months, a certain maintenance fee shall also be charged if:
  - Unable to follow the operation steps in the user manual causing damages to the drive.
  - The drive is damaged due to flood, fire, abnormal voltage, etc.
  - The drive is damaged due to incorrect wiring, etc.
  - Damages caused by using the drive for abnormal functions.
5. The related service fee is calculated based on actual

Drive warranty form

|                                                                                                                                                              |                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| User unit:                                                                                                                                                   |                          |
| Detailed address:                                                                                                                                            |                          |
| Zip code:                                                                                                                                                    | Contact person:          |
| Telephone number:                                                                                                                                            | Fax:                     |
| Machine number:                                                                                                                                              |                          |
| Power:                                                                                                                                                       | Model:                   |
| Contract number:                                                                                                                                             | Date of purchase:        |
| Service unit:                                                                                                                                                |                          |
| Contact person:                                                                                                                                              | Telephone number:        |
| Repairman:                                                                                                                                                   | Telephone number:        |
| Date of repair:                                                                                                                                              |                          |
| User comments and evaluation: <input type="checkbox"/> Excellent <input type="checkbox"/> Good <input type="checkbox"/> Normal <input type="checkbox"/> Poor |                          |
| Other comments:                                                                                                                                              |                          |
| User signature:                                                                                                                                              | Day      Month      Year |
| Company return visit records:                                                                                                                                |                          |
| Others:                                                                                                                                                      |                          |

Certificate  
of Conformity

Inspector\_\_\_\_\_

This product is qualified via  
inspection and is allowed to  
leave the factory.