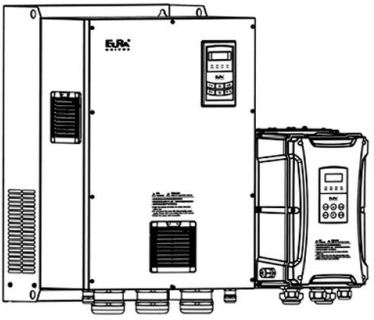
# E2400 SERIES

EURA DRIVES

## User's Manual

## 0.4-450KW



# Content

# I. Product

This manual offers a brief introduction of the installation connection for E2400 series inverters, parameters setting and operations, and should therefore be properly kept. Please contact manufacturer or dealer in case of any malfunction during application.

## 1.1 Product model naming rule

E2400 – 0004 S2 CPX

| Mark | Structure |
|---|---|
| CPX | Wall-hanging type |
| …… | |
| CP11 | |

Input power type:
S2 means single-phase 220VAC
T2means three-phase 220 VAC
T3 means three-phase 380 VAC

Motor power

Relation

| Mark | 0004 | …… | 4500 |
|---|---|---|---|
| Motor power (kW) | 0.4 | …… | 450 |

Product series

## 1.2 Function naming rule

U1 F2 AJ03 B1 R3 P6

| | | | |
|---|---|---|---|
| IP level | P6 | IP66 | Note5 |
| Filter | R3 | EMC C3 level | Note1 |
| Braking | B1 | Dynamic braking | Note2 |
| Keypad | AJ03 | AJ Chinese no potentioometer LED keypad | Note3 |
| Communication | F2 | Modbus | Note4 |
| Certicicate | U1 | CE | Note6 |

Note：

1. R3: EMC C3 level, the test condition is 25m shielded motor cable.

2. Braking unit is standard for three-phase 380V 30kW and below 30kW, so as three-phase 220V model 2.2kW and below 2.2kW.

Braking unit is optional for single-phase 220V and three-phase 380V 37kW~110kW.

132kW and above 132kW have no built-in braking unit.

3. Keypad :

| Structure code | Keypad code | Contents |
|---|---|---|
| CPX~CP2 | AJ01 | AJ Chinese version without potentiometer |
| | AJ03 | AJ English version without potentiometer |
| CP3~CP11 | A601 | A6 Chinese version without potentiometer |
| | A603 | A6 English version without potentiometer |

4. Communication

| Structure code | Communication code | Contents |
|---|---|---|
| CPX~CP11 | F2 | Modbus |
| | F15 | CANOpen+Modbus |

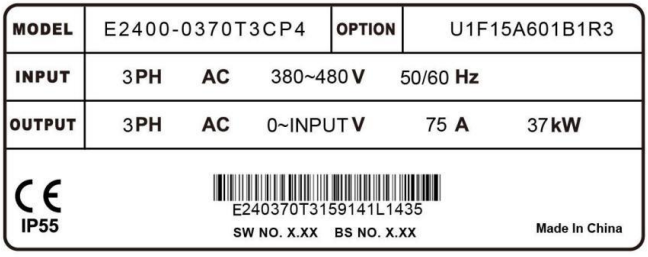
5. P6 represents protection level IP66, no P6 represents IP55.

## 1.3 Nameplate

Taking for instance the E2400 series 37kW inverter with 3-phase input, its nameplate is illustrated as Fig 1-1.

3Ph: 3-phase output; 75A, 37kW: rated output current and power;

0.50～590.0Hz：output frequency range



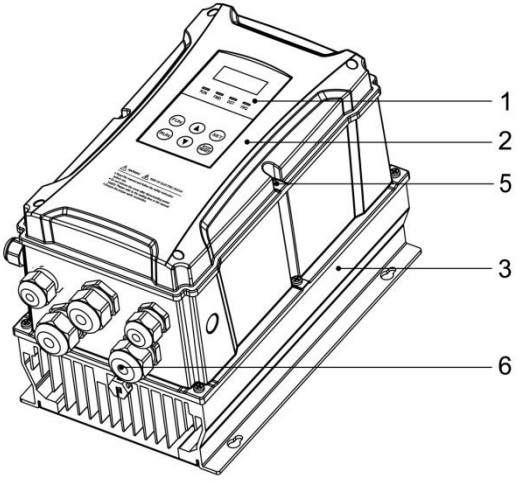

Note: For frame CPX～CP2, P6 represents IP66, no P6 represents IP55.
For frame CP3～CP11, protection level is IP54.

## 1.4 Product appearance

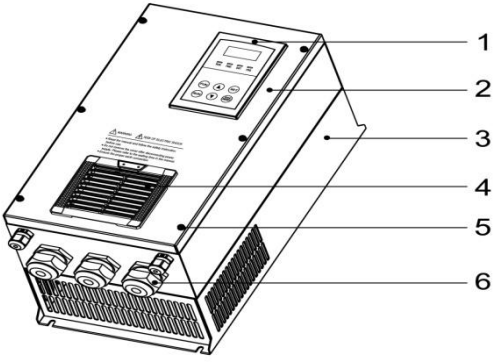
### 1.4.1 Appearance

The external structure of E2400 series inverter is classified into plastic and metal housings. Wall hanging type is adopted.

Plastic housing possesses elegant appearance and high strength.Taking E2400-0075T3CP1 for instance, the external appearance and structure are shown as in below Fig.




Metal housing possesses elegant appearance and high strength. Taking E2400-1320T3CP6 for instance, its appearance and structure are shown as in below Fig.



| 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|
| Keypad | Cover | Radiator | Protective net cover Note | Screw | Cable gland |

Note: Protective net cover is only adopted for 132kW and above 132kW drive.

## 1.5 Technical Specifications

Table2-2 **Technical Specifications for E2400 Series Inverters**

| | Items | Contents |
|---|---|---|
| Input | Rated Voltage Range | 3-phase 380-480V (+10%, -15%) note 1<br>3-phase 220V~240V ±15%<br>1-phase 220-240V ±15% |
| | Rated Frequency | 50/60Hz |
| Output | Rated Voltage Range | 3-phase 0-INPUT (V) |
| | Frequency Range | 0.50～590.0Hz (In SVC control mode, the max frequency should be lower than 500Hz.) |
| Control Mode | Carrier Frequency | 800~16000Hz; Fixed carrier-wave and random carrier-wave can be selected by F159. |
| | Input Frequency Resolution | Digital setting: 0.01Hz, analog setting: max frequency X 0.1% |
| | Control Mode | For induction motor:<br>SVC (open-loop vector control) control, V/F control,<br>VC (Closed-loop vector control) control<br>For PMSM: SVC (open-loop vector control) control |
| | Start Torque | 0.5 Hz / 150% (SVC)， 0Hz/180% (VC),<br>5% of rated speed/100% of rated torque (PMSM SVC) |
| | Speed-control Scope | 1:100 (SVC), 1:1000 (VC), 1:20 (in PMSM SVC) |
| | Steady Speed Precision | ±0.5%（SVC）, ±0.02%（VC) |
| | Torque Control Precision | ±5% |
| | Overload Capacity | 150% rated current, 60 seconds. |
| | Torque Elevating | Auto torque promotion, Manual Torque Promotion includes 1-20 curves. |
| | V/F Curve | 3 kinds of modes: beeline type, square type and under-defined V/F curve. |
| | Startup mode | Direct startup, speed track startup (V/F control) |
| | DC Braking | DC braking frequency: 0.20-50.00 Hz,<br>braking time: 0.00~30.00s |
| | Jogging Control | Jogging frequency range: min frequency~ max frequency,<br>jogging acceleration/deceleration time: 0.1~3000s |
| | Auto Circulating Running and multi-stage speed running | Auto circulating running or terminals control can realize 15-stage speed running. |
| | Built-in PID adjusting | Easy to realize a system for process closed-loop control |
| | Auto voltage regulation (AVR) | When source voltage changes, the modulation rate can be adjusted automatically, so that the output voltage is unchanged. |
| Operation Function | Frequency Setting | Potentiometer or external analog signal (0～5V, 0～10V, 0～20mA); keypad (terminal)▲ / ▼ keys, external control logic and automatic circulation setting. |

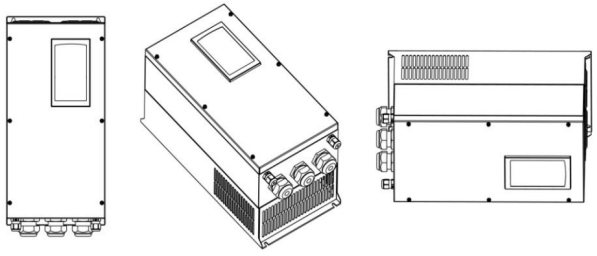
| | | |
|---|---|---|
| | Start/Stop Control | Terminal control, keypad control or communication control. |
| | Running Command Channels | 3 kinds of channels from keypad panel, control terminal and MODBUS. |
| | Frequency Source | Frequency sources: given digit, given analog voltage, given analog current and given MODBUS |
| | Accessorial frequency Source | 7 kinds of accessorial frequency |
| Optional | Built-in EMI filter, built-in braking unit, Modbus, tele-control panel | |
| Protection Function | Input phase loss, Output phase loss, input under-voltage, DC over-voltage, over-current, inverter over-load, motor over-load, current stall, over-heat, external disturbance, under-load, pressure control, analog line disconnected, PG line disconnection, keypad disconnection, oPEn protection, STO and STO1. | |
| Display | Keypad showing present output frequency, present rotate-speed (rpm), present output current, present output voltage, present linear-velocity, types of faults, and parameters for the system and operation; LED indicators showing the current working status of inverter. | |
| Environment Conditions | Equipment Location | In an indoor location |
| | Environment Temperature | -10℃～+40℃ |
| | Environment Humidity | Below 90% (no water-bead coagulation) |
| | Vibration Strength | CPX～CP2: 2g<br>CP3～CP11: Below 0.6g (acceleration) |
| | Height above sea level | 1000m or below |
| Protection level | CPX～CP2: IP55/IP66<br>CP3～CP11: IP54 | |
| Applicable Motor | 0.4～450kW | |

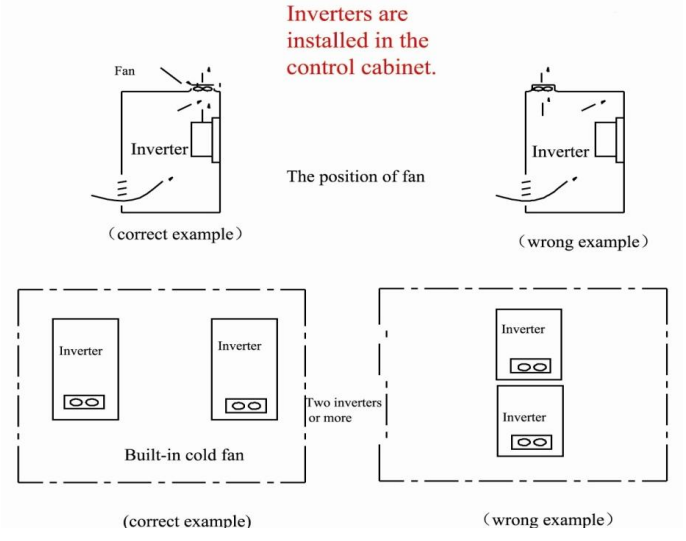
Note: E2400 series is suitable for harsh indoor environments, such as dust, graphite, and humidity. E2400 series cannot completely prevent dust from entering, but the amount of entering dust will not affect the normal operation and will not affect safety.

## 1.6 Safe instructions

- Please check the model in the nameplate of the inverter and the rated value of the inverter. Please do not use the damaged inverter in transit.
- Installation and application environment should be free of corrosive or flammable gases or liquids. Environment temperature within the scope of -10℃～+50℃.
- Please install inverter away from combustibles.
- Do not drop anything into the inverter.
- The reliability of inverters relies heavily on the temperature. The around temperature increases by 10℃, inverter life will be halved. Because of the wrong installation or fixing, the temperature of inverter will increase and inverter will be damaged.
- Inverter is installed in a control cabinet, and smooth ventilation should be ensured and inverter should be installed vertically. If there are several inverters in one cabinet, in order to ensure ventilation, please install inverters side by side. If it is necessary to install several inverters up and down, please add heat-insulation plate.

1






## 1.7 Precautions

### 1.7.1 Instructions for use

- Never touch the internal elements within 15 minutes after power off. Wait till it is completely discharged.
- Input terminals R, S and T are connected to power supply of 400V while output terminals U, V and W are connected to motor.
- Proper grounding should be ensured with grounding resistance not exceeding 4Ω; separate grounding is required for motor and inverter. Grounding with series connection is forbidden.
- There should be separate wiring between control loop and power loop to avoid any possible interference.
- Signal line should not be too long to avoid any increase with common mode interference.

- If circuit breaker or contactor needs to be connected between the drive and the motor, be sure to operate these circuit breakers or contactor when the drive has no output, to avoid damaging of drive.
- Before using the drive, the insulation of the motors must be checked, especially, if it is used for the first time or if it has been stored for a long time. This is to reduce the risk of the drive from being damaged by the poor insulation of the motor.
- Do not connect any varistor or capacitor to the output terminals of the drive, because the drive's output voltage waveform is pulse wave, otherwise tripping or damaging of components may occur; in addition, do not install circuit breaker or contactor at the output side of the drive as shown in Fig 1-6.

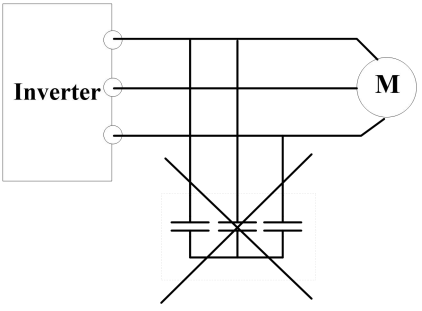



Fig 1-6 Capacitors are prohibited to be used.

- Derating must be considered when the drive is installed at high altitude, greater than 1000m. This is because the cooling effect of drive is deteriorated due to the thin air, as shown in Fig. 1-7 that indicates the relationship between the elevation and rated current of the drive.

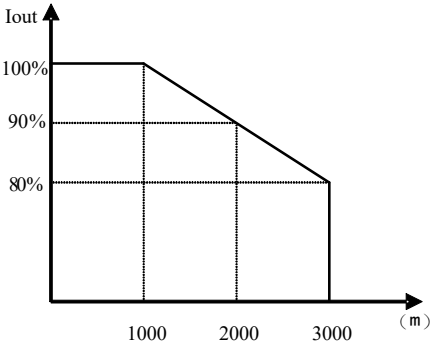



Fig 1-7 Derating drive's output current with altitude

The base of the radiator may become hot during running. Do not touch to avoid hurt.

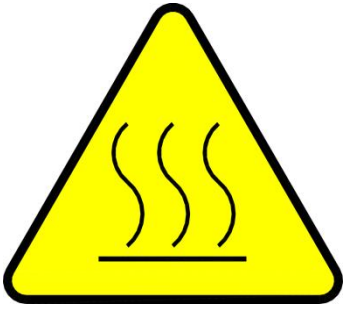


Fig 1-8 Hot side

### 1.7.2 Special Warning!!

- Never touch high-voltage terminals inside the inverter to avoid any electric shock.
- Before inverter is powered on, please be sure that input voltage is correct.
- Please do not connect input power supply onto U,V,W or ⏚/PE/E terminals.
- Please do not install inverter directly under sunshine, do not block up the cooling hole.
- All safety covers should be well fixed before inverter is power connected, to avoid any electric shock.
- Only professional personnel are allowed for any maintenance, checking or replacement of parts.
- No live-line work is allowed.

## 1.8 Maintenance

### 1.8.1 Periodic checking

- Cooling fan and wind channel should be cleaned regularly to check whether it is normal; remove the dust accumulated in the inverter on a regular basis.
- Check inverter's input and output wiring and wiring terminals regularly and check if wirings are ageing.
- Check whether screws on each terminals are fastened.
- Check whether inverter is corrosive.

### 1.8.2 Replacement of Vulnerable Components

The vulnerable components of the frequency converter mainly include the cooling fan and the filter electrolytic capacitor.

- The lifespan of the fan is generally 2 to 3 years. Users can determine the replacement of the frequency converter's cooling fan based on the operating time. Potential reasons for fan damage include bearing wear and blade aging. Check for cracks in the fan blades, abnormal vibration sounds when starting up, to assess the need for replacement.
- The lifespan of the filter electrolytic capacitor is typically 4 to 5 years. Users can determine the replacement of the frequency converter's filter electrolytic capacitor based on the operating time. Potential reasons for capacitor damage include poor input power quality, high ambient temperatures, frequent load

changes, and electrolyte aging. Check for liquid leakage, protrusion of the safety valve, measure the static capacitance, and insulation resistance to determine the need for replacement.

