HDv-E610-□□□□-000

Product Instructions NO：ATC/IHDv2420

1 Preface

Thank you for purchasing and using the E610 series Variable-frequency Drive (VFD) produced by Hechuan Technology Co., Ltd.

The E600 series of VFDs are designed to be economical and simple, with low power consumption. They are the latest general-purpose HCFA VFD products, offering two models: the E600 economic model and the E610 simple model, both of which support Modbus and CANOpen field bus. These VFDs can be used for single VFD control equipment as well as for bus linkage application of multiple VFDs. The entire series comes equipped with a standard USB interface, which can be used to connect to a host computer and external monitoring devices (including Bluetooth external keyboard). In addition, digital and analog inputs and outputs are provided as standard, along with precise fault protection functions that provide higher stability and reliability for the E600 series VFDs and controlled motors. This manual primarily introduces the E610 simple model VFD.

This manual will give a brief description of the products in the table:

Name	Operation voltage	E610 series model	Power
E610 series VFD	Single-phase 220V~240V	HDv-E610-2S0.4B-000	400W
		HDv-E610-2S0.7B-000	750W
		HDv-E610-2S1.5B-000	1.5kW
		HDv-E610-2S2.2B-000	2.2kW
	Three-phase 220V~240V*1	HDv-E610-2T0.4B-000	400W
		HDv-E610-2T0.7B-000	750W
		HDv-E610-2T1.5B-000	1.5kW
		HDv-E610-2T2.2B-000	2.2kW
	Three-phase 380V~480V	HDv-E610-4T0.4B-000	400W
		HDv-E610-4T0.7B-000	750W
		HDv-E610-4T1.5B-000	1.5kW
		HDv-E610-4T2.2B-000	2.2kW
		HDv-E610-4T3.7B-000	3.7kW
		HDv-E610-4T5.5B-000	5.5kW
		HDv-E610-4T7.5B-000	7.5kW
		HDv-E610-4T011B-000*2	11kW
		HDv-E610-4T015B-000*2	15kW
		HDv-E610-4T018B-000*2	18.5kW
		HDv-E610-4T022B-000*2	22kW
		HDv-E610-4T030B-000*2	30kW

➢ **Note**：1. Three-phase 220V~240V is compatible with single-phase models.

2. The product has not been released yet, please stay informed.

Intended readers

Users of HCFA E610 series VFD can use this manual for wiring, installation, diagnostics, and maintenance. This manual is intended for the following personnel who must have knowledge of electrical systems (an electrical engineer or equivalent).

This manual contains the necessary information for using E610 series VFD, please read it carefully before using or operating the product with full attention to safety.

1.1 Safety guide

1.1.1 Safety icon

When using these products, please strictly follow the safety instructions for operation.

In this manual, the following safety instructions must be observed.

DANGER ⚠	Indicates a potentially hazardous situation including minor or moderate injury which, if not avoided, may result in death or serious injury. Additionally, there may be severe property damage.
WARNING ⚠	Indicates a potentially hazardous situation including minor or moderate injury, and property damage.
CAUTION ⚠	Indicates a potentially hazardous situation which, if not avoided, may result in minor injury, or property damage.
NOTE	Indicates a potentially hazardous situation which, if not avoided, may result in the environment/equipment damage or data loss.

➢ **Note: Key points or descriptions for helping users to better operate or understand products.**

1.1.2 Safety rules

STARTUP AND MAINTENANCE PRECAUTIONS	DANGER ⚠

Before installation

- ☐ When unpacking, please do not install the equipment if it is soaked with water or left with water stains indicating dampness or even water damage on the equipment!
- ☐ Please do not install the equipment if parts of the equipment are damaged or even missing when unpacking!
- ☐ Please do not install the equipment if packing markings do not match actual products when unpacking!
- ☐ The equipment should be lifted and placed gently during transportation, otherwise there is a risk of damage to the equipment!
- ☐ Please do not touch the components of the equipment with bare hands, otherwise there is a risk of static electricity damaging the equipment!

During installation

- ☐ Please install the equipment on a non-flammable object such as metal and keep it away from combustible materials. Otherwise, it may cause a fire!
- ☐ Please assemble and tighten the equipment's fastening bolts as specified. Otherwise, it may result in equipment dropping!
- ☐ Never unscrew the fixing bolts on the equipment, especially those marked in red!

During wiring

- ☐ The guidance in this manual must be followed and the work must be carried out by a specialist electrical engineer. Failure to do so may cause danger!
- ☐ There must be circuit breaker isolation between the VFD and the power supply that matches the capacity of the VFD, otherwise, it may cause a fire!
- ☐ Please ensure that the wiring part is disconnected from the power supply before wiring. It is strictly prohibited

to work with electricity, otherwise, it may cause electric shock! Please ground the VFD correctly according to the standard, otherwise it may cause an electric shock!

- ☐ Never connect the input power to the U\V\W output terminals of the VFD. Check the markings on the VFD terminals when wiring and do not connect the wrong wires, otherwise, the VFD will be damaged!
- ☐ Please ensure that the cables and wire diameters of the main circuit meet the standards and that the circuit conforms to the EMC requirements and safety standards required by the local area, otherwise, it may cause potential accidents or even lead to accidents!
- ☐ Never connect the braking resistor to the bus DC+ and DC- terminals of the VFD, otherwise it may cause a fire!
- ☐ Please configure the control cables of the VFD according to the standard. Use the shielded wires for the input and output control circuits of analog and high-speed pulses, and make sure that the single terminal is reliably grounded as well!

Before power on

- ☐ Before powering up the VFD, please reconfirm that the peripherals and cables of the VFD are configured in accordance with the recommended models in this manual and that all configured wiring is wired correctly in accordance with the connection methods provided in this manual, otherwise, it may cause accidents or equipment damage!
- ☐ Before powering up the VFD, please reconfirm that the voltage level of the VFD is consistent with that of the power supply, otherwise, it may cause accidents or equipment damage!

After power on

- ☐ Do not open the cover after powering up the VFD, otherwise, it may cause an electric shock!
- ☐ Please do not touch or operate the VFD with wet hands, otherwise, it may cause an electric shock!
- ☐ Never touch any of the input and output terminals of the VFD or pull on the configured cables at any time after the VFD has been powered up, otherwise, it may cause an electric shock or serious damage to the equipment!
- ☐ Please do not attempt to access the manufacturer's parameters to check or modify the parameter values. Otherwise, the VFD will not function or even be damaged!
- ☐ Before the trial operation of the VFD with load, please ensure that the mechanical equipment is ready to be started and that the relevant personnel are in a safe area of the facility, otherwise, it may cause damage to the equipment or personal injury!
- ☐ If motor parameter identification is required, please pay attention to potential accidents or injuries to equipment and personnel when the motor is rotating.

During operation

- ☐ Do not touch the cooling fan or braking resistor, otherwise, it may cause personal injury!
- ☐ Non-professionals should not detect signals during VFD operation, otherwise, it may cause damage to the VFD or personal injury!
- ☐ **After the VFD is disconnected from the power supply, there is still residual power left inside it. Therefore, it is strictly prohibited to carry out disassembly and assembly operations within 10 minutes after the VFD is powered off!**

During maintenance

- ☐ It is strictly prohibited to carry out any kind of maintenance or repair of the VFD while it is charged with electricity, otherwise it may lead to electric shock!
- ☐ It is strictly prohibited to disassemble the inside of the VFD when its panel and all the indicators inside are still lit, otherwise it may cause an electric shock!
- ☐ Non-professionals or untrained personnel should not perform maintenance or upkeep on the VFD, otherwise, it may damage the VFD or cause personal injury!
- ☐ The standard or optional parts of the VFD must be assembled and disassembled only when the VFD is powered off.

STARTUP AND MAINTENANCE PRECAUTIONS

CAUTION ⚠

- ☐ Please do not disassemble or modify the equipment. Otherwise, it may cause, malfunction, misoperation, and fires.

  * For equipment maintenance, please consult Hechuan Technology Co., Ltd.

Before installation

- ☐ Do not drop conductive materials such as cable heads and other debris into the equipment, otherwise it may cause damage to the equipment!
- ☐ Please install the equipment in a place where there is little vibration, no splashing of water droplets, and no direct sunlight.
- ☐ When installing two or more pieces of equipment in the same cabinet, please pay attention to their location and spacing and ensure that the cabinet is well-ventilated for the proper heat dissipation of all the equipment.

During operation

- ☐ During the operation of the VFD, avoid moving the VFD or the control cabinet, and avoid foreign objects from falling into the VFD, otherwise, it may cause damage to the VFD!
- ☐ Please start or stop the VFD by means of terminal functions or control circuits, and try to avoid starting the VFD via the power-up method. It is strictly prohibited to control the start or stop of the motor by switching on or off the contactor at the output terminal of the VFD!

DISPOSAL PRECAUTIONS

CAUTION ⚠

- ☐ Please treat discarded products as industrial waste and dispose of batteries separately according to the laws and regulations specified by each region.

TRANSPORT AND STORAGE PRECAUTIONS

CAUTION ⚠

- ☐ As the equipment belongs to precision equipment, please avoid subjecting it to impacts exceeding the general specifications specified in the manual during transportation. Otherwise, it may cause equipment malfunction. After transportation, please confirm the operation of the equipment.

2 Product overview

2.1 Model number notation

HDv - E610 - 4T 7.5 B S - ***

Product code	
HDv	HCFA VFD

Series type
E600 series
E610 series

Product voltage level	
2S	Single-phase 220V~240V
2T	Three-phase 220V~240V
4T	Three-phase 380V~480V

Note: 2T model is compatible with single-phase 220V~240V.

Power level	
0.4	400W
0.7	750W
1.5	1.5kW
2.2	2.2kW
3.7	3.7kW
5.5	5.5kW
7.5	7.5kW
011	11kW
015	15kW
018	18.5kW
022	22kW

Brake components	
None	Not available
B	Available

Functional components	
None	Not available
S	Available

Note: Only optional for E610 model.

Software and hardware version number

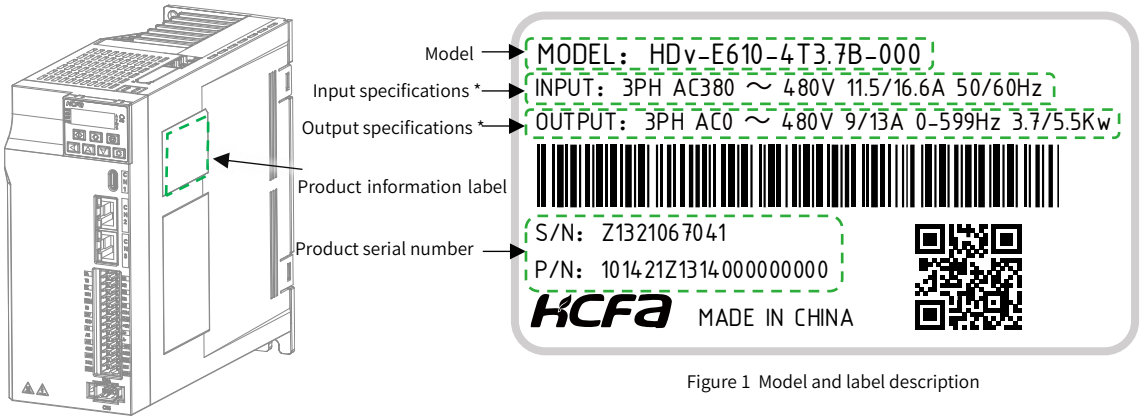


Figure 1 Model and label description

Item	Instruction
Product information label	Describes the current product model, power and other basic product information
Model	Displays the product model
Input specifications *	Display the input specifications of this product INPUT: Rated input power voltage and input current
Output specifications *	Display the output specifications of this product OUTPUT: Rated output voltage and current, output frequency and VFD power
Product Serial Number	Displays the product serial number P/N, S/N: Product serial number

➢ **Note:** Factory default is Model G machine, users can change it through parameter settings. For specific settings, please consult HCFA technical personnel.

Model P is a fan-and-pump load model (light load).

Model G is a constant torque load model (heavy load).

2.2 Part names and features of E610 series (400W~3.7kW)

2.2.1 Front view interface

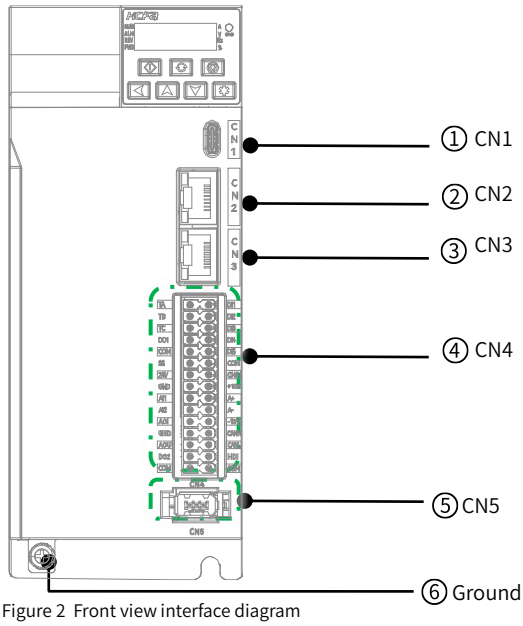


Figure 2 Front view interface diagram

Table 1 Front view interface description

No.	Name	Description
(1)	CN1	USB interface
(2)	CN2*	RJ45 interface, RS485/CANopen IN
(3)	CN3*	RJ45 interface, RS485/CANopen OUT/ termination resistor
(4)	CN4	30PIN terminal interface
(5)	CN5	Reserved
(6)	Grounding terminal	Grounding

➢ **Note: The 120Ω termination resistor is optional.**

Table 2 CN2 CAN IN/RS485 IN interface description

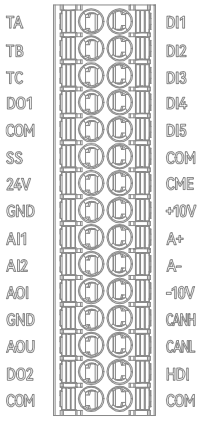
PIN	PIN1	PIN2	PIN3	PIN4	PIN5	PIN6	PIN7	PIN8
Name	CANH	CANL	CAN-GND	RS485-	RS485+	RS485-GND	NC	NC
Function	CANopen		CANopen ground	RS485		RS485 ground	Reserved	Reserved

Table 3 CN3 CAN OUT/RS485 OUT interface description

PIN	PIN1	PIN2	PIN3	PIN4	PIN5	PIN6	PIN7	PIN8
Name	CANH	CANL	CAN-GND	RS485-	RS485+	RS485-GND	NC	NC
Function	CANopen		CANopen ground	RS485		RS485 ground	Reserved	Reserved

Table 4 CN4 30PIN interface description

PIN	Name	Description
PIN1	TA	Relay common terminal
PIN3	TB	Relay output NC
PIN5	TC	Relay output NO
PIN7	DO1	Digital output DO
PIN9	COM*	Internal power supply DC0V
PIN11	SS	Digital input DI common terminal
PIN13	24V	Internal power supply DC24V
PIN15	GND	Analog ground
PIN17	AI1	Analog input
PIN19	AI2	
PIN21	AOI	Analog current output
PIN23	GND	Analog ground
PIN25	AOU	Analog voltage output
PIN27	DO2	Digital output
PIN29	COM*	Internal power supply DC0V



PIN	Name	Description
PIN2	DI1	High-speed DI/General digital input
PIN4	DI2	Digital input DI
PIN5	DI3	
PIN8	DI4	
PIN10	DI5	
PIN12	COM*	Internal power supply DC0V
PIN14	CME	Digital output DO common terminal
PIN16	+10V	Power supply DC+10V
PIN18	A+	RS485
PIN20	A-	
PIN22	-10V	Power supply DC-10V
PIN24	CANH	CANopen
PIN26	CANL	
PIN28	HDI	High-speed HDI/General digital input
PIN30	COM*	Internal power supply DC0V

➢ **Note:** COM is internally shorted.

2.2.2 Indicators and keys description

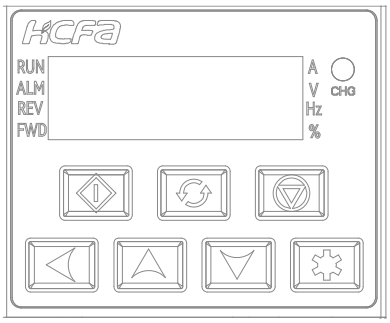


Figure 3 E610 series indicator key diagram

Table 5 E610 series indicator description

Silk screen printing		Name	Description
Status indicator	CHG	Charge indicator	Lit(Red)：Power ON Not lit： Power OFF
	RUN	Run indicator	Lit(Green)：RUN Not lit：STOP
	ALM	Alarm indicator	Lit(Green)：Fault indication Not lit：No error
	REV	Reverse rotation indicator	Lit(Green)： Before the VFD is stopped, there is a reverse rotation instruction. During the running state, the VFD runs in reverse direction.
	FWD	Forward rotation indicator	Lit(Green)： Before the VFD is stopped, there is a forward rotation instruction. During the running state, the VFD runs in forward direction.
Unit indicator	A	Current	Lit(Green): The unit is A.
	V	Voltage	Lit(Green): The unit is V.
	Hz	Frequency	Lit(Green): The unit is Hz.
	%	Percentage	Lit(Green): The unit is %.

Table 6 E610 series indicator description

Key	Name	Description	Key	Name	Description
	RUN	In the panel control mode, it is used to control the motor operation.		SHIFT	Under the level 0 menu, the key is used to change the display parameters. Under the level 2 and 3 menus, the key is used to display panel parameters from the left.
	Multi-function	Forward JOG, reverse JOG, forward and reverse rotation switching, operation panel and remote switching		UP	Increase display parameters
	RESET/STOP	When there is a fault alarm, it is used to reset the fault. During the running state, it is used to stop the motor.		DOWN	Decrease display parameters
				Parameter setting/confirmation/exit	Short press the key to enter the next interface. Long press the key to return to the previous interface. Short press the key in the three-level menu page to save parameters.

