NZ200 Series

Vector Control Inverter

User Manual

User Manual Contents

Thank you for choosing the NZ200 series general-purpose vector inverter.
Before installing, operating, maintaining, or inspecting the drive, please read this user manual carefully to fully utilize the drive's functions and ensure the safety of users.
In this user manual, safety is divided into two categories: Danger and Caution. Please pay special attention to the "Warning", "Caution" symbols and related content.

Warning:Incorrect or improper operations can cause hazards that may result in the death or serious injury of personnel.

Caution:Incorrect or improper operations can cause hazards that may result in personnel injuries or failures of the drive and mechanical systems. Depending on the circumstances, such precautions may also lead to serious consequences.

The diagrams in this user manual are provided for ease of understanding and may differ slightly from the actual product. Due to product upgrades, there might also be some differences. Please refer to the physical product for accuracy.

Please hand this user manual over to the end user and keep it properly for future maintenance and repair purposes.
If you have any questions, please contact our company or our agents promptly. We will be more than happy to assist you.

Notes:
1：The parameters and factory values in this manual are mainly based on those of a three-phase 380V inverter. The parameters of single-phase 220V and three-phase 220V inverters are mostly the same as those of the three-phase 380V inverter, and no detailed description is provided. If you have any questions, please contact our company or our agent in time.
2：The parameters that can actually be adjusted on the frequency inverter, but which are not mentioned in the manual: These parameters are only for internal testing by the manufacturer. They are not listed and it is not recommended to adjust them by yourself.
3：The parameters listed in this table are specific to the software of this inverter. If there are any parameter values outside the range, there is no need to make any adjustments.

1：Safety Precautions

Before installation, operation, maintenance or inspection, please carefully read this manual.

The precautions for safe operation in the manual are classified as "Warning" or "Caution".

Warning：It refers to identifying potential dangerous situations. If not avoided, they may lead to casualties.

Caution： Identify potential critical situations. If not avoided, they may lead to mild or moderate injuries to personnel and equipment damage. This can also be used to alert against unsafe operations.

In some cases, even with respect to the content stated herein, serious accidents may still occur. Therefore, these important precautions must be observed under any circumstances.

★ Note: Steps taken to ensure correct operation.

Warning marks are displayed on the front cover of the drive. When using the drive, follow these instructions.

DANGER
·Risk of lnjury and electric shock. ·Read the manual and follow the safety instruction before use. ·Isolate from supply and wait 10minutes before removing his cover. ·Ensure proper earth connection. ·Mount the inverter on a non-combustible surface.

2:Inspection upon opening the box

caution
Do not install or run any drives that are damaged or have faulty parts, as it poses a risk of injury.

After unpacking and removing the drive, please check the following items:

1：Confirm that no damage occurred to the drive during transportation (such as damage or cracks on the unit).

2： Confirm that the user manual and warranty card are included in the packaging box.

3： Check the drive's nameplate and confirm that it is the product you ordered.

4： If you ordered optional accessories for the drive, confirm that the received optional accessories are the ones you need.

If you find any damage to the drive or optional accessories, please immediately call the local distributor.

3: Disassembly and Installation Warning

warning

* The design, installation, commissioning and operation of the equipment must be carried out by trained and qualified professionals; during the work process, all the regulations in the "Warning" must be followed; otherwise, serious personal injury or significant property loss may occur.
* The input power cord can only be permanently fastened and connected. The equipment must be reliably grounded.
* Even if the drive is not in operation, the following terminals may still carry dangerous voltage:
- Power terminals R, S, T
- The terminals U, V, and W connected to the motor

*After the power switch is turned off, you must wait for more than 10 minutes, and ensure the drive has been fully discharged, before starting the installation work.
*The minimum cross-sectional area of the grounding conductor is at least 10mm², or in accordance with the data in the table below. It is required to select the maximum of the two as the area of the grounding conductor：

Cross-sectional area of power line conductor S mm²	Cross-sectional area of the grounding conductor
S≤6	S
16<S≤35	16
35<S	S/2

caution

*Lift the cabinet by supporting the base. When moving the drive, do not lift it by grasping the panel; otherwise, the main unit may fall, which could cause personal injury.
*The drive should be installed on a metal or other flame-retardant material, and kept away from heat sources and flammable objects to prevent fires.
*When installing more than two drives in a cabinet, a cooling fan must be installed and the air temperature should be controlled below 40℃. Otherwise, overheating may cause a fire or damage to the equipment.

Chapter One Overview

1-1 Comprehensive technical characteristics

Item		Specification
Basic functions	Maximum frequency	Vector control: The standard defaults to 0-320Hz. VF control can reach 0-3200Hz
	Carrier frequency	0.5kHz to 16kHz The carrier frequency can be automatically adjusted according to the load characteristics.
	Input frequency resolution	Digital setting: 0.01Hz Simulation setting: Maximum frequency ×0.025%
	Control mode	Open-loop vector control and VF control
	Starting torque	G-type machine: 0.5Hz/150% (without PG) P-type machine: 0.5Hz/100%
	Speed regulation range	1:100（No PG）
	Speed stability accuracy	±0.5%（No PG）
	Torque control accuracy	±5%(FVC)
	Overload capacity	G-type: 150% rated current for 60 seconds 180% rated current for 3 seconds. P-type: 120% rated current for 60 seconds; 150% rated current for 3 seconds.
	Torque boost	Automatic torque boost The manual torque is increased by 0.1% to 30.0%
	V/F curve	Three types of V/F curves: Linear type; Multi-point type; Power-law type (1.2 power, 1.4 power, 1.6 power, 1.8 power, 2 power)
	V/F separation	Complete separation and half separation
	Acceleration and deceleration curve	Linear or S-curve acceleration and deceleration mode. There are four acceleration and deceleration times, with the acceleration and deceleration time range being 0.0 to 6500.0 seconds
	Dc braking	Dc braking frequency: 0.00Hz to maximum frequency; Braking time: 0.0s to 100.0s Braking action current value: 0.0% - 100.0%
	Jog control	Jog frequency range：0.00Hz to maximum frequency (P0.12) JOG acceleration/deceleration time: 0.0-6500.0s
	Simple PLC, multi-speed	It can operate at a maximum speed of 16 segments through the built-in PLC or control terminals

	operation	
	Build-in PID	It can conveniently realize a closed-loop control system for process control
	Automatic Voltage Regulation (AVR)	When the grid voltage changes, it can automatically maintain a constant output voltage
	Over voltage and overflow rate control	Automatically limit the current and voltage during operation to prevent frequent over current and over voltage tripping
	Rapid current limit	Minimize over current faults to the greatest extent and protect the normal operation of the vfd
	Torque limitation and control	Automatically limit the torque during operation to prevent frequent over current tripping
Special functions	Instant stop but no-stop protect function	When there is a sudden power outage, the voltage drop is compensated by the load feedback energy to maintain the continuous operation of the frequency inverter for a short period of time
	Timing control	Timing control function: Set the time range from 0.0Min to 6500.0Min
	Communication control method	Via RS485
Run	Command source	The operation panel given, the control terminal given, and the serial communication port given. It can be switched in multiple ways
	Frequency source	Ten frequency sources: digital given, analog voltage given, analog current given, pulse given, serial port given. It can be switched in multiple ways
	Input terminal	37kW and below: Four digital input terminals; One analog input terminal, supporting 0 ~ 10V voltage input or 4 ~ 20mA Current Input (AVI) 45kW and above: Six digital input terminals, among which one supports high-speed pulse input up to 100kHz (optional for S3); There are two analog input terminals. One only supports 0-10V voltage input (FIV), and the other supports 0-10V voltage input or 4-20mA current input (FIC).
	Output terminal	37kW and below: One relay output terminal (RA, RC); 45kW and above: 1 digital output terminal (MO1) One relay output terminal (RA, RB, RC)

		One analog output terminal, supporting 0 ~ 20mA current output or 0 ~ 10V voltage output (FOV)
Display	LED display	Display parameters
	Key locking and function selection	It realizes partial or full locking of the keys and defines the action range of some keys to prevent misoperation
	Protection function	Power-on motor short circuit detection, input and output phase loss protection, overcurrent protection, overvoltage protection, undervoltage protection, overheat protection, overload protection, etc
Environment	Place of use	Indoors, it should not be exposed to direct sunlight, and there should be no dust, corrosive gases, flammable gases, oil mist, water vapor, dripping water or salt, etc
	Altitude	Less than 1000m (for distances above 1000m, a product with a higher power should be selected)
	Ambient temperature	-10℃ to +40℃ (If the ambient temperature is between 40℃ and 50℃, please choose a higher power.)
	Humidity	Less than 95%RH, no water droplets condensing
	Vibration	Less than 5.9m/s ² (0.6g)
	Storage temperature	-20-60℃

1-2 Nameplate description of NZ200 series

★The NZ200 series is used for induction motors

NZ200: NZ200 series vector control frequency inverter

Inverter capacity: 7R5G 7.5KW 11P 11KW G: constant torque P: variable torque

-4: AC 380V -2: AC 220V

1-3 NZ200 specification

VFD Model	Input Voltage	Rated output power (kW)	Rated input current (A)	Rated output current (A)	Applicable motor (kW)
NZ200-0R4G-2	1PH AC 220V±15%	0.4	5.4	2.1	0.4
NZ200-0R75G-2		0.75	7.2	3.8	0.75
NZ200-1R5G-2		1.5	10.0	7.2	1.5
NZ200-2R2G-2		2.2	16	9	2.2
NZ200-3R7G-2		3.7	24	16.5	3.7
NZ200-0R4G-4	3PH AC 380V±15%	0.4	3.4	1.2	0.4
NZ200-0R75G-4		0.75	3.8	2.1	0.75
NZ200-1R5G-4		1.5	5.0	3.8	1.5
NZ200-2R2G-4		2.2	5.8	5.1	2.2
NZ200-3R7G/5R5P-4		3.7/5.5	10/15	9/13	3.7/5.5
NZ200-5R5G/7R5P-4		5.5/7.5	15/20	13/17	5.5/7.5
NZ200-7R5G/11P-4		7.5/11	20/26	17/25	7.5/11
NZ200-11G/15P-4		11/15	26/35	25/32	11/15
NZ200-15G/18.5P-4		15/18.5	35/38	32/37	15/18.5
NZ200-18.5G/22P-4		18.5/22	38/46	37/45	18.5/22
NZ200-22G/30P-4		22/30	46/62	45/60	22/30
NZ200-30G/37P-4		30/37	62/76	60/75	30/37
NZ200-37G/45P-4		37/45	76/92	75/90	37/45
NZ200-45G/55P-4		45/55	92/113	90/110	45/55
NZ200-55G-4		55	113	110	55
NZ200-75P-4		75	157	150	75
NZ200-75G/90P-4		75/90	157/180	150/176	75/90
NZ200-90G/110P-4		90/110	180/214	176/210	90/110
NZ200-110G/132P-4		110/132	214/256	210/253	110/132
NZ200-132G/160P-4		132/160	256/307	253/300	132/160
NZ200-160G/185P-4		160/185	307/355	300/340	160/185
NZ200-185G/200P-4		185/200	355/385	340/380	185/200
NZ200-200G/220P-4		200/220	385/430	380/420	200/220
NZ200-220G/250P-4		220/250	430/475	420/470	220/250
NZ200-250G/280P-4		250/280	475/525	470/520	250/280
NZ200-280G/315P-4		280/315	525/610	520/600	280/315
NZ200-315G/350P-4		315/350	610/665	600/640	315/350
NZ200-350G/400P-4		350/400	665/700	640/690	350/400
NZ200-400G/450P-4		400/450	700/800	690/790	400/450
NZ200-450G/500P-4		450/500	800/865	790/860	450/500
NZ200-500G/560P-4		500/560	865/960	860/950	500/560
NZ200-560G/630P-4		560/630	960/1112	950/1100	560/630
NZ200-630G-4		630	1112	1100	630
NZ200-710P-4		710	1290	1280	710

Remark：

The 0.4 to 22KW model features a plastic casing. The keyboard is non-detachable, but it supports the optional installation of an external keyboard.

(sample picture)

The 30 to 37KW model features a plastic casing and a metal back panel. The keyboard is non-detachable, but it supports the optional installation of an external keyboard.

(sample picture)

For models above 45KW, it features an all-metal casing and a detachable keyboard.

(sample picture)

Braking unit remarks:

220V 0.4-1.5KW and 380V 0.4-2.2KW without braking unit;

220V 2.2-3.7KW, 380V 3.7-37KW, built-in braking unit.

380V 45-630KW, with optional equipped built-in or external braking units.

Reactor remarks:
Customers can purchase input AC reactors and output AC reactors separately according to their own needs. For 30KW and above, an internal DC reactor can be optionally equipped.

Chapter Two Installation and Wiring

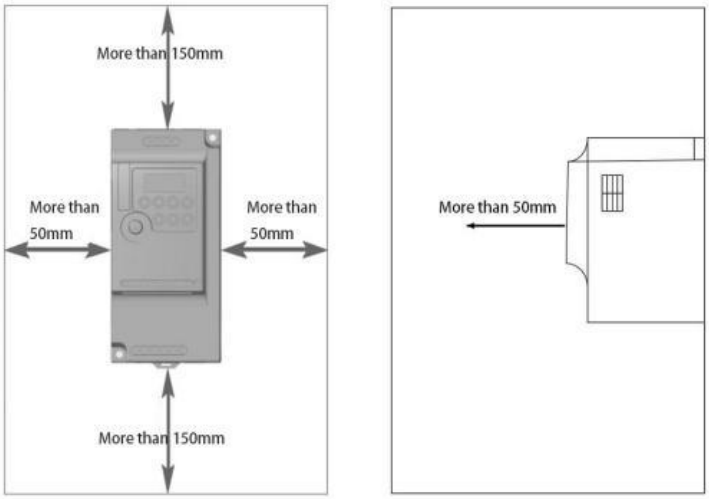
2-1 Installation Requirements and Installation Environment

The installation environment directly impacts the service life and proper functionality of a frequency inverter. Operating the vfd inverter outside the permitted range specified in the user manual may trigger protection mechanisms or cause malfunctions.

The NZ200 series frequency inverter is a wall-mounted device. For optimal heat dissipation, install it vertically to facilitate air convection.

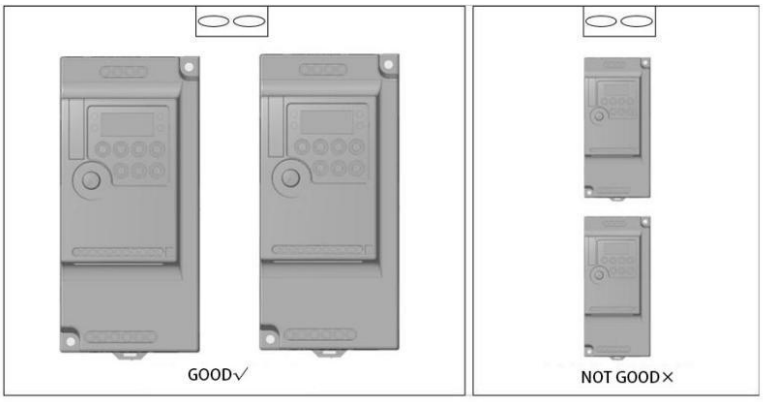
Ensure the installation environment complies with the following conditions:
(1) Ambient temperature: -10°C to +40°C
(2) Ambient humidity: 0% to 95% (non-condensing)
(3) Avoid direct sunlight exposure.
(4) No corrosive gases or liquids in the environment.
(5) No dust, airborne fibers, cotton lint, or metal particles in the environment.
(6) Keep away from radioactive substances and combustible materials.
(7) Avoid electromagnetic interference sources (e.g., welding machines, high-power equipment).
(8) Mount on a sturdy, vibration-free surface. If vibration is unavoidable, install vibration-damping pads to minimize impact.
(9) Install the inverter in a well-ventilated, easily accessible location for inspection and maintenance, and secure it to a rigid non-combustible material, away from heat sources (e.g., braking resistors).
(10) Ensure sufficient clearance around the inverter, especially for multi-unit installations. Arrange units appropriately and install cooling fans to maintain ambient temperature below 45°C.

1) Installation of a single inverter：



2) Precautions for installing multiple frequency inverters in the same control cabinet

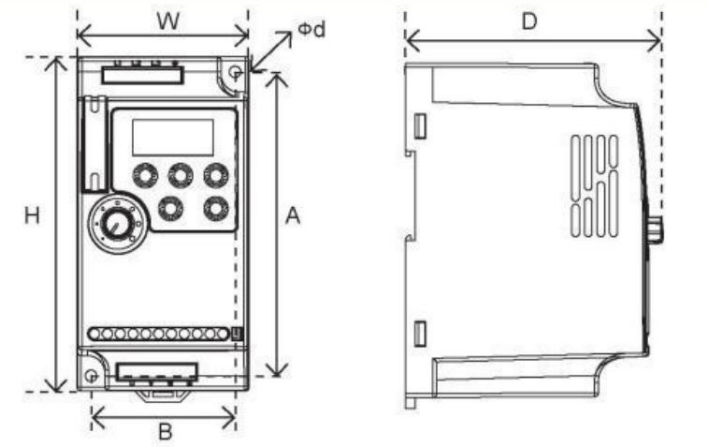
Please note: When installing VFDS, they should be installed side by side as much as possible.



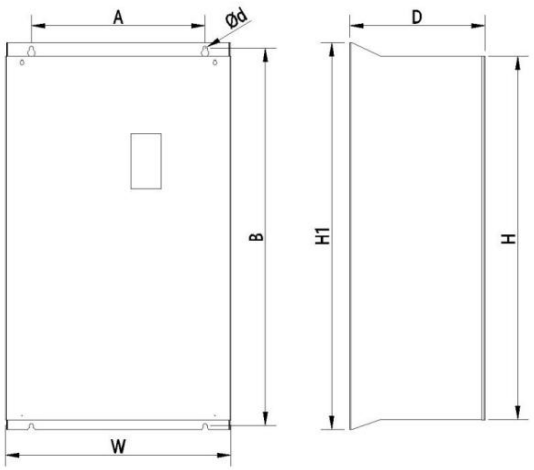
When multiple VFDS are installed in the same control cabinet, it is necessary to leave sufficient space while also paying attention to the air convection inside the cabinet and the installation of cooling fans.

Note：For models below 5.5KW, standard 35mm rail installation is supported.

3) VFD appearance and installation dimensions



Model	External dimensions (mm)			Installation dimensions (mm)			Dc reactor
	W	H	D	A	B	Ød	
NZ200-0R4G-2 NZ200-0R75G-2 NZ200-1R5G-2	72	142	112.2	130	61	4.5	No
NZ200-0R4G-4 NZ200-0R75G-4 NZ200-1R5G-4 NZ200-2R2G-4							
NZ200-2R2G-2 NZ200-3R7G-2	85	180	116	167	72	5.5	
NZ200-3R7G/5R5P-4 NZ200-5R5G/7R5P-4							
NZ200-7R5G/11P-4 NZ200-11G/15P-4	106	240	153	230	96	4.5	
NZ200-15G/18.5P-4 NZ200-18.5G/22P-4 NZ200-22G/30P-4	151	332	165.5	318	137	7	Optional built-in
NZ200-30G/37P-4 NZ200-37G/45P-4	217	400	201	385	202	7	

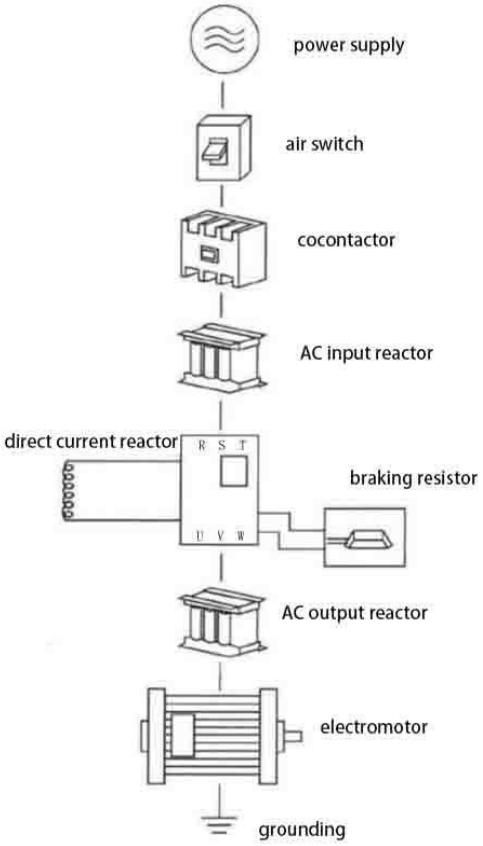


Model	External dimensions (mm)				Installation dimensions (mm)			DC reactor
	W	H	H1	D	A	B	Φd	
NZ200-45G/55P-4 NZ200-55G-4 NZ200-75P-4	300	440	470	240	200	455	9	Optional built-in
NZ200-75G/90P-4 NZ200-90G/110P-4 NZ200-110G/132P-4	275	590	630	310	200	612	9	No
NZ200-132G/160P-4 NZ200-160G/185P-4	400	675	715	310	320	695	11	Optional built-in
NZ200-185G/200P-4 NZ200-200G/220P-4 NZ200-220G/250P-4	400	790	830	320	160+160	810	11	
NZ200-250G/280P-4 NZ200-280G/315P-4 NZ200-315G/350P-4	530	920	970	350	215+215	950	11	
NZ200-350G/400P-4 NZ200-400G/450P-4 NZ200-450G/500P-4 NZ200-500G/560P-4	550	1120	1180	400	230+230	1150	13	
NZ200-560G/630P-4 NZ200-630G-4 NZ200-710P-4	760	1330	1400	450	325+325	1370	13	

2-2 Selection of wiring and accessories for frequency inverters

The wiring of the vfd is divided into the main circuit section and the control section.

2-2-1 Main circuit wiring



Power supply: Please use a power supply within the allowable specifications of vfd.

Air switch: fusiless circuit breaker (MCCB) or leakage circuit breaker. When the power is put on, it contains a relatively large inrush current flowing into the frequency inverter. Please pay attention to the selection of the circuit breaker.

Contactor: Electromagnetic contactor (MC). Note: Please do not use electromagnetic contactors to start and stop the frequency inverter, otherwise it will reduce the service life of the frequency inverter.

Ac input reactor: Optional, suppresses high harmonics, improves power factor. Please select the appropriate reactor.

Dc reactor: Suppress high harmonics and improve power factor. Please select the appropriate reactor.

Braking resistor: It can enhance the braking capacity of the built-in brake of the frequency inverter.

AC output reactor: optional component, used to suppress high harmonics and improve power factor. Please select a suitable reactor.

Motor: Use a motor within the allowable range of the inverter.

2-2-2 Description of peripheral devices

(1) AC power supply

Please supply power in accordance with the power specifications specified in the user manual.