**1.8.3 Storage**

- Please put the inverter in the packing case of manufacture.
- If inverter is stored for long time, please charge the inverter within half a year to prevent the electrolytic capacitors damaged. The charging time should be longer than 5 hours.

**1.8.4 Daily Maintenance**

Environment temperature, humidity, dust and vibration would decrease the life of inverter. Daily maintenance is necessary to inverters.

Daily inspecting:

- Inspecting for noise of motor when it is working.
- Inspecting for abnormal vibration of motor when it is working.
- Inspecting for the installing environment of inverter.
- Inspecting for the fan and inverter temperature.

**1.8.5 Daily cleaning:**

Keep the inverter clean. Clean surface dust of inverter to prevent dust, metal powder, oily dirt and water from dropping into the inverter

# II.Keypad panel

Two kinds of controllers (four lines of LCD and LED segment display) are available for E2400 series inverters. Refer to note for Fig3-1.

## 2.1 Panel Illustration

### 2.1.1 Six- key LED keypad

The panel covers three sections: data display section, status indicating section and keypad operating section, as shown in Fig. 2-1.

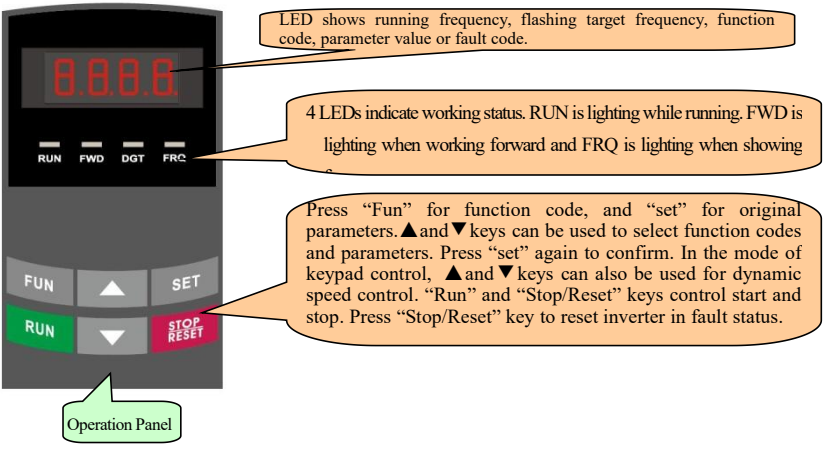



Fig.2-1 Operation Panels

### 2.1.2 Nine-key LED keypad

The panel covers three sections: data display section, status indicating section and keypad operating section, as shown in Fig. 2-1.


LED shows running frequency, flashing target frequency, function code, parameter value or fault code.

4 LEDs indicate working status. RUN is lighting while running. FWD is lighting when working forward and FRQ is lighting when showing frequency.

Press "FUN" for calling function code, and "SET" for original parameters. ▲ and ▼ keys can be used to select function codes and parameters, and press "SET" to confirm. In the mode of keypad control, << ▲ and ▼ keys can also be used for dynamic speed control. "Run" and "Stop/Reset" keys control start and stop. Press "Stop/Reset" key to reset inverter when in fault status. Press "*" key to set Fwd/rev jogging and select local/remote control,

Fig.2-2 Operation Panels

### 2.1.3 LCD keypad

The panel covers three sections: data display section, status indicating section and keypad operating section, as shown in Fig 2-3.


ALM blinks when fault occurs. LOC/REM blinks in the data transmission process. FWD is ON when rotating forward, REV is ON when rotating reversely, and STOP is always ON and FWD/REV blinks when not running.

Function definition

Display and value of function code

Operation guidance

Press "FUN" for calling function code, and "SET" for original parameters. <<, ▲ and ▼keys can be used to select function codes and parameters. Press "SET" again to confirm. In the mode of keypad control, ▲and▼keys can also be used for dynamic speed control. "Run" and "Stop/Reset" keys control start and stop. Press "Stop/Reset" key to reset inverter when in fault status. Press "FWD/REV" to change motor running direction.

Fig.2-3 Operation Panels

**Note :** Nine-key LED keypad and LCD keypad is not supported by E2400 series.

# III.Wiring Recommended

## 3.1 Power cable

**Table 3-1 Lead Section Area**

| Inverter Model | Lead Section Area($mm^2$) |
|---|---|
| E2400-0004S2 | 1.5 |
| E2400-0007S2 | 2.5 |
| E2400-0015S2 | 2.5 |
| E2400-0022S2 | 4.0 |
| E2400-0004T2 | 1.5 |
| E2400-0007T2 | 2.5 |
| E2400-0015T2 | 2.5 |
| E2400-0022T2 | 4.0 |
| E2400-0004T3 | 1.5 |
| E2400-0007T3 | 1.5 |
| E2400-0015T3 | 2.5 |
| E2400-0022T3 | 2.5 |
| E2400-0030T3 | 2.5 |
| E2400-0040T3 | 2.5 |
| E2400-0055T3 | 4.0 |
| E2400-0075T3 | 4.0 |
| E2400-0110T3 | 6.0 |
| E2400-0150T3 | 10 |
| E2400-0185T3 | 16 |
| E2400-0220T3 | 16 |
| E2400-0300T3 | 25 |
| E2400-0370T3 | 25 |
| E2400-0450T3 | 35 |
| E2400-0550T3 | 35 |
| E2400-0750T3 | 50 |
| E2400-0900T3 | 70 |

| | |
|---|---|
| E2400-1100T3 | 70 |
| E2400-1320T3 | 95 |
| E2400-1600T3 | 120 |
| E2400-1850T3 | 120 |
| E2400-2000T3 | 150 |
| E2400-2200T3 | 185 |
| E2400-2500T3 | 240 |
| E2400-2800T3 | 240 |
| E2400-3150T3 | 300 |
| E2400-3550T3 | 300 |
| E2400-4000T3 | 400 |
| E2400-4500T3 | 480 |

**Table 3-2 Recommended stripping length and Tube cable lug**

| Inverter model | **Power cable** | | Grounding cable | |
|---|---|---|---|---|
| | Terminal screw | Tube cable lug | Terminal screw | Tube cable lug |
| E2400-0004S2 | M4 | RNB2.5-4 | M4 | RNB2.5-4 |
| E2400-0007S2 | M4 | RNB2.5-4 | M4 | RNB2.5-4 |
| E2400-0015S2 | M4 | RNB2.5-4 | M4 | RNB2.5-4 |
| E2400-0022S2 | M4 | RNB4-5 | M4 | RNB4-5 |
| E2400-0004T2 | M4 | RNB2.5-4 | M4 | RNB2.5-4 |
| E2400-0007T2 | M4 | RNB2.5-4 | M4 | RNB2.5-4 |
| E2400-0015T2 | M4 | RNB2.5-4 | M4 | RNB2.5-4 |
| E2400-0022T2 | M4 | RNB4-5 | M4 | RNB4-5 |
| E2400-0004T3 | M4 | RNB2.5-4 | M4 | RNB2.5-4 |
| E2400-0007T3 | M4 | RNB2.5-4 | M4 | RNB2.5-4 |
| E2400-0015T3 | M4 | RNB2.5-4 | M4 | RNB2.5-4 |
| E2400-0022T3 | M4 | RNB4-5 | M4 | RNB4-5 |
| E2400-0030T3 | M4 | RNB4-5 | M4 | RNB4-5 |
| E2400-0040T3 | M4 | RNB4-5 | M4 | RNB4-5 |
| E2400-0055T3 | M4 | SC6-6 | M4 | SC6-6 |

| | | | | |
|---|---|---|---|---|
| E2400-0075T3 | M4 | SC6-6 | M4 | SC6-6 |
| E2400-0110T3 | M5 | SC16-6 | M4 | SC16-6 |
| E2400-0150T3 | M5 | SC16-6 | M4 | SC16-6 |

| Model | Power cable | | Grounding cable | |
|---|---|---|---|---|
| | Cable fixing mode | Stripping length(mm) | Cable fixing mode | Stripping length (mm) |
| E2400-0185T3 | Line pressing | 16.5 | Line pressing | 16.5 |
| E2400-0220T3 | Line pressing | 16.5 | Line pressing | 16.5 |
| E2400-0300T3 | Line pressing | 16.5 | Line pressing | 16.5 |

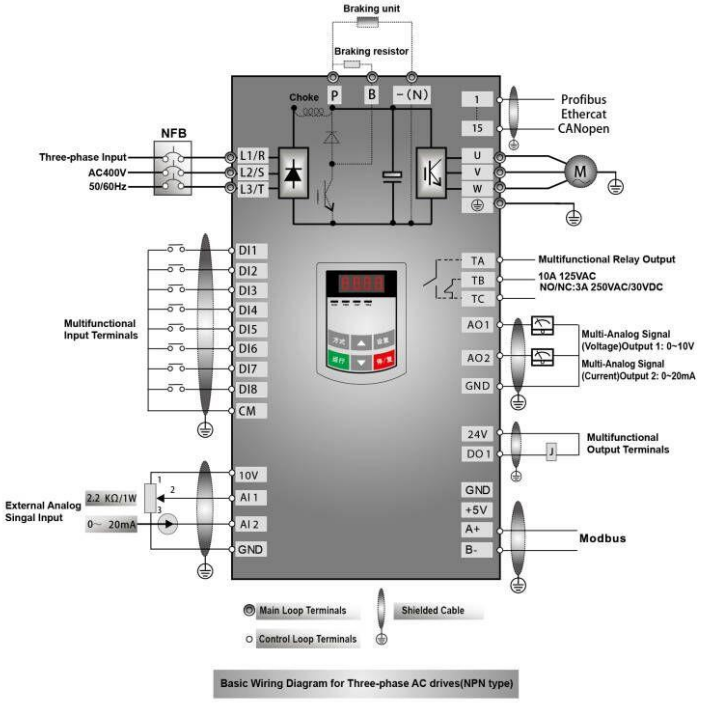
| Model | Power cable | | Grounding cable | |
|---|---|---|---|---|
| | Terminal screw | Tube cable lug | Terminal screw | Tube cable lug |
| E2400-0370T3 | M8 | GTNR25-6 | M6 | GTNR16-6 |
| E2400-0450T3 | M8 | GTNR35-8 | M6 | GTNR16-6 |
| E2400-0550T3 | M8 | GTNR35-8 | M6 | GTNR16-6 |
| E2400-0750T3 | M8 | GTNR50-8 | M6 | GTNR25-6 |
| E2400-0900T3 | M10 | GTNR70-10 | M8 | GTNR35-8 |
| E2400-1100T3 | M10 | GTNR70-10 | M8 | GTNR35-8 |
| E2400-1320T3 | M10 | GTNR95-10 | M8 | GTNR50-8 |
| E2400-1600T3 | M12 | GTNR120-12 | M12 | GTNR70-12 |
| E2400-1850T3 | M12 | GTNR120-12 | M12 | GTNR70-12 |
| E2400-2000T3 | M12 | GTNR150-12 | M12 | GTNR95-12 |
| E2400-2200T3 | M12 | GTNR185-16 | M12 | GTNR95-12 |
| E2400-2500T3 | M12 | GTNR150-16 | M12 | GTNR120-12 |
| E2400-2800T3 | M12 | GTNR150-16 | M12 | GTNR120-12 |
| E2400-3150T3 | M16 | GTNR240-16 | M12 | GTNR150-12 |
| E2400-3550T3 | M16 | GTNR240-16 | M12 | GTNR150-12 |
| E2400-4000T3 | M16 | GTNR240-16 | M12 | GTNR240-12 |
| E2400-4500T3 | M16 | GTNR240-16 | M12 | GTNR240-12 |

## 3.2 Lead section area of protect conductor (grounding wire)

| Lead section area S of U,V,W ($mm^2$) | Min lead section area of ⏚/⏦/PE/E(mm2) |
|---|---|
| S≤16 | S |
| 16＜S≤35 | 16 |
| 35＜S | S/2 |

## 3.3 Overall Connection

Refer to next figure for overall connection sketch for E2400 series inverters. Wiring mode is available for various terminals whereas not every terminal needs connection when applied.




Basic Wiring Diagram for Three-phase AC drives(NPN type)

Note:

1. Please only connect power terminals L1/R and L2/S with power grid for single-phase inverters.
2. 485 communication port has built-in standard MODBUS communication protocol. Communication port is on the left

side of inverter. For 30KW inverter and below, the sequence from top to down is B-, A+, 5V power, and GND. For 37KW inverter and above, the sequence from top to down is GND, 5V power, A+, B-.

3. Inverter above 37kW has 8 multifunctional input terminals DI1~DI8, 37kW inverter and below 30kW has 6 multifunctional input terminals DI1~DI6.

4. The contact capacity is 10A/125VAC. NO/NC: 3A 250VAC/30VDC.

## 3.4 Safety capacitor group and varistor jumper

1. J1 is screen printing of safety capacitor group (EMC). The default setting is to connect pin 1 and pin 3 by a jumper. This state is EMC interference countermeasure**,** safety capacitor is in valid state. If leakage protection breaker acts when inverter is power-on, please change the safety capacitor to invalid state, by switching to connect pin 2 and pin4 by a jumper.
2. Y1 is screen printing of varistor (VAR). The default setting is to connect pin 2 and pin 4 by a jumper. This state applies to isolated neutral system. For earthed neutral system, please change the varistor jumper to valid state, by switching to connect pin 2 and pin 4 with a jumper.

Note:①when the frequency inverter is applied to the IT power grid system, that is, isolated neutral system, the ground jumper of varistor (screen printed Y1, labeled VAR) and safety capacitor (screen printed J1, labeled EMC) must be adjusted to invalid state. In IT power grid system, frequency inverter can't connect with external input filter, otherwise frequency inverter will be damaged.

②Please adjust jumper wire in power-off state.

Please refer to following figure for guidance for structure code CP4 and above inverter: the triangular part of the shield plate opening, represented by 1 pin.

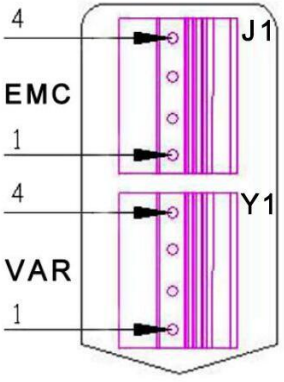



Fig 3-2 Safety capacitor and varistor jumper J1/Y1

# IV.Analog Input and Output

## 4.1 Analog output

E2400 series inverters have 2 analog output channels AO1 and AO2. Analog output terminal AO2 can only output current signal, AO1 terminal can output voltage and current signal, the selecting switch is J5, please refer to Fig 4-1, the output relation is shown in table 4-1.

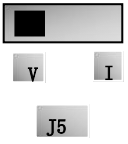



Fig 4-1

**Table 4-1 The relationship between AO1 and J5 and F423**

| AO1 output | | Setting of F423 | | |
|---|---|---|---|---|
| | | 0 | 1 | 2 |
| J5 | V | 0～5V | 0～10V | Reserved |
| | I | Reserved | 0～20mA | 4～20mA |

## 4.2 Analog input

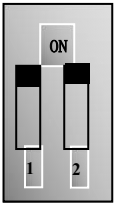



Fig 4-2

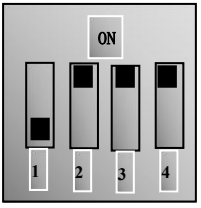



Fig 4-3

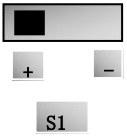



Fig 4-4

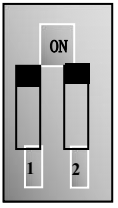



Fig 4-5

**Table 4-2 The Setting of Coding Switch and Parameters in the Mode of Analog Speed Control**

| F203=2, channel AI2 is selected | | | | F203=1, channel AI1 is selected | |
|---|---|---|---|---|---|
| Parameter | SW1 coding switch | | | S1 toggle switch | |
| F439 | Coding Switch 1 | Coding Switch 2 | Mode of Speed Control | + | - |
| 0 | OFF | OFF | 0~5V voltage | 0~10V voltage | -10~10V voltage |
| 0 | OFF | ON | 0~10V voltage | | |
| 1 | ON | ON | 0~20mA current | | |

**Table 4-3 The Setting of Coding Switch and Parameters in the Mode of Analog Speed Control**

| | Set F203 to 1, to select channel AI1 | | | | Set F203 to 2, to select channel AI2 | | | |
|---|---|---|---|---|---|---|---|---|
| Para. | Coding Switch SW1 | | Toggle switch S1 | Analog signal range | Para. | Coding Switch SW1 | | |
| F438 | Switch 1 | Switch 3 | | | F439 | Switch 2 | Switch 4 | Analog signal range |
| 0 | OFF | OFF | + | 0~5V voltage | 0 | OFF | OFF | 0~5V voltage |
| 0 | OFF | ON | + | 0~10V voltage | 0 | OFF | ON | 0~10V voltage |
| 1 | ON | ON | + | 0~20mA current | 1 | ON | ON | 0~20mA current |
| 0 | OFF | ON | - | -10~10V voltage | | | | |
| | OFF | OFF | - | Reserved | | | | |
| | ON | ON | - | Reserved | | | | |
| ON refers to switching the coding switch to the top, OFF refers to switching the coding switch to the bottom | | | | | | | | |

Note: There is a black two-digit coding switch SW2 near the control terminal block of E2400 inverter, as shown in Figure 4-5. Turn switches 1 to ON and 2 to ON as illustrated in the figure, the CM, GND terminal of control board is connected to grounding terminal PE. Turn switches 1 to OFF and 2 to OFF, the CM, GND terminal of control board is disconnected to PE terminal.

