HD800 Series

Vector Control Inverter

User Manual

V1.0 2024.08

FOREWORD

Thank you for purchasing the HD800 series vector control inverter developed by Shenzhen Hpmont Technology Co., Ltd.!

This user manual explains how to use HD800 correctly, and comprehensively introduces the mechanical installation, electrical installation, parameter setting, fault countermeasures, maintenance and other detailed information of HD800.

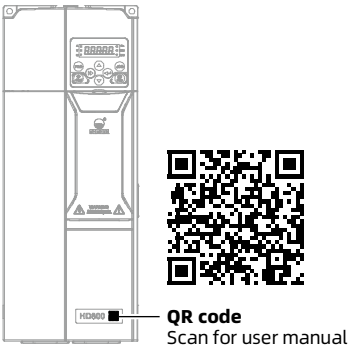
Before using HD800, please read through this user manual carefully. In addition, please do not use this product until you have fully understood safety precautions.

Note:

- Preserve this user manual for future use.
- If you need the user manual due to damage, loss or other reasons, please contact the distributor of our company or directly contact our Technical Service Center.
- If you have some problems during use, please contact our Technical Service Center.
- Due to product upgrade or specification change, and to improve the readability and accuracy of the user manual, Hpmont changes the content of the user manual timely without prior notice.
- Email address: **marketing@hpmont.com**

You can scan the QR code to get the electronic PDF file.

- HD800 Series Vector Control Inverter Starting Guide
- HD800 Series Vector Control Inverter User Manual



Version and Revision Records

Version	Time	Revised Contents
1.0	2024/08	• V1.0 version released

Contents

Chapter 1 Safety Information and Precautions

1.1 Safety Definition

 **Danger**
Danger: A Danger contains information which is critical for avoiding safety hazard.

 **Warning**
Warning: A Warning contains information which is essential for avoiding a risk of damage to products or other equipements.

Note
Note: A Note contains information which helps to ensure correct operation of the product.

1.2 Safety Sign

The inverter's safety signs are shown in the figure below. Please strictly abide by the requirements of the safety signs.

1.3 Precautions

Compared to Industrial Frequency Operation

HD800 is a voltage-type type inverter, and its output is PWM wave with certain harmonic wave. Therefore, the temperature rise, noise, and vibration of the motor during use have slightly increased compared to power frequency operation.

Constant Torque Low Speed Operation

When inverter drives an ordinary motor to run at a low speed for a long time, the output torque will be reduced due to the poor heat dissipation of the motor. If the motor is in a long-term low-speed constant torque running condition, it is recommended to use a inverter motor.

Electronic Thermal Protection for Motor

When selecting an adaptive motor, the inverter can effectively implement thermal protection for the motor. If the power of the controlled motor does not match that of the inverter, the motor protection parameters or other protection measures must be adjusted to ensure safe and reliable operation of the motor.

Above the Rated Frequency of the Motor

If the motor is operated at a frequency exceeding its rated frequency, the noise increases. Pay attention to the vibration of the motor and ensure that the motor bearings and mechanical devices can meet the requirements of the running speed range.

Lubrication of Mechanical Device

At long time low-speed running, provide periodical lubrication maintenance for the mechanical devices such as gear box and geared motor etc. to make sure the drive results meet the site need.

Mechanical Resonance Point

Set the inverter's jump frequency to avoid the mechanical resonance point of the load device or motor.

Check the Insulation of the Motor

For the first time using the motor or after long time storage, it needs check the insulation of the motor. Worse insulation can cause damage to HD800.

Note:
Use a 500V Mega-Ohm-Meter to test and the insulation resistance must be higher than 5Mohm.

Negative Torque Load

For situations such as lifting loads, negative torque often occurs, and the inverter often trips due to overcurrent or overvoltage faults. Consider matching brake components with appropriate parameters.

Requirement for Leakage Current Protector RCD

Since the device generates high leakage current which goes through the protective grounding conductor, please install B type leakage current protector RCD on one side of the power supply. For the selection of RCD, users need to consider the possible problems of ground leakage current in both transient status and steady status at start and during running. It is recommended to choose either special RCD that can suppress the higher harmonics, or general RCD that has more aftercurrent.

Warning for Ground Mass Leakage Current

The device generates mass leakage current, so users need to confirm the reliable grounding before connect to the power supply. The grounding should comply with the local relative IEC standard.

It is Prohibited to Install Capacitors or Pressure-sensitive Devices to Improve the Power Factor on the Output Side

Since the output of the inverter is a PWM wave, it is strictly prohibited to install capacitors to improve the power factor or varistor for lightning protection on the output side to avoid possible tripping of the inverter or damage to the device.

The Output Terminal is Externally Connected to Switching Devices Such as Contactors

If there are switching devices such as contactors installed between the inverter and the motor, please ensure that the inverter is switched on and off when there is no output, otherwise it may cause inverter damaged.

Running Voltage

It is strictly prohibited to use it directly outside the voltage range specified by the HD800. If the power supply voltage is not suitable, the corresponding voltage regulating device should be used to transform the voltage to obtain a voltage that meets the product's use.

Capacitor Energy Storage

In the event that the AC power supply is cut off, the capacitors within the inverter remain charged for a period of time, and the voltage can be fatal. If the inverter has been powered on before, the AC power must be cut off for more than 10 minutes, and the internal charging indicator has gone out, and the voltage between the power terminals (+) and (-) is lower than 36V before disassembling the inverter.

Typically, internal circuitry discharges the capacitor. However, under certain abnormal circumstances, the capacitor may not be able to discharge. In this case, you should consult our company or distributor.

Three Phase Input Changed to Single Phase Input

For three phase input inverters, it is recommended that users do not change to single phase input.

If single phase power supply must be used, the input phase loss protection function should be cancelled. The bus voltage and current ripple will increase, resulting in poor performance of the inverter and reduced capacitor life. In this application, derating is required, not exceeding 60% of the inverter's rating.

Lightning Strike Protection

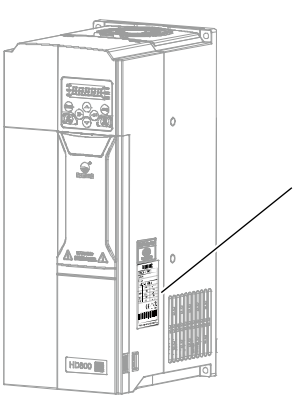
The inverter is designed with a lightning overcurrent protection circuit and has certain self-protection capabilities against induced lightning.

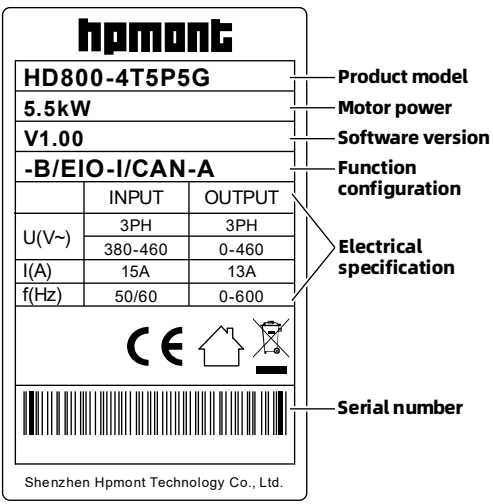
Altitude and Derating

In areas with an altitude of more than 1000 meters, the heat dissipation effect of the inverter becomes poor due to the thin air. At this time, the inverter must be derated. For every 100m of altitude increase, the output current rating decreases by 1%.

Chapter 2 Product Information

2.1 Nameplate





Product Model

See instructions below.

HD800-4T5P5G

1 2 3 4 5

Code	Description			
1	Product series	• **HD800:** Vector control inverter		
2	Voltage level	• **2:** 200 - 240V	• **4:** 380 - 460V	
3	Phase	• **S:** Single phase	• **D:** Single/three phase	• **T:** Three phase
4	Suitable for motor	• **0P2:** 0.2kW • **0P4:** 0.4kW • **0P7:** 0.75kW • **1P5:** 1.5kW • **2P2:** 2.2kW • **3P7:** 3.7kW • **5P5:** 5.5kW • **7P5:** 7.5kW • **011:** 11kW • **015:** 15kW	• **018:** 18.5kW • **022:** 22kW • **030:** 30kW • **037:** 37kW • **045:** 45kW • **055:** 55kW • **075:** 75kW • **090:** 90kW • **110:** 110kW • **132:** 132kW	• **160:** 160kW • **185:** 185kW • **200:** 200kW • **220:** 220kW • **250:** 250kW • **280:** 280kW • **315:** 315kW • **355:** 355kW • **400:** 400kW
5	Load type	• **G:** General		

Motor Power

See section 2.2, page 7 for instruction.

Function Configuration

See instructions below.

-B / EIO-I / CAN-A

1 2 3

Code	Description	
1	Special function configuration	• **NA:** None • **-B:** Optional dynamic brake unit • **XXX:** XXXX • **XXX:** XXXX
2	SLOT-A expansion slot configuration	Note: • SLOT-A and SLOT-B cannot install the same type of expansion card at the same time • F1 size inverter does not support expansion card • HD800-EIO-I can only be installed in SLOT-A expansion slot • **NA:** None **IO type expansion card** • **EIO-I:** HD800-EIO-I, IO expansion card **Communication expansion card** • **CAN-A:** HD800-CAN-A, CAN bus communication expansion card • **ECAT-A:** HD800-EtherCat-A, EtherCat bus communication expansion card • **PN-A:** HD800-ProfiNet-A, ProfiNet bus communication expansion card • **DP:** HD800-Profibus-DP, Profibus bus communication expansion card • **IOT-B:** HD800-IOT-B, IoT 4G module expansion card • **IOT-W:** HD800-IOT-W, IoT WiFi module expansion card **Functional safety expansion card** • **STO:** HD800-STO, STO expansion card **Other expansion cards** • **WGH-A:** HD800-WGH-A, weighing expansion card
3	SLOT-B expansion slot configuration	

Electrical Specification

See section 2.2, page 7 for instruction.

2.2 Electrical Specification

For size details, see section 3.2.1 Size and Gross Weight, page 16.

Model	Motor (kW)	Rated Capacity (kVA)	Rated Input Current (A)	Rated Output Current (A)	Size
Single phase 200 - 240V, single/three phase 200 - 240V					
HD800-2S0P2G	0.2	0.6	4.3	1.7	F1
HD800-2S0P4G	0.4	1.0	5.8	2.5	F1
HD800-2S0P7G	0.75	1.5	10.5	4.0	F1
HD800-2S1P5G	1.5	2.8	18.5	7.5	F1
HD800-2D2P2G	2.2	3.8	24.1/12 (1)	10	F2
HD800-2D3P7G	3.7	5.9	40/19 (1)	17	F3
HD800-2D5P5G	5.5	8.5	60/28 (1)	25	F4
HD800-2D7P5G	7.5	11	75/35 (1)	32	F4
HD800-2D011G	11	16	100/47 (1)	45	F4
(1): The value before "/" corresponds to single phase power input, and the value after "/" corresponds to three phase power input.					
Three phase 380 - 460V					
HD800-4T0P4G	0.4	1.0	1.8	1.4	F1
HD800-4T0P7G	0.75	1.5	3.4	2.3	F1
HD800-4T1P5G	1.5	2.5	5.2	3.8	F1
HD800-4T2P2G	2.2	3.4	7.3	5.1	F1
HD800-4T3P7G	3.7	5.9	11.9	9.0	F2
HD800-4T5P5G	5.5	8.5	15	13	F2
HD800-4T7P5G	7.5	11	19	17	F3
HD800-4T011G	11	16	28	25	F3
HD800-4T015G	15	21	35	32	F4
HD800-4T018G	18.5	24	39	37	F4
HD800-4T022G	22	30	47	45	F4
HD800-4T030G	30	39	62	60	F5
HD800-4T037G	37	49	77	75	F5
HD800-4T045G	45	59	92	90	F6A
HD800-4T055G	55	72	113	110	F6
HD800-4T075G	75	100	156	152	F6
HD800-4T090G	90	116	180	176	F7
HD800-4T110G	110	138	214	210	F7
HD800-4T132G	132	167	256	253	F8
HD800-4T160G	160	200	307	304	F8
HD800-4T185G	185	220	345	340	F9
HD800-4T200G	200	250	385	380	F9
HD800-4T220G	220	280	430	426	F9

Model	Motor (kW)	Rated Capacity (kVA)	Rated Input Current (A)	Rated Output Current (A)	Size
HD800-4T250G	250	309	475	470	F10
HD800-4T280G	280	349	535	530	F10
HD800-4T315G	315	398	609	600	F11
HD800-4T355G	355	434	664	660	F11
HD800-4T400G	400	494	754	750	F11

2.3 Technical Data

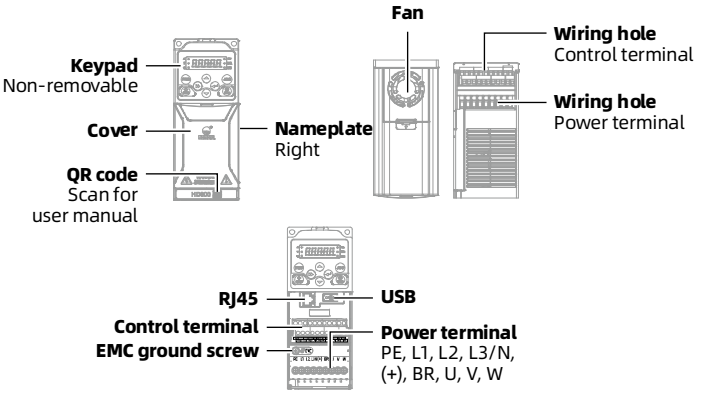
Electrical	
Input voltage	Single phase 200 - 240V Single/three phase 200 - 240V Three phase 380 - 460V Fluctuation within ± 10%, unbalance rate <3%
Input frequency	50/60Hz ± 5%
Output voltage	0V - input voltage
Output frequency	V/f: 0.00 - 600.00Hz SVC: 0.00 - 200.00Hz
Performance	
Overload capacity	150% rated output current for 2 minutes 180% rated output current for 10 seconds
Control method	V/f control, SVC (open loop vector) control
Run command	Keypad, external DI terminal, SCI communication
Speed setting	Digital, analog, SCI communication
Speed resulotion	Digital setting: 0.01Hz Analog setting: 1% × maximum frequency
Speed control accuracy	SVC: ±0.5%
Speed control range	SVC: 1:100
Torque control response	SVC: <200ms
Starting torque	SVC: 180% rated torque/0.5Hz
Torque control accuracy	±5%

Protection Function	
Overvoltage stall	Automatic bus voltage control to prevent overvoltage faults
Automatic current limiting protection	Output current is automatically limited to prevent overcurrent faults
Overload pre-alarm and alarm	Overload early warning and protection
Output underload protection	Underload alarm function
Input and output phase loss protection	Input and output phase loss automatic detection and alarm function
Brake pipe fault protection	Brake pipe detection and alarm function
Output short-circuit protection to ground	Output short-circuit to ground effective protection function
Output phase short-circuit protection	Output phase short-circuit effective protection function
Input and Output	
External analog power supply	+10V, maximum output current 100mA
External digital power supply	+24V, maximum output current 200mA
Analog input	AI1: 0 - 10V AI2: 0 - 10V/0 - 20mA (default voltage)
Analog output	AO1: 0 - 10V/0 - 20mA (default voltage)
Digital input	DI1 - DI5 • Bipolar selectable input signal • DI5 can be set as high-speed pulse input AI1 - AI2
Digital output	DO1 • Open collector output • DO1 can be set as high-speed pulse output
Relay output	RA/RC (normally open) • Contact capacity 250VAC/3A or 30VDC/1A
SCI communication	Modbus communication protocol AB terminal, RJ45 terminal
Operation Display	
Standard LED keypad	5-digit LED digital tubes, 5 unit indicators, 1 status indicator • Set parameters, view parameters, view fault codes, custom menus, etc. • Cannot be disassembled
Optional LED keypad	5-digit LED digital tube, 5 unit indicators, 5 status indicators • Set parameters, view parameters, view fault codes, backup parameters, custom menus, etc.
Mobile phone debugging	Support Android phone Bluetooth APP debugging (operating system is Android 10 and above)

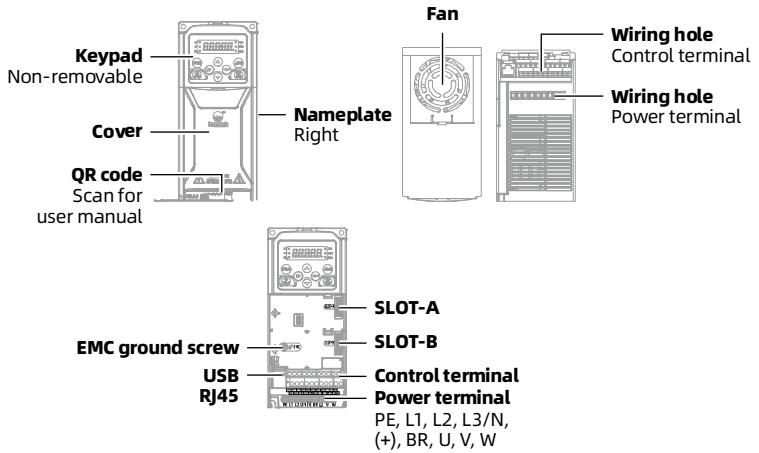
Environment	
Installation place	Indoors or in electrical control panel • No direct sunlight or water droplets • No gas and liquid with flammable, explosive and corrosive • No oily dust, fibers or metal particles • The mounting surface is flame retardant and strong enough to support the inverter
Use ambient temperature	-10 - +50℃, when the temperature exceeds 40℃, the inverter needs to be derated • For every 1℃ rise, derating is 2%
Storage temperature	-40 - +70℃, 70℃ not more than 24 hours
Use ambient humidity	Less than 95%RH, no condensation
Vibration	IEC 60721-3-3 • 2 ≤ f < 9Hz, displacement 0.3mm • 9 ≤ f < 200Hz, acceleration 1m/s²
Protection level	IP20
Pollution degree	Level 2 (dry, non-conductive dust contamination)
Altitude	Less than 1000 meters, otherwise should be derating use • For every 100 meters of increase, derate by 1% • For distances exceeding 3000 meters, please contact Hpmont
Accessories	
Installation	HD800-DGJ1: Rail assembly
Expansion card	4 types of expansion card, see section 2.1, page 5 • Supports 2 expansion cards. SLOT-A and SLOT-B cannot install the same type of expansion card at the same time • F1 size inverter does not support expansion card • HD800-EIO-I can only be installed in SLOT-A expansion slot
About keypad	HD-LED-P: LED keypad HD-KMB: Keypad mounting base HD-CAB-1M/2M/3M/6M: 1m/2m/3m/6m cable
Power unit	HDBU: Dynamic brake unit

2.4 Layout

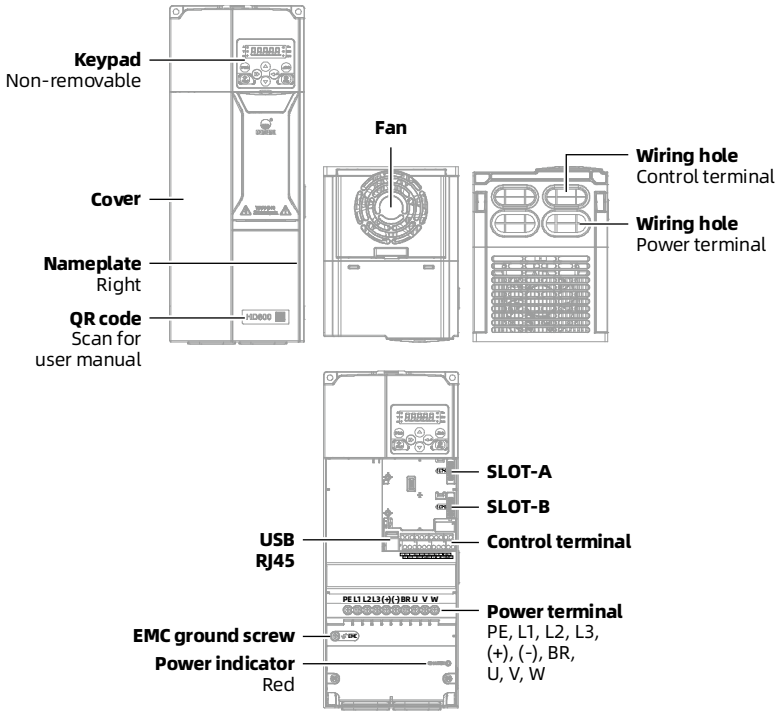
2.4.1 F1 Size



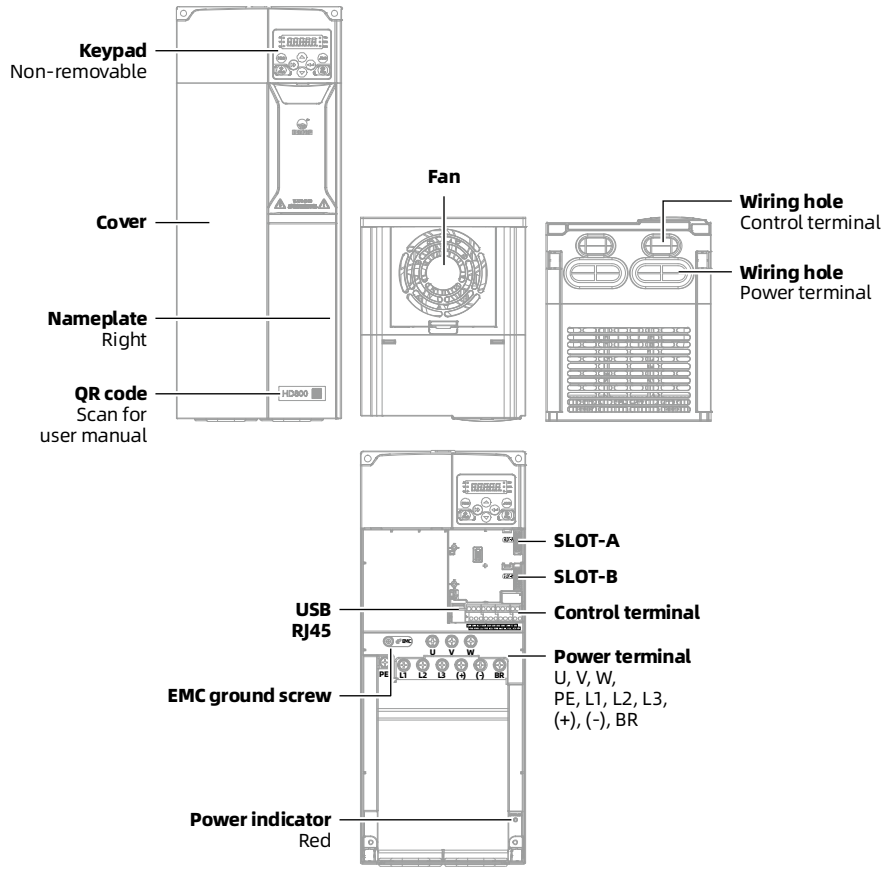
2.4.2 F2 Size



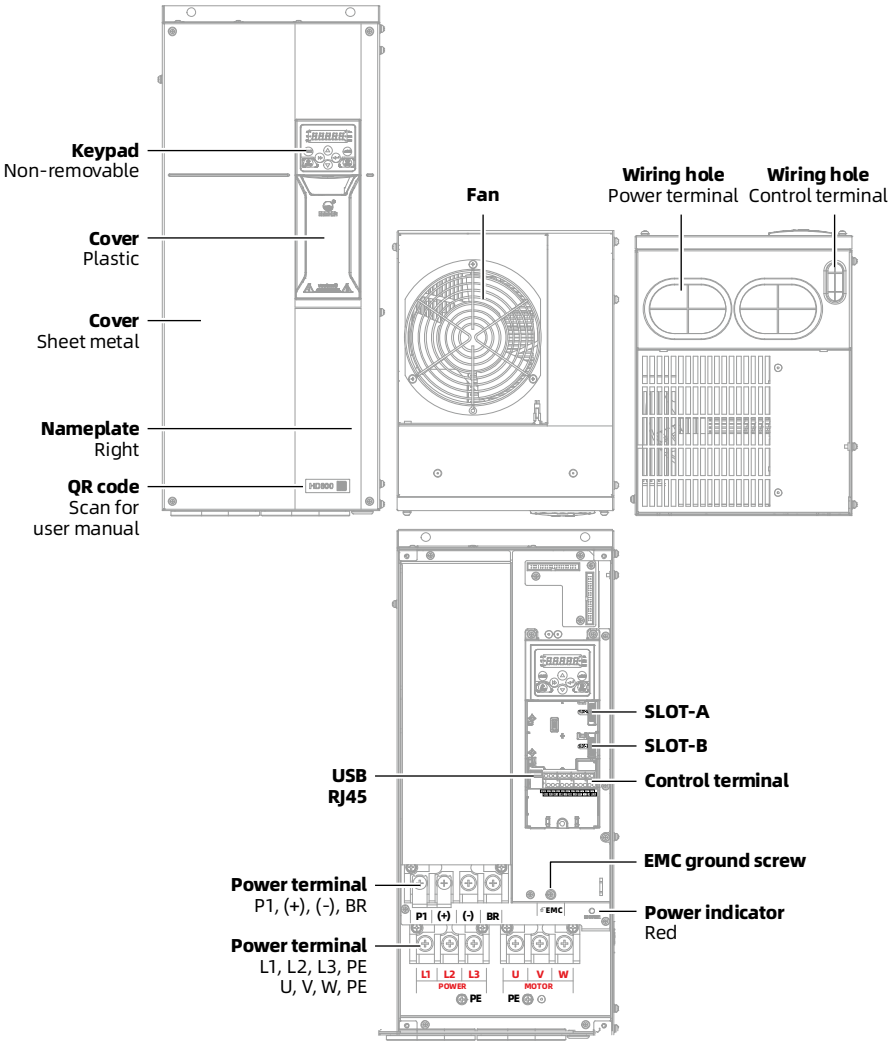
2.4.3 F3 - F4 Size



2.4.4 F5 Size


Keypad
Non-removable
Cover
Nameplate
Right
QR code
Scan for
user manual
HD800
Fan
Wiring hole
Control terminal
Wiring hole
Power terminal
SLOT-A
SLOT-B
USB
RJ45
Control terminal
Power terminal
U, V, W,
PE, L1, L2, L3,
(+), (-), BR
EMC ground screw
Power indicator
Red
U V W
PE L1 L2 L3 (+) (-) BR

2.4.5 F6 - F7 Size



Chapter 3 Mechanical Installation

Danger

- Do not install if the inverter parts are incomplete or damaged.
- During transportation, please use appropriate tools according to the weight of the inverter to avoid being cut by sharp corners or being injured when the inverter rolls over or falls.
- The inverter should be installed on metal and other flame-retardant objects, away from flammable and explosive objects.
- Before operation, please disconnect the input power supply reliably and wait for at least 10min. Confirm that the power indicator of the inverter has gone out and the voltage between the power terminals (+) and (-) is lower than 36V.

Warning

- When carrying, please hold the bottom of the inverter.
- When installing, do not let cables, screws, or residues fall into the inverter.

3.1 Environmental Requirement

Confirm that the installation site meets the following conditions.

Table 3 -1 Installation site conditions

Requirement	Description
Installation place	Indoors or in electrical control panel • No direct sunlight or water droplets • No gas and liquid with flammable, explosive and corrosive • No oily dust, fibers or metal particles • The mounting surface is flame retardant and strong enough to support the inverter
Use ambient temperature	-10 - +50℃, when the temperature exceeds 40℃, the inverter needs to be derated • For every 1℃ rise, derating is 2%
Storage temperature	-40 - + 70℃, 70℃ not more than 24 hours
Use ambient humidity	Less than 95%RH, no condensation
Vibration	IEC 60721-3-3 • 2 ≤ f < 9Hz, displacement 0.3mm • 9 < f ≤ 200Hz, acceleration 1m/s²
Protection level	IP20
Pollution degree	Level 2 (dry, non-conductive dust contamination)
Altitude	Below 1000 meters, derating is required above 1000 meters • For every 100 meters of increase, derate by 1% • For distances exceeding 3000 meters, please contact Hpmont

3.2 Installation Requirement

3.2.1 Size and Gross Weight

Table 3-2 Size and gross weight

Size	Dimension (mm)			Screw Mounting Size (mm)				Rail Mounting Size (mm)	GW (kg)
	W	H	D	W1	H1	H2	d	D1	
F1	68	170	145	58	160	167	5	153	1.2
F2	82	188	161	72	178	185	5	169	1.7
F3	116	290	178	104	278	287	5	/	3.6
F4	142	355	185	129	342	352	6	/	5.7
F5	172	430	213	157	416	428	6.5	/	10.2
F6A	240	564	275	176	544	540	10	/	24
F6	240	560	316	176	544	540	10	/	31
F7	270	638	356	195	620	618	10	/	46.5

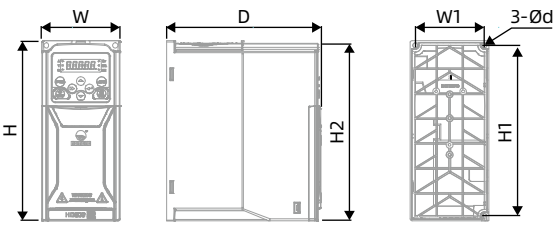


Figure 3-1 F1 - F2 size (screw mounting)

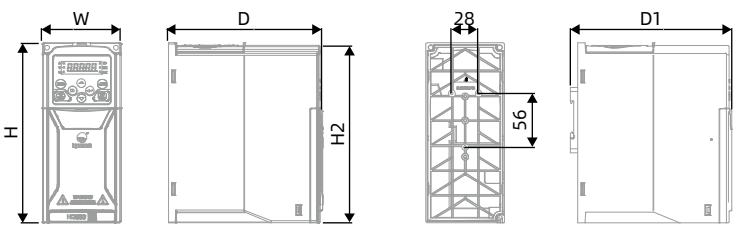


Figure 3-2 F1 - F2 size (rail mounting)

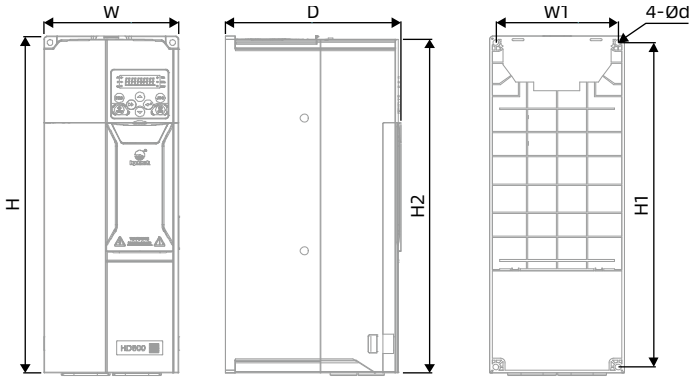


Figure 3-3 F3 - F4 size

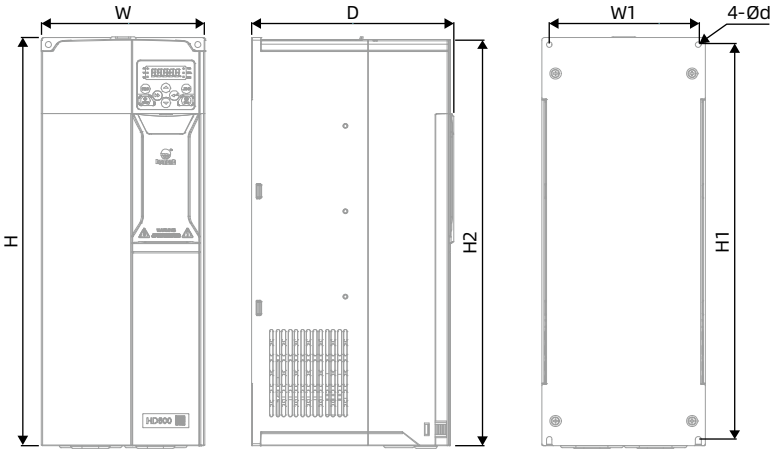


Figure 3-4 F5 size

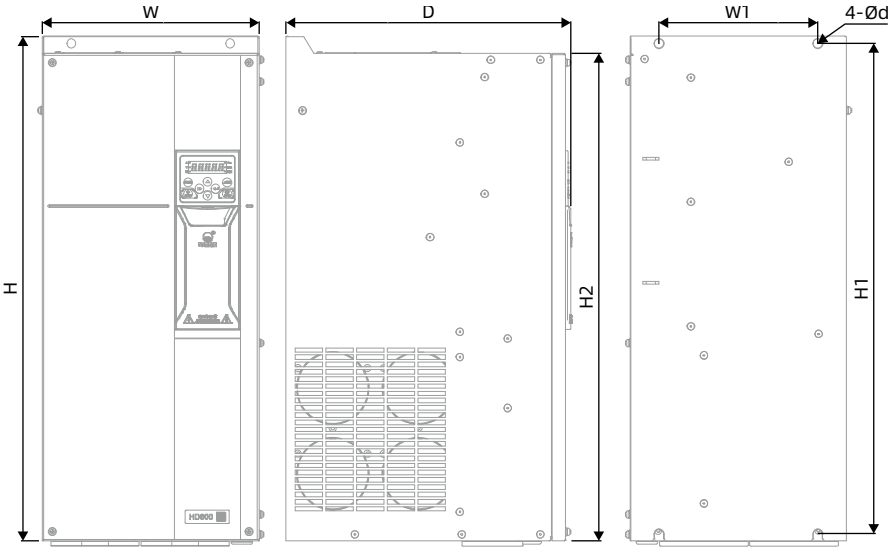


Figure 3-5 F6 - F7 size

3.2.2 Plan Installation Space

Install the inverter in the electrical control panel.

The inverter uses forced air cooling (top exhaust) for heat dissipation. To ensure the performance and life of the inverter, please leave enough installation space around the inverter.

3.2.2.1 Installation Direction

It is wall-mounted and the installation direction is perpendicular to the installation surface.

3.2.2.2 Space for Installing a Single Inverter

When installing a single inverter, the installation space is shown in the table below.

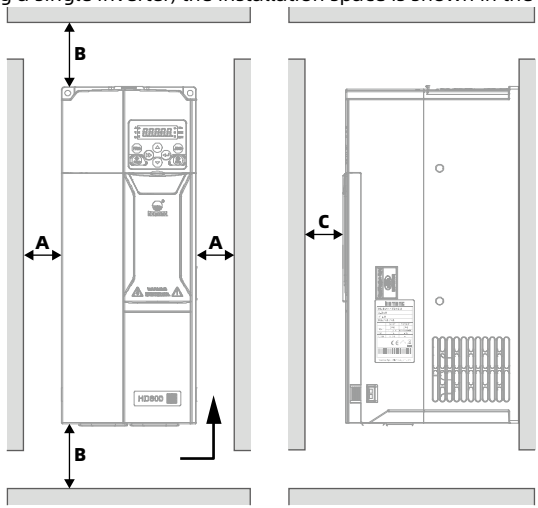


Figure 3-6 Space installation of a single inverter

Table 3-3 Space required to install a single inverter

Size	F1 - F2	F3 - F5	F6A/F6 - F7
Power (220V)	**0.2 - 2.2kW**	**3.7 - 11kW**	**/**
Power (380V)	**0.4 - 5.5kW**	**7.5 - 37kW**	**45 - 110kW**
A (left and right)	≥10mm	≥30mm	≥100mm
B (up and down)	≥100mm	≥200mm	≥350mm
C (front)	≥20mm	≥20mm	≥20mm

3.2.2.3 Space for Installing Multiple Inverters

When multiple inverters are installed up and down, please install a guide baffle. The distance between the baffle and the inverter is shown in the table below.

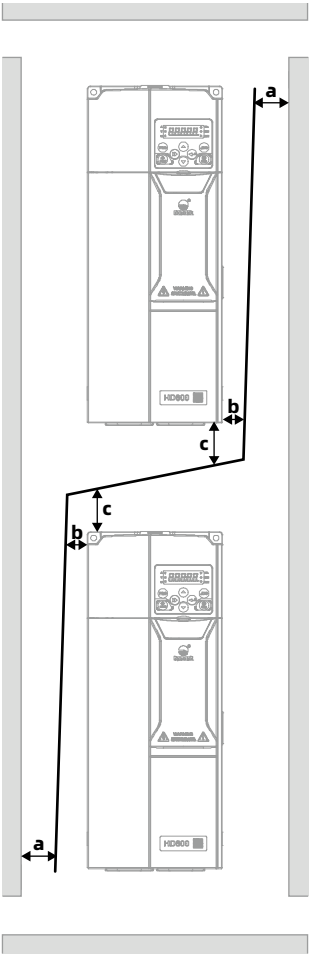


Figure 3-7 Up and down installation

Table 3-4 Distance between partition and inverter

Size	F1 - F2	F3 - F5	F6A/F6 - F7
Power (220V)	**0.2 - 2.2kW**	**3.7 - 11kW**	**/**
Power (380V)	**0.4 - 5.5kW**	**7.5 - 37kW**	**45 - 110kW**
a	≥50mm	≥50mm	≥100mm
b	≥50mm	≥50mm	≥100mm
c	≥100mm	≥200mm	≥350mm

When installing multiple inverters side by side, keep enough space between the inverters, see the table below.

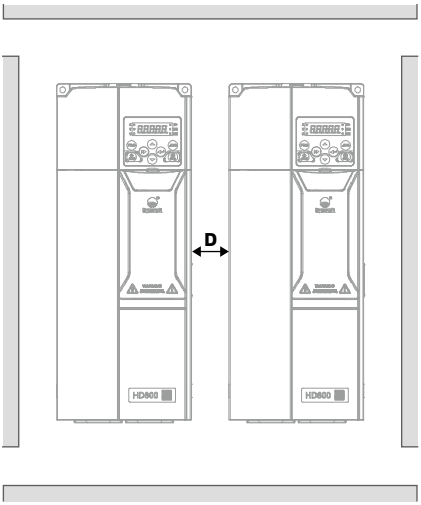


Figure 3-8 Side by side installation

Table 3-5 Side by side installation

Size	**F1 - F2**	**F3 - F5**	**F6A/F6 - F7**
Power (220V)	**0.2 - 2.2kW**	**3.7 - 11kW**	**/**
Power (380V)	**0.4 - 5.5kW**	**7.5 - 37kW**	**45 - 110kW**
D	≥0mm	≥30mm	≥100mm

3.2.3 Install Inverter

3.2.3.1 Install by Using Combination Screws

Use the combination screws to install the inverter in the control panel.

Steps:

1. Mark the mounting locations, drill holes, and refer to section 3.2.1 Size and Gross Weight, page 16.
2. Use elastic flat washer screws to fix the inverter. The screw specifications are shown in the table below.

   Tighten the combination screws clockwise. The tightening torque is shown in the table below.

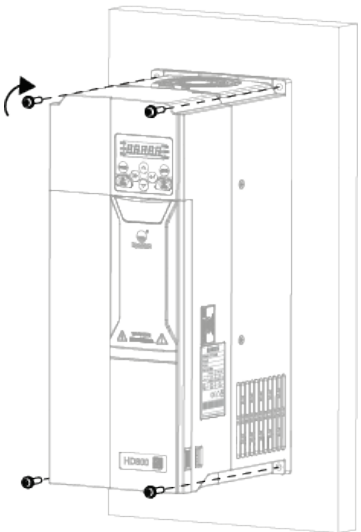


Figure 3-9 Installing with combination screws

Table 3-6 Screw specifications

Size	**F1 - F3**	**F4 - F5**	**F6A/F6 - F7**
Power (220V)	**0.2 - 3.7kW**	**5.5 - 11kW**	**/**
Power (380V)	**0.4 - 11kW**	**15 - 37kW**	**45 - 110kW**
Combination screw specifications	M4	M5	M8
Tightening torque	1.2 - 1.5N·m	2.0 - 3.0N·m	9.0 - 10.0N·m
Use tools	Phillips screwdriver		Socket wrench (13#)

3.2.3.2 Install by Using Rail

For inverters with F1 - F2 sizes, the rail assembly (HD800-DGJ1) can be used to install the inverter.

- 220V inverter: 0.2 - 2.2kW.
- 380V inverter: 0.4 - 5.5kW.

The rail assembly is an optional accessory, including:

- Rail assembly.
- 3 self-tapping screws, specification: ST3.5 × 9.

Steps:

1. Fasten the rail assembly to the rear of the inverter.
2. Use 3 self-tapping screws to secure the rail assembly.
3. Fixed rail, rail width: 35mm.
4. Snap the inverter with rail assembly into the rail.

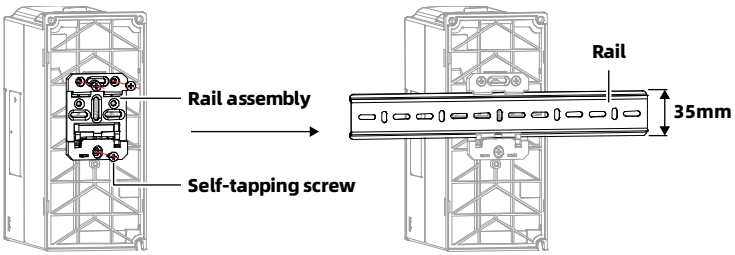


Figure 3-10 Install by using rail

3.2.4 Install the Optional Keypad

Use the mounting kit to install the keypad on the control panel door.

The installation kit is an optional accessory, including:

- Mounting base model: HD-KMB
- External cable model: HD-CAB-1M/2M/3M/6M

Steps:

1. Make a hole in the panel door. See the figure below for the hole size, unit: mm.
2. Place the mounting base at the hole and press the mounting base horizontally until the buckle locks into the panel door.
3. Place the keypad into the mounting base and press the keypad until the keypad and the mounting base are at the same level.

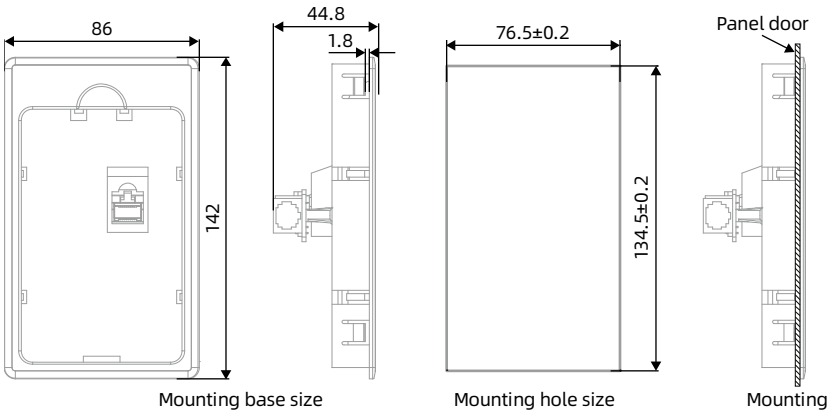


Figure 3-11 Mounting base size and hole size

Chapter 4 Electrical Installation

Danger

- Wiring must be performed by qualified electrical engineers.
- Before wiring or disassembling the internal components of the inverter, please disconnect the input power reliably and wait for at least 10 minutes. Make sure that the power indicator of the inverter is off and the voltage between the power terminals (+) and (-) is less than 36V.
- In order to protect the input side from overcurrent and facilitate maintenance during power outages, the inverter is connected to the input power supply through an air switch MCCB or a fuse.
- When connecting the external power emergency stop terminal, please make sure that the connection is reliable and the emergency stop is effective.
- The inverter has a leakage current to the ground (greater than 3mA, the actual value is determined by the use conditions). To ensure safety, the inverter and motor must use independent grounding cables to ensure reliable grounding, and it is recommended to install a Type B leakage protection device (ELCB/RCD).
- Do not short-circuit the power terminals of the inverter, and do not connect the power terminals to the product casing.
- After the inverter is powered on, do not touch the inverter terminals.

Warning

- The inverter has passed the withstand voltage test before leaving the factory, and the user does not need to test it again.
- For inverters that have been stored for more than 2 years, please use a voltage regulator to slowly increase the voltage when powering on.
- Please connect the brake unit or brake resistor correctly according to the wiring diagram.
- Please tighten the terminals securely.
- Do not connect the input power cable to the output U/V/W terminals.
- It is prohibited to connect phase-shifting capacitors to the output circuit.
- It is prohibited to short-circuit the DC bus terminals of the inverter.
- The motor can be switched or the variable frequency/industrial frequency can be switched only when the inverter stops to output.

4.1 Remove the Cover

Please remove the cover before wiring.

4.1.1 F1 – F5 Size

Take the F4 size as an example. Remove steps:

1. Use both hands to press the buckles on both ends at the same time.
2. Lift the cover upwards.

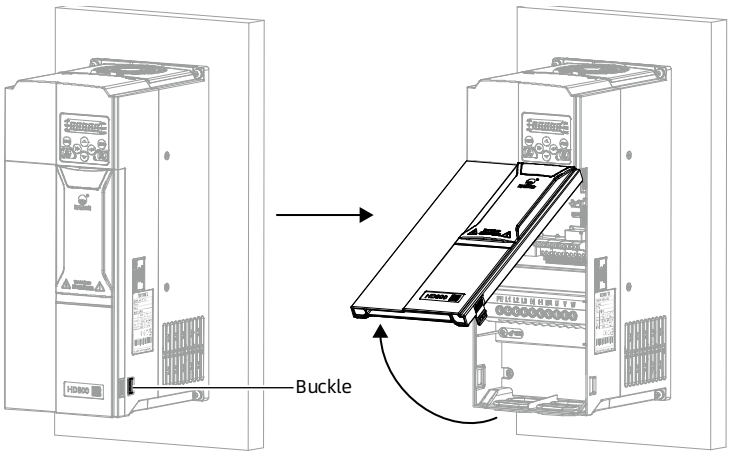


Figure 4-1 Remove the cover

4.1.2 F6 – F7 Size

Take the F6 size as an example. Disassembly steps:

1. Use a screwdriver to remove the four screws securing the sheet metal cover and remove the cover.
2. Lift the plastic cover upward and remove it.

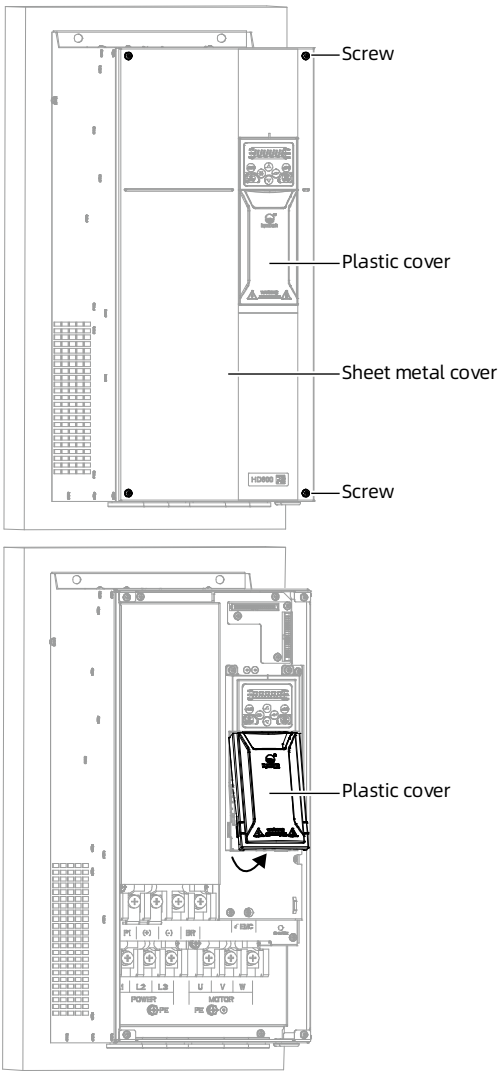


Figure 4-2 Remove the cover

4.2 Connect Power Cable

4.2.1 Select Peripheral Devices

4.2.1.1 Connect Peripheral Devices

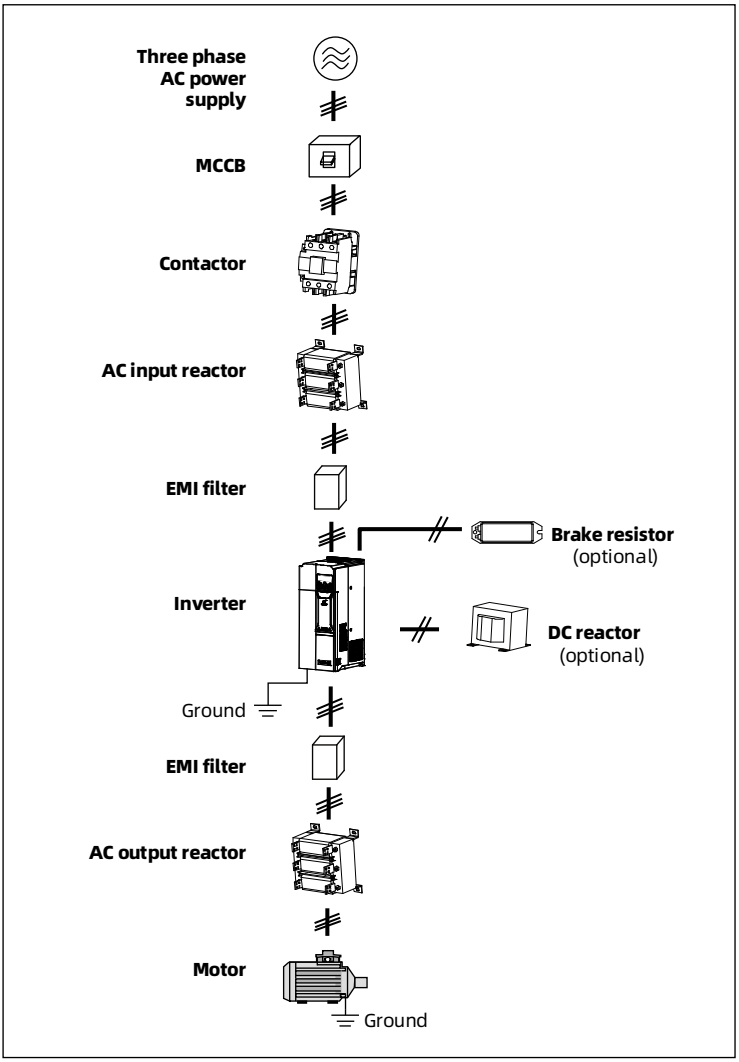


Figure 4-3 Connect peripheral devices

4.2.1.2 Select MCCB and Contactor

Please install a disconnecting device such as an MCCB or fuse with overcurrent protection between the power supply and the inverter. Avoid expanding the scope of influence due to failure of subsequent equipment to ensure the safety of equipment and personnel. Recommended MCCB and contactor are shown in the table below.

Note:
The data in the table are recommended values, and the data can be adjusted according to the site, but try not to be less than the recommended value.

Table 4-1 Select MCCB and contactor

Model	MCCB (A)	Contactor(A)
HD800-2S0P2G	16	10
HD800-2S0P4G	16	10
HD800-2S0P7G	16	10
HD800-2S1P5G	20	16
HD800-2D2P2G	32	20
HD800-2D3P7G	100/40 (1)	63/32 (1)
HD800-2D5P5G	125/63 (1)	100/40 (1)
HD800-2D7P5G	160/63 (1)	100/40 (1)
HD800-2D011G	200/100 (1)	125/63 (1)
HD800-4T0P4G	10	10
HD800-4T0P7G	10	10
HD800-4T1P5G	16	10
HD800-4T2P2G	16	10
HD800-4T3P7G	25	16
HD800-4T5P5G	32	25
HD800-4T7P5G	40	32
HD800-4T011G	63	40
HD800-4T015G	63	40
HD800-4T018G	100	63
HD800-4T022G	100	63
HD800-4T030G	125	100
HD800-4T037G	160	100
HD800-4T045G	200	125
HD800-4T055G	200	125
HD800-4T075G	250	160
HD800-4T090G	250	160
HD800-4T110G	350	350
HD800-4T132G	400	400
HD800-4T160G	500	400
HD800-4T185G	600	580
HD800-4T200G	600	600
HD800-4T220G	600	600

Model	MCCB (A)	Contactor(A)
HD800-4T250G	800	600
HD800-4T280G	800	800
HD800-4T315G	800	800
HD800-4T355G	800	800
HD800-4T400G	1000	1000
(1): The value before "/" corresponds to single phase input power, and the value after "/" corresponds to three phase input power.		

4.2.1.3 Select Brake Resistor

See the table below for brake resistor selection.

Note:

1. It is recommended to select the brake resistor according to the resistance value recommended in the table below.
   When the braking system fails, a larger resistance value can ensure safety. However, if the resistance value is too high, the braking capacity will decrease and the inverter may cause overvoltage protection.
2. Install the brake resistor in a well-ventilated metal cover. The temperature of the brake resistor is very high when it is working, so do not touch the brake resistor.

Table 4-2 Select brake resistor (recommended)

Model	Brake Unit	Brake Resistor			
		Hoist Load		Non-hoist Load	
		Resistance	Power	Resistance	Power
HD800-2S0P2G	Built-in standard	≥100Ω	≥0.15kW	200 - 350Ω	≥0.05kW
HD800-2S0P4G	Built-in standard	≥100Ω	≥0.15kW	200 - 350Ω	≥0.05kW
HD800-2S0P7G	Built-in standard	≥80Ω	≥0.3kW	150 - 250Ω	≥0.1kW
HD800-2S1P5G	Built-in standard	≥60Ω	≥0.6kW	100 - 150Ω	≥0.2kW
HD800-2D2P2G	Built-in standard	≥40Ω	≥0.75kW	80 - 100Ω	≥0.25kW
HD800-2D3P7G	Built-in standard	≥30Ω	≥1.2kW	60 - 80Ω	≥0.4kW
HD800-2D5P5G	Built-in standard	≥25Ω	≥1.8kW	40 - 50Ω	≥0.6kW
HD800-2D7P5G	Built-in standard	≥15Ω	≥2.4kW	30 - 40Ω	≥0.8kW
HD800-2D011G	Built-in standard	≥12Ω	≥3.6kW	20 - 25Ω	≥1.2kW
HD800-4T0P4G	Built-in standard	≥150Ω	≥0.3kW	250 - 350Ω	≥0.1kW
HD800-4T0P7G	Built-in standard	≥150Ω	≥0.3kW	250 - 350Ω	≥0.1kW
HD800-4T1P5G	Built-in standard	≥120Ω	≥0.6kW	200 - 300Ω	≥0.2kW
HD800-4T2P2G	Built-in standard	≥100Ω	≥0.75kW	150 - 250Ω	≥0.25kW
HD800-4T3P7G	Built-in standard	≥80Ω	≥1.2kW	100 - 150Ω	≥0.4kW
HD800-4T5P5G	Built-in standard	≥60Ω	≥1.8kW	80 - 100Ω	≥0.6kW
HD800-4T7P5G	Built-in standard	≥45Ω	≥2.4kW	60 - 80Ω	≥0.8kW
HD800-4T011G	Built-in standard	≥40Ω	≥3.6kW	40 - 50Ω	≥1.2kW
HD800-4T015G	Built-in standard	≥25Ω	≥4.5kW	30 - 40Ω	≥1.5kW
HD800-4T018G	Built-in standard	≥20Ω	≥6kW	25 - 30Ω	≥2kW

Model	Brake Unit	Brake Resistor			
		Hoist Load		Non-hoist Load	
		Resistance	Power	Resistance	Power
HD800-4T022G	Built-in standard	≥18Ω	≥7.5kW	20 - 25Ω	≥2.5kW
HD800-4T030G	Built-in optional	≥15Ω	≥9kW	15 - 20Ω	≥3kW
HD800-4T037G	Built-in optional	≥12Ω	≥12kW	15 - 20Ω	≥4kW
HD800-4T045G	Built-in optional	≥10Ω	≥13.5kW	10 - 15Ω	≥4.5kW
HD800-4T055G	Built-in optional	≥9Ω	≥16.5kW	10 - 15Ω	≥5.5kW
HD800-4T075G	Built-in optional	≥6Ω	≥22.5kW	8 - 10Ω	≥7.5kW
HD800-4T090G	Built-in optional	≥6Ω	≥27kW	8 - 10Ω	≥9kW
HD800-4T110G	Built-in optional	≥6Ω	≥33kW	6 - 8Ω	≥11kW
HD800-4T132G	HDBU-4T250	≥4Ω	≥40kW	6 - 8Ω	≥13.2kW
HD800-4T160G	HDBU-4T250	≥4Ω	≥48kW	4 - 6Ω	≥16kW
HD800-4T185G	HDBU-4T250	≥4Ω	≥60kW	4 - 6Ω	≥20kW
HD800-4T200G	HDBU-4T250	≥4Ω	≥60kW	4 - 6Ω	≥20kW
HD800-4T220G	HDBU-4T250 × 2	≥4Ω × 2	≥33kW × 2	6 - 8Ω × 2	≥11kW × 2
HD800-4T250G	HDBU-4T250 × 2	≥4Ω × 2	≥37.5kW × 2	6 - 8Ω × 2	≥12.5kW × 2
HD800-4T280G	HDBU-4T250 × 2	≥4Ω × 2	≥42kW × 2	4 - 6Ω × 2	≥14kW × 2
HD800-4T315G	HDBU-4T250 × 2	≥4Ω × 2	≥48kW × 2	4 - 6Ω × 2	≥16kW × 2
HD800-4T355G	HDBU-4T250 × 3	≥4Ω × 3	≥33kW × 3	4 - 6Ω × 3	≥11kW × 3
HD800-4T400G	HDBU-4T250 × 3	≥4Ω × 3	≥42kW × 3	4 - 6Ω × 3	≥14kW × 3
× 2 or × 3: 2 or 3 connected in parallel.					