(2) Fusiless Circuit Breaker (MCCB)

When the power supply voltage is too low or there is a short circuit on the input side, the circuit breaker can provide protection. During inspection, maintenance or when it is not working, the circuit breaker can be disconnected to isolate the frequency inverter from the power supply.

(3) Electromagnetic Contactor (MC)

It is convenient to control the power-on and power-off of the frequency inverter to ensure safety.

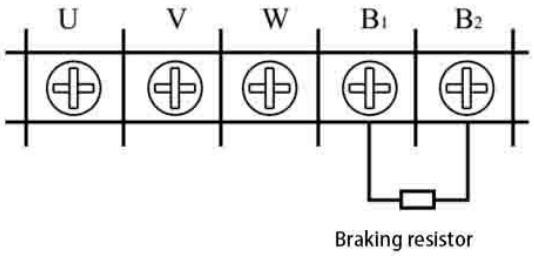
(4) AC reactor

a: Suppress high harmonics and protect the frequency inverter

b: Improve the power factor

(5) Braking resistor

When the motor is in braking mode, to prevent excessive voltage in the DC circuit of the frequency inverter and enhance the braking capacity of the built-in braking unit, the connection method of the braking resistor of the NZ200 series frequency inverter is as follows:



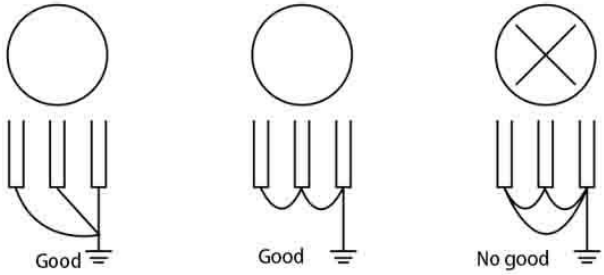
2-2-3 Precautions for Main circuit wiring

(1) The specifications of the wiring lines should be carried out in accordance with the provisions of the electrician regulations.

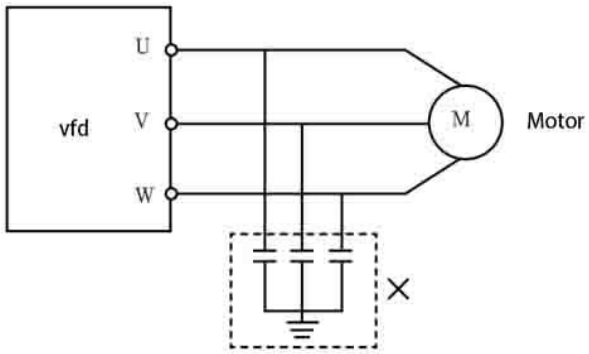
(2) Do not connect AC power to the output terminal (U, V, W) of the frequency inverter, otherwise it may cause damage to the frequency inverter.

(3) For power wiring, please use isolation wires and conduits as much as possible and

ground both ends of the isolation wires or conduits.
(4) The grounding wire of the frequency inverter must not be grounded together with the welding machine, high-power motors or high-current loads. Please ground it separately.
(5) Grounding terminal E should be grounded in the third way, and the grounding impedance should be less than 100Ω.
(6) The use of grounding wires should be in accordance with the specifications specified by the electrical equipment technology. The shorter the grounding wire, the better.
(7) If multiple frequency inverters are grounded, please be careful not to cause a grounding circuit, as shown in the following figure;



(8) The power lines and control lines of the main circuit must be laid separately. For parallel wiring, the distance between them should be more than 10cm. For cross wiring, they should be perpendicular to each other. Do not place the control lines and power lines in the same wire slot, otherwise it will cause interference.
(9) Generally, the distance between the frequency inverter and the motor should be less than 30 meters. If the distance is too long, the in impulse current generated by the parasitic capacitance may cause over current protection and may also lead to false operation, which may result in frequency inverter failure or abnormal equipment operation. The maximum distance between the frequency inverter and the motor should not exceed 100 meters. When the distance is longer, please select an output-side filter. And reduce the carrier frequency;
(10) Absorption capacitors or other resistance-capacitance absorption devices shall not be installed on the output side (U, V, W) of the frequency inverter.



(11) Please confirm that all terminals of the main circuit are locked and that the leads are in good contact with the terminals to prevent them from loosening due to vibration,

generating sparks and causing short circuits.

(12) To reduce interference, it is recommended to connect surge absorbers to the coils of electromagnetic contactors, relays and other devices in the circuits around the frequency inverter.

2-2-4 Device recommended specifications for use

VFD model	Input Voltage	Motor（kW）	Main Circuit Cable Size (mm²)	Air circuit breaker（A）	Electromagnetic contactor (A)
NZ200-0R4G-2	1PH 220V±15%	0.4	0.75	10	9
NZ200-0R75G-2		0.75	0.75	16	12
NZ200-1R5G-2		1.5	1.5	25	18
NZ200-2R2G-2		2.2	2.5	32	25
NZ200-3R7G-2		3.7	2.5	40	32
NZ200-0R4G-4	3PH 380V±15%	0.4	0.75	6	9
NZ200-0R75G-4		0.75	0.75	6	9
NZ200-1R5G-4-4		1.5	0.75	10	9
NZ200-2R2G-4-4		2.2	0.75	10	9
NZ200-3R7G/5R5P-4		3.7/5.5	1.5	16	12
NZ200-5R5G-4		5.5	2.5	20	18
NZ200-7R5P-4		7.5	4	32	25
NZ200-7R5G/11P-4		7.5/11	4	32	25
NZ200-11G/15P-4		11/15	4	40	32
NZ200-15G/18.5P-4		15/18.5	6	50	38
NZ200-18.5G/22P-4		18.5/22	10	80	65
NZ200-22G/30P-4		22/30	10	80	65
NZ200-30G/37P-4		30/37	16	100	65
NZ200-37G/45P-4		37/45	25	100	80
NZ200-45G/55P-4		45/55	35	160	95
NZ200-55G-4		55	50	160	115
NZ200-75P-4		75	50	160	115
NZ200-75G/90P-4		75/90	70	250	150
NZ200-90G/110P-4		90/110	95	250	170
NZ200-110G/132P-4		110/132	120	400	205
NZ200-132G/160P-4		132/160	150	400	245
NZ200-160G/185P-4		160/185	185	400	300
NZ200-185G/200P-4		185/200	185	500	410
NZ200-200G/220P-4		200/220	185	500	410
NZ200-220G/250P-4		220/250	240	630	410
NZ200-250G/280P-4		250/280	240	630	475
NZ200-280G/315P-4		280/315	150*2	700	620

NZ200-315G/350P-4		315/350	185*2	800	620
NZ200-350G/400P-4		350/400	185*2	800	620
NZ200-400G/450P-4		400/450	240*2	1000	800
NZ200-450G/500P-4		450/500	240*2	1000	800
NZ200-500G/560P-4		500/560	185*3	1600	1000
NZ200-560G/630P-4		560/630	185*3	1600	1000
NZ200-630G-4		630	240*3	1600	1250
NZ200-710P-4		710	240*3	1600	1250

2-2-5 Selection and matching of braking resistors

Model	Recommended specifications for braking resistors	
	Power W（≥）	Resistance value Ω（≥）
NZ200-0R4G-2	80W	200
NZ200-0R75G-2	80W	150
NZ200-1R5G-2	100W	100
NZ200-2R2G-2	100W	70
NZ200-3R7G-2	250W	65
NZ200-0R4G	250W	300
NZ200-0R75G	250W	300
NZ200-1R5G	300W	220
NZ200-2R2G	400W	200
NZ200-3R7G/5R5P	500W	130
NZ200-5R5G7R5P	800W	90
NZ200-7R5G/11P	1000W	65
NZ200-11G/15P	1500W	43
NZ200-15G/18.5P	2000W	32
NZ200-18.5G/22P	4kW	24
NZ200-22G/30P	4.5KW	24
NZ200-30G/37P	6KW	19.2
NZ200-37G/45P	7kW	14.8
NZ200-45G/55P	9kW	12.8
NZ200-55G	11kW	9.6
NZ200-75P	15kW	7.7
NZ200-75G/90P	15kW	6.8
NZ200-90G/110P	9kW*2	9.3*2
NZ200-110G/132P	11kW*2	9.3*2
NZ200-132G/160P	13kW*2	6.2*2
NZ200-160G/185P	16kW*2	6.2*2
NZ200-185G/200P	19kW*2	2.5*2
NZ200-200G/220P	19kW*2	2.5*2

NZ200-220G/250P	21kW*2	2.5*2
NZ200-250G/280P	24kW*2	2.5*2
NZ200-280G/315P	27kW*2	2.5*2
NZ200-315G/350P	20kW*3	2.5*3
NZ200-350G/400P	23kW*3	2.5*3
NZ200-400G/450P	26kW*3	2.5*3
NZ200-450G/500P	29kW*3	2.5*3
NZ200-500G/560P	31kW*3	2.5*3
NZ200-560G/630P	34kW*3	2.5*3
NZ200-630G	37kW*3	2.5*3
NZ200-710P	37kW*3	2.5*3

Note: *2 indicates that the two braking units with their respective braking resistors are used in parallel, and *3/*4/*5 have the same meaning as *2

Calculation of brake resistance：

The braking resistance value is related to the DC voltage when the frequency inverter brakes. For a 380V power supply level, the DC voltage during braking is 800V - 820V, and for a 220V system, the DC voltage is 400V.

In addition, the braking resistance is related to the braking torque Mbr %. Different braking torques result in different braking resistance values. The calculation formula is as follows:

$$R = \frac{U_{dc}^2 \times 100}{P_{Motor} \times Mbr\% \times \eta_{VFD} \times \eta_{Motor}}$$

Among them: Udc - Braking DC voltage;

P motor - Motor power

Mbr - Braking Torque

η Motor - Motor efficiency

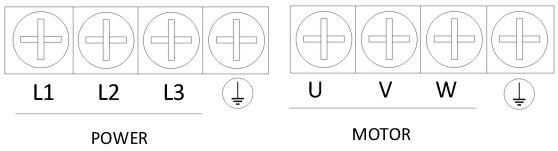
η Inverter - Inverter efficiency.

Braking power is related to braking torque and braking frequency. The braking torque given in the above table is 125% and the frequency is 10%. Due to different load conditions, the data in the table is for reference only.

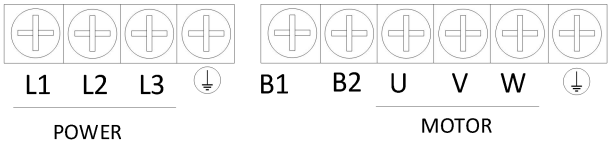
2-2-6 Main circuit terminals and instructions

When the user opens the upper cover plate of the frequency inverter, the main circuit terminals can be seen.The main circuit terminal arrangement of the NZ200 series frequency inverter is as follows:

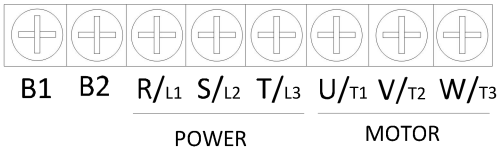
1）1PH 220V 0.4kW-1.5kW&3PH 380V 0.4kW-2.2kW



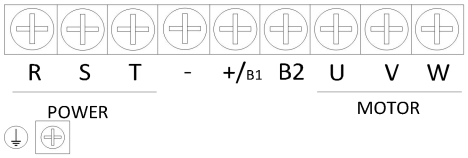
2）1PH 220V 2.2kW-3.7kW&3PH 380V 3.7kW-11kW



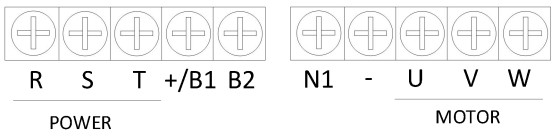
3）3PH 380V 15kW-37kW



4）3PH 380V 45kW-55kW

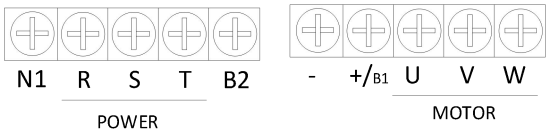


5）3PH 380V 75kW-110kW



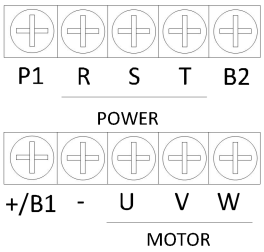
Note: The B2 terminal is only included in products that contain a braking unit. Terminal N1 is optional.

6）3PH 380V 132kW-160kW



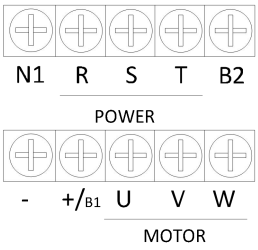
Note: The B2 terminal is only included in products that contain a braking unit. Terminal N1 is optional.

7）3PH 380V 185kW-315kW&3PH 380V 560kW-630kW



Note: The B2 terminal is only included in products that contain a braking unit.

8）3PH 380V 350kW-500kW



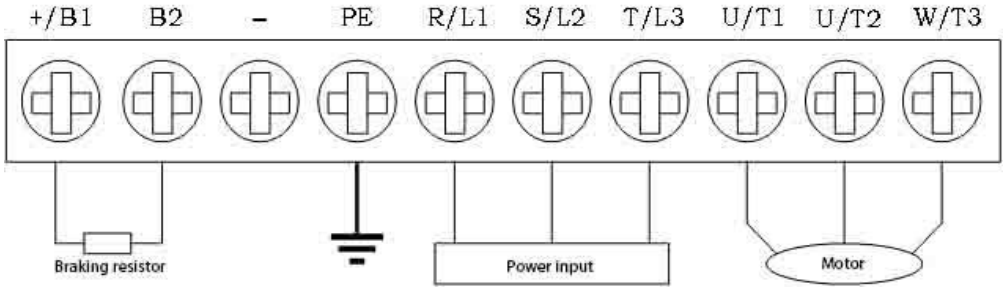
Note: The standard product only has R/S/T/U/V/W terminals. Other terminals are optional.

** Note: The legends are for illustration only and may differ from the products you order. Please refer to the actual items.

2-3 Main Circuit Terminal Description

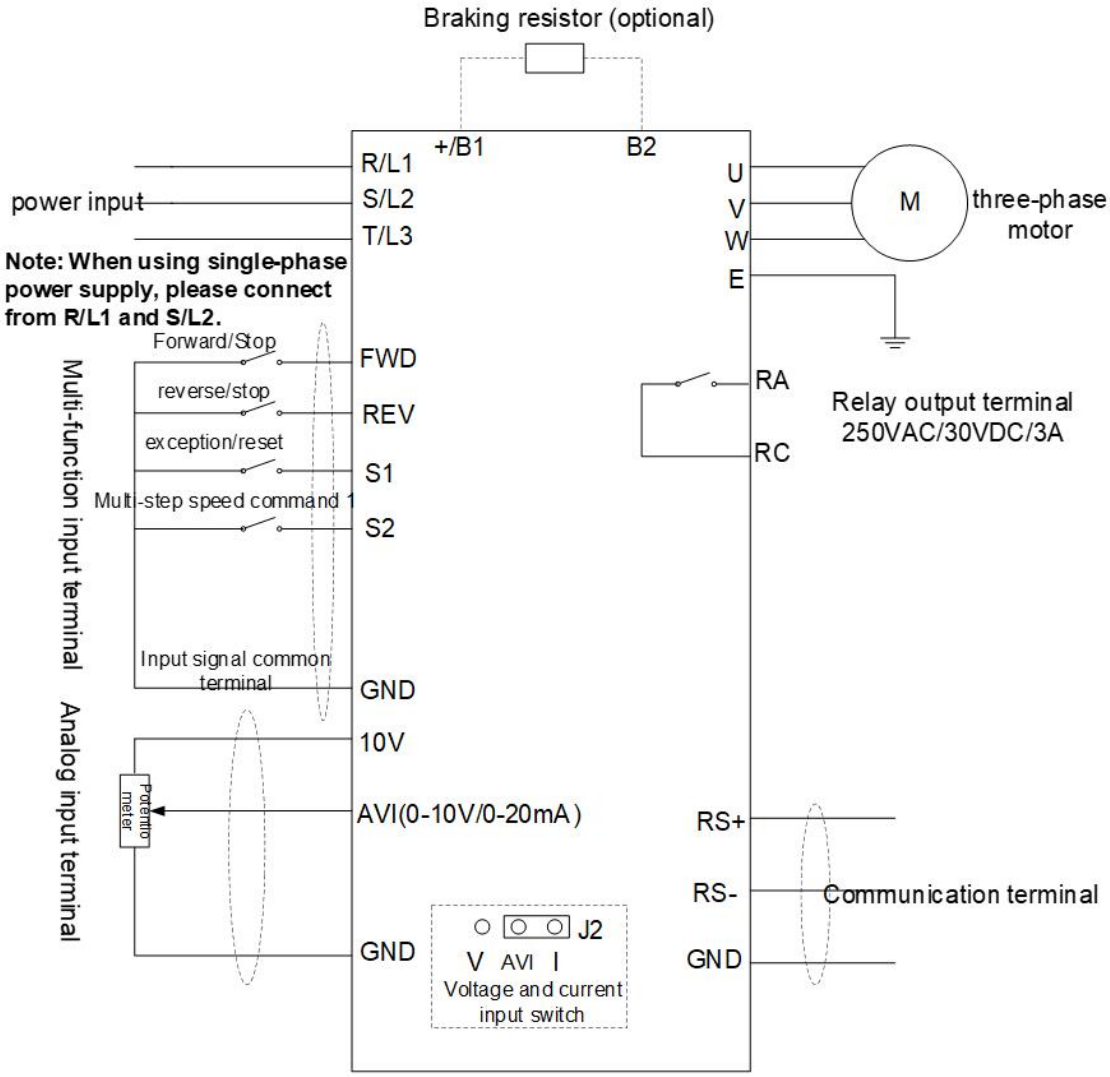
Name	Function Description
⏚	grounding terminal
R/L1 S/L2 T/L3	Power input terminal
U/T1、V/T2、W/T3	Connecting three-phase AC/DC motors
+/B1、B2	Brake resistor connection terminal
+/B1、-	The positive and negative poles of the inverter DC, It can be connected to a braking unit
P1、+/B1 or N1、-	Connect to the DC reactor

Wiring example:

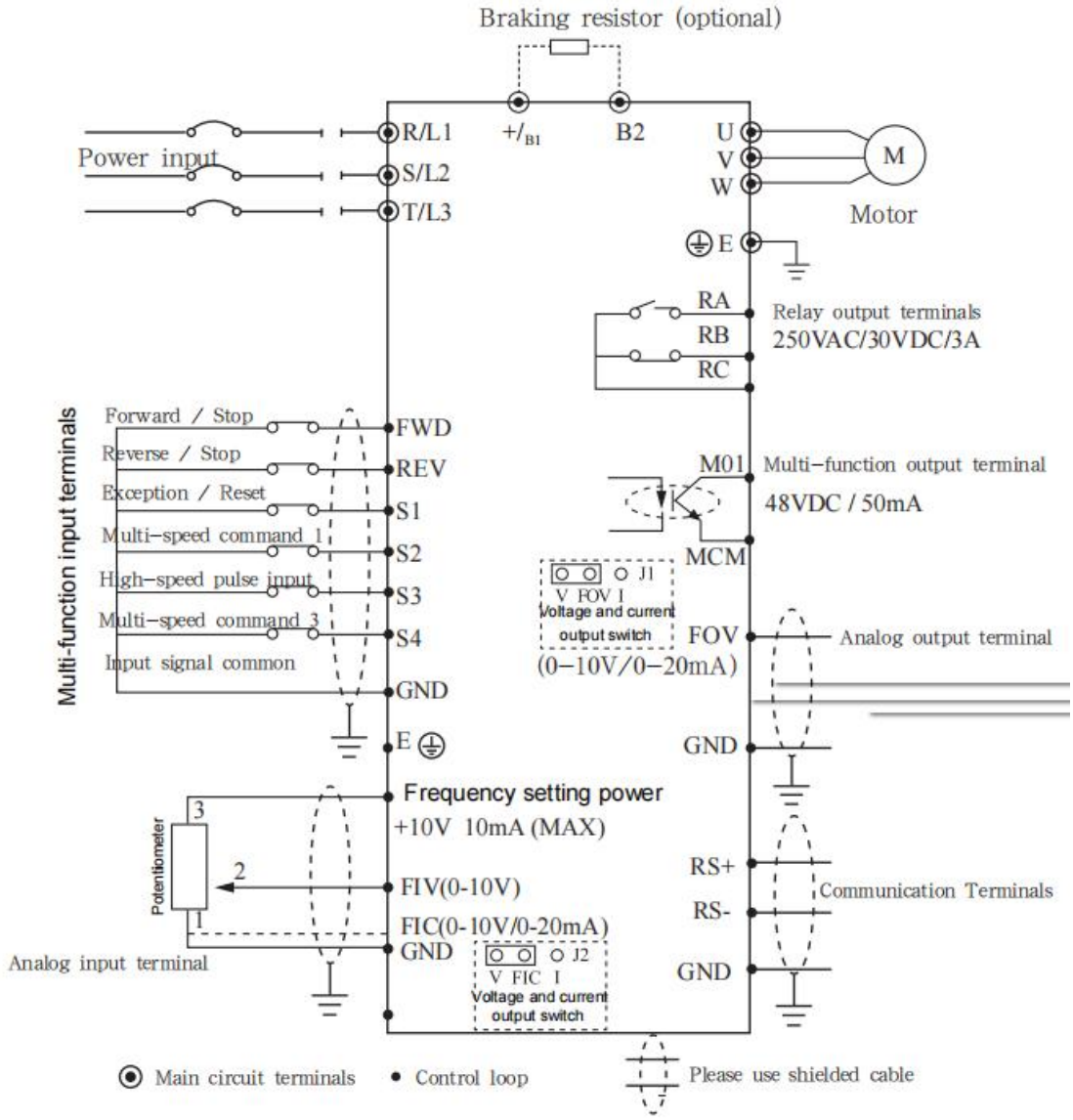


Basic wiring diagram：

（1）0.75kW-37kW

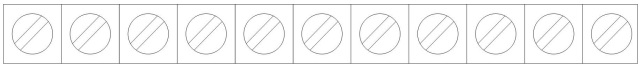


(2) 45kW-630kW

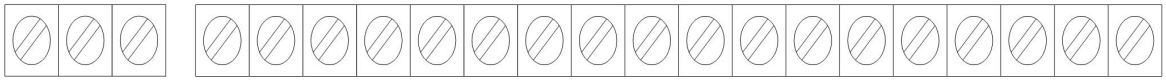

Braking resistor (optional)
Power input
R/L1
S/L2
T/L3
+/B1
B2
U
V
W
M
Motor
E
RA
RB
RC
Relay output terminals
250VAC/30VDC/3A
Multi-function input terminals
Forward / Stop
Reverse / Stop
Exception / Reset
Multi-speed command 1
High-speed pulse input
Multi-speed command 3
Input signal common
FWD
REV
S1
S2
S3
S4
GND
E
M01
Multi-function output terminal
48VDC / 50mA
MCM
J1
V FOV I
Voltage and current output switch
(0-10V/0-20mA)
FOV
Analog output terminal
GND
Frequency setting power
+10V 10mA (MAX)
Potentiometer
3
2
1
FIV(0-10V)
FIC(0-10V/0-20mA)
GND
Analog input terminal
J2
V FIC I
Voltage and current output switch
RS+
RS-
Communication Terminals
GND
Main circuit terminals
Control loop
Please use shielded cable

2-4 Control terminals

1) 37kW and below



2) 45kW and above



Note: Terminal S3 only supports NPN function. The rest of the FWD, REV, S1, and S2 can support both PNP and NPN functions.