# V.Functions of control terminals

## 5.1 Control terminal

The key to operate the inverter is to operate the control terminals correctly and flexibly. Certainly, the control terminals are not operated separately, and they should match corresponding settings of parameters. This chapter describes basic functions of the control terminals. The users may operate the control terminals by combining relevant contents hereafter about “Defined Functions of the Terminals”.

**Wiring for control loop as follows:**

| TA | TB | TC | DO1 | DO2 | 24V | CM | DI1 | DI2 | DI3 | DI4 | DI5 | DI6 | DI7 | DI8 | 10V | AI1 | AI2 | GND | AO1 | AO2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GND | 5V | A+ | B- | GND | H | L | | | | | | | | | | | | | | |

Table 4-3 **Functions of Control Terminals**

| Terminal | Type | Description | Function | |
|---|---|---|---|---|
| DO1 | Output signal | Multifunctional output terminal 1 | When the token function is valid, the value between this terminal and CM is 0V; when the inverter is stopped, the value is 24V. When DO1 is as high-frequency output terminal, the max output frequency is 100KHz and please do not connect to intermediate relay. | The functions of output terminals shall be defined per manufacturer’s value. Their initial state may be changed through changing function codes. |
| DO2[Note 1] | | Multifunctional output terminal 2 | When the token function is valid, the value between this terminal and CM is 0V; when the inverter is stopped, the value is 24V. | |
| TA | | Relay contact | TC is a common point, TB-TC are normally closed contacts, TA-TC are normally open contacts. The contact capacity is 10A/125VAC, NO/NC 3A 250VAC/30VDC. | |
| TB | | | | |
| TC | | | | |
| AO1 | | Voltage/current output | It is connected with frequency meter, speedometer or ammeter externally, and its minus pole is connected with GND. See F423～F426 for details,. | |
| AO2 | | Current output | It is connected with ammeter externally, and its minus pole is connected with GND. See F427～F430 for details | |
| 10V | Analog power supply | Self contained power supply | Internal 10V self-contained power supply of the inverter provides power to the inverter. When used externally, it can only be used as the power supply for voltage control signal, with current restricted below 20mA. | |
| AI1 [Note 2] | Input Signal | Voltage analog input port | When analog speed control is adopted, the voltage or current signal is input through this terminal. The range of voltage input is 0~5V or 0~10V or -10V-10V, and the current input is 0～20mA, the input resistor is 500Ohm, and grounding: GND. If the input is 4～20mA, it can be realized by setting F406=2. The voltage or current signal can be chosen by coding switch. See table 5-2, 5-3 for details, and F438 and F439 also should be set accordingly.the default setting of AI1 is 0~10V, and the default setting of AI2 is 0~20mA. | |
| AI2 | | Voltage / Current analog input port | | |
| GND | | Self-contained Power supply Ground | Ground terminal of external control signal (voltage control signal or current source control signal) is also the ground of 10V power supply of this inverter. | |
| 24V | Power supply | Control power supply | Power: 24±1.5V, grounding is CM; current is restricted below 200mA for | |

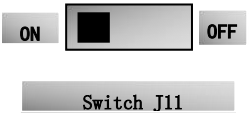
| | | | | |
|---|---|---|---|---|
| | | | external use. | |
| DI1 | Digital input control terminal | Jogging terminal | When this terminal is valid, the inverter will have jogging running. The jogging function of this terminal is valid under both at stopped and running status. This terminal can also be used as high-speed pulse input port. The max frequency is 100KHz. | The functions of input terminals shall be defined per manufacturer's value. Other functions can also be defined by changing function codes. |
| DI2 | | External Emergency Stop | When this terminal is valid, "ESP" malfunction signal will be displayed. | |
| DI3 | | "FWD" Terminal | When this terminal is valid, inverter will run forward. | |
| DI4 | | "REV" Terminal | When this terminal is valid, inverter will run reversely. | |
| DI5 | | Reset terminal | Make this terminal valid under fault status to reset the inverter. | |
| DI6 | | Free-stop | Make this terminal valid during running can realize free stop. | |
| DI7 Note 1 | | Running terminal | When this terminal is in the valid state, inverter will run by the acceleration time. | |
| DI8 Note 1 | | Stop terminal | Make this terminal valid during running can realize stop by the deceleration time. | |
| CM | Common port | Grounding of control power supply | The grounding of 24V power supply and other control signals. | |
| GND | 485 communication terminals | Grounding of differential signal | Grounding of differential signal | |
| 5V | | Power of differential signal | Power of differential signal | |
| A+ | | Positive polarity of differential signal | Standard: TIA/EIA-485(RS-485)<br>Communication protocol: Modbus<br>Communication rate: 1200/2400/4800/9600/19200/38400/57600bps | |
| B- | | Negative polarity of Differential signal | | |
| GND | CAN communication | CAN cable shielded layer | CAN cable's shielded layber | |
| H | | CAN H high-level cable | Can baud rate: 20/50/100/125/250/500/1000kbps | |
| L | | CAN L low-level cable | | |

**Note:**

1. T3 30kW and below 30kW inverters have no DO2, DI7 and DI8 control terminals.

2. AI1 terminal of T3 30kW and below 30kW inverters can only accept voltage signal, the default voltage is 0~10V.

2. CAN communication terminal is available from frame size CP3. CP3 has H and L terminals, CP4 and above has GND/H/L terminals. GND needs to be connected between the drives. Shielded twisted pair cable is recommended for communication cable. The internal DIP switch J11 (as shown in the figure below) of the first and end drive is set to ON state, other drives are set to OFF state. The shielding layer uses single-point reliable grounding.




## 5.2 Terminal two-line/three-line operation control

| | | |
|---|---|---|
| F208<br>Terminal two-line/three-line operation control | Setting range:<br>0: No function<br>1: Two-line operation mode 1;<br>2: Two-line operation mode 2;<br>3: three-line operation mode 1;<br>4: three-line operation mode 2;<br>5: start/stop controlled by direction pulse | Mfr's value: 0 |

· **When selecting two-line type or three-line type), F200, F201 and F202 are invalid.**

· **Five modes are available for terminal operation control.**

**Note:** "FWD", "REV" and "X" are three terminals designated in programming DI1～DI8.

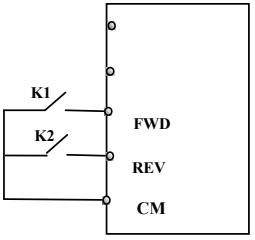
1: Two-line mode 1: this mode is the most popularly used two-line mode. The running direction of mode is controlled by FWD, REV terminals.

**For example: "FWD" terminal-----"open": stop, "closed": forward running;**

**"REV" terminal-----"open": stop, "closed": reverse running;**

**"CM" terminal-----common port**

| K1 | K2 | Running command |
|---|---|---|
| 0 | 0 | Stop |
| 1 | 0 | Forward running |
| 0 | 1 | Reverse running |
| 1 | 1 | Stop |




2. Two-line mode 2: when this mode is used, FWD is enable terminal, the direction is controlled by REV terminal.

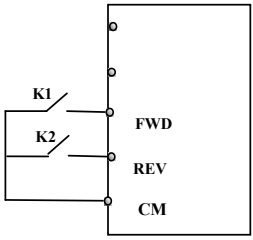
**For example: "FWD" terminal-----"open": stop, "closed": running;**

**"REV" terminal-----"open": forward running,**

**"closed": reverse running;**

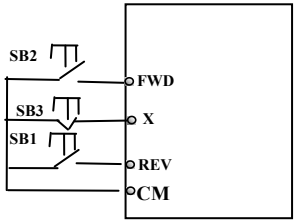
**"CM" terminal-----common port**

| K1 | K2 | Running command |
|---|---|---|
| 0 | 0 | Stop |
| 0 | 1 | Stop |
| 1 | 0 | Forward running |
| 1 | 1 | Reverse running |




3. Three-line mode 1:

In this mode, X terminal is enable terminal, the direction is controlled by FWD terminal and REV terminal. Pulse signal is valid.




Stopping commands is enabled by opening X terminal.

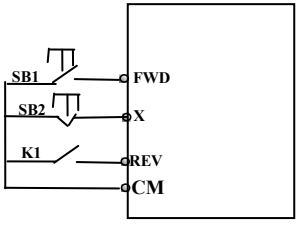
**SB3: Stop button**

**SB2: Forward button.**

**SB1: Reverse button.**

4. Three-line mode 2:

In this mode, X terminal is enable terminal, running command is controlled by FWD terminal. The running direction is controlled by REV terminal, and stopping command enable by opening X terminal.




**SB1: Running button**

**SB2: Stop button**

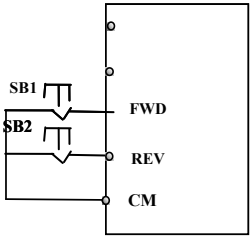
**K1: direction switch. Open stands for forward running; close stands for reverse running.**

5**.** Start/stop controlled by direction pulse:

**"FWD" terminal—(impulse signal: forward/stop)**

**"REV" terminal—(impulse signal: reverse/stop)**

**"CM" terminal—common port**




Note: when pulse of SB1 triggers, inverter will run forward. When the pulse triggers again, inverter will stop running.

When pulse of SB2 triggers, inverter will run reverse. When the pulse triggers again, inverter will stop running.

# VI. Trouble Shooting

When malfunction occurs to inverter, don't run by resetting immediately. Check any causes and get it removed if there is any.

Take counter measures by referring to this manual in case of any malfunctions on inverter. Should it still be unsolved, contact the manufacturer. Never attempt any repairing without due authorization.

Table 1-1 **Inverter's Common Cases of Malfunctions**

| Fault | Description | Causes | Countermeasures |
|---|---|---|---|
| Err0 | Prohibition modify function code | * prohibition modify the function code during running process. | * Please modify the function code in stopped status. |
| Err1 | Wrong password | *Enter wrong password when password is valid<br>* Do not enter password when modifying function code. | * Please enter the correct password. |
| 2: O.C. | Over-current | * too short acceleration time<br>* short circuit at output side<br>* locked rotor with motor<br>* Too heavy load.<br>* parameter tuning is not correct. | *prolong acceleration time;<br>*whether motor cable is broken;<br>*check if motor overloads;<br>*reduce V/F compensation value<br>* measure parameter correctly. |
| 16: OC1 | Over-current 1 | | |
| 67: OC2 | Over-current 2 | | |
| 3: O.E. | DC Over-Voltage | *supply voltage too high;<br>*load inertia too big<br>*deceleration time too short;<br>*motor inertia rise again<br>* bad effect of dynamic braking<br>*parameter of rotary speed loop PID is set abnormally. | *check if rated voltage is input;<br>*add braking resistance(optional);<br>*increase deceleration time<br>* Enhancing the dynamic braking effect<br>*set the parameter of rotary speed loop PID correctly.<br>* Change to VF control for centrifugal fan. |
| 4: P.F1. | Input Phase loss | *phase loss with input power | *check if power input is normal;<br>*check if parameter setting is correct. |
| 5: O.L1 | Inverter Overload | * load too heavy | *reduce load; *check drive ratio;<br>*increase inverter's capacity |
| 6: L.U. | Under-Voltage Protection | *input voltage on the low side | *check if supply voltage is normal<br>*check if parameter setting is correct. |
| 7: O.H. | Radiator Overheat | *environment temperature too high;<br>*radiator too dirty<br>*install place not good for ventilation;<br>*fan damaged<br>* Carrier wave frequency or compensation curve is too high. | *improve ventilation;<br>*clean air inlet and outlet and radiator;<br>*install as required;<br>*change fan<br>* Decrease carrier wave frequency or compensation curve. |
| 8: O.L2 | Motor Overload | * load too heavy | *reduce load; *check drive ratio;<br>*increase motor's capacity |
| 11: ESP | External fault | *External emergency-stop terminal is valid. | *Check external fault. |

| | | | |
|---|---|---|---|
| 12: Err3 | Current malfunction before running | *Current alarm signal exists before running. | *check if control board is connected with power board well.<br>*ask for help from manufacture. |
| 13: Err2 | Parameters tuning wrong | * Do not connect motor when measuring parameters | *please connect motor correctly. |
| 15: Err4 | Current zero excursion malfunction | *Flat cable is loosened.<br>*Current detector is broken. | *check the flat cable.<br>*ask for help from manufacture. |
| 17: PF0 | Output Phase loss | * Motor is broken<br>* Motor wire is loose.<br>* Inverter is broken | * check if wire of motor is loose.<br>* check if motor is broken. |
| 18: AErr | Line disconnected | * Analog signal line disconnected<br>* Signal source is broken. | * Change the signal line.<br>* Change the signal source. |
| 19: EP3 | Inverter under-load | * Water pump dries up.<br>* Belt is broken.<br>* Equipment is broken. | * Supply water for pump<br>* Change the belt.<br>* Repair the equipment. |
| 20: EP/EP2 | | | |
| 22: nP | Pressure control | * Pressure is too high when negative feedback.<br>* Pressure is too low when positive feedback.<br>* Inverter enters into the dormancy status. | * Decrease the min frequency of PID.<br>* Reset inverter to normal status. |
| 23: Err5 | PID parameters are set wrong, | * PID parameters are set wrong. | * Set the parameters correctly. |
| 24:SLP | Dormancy protection | *Dormancy mode | *When the pressure is normal, it automatically exits dormancy mode. |
| 26: GP | Earth fault protection (S2/T2 does not have GP protection) | *Motor cable is damaged, short connected to grounding.<br>*Motor isolation is damaged, short connected to grounding.<br>*inverter fault. | *change a new cable.<br>*repair the motor.<br>*contact manufacturer. |
| 27: PG | Encoder fault | *Encoder installation fault<br>*Encoder fault<br>*Encoder line number setting fault | *Check the installation and connection<br>*Check encoder<br>*Setting F851 correctly |
| 32: PCE | PMSM distuning fault | *motor parameters measurement is wrong.<br>*load is too heavy. | * Measure motor parameters correctly.<br>* Decrease the load. |
| 34：OH5 | Overheat Protection | *protective net blocked | *Clean protective mesh (only for 132kW and above). |
| 35: OH1 | PTC overheat protection | *external relay protection. | *check external heat protection equipment. |
| 44: Er44 | Master loses slave's response | *communication fault between master and slave | * check wiring.<br>*check baud rate<br>*check communication parameters setting |

| | | | |
|---|---|---|---|
| 45: CE | Communication timeout error | Communication fault | *PC/PLC does not send command at fixed time<br>*Check whether the communication line is connected reliably. |
| 47: EEEP | EEPROM read/write fault | *interference around<br>*EEPROM is damaged. | * remove interferences<br>*contact manufacturer. |
| 49: Err6 | Watchdog fault | *Watchdog timeout | *please check watchdog signal |
| 50：oPEn | oPEn protection | *oPEn protection invalid | *please check oPEn signal |
| 53: CE 1 | Keypad disconnection protection | *Keypad disconnection | *Check communication line |
| 55:Er55 | Drop load protection | *Drop load | *Check exteranl device |

## Motor Malfunction and Counter Measures

| Malfunction | Items to Be Checked | Counter Measures |
|---|---|---|
| Motor not Running | Wiring correct? Setting correct? Too big with load? Motor is damaged? Malfunction protection occurs? | Get connected with power; Check wiring; Checking malfunction; Reduce load; Check against Table 1-1 |
| Wrong Direction of Motor Running | U, V, W wiring correct?<br>Parameters setting correct? | To correct wiring<br>Setting the parameters correctly. |
| Motor Turning but Speed Change not Possible | Wiring correct for lines with given frequency?<br>Correct setting of running mode?<br>Too big with load? | To correct wiring;<br>To correct setting; Reduce load |
| Motor Speed Too High or Too Low | Motor's rated value correct? Drive ratio correct? Inverter parameters are set in-corrected? Check if inverter output voltage is abnormal? | Check motor nameplate data; Check the setting of drive ratio; Check parameters setting; Check V/F Characteristic value |
| Motor Running Unstable | Too big load? Too big with load change?<br>Phase loss? Motor malfunction. | Reduce load; reduce load change, increase capacity;<br>Correct wiring. |
| Power Trip | Wiring current is too high? | Check input wring; Selecting matching air switch; Reduce load; checking inverter malfunction. |