4.2.1.4 Select Reactor

Table 4-3 Select reactor

Model	AC input Reactor		AC Output Reactor		DC Reactor	
	Model HD-	Parameter mH/A	Model HD-	Parameter mH/A	Model HD-	Parameter mH/A
HD800-4T030G	AIL-4T030	0.17/80	AOL-4T030	0.087/80	/	/
HD800-4T030G	AIL-4T030	0.17/80	AOL-4T030	0.087/80	/	/
HD800-4T037G	AIL-4T037	0.16/90	AOL-4T037	0.08/90	/	/
HD800-4T045G	AIL-4T045	0.12/120	AOL-4T045	0.06/120	DCL-4T045	0.54/95
HD800-4T055G	AIL-4T055	0.095/150	AOL-4T055	0.048/150	DCL-4T055	0.45/115
HD800-4T075G	AIL-4T075	0.07/200	AOL-4T075	0.035/200	DCL-4T075	0.36/160
HD800-4T090G	AIL-4T090	0.056/240	AOL-4T090	0.03/200	DCL-4T090	0.33/180
HD800-4T110G	AIL-4T110	0.056/250	AOL-4T110	0.02/225	DCL-4T110	0.26/250
HD800-4T132G	AIL-4T132	0.048/290	AOL-4T132	0.016/280	DCL-4T132	0.24/280
HD800-4T160G	AIL-4T160	0.042/330	AOL-4T160	0.013/320	DCL-4T160	0.17/340
HD800-4T185G	AIL-4T200	0.036/390	AOL-4T200	0.011/400	DCL-4T200	0.09/460
HD800-4T200G	AIL-4T200	0.036/390	AOL-4T200	0.011/400	DCL-4T200	0.09/460
HD800-4T220G	AIL-4T220	0.028/490	AOL-4T220	0.01/450	DCL-4T220	0.09/460
HD800-4T250G	AIL-4T250	0.026/530	AOL-4T250	0.009/560	DCL-4T250	0.072/650
HD800-4T315G	AIL-4T315	0.021/660	AOL-4T315	0.007/630	Built-in standard	/
HD800-4T355G	AIL-4T355	0.017/800	AOL-4T355	0.006/800	Built-in standard	/
HD800-4T400G	AIL-4T400	0.017/800	AOL-4T400	0.006/800	Built-in standard	/

4.2.2 Select Power Cable

The cross-sectional area of the ground protective conductor (ground cable) should comply with the requirements of 4.3.5.4 of IEC 61800-5-1 are shown in the table below.

Table 4-4 Cross-sectional area of ground protective conductor

Sectional Area S of Phase Conductor (Power Cable) (mm^2)	S ≤ 2.5	2.5 < S ≤ 16	16 < S ≤ 35	S > 35
Min. Sectional Area Sp of Relative Protective Conductor (Ground Cable) (mm^2)	2.5	S	16	S/2

Recommended power cable diameters are shown in the table below.

Note:
The data in the table are recommended values and can be adjusted according to the site, try not to be less than the recommended value.

Table 4 -5 Select power cable diameter

Model	**Power Cable (mm^2) L1, L2, L3/N, L 3 P1, (+), (-), BR**	**Motor Cable (mm^2) U, V, W**	**Ground cable (mm^2) PE**
HD800-4T0P4G	0.5	0.5	2.5
HD800-4T0P7G	0.5	0.5	2.5
HD800-4T1P5G	0.75	0.5	2.5
HD800-4T2P2G	1.5	0.75	2.5
HD800-4T3P7G	2.5	2.5	2.5
HD800-4T5P5G	4	4	4
HD800-4T7P5G	6	6	6
HD800-4T011G	10	10	10
HD800-4T015G	10	10	10
HD800-4T018G	16	16	16
HD800-4T022G	16	16	16
HD800-4T030G	25	25	16
HD800-4T037G	35	35	16
HD800-4T045G	35	35	16
HD800-4T055G	50	50	25
HD800-4T075G	95	70	50
HD800-4T090G	120	120	50
HD800-4T110G	120	120	50

4.2.3 Select Power Cable Terminal

For inverters with F1 - F4 sizes (0.2 - 22kW), the power cable terminals use code end terminals, see Table 4-6 for specifications.

For inverters with F5 - F7 sizes (30 - 110kW), the power cable terminals use ring cable lug, see Table 4-7 for specifications.

Table 4-6 Power cable terminal data (code end terminal)

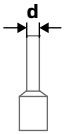
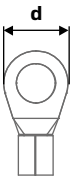
Size	Power Terminal	Screw	Tightening Torque (N·m)	Terminal Outer Diameter d (mm)	
F1 F2	L1, L2, L3/N (+), BR, U, V, W, PE	M3	0.6 - 0.8	≤3.5	
F3 F4	L1, L2, L3, (+), (-), BR, U, V, W, PE	M4	1.2 - 1.5	≤5	

Table 4-7 Power cable terminal data (ring cable lug)

Size	Power Terminal	Screw	Tightening Torque (N·m)	Ring Cable Lug Outer Diameter d (mm)	
F5	L1, L2, L3 (+), (-), BR, U, V, W, PE	M6	4.0 - 5.0	≤17.5	
F6A	P1, (+), (-), BR, L1, L2, L3, PE U, V, W, PE	M8	9.0 - 10.0	≤17.5	
F6		M8	9.0 - 10.0	≤20	
F7		M10	17.6 - 22.5	≤30	

4.2.4 Power Terminal Description

Table 4-8 Power terminal description

Power Terminal	Description
L1, L2, L3 /N L1, L2, L3	Three phase AC power input terminal
U, V, W	Inverter output terminal, connected to three phase AC motor
(+), BR	Connect brake resistor
(+), (-)	DC power input terminal Connect brake unit (F5 - F7 size)
P1, (+)	External DC reactor, short-circuited by default
PE	Ground terminal

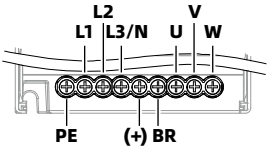


Figure 4-4 F1 - F2 size power terminal

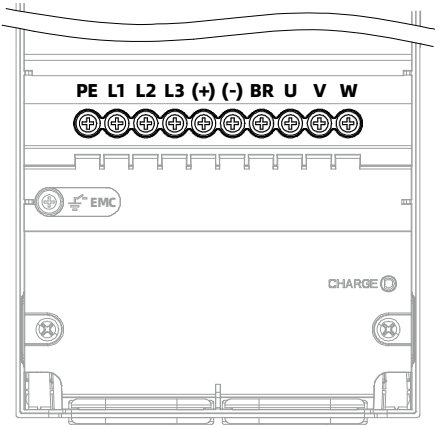


Figure 4-5 F3 - F4 size power terminal

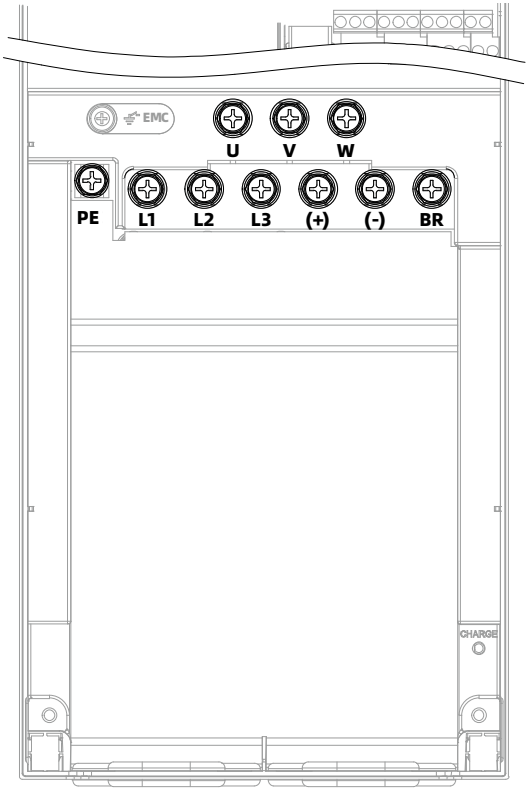


Figure 4-6 F5 size power terminal

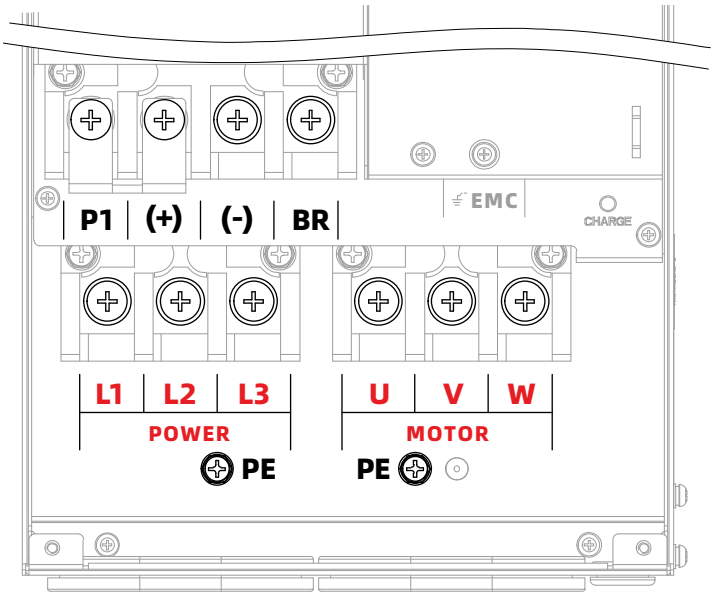


Figure 4-7 F6A/F6 - F7 size power terminal

4.2.5 Connect Power Cable

Danger

- When wiring the power terminals, use insulating tape to wrap the exposed metal parts.

Warning

- Confirm that the AC power input voltage is the same as the rated input voltage of the inverter.

Connect the power cables as shown in the following figure.

- Refer to 4.2.1.2 to select MCCB and contactor.
- Refer to 4.2.1.3 to select the brake resistor.
- Refer to 4.2.1.4 to select the reactor.
- Refer to 4.2.2 to select the cable diameter of the power cable.
- Refer to 4.2.3 to select the terminals of the power cables.

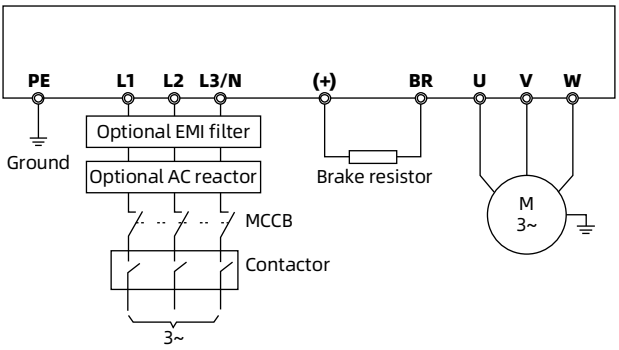


Figure 4-8 F1 - F2 size power terminal wiring

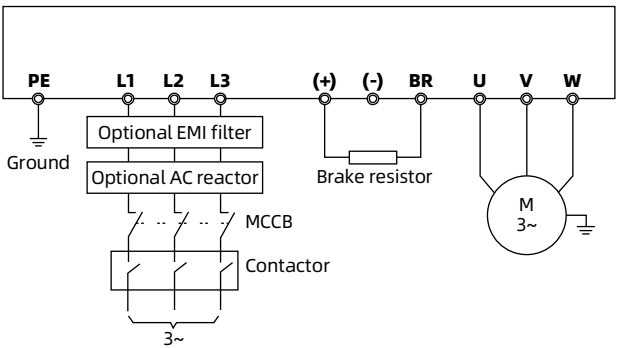


Figure 4-9 F3 - F4 size power terminal wiring

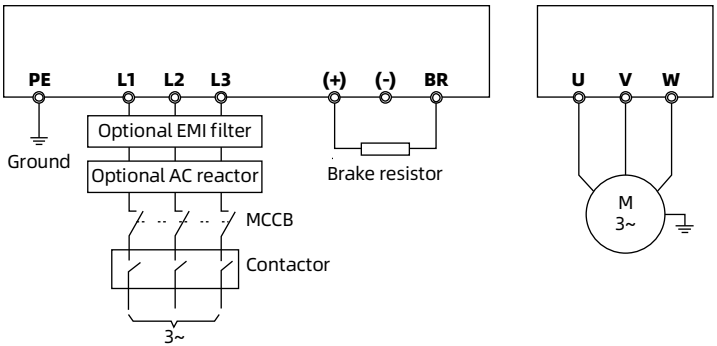


Figure 4-10 F5 size power terminal wiring (optional built-in brake unit)

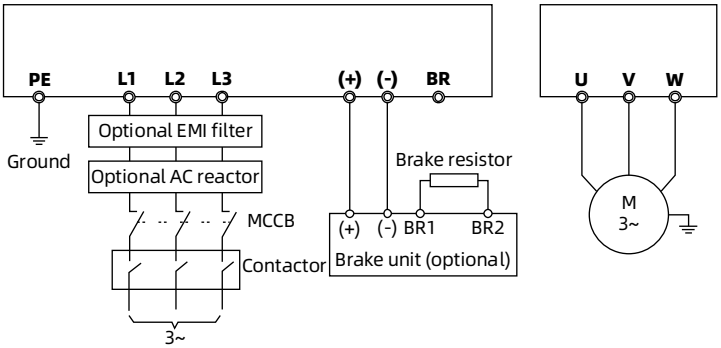


Figure 4-11 F5 size power terminal wiring (optional external brake unit)

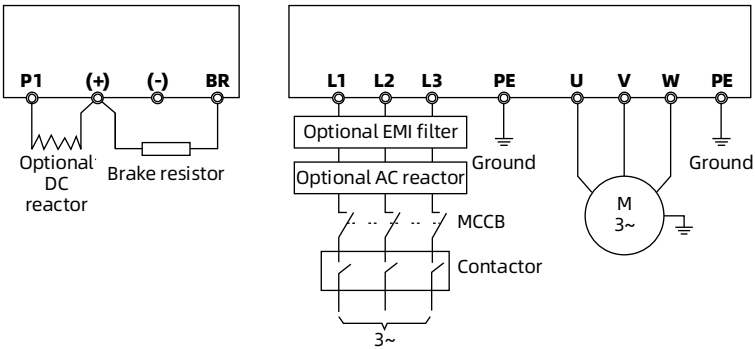


Figure 4-12 F6A/F6 - F7 size power terminal wiring (optional built-in brake unit)

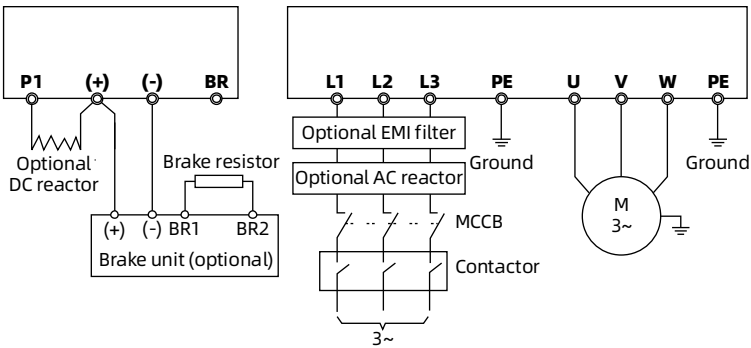


Figure 4-13 F6A/F6 - F7 size power terminal wiring (optional external brake unit)

4.3 Connect Control Cable

4.3.1 Control Terminal Description

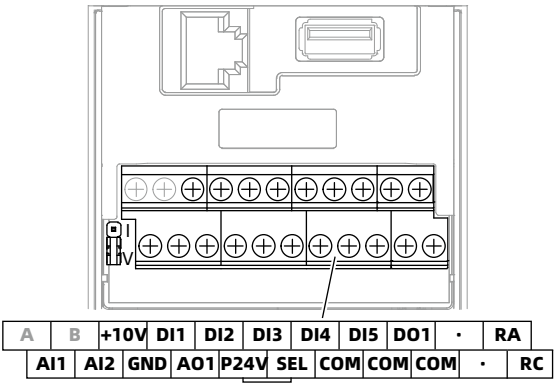


Figure 4-14 F1 size control terminal

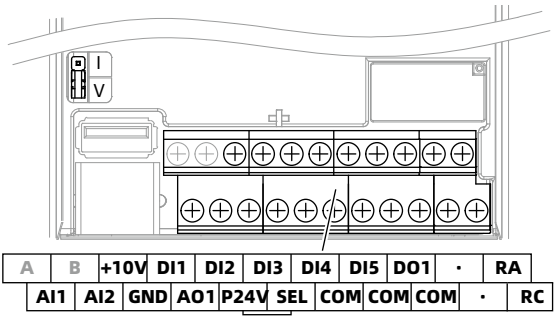


Figure 4-15 F2 - F11 size control terminal

Table 4-9 Control terminal description

Control Terminal		Description
P24V, COM	Digital power	24V ± 10%, maximum output current 200mA

DI1 - DI5, COM
DI1 - DI5, SEL
	Digital input	Bipolar selectable input signal
		• DI uses internal power supply, the common terminal is COM (default)
		  • Voltage is 24VDC
		• DI uses external power supply, the common terminal is SEL, which is compatible with DC and AC input signals
		  • Input voltage: 12 - 30VDC (compatible with 24V, 36V, 48V), 12 - 30VAC (compatible with 36V, 48V)
		  • Input impedance: 6.2kΩ
		• DI uses internal/external power supply
		  • Use internal power supply: Short-circuit SEL and P24V (default)
		  • Use external power supply: Remove the shorting piece
		• F10.00 - F10.04 set function
		F10.04 = 53, DI5 is high-speed pulse input
		• F09.38, F09.40 set the input pulse frequency, up to 50kHz

DO1, COM	Digital output	Optocoupler isolation, open collector output • Voltage: 0 - 30VDC, maximum output current 50mA • F10.22 sets function F10.22 = 38, DO1 is high-speed pulse output • F09.46 sets function • F09.48, F09.50 set the output pulse frequency, up to 10kHz
RA, RC	Relay output	Contact capacity: 250VAC/3A or 30VDC/1A • RA, RC: Normally open • F10.25 sets function
+ 10V, GND	Analog power supply	+10V power supply, maximum output current 100mA • GND and COM isolation
AI1, GND AI2, GND	Analog input	AI1 voltage input • Voltage: 0 - 10V, input impedance 32kΩ AI2 can be set as voltage/current input • Voltage: 0 - 10V, input impedance 32kΩ (default) • Current: 0 - 20mA, input impedance 500Ω F09.32 ten sets AI2 input • 0: Voltage input (default) • 1, 2: Current input
	Digital input	AI as digital input (DI-AI terminal) • Common terminal: GND • **Voltage: 0 - 10V** (prohibit access to 24V) F10.14 - F10.15 set function
AO1, GND	Analog output	AO1 can be set as voltage/current output • Voltage: 0 - 10V (default) • Current: 0 - 20mA Jumper sets AO1 output • Short-circuit V: Voltage output (default) • Short-circuit I: Current output F09.43 sets function 

4.3.2 Wiring Requirement

Warning

- If the control circuit is connected to an external device with a port that is accessible when powered, please add an additional level of insulation protection isolation device to ensure that the original voltage level of the equipment is not changed.
- It is forbidden to connect AC 220V voltage to control terminals other than relay terminals.

The control cable specification is 0.2 - 0.75mm^2 (AWG24 – 18), and the cable terminals use code end terminals.

- To reduce interference and attenuation of control signals, the length of the control cable should be within 50m and the distance from the motor cable should be greater than 0.3m.
- The control cables must be shielded cables, and the shielding layer must be reliably grounded.
- Analog control cables use twisted-pair shielded cables, and the shielding layer must be reliably grounded.

Code end terminal

4.3.3 Default IO Wiring

The default I/O settings are shown in the table below, and the IO wiring is shown in the figure below.

Table 4 -10 Default I/O settings

Ref. Code	Address	Parameter	Value (Default)	Description
F09.43	0x092b	AO1 terminal function	2	Reference frequency
F10.00	0x0A00	DI1 terminal function	2	Forward
F10.01	0x0A01	DI2 terminal function	3	Reverse
F10.02	0x0A02	DI3 terminal function	0	Unused
F10.03	0x0A03	DI4 terminal function	0	Unused
F10.04	0x0A04	DI5 terminal function	0	Unused
F10.22	0x0A16	DO1 terminal function	2	Inverter running
F10.25	0x0A19	RLY1 relay function (RA, RC)	31	Inverter faulty

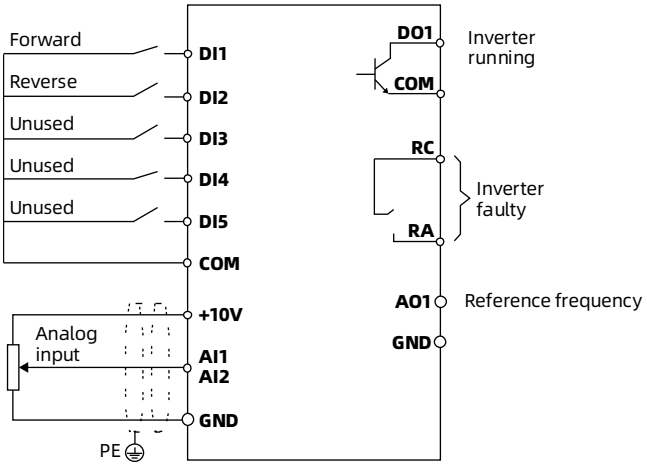


Figure 4-16 Control terminal default IO wiring

4.3.4 DI Terminal Wiring

DI1 - DI5 are compatible with DC and AC input signals.

- Use DC power supply, input voltage: 12 - 30VDC (compatible with 24V, 36V, 48V).
- Use AC power supply, input voltage: 12 - 30VAC (compatible with 36V, 48V).

4.3.4.1 Dry Contact Wiring by Using DC Power Supply

Use a DC power supply and see the figure below for wiring.

- Use internal 24V power supply: Short SEL and P24V (default).
- Use external power supply: Remove the shorting piece between SEL and P24V, and connect SEL to DC power supply.

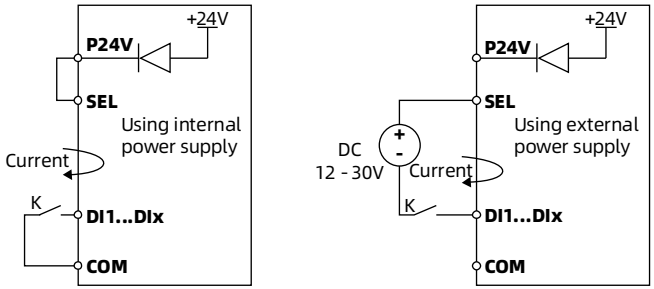


Figure 4-17 Dry contact wiring by using DC power supply

4.3.4.2 NPN Type Wiring by Using DC Power Supply

The external controller has NPN common emitter output and uses a DC power supply. The wiring is shown in the figure below.

- Use internal 24V power supply: Short SEL and P24V (default).
- Use external power supply: Remove the shorting piece between SEL and P24V, and connect SEL to DC power supply.

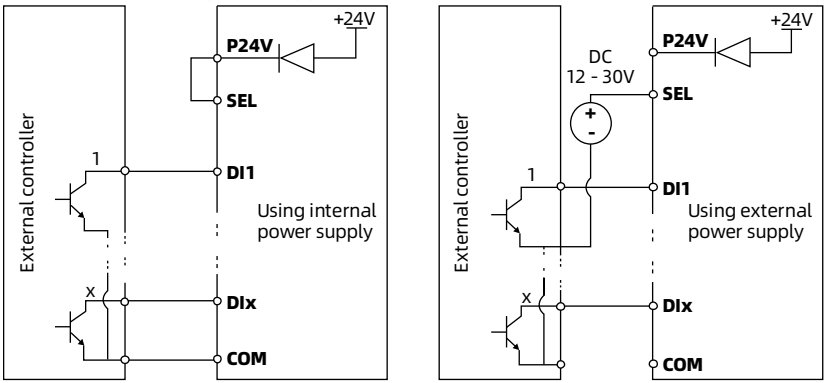


Figure 4-18 NPN type wiring by using DC power supply

4.3.4.3 PNP Type Wiring by Using DC Power Supply

The external controller is a PNP type common emitter output, using a DC power supply. The wiring is shown in the figure below.

- Use internal 24V power supply: Remove the shorting piece between SEL and P24V, and short SEL and COM with the shorting piece.
- Use external power supply: Remove the shorting piece between SEL and P24V, and connect SEL to a DC power supply.

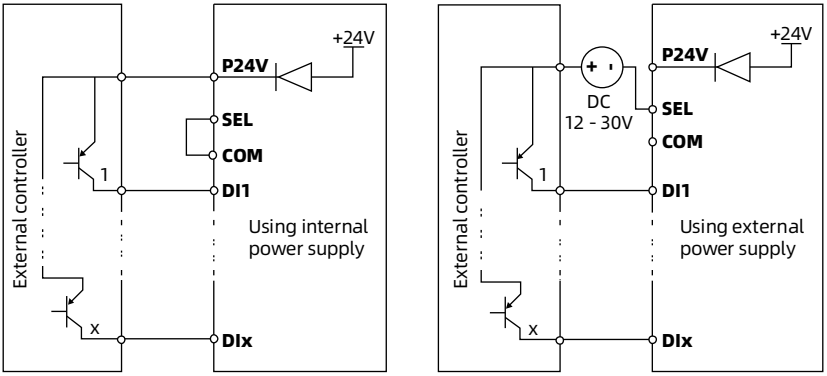


Figure 4-19 PNP type wiring using DC power supply

4.3.4.4 Wiring with AC Power Supply

Remove the shorting piece between SEL and P24V, connect SEL to AC power, and see the figure below for wiring.

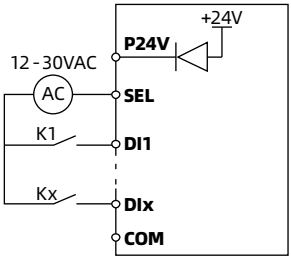


Figure 4-20 AC power supply wiring

4.3.5 DO Terminal Wiring

DO1 is an open collector output, which can use an internal 24V power supply or an external power supply. See the figure below for wiring.

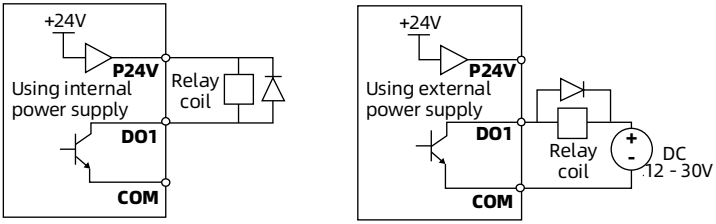


Figure 4 -21 DO1 terminal wiring

When F10.22 = 38, DO1 is pulse frequency output, and can use internal 24V power supply or external power supply. See the figure below for wiring.

- R: 3.3kΩ pull-up resistor.
- f: Digital frequency meter.

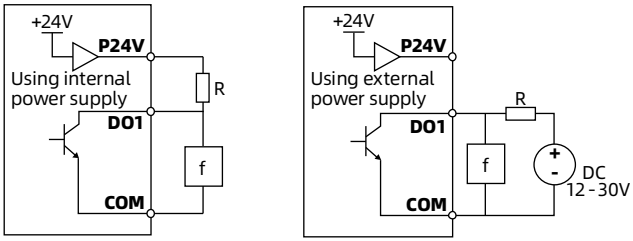


Figure 4-22 DO1 terminal wiring (pulse frequency output)

4.3.6 AI Terminal Wiring

AI as DI (DI-AI Terminal) Wiring

AI is used as digital input (DI-AI terminal), the wiring is shown in the figure below.

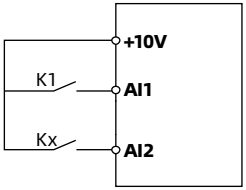


Figure 4-23 AI terminal wiring (AI as digital input)

AI1 Wiring

AI1 is voltage input, with a range of 0 - 10V. The wiring is shown in the figure below.

- Analog control cables use twisted-pair shielded cables, and the shielding layer must be reliably grounded.
- When the interference is serious, add filter capacitors and ferrite magnetic rings, and wind the cable around the ferrite magnetic rings in the same direction for 2 - 3 turns.

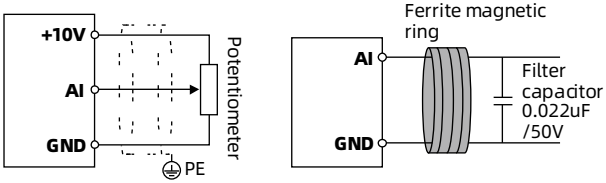


Figure 4-24 AI1 terminal wiring (voltage input)

AI2 Wiring

AI2 defaults to voltage input, with a range of 0 - 10V.

- When using the internal 10V power supply, the wiring is the same as AI1, see Figure 4-24.
- When using an external 10V power supply, the wiring is shown in the figure below.

AI2 can be set as current input. The wiring is shown in the figure below.

- F09.32 ten = 1, range 0 - 20mA.
- F09.32 ten = 2, range 4 - 20mA.

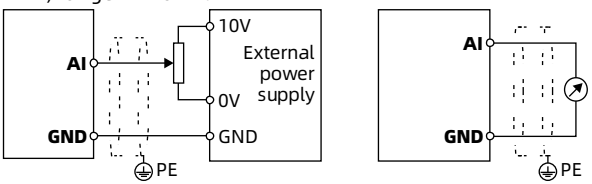


Figure 4-25 AI2 terminal wiring (voltage/current input)

4.4 Connect Communication Terminal

Communication Terminal Description

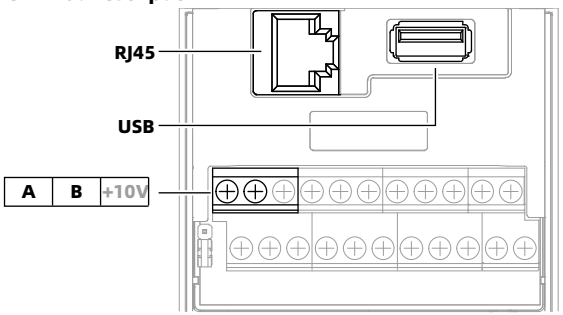


Figure 4-26 Communication terminal (F1 size)

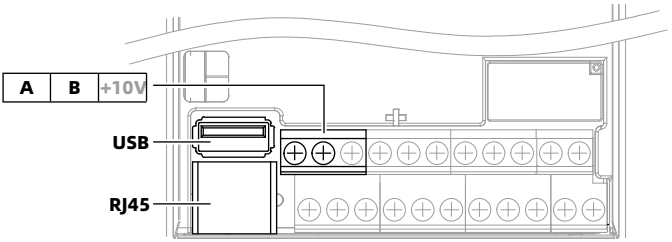
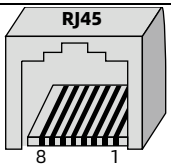


Figure 4-27 Communication terminal (F2 - F11 size)

Table 4-11 Communication terminal description

Terminal	Description
A, B	Connect to the host computer (PLC, touch screen, PC, etc.) • A: 485+ • B: 485- Group F22 sets communication parameters
RJ45	Connect the keypad • 1, 3: +5V • 2, 7: 485+/- • 4, 5, 6: GND • 8: Unused Group F22 sets communication parameters 
USB	Connect the Bluetooth module (MT70-BLE-A) and use the mobile phone to debug the HD800

Note:

RJ45 and USB cannot be used at the same time.

Wiring

Warning

- When the communication terminal is connected to a PC, please use an RS485/232 isolation converter that meets safety regulations.

The specification of the communication cable (A, B terminals) is 0.2 - 0.75mm^2 (AWG24 - 18), and the cable terminals use code end terminals.

Code end terminal

RJ45 uses a cable to connect to the keypad. The model is shown below.

- 1/2/3/6m cable: HD-CAB-1M/2M/3M/6M

4.5 Connect Expansion Card

HD800 supports 2 expansion cards. Install expansion card A in SLOT-A and install expansion card B in SLOT-B.

Note:

1. SLOT-A and SLOT-B cannot be installed with the same type of expansion card at the same time.
2. F1 size inverter does not support expansion card.
3. HD800-EIO-I can only be installed in the SLOT-A expansion slot.

4.5.1 IO Expansion Card

4.5.1.1 HD800-EIO-I

Terminal Description

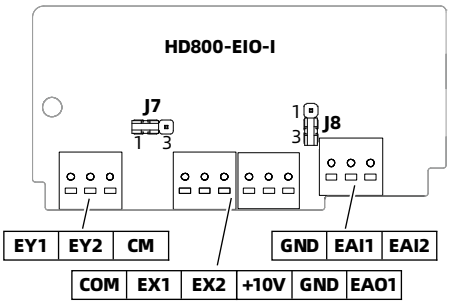


Figure 4 -28 HD800-EIO-I

Table 4-12 Terminal description

Terminal		Description
EX1, COM EX2, COM	Digital input	Bipolar selectable input signal • Use internal power supply, voltage: 0 - 30VDC Jumper J7 sets the wiring mode • Short-circuit 1,2pin, SEL connects to internal 24V (default) • Short-circuit 2,3pin, SEL connects to COM F10.09 - F10.10 set function J7 1 3
EY1, CM EY2, CM	Relay output	Contact capacity: 250VAC/3A or 30VDC/1A • EY, CM: Normally open • F10.27 - F10.28 set function
+10V, GND	Analog power supply	+10V power supply, maximum output current 100mA GND and COM isolation
EAI1, GND EAI2, GND	Analog input	EAI can set voltage/current input • Voltage: 0 - 10V, input impedance 32kΩ (default) • Current: 0 - 20mA, input impedance 500Ω F09.32 sets EAI input • Hundred: EAI1 • Thousand: EAI2

Terminal		Description
		• 0: Voltage input (default) • 1, 2: Current input
	Digital input	EAI as digital input (DI-EAI terminal) • Common terminal: GND • **Voltage: 0 - 10V (**prohibit access to 24V) F10.16 - F10.17 set function
EAO1, GND	Analog output	EAO1 can be set as voltage/current output • Voltage: 0 - 10V (default) • Current: 0 - 20mA Jumper J8 sets EAO1 output • Short-circuit 2,3pin: Voltage output (default) • Short-circuit 1,2pin: Current output F09.44 sets function 

Digital Input EX Terminal Wiring

EX1 - EX2 can only use the internal 24V power supply.

Dry Contact Wiring

Jumper J7 short-circuit 1,2pin (default). See the figure below for wiring.

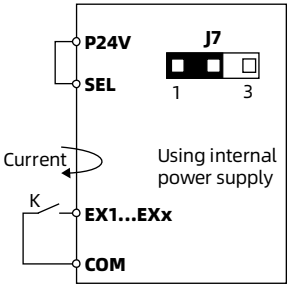


Figure 4-29 Dry contact wiring

NPN Type Wiring

The external controller is an NPN common emitter output, jumper J7 short-circuit 1,2pin (default), and the wiring is shown in the figure below.

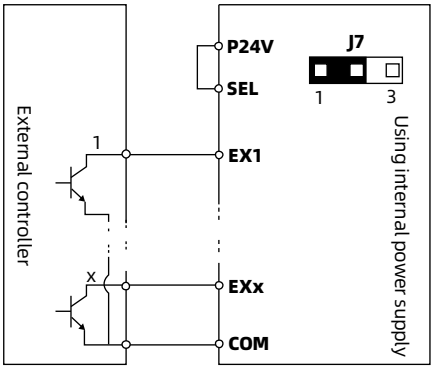


Figure 4-30 NPN type wiring

PNP Type Wiring

The external controller is a PNP type common emitter output, jumper J7 short-circuit 2,3pin, and the wiring is shown in the figure below.

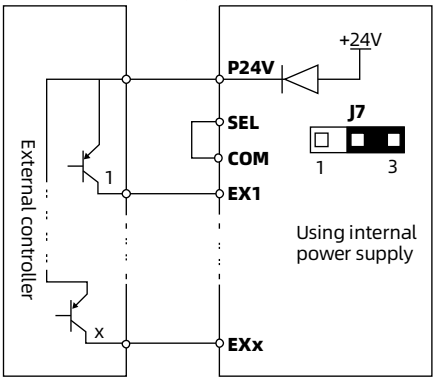


Figure 4-31 PNP type wiring

Analog Input EAI Terminal Wiring

The wiring of EAI1/EAI2 is the same as AI2, see section 4.3.6, page 46.

The hundred of F09.32 sets the input of EAI1, and the thousand of F09.32 sets the input of EAI2.

- 0: Voltage input (default), range 0 - 10V.
- 1: Current input, range 0 - 20mA.
- 2: Current input, range 4 - 20mA.

4.5.2 Communication Expansion Card

4.5.2.1 HD800-CAN-A

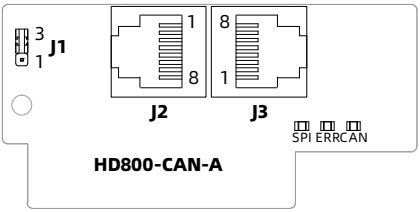


Figure 4-32 HD800-CAN-A

Terminal Description

Table 4-13 Terminal description

Terminal			Description
J2 J3	1, 2	CAN+, CAN-	CAN communication input signal Jumper J1 sets the terminal matching resistance • Short-circuit 1,2 pin, connect 120Ω terminal matching resistor • Short-circuit 2,3 pin, no connect 120Ω terminal matching resistor (default) 
	3	CGND	CAN communication signal reference ground
	4 - 8	/	
	Shell	PE	Shield

Indicator Description

Table 4-14 Indicator description

Indicator		Description
SPI (green)	SPI communication indicator between expansion card and inverter	On: Communication is normal Flash: Communication is disturbed Off: Communication disconnected
ERR (red)	Error indicator	On: Communication is normal Off: Communication abnormality
CAN (green)	Expansion card CAN indicator	Off: CANopen is in the initial status Flash quickly (200ms on, 200ms off): CANopen is in the pre-operation status Slow flash (200ms on, 1000ms off): CANopen is in stop status On: CANopen is running

Wiring

The CAN bus uses a daisy chain connection.

- A maximum of 64 nodes can be connected.
- The CAN bus uses twisted-pair shielded cables, and CAN+ and CAN- use twisted-pair cables.
- Connect 120Ω terminal matching resistors at both ends of the CAN bus to prevent signal reflection.
- The CGND of all nodes are connected together.

The transmission distance of the CAN bus is related to the baud rate and communication cable. The relationship between the maximum bus line length and the baud rate is shown in the table below.

Table 4-15 Relationship between maximum bus line length and baud rate

Serial Number	Baud Rate (bps)	Max. Transmission Distance (m)	Number of Nodes	Cable Diameter (mm^2)
1	1M	25	64	0.205
2	500k	95	64	0.34
3	100k	560	64	0.5
4	50k	1100	64	0.75

4.5.2.2 HD800-EtherCat-A

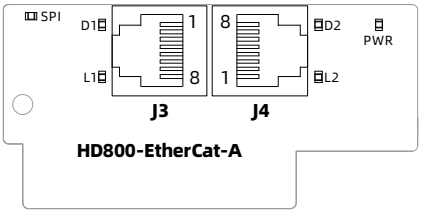


Figure 4-33 HD800-EtherCat-A

Terminal Description

Table 4-16 Terminal Description

Terminal			Description
J3	1, 2	TXA+, TXA-	EtherCAT communication network port • J3 is the input port, J4 is the output port • Support PDO/SDO, rate 100Mbit/s, synchronization period 1ms, full-duplex • Standard Ethernet RJ45 port
	3, 6	RXA+, RXA-	
	4, 5, 7, 8	/	
J4	1, 2	TXB+, TXB-	
	3, 6	RXB+, RXB-	
	4, 5, 7, 8	/	

Indicator Description

Table 4-17 Indicator description

Indicator		Description
SPI (green)	SPI communication indicator between expansion card and inverter	On: Communication is normal Flash: Communication is abnormal or disturbed Off: Communication disconnected
PWR (green)	Power indicator	On: The inverter is powered on Off: The inverter is not powered on or the expansion card is not installed correctly
D1, D2, L1, L2	Unused	

Wiring

The maximum number of slaves is 125.

Use category 5e shielded twisted pair network cable with a length not exceeding 100 meters.

J3 connects to the master or previous slave, and J4 connects to the next slave.

4.5.2.3 HD800-Profibus-DP

Terminal Definition

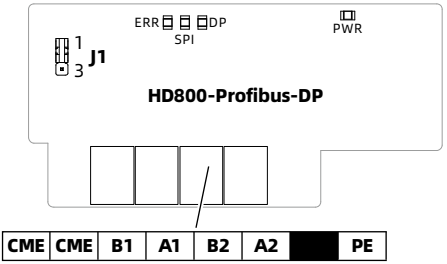
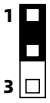


Figure 4-34 HD800-Profibus-DP

Table 4-18 Terminal description

Terminal		Description
A1, B1	Communication signal	Maximum rate 6Mbit/s Jumper J1 sets the terminal matching resistance • Short-circuit 1,2 pin, not connect terminal matching resistor (default) • Short-circuit 2,3pin, connect terminal matching resistor 
CME	Ground	Communication signal reference ground
PE	Ground	Connect to shield layer

Indicator Description

Table 4-19 Indicator description

Indicator		Description
SPI (green)	SPI communication indicator between expansion card and inverter	On: Communication is normal Flash: Communication is abnormal or disturbed Off: Communication disconnected
ERR (red)	Error indicator	On: Expansion card initialization failed Off: Expansion card initialization successful
DP (green)	Communication indicator between expansion card and PROFIBUS-DP master station	On: Communication is normal Flash: Communication with the master station is abnormal Off: Communication disconnected
PWR (green)	Power indicator	On: The inverter is powered on Off: The inverter is not powered on or the expansion card is not installed correctly

Wiring

See the figure below for wiring.

Use shielded cables for communication and ensure that the shielding layer is reliably grounded.

Connect 120Ω terminal matching resistors at both ends of the Profibus bus to prevent signal reflection.

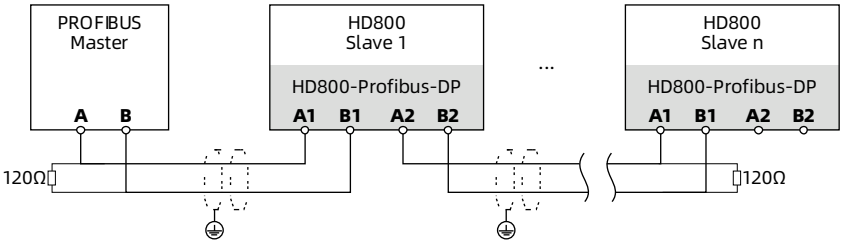


Figure 4-35 HD800-Profibus-DP wiring

Cable length is related to baud rate, see the table below.

Baud Rate (kbps)	9.6/19.2	187.5	500	1500	3000/6000
Maximum Length of Cable A (m)	1200	600	200	100	100
Maximum Length of Cable B (m)	1200	600	200	70	Not support

Cable specifications are shown in the table below.

Specification	Impedance	Capacitance	Resistance	Wire diameter
Cable A	135 - 165Ω f = 3 - 20MHz	<30pF/m	100Ω/km	≥0.34mm^2
Cable B	100 - 130Ω f > 100kHz	<60pF/m	/	≥0.22mm^2

4.6 Meet EMC Requirement of Installation

4.6.1 Correct EMC installation

According to national standards GB/T 12668.3, the inverter should meet the two requirements of electromagnetic interference (EMI) and anti-electromagnetic interference. The international standards IEC 61800-3 (VVVF drive system part 3: EMC specifications and test methods) are identical to the national standards GB/T 12668.3. HD800 are designed and produced according to the requirements of IEC 61800-3. Please install the inverter as per the description below so as to achieve good electromagnetic compatibility (EMC).

- In a drive system, the inverter, control equipment and sensors are installed in the same cabinet; The electromagnetic noise should be suppressed at the main connecting points, and the EMI filter and AC reactor installed in cabinet to satisfy the EMC requirements.
- The most effective but expensive measure to reduce the interference is to isolate the noise source and the noise receiver, which should be considered in mechanical system design phase. In driving system, the noise source can be inverter, brake unit and contactor. Noise receiver can be automation equipment, encoder and sensor etc.
- The mechanical/system is divided into different EMC areas according to electrical characteristics, see the figure below. Please install the equipment in the designated area.

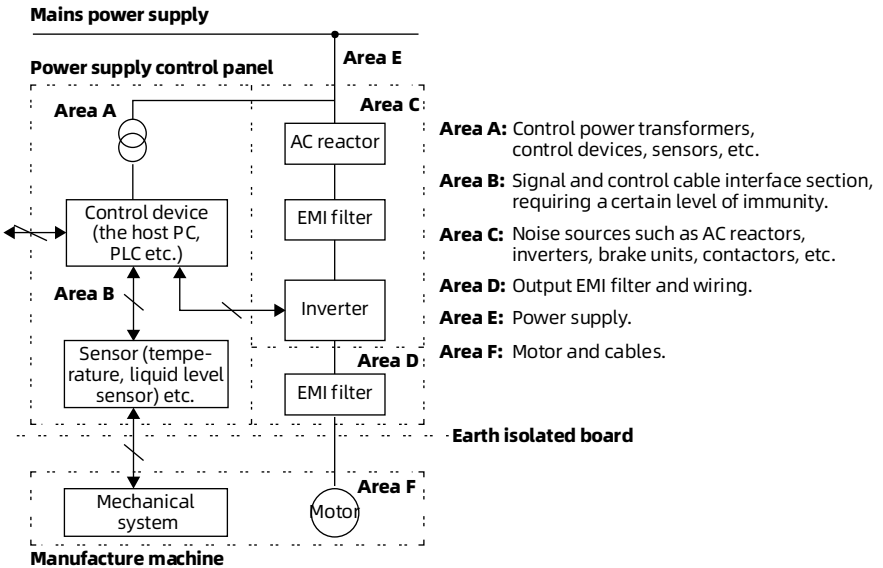


Figure 4-36 Region division

Description:

- All areas should be isolated in space to achieve electromagnetic decoupling effect.
- The Min. distance between areas should be 20cm, and use grounding bars for decoupling among areas, the cables from different area should be placed in different tubes.
- EMI filters should be installed at the interfaces between different areas if necessary.
- Bus cable (such as RS485) and signal cable must be shielded.

4.6.2 Wiring Requirement

In order to avoid interference intercoupling, it is recommended to separate the power supply cables, motor cables and the control cables, and keep enough distance among them, especially when the cables are laid in parallel and are long enough.
The signal cables should cross the power supply cables or motor cables, keep it perpendicular (90°).
Distribute the power supply cables, motor cables and control cables in different pipelines.

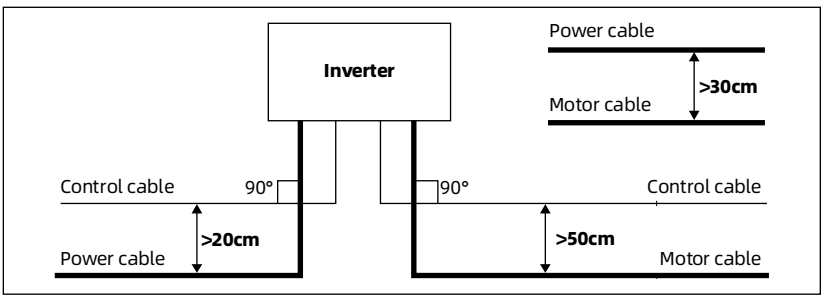


Figure 4-37 System wiring requirements

Shielded/armoured cable: High frequency low impedance shielded cable should be used. For example: Copper net, aluminum net or iron net.
Normally, the control cables must use the shielded cables and the shielding metal net must be connected to the metal enclosure of the inverter by cable clamps

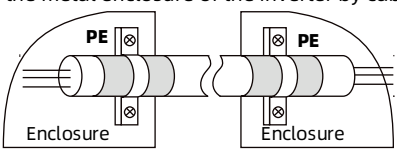


Figure 4-38 Shielded cable connection

4.6.3 Motor Wiring

The longer the cable of the motor, the higher the carrier frequency, and the greater the high-order harmonic leakage current on the cable. Leakage current can have adverse effects on devices near the inverter.

When the cable length is longer than 100 meters, it is recommended to install AC output reactor and adjust the carrier frequency according to the following table.

Table 4-20 Motor cable length and carrier frequency

Motor Cable Length	<30m	30 - 50m	50 - 100m	≥100m
Carrier Frequency (F21.00)	Below 15kHz	Below 10kHz	Below 5kHz	Below 2kHz

The motor cable should use the cable with the specified area.

The inverter should be derated if motor cables are too long or their CSA is too large. The current should be decreased by 5% when per level of CSA is increased. If the CSA increase, so do the current to ground and capacitance.

4.6.4 Ground

The inverter has leakage current to the ground, and the PE ground terminal needs to be grounded. Ground requirements:

- PE is close to the ground point.
- Make the ground contact area as large as possible.
- The ground resistance is less than 10Ω.

Do not share the ground cable (A) with other power equipment. The ground pole (C) can be shared, but each has a dedicated ground pole (B) for the best effect.

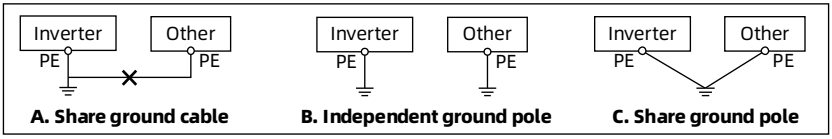


Figure 4-39 Recommended grounding method

When using two or more inverters at the same time, do not create a loop with the ground cable.

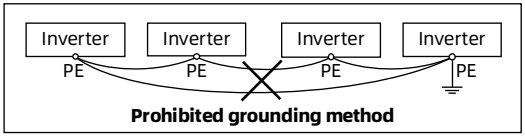


Figure 4-40 Prohibited grounding method

4.6.5 EMI Filter

For devices that can generate strong interference and are sensitive to external interference, please install EMI filters.

EMI filter is a bidirectional low-pass filter. EMI filter allows low-frequency current to pass, but it is not easy for high-frequency electromagnetic interference current to pass.

The role of EMI filter:

- It enables the equipment to meet the requirements of conducted emission and conducted sensitivity in the electromagnetic compatibility standards and can suppress the radiated emission of the equipment.
- Prevent electromagnetic interference generated by the device from entering the power cable, and prevent interference on the power cable from entering the device.

Common errors in EMI filter installation are shown in the table below.

1.	**The cable between the EMI filter and the inverter is too long.** The filter in the cabinet needs to be close to the power cable inlet, and the power input cable of the filter should be as short as possible.
2.	**The distance between the input and output cables of the EMI filter is short.** If the distance is short, the high-frequency interference signal is directly coupled through the input and output cables of the EMI filter, bypassing the filter and rendering the EMI filter ineffective.
3.	**The EMI filter is not properly grounded.** The enclosure of EMI filter must be grounded properly to the metal case of the inverter. In order to achieve better grounding effect, make use of a special grounding terminal on the enclosure. If using one cable to connect the filter to the case, the grounding is useless for high frequency interference. When the frequency is high, so is the impedance of cable, hence there is little bypass effect. Correct installation method: The filter should be mounted on the enclosure of equipment. Ensure to clear away the insulation paint between the filter case and the enclosure for good grounding contact.

4.6.6 Countermeasures for Conduction, Radiation and Radio Frequency

Inverter Radiation Emission

The operating theory of inverter means that some EMI is unavoidable. The inverter is usually installed in a metal cabinet which normally little affects the instruments outside the metal cabinet. The cables are the main EMI source. If connect the cables according to this manual, the EMI can be suppressed effectively.

If the inverter and other control equipment are installed in one cabinet, the area rule must be observed. Pay attention to the isolation between different areas, cable layout and shielding.

Reducing Conducted Interference

Add a noise filter to suppress conducted interference on the output side. Additionally, conducted interference can be efficiently reduced by threading all the output cables through a grounded metal tube. And conducted interference can be dramatically decreased when the distance between the output cables and the signal cables is above 0.3m.

Reducing RF Interference

Input cables, output cables and inverter can all generate RF interference. Measures to reduce RF interference:

- Install EMI filters on both the input and output sides and use iron vessels for shielding.
- Use shorter motor cables.

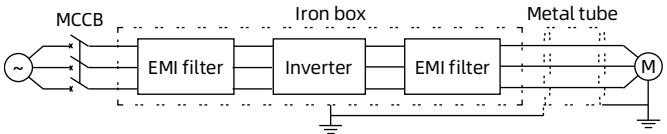


Figure 4-41 Reducing RF interference

4.6.7 Reactor

AC Input Reactor

Function of AC input reactor:

- Improve the power factor on the input side.
- Effectively eliminate high-order harmonics on the input side to prevent damage to other equipment due to voltage waveform distortion.
- Eliminate input current imbalance caused by power phase imbalance.

DC Reactor

Function of DC reactor:

- Improve the power factor on the input side.
- Improve the overall efficiency and thermal stability of the inverter.
- Effectively eliminate the impact of high-order harmonics on the inverter on the input side.
- Reduce external conduction and radiation interference.

AC Output Reactor

When the motor cable exceeds 100 meters, the leakage current on the cable causes the inverter to fault.

In this case, please install an output AC reactor.