2.2.3 Top view interface

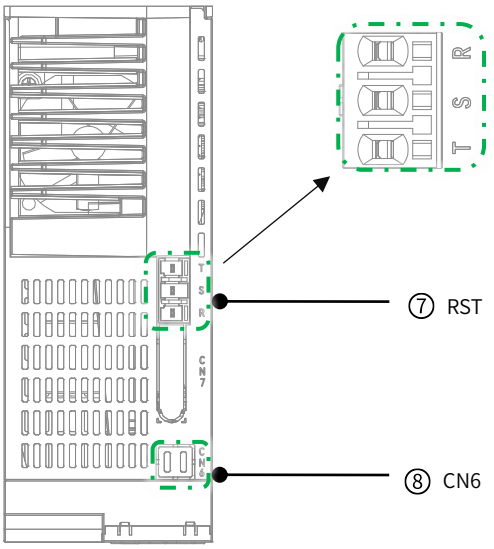


Figure 4 Top view interface diagram

Table 7 Top view interface description

No.	Name	Description
(7)	CN6*	STO
(8)	CN7	Main circuit power supply input

*Note: STO Safe Torque Off (STO) is optional for the E610 series only.

Table 8 CN7 Main circuit input power supply interface description

PIN	Name	Description
PIN1	R	Main circuit three-phase/single-phase power supply input interface
PIN2	S	
PIN3	T	

2.2.4 Bottom view interface

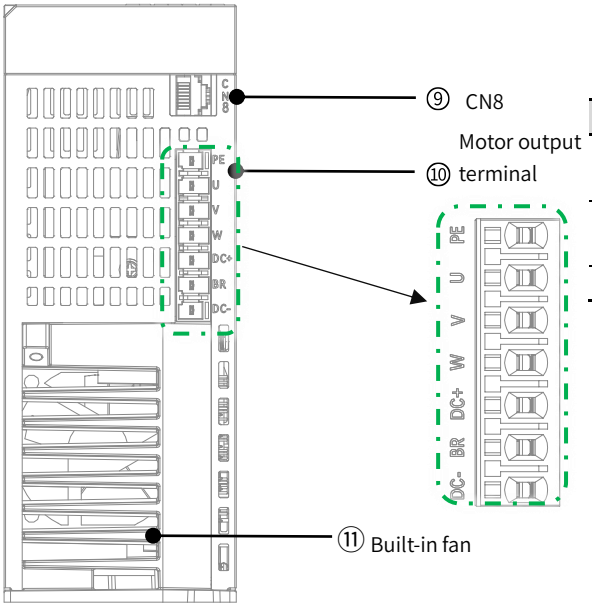


Figure 5 Bottom view interface diagram

Table 9 Bottom view interface description

No.	Name	Description
(9)	CN8	External keyboard interface
(10)	Motor output terminal	Motor power output terminal interface
(11)	Built-in fan	Cooling

Table 10 Motor output terminal interface description

PIN	Name	Description
PIN1	PE	Grounding
PIN2	U	Motor output cable
PIN3	V	
PIN4	W	
PIN5	DC+	DC bus+
PIN6	BR	Braking resistor
PIN7	DC-	DC bus-

2.3 Part names and features of E610 series (5.5kW~7.5kW)

2.3.1 Front view interface

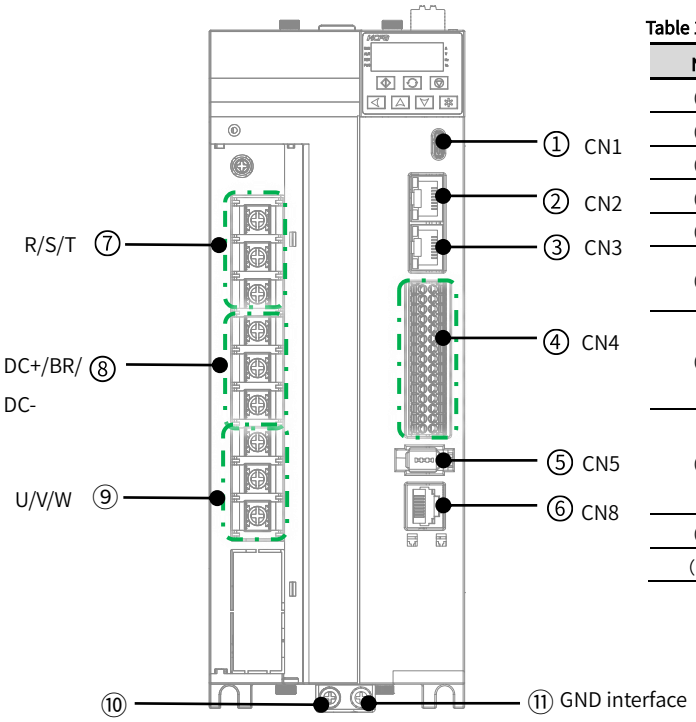


Figure 6 Front view interface diagram

Table 11 Front view interface description

No.	Name	Description
(1)	CN1	USB interface
(2)	CN2*	RJ45 interface, RS485 IN
(3)	CN3*	RJ45 interface, RS485 OUT
(4)	CN4	20PIN terminal interface
(5)	CN5	Reserved
(6)	CN8	External keyboard interface
(7)	R/S/T	Main circuit three-phase/single-phase power supply input interface
(8)	DC+	DC bus+
	BR	Braking resistor
	DC-	DC bus-
(9)	U/V/W	Motor output cable
(10)	GND interface	Grounding

Table 12 CN2 CAN IN/RS485 IN interface description

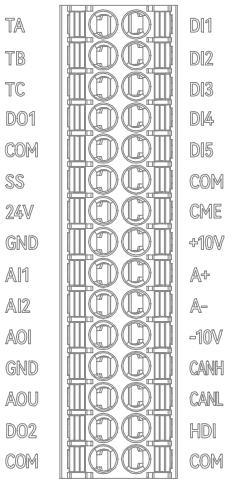
PIN	PIN1	PIN2	PIN3	PIN4	PIN5	PIN6	PIN7	PIN8
Name	CANH	CANL	CAN-GND	RS485-	RS485+	RS485-GND	NC	NC
Function	CANopen		CANopen ground	RS485		RS485 ground	Reserved	Reserved

Table 13 CN3 CAN OUT/RS485 OUT interface description

PIN	PIN1	PIN2	PIN3	PIN4	PIN5	PIN6	PIN7	PIN8
Name	CANH	CANL	CAN-GND	RS485-	RS485+	RS485-GND	NC	NC
Function	CANopen		CANopen ground	RS485		RS485 ground	Reserved	Reserved

Table 14 CN4 30PIN interface description

PIN	Name	Description
PIN1	TA	Relay common terminal
PIN3	TB	Relay output NC
PIN5	TC	Relay output NO
PIN7	DO1	Digital output DO
PIN9	COM*	Internal power supply DC0V
PIN11	SS	Digital input DI common terminal
PIN13	24V	Internal power supply DC24V
PIN15	GND	Analog ground
PIN17	AI1	Analog input
PIN19	AI2	
PIN21	AOI	Analog current output
PIN23	GND	Analog ground
PIN25	AOU	Analog voltage output
PIN27	DO2	Digital output DO
PIN29	COM*	Internal power supply DC0V



PIN	Name	Description
PIN2	DI1	High-speed DI/General digital input
PIN4	DI2	Digital input DI
PIN5	DI3	
PIN8	DI4	
PIN10	DI5	
PIN12	COM*	Internal power supply DC0V
PIN14	CME	Digital output DO common terminal
PIN16	+10V	Power supply DC+10V
PIN18	A+	RS485
PIN20	A-	
PIN22	-10V	Power supply DC-10V
PIN24	CANH	CANopen
PIN26	CANL	
PIN28	HDI	High-speed HDI/General digital input
PIN30	COM*	Internal power supply DC0V

➢ **Note: The COM common terminal is internally shorted.**

2.3.2 Indicators and keys description

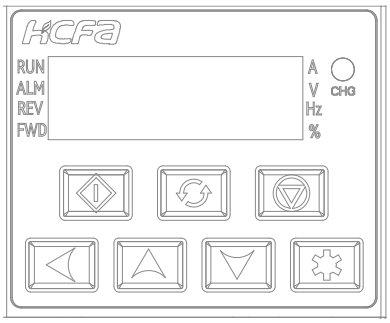


Figure 7 Indicator key diagram

Table 15 Indicator description

Silk screen printing		Name	Description
Status indicator	CHG	Charge indicator	Lit(Red)：Power ON Not lit： Power OFF
	RUN	Run indicator	Lit(Green)：RUN Not lit：STOP
	ALM	Alarm indicator	Lit(Green)：Fault indication Not lit：No error
	REV	Reverse rotation indicator	Lit(Green)： Before the VFD is stopped, there is a reverse rotation instruction. During the running state, the VFD runs in reverse direction.
	FWD	Forward rotation indicator	Lit(Green)： Before the VFD is stopped, there is a forward rotation instruction. During the running state, the VFD runs in forward direction.
单位灯	A	Current	Lit(Green): The unit is A.
	V	Voltage	Lit(Green): The unit is V.
	Hz	Frequency	Lit(Green): The unit is Hz.
	%	Percentage	Lit(Green): The unit is %.

Table 16 Indicator description

Key	Name	Description	Key	Name	Description
	RUN	In the panel control mode, it is used to control the motor operation.		SHIFT	Under the level 0 menu, the key is used to change the display parameters. Under the level 2 and 3 menus, the key is used to display panel parameters from the left.
	Multi-function	Forward JOG, reverse JOG, forward and reverse rotation switching, operation panel and remote switching		UP	Increase display parameters
	RESET/STOP	When there is a fault alarm, it is used to reset the fault. During the running state, it is used to stop the motor.		DOWN	Decrease display parameters
				Parameter setting/confirmation/exit	Short press the key to enter the next interface. Long press the key to return to the previous interface. Short press the key in the three-level menu page to save parameters.

2.4 Product dimensions

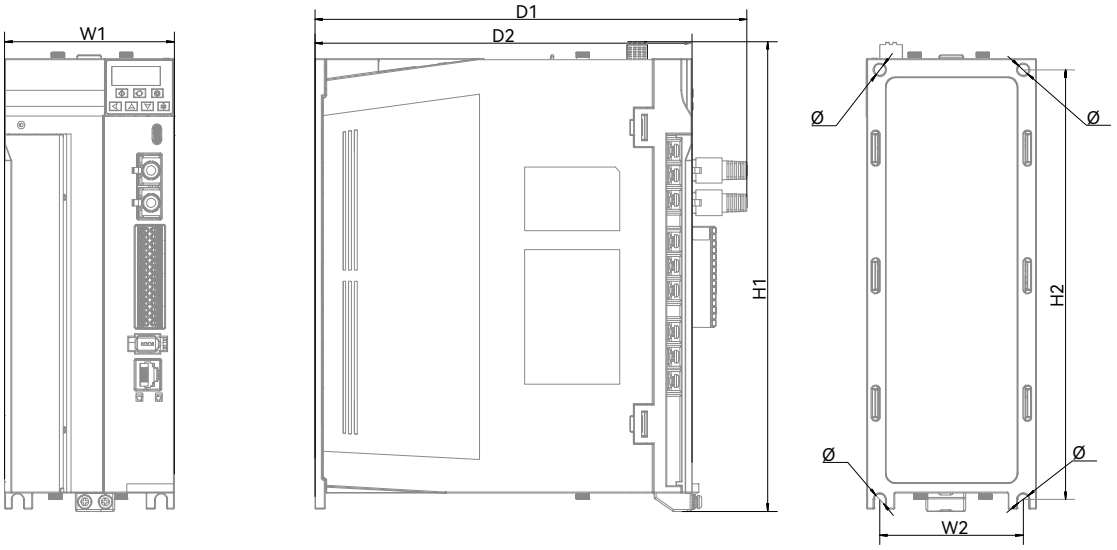


Figure 8 Dimensions of the E610 series product (unit: mm)

Applicable model	W1	W2	D1	D2	H1	H2	Φ	Net weight（kg）
HDv-E610-2S0.4B-000	37	21.3	199	170	189.2	162.8	5.5	0.75
HDv-E610-2T0.4B-000								
HDv-E610-4T0.4B-000								
HDv-E610-2S0.7B-000	47	31.3						0.96
HDv-E610-2T0.7B-000								
HDv-E610-2S1.5B-000								
HDv-E610-2T1.5B-000								
HDv-E610-4T0.7B-000	55.00	39.70	209.00	180.00	182.90	163.00		1.17
HDv-E610-4T1.5B-000								
HDv-E610-4T2.2B-000	70.00	54.70						1.38
HDv-E610-4T3.7B-000								
HDv-E610-4T5.5B-000	90	76	229	200	243.3	227.5	6	3.07
HDv-E610-4T7.5B-000								

3 Parameter specifications

3.1 General specifications

Item		Specifications						
		0.4kW	0.75kW	1.5kW	2.2kW	3.7kW	5.5 kW	7.5kW
Operating environment	Operating temperature	-10°C～+55°C (no condensation)（When the ambient temperature is between 40 °C to 55 °C, the equipment is derated by 10% for every 5 °C increase in temperature.）						
	Storage temperature & humidity	-20°C~+70°C Temperature range: -20°C~+70°C Humidity range: 20%~85% (no condensation)						
	Relative humidity	20%～85%RH or less (no condensation)						
	Altitude	1000m or less (When the altitude exceeds 1000m, please use the products at the derating rate of 2%/100m.)						
	Vibration resistance	5.88m/s^2(0.6G) or less，10~60Hz（Do not connect at the point of resonance）						
	Shock resistance	Acceleration of 100m/s^2 or less (XYZ)						
	Protection rating	IP20						
	Pollution rating	Pollution degree I or II						
EMC	Electrostatic discharge	Air discharge: ±8kV Contact discharge: ±4kV						
	Electrical fast transient/ burst	±2KV						
	Surge	AC power: DM (differential mode) 1kV CM (common mode) 2kV						
Heat dissipation		Natural air cooling						
Mounting method		Screw fixation						
Main material		PPE						

3.2 Basic specifications

3.2.1 Input voltage single-phase/three-phase 220V (compatible)

E610 series VFD power（kW）			0.4	0.75	1.5	2.2
Maximum applicable motor capacity [kW]			0.4	0.75	1.5	2.2
Rated output current [Arms]			3.5	4.8	7.5	11
Instantaneous maximum output current [Arms]			5.2	8.5	13.0	16.2
Rated output voltage [V]			0~input voltage			
Maximum output frequency [Hz]			0～599			
Carrier frequency [Hz]			VF: 1.5k~16k； SVC: 1.5k~10k			
Overload capability			110% rated current for 1 hour, 150% rated current for 1 minute, and 180% rated current for 3 seconds			
Input power supply voltage [V]			Three-phase AC 200 V ～ 240V, 50/60Hz （-15%～10%） Actual allowable voltage range Three-phase AC 170V～264V			
Input current [Arms]			3.8	5.3	8.6	11.5
Power capacity [kVA]			1.1	2.1	4.2	5.3
Heat and power loss [W]			35	52	88	110
Wide voltage [V]			Wide voltage range: 187~242V（-15%~10%）			
Braking resistor	External braking resistor	Resistance value [Ω]	300	170	80	55
		Capacity [W]	90	160	340	500
	Minimum resistance value of external braking resistor [Ω]		48	48	32	16

3.2.2 Standard model: Input voltage three-phase 380V

E610 series VFD power（kW）			0.4*	0.75	1.5	2.2	3.7	5.5	7.5
Maximum applicable motor capacity [kW]			0.4	0.75	1.5	2.2	3.7	5.5	7.5
Rated output current [Arms]			2.0	3.5	4.8	7.2	9	13	17
Instantaneous maximum output current [Arms]			3.6	5.2	8.5	13.0	16.2	23.4	30.6
Rated output voltage [V]			0~input voltage						
Maximum output frequency [Hz]			0～599Hz						
Carrier frequency [Hz]			VF: 1.5kHz~16kHz SVC: 1.5kHz~10kHz						
Overload capability			110% rated current for 1 hour, 150% rated current for 1 minute, and 180% rated current for 3 seconds						
Input power supply voltage [V]			Three-phase AC 380 ～ 480V, 50/60Hz -15%～10% Actual allowable voltage range Three-phase AC 323V～528V						
Input current [Arms]			2.3	3.8	5.3	8.6	11.5	16.6	21.9
Power capacity [kVA]			2	2.8	5	6.7	12	17.5	22.6
Heat and power loss [W]			39	46	68	80	140	200	240
Wide voltage [V]			Wide voltage range: 380V~480V（-15%~10%）						
Braking resistor	External braking resistor	Resistance value [Ω]	1450	800	380	260	150	100	75
		Capacity [W]	80	140	300	440	750	1100	1500
	Minimum resistance value of external braking resistor [Ω]		96	96	96	64	32	32	32

***Note:** The product is not yet released, please stay informed.

3.3 Function specifications

3.3.1 Basic function

Item	Specifications
Input frequency resolution	Digital setting: 0.01Hz Analogy setting: Maximum frequency×0.025%
Motor type and control mode	Three-phase asynchronous motor: VF control, sensorless vector control (SVC) Permanent magnet synchronous motor: sensorless vector control (SVC)
Start-up torque	150% (SVC 0.5Hz)
Speed range	1:50 VF control 1:100 Speed SVC of asynchronous motor
Speed control accuracy	±1.0% VF control ±0.5% SVC
Torque boost	Automatic torque boost Manual torque boost 0.1%~30.0%
V/F curve	Linear V/F, multi-point V/F, square V/F, VF separation
Automatic voltage regulator (AVR)	Automatically maintains a constant output voltage when the grid voltage changes
DC braking	DC braking frequency: 0.00Hz~the maximum frequency Braking time: 0.00s~30.00s Braking current value: 0.00%~100.00%
JOG control	JOG frequency range: 0.00Hz~ the maximum frequency JOG acceleration and deceleration time: 0.00s~600.00s
Simple PLC, multispeed operation	Realize the maximum 16 segments of speed operation via built-in PLC and control terminals
Built-in PID	Built-in two set of PID parameters for realizing closed-loop process control system
LED display	LED keyboard for parameter setting and status monitoring
Protection function	Over-current protection, over-voltage protection, under-voltage protection, over-heating protection, and overload protection

3.3.2 Customized function

Item	Specifications
Customized key	Supports optional programmable keys, JOG, positive/negative input switch function, function code display switch, start/stop instruction switch, coast stop and emergency stop
Communication bus	Supports Modbus communication, E610 supports CANopen communication
STO function*1	Built-in safe torque off (STO)
Customized fault diagnosis	User-defined analog or digital fault diagnosis according to actual requirements
Acceleration and deceleration curves	Linear acceleration/deceleration mode, S-curve acceleration/deceleration mode; Acceleration and deceleration curve method for lifting-type load
Electricity measurement	Calculates the amount of electricity used per unit of time
Display mode switch	The display mode can be switched to quick menu mode or the factory value, which is convenient for debugging
Running instruction channels	Three types of channels: operator panel setting, control terminal setting, and communication setting (three channels can be switched through multiple methods)
Frequency source	Eight types of frequency sources: Digital setting, analog voltage setting, analog current setting, pulse setting, multi-speed, PLC, PID, and communication setting
Wireless communications	WIFI, Bluetooth, and IoT modules are optional

***Note:** 1. STO Safe Torque Off (STO) is optional for the E610 series only.

2. Not supported yet, please stay informed.

3.3.3 Special function

Item	Specifications
RPM tracker	Comprehensive speed tracking function (IM/PM), non-stationary activation
Weak magnetic property	Weak magnetic area with load capacity, high speed weak magnetic capacity
Active preheating (APH)	Active motor preheating function that reduces grease viscosity and enhances start-up capacity at low temperatures.
Overload releasing	Overload releasing function that avoids malfunction shutdowns and reduces the times of shutdowns.