# VII. Products & Structures

Table 7-1 Product structure list of E2400

| Structure Code | External Dimension [A×B(B1)×H][note1] | Mounting Size(W×L) | Mounting Bolt | Remarks |
|---|---|---|---|---|
| CPX | 144×179×227（249） | 130*162 | M4 | Plastic Hanging |
| CP0 | 164×184×261（285） | 149*193 | M5 | |
| CP1 | 185×206×293（319） | 170*216 | M5 | |
| CP2 | 208×245×327（360） | 191×241 | M5 | |
| CP3 | 210×246×432(459) | 180×419 | M5 | Metal Hanging |
| CP4 | 310×266×483(510) | 274×465 | M6 | |
| CP5 | 355×310×555(576) | 320×530 | M8 | |
| CP6 | 406×336×633(656) | 370×600 | M10 | |
| CP7 | 510×433×913(944) | 360×882 | M10 | |
| CP8 | 580×439×1095（1112） | 520×1042 | M10 | |
| CP9 | 670×537×1340（1356） | 615×1310 | M10 | |
| CP10 | 670×537×1464（1506） | 615×1433 | M10 | |
| CP11 | 670×534×1593（1639） | 615×1563 | M10 | |

Table 7-2 Product list of E2400

| Model | Applicable Motor (kW) | Rated Current Output | Structure Code | Cooling Mode | Remarks | Model |
|---|---|---|---|---|---|---|
| E2400-0004S2 | 0.4 | 2.5 | CPX | 2.7 | Self-cooling | Plastic Hanging |
| E2400-0007S2 | 0.75 | 4.5 | CPX | 2.7 | Air-cooling | |
| E2400-0015S2 | 1.5 | 7.0 | CPX | 2.8 | Air-cooling | |
| E2400-0022S2 | 2.2 | 10.0 | CP0 | 4.0 | Air-cooling | |
| E2400-0004T2 | 0.4 | 2.5 | CPX | 2.8 | Self-cooling | |
| E2400-0007T2 | 0.75 | 4.5 | CPX | 2.8 | Self-cooling | |
| E2400-0015T2 | 1.5 | 7 | CPX | 2.9 | Air-cooling | |
| E2400-0022T2 | 2.2 | 10.0 | CP0 | 4.0 | Air-cooling | |
| E2400-0004T3 | 0.4 | 1.2 | CPX | 2.7 | Self-cooling | |
| E2400-0007T3 | 0.75 | 2.0 | CPX | 2.7 | Self-cooling | |
| E2400-0015T3 | 1.5 | 4.0 | CPX | 2.8 | Air-cooling | |
| E2400-0022T3 | 2.2 | 6.5 | CPX | 2.8 | Air-cooling | |
| E2400-0022T3 | 2.2 | 6.5 | CP0 | 4.0 | Air-cooling | |
| E2400-0030T3 | 3.0 | 7.6 | CP0 | 4.1 | Air-cooling | |
| E2400-0040T3 | 4.0 | 9.0 | CP1 | 4.2 | Air-cooling | |
| E2400-0055T3 | 5.5 | 12.0 | CP1 | 5.0 | Air-cooling | |
| E2400-0075T3 | 7.5 | 17.0 | CP2 | 5.1 | Air-cooling | |
| E2400-0110T3 | 11 | 23.0 | CP2 | 7.5 | Air-cooling | |
| E2400-0150T3 | 15 | 32.0 | CP3 | 7.6 | Air-cooling | Metal Hanging |
| E2400-0185T3 | 18.5 | 38 | CP3 | 13.5 | Air-cooling | |
| E2400-0220T3 | 22 | 44 | CP3 | 14 | Air-cooling | |
| E2400-0300T3 | 30 | 60 | CP4 | 14 | Air-cooling | |
| E2400-0370T3 | 37 | 75 | CP4 | 23 | Air-cooling | |
| E2400-0450T3 | 45 | 90 | CP5 | 24 | Air-cooling | |
| E2400-0550T3 | 55 | 110 | CP5 | 38 | Air-cooling | |
| E2400-0750T3 | 75 | 150 | CP6 | 39 | Air-cooling | |

**E2400**

| | | | | | | |
|---|---|---|---|---|---|---|
| E2400-0900T3 | 90 | 180 | CP6 | 54 | Air-cooling | |
| E2400-1100T3 | 110 | 220 | CP6 | 56 | Air-cooling | |
| E2400-1320T3 | 132 | 265 | CP7 | 56 | Air-cooling | |
| E2400-1600T3 | 160 | 320 | CP7 | 107 | Air-cooling | |
| E2400-1850T3 | 185 | 360 | CP8 | 109 | Air-cooling | |
| E2400-2000T3 | 200 | 400 | CP8 | 129 | Air-cooling | |
| E2400-2200T3 | 220 | 440 | CP9 | 131 | Air-cooling | |
| E2400-2500T3 | 250 | 480 | CP9 | 175 | Air-cooling | |
| E2400-2800T3 | 280 | 530 | CP10 | 190 | Air-cooling | |
| E2400-3150T3 | 315 | 580 | CP10 | 200 | Air-cooling | |
| E2400-3550T3 | 355 | 640 | CP11 | 213 | Air-cooling | |
| E2400-4000T3 | 400 | 690 | CP11 | 245 | Air-cooling | |
| E2400-4500T3 | 450 | 770 | CP11 | 266 | Air-cooling | |

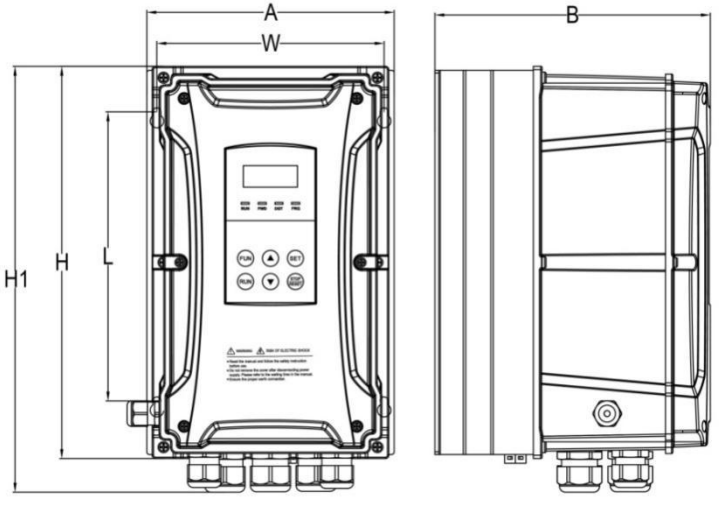
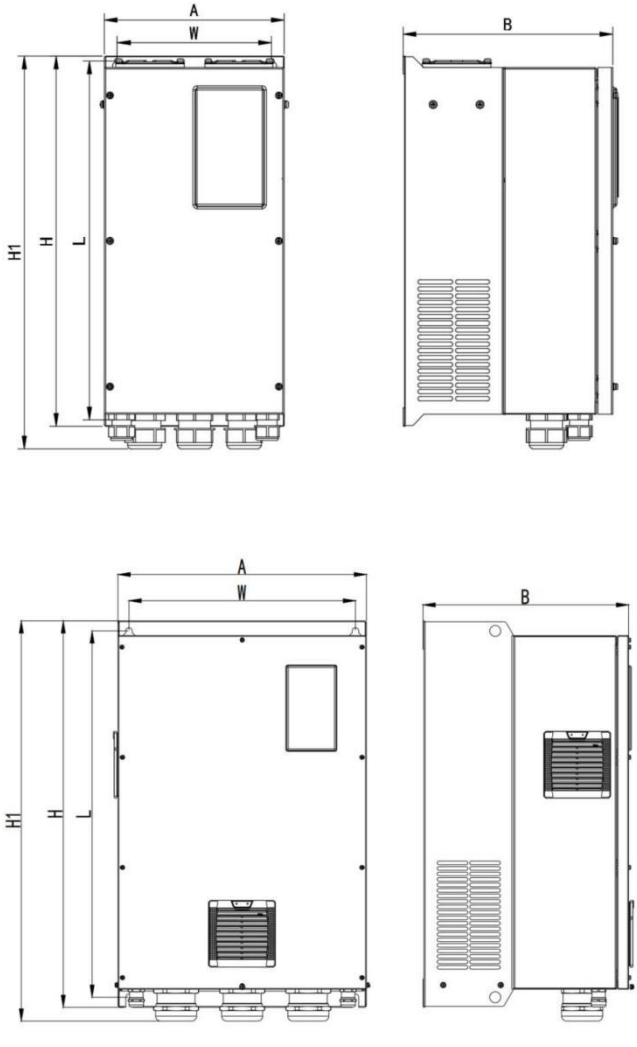



**Fig 7-1 Plastic hanging profile**


A
W
H1
H
L
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A
W
H1
H
L
B

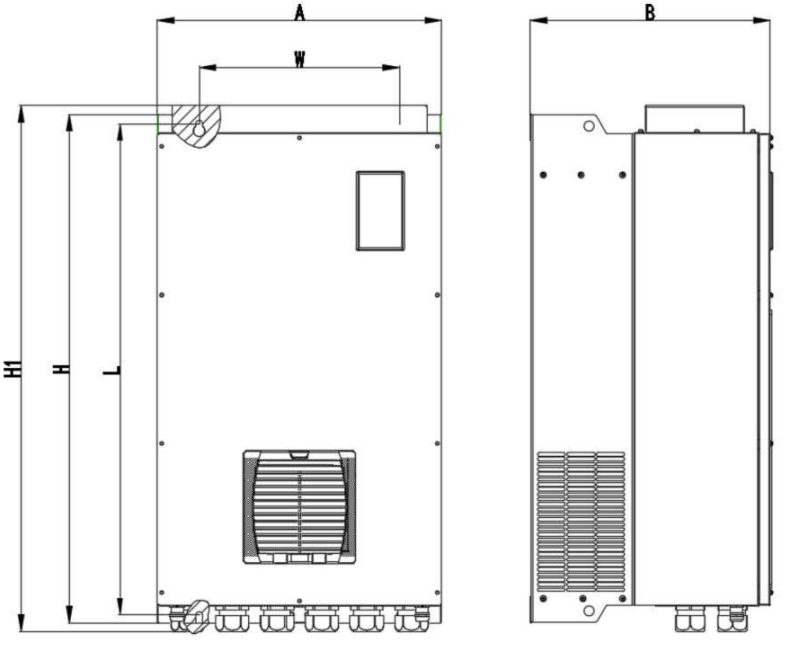


**Fig7-2 Metal hanging profile**

Note 1: H1 is the overall dimension including the cable gland.

# VIII. Expansion card

## 8.1 Installation

The installation location of the expansion cards is divided into Expansion Card 1 and Expansion Card 2.

Expansion Card 1: STO Card (For detailed instructions on using the STO card, refer to the STO manual), Expansion Card 2: E24DR02.

| Name | Model | Function | Remark |
|---|---|---|---|
| I/O expansion card | E24DR02 | 4 DI terminals,<br>2 relay output terminals | Built-in expansion card |

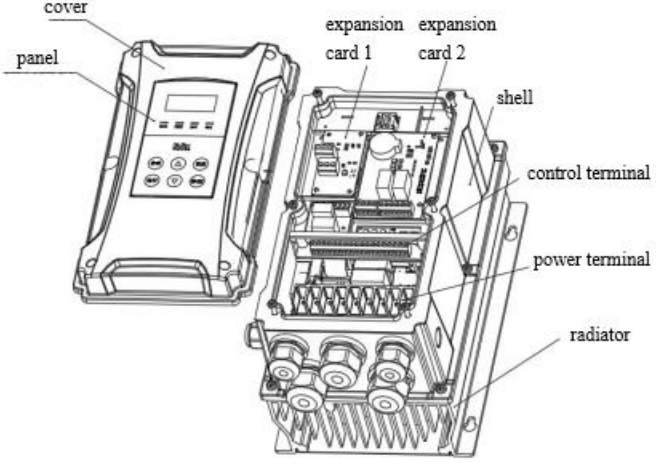


**Fig8-1 expansion card installation**

## 8.2 E24DR02 instruction

| | Function | Response | Impedance Output | Voltage | Output current | Frequency Range |
|---|---|---|---|---|---|---|
| DIA～DID | 4 DI terminals | --- | --- | 0～24V | --- | --- |
| TA1/TC1<br>TA2/TC2 | 2 relay output terminals with normal- open contacts | --- | --- | --- | 3A/250VAC<br>3A/30VDC | --- |
| +24V,CM | DIA～DID power | --- | | 24±1.5V | 50mA | --- |

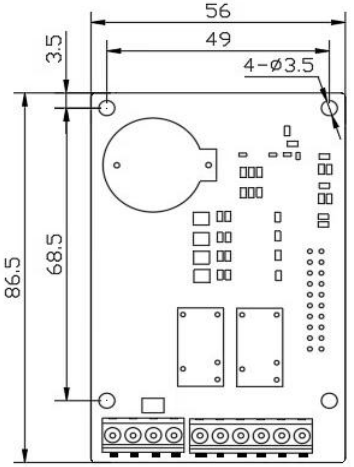


**Fig8-2 expansion card dimension**

The expansion card is installed in position 2 inside the inverter, as shown in Figure 8-1, using 3*6 self-tapping screws.

This card is compatible with frame CPX to CP3.

DIA～DID are 4 DI terminals, TA1/TC1、TA2/TC2 are 2 relay output terminals. Please see I/O parameter for details.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| DIA | DIB | DIC | DID | CM | TA1 | TC1 | TA2 | TC2 |

# IX. Zoom Table of Function Code

## Basic parameters: F100-F160

| Function Code | Function Definition | Setting Range | Mfr's Value | Change |
|---|---|---|---|---|
| F100 | User's Password | 0～9999 | 0 | √ |
| F102 | Inverter's Rated Current (A) | | Subject to | △ |
| F103 | Inverter Power (kW) | | Subject to | △ |
| F104 | Voltage level | | Subject to | △ |
| F105 | Software Edition No. | 1.00～10.00 | Subject to | △ |
| F106 | Control mode | 0:Sensorless vector control (SVC);<br>1: Closed-loop vector control (VC);<br>2: V/F;<br>3: Vector control 1<br>6: PMSM sensorless vector control | 2 | × |
| F107 | Password Valid or Not | 0: invalid;<br>1: valid;<br>2：nvalid on communications | 0 | √ |
| F108 | Setting User's Password | 0～9999 | 8 | √ |
| F109 | Starting Frequency (Hz) | 0.0～10.00Hz | 0.00 | √ |
| F110 | Holding Time of Starting Frequency (S) | 0.0～999.9 | 0.0 | √ |
| F111 | Max Frequency (Hz) | F113～650.0Hz | 50.00 | × |
| F112 | Min Frequency (Hz) | 0.00Hz～F113 | 0.50 | √ |
| F113 | Target Frequency (Hz) | F112～F111 | 50.00 | √ |
| F114 | 1st Acceleration Time (S) | 0.1～3000 | subject to inverter model | √ |
| F115 | 1st Deceleration Time (S) | 0.1～3000 | | √ |
| F116 | 2nd Acceleration Time (S) | 0.1～3000 | | √ |
| F117 | 2nd Deceleration Time (S) | 0.1～3000 | | √ |
| F118 | Turnover Frequency (Hz) | 15.00～590.0 | 50.00 | ×○ |
| F119 | Reference of setting accel/decel time | 0: 0~50.00Hz<br>1: 0~max frequency | 0 | × |
| F120 | Forward/Reverse Switchover dead-Time | 0.0～3000S | 0.0 | √ |

| | | | | |
|---|---|---|---|---|
| F122 | Reverse Running Forbidden | 0: invalid; 1: valid | 0 | × |
| F123 | Minus frequency is valid in the mode of combined speed control. | 0：Invalid；1：valid | 0 | × |
| F124 | Jogging Frequency | F112～F111 | 5.00 | √ |
| F125 | Jogging Acceleration Time | 0.1～3000S | subject to inverter model | √ |
| F126 | Jogging Deceleration Time | 0.1～3000S | | √ |
| F127 | Skip Frequency A | 0.00～650.0Hz | 0.00 | √ |
| F128 | Skip Width A | ±2.50Hz | 0.00 | √ |
| F129 | Skip Frequency B | 0.00～650.0Hz | 0.00 | √ |
| F130 | Skip Width B | ±2.50Hz | 0.00 | √ |
| F131 | Running Display Items | 0－Present output frequency / function code<br>1－Current output rotary speed<br>2－Output current<br>4－Output voltage<br>8－PN voltage<br>16－PID feedback value<br>32－Temperature<br>64－Count values<br>128－Linear speed<br>256－PID given value<br>512－Yarn length<br>1024－Center frequency<br>2048－Output power<br>4096－ Output torque | 0+1＋2＋4＋8＝15 | √ |
| F132 | Display items of stop | 0: frequency / function code<br>1: Keypad jogging<br>2: Target rotary speed<br>4: PN voltage<br>8: PID feedback value<br>16: Temperature<br>32: Count values<br>64: PID given value<br>128: Yarn length<br>256: Center frequency<br>512: Setting torque | 0+2＋4＝6 | √ |
| F133 | Drive Ratio of Driven System | 0.10～200.0 | 1.0 | √ |
| F134 | Transmission-wheel radius | 0.001～1.000（m） | 0.001 | √ |
| F135 | User macro | 0: Invalid 1：user macro 1 2: user macro 2 | 0 | ×○ |
| F136 | Slip compensation | 0～10% | 0 | × |