2-4-1 Control terminal description

Terminal name	Function Definition Description	Note
FWD	Forward command input terminal (multi-functional input terminal)	The multifunctional input terminals S1-S4, FWD, and REV can be specifically configured via parameters P5.00 to P05.05. These terminals are activated when closed to GND.
REV	Reverse command input terminal (multi-functional input terminal)	
S1	Fault reset	
S2	Multi-segment speed command 1	
S3	Multi-segment speed Command 2 (High-speed pulse input)	
S4	Multi-segment speed command 3	
FOV	Analog voltage output terminal	0 ~ 10V
10V	Power supply for frequency setting	
FIV/Keyboard potentiometer	Analog voltage command input terminal	0 ~ 10V
FIC/AVI	Analog current command input terminal	0 ~ 20mA
GND	Common terminal of input signal	
MCM	Optical coupling output common terminal	
MO1	Multifunctional optical coupling output contact	
RA	Relay output contact (normally open)	AC250V/3A,DC30V/1A
RB	Relay output contact (normally closed)	
RC	Relay output contact RA RB public terminal	

Instructions for the control board switching switch:

Name of the switching switch	Instructions for Switching Switch
J1	Short-circuiting V and FOV is the voltage output. I and FOV short-circuiting is the current output
J2	V and FIC short-circuiting is for voltage input; I and FIC short-circuiting serves is the current input

Precautions for power distribution in the control circuit:

(1) Please separate the control signal lines from the main circuit lines, as well as other power lines and power lines.

(2) To prevent misoperation caused by interference, please use twisted shielded wire or double-strand shielded wire with a specification of 0.3 to 0.5mm ².

(3) Please determine the allowable conditions for each terminal in use, such as power supply, maximum allowable current, etc.

(4) Please ground the grounding terminal E correctly, and the grounding impedance should be less than 100Ω.

(5) Wiring requirements for each terminal, and the correct selection of accessories such as potentiometers, voltmeters, input power supplies, etc.

(6) After the wiring is completed, please check it correctly. Only after confirming that there are no errors can you power on.

Chapter Three Operations

3-1 Operation Panel Instructions

The operation panel is also called the keypad.

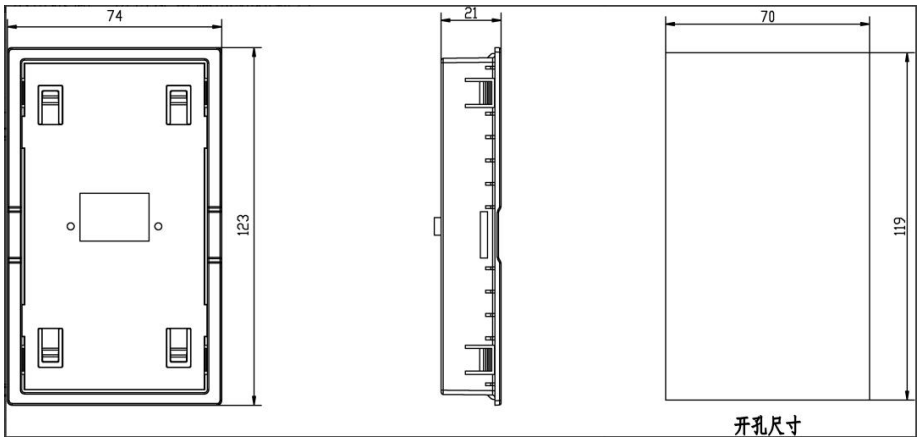
3-1-1 keypad

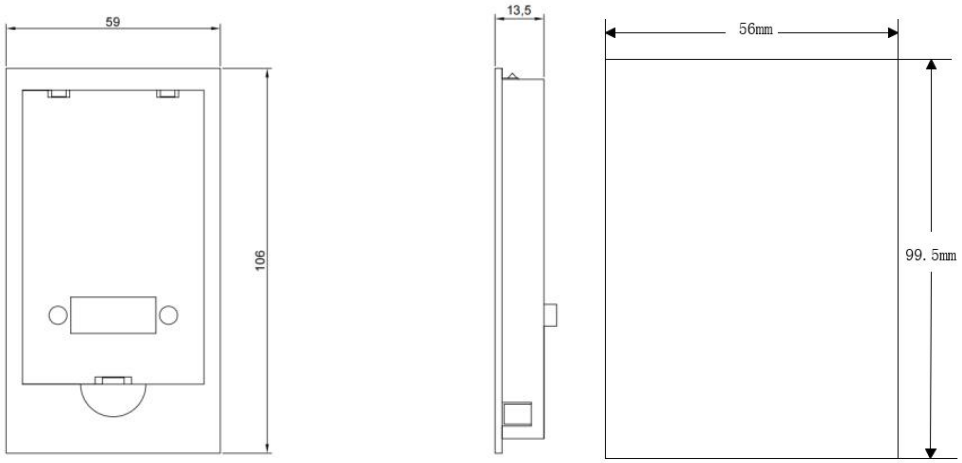
Note: If an encoder keyboard or a dual-row display keypad is required, please specify it in your order.

Model of the external pull keypad and the opening size of the external pull tray.

Note: For keypads with potentiometers and encoders, please select according to the model of the control board.

DP8-G-5	Standard potentiometers and encoders are absent	119mm*70mm
DP8-G-1	With potentiometer (special main board)	
DP8-G-4	Dual-row display with encoder	
DP8-A-1	Standard potentiometers and encoders are absent	99.5mm*56mm
DP8-A-0	With potentiometer (special main board)	
DP8-A-5	with encoder	
DP8-B-2	Standard potentiometers and encoders are absent	141.5mm*79.5mm
DP8-B-1	With encoder	





3-1-2 Key Function Description

Key symbol	Name	Function Description
	Programming key	Enter or exit from the first-level menu
	Confirm key	Enter the menu screen step by step and confirm the set parameters
	UP	Increment of data or function codes
	DOWN	The decrement of data or function codes
	Shift key	Under the shutdown display interface and the operation display interface, the display parameters can be cyclically selected. When modifying parameters, the modification bit of the parameter can be selected
	Run key	In the keyboard operation mode, it is used to run operations
	Stop/Reset key	When in operation, pressing this key can be used to stop the operation, which is restricted by the function code P7.02. When in the fault alarm state, this key can be used to reset the fault, without being restricted by the function code P7.02.

3-1-3 Indicator Light Description:

Symbolic features	Description of symbol content
Hz	Frequency indicator light
A	Current indicator light
V	Voltage indicator light
FUNC/ERR	Overload pre-alarm/fault indicator light: The light going out indicates that the vfd is in a normal state. The flashing light indicates the overload pre-alarm status of the vfd. The light being on indicates a fault status of the vfd.
RUN	Operation indicator light (for external keyboard only)

3-2 Operating Procedure

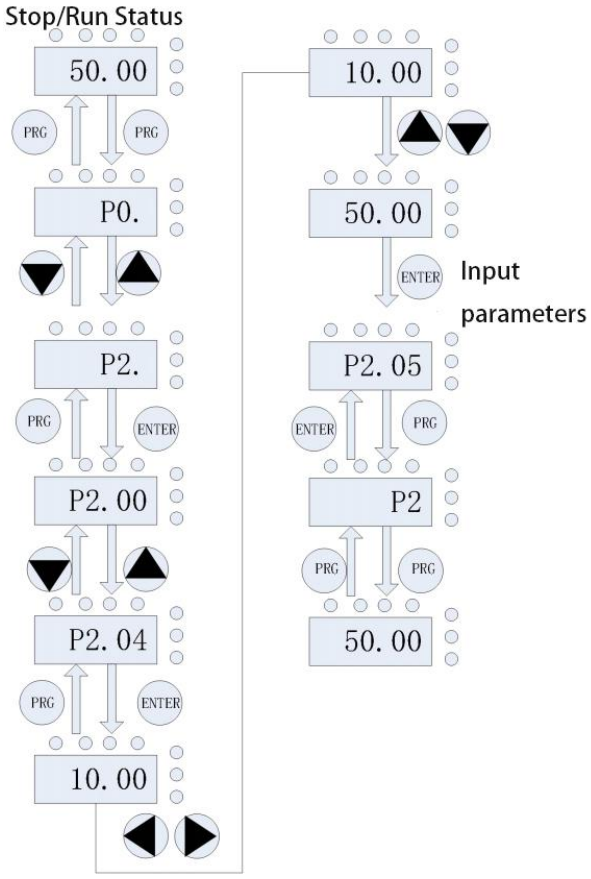
3-3-2-1 parameter settings

The three-level menus are respectively:

1. Function code group number (first-level menu)
2. Function code marking (secondary menu)
3. Function code setting values (three-level menu).

Note: When operating in the third-level menu, you can press PRG or ENTER to return to the second-level menu. The difference between the two is: Press ENTER to save the set parameters to the control panel, then return to the secondary menu and automatically transfer to the next function code; Pressing PRG will directly return to the secondary menu, without storing parameters and remaining at the current function code.

Example: An example of changing the function code P2.04 from 00.00Hz to 50.00Hz.



In the three-level menu state, if the parameter has no flashing bits, it indicates that the function code cannot be modified. Possible reasons are:

1）This function code is an unmodifiable parameter. Such as actual detection parameters, operation record parameters, etc.

2) This function code cannot be modified when the machine is running. It can only be modified after the machine is shut down.

3-2-2 Fault reset

When a frequency inverter malfunctions, it will prompt relevant fault information. Users can reset the fault through the STOP key on the keyboard or the terminal function (P5 group). After the inverter is reset, it will be in standby mode. If the frequency inverter is in a faulty state and the user does not reset the fault, the frequency inverter will be in an operational protection state and cannot operate.

3-2-3 Motor parameter auto-tuning

1:Comprehensive parameter auto-tuning
When choosing the PG-free vector control operation mode, the nameplate parameters of the motor must be accurately input. The frequency inverter will match the standard motor parameters based on these nameplate parameters. In order to obtain good control performance, it is recommended to conduct auto-tuning of motor parameters. The operation steps of auto-tuning are as follows:

First, select the running command channel (P0.02) as the keyboard command channel.Then please enter the following parameters according to the actual parameters of the motor:
P2.01: Rated power of motor
P2.02: Rated voltage of the motor
P2.03: Rated current of motor
P2.04: Rated frequency of motor
P2.05: Rated speed of the motor.

Note: During the comprehensive parameter auto-tuning process, the motor must be disconnected from the load; otherwise, the motor parameters obtained through auto-tuning may be incorrect.

2: Static parameter auto-tuning

When the motor's static parameters are auto-tuning, it is not necessary to disconnect the motor from the load. Before the motor parameters are auto-tuning, the motor nameplate parameters (P2.01-P2.05) must be correctly input. After auto-tuning, the stator resistance, rotor resistance and leakage inductance of the motor will be detected. However, the mutual inductance and no-load current of the motor cannot be measured. Users can input the corresponding values according to the motor nameplate.

3.3 Operating Status

3-3-1 Power-on initialization

During the power-on process of the frequency inverter, the system is initialized first. The LED display shows "2000" and all the indicator lights are on. After the initialization is completed, the frequency inverter is in standby mode.

3-3-2 Standby

In the state of shutdown or operation, multiple status parameters can be displayed. The function codes P7.03 and P7.04 (operation parameters), as well as P7.05 (shutdown parameters), can be used to select whether to display the parameter by binary bit. For each definition, please refer to the descriptions of the function codes P7.03 and P7.04 and P7.05.

3-3-3 Motor parameter auto-tuning

For details, please refer to the detailed description of the function code P2.37.

3-3-4 Running

In the operating state, there are a total of 29 status parameters that can be selected for display or not, namely: operating frequency, set frequency, bus voltage, output voltage, output current, operating speed, output power, output torque, etc. Whether to display or not is selected bit by bit (converted to binary) by the function codes P7.03 and P7.04. Press the  key in sequence to switch and display the selected parameters.

3-3-5 Fault

The NZ200 series frequency inverters provide various fault information. For details, please refer to the faults and countermeasures of the NZ200 series frequency inverters.

Chapter Four Detailed Description of Functional Parameters

Group P0 Basic functional group

P0.00	G/P type display		Factory value	It is related to the model.
	Setting range	1	Type G (Constant Torque load model)	
		2	Type P (Fan and water pump load models)	

1: Applicable to constant torque loads with specified rated parameters

2: Applicable to variable torque loads with specified rated parameters (such as fan and pump loads)

The factory parameters of the frequency inverter are set to G type. If P type is to be selected, the function code needs to be set to 2 and the parameters of P2 group of motors need to be reset.

P0.01	Control mode choose		Factory value	0
	Setting range	0	V/F mode	
		1	Sensorless vector control (no PG)	

0: V/F control is suitable for situations where the load requirements are not high or where one frequency inverter drives multiple motors, such as fan and pump loads. It can be used in situations where one frequency inverter drives multiple motors.

1: Sensorless vector control

It refers to open-loop vector control, which is suitable for common high-performance control scenarios. One frequency inverter can only drive one motor. Loads such as machine tools, centrifuges, wire drawing machines, injection molding machines, etc.

**Note: When choosing the vector control mode, the motor parameter auto-tuning process must be carried out. Only accurate motor parameters can bring out the advantages of vector control.

P0.02	Command source		Factory value	0
	Setting range	0	Operation panel command channel (LED off)	
		1	Terminal command channel (LED on)	
		2	Communication command channel (LED flashing)	

Select the input channel of the frequency inverter control command.

The control commands of the frequency inverter include: start, stop, forward rotation, reverse rotation, jog, etc.

0: Command channel of the operation panel (the "LOCAL" light is off); The operation commands are controlled by the RUN and STOP/RESET buttons on the operation panel.

1： Terminal command channel (the "LOCAL" light is on); The operation command control is carried out through the multi-functional input terminals FWD, REV, S1 to S4.

2: Communication command channel (with the "LOCAL" light flashing) The operation command is given by the upper computer through communication.

P0.03	Frequency source superposition selection	Factory value	00
	Setting range	unit digit	Frequency source selection
		0	Main frequency source X
		1	The results of primary and secondary operations (the operation relationship is determined by the tens place)
		2	Switching from the primary frequency source X to the auxiliary frequency source Y
		3	Switch between the main frequency source X and the main and auxiliary operation results
		4	Switch between the auxiliary frequency source Y and the main and auxiliary operation results
		tens digit	The primary and secondary operation relationship of the frequency source
		0	Main + Auxiliary
		1	Main - Auxiliary
		2	The maximum value of the two
		3	The minimum value of the two

Select the frequency-given channel through this parameter. Frequency setting is achieved through the combination of the main frequency source X and the auxiliary frequency source Y.

Unit: Frequency source selection

0: Main frequency source X
The main frequency X is taken as the target frequency.

1: Primary and secondary operation results: The primary and secondary operation results are used as the target frequency. The relationship between primary and secondary operations is described in the "tens place" of this function code.

2: Switching between the main frequency source X and the auxiliary frequency source Y: When the function 18 of the multi-functional input terminal (frequency switching) is ineffective, the main frequency X serves as the target frequency. When the multi-functional input terminal function 18 (frequency source switching) is effective, the auxiliary frequency Y is taken as the target frequency.

3: Switching between the main frequency source X and the main and auxiliary operation results: When the function 18 of the multi-functional input terminal (frequency switching) is ineffective, the main frequency X is used as the target frequency. When the function 18 (frequency switching) of the multi-functional input terminal is effective, the primary and secondary operation results are taken as the target frequency.

4: Switching between the auxiliary frequency source Y and the main and auxiliary

operation results: When the function 18 of the multi-functional input terminal (frequency switching) is ineffective, the auxiliary frequency Y is used as the target frequency. When the function 18 (frequency switching) of the multi-functional input terminal is effective, the primary and secondary operation results are taken as the target frequency.

Tens place: Frequency source primary and secondary operation relationship:

0: Main frequency source X+ auxiliary frequency source Y
The sum of the main frequency X and the auxiliary frequency Y is taken as the target frequency. Realize the function of frequency superposition given.

1: Main frequency source X- Auxiliary frequency source Y
The difference between the main frequency X and the auxiliary frequency Y is taken as the target frequency.

2: MAX (main frequency source X, auxiliary frequency source Y) Take the one with the largest absolute value between the main frequency X and the auxiliary frequency Y as the target frequency.

3: MIN (main frequency source X, auxiliary frequency source Y) Take the frequency with the smallest absolute value between the main frequency X and the auxiliary frequency Y as the target frequency. In addition, when the frequency source is selected as the primary and secondary operation, the bias frequency can be set through P0.21, and the bias frequency can be superimposed on the results of the primary and secondary operations to flexibly meet various demands.

<table>
<tr><td rowspan="11">P0.04</td><td colspan="2">Selection of main frequency source X</td><td>Factory value</td><td>2</td></tr>
<tr><td rowspan="10">Setting range</td><td>0</td><td colspan="2">Digital setting (Preset frequency P0.10, UP/DOWN modifiable, no memory when power is off)</td></tr>
<tr><td>1</td><td colspan="2">Digital setting (Preset frequency P0.10, UP/DOWN modifiable, power-off memory)</td></tr>
<tr><td>2</td><td colspan="2">FIV</td></tr>
<tr><td>3</td><td colspan="2">FIC</td></tr>
<tr><td>4</td><td colspan="2">Keyboard encoder</td></tr>
<tr><td>5</td><td colspan="2">Pulse Setting (S3)</td></tr>
<tr><td>6</td><td colspan="2">Multi-segment instructions</td></tr>
<tr><td>7</td><td colspan="2">PLC</td></tr>
<tr><td>8</td><td colspan="2">PID</td></tr>
<tr><td>9</td><td colspan="2">Communication given</td></tr>
</table>

Select the input channel of the main set frequency of the frequency inverter. There are a total of 10 main given frequency channels:

0: Digital setting (No memory in case of power failure)
Set the initial value of the frequency to P0.10, the value of the "preset frequency". The set frequency value of the frequency inverter can be changed through the ▲ key and ▼ key on the keyboard (or the UP and DOWN keys of the multi-functional input terminal).
When the inverter is powered off and then powered on again, the set frequency value is restored to P0.10 "Digital Preset Frequency" value.

1: Digital setting (power-off memory)
Set the initial value of the frequency to P0.10, the value of the "preset frequency". The set frequency value of the frequency inverter can be changed by pressing the ▲ and ▼ keys on the keyboard (or by pressing UP and DOWN on the multi-functional input terminals). When the inverter is powered off and then powered on again, the set frequency is the same as the set frequency at the time of the last power failure. The correction values through the keyboard ▲ and ▼ keys or the UP and DOWN terminals are remembered.
It should be noted that P0.23 stands for "Digital Set Frequency Shutdown Memory Selection". P0.23 is used to select whether the frequency correction amount is remembered or reset to zero when the frequency inverter stops. P023 is related to the shutdown, not to the power failure memory. Please note this during application.
2. FIV
3. FIC
4. Keyboard encoder
It means that the frequency is determined by the analog input terminal. The NZ200 control board provides two analog input terminals (FIV, FIC). Among them, FIV is a voltage type input of 0V to 10V, and FIC can be a voltage input of 0V to 10V or a current input of 4mA to 20mA, which is selected by the jumper on the control board.

The input voltage values of FIV and FIC, as well as their corresponding relationships with the target frequency, can be freely selected by users. The NZ200 offers five sets of corresponding relationship curves, among which three sets of curves are linear relationships (2-point corresponding relationships), and two sets of curves are arbitrary curves with a 4-point corresponding relationship. Users can set them through P5 and C6 function codes.

Function code P5.33 is used to set two analog input channels, FIV to FIC, and select which of the five groups of curves respectively. For the specific corresponding relationship of the five curves, please refer to the descriptions of function codes P5 and C6.

5. Pulse setting (S3) ： Frequency setting is achieved through terminal pulses. Pulse given signal specifications: Voltage range 9V to 30V, frequency range 0kHz to 100kHz. Pulse setting can only be input from the multi-functional input terminal S3.
The relationship between the input pulse frequency of terminal S3 and the corresponding

setting is set through P5.28 to P5.31. This corresponding relationship is a linear correspondence of two points. 100.0% of the setting corresponding to the pulse input refers to the percentage relative to the maximum frequency P0.12.

6. Multi-segment instructions: When choosing the multi-stage instruction operation mode, it is necessary to input different state combinations of the S terminal through digital quantities, corresponding to different set frequency values. The NZ200 can be set with 4 multi-segment instruction terminals. The 16 states of the 4 terminals can be corresponding to any 16 "multi-segment instructions" through the PC group function code. The "multi-segment instructions" are a percentage relative to the maximum frequency P0.12.

When the digital input S terminal is used as a multi-segment instruction terminal, corresponding settings need to be made in the P5 group. For specific content, please refer to the relevant functional parameter description of the P5 group.

7. Simple PLC functions: When the frequency source is a simple PLC, the operating frequency source of the frequency inverter can be switched and operated between 1 to 16 arbitrary frequency instructions. The holding time of 1 to 16 frequency instructions and their respective acceleration and deceleration times can also be set by the user. For specific details, please refer to the relevant instructions of the PC group.

8. PID: Select the output of the process PID control as the operating frequency. It is generally used for on-site process closed-loop control, such as constant pressure closed-loop control, constant tension closed-loop control and other occasions. When PID is applied as the frequency source, the relevant parameters of the "PID function" of the PA group need to be set.

9. Communication given: It means that the main frequency source is given by the upper computer through communication.

The communication method supported by NZ200: RS-485.