Chapter 5 Debugging Tool

Danger

- Before powering on, please install the inverter cover. After powering on, do not disassemble the chassis.
- Before the inverter starts the motor and mechanical equipment, please make sure that the motor and mechanical equipment are operating within the allowable range.
- If the inverter is set with undervoltage restart function, please do not get close to mechanical transmission equipment.
- If you replace the control board, please set the parameters correctly after replacement. Otherwise, the inverter may not operate normally.

Warning

- It is prohibited to check or measure signals while the inverter is running.
- Do not change the inverter parameter settings at will.
- Before switching the inverter's running command channel, please perform switching debugging first.
- The temperature of the brake resistor is very high during operation, please do not touch it.

The following tools can be used to debug the HD800.

Debugging Tool	Description
Standard LED keypad	Set parameters, view parameters, view fault codes, custom menus, etc. • 5-digit LED digital tube display, 5 unit indicators, 1 status indicator • Cannot be disassembled
Optional LED keypad [HD-LED-P]	Set parameters, view parameters, view fault codes, custom menus, backup parameters, etc. • 5-digit LED digital tube display, 5 unit indicators, 5 status indicator • With potentiometer
Android phone [Bluetooth debugging APP]	Quickly debug, monitor inverter status, set parameters, and view fault details • HD800 connects to Bluetooth module (MT70-BLE-A), and installs Bluetooth debugging APP on Android phone

5.1 Standard Keypad Description

HD800 comes standard with an LED keypad (not removable).

5.1.1 Layout

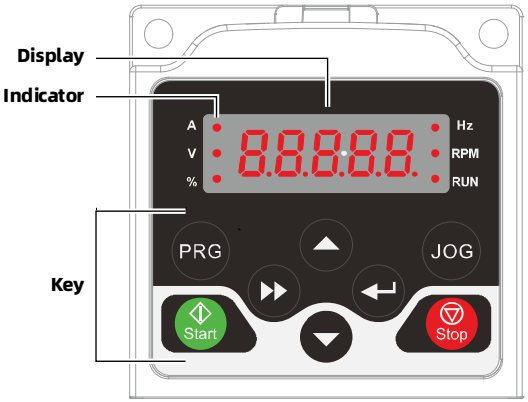


Figure 5-1 Keypad layout

5.1.2 Key Description

Table 5-1 Key description

Key			Description
PRG	**PRG**	Program/exit	• Press this key to enter and exit the menu settings • Press this key to return to the previous menu
JOG	**JOG**	Jog	• In keypad control, press this key to start the inverter
Start	**Start**	Run	• In keypad control, press this key to start the inverter
Stop	**Stop**	Stop/reset	• In keypad control, press this key to stop the inverter • When the inverter reports a fault, clear the fault and then press this key to reset the fault
▲	▲	Increment	• Press this key to increase the current value
▼	▼	Decrement	• Press this key to decrease the current value
▶▶	▶▶	Shift	• Press this key to move the parameter or parameter value modification bit • Cycle switching of stop status display parameters or run status display parameters
↵	↵	Confirm	• Press this key to enter the next level menu • Press this key to save the setting and return to the previous menu

5.1.3 Indicator Description

Table 5-2 Indicator description (unit)

Indicator		On	Off
A	Current	The unit of the parameter is A	/
V	Voltage	The unit of the parameter is V	/
%	Percentage	The unit of the parameter is %	/
Hz	Frequency	The unit of the parameter is Hz	/
RPM	Rpm	The unit of the parameter is rpm	/

Table 5-3 Indicator description (status)

Indicator		On/Flash	Off
RUN	Running status	On: The inverter is running forward Flash: The inverter is running reverse	Inverter is stop

5.1.4 Display Description

5.1.4.1 Indicator Display Meaning

Table 5-4 LED display

LED	Meaning	LED	Meaning	LED	Meaning	LED	Meaning
0	0	A	A	i	i	t	t
1	1	b	b	J	J	U	U
2	2	C	C	L	L	u	u
3	3	c	c	n	n	v	v
4	4	d	d	o	o	y	y
5	5	E	E	P	P	-	-
6	6	F	F	q	q	.	Point
7	7	G	G	r	r	8.	Full display
8	8	H	H	S	S		No display
9	9	h	h	T	T	8.	Flash Can be modified

5.1.4.2 Special Display

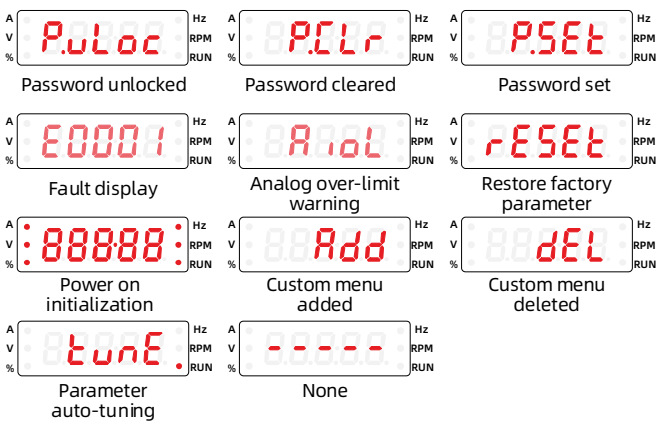


Figure 5-2 Special display

5.1.5 Instruction

5.1.5.1 Switch Four-level Menu

Four-level menu: **Function menu (first level) → Parameter group (second level) → Parameter (third level) → Parameter value (fourth level).**

See the figure below for switching the four-level menu and the table below for key descriptions.

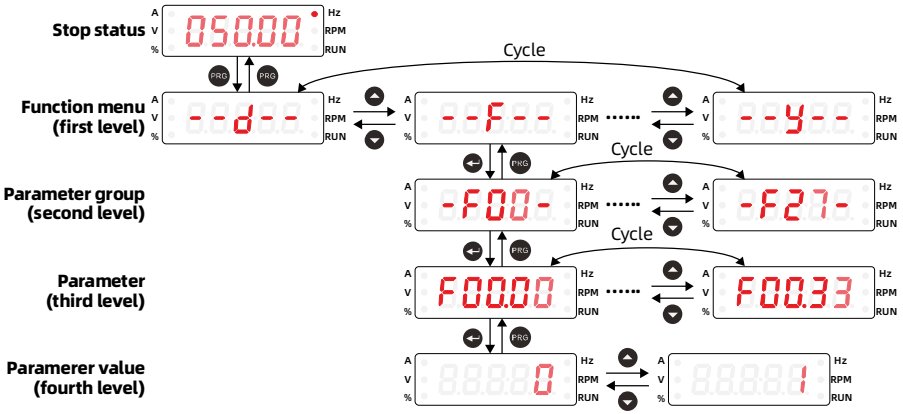


Figure 5-3 Switch the four-level menu

Table 5-5 Key description

Key	First Level	Second Level	Third Level	Fourth Level
PRG **PRG**	When there is a fault, it returns to the fault display. When there is no fault, it returns to the start or stop status display	Return to the first level menu	Return to the second level menu	Do not save the current value and return to the third level menu
	Enter the second level menu	Enter the third level menu	Enter the fourth level menu	Save the current value and return to the third level menu
	Cycle function menu, see Figure 5-4	Increase parameter group, press 1 time to increase by 1	Increase parameters, press 1 time to increase by 1	Increase value of a parameter, press 1 time to increase by 1
	Cycle function menu, see Figure 5-4	Decrease parameter group, press 1 time to decrease by 1	Decrease parameters, press 1 time to decrease by 1	Decrease value of the parameter, press 1 time to decrease by 1
	Invalid	Invalid	Cycle switching parameters: Unit, ten	Cycle through parameter values: Unit, ten thousand, thousand, hundred, ten

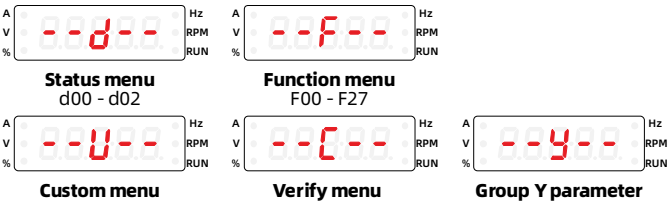


Figure 5-4 Function menu (first level)

5.1.5.2 Set Parameter

Example: F00.05 (maximum output frequency) defaults to 50.00Hz, set it to 55.00Hz.

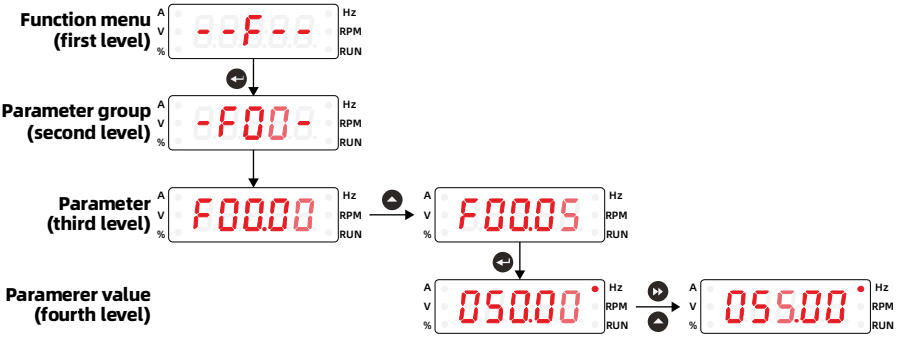


Figure 5-5 Set parameters

When setting a parameter value in the fourth level menu, if the value does not flash, it means that the parameter cannot be set.

Possible reason:

- This parameter cannot be set, such as status parameters (group d, fault record parameters).
- This parameter cannot be set when the inverter is running. Stop the inverter and then set this parameter.
- The inverter has a user password. Enter the correct user password first, then set this parameter.

5.1.5.3 Unlock User Password

When the inverter has a user password, you can set parameters only after unlocking the password.

Example: The user password is 00004.

Steps:

1.	Set F08.00 = 4.
2.	When the keypad displays P.uLoc, the password is unlocked successfully.

Figure 5-6 Unlock user password

5.1.5.4 Change User Password

If the inverter has a user password, first refer to section 5.1.5.3 to unlock the password, and then change the user password.

Example: The new user password is 00004.

Steps:

1.	Set F08.00 = 4, and the keypad displays P.SET.
2.	When the keypad displays F08.01, press PRG key to return to the run or stop status display, and the user password takes effect.

Figure 5-7 Change user password

5.1.5.5 Clear User Password

Example: The user password is 00004.

Steps:

1.	Refer to section 5.1.5.3 to unlock the password.
2.	Set F08.00 = 0.
3.	When the keypad displays P.CLr, the password is cleared successfully.

Figure 5-8 Clear user password

5.1.5.6 Switch Status Display Parameter

The keypad can cyclically switch the run status parameters (F07.00 - F07.05) or the stop status parameters (F07.06 - F07.11).

Taking the factory value of the run status parameters as an example, the switching parameters are shown in the figure below.

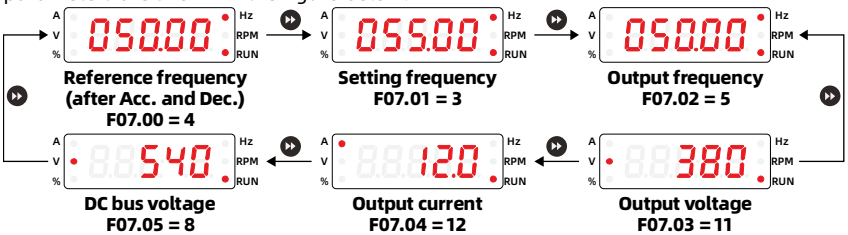


Figure 5-9 Switch run status parameters

5.1.5.7 Add or Delete Custom Menu Parameter

The custom menu is group U (--U--).

Add commonly used parameters (group F) to group U, and then enter group U to quickly set group F parameters.

Add steps:

1.	Enter the third level menu of group F.
2.	When the keypad displays the target parameter (F XX.XX), press and hold ▶▶ key. When the keypad displays Add, release ▶▶ key.

Delete steps:

1.	Enter group U.
2.	When the keypad displays the target parameter (FXX.XX), press and hold ▶▶ key. When the keypad displays dEL, release ▶▶ key.

5.2 Optional Keypad Description

HD800 can be equipped with an optional LED keypad (model: HD-LED-P).

5.2.1 Layout

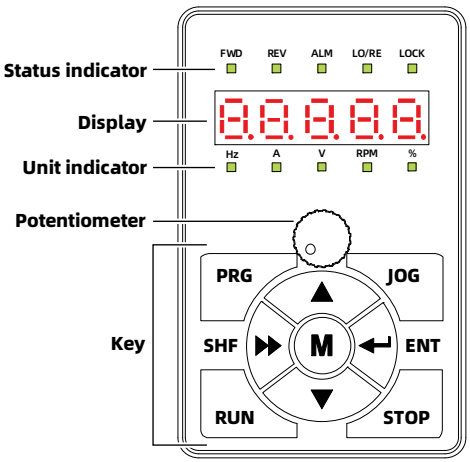


Figure 5-10 Keypad layout

5.2.2 Key Description

Table 5-6 Key description

Key		Description
PRG	Program/exit	• Press this key to enter and exit the menu settings • Press this key to return to the previous menu
JOG	Jog	• In keypad control, press this key to start the inverter
RUN	Run	• In keypad control, press this key to start the inverter
STOP	Stop/reset	• In keypad control, press this key to stop the inverter • When the inverter reports a fault, clear the fault and then press this key to reset the fault
M	Multi-function	• F07.22 sets function
▲	Increment	• Press this key to increase the current value
▼	Decrement	• Press this key to decrease the current value
⏩	Shift	• Press this key to move the parameter or parameter value modification bit • Cycle switching of stop status display parameters or run status display parameters
↵	Confirm	• Press this key to enter the next level menu • Press this key to save the setting and return to the previous menu
-	Potentiometer	• Set parameter: Counterclockwise to decrease, clockwise to increase

5.2.3 Indicator Description

Table 5-7 Indicator description

Indicator		On	Flash	Off
FWD	Forward status	Motor forward	The next time you start, the motor rotates forward	
REV	Reverse status	Motor reverse	The next time you start, the motor rotates reverse	
ALM	Warning status	The inverter is faulty		The inverter has no fault
LO/RE	Remote/local status	The inverter is in terminal control	The inverter is in communication control	The inverter is in keypad control
LOCK	Password lock status	The inverter user password lock status takes effect		The inverter has no user password or is in unlocked status
Hz	Frequency unit	The unit of the parameter is Hz	The parameter is the output frequency	
A	Current unit	The unit of the parameter is A		
V	Voltage unit	The unit of the parameter is V		
RPM	Rpm unit	The unit of the parameter is rpm	The parameter is the running speed	
%	Percentage unit	The unit of the parameter is %		

5.2.4 Backup Parameters

Backup parameters (parameter upload or parameter download) can quickly set the parameters of multiple inverters.

Backup the Inverter Parameters to the Keypad (Parameter Upload)

Steps:

1.	Set F08.02 = 1/2 (backup parameters), the keypad displays UPLd, and the inverter starts backup parameters.
2.	When the keypad displays F08.03, the parameter backup is completed. • If the keypad displays E0022 flashingly and then displays F08.03 after 10s, the parameter backup has failed. For troubleshooting, see section 8.2, page 173.

Figure 5-11 Parameter backup to the keypad

Backup the Parameters of the Keypad to the Inverter (Parameter Download)

Steps:

1.	Set F08.01 = 5/6/7/8 (restore backup parameters), the keypad displays dnLd, and the inverter starts backup parameters. • 5, 6: Restore backup parameters 1/2 (excluding motor parameters). • 7, 8: Restore backup parameters 1/2 (including motor parameters).
2.	When the keypad displays F08.02, the parameter backup is completed. • If the keypad displays dFAiL, the parameters stored in the keypad do not match the current inverter parameters. First back up the correct parameters to the keypad, and then back up the parameters again. • If the keypad displays E0022 flashingly and displays F08.02 after 10 seconds, the parameter backup has failed. For troubleshooting, see section 8.2, page 173.

Figure 5-12 Parameter backup to inverter

5.3 Mobile APP

Equipped with MT70-BLE-A (Bluetooth module), use an Android phone (operating system Android 4.3 and above) to debug HD800 and monitor the inverter status.
The Bluetooth debugging APP (hereinafter referred to as APP) functions, see the table below.

Table 5-8 APP function description

Function	Description
Monitor	Check the current inverter status. Start and stop the inverter.
Parameter	Contains the parameter set when debugging HD800 to achieve rapid debugging. The parameter set includes: Status, application function, external terminal setting, motor communication, communication setting, fault protection, upload and download.
Fault	View the fault information (current fault, historical fault, all faults), causes, and countermeasures. Search for faults using fault codes or keywords.

5.3.1 Preparation

5.3.1.1 Get APP Account

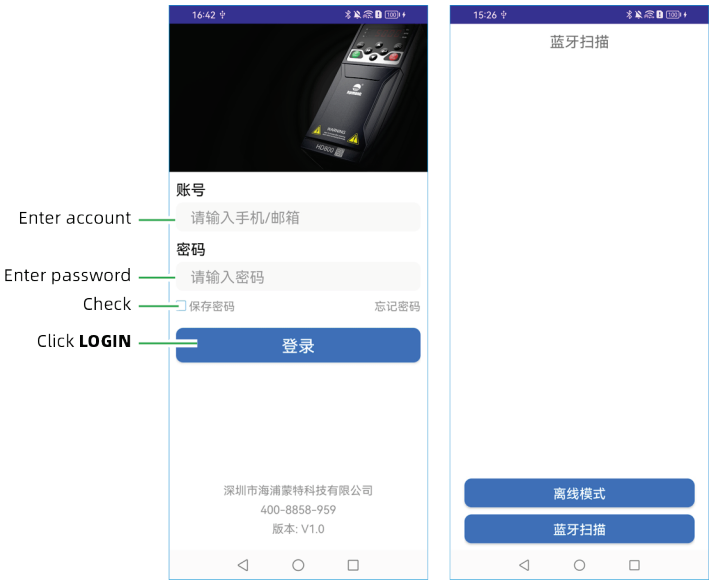
Please contact Hpmont to obtain an account and provide the following information: Name, email address, mobile phone number, password, company name, and company address.

5.3.1.2 Install the APP

1.	Scan the QR code on the HD800 case or right side. • We recommend using WeChat.	
2.	Click**...** in the upper-right corner and click **Open in Browser**.	
3.	Click **HD800 Bluetooth APP software download**, the browser opens the download pop-up window, and click **Download**.	
4.	After the download is complete, the installation interface will open automatically and wait for the installation to complete. The APP icon is on the right.	

5.3.1.3 Log in APP Account

1.	Click the APP icon to open the **Login** interface. • Please allow location and access permissions.
2.	On the **Login** interface, enter your account number and password in sequence. • The account can be a mobile phone or email address, mobile phone is recommended.
3.	Check **Save password** and click **Login**. After successful login, open the **Bluetooth** interface.



Login interface Bluetooth interface

Figure 5-13 Login in APP account

5.3.2 Connect the HD800

5.3.2.1 Connect MT70-BLE-A

MT70-BLE-A is plugged into USB, see the figure below.

Note:
RJ45 cannot be connected to the keypad. When the keypad is connected at the same time, USB is invalid.

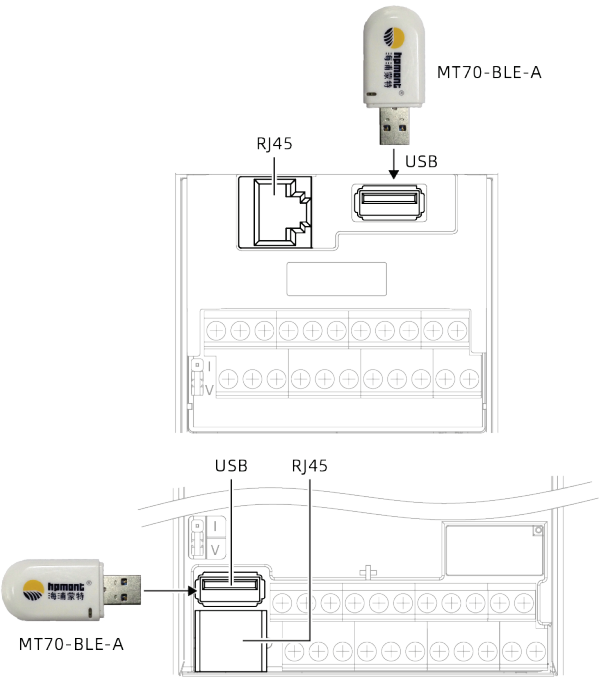


Figure 5-14 Connect MT70-BLE-A

5.3.2.2 Connect Bluetooth

1.	Confirm: • The Bluetooth and positioning of the mobile phone are turned on. • The HD800 is powered on.
2.	In the **Bluetooth** interface, click **Bluetooth scan** and the phone continues to search for nearby Bluetooth devices.
3.	Click to connect to HD800's Bluetooth. HD800 connects to Bluetooth. After the connection is successful, the **Monitor** interface opens. • Bluetooth names start with MT.

Figure 5-15 Connect to Bluetooth

5.3.3 Interface Description

5.3.3.1 Monitor Interface Description

After successfully connecting to Bluetooth, the APP opens the **Monitor** interface by default, as shown in the figure below and the description is shown in the table below.

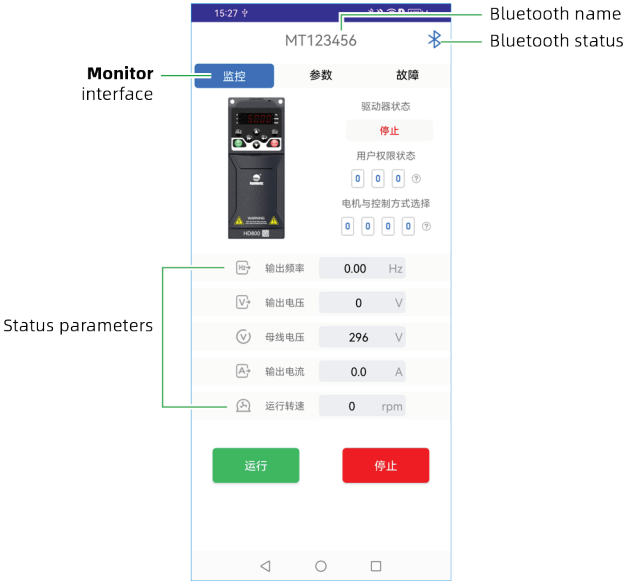


Figure 5-16 Monitoring interface

Table 5-9 Monitoring interface description

Monitor	Description
Bluetooth status	Display the Bluetooth connection status: (Bluetooth connected), (Bluetooth disconnected).
Drive status	Display the run status of the inverter: Run, stop.
User permission status	Display user permissions. Click to display the meaning of the value. The default value is 000. • Unit: Permission 1 locked • Ten: Permission 2 locked • Hundred: Permission 3 locked • 0: Not enabled • 1: Not expired • 2: Expiration

Motor and control mode selection	Display the motor and control mode. Click to display the meaning of the value. The default value is 0000.
	• Unit: Current drive motor
	  • 0: Asyn. motor 1
	  • 1: Asyn. motor 2
	• Ten: Asyn. motor control method
	  • 0: V/F mode
	  • 1: No PG vector
	Hundred: Unused
	Thousand: Mode
	• 0: Speed control
	• 1: Torque control

Monitor	Description
Status parameters	Display the inverter's status parameters: Output frequency, output voltage, bus voltage, output current, and running speed.
Run	In keypad control (F00.04 = 0), click **Run** to start the inverter.
Stop	In keypad control (F00.04 = 0), click **Stop** to stop the inverter.

5.3.3.2 Parameter Interface Description

Click **Parameter** to switch to the parameter interface, see the figure below, and the description is shown in the table below.

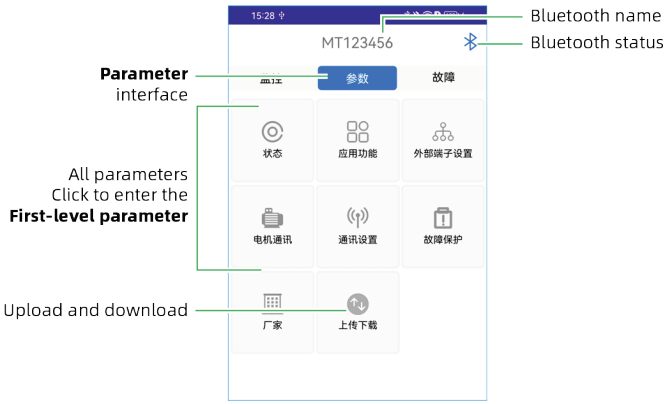
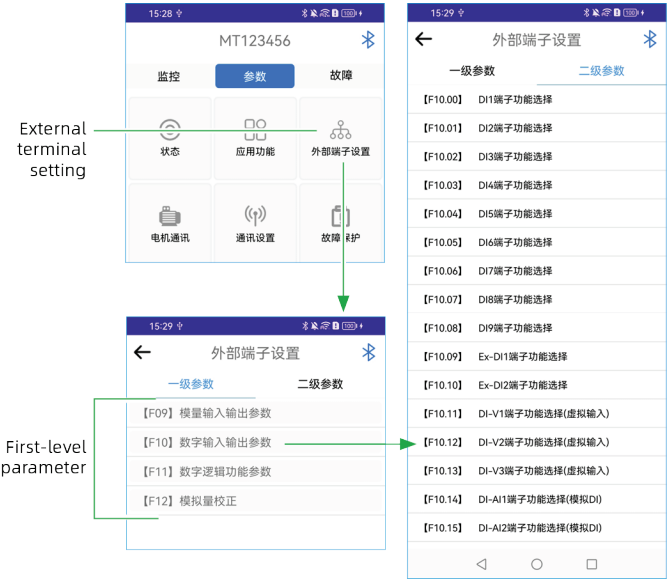
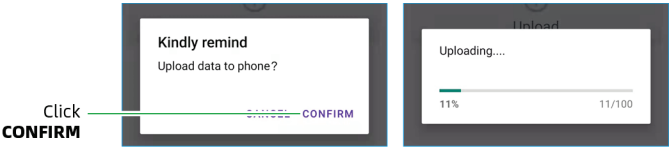


Figure 5-17 Parameter interface

Table 5-10 Parameter interface description

Parameter	Description
Bluetooth status	Display the Bluetooth connection status: (Bluetooth connected), (Bluetooth disconnected).
All parameters	Display all parameters of HD800. • Including: Status (D00 - D02), application function (F00 - F08), external terminal setting (F09 - F12), motor communication (F13 - F21), communication setting (F22 - F25), fault protection (F26 - F27), upload and download. • Click to enter the **First-level parameter** page, and click the **First-level parameter** to enter the corresponding **Second-level parameter** page. 
Upload and download	Available operations: Upload parameters, download parameters, export parameters, etc. • Only one set of parameters can be uploaded each time, and multiple uploads are allowed. • The uploaded parameters can be downloaded, deleted, and exported (in txt format). • Parameter names can be renamed for easier searching. 

<table>
<tr><th>Parameter</th><th>Description</th></tr>
<tr><td></td><td>Upload and download parameter operations:
<table>
<tr><td>1.</td><td>Click Monitor to switch to the monitoring interface and confirm that the Driver status is Stop.</td></tr>
<tr><td>2.</td><td>Click Parameter to switch to the parameter interface, and click Upload and download to open the Upload and download page.</td></tr>
<tr><td>3.</td><td>Upload parameters: Click ⊕ Upload, and click CONFIRM in the pop-up dialog box, as shown in the figure below.
Download parameters: Confirm the parameters to be downloaded, click Download, and click CONFIRM in the pop-up dialog box.</td></tr>
</table>


Confirm upload parameter Parameter uploading</td></tr>
</table>

5.3.3.3 Fault Interface Description

Click **Fault** to switch to the Fault interface, see the figure below, and the description is shown in the table below.

Figure 5-18 Fault interface

Table 5-11 Fault interface description

Fault	Description
Bluetooth status	Display the Bluetooth connection status: (Bluetooth connected), (Bluetooth disconnected).
Current fault information	Display current faults and reset fault buttons. Click **Current fault information** to display: Fault code and countermeasures, and other records when the fault occurs. • Click **Fault code and countermeasure** to display: Fault code, fault name, fault cause, fault countermeasures, and reset fault button. • Click **Other records when fault occurs** to display other information, such as reference frequency, DC bus voltage, output voltage, terminal status, running time, etc. 
Historical fault information	Display the last three faults. Including: Detailed fault information, other record information.
Troubleshooting	Display all fault information.

Fault	Description
	Click **Fault Help** to open the **Fault Help** page, and then click a specific fault to open the **Fault code and countermeasures** page. 
Operation Help	Click **Operation Help** to open the HD800 user manual in PDF format.

Chapter 6 Detailed Parameter Description

6.1 Status Menu (--d--)

6.1.1 d00: Running Status Parameters

Ref. Code	Parameter	Setting Range [Default]
d00.00	**Main setting frequency (Hz)**	**[Actual value]**
d00.01	**Auxiliary setting frequency (Hz)**	**[Actual value]**
d00.02	**Setting frequency (Hz)**	**[Actual value]**
d00.03	**Reference frequency (after Acc. and Dec.) (Hz)**	**[Actual value]**
	Display the frequency after acceleration and deceleration.	
d00.04	**Output frequency (Hz)**	**[Actual value]**
d00.05	**Setting rpm (rpm)**	**[Actual value]**
d00.06	**Running speed (rpm)**	**[Actual value]**
d00.07	**DC bus voltage (V)**	**[Actual value]**
d00.08	**Three phase power input phase sequence**	**[Actual value]**
	0: Positive sequence. • L1 (R) ahead L2 (S) ahead L3 (T). 1: Negative sequence. • L1 (R) ahead L3 (T) ahead L2 (S).	
d00.09	**Input voltage (V)**	**[Actual value]**
	0.2 - 5.5kW: Display -----. 7.5 - 400kW: Display the actual input voltage.	
d00.10	**Output voltage (V)**	**[Actual value]**
d00.11	**Output current (A)**	**[Actual value]**
d00.12	**Torque reference (%)**	**[Actual value]**
	Display the torque reference as a percentage of the motor rated torque.	
d00.13	**Output torque (%)**	**[Actual value]**
	Display the output torque as a percentage of the motor rated torque.	
d00.14	**Output power (kW)**	**[Actual value]**
	Display the current actual output power.	
d00.15	**V/f separation setting voltage (V)**	**[Actual value]**
d00.16	**V/f separation reference voltage (V)**	**[Actual value]**
d00.19	**Inverter status**	**[Actual value]**
	Display the inverter status in hexadecimal format. **Bit0: Inverter fault** 0: Invalid. 1: Valid. **Bit1: Run/stop** 0: Stop. 1: Run. **Bit2: Forward/reverse** 0: Forward. 1: Reverse. **Bit3: Zero speed running** 0: Invalid. 1: Valid.	

Ref. Code	Parameter	Setting Range [Default]
	Bit5&Bit4: Acc./Dec./constant speed 00, 11: Constant speed 01: Acc. 10: Dec. **Bit6: Unused** **Bit7: DC braking** **Bit8: Parameter auto-tuning** 0: Invalid. 1: Valid. **Bit9: Unused** **Bit10: Speed limit** 0: Invalid. 1: Valid. **Bit11: Control mode** 0: Speed control. 1: Torque control. **Bit12: Overvoltage stall** **Bit13: Automatic current limit** **Bit14: Analog input over-limit stop** 0: Invalid. 1: Valid. **Bit15: Unused**	
d00.20	**Motor and control mode**	**[Actual value]**
	Unit: The motor currently being driven 0: Asyn. motor 1. 1: Asyn. motor 2. 2, 3: Unused. **Ten: Asyn. motor control mode** 0: V/f control. 1: SVC (open loop vector) control. 2: Unused. **Hundred: Unused** **Thousand: Control mode** 0: Speed control. 1: Torque control.	
d00.21	**Current fault**	**[Actual value]**
	When it displays 100, it indicates undervoltage.	
d00.22	**PID reference (%)**	**[Actual value]**
	Display the PID reference as a percentage of the reference full scale.	
d00.23	**PID feedback (%)**	**[Actual value]**
	Display the PID feedback as a percentage of the reference full scale.	
d00.24	**PID error (%)**	**[Actual value]**
	Display the PID error as a percentage of the reference full scale.	
d00.25	**PID integral term (%)**	**[Actual value]**
	Display the PID integral term as a percentage of the maximum output frequency.	
d00.26	**PID output (%)**	**[Actual value]**
	Display the PID output as a percentage of the maximum output frequency.	
d00.27	**External count value**	**[Actual value]**
d00.28	**Current running time (min)**	**[Actual value]**
d00.29	**Count value**	**[Actual value]**
d00.30	**Calibration display 1**	**[Actual value]**
d00.31	**Calibration display 2**	**[Actual value]**
d00.32	**Motor temperature resistance value (kΩ)**	**[Actual value]**

6.1.2 d01: Control Terminal Status Parameters

<table>
<tr><th>Ref. Code</th><th>Parameter</th><th>Setting Range [Default]</th></tr>
<tr><td>d01.00</td><td>Input terminal status 1</td><td>[Actual value]</td></tr>
<tr><td></td><td colspan="2">Display the input terminal status.
• 0: The input terminal is disconnected from the common terminal.
• 1: The input terminal is connected to the common terminal.
<table>
<tr><th colspan="4">Thousand</th><th colspan="4">Hundred</th><th colspan="4">Ten</th><th colspan="4">Unit</th></tr>
<tr><td>Bit15</td><td>Bit14</td><td>Bit13</td><td>Bit12</td><td>Bit11</td><td>Bit10</td><td>Bit9</td><td>Bit8</td><td>Bit7</td><td>Bit6</td><td>Bit5</td><td>Bit4</td><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td></tr>
<tr><td>DI-AI2</td><td>DI-AI1</td><td>DI-V3</td><td>DI-V2</td><td>DI-V1</td><td>EX2</td><td>EX1</td><td>-</td><td>-</td><td>-</td><td>-</td><td>DI5</td><td>DI4</td><td>DI3</td><td>DI2</td><td>DI1</td></tr>
</table></td></tr>
<tr><td>d01.01</td><td>Input terminal status 2</td><td>[Actual value]</td></tr>
<tr><td></td><td colspan="2">Display the input terminal status.
• 0: The input terminal is disconnected from the common terminal.
• 1: The input terminal is connected to the common terminal.
<table>
<tr><th colspan="4">Thousand</th><th colspan="4">Hundred</th><th colspan="4">Ten</th><th colspan="4">Unit</th></tr>
<tr><td>Bit15</td><td>Bit14</td><td>Bit13</td><td>Bit12</td><td>Bit11</td><td>Bit10</td><td>Bit9</td><td>Bit8</td><td>Bit7</td><td>Bit6</td><td>Bit5</td><td>Bit4</td><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td></tr>
<tr><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td><td>DI-EAI2</td><td>DI-EAI1</td></tr>
</table></td></tr>
<tr><td>d01.02</td><td>Output terminal status</td><td>[Actual value]</td></tr>
<tr><td></td><td colspan="2">Display the output terminal status.
• 0: The output terminal is disconnected from the common terminal.
• 1: The output terminal is connected to the common terminal.
<table>
<tr><th colspan="4">Ten</th><th colspan="4">Unit</th></tr>
<tr><td>Bit7</td><td>Bit6</td><td>Bit5</td><td>Bit4</td><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td></tr>
<tr><td>-</td><td>EY2</td><td>EY1</td><td>-</td><td>RLY1</td><td>-</td><td>-</td><td>DO1</td></tr>
</table></td></tr>
<tr><td>d01.03</td><td>AI1 input (%)</td><td>[Actual value]</td></tr>
<tr><td></td><td colspan="2">Display AI1 input (after filtering).
• Voltage input: 0V corresponds to 0.0%, 10V corresponds to 100.0%.</td></tr>
<tr><td>d01.04</td><td>AI1 input (after processing) (%)</td><td>[Actual value]</td></tr>
<tr><td></td><td colspan="2">Display the AI1 input after processing (gain, offset, and analog scaling).</td></tr>
<tr><td>d01.05</td><td>AI2 input (%)</td><td>[Actual value]</td></tr>
<tr><td></td><td colspan="2">Display AI2 input (after filtering).
AI2 can be set to voltage input or current input.
• Voltage input: 0V corresponds to 0.0%, 10V corresponds to 100.0%.
• Current input: 0mA corresponds to 0.0%, 20mA corresponds to 100.0%.</td></tr>
<tr><td>d01.06</td><td>AI2 input (after processing) (%)</td><td>[Actual value]</td></tr>
<tr><td></td><td colspan="2">Display the AI2 input after processing (gain, offset, and analog scaling).</td></tr>
<tr><td>d01.07</td><td>EAI1 input (%)</td><td>[Actual value]</td></tr>
<tr><td></td><td colspan="2">Display the EAI1 input (after filtering).
EAI1 can be set to voltage input or current input.
• Voltage input: 0V corresponds to 0.0%, 10V corresponds to 100.0%.
• Current input: 0mA corresponds to 0.0%, 20mA corresponds to 100.0%.</td></tr>
</table>

Ref. Code	Parameter	Setting Range [Default]
d01.08	**EAI1 input (after processing) (%)**	**[Actual value]**
	Display the EAI1 input after processing (gain, offset, and analog scaling).	
d01.09	**EAI2 input (%)**	**[Actual value]**
	Display the EAI2 input (after filtering). EAI2 can be set up for voltage input or current input. • Voltage input: 0V corresponds to 0.0%, 10V corresponds to 100.0%. • Current input: 0mA corresponds to 0.0%, 20mA corresponds to 100.0%.	
d01.10	**EAI2 input (after processing) (%)**	**[Actual value]**
	Display the EAI2 input after processing (gain, offset, and analog scaling).	
d01.11	**Keypad potentiometer input voltage**	**[Actual value]**
	Display the input voltage of the potentiometer on the keypad. • Voltage input: 0V corresponds to 0.0%, 5V corresponds to 100.0%.	
d01.12	**Keypad potentiometer input voltage (after processing)**	**[Actual value]**
	Display the input voltage of the potentiometer after processing (analog scaling).	
d01.13	**AO1 output (%)**	**[Actual value]**
	Display the AO1 output. AO1 can be set to voltage output or current output. • Voltage output: 0.0% corresponds to 0V, 100.0% corresponds to 10V. • Current output: 0.0% corresponds to 0mA, 100.0% corresponds to 20mA.	
d01.14	**EAO1 output (%)**	**[Actual value]**
	Display the EAO1 output. EAO1 can be set to output voltage or current. • Voltage output: 0.0% corresponds to 0V, 100.0% corresponds to 10V. • Current output: 0.0% corresponds to 0mA, 100.0% corresponds to 20mA.	
d01.16	**High speed input pulse frequency**	**[Actual value]**
d01.17	**High speed output pulse frequency**	**[Actual value]**

6.1.3 d02: Factory Maintenance Status Parameters

Ref. Code	Parameter	Setting Range [Default]
d02.00	**Series**	**[Actual value]**
d02.01	**Software version**	**[Actual value]**
d02.02	**Software non-standard version**	**[Actual value]**
d02.05	**Keypad software version**	**[Actual value]**
d02.06	**Customized number**	**[Actual value]**
d02.07	**Inverter rated current (A)**	**[Actual value]**
d02.08	**Expansion card A**	**[Actual value]**
	0: No expansion card. 1: HD800-CAN-A. 2: HD800-Profibus-DP. 3, 4: Unused. 5: HD800-EIO-I. 6 - 9, A, B: Unused.	
d02.09	**Expansion card A software version**	**[Actual value]**
d02.10	**Expansion card B**	**[Actual value]**
	0: No expansion card. 1: HD800-CAN-A. 2: HD800-Profibus-DP. 3 - 9, A, B: Unused.	
d02.11	**Expansion card B software version**	**[Actual value]**
d02.12	**Cumulative power-on time (h)**	**[Actual value]**
d02.13	**Cumulative running time (h)**	**[Actual value]**
d02.14	**Motor cumulative energy consumption (high bit) (k kW.h)**	**[Actual value]**
d02.15	**Motor cumulative energy consumption (low bit) (kW.h)**	**[Actual value]**
d02.16	**Energy consumption of this run (high bit) (k kW.h)**	**[Actual value]**
d02.17	**Energy consumption of this run (low bit) (kW.h)**	**[Actual value]**
d02.18	**Heatsink temperature (°C)**	**[Actual value]**
	220V 0.2 - 1.5kW: Display actual temperature in unit of 0.1°C. Others: Display -----.	
d02.19	**RLY1 cumulative number of actions (high bit)**	**[Actual value]**
d02.20	**RLY1 cumulative number of actions (low bit)**	**[Actual value]**
d02.34	**AI1 raw sampling value**	**[Actual value]**
d02.35	**AI2 raw sampling value**	**[Actual value]**
d02.36	**EAI1 raw sample value**	**[Actual value]**
d02.37	**EAI2 raw sample value**	**[Actual value]**
d02.38	**AO1 raw output value**	**[Actual value]**
d02.39	**EAO1 raw output value**	**[Actual value]**

6.2 Function Menu (--F--)

6.2.1 F00: Basic Parameters

Ref. Code	Parameter	Setting Range [Default]
F00.00	**Control mode**	**0, 1 [0]**
	0: Speed control. 1: Torque control. • Torque control is valid only in SVC control (F13.00 unit = 1 or F17.00 unit = 1). • For detailed description, see group F10 DI terminal function (function No. 56 and 57) and group F05. 56: Speed control/torque control switching. 57: Torque polarity switching (torque control).	
F00.01	**Running direction**	**0, 1 [0]**
	0: The same direction. 1: The reverse the direction.	
F00.02	**Anti-reverse**	**0, 1 [0]**
	0: Allow reverse. 1: Disable reverse. • The inverter only responds to forward commands. If the frequency is negative, the inverter runs at zero frequency. • The inverter does not respond to the reverse command when it is stopped. • When the inverter receives a reverse command while running, it will immediately stop according to the setting of F01.06 (stop mode).	
F00.03	**Forward and reverse dead time**	**0.0 - 3600.0 [0.0s]**
	Valid when F00.00 = 0 (speed control). When the inverter switches from forward to reverse, or from reverse to forward, it sets the time for the inverter to output zero frequency.	
F00.04	**Command setting channel**	**0 - 2 [0]**
	Setting priority: Keypad **M** key switch (F07.22 unit = 1) > DI terminal switch (function No. 30) > DI terminal switch (function No. 9 - 10) > F00.04 setting. **0: Keypad.** • Press Start **Start** or **Run** key on the keypad to start the inverter, press Stop **Stop** or **STOP** key to stop the inverter, and press JOG **JOG** key to jog start the inverter. **1: DI terminal.** • DI terminal sets function: 2 (forward), 3 (reverse), 4 (three-wire operation control), 20/21 (jog 1 command), 22/23 (jog 2 command), 24/25 (jog 1), see F10.00 - F10.17. • Use the DI terminal to start and stop the inverter. **2: Communication.** • Connect the communication terminals and use communication commands to start and stop the inverter.	
F00.05	**Maximum output frequency**	**V/f: 0.00 - 600.00 [50.00Hz]** **SVC: 0.00 - 200.00 [50.00Hz]**
	Set the maximum frequency that the inverter is allowed to output. Set F00.05 carefully according to the motor nameplate and actual operating conditions.	
F00.06	**Upper limit running frequency**	**00.00 - F00.05 [50.00Hz]**
F00.07	**Lower limit running frequency**	**0.00 - F00.06 [0.00Hz]**
	The motor parameter auto-tuning is invalid.	

Ref. Code	Parameter	Setting Range [Default]
	Limit the actual output frequency of the inverter. When the set frequency < F00.07, the inverter runs at the lower limit frequency (F00.07). • Set F00.07 carefully according to the motor nameplate and actual operating conditions. • The following parameters limit the inverter's operating output frequency: F00.06/F00.07, F00.29 - F00.31 (jump frequency), F01.02/F01.07 (start/stop DWELL frequency), F01.10 (stop DC braking starting frequency).	
F00.08	**Main frequency setting channel**	**0 - 13 [0]**
	Setting priority: Keypad **M** key switch (F07.22 unit = 1) > DI terminal switch (function No. 88) > DI terminal switch (function No. 89) ... > DI terminal switch (function No. 100) > DI terminal selection (function No. 5 - 8) > F00.08 or F00.11 setting. **0: Keypad.** • Press ▲ or ▼ key on the keypad to increase or decrease the frequency, and F00.09 sets the initial frequency. **1: DI terminal.** • DI terminal sets function: 17 (frequency increase UP), 18 (frequency decrease DN), see F10.00 - F10.17. • Use the DI terminal to increase or decrease the frequency, and F00.09 sets the initial frequency. **2: Terminal pulse (DI5).** • DI5 terminal sets function: F10.04 = 53 (pulse frequency input). • Use DI5 terminal to set the frequency. • For the relationship between input pulse and set frequency, see F09.38 - F09.41. **3: Communication.** • Connect the communication terminal and use the communication command to set the frequency. The initial frequency is 0. **4, 5: Unused.** **6: Multi-speed.** • DI terminal sets function: 13 - 16 (multi-frequency terminal), see F10.00 - F10.17. • Use the DI terminal to switch the multi-speed frequency. **7: PID.** • Use PID control to set the frequency, see group F04. **8 - 11: AI1/AI2/EAI1/EAI2.** • Use AI terminal to set frequency. F09.32 sets voltage input or current input. • For the relationship between the input analog quantity and the set frequency, see F09.00 - F09.27. **12: Keypad potentiometer.** • Use the potentiometer on the keypad to set the frequency. • For the relationship between input voltage and set frequency, see F09.28 - F09.31. **13: Communication percentage.** • Connect the communication terminals and use the communication commands to set the frequency. • The relationship between communication data and set frequency: 0 corresponds to 0.00Hz, 1000 corresponds to F00.05 (maximum output frequency).	
F00.09	**Initial running frequency (digital setting)**	**0.00 - F00.06 [50.00Hz]**
	When F00.08 = 0 or 1 (main frequency is set by keypad or terminal), F00.09 sets the initial frequency.	

Ref. Code	Parameter	Setting Range [Default]
F00.10	**Main frequency control**	**0x0000 - 0x1111 [0x1001]**
	After setting the frequency using F00.09, the new frequency replaces the currently set frequency. **Unit: Stored when power is off (F00.08 = 0 or 1)** 0: Do not store. 1: Storage. **Ten: Control during stop (F00.08 = 0 or 1)** 0: Maintain the set frequency. 1: The set frequency is restored to F00.09. **Hundred: Stored when power is off (F00.08 = 3 or 13)** **Thousand: Stored when frequency channel is switched** 0: Do not store. 1: Storage.	
F00.11	**Auxiliary frequency channel**	**0 - 13 [0]**
	Same as main frequency (F00.08). 0: Keypad. F00.14 sets the initial frequency. 1: DI terminal. F00.14 sets the initial frequency. 2: Terminal pulse (DI5). 3: Communication. 4, 5: Unused. 6: Multi-speed. 7: PID. 8 - 11: AI1/AI2/EAI1/EAI2. 12: Keypad potentiometer. 13: Communication percentage (0 - 1000 corresponds to 0.00 - F00.05).	
F00.12	**Main and auxiliary setting calculation**	**0x00 - 0x43 [0x10]**
	Unit: Main and auxiliary calculation 0: Main. 1: Main + auxiliary. 2: Main - auxiliary. 3: Main and auxiliary for wire drawing. **Ten: Frequency source switching** 0: Main. 1: Main&auxiliary calculation. 2: Switch between main and auxiliary. 3: Switch between main and main&auxiliary calculation. 4: Switch between auxiliary and main&auxiliary calculation. Set the calculation relationship between the final set frequency and the main and auxiliary frequencies. • DI terminal setting function: 54 (main and auxiliary frequency source switching), see F10.00 - F10.17. • Use the DI terminal to switch the frequency source, see the table below.	

Ref. Code	Parameter	Setting Range [Default]

DI terminal	F00.12									
	00	10	20	30	40	01	11	21	31	41
0	Main	Main + auxiliary	Auxiliary	Main + auxiliary	Main + auxiliary	Main	Main - auxiliary	Auxiliary	Main - auxiliary	Main - auxiliary
1	Main	Main + auxiliary	Main	Main	Auxiliary	Main	Main - auxiliary	Main	Main	Auxiliary

F00.13 **Auxiliary set coefficient** **0.00 - 9.99 [1.00]**

When F00.11 = 2 or 8 or 9 (DI5 or AI sets the auxiliary frequency), the auxiliary frequency calculation order is:

- First use F00.13 to calculate (gain).
- Then perform calibration calculation, see F09.38 - F09.41, F09.00 - F09.03, F09.07 - F09.10.

F00.14 **Auxiliary initial frequency (digital setting)** **0.00 - F00.06 [0.00Hz]**

When F00.11 = 0 or 1 (keypad or terminal set auxiliary frequency), F00.14 sets the initial frequency.

F00.15 **Auxiliary frequency control** **0x0000 - 0x1011 [0x0000]**

Unit: Stored when power is off (F00.11 = 0 or 1)
0: Do not store.
1: Storage.
Ten: Control during stop (F00.11 = 0 or 1)
0: Maintain the set frequency.
1: The set frequency is restored to F00.14.
Hundred: Unused
Thousand: Stored when frequency channel is switched
0: Do not store.
1: Storage.

F00.16 **Set frequency ratio adjustment** **0 - 2 [1]**

F00.17 **Set frequency ratio adjustment coefficient** **0.0 - 200.0 [100.0%]**

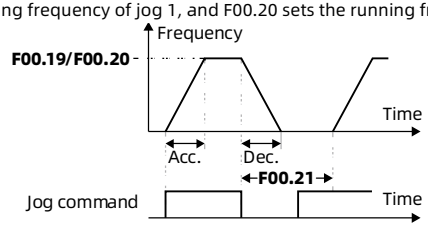
Sets the final set frequency is adjusted.
Synthesized frequency: The frequency after the main frequency and the auxiliary frequency are calculated.
0: No adjustment.
- Set frequency = synthetic frequency.

1: Adjust relative to F00.05 (maximum output frequency).
- Set frequency = synthetic frequency + F00.05 × (F00.17 - 100%).

2: Adjust relative to the current frequency.
- Set frequency = synthetic frequency × F00.17.

F00.18 **Frequency adjustment range** **0x000 - 0x111 [0x100]**

Unit: Main frequency calculation range
Ten: Auxiliary frequency calculation range
0: 0 - maximum frequency (F00.05).
1: Negative maximum frequency - maximum frequency.
Hundred: Synthetic frequency calculation range
0: 0 - upper limit frequency (F00.06).

Ref. Code	Parameter	Setting Range [Default]
	1: Negative upper limit frequency - upper limit frequency.	
F00.19	**Jog running frequency 1 (digital setting)**	**0.00 - F00.06 [5.00Hz]**
F00.20	**Jog running frequency 2 (digital setting)**	**0.00 - F00.06 [5.00Hz]**
F00.21	**Jog running interval time**	**0.0 - 100.0 [0.0s]**
	DI terminal sets function: 20/21 (jog 1 command), 22/23 (jog 2 command), 24/25 (jog 1), see F10.00 - F10.17. After the jog command is invalid, the inverter does not respond to the jog command within the F00.21 time. After F00.21 time, if the jog command is valid, the inverter jogs immediately. F00.19 sets the running frequency of jog 1, and F00.20 sets the running frequency of jog 2. 	
F00.22	**Zero frequency action**	**0x00 - 0x54 [0x33]**
F00.23	**Zero frequency threshold**	**0.00 - F00.06 [0.00Hz]**
	When the reference frequency ≤ F00.23, F00.22 sets the action of the inverter. • When the unit or ten is set to 4, F01.09 sets the braking current. • In F00.03 (forward/reverse dead zone) time, if the unit or ten is set to 1 or 2, the setting is invalid. The inverter acts as if it is set to 0 (no processing). **Unit: V/f control** 0: No processing. 1: Run according to zero frequency. 2: Run according to zero frequency threshold (F00.23). 3: Block output. 4: Run according to DC braking. **Ten: SVC (open loop vector) control** 0: No processing. 1: Run according to zero frequency. 2: Run according to zero frequency threshold (F00.23). 3: Block output. 4: Run according to DC braking. 5: Run according to pre-excitation.	
F00.24	**Sleep action**	**0, 1 [0]**
	Valid when F00.04 = 1 (terminal setting run command). 0: Disable. 1: Enable.	
F00.25	**Sleep wake-up time**	**0.0 - 6000.0 [1.0s]**
F00.26	**Sleep detection time**	**0.0 - 6000.0 [1.0s]**
F00.27	**Sleep detection threshold**	**0.00 - F00.06 [0.00Hz]**
F00.28	**Sleep wake-up detection threshold**	**0.00 - F00.06 [0.00Hz]**
	Valid when F00.04 = 1 (terminal setting run command) and F00.24 = 1. • When the inverter is running, and the set frequency < F00.27, the inverter enters the sleep status (the running indicator is always on and the LED flashes) after F00.26 time. • The inverter is in sleep mode. After the terminal gives a run command, when the set frequency ≥ F00.28, the inverter exits sleep mode after F00.25 time.	

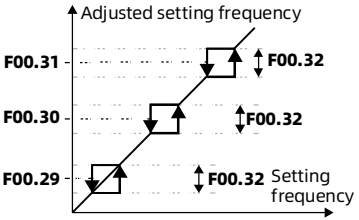
Ref. Code	Parameter	Setting Range [Default]
F00.29	Jump frequency 1	F00.07 - F00.06 [0.00Hz]
F00.30	Jump frequency 2	
F00.31	Jump frequency 3	
F00.32	Jump frequency range	0.00 - 30.00 [0.00Hz]

Set the jump frequency can prevent the inverter from resonating with the mechanical load.

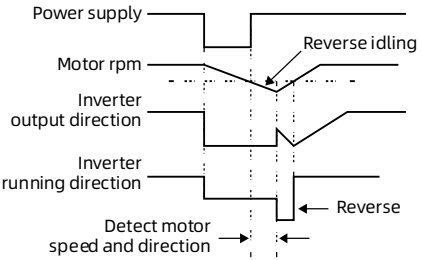
- Invalid when PID control or F00.11 = 7 (PID sets auxiliary frequency).

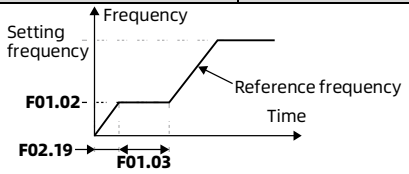
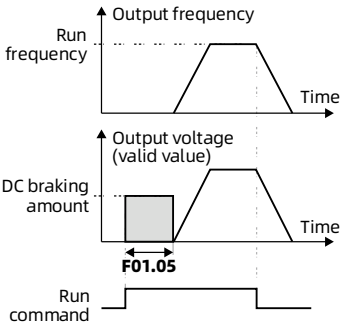
In the jump frequency range:

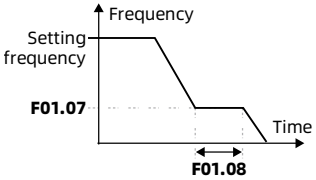
- The inverter does not run at a constant speed and automatically updates the set frequency.
- The output frequency of the inverter not change suddenly, but change smoothly according to the Acc. and Dec. curve.