| | | | | |
|---|---|---|---|---|
| F137 | Modes of torque compensation | 0: Linear compensation;<br>1: Square compensation;<br>2: User-defined multipoint compensation<br>3: Auto torque compensation<br>4: V/F separation | 0 | × |
| F138 | Linear compensation | 1～20 | subject to inverter model | × |
| F139 | Square compensation | 1：1.5；　　2：1.8；<br>3：1.9；　　4：2.0 | 1 | × |
| F140 | Voltage compensation point frequency | 0.00～F142 | 1.00 | × |
| F141 | Voltage compensation point 1 (%) | 0～30 | 0 | × |
| F142 | User-defined frequency point 2 | F140～F144 | 5.00 | × |
| F143 | User-defined voltage point 2 | 0～100% | 13 | × |
| F144 | User-defined frequency point 3 | F142～F146 | 10.00 | × |
| F145 | User-defined voltage point 3 | 0～100% | 24 | × |
| F146 | User-defined frequency point 4 | F144～F148 | 20.00 | × |
| F147 | User-defined voltage point 4 | 0～100% | 45 | × |
| F148 | User-defined frequency point 5 | F146～F150 | 30.00 | × |
| F149 | User-defined voltage point 5 | 0～100% | 63 | × |
| F150 | User-defined frequency point 6 | F148～F118 | 40.00 | × |
| F151 | User-defined voltage point 6 | 0～100% | 81 | × |
| F152 | Output voltage corresponding to turnover frequency | 10~100 | 100 | × |
| F153 | Carrier frequency setting | subject to inverter model | subject to inverter model | × |
| F154 | Automatic voltage rectification | Setting range:<br>0: Invalid 1: Valid<br>2:Invalid during deceleration process | 0 | × |
| F155 | Digital accessorial frequency setting | 0.00～F111 | 0 | × |
| F156 | Digital accessorial frequency polarity setting | 0~1 | 0 | × |
| F157 | Reading accessorial frequency | | | △ |

| | | | | |
|---|---|---|---|---|
| F158 | Reading accessorial frequency polarity | | | △ |
| F159 | Random carrier-wave frequency selection | 0: Control speed normally;<br>1: Random carrier-wave frequency | 0 | × |
| F160 | Reverting to manufacturer values | 0: Invalid<br>1: Valid<br>21: revert user macro 1<br>22: revert user macro 2 | 0 | × |

**Running control mode: F200-F230**

| | | | | |
|---|---|---|---|---|
| F200 | Source of start command | 0: Keypad command;<br>1: Terminal command;<br>2: Keypad＋Terminal;<br>3:MODBUS;<br>4: Keypad＋Terminal＋MODBUS | 4 | × |
| F201 | Source of stop command | 0: Keypad command;<br>1: Terminal command;<br>2: Keypad＋Terminal;<br>3:MODBUS;<br>4: Keypad＋Terminal＋MODBUS | 4 | × |
| F202 | Mode of direction setting | 0: Forward running locking;<br>1: Reverse running locking;<br>2: Terminal setting<br>3: Keypad setting<br>4: Keypad setting and direction in memory | 0 | √ |
| F203 | Main frequency source X | 0: Digital setting memory;<br>1: External analog AI1;<br>2: External analog AI2;<br>3: Pulse input given;<br>4: Stage speed control;<br>5: No memory by digital setting;<br>6:Keypad potentiometer AI3;<br>7: Reserved;<br>8: Reserved;<br>9: PID adjusting;<br>10: MODBUS | 0 | × |
| F204 | Accessorial frequency source Y | 0: Digital setting memory;<br>1: External analog AI1;<br>2: External analog AI2;<br>3: Pulse input given;<br>4: Stage speed control;<br>5: PID adjusting;<br>6: Keypad potentiometer AI3; | 0 | × |

| | | | | |
|---|---|---|---|---|
| F205 | Reference for selecting accessorial frequency source Y range | 0: Relative to max frequency;<br>1: Relative to main frequency X | 0 | × |
| F206 | Accessorial frequency Y range | 0～150 | 100 | × |
| F207 | Frequency source selecting | 0: X;<br>1: X+Y;<br>2: X or Y (terminal switchover);<br>3: X or X+Y (terminal switchover);<br>4: Combination of stage speed and analog<br>5: X-Y<br>6: X+Y-$Y_{MAX}$*50%<br>7: combination 1 of stage speed and digital | 0 | × |
| F208 | Terminal two-line/three-line operation control | 0: No function;<br>1: Two-line operation mode 1;<br>2: Two-line operation mode 2;<br>3: three-line operation mode 1;<br>4: three-line operation mode 2;<br>5: start/stop controlled by direction pulse | 0 | × |
| F209 | Selecting the mode of stopping the motor | 0: stop by deceleration time;<br>1: free stop<br>2: Stop by DC braking | 0 | × |
| F210 | Frequency display accuracy | 0.01～10.00 | 0. 01 | √ |
| F211 | Speed of digital control | 0.01～100.00Hz/S | 5. 00 | √ |
| F212 | Direction memory | 0: Invalid 1: Valid | 0 | √ |
| F213 | Auto-starting after repowered on | 0: invalid; 1: valid | 0 | √ |
| F214 | Auto-starting after reset | 0: invalid; 1: valid | 0 | √ |
| F215 | Auto-starting delay time | 0.1～3000.0 | 60. 0 | √ |
| F216 | Times of auto-starting in case of repeated faults | 0～5 | 0 | √ |
| F217 | Delay time for fault reset | 0.0～10.0 | 3. 0 | √ |
| F219 | EEPROM write operation | 0:enabled to write<br>1:prohibit writing | 1 | √ ○ |
| F220 | Frequency memory after power-down | 0: invalid; 1: valid | 0 | √ |

| | | | | |
|---|---|---|---|---|
| F221 | X+Y-50%(%) | 0~200 | 50 | √ |
| F222 | count memory selection | Setting range: 0: Invalid 1: Valid | 0 | √ |
| F223 | Main frequency coefficient | 0.0～100.0 | 100.0 | √ |
| F224 | When target frequency is lower than Min frequency | 0: stop<br>1: run at min frequency | 0 | × |
| F226 | Action of skipping frequency | 0: no action during accel/decel<br>1: no action during decelerating<br>2. valid at any time | 0 | × |
| F233 | Accel/decel time unit | 0: 0.1s 1: 0.01s | 0 | √ |
| F234 | switchover frequency during deceleration process (Hz) | 0.00: invalid 0.00～F111 | 0.00 | × |

**Traverse Operating function: F235-F280**

| | | | | |
|---|---|---|---|---|
| F235 | Traverse operating mode | 0：Invalid<br>1：Traverse operating mode 1<br>2：Traverse operating mode 2<br>3：Traverse operating mode 3 | 0 | × |
| F236 | Crawl-positioning | 0：Disabled 1：Enabled | 0 | √ |
| F237 | Traverse signal source | 0：Auto start 1：X terminal | 0 | × |
| F238 | Stop mode of length arrival | 0：Stop the motor at fixed length<br>1：Stop the motor at fixed spindle radius<br>2：Non-stop at fixed length, it indicates full of yarn.<br>3：Fixed radius arrival, it indicates full of yarn. | 0 | × |
| F239 | Traverse memory mode | 0: Memory at the status of stop and power off<br>1: Only memory at the status of stop.<br>2: Only memory at the status of power off.<br>3：No memory. | 0 | √ |
| F240 | Preset frequency (Hz) | F112～F111 | 5.00 | √ |
| F241 | Running time of preset frequency (S) | 0～3000 | 0 | √ |
| F242 | Central frequency (Hz) | F243～F111 | 25.00 | √ |
| F243 | Lower limit of central frequency (Hz) | F112～F242 | 0.50 | √ |

| | | | | |
|---|---|---|---|---|
| F244 | Descending rate of central frequency (Hz / S) | 0.100～65.000 | 0. 500 | √ |
| F247 | Traverse amplitude setting mode | 0：Relative to max frequency<br>1：Relative to central frequency | 1 | × |
| F248 | Traverse amplitude | 0～100.00% | 10. 00 | √ |
| F249 | Jump frequency | 0～50.00% | 30. 00 | √ |
| F250 | Rising time of traverse (S) | 0.1～3000 | 10. 0 | √ |
| F251 | Descending time of traverse (S) | 0.1～3000 | 10. 0 | √ |
| F252 | Crawl-positioning frequency (Hz) | F112～F111 | 3. 00 | √ |
| F253 | Waiting time of crawl-positioning (S) | 0.0～3000 | 5. 0 | √ |
| F254 | Max time of crawl-positioning (S) | 0.0～3000 | 10. 0 | √ |
| F257 | Cumulative length (Km) | 0.00～6500 | 0 | √ |
| F258 | Actual length (Km) | 0.00～65.00 | 0 | △ |
| F259 | Setting length (Km) | 0.00～65.00 | 0 | √ |
| F260 | Pulse numbers of length sensor | 0.01～650.0 | 1. 00 | √ |
| F262 | Clear yarn broken signal | 0: stop and refer to yarn broken signal<br>1: refer to yarn broken signal | 0 | √ |
| F264 | Feedback channel of fixed radius | 0：AI1 1：AI2 | 0 | √ |
| F265 | Fixed-radius display value | 0～10000 | 1000 | √ |
| F266 | Output voltage at fixed radius mode (V) | 0～10.00 | 5. 00 | √ |
| F267 | Voltage hysteresis when judging full of yarn signal is clear. | 0～10.00 | 0 | √ |
| F269 | DI pre-alarm current | Read only | Read-only | △ |
| F270 | DI pre-alarm current threshold | 0.01～6.00 | 0. 50 | √ |
| F271 | DI pre-alarm current delay time | 5～60 | 30 | √ |
| F272 | Delay time of yarn broken and yarn intertwining（S） | 0.0～3000.0 | 0 | √ |
| F275 | Detect frequency value | F112～F111 | 25. 00 | √ |
| F276 | Detect frequency width | 0.00～20.00 | 0. 50 | √ |
| F277 | Third Acceleration Time (S) | Setting range:<br>0.1~3000 | subject to inverter model | √ |
| F278 | Third Deceleration Time (S) | | | √ |
| F279 | Fourth Acceleration Time (S) | | | √ |
| F280 | Fourth Deceleration Time (S) | | | √ |

## Multifunctional Input and Output Terminals: F300-F330

| | | | | |
|---|---|---|---|---|
| F300 | Relay token output | 0:no function<br>1: inverter fault protection<br>2:over latent frequency 1<br>3: over latent frequency 2<br>4: free stop<br>5: In running status 1<br>6: Reserved<br>7: acceleration/deceleration time switchover<br>8: Reaching the Set Count Value<br>9: Reaching the Designated Count Value<br>10: inverter overload pre-alarm<br>11: motor overload pre-alarm<br>12:stalling<br>13: Inverter is ready to run<br>14: In running status 2<br>15: frequency arrival output<br>16: overheat pre-alarm<br>17: over latent current output<br>18: Analog line disconnection protection<br>19: Under-load 1 pre-alarm<br>20: Zero current detecting output<br>21: Output controlled by communication address 2005H<br>22: Output controlled by communication address 2005H<br>23:Output controlled by communication address 2007H<br>24: Watchdog output token<br>25: DI Pre-alarm current<br>30: General pump is running<br>31: Converter pump is running<br>32: Over-limit pressure token<br>35: Stop signal of yarn full, yarn broken, yarn intertwining and stop inverter by manual<br>36: Full yarn signal<br>37: Output signal of traverse rising<br>38: Traverse wave form output<br>39: Yarn frequency detected | 1 | √ |
| F301 | DO1 token output | | 14 | √ |
| F302 | DO2 token output | | 5 | √ |

| | | | | |
|---|---|---|---|---|
| | | 42: The second motor token output<br>43: Communication timeout 2<br>45: Token output when lower than setting temperature<br>55: Under load<br>59: oPEn | | |
| F303 | DO output types selection | 0: level output 1 : pulse output | 0 | √ |
| F304 | S curve beginning stage proportion | 2.0～50.0 | 30.0 | √ |
| F305 | S curve ending stage proportion | 2.0～50.0 | 30.0 | √ |
| F306 | Accel/decel mode | 0：Straight-line 1: S curve | 0 | × |
| F307 | Characteristic frequency 1 | F112～F111 | 10.00 | √ |
| F308 | Characteristic frequency 2 | F112～F111 | 50.00 | √ |
| F309 | Characteristic frequency width (%) | 0～100 | 50 | √ |
| F310 | Characteristic current (A) | 0～5000.0 | Rated current | √ ○ |
| F311 | Characteristic current width (%) | 0～100 | 10 | √ |
| F312 | Frequency arrival threshold (Hz) | 0.00～5.00 | 0.00 | √ |
| F313 | Count frequency divisions | 1～65000 | 1 | √ |
| F314 | Set count value | F315～65000 | 1000 | √ |
| F315 | Designated count value | 1～F314 | 500 | √ |
| F316 | DI1 terminal function setting | 0: no function;<br>1: running terminal;<br>2: stop terminal;<br>3: multi-stage speed terminal 1;<br>4: multi-stage speed terminal 2;<br>5: multi-stage speed terminal 3;<br>6: multi-stage speed terminal 4;<br>7: reset terminal;<br>8: free stop terminal;<br>9: external emergency stop terminal;<br>10: acceleration/deceleration forbidden terminal;<br>11: forward run jogging;<br>12: reverse run jogging; | 11 | √ |
| F317 | DI2 terminal function setting | | 9 | √ |
| F318 | DI3 terminal function setting | | 15 | √ |
| F319 | DI4 terminal function setting | | 16 | √ |
| F320 | DI5 terminal function setting | | 7 | √ |

| | | | | |
|---|---|---|---|---|
| F321 | DI6 terminal function setting | 13: UP frequency increasing terminal;<br>14: DOWN frequency decreasing terminal;<br>15: “FWD” terminal;<br>16: “REV” terminal;<br>17: three-line type input “X” terminal;<br>18: accel/decel time switchover 1;<br>19: Reserved;<br>20: Switchover between speed and torque<br>21: frequency source switchover terminal;<br>22: Count input terminal:<br>23: Count reset terminal<br>24: clear traverse status<br>25: Traverse operating mode is valid.<br>26: yarn broken<br>27: intertwining yarn<br>28: crawl-positioning signal<br>29: clear actual yarn length and traverse status<br>30: Water lack signal;<br>31: Signal of water<br>32: Fire pressure switchover;<br>33: Emergency fire control<br>34: Accel / decel switchover 2<br>37: Common-open PTC heat protection<br>38: Common-close PTC heat protection<br>41: DI pre-alarm current enable<br>42: oPEn protection terminal.<br>49: PID paused<br>51: Motor switchover<br>53: Watchdog<br>54: Frequency reset<br>60: Communication timeout 2<br>61: Start-stop terminal | 8 | √ |
| F322 | DI7 terminal function setting | | 0 | √ |
| F323 | DI8 terminal function setting | | 0 | √ |
| F324 | Free stop terminal logic | 0: positive logic (valid for low level);<br>1: negative logic (valid for high level) | 0 | × |
| F325 | External emergency stop terminal logic | | 0 | × |
| F326 | Watchdog time | 0.0: invalid<br>0.1~3000.0 | 10.0 | √ |
| F327 | Stop mode | 0: Free stop 1: Deceleration to stop | 0 | × |

| | | | | |
|---|---|---|---|---|
| F328 | Terminal filter times | 1～100 | 20 | √ |
| F329 | Run command of start terminal | 0: Valid 1: Invalid | 0 | √ |
| F330 | Diagnostics of DIX terminal | | | △ |
| F331 | Monitoring AI1 | | | △ |
| F332 | Monitoring AI2 | | | △ |
| F333 | Monitoring AI3 | | | △ |
| F335 | Relay output simulation | Setting range:<br>0：Output active.<br>1：Output inactive. | 0 | × |
| F336 | DO1 output simulation | | 0 | × |
| F337 | DO2 output simulation | | 0 | × |
| F338 | AO1 output simulation | Setting range: 0～4095 | 0 | × |
| F339 | AO2 output simulation | Setting range: 0～4095 | 0 | × |
| F340 | Selection of terminal negative logic | 0: Invalid<br>1: DI1 negative logic<br>2: DI2 negative logic<br>4: DI3 negative logic<br>8: DI4 negative logic<br>16: DI5 negative logic<br>32: DI6 negative logic<br>64: DI6 negative logic<br>128: DI8 negative logic | 0 | √ |
| F343 | Delay time of DI1 ON | 0.00~99.99 | 0.00 | √ |
| F344 | Delay time of DI2 ON | | 0.00 | √ |
| F345 | Delay time of DI3 ON | | 0.00 | √ |
| F346 | Delay time of DI4 ON | | 0.00 | √ |
| F347 | Delay time of DI5 ON | | 0.00 | √ |
| F348 | Delay time of DI6 ON | | 0.00 | √ |
| F349 | Delay time of DI7 ON | | 0.00 | √ |
| F350 | Delay time of DI8 ON | | 0.00 | √ |
| F351 | Delay time of DI1 OFF | | 0.00 | √ |
| F352 | Delay time of DI2 OFF | | 0.00 | √ |
| F353 | Delay time of DI3 OFF | | 0.00 | √ |

| | | | | |
|---|---|---|---|---|
| F354 | Delay time of DI4 OFF | | 0.00 | √ |
| F355 | Delay time of DI5 OFF | | 0.00 | √ |
| F356 | Delay time of DI6 OFF | | 0.00 | √ |
| F357 | Delay time of DI7 OFF | | 0.00 | √ |
| F358 | Delay time of DI8 OFF | | 0.00 | √ |
| F359 | Stop command priority | 0: Invalid 1: Valid | 0 | √ |
| F360 | DO terminal negative logic | 0: Invalid<br>1: DO1 negative logic<br>2: DO2 negative logic<br>4: Relay 1 | 0 | √ |