<table>
<tr><td rowspan="12">P0.05</td><td colspan="2">Selection of auxiliary frequency source</td><td>Factory value</td><td>0</td></tr>
<tr><td rowspan="11">Setting range</td><td>0</td><td colspan="2">Digital setting (Preset frequency P010, UP/DOWN modifiable, no memory in case of power failure)</td></tr>
<tr><td>1</td><td colspan="2">Digital Settings (Preset frequency P010, UP/DOWN modifiable, power-off memory)</td></tr>
<tr><td>2</td><td colspan="2">FIV</td></tr>
<tr><td>3</td><td colspan="2">FIC</td></tr>
<tr><td>4</td><td colspan="2">reserve</td></tr>
<tr><td>5</td><td colspan="2">Pulse Setting (S3)</td></tr>
<tr><td>6</td><td colspan="2">Multiple instructions</td></tr>
<tr><td>7</td><td colspan="2">PLC</td></tr>
<tr><td>8</td><td colspan="2">PID</td></tr>
<tr><td>9</td><td colspan="2">Communication given</td></tr>
</table>

When the auxiliary frequency source is used as an independent frequency given channel (i.e., the frequency source is selected to switch from X to Y), its usage is the same as that of the main frequency source X. The usage method can refer to the relevant instructions on P0.04.

When the auxiliary frequency source is used for superposition given (i.e., the frequency source is selected as X+Y, X to X+Y switching, or Y to X+Y switching), it should be noted that:

1) When the auxiliary frequency source is digitally set, the preset frequency (P0.10) does not function. The frequency adjustment made by the user through the ▲ and ▼ keys on the keyboard (or the UP and DOWN keys on the multi-functional input terminal) is directly based on the main set frequency.

2) When the auxiliary frequency source is given to the analog input (FIV, FIC) or the pulse input, the 100% corresponding range of the input setting for the auxiliary frequency source can be set through P0.06 and P0.07.

3) When the frequency source is given as a pulse input, it is similar to the given analog quantity.

**Note: The selection of the auxiliary frequency source Y and the main frequency source X should not be set to the same channel. That is, P0.04 and P0.05 should not be set to the same value, otherwise it may cause confusion.

P0.06	Selection of the Y range of the auxiliary frequency source when superimposing		Factory value	0
	Setting range	0	Relative to the maximum frequency	
		1	Relative to the main frequency source X	
P0.07	The range of the auxiliary frequency source Y during superposition		Factory value	100%
	Setting range		0%～150%	

When the frequency source is selected as "frequency superposition" (i.e., P0.03 is set to 1, 3 or 4), these two parameters are used to determine the adjustment range of the auxiliary frequency source.

P0.06 is used to determine the object corresponding to the range of the auxiliary frequency source. It can be selected relative to the maximum frequency or relative to the main frequency source X. If it is selected relative to the main frequency source, the range of the auxiliary frequency source will change along with the variation of the main frequency X.

P0.08	Acceleration time 1	Factory value	Model dependent
	Setting range	0.00s～6500.0s	
P0.09	Deceleration time 1	Factory value	Model dependent
	Setting range	0.00s～6500.0s	

The acceleration time refers to the time required for the frequency inverter to accelerate from zero frequency to the reference frequency for acceleration and deceleration (determined by P0.24).
The deceleration time refers to the time required for the frequency inverter to decelerate from the acceleration and deceleration reference frequency (determined by P0.24) to zero frequency.

P0.10	Preset	Factory value	50.00Hz
	Setting range	0.00 ~ Maximum frequency (valid for frequency source selection mode with digital setting)	

When the frequency source is selected as "Digital Setting" or "Terminal UP/DOWN", the function code value is the initial value of the frequency digital setting of the frequency inverter.

P0.11	Running direction		Factory value	0
	Setting range	0	Consistent direction	
		1	Opposite directions	

By modifying this function code, the purpose of changing the motor's rotation direction can be achieved without altering the motor wiring. Its effect is equivalent to adjusting any two wires of the motor (U, V, W) to convert the motor's rotation direction.
**Note: After the parameters are initialized, the motor's running direction will return to its original state. Use with caution in situations where the motor rotation direction must not be changed after the system has been debugged.

P0.12	Maximum frequency	Factory value	50.00 Hz
	Setting range	50.00Hz～320.00Hz	

In NZ200, the analog input, pulse input (S3), multi-segment instructions, etc., when used as frequency sources, each account for 100.0%
It is calibrated relative to P0.12.
The maximum output frequency of NZ200 VF mode can reach 3200Hz. To balance the resolution of the frequency command and the input range of the frequency, the decimal places of the frequency command can be selected through P0.22.

When P0.22 is selected as 1, the frequency resolution is 0.1Hz, and at this time, the setting range of P0.10 is 50.0Hz to 3200.0Hz.
When P0.22 is selected as 2, the frequency resolution is 0.01Hz, and at this time, the setting range of P0.10 is 50.00Hz to 320.00Hz.

P0.13	Upper limit frequency source		Factory value	0
	Setting range	0	P0.14 setting	
		1	FIV	
		2	FIC	
		3	Reserve	
		4	PULSE Settings (S3)	
		5	Communication Settings	

Define the source of the upper limit frequency. The upper limit frequency can come from the digital setting (P0.14) or from the analog input channel. When setting the upper limit frequency with the analog input, 100% of the analog input setting corresponds to P0.14.
For instance, when torque control mode is adopted in the winding control site, to prevent the "runaway" phenomenon caused by material disconnection, the upper limit frequency can be set with analog quantities. When the frequency inverter operates to the upper limit frequency value, the frequency inverter remains at the upper limit frequency for operation.

P0.14	Upper limit frequency	Factory value	50.00Hz
	Setting range	Lower limit frequency P0.16 to maximum frequency P0.12	
P0.15	Upper limit frequency bias	Factory value	0.00Hz
	Setting range	0.00Hz to maximum frequency P0.12	

When the upper limit frequency is an analog quantity or PULSE setting, P0.15 is used as the offset of the set value. This offset frequency is superimposed with the upper limit frequency value set by P0.14 as the final set value of the upper limit frequency.

P0.16	Lower limit frequency	Factory value	0.00Hz
	Setting range	0.00Hz to the upper limit frequency P0.14	

When the frequency command is lower than the lower limit frequency set in P0.16, the inverter can shut down, operate at the lower limit frequency or run at zero speed. The operation mode to be adopted can be set through P8.14 (operation mode with the set frequency lower limit frequency).

P0.17	Carrier frequency	Factory value	Model dependent
	Setting range	0.5kHz～16.0kHz	

This function adjusts the carrier frequency of the frequency inverter. By adjusting the carrier frequency, the motor noise can be reduced, the resonance points of the mechanical system can be avoided, the leakage current of the line to the ground can be

decreased, and the interference generated by the frequency inverter can be reduced.
When the carrier frequency is low, the high-order harmonic components of the output current increase, the motor loss increases, and the motor temperature rise increases. When the carrier frequency is relatively high, the motor loss decreases and the motor temperature rise reduces, but the inverter loss increases, the inverter temperature rise increases, and the interference increases.

Adjusting the carrier frequency will affect the following performance:

Carrier frequency	Low → high
Motor noise	Strong → weak
Output current waveform	Bad → Good
Motor temperature rise	High → low
Inverter temperature rise	Low → high
Leakage current	Small → big
External radiation interference	Weak → strong

The factory settings of carrier frequencies for frequency inverters of different powers are different. Although users can modify it as needed, it should be noted that if the carrier frequency is set higher than the factory value, it will cause the temperature rise of the inverter's heat sink to increase. At this time, users need to derate the inverter; otherwise, there is a risk of overheating alarm for the inverter.

P0.18	The carrier frequency is adjusted with temperature	Factory value	0
	Setting range	0：No 1：Yes	

Carrier frequency adjustment with temperature means that when the inverter detects a high temperature of its own heat sink, it automatically reduces the carrier frequency to lower the temperature rise of the inverter. When the temperature of the radiator is relatively low, the carrier frequency gradually returns to the set value. This function can reduce the chance of overheating alarms for the frequency inverter.

P0.19	Acceleration and deceleration time unit		Factory value	1
	Setting range	0	1second	
		1	0.1 second	
		2	0.01second	

To meet the various on-site requirements, NZ200 offers three acceleration and deceleration time units, namely 1 second, 0.1 second and 0.01 second.
*Note: When modifying this function parameter, the number of decimal places displayed for the 4 sets of acceleration and deceleration times will change, and the corresponding acceleration and deceleration times will also change. During application, special attention should be paid to this.

P0.21	The auxiliary frequency source bias frequency during superposition	Factory value	0.00Hz
	Setting range	0.00 Hz to the maximum frequency P0.12	

This function code is only valid when the frequency source is selected for primary or secondary operation.When the frequency source is used for Main and auxiliary operations, P0.21 serves as the bias frequency and is superimposed with the results of the main and auxiliary operations to form the final frequency setting value, thereby enabling more flexible frequency setting.

P0.22	Frequency command resolution		Factory value	2
	Setting range	1	0.1Hz	
		2	0.01Hz	

This parameter is used to determine the resolution of all frequency-related function codes.When the frequency resolution is 0.1Hz, the maximum output frequency of NZ200 can reach 3200Hz, while when the frequency resolution is 0.01Hz, the maximum output frequency of NZ200 is 320.00Hz.

Note: When modifying this function parameter, the decimal places of all parameters related to frequency will change, and the corresponding frequency values will also change. Please pay special attention during use.

P0.23	Digital setting frequency shutdown memory selection		Factory value	0
	Setting range	0	No memory	
		1	Memory	

This function is only effective when the frequency source is set as digital.

"Memory loss" means that after the frequency inverter stops, the digital set frequency value reverts to the value of P0.10 (pre-set frequency), and the frequency corrections made through the ▲ and ▼ keys on the keyboard or the UP and DOWN buttons on the terminals are reset.

"Memory" refers to the situation where after the frequency inverter stops, the digital set frequency remains as the one set at the time of the last stop, and the frequency adjustments performed through the ▲ and ▼ keys on the keyboard or the UP and DOWN buttons on the terminals remain valid.

P0.24	Acceleration and deceleration time reference frequency		Factory value	0
	Setting range	0	Maximum frequency (P0.12)	
		1	Set the frequency	
		2	100Hz	

The acceleration and deceleration time refers to the time taken from zero frequency to the set frequency of P0.24.

When P0.24 is set to 1, the acceleration and deceleration time is related to the set frequency. If the set frequency changes frequently, the acceleration of the motor will also change. Users should be aware of this when using it.

P0.25	Operating frequency command UP/DOWN reference		Factory value	0
	Setting range	0	Operating frequency	
		1	Setting frequency	

This parameter is only valid when the frequency source is set digitally.

It is used to determine how to adjust the set frequency when the ▲, ▼ keys on the keyboard or the UP/DOWN action of the terminals are operated, that is, whether the target frequency is increased or decreased based on the running frequency or the set frequency. The difference between the two settings is obvious when the frequency inverter is in the acceleration and deceleration process. That is, if the running frequency of the frequency inverter is different from the set frequency, the different selection of this parameter makes a significant difference.

P0.26	Command source is bundled with frequency source		Factory value	000
	Setting range	The unit	Operation panel command binding frequency source selection	
		0	No bundling	
		1	Digital setting of frequency source	
		2	FIV	
		3	FIC	
		4	Reserve	
		5	PULSE Pulse Setting (S3)	
		6	Multiple instructions	
		7	Simple PLC	
		8	PID	
		9	Communication given	
		Decade	Terminal command binding frequency source selection (0-9, same bit)	

		Hundreds place	Communication command binding frequency source selection (0-9, same bit)

Define the bundled combinations of three types of operation command channels and nine types of frequency setting channels, facilitating the simultaneous switching.
The meanings of the above frequency-specified channels are the same as those of the main frequency source X for selecting P0.04. Please refer to the P0.04 function code description. Different operation command channels can be associated with the same frequency-specified channel. When the command source has a bundled frequency source, during the effective period of the command source, the frequency sources set by P0.03 to P0.07 will no longer be effective.

P0.27	Communication type		Factory value	0
	Setting range	0	Modbus	

P1 group - Start-stop control

P1.00	Start-up method		Factory value	0
	Setting range	0	Direct start-up	
		1	Speed tracking re-start	
		2	Pre-excitation startup (for AC asynchronous motors)	

0: Direct Start
If the DC braking time setting is 0, the frequency inverter will operate from the start frequency. If the DC braking time is not 0, it will first perform DC braking and then start operating from the start frequency. This is applicable for small inertia loads and in cases where the motor may rotate during startup.

1: Speed tracking restart
The frequency inverter first determines the speed and direction of the motor, then starts the motor at the frequency tracked, and performs a smooth and impact-free start for the rotating motor. It is applicable for restart after instantaneous power outage for motors with large inertia loads. To ensure the performance of speed tracking restart, the parameters of the P2 group of motors need to be accurately set.

2: Asynchronous motor pre-excitation start-up
Only effective for asynchronous motors, used to establish the magnetic field before the motor starts running. Pre-excitation current and pre-excitation time are described in Function Codes P1.05 and P1.06.

If the pre-excitation time is set to 0, the frequency inverter will cancel the pre-excitation

process and start at the startup frequency. If the pre-excitation time is not 0, it will perform pre-excitation first before starting, which can improve the dynamic response performance of the motor.

P1.01	Speed tracking method		Factory value	0
	Setting range	0	Starting from the frequency of shutdowns	
		1	Starting from zero speed	
		2	Starting from the highest frequency	

To complete the speed tracking process in the shortest time, select the way for the frequency inverter to track the motor speed:
0: Track downward from the frequency at the time of power failure; this method is usually selected.
1: Track upward starting from 0 frequency; it is used in cases where the power failure lasts for a long time and then the motor is restarted.
2: Track downward from the maximum frequency; it is generally used for generating loads.

P1.02	The speed of rotational speed tracking	Factory value	20
	Setting range	1～100	

During speed tracking restart, select the speed of speed tracking.
The larger the parameter, the faster the tracking speed. However, setting it too large may lead to unreliable tracking effect.

P1.03	Start frequency	Factory value	0.00Hz
	Setting range	0.00Hz～10.00Hz	
P1.04	Frequency startup hold time	Factory value	0.0s
	Setting range	0.0s～100.0s	

To ensure the motor torque during startup, please set an appropriate starting frequency. To allow the magnetic flux to be fully established when the motor starts, the starting frequency needs to be maintained for a certain period of time.
The starting frequency P1.03 is not limited by the lower limit frequency. However, if the set target frequency is lower than the starting frequency, the frequency inverter will not start and will remain in a standby state.
During forward-reverse rotation switching, the starting frequency hold time does not take effect. The starting frequency hold time is not included in the acceleration time, but is included in the operation time of the simple PLC.

Example 1:
P0.04 = 0 Source frequency is digitally set
P0.10 = 2.00Hz The digital set frequency is 2.00Hz
P1.03 = 5.00Hz Starting frequency is 5.00Hz
P1.04 = 2.0s Starting frequency holding time is 2.0s. At this point, the frequency inverter will be in standby mode, and the output frequency of the frequency inverter is 0.00Hz.

Example 2:
P0.04 = 0 Source frequency is digitally set
P010 = 10.00Hz The digital set frequency is 10.00Hz
P1.03 = 5.00Hz Starting frequency is 5.00Hz
P1.04 = 2.0s Starting frequency duration is 2.0 seconds
At this point, the frequency inverter accelerates to 5.00Hz, and this speed is maintained for 2.0 seconds. Then, it further accelerates to the set frequency of 10.00Hz.

P1.05	Starting DC braking current / pre-excitation current	Factory value	0%
	Setting range	0%～100%	
P1.06	Starting DC braking time / pre-excitation time	Factory value	0.0s
	Setting range	0.0s～100.0s	

Starting DC braking is generally used to restart a running motor after stopping it. Pre-excitation is used to start an asynchronous motor after first establishing its magnetic field, so as to improve response speed.

Starting DC braking is only effective when the starting mode is direct start. In this case, the frequency inverter first performs DC braking according to the set starting DC braking current, and then starts operation after the set starting DC braking time. If the set DC braking time is 0, it will start directly without DC braking. The larger the DC braking current, the greater the braking force.

If the starting mode is asynchronous motor pre-excitation start, the frequency inverter first pre-establishes the magnetic field according to the set pre-excitation current, and then starts operation after the set pre-excitation time. If the set pre-excitation time is 0, it will start directly without going through the pre-excitation process.

The starting DC braking current / pre-excitation current is a percentage relative to the rated current of the frequency inverter.

P1.07	Acceleration and deceleration methods		Factory value	0
	Setting range	0	Linear acceleration and deceleration	
		1	S-shaped acceleration and deceleration A	
		2	S-shaped curve acceleration and deceleration B	

Select the method of frequency variation during the start-up and stop of the frequency inverter.

0: Linear acceleration/deceleration

The output frequency increases or decreases linearly. NZ200 provides 4 types of acceleration/deceleration time, which can be selected via multi-function digital input terminals (P5.00～P5.08).

1: S-curve acceleration/deceleration A

The output frequency increases or decreases in an S-curve. S-curve is used in places requiring smooth startup or shutdown, such as elevators and conveyor belts. Function codes P1.08 and P1.09 define the time ratios of the initial segment and the end segment of S-curve acceleration/deceleration, respectively.

2: S-curve acceleration/deceleration B

In this S-curve acceleration/deceleration B, the motor's rated frequency fb is always the inflection point of the S-curve, as shown in Figure 4-1. It is generally used in occasions where rapid acceleration/deceleration is required in the high-speed region above the motor's rated frequency fb.

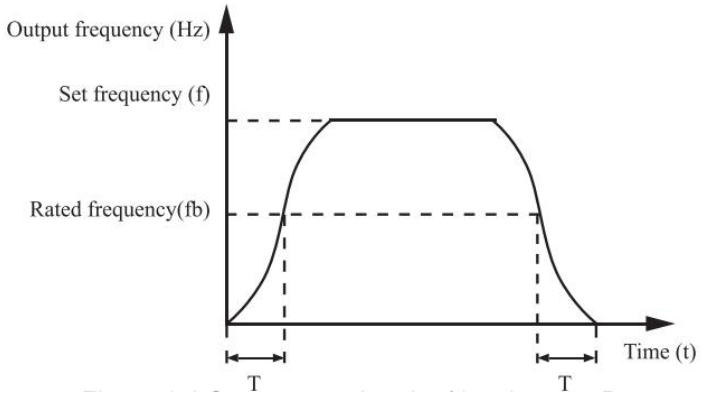


Figure 4-1 S-curve acceleration and deceleration B schematic diagram

When the set frequency is above the rated frequency, the acceleration and deceleration time is:

$$t = (\frac{4}{9} * (\frac{f}{f_b}) + \frac{5}{9}) * T$$

Here, f represents the set frequency, fb represents the motor's rated frequency, and T represents the time taken to accelerate from a frequency of 0 to the rated frequency fb.

P1.08	The initial period proportion of the S-curve	Factory value	30.0%
	setting range	0.0%～(100.0%-P1.09)	
P1.09	Proportion of time at the end of the S-curve	Factory value	30.0%
	Setting range	0.0%～(100.0%-P1.08)	

Function codes P1.08 and P1.09 respectively define the proportion of the starting and ending periods of acceleration/deceleration segment A of the S-curve. Both function codes must satisfy: P1.08 + P1.09 ≤ 100.0%.

In Figure 4-2, t1 represents the parameter defined by P1.08. During this period, the slope of the output frequency change gradually increases. t2 represents the time defined by parameter P1.09. During this period, the slope of the output frequency change gradually decreases to 0. Within the time interval between t1 and t2, the slope of the output frequency change is constant, meaning that a linear acceleration and deceleration occurs in this range.

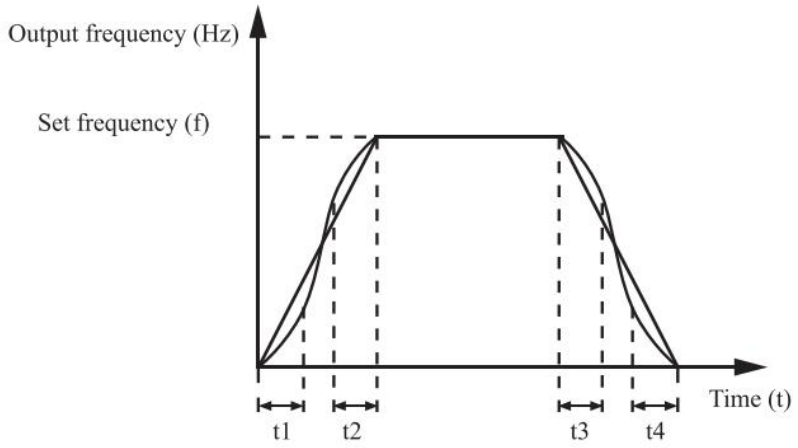


Figure 4-2 S-curve acceleration and deceleration schematic diagram A

P1.10	Shutting down method	Factory value	0
	Setting range	0	Decelerate to stop
		1	Free stop

0: Decelerate to stop

After the stop command takes effect, the inverter reduces the output frequency according to the deceleration time and stops when the frequency drops to 0.

1: Free stop

After the stop command takes effect, the inverter immediately terminates the output; at this point, the motor stops freely due to mechanical inertia.

P1.11	Shutdown direct current braking starting frequency	Factory value	0.00Hz
	Setting range	0.00 Hz to the maximum frequency	
P1.12	Shutdown direct current braking waiting time	Factory value	0.0s
	Setting range	0.0s～100.0s	
P1.13	Shutdown direct current braking current	Factory value	0%
	Setting range	0%～100%	
P1.14	Shutdown direct current braking time	Factory value	0.0s
	Setting range	0.0s～100.0s	

Starting frequency of DC braking for stopping: During the deceleration stop process, when the operating frequency decreases to this frequency, the DC braking process starts.

Waiting time for DC braking during stopping: After the operating frequency decreases to the starting frequency of DC braking for stopping, the inverter first stops output for a period of time before starting the DC braking process. It is used to prevent faults such as overcurrent that may be caused by starting DC braking at a relatively high speed.

DC braking current for stopping: Refers to the output current during DC braking, expressed as a percentage relative to the motor's rated current. The larger this value, the stronger the DC braking effect; however, the greater the heat generation of the motor and inverter.

DC braking time for stopping: The duration for which the DC braking amount is maintained. If this value is 0, the DC braking process is cancelled. The DC braking process during stopping is shown in the schematic diagram in Figure 4-3.