3.4 Interface specifications

Item			Specifications
IGBT Overheating protection signal input			Number of input channel: 1 Input voltage range: 0V ～ +5V
Communication function	RS485 CANopen (CN2 CN3) *1	Connection device	Connects with external communication devices
		Communication	RS485 interface that supports Modbus RTU CAN interface CANOpen（only available for the E610 series）
		Address setting	Set by parameters
		Cable connection	Shielded twisted pair (STP) CAT5e
	USB communication (CN1)	Device connection	PC (supports the host computer)
		Communication specification	Compliant with USB specifications
Operation and display function			Built-in 5-digit digital tube for display with 7 keys including CHARGE, POWER indicator, and so on.
External keyboard interface (CN8)			External keyboard operator connecting with SPI connection
DI/DO/AI/AO input and output terminals (CN4)			DI/DO output voltage range: DC ± 24V AI/AO output voltage range: DC ± 10V / ± 20mA (10-bit resolution) Accuracy: ± 20mV (Typ.) The maximum output current: ± 10mA
Braking function			Built-in energy braking function
Protection function			Overcurrent, overvoltage, undervoltage, overload, overheat, and phase loss
Auxiliary function			Gain adjustment, alarm recording, JOG operation, and customized shortcut buttons
Safety function*2	Input		/HWBB1, /HWBB2: Base block signal for the power module
	Output		EDM1: status monitoring of built-in safety circuit (constant output)
Optional accessories			External keyboard, braking resistor, external keyboard cable, termination resistor

***Note: 1.** The CANOpen function of CN2/CN3 is supported by the E610 series only.

2. Safe Torque Off (STO) is optional for the E610 series only.

4 Installation instructions

4.1 Installation instructions

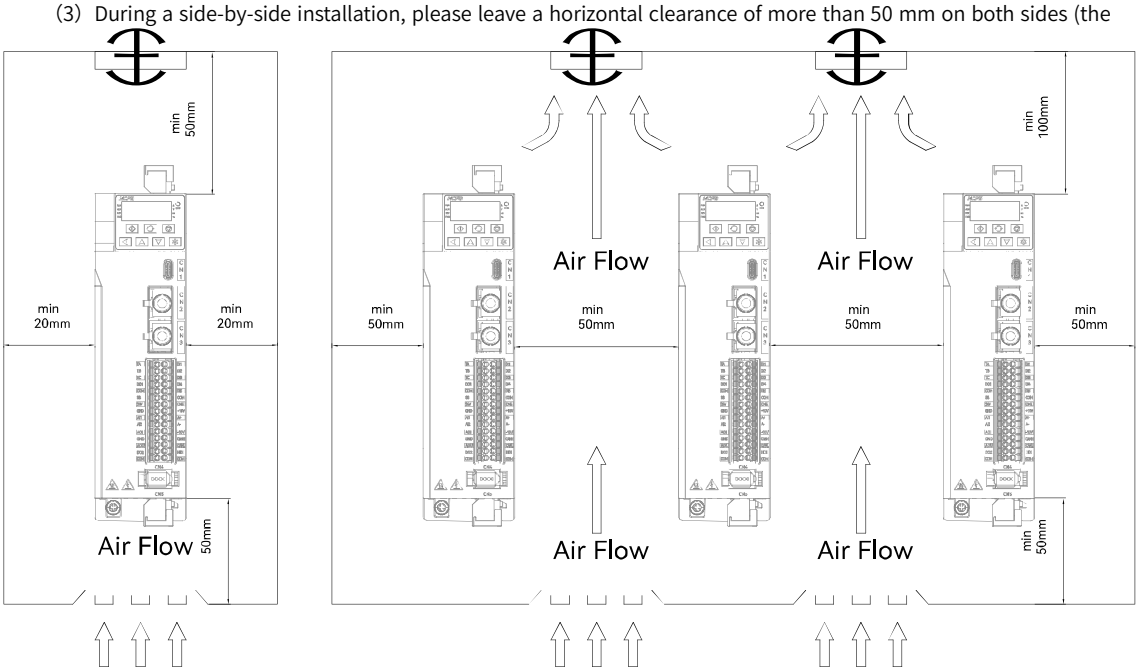
4.1.1 Installation within a control cabinet

Please pay attention to the following points when performing the installation of the equipment inside the control cabinet:

(1) Please ensure that the installation direction is perpendicular to the wall, cool down the equipment with natural convection or a fan, and install the equipment firmly in the control cabinet with screws.

(2) To ensure the equipment can be cooled by natural convection or a fan. Please refer to the following figures and allow enough clearances around them. It is necessary to keep the temperature inside the cabinet even to avoid the localized overheating of the equipment.

(3) During a side-by-side installation, please leave a horizontal clearance of more than 50 mm on both sides (the



clearance is not a must if the space is limited).

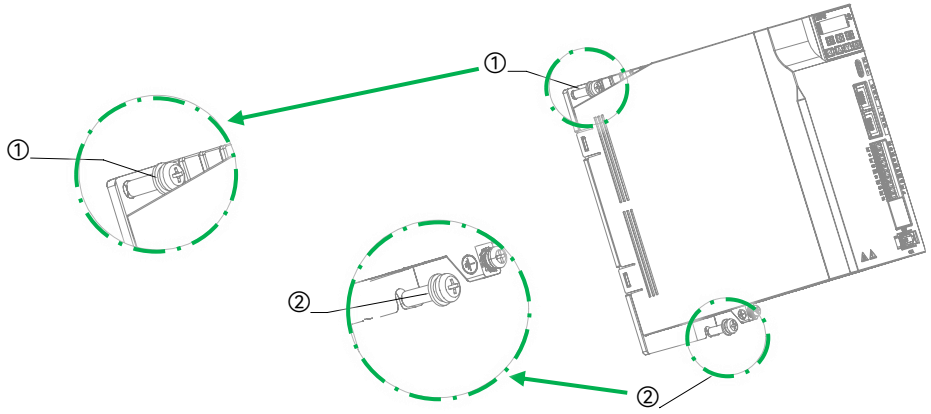
***Note:** 1. This diagram shows the external dimensions of the HDv-E600 (380V-3.7kW and 380V-2.2kW). Please refer to the sample manual for detailed appearance and installation instructions.

2. Recommended combination for securing the controller: M5*25 hexagon socket head cap screws, spring washers, flat washers, and M5 hexagon nuts. Tightening torque: 3.5N.m.

4.1.2 VFD mounting and dismounting

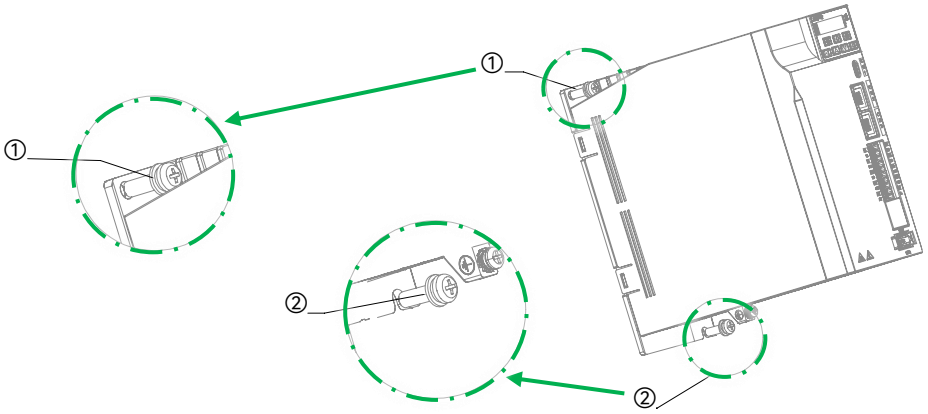
VFD mounting

During mounting, use two hexagonal M5*20 screws to secure the machine. Pre-tighten the screw ② first, then snap the base plate at the bottom of the machine onto the screw ②, and finally use the screw ① to secure the upper part of the housing. The recommended torque is 3.5N.m.



VFD dismounting

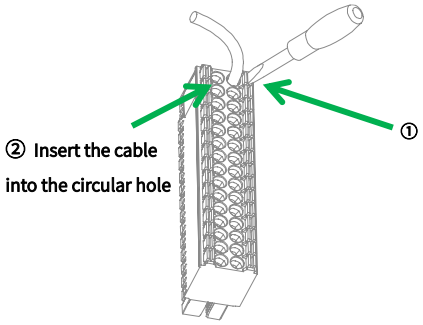
During dismounting, use a screwdriver to pre-loosen the screw ② first without removing it. While removing the screw ① with a screwdriver, hold the device with a hand to prevent it from falling until the screw ① is completely removed. Finally, lift the machine upward to take down the device.



4.1.3 Cable connecting and disconnecting I (CN4 terminal)

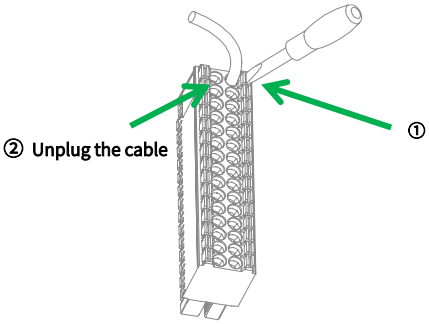
Cable connecting

During connecting, insert the flat-blade screwdriver into the unlocking tab, and press down gently. Then insert a cable into the circular hole. Gently tug the cable after pulling out the screwdriver. If the cable is secured firmly, then the connection is finished.



Cable disconnecting

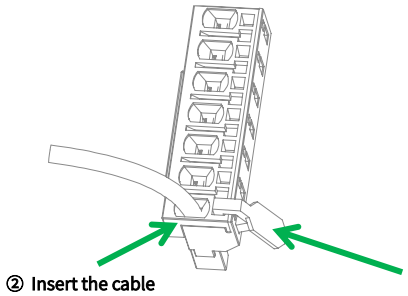
During disconnecting, insert the flat-blade screwdriver into the unlocking tab, and press down gently. First, unplug the cable out of the circular hole. Then, pull out the screwdriver to finish the disconnection.



4.1.4 Cable connecting and disconnecting II （motor power output/power supply input）

Cable connecting

During connecting, insert the crowbar into the slot on the right first. Press down the crowbar and then insert the cable into the slot on the left. If the cable is secured firmly after pulling out the crowbar, then the connection is finished.

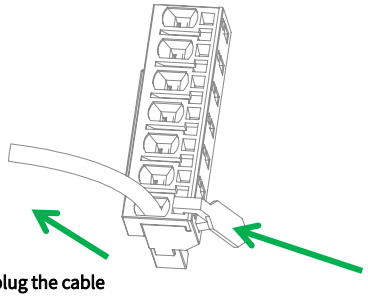


② Insert the cable

① Insert the crowbar into the slot and press it down

Cable disconnecting

During disconnecting, insert the crowbar into the slot on the right first. Press down the crowbar and then unplug the cable.



② Unplug the cable

① Insert the crowbar into the slot and press it down

4.2 Wiring instructions

4.2.1 Standard wiring of HDv-E610 series single-phase /three-phase 220V model

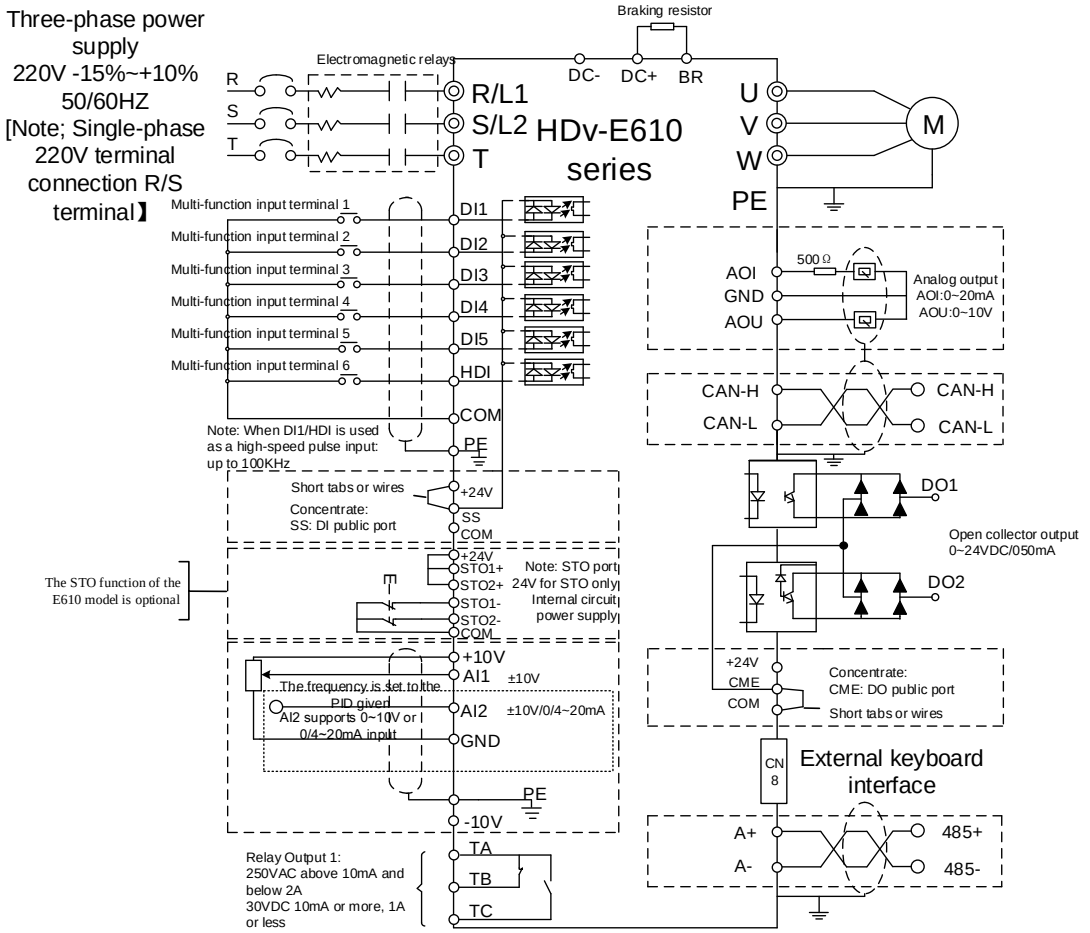


Figure 9 HDv-E610 series 220V model standard wiring diagram

Table 17 Main circuit interface description

Name	Description
R/S/T	Main circuit power supply input interface
DC+/BR	Regenerative braking resistor interface
U/V/W	Motor power output
DC+/DC-	DC bus interface

4.2.2 Standard wiring of HDv-E610 series three-phase 380V model

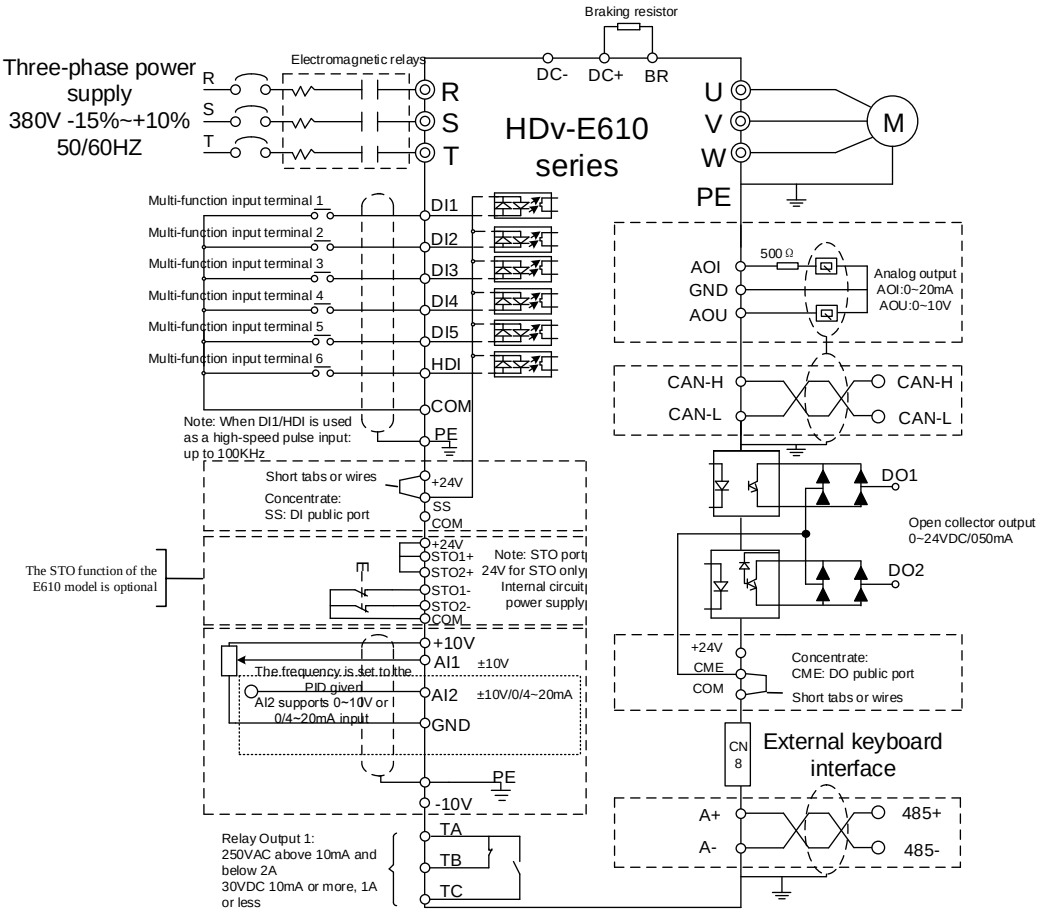


Figure 10 HDv-E610 series 380V model standard wiring diagram

Table 18 Main circuit interface description

Name	Description
R/S/T	Main circuit power supply input interface
DC+/BR	Regenerative braking resistor interface
U/V/W	Motor power output
DC+/DC-	DC bus interface