## Analog and Output: F400-F480

| | | | | |
|---|---|---|---|---|
| F400 | Lower limit of AI1 channel input (V) | 0.00～F402 | 0. 04 | √ ○ |
| F401 | Corresponding setting for lower limit of AI1 input | 0.00～2.00 | 1. 00 | √ |
| F402 | Upper limit of AI1 channel input (V) | F400～10.00 | 10. 00 | √ ○ |
| F403 | Corresponding setting for upper limit of AI1 input | 0.00～2.00 | 2. 00 | √ |
| F404 | AI1 channel proportional gain K1 | 0.0～10.0 | 1. 0 | √ |
| F405 | AI1 filtering time constant (S) | 0.01～10.0 | 0. 10 | √ |
| F406 | Lower limit of AI2 channel input (V) | 0.00～F408 | 0. 04 | √ ○ |
| F407 | Corresponding setting for lower limit of AI2 input | 0.00～2.00 | 1. 00 | √ |
| F408 | Upper limit of AI2 channel input (V) | F406～10.00 | 10. 00 | √ ○ |
| F409 | Corresponding setting for upper limit of AI2 input | 0.00～2.00 | 2. 00 | √ |
| F410 | AI2 channel proportional gain K2 | 0.0～10.0 | 1. 0 | √ |
| F411 | AI2 filtering time constant | 0.01～10.00 | 0. 10 | √ |
| F412 | Lower limit of AI3 channel input | 0.00～F414 | 0. 05 | √ ○ |
| F413 | Corresponding setting for lower limit of AI3 input | 0.00～2.00 | 1. 00 | √ |
| F414 | Upper limit of AI3 channel input | F412～10.0 | 10. 00 | √ ○ |
| F415 | Corresponding setting for upper limit of AI3 input | 0.00～2.00 | 2. 00 | √ |
| F416 | AI3 channel proportional gain K1 | 0.0～10.0 | 1. 0 | √ |
| F417 | AI3 filtering time constant | 0.01～10.00 | 0. 10 | √ |
| F418 | AI1 channel 0Hz voltage dead zone | 0.00～1.00 | 0. 00 | √ |
| F419 | AI2 channel 0Hz voltage dead zone | 0.00～1.00 | 0. 00 | √ |
| F420 | AI3 channel 0Hz voltage dead zone | 0.00～1.00 | 0. 00 | √ |
| F421 | Panel selection | 0: Local keypad panel<br>1: Remote control keypad panel<br>2: local keypad + remote control keypad | 1 | √ ○ |
| F422 | Potentiometer selection | 0: Potentiometer in local panel<br>1: Potentiometer in remote control panel | 0 | √ |

| | | | | |
|---|---|---|---|---|
| F423 | AO1 output range | 0：0～5V；1：0～10V or 0-20mA 2: 4-20mA | 1 | √ |
| F424 | AO1 lowest corresponding frequency | 0.0～F425 | 0. 05 | √ |
| F425 | AO1 highest corresponding frequency | F424～F111 | 50. 00 | √ |
| F426 | AO1 output compensation | 0～120 | 100 | √ |
| F427 | AO2 output range | 0：0～20mA；1：4～20mA | 0 | √ |
| F428 | AO2 lowest corresponding frequency | 0.0～F429 | 0. 05 | √ |
| F429 | AO2 highest corresponding frequency | F428～F111 | 50. 00 | √ |
| F430 | AO2 output compensation | 0～120% | 100 | √ |
| F431 | AO1 analog output signal selecting | 0: Running frequency;<br>1: Output current;<br>2: Output voltage;<br>3: AI1 4: AI2<br>5: Input pulse<br>6: Output torque<br>7: Given by PC/PLC<br>8: Target frequency<br>9: Speed<br>10: Output torque 2<br>11: Reserved<br>12: Output power<br>13: DO2 output | 0 | √ |
| F432 | AO2 analog output signal selecting | | 1 | √ |
| F433 | Corresponding current for full range of external voltmeter | 0.01～5.00 times of rated current | 2. 00 | × |

| | | | | |
|---|---|---|---|---|
| F434 | Corresponding current for full range of external ammeter | | 2.00 | × |
| F435 | Corresponding multiple of rated power for output max analog value | 0.01～3.00 | 2.00 | × |
| F436 | Corresponding current multiple of rated torque for output max analog value | 0.01~3.00 | 3.00 | × |
| F438 | Input signal of AI1 channel | Setting range:<br>0: voltage<br>1: current | 0 | × |
| F439 | Input signal of AI2 channel | Setting range:<br>0: voltage<br>1: current | 1 | × |
| F440 | Min frequency of input pulse FI | 0.00～F442 | 0.00 | √ |
| F441 | Corresponding setting of FI min frequency | 0.00～F443 | 1.00 | √ |
| F442 | Max frequency of input pulse FI | F440～100.00 | 10.00 | √ |
| F443 | Corresponding setting of FI max frequency | Max（1.00，F441）～2.00 | 2.00 | √ |
| F445 | Filtering constant of FI input pulse | 0～100 | 0 | √ |
| F446 | FI channel 0Hz frequency dead zone | 0～F442Hz (Positive-Negative) | 0.00 | √ |
| F448 | F1 proportional gain | 0.001～2.000 | 1.000 | √ |
| F449 | Max frequency of output pulse FO | 0.00～100.00 | 10.00 | √ |
| F450 | Zero bias coefficient of output pulse frequency (%) | 0.0～100.0 | 0.0 | √ |
| F451 | Frequency gain of output pulse | 0.00～10.00 | 1.00 | √ |
| F453 | Output pulse signal | 0: Running frequency<br>1: Output current<br>2: Output voltage<br>3: AI1 4: AI2<br>5: Input pulse<br>6: Output torque<br>7: Given by PC/PLC<br>8: Target frequency | 0 | √ |

| | | | | |
|---|---|---|---|---|
| F460 | AI1channel input mode | 0: straight line mode<br>1: folding line mode | 0 | × |
| F461 | AI2 channel input mode | 0: straight line mode<br>1: folding line mode | 0 | × |
| F462 | AI1 insertion point A1 voltage value | F400～F464 | 2. 00 | × |
| F463 | AI1 insertion point A1 setting value | 0.00～2.00 | 1. 20 | × |
| F464 | AI1 insertion point A2 voltage value | F462～F466 | 5. 00 | × |
| F465 | AI1 insertion point A2 setting value | 0.00～2.00 | 1. 50 | × |
| F466 | AI1 insertion point A3 voltage value | F464～F402 | 8. 00 | × |
| F467 | AI1 insertion point A3 setting value | 0.00～2.00 | 1. 80 | × |
| F468 | AI2 insertion point B1 voltage value | F406～F470 | 2. 00 | × |
| F469 | AI2 insertion point B1 setting value | 0.00～2.00 | 1. 20 | × |
| F470 | AI2 insertion point B2 voltage value | F468～F472 | 5. 00 | × |
| F471 | AI2 insertion point B2 setting value | 0.00～2.00 | 1. 50 | × |
| F472 | AI2 insertion point B3 voltage value | F470～F412 | 8. 00 | × |
| F473 | AI2 insertion point B3 setting value | 0.00～2.00 | 1. 80 | × |
| F477 | User-define speed control mode | 0: invalid 1: valid | 0 | × |
| F478 | Max limit of output frequency | F113～F111 | 50. 00 | √ |

## Multi-stage Speed Control: F500-F580

| | | | | |
|---|---|---|---|---|
| F500 | Stage speed type | 0: 3-stage speed;<br>1: 15-stage speed;<br>2: Max 8-stage speed auto circulating | 1 | × |
| F501 | Selection of Stage Speed Under Auto-circulation Speed Control | 2～8 | 7 | √ |
| F502 | Selection of Times of Auto- Circulation Speed Control | 0～9999（when the value is set to 0, the inverter will carry out infinite circulating） | 0 | √ |
| F503 | Status after auto circulation running Finished | 0: Stop<br>1: Keep running at last stage speed | 0 | √ |
| F504 | Frequency setting for stage 1 speed | F112～F111 | 5.00 | √ |
| F505 | Frequency setting for stage 2 speed | F112～F111 | 10.00 | √ |
| F506 | Frequency setting for stage 3 speed | F112～F111 | 15.00 | √ |
| F507 | Frequency setting for stage 4 speed | F112～F111 | 20.00 | √ |
| F508 | Frequency setting for stage 5 speed | F112～F111 | 25.00 | √ |
| F509 | Frequency setting for stage 6 speed | F112～F111 | 30.00 | √ |
| F510 | Frequency setting for stage 7 speed | F112～F111 | 35.00 | √ |
| F511 | Frequency setting for stage 8 speed | F112～F111 | 40.00 | √ |
| F512 | Frequency setting for stage 9 speed | F112～F111 | 5.00 | √ |
| F513 | Frequency setting for stage 10 speed | F112～F111 | 10.00 | √ |
| F514 | Frequency setting for stage 11 speed | F112～F111 | 15.00 | √ |
| F515 | Frequency setting for stage 12 speed | F112～F111 | 20.00 | √ |
| F516 | Frequency setting for stage 13 speed | F112～F111 | 25.00 | √ |
| F517 | Frequency setting for stage 14 speed | F112～F111 | 30.00 | √ |
| F518 | Frequency setting for stage 15 speed | F112～F111 | 35.00 | √ |
| F519-F533 | Acceleration time setting for the speeds from Stage 1 to stage 15 | 0.1～3000S | Subject to inverter model | √ |
| F534-F548 | Deceleration time setting for the speeds from Stage 1 to stage 15 | 0.1～3000S | | √ |
| F549-F556 | Running directions of stage speeds from Stage 1 to stage 8 | 0: forward running;<br>1: reverse running | 0 | √ |
| F557-F564 | Running time of stage speeds from Stage 1 to stage 8 | 0.1～3000S | 1.0 | √ |
| F565-F572 | Stop time after finishing stages from Stage 1 to stage 8. | 0.0～3000S | 0.0 | √ |
| F573-F579 | Running directions of stage speeds from Stage 9 to stage 15. | 0: forward running;<br>1: reverse running | 0 | √ |
| F580 | Stage-speed mode | 0: Stage speed mode 1<br>1: Stage speed mode 2 | 0 | √ |

## Auxiliary Functions: F600-F677

| | | | | |
|---|---|---|---|---|
| F600 | DC Braking Function Selection | 0: Invalid;<br>1: braking before starting;<br>2: braking during stopping;<br>3: braking during starting and stopping | 0 | √ |
| F601 | Initial Frequency for DC Braking | 0.20～50.00 | 1.00 | √ |
| F602 | DC Braking efficiency before Starting | 0~250 for 30kW and below 30kW<br>0~200 for above 30kW | 50 | √ |
| F603 | DC Braking efficiency During Stop | | 100 | √ |
| F604 | Braking Lasting Time Before Starting | 0.0～30.00 | 0.50 | √ |
| F605 | Braking Lasting Time During Stopping | 0.0～30.00 | 0.50 | √ |
| F606 | DC Braking type | 0：voltage 1：current | 1 | × |
| F607 | Selection of Stalling Adjusting Function | Setting range:<br>0: Invalid<br>1~2:Reserved<br>3: Voltage/current control<br>4: Voltage control<br>5: Current control | 3 | √ ○ |
| F608 | Stalling Current Adjusting (%) | 25～FC49 | 160 | √ |
| F609 | Stalling Voltage Adjusting (%) | 110～200 | S2/T2：130<br>T3：140 | √ ○ |
| F610 | Stalling Protection Judging Time (S) | 0.0～3000.0 | 60.0 | √ |
| F611 | Dynamic Braking threshold (V) | T3: 600～2000<br>S2/T2: 320~2000 | subject to model | × ○ |
| F612 | Dynamic braking duty ratio (%) | 0～100 | 100 | × |
| F613 | Speed track | 0: invalid<br>1: valid for induction motor<br>2: valid for induction motor at the first time | 0 | × |
| F614 | Speed track mode | Setting range:<br>0: Speed track from frequency memory<br>1: Speed track from zero<br>2: Speed track from max frequency | 0 | × |

| | | | | |
|---|---|---|---|---|
| F615 | Speed track rate | 1～100 | 20 | × |
| F618 | Delay time of speed track (S) | 0.5～60.0 | 1.5 | × |
| F620 | Brake delay turn-off time | 0.0 (brake not closed when stop)<br>0.1～3000 | 5.0 | √ |
| F622 | Dynamic braking duty | 0：fixed duty ratio<br>1：automatic duty ratio | 1 | √ |
| F624 | Overshoot restrained | 0: invalid 1: valid | 0 | √ |
| F638 | Parameters copy enabled | 0: Copy forbidden<br>1: Parameters download 1 ( voltage level and power are totally same)<br>2: Parameters download 2 (without considering voltage level and power) | 1 | × |
| F639 | Parameters copy code | 2000~2999 | subject to model | △ |
| F640 | Parameter copy type | 0: Copy all parameters<br>1: Copy parameters (except motor parameters from F801 to F810/F844) | 1 | × |
| F641 | Inhibition of current oscillation at low frequency | 0~100<br>0: Invalid | subject to model | × |
| F643 | Multi-functional key | Setting range:<br>0: Invalid<br>1: FWD jogging<br>2: REV jogging<br>3:Switchover between local/remote<br>4:Reverse run control | 0 | × |
| F644 | Keypad copy enabled | Setting range: 0: Invalid<br>1: current macro parameter upload<br>2: current macro parameter download<br>3: user macro 1 upload<br>4: user macro 1 download<br>5: user macro 2 upload<br>6: user macro 2 download | 0 | × |

| | | | | |
|---|---|---|---|---|
| F645 | Status parameters selection | 0: Current running frequency<br>1: Current rotate speed<br>2: Target rotate speed<br>3: Output current<br>4: Output voltage<br>5: PN voltage<br>6: PID setting value<br>7: PID feedback value<br>8: Radiator temperature<br>9: Count value<br>10: Linear speed<br>11: Main frequency setting channel<br>12: Main frequency<br>13: Auxiliary frequency setting channel<br>14: Auxiliary frequency<br>15: Target frequency<br>16: Reserved<br>17: Output torque<br>18: Setting torque<br>19: Motor power<br>20: Output power<br>21: Frequency status<br>22: DI terminal status<br>23: Output terminal status<br>24: Current stage of multi-stage speed<br>25: AI1 input value<br>26: AI2 input value<br>27, 28: Reserved<br>29: Pulse input frequency<br>30: Pulse output frequency<br>31: AO1 output percentage<br>32: AO2 output percentage<br>33: Power-on time<br>34: Length<br>35: Center frequency | 0 | √ |
| F646 | Backlight time of LCD (S) | 0~100 | 100 | √ |
| F647 | Language selection | 0: Chinese 1: English<br>2: Deutsch | 0 | √ ○ |
| F649 | Keypad selection | 0: Automatic identification<br>1: LED remote keypad<br>2: LCD remote keypad | 0 | √ ○ |
| F656 | Time of DC braking when stop | 0.00~30.00 | 0 | √ ○ |

| | | | | |
|---|---|---|---|---|
| F657 | Instantaneous power failure selection | 0: Invalid<br>1: non-stop after power failure<br>2: decelerate to stop after power failure | 0 | × |
| F658 | Voltage rally acceleration time | 0.0～3000s<br>0.0: F114 | 0.0 | √ |
| F659 | Voltage rally deceleration time | 0.0～3000s<br>0.0: F115 | 0.0 | √ |
| F660 | Action judging voltage at instantaneous power failure | 200～F661 | subject to model | ×○ |
| F661 | Action stop voltage at instantaneous power failure | F660~1400 | subject to model | ×○ |
| F662 | Instantaneous voltage recovery judging time(s) | 0.00~10.00 | 0.30 | √ |
| F663 | Instantaneous proportion coefficient Kp | 0.00~10.00 | 0.25 | √ |
| F664 | instantaneous integral coefficient Ki | 0.00~10.00 | 0.30 | √ |
| F670 | Voltage-limit current-limit adjustment coefficient | 0.01~10.00 | 2.00 | √ |
| F671 | voltage source for V/F separation | 0: F672 1: AI1 2:AI2 3: AI3<br>4: Communication setting<br>5: pulse setting 6: PID | 0 | × |
| F672 | Voltage digital setting for V/F separation | 0.00～100.00 | 100.00 | √ |
| F673 | Lower limit of voltage at V/F separation (%) | 0.00～F674 | 0.00 | × |
| F674 | Upper limit of voltage at V/F separation (%) | F673～100.00 | 100.00 | × |
| F675 | Voltage rise time of V/F separation (S) | 0.0～3000.0 | 5.0 | √ |
| F676 | Voltage rise time of V/F separation (S) | 0.0～3000.0 | 5.0 | √ |
| F677 | Stop mode at V/F separation | 0: voltage and frequency declines to 0 according to respective time.<br>1: Voltage declines to 0 first<br>2: frequency declines to 0 first. | 0 | × |
| F678 | Judgment voltage at V/F separation | 0: invalid<br>1: auto judgment | 0 | × |
| F679 | Voltage switch point at V/F separation (V) | 200～600 | 430 | × |

| | | | | |
|---|---|---|---|---|
| F680 | Switch point width at V/F separation (%) | 0.0～100.0 | 0. 5 | × |