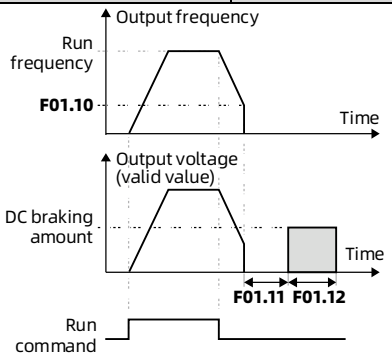


6.2.2 F01: Start and Stop Control Parameters

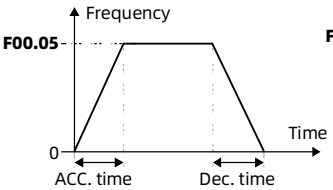
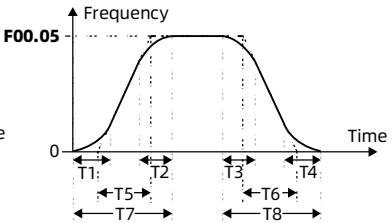
Ref. Code	Parameter	Setting Range [Default]
F01.00	**Start mode (speed control)**	**0, 1 [0]**
F01.01	**Start delay time**	**0.0 - 10.0 [0.0s]**
	F01.00 sets the starting mode when F00.00 = 0 (speed control). **0: Start from the set frequency.** • Starting DC braking is valid: After the running command is valid, the inverter waits for F01.01 time, then performs DC braking, and then starts from the start DWELL frequency. • Starting DC braking is invalid: After the running command is valid, the inverter waits for F01.01 time and then starts from the start DWELL frequency. • See F01.04 - F01.05 for start DC braking and F01.02 - F01.03 for start DWELL frequency. **1: Speed tracking start.** • The inverter automatically detects the speed and direction of the motor, allowing the motor to start smoothly without impact. If the search result < F01.02 frequency, the inverter starts from the start DWELL frequency. • When starting after stopping, speed tracking is valid. When starting after switching forward and reverse rotation, speed tracking is invalid. • Do not set: F00.22 = 33 (zero frequency output blocking) or F00.03 > 0.0 (forward and reverse dead time). The ten of F13.00 and F17.00 is 1 (SVC control mode 2).  	
F01.02	**Start DWELL frequency**	**0.00 - F00.06 [0.00Hz]**
F01.03	**Start DWELL frequency holding time**	**0.0 - 10.0 [0.0s]**
	When F01.00 = 0, the start DWELL frequency is valid. When starting, the set output frequency is temporarily maintained to prevent the motor from stalling. When the load is equipped with a brake, if the brake moves slowly, use the start DWELL function to avoid brake friction and let the inverter accelerate after the brake is fully opened. When the reference frequency accelerates to F01.02, the inverter runs at F01.02 frequency for F01.03 time and then continues to accelerate. • F02.19 sets the time for frequency acceleration to F01.02. • Starting after switching forward and reverse rotation, the start DWELL frequency is also valid. Under any of the following conditions, the start DWELL frequency is invalid: • F01.02 = 0 or F01.03 = 0. • F00.00 = 1 (torque control). • PID control or F00.11 = 7 (PID setting auxiliary frequency).	

Ref. Code	Parameter	Setting Range [Default]
		
F01.04	**Start braking/pre-excitation current**	**0 - 150 (motor rated current) [50%]**
F01.05	**Start DC braking time**	**0.0 - 60.0 [0.0s]**
	When F01.00 = 0, start DC braking is valid. Start with DC braking: After the run command is valid, the inverter waits for F01.01 time. If the start DC braking is valid, the inverter first perform DC braking and then start from the start DWELL frequency. • F01.04 sets the braking current, F01.05 sets the braking time, and F01.14 limits the braking current. • When starting after stopping, DC braking is valid. When starting after switching forward and reverse rotation, DC braking is invalid. • When F01.05 = 0, DC braking is invalid. Starting with pre-excitation: Build up motor flux before the motor rotates to obtain faster acceleration performance. • F01.04 sets the pre-excitation current, and F01.13 sets the pre-excitation time (recommended ≥0.1s). • Pre-excitation is valid only in SVC control (F13.00 unit = 1 or F17.00 unit = 1). • If DC braking is enabled, pre-excitation is disabled. • When F01.13 = 0, pre-excitation is invalid. 	
F01.06	**Stop mode (speed control)**	**0 - 2 [0]**
	Set the stopping mode when F00.00 = 0 (speed control). **0: Dec. to stop.** • For detailed instructions, see F01.07 - F01.08. **1: Coast to stop.** • After the stop command is valid, the inverter stops to output immediately and the load stops freely according to mechanical inertia. **2: Dec. to stop + DC braking.** • For detailed instructions, see F01.09 - F01.12.	
F01.07	**Stop DWELL frequency**	**0.00 - F00.06 [0.00Hz]**
F01.08	**Stop DWELL frequency holding time**	**0.0 - 10.0 [0.0s]**

<table>
<tr><th>Ref. Code</th><th>Parameter</th><th>Setting Range [Default]</th></tr>
<tr><td></td><td colspan="2">When F01.06 = 0, the stop DWELL frequency is valid.
When stopping, the set output frequency is temporarily maintained to prevent the motor from stalling.
When the load is equipped with a brake, if the brake moves slowly, use the DWELL function to avoid possible danger when the brake is not completely closed, and let the inverter stop only after the brake is fully closed.
After the stop command is valid, the inverter reduces the output frequency according to the deceleration time. When the frequency is reduced to F01.07, the inverter runs at F01.07 frequency for F01.08 time, and then continues to decelerate.
• For deceleration time, see F02.02 - F02.09.
Under any of the following conditions, the stop DWELL frequency is invalid:
• F01.06 = 1.
• F01.07 = 0 or F01.08 = 0.
• F00.00 = 1 (torque control).
• PID control or F00.11 = 7 (PID setting auxiliary frequency).
 
</td></tr>
<tr><td>F01.09</td><td>Stop braking current</td><td>0 - 150 (motor rated current) [50%]</td></tr>
<tr><td>F01.10</td><td>DC braking start frequency at stop</td><td>0.00 - 50.00 [0.50Hz]</td></tr>
<tr><td>F01.11</td><td>DC braking waiting time at stop</td><td>0.0 - 10.0 [0.0s]</td></tr>
<tr><td>F01.12</td><td>DC braking time at stop</td><td>0.0 - 60.0 [0.0s]</td></tr>
<tr><td></td><td colspan="2">When F01.06 = 2, stop DC braking is valid.
After the stop command is valid, the inverter reduces the output frequency according to the deceleration time. When the frequency is reduced to F01.10, the inverter waits for the F01.11 time and then starts DC braking.
• For deceleration time, see F02.02 - F02.09.
• F01.09 sets the braking current, F01.12 sets the braking time, and F01.14 limits the braking current.
• When F01.12 = 0, DC braking is invalid.
• The inverter has no output during the F01.11 time. For high-power motors, setting F01.11 can prevent current overshoot when the inverter starts braking.</td></tr>
</table>

Ref. Code	Parameter	Setting Range [Default]
		
F01.13	**Pre-excitation time**	**0.0 - 0.5 [0.5s]**
	See F01.04 for detailed instructions.	
F01.14	**DC braking maximum current limit**	**0 - 130 (inverter rated current) [80%]**
	Limit the current of start DC braking and stop DC braking (F01.04 and F01.09).	
F01.15	**Holding enable after stop is completed**	**0, 1 [0]**
F01.16	**Holding current**	**0 - 150 (motor rated current) [30%])**
	In the stopped status and with holding enabled, if the run command is valid, the inverter forces DC braking (holding). 0: Disable. 1: Enable.	
F01.17	**Jog control mode**	**0x00 - 0x11 [0x00]**
	Unit: Start and stop mode (F01.00 and F01.06) 0: Invalid. • When the jog command is valid, the inverter starts running directly. When the jog command is invalid, the inverter decelerates and stops. 1: Enable. • During jog operation, the inverter starts according to the setting of F01.00 and stops according to the setting of F01.06. **Ten: Terminal jog** 0: No priority. 1: Priority.	

6.2.3 F02: Acc. and Dec. Parameters

Ref. Code	Parameter	Setting Range [Default]
F02.00	Acc. and Dec. mode	0x00 - 0x11 [0x00]
F02.01	Base frequency (digital setting)	50.00 - 600.00 [50.00Hz]
	The settings of F02.00 are as follows: **Unit: Curve** Selection priority: DI terminal selection (function No. 28) > F02.00 unit setting. 0: Linear Acc. and Dec.. • The output frequency increases or decreases at a constant slope. • F02.02 - F02.09 sets the Acc. time and Dec. time. 1: S-curve Acc. and Dec.. • The output frequency increases or decreases according to the S curve. • T1 = F02.12, T2 = F02.13, T3 = F02.14, T4 = F02.15. • T5: Set Acc. time, T7: Actual Acc. time. T6: Set Dec. time, T8: Actual Dec. time. • For T5 and T6, see F02.02 - F02.09.   **Ten: Base frequency** 0: Maximum frequency (F00.05). 1: Base frequency (F02.01).	
F02.02	Acc. time 1	0.0 - 6000.0 [0.2 - 15kW: 10.0s] [18.5 - 55kW: 30.0s] [75 - 400kW: 60.0s]
F02.03	Dec. time 1	
F02.04	Acc. time 2	
F02.05	Dec. time 2	
F02.06	Acc. time 3	
F02.07	Dec. time 3	
F02.08	Acc. time 4	
F02.09	Dec. time 4	
	Acc. time: Time for the inverter to accelerate from zero frequency to base frequency in a linear manner. Dec. time: Time for the inverter to decelerate from base frequency to zero frequency in a linear manner. • The ten of F02.00 sets the base frequency. Only one group of Acc. and Dec. time can be selected, and the selection priority is: DI terminal selection (function No. 26 and 27) > F02.10, F02.11 settings. During Acc. and Dec., if the inverter reports the overvoltage fault, the possible reasons are: • Rapid deceleration. • Or the brake components are not selected correctly. • Or the load inertia may cause faster deceleration.	

Ref. Code	Parameter	Setting Range [Default]
	Troubleshooting: • Select the appropriate brake components. • Or increase the Dec. time and adjust F19.18 and F06.06.	
F02.10	**Acc. time 2 and 1 switching frequency**	**0.00 - F00.06 [0.00Hz]**
F02.11	**Dec. time 2 and 1 switching frequency**	**0.00 - F00.06 [0.00Hz]**
	Invalid when the DI terminal selects the Acc./Dec. time (function No. 26, 27). When the running frequency < F02.10, accelerate according to Acc. time 2; Otherwise, accelerate according to Acc. time 1. When the running frequency < F02.11, decelerate according to Dec. time 2; Otherwise, decelerate according to Dec. time 1.	
F02.12	**S-shaped characteristic time at the start of Acc.**	**0.00 - 2.50 [0.20s]**
F02.13	**S-shaped characteristic time at the end of Acc.**	
F02.14	**S-shaped characteristic time at the start of Dec.**	
F02.15	**S-shaped characteristic time at the end of Dec.**	
	Only valid when F02.00 unit = 1 (S curve Acc./Dec.). See figure of F02.00.	
F02.16	**Jog Acc. time**	**0.1 - 6000.0 [6.0s]**
F02.17	**Jog Dec. time**	
	Set the Acc. time and Dec. time during jog operation.	
F02.18	**Emergency stop Dec. time**	**0.1 - 6000.0 [10.0s]**
	Set the Dec. time for emergency stop.	
F02.19	**Start DWELL Acc. time**	**0.1 - 6000.0 [1.0s]**
	Set the time for the inverter to accelerate to F01.02 (start DWELL frequency).	

6.2.4 F03: Multi-speed Parameters

Ref. Code	Parameter	Setting Range [Default]
F03.00	Multi-frequency command 0	F00.07 - F00.06 [5.00Hz]
F03.01	Multi-frequency command 1	F00.07 - F00.06 [5.00Hz]
F03.02	Multi-frequency command 2	F00.07 - F00.06 [5.00Hz]
F03.03	Multi-frequency command 3	F00.07 - F00.06 [5.00Hz]
F03.04	Multi-frequency command 4	F00.07 - F00.06 [5.00Hz]
F03.05	Multi-frequency command 5	F00.07 - F00.06 [5.00Hz]
F03.06	Multi-frequency command 6	F00.07 - F00.06 [5.00Hz]
F03.07	Multi-frequency command 7	F00.07 - F00.06 [5.00Hz]
F03.08	Multi-frequency command 8	F00.07 - F00.06 [5.00Hz]
F03.09	Multi-frequency command 9	F00.07 - F00.06 [5.00Hz]
F03.10	Multi-frequency command 10	F00.07 - F00.06 [5.00Hz]
F03.11	Multi-frequency command 11	F00.07 - F00.06 [5.00Hz]
F03.12	Multi-frequency command 12	F00.07 - F00.06 [5.00Hz]
F03.13	Multi-frequency command 13	F00.07 - F00.06 [5.00Hz]
F03.14	Multi-frequency command 14	F00.07 - F00.06 [5.00Hz]
F03.15	Multi-frequency command 15	F00.07 - F00.06 [5.00Hz]
F03.16	Multi-speed default frequency	0 - 14 [0]

DI terminal setting function: 13 - 16 (multi-frequency terminal), use DI terminal to switch the multi-speed frequency. See F10.00 - F10.17.

When the DI terminal is not used for switching (DI terminal is invalid), F03.16 sets the multi-speed frequency.

0: F03.00.

1: Keypad (digital setting).

- Press ▲ or ▼ key on the keypad to increase or decrease the frequency.

2: Terminal (digital setting).

- DI terminal setting function: 17 (frequency increase UP), 18 (frequency decrease DN), see F10.00 - F10.17.
- Use the DI terminal to increase or decrease the frequency.

3: Terminal pulse (DI5).

- DI5 terminal setting function: F10.04 = 53 (pulse frequency input).
- Use DI5 terminal to set the multi-speed frequency.
- For the relationship between input pulse and set frequency, see F09.38 - F09.41.

4: Communication.

- Connect the communication terminals and use the communication commands to set the multi-speed frequency.

5 - 7: Unused.

8: PID.

- Use PID control to set the multi-speed frequency, see group F04.

9 - 12: AI1/AI2/EAI1/EAI2.

- Use AI terminal to set multi-speed frequency. F09.32 sets voltage input or current input.
- For the relationship between the input analog quantity and the set frequency, see F09.00 - F09.27.

13: Keypad potentiometer.

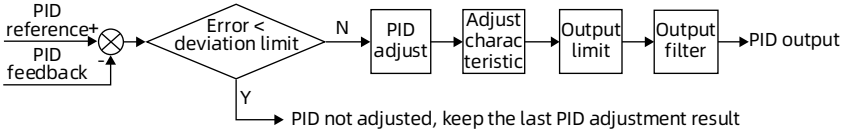
- Use the potentiometer on the keypad to set multi-speed frequency.
- For the relationship between input voltage and set frequency, see F09.28 - F09.31.

Ref. Code	Parameter	Setting Range [Default]
	14: Communication percentage. • Connect the communication terminals and use the communication commands to set multi-speed frequency. • The relationship between communication data and set frequency: 0 corresponds to 0.00Hz, 1000 corresponds to F00.05 (maximum output frequency).	

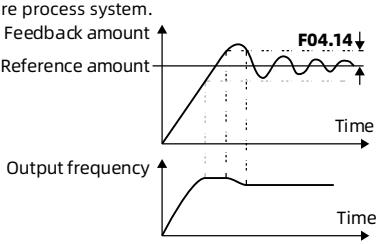
6.2.5 F04: PID Control Parameters

PID control is used to control physical quantities, such as pressure, liquid level, temperature, etc.

Use PID reference and PID feedback to form a closed loop.



Ref. Code	Parameter	Setting Range [Default]
F04.00	**Reference channel**	**0 - 7 [0]**
	0: F04.02. **1: Terminal pulse (DI5).** • DI5 terminal setting function: F10.04 = 53 (pulse frequency input). • Use DI5 terminal to set PID reference. • For the relationship between pulse input and PID reference, see F09.38 - F09.41. **2 - 5: AI1/AI2/EAI1/EAI2.** • Use AI terminal to set PID reference. F09.32 sets voltage input or current input. • For the relationship between analog input and PID reference, see F09.00 - F09.27. **6: Keypad potentiometer.** • Use the potentiometer on the keypad to set the PID reference. • For the relationship between potentiometer input and PID reference, see F09.28 - F09.31. **7: Communication.** • Connect the communication terminals and use the communication commands to set the PID reference.	
F04.01	**Feedback channel**	**0 - 5 [3]**
	0: Unused. **1: Terminal pulse.** • DI5 terminal setting function: F10.04 = 53 (pulse frequency input). • Use DI5 terminal to set PID feedback. • For the relationship between pulse input and PID feedback, see F09.38 - F09.41. **2 - 5: AI1/AI2/EAI1/EAI2.** • Use AI terminal to set PID feedback. F09.32 sets voltage input or current input. • For the relationship between analog input and PID feedback, see F09.00 - F09.27.	
F04.02	**Reference amount (digital setting)**	**-100.0 - + 100.0 [0.0%]**
	Valid when F04.00 = 0.	
F04.03	**Proportional gain (P1)**	**0.00 - 50.00 [5.00]**
F04.04	**Integration time (I1)**	**0.00 - 50.00 [1.00s]**
F04.05	**Differential time (D1)**	**0.00 - 10.00 [0.00s]**
F04.06	**Proportional gain (P2)**	**0.00 - 50.00 [5.00]**
F04.07	**Integration time (I2)**	**0.01 - 10.00 [1.00s]**
F04.08	**Differential time (D2)**	**0.00 - 10.00 [0.00s]**
	Set PID parameters (2 groups): PID parameter 1 (F04.03 - F04.05), PID parameter 2 (F04.06 - F04.08). When F04.05 = 0 or F04.08 = 0, the differential term is invalid.	

Ref. Code	Parameter	Setting Range [Default]
F04.09	**PID parameter adjustment basis**	**0 – 3 [0]**
F04.10	**PID parameter switching point 1**	**0.0 - F04.11 [0.0%]**
F04.11	**PID parameter switching point 2**	**F04.10 - 100.0 [100.0%]**
	0: No adjustment. • Select PID parameter 1 (F04.03 - F04.05). 1: DI. • DI terminal setting function: 36 (PID parameter switching), see F10.00 - F10.17. • Use the DI terminal to select PID parameters. • When the DI terminal is invalid, select PID parameter 1. When the DI terminal is valid, select PID parameter 2. 2: Deviation. • Select PID parameters according to the deviation between the PID feedback and the PID reference. • When the deviation < F04.10, select PID parameter 1. When the deviation > F04.11, select PID parameter 2. • When F04.10 < deviation < F04.11, the PID parameters are linear interpolation of the two sets of parameters. 3: Frequency. • Select PID parameters according to PID output frequency. • When PID output frequency < F04.10, select PID parameter 1. When PID output frequency > F04.11, select PID parameter 2. • When F04.10 < PID output frequency < F04.11, the PID parameters are linear interpolation of the two sets of parameters.	
F04.12	**Integral upper limit**	**0.0 - 100.0 [100.0%]**
F04.13	**Differential limit value**	**0.0 - 100.0 [20.0%]**
	Set the upper limit of the PID integral or derivative term.	
F04.14	**Deviation limit**	**0.0 - 20.0 (reference) [0.0%]**
	Set the maximum deviation of the system output value relative to the PID reference. • When the feedback amount is within the range of F04.14, the PID regulator stops adjusting. Set F04.14 can balance the accuracy and stability of system output. • If F04.14 is too large, it may cause PID intermittent large adjustments, resulting in large oscillations in the entire process system. 	
F04.15	**PID reference change time**	**0.00 - 50.00 [0.00s]**
	Set the time for the PID reference to increase or decrease. The PID reference increases or decreases with a fixed slope (slope = 100% / F04.15).	
F04.16	**PID output upper limit**	**0.0 - 100.0 [100.0%]**
F04.17	**PID output lower limit**	**0.0 - 100.0 [0.0%]**
	Set the upper and lower limits of PID output.	
F04.18	**PID output reverse upper limit**	**0.0 - 100.0 [100.0%]**

Ref. Code	Parameter	Setting Range [Default]
F04.19	**PID output reverse**	**0, 1 [0]**
	Invalid when F00.11 = 7 (PID setting auxiliary frequency). • For PID output limit, see F04.37 - F04.39. 0: Disable. • When the PID output is negative, 0 is the limit. 1: Allowed. • F04.18 sets the upper limit frequency of PID reverse. • When F00.02 = 1 (disable reverse), 0 is the limit.	
F04.20	**PID regulator adjustment characteristics**	**0, 1 [0]**
	0: Positive characteristic. • Increase the PID reference will increase the motor speed. 1: Negative characteristics. • Increase the PID setting will decrease the motor speed.	
F04.21	**PID output filter time**	**0.01 - 10.00 [0.01s]**
	Set the time to filter the PID output.	
F04.22	**PID output gain**	**0.00 - 2.00 [1.00]**
	Set the gain of PID output frequency.	
F04.23	**PID operation mode**	**0, 1 [0]**
	0: No operation during stop. 1: Operation during stop.	
F04.24	**PID sleep enable**	**0, 1 [0]**
	0: Disable. 1: Enable.	
F04.25	**PID wake-up tolerance**	**0.0 - 100.0 [10.0%]**
F04.26	**PID wake-up delay**	**0.0 - 6000.0 [10.0s]**
	Positive characteristic (F04.20 = 0): In sleep status, when PID feedback ≤ PID reference × (100% - F04.25) and lasts for F04.26 time, the inverter wakes up. Negative characteristic (F04.20 = 1): In sleep status, when PID feedback ≥ PID reference × (100% + F04.25) and lasts for F04.26 time, the inverter wakes up.	
F04.27	**PID sleep tolerance**	**0.0 - 100.0 [10.0%]**
F04.28	**PID sleep delay**	**0.0 - 6000.0 [10.0s]**
F04.29	**PID sleep frequency**	**0.00 - F00.05 [20.00Hz]**
	Positive characteristic (F04.20 = 0): In wake-up status, when PID feedback ≤ PID reference × (100% - F04.27), target frequency ≤ F04.29, and lasts for F04.28 time, the inverter sleeps. Negative characteristic (F04.20 = 1): In wake-up status, when PID feedback ≥ PID reference × (100% + F04.27), target frequency ≤ F04.29, and lasts for F04.28 time, the inverter sleeps.	
F04.30	**PID reference loss detection value**	**0 - 100 (maximum reference) [0%]**
F04.31	**PID reference loss detection time**	**0.0 - 10.0 [0.2s]**
	When PID reference < F04.30 and lasts for F04.31 time, the inverter reports E0025 fault (PID reference lost). • When F04.30 = 0 or F04.31 = 0, the inverter does not detect.	

Ref. Code	Parameter	Setting Range [Default]
F04.32	**PID feedback loss detection value**	**0 - 100 (maximum feedback) [0%]**
F04.33	**PID feedback loss detection time**	**0.0 - 10.0 [0.2s]**
	When PID feedback < F04.32 and lasts for F04.33 time, the inverter reports E0026 fault (PID feedback lost). • When F04.32 = 0 or F04.33 = 0, the inverter does not detect.	
F04.34	**PID feedback over-limit detection value**	**0 - 100 (maximum feedback) [100%]**
F04.35	**PID feedback over-limit detection time**	**0.0 - 10.0 [0.2s]**
	When PID feedback > F04.34 and lasts for F04.35 time, the inverter reports E0027 fault (PID feedback exceeds limit). • When F04.34 = 0 or F04.35 = 0, the inverter does not detect.	
F04.36	**Enable PID fault detection time after running**	**0.0 - 30.0 [5.0s]**
	The inverter runs for F04.36 time and then starts to detect PID faults. 0.0s: Detection is always performed during running and stop.	
F04.37	**Auxiliary PID output limit relative amount**	**0, 1 [0]**
F04.38	**Auxiliary PID output limit**	**0.0 - 100.0 [100%]**
F04.39	**Auxiliary PID output limit boost**	**0.0 - 100.0 [0%]**
	Valid when F00.11 = 7 (PID setting auxiliary frequency). 0: Relative maximum frequency (F00.05). • PID output limit = F04.38 × F00.05 + F04.39. 1: Relative to main frequency. • PID output limit = F04.38 × main frequency + F04.39.	

6.2.6 F05: Torque Control Parameters

In SVC control (F13.00 unit = 1 or F17.00 unit = 1), when using torque control (F00.00 = 1), set the group F05 parameters to control the output of the motor torque.

If the motor output torque and load torque are unbalanced, the motor accelerate or decelerate.

In the electric status (actual speed < set speed), F05.04 and F05.05 limit the motor speed. In the power generation status (actual speed > set speed), the motor running speed changes according to the load speed.

The direction of the internal torque command changes according to the positive and negative changes of the running command direction and the torque reference value.

Ref. Code	Parameter	Setting Range [Default]
F05.00	**Torque command reference channel**	**0, 7 [0]**
	0: F05.01. **1: Terminal pulse.** • DI5 terminal setting function: F10.04 = 53 (pulse frequency input). • Use DI5 terminal to set the torque. • For the relationship between pulse input and torque, see F09.38 - F09.41. **2 - 5: AI1/AI2/EAI1/EAI2.** • Use AI terminal to set the torque. F09.32 sets voltage input or current input. • For the relationship between analog input and torque, see F09.00 - F09.27. **6: Keypad potentiometer.** • Use the potentiometer on the keypad to set the torque. • For the relationship between potentiometer input and torque, see F09.28 - F09.31. **7: Communication.** • Connect the communication terminals and use the communication commands to set the torque.	
F05.01	**Torque command (digital setting)**	**-100.0 - +100.0 (F05.02) [0.0%]**
	Valid when F05.00 = 0.	
F05.02	**Maximum torque**	**0.0 - 500.0 (motor rated torque) [100%]**
	Set the maximum torque that the inverter is allowed to output.	
F05.03	**Torque command filter time**	**0.0 - 3.0 [0.2s]**
	Set the time to filter the torque command. • Sudden change of torque command causes motor jitter. Set F05.03 can prevent jitter.	
F05.04	**Torque control positive limit channel**	**0 - 7 [0]**
	Maximum limit: F00.05 (maximum frequency). 0: F05.06. 1: Terminal pulse. 2 - 5: AI1/AI2/EAI1/EAI2. 6: Keypad potentiometer. 7: Communication.	
F05.05	**Torque control reverse limit channel**	**0 - 7 [0]**
	Maximum limit: F00.05 (maximum frequency). 0: F05.07. 1: Terminal pulse. 2 - 5: AI1/AI2/EAI1/EAI2.	

Ref. Code	Parameter	Setting Range [Default]
	6: Keypad potentiometer. 7: Communication.	
F05.06	**Forward speed limit in torque control**	**0 - 120 (F00.05) [100%]**
F05.07	**Reverse speed limit in torque control**	**0 - 120 (F00.05) [100%]**
F05.08	**Zero torque action**	**0 - 3 [1]**
	0: No processing. 1: Block output. 2: Run according to DC braking. 3: Run according to pre-excitation.	
F05.09	**Stop mode (torque control)**	**0 - 2 [0]**
	0: Dec. to stop. • After the stop command is valid, the frequency is decelerated to zero, and the inverter outputs torque according to the current limited torque. 1: Stop torque output. • After the stop command is valid, the inverter stops to output torque and the motor is completely driven by the load. 2: Coast to stop. • After the stop command is valid, the inverter stops to output immediately and the load caost to stop according to mechanical inertia.	

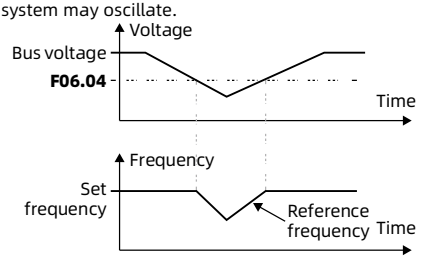
6.2.7 F06: Enhanced Protection Parameters

Note: When the inverter is used for potential loads (elevators, winches, etc.), to ensure the safety of the entire system, please prohibit the following functions: Instantaneous power failure without stop (F06.02 - F06.04), overvoltage stall (F06.06 - F06.09), and automatic current limit (F06.10 - F06.11).

Fan Control (F06.00 - F06.01)

Ref. Code	Parameter	Setting Range [Default]
F06.00	**Cooling fan control**	**0 - 2 [0]**
F06.01	**Cooling fan control delay time**	**0.0 - 600.0 [60.0s]**
	If the inverter has over-temperature protection, the fan keeps running. 0: Automatic stop. • When the inverter is running, the fan runs. When the inverter stops for F06.01 time and there is no over-temperature protection, the fan stops. 1: Stop immediately. When the inverter is running, the fan runs until the inverter stops. 2: The fan keeps running when the power is on.	

Instantaneous Power Failure without Stopping (F06.02 - F06.04)

Ref. Code	Parameter	Setting Range [Default]
F06.02	**Instantaneous power failure without stopping**	**0, 1 [0]**
	0: Disable. 1: Enable. Compensate for low voltage. When the inverter is running, if the DC bus voltage < F06.04, the inverter adjusts the output frequency according to F06.03 and the voltage difference (DC bus voltage compared to F06.04), and maintains the DC bus voltage through load feedback energy to avoid inverter stop due to undervoltage. • F06.03 is too small, the load feedback energy is small, and the inverter cannot effectively compensate for the low voltage. • If F06.03 is too large, the load feedback energy is large, the output frequency may fluctuate, and the system may oscillate. 	
F06.03	**Instantaneous power failure without stopping voltage compensation gain**	**0.000 - 9.000 [1.200]**
F06.04	**Instantaneous power failure without stopping action voltage**	**220V inverter: 210 - 370 [248V]** **380V inverter: 400 - 670 [430V]**

DC Bus Undervoltage (F06.05)

Ref. Code	Parameter	Setting Range [Default]
F06.05	**DC bus undervoltage protection voltage**	**220V inverter: 150 - 999 [190V]** **380V inverter: 150 - 999 [380V]**
	If the DC bus voltage < F06.05, the inverter reports -Lu- fault (DC bus undervoltage).	

Overvoltage Stall (F06.06 - F06.09)

Ref. Code	Parameter	Setting Range [Default]
F06.06	**Overvoltage stall voltage**	**220V inverter: 350 - 400 [390V]** **380V inverter: 650 - 800 [720V]**
F06.07	**Overvoltage stall suppression frequency gain**	**0.000 - 9.000 [2.500]**
F06.09	**V/f overvoltage excitation gain**	**0 - 150 [64%]**

When F06.07 = 0, overvoltage stall is invalid. When F06.07 ≠ 0, overvoltage stall is enabled.

When F06.09 = 0, overexcitation is invalid. When F06.09 ≠ 0, the inverter adjusts the excitation voltage according to F06.09.

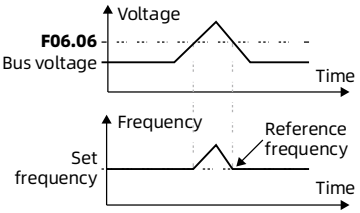
Use with brake components:

- When installing the brake assembly on the inverter, please set F06.07 = 0.
- However, when the load instantaneously feeds back a lot of energy and the brake assembly cannot release the energy in time, enable overvoltage stall to avoid overvoltage protection.

When the inverter is running, if the bus voltage > F06.06, the inverter automatically increases the output frequency to prevent the load from feeding back more energy to the inverter.

- If F06.07 is too small, the inverter cannot effectively suppress the bus voltage rise.
- If F06.07 is too large, the output frequency may fluctuate, causing the system to oscillate.
- Set F06.06 greater than the actuation voltage of the brake assembly.

When the bus voltage > F06.06 and lasts for 1 minute, the inverter reports E0007 fault (overvoltage stall) and stops to output.



$\triangle F = F06.07 \times (V_{DC} - F06.06)$

Automatic Current Limit (F06.10 - F06.11)

Not suitable for situations where the output frequency is stable during constant speed operation. Automatic current limit changes the output frequency of the inverter.

Suitable for load applications with large inertia or drastic changes. The inverter controls the load current in real time.

Ref. Code	Parameter	Setting Range [Default]
F06.10	**Automatic current limit level**	**20.0 - 200.0 (inverter rated current) [150%]**
F06.11	**Current limit suppression frequency gain**	**0.000 - 2.000 [0.350]**
	When F06.11 = 0, automatic current limit is invalid. When the inverter output current > F06.10, the inverter automatically limits the increase of output current to avoid overcurrent protection. • If F06.10 is too small, it may affect the inverter overload capacity. Set F06.11 according to the actual load: • If F06.11 is too small, the inverter cannot effectively suppress the increase of output current. • If F06.11 is too large, the output frequency may fluctuate, causing the system to oscillate.	

Braking Function (F06.13)

Ref. Code	Parameter	Setting Range [Default]
F06.13	**Brake unit action voltage**	**220V inverter: 330 - 400 [380V]** **380V inverter: 630 - 750 [680V]**
	This function is valid when the inverter has a built-in brake unit. The inverter releases energy through the brake resistor when running.	

6.2.8 F07: Keypad Display and Control Parameters

Ref. Code	Parameter	Setting Range [Default]
F07.00	Run display parameter 1	0 - 92 [4]
F07.01	Run display parameter 2	0 - 92 [3]
F07.02	Run display parameter 3	0 - 92 [5]
F07.03	Run display parameter 4	0 - 49 [11]
F07.04	Run display parameter 5	0 - 49 [12]
F07.05	Run display parameter 6	0 - 92 [8]
F07.06	Stop display parameter 1	0 - 92 [3]
F07.07	Stop display parameter 2	0 - 92 [8]
F07.08	Stop display parameter 3	0 - 92 [20]
F07.09	Stop display parameter 4	0 - 92 [22]
F07.10	Stop display parameter 5	0 - 92 [35]
F07.11	Stop display parameter 6	0 - 92 [36]

Set the run and stop parameters displayed on the keypad, and press ▶▶ key to cycle through the parameters.

0: Unused.
1: Main set frequency.
2: Auxiliary set frequency.
3: Set frequency.
4: Reference frequency (after Acc. and Dec.).
5: Output frequency.
6: Set rpm.
7: Running speed.
8: DC bus voltage.
9: Three phase power input phase sequence.
10: Input voltage.
11: Output voltage.
12: Output current.
13: Torque reference.
14: Output torque.
15: Output power.
16: V/f separation set voltage.
17: V/f separation reference voltage.
18, 19: Unused.
20: Inverter status.
21: Motor and control mode.
22: Current fault.
23: PID reference.
24: PID feedback.
25: PID error.
26: PID integral term.
27: PID output.
28: External count value.
29: Current running time.
30: Count value.
31: Calibration display 1.
32: Calibration display 2.
33: Motor temperature resistance value.
34: Unused.
35: Input terminal status 1.
36: Input terminal status 2.
37: Output terminal status.
38: AI1 input.
39: AI1 input (after processing).
40: AI2 input.
41: AI2 input (after processing).
42: EAI1 input.
43: EAI1 input (after processing).
44:EAI2 input.
45: EAI2 input (after processing).
46: Keypad potentiometer input voltage.
47: Keypad potentiometer input voltage (after processing).
48: AO1 output.
49: EAO1 output.
50: Unused.
51: High-speed input pulse frequency.
52: High-speed output pulse frequency.
53: Unused.
54: Series.
55: Software version.
56: Non-standard version of software.
57, 58: Unused.
59: Keypad software version.
60: Customer customized number.
61: Inverter rated current.

Ref. Code	Parameter	Setting Range [Default]
	62: Expansion card A. 63: Expansion card A software version. 64: Expansion card B. 65: Expansion card B software version. 66: Cumulative power-on time (hours). 67: Cumulative running time (hours). 68: Motor cumulative energy consumption (high bit). 69: Motor cumulative energy consumption (low bit). 70: Energy consumption of this run (high bit).	71: Energy consumption of this run (low bit). 72: Heatsink temperature. • 220V 0.2 - 1.5kW: Display actual temperature in unit of 0.1°C. • Others: Display -----. 73: RLY1 cumulative number of actions (high bit). 74: RLY1 cumulative number of actions (low bit). 75 - 92: Unused.
F07.13	**Calibration display 1 signal source**	**0 - 6 [0]**
	0: Set frequency. 1: Reference frequency. 2 - 5: AI1/AI2/EAI1/EAI2. 6: High-speed input pulse.	
F07.14	**Calibration display 1 range**	**0 - 65535 [65535]**
F07.15	**Calibration display 1 display accuracy**	**0 - 3 [0]**
	0: Integer. 1: One decimal place. 2: Two decimal places. 3: Three decimal places.	
F07.16	**Calibration display 2 signal source**	**0 - 6 [0]**
	0: Set frequency. 1: Reference frequency. 2 - 5: AI1/AI2/EAI1/EAI2. 6: High-speed input pulse.	
F07.17	**Calibration display 2 range**	**0 - 65535 [65535]**
F07.18	**Calibration display 2 display accuracy**	**0 - 3 [0]**
	0: Integer. 1: One decimal place. 2: Two decimal places. 3: Three decimal places.	
F07.19	**Keypad priority**	**0, 1 [0]**
	0: The external keypad takes priority. 1: The standard keypad takes priority.	
F07.21	**Keypad STOP key function**	**0, 1 [1]**
	0: Press STOP to stop the inverter in keypad control. 1: Press STOP to stop the inverter on any channel.	

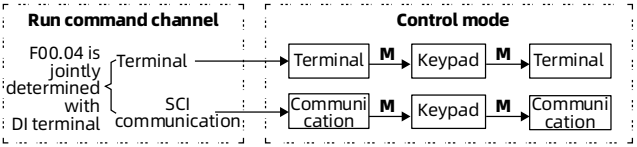
Ref. Code	Parameter	Setting Range [Default]
F07.22	**Keypad keys multi-function**	**0x00 - 0x11 [0x00]**

Unit: M key (only valid with optional LED keypad)

0: Invalid.

1: Local/remote.

- Valid when F00.04 = 1 (terminal sets run command) or 2 (communication sets run command).
- Setting priority: Keypad **M** key switch (F07.22 unit = 1) > DI terminal switch (function No. 30) > DI terminal switch (function No. 9 - 10) > F00.04 setting.
- Press **M** key to switch between remote control and local control. The switching logic is shown in the figure below.
  Local control (LOCAL): F00.04 = 0 (keypad sets run command).
  Remote control (REMOTE): F00.04 = 1 (terminal sets run command) or 2 (communication sets run command).



- **LO/RE** indicator description:
  On: The terminal controls the current inverter.
  Flash: The communication controls the current inverter.
  Off: The keypad controls the current inverter.

2: Direction switch.

- Valid when F00.04 = 0 (keypad sets the run command).

Ten: JOG key (jog linkage)

0: Disable.

1: Enable.

- Press JOG, the inverter does not respond.
- Press JOG + ▲ key, the system jog forward.
- Press JOG + ▼ key, the system jog reverse.
- Setting the frequency by press ▲ or ▼ key on the keypad is invalid.

6.2.9 F08: Parameter Management

Ref. Code	Parameter	Setting Range [Default]
F08.00	**User password**	**00000 - 65535 [00000]**
	For information on unlocking, modifying, and clearing passwords, see section 5.1.5, page 69. After the password takes effect, the keypad can only view parameters. If you need to set parameters, please enter the correct password to unlock it.	
F08.01	**Parameter initialization**	**0 - 12 [0]**
	0: No operation. • The inverter can read and write parameters normally. • The change of parameters is related to the user password and the current working condition of the inverter. 1: Restore factory parameters (excluding motor parameters and protection parameters). • **Steps:** Set F08.01 = 1, press ↵ key, the keypad displays "rESEt". When the keypad displays the stop status parameters, the recovery is complete. 2, 3: Unused. 4: Clear fault information. • Clear the fault information recorded in group F27. 5, 6: Restore backup parameters 1/2 (excluding motor parameters), i.e. parameter download. 7, 8: Restore backup parameters 1/2 (including motor parameters, etc.), i.e. parameter download. • The optional LED keypad is valid. • For parameter downloading steps, see section 5.2.4, page 77. 9, 10: Unused. 11: Restore normal parameters (including motor parameters and protection parameters, excluding custom menu parameters). 12: Restore all parameters (including motor parameters, protection parameters, and custom menu parameters). • The steps for restoring parameters are the same as 1.	
F08.02	**Parameter backup (parameter upload)**	**0 - 2 [0]**
	0: No operation. • The inverter can read and write parameters normally. 1, 2: Backup parameters 1/2. • Parameters that cannot be copied: motor parameters, fault record parameters. • The optional LED keypad is valid. • For parameter upload steps, see section 5.2.4, page 77.	
F08.03	**Keypad menu mode**	**0x00 - 0x11 [0x00]**
	Unit: Parameter modification attributes **Ten: Parameter view attributes** 0: Allowed. 1: Prohibited.	

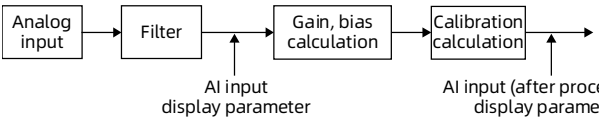
6.2.10 F09: Analog Input and Output Parameters

The group F09 introduces the following functions: Analog input and output processing relationship, pulse input and output processing relationship, analog input limit, analog output function, and pulse output function.

Ref. Code	Parameter	Setting Range [Default]
F09.00	**AI1 Min. reference**	**0.0 - F09.02 [0.0%]**
F09.01	**AI1 Min. reference corresponding value**	**-100.0 - +100.0 [0.0%]**
F09.02	**AI1 Max. reference**	**F09.00 - 100.0 [100.0%]**
F09.03	**AI1 Max. reference corresponding value**	**-100.0 - +100.0 [100.0%]**
F09.04	**AI1 gain**	**-10.00 - +10.00 [1.00]**
F09.05	**AI1 bias**	**-100.0 - +100.0 [0.0%]**
F09.06	**AI1 filter time**	**0.01 - 10.00 [0.05s]**

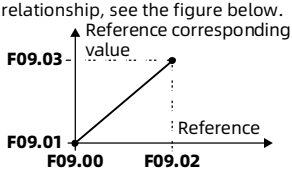
Set the processing relationship of analog input: Filter first, then offset and gain calculation, and finally calibration calculation.

AI1 is voltage input, with a range of 0 - 10V.

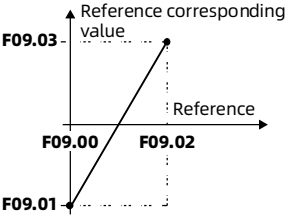


- F09.06 sets the time for filtering AI input.
  - The lager the F09.06, the greater the anti-interference ability, but the slower the response.
  - The smaller the F09.06, the faster the response, but the weaker the anti-interference ability.
- F09.04 - F09.05 set the offset and gain calculation.
  - **Calculation formula:** Calculated AI input = gain × AI input + bias.
- F09.00 - F09.03 sets the calibration relationship, see the figure below.

F09.00 = 0.0%
F09.01 = 0.0%
F09.03 = 100.0%
F09.04 = 100.0%



F09.00 = 0.0%
F09.01 = -100.0%
F09.03 = 100.0%
F09.04 = 100.0%



F09.07	**AI2 Min. reference**	**0.0 - F09.09 [0.00%]**
F09.08	**AI2 Min. reference corresponding value**	**-100.0 - +100.0 [0.0%]**
F09.09	**AI2 Max. reference**	**F09.07 - 100.0 [100.0%]**
F09.10	**AI2 Max. reference corresponding value**	**-100.0 - +100.0 [100.0%]**
F09.11	**AI2 gain**	**-10.00 - +10.00 [1.00]**

Ref. Code	Parameter	Setting Range [Default]
F09.12	AI2 bias	-100.0 - +100.0 [0.0%]
F09.13	AI2 filter time	0.01 - 10.00 [0.05s]
F09.14	EAI1 Min. reference	0.0 - F09.16 [0.00%]
F09.15	EAI1 Min. reference corresponding value	-100.0 - +100.0 [0.0%]
F09.16	EAI1 Max. reference	F09.14 - 100.0 [100.0%]
F09.17	EAI1 Max. reference corresponding value	-100.0 - +100.0 [100.0%]
F09.18	EAI1 gain	-10.00 - +10.00 [1.00]
F09.19	EAI1 bias	-100.0 - +100.0 [0.0%]
F09.20	EAI1 filter time	0.01 - 10.00 [0.05s]
F09.21	EAI2 Min. reference	0.0 - F09.23 [0.00%]
F09.22	EAI2 Min. reference corresponding value	-100.0 - +100.0 [0.0%]
F09.23	EAI2 Max. reference	F09.21 - 100.0 [100.0%]
F09.24	EAI2 Max. reference corresponding value	-100.0 - +100.0 [100.0%]
F09.25	EAI2 gain	-10.00 - +10.00 [1.00]
F09.26	EAI2 bias	-100.0 - +100.0 [0.0%]
F09.27	EAI2 filter time	0.01 - 10.00 [0.05s]
	Same function as AI1, see F09.00 - F09.06. F09.32 sets the input of AI2 and EAI. Default to voltage input, with a range of 0 - 10V.	
F09.28	Potentiometer Min. reference	0.0 - F09.30 [0.00%]
F09.29	Potentiometer Min. reference corresponding value	-100.0 - +100.0 [0.00%]
F09.30	Potentiometer Max. reference	F09.28 -100.0 [100.0%]
F09.31	Potentiometer Max. reference corresponding value	-100.0 - +100.0 [100.0%]
	Set the processing relationship of the potentiometer input: Calibration calculation. • Same as AI1, see F09.00 - F09.03.	
F09.32	AI input signal	0x0000 - 0x2220 [0x0000]
	Unit: Unused **Ten: AI2** **Hundred: EAI1** **Thousand: EAI2** 0: Voltage (0 - 10V). 1: Current (0 - 20mA). 2: Current (4 - 20mA).	
F09.33	Analog input over-limit	0x0000 - 0x1153 [0x0000]
F09.34	Analog input over-limit upper limit	F09.35 - 100.0 [100.0%]
F09.35	Analog input over-limit lower limit	0.0 - F09.34 [0.0%]
F09.36	Analog input over-limit detection time	0.00 - 50.00 [5.00s]
F09.37	Analog input over-limit delay detection time after running	0.00 - 50.00 [15.00s]
	When the analog input > F09.34 or analog input < F09.35 and lasts for F09.36 time, the inverter report AioL warning (analog over-limit). F09.33 unit set the inverter action. • If any DO terminal or RLY/EY relay is set to function: 27 (analog input over-limit output), see F10.22 - F10.28. When the analog over-limit, the DO terminal or RLY/EY relay outputs signal.	

Ref. Code	Parameter	Setting Range [Default]
	When F09.35 ≤ analog input ≤ F09.34, AioL warning is cleared. F09.33 thousand sets the automatic operation of the inverter. **F09.33 settings are as follows:** **Unit: Inverter action when over-limit** 0: Alarm AioL, do not record fault data. 1: Alarm AioL, coast to stop. 2: Alarm AioL, Dec. to stop. 3: Alarm AioL, emergency stop. **Ten: Analog input port** 0: None. • Disable the analog input over-limit detection function. 1 - 4: AI1/AI2/EAI1/EAI2. 5: Keypad potentiometer. **Hundred: Over-limit detection conditions** 0: Always detect. • When running or stopping, the timing starts immediately when the over-limit condition is met. 1: Detection in running. • The delay time starts after the run. **Thousand: Automatic operation after over-limit detection** (valid for two-line operation) 0: Disable. 1: Allow.	
F09.38	**High-speed pulse input Min. frequency (DI5)**	**0 - F09.40 [0Hz]**
F09.39	**High-speed pulse input Min. frequency corresponding value (DI5)**	**0.0 - 100.0 [0.0%]**
F09.40	**High-speed pulse input Max. frequency (DI5)**	**F09.38 - 50000 [10000Hz]**
F09.41	**High-speed pulse input Max. frequency corresponding value (DI5)**	**0.0 - 100.0 [100.0%]**
F09.42	**High-speed pulse input filter time (DI5)**	**0.01 - 10.00 [0.05s]**
	Set the processing relationship of pulse input: Filter first, then perform calibration calculation. When F10.04 = 53, DI5 is high-speed pulse input. • F09.42 sets the time for filtering pulse input to filter out small fluctuations in pulse frequency. • F09.38 - F09.41 set the calibration relationship of pulse input.	
F09.43	**AO1 output function**	**0 - 31 [2]**
F09.44	**EAO1 output function**	**0 - 31 [0]**
F09.46	**High-speed pulse output function (DO1)**	**0 - 31 [0]**
	0: Unused. **1: Output frequency.** Range: 0 - Max. output frequency F00.05. **2: Reference frequency.** Range: 0 - Max. output frequency F00.05. **3: Motor speed.** Range: 0 - Max. output frequency corresponding to the speed. **4: Output current.** Range: 0 - 2 × inverter rated current. **5: Output current.** Range: 0 - 2 × motor rated current. **6: Torque command.** Range: 0 - 3 × motor rated torque. **10: Output torque.** Range: 0 - 3 × rated motor torque. **11: Output voltage.** Range: 0 - 1.2 × inverter rated current. **12: Bus voltage.** Range: 0 - 2.2 × inverter rated voltage.	

Ref. Code	Parameter	Setting Range [Default]
	13: Output power. Range: 0 - 2 × motor rated power. **14: AI1 input (before processing).** Input range: 0 - 10V. **15: AI1 input (after processing).** Input range: 0 - 10V. **16: AI1 input (after processing).** Input range: -10 - +10V. **17: AI2 input (before processing).** Input range: 0 - 10V. **18: AI2 input (after processing).** Input range: 0 - 10V. **19: AI2 input (after processing).** Input range: -10 - +10V. **20: EAI1 input (before processing).** Input range: 0 - 10V. **21: EAI1 input (after processing).** Input range: 0 - 10V. **22: EAI1 input (after processing).** Input range: -10 - +10V. **23: EAI2 input (before processing).** Input range: 0 - 10V. **24: EAI2 input (after processing).** Input range: 0 - 10V. **25: EAI2 input (after processing).** Input range: -10 - +10V. **26: Output frequency.** Range: -1 - +1 times the Max. output frequency. **27: Reference frequency.** Range: -1 - +1 times the Max. output frequency. **28: Set frequency.** Range: 0Hz - Max. output frequency F00.05. **29: Communication control setting 1.** Range: 0.0 - 100.0%. **30: Communication control setting 2.** Range: 0.0 - 100.0%. **31: Communication control setting 3.** Range: 0.0 - 100.0%.	
F09.47	**High-speed pulse output signal source Min. value (DO1)**	**0.0 - F09.49 [0.0%]**
F09.48	**High-speed pulse output Min. frequency (DO1)**	**0 - 10000Hz [0Hz]**
F09.49	**High-speed pulse output signal source Max. value (DO1)**	**F09.47 - 100.0 [100.0%]**
F09.50	**High-speed pulse output Max. frequency (DO1)**	**0 - 10000Hz [10000Hz]**
	Set the processing relationship of pulse output: Calibration calculation. When F10.22 = 38, DO1 is high-speed pulse output. F09.46 sets the function of DO1.	
F09.51	**AO1 Min. reference**	**0.0 - F09.53 [0.0%]**
F09.52	**AO1 Min. reference corresponding value**	**0.0 - 100.0 [0.0%]**
F09.53	**AO1 Max. reference**	**F09.51 - 100.0 [100.0%]**
F09.54	**AO1 Max. reference corresponding value**	**0.0 - 100.0 [100.0%]**
F09.55	**AO1 gain**	**-10.00 - +10.00 [1.00]**
F09.56	**AO1 bias**	**-100.0 - +100.0 [0.0%]**
	Set the processing relationship of analog output: First perform calibration calculation, then calculate offset and gain. F09.43 sets the function of AO1. AO1 defaults to voltage output, with a range of 0 - 10V. When the jumper is shorted to I, AO1 is current output, with a range of 0 - 20mA. • F09.51 - F09.54 set the calibration relationship. • F09.55 - F09.56 set the offset and gain calculation. • **Calculation formula:** Actual AO1 output = F09.55 × calibrated value + F09.56.	
F09.57	**EAO1 Min. reference**	**0.0 - F09.59 [0.0%]**
F09.58	**EAO1 Min. reference corresponding value**	**0.0 - 100.0 [0.0%]**
F09.59	**EAO1 Max. reference**	**F09.57 - 100.0 [100.0%]**
F09.60	**EAO1 Max. reference corresponding value**	**0.0 - 100.0 [100.0%]**

Ref. Code	Parameter	Setting Range [Default]
F09.61	**EAO1 gain**	**-10.00 - +10.00 [1.00]**
F09.62	**EAO1 bias**	**-100.0 - +100.0 [0.0%]**
	Same as AO1, see F09.51 - F09.56. F09.44 sets the function of EAO1. EAO1 defaults to voltage output, with a range of 0 - 10V. When jumper J8 (EIO-I expansion card) shorts 1,2pin, EAO1 is current output, with a range of 0 - 20mA.	

6.2.11 F10: Digital Input and Output Parameters

Group F10 introduces the functions and logic of digital input terminals (DI/EX terminals, virtual DI, analog DI) and output terminals (DO terminals, RLY/EY relays).

Ref. Code	Parameter	Setting Range [Default]
F10.00	DI1 terminal function	0 - 100 [2]
F10.01	DI2 terminal function	0 - 100 [3]
F10.02	DI3 terminal function	0 - 100 [0]
F10.03	DI4 terminal function	0 - 100 [0]
F10.04	DI5 terminal function	0 - 100 [0]
F10.09	EX1 terminal function	0 - 100 [0]
F10.10	EX2 terminal function	0 - 100 [0]
F10.11	DI-V1 terminal (virtual DI) function	0 - 100 [0]
F10.12	DI-V2 terminal (virtual DI) function	0 - 100 [0]
F10.13	DI-V3 terminal (virtual DI) function	0 - 100 [0]
F10.14	DI-AI1 terminal (analog DI) function	0 - 100 [0]
F10.15	DI-AI2 terminal (analog DI) function	0 - 100 [0]
F10.16	DI-EAI1 terminal (analog DI) function	0 - 100 [0]
F10.17	DI-EAI2 terminal (analog DI) function	0 - 100 [0]

0: Unused.

- Please set the unused terminals to 0. When the terminal is valid, the terminal does not work to prevent misconnection or malfunction.

1: Inverter enable.

- When the DI terminal is valid, the inverter is enabled to run.
- When the DI terminal is invalid, the inverter cannot run in the stop status and stops freely in the running status.
- If no DI terminal is set to 1, the inverter is enabled by default.

2: Forward (FWD).

3: Reverse (REV).

4: Three-line operation control.

- Valid when F00.04 = 1 (terminal control).
- Use the DI terminal to start and stop the inverter, see F11.00.

5 - 8: Frequency setting channel 1 - 4.

- Use the DI terminal to select the channel for setting the frequency, see the table below.
- Set priority: Keypad M key switch (F07.22 unit = 1) > DI terminal switch (function No. 88) > DI terminal switch (function No. 89) ... > DI terminal switch (function No. 100) > DI terminal selection (function No. 5 - 8) > F00.08 or F00.11 setting.

Set Channel 4 (No. 8)	Set Channel 3 (No. 7)	Set Channel 2 (No. 6)	Set Channel 1 (No. 5)	Frequency Setting Channel
0	0	0	0	Keep
0	0	0	1	Keypad
0	0	1	0	DI terminal
0	0	1	1	Terminal pulse (DI5)
0	1	0	0	Communication
0	1	0	1	Unused
0	1	1	0	Unused

Ref. Code	Parameter	Setting Range [Default]

0	1	1	1	Multi-speed
1	0	0	0	PID
1	0	0	1	AI1
1	0	1	0	AI2
1	0	1	1	EAI1
1	1	0	0	EAI2
1	1	0	1	Keypad potentiometer
1	1	1	0	Communication

9 - 10: Run command channel 1 - 2.