Appendix 1: VFD parameter description

P00 basic parameter						
Code	Name	Scope	Parameter type	Default value	Property	Communication address
P00.00	GP display type	1：G type (Constant torque load model) 2：P type（Fan and pump load models）	uint16	1	R	0x0000
P00.01	Motor control mode	0：SVC 1：Reserved 2：V/F control	uint16	2	W*	0x0001
P00.02	Command source selection	0: Operation panel command channel 1: Terminal command channel 2: Serial port communication command channel	uint16	0	W	0x0002
P00.03	Main frequency source X selection	0：Digital setting (without persistent storage during power down) 1：Digital setting（with persistent storage during power down） 2：AI1 3：AI2 5：PULSE setting 6：Multi-segment instructions 7：Simple PLC 8：PID 9：Communication setting	uint16	0	W*	0x0003
P00.04	Auxiliary frequency source Y selection	0：Digital setting (without persistent storage during power down) 1：Digital setting（with persistent storage during power down） 2：AI1 3：AI2 5：PULSE setting 6：Multi-segment instructions 7：Simple PLC 8：PID 9：Communication setting	uint16	0	W*	0x0004
P00.05	Selection of frequency source superposition selection	Ones place: frequency instruction selection 0：Primary frequency source X 1：Primary and secondary operation results (depend on the tens place) 2：Switch the primary frequency source X with the secondary frequency source Y 3：Switch the operation result of the primary frequency source X with that of the secondary frequency source Y 4：Switch the secondary frequency source Y with the results of the primary and secondary operation Tens place: The primary and secondary operation relation of frequency instruction 0：Primary + secondary 1：Primary - secondary 2：The maximum value of both	uint16	0	W	0x0005

		3：The minimum value of both				
P00.06	Selection range of the secondary frequency source Y during superposition	0: Relative to the maximum frequency 1: Relative to the frequency source X	uint16	0	W	0x0006
P00.07	Range of the secondary frequency source Y during superimposing	0%~150%	uint16	100%	W	0x0007
P00.08	Maximum frequency	50Hz~599Hz	uint16	50Hz	W*	0x0008
P00.09	Upper limit frequency source	0：P00.10 setting 1：AI1 2：AI2 4：PULSE setting 5：Communication setting	uint16	0	W*	0x0009
P00.10	Upper limit frequency	Lower limit frequency P00.11~ Maximum frequency P00.08	uint16	50Hz	W	0x000a
P00.11	Lower limit frequency	0Hz~upper limit frequency P00.10	uint16	0Hz	W	0x000b
P00.12	Preset frequency	0Hz~upper limit frequency P00.08	uint16	50Hz	W	0x000c
P00.13	Acceleration time 1	0s~6500s	uint16	10s	W	0x000d
P00.14	Deceleration time 1	0s~6500s	uint16	10s	W	0x000e
P00.15	Upper limit frequency offset	0Hz~maximum frequency P00.08	uint16	0Hz	W	0x000f
P00.17	Secondary frequency source offset frequency during superposition	0Hz~maximum frequency P00.08	uint16	0Hz	W	0x0011
P00.18	Frequency instruction decimal point	1：0.1Hz 2：0.01Hz	uint16	2	W*	0x0012
P00.19	Digital setting of frequency shutdown memory selection	0：Not memorized 1：Memorized	uint16	0	W	0x0013
P00.20	Command source bundled frequency source	0~9999	uint16	0	W	0x0014
P00.21	Acceleration and deceleration time unit	0：1s 1：0.1s 2：0.01s	uint16	1	W*	0x0015
P00.22	Acceleration and deceleration time base frequency	0：Maximum frequency 1：Set frequency 2：100Hz	uint16	0	W*	0x0016
P00.23	Parameter initialization	0: No operation 1: Restore factory parameters, excluding motor parameters 2: Clear record information 3: Restore factory parameters, including motor parameters 4: Save all current user function codes 501: Restore saved user function code	uint16	0	W*	0x0017
P00.24	Output phase sequence selection	0：Standard 1：Reverse	uint16	0	W	0x0018
P00.25	Carrier frequency	1.3kHz~16kHz	uint16	Model setting	W	0x0019
P00.26	Temperature-adjusted carrier frequency	0：NO 1：YES	uint16	1	W	0x001a
P00.27	DPWM switching upper limit frequency	5Hz~maximum frequency P00.08	uint16	15Hz	W	0x001b

P00.28	Frequency command UP/DOWN reference during running	0：running frequency 1：Set frequency	uint16	0	W*	0x001c
P00.29	Modulation mode	0：Asynchronous modulation 1：Synchronous modulation	uint16	0	W	0x001d
P00.30	Dead zone compensation mode	0：No compensation 1：Compensation mode 1	uint16	1	W	0x001e
P00.31	Random PWM	0~10	uint16	0	W	0x001f
P00.32	Overmodulation coefficient	100%~110%	uint16	105%	W*	0x0020
P00.33	Tuning selection	0: No operation 1: Static partial tuning of asynchronous machine 2: Dynamic tuning of asynchronous machine 3: Static complete tuning of asynchronous machine (reserved) 11: Static tuning of synchronous machine 12: Synchronous machine dynamic tuning	uint16	0	R	0x0021
P00.34	Motor selection	0: The 1st motor; 1: The 2nd motor; 2: The 3rd mot+or; 3: The 4th motor;	uint16	0	W	0x0022
P00.35	Dead zone compensation value	0~1000	uint16	110	W	0x0023

P01 start/stop control parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P01.00	Start mode	0: Start directly 1: Speed tracking restart 2: Asynchronous machine pre-excitation start	uint16	0	W	0x0100
P01.01	Start frequency	0Hz~10Hz	uint16	0Hz	W	0x0101
P01.02	Start frequency holding time	0s~100s	uint16	0s	W*	0x0102
P01.03	Start DC braking/pre-excitation current	0%~100%	uint16	50%	W*	0x0103
P01.04	Start DC braking/pre-excitation time	0s~100s	uint16	0s	W*	0x0104
P01.05	Stop mode	0: Slow down and stop 1: Coast stop	uint16	0	W	0x0105
P01.06	Stop DC braking starting frequency	0Hz~maximum frequency P00.08	uint16	0	W	0x0106
P01.07	Stop DC braking waiting time	0s~100s	uint16	0s	W	0x0107
P01.08	Stop DC braking current	0%~100%	uint16	50%	W	0x0108
P01.09	Stop DC braking time	0s~100s	uint16	0s	W	0x0109
P01.10	JOG running frequency	0Hz~maximum frequency P00.08	uint16	2Hz	W	0x010a
P01.11	JOG acceleration time	0s~6500s	uint16	20s	W	0x010b
P01.12	JOG deceleration time	0s~6500s	uint16	20s	W	0x010c

P01.14	Acceleration and deceleration mode	0: Linear acceleration and deceleration 1: S curve acceleration and deceleration A 2: S curve acceleration and deceleration B	uint16	0	W*	0x010e
P01.15	S curve starting time proportion 0%~100%	0%~100%	uint16	30%	W*	0x010f
P01.16	S curve end time ratio 0%~100%	0%~100%	uint16	30%	W*	0x0110
P01.17	Jump frequency 1	0Hz~maximum frequency P00.08	uint16	0Hz	W	0x0111
P01.18	Jump frequency amplitude	0Hz~maximum frequency P00.08	uint16	0Hz	W	0x0112
P01.19	Forward and reverse dead time	0s~3000s	uint16	0s	W	0x0113
P01.20	Operation action when the frequency s lower than the lower limit frequency	0: Run at the lower frequency limit 1: Delayed shutdown 2: Zero speed operation	uint16	0	W	0x0114
P01.21	Reverse rotation control	0：Enable reverse rotation 1：Disable reverse rotation	uint16	0	W	0x0115
P01.24	Brake usage rate	0%~100%	uint16	100%	W	0x0118
P01.25	Braking resistor opening time	0s~65000s	uint16	0s	W	0x0119
P01.28	Terminal JOG priority	0：No JOG during operation 1：JOG during operation	uint16	0	W	0x011c
P01.34	Instantaneous stop function selection	0：Invalid 1：Deceleration 2：Decelerate and stop	uint16	0	W	0x0122
P01.35	Instantaneous action suspension judgment voltage	80%~100%	uint16	85%	W	0x0123
P01.36	Instantaneous power fault and non-stop voltage recovery judgment time	0s~100s	uint16	0.5s	W	0x0124
P01.37	Instantaneous non-stop action judgment voltage	60%~100%	uint16	80%	W	0x0125
P01.38	Instantaneous stop gain	0~100	uint16	40	W	0x0126
P01.39	Instantaneous stop integral coefficient	0~100	uint16	30	W	0x0127
P01.40	Instant stop non-stop action deceleration time	0s~300s	uint16	10s	W	0x0128
P01.41	Acceleration time 2	0s~6500s	uint16	10s	W	0x0129
P01.42	Deceleration time 2	0s~6500s	uint16	10s	W	0x012a
P01.43	Acceleration time 3	0s~6500s	uint16	10s	W	0x012b
P01.44	Deceleration time 3	0s~6500s	uint16	10s	W	0x012c
P01.45	Acceleration time 4	0s~6500s	uint16	10s	W	0x012d
P01.46	Deceleration time 4	0s~6500s	uint16	10s	W	0x012e
P01.49	Jump frequency 2	0Hz~maximum frequency P00.08	uint16	0Hz	W	0x0131
P01.50	Start protection selection	0：No protection 1：Protection	uint16	0	W	0x0132
P01.51	Whether the jump frequency during acceleration and deceleration is valid	0：Invalid 1：Valid	uint16	0	W	0x0133
P01.52	JOG frequency instruction source	0: Digital setting（P01.10） 1: AI1 2: AI2	Uint16	0	W	0x0134

		3: Reserved 4: PULSE setting 5: Communication setting				

P02 motor parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P02.00	Motor type selection	0: Common asynchronous motor 1: Reserved 2: Permanent magnet synchronous motor	uint16	0	W*	0x0200
P02.01	Motor rated power	0.1kw~1000kw	uint16	Model setting	W*	0x0201
P02.02	Motor rated voltage	1V~2000V	uint16	Model setting	W*	0x0202
P02.03	Motor rated current	0.01A~655.35A	uint16	Model setting	W*	0x0203
P02.04	Motor rated frequency	1Hz~maximum frequency P00.08	uint16	Model setting	W*	0x0204
P02.05	Motor rated speed	1rpm~65535rpm	uint16	Model setting	W*	0x0205
P02.06	Asynchronous motor stator resistance	0.001Ω~65.535Ω	uint16	Model setting	W*	0x0206
P02.07	Asynchronous motor rotor resistance	0.001Ω~65.535Ω	uint16	Model setting	W*	0x0207
P02.08	Asynchronous motor leakage inductance	0.01mH~655.35mH	uint16	Model setting	W*	0x0208
P02.09	Asynchronous motor mutual inductance	0.1mH~6553.5mH	uint16	Model setting	W*	0x0209
P02.10	Asynchronous motor no-load current	0.01A~655.35A	uint16	Model setting	W*	0x020A
P02.11	Synchronous motor stator resistance	0.001Ω~65.535Ω	uint16	Model setting	W*	0x020B
P02.12	Synchronous motor D-axis inductance	0.01mH~655.35mH	uint16	Model setting	W*	0x020C
P02.13	Synchronous motor Q-axis inductance	0.01mH~655.35mH	uint16	Model setting	W*	0x020D
P02.14	Synchronous motor counter electromotive force	0v~6553.5V	uint16	Model setting	W*	0x020E

P03 motor vector parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P03.01	Speed loop proportional gain 1	1~100	uint16	Model setting	W	0x0301
P03.02	Speed loop integration time 1	0.01s~10s	uint16	Model setting	W	0x0302
P03.03	Speed loop switching frequency 1	0Hz~speed loop switching frequency 2 P03.06	uint16	5Hz	W	0x0303
P03.04	Speed loop proportional gain 2	1~100	uint16	Model setting	W	0x0304
P03.05	Speed loop integration time 2	0.01s~10s	uint16	Model setting	W	0x0305
P03.06	Speed loop switching frequency 2	Speed loop switching frequency 1 P03.03~maximum frequency P00.08	uint16	10Hz	W	0x0306
P03.07	Speed loop filter time constant	0~0.031	uint16	0.028	W	0x0307

P03.11	Speed control (drive) torque upper limit source	0: Digital setting (P03.12) 1：AI1 2：AI2 4: PULSE setting 5: Communication setting 6：MIN(AI1,AI2) 7：MAX(AI1,AI2)	uint16	0	W	0x030b
P03.12	Speed control (drive) torque upper limit digital setting	0%~200%	uint16	150%	W	0x030c
P03.13	Excitation current loop proportional gain	0~60000	uint16	2000	W	0x030d
P03.14	Excitation current loop integral gain	0~60000	uint16	1000	W	0x030e
P03.15	Torque current loop proportional gain	0~60000	uint16	2000	W	0x030f
P03.16	Torque current loop integral gain	0~60000	uint16	1000	W	0x0310
P03.17	Speed control (braking) torque upper limit source	0: Digital setting (P03.18) 1：AI1 2：AI2 4: PULSE setting 5: Communication setting 6：MIN(AI1,AI2) 7：MAX(AI1,AI2)	uint16	0	W	0x0311
P03.18	Speed control (braking) torque upper limit digital setting	0%~200%	uint16	150%	W	0x0312
P03.34	Torque setting source during torque control	0: Digital setting (P03.35) 1：AI1 2：AI2 4: PULSE setting 5: Communication setting 6：MIN(AI1,AI2) 7：MAX(AI1,AI2)	uint16	0	W*	0x0322
P03.35	Torque digital setting in torque control mode	-200%~200%	int16	150%	W	0x0323
P03.36	Torque control forward maximum frequency	0Hz~maximum frequency P00.08	uint16	50Hz	W	0x0324
P03.37	Torque control reverse maximum frequency	0Hz~maximum frequency P00.08	uint16	50Hz	W	0x0325
P03.38	Speed/torque control mode	0：Speed control 1：Torque control	uint16	0	W*	0x0326
P03.39	Torque control acceleration time	0s~650s	uint16	0s	W	0x0327
P03.40	Torque control deceleration time	0s~650s	uint16	0s	W	0x0328

P03.41	Source of frequency limit during torque control	0: Digital setting (P03.36~P03.37) 1：AI1 2：AI2 4: PULSE setting 5: Communication setting 6：MIN(AI1,AI2) 7：MAX(AI1,AI2)	uint16	0	W*	0x0329
P03.46	Output power correction coefficient	0%~200%	uint16	100%	W	0x032e
P03.48	Test bench torque mode	0: Off 1: On	uint16	0	W	0x0330
P03.49	Test bench torque mode torque limit	0~20	uint16	15	W	0x0331

P04 motor V/F parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P04.00	VF curve setting	0: Straight line V/F curve 1: Multi-point V/F curve 2: Square V/F curve 3: 1.2 times order V/F curve 4: 1.4 times order V/F curve 6: 1.6 times V/F curve 8: 1.8 times order V/F curve 10: VF complete separation mode 11: VF semi-separated mode	uint16	0	W*	0x0400
P04.02	Multi-point VF frequency point 1	0Hz~ P04.04	uint16	0Hz	W	0x0402
P04.03	Multi-point VF voltage point 1	0%~100%	uint16	0%	W*	0x0403
P04.04	Multi-point VF frequency point 2	P04.02~ P04.06	uint16	0Hz	W*	0x0404
P04.05	Multi-point VF voltage point 2	0%~100%	uint16	0%	W*	0x0405
P04.06	Multi-point VF frequency point 3	P04.04~Motor rated frequency P02.04	uint16	0Hz	W*	0x0406
P04.07	Multi-point VF voltage point 3	0%~100%	uint16	0%	W*	0x0407
P04.08	VF overexcitation gain	0~200	uint16	64	W	0x0408
P04.09	Torque boost cutoff frequency	0Hz~maximum frequency P00.08	uint16	50Hz	W*	0x0409
P04.10	Torque boost	0%~30%	uint16	Model determined	W	0x040a
P04.11	VF overcurrent stall action current	50%~200%	uint16	150%	W*	0x040b
P04.12	VF overcurrent stall enable	0：Invalid 1：Valid	uint16	1	W*	0x040c
P04.13	VF overcurrent stall suppression gain	0~100	uint16	20	W	0x040d
P04.14	VF over-speed stall action current compensation coefficient	50%~200%	uint16	50%	W*	0x040e
P04.16	VF oscillation suppression enable	0：Invalid 1：Valid	uint16	1	W*	0x0410
P04.17	Oscillation suppression gain	0~100	uint16	Model determined	W	0x0411