## Timing Control and Protection: F700-F760

| | | | | |
|---|---|---|---|---|
| F700 | Selection of terminal free stop mode | 0: free stop immediately;<br>1: delayed free stop | 0 | √ |
| F701 | Delay time for free stop and programmable terminal action | 0.0～60.0s | 0. 0 | √ |
| F702 | Fan control mode | 0:controlled by temperature<br>1: Running when inverter is powered on<br>2: Controlled by running status | 2 | √ |
| F704 | Inverter Overloading pre-alarm Coefficient (%) | 50~100 | 80 | √ |
| F705 | Overloading adjusting gains | 50~100 | 80 | √ |
| F706 | Inverter Overloading coefficient% | 120～190 | 150 | × |
| F707 | Motor Overloading coefficient % | 20～100 | 100 | × |
| F708 | Record of The Latest Malfunction Type | Please refer to trouble shooting | | △ |
| F709 | Record of Malfunction Type for Last but One | | | △ |
| F710 | Record of Malfunction Type for Last but Two | | | △ |
| F711 | Fault Frequency of The Latest Malfunction | | | △ |
| F712 | Fault Current of The Latest Malfunction | | | △ |
| F713 | Fault PN Voltage of The Latest Malfunction | | | △ |
| F714 | Fault Frequency of Last Malfunction but One | | | △ |
| F715 | Fault Current of Last Malfunction but | | | △ |
| F716 | Fault PN Voltage of Last Malfunction | | | △ |
| F717 | Fault Frequency of Last Malfunction | | | △ |
| F718 | Fault Current of Last Malfunction but | | | △ |
| F719 | Fault PN Voltage of Last Malfunction | | | △ |
| F720 | Record of overcurrent protection fault | | | △ |
| F721 | Record of overvoltage protection fault | | | △ |
| F722 | Record of overheat protection fault | | | △ |
| F723 | Record of overload protection fault | | | △ |

| | | | | |
|---|---|---|---|---|
| F724 | Input phase loss | 0: invalid; 1: valid | S2：0<br>T2/T3：1 | ×○ |
| F725 | Under-voltage protection | 1: reset manually<br>2: reset automatically | 2 | × |
| F726 | Overheat | 0: invalid; 1: valid | 1 | ×○ |
| F727 | Output phase loss | 0: invalid; 1: valid | 1 | ×○ |
| F728 | Input phase loss filtering constant | 0.1～60.0 | 5 | √ |
| F729 | Under-voltage filtering constant | 0.1～60.0 | 5 | √○ |
| F730 | Overheat protection filtering constant | 0.1～60.0 | 5.0 | √ |
| F732 | Under-voltage protection voltage threshold (V) | T2/S2: 120~450<br>T3: 300~450 | Subject to inverter model | ×○ |
| F737 | Over-current 1 protection | 0: Invalid 1:Valid | 1 | ×○ |
| F738 | Over-current 1 protection coefficient | 0.50～3.00 | 2.50 | × |
| F739 | Over-current 1 protection record | | | △ |
| F741 | Analog disconnected protection | 0: Invalid<br>1: Stop and AErr displays.<br>2: Stop and AErr is not displayed.<br>3: Inverter runs at the min frequency.<br>4: Reserved. | 0 | √ |
| F742 | Threshold of analog disconnected protection (%) | 1~100 | 50 | √ |
| F743 | Filtering constant of checking STO | 0.1～10.0 | 0.5 | √ |
| F745 | Threshold of pre-alarm overheat | 0~100 | 80 | √○ |
| F746 | Carrier frequency auto-adjusting threshold | 60~100 | 75 | √○ |
| F747 | Carrier frequency auto-adjusting | 0: Invalid 1: Valid | 1 | √ |
| F751 | Instantaneous stop pretreatment enable | 0: Invalid 1: Valid | 0 | √ |
| F752 | Overload quitting coefficient | 0.1~20.0 | 1.0 | √ |
| F753 | Selection of overload protection | 0: Normal motor<br>1: variable frequency motor | 1 | × |
| F754 | Zero-current threshold (%) | 0~200 | 5 | × |
| F755 | Duration time of zero-current | 0~60 | 0.5 | √ |
| F756 | Delay time when drive runs（ms） | 0：invalid ；1～5000 | 0 | √ |
| F757 | Delay time when drive stops (S)） | 0.0～100.0 | 5.0 | √ |
| F760 | Grounding protection | 0: Invalid 1: Valid | 0 | * |
| F761 | Switchover mode of FWD/REV | 0: At zero 1: at start frequency | 0 | × |

| | | | | |
|---|---|---|---|---|
| F770 | Auxiliary version No. | | | △ |
| F771 | Precharge function | 0: invalid 1:valid | 1 | × |

## Motor parameters: F800-F880

| | | | | |
|---|---|---|---|---|
| F800 | Motor's parameters selection | Setting range:<br>0: Invalid;<br>1: Rotating tuning.;<br>2: Stationary tuning | 0 | ×○ |
| F801 | Rated power | 0.1～1000.0 | subject to model | ×○ |
| F802 | Rated voltage | 1～1300 | | ×○ |
| F803 | Rated current | 0.2～6553.5 | | ×○ |
| F804 | Number of motor poles | 2～100 | 4 | ×○ |
| F805 | Rated rotary speed | 1～39000 | | ×○ |
| F806 | Stator resistance | 0.001～65.53Ω (for 15kw and below 15kw)<br>0.1~6553mΩ (For above 15kw) | subject to model | ×○ |
| F807 | Rotor resistance | 0.001～65.53Ω (for15kw and below 15kw)<br>0.1~6553mΩ (For above 15kw) | subject to model | ×○ |
| F808 | Leakage inductance | Setting range:<br>0.01～655.3mH (for 15kw and below 15kw)<br>0.001~65.53mH (for above 15kw) | subject to model | ×○ |
| F809 | Mutual inductance | Setting range:<br>0.1～6553mH (for 15kw and below 15kw)<br>0.01~655.3mH (for above 15 kw) | subject to model | ×○ |
| F810 | Motor rated frequency | 1.00~590.00 | 50.00 | ×○ |
| F811 | Carrier frequency switchover point (Hz) | 0.00~20.00 | 8.00 | √ |
| F812 | Pre-exciting time （S） | 0.00～30.00 | 0.10 | √ |
| F813 | Rotary speed loop KP1 | 1~100 | 30 | √ |
| F814 | Rotary speed loop KI1 | 0.01~10.00 | 0.50 | √ |
| F815 | Rotary speed loop KP2 | 1~100 | subject to model | √ |
| F816 | Rotary speed loop KI2 | 0.01~10.00 | 1.00 | √ |
| F817 | PID switching frequency 1 | 0~F818 | 5.00 | √ |
| F818 | PID switching frequency 2 | F817~F111 | 10.00 | √ |

| | | | | |
|---|---|---|---|---|
| F819 | Slip coefficient | 10~200 | 100 | √ |
| F820 | Filtering coefficient of speed loop | 0~100 | 0 | √ |
| F821 | Over-excitation gain | Setting range: 0.0～50.0 | 30.0 | √ |
| F822 | Upper limit of speed control torque | 0.0~250.0 | 200 | √ |
| F839 | Weak magnetism coefficient | 0. 10～2. 00 | 1. 00 | √ |
| F840 | Stop after detecting feedback value | 0: By feedback speed<br>1: By given speed | 0 | ×○ |
| F844 | Motor current without load（A） | 0.1～F803 | Subject to model | ×○ |
| F847 | Encoder disconnection detection time(s) | 0.1～10.0 | 2.0 | × |
| F850 | Detection threshold of encoder disconnection | 5~100 | 30 | × |
| F851 | Encoder resolution | 1～9999 | 1000 | ×○ |
| F854 | Encoder phase sequence | 0: forward direction<br>1: reverse direction | 0 | ×○ |
| F866 | Static position identification | 0: Invalid 1: Valid | 0 | × |
| F867 | Position identification current | 0～30 | 10 | × |
| F868 | Position identification frequency | 2000～16000 | 10000 | × |
| F870 | PMSM back electromotive force (mV/rpm) | 0.1～6553.0 (valid value between lines) | 100.0 | ×○ |
| F871 | PMSM D-axis inductance (mH) | 0.01～655.35 | 5.00 | ×○ |
| F872 | PMSM Q-axis inductance (mH) | 0.01～655.35 | 7.00 | ×○ |
| F873 | PMSM stator resistance（Ω） | 0.001～65.53<br>(phase resistor) | 0.500 | ×○ |
| F874 | Position identification times | 5～50 | 30 | × |
| F875 | Position identification angle compensation | 0.0～1000 | 0 | × |
| F876 | PMSM injection current without load (%) | 0.0～100.0 | 20.0 | ×○ |

| | | | | |
|---|---|---|---|---|
| F877 | PMSM injection current compensation without load (%) | 0.0～50.0 | 0.0 | ×○ |
| F878 | PMSM cut-off point of injection current compensation without load (%) | 0.0～50.0 | 10.0 | ×○ |
| F879 | PMSM injection current with heavy load (%) | 0.0~100.0 | 0.0 | ×○ |
| F880 | PMSM PCE detection time (S) | 0.0～10.0 S | 0.2 | ×○ |

## Communication parameter: F900-F930

| | | | | |
|---|---|---|---|---|
| F900 | Communication Address | 1~255: single inverter address<br>0: broadcast address | 1 | √ |
| F901 | Communication Mode | 1: ASCII 2: RTU<br>3: Remote keypad | 2 | √ |
| F902 | Stop bits | 1~2 | 2 | √ |
| F903 | Parity Check | 0: Invalid 1: Odd 2: Even | 0 | √ |
| F904 | Baud Rate | 0: 1200; 1: 2400; 2: 4800;<br>3: 9600 ; 4: 19200 5: 38400<br>6: 57600 | 3 | √ |
| F905 | Communication timeout period (S) | 0.0~3000.0 | 0.0 | √ |
| F907 | Time 2 of communication timeout (S) | 0.0~3000.0 | 0.0 | √ |
| F911 | Point-point communication selection | 0:Disabled 1:Enabled | 0 | × |
| F912 | Master and slave selection | 0:Master 1:Slave | 0 | × |
| F913 | Running command of slave | 0:Slave not following running commands of master<br>1:Slave following running commands of master | 1 | × |
| F914 | Fault information of slave | Ones: slave fault information<br>0: Not sending fault information<br>1: Sending fault information<br>Tens: master's reaction when it loses slave's response<br>0: No reaction 1: Alarm | 01 | √ |
| F915 | Master action when salve failed | 0: continue running<br>1: free stop<br>2: Deceleration to stop | 1 | √ |
| F916 | Slave action when master stops | 1: Free stop<br>2: Deceleration to stop | 1 | √ |

| | | | | |
|---|---|---|---|---|
| F917 | Slave following master command selection | 0: given torque(torque)<br>1: given frequency 1(Droop)<br>2: given frequency 2 (Droop) | 0 | × |
| F918 | Zero offset of received data (torque) | 0～200.00 | 100.00 | √ |
| F919 | Gain of received data(torque) | 0.00～10.00 | 1.000 | √ |
| F920 | Zero offset of received data (frequency) | 0～200.00 | 100.00 | √ |
| F921 | Gain of received data(frequency) | 0.00～10.00 | 1.000 | √ |
| F922 | window | 0.00～10.00 | 0.50 | √ |
| F923 | Droop control | 0.0～30.0 | 0.00 | √ |
| F924 | Time of communication timeout (S) | 0.0～3000.0 | 0.0 | √ |
| F925 | Master sending data interval (S) | 0.000～1.000 | 0.0 | √ |
| F926 | CAN baud rate (kbps) | 0:20 1:50 2:100<br>3:125 4: 250 5:500<br>6:1000 | 6 | √ |
| F928 | BACnet address | 0～127 | 1 | √ |
| F929 | BACnet baud rate（bps） | 0:9600 1: 19200 2: 38400 3:76800 | 1 | √ |
| F930 | Keypad disconnected protection(s) | 0~10 0: Invalid | 0 | √ |
| F933 | BACnet device number | 0~65535 | 1 | √ |
| F934 | Master/slave adjustment time benchmark（S） | 0.0～10.0 | 0.5 | √ |
| F935 | Master/slave adjustment current error（%） | 0.0～50.0 | 5.0 | √ |
| F936 | Adjustment mode of accel/decel | 0: mode 0 1: mode 1 | 0 | × |
| F937 | Slave adjustment frequency mode | 0: no adjustment<br>1: Current balance adjustment<br>2: current PID adjustment | 1 | × |

| | | | | |
|---|---|---|---|---|
| F938 | Slave adjustment max frequency (Hz) | 0.00～5.00 | 0.1 | √ |
| F939 | Slave adjustment frequency period (S) | 0.00～10.00 | 0.5 | √ |