- Use the DI terminal to switch the running command channel, see the table below.
- The channels can be switched when the inverter is running, and the switched channel is valid only after the inverter is stopped.
- Set priority: Keypad M key switch (F07.22 unit = 1) > DI terminal switch (function No. 30) > DI terminal switch (function No. 9 - 10) > F00.04 setting.

Command Channel 2 (No. 10)	Command Channel 1 (No. 9)	Run Command Channel
0	0	Keep
0	1	Keypad
1	0	Terminal
1	1	Communication

11: Unused.

12: External stop.

- When the DI terminal is valid, the inverter stops according to F01.06 (speed control) or F05.09 (torque control). Dec. to stop by default.
- Valid for all run command channels.

13 - 16: Multi-frequency 1 - 4.

- Valid when the multi-speed sets frequency (F00.08 = 6 or F00.11 = 6).
- Use the DI terminal to switch the multi-speed frequency, see the table below.

Multi-frequency 4 (No. 16)	Multi-frequency 3 (No. 15)	Multi-frequency 2 (No. 14)	Multi-frequency 1 (No. 13)	Frequency
0	0	0	0	F03.16 setting
0	0	0	1	Multi-frequency 1 (F03.01)
0	0	1	0	Multi-frequency 2 (F03.02)
0	0	1	1	Multi-frequency 3 (F03.03)
0	1	0	0	Multi-frequency 4 (F03.04)
0	1	0	1	Multi-frequency 5 (F03.05)
0	1	1	0	Multi-frequency 6 (F03.06)

Ref. Code	Parameter	Setting Range [Default]

0	1	1	1	Multi-frequency 7 (F03.07)
1	0	0	0	Multi-frequency 8 (F03.08)
1	0	0	1	Multi-frequency 9 (F03.09)
1	0	1	0	Multi-frequency 10 (F03.10)
1	0	1	1	Multi-frequency 11 (F03.11)
1	1	0	0	Multi-frequency 12 (F03.12)
1	1	0	1	Multi-frequency 13 (F03.13)
1	1	1	0	Multi-frequency 14 (F03.14)
1	1	1	1	Multi-frequency 15 (F03.15)

17: Frequency increase (UP).

18: Frequency decrease (DN).

- Valid when the terminal sets frequency (F00.08 = 1 or F00.11 = 1).
- Use the DI terminal to increase or decrease the frequency, see the table below. F11.01 sets the frequency increase or decrease rate.

Frequency Increase (UP) (No. 17)	Frequency Decrease (DN) (No. 18)	Frequency Change
0	0	Keep current frequency
0	1	Decrease frequency
1	0	Decrease frequency
1	1	Keep current frequency

19: Auxiliary set frequency cleared.

- When the DI terminal is valid, the auxiliary frequency is cleared and use the channel set by F00.08 to set the frequency.

20: Forward jog 1 command (JOGF1).

21: Reverse jog 1 command (JOGR1).

22: Forward jog 2 command (JOGF2).

23: Reverse jog 2 command (JOGR2).

24: Jog 1 command.

25: Jog 1 direction.

- Use the DI terminal to jog the inverter.
- Please set the parameters: F00.19/F00.20 (jog run frequency), F00.21 (jog run interval time), F02.16 (jog Acc. time), F02.17 (jog Dec. time).
- Set priority: DI terminal selection (function No. 20 and 21) > DI terminal selection (function No. 24 and 25).

Ref. Code	Parameter	Setting Range [Default]

Jog Direction 1 (No. 25)	Jog 1 Command (No. 24)	Jog Command
0	0	Invalid jog command
1	0	Invalid jog command
0	1	Jog 1 forward
1	1	Jog 1 reverse

26: Acc./Dec. time 1.

27: Acc./Dec. time 2.

- Use the DI terminal to select the acceleration and deceleration time, see the table below.
- Selection priority: DI terminal selection (function No. 26 and 27) > F02.10, F02.11 settings.

Acc./Dec. time 2 (No. 27)	Acc./Dec. time 1 (No. 26)	Acc./Dec. time
0	0	Acc./Dec. time 1 (F02.02/F02.03)
0	1	Acc./Dec. time 2 (F02.04/F02.05)
1	0	Acc./Dec. time 3 (F02.06/F02.07)
1	1	Acc./Dec. time 4 (F02.08/F02.09)

28: Acc. and Dec. mode.

- When the DI terminal is valid, select S curve Acc./Dec.. When the DI terminal is invalid, select linear Acc./Dec..
- Selection priority: DI terminal selection (function No. 28) > F02.00 unit setting.

29: Acc. and Dec. prohibited.

- Invalid during Dec. to stop.
- When the DI terminal is valid, except for the stop command, the motor is not affected by any external signal and maintains the current speed.

30: Command switched to terminal.

- Valid during stop.
- When the DI terminal is valid, use the terminal to control the run command.
- Set priority: Keypad M key switch (F07.22 unit = 1) > DI terminal switch (function No. 30) > DI terminal switch (function No. 9 - 10) > F00.04 setting.

31: Unused.

32: PID paused.

- When the DI terminal is valid, the PID function is invalid and the inverter continues to run at the current frequency.

33: Unused.

34: PID integral hold.

- When the DI terminal is valid, PID stops accumulating integral and the integrator keeps the current integral unchanged.

35: PID integral clear.

- When the DI terminal is valid, the PID integrator is cleared.

36: PID parameter switch.

- When F04.09 = 1, use the DI terminal to select PID parameters.
- When the DI terminal is invalid, select PID parameter 1 (F04.03 - F04.05). When the DI terminal is valid, select PID parameter 2 (F04.06 - F04.08).

37: Unused.

38: Enable DC braking during stop.

- When the inverter stops, if the DI terminal is valid, the inverter immediately perform DC braking on the motor until the DI terminal is invalid.

Ref. Code	Parameter	Setting Range [Default]
	• F01.09 sets the braking current. **39: External interrupt (normally open).** **40: External interrupt (normally closed).** • When the inverter is running, if the DI terminal is valid, the inverter stops to output immediately. • When the DI terminal is invalid and the inverter meets the operating conditions, the inverter starts in speed tracking mode. **41: Coast to stop (normally open).** **42: Coast to stop (normally closed).** • When the DI terminal is valid, the inverter stops to output immediately, and the load stops freely according to mechanical inertia. **43: Emergency stop.** • When the inverter is running, if the DI terminal is valid, the inverter decelerates to stop. F02.18 sets the deceleration time. **44: External fault (normally open).** **45: External fault (normally closed).** • The inverter detects the fault signal of the external device through the DI terminal (normally open/normally closed). • When the DI terminal is valid, the inverter reports E0024 fault (external device fault) and stops or runs according to F11.02 (default run). **46: External reset.** • When a fault occurs in the inverter, clear the fault and then use the DI terminal to reset the fault. • Functions as  **Stop** or **STOP** key on the keypad. **47: Motor 1/2 switch.** • Prerequisite: Set 2 groups of motor parameters. • Valid during stop. • When the DI terminal is valid, switch to motor 1 parameters or motor 2 parameters. **48: Timing function.** • When the DI terminal is used as the input terminal of the timing function, see F11.04 and F11.05. **49: Unused.** **50: Counter cleared.** • When the DI terminal is valid, the built-in counter of the inverter is cleared. • Used in conjunction with function No. 51. **51: Counter triggered.** • The DI terminal is used as the count pulse input port of the built-in counter. When power is off, the inverter stores the current count value. • Max. pulse frequency: 200Hz. • See F11.21, F11.22. **52: Unused.** **53: Pulse frequency input (DI5).** • DI5 is used as pulse input terminal. • F09.38 - F09.41 set the calibration relationship of pulse input. **54: Switch between main and auxiliary frequency sources.** • When the DI terminal is valid, the main frequency is selected. When the DI terminal is invalid, the auxiliary frequency is selected. **55: Unused.**	

<table>
<tr><th>Ref. Code</th><th>Parameter</th><th>Setting Range [Default]</th></tr>
<tr><td></td><td colspan="2">
56: Speed control/torque control switch.
• When the DI terminal is valid: If F00.00 = 0, switch to torque control. If F00.00 = 1, switch to speed control.
• When the DI terminal is invalid, it switches according to F00.00 (control mode) and defaults to speed control.
57: Torque polarity switch (torque control).
• When the DI terminal is valid, the torque reference polarity set by group F05 is reversed.
• When the DI terminal is invalid, the torque setting polarity set by group F05 is maintained.
59 - 85: Unused.
86: Enable terminal DC braking.
• When the DI terminal is valid, the inverter immediately performs DC braking on the motor.
• When the DI terminal is invalid, if there is no stop command, the inverter restarts.
87: V/f separation voltage switching.
• Valid when F14.00 = 5 or 6 (V/f separation mode) and F14.17 = 0.
• When the DI terminal is valid, the output voltage uses F14.19 (voltage 2).
• When the DI terminal is invalid, the output voltage uses F14.18 (voltage 1).
88: Main frequency switches to the keypad (digital setting).
• When the DI terminal is valid, the keypad sets the main frequency.
• Setting priority: Keypad M key switch (F07.22 unit = 1) > DI terminal switch (function No. 88) > DI terminal switch (function No. 89) ... > DI terminal switch (function No. 100) > DI terminal selection (function No. 5 - 8) > F00.08 or F00.11 setting.
89: Main frequency switches to terminal (digital setting).
90: Main frequency switches to high-speed pulse.
91: Main frequency switches to communication.
92, 93: Unused.
94: Main frequency switches to multi-speed.
95: Main frequency switches to PID.
96: Main frequency switches to AI1.
97: Main frequency switches to AI2.
98: Main frequency switches to EAI1.
99: Main frequency switches to EAI2.
100: Main frequency switches to potentiometer on the keypad.
• The functions of 89 - 100 are the same as those of 88.
</td></tr>
<tr><td>F10.18</td><td>DI terminal filter times</td><td>0 - 1000 [3]</td></tr>
<tr><td>F10.19</td><td>DI positive and negative logic</td><td>0x000 - 0xFFF [0x000]</td></tr>
<tr><td></td><td colspan="2">
Set the input logic of the DI terminal.
• 0: Positive logic. Valid when the DI terminal is connected to the common terminal and invalid when it is disconnected.
• 1: Negative logic. Invalid when the DI terminal is connected to the common terminal and valid when it is disconnected.
<table>
<tr><th colspan="4">Thousand</th><th colspan="4">Ten</th><th colspan="4">Unit</th></tr>
<tr><td>Bit11</td><td>Bit10</td><td>Bit9</td><td>Bit8</td><td>Bit7</td><td>Bit6</td><td>Bit5</td><td>Bit4</td><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td></tr>
<tr><td>-</td><td>EX2</td><td>EX1</td><td></td><td>-</td><td>-</td><td>-</td><td>DI5</td><td>DI4</td><td>DI3</td><td>DI2</td><td>DI1</td></tr>
</table>
</td></tr>
<tr><td>F10.20</td><td>DI-V terminal positive and negative logic (virtual DI)</td><td>0x0 - 0xF [0x0]</td></tr>
</table>

<table>
<tr><th>Ref. Code</th><th>Parameter</th><th>Setting Range [Default]</th></tr>
<tr><td></td><td colspan="2">Set the input logic of the DI terminal (virtual DI).
• 0: Positive logic. Valid when the DI terminal is connected to the common terminal and invalid when it is disconnected.
• 1: Negative logic. Invalid when the DI terminal is connected to the common terminal and valid when it is disconnected.
<table><tr><th colspan="4">Unit</th></tr><tr><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td></tr><tr><td>-</td><td>DI-V3</td><td>DI-V2</td><td>DI-V1</td></tr></table></td></tr>
<tr><td>F10.21</td><td>DI-AI positive and negative logic (analog DI)</td><td>0x0 - 0xF [0x0]</td></tr>
<tr><td></td><td colspan="2">Set the input logic of the DI terminal (analog DI).
• 0: Positive logic. Valid when the DI terminal is connected to the common terminal and invalid when it is disconnected.
• 1: Negative logic. Invalid when the DI terminal is connected to the common terminal and valid when it is disconnected.
<table><tr><th colspan="4">Unit</th></tr><tr><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td></tr><tr><td>DI-EAI2</td><td>DI-EAI1</td><td>DI-AI2</td><td>DI-AI1</td></tr></table></td></tr>
<tr><td>F10.22</td><td>DO1 terminal function</td><td>0 - 41 [2]</td></tr>
<tr><td>F10.25</td><td>RLY1 relay function</td><td>0 - 41 [31]</td></tr>
<tr><td>F10.27</td><td>EY1 relay function</td><td>0 - 41 [0]</td></tr>
<tr><td>F10.28</td><td>EY2 relay function</td><td>0 - 41 [0]</td></tr>
<tr><td></td><td colspan="2">Relay description:
• RLY1: RA/RC of control board.
• EY1, EY2: EY1/CM, EY2/CM of HD800-EIO-I.
0: Unused.
1: Inverter is ready.
• After the inverter is powered on, if the inverter is enabled (with the DI terminal set to function No. 1) and the inverter does not report a fault, the DO terminal or RLY/EY relay outputs a signal. At this time, the inverter can operate normally.
2: Inverter is running.
• When the inverter is running, the DO terminal or RLY/EY relay outputs a signal.
3: Inverter forward.
4: Inverter reverse.
• When the inverter forward or reverse, the DO terminal or RLY/EY relay outputs a signal.
5: Inverter DC braking.
• When the inverter performs DC braking, the DO terminal or RLY/EY relay outputs a signal.
6: Inverter zero frequency status.
7: Inverter runs at zero frequency.
• See F11.07, F11.08.
9: Frequency level detection 1 (FDT1).
10: Frequency level detection 2 (FDT2).
• See F11.09 - F11.12.
11: Frequency arrived (FAR).
• See F11.06.
12: Upper limit frequency.</td></tr>
</table>

Ref. Code	Parameter	Setting Range [Default]
	• When set frequency ≥ F00.06 (upper limit frequency), the DO terminal or RLY/EY relay outputs a signal. **13: Lower limit frequency.** • When set frequency ≤ F00.07 (lower limit frequency), the DO terminal or RLY/EY relay outputs a signal. **14 - 17: Unused.** **18: Communication control output.** • Communication controls DO terminal or RLY/EY relay output a signal. **19, 20: Unused.** **21: Set running time arrived.** • See F11.19. **22: Timing function.** • DO terminal or RLY relay is used as the output terminal of timing function, see F11.04 and F11.05. **23: Set count value arrived.** **24: Specified count value arrived.** • See F11.21, F11.22. **25: Unused.** **26: Motor 1, 2 indication.** • When the inverter controls motor 1, the DO terminal or RLY relay does not output a signal. • When the inverter controls motor 2, the DO terminal or RLY/EY relay outputs a signal. **27: Analog input over-limit.** • F09.33 ten sets the analog input port (AI1, AI2, EAI1, EAI2, keypad potentiometer). • When the analog input > F09.34 (upper limit) or analog input < F09.35 (lower limit), the DO terminal or RLY/EY relay outputs a signal and the inverter reports AioL warning (analog value over-limit). **28: Unused.** **29: Undervoltage.** • When the DC bus voltage < F06.05 (undervoltage protection voltage), the DO terminal or RLY/EY relay outputs a signal, the inverter stops to output and reports -Lu- fault (DC bus undervoltage). **30: Overload.** • When the inverter output current > F26.09 (detection level) and lasts for F26.10 time, the DO terminal or RLY/EY relay outputs a signal and the inverter reports E0035 fault (overload pre-alarm). **31: Inverter fault.** • When the inverter reports a fault, the RLY relay outputs a signal according to F11.03. **32: External fault.** • DI terminal setting function: 44 (external fault normally open), 45 (external fault normally closed), see F10.00 - F10.17. • When the inverter detects an external device fault signal through the DI terminal, the DO terminal or RLY/EY relay outputs a signal, the inverter reports E0024 (external device fault), and stops or runs according to F11.02 (default run). **33: Inverter fault automatic reset.** • When the inverter automatically resets, the DO terminal or RLY/EY relay outputs a signal. **35: Sleep mode.** • When the inverter is in sleep mode, the DO terminal or RLY/EY relay outputs a signal. **36: System running.**	

<table>
<tr><th>Ref. Code</th><th>Parameter</th><th>Setting Range [Default]</th></tr>
<tr><td></td><td colspan="2">• When the inverter is in any of the following status, the DO terminal or RLY/EY relay outputs a signal.
- Running.
- Sleeping.
- Waiting for restart after the analog over-limit.
38: High-speed pulse output (DO1).
• DO1 is used as pulse output terminal.
• F09.47 - F09.50 set the calibration relationship of pulse output.
• F09.46 sets the function of DO1.
39: Zero current.
• See F11.13, F11.14.
40: Current over-limit.
• See F11.15, F11.16.
41: Current arrived.
• See F11.17, F11.18.</td></tr>
<tr><td>F10.32</td><td>Output terminal positive and negative logic</td><td>0x00 - 0xFF [0x00]</td></tr>
<tr><td></td><td colspan="2">Set the output logic of the DO terminal or relay.
• 0: Positive logic. Valid when the DO terminal or RLY relay is connected to the common terminal, and invalid when they are disconnected.
• 1: Negative logic. Invalid when the DO terminal or RLY relay is connected to the common terminal, and valid when they are disconnected.
<table>
<tr><th colspan="4">Ten</th><th colspan="4">Unit</th></tr>
<tr><td>Bit7</td><td>Bit6</td><td>Bit5</td><td>Bit4</td><td>Bit3</td><td>Bit2</td><td>Bit1</td><td>Bit0</td></tr>
<tr><td>-</td><td>EY2</td><td>EY1</td><td>-</td><td>RLY1</td><td>-</td><td>-</td><td>DO1</td></tr>
</table></td></tr>
<tr><td>F10.33</td><td>DO1 output delay</td><td>0.0 - 100.0 [0.0s]</td></tr>
<tr><td>F10.36</td><td>RLY1 output delay</td><td>0.0 - 100.0 [0.0s]</td></tr>
<tr><td>F10.38</td><td>EY1 output delay</td><td>0.0 - 100.0 [0.0s]</td></tr>
<tr><td>F10.39</td><td>EY2 output delay</td><td>0.0 - 100.0 [0.0s]</td></tr>
</table>

6.2.12 F11: Digital Logic Function Parameters

Ref. Code	Parameter	Setting Range [Default]
F11.00	**Terminal operation control mode**	**0 - 3 [0]**

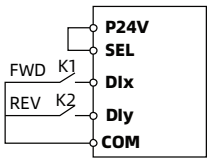
Set the DI terminal to control the inverter operation mode.

- The DIx terminal is set to function No. 2 (forward FWD).
- The DIy terminal is set to function No. 3 (reverse REV).
- The DIz terminal is set to function No. 4 (three-line operation control).

0: Two-line operation mode 1.

1: Two-line operation mode 2.

- In terminal control, the terminal level is valid. When the inverter is stopped by a stop command from other sources, no run command will be generated even if the control terminal is in forward or reverse mode.
- Other sources include: Terminal external stop (input function No. 39 and 40), terminal coast to stop (input function No. 41 and 42), inverter fault (output function No. 31), external fault (input function No. 44 and 45).
- If the inverter needs to run again, re-trigger the forward or reverse terminal to be in the valid status.



0: Terminal Disconnected 1: Terminal Closed		Run Command	
K2	**K1**	**F11.00 = 0**	**F11.00 = 1**
0	0	Stop	Stop
1	0	REV	Stop
0	1	FWD	FWD
1	1	Stop	REV

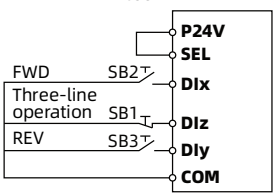
2: Three-line operation mode 1.

- When the valid status of SB2 or SB3 does not change, the inverter maintains the current running direction.

3: Three-line operation mode 2.

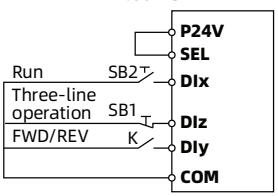
- When SB2 changes from valid to invalid, the inverter maintains in the running status.

F11.00 = 2

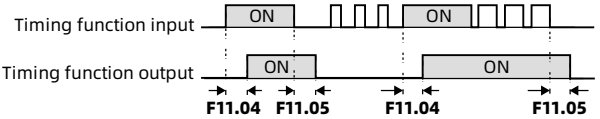


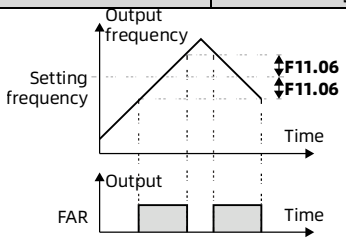
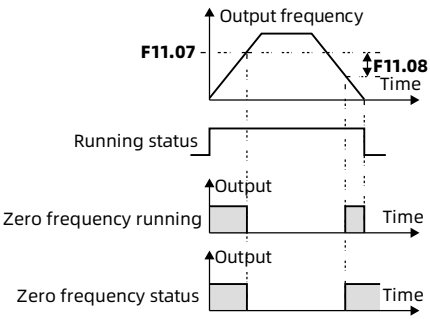
- SB1: Stop button, normally closed (falling edge valid)
- SB2: Forward FWD button, normally open (rising edge valid)
- SB3: REV button, normally open (rising edge valid)

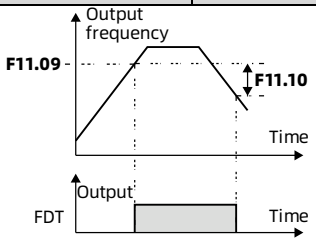
F11.00 = 3

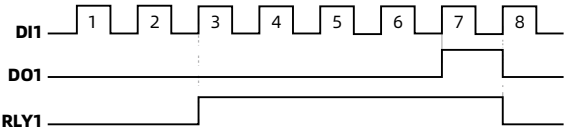


- K: Direction terminal (level valid)
  - K = 0 (FWD)
  - K = 1 (REV)
- SB1: Stop button, normally closed (falling edge valid)
- SB2: Run button, normally open (rising edge valid)

Ref. Code	Parameter	Setting Range [Default]
F11.01	**Acc. and Dec. rates of UP/DN terminal**	**0.00 - 99.99 [1.00Hz/s]**
	When the terminal sets the frequency (F00.08 = 1 or F00.11 = 1) and the DI terminal is used as the UP or DN terminal (function No. 17 or 18), use the DI terminal to increase or decrease the frequency, and F11.01 sets the frequency increase or decrease rate.	
F11.02	**External device fault action**	**0 - 3 [0]**
	Set the function of any DI/EX terminal: 44 (external fault, normally open), 45 (external fault, normally closed), see F10.00 - F10.17. F11.02 sets the inverter's action when it reports E0024 fault (external device fault). 0: Fault, no stop. 1: Fault, coast to stop. 2: Fault, Dec. to stop. 3: Fault, emergency stop.	
F11.03	**Fault relay action**	**0x0000 - 0x1211 [0x0210]**
	Set the function of any RLY/EY relay: 31 (inverter fault), see F10.25 - F10.28. F11.03 sets the action of the relay when the inverter reports a fault. **Unit: -Lu- fault (first time)** **Ten: -Lu- fault (not the first time)** 0: No action. 1: Action. **Hundred: E0099 fault** 0: No action. 1: Actual undervoltage action (if no reset is selected). 2: Action. **Thousand: During automatic reset (excluding E0099 and -Lu- fault)** 0: No action. 1: Action.	
F11.04	**Timing function ON side delay time**	**0.00 - 300.00 [0.00s]**
F11.05	**Timing function OFF side delay time**	**0.00 - 300.00 [0.00s]**
	Set the function of any DI/EX terminal: 48 (timing function), see F10.00 - F10.17. Set the function of any DO terminal or RLY/EY relay: 22 (timing function), see F10.22 - F10.28. F15.25 and F15.26 set the delay time of the timing function output corresponding to the input. • When the input ON time > F11.04, the output is ON. • When the input OFF time > F11.05, the output is OFF. 	
F11.06	**Frequency arrival (FAR) detection width**	**0.00 - 100.00 [2.5Hz]**
	Set the function of any DO terminal or RLY/EY relay: 11 (frequency arrived), see F10.22 - F10.28. • When the inverter output frequency is within the positive and negative detection width of the set frequency (F11.06), the DO terminal or RLY/EY relay outputs a signal.	

Ref. Code	Parameter	Setting Range [Default]
		
F11.07	**Zero frequency signal detection value**	**0.00 - F00.06 [0.00Hz]**
F11.08	**Zero frequency hysteresis**	**0.00 - F00.06 [0.00Hz]**
	Set the function of any DO terminal or RLY/EY relay: 6 (inverter zero frequency status), see F10.22 - F10.28. • When the inverter output frequency is within the zero frequency range (including stop status), the DO terminal or RLY/EY relay outputs a signal. Set the function of any DO terminal or RLY/EY relay: 7 (inverter zero frequency running), see F10.22 - F10.28. • When the inverter output frequency is within the zero frequency range, the DO terminal or RLY/EY relay outputs a signal. Zero frequency range: • When start, output frequency < F11.07. • When stop, output frequency < F11.07 – F11.08. 	
F11.09	**FDT1 detection frequency**	**0.00 - F00.06 [50.00Hz]**
F11.10	**FDT1 detects hysteresis frequency**	**0.00 - F00.06 [1.00Hz]**
F11.11	**FDT2 detection frequency**	**0.00 - F00.06 [50.00Hz]**
F11.12	**FDT2 detection hysteresis frequency**	**0.00 - F00.06 [1.00Hz]**
	Set the function of any DO terminal or RLY/EY relay: 9 (frequency level detection 1, FDT1), see F10.22 - F10.28. • When the inverter output frequency > F11.09, the DO terminal or RLY/EY relay outputs a signal until the output frequency < F11.09 - F11.10. Set the function of any DO terminal or RLY/EY relay: 10 (frequency level detection 2, FDT2), see F10.22 - F10.28. • When the inverter output frequency > F11.11, the DO terminal or RLY/EY relay outputs a signal until the output frequency < F11.11 - F11.12.	

Ref. Code	Parameter	Setting Range [Default]
		
F11.13	**Zero current detection level**	**0.00 - 300.00 (motor rated current) [5.0%]**
F11.14	**Zero current detection delay**	**0.00 - 60.00 [0.00s]**
	Set the function of any DO terminal or RLY/EY relay: 39 (zero current), see F10.22 - F10.28. When the output current is less than F11.13 and lasts for F11.14 time, the DO terminal or RLY/EY relay outputs a signal. • When F11.14 = 0 or stopped, the inverter does not detect.	
F11.15	**Output current over-limit detection level**	**0.0 - 300.0 (rated motor current) [200.0%]**
F11.16	**Output current over-limit detection delay**	**0.00 - 60.00 [0.00s]**
	Set the function of any DO terminal or RLY/EY relay: 40 (current over-limit), see F10.22 - F10.28. When the output current > F11.15 and lasts for F11.16, the DO terminal or RLY/EY relay outputs a signal. • When F11.16 = 0, the inverter does not detect.	
F11.17	**Current arrival detection level**	**0.0 - 300.0 (rated motor current) [100.0%]**
F11.18	**Current arrival detection width**	**0.0 - 300.0 (rated motor current) [0.0%]**
	Set the function of any DO terminal or RLY/EY relay: 41 (current arrival), see F10.22 - F10.28. When F11.17 - F11.18 ≤ output current ≤ F11.17 + F11.18, the DO terminal or RLY/EY relay outputs a signal.	
F11.19	**Current power-on running time**	**0.0 - 65535.5 [0.0min]**
	Set the function of any DO terminal or RLY/EY relay: 21 (set run time arrived), see F10.22 - F10.28. • After the inverter is powered on, when the accumulated running time reaches F11.19, the DO terminal or RLY/EY relay outputs a signal (single pulse, width 500ms), and the inverter controls the output according to this signal.	
F11.21	**Set count value**	**F11.22 - 65535 [0]**
F11.22	**Specify count value**	**0 - F11.21 [0]**
	Set the function of any DO terminal or RLY/EY relay: 23 (set count value arrived), see F10.22 - F10.28. Set the function of any DI/EX terminal: 51 (counter trigger), see F10.00 - F10.17. • When the number of pulses input to the DI terminal reaches F11.21, the DO terminal or RLY/EY relay outputs a signal and the external count value is automatically cleared. Set the function of any DO terminal or RLY/EY relay: 24 (specified count value reached), see F10.22 - F10.28. Set the function of any DI/EX terminal: 51 (counter trigger), see F10.00 - F10.17. • When the DI terminal input pulse number reaches F11.22, the DO terminal or RLY/EY relay outputs a signal until the pulse number reaches F11.21.	

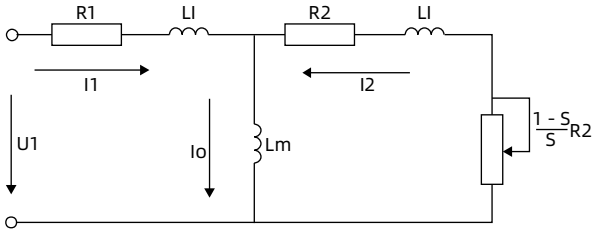
Ref. Code	Parameter	Setting Range [Default]
	Example: F11.21 = 7. F11.22 = 3. F10.00 = 51 (DI1), F10.22 = 23 (DO1), F10.25 = 24 (RLY1). • When DI1 inputs the 7th pulse, DO1 outputs a signal. When DI1 inputs the 8th pulse, the DO1 output signal returns to a low level. • When DI1 inputs the 3rd pulse, RLY1 outputs a signal until DI1 inputs the 8th pulse (the number of pulses is 7). 	

6.2.13 F12: Analog Calibration Parameters

Ref. Code	Parameter	Setting Range [Default]
F12.00	**AI1 sampling value 1**	**0 - 4096 [Default]**
F12.01	**AI1 measured value 1**	**0.00 - 10.00V [Default]**
F12.02	**AI1 sampling value 2**	**0 - 4096 [Default]**
F12.03	**AI1 measured value 2**	**0.00 - 10.00V [Default]**
F12.04	**AI1 zero point sampling value**	**0 - 4096 [Default]**
F12.05	**AI1 zero point deviation value**	**0.000 - 0.200 [0.018V]**
	Used to manually correct the AI1 input signal. • F12.00 - F12.05 are set by default. Usually, do not set them. Manual setup steps: 1. AI1 does not receive voltage signal, check D02.34, and set F12.04 = D02.34. 2. AI1 is connected to a 0 - 10V signal, such as 0.5 - 2.0V. Check D02.34 and set F12.00 = D02.34. Use a multimeter to measure the actual input of AI1 and set F12.01 to the measured value. 3. AI1 is connected to another 0-10V signal, such as 8.0 - 9.5V. Check D02.34 and set F12.02 = D02.34. Use a multimeter to measure the actual input of AI1 and set F12.03 to the measured value.	
F12.06	**AI2 sampling value 1**	**0 - 4096 [Default]**
F12.07	**AI2 measured value 1**	**0.00 - 1.00V [Default]**
F12.08	**AI2 sampling value 2**	**0 - 4096 [Default]**
F12.09	**AI2 measured value 2**	**0.00 - 10.00V [Default]**
F12.10	**AI2 zero sampling value**	**0 - 4096 [Default]**
F12.11	**AI2 zero point deviation value**	**0.000 - 0.200 [0.018V]**
F12.12	**EAI1 sampling value 1**	**0 - 4096 [Default]**
F12.13	**EAI1 measured value 1**	**0.00 - 1.00V [Default]**
F12.14	**EAI1 sample value 2**	**0 - 4096 [Default]**
F12.15	**EAI1 measured value 2**	**0.00 - 10.00V [Default]**
F12.16	**EAI1 zero sampling value**	**0 - 4096 [Default]**
F12.17	**EAI1 zero point deviation value**	**0.000 - 0.200 [0.018V]**
F12.18	**EAI2 sampling value 1**	**0 - 4096 [Default]**
F12.19	**EAI2 measured value 1**	**0.00 - 1.00V [Default]**
F12.20	**EAI2 sampling value 2**	**0 - 4096 [Default]**
F12.21	**EAI2 measured value 2**	**0.00 - 10.00V [Default]**
F12.22	**EAI2 zero sampling value**	**0 - 4096 [Default]**
F12.23	**EAI2 zero point deviation value**	**0.000 - 0.200 [0.018V]**
	The function is the same as AI1, see F12.00 - F12.05.	
F12.24	**AO test mode**	**0x0000 - 0x0022 [0x0000]**
	Unit: AO1 **Ten: EAO1** **Hundred&thousand: Unused** 0: According to the actual output. 1: Force 5% output.	

Ref. Code	Parameter	Setting Range [Default]
	2: Force 90% output.	
F12.25	**AO1 measured output 1**	**0.0 - 100.0 [5.1%]**
F12.26	**AO1 output coefficient 1**	**0 - 65535 [599]**
F12.27	**AO1 measured output 2**	**0.0 - 100.0 [94.4%]**
F12.28	**AO1 output coefficient 2**	**0 - 65535 [10799]**
F12.29	**EAO1 measured output 1**	**0.0 - 100.0 [5.0%]**
F12.30	**EAO1 output coefficient 1**	**0 - 65535 [500]**
F12.31	**EAO1 measured output 2**	**0.0 - 100.0 [92.5%]**
F12.32	**EAO1 output coefficient 2**	**0 - 65535 [9000]**

6.2.14 F13: Motor 1 Parameters



R1 = F13.08 stator resistance LI = F13.10 leakage inductance
R2 = F13.09 rotor resistance Lm = F13.11 mutual Inductance
Io = F13.12 no-load current S = Slip

Ref. Code	Parameter		Setting Range [Default]
F13.00	**Motor 1 control mode**		**0x00 - 0x11 [0x00]**
	Unit: Control mode 0: Asyn. motor V/f control. Constant control voltage/frequency ratio. • Applicable occasions: One inverter drives multiple motors. • Please set group F14 (V/f parameters) reasonably to achieve the control effect. 1: Asyn. motor SVC (open loop vector) control, i.e. speed sensorless vector control. • Applicable occasions: Variable speed drive with high driving performance requirements and large torque requirements. • First, perform motor parameter auto-tuning to obtain the correct motor parameters. Then set group F15 (loop parameters) to achieve vector control effects. **Ten: Asyn. motor SVC mode** 0: Mode 1. 1: Mode 2.		
F13.01	**Motor 1 rated power**		**0.2 - 999.0kW [Depend on HD800]**
F13.02	**Motor 1 rated voltage**		**0 - 999V [Depend on HD800]**
F13.03	**Motor 1 rated current**	**0.2 - 5.5kW**	**0.01 - 250.00A [Depend on HD800]**
		7.5kW - 400kW	**0.1 - 2500.0A [Depend on HD800]**
F13.04	**Motor 1 rated frequency**		**1.0 - 600.0Hz [Depend on HD800]**
F13.05	**Motor 1 rated speed (low bit)**		**1 - 65535rpm [Depend on HD800]**
	Please set F13.01 - F13.05 according to the motor nameplate.		
F13.07	**Motor 1 iron loss**		**0.000 - 9.999kW [Depend on HD800]**
	Torque compensation for V/f control. Normally, do not set F13.07. If you get an accurate iron loss value from the motor test report, set F13.07 to this value.		
F13.08	**Motor 1 stator resistance**	**0.2 - 5.5kW**	**0.00 - 99.99Ω [Depend on HD800]**
		7.5 - 75kW	**0.000 - 9.999Ω [Depend on HD800]**
		90 - 400kW	**0.0000 - 0.9999Ω [Depend on HD800]**
F13.09	**Motor 1 rotor resistance**	**0.2 - 5.5kW**	**0.00 - 99.99Ω [Depend on HD800]**
		7.5 - 75kW	**0.000 - 9.999Ω [Depend on HD800]**

Ref. Code	Parameter		Setting Range [Default]
		90 - 400kW	0.0000 - 0.9999Ω [Depend on HD800]
F13.10	Motor 1 leakage inductance	0.2 - 5.5kW	0.0 - 5000.0mH [Depend on HD800]
		7.5 - 75kW	0.00 - 500.00mH [Depend on HD800]
		90 - 400kW	0.000 - 50.000mH [Depend on HD800]
F13.11	Motor 1 mutual inductance	0.2 - 5.5kW	0.0 - 5000.0mH [Depend on HD800]
		7.5 - 75kW	0.00 - 500.00mH [Depend on HD800]
		90 - 400kW	0.000 - 50.000mH [Depend on HD800]
F13.12	Motor 1 no-load current	0.2 - 5.5kW	0.00 -9 9.99A [Depend on HD800]
		7.5 - 400kW	0.0 -9 99.9A [Depend on HD800]
F13.13	Motor 1 core saturation coefficient 1		0.00 - 1.00 [1.00]
F13.14	Motor 1 core saturation coefficient 2		0.00 - 1.00 [1.00]
F13.15	Motor 1 core saturation coefficient 3		0.00 - 1.00 [1.00]
F13.16	Motor 1 core saturation coefficient 4		0.00 - 1.00 [1.00]
F13.17	Motor 1 core saturation coefficient 5		0.00 - 1.00 [1.00]
F13.21	Motor 1 parameter auto-tuning		0 - 2 [0]

Auto-tuning can only be performed in keypad control (F00.04 = 0).

0: No action.

1: Static auto-tuning.

- See section 7.6, page 172 for detailed steps.
- The motor is in a stationary status.
- The inverter automatically measures the stator resistance, rotor resistance and leakage inductance of the motor, and the measurement results are automatically written into F13.08 - F13.10.
- Automatically calculate mutual inductance and write it into F13.11.

$$F13.11 = \frac{F13.02}{2\sqrt{3}\pi \times F13.04 \times F13.12} - F13.10$$

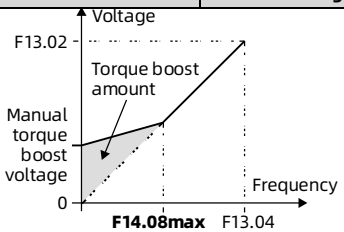
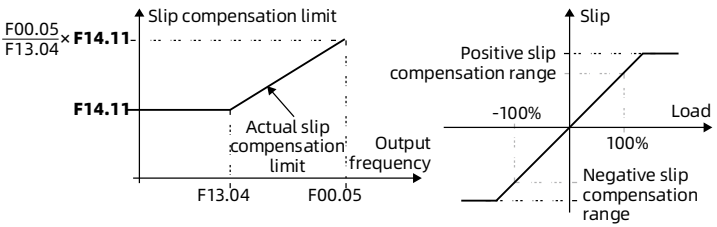
1: Rotary auto-tuning.

- See section 7.6, page 172 for detailed steps.
- The motor is first in a stationary status, and the inverter automatically measures the stator resistance, rotor resistance, and leakage inductance of the motor.
- Then the motor is in a rotating status, and the inverter automatically measures the mutual inductance, no-load current, and core saturation coefficient of the motor.
- The measurement results are automatically written into F13.08 - F13.17.

6.2.15 F14: Asyn. Motor 1 V/f Parameters

Motor 1 selects V/f control (F13.00 unit = 0), set the group F14 parameters to achieve the control effect.

Ref. Code	Parameter	Setting Range [Default]
F14.00	**V/f curve**	**0 - 6 [0]**
	Set the V/f curve according to different load characteristics. 0: Straight line. 1: Square curve. 2: 1.2 power curve. 3: 1.7 power curve. 4: User-defined curve. • Applicable to special loads, see F14.01 - F14.06. 5: V/f complete separation mode. • F14.20 and F14.21 set the voltage acceleration and deceleration time. • The output frequency is completely independent of the output voltage. F14.17 sets the output voltage source, and the frequency source sets the output frequency. 6: V/f semi-separation mode. • F02.02 and F02.03 set the voltage acceleration and deceleration time. • The output voltage V is proportional to the output frequency f: V = 2 × voltage input source voltage × f / F13.04 (motor rated frequency).	
F14.01	**V/f frequency F3**	**F14.03 - 100.0 (F13.04) [80.0%]**
F14.02	**V/f voltage V3**	**F14.04 - 100.0 (F13.02) [80.0%]**
F14.03	**V/f frequency F2**	**F14.05 - F14.01 (F13.04) [50.0%]**
F14.04	**V/f voltage V2**	**F14.06 - F14.02 (F13.02) [50.0%]**
F14.05	**V/f frequency F1**	**0.0 - F14.03 (F13.04) [0.0%]**
F14.06	**V/f voltage V1**	**0.0 - F14.04 (F13.02) [0.0%]**
	Valid when F14.00 = 4 (user-defined curve). Use the three-point polyline mode of (V1, F1), (V2, F2), and (V3, F3) to set the V/f curve. • F13.02: Motor rated voltage. • F13.04: Motor rated frequency.	
F14.07	**Torque boost**	**0.2 - 45kW: 0.0 - 30.0 [2.0%]** **55 - 132kW: 0.0 - 30.0 [1.0%]** **160 - 400kW: 0.0 - 30.0 [0.5%]**
F14.08	**Manual torque boost cut-off point**	**0.0 - 50.0 (F13.04) [25.0%]**
	When F14.00 is set to any V/f curve, torque boost is valid. Increasing output voltage compensates for low-frequency torque. • F14.07 ≠ 0, manual torque boost. • When F14.07 = 0, the torque is automatically increased. Please set the following parameters: • Motor rated frequency (F13.04): According to the motor nameplate. • Motor rated speed (F13.05): According to the motor nameplate, or through rotary auto-tuning. • Motor stator resistance (F13.08): Through auto-tuning. • F14.09 = 100.0%, enable slip compensation.	

Ref. Code	Parameter	Setting Range [Default]
		
F14.09	**Slip compensation gain**	**0.0 - 300.0 [0.0%]**
F14.10	**Slip compensation filter time**	**0.01 - 10.00 [0.10s]**
F14.11	**Slip compensation limit**	**0.0 - 250.0 [200.0%]**
	The change of motor load torque affects the motor running slip, resulting in the change of motor speed. Setting slip compensation can reduce this change. • Slip compensation: The inverter automatically adjusts the inverter output frequency according to the motor load torque. • In the electric status (actual speed < set speed) and power generation status (actual speed > set speed), F14.09 can be added. The automatic slip compensation amount is related to the rated slip of the motor. Please set F13.04 (rated motor frequency) and F13.05 (rated motor speed) correctly. • Slip compensation range = actual slip compensation limit × rated slip. • Rated slip = F13.04 – F13.05 × Np / 60. Np is the number of motor pole pairs. 	
F14.12	**AVR function**	**0 - 2 [1]**

	Valid in V/f control. In SVC control, AVR is always in action.
	When the input voltage deviates from the rated voltage, use the AVR function to keep the output voltage constant. Especially when the input voltage is higher than the rated voltage, please enable the AVR function.
	0: No operation.
	1: Keep operates.
	2: No operation only in Dec.
	• When the inverter decelerates and stops, energy is fed back from the load to the inverter and the bus voltage increases.
	  • If F14.12 = 0 or 2, the running current is larger.
	  • If F14.12 = 1, the running current is small and the motor decelerates smoothly.	

F14.13	**Oscillation suppression coefficient (low frequency)**	**0 - 200 [30]**
F14.14	**Oscillation suppression coefficient (high frequency)**	**0 - 200 [20]**
F14.15	**Oscillation suppression frequency (low frequency)**	**0.00 - F00.05 [20.00Hz]**

Ref. Code	Parameter	Setting Range [Default]
F14.16	**Oscillation suppression frequency (high frequency)**	**0.00 - F00.05 [35.00Hz]**
	Suppress the oscillation generated when the inverter drives the motor. When the inverter is running at a constant load, if the output current changes repeatedly, set F14.13 - F14.16 to eliminate oscillation and make the motor run smoothly. • When the output frequency = F14.15, the oscillation coefficient is F14.13. • When the output frequency = F14.16, the oscillation coefficient is F14.14. • When F14.15 < output frequency < F14.16, the oscillation coefficient is the linear interpolation between F14.13 and F14.14. • When the output frequency < F14.15 or the output frequency > F14.16, the oscillation suppression is invalid.	
F14.17	**V/f separation voltage source**	**0 - 7 [0]**
	Valid when F14.00 = 5 or 6 (V/f separation mode). **0: F14.18, F14.19.** **1: Terminal pulse (DI5).** • DI5 terminal setting function: F10.04 = 53 (pulse frequency input). • Use the DI5 terminal to set the output voltage. • For the relationship between input pulse and voltage, see F09.38 - F09.41. **2 - 5: AI1/AI2/EAI1/EAI2.** • Use AI terminal to set output voltage. F09.32 sets voltage input or current input. • For the relationship between input analog and voltage, see F09.00 - F09.27. **6: Keypad potentiometer.** • Use the potentiometer on the keypad to set the output voltage. • For the relationship between input voltage and voltage, see F09.28 - F09.31. **7: Communication.** • Connect the communication terminals and use the communication commands to set the output voltage (communication writes actual voltage).	
F14.18	**V/f separation voltage 1 (digital setting)**	**0.0 - 100.0 (F13.02) [0.0%]**
F14.19	**V/f separation voltage 2 (digital setting)**	**0.0 - 100.0 (F13.02) [0.0%]**
	Valid when F14.00 = 5 or 6 (V/f separation mode) and F14.17 = 0. Under any of the following conditions, the output voltage uses F14.19. • Jog. • DI terminal is valid: Set the function of any DI/EX terminal: 87 (V/f separation voltage switch), see F10.00 - F10.17. • When F14.23 ≠ 0 and the F14.23 time is reached.	
F14.20	**V/f separation voltage Acc. time**	**0.0 - 600.0 [10.0s]**
F14.21	**V/f separation voltage Dec. time**	**0.0 - 600.0 [10.0s]**
	When F14.00 = 5 (V/f complete separation mode), F14.20 sets the voltage Acc. time, and F14.21 sets the voltage Dec. time. Acc. time: The time for the output voltage to accelerate from 0 to F13.02 (motor 1 rated voltage). Dec. time: The time for the output voltage to decelerate from F13.02 (motor 1 rated voltage) to 0.	
F14.22	**V/f separation stop mode**	**0, 1 [0]**
	0: Frequency/voltage independent deceleration. 1: The voltage decelerates to 0 and then the frequency decelerates.	

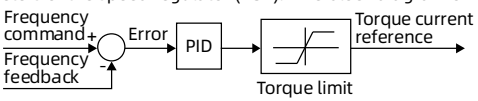
Ref. Code	Parameter	Setting Range [Default]
F14.23	V/f separation voltage automatic switching time	0.0 - 600.0 [0.0s]

6.2.16 F15: Motor 1 Loop Parameters

Motor 1 selects SVC control (F13.00 unit = 1), set the parameters of group F15 to achieve vector control effect.

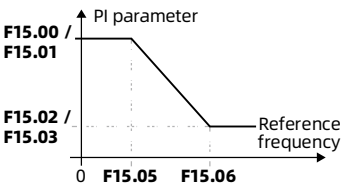
Ref. Code	Parameter	Setting Range [Default]
F15.00	Speed loop KP1	0.1 - 200.0 [10.0]
F15.01	Speed loop KI1	0.00 - 10.00 [0.10s]
F15.02	Speed loop KP2	0.1 - 200.0 [10.0]
F15.03	Speed loop KI2	0.00 - 10.00 [0.20s]
F15.04	Speed loop KD	0.00 - 1.00 [0.00s]
F15.05	Speed loop PI switching frequency 1	0.00 - F15.06 [10.00Hz]
F15.06	Speed loop PI switching frequency 2	F15.05 - 50.00 [15.00Hz]

Set the PID parameters of the speed regulator (ASR). The block diagram of ASR is as follows:



See below:

- When the reference frequency < F15.05, the PI parameters are F15.00 and F15.01.
- When the reference frequency > F15.06, the PI parameters are F15.02 and F15.03.
- When F15.05 < reference frequency < F15.06, the P parameter is the linear interpolation between F15.00 and F15.02, and the I parameter is the linear interpolation between F15.01 and F15.03.



Adjustment mode:

- First adjust KP (F15.00, F15.02) to increase KP as much as possible without oscillating the system, and then adjust KI (F15.01, F15.03) to make the system respond quickly without overshooting.
  - Increasing KP can speed up the dynamic response of the system, but if KP is too large, the system is prone to oscillation.
  - Decreasing KI can speed up the dynamic response of the system. However, if KI is too small, the system is prone to oscillation and overshoot.
  - To improve dynamic response at low frequency, increase KP and decrease KI.
  - Normally, do not set F15.04. If you need to speed up the dynamic response, please set F15.04.
- If KI = 0, the integral term is invalid and the ASR acts as a proportional regulator.
- If KD = 0, the derivative term is invalid.

F15.07	Speed loop integral term limit	0.0 - 200.0 (F13.03) [180.0%]

Ref. Code	Parameter	Setting Range [Default]
	Set the Max. value of KI.	
F15.08	**Speed loop output filter time**	**0.000 - 1.000 [0.000s]**
	Sets the time to filter the ASR output. • When F15.08 = 0, ASR output is not filtered.	
F15.09	**Torque limit lock**	**0, 1 [0]**
	0: Unlocked. 1: All torque limits are consistent with the forward electric torque limit.	
F15.10	**Torque limit channel**	**0x0000 - 0x7777 [0x0000]**
	Unit: Forward electric **Ten: Reverse electric** **Hundred: Forward power generation** **Thousand: Reverse power generation** 0: F15.11 - F15.14. 1: Terminal pulse. 2 - 5: AI1/AI2/EAI1/EAI2. 6: Keypad potentiometer. 7: Communication.	
F15.11	**Forward electric torque limit**	**0.0 - 200.0 (F13.03) [180.0%]**
F15.12	**Reverse electric torque limit**	
F15.13	**Forward power generation torque limit**	
F15.14	**Reverse power generation torque limit**	
	Please set F15.11 - F15.14 with caution. Setting too large may damage the motor.	
F15.15	**Current loop KP**	**0 - 2000 [800]**
F15.16	**Current loop KI**	**0 - 1000 [250]**
F15.17	**Current loop output filter coefficient**	**0 - 31 [3]**
	F15.15 and F15.16 set the PI parameters of the current loop regulator (ACR). Normally, the PI parameters are not set.	
F15.18	**Feedforward enable**	**0, 1 [0]**
	The inverter calculates the voltage feedforward of the ACR output in real time based on the motor parameters, excitation current and torque current. • When the motor parameters are accurate, enable feedforward to improve the dynamic response of the system. • When the motor parameters are inaccurate, please disable feedforward. 0: Disable. 1: Enable.	
F15.19	**Excitation enhancement**	**0.0 - 30.0 (F13.12) [0.0%]**
	When the motor is running under heavy load within the rated frequency range, the motor excitation current is increased to improve the motor's load capacity.	
F15.20	**Field orientation optimization**	**0x00 - 0x11 [0x00]**
	Unit: Magnetic field orientation angle correction **Ten: Mutual inductance calculation (based on magnetic flux)** 0: Disable. 1: Enable.	
F15.21	**Flux correction coefficient**	**40.00 - 200.00 [100.00]**

6.2.17 F17: Motor 2 Parameters

The function is the same as motor 1 (group F13).

Ref. Code	Parameter		Setting Range [Default]
F17.00	**Motor 2 control mode**		**0x00 - 0x11 [0x00]**
	Unit: Control mode 0: Asyn. motor V/f control. 1: Asyn. motor SVC (open loop vector) control. **Ten: Asyn. motor SVC mode** 0: Mode 1. 1: Mode 2.		
F17.01	**Motor 2 rated power**		**0.2 - 999.0kW [Depend on HD800]**
F17.02	**Motor 2 rated voltage**		**0 - 999V [Depend on HD800]**
F17.03	**Motor 2 rated current**	**0.2 - 5.5kW**	**0.01 - 250.00 A [Depend on HD800]**
		7.5 - 400kW	**0.1 - 2500.0A [Depend on HD800]**
F17.04	**Motor 2 rated frequency**		**1.0 - 600.0Hz [Depend on HD800]**
F17.05	**Motor 2 rated speed (low bit)**		**1 - 65535rpm [Depend on HD800]**
F17.07	**Motor 2 iron loss**		**0.000 - 9.999kW [Depend on HD800]**
F17.08	**Motor 2 stator resistance**	**0.2 - 5.5kW**	**0.00 - 99.99Ω [Depend on HD800]**
		7.5 - 75kW	**0.000 - 9.999Ω [Depend on HD800]**
		90 - 400kW	**0.0000 - 0.9999Ω [Depend on HD800]**
F17.09	**Motor 2 rotor resistance**	**0.2 - 5.5kW**	**0.00 - 99.99Ω [Depend on HD800]**
		7.5 - 75kW	**0.000 - 9.999Ω [Depend on HD800]**
		90 - 400kW	**0.0000 - 0.9999Ω [Depend on HD800]**
F17.10	**Motor 2 leakage inductance**	**0.2 - 5.5kW**	**0.0 - 5000.0mH [Depend on HD800]**
		7.5 - 75kW	**0.00 - 500.00mH [Depend on HD800]**
		90 - 400kW	**0.000 - 50.000mH [Depend on HD800]**
F17.11	**Motor 2 mutual inductance**	**0.2 - 5.5kW**	**0.0 - 5000.0mH [Depend on HD800]**
		7.5 - 75kW	**0.00 - 500.00mH [Depend on HD800]**
		90 - 400kW	**0.000 - 50.000mH [Depend on HD800]**
F17.12	**Motor 2 no-load current**	**0.2 - 5.5kW**	**0.00 -9 9.99A [Depend on HD800]**
		7.5 - 400kW	**0.0 -9 99.9A [Depend on HD800]**
F17.13	**Motor 2 core saturation coefficient 1**		**0.00 - 1.00 [1.00]**
F17.14	**Motor 2 core saturation coefficient 2**		**0.00 - 1.00 [1.00]**
F17.15	**Motor 2 core saturation coefficient 3**		**0.00 - 1.00 [1.00]**
F17.16	**Motor 2 core saturation coefficient 4**		**0.00 - 1.00 [1.00]**
F17.17	**Motor 2 core saturation coefficient 5**		**0.00 - 1.00 [1.00]**
F17.21	**Motor 2 parameter auto-tuning**		**0 - 2 [0]**
	0: No action. 1: Static auto-tuning. 2: Rotary auto-tuning.		

6.2.18 F18: Asyn. Motor 2 V/f Parameters

Motor 2 selects V/f control (F1 7.00 unit = 0), set the parameters of group F18 to achieve the control effect.

The function is the same as motor 1 (group F14).