P04.20	VF separated voltage source	0: Digital setting 1: AI1 2: AI2 4: PULSE setting 5: Multi-segment instructions 6: Simple PLC 7: PID 8: Communication setting	uint16	0	W	0x0414
P04.21	VF separated voltage source digital setting	0V~motor rated voltage P02.02	uint16	0V	W	0x0415
P04.22	VF separated voltage rising time	0s~100s	uint16	0s	W	0x0416
P04.23	VF separated voltage deceleration time	0s~100s	uint16	0s	W	0x0417
P04.24	VF separation shutdown mode selection	0：Frequency/voltage independently reduced to 0 1：The frequency decreases again after the voltage decreases to 0	uint16	0	W*	0x0418
P04.25	VF overvoltage stall action voltage	330V~800V	uint16	Model setting	W*	0x0419
P04.26	VF overvoltage stall enable	0：Invalid 1：Valid	uint16	0	W*	0x041a
P04.27	VF overvoltage stall suppression frequency gain	0~100	uint16	30	W	0x041b
P04.28	VF overvoltage stall suppression voltage gain	0~100	uint16	30	W	0x041c
P04.29	Overvoltage stall maximum rising limit frequency	0Hz~50Hz	uint16	5Hz	W*	0x041d

P05 Input terminal parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P05.00	DI1 terminal function selection	0: No function 1: Forward running (FWD) 2: Reverse operation (REV) 3: Three-line operation control 4: Forward JOG (FJOG) 5: Reverse JOG (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Coast stop 9: Fault reset (RESET) 10: Running paused 11: External fault normally open input 12: Multi-segment instruction terminal 1 13: Multi-segment instruction terminal 2 14: Multi-segment instruction terminal 3 15: Multi-segment instruction terminal 4 16: Acceleration and deceleration selection terminal 1	uint16	1	W*	0x0500
P05.01	DI2 terminal function selection		uint16	2	W*	0x0501
P05.02	DI3 terminal function selection		uint16	9	W*	0x0502
P05.03	DI4 terminal function selection		uint16	12	W*	0x0503

P05.04	DI5 terminal function selection	17: Acceleration and deceleration selection terminal 2 18: Frequency source switching 19: UP/DOWN setting clearing 20: Control instruction switching terminal 1	uint16	13	W*	0x0504
P05.05	DI1 or HDI terminal function selection	21: Acceleration and deceleration prohibition 22: PID pause 23: PLC status reset 24: Swing frequency pause 25: Counter input 26: Counter reset 27: Length count input 28: Length reset 29: Torque control disabled 30: PULSE frequency input 31: Reserved 32: Immediate DC braking 33: External fault normally closed input 34: Frequency setting activation terminal 35: PID action direction reverse terminal 36: External stop terminal 1 37: Control instruction switching terminal 2 38: PID integral pause terminal 39: Frequency source X and preset frequency switching terminal 40: Frequency source Y and preset frequency switching terminal 41: Motor selection terminal 1 42: Reserved 43: PID parameter switching terminal 44: User-defined fault 1 45: User-defined fault 2 46: Speed control/torque control switching 47: Emergency stop 48: External stop terminal 2 49: Deceleration DC braking 50: Clear this running time to zero	uint16	0	W*	0x0505
P05.10	DI input terminal valid status setting 1	Ones place: DI1 0: High level is valid 1: Low level is valid Tens place: DI2 0: High level is valid 1: Low level is valid Hundreds place: DI3 0: High level is valid 1: Low level is valid Thousands place: DI4 0: High level is valid 1: Low level is valid Ten thousands place: DI15 0: High level is valid 1: Low level is valid	uint16	00000	W	0x050a

P05.11	DI input terminal valid status setting 2	Ones place: HDI 0: High level is valid 1: Low level is valid Tens place: Reserved 0: High level is valid 1: Low level is valid Hundreds place: Reserved 0: High level is valid 1: Low level is valid Thousands place: Reserved 0: High level is valid 1: Low level is valid Ten thousands place: Reserved 0: High level is valid 1: Low level is valid	uint16	00000	W	0x050b
P05.12	DI filter time	0s~1s	uint16	0.01s	W	0x050c
P05.13	Terminal instruction mode	0: Two-wire type 1 1: Two-wire type 2 2: Three-wire type 1 3: Three-wire type 2	uint16	0	W*	0x050d
P05.14	Terminal UP/DOWN change rate per second	0.001~65.535	uint16	1	W	0x050e
P05.15	AI curve 1 minimum input	0V~P05.17	int16	0v	W	0x050f
P05.16	AI curve 1 minimum input corresponding setting	-100%~100%	int16	0%	W	0x0510
P05.17	AI curve 1 maximum input	P05.15~10v	int16	10v	W	0x0511
P05.18	AI curve 1 maximum input corresponding setting	-100%~100%	int16	100%	W	0x0512
P05.19	AI1 filter time	0s~10s	uint16	0.1s	W	0x0513
P05.20	AI curve 2 minimum input	0V~P05.22	int16	0v	W	0x0514
P05.21	AI curve 2 minimum input corresponding setting	-100%~100%	int16	0%	W	0x0515
P05.22	AI curve 2 maximum input	P05.20~10v	int16	10v	W	0x0516
P05.23	AI curve 2 maximum input corresponding setting	-100%~100%	int16	100%	W	0x0517
P05.24	AI2 filter time	0s~10s	uint16	0.1s	W	0x0518
P05.25	AI curve 3 minimum input	-10v~P05.27	int16	0v	W	0x0519
P05.26	AI curve 3 minimum input corresponding setting	-100%~100%	int16	0%	W	0x051a
P05.27	AI curve 3 maximum input	P05.25~10V	int16	10v	W	0x051b
P05.28	AI curve 3 maximum input corresponding setting	-100%~100%	int16	100%	W	0x051c
P05.30	PULSE minimum input	0KHz~P05.32	uint16	0KHz	W	0x051e
P05.31	PULSE minimum input corresponding setting	-100%~100%	int16	0%	W	0x051f
P05.32	PULSE maximum input	P05.30~100KHz	uint16	50KHz	W	0x0520
P05.33	PULSE maximum input setting	-100%~100%	int16	100%	W	0x0521
P05.34	PULSE filter time	0s~10s	uint16	0.1s	W	0x0522
P05.35	AI setting curve selection	0x11~0x55	uint16	0x21	W	0x0523

P05.36	AI is lower than the minimum input setting selection	0x0~0x111	uint16	0x0	W	0x0524
P05.37	DI1 delay time	0s~3600s	uint16	0s	W	0x0525
P05.38	DI2 delay time	0s~3600s	uint16	0s	W	0x0526
P05.39	DI3 delay time	0s~3600s	uint16	0s	W	0x0527
P05.40	Frequency source high-speed DI selection	0：DI1 1：HDI	uint16	0	W	0x0528
P05.41	AI curve 4 minimum input	-10v~P05.43	int16	0v	W	0x0529
P05.42	AI curve 4 minimum input corresponding setting	-100%~100%	int16	0%	W	0x052a
P05.43	AI curve 4 value1 input	P05.41~P05.45	int16	3v	W	0x052b
P05.44	AI curve 4 value1 input corresponding setting	-100%~100%	int16	30%	W	0x052c
P05.45	AI curve 4 value2 input	P05.43~P05.47	int16	6v	W	0x052d
P05.46	AI curve 4 value2 input corresponding setting	-100%~100%	int16	60%	W	0x052e
P05.47	AI curve 4 maximum input	P05.45~10v	int16	10v	W	0x052f
P05.48	AI curve 4 maximum input corresponding setting	-100%~100%	int16	100%	W	0x0530
P05.49	AI curve 5 minimum input	-10V~P05.51	int16	-10v	W	0x0531
P05.50	AI curve 5 minimum input corresponding setting	-100%~100%	int16	-100%	W	0x0532
P05.51	AI curve 5 value 1 input	P05.49~P05.53	int16	-3v	W	0x0533
P05.52	AI curve 5 value 1 input corresponding setting	-100%~100%	int16	-30%	W	0x0534
P05.53	AI curve 5 value 2 input	P05.51~P05.55	int16	3v	W	0x0535
P05.54	AI curve 5 value 2 input corresponding setting	-100%~100%	int16	30%	W	0x0536
P05.55	AI curve 5 maximum input	P05.53~10v	int16	10v	W	0x0537
P05.56	AI curve 5 maximum input corresponding setting	-100%~100%	int16	100%	W	0x0538
P05.57	AI1 jump point	-100%~100%	int16	0%	W	0x0539
P05.58	AI1 jump amplitude	0%~100%		0.5%	W	0x053a
P05.59	AI2 jump point	-100%~100%	int16	0%	W	0x053b
P05.60	AI2 jump amplitude	0%~100%	uint16	0.5%	W	0x053c

P06 Output terminal parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P06.01	Relay output selection	0: No output 1: The VFD is running 2: Fault output (fault shutdown) 3: Frequency level detection FDT1 output 4: Frequency arrival	uint16	2	W	0x0601

P06.02	DO1 output selection	5: Running at zero speed (no output when stopped) 6: Motor overload warning 7: Frequency converter overload pre-alarm 8: The set count value is reached 9: The specified count value is reached 10: Length arrival 11: PLC cycle is completed 12: Running time arrival 13: Frequency is limited 14: Torque limited 15: Ready to run 16：AI1>AI2 17: Upper limit frequency arrival 18: Lower limit frequency arrival (related to operation) 19: Undervoltage status output 20: Communication settings 21: Positioning completed (reserved) 22: Positioning approaching (reserved) 23: Running at zero speed 2 (also input when stopped) 24: Power-on time arrival 25: Frequency level detection FDT2 output 26: Frequency arrival 1 output 27: Frequency arrival 2 output 28: Current arrival 1 output 29: Current arrival 2 output 30: Timing arrival output 31: AI1 input exceeds the upper and lower limits 32: Offloading 33: Running direction 34: Zero current detection 35: Module temperature arrival 36: Software overcurrent output 37: Lower limit frequency arrival (irrelevant to operation) 38: Fault output (keep running) 39: Motor over-temperature warning 40: Current running time arrival 41: Fault output 42: Over torque output 43: Synchronous coast stop output	uint16	1	W	0x0602
P06.03	DO2 output selection		uint16	0	W	0x0603

P06.04	AO1 output selection	0: Running frequency 1: Set frequency 2: Output current (twice the rated current of the motor as the maximum output value) 3: Output torque (twice the rated torque of the motor as the maximum output value) 4: Output power 5: Output voltage (1.2 times the rated voltage of the inverter as the maximum output value) 6: PULSE input 7: AI1 8:AI2 10: length 11: count value 12: Communication settings 13: Motor speed 14: Output current (1000A as maximum output value) 15: Output voltage (1000V as maximum output value) 16: Output torque (Maximum output at twice the rated motor torque with direction)	uint16	0	W	0x0604
P06.06	AO1 zero bias coefficient	-100~100	int16	0	W	0x0606
P06.07	AO1 increased profit	-10~10	int16	1	W	0x0607
P06.08	Relay output delay time	0s~3600s	uint16	0s	W	0x0608
P06.09	DO1 output delay time	0s~3600s	uint16	0s	W	0x0609
P06.10	DO2 output delay time	0s~3600s	uint16	0s	W	0x060a
P06.11	DO output terminal valid state selection	Ones place: relay 0: Positive logic 1: Counter logic Tens place: DO1 0: Positive logic 1: Counter logic Hundreds place: DO2 0: Positive logic 1: Counter logic	uint16	0	W	0x060b

P07 Synchronous machine control parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P07.04	Initial position detection	0：Detection 1：No detection	uint16	0	W	0x0704
P07.05	Synchronous machine SVC low-speed carrier frequency	8.0kHz~P00.25	uint16	1.5kHz	W	0x0705
P07.06	Synchronous machine field weakening mode	0: No magnetic weakening 1: Automatic adjustment mode	uint16	1	W	0x0706
P07.07	Synchronous machine field weakening coefficient	1~50	uint16	5	W	0x0707
P07.08	Synchronous machine SVC initial excitation current limit	0%~80%	uint16	30%	W	0x0708
P07.09	Synchronous machine inductor identification current	50%~180%	uint16	80%	W*	0x0709

P07.10	Initial position detection current	50%~180%	uint16	120%	W*	0x070a
P07.14	Magnetic field weakening depth	0%~50%	uint16	5%	W	0x070e
P07.15	Maximum output adjustment coefficient	50~500	uint16	100	W	0x070f
P07.20	Synchronous machine SVC speed filter level	10~1000	uint16	100	W*	0x0714
P07.21	Synchronous machine SVC speed estimation proportional gain	5~200	uint16	40	W*	0x0715
P07.22	Synchronous machine SVC speed estimation integral gain	5~200	uint16	30	W	0x0716
P07.36	Initial position compensation angle	0°~359.9°	uint16	0°	W	0x0724

P08 Process PID control parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P08.00	PID setting source	0: Digital setting 1: AI1 2: AI2 4: PULSE 5: Communication 6: Multi-segment instructions	uint16	0	W	0x0800
P08.01	PID value setting	0%~100%	uint16	50%	W	0x0801
P08.02	PID feedback source	0：AI1 1：AI2 3：AI1-AI2 4：PULSE 5：communication 6：AI1+AI2 7：Maximum absolute value of AI1 and AI2 8：Minimum absolute value of AI1 and AI2	uint16	0	W	0x0802
P08.03	PID action direction	0：Forward 1：Reverse	uint16	0	W	0x0803
P08.04	PID setting feedback range	0~65535	uint16	1000	W	0x0804
P08.05	Proportional gain P	0~100	uint16	20	W	0x0805
P08.06	Integration time I	0.01~10	uint16	2	W	0x0806
P08.07	Differential time D	0~10	uint16	0	W	0x0807
P08.08	PID proportional gain P2	0~100	uint16	20	W	0x0808
P08.09	PID integration time I2	0.01~10	uint16	2	W	0x0809
P08.10	PID differential time D2	0~10	uint16	0	W	0x080a
P08.11	PID parameter switching condition	0: No switching 1: DI terminal 2: Automatically switch according to deviation	uint16	0	W	0x080b
P08.12	PID parameter switching deviation 1	0%~P08.13	uint16	20%	W	0x080c
P08.13	PID parameter switching deviation 2	P08.12~100%	uint16	80%	W	0x080d

P08.14	PID Initial value	0%~100%	uint16	0%	W	0x080e
P08.15	PID initial value holding time	0s~650s	uint16	0s	W	0x080f
P08.16	PID feedback loss detection value	0%~100%	uint16	0%	W	0x0810
P08.17	PID feedback loss detection time 0s~20s	0s~20s	uint16	0s	W	0x0811
P08.18	PID operation mode	0：No operation during shutdown 1：Operation during shutdown	uint16	0	W	0x0812
P08.19	PID reverse cutoff frequency	0Hz~50Hz	uint16	2Hz	W	0x0813
P08.20	PID deviation limit	0%~100%	uint16	0%	W	0x0814
P08.21	PID differential limiting	0%~100%	uint16	0.1	W	0x0815
P08.22	PID setting change time	0s~650s	uint16	0s	W	0x0816
P08.23	PID feedback filter time	0s~60s	uint16	0s	W	0x0817
P08.24	PID output filter time	0s~60s	uint16	0s	W	0x0818
P08.26	Maximum value of deviation between PID two outputs	0%~100%	uint16	1%	W	0x081a
P08.27	Minimum value of PID deviation between two outputs	0%~100%	uint16	1%	W	0x081b
P08.28	PID integral property	Ones place: 0: Integral pause prohibited 1: Integral pause allowed Tens place: 0: Continue integrating when the integral output reaches a limited value 1: Stop integrating when the integral output reaches a limited value	uint16	0	W	0x081c
P08.29	PID type	0：Incremental PID 1：Positional PID	uint16	0	W	0x081d

P09 Special function control parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P09.00	Frequency detection value (FDT level)	0Hz~P00.08	uint16	50Hz	W	0x0900
P09.01	Frequency detection hysteresis value	0%~100%	uint16	5%	W	0x0901
P09.02	Frequency detection value (FDT1 level)	0Hz~P00.08	uint16	50Hz	W	0x0902
P09.03	Frequency detection 1 hysteresis value	0%~100%	uint16	5%	W	0x0903
P09.04	Frequency arrival detection range	0%~100%	uint16	0%	W	0x0904
P09.05	Swing frequency setting method	0：Relative to center frequency 1：Relative to maximum frequency	uint16	0	W	0x0905
P09.06	Swing frequency amplitude	0%~100%	uint16	0%	W	0x0906
P09.07	Jump frequency amplitude	0Hz~50Hz	uint16	0Hz	W	0x0907
P09.08	Swing frequency cycle	0.1~3000	uint16	10	W	0x0908
P09.09	Triangular wave rising time of swing frequency	0.1s~100s	uint16	50s	W	0x0909
P09.10	Set length	0m~65535m	uint16	1000m	W	0x090a
P09.11	Actual length	0m~65535m	uint16	0m	W	0x090b

P09.12	Number of pulses per meter	0~6553.5	uint16	100	W	0x090c
P09.13	Set count value	0~65535	uint16	1000	W	0x090d
P09.14	Specify count value	0~65535	uint16	1000	W	0x090e
P09.15	Droop control	0~10	uint16	0	W	0x090f
P09.16	Set the running arrival time	0h~65000h	uint16	0h	W	0x0910
P09.17	Set power-on arrival time	0h~65000h	uint16	0h	W	0x0911
P09.20	Acceleration time 1/2 switching frequency point	0Hz~P00.08	uint16	0Hz	W	0x0914
P09.21	Deceleration time 1/2 switching frequency point	0Hz~P00.08	uint16	0Hz	W	0x0915
P09.22	Frequency arrival detection value 1	0Hz~P00.08	uint16	50Hz	W	0x0916
P09.23	Frequency arrival detection 1 amplitude	0%~100%	uint16	0%	W	0x0917
P09.24	Frequency arrival detection value 2	0Hz~P00.08	uint16	50Hz	W	0x0918
P09.25	Frequency arrival detection 2 Amplitude	0%~100%	uint16	0%	W	0x0919
P09.26	Timing function selection	0：Invalid 1：Valid	uint16	0	W*	0x091a
P09.27	Timing time setting selection	0: Set running time of the timer (P09.28) 1:AI1 2:AI2	uint16	0	W*	0x091b
P09.28	Running time setting	0Min~6500Min	uint16	0Min	W*	0x091c
P09.29	Wake-up frequency	P09.31~P00.08	uint16	0Hz	W	0x091d
P09.30	Wake-up delay time	0s~6500s	uint16	0s	W	0x091e
P09.31	Sleep frequency	0Hz~P00.08	uint16	0Hz	W	0x091f
P09.32	Sleep delay time	0s~6500s	uint16	0s	W	0x0920
P09.33	Current running arrival time	0~6500Min	uint16	0Min	W*	0x0921