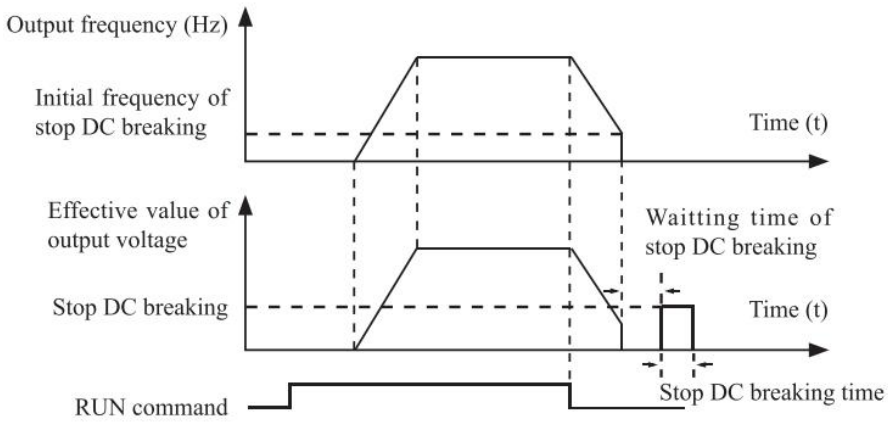


Figure 4-3 Diagram of Stopping DC Braking

P1.15	Brake function utilization rate	Factory value	100%
	Setting range	0% ~ 100%	

Only valid for inverters with built-in braking units.

Used to adjust the duty cycle of the braking unit. A higher braking usage rate results in a higher duty cycle for the braking unit's operation, leading to a stronger braking effect. However, during the braking process, the DC bus voltage of the inverter will fluctuate more significantly.

P2 group - Motor parameters

P2.00	Selection of motor type	Factory value	0
	Setting range	Ordinary asynchronous motor Variable-frequency asynchronous motor	
P2.01	Rated power	Factory value	Model dependent
	Setting range	0.1kW ~ 630.0kW	
P2.02	Rated voltage	Factory value	Model dependent
	Setting range	1V ~ 2000V	
P2.03	Rated current	Factory value	Model dependent
	Setting range	0.01A ~ 655.35A（VFD power<=55kW） 0.1A ~ 6553.5A（VFD power>55kW）	
P2.04	Rated frequency	Factory value	Model dependent
	Setting range	0.01 Hz to the maximum frequency	
P2.05	Rated rotational speed	Factory value	Model dependent
	Setting range	1rpm ~ 65535rpm	

The above function codes represent the motor nameplate parameters. Regardless of whether V/F control or vector control is employed, the relevant parameters must be accurately configured according to the motor nameplate.

To achieve better performance in V/F or vector control, it is necessary to perform auto-tuning of the motor parameters. The accuracy of the auto-tuning results is closely related to the correct configuration of the motor nameplate parameters.

P2.06	Asynchronous motor stator resistance	Factory value	Model dependent
	Setting range	0.001Ω～30.000Ω	
P2.07	Asynchronous motor rotor resistance	Factory value	Model dependent
	Setting range	0.001Ω～65.535Ω（VFD power<=55kW） 0.0001Ω～6.5535Ω（VFD power>55kW）	

P2.08	Asynchronous motor leakage inductance reactance	Factory value	Model dependent
	Setting range	0.01mH～655.35mH（VFD power<=55kW） 0.001mH～65.535mH（VFD power>55kW）	
P2.09	Asynchronous motor mutual inductance	Factory value	Model dependent
	Setting range	0.1mH～6553.5mH（VFD power<=55kW） 0.01mH～655.35mH（VFD power>55kW）	
P2.10	No-load current of asynchronous motor	Factory value	Model dependent
	Setting range	0.01A～P2.03（VFD power<=55kW） 0.1A～P2.03（VFD power>55kW）	

P2.06 to P2.10 are parameters for asynchronous motors. These parameters are generally not found on the motor nameplate and need to be obtained through the inverter's auto-tuning function. Among them, the "stationary auto-tuning for asynchronous motors" can only obtain three parameters: P2.06 to P2.08. The "dynamic auto-tuning for asynchronous motors" can obtain all five parameters here, as well as current loop PI parameters.

When changing the motor's rated power (P2.01) or rated voltage (P2.02), the inverter will automatically modify the parameter values of P2.06 to P2.10, resetting these five parameters to the values of standard motors.

If it is not possible to perform parameter auto-tuning for the asynchronous motor on-site, the corresponding function codes can be filled with parameters provided by the motor manufacturer.

P2.37	Dynamic auto-tuning selection	Factory value	0
	Setting range 0	No operation	
	Setting range 1	Asynchronous machine static auto-tuning	
	Setting range 2	Asynchronous dynamic auto-tuning	

0: No operation, i.e., auto-tuning is prohibited.

1: Asynchronous motor stationary auto-tuning: Suitable for scenarios where the asynchronous motor and load are difficult to disconnect, making dynamic auto-tuning infeasible.

Before performing stationary auto-tuning for an asynchronous motor, the motor type and motor nameplate parameters P2.00 to P2.05 must be correctly configured. Through stationary tuning of the asynchronous motor, the inverter can obtain three parameters: P2.06 to P2.08.

Action instructions: Set this function code to 1, then press the RUN key. The inverter will perform stationary auto-tuning.

2: Asynchronous motor dynamic auto-tuning: To ensure the dynamic control performance of the inverter, select dynamic auto-tuning. In this case, the motor must be disconnected from the load to keep it in a no-load state.
During the dynamic auto-tuning process, the inverter first performs stationary auto-tuning. It then accelerates to 80% of the motor's rated frequency according to the acceleration time P0.08. After maintaining this state for a period, it decelerates to a stop according to the deceleration time P0.09 and completes the auto-tuning.

Action instructions: Set this function code to 2, then press the RUN key. The inverter will perform dynamic auto-tuning.

**Note: When choosing the vector control mode, it is essential to correctly set the nameplate parameters of the motor and conduct auto-tuning of the motor parameters. Only with accurate motor parameters can the advantages of vector control be fully exploited.

P3 group - Vector control parameters

The function code of P3 group is only effective for vector control and ineffective for VF control.

P3.00	Speed Loop Proportional Gain 1	Factory value	30
	Setting range	1～100	
P3.01	Speed Loop Integral Time 1	Factory value	0.50s
	Setting range	0.01s～10.00s	
P3.02	Switching frequency 1	Factory value	5.00Hz
	Setting range	0.00～P3.05	
P3.03	Speed Loop Proportional Gain 2	Factory value	20
	Setting range	0～100	

P3.04	Speed Loop Integral Time 2	Factory value	1.00s
	Setting range	0.01s～10.00s	
P3.05	Switching frequency 2	Factory value	10.00Hz
	Setting range	P3.02 - Maximum Output Frequency	

The inverter can select different speed loop PI parameters when operating at different frequencies. When the operating frequency is less than Switching Frequency 1 (P3.02), the speed loop PI adjustment parameters are P3.00 and P3.01. When the operating frequency is greater than Switching Frequency 2 (P3.05), the speed loop PI adjustment parameters are P3.03 and P3.04. Between Switching Frequency 1 and Switching Frequency 2, the speed loop PI parameters transition linearly between the two sets of PI parameters, as shown in Figure 4-4：

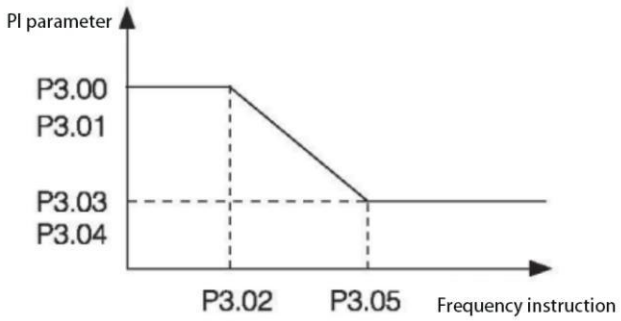


Figure 4-4 Diagram of PI Parameters

By setting the proportional coefficient and integral time of the speed regulator, the speed dynamic response characteristics of vector control can be adjusted.

Increasing the proportional gain and reducing the integral time can both accelerate the dynamic response of the speed loop. However, an excessively large proportional gain or an excessively small integral time may cause the system to oscillate. The recommended adjustment method is as follows: if the factory parameters cannot meet the requirements, perform fine-tuning based on the factory parameter values. First, increase the proportional gain to ensure the system does not oscillate; then, reduce the integral time so that the system has both a fast response characteristic and a small overshoot.

Note: Improper setting of PI parameters may lead to excessive speed overshoot, and even an overvoltage fault when the overshoot recovers.

P3.06	Vector control slip gain	Factory value	100%
	Setting range	50%～200%	

For sensorless vector control, this parameter is used to adjust the speed stability accuracy of the motor: when the motor is loaded and the speed is low, increase this parameter; similarly, when the motor is loaded and the speed is high, decrease this parameter.

P3.07	Speed Loop Filter Time Constant	Factory value	0.050s
	Setting range	0.000s ~ 0.100s	

In vector control mode, the output of the speed loop regulator is the torque current command, and this parameter is used to filter the torque command. Generally, there is no need to adjust this parameter. When the speed fluctuates greatly, the filter time can be appropriately increased; if the motor oscillates, this parameter should be appropriately decreased.

A smaller speed loop filter time constant may cause larger fluctuations in the output torque of the frequency inverter, but the speed response will be faster.

P3.08	Vector Control Over-Excitation Gain	Factory value	64
	Setting range	0～200	

During the deceleration of the frequency inverter, over-excitation control can suppress the rise of the DC bus voltage and avoid over-voltage faults. The larger the over-excitation gain, the stronger the suppression effect.

In applications where over-voltage alarms frequently occur during deceleration, increasing the over-excitation gain is necessary. However, an excessively high over-excitation gain may lead to an increase in output current, so a balance must be struck in practical applications.

For applications with very small inertia where voltage rise does not occur during motor deceleration, it is recommended to set the over-excitation gain to 0. Similarly, for applications equipped with braking resistors, setting the over-excitation gain to 0 is also advisable.

P3.09	Source of Torque Upper Limit in Speed Control Mode		Factory value	0
	Setting range	0	P3.10	
		1	FIV	
		2	FIC	
		3	Reserve	
		4	PULSE settings	
		5	Communication settings	

P3.10	Digital Setting of Torque Upper Limit in Speed Control Mode	Factory value	150.0%
	Setting range	0.0%～200.0%	

In speed control mode, the maximum output torque of the frequency inverter is controlled by the torque upper limit source.

P3.09 is used to select the setting source of the torque upper limit. When set via analog input, PULSE signal, or communication, 100% of the corresponding setting value corresponds to P3.10, where 100% of P3.10 represents the rated torque of the frequency inverter.

P3.13	Excitation Regulation Proportional Gain	Factory value	2000
	Setting range	0～60000	
P3.14	Excitation Regulation Integral Gain	Factory value	1300
	Setting range	0～60000	
P3.15	Torque Regulation Proportional Gain	Factory value	2000
	Setting range	0～60000	
P3.16	Torque Regulation Integral Gain	Factory value	1300
	Setting range	0～60000	
P3.17	Speed loop integral property	Factory value	0
	Unit: Integral Separation	0：invalid 1：valid	

PI adjustment parameters for the current loop in vector control; these parameters are automatically obtained after dynamic auto-tuning of the asynchronous motor and generally do not need to be modified.

It should be noted that the integral regulator of the current loop does not use integral time as the dimension, but directly sets the integral gain. Excessively large PI gain settings for the current loop may cause oscillation of the entire control loop; therefore, when there is current oscillation or significant torque fluctuation, the PI proportional gain or integral gain here can be manually reduced.

P4 group V/F control parameters

This group of function codes is only valid for V/F control and invalid for vector control. V/F control is suitable for general-purpose loads such as fans and water pumps, or applications where one frequency inverter drives multiple motors, or where there is a significant difference between the power of the frequency inverter and that of the motor.

P4.00	V/F curve setting		Factory value	0
	Setting range	0	Linear V/F	
		1	Multiple V/F	
		2	Square V/F	
		3	1.2-power V/F	
		4	1.4-power V/F	
		6	1.6-power V/F	
		8	1.8-power V/F	
		9	Reserved	
		10	VF Fully Separated Mode	
		11	VF semi-separation mode	

0: Linear V/F. Suitable for ordinary constant torque loads.

1: Multi-point V/F. Suitable for special loads such as dehydrators and centrifuges. In this case, arbitrary V/F relationship curves can be obtained by setting parameters P4.03～P4.08.

2: Square V/F. Suitable for centrifugal loads such as fans and water pumps.

3 to 8: V/F curve between linear V/F and square V/F

10: VF Full Separation Mode. In this case, the output frequency and output voltage of the frequency inverter are independent of each other; the output frequency is determined by the frequency source, while the output voltage is determined by P4.13 (VF Separation Voltage Source).
VF Full Separation Mode is generally applied to occasions such as induction heating, inverter power supplies, and torque motor control.

11: VF Semi-Separation Mode.
In this mode, V and F are proportional, but the proportional relationship can be set via voltage source P4.13. The V/F relationship also depends on the motor's rated voltage and frequency (Group P2 parameters).

Assuming the voltage source input is X (where X ranges from 0% to 100%), the relationship between the inverter's output voltage V and frequency F is:
V/F = 2 × X × (Motor Rated Voltage) / (Motor Rated Frequency)

P4.01	Torque boost	Factory value	Model dependent
	Setting range	0.0%～30%	
P4.02	Torque boost cutoff frequency	Factory value	50.00Hz
	Setting range	0.00 Hz to the maximum output frequency	

To compensate for the low-frequency torque characteristics in V/F control, some boost compensation is applied to the inverter's output voltage at low frequencies. However, excessively high torque boost settings may cause the motor to overheat and the inverter to experience overcurrent.

When the load is heavy and the motor's starting torque is insufficient, it is recommended to increase this parameter. When the load is light, the torque boost can be reduced. When the torque boost is set to 0.0, the inverter enables automatic torque boost, where the inverter automatically calculates the required torque boost value based on parameters such as the motor's stator resistance.

Torque boost cut-off frequency: Below this frequency, the torque boost is effective; beyond this set frequency, the torque boost becomes ineffective. For details, refer to the description in Figure 4-5.

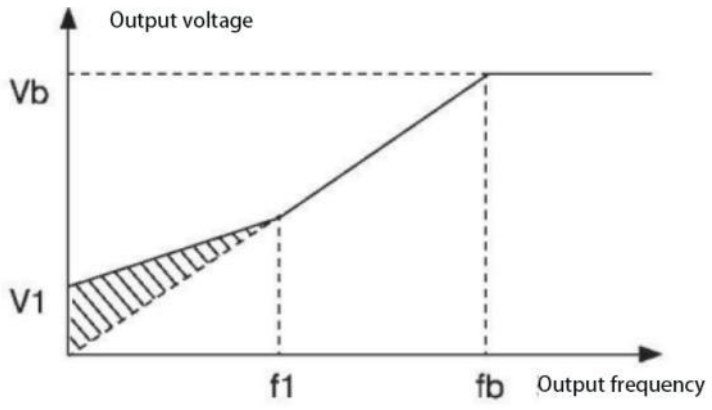


Figure 4-5 Diagram of Manual Torque Enhancement

V1: Manual Torque Boost Voltage Vb: Motor Rated Voltage
f1: Manual Torque Boost Cut-off Frequency fb: Motor Rated Frequency

P4.03	Multi-point V/F Frequency Point F1	Factory value	0.00Hz
	Setting range	0.00Hz～P4.05	
P4.04	Multi-point V/F Voltage Point V1	Factory value	0.0%
	Setting range	0.0%～100.0%	
P4.05	Multi-point V/F Frequency Point F2	Factory value	0.00Hz
	Setting range	P4.03～P4.07	
P4.06	Multi-point V/F Voltage Point V2	Factory value	0.0%
	Setting range	0.0%～100.0%	
P4.07	Multi-point V/F Frequency Point F3	Factory value	0.00Hz
	Setting range	P4.05 to Motor Rated Frequency (P2.04)	
P4.08	Multi-point V/F Voltage Point V3	Factory value	0.0%
	Setting range	0.0%～100.0%	

Parameters P4.03 to P4.08 define the multi-segment V/F curve.

Multi-point V/F curves should be set according to the load characteristics of the motor. It should be noted that the relationship between the three voltage points and frequency points must satisfy: V1 < V2 < V3, F1 < F2 < F3. Figure 4-6 shows a schematic diagram of the multi-point V/F curve setting.

Excessively high voltage settings at low frequencies may cause the motor to overheat or even burn out, and the inverter may suffer from over current, overs peed, or trigger over current protection.

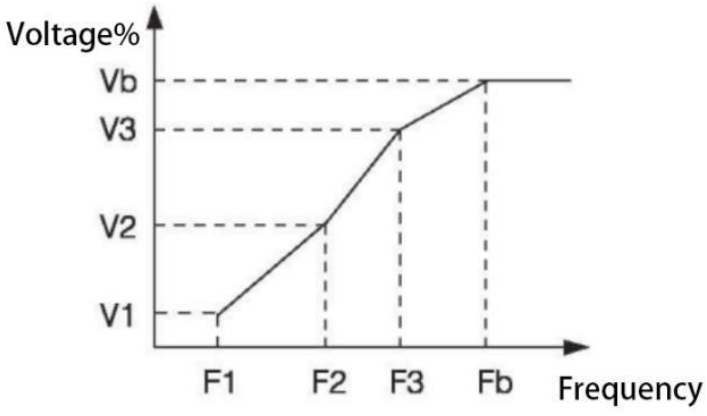


Figure 4-6 Schematic Diagram of Multi-point V/F Curve Setting

V1--V3: Voltage percentage of segments 1-3 for multi-speed V/F
F1--F3: Frequency setting values of segments 1-3 for multi-speed V/F
Vb: Motor rated voltage
Fb: Motor rated frequency

P4.09	VF Slip Compensation Gain	Factory value	0.0%
	Setting range	0%～200.0%	

This parameter is only valid for asynchronous motors.
VF slip compensation can compensate for the motor speed deviation caused by increased load on the asynchronous motor, enabling the motor speed to remain basically stable when the load changes.
When the VF slip compensation gain is set to 100.0%, it means that the slip compensated when the motor is under rated load equals the motor's rated slip. The motor's rated slip is automatically calculated by the inverter based on the motor's rated frequency and rated speed (from Group P2 parameters).
When adjusting the VF slip compensation gain, the general principle is that under rated load, the motor speed should be basically the same as the target speed. If the motor speed differs from the target value, this gain needs to be appropriately fine-tuned.

P4.10	VF Over-Excitation Gain	Factory value	64
	Setting range	0～200	

During the deceleration of the inverter, over-excitation control can suppress the rise of bus voltage and prevent over voltage faults. The larger the over-excitation gain, the stronger the suppression effect.
For occasions where over voltage alarms are likely to occur during inverter deceleration, the over-excitation gain needs to be increased. However, an excessively large over-excitation gain may easily lead to an increase in output current, so a trade-off is required in application.
For occasions with very small inertia, where no voltage rise occurs during motor deceleration, it is recommended to set the over-excitation gain to 0; for occasions with braking resistors, it is also recommended to set the over-excitation gain to 0.

P4.11	VF Oscillation Suppression Gain	Factory value	Model dependent
	Setting range	0～100	

The selection principle for this gain is to keep it as small as possible on the premise of effectively suppressing oscillations, so as to avoid adverse effects on VF operation.
When there is no oscillation in the motor, this gain should be set to 0. Only when the motor oscillates obviously, it is necessary to increase this gain appropriately—the larger the gain, the more significant the oscillation suppression effect.
When using the oscillation suppression function, it is required that the parameters of the motor's rated current and no-load current are accurate; otherwise, the VF oscillation suppression effect will be poor.

P4.13	VF Separation Voltage Source		Factory value	0
	Setting range	0	Digital setting (P4.14)	
		1	FIV	
		2	FIC	
		3	Reserved	
		4	PULSE Pulse Setting (S3)	
		5	Multiple instructions	
		6	Simply PLC	
		7	PID	
		8	Communication given	
		100.0% corresponds to the rated voltage of the motor (P2.02)		
P4.14	Voltage digital setting for VF separation		Factory value	0V
	Setting range		0V - Rated voltage of the motor	

VF Separation is generally applied in scenarios such as induction heating, inverter power supplies, and torque motor control.

When VF Separation control is selected, the output voltage can be set via function code P4.14, or derived from analog input, multi-segment commands, PLC, PID, or communication signals. For non-digital settings, 100% of each setting corresponds to the motor's rated voltage; if the percentage set by analog input or other means is negative, the absolute value of the setting is taken as the effective value.

0: Digital setting (P4.14)
The voltage is directly set by P4.14.

1: FIV 2: FIC
The voltage is determined by the analog input terminal.

4: PULSE setting (S3)
The voltage is given via terminal pulses. Specifications of the pulse given signal: voltage range 9V～30V, frequency range 0kHz～100kHz.

5: Multi-segment commands

When the voltage source is multi-segment commands, parameters in Group P5 and Group PC need to be set to determine the corresponding relationship between the given signal and the given voltage.

6: Simple PLC

When the voltage source is Simple PLC, parameters in Group PC need to be set to determine the given output voltage.

7: PID

The output voltage is generated based on the PID closed loop. For details, refer to the introduction of PID in Group PA.

8: Communication given

It means the voltage is given by the host motor via communication.

When 1～8 are selected for the above voltage sources, 0%～100% correspond to the output voltage of 0V～motor rated voltage.

P4.14	Voltage Rise Time for V/F Separation	Factory value	0.0s
	Setting range	0.0s～1000.0s	

VF Separation Rise Time is defined as the time required for the output voltage to change from 0V to the motor's rated voltage. As shown in Figure 4-7:

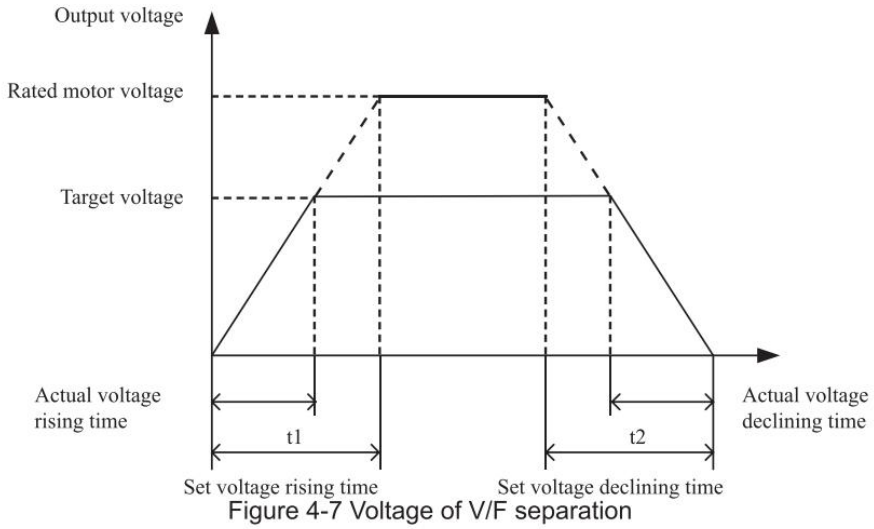


Figure 4-7 Voltage of V/F separation

P5 group input terminal

The NZ200 series inverter is equipped with 6 multi-functional digital input terminals (among which S3 can be used as a high-speed pulse input terminal), and 2 analog input terminals.