Ref. Code	Parameter	Setting Range [Default]
F18.00	**V/f curve**	**0 - 6 [0]**
	0: Straight line. 1: Square curve. 2: 1.2 power curve. 3: 1.7 power curve. 4: User-defined curve. 5: V/f complete separation mode. 6: V/f semi-separation mode.	
F18.01	**V/f frequency F3**	**F18.03 - 100.0 (F17.04) [80.0%]**
F18.02	**V/f voltage V3**	**F18.04 - 100.0 (F17.02) [80.0%]**
F18.03	**V/f frequency F2**	**F18.05 - F18.01 (F17.04) [50.0%]**
F18.04	**V/f voltage V2**	**F18.06 - F18.02 (F17.02) [50.0%]**
F18.05	**V/f frequency F1**	**0.0 - F18.03 (F17.04) [0.0%]**
F18.06	**V/f voltage V1**	**0.0 - F18.04 (F17.02) [0.0%]**
F18.07	**Torque boost**	**0.2 - 45kW: 0.0 - 30.0 [2.0%]** **55 - 132kW: 0.0 - 30.0 [1.0%]** **160 - 400kW: 0.0 - 30.0 [0.5%]**
F18.08	**Manual torque boost cut-off point**	**0.0 - 50.0 (F17.04) [25.0%]**
F18.09	**Slip compensation gain**	**0.0 - 300.0 [0.0%]**
F18.10	**Slip compensation filter time**	**0.01 - 10.00 [0.10s]**
F18.11	**Slip compensation limit**	**0.0 - 250.0 [200.0%]**
F18.12	**AVR function**	**0 - 2 [1]**
	0: No operation. 1: Keep operates. 2: No operation only in Dec..	
F18.13	**Oscillation suppression coefficient (low frequency)**	**0 - 200 [30]**
F18.14	**Oscillation suppression coefficient (high frequency)**	**0 - 200 [20]**
F18.15	**Oscillation suppression frequency (low frequency)**	**0.00 - F00.05 [20.00Hz]**
F18.16	**Oscillation suppression frequency (high frequency)**	**0.00 - F00.05 [35.00Hz]**
F18.17	**V/f separation voltage source**	**0 - 7 [0]**
	0: F18.18, F18.19. 1: Terminal pulse. 2 - 5: AI1/AI2/EAI1/EAI2. 6: Keypad potentiometer. 7: Communication.	

Ref. Code	Parameter	Setting Range [Default]
F18.18	**V/f separation voltage 1 (digital setting)**	**0.0 - 100.0 (F17.02) [0.0%]**
F18.19	**V/f separation voltage 2 (digital setting)**	**0.0 - 100.0 (F17.02) [0.0%]**
F18.20	**V/f separation voltage Acc. time**	**0.0 - 600.0 [10.0s]**
F18.21	**V/f separation voltage Dec. time**	**0.0 - 600.0 [10.0s]**
F18.22	**V/f separation stop mode**	**0, 1 [0]**
	0: Frequency/voltage independent deceleration. 1: The voltage decelerates to 0 and then the frequency decelerates.	
F18.23	**V/f separation voltage automatic switching time**	**0.0 - 600.0 [0.0s]**

6.2.19 F19: Motor 2 Loop Parameters

Motor 2 selects SVC control (F17.00 unit = 1), set the parameters of group F19 to achieve vector control effect.

The function is the same as motor 1 (group F15).

Ref. Code	Parameter	Setting Range [Default]
F19.00	Speed loop KP1	0.1 - 200.0 [10.0]
F19.01	Speed loop KI1	0.00 - 10.00 [0.10s]
F19.02	Speed loop KP2	0.1 - 2 00.0 [10.0]
F19.03	Speed loop KI2	0.00 - 10.00 [0.20s]
F19.04	Speed loop KD	0.00 - 1.00 [0.00s]
F19.05	Speed loop PI switching frequency 1	0.00 - F19.06 [10.00Hz]
F19.06	Speed loop PI switching frequency 2	F19.05 - 50.00 [15.00Hz]
F19.07	Speed loop integral term limit	0.0 - 200.0 (F17.03) [180.0%]
F19.08	Speed loop output filter time	0.000 - 1.000 [0.000s]
F19.09	Torque limit lock	0, 1 [0]
	0: Unlocked. 1: All torque limits are consistent with the forward electric torque limit.	
F19.10	Torque limit channel	0x0000 - 0x7777 [0x0000]
	Unit: Forward electric **Ten: Reverse electric** **Hundred: Forward power generation** **Thousand: Reverse power generation** 0: F19.11 - F19.14. 1: Terminal pulse. 2 - 5: AI1/AI2/EAI1/EAI2. 6: Keypad potentiometer. 7: Communication.	
F19.11	Forward electric torque limit	0.0 - 200.0 (F17.03) [180.0%]
F19.12	Reverse electric torque limit	
F19.13	Forward power generation torque limit	
F19.14	Reverse power generation torque limit	
F19.15	Current loop KP	0 - 2000 [800]
F19.16	Current loop KI	0 - 1000 [250]
F19.17	Current loop output filter coefficient	0 - 31 [3]
F19.18	Feedforward enable	0, 1 [0]
	0: Disable. 1: Enable.	
F19.19	Excitation enhancement	0.0 - 30.0 (F17.12) [0.0%]
F19.20	Field orientation optimization	0x00 - 0x11 [0x00]
	Unit: Magnetic field orientation angle correction **Ten: Mutual inductance calculation (based on magnetic flux)** 0: Disable. 1: Enable.	
F19.21	Flux correction coefficient	40.00 - 200.00 [100.00]

6.2.20 F21: PWM Control Parameters

<table>
<tr><th>Ref. Code</th><th>Parameter</th><th>Setting Range [Default]</th></tr>
<tr><td>F21.00</td><td>Carrier frequency</td><td>1.0 - 8.0kHz [Depend on HD800]</td></tr>
<tr><td></td><td colspan="2">Set the carrier frequency of the inverter output PWM wave.
<table>
<tr><th>Inverter Power</th><th>Default</th></tr>
<tr><td>0.2 - 7.5kW (220V)</td><td>6.0kHz</td></tr>
<tr><td>11kW (220V)</td><td>4.0kHz</td></tr>
<tr><td>0.4 - 18.5kW (380V)</td><td>6.0kHz</td></tr>
<tr><td>22 - 55kW (380V)</td><td>4.0kHz</td></tr>
<tr><td>75 - 400kW (380V)</td><td>2.0kHz</td></tr>
</table>
• The carrier frequency affects the noise of the motor operation. The higher the carrier frequency, the lower the noise. Please set F21.00 reasonably.
• When F21.00 is greater than the factory value, the inverter needs to be derated by 5% for every 1kHz increase.</td></tr>
<tr><td>F21.01</td><td>Automatic adjustment of carrier frequency</td><td>0 - 3 [1]</td></tr>
<tr><td></td><td colspan="2">Invalid when F00.00 = 1 (torque control).
0: Disable.
1: Automatic adjustment 1. The inverter automatically adjusts according to the output frequency.
2: Random carrier frequency.
3: Automatic adjustment according to temperature rise. The inverter automatically adjusts according to the heat sink temperature.</td></tr>
<tr><td>F21.02</td><td>PWM overmodulation</td><td>0, 1 [1]</td></tr>
<tr><td></td><td colspan="2">0: Invalid.
1: Valid.</td></tr>
<tr><td>F21.03</td><td>PWM modulation mode</td><td>0, 1 [0]</td></tr>
<tr><td></td><td colspan="2">0: Two phase modulation/three phase modulation switching.
1: Three phase modulation.</td></tr>
<tr><td>F21.04</td><td>PWM modulation mode switching point 1</td><td>5.00Hz - (F21.05 - 2.00)
[Depend on HD800]</td></tr>
<tr><td>F21.05</td><td>PWM modulation mode switching point 2</td><td>(F21.04 + 2.00) - 50.00Hz
[Depend on HD800]</td></tr>
<tr><td></td><td colspan="2">Valid when V/f control and F21.00 > 3kHz. When SVC control or F21.00 ≤ 3kHz, the inverter automatically selects three phase modulation.
F21.04 sets the frequency at which two phase modulation switches to three phase modulation.
<table>
<tr><th>Inverter Power</th><th>Default</th><th>Lower Limit</th></tr>
<tr><td>0.2 - 2.2kW</td><td>10.00Hz</td><td>10.00Hz</td></tr>
<tr><td>3.7 - 400kW</td><td>5.00Hz</td><td>5.00Hz</td></tr>
</table>
F21.05 sets the frequency at which three phase modulation switches to two phase modulation.
<table>
<tr><th>Inverter Power</th><th>Default</th><th>Upper Limit</th></tr>
<tr><td>0.2 - 2.2kW</td><td>15.00Hz</td><td>50.00Hz</td></tr>
<tr><td>3.7 - 400kW</td><td>10.00Hz</td><td>50.00Hz</td></tr>
</table></td></tr>
</table>

Ref. Code	Parameter	Setting Range [Default]
F21.06	**Narrow pulse width mode**	**0x000 - 0x111 [0x111]**
	Unit: V/f operation **Ten: SVC operation** **Hundred: Auto-tuning** 0: Invalid. 1: Valid.	
F21.07	**Random carrier frequency coefficient K1**	**0 - 2000 [2]**
F21.08	**Random carrier frequency coefficient K2**	**0 - 2000 [3]**

6.2.21 F22: Communication Parameters

For communication functions, see Chapter 10, page 183.

Ref. Code	Parameter	Setting Range [Default]
F22.00	**Communication address**	**Modbus communication: 0 - 247 [2]** **CAN communication: 0 - 127 [2]**
	When F22.00 = 0, F22.00 is the broadcast address.	
F22.01	**Modbus communication format**	**0 - 3 [0]**
	0: 1-8-2 format, no checksum, RTU. 1: 1-8-1 format, even parity, RTU. 2: 1-8-1 format, odd parity, RTU. 3: 1-8-1 format, no checksum, RTU.	
F22.02	**Communication baud rate**	**0x00 - 0x68 [0x53]**
	Unit: Modbus communication 0: 1200bps. 1: 2400bps. 2: 4800bps. 3: 9600bps. 4: 19200bps. 5: 38400bps. 6: 57600bps. 7: 76800bps. 8: 115200bps. **Ten: CAN communication** 0: 20kbps. 1: 50kbps. 2: 100kbps. 3: 125kbps. 4: 250kbps. 5: 500kbps. 6: 1Mbps.	
F22.03	**Modbus response delay**	**0 - 1000 [0ms]**
F22.04	**Modbus communication timeout**	**0.0 - 600.0 [0.0s]**
	When the time interval between two data returns to the inverter exceeds F22.04, the inverter reports E0028 fault (Modbus communication timeout). F22.08 sets the protection action. • When F22.04 = 0, the inverter does not detect.	
F22.05	**Communication expansion card configuration**	**0x00 - 0x42 [0x00]**
	Unit: CAN communication 0: Disable. 1: Enable CAN custom protocol. 2: Enable CanOpen protocol. **Ten: Profibus-DP PPO type** 0: Invalid. 1: PPO1. 2: PPO2. 3: PPO3. 4: PPO4.	

Ref. Code	Parameter	Setting Range [Default]
	Note: After changing the PPO type, please power on again for the change to take effect.	
F22.06	**Communication timeout between communication expansion card and control board**	**0.0 - 600.0 [0.0s]**
	When the time interval between two data returns to the inverter exceeds F22.06, the inverter reports E0050 fault (communication timeout between communication expansion card and control board). F22.08 sets the protection action. • When F22.06 = 0, the inverter does not detect.	
F22.07	**Communication timeout between host (PLC, HMI, etc.) and control board**	**0.0 - 600.0 [0.0s]**
	When the time interval between two data returns to the inverter exceeds F22.07, the inverter reports E0051 fault (communication timeout between host and control board). F22.08 sets the protection action. • When F22.07 = 0, the inverter does not detect.	
F22.08	**Communication timeout action**	**0x0000 - 0x3333 [0x0000]**
	Unit: E0028 (Modbus communication) **Ten: E0050 (communication expansion card and control board communication)** **Hundred: E0051 (host and control board communication)** **Thousand: E0052 (EIO-I card and control board communication)** 0: Warning, no stop. 1: Fault, coast to stop. 2: Fault, Dec. to stop. 3: Fault, emergency stop.	
F22.09	**Communication timeout between EIO-I card and control board**	**0.0 - 600.0 [0.0s]**
	When the time interval between two data returns to the inverter exceeds F22.09, the inverter reports E0052 fault (communication timeout between EIO-I card and control board). F22.08 sets the protection action. • When F22.09 = 0, the inverter does not detect.	

6.2.22 F23: Communication Customization 1

See section 10.4.4, page 193 for instruction.

Ref. Code	Parameter	Setting Range [Default]
F23.00	The 1st read/write parameter address	0x0000 - 0xFFFF [0x3315]
F23.01	The 2nd read/write parameter address	0x0000 - 0xFFFF [0x3302]
F23.02	The 3rd read/write parameter address	0x0000 - 0xFFFF [0x3303]
F23.03	The 4th read/write parameter address	0x0000 - 0xFFFF [0x330B]
F23.04	The 5th read/write parameter address	0x0000 - 0xFFFF [0x3306]
F23.05	The 6th read/write parameter address	0x0000 - 0xFFFF [0x3307]
F23.06	The 7th read/write parameter address	0x0000 - 0xFFFF [0x330E]
F23.07	The 8th read/write parameter address	0x0000 - 0xFFFF [0x3313]
F23.08	The 9th read/write parameter address	0x0000 - 0xFFFF [0x3400]
F23.09	The 10th read/write parameter address	0x0000 - 0xFFFF [0x3401]
F23.10	The 11th read/write parameter address	0x0000 - 0xFFFF [0x3402]
F23.11	The 12th read/write parameter address	0x0000 - 0xFFFF [0x3512]
F23.12	The 13th read/write parameter address	0x0000 - 0xFFFF [0x3200]
F23.13	The 14th read/write parameter address	0x0000 - 0xFFFF [0x3201]
F23.14	The 15th read/write parameter address	0x0000 - 0xFFFF [0xFFFF]
F23.15	The 16th read/write parameter address	0x0000 - 0xFFFF [0xFFFF]
F23.16	The 17th read/write parameter address	0x0000 - 0xFFFF [0xFFFF]
F23.17	The 18th read/write parameter address	0x0000 - 0xFFFF [0xFFFF]
F23.18	The 19th read/write parameter address	0x0000 - 0xFFFF [0xFFFF]
F23.19	The 20th read/write parameter address	0x0000 - 0xFFFF [0xFFFF]

6.2.23 F24: Communication Customization 2

See section 10.4.5, page 194 for instruction.

Ref. Code	Parameter	Setting Range [Default]
F24.00	Communication control command address	0x0000 - 0xFFFF [0x0000]
F24.01	Forward start command address	0x0000 - 0xFFFF [0x0000]
F24.0 2	Reverse start command address	0x0000 - 0xFFFF [0x0000]
F24.03	Forward jog command address	0x0000 - 0xFFFF [0x0000]
F24.04	Reverse jog command address	0x0000 - 0xFFFF [0x0000]
F24.05	Coast to stop command address	0x0000 - 0xFFFF [0x0000]
F24.06	Dec. to stop command address	0x0000 - 0xFFFF [0x0000]
F24.07	Emergency stop command address	0x0000 - 0xFFFF [0x0000]
F24.08	Communication fault reset address	0x0000 - 0xFFFF [0x0000]
F24.09	Fault reset command address	0x0000 - 0xFFFF [0x0000]
F24.10	Communication setting frequency address	0x0000 - 0xFFFF [0x0000]
F24.11	Frequency setting accuracy	0 - 2 [0]
	0: 2 decimal places. 1: 1 decimal place. 2: 0 decimal place.	

6.2.24 F25: PZD Mapping Parameters

Ref. Code	Parameter	Setting Range [Default]
F25.00	PZD01 mapping setting value 01	0x0000 - 0xFFFF [0xFFFF]
F25.01	PZD03 mapping setting value 02	0x0000 - 0xFFFF [0xFFFF]
F25.02	PZD04 mapping setting value 03	0x0000 - 0xFFFF [0xFFFF]
F25.03	PZD05 mapping setting value 04	0x0000 - 0xFFFF [0xFFFF]
F25.04	PZD06 mapping setting value 05	0x0000 - 0xFFFF [0xFFFF]
F25.05	PZD07 mapping setting value 06	0x0000 - 0xFFFF [0xFFFF]
F25.06	PZD08 mapping setting value 07	0x0000 - 0xFFFF [0xFFFF]
F25.07	PZD09 mapping setting value 08	0x0000 - 0xFFFF [0xFFFF]
F25.08	PZD10 mapping setting value 09	0x0000 - 0xFFFF [0xFFFF]
F25.09	PZD11 mapping setting value 10	0x0000 - 0xFFFF [0xFFFF]
F25.10	PZD12 mapping setting value 11	0x0000 - 0xFFFF [0xFFFF]
F25.11	PZD 02 mapping setting value 12	0x0000 - 0xFFFF [0xFFFF]
F25.12	PZD01 mapping response value 01	0x0000 - 0xFFFF [0xFFFF]
F25.13	PZD03 mapping response value 02	0x0000 - 0xFFFF [0xFFFF]
F25.14	PZD04 mapping response value 03	0x0000 - 0xFFFF [0xFFFF]
F25.15	PZD05 mapping response value 04	0x0000 - 0xFFFF [0xFFFF]
F25.16	PZD06 mapping response Value 05	0x0000 - 0xFFFF [0xFFFF]
F25.17	PZD07 mapping response Value 06	0x0000 - 0xFFFF [0xFFFF]
F25.18	PZD08 mapping response value 07	0x0000 - 0xFFFF [0xFFFF]
F25.19	PZD09 mapping response value 08	0x0000 - 0xFFFF [0xFFFF]
F25.20	PZD10 mapping response value 09	0x0000 - 0xFFFF [0xFFFF]
F25.21	PZD11 mapping response value 10	0x0000 - 0xFFFF [0xFFFF]
F25.22	PZD12 mapping response value 11	0x0000 - 0xFFFF [0xFFFF]
F25.23	PZD02 mapping response value 12	0x0000 - 0xFFFF [0xFFFF]

6.2.25 F26: Fault Protection Parameters

Ref. Code	Parameter	Setting Range [Default]
F26.02	**Undervoltage start function**	**0x00 - 0x12 [0x00]**
F26.03	**Undervoltage start waiting time**	**0.0 - 10.0 [2.0s]**
	Note: When the inverter is used for potential loads (elevators, winches, etc.), in order to ensure the safety of the entire system, please disable the undervoltage restart function. **F26.02 settings are as follows:** **Unit: First undervoltage start after power-on** 0: Disable automatic start. 1: Start according to the last power off running status. 2: Start when the run command terminal is valid. **Ten: Stop undervoltage and restart** 0: Edge trigger mode. 1: Level trigger mode.	
F26.04	**E0099 fault action**	**0x00 - 0x21 [0x00]**
F26.05	**E0099 fault restart waiting time**	**0.0 - 10.0 [2.0s]**
	F26.04 settings are as follows: **Unit: Power off detection during operation** 0: Disable. 1: Enable. **Ten: Power off action during operation** 0: Automatically reset the fault, but cannot automatically start. 1: Automatically reset the fault and start automatically. 2: Fault cannot be reset automatically.	
F26.06	**Fault automatic reset times**	**0 - 100 [0]**
F26.07	**Fault automatic reset interval**	**0.1 - 20.0 [5.0s]**
	F26.06 = 0, automatic reset is invalid. If the inverter reports a fault during operation, the inverter will automatically reset the fault. During automatic reset, the inverter has no output. After reset, if the run command is valid, the inverter starts by speed tracking. • If the inverter does not report a fault within 5 minutes, the reset count will be cleared. • When the external fault is reset, the reset count is cleared. The inverter cannot automatically reset the following faults: • E0008: Power module fault • E0010: Brake unit fault • E0013: The power-on buffer contactor is not energized • E0014: Current detection circuit fault • E0021: Control board EEPROM read/write fault • E0023: Parameter setting error • E0024: External device fault	

Ref. Code	Parameter		Setting Range [Default]
F26.08	**Overload pre-alarm detection**		**0x00 - 0x33 [0x00]**
F26.09	**Overload pre-alarm detection level**		**20.0 - 200.0 (rated motor current) [150%]**
F26.10	**Overload pre-alarm detection time**		**0.0 - 3600.0 [5.0s]**
	When the inverter output current > F26.09 and lasts for F26.10 time, the inverter reports E0035 fault (overload pre-alarm). **F26.08 settings are as follows:** **Unit: Overload pre-alarm detection** 0: Disable. 1: Enable. **Ten: Overload pre-alarm action** 0: Fault, no stop. 1: Fault, coast to stop. 2: Fault, Dec. to stop. 3: Fault, emergency stop.		
F26.11	**Motor overload detection enable**		**0 - 2 [1]**
	When the motor is overloaded, the inverter reports E0019 fault (motor overload). 0: Disable. 1: Enable (normal motor). 2: Enable (variable frequency motor).		
F26.12	**Inverter overload detection enable**		**0, 1 [1]**
	When the inverter is overloaded, the inverter reports E0017 fault (inverter overload) or E0117 fault (inverter phase overload). 0: Disable. 1: Enable.		
F26.13	**Inverter single phase overload protection coefficient**		**0.0 - 250.0 [200%]**
	When the inverter is overloaded, the inverter reports E0117 fault (inverter phase overload). • When F26.13 = 0, the inverter does not detect.		
F26.14	**Output underload detection action**		**0x00 - 0x31[0x00]**
F26.15	**Output underload detection level**		**0 - 100 (inverter rated current) [30%]**
F26.16	**Output underload detection time**		**00 - 20.0 [1.0s]**
	When the inverter output current < F26.15 and lasts for F26.16 time, the inverter reports E0018 fault (inverter output underload). • F26.15 = 0 or F26.16 = 0, the inverter does not detect. **F26.14 settings are as follows:** **Unit: Output underload detection** 0: Disable. 1: Enable. **Ten: Output underload action** 0: Fault, no stop. 1: Fault, coast to stop. 2: Fault, Dec. to stop. 3: Fault, emergency stop.		
F26.17	**Input phase loss detection reference**	**0.2 - 5.5kW**	**0 - 80 (inverter rated voltage) [10%]**
		7.5 - 400kW	**0 - 80 (inverter rated voltage) [30%]**

Ref. Code	Parameter	Setting Range [Default]
F26.18	**Input phase loss detection time**	**1.0 - 5.0 [1.0s]**
	When a phase input voltage < F26.17 and lasts for F26.18 time, the inverter reports E0015 fault (input phase loss). • When F26.17 = 0, the inverter does not detect.	
F26.19	**Output phase loss detection reference**	**0 - 100 (inverter rated current) [20%]**
F26.20	**Output phase loss detection time**	**1 - 20 [3s]**
	When a phase output current < F26.19 and lasts for F26.20 time, the inverter reports E0016 fault (output phase loss). • When F26.19 = 0, the inverter does not detect.	
F26.21	**Motor overheat signal input**	**0x00 - 0x32 [0x00]**
F26.22	**Motor overheat thermistor**	**0.0 - 90.0 [5.0kΩ]**
F26.23	**Measuring circuit resistance**	**0.0 - 90.0 [22.0kΩ]**
F26.24	**Motor overheat pull-up resistor**	**0.0 - 90.0 [5.0kΩ]**
F26.25	**Motor overheat delay time**	**1 - 200 [5s]**
	F26.21 settings are as follows: **Unit: Input type** 0: Do not detect. 1: Positive characteristic (PTC). 2: Negative characteristic (NTC). **Ten: Overheat signal source** 0 - 3: AI1/AI2/EAI1/EAI2.	

6.2.26 F27: Fault Record Parameters

Record the information of the last three faults.

Ref. Code	Parameter	Setting Range [Default]
F27.00	The 3rd fault (most recent)	[Actual value]
F27.01	Reference frequency at the 3rd fault	
F27.02	Output frequency at the 3rd fault	
F27.03	DC bus voltage at the 3rd fault	
F27.04	Output voltage at the 3rd fault	
F27.05	Output current at the 3rd fault	
F27.06	Input terminal status 1 at the 3rd fault	
F27.07	Input terminal status 2 at the 3rd fault	
F27.08	Output terminal status at the 3rd fault	
F27.09	Power-on time at the 3rd fault	
F27.10	Running time at the 3rd fault	
F27.11	IGBT temperature at the 3rd fault	
F27.12	The 2nd fault	[Actual value]
F27.13	Reference frequency at the 2nd fault	
F27.14	Output frequency at the 2nd fault	
F27.15	DC bus voltage at the 2nd fault	
F27.16	Output voltage at the 2nd fault	
F27.17	Output current at the 2nd fault	
F27.18	Input terminal status 1 at the 2nd fault	
F27.19	Input terminal status 2 at the 2nd fault	
F27.20	Output terminal status at the 2nd fault	
F27.21	Power-on time at the 2nd fault	
F27.22	Running time at the 2nd fault	
F27.23	IGBT temperature at the 2nd fault	
F27.24	The 1st fault	[Actual value]
F27.25	Reference frequency at the 1st fault	
F27.26	Output frequency at the 1st fault	
F27.27	DC bus voltage at the 1st fault	
F27.28	Output voltage at the 1st fault	
F27.29	Output voltage at the 1st fault	
F27.30	Input terminal status 1 at the 1st fault	
F27.31	Input terminal status 2 at the 1st fault	
F27.32	Output terminal status at the 1st fault	
F27.33	Power-on time at the 1st fault	
F27.34	Running time at the 1st fault	
F27.35	IGBT temperature at the 1st fault	

6.3 Custom Menu (--U--)

Add commonly used parameters (group F) to group U, and then enter group U to quickly set group F parameters.
For steps to add or delete parameters, see section 5.1.5.7, page 73.

6.4 Verify Menu (--C--)

The verify menu displays parameters that are inconsistent with the factory values.

Chapter 7 Quick Start

After completing and confirming the installation and power terminal wiring, you can choose any method to quickly start the inverter.

Note:
Some parameters have been set at the factory (factory values), and do not need to be set for the first use.

7.1 Start and Stop the Inverter and Set the Running Frequency by Keypad

Power-on

Close the MCCB on the input side of the inverter.

Set Parameter

Use the keypad to set the parameters.

Ref. Code	Address	Parameter	Settings	Description
F00.04	0x0004	Command setting channel	0 (default)	Keypad
F00.08	0x0008	Main frequency setting channel	0 (default)	Keypad
F00.09	0x0009	Initial running frequency (digital setting)	50.00Hz	Set according to actual needs
F02.02	0x0202	Acc. time 1	-	Adjust according to actual needs
F02.03	0x0203	Dec. time 1	-	Adjust according to actual needs
F13.01	0x0D01	Motor 1 rated power	-	Set according to the motor nameplate
F13.02	0x0D02	Motor 1 rated voltage		
F13.03	0x0D03	Motor 1 rated current		
F13.04	0x0D04	Motor 1 rated frequency		
F13.05	0x0D05	Motor 1 rated speed (low bit)		

Start and Stop the Inverter

The keypad returns to the stop or running status interface.

Press **Start** or **RUN** key on the keypad to start the inverter, and press **Stop** or **STOP** key to stop the inverter.

Set Running Frequency

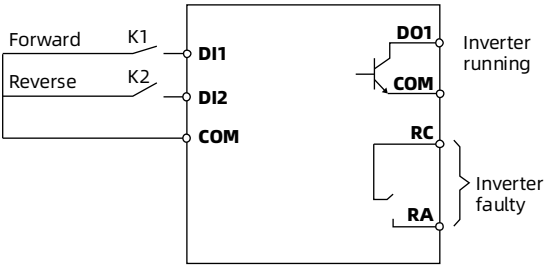
Press ▲ key to increase the frequency, and press ▼ key to decrease the frequency.

Or set F00.09.

7.2 Start and Stop the Inverter by Terminal, Set the Running Frequency by Keypad

Wiring

Wiring as shown below.



Power-on

Close the MCCB on the input side of the inverter.

Set Parameter

Use the keypad to set the parameters.

Ref. Code	Address	Parameter	Settings	Description
F00.04	0x0004	Command setting channel	1	Terminal
F00.08	0x0008	Main frequency setting channel	0 (default)	Keypad
F00.09	0x0009	Initial running frequency (digital setting)	50.00Hz	Set according to actual needs
F02.02	0x0202	Acc. time 1	-	Adjust according to actual needs
F02.03	0x0203	Dec. time 1	-	Adjust according to actual needs
F13.01	0x0D01	Motor 1 rated power	-	Set according to the motor nameplate
F13.02	0x0D02	Motor 1 rated voltage		
F13.03	0x0D03	Motor 1 rated current		
F13.04	0x0D04	Motor 1 rated frequency		
F13.05	0x0D05	Motor 1 rated speed (low bit)		
F10.00	0x0A00	DI1 terminal	2 (default)	Forward
F10.01	0x0A01	DI2 terminal	3 (default)	Reverse
F10.22	0x0A16	DO1 terminal	2 (default)	Inverter running
F10.25	0x0A19	RLY1 relay	31 (default)	Inverter faulty

Start and Stop the Inverter

Close K1, motor forward. Disconnect K1, motor stops.

Close K2, motor reverses. Disconnect K2, motor stops.

Close K1 and K2, motor stops. Disconnect K1 and K2, motor stops.

If the motor rotation direction is inconsistent. After the inverter is stopped, reverse F00.01 or change the wiring of any two phases of terminals U/V/W.

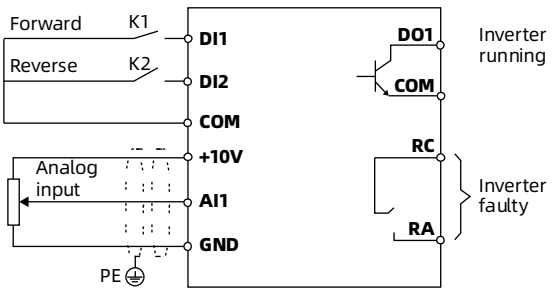
Set Running Frequency

Press ▲ key to increase the frequency, and press ▼ key to decrease the frequency. Or set F00.09.

7.3 Start and Stop the Inverter by Terminal, Set the Running Frequency by Analog

Wiring

Wiring as shown below.



Power-on

Close the MCCB on the input side of the inverter.

Set Parameter

Use the keypad to set the parameters.

Ref. Code	Address	Parameter	Settings	Description
F00.04	0x0004	Command setting channel	1	Terminal
F00.08	0x0008	Main frequency setting channel	8	AI1
F02.02	0x0202	Acc. time 1	-	Adjust according to actual needs
F02.03	0x0203	Dec. time 1	-	Adjust according to actual needs
F13.01	0x0D01	Motor 1 rated power	-	Set according to the motor nameplate
F13.02	0x0D02	Motor 1 rated voltage		
F13.03	0x0D03	Motor 1 rated current		
F13.04	0x0D04	Motor 1 rated frequency		
F13.05	0x0D05	Motor 1 rated speed (low bit)		
F10.00	0x0A00	DI1 terminal	2 (default)	Forward

Ref. Code	Address	Parameter	Settings	Description
F10.01	0x0A01	DI2 terminal	3 (default)	Reverse
F10.22	0x0A16	DO1 terminal	2 (default)	Inverter running
F10.25	0x0A19	RLY1 relay	31 (default)	Inverter faulty

Start and Stop the Inverter

Close K1, motor forward. Disconnect K1, motor stops.

Close K2, motor reverses. Disconnect K2, motor stops.

Close K1 and K2, motor stops. Disconnect K1 and K2, motor stops.

If the motor rotation direction is inconsistent. After the inverter is stopped, reverse F00.01 or change the wiring of any two phases of terminals U/V/W.

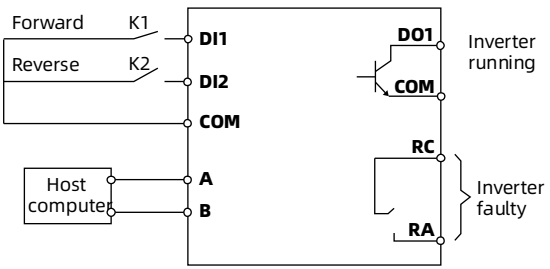
Set Running Frequency

Adjust AI1 analog input.

7.4 Start and Stop the Inverter by Terminal, Set the Running Frequency by Modbus Communication

Wiring

Wiring as shown below.



Power-on

Close the MCCB on the input side of the inverter.

Set Parameter

Use the keypad to set the parameters.

Ref. Code	Address	Parameter	Settings	Description
F00.04	0x0004	Command setting channel	1	Terminal
F00.08	0x0008	Main frequency setting channel	3	Communication
F02.02	0x0202	Acc. time 1	-	Adjust according to actual needs
F02.03	0x0203	Dec. time 1	-	Adjust according to actual needs
F13.01	0x0D01	Motor 1 rated power	-	Set according to the motor nameplate
F13.02	0x0D02	Motor 1 rated voltage		
F13.03	0x0D03	Motor 1 rated current		

Ref. Code	Address	Parameter	Settings	Description
F13.04	0x0D04	Motor 1 rated frequency		
F13.05	0x0D05	Motor 1 rated speed (low bit)		
F10.00	0x0A00	DI1 terminal	2 (default)	Forward
F10.01	0x0A01	DI2 terminal	3 (default)	Reverse
F10.22	0x0A16	D O 1 terminal	2 (default)	Inverter running
F10.25	0x0A19	RLY1 relay	31 (default)	Inverter faulty
F22.00	0x1600	Communication address	2 (default)	
F22.01	0x1601	Modbus communication format	0 (default)	1-8-2 format, no checksum, RTU
F22.02	0x1602	Unit: Modbus communication baud rate	0x3 (default)	9600bps

Start and Stop the Inverter

Close K1, motor forward. Disconnect K1, motor stops.

Close K2, motor reverses. Disconnect K2, motor stops.

Close K1 and K2, motor stops. Disconnect K1 and K2, motor stops.

If the motor rotation direction is inconsistent. After the inverter is stopped, reverse F00.01 or change the wiring of any two phases of terminals U/V/W.

Set Running Frequency

SCI communication writes register 0x3201, function code 0x06.

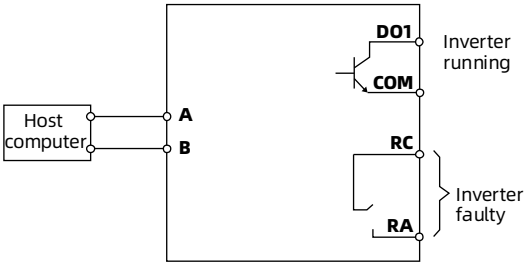
For example: Set the running frequency of slave 2 to 45.00Hz.

	Address	Code	Register Address		Register Contents		Checksum	
Request/response frame	0x02	0x06	0x32	0x01	0x11	0x94	0xDB	0x7E

7.5 Start and Stop the Inverter, Set the Running Frequency by Modbus Communication

Wiring

Wiring as shown below.



Power-on

Close the MCCB on the input side of the inverter.

Set Parameter

Use the keypad to set the parameters.

Ref. Code	Address	Parameter	Setting	Description
F00.04	0x0004	Command setting channel	2	Communication
F00.08	0x0008	Main frequency setting channel	3	Communication
F02.02	0x0202	Acc. time 1	-	Adjust according to actual needs
F02.03	0x0203	Dec. time 1	-	Adjust according to actual needs
F13.01	0x0D01	Motor 1 rated power	-	Set according to the motor nameplate
F13.02	0x0D02	Motor 1 rated voltage		
F13.03	0x0D03	Motor 1 rated current		
F13.04	0x0D04	Motor 1 rated frequency		
F13.05	0x0D05	Motor 1 rated speed (low bit)		
F10.22	0x0A16	DO1 terminal	2 (default)	Inverter running
F10.25	0x0A19	RLY1 relay	31 (default)	Inverter faulty
F22.00	0x1600	Communication address	2 (default)	
F22.01	0x1601	Modbus communication format	0 (default)	1-8-2 format, no checksum, RTU
F22.02	0x1602	Unit: Modbus communication baud rate	0x3 (default)	9600bps

Start and Stop the Inverter

SCI communication writes register 0x3200, function code 0x06.

For example: Forward start command.

	Address	Code	Register Address		Register Contents		Checksum	
Request/ response frame	0x02	0x06	0x32	0x00	0x10	0x01	0x4B	0x41

For example: Dec. to stop command.

	Address	Code	Register Address		Register Contents		Checksum	
Request/ response frame	0x02	0x06	0x32	0x00	0x10	0x04	0x8B	0x42

Set Running Frequency

SCI communication writes register 0x3201, function code 0x06.

For example: Set the running frequency of slave 2 to 45.00Hz.

	Address	Code	Register Address		Register Contents		Checksum	
Request/response frame	0x02	0x06	0x32	0x0 1	0x11	0x94	0xDB	0x7E

7.6 Motor Parameter Auto-tuning

When the control mode is V/f control, there is no need to perform parameter auto-tuning.
When the control mode is vector control, parameter auto-tuning must be performed first.
Only when F00.04 = 0 (keypad control), the inverter can perform auto-tuning.
Take Asyn. motor 1 as an example.

Static Auto-tuning

1.	Set F13.01 - F13.05 according to the motor nameplate.
2.	Set F00.04 = 0 (keypad control), default to 0.
3.	Start motor parameters auto-tuning: • Set F13.21 = 1 (static auto-tuning of Asyn. motor). • Press **Start** or **RUN** key to start auto-tuning, and the keypad displays tunE.
4.	When the keypad does not display tunE, F13.21 automatically returns to 0. Confirm that the auto-tuning is successful: The inverter does not report a fault. • If the inverter reports **E0012** fault, refer to 8.2 to clear the fault and then perform auto-tuning again.

Rotary Auto-tuning

1.	Set F13.01 - F13.05 according to the motor nameplate.
2.	Set F00.04 = 0 (keypad control), default to 0. Set F02.02 (Acc. time 1) and F02.03 (Dec. time 1).
3.	The motor shaft is free from the load and safety is confirmed.
4.	Start motor parameter auto-tuning: • Set F13.21 = 2 (rotary auto-tuning of Asyn. motor). • Press **Start** or **RUN** key to start auto-tuning, and the keypad displays tunE.
5.	When the keypad does not display tunE, F13.21 automatically returns to 0. Confirm that the auto-tuning is successful: The inverter does not report a fault. • If the inverter reports **E0012** fault, refer to 8.2 to clear the fault and then perform auto-tuning again. • When the motor rotates, if the system oscillates or overcurrent occurs. Press **Stop** or **STOP** key to stop auto-tuning, adjust F14.13 or F14.14 (oscillation suppression coefficient), and then perform auto-tuning again.
6.	Run without load and confirm: • The output current is normal. • The motor running normally.
7.	The motor is loaded.

7.7 Change Motor Rotation Direction

When starting the inverter, check the rotation direction of the motor.
If the direction of rotation is inconsistent with the reference direction. After the inverter is stopped, reverse F00.01 or change the wiring of any two phases of terminals U/V/W.

Chapter 8 Troubleshooting

8.1 Fault phenomenon

When the inverter reports a fault:

- Standard keypad: Flashes to display fault code.
- Optional keypad: Flashes to display fault code and the **ALM** is on.
- The fault relay acts, the inverter stops to output, and the motor coasts to stop.

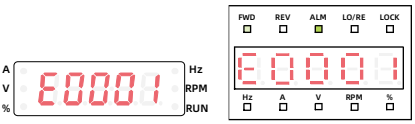


Figure 8-1 Keypad displays fault

8.2 Troubleshooting

After the inverter reports a fault, please record the fault phenomenon in detail and refer to the following table to troubleshoot and clear the fault.
Group F27 checks the fault record information.
If you need technical support, please contact your supplier or Hpmont.

Fault		Fault Reasons	Countermeasures
No display when power up		• Input grid voltage is too low or none • The power supply of the drive board is faulty • The wiring of the control board and drive board is disconnected • The rectifier bridge is damaged • The inverter buffer resistor is damaged • The control board and keypad are faulty	• Check input supply voltage • Check bus voltage • Reconnect or check the wiring between the control board and the driver board • Contact the manufacturer for repair
-Lu-	DC bus undervoltage	• Power-on initial status, power-off end status • Input voltage is too low • Improper wiring leads to hardware undervoltage	• Normal power-on and power-off status, no processing required • Check the input power voltage • Check the wiring and standardize the wiring
E0001	Software overcurrent (OC) (in Acc.)	• Incorrect wiring between the inverter and the motor • The motor parameters are incorrect • The inverter power selection is too small	• Correct the wiring between the inverter and the motor • Correctly set the motor parameters (F13.01 - F13.05, F17.01 - F17.05) • Choose the appropriate inverter power
E0002	Software overcurrent (OC) (in Dec.)		

Fault		Fault Reasons	Countermeasures
E0003	Software overcurrent (OC) (constant speed)	• Acc. and Dec. time is too short • Vector control, no auto-tuning of the motor	• Set appropriate Acc. and Dec. time (F02.02 - F02.09) • Parameter auto-tuning during vector control (F13.21, F17.21)
E0101	Hardware overcurrent (OC) (in Acc.)		
E0102	Hardware overcurrent (OC) (in Dec.)		
E0103	Hardware overcurrent (OC) (in constant speed)		
E0203	Overcurrent (OC) (starting short-circuit to ground)	• The inverter output U/V/W is short-circuited to ground	• Check the motor cables to make sure they are not damaged
E0303	Overcurrent (OC) (starting phase short-circuit)	• Inverter output U/V/W phase short-circuit	• Check the motor cables to make sure they are not damaged
E0004	DC bus overvoltage (in Acc.)	• Input voltage is too high • Dec. time is too short • Improper wiring leads to hardware overvoltage • Improper selection of brake components	• Check input supply voltage • Set appropriate Dec. time (F02.03, F02.05, F02.07, F02.09) • Check system wiring and standardize wiring • Choose brake components correctly
E0005	DC bus overvoltage (in Dec.)		
E0006	DC bus overvoltage (in constant speed)		
E0007	Overvoltage stall	• Bus voltage is too high • Overvoltage stall point setting is too small	• Check the input power or dynamic braking components • Reasonably set the overvoltage stall point (F06.06)
E0008	Power module fault (FO) (in Acc.)	• Phase output short-circuit • Short-circuit to ground • Output current is too large • Power module damaged	• Check the wiring and standardize the wiring • Check the wiring and standardize the wiring • Check electrical wiring and mechanical devices • Contact the manufacturer for repair
E0108	Power module fault (FO) (in Dec.)		
E0208	Power module fault (FO) (in constant speed)		
E0308	Power module fault (FO) (starting short-circuit to ground)	• The inverter output U/V/W is short-circuited to ground	• Check the motor cables to make sure they are not damaged
E0408	Power module fault (FO) (starting phase short-circuit)	• Inverter output U/V/W phase short-circuit	• Check the motor cables to make sure they are not damaged
E0009	Heatsink overheat	• The ambient temperature exceeds the specification requirements • The external ventilation of the inverter is poor	• Derating, power amplification • External ventilation of inverter • Replace the fan • Seek technical support

Fault		Fault Reasons	Countermeasures
		• Fan fault • The temperature detection circuit is faulty	
E0010	Brake unit fault	• Brake circuit fault • Brake resistor wiring error	• Seek technical support • Check the wiring of the brake resistor and make sure it is connected to the (+) and BR terminal
E0012	Parameter auto-tuning fault	• Parameter auto-tuning timeout	• Check the motor wiring • Correctly set the motor parameters (F13.01 - F13.05, F17.01 - F17.05) • Seek technical support
E0013	The power-on buffer contactor is not energized	• Contactor fault • Control circuit fault	• Replace the contactor • Seek technical support
E0014	Current detection circuit fault	• Current detection circuit is damaged • Control power supply abnormality	• Contact the manufacturer for repair • Remove the external control signal after power off. If the fault is cleared, check the control signal and confirm that there is no short-circuit in the circuit
E0015	Input phase loss	• For a three phase input inverter, the three phase input power supply phase is loss	• Check the three phase input power • Seek technical support
E0016	Output phase loss	• The three phase output of the inverter is disconnected or lacks a phase. • The three phase load carried by the inverter is seriously unbalanced	• Check the wiring between the inverter and the motor • Check the motor quality
E0017	Inverter overload	• Acc. time set too short • Motor parameter setting error • Improper V/f curve or torque boost setting causes excessive current • Vector control, no parameter auto-tuning of the motor • Grid voltage is too low • Motor load is too large	• Adjust Acc. time (F02.02, F02.04, F02.06, F02.08) • Correctly set the motor parameters (F13.01 - F13.05, F17.01 - F17.05) • Adjust V/f curve (F14.00 - F14.06, F18.00 - F18.06) or torque boost (F14.07 - F14.08, F18.07 - F18.08) • Parameter auto-tuning during vector control (F13.21, F17.21) • Check input grid voltage • Use a power-matched inverter
E0117	Inverter phase overload		
E0018	Inverter output underload	• Load disappears or suddenly decreases • Improper parameter settings	• Check load and mechanical transmission • Set appropriate parameters (F26.14 - F26.16)

Fault		Fault Reasons	Countermeasures
			• Check F26.14 - F26.16 to confirm that the settings meet actual needs
E0019	Motor overload	• Improper setting of V/f curve • The grid voltage is too low • Non-frequency conversion ordinary motors running at low speed and high load for a long time • The motor is stalled or the load is too large	• Adjust the appropriate V/f curve (F14.00 - F14.06, F18.00 - F18.06) • Check the input power • For long-term low-speed and large-load running, replace the variable frequency motor • Check load and mechanical transmission
E0020	Motor overheat	• Motor overheat • Motor parameter setting error	• Reduce the load; Repair or replace the motor; Increase the Acc. and Dec. time (F02.02 - F02.09) • Correctly set the motor parameters (F13.01 - F13.05, F17.01 - F17.05) • Check F26.21 - F26.25 to confirm that the settings meet actual needs
E0021	Control board EEPROM read/write fault	• Control board EEPROM storage circuit fault	• Contact the manufacturer for repair
E0022	Keypad EEPROM read/write fault (the inverter does not stop)	• Keypad EEPROM storage circuit fault	• Replace the keypad • Contact the manufacturer for repair
E0023	Parameter setting fault	• The difference between the rated power of the motor and the rated power of the inverter is too large • Improper motor parameter settings	• Select a motor that matches the inverter power • Correctly set the motor parameters (F13.01 - F13.05, F17.01 - F17.05)
E0024	External device fault	• External device fault terminal action	• Check external devices
E0025	PID reference lost	• Analog reference signal < F04.30 • Analog input circuit fault	• Check the connection • Seek technical support • Set F04.30 and F04.31 according to actual working conditions
E0026	PID feedback lost	• Analog feedback signal < F04.32 • Analog input circuit fault	• Check the connection • Seek technical support • Set F04.32 and F04.33 according to actual working conditions
E0027	PID feedback exceeds limit	• Analog feedback signal > F04.34 • Analog input circuit fault	• Check the connection • Seek technical support • Set F04.34 and F04.35 according to actual working conditions
E0028	Modbus communication timeout	• The communication cable is incorrectly connected, disconnected, or loose	• Check the wiring

Fault		Fault Reasons	Countermeasures
		• Communication signal is interfered	• Reduce the baud rate, ground according to EMC regulations and use shielded twisted pair cables
E0032	Motor speed overspeed	• Actual speed of the motor > reference speed	• Check the motor and load
E0033	Excessive motor speed deviation	• The deviation between the motor reference speed and actual speed is too large	• Check the motor and load
E0035	Overload pre-alarm fault	• Acc. time set too short • Motor parameter setting error • Improper V/f curve or torque boost setting causes excessive current • Vector control, no parameter auto-tuning of the motor • Grid voltage is too low • Motor load is too large	• Adjust Acc. time (F02.02, F02.04, F02.06, F02.08) • Correctly set the motor parameters (F13.01 - F13.05, F17.01 - F17.05) • Adjust V/f curve (F14.00 - F14.06, F18.00 - F18.06) or torque boost (F14.07 - F14.08, F18.07 - F18.08) • Parameter auto-tuning during vector control (F13.21, F17.21) • Check the input grid voltage • Use a power-matched inverter • Check F26.08 - F26.12 to confirm that the settings meet actual needs
E0050	Communication timeout between communication expansion card and control board	• The expansion card and the control board have poor contact	• Check expansion card wiring
E0051	Communication timeout between host (PLC, HMI, etc.) and control board	• The communication cable is incorrectly connected, disconnected, or loose. • Communication signal is interfered	• Check the wiring • Reduce the baud rate, ground according to EMC regulations and use shielded twisted pair cables
E0052	Communication timeout between EIO-I card and control board	• EIO-I and control board have poor contact	• Check EIO-I connection
E0090	Power on model detection error	• The automatic model identification circuit is damaged	• Contact the manufacturer for repair
E0099	Bus undervoltage during operation	• The grid voltage is too low • Bus voltage fluctuation • Power fault during operation	• Check the grid voltage • Contact the manufacturer for repair • Automatically reset after power on again, or set F26.04 as needed

Warning		Reason	Countermeasures
AioL	Analog value over-limit	• Analog input > F09.34 (upper limit) • Analog input < F09.35 (lower limit)	• Disable analog input over-limit detection function (F09.33 ten = 0) • Wait for the system to automatically recover

8.3 Reset Fault

After the fault is eliminated, please reset the inverter by any of the following methods:

- Keypad: Press the  **Stop** or **STOP** key.
- External reset terminal: Set DI terminal function (F10.00 - F10.10 = 46, external reset).
- Communication: Use communication command.
- Inverter: Completely powered off and then powered on again.

Chapter 9 Maintenance

Many reasons can cause inverter failure, such as: Environmental influences (temperature, humidity, pH, dust, vibration, etc.), aging and wear of components within the inverter, etc. Therefore, please perform daily or regular maintenance on the inverter during storage and use.

Danger

- Only qualified and authorized professionals who have received professional training can maintain the inverter.
- After long-distance transportation of the inverter, please check the inverter before use to confirm that: The product components are complete and the screws are tightened.
- When the inverter is powered on and in operation, dangerous high voltage exists inside it.
- Before maintenance, maintenance personnel must remove metal accessories. During maintenance, they must use clothing and tools that meet insulation requirements.
- Before checking or maintaining the inverter, please disconnect the input power reliably and wait for at least 10 minutes. Make sure the inverter power indicator is off and the voltage between the power terminals (+) and (-) is less than 36V.

Warning

- When the inverter is powered on for the first time after being stored for more than 2 years, please increase the voltage slowly through the voltage regulator.
- Do not leave metal objects such as wires, tools, screws, etc. inside the inverter.
- Do not modify the inverter without authorization.
- There are static-sensitive IC components inside the inverter. Do not touch the internal components directly.

9.1 Daily Maintenance

The inverter must be operated in the specified environment, see section 3.1, page 15. Please perform daily maintenance according to the following table, so as to find abnormal phenomena in time and extend the service life of the inverter.

Table 9-1 Daily maintenance

Check Item	Check Content	Criteria
Operating environment	Temperature	-10 - +50℃, 40 - 50℃ needs to be derated.
	Humidity	Less than 95%RH, no condensation
	Dust	No conductive dust accumulation
	Water and dripping	No trace of water leakage
	Gas	No strange smell
Inverter	Vibration	Smooth vibration
	Fever	Reasonable air temperature
	Noise	No strange noise
Motor	Fever	No abnormality
	Noise	No noise
Running status parameters	Output current	Within the rated value range
	Output voltage	Within the rated value range

9.2 Regular Maintenance

According to the use environment, users should check the inverter every 3 - 6 months to eliminate potential faults and ensure that the inverter can operate stably and with high performance for a long time.

Check content:

- The control terminal screws are not loose. If they are, use a screwdriver with appropriate torque and size to tighten them.
- The power terminals are in firm contact, and there are no traces of overheating at the copper bars or cable connections.
- The power cables and control cables are not damaged, especially the skin in contact with the metal surface has no traces of cuts.
- The insulation wrapping tapes of power cables and control cable terminals are not peeled off or broken.
- Comprehensively clean the dust on the circuit boards and air ducts, preferably using a vacuum cleaner.

Note:

1. The inverter has passed the withstand voltage test before leaving the factory. Users do not need to test it again, otherwise improper testing may damage the inverter.
2. When testing the motor insulation, disconnect the U/V/W terminals of the inverter and test the motor alone, otherwise the inverter may be damaged.
3. For inverters that have been stored for a long time, please power them on once every 2 years. Use a voltage regulator to slowly increase the input voltage of the inverter to the rated value and power it on for at least 5 hours.

9.3 Replace Damaged Parts

The damaged parts of the inverter mainly include cooling fans and filter electrolytic capacitors, and their service life is related to the use environment and maintenance. Users can set the replacement period based on operating time.

Easily damaged	Cooling fan	Filter electrolytic capacitor
Life time	60,000 hours	50,000 hours
Possible damage reasons	Bearing wear and blade aging	High ambient temperature and frequent load changes cause increased pulsating current and electrolyte aging
Criteria	• When the inverter is powered off, check whether there are cracks in the fan blades, etc. • When the inverter is powered on, check whether the fan is running normally and whether there is abnormal vibration, noise, etc.	• Does the inverter often have overcurrent, overvoltage and other faults when running under load? • Is there any liquid leakage? • Is the safety valve protruding? • Measuring electrostatic capacitance • Determination of insulation resistance

9.4 Scrap Disposal

Note:

- Burning the electrolytic capacitor inside the integrated inverter may explode.
- Burning plastic parts produces toxic gases, please dispose of them as industrial waste.

Chapter 10 Communication Protocol

10.1 Modbus Communication Description

HD800 uses standard Modbus communication protocol.
Functions are realized through the host computer (including computers, PLC and other communication equipment): Read and write function parameters, read status parameters, write control commands, etc.
During communication, HD800 is in slave mode.

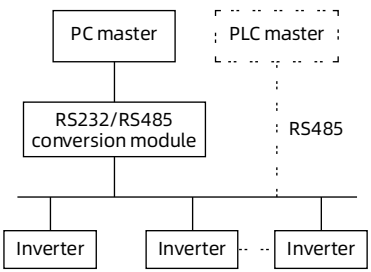
Communication Terminal Pin Description

Communication Terminal	Terminal Description	
A B	**Terminal**	**Terminal Definition**
	A	485+
	B	485-

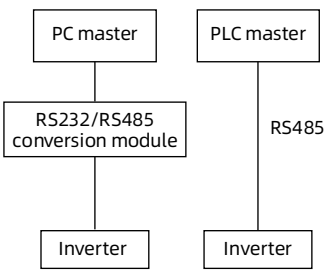
Transfer Method

Interface	Asyn., half-duplex
Format	1-8-2 (1 start bit, 8 data bits, 2 stop bits), no parity, RTU
Baud Rate	9600bps
Related Parameter	See F22: Communication Parameters, page 155

Networking



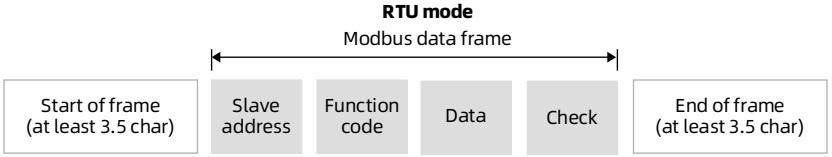
Single-master, multi-slave



Single-master, single-slave

Protocol Format

Modbus protocol supports RTU mode, the frame format is shown in the figure below:



Modbus uses the "Big Endian" encoding method, sending high bytes and low bytes in sequence.

- Use bus idle time (no less than 3.5 bytes) to define the frame start and end.
- When the slave address is set to 0, the address is a broadcast address.
- The data checking uses CRC-16, and the entire information is involved in the check. For CRC check, please refer to the example on page 196.

Example: Read the internal register F00.06 of the slave with address 1 = 50.00Hz.

	Address	**Code**	**Register Address**		**No. of Registers**		**Checksum**	
Request frame	0x01	0x03	0x00	0x06	0x00	0x01	0x64	0x0B
	Address	**Code**	**No. of Response Bytes**		**Register Contents**		**Checksum**	
Response frame	0x01	0x03	0x02		0x13	0x88	0xB5	0x12

10.2 Scaling Relationship of Parameter Value

Except for the following parameters, refer to Appendix A to determine the calibration relationship for other parameters.