P10 keyboard and display parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P10.01	STOP key function	0: Only valid in keyboard control 1: All controls are valid	uint16	1	W	0x0a01
P10.02	MF.K key function selection	0: MF.K is invalid 1: Operation panel instructions and remote instructions switching 2: Forward and reverse switching 3: Forward JOG 4: Reverse JOG 5: Exit parameter interface	uint16	5	W*	0x0a02
P10.03	LED running display parameter 1	bit 0: Running frequency bit 1: Bus voltage bit 2: Output voltage bit 3: Output current bit 4: Output power bit 5: Output torque bit 6: Feedback frequency bit 7: Detection frequency bit 8: DI output status bit 9: DO output status	uint16	0	W	0x0a03

		bit 10: Heat sink temperature bit 11: Output torque bit 12: Motor temperature value bit 13: AI1 voltage bit 14: AI2 voltage bit 15: Reserved				
P10.04	LED running display parameter 2	bit 0: PLUSE input pulse frequency, the unit is 0.01Khz. bit 1: PLUSE input pulse frequency, the unit is 1Khz. bit 2: Communication setting bit 3: Main frequency display bit 4: Auxiliary frequency Y display bit 5: Current power-up time bit 6: Current running time bit 7: Residual running time bit 8: linear speed bit 9: Count value input bit 10: Length value input bit 11: Load speed bit 12: PID setting bit 13: PID return bit 14: PLC stage bit 15: Fault message	uint16	0	W	0x0a04
P10.05	LED shutdown display parameters	bit 0: Set frequency bit 1: Bus voltage bit 2: DI input status bit 3: DO input status bit 4: AI1 voltage bit 5: AI2 voltage bit 6: Reserved bit 7: Count value bit 8: Length value bit 9: PLC phase bit 10: Load speed display bit 11: PID setting bit 12: PLUSE input bit 13: Heat sink temperature bit 14: Motor temperature value bit 15: Fault message	uint16	0	W	0x0a05
P10.06	Load speed display coefficient	0.0001~6.5	uint16	1	W	0x0a06
P10.07	Accumulated running time	0h~65535h	uint16	0h	R	0x0a07
P10.08	Software version number	0~655.35	uint16	Model setting	R	0x0a08
P10.09	Function number	0~655.35	uint16	Model setting	R	0x0a09
P10.10	Number of decimal points displayed for load speed	0: 0 decimal place 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places	uint16	Model setting	W	0x0a0a
P10.11	Accumulated power-on time	0h~65535h	uint16	Model setting	R	0x0a0b
P10.12	Accumulated power consumption	0~65535	uint16	0	R	0x0a0c
P11 Multi-step speed command parameter						

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P11.00	Multi-segment instruction 0 setting mode	0: Digital setting (P11.01) 1: AI1 setting 2: AI2 setting 4: PULSE setting 5: PID setting 6: Preset frequency setting (P00.12)		0	W	0x0b00
P11.01	Multi-segment instruction 0	-100%~100%	int16	5%	W	0x0b01
P11.02	Multi-segment instruction 1	-100%~100%	int16	30%	W	0x0b02
P11.03	Multi-segment instruction 2	-100%~100%	int16	50%	W	0x0b03
P11.04	Multi-segment instruction 3	-100%~100%	int16	80%	W	0x0b04
P11.05	Multi-segment instruction 4	-100%~100%	int16	100%	W	0x0b05
P11.06	Multi-segment instruction 5	-100%~100%	int16	0%	W	0x0b06
P11.07	Multi-segment instruction 6	-100%~100%	int16	0%	W	0x0b07
P11.08	Multi-segment instruction 7	-100%~100%	int16	0%	W	0x0b08
P11.09	Multi-segment instruction 8	-100%~100%	int16	0%	W	0x0b09
P11.10	Multi-segment instruction 9	-100%~100%	int16	0%	W	0x0b0a
P11.11	Multi-segment instruction 10	-100%~100%	int16	0%	W	0x0b0b
P11.12	Multi-segment instruction 11	-100%~100%	int16	0%	W	0x0b0c
P11.13	Multi-segment instruction 12	-100%~100%	int16	0%	W	0x0b0d
P11.14	Multi-segment instruction 13	-100%~100%	int16	0%	W	0x0b0e
P11.15	Multi-segment instruction 14	-100%~100%	int16	0%	W	0x0b0f
P11.16	Multi-segment instruction 15	-100%~100%	int16	0%	W	0x0b10

P12 Simple PLC parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P12.00	PLC operating mode	0: Stop after a single running 1: Keep the final value after a single run 2: Keep looping	uint16	0	W	0x0c00
P12.01	PLC power-off memory selection	Ones place: power-off memory selection 0: No memory when power off 1: Power-off memory Tens place: shutdown memory selection 0: No memory when shutdown 1: Stop memory	uint16	0	W	0x0c01
P12.02	PLC running time unit	0：Second 1：Hour	uint16	0	W	0x0c02
P12.03	PLC section 0 running time	0s(h)~6500s(h)	uint16	0	W	0x0c03
P12.04	PLC section 0 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c04
P12.05	PLC section 1 running time	0s(h)~6500s(h)	uint16	0	W	0x0c05
P12.06	PLC section 1 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c06
P12.07	PLC section 2 running time	0s(h)~6500s(h)	uint16	0	W	0x0c07

P12.08	PLC section 2 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c08
P12.09	PLC section 3 running time	0s(h)~6500s(h)	uint16	0	W	0x0c09
P12.10	PLC section 3 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c0a
P12.11	PLC section 4 running time	0s(h)~6500s(h)	uint16	0	W	0x0c0b
P12.12	PLC section 4 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c0c
P12.13	PLC section 5 running time	0s(h)~6500s(h)	uint16	0	W	0x0c0d
P12.14	PLC section 5 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c0e
P12.15	PLC section 6 running time	0s(h)~6500s(h)	uint16	0	W	0x0c0f
P12.16	PLC section 6 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c10
P12.17	PLC section 7 running time	0s(h)~6500s(h)	uint16	0	W	0x0c11
P12.18	PLC section 7 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c12
P12.19	PLC section 8 running time	0s(h)~6500s(h)	uint16	0	W	0x0c13
P12.20	PLC section 8 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c14
P12.21	PLC section 9 running time	0s(h)~6500s(h)	uint16	0	W	0x0c15
P12.22	PLC section 9 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c16
P12.23	PLC section 10 running time	0s(h)~6500s(h)	uint16	0	W	0x0c17
P12.24	PLC section 10 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c18
P12.25	PLC section 11 running time	0s(h)~6500s(h)	uint16	0	W	0x0c19
P12.26	PLC section 11 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c1a
P12.27	PLC section 12 running time	0s(h)~6500s(h)	uint16	0	W	0x0c1b
P12.28	PLC section 12 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c1c
P12.29	PLC section 13 running time	0s(h)~6500s(h)	uint16	0	W	0x0c1d
P12.30	PLC section 13 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c1e
P12.31	PLC section 14 running time	0s(h)~6500s(h)	uint16	0	W	0x0c1f
P12.32	PLC section 14 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c20

P12.33	PLC section 15 running time	0s(h)~6500s(h)	uint16	0	W	0x0c21
P12.34	PLC section 15 acceleration and deceleration time selection	0~3	uint16	0	W	0x0c22
P13 Fault and protection setting parameter						
Code	**Name**	**Scope**	**Parameter type**	**Default value**	**Property**	**Communication address**
P13.01	Motor overload software protection selection	0：Prohibit 1：Allow	uint16	1	W	0x0d01
P13.02	Motor overload software protection gain	0.2~10	uint16	1	W	0x0d02
P13.03	Motor overload warning coefficient	50%~100%	uint16	80%	W	0x0d03
P13.04	Input phase loss protection selection	0: Prohibited 1: Allowed Ones place: Input phase loss protection Tens place: Reserved	uint16	11	W	0x0d04
P13.05	Load loss protection selection	0：Invalid 1：Valid	uint16	0	W	0x0d05
P13.06	Load loss detection level	0%~100%	uint16	10%	W	0x0d06
P13.07	Load loss detection time	0s~60s	uint16	1s	W	0x0d07
P13.08	Output phase loss protection selection	0：Prohibit 1：Permission	uint16	1	W	0x0d08
P13.09	Power-on short-circuit to ground protection selection	0：Invalid 1：Valid	uint16	1	W	0x0d09
P13.10	Initial operating voltage of braking unit	330v~800v	uint16	760v	W	0x0d0a
P13.17	Cooling fan control	0: The fan runs during operation 1: The fan runs when power-on 2: Reserved	uint16	0	W*	0x0d11
P13.18	Overvoltage point setting	330v~810v	uint16	Model setting	W*	0x0d12
P13.19	Undervoltage point setting	140v~420v	uint16	Model setting	W	0x0d13
P13.20	Fault automatic reset times	0~20	uint16	0	W	0x0d14
P13.21	Fault DO action selection during automatic fault select	0：No action 1：Action	uint16	0	W	0x0d15
P13.22	Automatic fault reset interval	0.1~100	uint16	1	W	0x0d16
P13.23	Overload curve	0~11	uint16	11	W	0x0d17
P13.28	Continue running frequency selection in case of fault	0: Run at the current operating frequency 1: Run at the set frequency 2: Run at the upper limit frequency 3: Run at the lower frequency limit 4: Run at backup frequency in case of abnormality	uint16	0	W	0x0d1c
P13.29	Abnormal backup frequency setting	0%~100%	uint16	100%	W	0x0d1d
P13.30	Zero current detection level	0%~300%	uint16	5%	W	0x0d1e
P13.31	Zero current detection delay time	0s~600s	uint16	0.1s	W	0x0d1f
P13.32	Software overcurrent point	0%~300%	uint16	220%	W	0x0d20
P13.33	Software overcurrent detection delay time	0s~600s	uint16	0s	W	0x0d21

P13.34	Arbitrary arrival current 1	0%~300%	uint16	100%	W	0x0d22
P13.35	Arbitrary current 1 width 0%~300%	0%~300%	uint16	0%	W	0x0d23
P13.36	Arbitrary arrival current 2	0%~300%	uint16	100%	W	0x0d24
P13.37	Arbitrary current 2 width 0%~300%	0%~300%	uint16	0%	W	0x0d25
P13.38	AI1 input voltage protection value lower limit	0v~10v	uint16	3.1v	W	0x0d26
P13.39	AI1 input voltage protection value upper limit	0v~11v	uint16	6.8v	W	0x0d27
P13.41	Fault protection action selection 1	Ones place: Motor overload (Err11) 0: Keep running 1: Stop according to stop mode 2: Coast stop Tens place: Input phase loss (Err12) 0: Keep running 1: Stop according to stop mode 2: Coast stop Hundreds place: Output phase loss (Err13) 0: Keep running 1: Stop according to stop mode 2: Coast stop Thousands place: external fault (Err15) 0: Keep running 1: Stop according to stop mode 2: Coast stop Ten thousands place: Communication abnormality (Err16) 0: Keep running 1: Stop according to stop mode 2: Coast stop	uint16	01211	W	0x0d29
P13.42	Fault protection action selection 2	Ones place: Encoder/PG card abnormality (Err20) 0: Keep running 1: Stop according to stop mode 2: Coast stop Tens place: Parameter reading and writing abnormality (Err21) 0: Keep running 1: Stop according to stop mode 2: Coast stop Hundreds place: Software overcurrent (Err24) 0: Keep running 1: Stop according to stop mode 2: Coast stop Thousands place: Reserved (Err25) 0: Keep running 1: Stop according to stop mode 2: Coast stop Ten thousands place: Running time arrival (Err26) 0: Keep running 1: Stop according to stop mode	uint16	01201	W	0x0d2a

		2: Coast stop				
P13.43	Fault protection action selection 3	Ones place: User-defined fault 1 (Err27) 0: Coast stop 1: Stop according to stop mode 2: Continue running Tens place: User-defined fault 2 (Err28) 0: Keep running 1: Stop according to stop mode 2: Coast stop Hundreds place: Power-on time arrival (Err29) 0: Keep running 1: Stop according to stop mode 2: Coast stop Thousands place: load loss (Err30) 0: Jump directly to 7% of the rated frequency of the motor running，it will automatically return to the set frequency if the load does not drop 1: Stop according to stop mode 2: Coast stop Ten thousands place: PID lost during runtime (Err31) 0: Keep running 1: Stop according to stop mode 2: Coast stop	uint16	01000	W	0x0d2b
P13.44	Fault protection action selection 4	Ones place: Speed deviation is too large (Err42) 0: Keep running 1: Stop according to stop mode 2: Coast stop Tens place: Motor overspeed (Err43) 0: Keep running 1: Stop according to stop mode 2: Coast stop Hundreds place: Initial position error (Err51) 0: Keep running 1: Stop according to stop mode 2: Coast stop Thousands place: Reserved Ten thousands place: Reserved	uint16	000	W	0x0d2c
P13.45	Fault protection action selection 5	Reserved	uint16	10120	W	0x0d2d
P13.46	Fan starting temperature	0~100℃	uint16	60	W	0x0d2e
P13.47	Over-torque detection action selection	0: No action 1: Over torque detection in constant speed operation, keep running 2: Over torque detection in constant speed operation, stop running 3: Over torque detection during operation, keep running 4: Over torque detection during operation, stop running	uint16	0	W	0x0d2f

P13.48	Over-torque detection value	10~250%	uint16	120	W	0x0d30
P13.49	Over-torque detection time	0.1~60s	uint16	0.1	W	0x0d31

P14 Fault information parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P14.00	The tenth fault type	0: No fault 1: Reserved 2: Acceleration overcurrent (ERR02) 3: Deceleration overcurrent (ERR03) 4: Constant speed overcurrent (ERR04) 5: Acceleration overvoltage (ERR05) 6: Deceleration overvoltage (ERR06) 7: Constant speed overvoltage (ERR07) 8: Buffer resistor overload fault (ERR08) 9: Undervoltage fault (ERR09) 10: Frequency converter overload (ERR10) 11: Motor overload (ERR11) 12: Input phase loss (ERR12) 13: Output phase loss (ERR13) 14: Module overheating (ERR14) 15: External fault (ERR15) 16: Communication abnormality (ERR16) 17: Contactor abnormality (ERR17) 18: Current detection fault (ERR18) 19: Motor tuning fault (ERR19) 20: Encoder/PG card fault (ERR20) 21: Parameter reading and writing exception (ERR21) 22: VFD hardware fault (ERR22) 23: Motor short circuit to ground fault (ERR23) 24: Software overcurrent (ERR24) 25: Reserved (ERR25) 26: Running time arrival (ERR26) 27: User-defined fault 1 (ERR27) 28: User-defined fault 2 (ERR28) 29: Power-on time arrival (ERR29) 30: Load drop (ERR30) 31: PID feedback loss during runtime (ERR31) 40: Fast current limit timeout fault (ERR40) 41: Motor switching fault during operation (ERR41) 42: Overlarge speed deviation (ERR42) 43: Motor overspeed (ERR43) 45: Motor overtemperature (ERR45) 51: Initial position error (ERR51)	uint16	0	R	0x0e00
P14.01	The ninth fault type		uint16	0	R	0x0e01
P14.02	The eighth fault type		uint16	0	R	0x0e02
P14.03	The seventh fault type		uint16	0	R	0x0e03
P14.04	The sixth fault type		uint16	0	R	0x0e04
P14.05	The fifth fault type		uint16	0	R	0x0e05
P14.06	The fourth fault type		uint16	0	R	0x0e06
P14.07	The third fault type		uint16	0	R	0x0e07
P14.08	The second fault type		uint16	0	R	0x0e08
P14.09	The first fault type		uint16	0	R	0x0e09
P14.10	Frequency at the tenth fault	0Hz~655.35Hz	uint16	0Hz	R	0x0e0a
P14.11	Current at the tenth fault	0A~655.35A	uint16	0A	R	0x0e0b
P14.12	Bus voltage at the tenth fault 0V~6553.5V	0V~6553.5V	uint16	0V	R	0x0e0c