P5.00	FWD Terminal function	Factory value	1（Forward rotation operation）
P5.01	REV Terminal function	Factory value	2 (Reverse Jog)
P5.02	S1 Terminal function	Factory value	9（Fault reset）
P5.03	S2 Terminal function	Factory value	12（Multi-speed terminal 1）
P5.04	S3 Terminal function	Factory value	0
P5.05	S4 Terminal function	Factory value	0

These parameters are used to set the functions of the digital multi-function input terminals. The selectable functions are as shown in the following table:

Value	Function	Detailed explanation
0	No function	Users can set the unused terminals as "no function" to prevent accidental operation.。
1	Forward rotation operation（FWD）	The forward and reverse operation of the frequency inverter can be controlled through external terminals.
2	Reverse operation（REV）	
3	Three-wire Operation Control	This terminal is used to determine that the inverter's operating mode is three-wire control mode. For details, refer to the description of function code P5.11 ("Terminal Command Mode").
4	Forward Jog (FJOG)	FJOG is jog forward operation, and RJOG is jog reverse operation. For jog operation frequency and jog acceleration/deceleration time, refer to the descriptions of function codes P8.00, P8.01, and P8.02.
5	Reverse jog（RJOG）	
6	Terminal UP	When the frequency is given by an external terminal, use these commands to increment or decrement the frequency. When the frequency source is set to digital setting, these commands can be used to adjust the set frequency up or down.
7	Terminal DOWN	
8	free stop	The inverter blocks the output; at this time, the motor's stopping process is not controlled by the inverter. This mode has the same meaning as the free stop described in P1.10.
9	Fault Reset (RESET)	The function of fault reset via terminals. It has the same function as the RESET key on the keypad. This function enables remote fault reset.
10	Operation suspended	The inverter decelerates to a stop, but all operational parameters (such as PLC parameters, swing frequency

		parameters, and PID parameters) are retained. When the terminal signal disappears, the inverter resumes its pre-stop operating state.
11	External Fault Normally Open Input	When this signal is sent to the inverter, the inverter will report fault EF and perform fault handling in accordance with the fault protection action mode (For details, refer to function code P9.47).。
12	Multiple-speed terminal 1	Customers can use the 16 states of these four terminals to set 16-speed levels or 16 other commands. See Appendix Table 1 for details.
13	Multiple-speed terminal 2	
14	Multiple-speed terminal 3	
15	Multiple-speed terminal 4	
16	Acceleration and Deceleration Time Selection Terminal 1	Through the four states of these two terminals, four types of acceleration/deceleration times can be selected. See Appendix Table 2 for details.
17	Acceleration and deceleration time selection terminal 2	
18	Frequency Source Switching	This function is used to switch between different frequency sources. According to the setting of the frequency source selection function code (P0.03), when switching between two specific frequency sources is set as the frequency source mode, this terminal is used to switch between the two frequency sources.
19	UP/DOWN Setting Reset (Terminal/Keypad)	When the frequency is given as a digital frequency setting, this terminal can clear the frequency value changed by terminal UP/DOWN or keypad UP/DOWN, restoring the given frequency to the value set in P0.10.
20	Run command to switch terminals	When the command source is set to terminal control (P0.02=1), this terminal enables switching between terminal control and keypad control. When the command source is set to communication control (P0.02=2), this terminal enables switching between communication control and keypad control.
21	Speeding and deceleration prohibited	Ensure the inverter maintains its current output frequency without being affected by external signals (except for the stop command).
22	PID pause	PID is temporarily disabled. The inverter maintains the current output frequency and no longer performs PID adjustment of

		the frequency source.
23	PLC State Reset	While the PLC is paused during execution, when it runs again, this terminal can enable the inverter to return to the initial state of the simple PLC.
24	Swing Frequency Pause	The inverter outputs at the central frequency, and the swing frequency function is paused.
25	Counter input	Counting pulse input terminal
26	Counter reset	Clear the counter state.
27	Length count input	Length counting input terminal
28	Length reset	Length clear
29	Torque control disabled	Disable the inverter from torque control, and the inverter enters speed control mode.
30	PULSE Frequency Input (Only Valid for S3)	Function of S3 as a pulse input terminal
31	Reserved	Reserved
32	Immediate direct current braking	When this terminal is active, the inverter directly switches to the DC braking state.
33	External fault normally open input	When the external fault normally closed signal is sent to the inverter, the inverter reports fault EF and shuts down.
34	Frequency adjustment enable	If this function is set to active, the inverter will not respond to frequency changes when the frequency alters, until the terminal state becomes inactive.
35	Reverse the direction of the PID action	When this terminal is active, the PID action direction is opposite to the direction set by PA.03.
36	External parking terminal 1	During keypad control, this terminal can be used to stop the inverter, functioning equivalently to the STOP key on the keypad.
37	Control Command Switching Terminal 2	Used to switch between terminal control and communication control. If the command source is selected as terminal control, the system switches to communication control when this terminal is active; vice versa.
38	PID integral pause	When this terminal is active, the integral adjustment function of PID is paused, while the proportional adjustment and derivative adjustment functions of PID remain effective.
39	Frequency source X switches to the preset frequency	When this terminal is active, frequency source X is replaced by the preset frequency (P0.10).
40	Frequency source Y switches to the preset frequency	When this terminal is active, frequency source Y is replaced by the preset frequency (P0.10).

43	PID parameter switching	When the PID parameter switching condition is the S terminal (PA.18=1), when this terminal is inactive, the PID parameters use PA.05～PA.07; when this terminal is active, they use PA.15～PA.17.
44	Reserved	
45	Reserved	
46	Speed Control/Torque Control Switching	Enables the inverter to switch between torque control and speed control modes. When this terminal is inactive, the inverter operates in the mode defined by C0.00 (Speed/Torque Control Mode). When this terminal is active, it switches to the other mode.
47	Emergency Stop	When this terminal is active, the inverter stops at the fastest speed. During this stopping process, the current is at the set current upper limit. This function is used to meet the requirement that the inverter needs to stop as soon as possible when the system is in an emergency state.
48	External Stop Terminal 2	Under any control mode (panel control, terminal control, communication control), this terminal can be used to make the inverter decelerate to a stop, with the deceleration time fixed as deceleration time 4 at this point.
49	Deceleration DC Braking	When this terminal is activated, the inverter first decelerates to the starting frequency for DC braking during shutdown and then switches to the DC braking state.
50	This time of operation has been reset to zero.	When this terminal is active, the timing duration of the inverter's current operation is cleared. This function needs to be used in conjunction with timed operation (P8.42) and current operation time arrival (P8.53).

Appendix Table 1 Description of Multi-segment Command Functions

The 4 multi-segment command terminals can be combined into 16 states, and these 16 states correspond to 16 command set values. Details are as shown in Table 1.

K4	K3	K2	K1	Command Setting	Corresponding Parameters
OFF	OFF	OFF	OFF	Multi-segment Command 0	PC.00
OFF	OFF	OFF	ON	Multi-segment Command 1	PC.01
OFF	OFF	ON	OFF	Multi-segment Command 2	PC.02
OFF	OFF	ON	ON	Multi-segment Command 3	PC.03
OFF	ON	OFF	OFF	Multi-segment Command 4	PC.04
OFF	ON	OFF	ON	Multi-segment Command 5	PC.05
OFF	ON	ON	OFF	Multi-segment Command 6	PC.06
OFF	ON	ON	ON	Multi-segment Command 7	PC.07
ON	OFF	OFF	OFF	Multi-segment Command 8	PC.08
ON	OFF	OFF	ON	Multi-segment Command 9	PC.09
ON	OFF	ON	OFF	Multi-segment Command 10	PC.10

ON	OFF	ON	ON	Multi-segment Command 11	PC.11
ON	ON	OFF	OFF	Multi-segment Command 12	PC.12
ON	ON	OFF	ON	Multi-segment Command 13	PC.13
ON	ON	ON	OFF	Multi-segment Command 14	PC.14
ON	ON	ON	ON	Multi-segment Command 15	PC.15

When the frequency source is selected as multi-speed, 100.0% of the function codes PC.00 to PC.15 corresponds to the maximum frequency P0.12. In addition to serving as the multi-speed function, the multi-segment command can also be used as the given source for PID or as the voltage source for VF separation control to meet the requirement of switching between different given values.

Appendix Table 2 Description of Acceleration/Deceleration Time Selection Terminal Functions

Terminal2	Terminal1	Acceleration or deceleration time	Corresponding parameters
OFF	OFF	acceleration	P0.09、P0.09
OFF	ON	acceleration	P8.03、P8.04
ON	OFF	acceleration	P8.05、P8.06
ON	ON	acceleration	P8.07、P8.08

P5.10	X filtering time	Factory value	0.010s
	Setting range	0.000s～1.000s	

Set the software filtering time for the state of the X terminal. If the input terminal in the application scenario is susceptible to interference and thus causes false operations, this parameter can be increased to enhance anti-interference capability. However, increasing this filtering time will result in a slower response of the S terminal.

P5.11	Terminal command mode		Factory value	0
	Setting range	0	Two-wire mode 1	
		1	Two-wire mode 2	
		2	Three-wire mode 1	
		3	Three-wire mode 2	

This parameter defines four different ways to control the operation of the frequency inverter via external terminals.

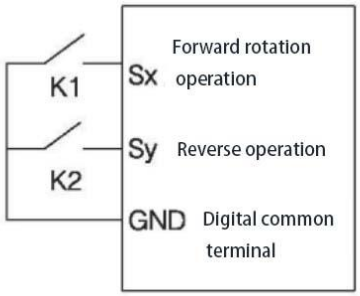
0: Two-wire mode

1: This is the most commonly used two-wire mode. The forward and reverse operation of the motor is determined by terminals Sx and Sy.

Terminal function settings are as follows:

Terminal	The set value	Note
Sx	1	Forward operation (FWD)
Sy	2	Reverse operation (REV)

Among them, Sx and Sy are multi-functional input terminals for FWD, REV, S1～S4, with active low.



K1	K2	Run command
0	0	Stop
1	0	Forward rotation operation
0	1	Reverse operation
1	1	Stop

Figure 4-8 Two-wire Mode 1

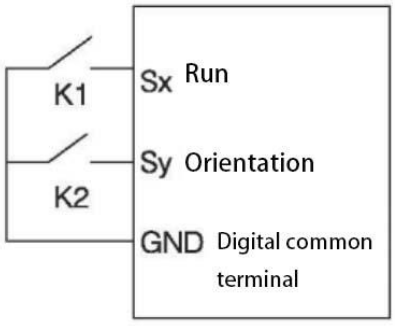
1: Two-wire Mode

2: In this mode, the Sx terminal functions as the run enable terminal, while the Sy terminal functions to determine the operation direction.

Terminal function settings are as follows:

Terminal	The set value	Note
Sx	1	Forward operation (FWD)
Sy	2	Reverse operation (REV)

Among them, Sx and Sy are multi-functional input terminals of FWD, REV, S1～S4, with active low.



K1	K2	Run command
0	0	Stop
1	0	Forward operation
1	1	Reserve operation
0	1	Stop

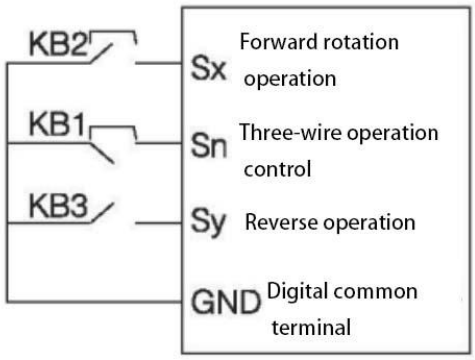
Figure 4-9 Two-wire Mode 2

2: Three-wire Control Mode 1: In this mode, Sn serves as the enable terminal, while the direction is controlled by Sx and Sy respectively.

Terminal function settings are as follows:

Terminal	The set value	Note
Sx	1	Forward operation（FWD）
Sy	2	Reverse operation（REV）
Sn	3	Three-wire operation control

When operation is required, the Sn terminal must first be closed, and the forward or reverse rotation of the motor is controlled by the pulse rising edge of Sx or Sy.
When stopping is required, it must be achieved by disconnecting the Sn terminal signal.
Among them, Sx, Sy, and Sn are multi-functional input terminals of FWD, REV, S1～S4; Sx and Sy are pulse active, and Sn is active low.



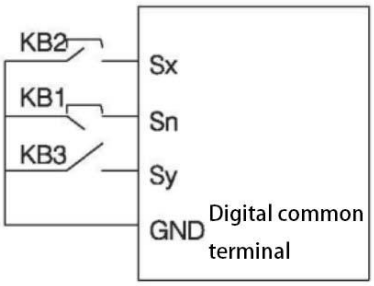
Among them:
KB1: Stop Button KB2: Forward Button KB3: Reverse Button

3: Three-wire Control Mode 2: In this mode, the enable terminal is Sn. The operation command is given by Sx, and the direction is determined by the state of Sy.

Terminal function settings are as follows:

Terminal	The set value	Note
Sx	1	Run Enable (FWD)
Sy	2	Reverse direction
Sn	3	Three-wire operation control

When operation is required, the Sn terminal must first be closed; the motor operation signal is generated by the pulse rising edge of Sx, and the motor direction signal is generated by the state of Sy.
When stopping is required, it must be achieved by disconnecting the Sn terminal signal.
Among them, Sx, Sy, and Sn are multi-functional input terminals of FWD, REV, S1～S4; Sx is pulse active, and Sy and Sn are active low.



KB3	Run command
0	Forward rotation operation
1	Reserve operation

Figure 4-10 Three-wire Control Mode 2

Among them: KB1: Stop Button KB2: Run Button

P5.12	Terminal UP/DOWN rate change	Factory value	1.00Hz/s
	Setting range	0.01Hz/s～65.535Hz/s	

It is used to set the speed of frequency change when adjusting the set frequency via the UP/DOWN terminals, i.e., the amount of frequency change per second.
When P0.22 (frequency decimal point) is 2, the range of this value is 0.001Hz/s～65.535Hz/s. When P0.22 (frequency decimal point) is 1, the range of this value is 0.01Hz/s～655.35Hz/s.

P5.13	FI curve 1 - Minimum input	Factory value	0.00V
	Setting range	0.00V～P5.15	
P5.14	FI Curve 1 Minimum Input Corresponding Setting	Factory value	0.0%
	Setting range	-100.00%～100.0%	
P5.15	FI Curve 1 Maximum Input	Factory value	10.00V
	Setting range	P5.13～10.00V	
P5.16	FI Curve 1 Maximum Input Corresponding Setting	Factory value	100.0%
	Setting range	-100.00%～100.0%	
P5.17	FI Curve 1 Filter Time	Factory value	0.10s
	Setting range	0.00s～10.00s	

The above function code is used to set the relationship between the analog input voltage and the set value it represents.

When the analog input voltage is greater than the set "maximum input" (P5.15), the analog voltage is calculated according to the "maximum input"; similarly, when the analog input voltage is less than the set "minimum input" (P5.13), it is calculated as the minimum input or 0.0% according to the setting of "FI below minimum input setting selection" (P5.14).

When the analog input is a current input, 1mA current is equivalent to 0.5V voltage.
FI input filter time is used to set the software filter time of FI. When the on-site analog quantity is prone to interference, please increase the filter time to stabilize the detected analog quantity. However, a longer filter time will slow down the response speed of analog quantity detection, and the setting needs to be balanced according to actual application conditions.

In different application scenarios, the meaning of the nominal value corresponding to 100.0% of the analog setting varies. For details, please refer to the description in each application section.

The following figures illustrate two typical setting cases:

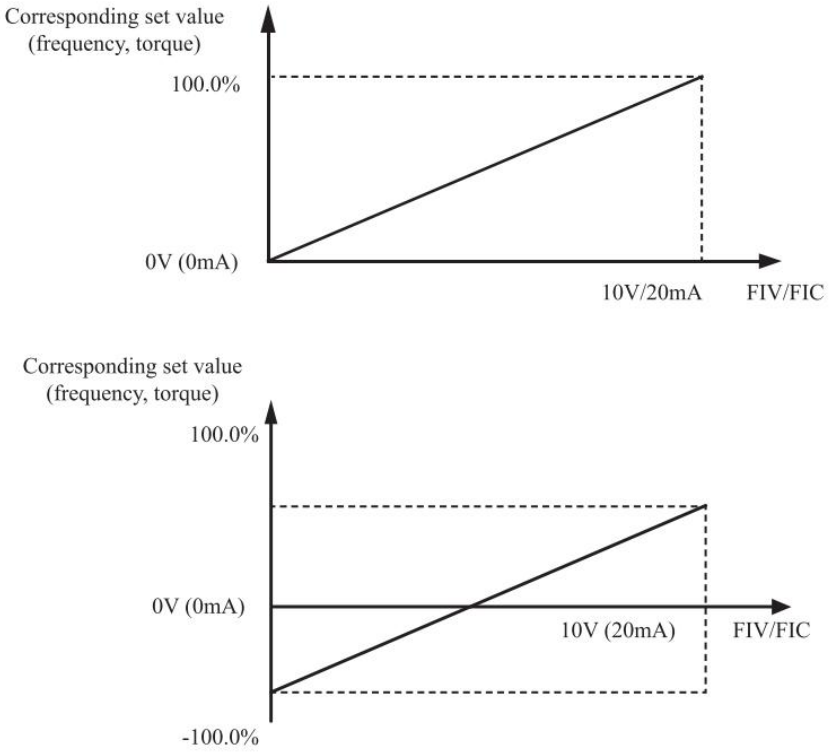


Figure 4-11 Corresponding Relationship between Analog Given and Set Quantity

P5.18	Minimum input of FI curve 2		Factory value	0.00V
	Setting range	0.00V～P5.20		
P5.19	FI Curve 2 Minimum Input Corresponding Setting		Factory value	0.0%
	Setting range	-100.00%～100.0%		
P5.20	Maximum input of FI curve 2		Factory value	10.00V
	Setting range	P5.18～10.00V		

P5.21	FI Curve 2 maximum Input Corresponding Setting	Factory value	100.0%
	Setting range	-100.00%～100.0%	
P5.22	Filtering time of FI curve 2	Factory value	0.10s
	Setting range	0.00s～10.00s	

The functions and usage methods of Curve 2 can be referred to in the instructions of Curve 1.

P5.23	Minimum input of FI curve 3	Factory value	0.00V
	Setting range	0.00s～P5.25	
P5.24	FI Curve 3 Minimum Input Corresponding Setting	Factory value	0.0%
	Setting range	-100.00%～100.0%	
P5.25	Maximum input of FI curve 3	Factory value	10.00V
	Setting range	P5.23～10.00V	
P5.26	FI Curve 3 Maximum Input Corresponding Setting	Factory value	100.0%
	Setting range	-100.00%～100.0%	
P5.27	Filtering time of FI curve 3	Factory value	0.10s
	Setting range	0.00s～10.00s	

For the functions and usage of Curve 3, please refer to the instructions for Curve 1.

P5.28	PULSE minimum input	Factory value	0.00kHz
	Setting range	0.00kHz～P5.30	
P5.29	PULSE minimum input corresponding setting	Factory value	0.0%
	Setting range	-100.00%～100.0%	
P5.30	PULSE maximum input	Factory value	50.00kHz
	Setting range	P5.28～50.00kHz	
P5.31	PULSE maximum input corresponding setting	Factory value	100.0%
	Setting range	-100.00%～100.0%	
P5.32	PULSE filtering time	Factory value	0.10s
	Setting range	0.00s～10.00s	

This group of function codes is used to set the relationship between the S3 pulse frequency and the corresponding settings.
The pulse frequency can only be input to the frequency inverter via the S3 channel.
The application of this group of functions is similar to that of Curve 1; please refer to the instructions for Curve 1.

P5.33	Selection of the FI curve		Factory value	321
	Setting range	The unit	Selection of the FIV curve	
		1	Curve 1 (2 points, see P5.13 - P5.16)	
		2	Curve 2 (2 points, see P5.18 - P5.21)	
		3	Curve 3 (2 points, see P5.23 - P5.26)	
		4	Curve 4 (4 points, see C6.00 to C6.07)	
		5	Curve 5 (4 points, see C6.08 - C6.15)	
		Tens digits	FIC curve selection (1-6, as above)	
		Hundreds digits	Reserved	

The units digit, tens digit, and hundreds digit of this function code are respectively used to select the corresponding set curves for analog inputs FIV and FIC.
The two analog inputs can respectively select any one of the five curves.Curve 1, Curve 2, and Curve 3 are all 2-point curves, set in the P5 group of function codes, while Curve 4 and Curve 5 are both 4-point curves and need to be set in the C6 group of function codes.

P5.34	FI is below the minimum input setting selection		Factory value	000
	Setting range	Units digit	FIV is below the minimum input setting threshold.	
		0	Corresponding to the minimum input setting	
		1	0.0%	
		Tens digit	FIC is below the minimum input setting selection (0 - 1, as mentioned above)	
		Hundreds digit	Reserved	

This function code is used to set how the corresponding setting of the analog quantity is determined when the voltage of the analog input is less than the set "minimum input".

The units digit, tens digit, and hundreds digit of this function code correspond to analog inputs FIV and FIC respectively. If 0 is selected, when the FI input is lower than the

"minimum input", the corresponding setting of the analog quantity is the "setting corresponding to minimum input" of the curve specified by the function code (P5.14, P5.19, P5.24).

If 1 is selected, when the FI input is lower than the minimum input, the corresponding setting of the analog quantity is 0.0%.

P5.35	FWD Delay Time		Factory value	0.0s
	Setting range	0.0s～3600.0s		
P5.36	REV delay time		Factory value	0.0s
	Setting range	0.0s～3600.0s		
P5.37	S1 Delay Time		Factory value	0.0s
	Setting range	0.0s～3600.0s		

Used to set the delay time of the frequency inverter for the change when the terminal state changes. Currently, only FWD, REV, and S1 have the function of setting delay time.

P5.38	S terminal effective mode selection 1		Factory value 00000
	Setting range	units digit	Setting of the valid state of the FWD terminal
		0	high level active
		1	low level active
		tens digit	Setting of valid state of REV terminals (0 - 1, same as
		hundreds digit	Setting of valid state of S1 terminal (0 - 1, same as above)
		thousands digit	Setting of valid state of S2 terminal (0 - 1, same as above)
		ten thousands	Setting of valid state of S3 terminal (0 - 1, same as above)
P5.39	S terminal effective mode selection 2		Factory value 00000
	Setting range	units digit	Setting of the valid state of the S4 terminal
		0	active high
		1	active low
		tens digit	Reserved

		hundreds digit	Reserved
		thousands digit	Reserved
		ten thousands	Reserved

Used to set the active state mode of digital input terminals. When high-level active is selected, the corresponding S terminal is active when connected to GND and inactive when disconnected. When low-level active is selected, the corresponding S terminal is inactive when connected to GND and active when disconnected.