Ref. Code	**Parameter**	**Register Address**	**Data**	**Communication Data**
d00.12	Torque reference	0x330C	-2500 - +2500	0 - 5000
d00.13	Output torque	0x330D	-2500 - +2500	0 - 5000
d00.14	Output power	0x330E	-8000 - +8000	0 - 16000
d00.22	PID reference	0x3316	-1000 - +1000	0 - 2000
d00.23	PID feedback	0x3317	-1000 - +1000	0 - 2000
d00.24	PID error	0x3318	-1000 - +1000	0 - 2000
d00.25	PID integral term	0x3319	-1000 - +1000	0 - 2000
d00.26	PID output	0x331A	-1000 - +1000	0 - 2000
d01.04	AI1 input (after processing)	0x3404	-1000 - +1000	0 - 2000
d01.06	AI2 input (after processing)	0x3406	-1000 - +1000	0 - 2000
d01.08	EAI1 input (after processing)	0x3408	-1000 - +1000	0 - 2000
d01.10	EAI2 input (after processing)	0x340A	-1000 - +1000	0 - 2000
d01.12	Keypad potentiometer input voltage (after processing)	0x340C	-1000 - +1000	0 - 2000

Ref. Code	Parameter	Register Address	Data	Communication Data
F04.02	Reference amount (digital setting)	0x0402	-1000 - +1000	0 - 2000
F05.01	Torque command (digital setting)	0x0501	-1000 - +1000	0 - 2000
F09.01	AI1 Min. reference corresponding value	0x0901	-1000 - +1000	0 - 2000
F09.03	AI1 Max. reference corresponding value	0x0903	-1000 - +1000	0 - 2000
F09.04	AI1 gain	0x0904	-1000 - +1000	0 - 2000
F09.05	AI1 bias	0x0905	-1000 - +1000	0 - 2000
F09.08	AI2 Min. reference corresponding value	0x0908	-1000 - +1000	0 - 2000
F09.10	AI2 Max. reference corresponding value	0x090A	-1000 - +1000	0 - 2000
F09.11	AI2 gain	0x090B	-1000 - +1000	0 - 2000
F09.12	AI2 bias	0x090C	-1000 - +1000	0 - 2000
F09.15	EAI1 Min. reference corresponding value	0x090F	-1000 - +1000	0 - 2000
F09.17	EAI1 Max. reference corresponding value	0x0911	-1000 - +1000	0 - 2000
F09.18	EAI1 gain	0x0912	-1000 - +1000	0 - 2000
F09.19	EAI1 bias	0x0913	-1000 - +1000	0 - 2000
F09.22	EAI2 Min. reference corresponding value	0x0916	-1000 - +1000	0 - 2000
F09.24	EAI2 Max. reference corresponding value	0x0918	-1000 - +1000	0 - 2000
F09.25	EAI2 gain	0x0919	-1000 - +1000	0 - 2000
F09.26	EAI2 bias	0x091A	-1000 - +1000	0 - 2000
F09.52	AO1 Min. reference corresponding value	0x0934	-1000 - +1000	0 - 2000
F09.54	AO1 Max. reference corresponding value	0x0936	-1000 - +1000	0 - 2000
F09.55	AO1 gain	0x0937	-1000 - +1000	0 - 2000
F09.56	AO1 bias	0x0938	-1000 - +1000	0 - 2000
F09.58	EAO1 Min. reference corresponding value	0x093A	-1000 - +1000	0 - 2000
F09.60	EAO1 Max. reference corresponding value	0x093C	-1000 - +1000	0 - 2000
F09.61	EAO1 gain	0x093D	-1000 - +1000	0 - 2000
F09.62	EAO1 bias	0x093E	-1000 - +1000	0 - 2000

10.3 Protocol Function

Supported Function

The Modbus protocol supports the following functions.

Supported Function	Code	Remark
Read function parameter (group F00 - F27) or status parameter (group d00 - d02)	0x03	
Write single function parameter (group F00 - F27) or control parameter	0x06	Power-off save
Write multiple function parameter (group F00 - F27) or control parameter	0x10	Power-off save

Read Function Parameters or Status Parameter

Function code 0x03, request frame and response frame are shown in the table below.

Request Frame	Address	Code	Starting Register Address	No. of Registers	CRC Check
Number of bytes in data frame	1	1	2	2	2
Value or range	0 - 247	0x03	0x0000 - 0xFFFF	0x0001 - 0x000C	

Response Frame	Address	Code	No. of Response Bytes	Register Contents	CRC Check
Number of bytes in data frame	1	1	1	2 × number of registers	2
Value or range	1 - 247	0x03	2 × number of registers		

Write Single Function Parameter or Control Parameter

Function code 0x06, request frame and response frame are shown in the table below.

The default setting is to save after power off.

The write function parameters (group F00 - F27) are not saved when power is off. Please set: The register address of the request frame + 0x8000.

Request Frame	Address	Code	Register Address	Register Content	CRC Check
Number of bytes in data frame	1	1	2	2	2
Value or range	0 - 247	0x06	0x0000 - 0xFFFF	0x0000 - 0xFFFF	

Response Frame	Address	Code	Register Address	Register Content	CRC Check
Number of bytes in data frame	1	1	2	2	2
Value or range	1 - 247	0x06	0x0000 - 0xFFFF	0x0000 - 0xFFFF	

Write Multiple Function Parameters or Control Parameters

Function code 0x10, request frame and response frame are shown in the table below.

The default setting is to save after power off.

The write function parameters (F00 - F27 groups) are not saved when power is off. Please set: The register address of the request frame + 0x8000.

Request Frame	Address	Code	Starting Register Address	No. of Operating Registers	Register Content Bytes	Register Contents	CRC Check
Number of bytes in data frame	1	1	2	2	1	2 × No. of operation registers	2
Value or range	0 - 247	0x10	0x0000 - 0xFFFF	0x0000 - 0x0004	2 × No. of operation registers		

Response Frame	Address	Code	Starting Register Address	No. of Operating Registers	CRC Check
Number of bytes in data frame	1	1	2	2	2
Value or range	1 - 247	0x10	0x0000 - 0xFFFF	0x0000 - 0x0004	

This command writes the contents of consecutive data unit starting from the starting register address. The register address is mapped to the functions and control parameters of the inverter.

When saving multiple register parameters continuously, the inverter saves from the lower address to the higher address of the register.

If the save fails, return from the register address that failed first.

Error and Exception Code

If the operation request fails, the response is an error code (function code + 0x80). The exception code is the next byte of the error code, and its meaning is shown in the table below.

Exception Code	Description
0x01	Function code error
0x02	Register address error
0x03	Data error (exceeding upper or lower limit)
0x04	Slave operation failure (including data within range but invalid data)
0x16	Unsupported operations (mainly for control parameters and status parameters, such as unsupported attributes, factory values, upper and lower limits, etc.)
0x17	Wrong number of registers in request frame
0x18	Information frame error (including information length and checksum)
0x20	Parameters cannot be modified
0x21	Parameters cannot be modified during runtime
0x22	Parameters are password protected

Example:

Write F07.21 (STOP key function) of slave 2, range 0x00 - 0x01.

If the register content is written as 0x02, it exceeds the limit. In this case, the error code is 0x86 (0x06 + 0x80) and the exception code is 0x03.

	Address	Code	Register Address		Register Content		Checksum	
Request frame	0x02	0x06	0x07	0x15	0x00	0x02	0x18	0x88

	Address	Error Code	Exception Code	Checksum	
Response frame	0x02	0x86	0x03	0xF2	0x61

10.4 Address Mapping Relationship

Map the function parameters, control parameters and status parameters of HD800 to the read and write registers of Modbus.

- Function parameters (group F): 0x00 - 0x1B.
- Control parameters: 0x32.
- Parameters (group d): 0x33 - 0x35.
- Communication customization 1 (group F23):
  Group F23 parameters, the starting address is 0x1700.
  Group F23 mapping address, the starting address is 0x3600.
- Communication customization 2 (group F24):
  Group F24 parameters, the starting address is 0x1800.
  Write the control commands of group F24. According to the control function, the addresses are F24.00, F24.08 and F24.10 respectively.

10.4.1 Function Parameter Address Mapping

Functional parameters (group F) is mapped to the high byte of the register address, see the table below.

The index within the group is mapped to the low byte of the register address. The index of F00 - F27 refers to the corresponding parameter group.

High Bytes of Register Address	Group No.	High Bytes of Register Address	Group No.	High Bytes of Register Address	Group No.
0x00	F00	0x0A	F10	0x14	F20
0x01	F01	0x0B	F11	0x15	F21
0x02	F02	0x0C	F12	0x16	F22
0x03	F03	0x0D	F13	0x17	F23
0x04	F04	0x0E	F14	0x18	F24
0x05	F05	0x0F	F15	0x19	F25
0x06	F06	0x10	F16	0x1A	F26
0x07	F07	0x11	F17	0x1B	F27
0x08	F08	0x12	F18		
0x09	F09	0x13	F19		

For example: The register address of F03.02 is 0x0302, and the register address of F16.01 is 0x1001.

10.4.2 Control Parameter Address Mapping

The mapping address (0x32) of the control parameters is shown in the table below.

Register Address	Parameter	Save after Power Off
0x3200	Control command byte, see below for details	No
0x3201	Running frequency setting	F00.10 hundred setting
0x3202	Auxiliary running frequency setting	No
0x3203	Torque setting	No
0x3204	Virtual DO output setting, see below for details	No

Register Address	Parameter	Save after Power Off
0x3205	Torque control positive limit	No
0x3206	Torque control reverse limit	No
0x3207	Forward electric torque limit	No
0x3208	Reverse electric torque limit	No
0x3209	Forward power generation torque limit	No
0x320A	Reverse power generation torque limit	No
0x320B	V/f separation voltage setting	No
0x3210	PID setting	No
0x3211	Virtual DI input setting, see below for details	No
0x3212	AO, high-speed pulse output frequency value 1	No
0x3213	AO, high-speed pulse output frequency value 2	No
0x3214	AO, high-speed pulse output frequency value 3	No
0x3215	Main frequency percentage setting	No
0x3216	Auxiliary frequency percentage setting	No

Control Command Word (0x3200)

Bit definition of the control command byte (0x3200) is shown in the table below.

Bit	Value		Description
Bit0	0: The run command is invalid	1: The run command is valid	Inverter start and stop control (edge trigger mode)
Bit1	0: Forward	1: Reverse	Running direction, the forward/reverse of terminal is valid
Bit2	0: Unused	1: Stop mode is Dec. to stop	Inverter Dec. to stop control (edge trigger mode)
Bit3	0: Unused	1: The stop mode is emergency sstop	Inverter emergency stop control (edge trigger mode)
Bit4	0: Unused	1: Stop mode is coast to stop	Inverter coast to stop control (edge trigger mode)
Bit5	0: Unused	1: External fault signal	The inverter displays an external fault, and F11.02 sets the inverter to stop or continue running
Bit6	0: Jog forward stop	1: Jog forward	Jog forward
Bit7	0: Jog reverse stop	1: Jog reverse	Jog reverse
Bit8	0: Fault reset is invalid	1: Fault reset is valid	Fault reset control of inverter
Bit9 - Bit11	0: Unused		
Bit12	0: Current control is invalid	1: Current control is valid	Is the currently issued control byte valid?
Bit13 - Bit15	0: Unused		

The register content of 0x3200 can be defined as a control command (Bit combination of control command byte), see the table below.

Register Content	Control Command	Register Content	Control Command	Register Content	Control Command
0x1001	Forward	0x1004	Dec. to stop	0x1040	Jog forward
0x1003	Reverse	0x1008	Emergency Stop	0x1080	Jog reverse
		0x1010	Coast to stop	0x1100	Fault reset*
		0x1020	External fault stop	*Valid in any control mode	

Virtual DO output setting (0x3204)

Bit definition of virtual DO output setting (0x3204) is shown in the table below.

Bit	Value	
Bit0	0: DO1 output is invalid	1: DO1 output is valid
Bit1 - Bit2	Unused	
Bit3	0: RLY1 output is invalid	1: RLY1 output is valid
Bit4	Unused	
Bit5	0: EY1 output is invalid	1: EY1 output is valid
Bit6	0: EY2 output is invalid	1: EY2 output is valid
Bit7 - Bit15	Unused	

Virtual DI input setting (0x3211)

Bit definition of virtual DI input setting (0x3211) is shown in the table below.

Bit	Value	
Bit0	0: DI-V1 input is invalid	1: DI-V1 input is valid
Bit1	0: DI-V2 input is invalid	1: DI-V2 input is valid
Bit2	0: DI-V3 input is invalid	1: DI-V3 input is valid
Bit3 - Bit15	Unused	

10.4.3 Status Parameter Address Mapping

The group number of the status parameter (group d) is mapped to the high byte of the register address (0x33/0x34/0x35). The index within the group is shown in the table below.

Address mapping (0x33) of status parameters (group d00):

Register Address	Parameter	Register Address	Parameter
0x3300	Main setting frequency	0x3311	Unused
0x3301	Auxiliary setting frequency	0x3312	Unused
0x3302	Setting frequency	0x3313	Inverter status
0x3303	Reference frequency (after Acc. and Dec.)	0x3314	Motor and control method
0x3304	Output frequency	0x3315	Current fault
0x3305	Setting speed	0x3316	PID reference
0x3306	Running speed	0x3317	PID feedback
0x3307	DC bus voltage	0x3318	PID error
0x3308	Three phase power input phase sequence	0x3319	PID integral term
0x3309	Input voltage	0x331A	PID output
0x330A	Output voltage	0x331B	External count value
0x330B	Output current	0x331C	Current running time
0x330C	Torque reference	0x331D	Count value
0x330D	Output torque	0x331E	Calibration display 1
0x330E	Output power	0x331F	Calibration display 2
0x330F	V/f separation setting voltage	0x3320	Motor temperature resistance
0x3310	V/f separation reference voltage		

Address mapping (0x34) of status parameters (group d01):

Register Address	Parameter	Register Address	Parameter
0x3400	Input terminal status 1	0x3409	EAI2 Input
0x3401	Input terminal status 2	0x340A	EAI2 input (after processing)
0x3402	Output terminal status	0x340B	Keypad potentiometer input voltage
0x3403	AI1 input	0x340C	Keypad potentiometer input voltage (after processing)
0x3404	AI1 input (after processing)	0x340D	AO1 output
0x3405	AI2 input	0x340E	EAO1 output
0x3406	AI2 input (after processing)	0x3410	High-speed input pulse frequency
0x3407	EAI1 input	0x3411	High-speed output pulse frequency
0x3408	EAI1 input (after processing)		

Address mapping (0x35) of status parameters (group d02):

Register Address	Parameter	Register Address	Parameter
0x3500	Series	0x350E	Motor cumulative energy consumption (high bit)
0x3501	Software version	0x350F	Motor cumulative energy consumption (low bit)
0x3502	Software non-standard version	0x3510	Energy consumption for this run (high bit)
0x3505	Keypad software version	0x3511	Energy consumption for this run (low bit)
0x3506	Customized number	0x3512	Heatsink temperature
0x3507	Inverter rated current	0x3513	RLY1 cumulative number of actions (high bit)
0x3508	Expansion card A	0x3514	RLY1 cumulative number of actions (low bit)
0x3509	Expansion card A software version	0x3522	AI1 raw sampling value
0x350A	Expansion card B	0x3523	AI2 raw sampling value
0x350B	Expansion card B software version	0x3524	EAI1 raw sample value
0x350C	Cumulative power-on time (hours)	0x3525	EAI2 raw sample value
0x350D	Cumulative running time (hours)	0x3526	AO1 raw output value
		0x3527	EAO1 raw output value

10.4.4 Communication Customization 1 (Group F23)

F23 parameters is the communication address.

By setting the F23 group parameters, the communication address of any parameter (F group: Function parameters, group d: Status parameters, 0x32: Control parameters) can be mapped to the register address 0x3600 - 0x3613.

Communication read/write mapping register address, actually read/write the register address of group F23 parameter value (parameter corresponding to the address).

The specific relationship is shown in the table below.

Ref. Code	Communication Address (Register Address)	Map Register Address
F23.00	0x1700	0x3600
F23.01	0x1701	0x3601
...	...	....
F23.19	0x1713	0x3613

Example:

F23.00 = 0x3302 (parameter d00.02), if the communication reads address 0x3600, it actually reads d00.02.

F23.01 = 0x0001 (parameter F00.01), if the communication read/write address is 0x3601, it actually read/write is F00.01.

10.4.5 Communication Customization 2 (Group F24)

By setting the group F24 parameters, the communication control commands used on site can be mapped to the communication control commands of the inverter.
F24.00 - F24.11 correspond to register addresses 0x1800 - 0x180B.
The communication write address = the value of F24.00, the write register content = F24.01 - F24.07, and the actual write corresponding communication command.
The communication write address = F24.08, the write register content = F24.09, which actually writes the fault reset command.

The use of function address and content of the group F24 control command parameter, see the table below.

Register Address	Register Content	Parameter
Communication control command address: F24.00 value	F24.01 value	Forward start command value
	F24.02 value	Reverse start command value
	F24.03 value	Forward jog command value
	F24.04 value	Reverse jog command value
	F24.05 value	Coast to stop command value
	F24.06 value	Dec. to stop command value
	F24.07 value	Emergency stop command value
Communication fault reset address: F24.08	F24.09 parameter value	Fault reset command value
Communication setting frequency address: F24.10 value	0 - Maximum frequency	Communication setting frequency
Frequency setting accuracy address: 0x180B (F24.11)	0 - 2	Setting frequency accuracy: • 0: 2 decimal places • 1: 1 decimal place • 2: 0 decimal place

Example: When the command mode is communication control.
Set F24.00 = 0x8001, F24.01 = 0x0002, write 0x0002 to address 0x8001, and actually write the communication forward start command.
Set F24.08 = 0x8002 and F24.09 = 0x1100, write 0x1100 to address 0x8002, and actually write the communication fault reset command.
Set F24.10 = 0x8003, F24.11 = 0, write 0x1388 to address 0x8003, and actually write the communication setting frequency 50.00Hz (2 decimal place frequency accuracy).

10.5 Special Instructions

The host computer restores factory parameters: F08.01 writes 0 x03E9.
The host computer clears the fault information: F08.01 writes 0x03EC.

Note:

1. Parameters that the host computer can read but cannot write: group F13 (motor 1 parameters), group F17 (motor 2 parameters), group F22 (SCI communication parameters).
2. Setting multiple DI terminals to the same function will cause functional disorder, so avoid this.
3. The host computer communication cannot change F08.00 (user password), but can write F08.00 to verify the user password.
   After the verification is passed, the host computer obtains the authority to change the inverter parameters. After the change is completed, write an invalid password to F08.00, and the host computer has no change authority.

10.6 CRC Check

The code for online calculation of CRC is as follows:

```
unsigned int crc_check (unsigned char * data, unsigned char length)
{
    int i;
    unsigned crc_result = 0xffff;
   While (length--)
    {
        crc_result ^ = * data++;
        for (I = 0; I < 8; i++)
        {
            If (crc_result&0x01)
                crc_result = (crc_result >> 1) ^ 0xa001;
            else
                crc_result = crc_result >> 1;
        }
    }
    return (crc_result = ((crc_result&0xff) << 8) | (crc_result >> 8));
}
```

10.7 Application Example

Prerequisite

Confirm:

- The wiring is correct.
- The inverter's communication parameters (data format, baud rate, communication address) are set correctly.

Example

1. Read the maximum output frequency (F00.05) of slave 2, the response is 50.00Hz

	Address	Code	Register Address		Byte No. of Read		Checksum	
Request frame	0x02	0x03	0x00	0x05	0x00	0x01	0x94	0x38
	Address	**Code**	**No. of Response Bytes**		**Register Content**		**Checksum**	
Response frame	0x02	0x03	0x02		0x13	0x88	0xF1	0x12

2. Read the DC bus voltage (status parameter) of slave 2, the response is 537V

	Address	Code	Register Address		Byte No. of Read		Checksum	
Request frame	0x02	0x03	0x33	0x07	0x00	0x01	0x3A	0xBC
	Address	**Code**	**No. of Response Bytes**		**Register Content**		**Checksum**	
Response frame	0x02	0x03	0x02		0x02	0x19	0x3C	0xEE

3. Write the setting frequency (F00.09) of slave 2 to 45.00Hz

	Address	Code	Register Address		Register Content		Checksum	
Request/response frame	0x02	0x06	0x00	0x09	0x11	0x94	0x54	0x04

4. When F00.08 = 3, write the set running frequency of slave 2 is 45.00Hz, and the register content is 0x11, 0x94

	Address	Code	Register Address		Register Content		Checksum	
Request/response frame	0x02	0x06	0x32	0x01	0x11	0x94	0xDB	0x7E

5. When F00.04 = 2, slave 2 runs in reverse direction

	Address	Code	Register Address		Register Content		Checksum	
Request/response frame	0x02	0x06	0x32	0x00	0x10	0x03	0xCA	0x80

6. When F00.04 = 2, slave 2 decelerates and stop

	Address	Code	Register Address		Register Content		Checksum	
Request/response frame	0x02	0x06	0x32	0x00	0x10	0x04	0x8B	0x42

7. External fault of slave 2

	Address	Code	Register Address		Register Content		Checksum	
Request/response frame	0x02	0x06	0x32	0x00	0x10	0x20	0x8B	0x59

8. Slave 2 fault reset

	Address	Code	Register Address		Register Content		Checksum	
Request/response frame	0x02	0x06	0x32	0x00	0x11	0x00	0x8B	0x11

Appendix A Parameters

Communication Address [Register Address]

Modbus communication protocol supports functions:

- 0x03: Read function parameter (group F00 - F27) or status parameter (group d00 - d02).
- 0x06: Write single function parameter (group F00 - F27).
- 0x10: Write multiple function parameter (group F00 - F27).

When writing function parameters, the communication address is shown in the parameter table, and the parameters are stored by default.

If only writing and not storing parameters, the communication address = communication address of parameter table + 0x8000.

Set [Parameter Setting Attributes]:

*: Actual parameter, cannot be modified.

×: Parameters cannot be modified while the inverter is running.

○: Parameters can be modified while the inverter is running.

Ref. Code	Address	Parameter	Range	Default	Set
d00 : Running status parameters					
d00.00	0x3300	Main setting frequency	0.00 - 600.00Hz	Actual	*
d00.01	0x3301	Auxiliary setting frequency	0.00 - 600.00Hz	Actual	*
d00.02	0x3302	Setting frequency	0.00 - 600.00Hz	Actual	*
d00.03	0x3303	Reference frequency (after Acc. and Dec.)	0.00 - 600.00Hz	Actual	*
d00.04	0x3304	Output frequency	0.00 - 600.00Hz	Actual	*
d00.05	0x3305	Setting rpm	0 - 60000rpm	Actual	*
d00.06	0x3306	Running speed	0 - 60000rpm	Actual	*
d00.07	0x3307	DC bus voltage	0 - 999V	Actual	*
d00.08	0x3308	Three phase power input phase sequence	0: Positive sequence, L1 (R) ahead L2 (S) ahead L3 (T) 1: Negative sequence, L1 (R) ahead L3 (T) ahead L2 (S)	Actual	*
d00.09	0x3309	Input voltage	0.2 - 5.5kW: ----- 7. 5 - 400kW: Actual	Actual	*
d00.10	0x330A	Output voltage	0 - 999V	Actual	*
d00.11	0x330B	Output current	Actual	Actual	*
d00.12	0x330C	Torque reference	-250.0 - + 250.0% (motor rated torque)	Actual	*
d00.13	0x330D	Output torque		Actual	*
d00.14	0x330E	Output power	Actual	Actual	*
d00.15	0x330F	V/f separation setting voltage	0 - 999V	Actual	*
d00.16	0x3310	V/f separation reference voltage	0 - 999V	Actual	*
d00.19	0x3313	Inverter status	Bit0: Inverter fault Bit1: Run/stop Bit2: Forward/reverse Bit3: Zero speed running Bit5&Bit4: Acc./Dec./constant speed Bit7: DC braking Bit8: Parameter auto-tuning Bit10: Speed limit Bit11: Control mode Bit12: Overvoltage stall Bit13: Automatic current limit Bit14: Analog input over-limit stop	Actual	*
d00.20	0x3314	Motor and control mode	Unit: The motor currently being driven 0: Asyn. motor 1 1: Asyn. motor 2 2, 3: Unused Ten: Asyn. motor control mode	Actual	*

Ref. Code	Address	Parameter	Range	Default	Set
			0: V/f control 1: SVC (open loop vector) control 2: Unused Hundred: Unused Thousand: Control mode 0: Speed control 1: Torque control		
d00.21	0x3315	Current fault	Actual	Actual	*
d00.22	0x3316	PID reference	-100.0 - +100.0%	Actual	*
d00.23	0x3317	PID feedback	-100.0 - +100.0%	Actual	*
d00.24	0x3318	PID error	-100.0 - +100.0%	Actual	*
d00.25	0x3319	PID integral term	-100.0 - +100.0%	Actual	*
d00.26	0x331A	PID output	-100.0 - +100.0%	Actual	*
d00.27	0x331B	External count value	0 - 9999	Actual	*
d00.28	0x331C	Current running time	0.0 - 6553.5min	Actual	*
d00.29	0x331D	Count value	0 - 65535	Actual	*
d00.30	0x331E	Calibration display 1	Determined by setting	Actual	*
d00.31	0x331F	Calibration display 2	Determined by setting	Actual	*
d00.32	0x3320	Motor temperature resistance value	0.0 - 99.9 kΩ	Actual	*
d01: Control terminal status parameters					
d01.00	0x3400	Input terminal status 1	Bit0 - Bit4: DI1 - DI5 Bit5 - Bit8: Unused Bit9 - Bit10: EX1 - EX2 Bit11 - Bit13: DI-V1 - DI-V3 Bit14 - Bit15: DI-AI1 - DI-AI2	Actual	*
d01.01	0x340 1	Input terminal status 2	Bit0 - Bit1: DI-EAI1 - DI-EAI2 Bit2 - Bit15: Unused	Actual	*
d01.02	0x3402	Output terminal status	Bit0: DO1 Bit3: RLY1 Bit5 - Bit6: EY1 - EY2	Actual	*
d01.03	0x3403	AI1 input	0.0 - 100.0% • 100.0%: 10V	Actual	*
d01.04	0x3404	AI1 input (after processing)	-100.0 - +100.0% • 100.0%: Calculated AI1 input	Actual	*
d01.05	0x3405	AI2 input	0.0 - 100.0% • 100.0%: 10V	Actual	*
d01.06	0x3406	AI2 input (after processing)	-100.0 - +100.0% • 100.0%: Calculated AI2 input	Actual	*
d01.07	0x3407	EAI1 input	0.0 - 100.0% 100.0%: 10V	Actual	*
d01.08	0x3408	EAI1 input (after processing)	-100.0 - +100.0% 100.0%: Calculated EAI1 input	Actual	*

Ref. Code	Address	Parameter	Range	Default	Set
d01.09	0x3409	EAI2 Input	0.0 - 100.0% 100.0%: 10V	Actual	*
d01.10	0x340A	EAI2 input (after processing)	-100.0 - +100.0% 100.0%: Calculated EAI2 input	Actual	*
d01.11	0x340B	Keypad potentiometer input voltage	0.0 - 100.0%	Actual	*
d01.12	0x340C	Keypad potentiometer input voltage (after processing)	-100.0 - +100.0%	Actual	*
d01.13	0x340D	AO1 output	0.0 - 100.0%	Actual	*
d01.14	0x340E	EAO1 output	0.0 - 100.0%	Actual	*
d01.16	0x3410	High speed input pulse frequency	0 - 50000Hz	Actual	*
d01.17	0x3411	High speed output pulse frequency	0 - 10000Hz	Actual	*
d02: Factory maintenance status parameters					
d02.00	0x3500	Series	800	Actual	*
d02.01	0x3501	Software version	1.00	Actual	*
d02.02	0x3502	Software non-standard version	0.00	Actual	*
d02.05	0x3505	Keypad software version	1.00	Actual	*
d02.06	0x3506	Customized number	0	Actual	*
d02.07	0x3507	Inverter rated current	0.2 - 5.5kW: 0.01A 7.5 - 400kW: 0.1A	Actual	*
d02.08	0x3508	Expansion card A	0: No expansion card 1: HD800-CAN-A 2: HD800-Profibus-DP 3, 4: Unused 5: HD800-EIO-I 6 - 9, A, B: Unused	Actual	*
d02.09	0x3509	Expansion card A software version	0.00	Actual	*
d02.10	0x350A	Expansion card B	0: No expansion card 1: HD800-CAN-A 2: HD800-Profibus-DP 3 - 9, A, B: Unused	Actual	*
d02.11	0x350B	Expansion card B software version	0.00	Actual	*
d02.12	0x350C	Cumulative power-on time	0 - 65535h	Actual	*
d02.13	0x350D	Cumulative running time	0 - 65535h	Actual	*
d02.14	0x350E	Motor cumulative energy consumption (high bit)	0 - 65535k kW.h	Actual	*
d02.15	0x350F	Motor cumulative energy consumption (low bit)	0.0 - 999.9kW.h	Actual	*
d02.16	0x3510	Energy consumption of this run (high bit)	0 - 65535k kW.h	Actual	*

Ref. Code	Address	Parameter	Range	Default	Set
d02.17	0x3511	Energy consumption of this run (low bit)	0.0 - 999.9kW.h	Actual	*
d02.18	0x3512	Heatsink temperature	0.0 - 999.9℃ • 220V 0.2 - 1.5kW: Display actual temperature • Others: Display -----	Actual	*
d02.19	0x3513	RLY1 cumulative number of actions (high bit)	0 - 65535	Actual	*
d02.20	0x3514	RLY1 cumulative number of actions (low bit)	0 - 65535	Actual	*
d02.34	0x3522	AI1 raw sampling value	0 - 4095	Actual	*
d02.35	0x3523	AI2 raw sampling value	0 - 4095	Actual	*
d02.36	0x3524	EAI1 raw sample value	0 - 4095	Actual	*
d02.37	0x3525	EAI2 raw sample value	0 - 4095	Actual	*
d02.38	0x3526	AO1 raw output value	0 - 65535	Actual	*
d02.39	0x3527	EAO1 raw output value	0 - 65535	Actual	*
F00: Basic parameters					
F00.00	0x0000	Control mode	0: Speed control 1: Torque control	0	×
F00.01	0x0001	Running direction	0: The same direction 1: The reverse the direction	0	×
F00.02	0x0002	Anti-reverse	0: Allow reverse 1: Disable reverse	0	×
F00.03	0x0003	Forward and reverse dead time	0.0 - 3600.0s • Only speed control mode is valid	0.0s	×
F00.04	0x0004	Command setting channel	0: Keypad 1: DI terminal 2: Communication	0	×
F00.05	0x0005	Maximum output frequency	V/f: 0.00 - 600.00Hz SVC: 0.00 - 200.00Hz	50.00Hz	×
F00.06	0x0006	Upper limit running frequency	0.00Hz - F00.05	50.00Hz	×
F00.07	0x0007	Lower limit running frequency	0.00Hz - F00.06	0.00Hz	×
F00.08	0x0008	Main frequency setting channel	0: Keypad (F00.09 sets the initial frequency) 1: DI terminal (F00.09 sets the initial frequency) 2: Terminal pulse (DI5) 3: Communication 4, 5: Unused 6: Multi-speed 7: PID 8 - 11: AI1/AI2/EAI1/EAI2	0	○

Ref. Code	Address	Parameter	Range	Default	Set
			12:Keypad potentiometer 13: Communication percentage (0 - 1000 corresponds to 0.00 - F00.05) Note: When setting the frequency via communication (Modbus, CAN, DP), please set it to 3 or 13		
F00.09	0x0009	Initial running frequency (digital setting)	0.00Hz - F00.06	50.00Hz	○
F00.10	0x000A	Main frequency control	Unit: Stored when power is off (F00.08 = 0 or 1) 0: Do not store 1: Storage Ten: Control during stop (F00.08 = 0 or 1) 0: Maintain the set frequency 1: The set frequency is restored to F00.09 Hundred: Stored when power is off (F00.08 = 3 or 13) Thousand: Stored when frequency channel is switched 0: Do not store 1: Storage	0x1001	○
F00.11	0x000B	Auxiliary frequency channel	0: Keypad (F00.14 sets the initial frequency) 1: DI terminal (F00.14 sets the initial frequency) 2: Terminal pulse (DI5) 3: Communication 4, 5: Unused 6: Multi-speed 7: PID 8 - 11: AI1/AI2/EAI1/EAI2 12:Keypad potentiometer 13: Communication percentage (0 - 1000 corresponds to 0.00 - F00.05) Note: When setting the auxiliary frequency via communication (Modbus, CAN, DP), please set it to 3 or 13	0	○
F00.12	0x000C	Main and auxiliary setting calculation	Unit: Main and auxiliary calculation 0: Main 1: Main + auxiliary	0x10	○

Ref. Code	Address	Parameter	Range	Default	Set
			2: Main - auxiliary 3: Main and auxiliary for wire drawing Ten: Frequency source switching 0: Main 1: Main&auxiliary calculation 2: Switch between main and auxiliary 3: Switch between main and main&auxiliary calculation 4: Switch between auxiliary and main&auxiliary calculation		
F00.13	0x000D	Auxiliary set coefficient	0.00 - 9.99	1.00	○
F00.14	0x000E	Auxiliary initial frequency (digital setting)	0.00Hz - F00.06	0.00Hz	○
F00.15	0x000F	Auxiliary frequency control	Unit: Stored when power is off (F00.11 = 0 or 1) 0: Do not store 1: Storage Ten: Control during stop (F00.11 = 0 or 1) 0: Maintain the set frequency 1: The set frequency is restored to F00.14 Hundred: Unused Thousand: Stored when frequency channel is switched 0: Do not store 1: Storage	0x0000	○
F00.16	0x0010	Set frequency ratio adjustment	0: No adjustment 1: Adjust relative to F00.05 (maximum output frequency) 2: Adjust relative to the current frequency	1	○
F00.17	0x0011	Set frequency ratio adjustment coefficient	0.0 - 200.0%	100.0%	○
F00.18	0x0012	Frequency adjustment range	Unit: Main frequency calculation range Ten: Auxiliary frequency calculation range 0: 0 - maximum frequency (F00.05) 1: Negative maximum frequency - maximum frequency	0x100	○

Ref. Code	Address	Parameter	Range	Default	Set
			Hundred: Synthetic frequency calculation range 0: 0 - upper limit frequency (F00.06) 1: Negative upper limit frequency - upper limit frequency		
F00.19	0x0013	Jog running frequency 1 (digital setting)	0.00 - F00.06	5.00Hz	○
F00.20	0x0014	Jog running frequency 2 (digital setting)	0.00 - F00.06	5.00Hz	○
F00.21	0x0015	Jog running interval time	0.0 - 100.0s	0.0s	×
F00.22	0x0016	Zero frequency action	Unit: V/f control 0: No processing 1: Run according to zero frequency 2: Run according to zero frequency threshold 3: Block output 4: Run according to DC braking Ten: SVC (open loop vector) control 0: No processing 1: Run according to zero frequency 2: Run according to zero frequency threshold 3: Block output 4: Run according to DC braking 5: Run according to pre-excitation Note: • F01.09 sets the braking current • In the forward and reverse dead zone, if the unit or ten is set to 1 or 2, the setting is invalid and the action is the same as if it was set to 0 (no processing)	0x33	×
F00.23	0x0017	Zero frequency threshold	0.00Hz - F00.06	0.00Hz	○
F00.24	0x0018	Sleep action	0: Disable 1: Enable • Only terminal control is valid	0	×
F00.25	0x0019	Sleep wake-up time	0.0 - 6000.0s	1.0s	○
F00.26	0x001A	Sleep detection time	0.0 - 6000.0s	1.0s	○
F00.27	0x001B	Sleep detection threshold	0.00Hz - F00.06	0.00Hz	○

Ref. Code	Address	Parameter	Range	Default	Set
F00.28	0x001C	Sleep wake-up detection threshold	0.00Hz - F00.06	0.00Hz	○
F00.29	0x001D	Jump frequency 1	F00.07 - F00.06	0.00Hz	○
F00.30	0x001E	Jump frequency 2	F00.07 - F00.06	0.00Hz	○
F00.31	0x001F	Jump frequency 3	F00.07 - F00.06	0.00Hz	○
F00.32	0x0020	Jump frequency range	0.00 - 30.00Hz	0.00Hz	○
F01: Start and stop control parameters					
F01.00	0x0100	Start mode (speed control)	0: Start from the set frequency 1: Speed tracking start When set to 1, do not set: • F00.22 = 33 or F00.03 > 0.0 • F13.00 ten =1 and F17.00 ten = 1	0	×
F01.01	0x0101	Start delay time	0.0 - 10.0s	0.0s	×
F01.02	0x0102	Start DWELL frequency	0.00Hz - F00.06 • F02.19 sets the start DWELL Acc. time	0.00Hz	×
F01.03	0x0103	Start DWELL frequency holding time	0.0 - 10.0s	0.0s	×
F01.04	0x0104	Start braking/ pre-excitation current	0 - 150% (motor rated current)	50%	×
F01.05	0x0105	Start DC braking time	0.0 - 60.0s	0.0s	×
F01.06	0x0106	Stop mode (speed control)	0: Dec. to stop 1: Coast to stop 2: Dec. to stop + DC braking	0	×
F01.07	0x0107	Stop DWELL frequency	0.00Hz - F00.06	0.00Hz	×
F01.08	0x0108	Stop DWELL frequency holding time	0.00 - 10.0s	0.0s	×
F01.09	0x0109	Stop braking current	0 - 150% (motor rated current)	50%	×
F01.10	0x010A	DC braking start frequency at stop	0.00 - 50.00Hz	0.50Hz	×
F01.11	0x010B	DC braking waiting time at stop	0.0 - 10.0s	0.0s	×
F01.12	0x010C	DC braking time at stop	0.0 - 60.0s	0.0s	×
F01.13	0x010D	Pre-excitation time	0.0 - 0.5s	0.5s	×
F01.14	0x010E	DC braking maximum current limit	0 - 130% (inverter rated current)	80%	×
F01.15	0x010F	Holding enable after stop is completed	0: Disable 1: Enable	0	○
F01.16	0x0110	Holding current	0 - 150% (motor rated current)	30%	○
F01.17	0x0111	Jog control mode	Unit: Start and stop mode (F01.00 and F01.06) 0: Invalid 1: Enable	0x00	×

Ref. Code	Address	Parameter	Range	Default	Set
			Ten: Terminal jog 0: No priority 1: Priority		
F02: Acc. and Dec. parameters					
F02.00	0x0200	Acc. and Dec. mode	Unit: Curve 0: Linear Acc. and Dec. 1: S-curve Acc. and Dec. Ten: Base frequency 0: Maximum frequency (F00.05) 1: Base frequency (F02.01)	0x00	○
F02.01	0x0201	Base frequency (digital setting)	50.00 - 6 00.00Hz	50.00Hz	○
F02.02	0x0202	Acc. time 1	0.0 - 6000.0s	0.2 - 15kW: 10.0s 18.5 - 55kW: 30.0s 75 - 400kW: 60.0s	○
F02.03	0x0203	Dec. time 1	0.0 - 6000.0s		○
F02.04	0x0204	Acc. time 2	0.0 - 6000.0s		○
F02.05	0x0205	Dec. time 2	0.0 - 6000.0s		○
F02.06	0x0206	Acc. time 3	0.0 - 6000.0s		○
F02.07	0x0207	Dec. time 3	0.0 - 6000.0s		○
F02.08	0x0208	Acc. time 4	0.0 - 6000.0s		○
F02.09	0x0209	Dec. time 4	0.0 - 6000.0s		○
F02.10	0x020A	Acc. time 2 and 1 switching frequency	0.00Hz - F00.06	0.00Hz	○
F02.11	0x020B	Dec. time 2 and 1 switching frequency	0.00Hz - F00.06	0.00Hz	×
F02.12	0x020C	S-shaped characteristic time at the start of Acc.	0.00 - 2.50s	0.20s	○
F02.13	0x020D	S-shaped characteristic time at the end of Acc.	0.00 - 2.50s	0.20s	○
F02.14	0x020E	S-shaped characteristic time at the start of Dec.	0.00 - 2.50s	0.20s	○
F02.15	0x020F	S-shaped characteristic time at the end of Dec.	0.00 - 2.50s	0.20s	○
F02.16	0x0210	Jog Acc. time	0.1 - 6000.0s	6.0s	○
F02.17	0x0211	Jog Dec. time	0.1 - 6000.0s	6.0s	○
F02.18	0x0212	Emergency stop Dec. time	0.1 - 6000.0s	10.0s	○
F02.19	0x0213	Start DWELL Acc. time	0.1 - 6000.0s	1.0s	○
F03: Multi-speed parameters					
F03.00	0x0300	Multi-frequency command 0	F00.07 - F00.06	5.00Hz	○
F03.01	0x0301	Multi-frequency command 1	F00.07 - F00.06	5.00Hz	○
F03.02	0x0302	Multi-frequency command 2	F00.07 - F00.06	5.00Hz	○
F03.03	0x0303	Multi-frequency command 3	F00.07 - F00.06	5.00Hz	○

Ref. Code	Address	Parameter	Range	Default	Set
F03.04	0x0304	Multi-frequency command 4	F00.07 - F00.06	5.00Hz	○
F03.05	0x0305	Multi-frequency command 5	F00.07 - F00.06	5.00Hz	○
F03.06	0x0306	Multi-frequency command 6	F00.07 - F00.06	5.00Hz	○
F03.07	0x0307	Multi-frequency command 7	F00.07 - F00.06	5.00Hz	○
F03.08	0x0308	Multi-frequency command 8	F00.07 - F00.06	5.00Hz	○
F03.09	0x0309	Multi-frequency command 9	F00.07 - F00.06	5.00Hz	○
F03.10	0x030A	Multi-frequency command 10	F00.07 - F00.06	5.00Hz	○
F03.11	0x030B	Multi-frequency command 11	F00.07 - F00.06	5.00Hz	○
F03.12	0x030C	Multi-frequency command 12	F00.07 - F00.06	5.00Hz	○
F03.13	0x030D	Multi-frequency command 13	F00.07 - F00.06	5.00Hz	○
F03.14	0x030E	Multi-frequency command 14	F00.07 - F00.06	5.00Hz	○
F03.15	0x030F	Multi-frequency command 15	F00.07 - F00.06	5.00Hz	○
F03.16	0x0310	Multi-speed default frequency	0: F03.00 1: Keypad (digital setting) 2: Terminal (digital setting) 3: Terminal pulse 4: Communication 5 - 7: Unused 8: PID 9 - 12: AI1/AI2/EAI1/EAI2 13: Keypad potentiometer 14: Communication percentage (0 - 1000 corresponds to 0.00 - F00.05)	0	○
F04: PID control parameters					
F04.00	0x0400	Reference channel	0: F04.02 1: Terminal pulse 2 - 5: AI1/AI2/EAI1/EAI2 6: Keypad potentiometer 7: Communication	0	×
F04.01	0x0401	Feedback channel	0: Unused 1: Terminal pulse 2 - 5: AI1/AI2/EAI1/EAI2	3	×
F04.02	0x0402	Reference amount (digital setting)	-100.0 - +100.0%	0.0%	○
F04.03	0x0403	Proportional gain (P1)	0.00 - 50.00	5. 00	○
F04.04	0x0404	Integration time (I1)	0.00 - 50.00s	1.00s	○
F04.05	0x0405	Differential time (D1)	0.00 - 10.00s 0.00: The differential term is invalid	0.00s	○

Ref. Code	Address	Parameter	Range	Default	Set
F04.06	0x0406	Proportional gain (P2)	0.00 - 50.00	5.00	○
F04.07	0x0407	Integration time (I2)	0.01 - 10.00s	1.00s	○
F04.08	0x0408	Differential time (D2)	0.00 - 10.00s 0.00: The differential term is invalid	0.00s	○
F04.09	0x0409	PID parameter adjustment basis	0: No adjustment 1: DI 2: Bias 3: Frequency	0	○
F04.10	0x040A	PID parameter switching point 1	0.0% - F04.11	0.0%	○
F04.11	0x040B	PID parameter switching point 2	F04.10 -100.0%	100.0%	○
F04.12	0x040C	Integral upper limit	0.0 - 100.0%	100.0%	○
F04.13	0x040D	Differential limit value	0.0 - 100.0%	20.0%	○
F04.14	0x040E	Deviation limit	0.0 - 20.0% (reference)	0.0%	○
F04.15	0x040F	PID reference change time	0.00 - 50.00s	0.00s	○
F04.16	0x0410	PID output upper limit	0.0 - 100.0%	100.0%	×
F04.17	0x0411	PID output lower limit	0.0 - 100.0%	0.0%	×
F04.18	0x0412	PID output reverse upper limit	0.0 - 100.0%	100.0%	×
F04.19	0x0413	PID output reverse	0: Disable 1: Allowed	0	×
F04.20	0x0414	PID regulator adjustment characteristics	0: Positive characteristic 1: Negative characteristic	0	×
F04.21	0x0415	PID output filter time	0.01 - 10.00s	0.01s	○
F04.22	0x0416	PID output gain	0.00 - 2.00	1.00	○
F04.23	0x0417	PID operation mode	0: No operation during stop 1: Operation during stop	0	×
F04.24	0x0418	PID sleep enable	0: Disable 1: Enable	0	×
F04.25	0x0419	PID wake-up tolerance	0.0 - 100.0%	10.0%	○
F04.26	0x041A	PID wake-up delay	0.0 - 6000.0s	10.0s	○
F04.27	0x041B	PID sleep tolerance	0.0 - 100.0%	10.0%	○
F04.28	0x041C	PID sleep delay	0.0 - 6000.0s	10.0s	○
F04.29	0x041D	PID sleep frequency	0.00Hz - F00.05	20.00Hz	○
F04.30	0x041E	PID reference loss detection value	0 - 100% (maximum reference) 0%: No detection	0%	○
F04.31	0x041F	PID reference loss detection time	0.0 - 10.0s 0.0s: No detection	0.2s	○
F04.32	0x0420	PID feedback loss detection value	0 - 100% (maximum feedback) 0%: No detection	0%	○
F04.33	0x0421	PID feedback loss detection time	0.0 - 10.0s 0.0s: No detection	0.2s	○

Ref. Code	Address	Parameter	Range	Default	Set
F04.34	0x0422	PID feedback over-limit detection value	0 - 100% (maximum feedback) 100%: No detection	100%	○
F04.35	0x0423	PID feedback over-limit detection time	0.0 - 10.0s 0.0s: No detection	0.2s	○
F04.36	0x0424	Enable PID fault detection time after running	0.0 - 30.0s 0.0s: Detection is always performed during running and stop	5.0s	○
F04.37	0x0425	Auxiliary PID output limit relative amount	0: Relative maximum frequency (F00.05) 1: Relative main frequency	0	○
F04.38	0x0426	Auxiliary PID output limit	0.0 - 100.0%	100.0%	○
F04.39	0x0427	Auxiliary PID output limit boost	0.0 - 100.0%	0.0%	○
F05: Torque control parameters					
F05.00	0x0500	Torque command reference channel	0: F05.01 1: Terminal pulse 2 - 5: AI1/AI2/EAI1/EAI2 6: Keypad potentiometer 7: Communication	0	×
F05.01	0x0501	Torque command (digital setting)	-100.0 - +100.0% (F05.02)	0.0%	○
F05.02	0x0502	Maximum torque	0.0 - 500.0% (motor rated torque)	100.0%	×
F05.03	0x0503	Torque command filter time	0.0 - 3.0s	0.2s	○
F05.04	0x0504	Torque control positive limit channel	0: F05.06 1: Terminal pulse 2 - 5: AI1/AI2/EAI1/EAI2 6: Keypad potentiometer 7: Communication Maximum limit: F00.05 (maximum frequency)	0	×
F05.05	0x0505	Torque control reverse limit channel	0: F05.07 1: Terminal pulse 2 - 5: AI1/AI2/EAI1/EAI2 6: Keypad potentiometer 7: Communication Maximum limit: F00.05 (maximum frequency)	0	×
F05.06	0x0506	Forward speed limit in torque control	0 - 120% (F00.05)	100%	○
F05.07	0x0507	Reverse speed limit in torque control	0 - 120% (F00.05)	100%	○
F05.08	0x0508	Zero torque action	0: No processing 1: Block output 2: Run according to DC braking	1	×

Ref. Code	Address	Parameter	Range	Default	Set
			3: Run according to pre-excitation		
F05.09	0x0509	Stop mode (torque control)	0: Dec. to stop (torque output is limited according to the current reference torque) 1: Stop torque output 2: Coast to stop	0	×
F06: Enhanced protection parameters					
F06.00	0x0600	Cooling fan control	0: Automatic stop 1: Stop immediately 2: The fan keeps running when the power is on	0	○
F06.01	0x0601	Cooling fan control delay time	0.0 - 600.0s	60.0s	○
F06.02	0x0602	Instantaneous power failure without stopping	0: Disable 1: Enable	0	×
F06.03	0x0603	Instantaneous power failure without stopping voltage compensation gain	0.000 - 9.000	1.200	○
F06.04	0x0604	Instantaneous power failure without stopping action voltage	220V inverter: 210 - 370V	248V	×
			380V inverter: 400 - 670V	430V	×
F06.05	0x0605	DC bus undervoltage protection voltage	220V inverter: 150 - 999V	190V	×
			380V inverter: 150 - 999V	380V	
F06.06	0x0606	Overvoltage stall voltage	220V inverter: 350 - 400V	390V	○
			380V inverter: 650 - 800V	720V	
F06.07	0x0607	Overvoltage stall suppression frequency gain	0.000 - 9.000 0.000: Disable frequency suppression	2.500	○
F06.09	0x0609	V/f overvoltage excitation gain	0 - 150% 0%: Overexcitation is invalid	64%	○
F06.10	0x060A	Automatic current limit level	20.0 - 200.0% (inverter rated current)	150.0%	○
F06.11	0x060B	Current limit suppression frequency gain	0.000 - 2.000	0.350	○
F06.13	0x060D	Brake unit action voltage	220V inverter: 330 - 400V	380V	○
			380V inverter: 630 - 750V	680V	
F07: Keypad display and control parameters					
F07.00	0x0700	Run display parameter 1	0: Unused 1: Main set frequency 2: Auxiliary set frequency 3: Set frequency 4: Reference frequency (after Acc. and Dec.)	4	○

Ref. Code	Address	Parameter	Range	Default	Set
F07.01	0x0701	Run display parameter 2	5: Output frequency 6: Set rpm 7: Running speed 8: DC bus voltage 9: Three phase power input phase sequence 10: Input voltage 11: Output voltage 12: Output current 13: Torque reference 14: Output torque 15: Output power 16: V/f separation set voltage 17: V/f separation reference voltage 18, 19: Unused 20: Inverter status 21: Motor and control mode 22: Current fault 23: PID reference 24: PID feedback 25: PID error 26: PID integral term 27: PID output 28: External count value 29: Current running time 30: Count value 31: Calibration display 1 32: Calibration display 2 33: Motor temperature resistance value 34: Unused 35: Input terminal status 1 36: Input terminal status 2 37: Output terminal status 38:AI1 input 39: AI1 input (after processing) 40: AI2 input 4 1:AI2 input (after processing) 42: EAI1 input 43: EAI1 input (after processing) 44: EAI2 input 45: EAI2 input (after processing) 46: Keypad potentiometer input voltage	3	○
F07.02	0x0702	Run display parameter 3		5	○
F07.03	0x0703	Run display parameter 4		11	○
F07.04	0x0704	Run display parameter 5		12	○
F07.05	0x0705	Run display parameter 6		8	○
F07.06	0x0706	Stop display parameter 1		3	○

Ref. Code	Address	Parameter	Range	Default	Set
F07.07	0x0707	Stop display parameter 2	47: Keypad potentiometer input voltage (after processing) 48: AO1 output 49: EAO1 output 50: Unused 51: High-speed input pulse frequency 52: High-speed output pulse frequency 53: Unused 54: Series 55: Software version 56: Non-standard version of software 57, 58: Unused 59: Keypad software version 60: Customer customized number 61: Inverter rated current 62: Expansion card A 63: Expansion card A software version 64: Expansion card B 65: Expansion card B software version 66: Cumulative power-on time (hours) 67: Cumulative running time (hours) 68: Motor cumulative energy consumption (high bit) 69: Motor cumulative energy consumption (low bit) 70: Energy consumption of this run (high bit) 71: Energy consumption of this run (low bit) 72: Heatsink temperature • 220V 0.2 - 1.5kW: Display actual temperature in 0.1℃ unit • Others: Display ----- 73: RLY1 cumulative number of actions (high bit) 74: RLY1 cumulative number of actions (low bit) 75 - 92: Unused	8	○
F07.08	0x0708	Stop display parameter 3		20	○
F07.09	0x0709	Stop display parameter 4		22	○
F07.10	0x070A	Stop display parameter 5		35	○
F07.11	0x070B	Stop display parameter 6		36	○
F07.13	0x070C	Calibration display 1 signal source	0: Set frequency 1: Reference frequency	0	○

Ref. Code	Address	Parameter	Range	Default	Set
			2 - 5: AI1/AI2/EAI1/EAI2 6: High-speed input pulse		
F07.14	0x070D	Calibration display 1 range	0 - 65535	65535	○
F07.15	0x070E	Calibration display 1 display accuracy	0: Integer 1: One decimal place 2: Two decimal places 3: Three decimal places	0	○
F07.16	0x070F	Calibration display 2 signal source	0: Set frequency 1: Reference frequency 2 - 5: AI1/AI2/EAI1/EAI2 6: High-speed input pulse	0	○
F07.17	0x0710	Calibration display 2 range	0 - 65535	65535	○
F07.18	0x0711	Calibration display 2 display accuracy	0: Integer 1: One decimal place 2: Two decimal places 3: Three decimal places	0	○
F07.19	0x0712	Keypad priority	0: The external keypad takes priority 1: The standard keypad takes priority	0	×
F07.21	0x0714	Keypad STOP key function	0: Press STOP to stop the inverter in keypad control 1: Press STOP to stop the inverter on any channel	1	○
F07.22	0x0715	Keypad keys multi-function	Unit: M key 0: Invalid 1: Local/remote • F00.04 = 1 (terminal) or 2 (communication) 2: Direction switch • F00.04 = 0 (keypad) • F00.02 = 1 (reverse rotation prohibited) Ten: JOG key (jog linkage) 0: Disable 1: Enable • Press JOG, the inverter does not respond • Press JOG + ▲ key, the system jog forward • Press JOG + ▼ key, the system jog reverse • Setting the frequency by press ▲ or ▼ key on the keypad is invalid	0x00	×
F08: Parameter management					

Ref. Code	Address	Parameter	Range	Default	Set
F08.00	0x0800	User password	00000 - 65535	00000	○
F08.01	0x0801	Parameter initialization	0: No operation 1: Restore factory parameters (excluding motor and protection parameters) 2, 3: Unused 4: Clear fault information 5, 6: Restore backup parameters 1/2 (excluding motor parameters), i.e. parameter download 7, 8: Restore backup parameters 1/2 (including motor parameters), i.e. parameter download 9, 10: Unused 11: Restore normal parameters (including motor parameters and protection parameters, excluding custom menu parameters) 12: Restore all parameters (including motor parameters, protection parameters, and custom menu parameters)	0	×
F08.02	0x0802	Parameter backup (parameter upload)	0: No operation 1, 2: Backup parameters 1/2	0	○
F08.03	0x0803	Keypad menu mode	Unit: Parameter modification attributes Ten: Parameter view properties 0: Allowed 1: Prohibited	0x00	○
F09: Analog input and output parameters					
F09.00	0x0900	AI1 Min. reference	0.0% - F09.02	0.0%	○
F09.01	0x0901	AI1 Min. reference corresponding value	-100.0 - +100.0%	0.0%	○
F09.02	0x0902	AI1 Max. reference	F09.00 - 100.0%	100.0%	○
F09.03	0x0903	AI1 Max. reference corresponding value	-100.0 - +100.0%	100.0%	○
F09.04	0x0904	AI1 gain	-10.00 - +10.00	1.00	○
F09.05	0x0905	AI1 bias	-100.0 - +100.0%	0.0%	○
F09.06	0x0906	AI1 filter time	0.01 - 10.00s	0.05s	○
F09.07	0x0907	AI2 Min. reference	0.0% - F09.09	0.0%	○
F09.08	0x0908	AI2 Min. reference corresponding value	-100.0 - +100.0%	0.0%	○
F09.09	0x0909	AI2 Max. reference	F09.07 -100.0%	100.0%	○