P14.13	Input terminal status at the tenth fault	0~9999	uint16	0	R	0x0e0d
P14.14	Output terminal status at the tenth fault	0~9999	uint16	0	R	0x0e0e
P14.15	VFD status at the tenth fault	0~65535	uint16	0	R	0x0e0f
P14.16	Time of the tenth fault	0Min~65535Min	uint16	0Min	R	0x0e10
P14.17	Time of tenth fault (Start timing when powering on)	0Min~6553.5Min	uint16	0Min	R	0x0e11
P14.18	Frequency at the ninth fault	0Hz~655.35Hz	uint16	0Hz	R	0x0e12
P14.19	Current at the ninth fault	0A~655.35A	uint16	0A	R	0x0e13
P14.20	Bus voltage at the ninth fault	0V~6553.5V	uint16	0V	R	0x0e14
P14.21	Input terminal status at the ninth fault	0~9999	uint16	0	R	0x0e15
P14.22	Output terminal status at the ninth fault	0~9999	uint16	0	R	0x0e16
P14.23	VFD status at the ninth fault	0~65535	uint16	0	R	0x0e17
P14.24	Time of ninth fault (Start timing when powering on)	0Min~65535Min	uint16	0Min	R	0x0e18
P14.25	Time of ninth fault (Start timing when running)	0Min~6553.5Min	uint16	0Min	R	0x0e19
P14.26	Frequency at the eighth fault	0Hz~655.35Hz	uint16	0Hz	R	0x0e1a
P14.27	Current at the eighth fault	0A~655.35A	uint16	0A	R	0x0e1b
P14.28	Bus voltage at the eighth fault	0V~6553.5V	uint16	0V	R	0x0e1c
P14.29	Input terminal status at the eighth fault	0~9999	uint16	0	R	0x0e1d
P14.30	Output terminal status at the eighth fault	0~9999	uint16	0	R	0x0e1e
P14.31	VFD status at the eighth fault	0~65535	uint16	0	R	0x0e1f
P14.32	Time of the eighth fault (Start timing when powering on)	0Min~65535Min	uint16	0Min	R	0x0e20
P14.33	Time of the eighth fault (Start timing when running)	0Min~6553.5Min	uint16	0Min	R	0x0e21
P14.34	Frequency at the seventh fault	0Hz~655.35Hz	uint16	0Hz	R	0x0e22
P14.35	Current at the seventh fault	0A~655.35A	uint16	0A	R	0x0e23
P14.36	Bus voltage at the seventh fault	0V~6553.5V	uint16	0v	R	0x0e24
P14.37	Input terminal status at the seventh fault	0~9999	uint16	0	R	0x0e25
P14.38	Output terminal status at the seventh fault	0~9999	uint16	0	R	0x0e26
P14.39	VFD status at the seventh fault	0~65535	uint16	0	R	0x0e27
P14.40	Time of the seventh fault (Start timing when powering on)	0Min~65535Min	uint16	0Min	R	0x0e28
P14.41	Time of the seventh fault (Start timing when running)	0Min~6553.5Min	uint16	0Min	R	0x0e29
P14.42	Frequency at the sixth fault	0Hz~655.35Hz	uint16	0Hz	R	0x0e2a
P14.43	Current at the sixth fault	0A~655.35A	uint16	0A	R	0x0e2b
P14.44	Bus voltage at the sixth fault	0V~6553.5V	uint16	0V	R	0x0e2c

P14.45	Input terminal status at the sixth fault	0~9999	uint16	0	R	0x0e2d
P14.46	Output terminal status at the sixth fault	0~9999	uint16	0	R	0x0e2e
P14.47	VFD status at the sixth fault	0~65535	uint16	0	R	0x0e2f
P14.48	Time of the sixth fault (Start timing when powering on)	0Min~65535Min	uint16	0Min	R	0x0e30
P14.49	Time of the sixth fault (Start timing when running)	0Min~6553.5Min	uint16	0Min	R	0x0e31
P14.50	Frequency at the fifth fault	0Hz~655.35Hz	uint16	0Hz	R	0x0e32
P14.51	Current at the fifth fault	0A~655.35A	uint16	0A	R	0x0e33
P14.52	Bus voltage at the fifth fault	0V~6553.5V	uint16	0V	R	0x0e34
P14.53	Input terminal status at the fifth fault	0~9999	uint16	0	R	0x0e35
P14.54	Output terminal status at the fifth fault	0~9999	uint16	0	R	0x0e36
P14.55	VFD status at the fifth fault	0~65535	uint16	0	R	0x0e37
P14.56	Time of the fifth fault (Start timing when powering on)	0Min~65535Min	uint16	0Min	R	0x0e38
P14.57	Time of the fifth fault (Start timing when running)	0Min~6553.5Min	uint16	0Min	R	0x0e39
P14.58	Frequency at the fourth fault	0Hz~655.35Hz	uint16	0Hz	R	0x0e3a
P14.59	Current at the fourth fault	0A~655.35A	uint16	0A	R	0x0e3b
P14.60	Bus voltage at the fourth fault	0V~6553.5V	uint16	0V	R	0x0e3c
P14.61	Input terminal status at the fourth fault	0~9999	uint16	0	R	0x0e3d
P14.62	Output terminal status at the fourth fault	0~9999	uint16	0	R	0x0e3e
P14.63	VFD status at the fourth fault	0~65535	uint16	0	R	0x0e3f
P14.64	Time of the fourth fault (Start timing when powering on)	0Min~65535Min	uint16	0Min	R	0x0e40
P14.65	Time of the fourth fault (Start timing when running)	0Min~6553.5Min	uint16	0Min	R	0x0e41
P14.66	Frequency at the third fault	0Hz~655.35Hz	uint16	0Hz	R	0x0e42
P14.67	Current at the third fault	0A~655.35A	uint16	0A	R	0x0e43
P14.68	Bus voltage at the third fault	0V~6553.5V	uint16	0V	R	0x0e44
P14.69	Input terminal status at the third fault	0~9999	uint16	0	R	0x0e45
P14.70	Output terminal status at the third fault	0~9999	uint16	0	R	0x0e46
P14.71	VFD status at the third fault	0~65535	uint16	0	R	0x0e47
P14.72	Time of the third fault (Start timing when powering on)	0Min~65535Min	uint16	0Min	R	0x0e48
P14.73	Time of the third fault (Start timing when running)	0Min~6553.5Min	uint16	0Min	R	0x0e49
P14.74	Frequency at the second fault	0Hz~655.35Hz	uint16	0Hz	R	0x0e4a
P14.75	Current at the second fault	0A~655.35A	uint16	0A	R	0x0e4b
P14.76	Bus voltage at the second fault	0V~6553.5V	uint16	0V	R	0x0e4c

P14.77	Input terminal status at the second fault	0~9999	uint16	0	R	0x0e4d
P14.78	Output terminal status at the second fault	0~9999	uint16	0	R	0x0e4e
P14.79	VFD status at the second fault	0~65535	uint16	0	R	0x0e4f
P14.80	Time of the second fault (Start timing when powering on)	0Min~65535Min	uint16	0Min	R	0x0e50
P14.81	Time of the second fault (Start timing when running)	0Min~6553.5Min	uint16	0Min	R	0x0e51
P14.82	Frequency at the first fault	0Hz~655.35Hz	uint16	0Hz	R	0x0e52
P14.83	Current at the first fault	0A~655.35A	uint16	0A	R	0x0e53
P14.84	Bus voltage at the first fault	0V~6553.5V	uint16	0	R	0x0e54
P14.85	Input terminal status at the first fault	0~9999	uint16	0	R	0x0e55
P14.86	Output terminal status at the first fault	0~9999	uint16	0	R	0x0e56
P14.87	VFD status at the first fault	0~65535	uint16	0	R	0x0e57
P14.88	Time of the first fault (Start timing when powering on)	0Min~65535Min	uint16	0Min	R	0x0e58
P14.89	Time of the first fault (Start timing when running)	0Min~6553.5Min	uint16	0Min	R	0x0e59
P14.90	Fault saving index	0~9	uint16	0	R	0x0e5a

P15 Communication setting parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P15.00	Communication type	0：Modbus communication 1：Reserved 2：CANOPEN communication	uint16	0	W	0x0f00
P15.01	CANOPEN point	0~0x1ff	uint16	2	W*	0x0f01
P15.02	Baud rate	Hexadecimal Ones place: MODBUS baud rate 0：300BPS 1：600BPS 2：1200BPS 3：2400BPS 4：4800BPS 5：9600BPS 6：19200BPS 7：38400BPS 8：57600BPS 9：115200BPS Hexadecimal Hundreds place: 0：50K 1：100K 2：125K 3：250K 4：500K 5：800K 6:1M	uint16	0x495	W*	0x0f02

P15.03	Data format	0：No check (8-N-2) 1：Even parity check (8-E-1) 2：Odd parity check (8-O-1) 3：No check (8-N-1)	uint16	3	W	0x0f03
P15.04	Local address	0~249	uint16	1	W	0x0f04
P15.05	Response delay	0s~20s	uint16	2s	W	0x0f05
P15.06	Communication timeout time	0s~60s	uint16	0s	W	0x0f06
P15.07	Data transmission format selection	0: Non-standard Modbus-RTU (response read = data length 2 bytes) 1: Standard Modbus-RTU (response read = data length 1 byte) Ones place: Modbus data format Tens place: Reserved	uint16	1	W	0x0f07
P15.08	Communication reading current resolution	0：0.01A 1：0.1A	uint16	0	W	0x0f08

P20 Second motor parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P20.00	Motor type selection 2	0：Common asynchronous motor 1：Reserved 2：Permanent magnet synchronous motor	uint16	0	W*	0x1400
P20.01	Motor rated power 2	0.1kw~1000kw	uint16	Model setting	W*	0x1401
P20.02	Motor rated voltage 2	1v~2000v	uint16	Model setting	W*	0x1402
P20.03	Motor rated current 2	0.01A~655.35A	uint16	Model setting	W*	0x1403
P20.04	Motor rated frequency 2	1 Hz~maximum frequency P00.08	uint16	Model setting	W*	0x1404
P20.05	Motor rated rotation speed 2	1rpm~65535rpm	uint16	Model setting	W*	0x1405
P20.06	Asynchronous motor stator resistance 2	0.001Ω~65.535Ω	uint16	Model setting	W*	0x1406
P20.07	Asynchronous motor rotor resistance 2	0.001Ω~65.535Ω	uint16	Model setting	W*	0x1407
P20.08	Asynchronous motor leakage inductance 2	0.01mH~655.35mH	uint16	Model setting	W*	0x1408
P20.09	Asynchronous motor mutual inductance 2	0.1mH~6553.5mH	uint16	Model setting	W*	0x1409
P20.10	Asynchronous motor zero-load current 2	0.01A~655.35A	uint16	Model setting	W*	0x140A
P20.11	Synchronous motor stator resistance 2	0.001Ω~65.535Ω	uint16	Model setting	W*	0x140B
P20.12	Synchronous motor D-axis inductor 2	0.01mH~655.35mH	uint16	Model setting	W*	0x140C
P20.13	Synchronous motor Q-axis inductance 2	0.01mH~655.35mH	uint16	Model setting	W*	0x140D
P20.14	Synchronous motor counter electromotive force 2	0v~6553.5v	uint16	Model setting	W*	0x140E
P20.26	Tuning selection 2	0: No operation 1: Asynchronous machine static partial tuning (reserved) 2: Asynchronous machine dynamic tuning 3: Asynchronous machine static complete tuning (reserved)	uint16	0	W	0x141A

		11: Synchronous machine static tuning (reserved) 12: Synchronous machine dynamic tuning				
P20.27	Speed loop proportional gain 1	1~100	uint16	Model setting	W	0x141B
P20.28	Speed loop integration time 1	0.01~10	uint16	Model setting	W	0x141C
P20.29	Switching frequency 1	0~600	uint16	5	W	0x141D
P20.30	Speed loop proportional gain 2	1~100	uint16	Model setting	W	0x141E
P20.31	Speed loop integration time 2	0.01~10	uint16	Model setting	W	0x141F
P20.32	Switching frequency 2	0~655.35	uint16	10	W	0x1420
P20.33	Speed loop filter time constant	0~0.031	uint16	0.028	W	0x1421
P20.34	Slip compensation coefficient	50~200	uint16	100	W	0x1422
P20.35	Vector control overexcitation gain	0~200	uint16	64	W	0x1423
P20.36	Speed loop integral property	0~1	uint16	0	W	0x1424
P20.37	Speed control (drive) torque upper limit source	0: Digital setting (P20.38) 1: AI1 2: AI2 4: PULSE setting 5: Communication setting 6：MIN(AI1,AI2) 7：MAX(AI1,AI2)	uint16	0	W	0x1425
P20.38	Speed control (drive) torque upper limit digital setting	0~200	uint16	150	W	0x1426
P20.39	M-axis current loop proportional gain	0~60000	uint16	2000	W	0x1427
P20.40	M-axis current loop integral gain	0~60000	uint16	1000	W	0x1428
P20.41	T-axis current loop proportional gain	0~60000	uint16	1000	W	0x1429
P20.42	T-axis current loop integral gain	0~60000	uint16	1000	W	0x142a
P20.43	Speed control (braking) torque upper limit source	0: Digital setting (P20. 44) 1: AI1 2: AI2 4: PULSE setting 5: Communication setting 6：MIN(AI1,AI2) 7：MAX(AI1,AI2)	uint16	0	W	0x142b
P20.44	Speed control (braking) torque upper limit digital setting	0~200	uint16	150	W	0x142c
P20.45	Motor control mode	0: SVC 1: Reserved 2: V/F control	uint16	2	W	0x142d
P20.46	Acceleration and deceleration time selection	0: Deceleration time 1 1: Acceleration time 2 2: Acceleration time 3 3: Acceleration time 4	uint16	0	W	0x142e
P20.47	Torque boost	0~30	uint16	3	W	0x142f

P20.48	Oscillation suppression gain	0~100	uint16	40	W	0x1430
P20.49	Whether the initial position is detected	0: No detection 1: Detect	uint16	0	W	0x1431
P20.50	Synchronous machine SVC minimum carrier frequency	8~20	uint16	15	W	0x1432
P20.51	Synchronous machine field weakening mode	0: No field weakening 1: Automatic adjustment mode	uint16	1	W	0x1433
P20.52	Synchronous machine field weakening coefficient	1~50	uint16	5	W	0x1434
P20.53	Synchronous machine SVC initial excitation current limit	0~80	uint16	30	W	0x1435
P20.54	Synchronous machine inductor identification current	50~180	uint16	80	W	0x1436
P20.55	Initial position detection current	50~180	uint16	120	W	0x1437
P20.56	Maximum field weakening current	1~300	uint16	50	W	0x1438
P20.57	Field weakening automatic tuning coefficient	10~500	uint16	100	W	0x1439
P20.58	Magnetic weakening integral multiple	0~1	uint16	0	W	0x143a
P20.59	Magnetic field weakening depth	0~50	uint16	5	W	0x143b
P20.60	Maximum output adjustment coefficient	50~500	uint16	100	W	0x143c
P20.61	Synchronous machine SVC speed filter level	10~1000	uint16	100	W	0x143d
P20.62	Synchronous machine SVC speed estimation proportional gain	5~200	uint16	40	W	0x143e
P20.63	Synchronous machine SVC speed estimation integral gain	5~200	uint16	30	W	0x143f
P20.64	Initial position compensation angle	0~359.9	uint16	0	W	0x1440

P25 Status monitoring parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P25.00	User password	0~65535	uint16	0	W	0x1900

P28 Status monitoring parameter

Code	Name	Scope	Parameter type	Default value	Property	Communication address
P28.00	Current power-on time	0Min~65535Min	uint16	0Min	R	0x1C00
P28.01	Current running time	0Min~6553.5Min	uint16	0Min	R	0x1C01
P28.02	VFD running status 0~65535	0~65535	uint16	0	R	0x1C02
P28.03	Fault information	0~65535	uint16	0	R	0x1C03
P28.04	Running frequency	0Hz~655.35Hz	uint16	0Hz	R	0x1C04
P28.05	Set frequency	0Hz~655.35Hz	uint16	0Hz	R	0x1C05
P28.06	Bus voltage	0v~6553.5v	uint16	0v	R	0x1C06
P28.07	Output voltage	0v~65535v	uint16	0v	R	0x1C07
P28.08	Output current	0A~655.35A	uint16	0A	R	0x1C08

P28.09	Output power	0kW~6553.5kW	uint16	0kW	R	0x1C09
P28.10	Target torque	0%~6553.5%	uint16	0%	R	0x1C0a
P28.11	Output torque	-327.68%~327.67%	int16	0%	R	0x1C0b
P28.12	Feedback frequency	-327.68Hz~327.67Hz	int16	0Hz	R	0x1C0c
P28.13	Detection frequency	-327.68Hz~327.67Hz	int16	0Hz	R	0x1C0d
P28.14	Resolver position	0~65535	uint16	0	R	0x1C0e
P28.15	ABZ position	0~65535	uint16	0	R	0x1C0f
P28.16	Z signal counter	0~65535	uint16	0	R	0x1C10
P28.17	Synchronous machine rotor position	0°~6553.5°	uint16	0°	R	0x1C11
P28.18	Power factor angle	0°~6553.5°	uint16	0°	R	0x1C12
P28.19	Controller temperature	-3276.8°C~3276.7°C	int16	0°C	R	0x1C13
P28.20	Motor temperature value	-3276.8°C~3276.7°C	int16	0°C	R	0x1C14
P28.21	DI input status	0~65535	uint16	0	R	0x1C15
P28.22	DO output status	0~65535	uint16	0	R	0x1C16
P28.23	Reserved		uint16	0	R	0x1C17
P28.27	AI1 voltage	-327.68v~327.67v	int16	0v	R	0x1C1b
P28.28	AI2 voltage	-327.68v~327.67v	int16	0v	R	0x1C1c
P28.29	Reserved		uint16	0	R	0x1C1d
P28.30	AI1 voltage before correction	0v~65.535v	uint16	0v	R	0x1C1e
P28.31	AI2 voltage before correction	0v~65.535v	uint16	0v	R	0x1C1f
P28.32	Reserved		int16	0	R	0x1C20
P28.33	VF separation target voltage	0v~65535v	uint16	0v	R	0x1C21
P28.34	VF separation output voltage	0v~65535v	uint16	0v	R	0x1C22
P28.35	Communication setting value	0%~655.35%	uint16	0%	R	0x1C23
P28.36	Main frequency X display	0Hz~655.35Hz	uint16	0Hz	R	0x1C24
P28.37	Auxiliary frequency Y display	0Hz~655.35Hz	uint16	0Hz	R	0x1C25
P28.38	Load speed display	0~65535	uint16	0	R	0x1C26
P28.39	PID setting	0~65535	uint16	0	R	0x1C27
P28.40	PID feedback	0~65535	uint16	0	R	0x1C28
P28.41	PLC stage	0~65535	uint16	0	R	0x1C29
P28.42	Count value	0~65535	uint16	0	R	0x1C2a
P28.43	Length value	0~65535	uint16	0	R	0x1C2b
P28.44	PULSE input pulse frequency	0Hz~65535Hz	uint16	0Hz	R	0x1C2c
P28.45	PULSE input pulse frequency	0kHz~655.35kHz	uint16	0kHz	R	0x1C2d
P28.46	linear speed	0m/Min~65535m/Min	uint16	0m/Min	R	0x1C2e
P28.47	Remaining running time	0Min~6553.5Min	uint16	0Min	R	0x1C2f

***Note:** W means that the setting value of this parameter can be changed when the VFD is in a stopped or running state.