P6 group output terminal

NZ200 series frequency inverters come standard with one multi-functional analog output terminal (FOV), one multi-functional relay output terminal, and one MO1 terminal, which functions as an open-collector digital output.

P6.00	MO1 terminal output mode selection		Factory value	0
	Factory value	0~1	0：Pulse output (optional) 1：on-off output	
P6.01	MO1 Function Selection (Emitter Open-Loop Output Terminal)		Factory value	0
P6.02	Relay output function selection (RA-RB-RC)		Factory value	2

The above two function codes are used to select the functions of the two digital outputs; the function description of the multi-functional output terminals is as follows:

Set value	Function	Description
0	No output	The output terminals have no functions at all.
1	Inverter in operation	This indicates that the frequency inverter is in operation mode, with an output frequency (which can be zero), and at this time, the output ON signal is generated.
2	Fault output (Fault shutdown)	When the frequency inverter malfunctions and stops operation, an output ON signal is sent.
3	Frequency level detection FDT1 output	Please refer to the explanations of function codes P8.19 and P8.20.
4	Frequency arrival	Please refer to the instructions for function code P8.21.
5	In zero-speed operation (no	When the frequency inverter is running and the output frequency is 0, an ON signal is output. When the

	output when stopped)	frequency inverter is in a stopped state, this signal is OFF.
6	Motor overload pre-alarm	Before the motor overload protection is activated, a judgment is made based on the threshold of the overload pre-alarm. When the threshold is exceeded, an ON signal is output. Refer to function codes P9.00 to P9.02 for the setting of motor overload parameters.
7	Inverter overload pre-alarm	An output ON signal is sent 10 seconds before the overload protection of the frequency inverter occurs.
8	Set count value reached	When the count value reaches the set value of Pb.08, output the ON signal.
9	Specified count value reached	When the count value reaches the value set in Pb.09, an ON signal is output. Refer to the Pb group function description for the counting function.
10	Length reaches	When the detected actual length exceeds the value set in Pb.05, an ON signal is output.
11	PLC Cycle Completion	When the simple PLC finishes one cycle of operation, it outputs a pulse signal with a width of 250ms.
12	Cumulative running time reached	When the cumulative operating time of the inverter exceeds the value set in P8.17, an ON signal is output.
13	Frequency being limited	When the set frequency exceeds the upper limit frequency or lower limit frequency, and the inverter output frequency has reached the upper limit frequency or lower limit frequency, an ON signal is output.
14	Torque limiting	When the inverter is in speed control mode and the output torque reaches the torque limit value, it enters the stall protection state and outputs an ON signal simultaneously.
15	Operation ready	When the power supplies of the inverter's main circuit and control circuit have stabilized, the inverter has not detected any fault information, and the inverter is in a runnable state, an ON signal is output.
16	FIV>FIC	When the value of analog input FIV is greater than that of analog input FIC, an ON signal is output.。
17	Upper frequency limit reached	When the operating frequency reaches the upper limit frequency, the output ON signal is generated.
18	Lower limit frequency reached (no output in the stopped state)	When the operating frequency reaches the lower limit frequency, an ON signal is output. This signal is OFF in the stopped state.
19	Under-voltage output	When the frequency inverter is in an under-voltage state, it outputs an ON signal.
20	Communication settings	Please refer to the communication protocol.

21	Reserved	Reserved
22	Reserved	Reserved
23	Zero speed operation in progress 2 (output also in stopped state)	When the output frequency of the inverter is 0, an ON signal is output. This signal is also ON in the stopped state.
24	Cumulative power-on time has reached	When the cumulative power-on time of the inverter (P7.13) exceeds the time set in P8.16, an ON signal is output.
25	Frequency level detection FDT2 output	Please refer to the explanations of function codes P8.28 and P8.29.
26	Frequency 1 reaches the output	Please refer to the explanations of function codes P8.30 and P8.31.
27	Frequency 2 reaches the output	Please refer to the explanations of function codes P8.32 and P8.33.
28	Current 1 reaches the output.	Please refer to the explanations of function codes P8.38 and P8.39.
29	Current 2 reaches the output.	Please refer to the explanations of function codes P8.40 and P8.41.
30	Timer reached output	When the timing function selection (P8.42) is activated, once the running time of the frequency inverter reaches the set timing duration, an ON signal will be output.
31	FIV input overlimit	When the value of the analog input FIV is greater than P8.46 (the upper limit for FIV input protection) or less than P8.45 (the lower limit for FIV input protection), an ON signal is output.
32	Load dropping in progress	When the frequency inverter is in the unloaded state, it outputs the ON signal.
33	Reverse operation in progress	When the frequency inverter is operating in reverse mode, an output ON signal is generated.
34	Zero current state	Please refer to the explanations of function codes P8.28 and P8.29.
35	Module temperature reached	When the temperature of the inverter module radiator (P7.07) reaches the set value for the module temperature (P8.47), an output ON signal is generated.
36	Software current overlimit	Please refer to the explanations of function codes P8.36 and P8.37.
37	Lower limit frequency reached (output also in	When the operating frequency reaches the lower limit frequency, the output ON signal is generated. This signal remains ON even during the shutdown state.

	stopped state)	
38	Alarm output	When the frequency inverter malfunctions and the handling mode for this fault is to continue operation, the frequency inverter will issue an alarm output.
39	Reserved	
40	Current running time reached	When the frequency inverter starts to operate for a duration exceeding the time set by P8.53, it will output the ON signal.

P6.07	FOV output function selection	Factory value	0
P6.08	FOC output function selection (optional)	Factory value	1

The analog outputs FOV and FOC have an output range of 0V to 10V or 0mA to 20mA. The relationship between the output range of the analog outputs and the scaling of the corresponding functions is shown in the following table:

Setting value	Function	The functions corresponding to the analog output range of 0.0% to 100.0%
0	Operating frequency	0 - Maximum output frequency
1	Setting frequency	0 - Maximum output frequency
2	Output current	0 to 2 times the motor's rated current
3	Output torque	0 to 2 times the motor's rated torque
4	Output power	0 to 2 times the rated power
5	Output voltage	0 to 1.2 times the rated voltage of the frequency inverter
6	PULSE input	0.01kHz～100.00kHz
7	FIV	0V～10V
8	FIC	0V～10V（or 0～20mA）
9	Reserved	
10	length	0 - Maximum set length
11	count value	0 - Maximum count value
12	Communication settings	0.0%～100.0%
13	motor speed	0 - Corresponding rotational speed at the maximum output frequency
14	current output	0.0A～1000.0A
15	Output voltage	0.0V～1000.0V

P6.10	FOV zero offset coefficient	Factory value	0.0%
	Setting range	-100.0%～+100.0%	
P6.11	FOV gain	Factory value	1.00
	Setting range	-10.00～+10.00	
P6.12	FOC zero offset coefficient	Factory value	0.00%
	Setting range	-100.0%～+100.0%	
P6.13	FOC gain	Factory value	1.00
	Setting range	-10.00～+10.00	

The above function codes are generally used to correct the zero drift and output amplitude deviation of the analog output. They can also be used to customize the required FOV output curve.

If the zero offset is denoted by "b", the gain by "k", the actual output by "Y", and the standard output by "X", then the actual output is: Y = kX + b. Among them, 100% of the zero offset coefficients of FOV and FOC correspond to 10V (or 20mA). The standard output refers to the quantity represented by the analog output where the output of 0V to 10V (or 0mA to 20mA) corresponds to the analog output under the condition of no zero offset and gain correction.

For example: If the analog output represents the operating frequency, and you want to output 8V when the frequency is 0 and 3V when the frequency is at its maximum, the gain should be set to "-0.50" and the zero offset should be set to "80%".

P6.17	MO1 output delay time	Factory value	0.0s
	Setting range	0.0s～3600.0s	
P6.18	RA-RB-RC output delay time	Factory value	0.0s
	Setting range	0.0s～3600.0s	

Set the delay time for the output terminal MO1 (relay) from the moment its status changes to when the actual output changes.

P6.22	MO1 Output Terminal Valid State Selection		Factory value	00000
	Setting range	units digit	MO1 Active State Selection	
		0	positive logic	
		1	negative logic	
		tens digit	RA-RB-RC valid state setting (0～1, same as above)	

Define the output logic for output terminal MO1 (RA, RB, RC):
0: Positive logic - The digital output terminal is active when connected to the corresponding common terminal and inactive when disconnected.
1: Negative logic - The digital output terminal is inactive when connected to the corresponding common terminal and active when disconnected.

P7 group: Keypad and Display

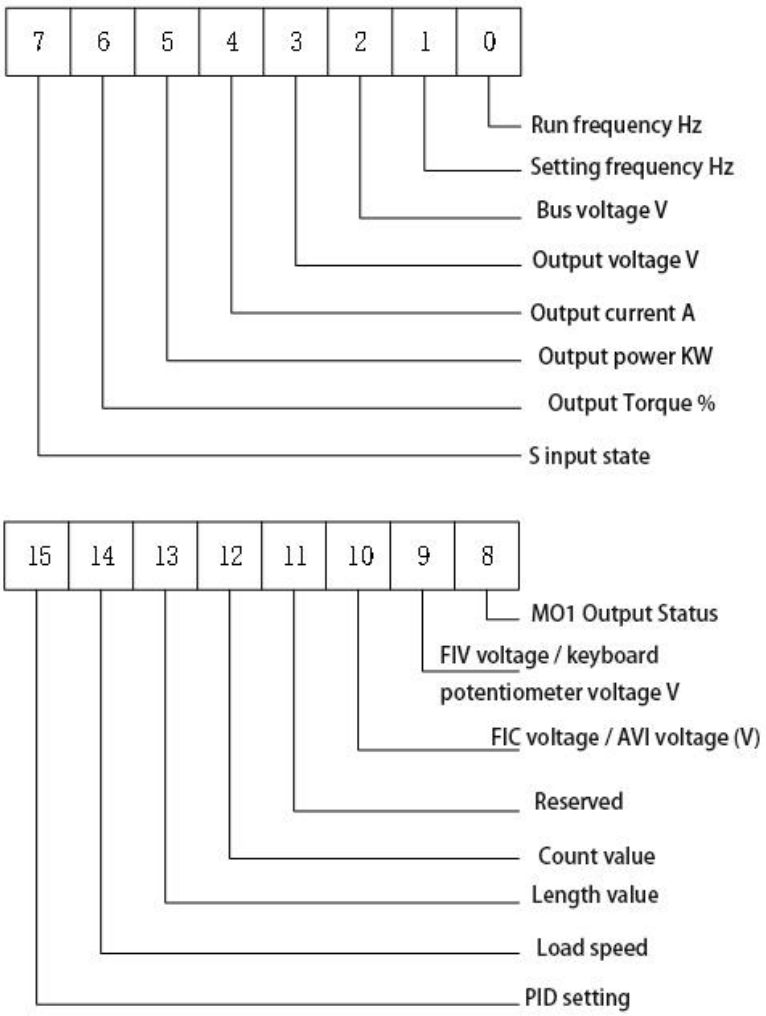
P7.00	Output power calibration coefficient		Factory value	100.0
	Setting range	0	0.0～200.0	

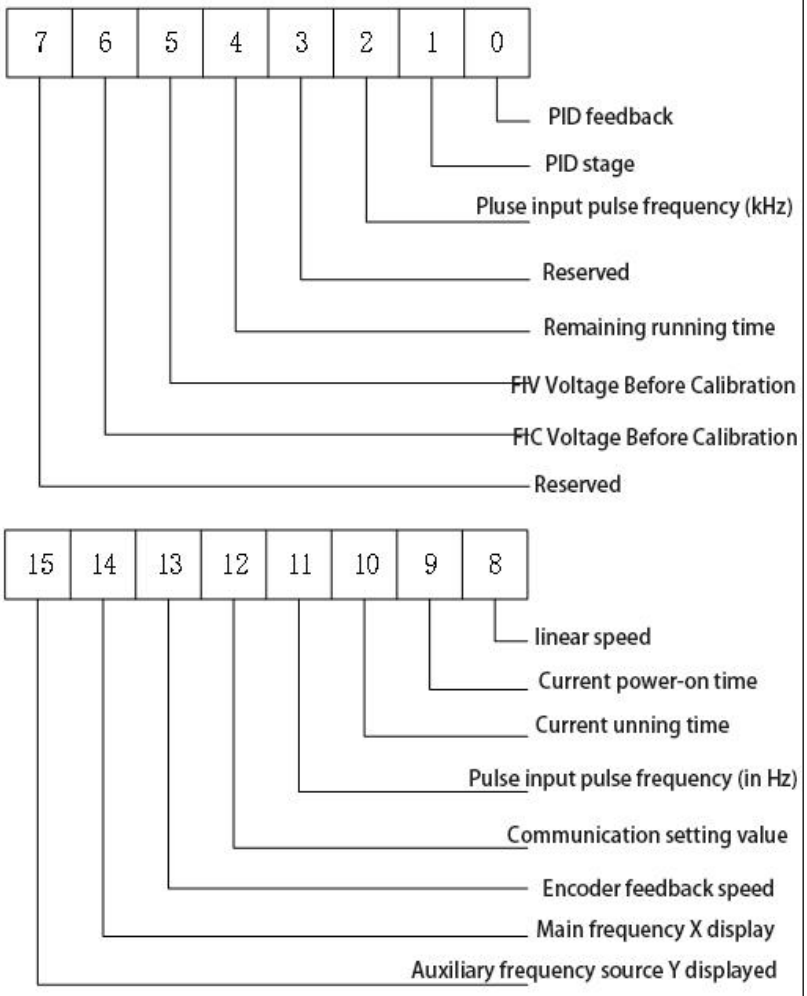
Users can modify the P7.00 parameter to adjust the output power (the output power can be viewed through parameter D0.05).

P7.01	JOG key function selection		Factory value	0
	Setting range	0	The JOG button is ineffective.
		1	Switch between the operation keypad command channel and the remote command channel (terminal command channel or communication command channel)
		2	Forward-reverse rotation switch
		3	Forward jog
		4	Reverse jog
		5	6-key keyboard stop key active

The JOG key is a multi-function key, and its function can be set via this function code. It can be switched using this key both in stop and running states.
0: This key has no function.
1: Switch between keyboard command and remote operation. It refers to the switching of command sources, i.e., switching between the current command source and keyboard control (local operation). If the current command source is keyboard control, this key function is invalid.
2: Forward/reverse switching Switch the direction of the frequency command via the JOG key. This function is only valid when the command source is the operation panel command channel.
3: Forward jog Implement forward jog (JOG-FWD) via the keyboard JOG key.
4: Reverse jog Implement reverse jog (JOG-REV) via the keyboard JOG key.
5: For 6-key keyboards, the stop key is active.

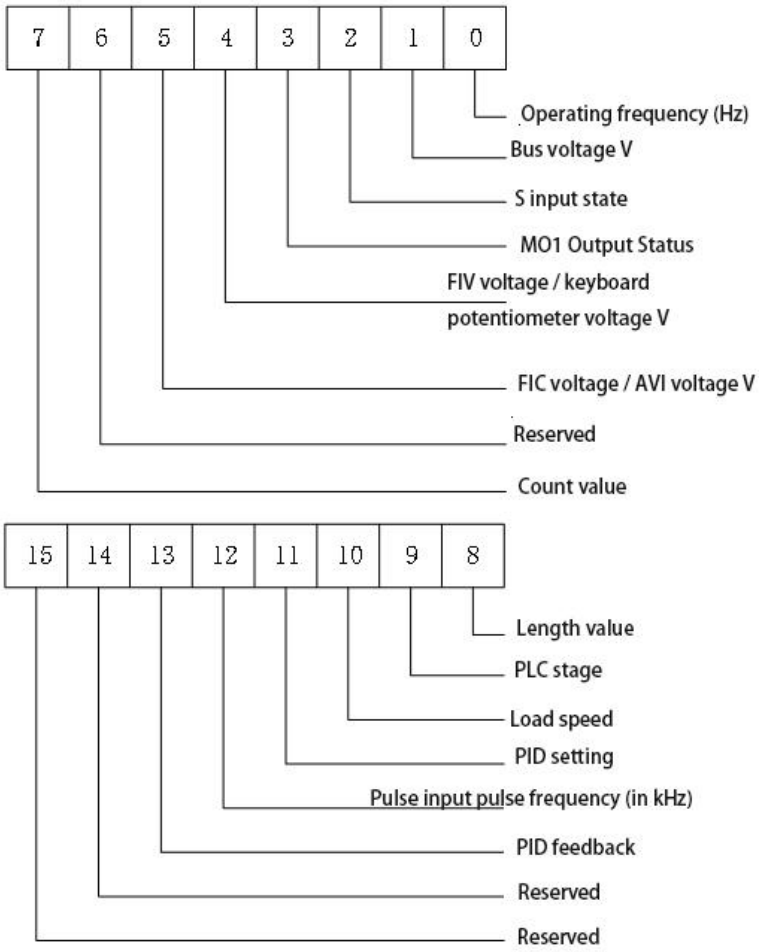
P7.02	STOP/RESET key function		Factory value	1
	Setting range	0	Only when using the keyboard operation mode, the STOP/RESET key's shutdown function is effective.	
		1	Under any operation mode, the stop function of the STOP/RESET key is valid.	

P7.03	LED operation display parameters 1		Factory value	1F
	Setting range	0000 ~ FFFF	 When it is necessary to display the above parameters during operation, set the corresponding positions to 1. Convert this binary number to hexadecimal and set it in P7.03.	

P7.04	LED operation display parameters 2		Factory value	0
	Setting range	0 0 0 0 ~ FFFF	 During operation, when it is necessary to display the above parameters, set their corresponding positions to 1. Convert this binary number to hexadecimal and set it in P7.04.

The "Run Display Parameters" are used to set the parameters that can be viewed when the inverter is in operation.

Up to 32 status parameters can be viewed. The status parameters to be displayed are selected based on each binary bit of the parameter values of P7.03 and P7.04, and the display order starts from the least significant bit of P7.03.

P7.05	LED shutdown display parameters		Factory value	0
	Setting range	0000 ~ FFFF	 During operation, when it is necessary to display the above parameters, set their corresponding positions to 1. Convert this binary number to hexadecimal and set it in P7.05.		

P7.06	Load speed display coefficient	Factory value	1.0000
	Setting range	0.0001 ~ 6.5000	

When it is necessary to display the load speed, adjust the correspondence between the inverter output frequency and the load speed through this parameter. For the specific correspondence, refer to the description of P7.12.

P7.07	Thermal temperature of the inverter module radiator	Factory value	0
	Setting range	0.0℃ ~ 100.0℃	

Display the temperature of the IGBT in the inverter module.
The over-temperature protection values for the IGBT in the inverter module vary among different models.

P7.09	Cumulative running time	Factory value	0h
	Setting range	0h～65535h	

Display the cumulative running time of the inverter. When the running time reaches the set running time P8.17, the multi-function digital output function (12) of the inverter outputs an ON signal.

P7.11	Software version		Factory value	Read-only
	Setting range	Control panel software version		
P7.12	Display the number of decimal places for load speed		Factory value	0
	Setting range	units digit	0: 0 decimal places	
			1：1 decimal places	
			2：2 decimal places	
			3：3 decimal places	
		tens digit	Reserved	

This parameter is used to set the number of decimal places for the load speed display.
The following examples illustrate how the load speed is calculated:

Example 1:
·If the Load Speed Display Coefficient (P7.06) is set to 2.000,
·and the Load Speed Decimal Places (P7.12) is set to 2 (two decimal places),
·when the inverter operates at a frequency of 40.00 Hz,
·the load speed will be calculated as: 40.00 × 2.000 = 80.00 (displayed with two decimal places).

Example 2 (When the inverter is stopped):
·The load speed will display the value corresponding to the set frequency (i.e., "Set Load Speed").
·Assuming a set frequency of 50.00 Hz,

·the load speed during the stopped state will be: 50.00 × 2.000 = 100.00 (displayed with two decimal places).

Key Notes:
·The decimal places are determined by P7.12.
·The display value is calculated by multiplying the actual frequency (or set frequency when stopped) by P7.06.
·The calculation formula is: Load Speed = Frequency × P7.06.

P7.13	Cumulative power-on time	Factory value	0h
	Setting range	0h～65535h	

Displays the cumulative power-on time of the inverter since factory shipment.
When this time reaches the Set Power-on Time (P8.17), the inverter's Multi-function Digital Output (24) will output an ON signal.

P7.14	Cumulative electricity consumption	Factory value	-
	Setting range	0～65535 kWh	

Display the cumulative power consumption of the frequency inverter up to now.

P8 group - Auxiliary functions

P8.00	jog running frequency	Factory value	2.00Hz
	Setting range	0.00 Hz to the maximum frequency	
P8.01	jog acceleration time	Factory value	20.0s
	Setting range	0.0s ~ 6500.0s	
P8.02	jog acceleration time	Factory	20.0s
	Setting	0.0s ~ 6500.0s	

Define the given frequency and acceleration/deceleration time of the inverter during jog operation.
During jog operation, the start-up mode is fixed as direct start-up mode (P1.00 = 0), and the stop mode is fixed as deceleration stop (P1.10 = 0).

P8.03	Accelerate time 2		Factory value	20.0s
	Setting range	0. 0s ~ 6500.0s		
P8.04	Deceleration time 2		Factory value	20.0s
	Setting range	0. 0s ~ 6500.0s		
P8.05	Accelerate time 3		Factory value	20.0s
	Setting range	0. 0s ~ 6500.0s		
P8.06	Deceleration time 3		Factory value	20.0s
	Setting range	0. 0s ~ 6500.0s		
P8.07	Accelerate time 4		Factory value	20.0s
	Setting range	0. 0s ~ 6500.0s		
P8.08	Deceleration time 4		Factory value	20.0s
	Setting range	0. 0s ~ 6500.0s		

The NZ200 provides 4 sets of acceleration/deceleration times, which are respectively P0.08/P0.09 and the 3 sets of acceleration/deceleration times mentioned above.

The 4 sets of acceleration/deceleration times are defined identically; please refer to the relevant instructions for P0.08 and P0.09.

Through different combinations of multi-function digital input terminals S, the 4 sets of acceleration/deceleration times can be switched and selected. For specific usage methods, please refer to the relevant instructions in function codes P5.00～P5.05.

P8.09	Jump Frequency 1		Factory value	0.00Hz
	Setting range	0.00 Hz to the maximum frequency		
P8.10	Jump Frequency 2		Factory value	0.00Hz
	Setting range	0.00 Hz to the maximum frequency		
P8.11	Jump Frequency Amplitude		Factory value	0.00Hz
	Setting range	0.00 to maximum frequency		

When the set frequency falls within the jump frequency range, the actual operating frequency will run at the jump frequency that is closer to the set frequency. By setting the jump frequency, the inverter can avoid the mechanical resonance point of the load.