Ref. Code	Address	Parameter	Range	Default	Set
F09.10	0x090A	AI2 Max. reference corresponding value	-100.0 - +100.0%	100.0%	○
F09.11	0x090B	AI2 gain	-10.00 - +10.00	1.00	○
F09.12	0x090C	AI2 bias	-100.0 - +100.0%	0.0%	○
F09.13	0x090D	AI2 filter time	0.01 - 10.00s	0.05s	○
F09.14	0x090E	EAI1 Min. reference	0.0% - F09.16	0.0%	○
F09.15	0x090F	EAI1 Min. reference corresponding value	-100.0 - +100.0%	0.0%	○
F09.16	0x0910	EAI1 Max. reference	F09.14 - 100.0%	100.0%	○
F09.17	0x0911	EAI1 Max. reference corresponding value	-100.0 - +100.0%	100.0%	○
F09.18	0x0912	EAI1 gain	-10.00 - +10.00	1.00	○
F09.19	0x0913	EAI1 bias	-100.0 - +100.0%	0.0%	○
F09.20	0x0914	EAI1 filter time	0.01 - 10.00s	0.05s	○
F09.21	0x0915	EAI2 Min. reference	0.0% - F09.23	0.0%	○
F09.22	0x0916	EAI2 Min. reference corresponding value	-100.0 - +100.0%	0.0%	○
F09.23	0x0917	EAI2 Max. reference	F09.21 - 100.0%	100.0%	○
F09.24	0x0918	EAI2 Max. reference corresponding value	-100.0 - +100.0%	100.0%	○
F09.25	0x0919	EAI2 gain	-10.00 - +10.00	1.00	○
F09.26	0x091A	EAI2 bias	-100.0 - +100.0%	0.0%	○
F09.27	0x091B	EAI2 filter time	0.01 - 10.00s	0.05s	○
F09.28	0x091C	Potentiometer Min. reference	0.0 - F09.30	0.0%	○
F09.29	0x091D	Potentiometer Min. reference corresponding value	-100.0 - +100.0%	0.0%	○
F09.30	0x091E	Potentiometer Max. reference	F09.28 - 100.0%	100.0%	○
F09.31	0x091F	Potentiometer Max. reference corresponding value	-100.0 - +100.0%	100.0%	○
F09.32	0x0920	AI input signal	Unit: Unused Ten: AI2 Hundred: EAI1 Thousand: EAI2 0: Voltage (0 - 10V) 1: Current (0 - 20mA) 2: Current (4 - 20mA)	0x0000	○
F09.33	0x0921	Analog input over-limit	Unit: Inverter action when over-limit 0: Alarm AioL, do not record fault data 1: Alarm AioL, coast to stop 2: Alarm AioL, Dec. to stop 3: Alarm AioL, emergency stop	0x0000	×

Ref. Code	Address	Parameter	Range	Default	Set
			Ten: Analog input port 0: None 1 - 4: AI1/AI2/EAI1/EAI2 5: Keypad potentiometer Hundred: Over-limit detection conditions 0: Always detect (when running or stopping, the timing starts immediately when the over-limit condition is met) 1: Detection in running (delay time starts after the run Thousand: Automatic operation after over-limit detection (valid for two-line operation) 0: Disable 1: Allow		
F09.34	0x0922	Analog input over-limit upper limit	F09.35 - 100.0%	100.0%	○
F09.35	0x0923	Analog input over-limit lower limit	0.0% - F09.34	0.0%	○
F09.36	0x0924	Analog input over-limit detection time	0.00 - 50.00s	5.00s	○
F09.37	0x0925	Analog input over-limit delay detection time after running	0.00 - 50.00s	15.00s	○
F09.38	0x0926	High-speed pulse input Min. frequency (DI5)	0Hz -F09.40	0Hz	○
F09.39	0x0927	High-speed pulse input Min. frequency corresponding value (DI5)	0.0 - 100.0%	0.0%	○
F09.40	0x0928	High-speed pulse input Max. frequency (DI5)	F09.38 - 50000Hz	10000Hz	○
F09.41	0x0929	High-speed pulse input Max. frequency corresponding value (DI5)	0.0 - 100.0%	100.0%	○
F09.42	0x092A	High-speed pulse input filter time (DI5)	0.01 - 10.00s	0.05s	○

Ref. Code	Address	Parameter	Range	Default	Set
F09.43	0x092B	AO1 output function	0: Unused 1: Output frequency (0 - Max. output frequency) 2: Reference frequency (0 - Max. output frequency) 3: Motor speed (0 - Max. output frequency corresponds to the speed) 4: Output current (0 - 2 ×inverter rated current) 5: Output current (0 - 2 × motor rated current) 6: Torque command (0 - 3 × motor rated torque) 10: Output torque (0 - 3 × rated motor torque) 11: Output voltage (0 - 1.2 × inverter rated voltage) 12: Bus voltage (0 - 2.2 × inverter rated voltage) 13: Output power (0 - 2 × motor rated power) 14: AI1 input (before processing) (range: 0 - 10V) 15: AI1 input (after processing) (range: 0 - 10V) 16: AI1 input (after processing) (range: -10 - +10V) 17: AI2 input (before processing) (range: 0 - 10V) 18: AI2 input (after processing) (range: 0 - 10V) 19: AI2 input (after processing) (range: -10 - +10V) 20: EAI1 input (before processing) (range: 0 - 10V) 21: EAI1 input (after processing) (range: 0 - 10V) 22: EAI1 input (after processing) (range: -10 - +10V)	2	○
F09.44	0x092C	EAO1 output function		0	○

Ref. Code	Address	Parameter	Range	Default	Set
F09.46	0x092E	High-speed pulse output function (DO1)	23: EAI2 input (before processing) (range: 0 - 10V) 24: EAI2 input (after processing) (range: 0 - 10V) 25: EAI2 input (after processing) (range: -10 - +10V) 26: Output frequency (-1 - +1 times the Max. output frequency) 27: Reference frequency (-1 - +1 times the Max. output frequency) 28: Set frequency (0Hz - Max. output frequency) 29: Communication control setting 1 (0 - 100.0%) 30: Communication control setting 2 (0 - 100.0%) 31: Communication control setting 3 (0 - 100.0%)	0	○
F09.47	0x092F	High-speed pulse output signal source Min. value (DO1)	0.0 - F09.49	0.0%	○
F09.48	0x0930	High-speed pulse output Min. frequency (DO1)	0 - 10000Hz	0Hz	○
F09.49	0x0931	High-speed pulse output signal source Max. value (DO1)	F09.47 - 100.0%	100.0%	○
F09.50	0x0932	High-speed pulse output Max. frequency (DO1)	0 - 10000Hz	10000Hz	○
F09.51	0x0933	AO1 Min. reference	0.0% - F09.53	0.0%	○
F09.52	0x0934	AO1 Min. reference corresponding value	0.0 - 100.0%	0.0%	○
F09.53	0x0935	AO1 Max. reference	F09.51 - 100.0%	100.0%	○
F09.54	0x0936	AO1 Max. reference corresponding value	0.0 - 100.0%	100.0%	○
F09.55	0x0937	AO1 gain	-10.00 - +10.00	1.00	○
F09.56	0x0938	AO1 bias	-100.0 - +100.0%	0.0%	○
F09.57	0x0939	EAO1 Min. reference	0.0% - F09.59	0.0%	○
F09.58	0x093A	EAO1 Min. reference corresponding value	0.0 - 100.0%	0.0%	○
F09.59	0x093B	EAO1 Max. reference	F09.57 - 100.0%	100.0%	○
F09.60	0x093C	EAO1 Max. reference corresponding value	0.0 - 100.0%	100.0%	○
F09.61	0x093D	EAO1 gain	-10.00 - +10.00	1.00	○
F09.62	0x093E	EAO1 bias	-100.0 - +100.0%	0.0%	○
F10: Digital input and output parameters					

Ref. Code	Address	Parameter	Range	Default	Set
F10.00	0x0A00	DI1 terminal function	0: Unused 1: Inverter enable 2: Forward (FWD) 3: Reverse (REV) 4: Three-wire operation control 5 - 8: Frequency setting channel 1 - 4 9 - 10: Run command channel 1 - 2 11: Unused 12: External stop 13 - 16: Multi-frequency 1 - 4 17: Frequency increase (UP) 18: Frequency decrease (DN) 19: Auxiliary set frequency cleared 20, 21: Forward/reverse jog 1 command (JOGF1/JOGR1) 22, 23: Forward/reverse jog 2 command (JOGF2/JOGR2) 24, 25: Jog 1 command/ direction Note: When 20,21 are selected, 24, 25 are invalid 26, 27: Acc./Dec. time 1/2 28: Acc. and Dec. mode 29: Acc. and Dec. prohibited 30: Command switched to terminal 31: Unused 32: PID paused 33: Unused 34: PID integral hold 35: PID integral clear 36: PID parameter switch 37: Unused 38: Enable DC braking during stop 39: External interrupt (normally open) 40: External interrupt (normally closed) 41: Coast to stop (normally open) 42: Coast to stop (normally closed) 43: Emergency stop	2	×
F10.01	0x0A01	DI2 terminal function		3	×
F10.02	0x0A02	DI3 terminal function		0	×
F10.03	0x0A03	DI4 terminal function		0	×
F10.04	0x0A04	DI5 terminal function		0	×
F10.09	0x0A09	EX1 terminal function		0	×
F10.10	0x0A0A	EX2 terminal function		0	×

Ref. Code	Address	Parameter	Range	Default	Set
F10.11	0x0A0B	DI-V1 terminal (virtual DI) function	44: External fault (normally open) 45: External fault (normally closed) 46: External reset 47: Motor 1, 2 switch 48: Timing function 49: Unused 50: Counter cleared 51: Counter triggered 52: Unused 53: Pulse frequency input (DI5) 54: Switch between main and auxiliary frequency sources 55: Unused 56: Speed control/torque control switch 57: Torque polarity switch (torque control) 59 - 85: Unused 86: Enable terminal DC braking 87: V/f separation voltage switching 88: Main frequency switches to the keypad (digital setting) 89: Main frequency switches to terminal (digital setting) 90: Main frequency switches to high-speed pulse 91: Main frequency switches to communication 92, 93: Unused 94: Main frequency switches to multi-speed 95: Main frequency switches to PID 96: Main frequency switches to AI1 97: Main frequency switches to AI2 98: Main frequency switched to EAI1 99: Main frequency switched to EAI2 100: Main frequency switches to potentiometer on the keypad	0	×
F10.12	0x0A0C	DI-V2 terminal (virtual DI) function		0	×
F10.13	0x0A0D	DI-V3 terminal (virtual DI) function		0	×
F10.14	0x0A0E	DI-AI1 terminal (analog DI) function		0	×
F10.15	0x0A0F	DI-AI2 terminal (analog DI) function		0	×
F10.16	0x0A10	DI-EAI1 terminal (analog DI) function		0	×
F10.17	0x0A11	DI-EAI2 terminal (analog DI) function		0	×
F10.18	0x0A12	DI terminal filter times	0 - 1000	3	○
F10.19	0x0A13	DI positive and negative logic	Bit0 - Bit4: DI1 - DI5 Bit9 - Bit10: EX1 - EX2	0x000	○

Ref. Code	Address	Parameter	Range	Default	Set
			0: Positive logic 1: Negative logic		
F10.20	0x0A14	DI-V terminal positive and negative logic (virtual DI)	Bit0 - Bit2: DI-V1 - DI-V3 0: Positive logic 1: Negative logic	0x0	○
F10.21	0x0A15	DI-AI positive and negative logic (analog DI)	Bit0 - Bit1: DI-AI1 - DI-AI2 Bit2 - Bit3: DI-EAI1 - DI-EAI2 0: Positive logic 1: Negative logic	0x0	○
F10.22	0x0A16	DO1 terminal function	Relay description: • RLY1: RA/RC of control board • EY1, EY2: EY1/CM, EY2/CM of HD800-EIO-I 0: Unused 1: Inverter is ready 2: Inverter is running (RUN) 3: Inverter forward 4: Inverter reverse 5: Inverter DC braking 6: Inverter zero frequency status 7: Inverter runs at zero frequency 9, 10: Frequency level detection 1/2 (FDT1/FDT2) 11: Frequency arrived (FAR) 12: Upper limit frequency 13: Lower limit frequency 14 - 17: Unused 18: Communication control output 19, 20: Unused 21: Set running time arrived 22: Timing function 23: Set count value arrived 24: Specified count value arrived 25: Unused 26: Motor 1, 2 indication 27: Analog input over-limit	2	○
F10.25	0x0A19	RLY1 relay function		31	○
F10.27	0x0A1B	EY1 relay function		0	○

Ref. Code	Address	Parameter	Range	Default	Set
F10.28	0x0A1C	EY2 relay function	28: Unused 29: Undervoltage 30: Overload 31: Inverter fault 32: External fault 33: Inverter fault automatic reset 35: Sleep mode 36: System running 38: High-speed pulse output (DO1) 39: Zero current 40: Current over-limit 41: Current arrived	0	○
F10.32	0x0A20	Output terminal positive and negative logic	Bit0: DO1 Bit3: RLY1 Bit5 - Bi6: EY1 - EY2 0: Positive logic 1: Negative logic	0x00	○
F10.33	0x0A21	DO1 output delay	0.0 - 100.0s	0.0s	○
F10.36	0x0A24	RLY1 output delay	0.0 - 100.0s	0.0s	○
F10.38	0x0A2 6	EY1 output delay	0.0 - 100.0s	0.0s	○
F10.39	0x0A2 7	EY2 output delay	0.0 - 100.0s	0.0s	○
F11: Digital logic function parameters					
F11.00	0x0B00	Terminal operation control mode	0: Two-line operation mode 1 1: Two-line operation mode 2 2: Three-line operation mode 1 3: Three-line operation mode 2	0	×
F11.01	0x0B01	Acc. and Dec. rates of UP/DN terminal	0.00 - 99.99Hz/s	1.00Hz/s	○
F11.02	0x0B02	External device fault action	0: Fault, no stop 1: Fault, coast to stop 2: Fault, Dec. to stop 3: Fault, emergency stop	0	○
F11.03	0x0B03	Fault relay action	Unit: -Lu- fault (first time) Ten: -Lu- fault (not the first time) 0: No action 1: Action Hundred: E0099 fault 0: No action 1: Actual undervoltage action (if no reset is selected) 2: Action	0x0210	○

Ref. Code	Address	Parameter	Range	Default	Set
			Thousand: During automatic reset (excluding E0099 and -Lu-fault) 0: No action 1: Action		
F11.04	0x0B04	Timing function ON side delay time	0.00 - 300.00s	0.00s	○
F11.05	0x0B05	Timing function OFF side delay time	0.00 - 300.00s	0.00s	○
F11.06	0x0B06	Frequency arrival (FAR) detection width	0.00 - 100.00Hz	2.50Hz	○
F11.07	0x0B07	Zero frequency signal detection value	0.00Hz - F00.06	0.00Hz	○
F11.08	0x0B08	Zero frequency hysteresis	0.00Hz - F00.06	0.00Hz	○
F11.09	0x0B09	FDT1 detection frequency	0.00Hz - F00.06	50.00Hz	○
F11.10	0x0B0A	FDT1 detection hysteresis frequency	0.00Hz - F00.06	1.00Hz	○
F11.11	0x0B0B	FDT2 detection frequency	0.00Hz - F00.06	50.00Hz	○
F11.12	0x0B0C	FDT2 detection hysteresis frequency	0.00Hz - F00.06	1.00Hz	○
F11.13	0x0B0D	Zero current detection level	0.0 - 300.0% (motor rated current)	5.0%	○
F11.14	0x0B0E	Zero current detection delay	0.00 - 60.00s • 0.00s or stop: No detection	0.00s	○
F11.15	0x0B0F	Output current over-limit detection level	0.0 - 300.0% (motor rated current)	200.0%	○
F11.16	0x0B10	Output current over-limit detection delay	0.00 - 60.00s 0.00s: No detection	0.00s	○
F11.17	0x0B11	Current arrival detection level	0.0 - 300.0% (motor rated current)	100.0%	○
F11.18	0x0B12	Current arrival detection width	0.0 - 300.0% (motor rated current)	0.0%	○
F11.19	0x0B13	Current power-on running time	0.0 - 6553.5min	0.0min	○
F11.21	0x0B15	Set count value	F11.22 - 65535	0	○
F11.22	0x0B16	Specify count value	0 - F11.21	0	○
F12: Analog calibration parameters					
F12.00	0x0C00	AI1 sampling value 1	0 - 4096	Default	○
F12.01	0x0C01	AI1 measured value 1	0.00 - 10.00V	Default	○
F12.02	0x0C02	AI1 sampling value 2	0 - 4096	Default	○
F12.03	0x0C03	AI1 measured value 2	0.00 - 10.00V	Default	○
F12.04	0x0C04	AI1 zero point sampling value	0 - 4096	Default	○
F12.05	0x0C05	AI1 zero point deviation value	0.000 - 0.200V	0.018V	○

Ref. Code	Address	Parameter	Range	Default	Set
F12.06	0x0C06	AI2 sampling value 1	0 - 4096	Default	○
F12.07	0x0C07	AI2 measured value 1	0.00 - 10.00V	Default	○
F12.08	0x0C08	AI2 sampling value 2	0 - 4096	Default	○
F12.09	0x0C09	AI2 measured value 2	0.00 - 10.00V	Default	○
F12.10	0x0C0A	AI2 zero sampling value	0 - 4096	Default	○
F12.11	0x0C0B	AI2 zero point deviation value	0.000 - 0.200V	0.018V	○
F12.12	0x0C0C	EAI1 sampling value 1	0 - 4096	Default	○
F12.13	0x0C0D	EAI1 measured value 1	0.00 - 10.00V	Default	○
F12.14	0x0C0E	EAI1 sample value 2	0 - 4096	Default	○
F12.15	0x0C0F	EAI1 measured value 2	0.00 - 10.00V	Default	○
F12.16	0x0C10	EAI1 zero sampling value	0 - 4096	Default	○
F12.17	0x0C11	EAI1 zero point deviation value	0.000 - 0.200V	0.018V	○
F12.18	0x0C12	EAI2 sampling value 1	0 - 4096	Default	○
F12.19	0x0C13	EAI2 measured value 1	0.00 - 10.00V	Default	○
F12.20	0x0C14	EAI2 sampling value 2	0 - 4096	Default	○
F12.21	0x0C15	EAI2 measured value 2	0.00 - 10.00V	Default	○
F12.22	0x0C16	EAI2 zero sampling value	0 - 4096	Default	○
F12.23	0x0C17	EAI2 zero point deviation value	0.000 - 0.200V	0.018V	○
F12.24	0x0C18	AO test mode	Unit: AO1 Ten: EAO1 Hundred&thousand: Unused 0: According to the actual output 1: Force 5% output 2: Force 90% output	0x0000	○
F12.25	0x0C19	AO1 measured output 1	0.0 - 100.0%	5.1%	○
F12.26	0x0C1A	AO1 output coefficient 1	0 - 65535	599	○
F12.27	0x0C1B	AO1 measured output 2	0.0 - 100.0%	94.4%	○
F12.28	0x0C1C	AO1 output coefficient 2	0 - 65535	10799	○
F12.29	0x0C1D	EAO1 measured output 1	0.0 - 100.0%	5.0%	○
F12.30	0x0C1E	EAO1 output coefficient 1	0 - 65535	500	○
F12.31	0x0C1F	EAO1 measured output 2	0.0 - 100.0%	92.5%	○
F12.32	0x0C20	EAO1 output coefficient 2	0 - 65535	9000	○
F13: Motor 1 parameters					
F13.00	0x0D00	Motor 1 control mode	Unit: Control mode 0: Asyn. motor V/f control 1: Asyn. motor SVC (open loop vector) control Ten: Asyn. motor S VC mode 0: Mode 1	0x00	×

Ref. Code	Address	Parameter	Range	Default	Set
			1: Mode 2		
F13.01	0x0D01	Motor 1 rated power	0.2 - 999.9kW	Depend on HD800	×
F13.02	0x0D02	Motor 1 rated voltage	0 - 999V		×
F13.03	0x0D03	Motor 1 rated current	0.2 - 5.5kW: 0.01 - 250.00A 7.5 - 400kW: 0.1 - 2500.0A		×
F13.04	0x0D04	Motor 1 rated frequency	1.0 - 600.0Hz		×
F13.05	0x0D05	Motor 1 rated speed (low bit)	1 - 65535rpm		×
F13.07	0x0D07	Motor 1 iron loss	0.000 - 9.999kW		×
F13.08	0x0D08	Motor 1 stator resistance	0.2 - 5.5kW: 0.00 - 99.99Ω 7.5 - 75kW: 0.000 - 9.999Ω 90 - 400kW: 0.0000 - 0.9999Ω		×
F13.09	0x0D09	Motor 1 rotor resistance			×
F13.10	0x0D0A	Motor 1 leakage inductance	0.2 - 5.5kW: 0.0 - 5000.0mH 7.5 - 75kW: 0.00 - 500.00mH 90 - 400kW: 0.000 - 50.000 mH		×
F13.11	0x0D0B	Motor 1 mutual inductance			×
F13.12	0x0D0C	Motor 1 no-load current	0.2 - 5.5kW: 0.00 - 99.99A 7.5 - 400kW: 0.0 - 999.9A		×
F13.13	0x0D0D	Motor 1 core saturation coefficient 1	0.00 - 1.00	1.00	×
F13.14	0x0D0E	Motor 1 core saturation coefficient 2	0.00 - 1.00	1.00	×
F13.15	0x0D0F	Motor 1 core saturation coefficient 3	0.00 - 1.00	1.00	×
F13.16	0x0D10	Motor 1 core saturation coefficient 4	0.00 - 1.00	1.00	×
F13.17	0x0D11	Motor 1 core saturation coefficient 5	0.00 - 1.00	1.00	×
F13.21	0x0D15	Motor 1 parameter auto-tuning	0: No action 1: Static auto-tuning 2: Rotary auto-tuning	0	×
F14: Asyn. motor 1 V/f parameters					
F14.00	0x0E00	V/f curve	0: Straight line 1: Square curve 2: 1.2 power curve 3: 1.7 power curve 4: User-defined curve 5: V/f complete separation mode 6: V/f semi-separation mode	0	×
F14.01	0x0E01	V/f frequency F3	F14.03 - 100.0% (F13.04)	80.0%	×
F14.02	0x0E02	V/f voltage V3	F14.04 - 100.0% (F13.02)	80.0%	×
F14.03	0x0E03	V/f frequency F2	F14.05 - F14.01 (F13.04)	50.0%	×
F14.04	0x0E04	V/f voltage V2	F14.06 - F14.02 (F13.02)	50.0%	×
F14.05	0x0E05	V/f frequency F1	0.0% - F14.03 (F13.04)	0.0%	×
F14.06	0x0E06	V/f voltage V1	0.0% - F14.04 (F13.02)	0.0%	×

Ref. Code	Address	Parameter	Range	Default	Set
F14.07	0x0E07	Torque boost	0.2 - 45kW: 0.0 - 30.0%	2.0%	○
			55 - 132kW: 0.0 - 30.0%	1.0%	
			160 - 400kW: 0.0 - 30.0%	0.5%	
F14.08	0x0E08	Manual torque boost cut-off point	0.0 - 50.0% (F13.04)	25.0%	○
F14.09	0x0E09	Slip compensation gain	0.0 - 300.0%	0.0%	○
F14.10	0x0E0A	Slip compensation filter time	0.01 - 10.00s	0.10s	○
F14.11	0x0E0B	Slip compensation limit	0.0 - 250.0%	200.0%	×
F14.12	0x0E0C	AVR function	0: No operation 1: Keep operates 2: No operation only in Dec.	1	○
F14.13	0x0E0D	Oscillation suppression coefficient (low frequency)	0 - 200	30	○
F14.14	0x0E0E	Oscillation suppression coefficient (high frequency)	0 - 200	20	○
F14.15	0x0E0F	Oscillation suppression frequency (low frequency)	0.00Hz - F00.05	20.00Hz	○
F14.16	0x0E10	Oscillation suppression frequency (high frequency)	0.00Hz - F00.05	35.00Hz	○
F14.17	0x0E11	V/f separation voltage source	0: F14.18, F14.19 1: Terminal pulse (DI5) 2 - 5: AI1/AI2/EAI1/EAI2 6: Keypad potentiometer 7: Communication	0	○
F14.18	0x0E12	V/f separation voltage 1 (digital setting)	0.0 - 100.0% (F13.02)	0.0%	○
F14.19	0x0E13	V/f separation voltage 2 (digital setting)	0.0 - 100.0% (F13.02)	0.0%	○
F14.20	0x0E14	V/f separation voltage Acc. time	0.0 - 600.0s	10.0s	○
F14.21	0x0E15	V/f separation voltage Dec. time	0.0 - 600.0s	10.0s	○
F14.22	0x0E16	V/f separation stop mode	0: Frequency/voltage independent deceleration 1: The voltage decelerates to 0 and then the frequency decelerates	0	×
F14.23	0x0E17	V/f separation voltage automatic switching time	0.0 - 600.0s	0.0s	○
F15: Motor 1 loop parameters					
F15.00	0x0F00	Speed loop KP1	0.1 - 200.0	10.0	○
F15.01	0x0F01	Speed loop KI1	0.00 - 10.00s	0.10s	○
F15.02	0x0F02	Speed loop KP2	0.1 - 200.0	10.0	○
F15.03	0x0F03	Speed loop KI2	0.00 - 10.00s	0.20s	○
F15.04	0x0F04	Speed loop KD	0.00 - 1.00s	0.00s	○

Ref. Code	Address	Parameter	Range	Default	Set
			0.00: No differential term		
F15.05	0x0F05	Speed loop PI switching frequency 1	0.00Hz - F15.06	10.00Hz	○
F15.06	0x0F06	Speed loop PI switching frequency 2	F15.05 - 50.00Hz	15.00Hz	○
F15.07	0x0F07	Speed loop integral term limit	0.0 - 200.0% (F13.03)	180.0%	○
F15.08	0x0F08	Speed loop output filter time	0.000 - 1.000s 0.000s: No filtering	0.000s	○
F15.09	0x0F09	Torque limit lock	0: Unlocked 1: All torque limits are consistent with the forward electric torque limit	0	×
F15.10	0x0F0A	Torque limit channel	Unit: Forward electric Ten: Reverse electric Hundred: Forward power generation Thousand: Reverse power generation 0: F15.11 - F15.14 1: Terminal pulse 2 - 5: AI1/AI2/EAI1/EAI2 6: Keypad potentiometer 7: Communication	0x0000	×
F15.11	0x0F0B	Forward electric torque limit	0.0 - 200.0% (F13.03)	180.0%	○
F15.12	0x0F0C	Reverse electric torque limit	0.0 - 200.0% (F13.03)	180.0%	○
F15.13	0x0F0D	Forward power generation torque limit	0.0 - 200.0% (F13.03)	180.0%	○
F15.14	0x0F0E	Reverse power generation torque limit	0.0 - 200.0% (F13.03)	180.0%	○
F15.15	0x0F0F	Current loop KP	0 - 2000	800	○
F15.16	0x0F10	Current loop KI	0 - 1000	250	○
F15.17	0x0F11	Current loop output filter coefficient	0 - 31	3	○
F15.18	0x0F12	Feedforward enable	0: Disable 1: Enable	0	×
F15.19	0x0F13	Excitation enhancement	0.0 - 30.0% (F13.12)	0.0%	×
F15.20	0x0F14	Field orientation optimization	Unit: Magnetic field orientation angle correction Ten: Mutual inductance calculation (based on magnetic flux) 0: Disable 1: Enable	0x00	×
F15.21	0x0F15	Flux correction coefficient	40.00 - 200.00	100.00	○
F17: Motor 2 parameters					

Ref. Code	Address	Parameter	Range	Default	Set
F17.00	0x1100	Motor 2 control mode	Unit: Control mode 0: Asyn. motor V/f control 1: Asyn. motor SVC (open loop vector) control Ten: Asyn. motor SVC mode 0: Mode 1 1: Mode 2	0x00	×
F17.01	0x1101	Motor 2 rated power	0.2 - 999.9kW	Depend on HD800	×
F17.02	0x1102	Motor 2 rated voltage	0 - 999V		×
F17.03	0x1103	Motor 2 rated current	0.2 - 5.5kW: 0.01 - 250.00A 7.5 - 400kW: 0.1 - 2500.0A		×
F17.04	0x1104	Motor 2 rated frequency	1.0 - 600.0Hz		
F17.05	0x1105	Motor 2 rated speed (low bit)	1 - 65535rpm		×
F17.07	0x1107	Motor 2 iron loss	0.000 - 9.999kW		×
F17.08	0x1108	Motor 2 stator resistance	0.2 - 5.5kW: 0.00 - 99.99Ω 7.5 - 75kW: 0.000 - 9.999Ω 90 - 400kW: 0.0000 - 0.9999Ω		×
F17.09	0x1109	Motor 2 rotor resistance			×
F17.10	0x110A	Motor 2 leakage inductance	0.2 - 5.5kW: 0.0 - 5000.0mH 7.5 - 75kW: 0.00 - 500.00mH 90 - 400kW: 0.000 - 50.000 mH		×
F17.11	0x110B	Motor 2 mutual inductance			×
F17.12	0x110C	Motor 2 no-load current	0.2 - 5.5kW: 0.00 - 99.99A 7.5 - 400kW: 0.0 - 999.9A		×
F17.13	0x110D	Motor 2 core saturation coefficient 1	0.00 - 1.00	1.00	×
F17.14	0x110E	Motor 2 core saturation coefficient 2	0.00 - 1.00	1.00	×
F17.15	0x110F	Motor 2 core saturation coefficient 3	0.00 - 1.00	1.00	×
F17.16	0x1110	Motor 2 core saturation coefficient 4	0.00 - 1.00	1.00	×
F17.17	0x1111	Motor 2 core saturation coefficient 5	0.00 - 1.00	1.00	×
F17.21	0x1115	Motor 2 parameter auto-tuning	0: No action 1: Static auto-tuning 2: Rotary auto-tuning	0	×
F18: Asyn. motor 2 V/f parameters					
F18.00	0x1200	V/f curve	0: Straight line 1: Square curve 2: 1.2 power curve 3: 1.7 power curve 4: User-defined curve 5: V/f complete separation mode 6: V/f semi-separation mode	0	×
F18.01	0x1201	V/f frequency F3	F10.03 - 100.0% (F17.04)	80.0%	×

Ref. Code	Address	Parameter	Range	Default	Set
F18.02	0x1202	V/f voltage V3	F10.04 - 100.0% (F17.02)	80.0%	×
F18.03	0x1203	V/f frequency F2	F10.05 - F10.01 (F17.04)	50.0%	×
F18.04	0x1204	V/f voltage V2	F10.06 - F10.02 (F17.02)	50.0%	×
F18.05	0x1205	V/f frequency F1	0.0% - F10.03 (F17.04)	0.0%	×
F18.06	0x1206	V/f voltage V1	0.0% - F10.04 (F17.02)	0.0%	×
F18.07	0x1207	Torque boost	0.2 - 45kW: 0.0 - 30.0%	2.0%	○
			55 - 132kW: 0.0 - 30.0%	1.0%	
			160 - 400kW: 0.0 - 30.0%	0.5%	
F18.08	0x1208	Manual torque boost cut-off point	0.0 - 50.0% (F17.04)	25.0%	○
F18.09	0x1209	Slip compensation gain	0.0 - 300.0%	0.0%	○
F18.10	0x120A	Slip compensation filter time	0.01 - 10.00s	0.10s	○
F18.11	0x120B	Slip compensation limit	0.0 - 250.0%	200.0%	×
F18.12	0x120C	AVR function	0: No operation 1: Keep operates 2: No operation only in Dec.	1	○
F18.13	0x120D	Oscillation suppression coefficient (low frequency)	0 - 200	50	○
F18.14	0x120E	Oscillation suppression coefficient (high frequency)	0 - 200	20	○
F18.15	0x120F	Oscillation suppression frequency (low frequency)	0.00Hz - F00.05	20.00Hz	○
F18.16	0x1210	Oscillation suppression frequency (high frequency)	0.00Hz - F00.05	35.00Hz	○
F18.17	0x1211	V/f separation voltage source	0: F18.18, F18.19 1: Terminal pulse 2 - 5: AI1/AI2/EAI1/EAI2 6: Keypad potentiometer 7: Communication	0	×
F18.18	0x1212	V/f separation voltage 1 (digital setting)	0 - 100.0% (F17.02)	0.0%	○
F18.19	0x1213	V/f separation voltage 2 (digital setting)	0 - 100.0% (F17.02)	0.0%	○
F18.20	0x1214	V/f separation voltage Acc. time	0.0 - 600.0s	10.0s	○
F18.21	0x1215	V/f separation voltage Dec. time	0.0 - 600.0s	10.0s	○
F18.22	0x1216	V/f separation stop mode	0: Frequency/voltage independent deceleration 1: The voltage decelerates to 0 and then the frequency decelerates	0	×
F18.23	0x1217	V/f separation voltage automatic switching time	0.0 - 600.0s	0.0s	○
F19: Motor 2 loop parameters					

Ref. Code	Address	Parameter	Range	Default	Set
F19.00	0x1300	Speed loop KP1	0.1 - 200.0	10.0	○
F19.01	0x1301	Speed loop KI1	0.00 - 10.00s	0.10s	○
F19.02	0x1302	Speed loop KP2	0.1 - 200.0	10.0	○
F19.03	0x1303	Speed loop KI2	0.00 - 10.00s	0.20s	○
F19.04	0x1304	Speed loop KD	0.00 - 1.00s 0.00: No differential term	0.00s	○
F19.05	0x1305	Speed loop PI switching frequency 1	0.00Hz - F19.06	10.00Hz	○
F19.06	0x1306	Speed loop PI switching frequency 2	F1 9.05 - 50.00Hz	15.00Hz	○
F19.07	0x1307	Speed loop integral term limit	0.0 - 200.0% (F17.03)	180.0%	○
F19.08	0x1308	Speed loop output filter time	0.000 - 1.000s 0.000s: No filter	0.000s	○
F19.09	0x1309	Torque limit lock	0: Unlocked 1: All torque limits are consistent with the forward electric torque limit	0	×
F19.10	0x130A	Torque limit channel	Unit: Forward electric Ten: Reverse electric Hundred: Forward power regeneration Thousand: Reverse power regeneration 0: F19.11 - F19.14 1: Terminal pulse 2 - 5: AI1/AI2/EAI1/EAI2 6: Keypad potentiometer 7: Communication	0x0000	×
F19.11	0x130B	Forward electric torque limit	0.0 - 200.0% (F17.03)	180.0%	○
F19.12	0x130C	Reverse electric torque limit	0.0 - 200.0% (F17.03)	180.0%	○
F19.13	0x130D	Forward power generation torque limit	0.0 - 200.0% (F17.03)	180.0%	○
F19.14	0x130E	Reverse power generation torque limit	0.0 - 200.0% (F17.03)	180.0%	○
F19.15	0x130F	Current loop KP	0 - 2000	800	○
F19.16	0x1310	Current loop KI	0 - 1000	250	○
F19.17	0x1311	Current loop output filter coefficient	0 - 31	3	○
F19.18	0x1312	Feedforward enable	0: Disable 1: Enable	0	×
F19.19	0x1313	Excitation enhancement	0.0 - 30.0% (F17.12)	0.0%	×
F19.20	0x1314	Field orientation optimization	Unit: Magnetic field orientation angle correction	0x00	×

Ref. Code	Address	Parameter	Range	Default	Set
			Ten: Mutual inductance calculation (based on magnetic flux) 0: Disable 1: Enable		
F19.21	0x1315	Flux correction coefficient	40.00 - 200.00	100.00	○
F21: PWM control parameters					
F21.00	0x1500	Carrier frequency	1.0 - 8.0kHz	Depend on HD800	○
F21.01	0x1501	Automatic adjustment of carrier frequency	0: Disable 1: Automatic adjustment 1 2: Random carrier frequency 3: Automatically adjust according to temperature rise	1	×
F21.02	0x1502	PWM overmodulation	0: Invalid 1: Valid	1	×
F21.03	0x1503	PWM modulation mode	0: Two phase modulation/three phase modulation switching 1: Three phase modulation	0	×
F21.04	0x1504	PWM modulation mode switching point 1	5.00Hz - (F21.05 - 2.00)	Depend on HD800	×
F21.05	0x1505	PWM modulation mode switching point 2	(F21.04 + 2.00) - 50.00Hz		×
F21.06	0x1506	Narrow pulse width mode	Unit: V/f operation Ten: SVC operation Hundred: Auto-tuning 0: Invalid 1: Valid	0x111	×
F21.07	0x1507	Random carrier frequency coefficient K1	0 - 2000	2	×
F21.08	0x1508	Random carrier frequency coefficient K2	0 - 2000	3	×
F22: Communication parameters					
F22.00	0x1600	Communication address	Modbus communication: 0 - 247 CAN communication: 1 - 127	2	×
F22.01	0x1601	Modbus communication format	0: 1-8-2 format, no checksum, RTU 1: 1-8-1 format, even parity, RTU 2: 1-8-1 format, odd parity, RTU 3: 1-8-1 format, no checksum, RTU	0	×
F22.02	0x1602	Communication baud rate	Unit: Modbus communication 0: 1200bps 1: 2400bps	0x53	×

Ref. Code	Address	Parameter	Range	Default	Set
			2: 4800bps 3: 9600bps 4: 19200bps 5: 38400bps 6: 57600bps 7: 76800bps 8: 115200bps Ten: CAN communication 0: 20kbps 1: 50kbps 2: 100kbps 3: 125kbps 4: 250kbps 5: 500kbps 6: 1Mbps		
F22.03	0x1603	Modbus response delay	0 - 1000ms	0ms	○
F22.04	0x1604	Modbus communication timeout	0.0 - 600.0s 0.0: No detection	0.0s	○
F22.05	0x1605	Communication expansion card configuration	Unit: CAN communication 0: Disable 1: Enable CAN custom protocol 2: Enable the CanOpen protocol Ten: Profibus-DP PPO type 0: Invalid 1: PPO1 2: PPO2 3: PPO3 4: PPO4 Note: After changing the PPO type, please power on again for the change to take effect	0x00	×
F22.06	0x1606	Communication timeout between communication expansion card and control board	0.0 - 600.0s 0.0: No detection	0.0s	○
F22.07	0x1607	Communication timeout between host (PLC, HMI, etc.) and control board	0.0 - 600.0s 0.0: No detection	0.0s	○
F22.08	0x1608	Communication timeout action	Unit: E0028 (Modbus communication) Ten: E0050 (communication expansion card and control board communication) Hundred: E0051 (host and control board communication)	0x000	○

Ref. Code	Address	Parameter	Range	Default	Set
			Thousand: E0052 (EIO-I card and control board communication) 0: Warning, no stop 1: Fault, coast to stop 2: Fault, Dec. to stop 3: Fault, emergency stop		
F22.09	0x1609	Communication timeout between EIO-I card and control board	0.0 - 600.0s 0.0: No detection	0.0s	○
F23: Communication customization 1					
F23.00	0x1700	The 1st read/write parameter address	0x0000 - 0xFFFF	0x3315	○
F23.01	0x1701	The 2nd read/write parameter address	0x0000 - 0xFFFF	0x3302	○
F23.02	0x1702	The 3rd read/write parameter address	0x0000 - 0xFFFF	0x3303	○
F23.03	0x1703	The 4th read/write parameter address	0x0000 - 0xFFFF	0x330B	○
F23.04	0x1704	The 5th read/write parameter address	0x0000 - 0xFFFF	0x3306	○
F23.05	0x1705	The 6th read/write parameter address	0x0000 - 0xFFFF	0x3307	○
F23.06	0x1706	The 7th read/write parameter address	0x0000 - 0xFFFF	0x330E	○
F23.07	0x1707	The 8th read/write parameter address	0x0000 - 0xFFFF	0x3313	○
F23.08	0x1708	The 9th read/write parameter address	0x0000 - 0xFFFF	0x3400	○
F23.09	0x1709	The 10th read/write parameter address	0x0000 - 0xFFFF	0x3401	○
F23.10	0x170A	The 11th read/write parameter address	0x0000 - 0xFFFF	0x3402	○
F23.11	0x170B	The 12th read/write parameter address	0x0000 - 0xFFFF	0x3512	○
F23.12	0x170C	The 13th read/write parameter address	0x0000 - 0xFFFF	0x3200	○
F23.13	0x170D	The 14th read/write parameter address	0x0000 - 0xFFFF	0x3201	○
F23.14	0x170E	The 15th read/write parameter address	0x0000 - 0xFFFF	0xFFFF	○
F23.15	0x170F	The 16th read/write parameter address	0x0000 - 0xFFFF	0xFFFF	○
F23.16	0x1710	The 17th read/write parameter address	0x0000 - 0xFFFF	0xFFFF	○
F23.17	0x1711	The 18th read/write parameter address	0x0000 - 0xFFFF	0xFFFF	○

Ref. Code	Address	Parameter	Range	Default	Set
F23.18	0x1712	The 19th read/write parameter address	0x0000 - 0xFFFF	0xFFFF	○
F23.19	0x1713	The 20th read/write parameter address	0x0000 - 0xFFFF	0xFFFF	○
F24: Communication customization 2					
F24.00	0x1800	Communication control command address	0x0000 - 0xFFFF	0x0000	○
F24.01	0x1801	Forward start command address	0x0000 - 0xFFFF	0x0000	○
F24.02	0x1802	Reverse start command address	0x0000 - 0xFFFF	0x0000	○
F24.03	0x1803	Forward jog command address	0x0000 - 0xFFFF	0x0000	○
F24.04	0x1804	Reverse jog command address	0x0000 - 0xFFFF	0x0000	○
F24.05	0x1805	Coast to stop command address	0x0000 - 0xFFFF	0x0000	○
F24.06	0x1806	Dec. to stop command address	0x0000 - 0xFFFF	0x0000	○
F24.07	0x1807	Emergency stop command address	0x0000 - 0xFFFF	0x0000	○
F24.08	0x1808	Communication fault reset address	0x0000 - 0xFFFF	0x0000	○
F24.09	0x1809	Fault reset command address	0x0000 - 0xFFFF	0x0000	○
F24.10	0x180A	Communication setting frequency address	0x0000 - 0xFFFF	0x0000	○
F24.11	0x180B	Frequency setting accuracy	0: 2 decimal places 1: 1 decimal place 2: 0 decimal place	0	○
F25: PZD mapping parameters					
F25.00	0x1900	PZD01 mapping setting value 01	0x0000 - 0xFFFF	0xFFFF	×
F25.01	0x1901	PZD03 mapping setting value 02	0x0000 - 0xFFFF	0xFFFF	×
F25.02	0x1902	PZD04 mapping setting value 03	0x0000 - 0xFFFF	0xFFFF	×
F25.03	0x1903	PZD05 mapping setting value 04	0x0000 - 0xFFFF	0xFFFF	×
F25.04	0x1904	PZD06 mapping setting value 05	0x0000 - 0xFFFF	0xFFFF	×
F25.05	0x1905	PZD07 mapping setting value 06	0x0000 - 0xFFFF	0xFFFF	×
F25.06	0x1906	PZD08 mapping setting value 07	0x0000 - 0xFFFF	0xFFFF	×

Ref. Code	Address	Parameter	Range	Default	Set
F25.07	0x1907	PZD09 mapping setting value 08	0x0000 - 0xFFFF	0xFFFF	×
F25.08	0x1908	PZD10 mapping setting value 09	0x0000 - 0xFFFF	0xFFFF	×
F25.09	0x1909	PZD11 mapping setting value 10	0x0000 - 0xFFFF	0xFFFF	×
F25.10	0x190A	PZD12 mapping setting value 11	0x0000 - 0xFFFF	0xFFFF	×
F25.11	0x190B	PZD 02 mapping setting value 12	0x0000 - 0xFFFF	0xFFFF	×
F25.12	0x190C	PZD01 mapping response value 01	0x0000 - 0xFFFF	0xFFFF	×
F25.13	0x190D	PZD03 mapping response value 02	0x0000 - 0xFFFF	0xFFFF	×
F25.14	0x190E	PZD04 mapping response value 03	0x0000 - 0xFFFF	0xFFFF	×
F25.15	0x190F	PZD05 mapping response value 04	0x0000 - 0xFFFF	0xFFFF	×
F25.16	0x1910	PZD06 mapping response Value 05	0x0000 - 0xFFFF	0xFFFF	×
F25.17	0x1911	PZD07 mapping response Value 06	0x0000 - 0xFFFF	0xFFFF	×
F25.18	0x1912	PZD08 mapping response value 07	0x0000 - 0xFFFF	0xFFFF	×
F25.19	0x1913	PZD09 mapping response value 08	0x0000 - 0xFFFF	0xFFFF	×
F25.20	0x1914	PZD10 mapping response value 09	0x0000 - 0xFFFF	0xFFFF	×
F25.21	0x1915	PZD11 mapping response value 10	0x0000 - 0xFFFF	0xFFFF	×
F25.22	0x1916	PZD12 mapping response value 11	0x0000 - 0xFFFF	0xFFFF	×
F25.23	0x1917	PZD02 mapping response value 12	0x0000 - 0xFFFF	0xFFFF	×
F26: Fault protection parameters					
F26.02	0x1A02	Undervoltage start function	Unit: First undervoltage start after power-on 0: Disable automatic start 1: Start according to the last power-off running status 2: Start when the run command terminal is valid Ten: Stop undervoltage and restart 0: Edge trigger mode 1: Level trigger mode	0x00	○

Ref. Code	Address	Parameter	Range	Default	Set
F26.03	0x1A03	Undervoltage start waiting time	0.0 - 10.0s	2.0s	○
F26.04	0x1A04	E0099 fault action	Unit: Power off detection during operation 0: Disable 1: Enable Ten: Power off action during operation 0: Automatically reset the fault, but cannot automatically start 1: Automatically reset the fault and start automatically 2: Fault cannot be reset automatically	0x00	○
F26.05	0x1A05	E0099 fault restart waiting time	0.0 - 10.0s	2.0s	○
F26.06	0x1A06	Fault automatic reset times	0 - 100 0: No automatic reset	0	○
F26.07	0x1A07	Fault automatic reset interval	0.1 - 20.0s	5.0s	○
F26.08	0x1A08	Overload pre-alarm detection	Unit: Overload pre-alarm detection 0: Disable 1: Enable Ten: Overload pre-alarm action 0: Fault, no stop 1: Fault, coast to stop 2: Fault, Dec. to stop 3: Fault, emergency stop	0x00	○
F26.09	0x1A09	Overload pre-alarm detection level	20.0 - 200.0% (motor rated current)	150.0%	○
F26.10	0x1A0A	Overload pre-alarm detection time	0.0 - 3600.0s	5.0s	○
F26.11	0x1A0B	Motor overload detection enable	0: Disable 1: Enable (normal motor) 2: Enable (variable frequency motor)	1	○
F26.12	0x1A0C	Inverter overload detection enable	0: Disable 1: Enable	1	○
F26.13	0x1A0D	Inverter single phase overload protection coefficient	0.0 - 250.0% 0.0: No detection	200.0%	○
F26.14	0x1A0E	Output underload detection action	Unit: Output underload detection 0: Disable 1: Enable	0x00	○

Ref. Code	Address	Parameter	Range	Default	Set
			Ten: Output underload action 0: Fault, no stop 1: Fault, coast to stop 2: Fault, Dec. to stop 3: Fault, emergency stop		
F26.15	0x1A0F	Output underload detection level	0 - 100% (rated current of inverter)	30%	○
F26.16	0x1A10	Output underload detection time	0.0 - 20.0s	1.0s	○
F26.17	0x1A11	Input phase loss detection reference	0.2 - 5.5kW: 0 - 80% (inverter rated voltage) 0: No detection	10%	○
			7.5 - 400kW: 0 - 80% (inverter rated voltage) 0: No detection	30%	
F26.18	0x1A12	Input phase loss detection time	1.0 - 5.0s	1.0s	○
F26.19	0x1A13	Output phase loss detection reference	0 - 100% (inverter rated current) 0: No detection	20%	○
F26.20	0x1A14	Output phase loss detection time	1 - 20s	3s	○
F26.21	0x1A15	Motor overheat signal input	Unit: Input type 0: Do not detect 1: Positive characteristic (PTC) 2: Negative characteristic (NTC) Ten: Overheat signal source 0 - 3: AI1/AI2/EAI1/EAI2	0x00	○
F26.22	0x1A16	Motor overheat thermistor	0.0 - 90.0kΩ	5.0kΩ	○
F26.23	0x1A17	Measuring circuit resistance	0.0 - 90.0kΩ	22.0kΩ	○
F26.24	0x1A18	Motor overheat pull-up resistor	0.0 - 90.0kΩ	5.0kΩ	○
F26.25	0x1A19	Motor overheat delay time	1 - 200s	5s	○
F27: Fault record parameters					
F27.00	0x1B00	The 3rd fault (most recent)	-Lu-: DC bus undervoltage E0001: Software overcurrent (in Acc.) E0002: Software overcurrent (in Dec.) E0003: Software overcurrent (constant speed) E0101: Hardware overcurrent (in Acc.) E0102: Hardware overcurrent (in Dec.) E0103: Hardware overcurrent (constant speed)	0	*

Ref. Code	Address	Parameter	Range	Default	Set
			E0203: Overcurrent (starting short-circuit to ground) E0303: Overcurrent (starting phase short-circuit) E0004: DC bus overvoltage (in Acc.) E0005: DC bus overvoltage (in Dec.) E0006: DC bus overvoltage (constant speed) E0007: Overvoltage stall E0008: Power module fault (in Acc.) E0108: Power module fault (in Dec.) E0208: Power module fault (in constant speed) E0308: Power module fault (starting short-circuit to ground) E0408: Power module fault (starting phase short-circuit) E0009: Heatsink overheat E0010: Brake unit fault E0012: Parameter auto-tuning fault E0013: The power-on buffer contactor is not energized E0014: Current detection circuit fault E0015: Input phase loss E0016: Output phase loss E0017: Inverter overload E0117: Inverter phase overload E0018: Inverter output underload E0019: Motor overload E0020: Motor overheat E0021: Control board EEPROM read/write fault E0022: Keypad EEPROM read/write fault (the inverter does not stop) E0023: Parameter setting fault E0024: External device fault E0025: PID reference lost E0026: PID feedback lost E0027: PID feedback exceeds limit		

Ref. Code	Address	Parameter	Range	Default	Set
			E0028: Modbus communication timeout E0032: Motor speed overspeed E0033: Excessive motor speed deviation E0035: Overload pre-alarm fault E0050: Communication timeout between communication expansion card and control board E0051: Communication timeout between host and control board E0052: Communication timeout between EIO-I card and control board E0090: Power-on model detection error E0099: Bus undervoltage during operation AioL: Analog value over-limit		
F27.01	0x1B01	Reference frequency at the 3rd fault	0.00 - 600.00Hz	0.00Hz	*
F27.02	0x1B02	Output frequency at the 3rd fault	0.00 - 600.00Hz	0.00Hz	*
F27.03	0x1B03	DC bus voltage at the 3rd fault	0 - 1999V	0V	*
F27.04	0x1B04	Output voltage at the 3rd fault	0 - 999V	0V	*
F27.05	0x1B05	Output current at the 3rd fault	0.2 - 5.5kW: Actual	0.00A	*
			7.5 - 400kW: Actual	0.0A	
F27.06	0x1B06	Input terminal status 1 at the 3rd fault	0x0000 - 0xFFFF	0x0000	*
F27.07	0x1B07	Input terminal status 2 at the 3rd fault	0x0000 - 0xFFFF	0x0000	*
F27.08	0x1B08	Output terminal status at the 3rd fault	0x0 - 0xFF	0x0	*
F27.09	0x1B09	Power-on time at the 3rd fault	0.0 - 6553.5h	0.0h	*
F27.10	0x1B0A	Running time at the 3rd fault	0.0 - 6553.5h	0.0h	*
F27.11	0x1B0B	IGBT temperature at the 3rd fault	0 - 140℃	0℃	*
F27.12	0x1B0C	The 2nd fault	Same as F27.00	0	*
F27.13	0x1B0D	Reference frequency at the 2nd fault	0.00 - 600.00Hz	0.00Hz	*

Ref. Code	Address	Parameter	Range	Default	Set
F27.14	0x1B0E	Output frequency at the 2nd fault	0.00 - 600.00Hz	0.00Hz	*
F27.15	0x1B0F	DC bus voltage at the 2nd fault	0 - 1999V	0V	*
F27.16	0x1B10	Output voltage at the 2nd fault	0 - 999V	0V	*
F27.17	0x1B11	Output current at the 2nd fault	0.2 - 5.5kW: Actual	0.00A	*
			7.5 - 400kW: Actual	0.0A	
F27.18	0x1B12	Input terminal status 1 at the 2nd fault	0x0000 - 0xFFFF	0x0000	*
F27.19	0x1B13	Input terminal status 2 at the 2nd fault	0x0000 - 0xFFFF	0x0000	*
F27.20	0x1B14	Output terminal status at the 2nd fault	0x0 - 0xFF	0x0	*
F27.21	0x1B15	Power-on time at the 2nd fault	0.0 - 6553.5h	0.0h	*
F27.22	0x1B16	Running time at the 2nd fault	0.0 - 6553.5h	0.0h	*
F27.23	0x1B17	IGBT temperature at the 2nd fault	0 - 140℃	0℃	*
F27.24	0x1B18	The 1st fault	Same as F27.00	0	*
F27.25	0x1B19	Reference frequency at the 1st fault	0.00 - 600.00Hz	0.00Hz	*
F27.26	0x1B1A	Output frequency at the 1st fault	0.00 - 600.00Hz	0.00Hz	*
F27.27	0x1B1B	DC bus voltage at the 1st fault	0 - 1999V	0V	*
F27.28	0x1B1C	Output voltage at the 1st fault	0 - 999V	0V	*
F27.29	0x1B1D	Output current at the 1st fault	0.2 - 5.5kW: Actual	0.00A	*
			7.5 - 400kW: Actual	0.0A	*
F27.30	0x1B1E	Input terminal status 1 at the 1st fault	0x0000 - 0xFFFF	0x0000	*
F27.31	0x1B1F	Input terminal status 2 at the 1st fault	0x0000 - 0xFFFF	0x0000	*
F27.32	0x1B20	Output terminal status at the 1st fault	0x0 - 0xF F	0x0	*
F27.33	0x1B21	Power-on time at the 1st fault	0.0 - 6553.5h	0.0h	
F27.34	0x1B22	Running time at the 1st fault	0.0 - 6553.5h	0.0h	
F27.35	0x1B23	IGBT temperature at the 1st fault	0 - 140℃	0℃	

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