W* indicates that the setting value of this parameter cannot be changed when the VFD is running.

R indicates that the value of this parameter is the actual detection record value and cannot be changed.

Appendix 2: Fault alarm code and handling measure

Fault code	Fault name	Cause	Handling measures
ERR00	No fault	-	-
ERR01	Reserved	-	-
ERR02	Acceleration overcurrent	Acceleration time set too short.	Extend acceleration time.
		Start the rotating motor.	Start the motor after it stops rotating.
		Capacity is too small.	Select an appropriate VFD.
		The V/F curve setting is inappropriate or the torque boost value is too high.	Reset the V/F curve or torque boost value.
ERR03	Deceleration overcurrent	Deceleration time is set too short.	Extend deceleration time.
		Potential energy load or load inertia is too large.	Choose the appropriate braking resistor.
		VFD capacity is too small.	Choose an VFD with appropriate capacity.
ERR04	Constant speed overcurrent	The motor is burned out or the insulation is aged.	Check the insulation resistance of the motor.
		The load is too large (the brake is not opened).	Measure the current flowing through the motor. Check if the motor brake is open during operation.
		The wiring length of the motor cable is relatively long.	Enlarge the VFD.
		Use a special motor or a motor with a capacity exceeding the maximum applicable capacity.	Confirm whether the motor model and power match the VFD.
		Improper parameter settings	Check whether the motor parameters are consistent with the VFD . View motor protection parameter settings.
		Hardware fault	Check IGBT for malfunction.
ERR05	Acceleration overvoltage	Power supply voltage fluctuation exceeds limit.	Check grid voltage.
		Start the rotating motor.	Start the motor after it stops rotating.
ERR06	Deceleration overvoltage	The deceleration time is too short, and the regenerative energy flowing from the motor to the VFD is too large.	Increases P00.14 deceleration time.
		The potential energy load or load inertia during the deceleration time is too large.	Reduce the load, enlarge the VFD, and select the appropriate braking unit and braking resistor.
		The power supply voltage fluctuation exceeds the limit.	Check the grid voltage if it exceeds the limit.
ERR07	Constant speed overvoltage	Potential energy load or load inertia is too large.	Increase braking resistor power.
		There is a surge voltage mixed in the input power supply.	Install DC reactor. In the same power supply system, if the phase advance capacitor or silicon controlled converter is turned on or off action may cause the input voltage to temporarily rise abnormally and sharply(surge).
		Power supply voltage is too high.	Check the voltage. Reduce the voltage to within the VFD's power specifications.
		Incorrect wiring of the brake resistor or brake resistor unit.	Check whether the wiring to the braking resistor or braking resistor unit is incorrect. Perform wiring correctly.
		Improper parameter settings	Motor imbalance vibration

ERR08	Snubber resistor overload fault	The rectifier unit starts and stops multiple times within 1 second.	Check whether the power supply is stable. View rectifier unit startup DI connections.
ERR09	Undervoltage fault	Input power phase loss occurs.	Check whether the wiring of the main circuit power supply is disconnected or incorrectly wired. Perform wiring correctly.
		The input power terminal is loose.	Check whether the terminals are loose or the fuse is burned out.
		The rectifier unit does not start.	Confirm whether the rectifier unit is started.
		Power outage occurs.	Improve power supply.
		The relay or contactor of the internal shock prevention circuit of the VFD does not operate properly.	Turn the power on and off to confirm whether a malfunction occurs. If continuous faults occur, replace the circuit board or VFD.
		Power supply voltage fault	Check the voltage. Adjust the voltage to within the power specification range of the VFD. If there is no fault in the main circuit power supply, check whether there is a fault in the main circuit MC.
ERR10	VFD overload	Excessive load	Choose an VFD that matches the motor capacity.
		Acceleration time set is too short.	Extend acceleration time.
		Trigger to start the rotating motor.	Restart the motor after it stops rotating.
		The V/F curve setting is inappropriate or the torque boost value is too high.	Reset the V/F curve or the torque boost value.
ERR11	Motor overload	The load is too large (the brake is not opened).	Measure the current flowing through the motor Check if the motor brake is open during operation
		Acceleration/deceleration time and cycle time are too short.	Increase the deceleration time or increase the VFD.
		Improper parameter settings	Check whether the motor parameters are consistent with the VFD. Check the motor protection parameter settings.
		Use a special motor or a motor above the maximum applicable capacity.	Confirm whether the motor model and power match the VFD.
ERR12	Input phase loss	Input power phase loss occurs.	Check whether the main circuit power supply wiring is disconnected or incorrectly wired. Check the wiring instructions and wire them correctly.
		The input power terminal is loose.	Check whether the terminals are loose.
		Phase-to-phase voltage imbalance	Confirm the power supply voltage. Take measures to stabilize the power supply.
		The voltage fluctuation of the input power supply is too large.	Confirm the power supply voltage. Take measures to stabilize power supply.
ERR13	Output phase loss	Output cable is disconnected.	Check whether the output cable wiring is disconnected or incorrectly wired.
		Motor coil is disconnected.	Measure the resistance between motor wires.
		Output terminal is loose.	Check whether the terminals are loose.
		Connected to single-phase motor.	This VFD cannot use single-phase motors.
		A motor with a capacity lower than 5% of the VFD's rated output current is used.	Modify the VFD capacity or motor capacity.
		The open circuit of the VFD output transistor is damaged.	Replace the circuit board or the VFD.

ERR14	Device overheated	Ambient temperature is too high.	Confirm the ambient temperature. Improve ventilation in the control cabinet. Install a cooling device (cooling fan or cooling air conditioner, etc.) to reduce the ambient temperature. If there are heating source around, remove the source.
		Heavy load	Measure the output current. Reduce load. Reduce carrier frequency.
		The built-in cooling fan of the VFD stops running.	Replace cooling fan.
ERR15	External fault	External DI fault input	Check external DI fault input.
ERR16	Communication abnormality	Modbus communication timeout	Check Modbus communication.
ERR18	Current detection fault	Zero drift detection is too large.	Check the current sampling circuit.
ERR19	Motor tuning fault	Motor detection timeout	Check motor wiring.
		The capacity difference between the motor and the VFD is too large.	Choose an VFD with appropriate capacity.
		Motor with load detection	Remove the load and recheck.
		Motor parameter setting error	Reset the motor parameters according to the motor nameplate.
ERR21	Parameter reading and writing exception	Electromagnetic interference during storage	Re-enter and save.
		EPROM is damaged.	Contact the manufacturer for technical support.
ERR23	Motor short circuit to ground fault	The motor is burned out or the insulation is aged	Check the insulation resistance of the motor.
		Contact or short circuit occurs due to damaged cables.	Check the motor power cables.
		The distributed capacitance of cables and ground terminals is large.	When the cable length exceeds 100m, reduce the carrier frequency. Take countermeasures to reduce distributed capacitance.
		Hardware fault	Replace the circuit board or VFD.
ERR24	Software overcurrent	The current output current exceeds the set software overcurrent point.	Check software overcurrent point setting.
ERR26	Running time arrival	The cumulative running time has reached the set running time.	
ERR27	User-defined fault 1	User-defined fault 1DI input is valid.	
ERR28	User-defined fault 2	User-defined fault 2DI input is valid.	
ERR29	The power-on time arrival	The cumulative power-on time has reached the setting.	
ERR30	Load loss	When the load loss asynchronous machine is running, the output current is less than 5% of the rated current of the motor.	Check the working status of the motor.
ERR31	PID feedback lost during runtime	Parameter setting is incorrect.	Adjustable parameters
		PID feedback is not wired correctly.	Check if there are any wiring errors in PID control.
		Feedback sensor fault	Check the status of the sensor on the control machine side
ERR40	Fast current limit timeout fault.	A single tube continues to limit the current wave by wave for more than 500ms.	The continuous wave-by-wave current limiting time of a single tube exceeds 500ms.

ERR42	Speed deviation is too large	Improper parameter setting	Increase the speed deviation parameters P03.32 and P03.33.
		The potential energy load or load inertia is too large.	Extend the acceleration and deceleration time and select a motor and VFD that matches the load.
ERR51	Initial position error	Unable to identify the initial position of the magnetic pole.	Check the motor.

Appendix 3: Modbus RTU communication

The physical topology connection of RS485 communication is shown in the figure below.

Figure 11 RS485 connection topology

***Note：1) The RS485 interface on the VFD is an RJ45 interface;**

2) Connect 120Ω terminal resistors to both ends of the bus;

3) Up to 32 nodes can be connected.

The Modbus protocol communication data format of E series VFDs is RTU, and the data frame format is as shown in the following table.

Frame header	Slave address	Function code	Date 2*N bytes of data	CRC CHK low digit	CRC CHK high digit	Frame end
3.5 bytes transfer time	Communication address: 0~247 (0 is the broadcast address)	03H: Read slave station parameters 06H/10H: Write slave station parameters	Data exchange (High → Low)	CRC check value (16bit)		3.5 bytes transfer time

Example 1: The slave address of the VFD is 01H, the memory starting address is 0008 (maximum output frequency address). When one consecutive word is read, the structure of the frame is as follow.

Frame header	Slave address	Function code	Starting address high digit (Parameter group number)	Starting address high digit (Parameter serial number)	Data high digit	Data low digit	CRC CHK low digit	CRC CHK high digit	Frame end
3.5 bytes transfer time	01H	03H	00H (P00)	08H (P00.08)	00H	01H	05H	C8H	3.5 bytes transfer time

Example 2: Write 5000 (1388H) to 000CH (digital setting frequency) of the VFD with the slave address 01H. The structure of the frame is described as follow.

Frame header	Slave address	Function code	Starting address high digit (Parameter group number)	Starting address high digit (Parameter serial number)	Data high digit	Data low digit	CRC CHK low digit	CRC CHK high digit	Frame end
3.5 bytes transfer	01H	03H	00H (P00)	0CH (P00.0C)	13H	88H	44H	9FH	3.5 bytes transfer

time									time

Address definition	Function description	Data meaning explanation	R/W characteristics
6000H	Communication control instruction	0001H：Forward operation	W
		0002H：Reverse operation	
		0003H：Forward JOG	
		0004H：Reverse JOG	
		0005H：Coast stop	
		0006H：Ramp stop	
		0007H：Fault reset	
		0008H: Forward and reverse switching	
6001H	DO control	Bit0: Relay control output	W
		Bit1: DO1 control output	
		Bit2: DO2 control output	
6002H	AOI/U control	0~0x7FF（0v~10v）	W
5000H	Communication setting frequency	0~100.00% corresponding to 0Hz~P00.08 parameter setting frequency	R/W
4000H	VFD running status	0001H：Forward operation in progress	R
		0002H：Reverse operation in progress	
		0003H：VFD shuts down	
		0004H：VFD fault	

Appendix 4: CANopen communication

The physical connection of CANopen communication is as follows

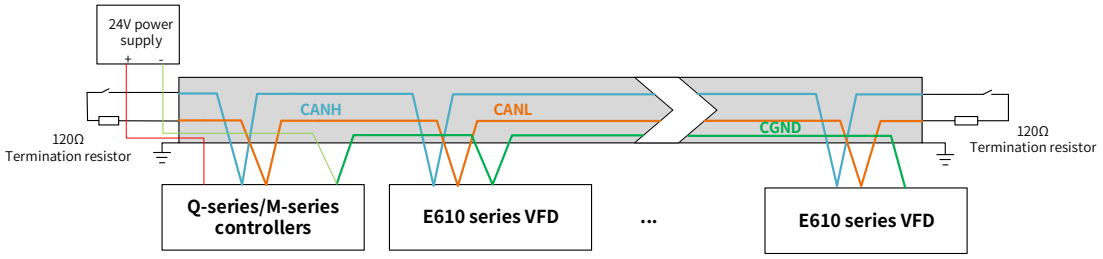


Figure 12 CANopen bus connection topology

***Note: 1) CANopen bus is recommended to be connected using shielded twisted pairs, and CANH and CANL are connected using twisted pairs;**

2) Connect 120Ω terminal matching resistors at both ends of the bus to prevent signal reflection;

3) The reference grounds of the CAN signals of all nodes are connected together;

4) A maximum of 64 nodes can be connected, and the distance between each node branch must be less than 0.3M.

The CANopen protocol stipulates the corresponding relationship between functional parameters and object dictionaries, making it convenient for users to operate parameters intuitively

SDO request/response code data frame format

Write command	Write command data	Read command	Read command data

Write 1 byte	0x2f	Read response 1 byte	0x4f
Write 2 byte	0x2b	Read response 2 byte	0x4b
Write 3 byte	0x27	Read response 3 byte	0x47
Write 4 byte	0x23	Read response 4 byte	0x43
Successful write response	0x60	Read	0x40
Exception response	0x80		

Request: Client ➡ VFD

COB-ID	0byte	1byte	2byte	3byte	4byte	5byte	6byte	7byte
		Object Index			Request data			
16#600+ Node-ID	Request code	index low byte	index high byte	Object subindex	Data low byte	Data high byte	reserve 0	

Response: Client ⬅ VFD

COB-ID	0 byte	1byte	2byte	3byte	4byte	5byte	6byte	7byte
		Object Index						
16#580+ Node-ID	Response code	index low byte	index high byte	Object subindex	Response data			

***Note：Node-ID is the slave address**

PDO only supports 4 RxPDO and 4 TxPDO

Name		COB-ID	Communication parameters	Mapping parameters
TxPDO	1	180H+NODE-ID	1800H	1A00H
	2	280H+NODE-ID	1801H	1A01H
	3	380H+NODE-ID	1802H	1A02H
	4	480H+NODE-ID	1803H	1A03H
RxPDO	1	200H+NODE-ID	1400H	1600H
	2	300H+NODE-ID	1401H	1601H
	3	400H+NODE-ID	1402H	1602H
	4	500H+NODE-ID	1403H	1603H

Client ➡ VFD

COB-ID	0byte	1byte	2byte	3byte	4byte	5byte	6byte	7byte
	variable		variable		variable		variable	
16#280+ Node-ID	index low byte	index high byte	index low byte	index high byte	index low byte	index high byte	index low byte	index high byte

Client ⬅ VFD

COB-ID	0byte	1byte	2byte	3byte	4byte	5byte	6byte	7byte
	variable		variable		variable		variable	
16#280+ Node-ID	index low byte	index high byte	index low byte	index high byte	index low byte	index high byte	index low byte	index high byte

***Note：Node-ID is the slave address.**

When E610 communicates for the first time, set the relevant parameters in the following table.

Parameter code	Set value	Function Description
P00.02	2	Control instruction source: communication control

P00.03	9	Frequency instruction source: communication setting
P15.00	2	Communication type: CANOpen
P15.01	1~110	CANOpen node ID (hexadecimal)
P15.02	0x095~0x695	Baud rate: Hexadecimal ones place: Modbus baud rate 0: 300BPS 1：600BPS 2：1200BPS 3：2400BPS 4：4800BPS 5：9600BPS 6：19200BPS 7：38400BPS 8：57600BPS 9：115200BPS Hexadecimal sixteens place: CANopen baud rate 0：50K 1：100K 2：125K 3：250K 4：500K 5：800K 6:1M
P24.13	1	CANOpen communication

The following is the general standard model CANopen object dictionary

Start/stop control word

Index	Subindex	Parameter description
0x6040	0x00	Start and stop control word
Start and stop control word data format		
0x6040： Start and stop control word (W)	1	Forward running
	2	Backward running
	3	Forward JOG
	4	Backward JOG
	5	Coast stop
	6	Stop according to the set stop method (default deceleration stop).
	7	Fault reset
	8	Forward and reverse switching

Frequency address

Index	Subindex	Parameter description
0x60FF	0x00	Frequency address
Frequency address data format		
0x60FF： Frequency address word （R/W ）	0~1000.0%	0~1000.0%corresponding 0~P00.08parameter setting frequency

Acceleration and deceleration time

Index	Subindex	Parameter Description
0x3000	0x0E	Acceleration time

0x3000	0x0F	Deceleration time

DO control word

Index	Subindex	Parameter description
0x60FE	0x00	DO control word
DO control word data format		
0x60FE：DO control word (W)	Bit0	Relay terminal
	Bit1	DO1
	Bit2	DO2
	Bit3	DO3
	Bit4	DO4
	Bit5	DO5
	Bit6	DO6
	Bit7~Bit15	Reserved

Running status word

Index	Subindex	Parameter description
0x6041	0x00	Running status word
Running status word data format		
0x6041 ： Running status word （R）	1	Forward running
	2	Backward running
	3	Stop
	4	Fault

DI status word

Index	Subindex	Parameter Description
0x301C	0x00	DI status word
DI status word data format		
0x301C：16：DI status word（R）	Bit0	DI1
	Bit1	DI2
	Bit2	DI3
	Bit3	DI4
	Bit4	DI5
	Bit5	HDI
	Bit6~Bit15	Reserved

Fault word

Index	Subindex	Parameter Description
0x603F	0x16	Fault word
Fault word data format		
0x603F：Fault word （RO）	0	NC
	1	VFD unit protection
	2	Acceleration overcurrent
	3	Deceleration overcurrent
	4	Constant speed overcurrent
	5	Acceleration overvoltage
	6	Deceleration overvoltage
	7	Constant speed overvoltage
	8	Control power fault
	9	Undervoltage fault
	10	Frequency converter overload
	11	Motor overload
	12	Input phase loss

0x603F：Fault word（RO）	13	Output phase loss
	14	Radiator overheat
	15	External fault
	16	Communication automation fault
	17	Contactor fault
	18	Current detection fault
	19	Motor tuning fault
	20	Code wheel fault
	21	Data overflow
	22	VFD hardware fault
	23	Motor short circuit to ground fault
	24	Reserved
	25	Reserved
	26	Running time arrival
	31	Software overcurrent
	40	Fast current limiting timeout fault
	41	Switching motors while running

Note: This manual is applicable to P10.09 software version (10.62) and above.