## PID parameters: FA00-FA80

| | | | | |
|---|---|---|---|---|
| FA00 | Water supply mode | 0: Single pump (PID control mode)<br>1: Fixed mode<br>2: Timing interchanging | 0 | × |
| FA01 | PID adjusting target given source | 0: FA04 1: AI1 2: AI2<br>3: AI3 (Potentiometer on the keypad)<br>4: FI (pulse frequency input) | 0 | × |
| FA02 | PID adjusting feedback given source | 1: AI1 2: AI2<br>3: FI (pulse frequency input)<br>4: reserved<br>5:Running current<br>6: Output power<br>7: Output torque | 1 | × |
| FA03 | Max limit of PID adjusting (%) | FA04～100.0 | 100.0 | √ |
| FA04 | Digital setting value of PID adjusting (%) | FA05～FA03 | 50.0 | √ |
| FA05 | Min limit of PID adjusting (%) | 0.0～FA04 | 0.0 | √ |
| FA06 | PID polarity | 0: Positive feedback<br>1: Negative feedback | 1 | × |
| FA07 | Dormancy function selection | 0: Valid 1: Invalid | 1 | × |
| FA09 | Min frequency of PID adjusting (Hz) | Max(F112, 0.1)~F111 | 5.00 | √ |
| FA10 | Dormancy delay time (S) | 0~500.0 | 15.0 | √ |
| FA11 | Wake delay time (S) | 0.0~3000 | 3.0 | √ |
| FA12 | PID max frequency(Hz) | FA09~F111 | 50.00 | √ |
| FA18 | Whether PID adjusting target is changed | 0: Invalid 1: Valid | 1 | × |
| FA19 | Proportion Gain P | 0.00~10.00 | 0.30 | √ |
| FA20 | Integration time I (S) | 0.0~100.0 | 0.3 | √ |
| FA21 | Differential time D (S) | 0.0~10.0 | 0.0 | √ |
| FA22 | PID sampling period (S) | 1～500 | 5 | √ |

| | | | | |
|---|---|---|---|---|
| FA23 | PID negative frequency output selection | 0: Invalid<br>1: Valid<br>2:Only output negative frequency | 0 | √ |
| FA24 | Switching Timing unit setting | 0: hour 1: minute | 0 | × |
| FA25 | Switching Timing Setting | 1～9999 | 100 | × |
| FA26 | Under-load protection mode | 0: No protection<br>1: Protection by contactor<br>2: Protection by PID<br>3: Protection by current | 0 | × |
| FA27 | Current threshold of under-load protection (%) | 10～150 | 50 | √ |
| FA28 | Waking time after protection (min) | 1～3000 | 60 | √ |
| FA29 | PID dead time (%) | 0.0～10.0 | 2.0 | √ |
| FA30 | Running Interval of restarting converter pump (S) | 2.0～999.9s | 20.0 | √ |
| FA31 | Delay time of starting general pumps (S) | 0.1～999.9s | 30.0 | √ |
| FA32 | Delay time of stopping general pumps (S) | 0.1～999.9s | 30.0 | √ |
| FA33 | stop mode when constant pressure water supply | 0: free stop<br>1: deceleration to stop | 0 | × |
| FA36 | Whether No.1 relay is started | 0: Stopped 1: Started | 0 | × |
| FA37 | Whether No.2 relay is started | 0: Stopped 1: Started | 0 | × |
| FA38 | Proportion gain Kp2 | 0.00～10.00 | 0.30 | √ |
| FA39 | Integration time Ki2(S) | 0.1～100.0 | 0.3 | √ |
| FA40 | Differential time Kd2(S) | 0.0～10.0 | 0.0 | √ |
| FA41 | PI parameter switchover type | 0: no switchover<br>1: reserved<br>2: Auto switchover<br>3: reserved | 0 | × |
| FA42 | Switchover error 1 | FA05～FA43 | 0.0 | √ |
| FA43 | Switchover error 2 | FA42～FA03 | 0.0 | √ |
| FA47 | The sequence of starting No 1 relay | 1~20 | 20 | × |
| FA48 | The sequence of starting No 2 relay | 1~20 | 20 | × |
| FA58 | Fire pressure given value (%) | 0.0~100.0 | 80.0 | √ |
| FA59 | Emergency fire mode | 0: Invalid<br>1: Emergency fire mode 1<br>2: Emergency fire mode 2 | 0 | × |
| FA60 | Running frequency of emergency fire | F112~F111 | 50.00 | √ |

| | | | | |
|---|---|---|---|---|
| FA62 | When fire emergency control terminal is invalid | 0～1 | 0 | ×○ |
| FA66 | Duration time of under-load protection (S) | 0~60 | 1.0 | √ |
| FA67 | Dormancy mode | 0: dormancy mode 1<br>1: dormancy mode 2 | 0 | × |
| FA68 | Given pressure offset 1（%） | 0.0～100.0 | 30.0 | √ |
| FA69 | Given pressure offset 2（%） | 0.0～100.0 | 30.0 | √ |
| FA76 | Frequency range of under load(Hz) | F112～F113 | 5.00 | √ |
| FA77 | running mode of under load | Setting range:<br>0: invalid<br>1: free stop<br>2: stop by decelerating time<br>3: run at FA76 | 0 | √ |

## Torque control parameters: FC00-FC51

| | | | | |
|---|---|---|---|---|
| FC00 | Speed/torque control selection | 0：Speed control<br>1：Torque control<br>2：Terminal switchover | 0 | √ |
| FC02 | Torque accel/decel time (S) | 0.1～100.0 | 1.0 | √ |
| FC06 | Torque given channel | 0: Digital given (FC09)<br>1: Analog input AI1<br>2: Analog input AI2<br>3: Analog input AI3<br>4: Pulse input channel FI<br>5: Reserved | 0 | × |
| FC07 | Torque given coefficient | 0～3.000 | 3.000 | × |
| FC09 | Torque given command value (%) | 0～300.0 | 100.0 | √ |
| FC14 | Offset torque given channel | 0: Digital given (FC17)<br>1: Analog input AI1<br>2: Analog input AI2<br>3: Analog input AI3<br>4: Pulse input channel FI<br>5: Reserved | 0 | × |
| FC15 | Offset torque coefficient | 0~0.500 | 0.500 | × |
| FC16 | Offset torque cut-off frequency (%) | 0~100.0 | 10.00 | × |
| FC17 | Offset torque command value (%) | 0~50.0 | 10.00 | √ |

| | | | | |
|---|---|---|---|---|
| FC22 | Forward speed limited channel | 0: Digital given (FC23)<br>1: Analog input AI1<br>2: Analog input AI2<br>3: Analog input AI3<br>4: Pulse input channel FI<br>5: Reserved | 0 | × |
| FC23 | Forward speed limited (%) | 0～100.0 | 10.00 | √ |
| FC24 | Reverse speed limited channel | 0: Digital given (FC25)<br>1: Analog input AI1<br>2: Analog input AI2<br>3: Analog input AI3<br>4: Impulse input FI<br>5: Reserved | 0 | × |
| FC25 | Reverse speed limited (%) | 0～100.0 | 10.0 | √ |
| FC28 | Electric torque limited channel | 0: Digital given (FC30)<br>1: Analog input AI1<br>2: Analog input AI2<br>3: Analog input AI3<br>4: Pulse input channel FI<br>5: Reserved | 0 | × |
| FC29 | Electric torque limited coefficient | 0～3.000 | 3.000 | × |
| FC30 | Electric torque limited (%) | 0～300.0 | 200.0 | √ |
| FC33 | Braking torque limited channel | 0: Digital given (FC35)<br>1: Analog input AI1<br>2: Analog input AI2<br>3: Analog input AI3<br>4: Pulse input channel FI<br>5: Reserved | 0 | × |
| FC34 | Braking torque limited coefficient | 0～3.000 | 3.000 | × |
| FC35 | Braking torque limited (%) | 0～300.0 | 200.00 | √ |
| FC36 | Torque lower limit enabled | 0: Invalid 1: valid | 0 | × |
| FC37 | Frequency at torque lower limit（Hz） | 2.00～50.00 | 10.00 | √ |
| FC38 | Filtering time（ms） | 0～5000 | 500 | √ |
| FC39 | Torque max value | 0.0～300.0 | 250 | × |
| FC40 | Lower limit torque threshold | 0.0～20.0 | 3 | √ |
| FC41 | Lower limit frequency threshold | 1.00～10.00 | 1 | √ |

| | | | | |
|---|---|---|---|---|
| FC48 | Torque switchover enabled | 0: Invalid 1: Valid | 1 | × |
| FC49 | Current-limiting point 2 (%) | F608～200 | 190 | √ |
| FC50 | Frequency switchover point 1(Hz) | 1.00～FC51 | 10.00 | √ |
| FC51 | Frequency switchover point 2(Hz) | FC50～F111 | 20.00 | √ |

## The second motor parameters: FE00-FE84

| | | | | |
|---|---|---|---|---|
| FE00 | Motor switchover | Ones: motor selection<br>0: No. 1 motor<br>1: No. 2 motor<br>2: Terminal switchover<br>Tens: control mode of No.2 motor<br>0: sensorless vector control (SVC)<br>1: Closed-loop vector control (VC)<br>2:V/F control<br>3:vector control 1 | 20 | × |
| FE01 | Rated power of motor 2(kW) | 0.1～1000.0 | Subject to inverter model | ×○ |
| FE02 | Rated voltage of motor 2(V) | 1～1300 | | ×○ |
| FE03 | Rated current of motor 2(A) | 0.2~6553.5 | | ×○ |
| FE04 | Number of motor 2 poles | 2～100 | 4 | ×○ |
| FE05 | Rated speed of motor 2(rmp) | 1～30000 | Subject to inverter model | ×○ |
| FE06 | Motor 2 stator resistor | 0.001～65.53Ω (≤15kW)<br>0.1～6553mΩ(>15kW) | Subject to inverter model | ×○ |
| FE07 | Motor 2 rotor resistor | 0.001～65.53Ω (≤15kW)<br>0.1～6553mΩ(>15kW) | Subject to inverter model | ×○ |
| FE08 | Motor 2 leakage inductance | 0.01～655.3mH (≤15kW)<br>0.001～65.53mH (>15kW) | Subject to inverter model | ×○ |
| FE09 | Motor 2 mutual inductance | 0.01～655.3mH (≤15kW)<br>0.001～65.53mH (>15kW) | Subject to inverter model | ×○ |
| FE10 | Motor 2 rated frequency(Hz) | 1.00～650.00 | 50.00 | ×○ |
| FE11 | Motor 2 no-load current(A) | 0.1～FE03 | Subject to inverter model | ×○ |
| FE12 | Type of motor 2 | 0: Normal motor | 1 | × |

| | | | | |
|---|---|---|---|---|
| | | 1: variable frequency motor | | |
| FE13 | Motor 2 rotary speed loop KP1 | 1～100 | 30 | √○ |
| FE14 | Motor 2 rotary speed loop KI1 | 0.01～10.00 | 0.50 | √○ |
| FE15 | Motor 2 rotary speed loop KP2 | 1～100 | 20 | √○ |
| FE16 | Motor 2 rotary speed loop KI2 | 0.01～10.00 | 1.00 | √○ |
| FE17 | Motor 2 switching frequency 1 | 0.00～F818 | 5.00 | √ |
| FE18 | Motor 2 switching frequency 2 | FE17～F111 | 10.00 | √ |
| FE19 | Accel/decel time of motor 2 | 0: same with accel/decal time of motor 1<br>1: 1st accel/decal time<br>2: 2ed accel/decal time | 0 | √ |
| FE20 | Torque compensation of motor 2 | 1～20 | Subject to inverter model | × |
| FE21 | Overload coefficient of motor 2 | 20～100 | 100 | × |
| FE22 | Motor 2 overloading pre-alarm Coefficient (%) | 50～100 | 80 | × |
| FE23 | Motor 2 oscillation inhibition coefficient | 0~100 | Subject to inverter model | × |
| FE24 | Reserved | | | |
| FE25 | Motor 2 speed loop filtering constant | 0～100 | 0 | √ |
| FE27 | Max torque when speed control | 0.0~250.0 | 200.0 | √ |
| FE33 | Motor 2 record of the latest malfunction type | | | △ |
| FE34 | Motor 2 record of malfunction type for last but one | | | △ |
| FE35 | Motor 2 record of malfunction type for last but two | | | △ |
| FE36 | Motor 2 fault frequency of the latest malfunction(Hz) | | | △ |
| FE37 | Motor 2 fault current of the latest malfunction(A) | | | △ |
| FE38 | Motor 2 fault PN voltage of the latest malfunction(V) | | | △ |
| FE39 | Motor 2 fault frequency of last malfunction but one(Hz) | | | △ |
| FE40 | Motor 2 fault current of last malfunction but one(A) | | | △ |

| | | | | |
|---|---|---|---|---|
| FE41 | Motor 2 fault PN voltage of last malfunction but one(V) | | | △ |
| FE42 | Motor 2 fault frequency of last malfunction but two(Hz) | | | △ |
| FE43 | Motor 2 fault current of last malfunction but two(A) | | | △ |
| FE44 | Motor 2 fault PN voltage of last malfunction but two(V) | | | △ |
| FE45 | Motor 2 record of overcurrent protection fault times | | | △ |
| FE46 | Motor 2 record of overvoltage protection fault times | | | △ |
| FE47 | Motor 2 record of overheat protection fault times | | | △ |
| FE48 | Motor 2 record of overload protection fault times | | | △ |
| FE49 | Motor 2 software overcurrent coefficient | 0.50～3.00 | 2.50 | × |
| FE50 | Motor 2 software overcurrent times | | | △ |
| FE51 | Motor 2 encoder line numbers | 1～9999 | 1000 | ×○ |
| FE76 | Injection current when no load | 0.0～100.0 | 20.0 | ×○ |
| FE77 | Injection current compensation when no load | 0.0～50.0 | 0.0 | ×○ |
| FE78 | Compensation cut-off point | 0.0～50.0 | 10.0 | ×○ |
| FE79 | Injection current when heavy load | 0.0～100.0 | 0.0 | ×○ |
| FE80 | PCE detecting current | 0.1～10.0 | 0.2 | ×○ |
| FE81 | PMSM speed loop Kp | 0.01～30.00 | 4.00 | ×○ |
| FE82 | PMSM speed loop Ki | 0.01～10.00 | 0.20 | ×○ |
| FE83 | PMSM current loop Kp | 0.1～10.0 | 1.0 | ×○ |
| FE84 | PMSM current loop Ki | 0.1～10.0 | 1.0 | ×○ |

## IO expansion:

| | | | | |
|---|---|---|---|---|
| FF00 | Expansion relay 1 output | Refer to F300～F302. | 0 | √ |
| FF01 | Expansion relay 2 output | | 0 | √ |
| FF05 | Expansion input DIA | Refer to F316～F323. | 0 | √ |
| FF06 | Expansion input DIB | | 0 | √ |
| FF07 | Expansion input DIC | | 0 | √ |
| FF08 | Expansion input DID | | 0 | √ |
| FF09 | Expansion input negative logic selection | 0: Invalid<br>1: DIA negative logic<br>2: DIB negative logic<br>4: DIC negative logic<br>8: DID negative logic | 0 | √ |

## Parameters display:

| | | | | |
|---|---|---|---|---|
| H000 | Running frequency / target frequency (Hz) | | | △ |
| H001 | Speed with load / target speed | | | △ |
| H002 | Output current (A) | | | △ |
| H003 | Output voltage（V） | | | △ |
| H004 | PN voltage（V） | | | △ |
| H005 | PID feedback value（%） | | | △ |
| H006 | Temperature（℃） | | | △ |
| H007 | Count values | | | △ |
| H008 | Linear speed | | | △ |
| H009 | PID given value（%） | | | △ |
| H010 | Yarn length | | | △ |
| H011 | Center frequency (Hz) | | | △ |
| H012 | Output power | | | △ |
| H013 | Output torque（%） | | | △ |
| H014 | Target torque（%） | | | △ |
| H015 | Encoder phase sequence adjustment | | | △ |
| H016 | Reserved | | | △ |

| | | | | |
|---|---|---|---|---|
| H017 | Current stage speed for multi-stage speed | | | △ |
| H018 | Input pulse frequency (0.01KHz) | | | △ |
| H019 | Feedback speed（Hz） | | | △ |
| H020 | Feedback speed (rpm) | | | △ |
| H021 | Monitoring AI1 | | | △ |
| H022 | Monitoring AI2 | | | △ |
| H023 | Monitoring AI3 | | | △ |
| H024 | Reserved | | | △ |
| H025 | Power-On time (h) | | | △ |
| H026 | Running time (h) | | | △ |
| H027 | Input pulse frequency（Hz） | | | △ |
| H028 | Reserved | | | △ |
| H029 | Reserved | | | △ |
| H030 | Main frequency X（Hz） | | | △ |
| H031 | Accessorial frequency Y(Hz) | | | △ |
| H032 | Torque sent by master | | | △ |
| H033 | Frequency sent by master | | | △ |
| H034 | Quantity of slaves | | | △ |
| H035 | Quantity of slaves | | | △ |
| H036 | Accumulative power-on time | | | △ |
| H037 | Accumulative running time | | | △ |
| H045 | CPU temperature | | | △ |

Note: × indicating that function code can only be modified in stop state.

√ indicating that function code can be modified both in stop and run state.

△ indicating that function code can only be checked in stop or run state but cannot be modified.

○ indicating that function code cannot be initialized as inverter restores manufacturer's value but can only be modified manually.

* indicating that function code can only be modified by manufacture.

1. It is necessary to study the parameters of motor (F801～805，F810) and set F800=1or 2 before inverter runs in the vector control mode (F106=0, 1, 3 and 6 ).

If user sets F800=1, please make sure the motor is disconnected from load.

2. Under vector control mode (F106=0,1, 3 and 6), one inverter can only drive one motor and the power of motor should be similar to the power of inverter. Otherwise, control performance will be increased or system cannot work properly.
3. When F106 = 1, in addition to the above 2 items, an encoder must be installed and F851 and F854 must be set correctly
4. When F137=3, auto torque compensation is chosen and it can compensate low-frequency torque automatically. Customers should set correct motor parameters

Please set F800=2 for stationary parameter measurement. Operation of one inverter with multiple motors is not supported in this mode

5. When F641>0 and low-frequency oscillation suppression is effective, a frequency inverter can only drive one motor at the same time, and motor parameters must be set correctly (F801~F805, F844)
6. When a frequency inverter is used to drive multiple motors, please set F106=2, F137≠3, and F641=0, F607=0.
7. When the power of frequency inverter is higher than the motor, and the difference is large, it is necessary to set F641=0, F607=0