The NZ200 can be configured with two jump frequency points. If both jump frequencies are set to 0, the jump frequency function will be disabled. For the schematic diagram illustrating the principle of jump frequency and jump frequency amplitude, please refer to Figure 4-12.

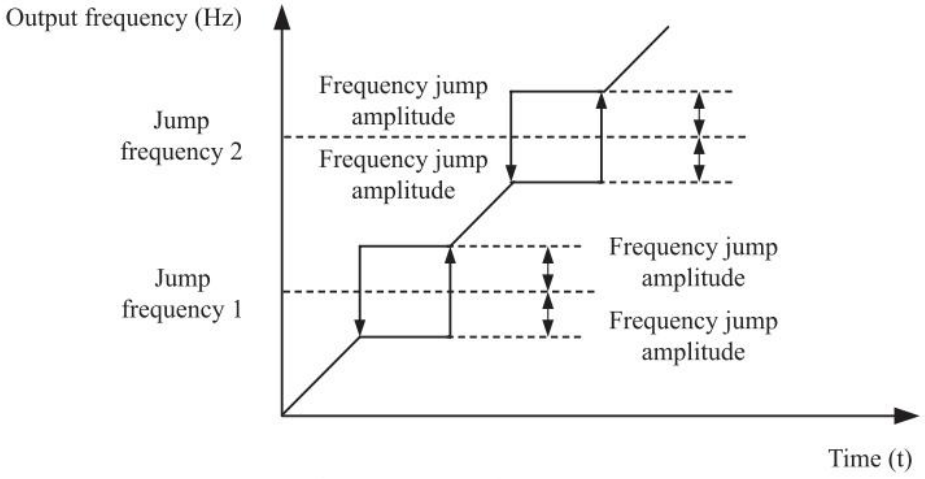


Figure 4-12 Schematic Diagram of Jumping Frequency

P8.12	Forward/reverse dead time	Factory value	0.0s
	Setting	0.00s ~ 3000.0s	

During the transition process of the frequency inverter 's forward and reverse operation, the transition time at the output of 0 Hz is set as shown in Figure 4-13:

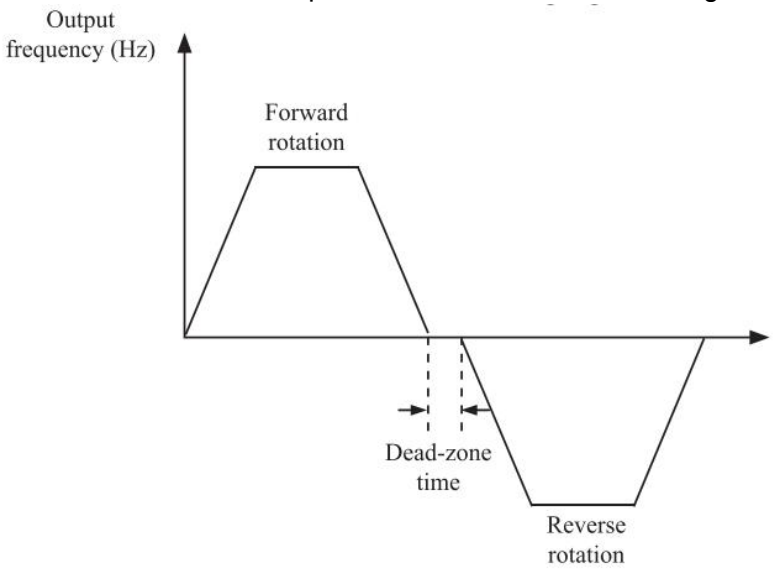


Figure 4-13 Schematic Diagram of Forward/Reverse Dead Time

P8.13	Reverse control enable		Factory value	0
	Setting range	0	Yes	
		1	No	

This parameter is used to set whether the inverter is allowed to operate in reverse rotation state. In situations where reverse rotation of the motor is not permitted, P8.13 should be set to 1.

P8.14	Operation mode when the set frequency is below the lower limit frequency		Factory value	0
	Setting range	0	Operate at the lower limit frequency.	
		1	STOP	
		2	zero speed operation	

When the set frequency is lower than the lower limit frequency, the operating state of the inverter can be selected via this parameter. NZ200 provides three operation modes to meet various application requirements.

P8.15	Droop Control	Factory	0.00Hz
	Setting Range	0.00Hz ~ 10.00Hz	

This function is generally used for load distribution when multiple motors drive the same load.

Droop control means that as the load increases, the output frequency of the inverter decreases. In this case, when multiple motors drive the same load, the output frequency of the motor bearing more load will decrease more, thereby reducing the load on that motor and achieving uniform load distribution among the multiple motors.This parameter refers to the drop value of the output frequency when the inverter is outputting the rated load.

P8.16	Set Cumulative Power-On Reach Time	Factory Setting	0h
	Setting Range	0h ~ 65000h	

When the cumulative power-on time (P7.13) reaches the power-on time set in P8.16, the inverter's multi-functional digital output MO1 outputs an ON signal (P6.01=24).

P8.17	Set Cumulative Operation Reach Time	Factory Setting	0h
	Setting Range	0h ~ 65000h	

Used to set the operating time of the inverter.When the cumulative operation time (P7.09) reaches this set operating time, the inverter's multi-functional digital output MO1 outputs an ON signal (P6.01=40).

P8.18	Start Protection Selection		Factory Setting	0
	Setting Range	0	No protection	
		1	Protection	

This parameter is related to the safety protection function of the inverter.
If this parameter is set to 1, when the inverter is powered on with an active run command (e.g., the terminal run command was closed before power-on), the inverter will not respond to the command. The run command must be deactivated and then reactivated for the inverter to respond.
Additionally, if this parameter is set to 1, when the frequency inverter resets due to a fault, if the operation command is valid, the frequency inverter will not respond to the operation command. It is necessary to first cancel the operation command before the frequency inverter can remove the operation protection status.
Setting this parameter to 1 can prevent potential dangers that may occur when the motor responds to the operation command during power-on or during a fault reset without the user's knowledge.

P8.19	Frequency Detection Value (FDT1)		Factory Setting	50.00Hz
	Setting Range	0.00Hz ~ Maximum Frequency		
P8.20	Frequency detection lag value (FDT1)		Factory Setting	5.0%
	Setting Range	0.0% ~ 100.0% (FDT1 level)		

When the operating frequency exceeds the frequency detection value, the multi-function output MO1 of the inverter sends an ON signal. The ON signal is cancelled when the frequency drops below the detection value by a certain margin (P6.01=37).

These parameters are used to set the detection value of the output frequency and the hysteresis value for cancelling the output action. Here, P8.20 represents the percentage of the hysteresis frequency relative to the frequency detection value P8.19. Figure 4-14 shows a schematic diagram of the FDT function.

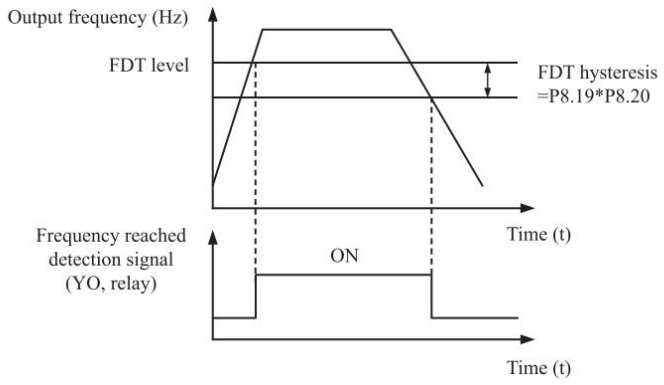


Figure 4-14 Schematic Diagram of FDT Level

P8.21	Frequency Arrival Detection Amplitude		Factory Setting	0.0%
	Setting Range	0.00% ~ 100% of maximum frequency		

When the operating frequency of the inverter is within a certain range of the target frequency, the inverter's multi-functional output MO1 outputs an ON signal (P6.01=3).This parameter is used to set the detection range for frequency arrival, and it is a percentage relative to the maximum frequency. Figure 4-15 is a schematic diagram of frequency arrival.

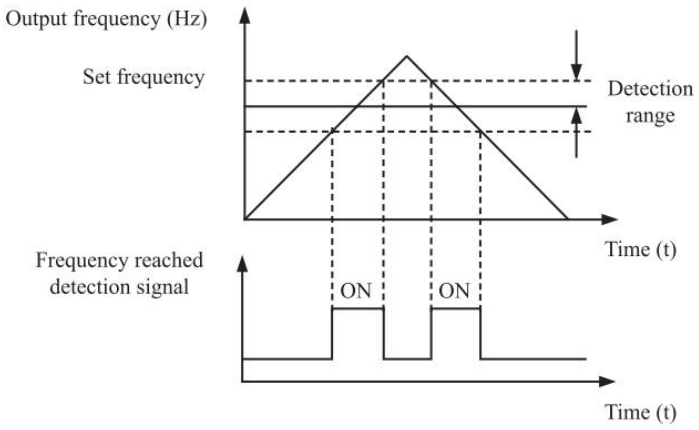


Figure 4-15 Schematic Diagram of Frequency Arrival Detection Amplitude

P8.22	Whether Skip Frequency is Effective During Acceleration/Deceleration		Factory Setting	0
	Setting Range	0: Invalid 1: Valid		

This function code is used to set whether the skip frequency is effective during the acceleration and deceleration process.When set to valid, if the operating frequency is within the skip frequency range, the actual operating frequency will skip the set skip frequency boundaries. Figure 4-16 is a schematic diagram of the skip frequency being effective during acceleration and deceleration.

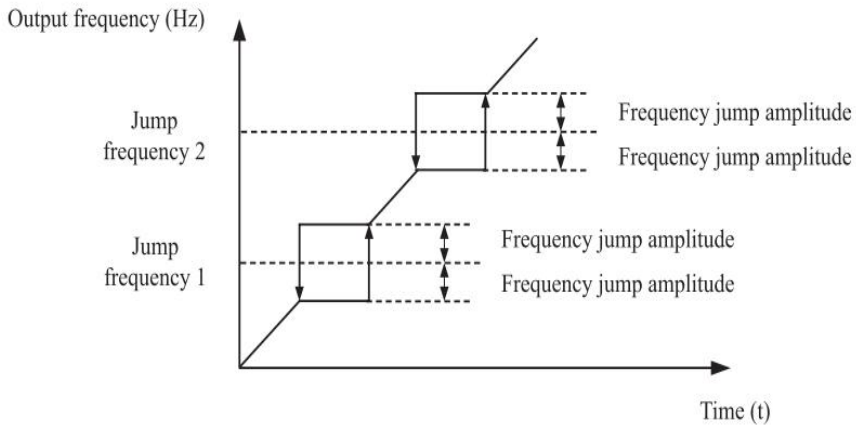


Figure 4-16 Effective schematic diagram of jumping frequency during acceleration and deceleration process

P8.25	Switching Frequency Point Between Acceleration Time 1 and Acceleration Time 2		Factory Setting	0.00Hz
	Setting Range	0.00Hz ~ Maximum Frequency		
P8.26	Switching Frequency Point Between Deceleration Time 1 and Deceleration Time 2		Factory Setting	0.00Hz
	Setting Range	0.00Hz ~ Maximum Frequency		

This function is effective when the acceleration/deceleration time is not selected via the S terminal. It allows the inverter to automatically select different acceleration/deceleration times based on the operating frequency range during operation, rather than relying on the S terminal for selection.

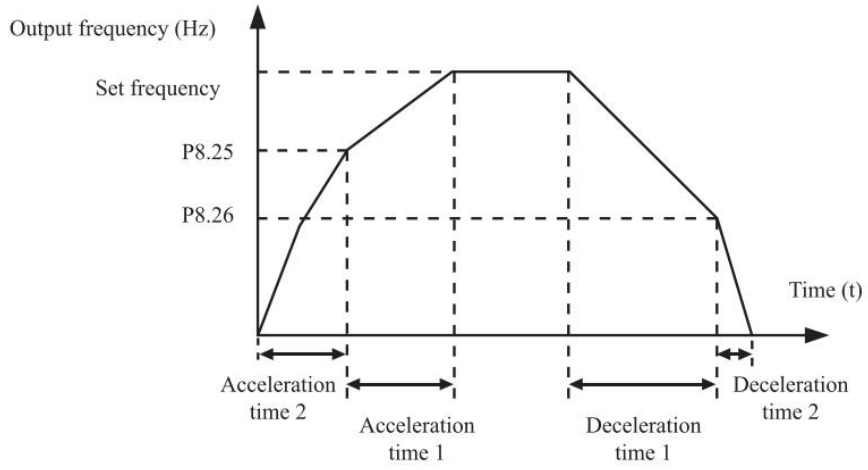


Figure 4-17 Schematic Diagram of Acceleration and Deceleration Time Switching

During acceleration: if the operating frequency is less than P8.25, acceleration time 2 is selected; if the operating frequency is greater than P8.25, acceleration time 1 is selected. During deceleration: if the operating frequency is greater than P8.26, deceleration time 1 is selected; if the operating frequency is less than P8.26, deceleration time 2 is selected.

P8.27	Terminal Jog Priority	Factory value	0
	Setting Range	0：Invalid 1：Valid	

This parameter is used to set whether the terminal jog function has the highest priority. When terminal jog priority is enabled, if a terminal jog command is issued during operation, the inverter will switch to the terminal jog operation state.

P8.28	Frequency Detection Value (FDT2)		Factory Setting	50.00Hz
	Setting Range	0.00Hz ~ Maximum Frequency		
P8.29	Frequency Detection Value (FDT2)		Factory Setting	5.0%
	Setting Range	0.0% ~ 100.0% (FDT2 Level)		

This frequency detection function is identical to that of FDT1; please refer to the relevant descriptions of FDT1, i.e., the descriptions of function codes P8.19 and P8.20.

P8.30	Arbitrary Arrival Frequency Detection Value 1		Factory Setting	50.00Hz
	Setting Range	0.00Hz ~ Maximum Frequency		
P8.31	Arbitrary Arrival Frequency Detection Amplitude 1		Factory Setting	0.0%
	Setting Range	0.0% ~ 100.0%（Maximum Frequency）		
P8.32	Arbitrary Arrival Frequency Detection Value 2		Factory Setting	50.00Hz
	Setting Range	0.00Hz ~ Maximum Frequency		
P8.33	Arbitrary Arrival Frequency Detection Amplitude 2		Factory Setting	0.0%
	Setting	0.0% ~ 100.0%（Maximum Frequency）		

When the output frequency of the inverter falls within the range of positive and negative detection amplitude of any reached frequency detection value, the multi-function MO1 outputs an ON signal (P6.01=26/27).

NZ200 provides two sets of arbitrary reached frequency detection parameters, which are used to set the frequency value and frequency detection range respectively. Figure 4-18 is a schematic diagram of this function.

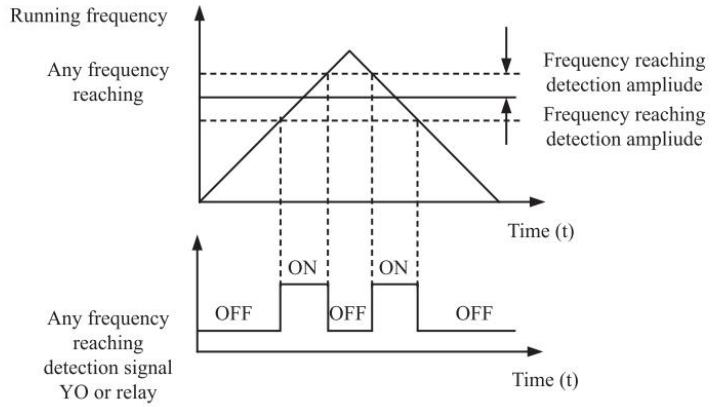


Figure 4-18　Schematic Diagram of Arbitrary Arrival Frequency Detection

P8.34	Zero Current Detection Level		Factory Setting	5.0%
	Setting Range	0.0% ~ 300.0%（motor rated current）		
P8.35	Zero Current Detection Delay Time		Factory Setting	0.10s
	Setting Range	0.00s ~ 600.00s		

When the output current of the inverter is less than or equal to the zero-current detection level, and the duration exceeds the zero-current detection delay time, the inverter's multi-function MO1 outputs an ON signal (P6.01=34). Figure 4-19 is a schematic diagram of zero-current detection.

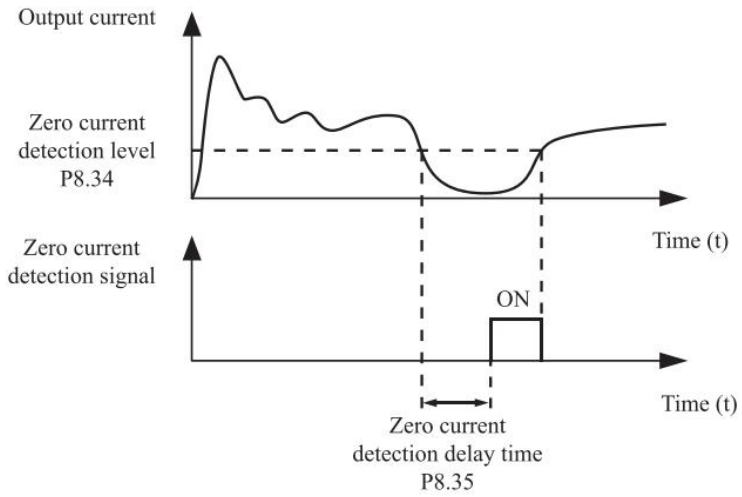


Figure 4-19　Schematic Diagram of Zero Current Detection

P8.36	Output Current Over limit Value	Factory Setting	200.0%
	Setting Range	0.0%（no detection） 0.1% ~ 300.0%（motor rated current）	
P8.37	Output Current Over limit Detection Delay Time	Factory Setting	0.00s
	Setting Range	0.00s ~ 600.00s	

When the output current of the inverter is greater than or equal to the over limit detection point, and the duration exceeds the output current over limit detection delay time, the inverter's multi-functional output MO1 outputs an ON signal (P6.01=36). Figure 4-20 is the schematic diagram of the output current over limit function.

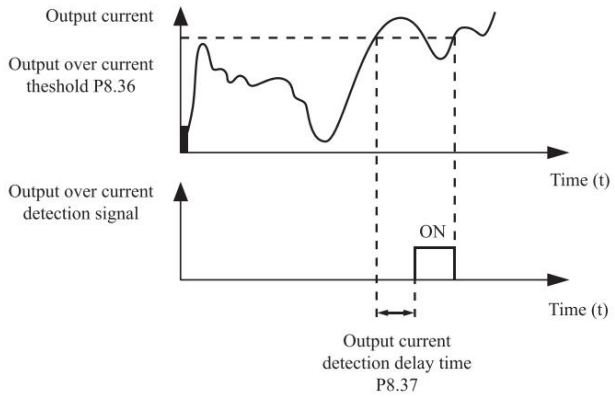


Figure 4-20 Diagram of Output Current Over-limit Detection

P8.38	Arbitrary Arrival Current 1	Factory Setting	100.0%
	Setting Range	0.0% ~ 300.0%（motor rated current）	
P8.39	Arbitrary Reaching Current 1 Width	Factory Setting	0.0%
	Setting Range	0.0% ~ 300.0%（motor rated current）	
P8.40	Arbitrary Reaching Current 2	Factory Setting	100.0%
	Setting Range	0.0% ~ 300.0%（motor rated current）	
P8.41	Arbitrary Reaching Current 2 Width	Factory Setting	0.0%
	Setting Range	0.0% ~ 300.0%（motor rated current）	

When the output current of the inverter is within the positive and negative detection width of the set arbitrary reaching current, the inverter's multi-functional MO1 outputs an ON signal (P6.01=28/29). NZ200 provides two groups of parameters for arbitrary reaching current and detection width, and Figure 4-21 is the functional schematic diagram.

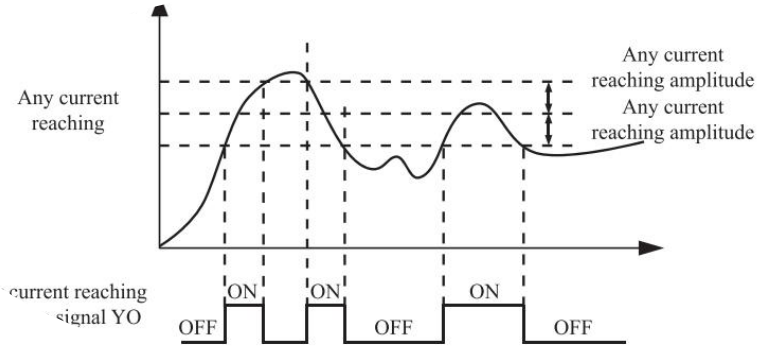


Figure 4-21 Schematic Diagram of Arbitrary Reaching Current Detection

P8.42	Timing Function Selection		Factory Setting	0
	Setting Range	0	Invalid	
		1	Valid	
P8.43	Timing Operation Time Selection		Factory Setting	0
	Setting Range	0	Set by P8.44	
		1	FIV	
		2	FIC	
		3	Reserved	
		100% of the analog input range corresponds to P8.44		
P8.44	Timing Operation Time		Factory Setting	0.0Min
	Setting Range	0.0Min ~ 6500.0Min		

This set of parameters is used to achieve the function of the frequency inverter's timed operation.

When the timing function selection of P8.42 is enabled, the inverter starts timing upon activation. After reaching the set timed operation duration, the inverter stops automatically, and the multi-function MO1 outputs an ON signal (P6.01=30) simultaneously.

Each time the inverter is activated, timing starts from 0. The remaining timed operation duration can be checked via D0.20. The timed operation duration is set by P8.43 and P8.44, with the time unit being minutes.

P8.45	Lower limit of FIV input voltage protection value		Factory Setting	3.10V
	Setting Range	0.00V ~ P8.46		
P8.46	Upper limit of FIV input voltage protection value		Factory Setting	6.80V
	Setting Range	P8.45 ~ 10.00V		

When the value of analog input FIV is greater than P8.46, or the FIV input is less than P8.47, the inverter's multi-function MO1 outputs an ON signal labeled "FIV input out of range" (P6.01=31), which is used to indicate whether the input voltage of FIV is within the set range.

P8.47	Module temperature reached	Factory value	75℃
	Setting Range	0.00V ~ P8.46	

When the temperature of the inverter's radiator reaches this level, the multifunctional MO1 of the frequency inverter outputs the "module temperature reached" ON signal (P6.01 = 35).

P8.48	Cooling fan control	Factory Setting	0
	Setting range	0: Fan runs during operation 1: Fan runs continuously	

This parameter is used to select the operation mode of the cooling fan: When set to 0, the fan runs during inverter operation. When the inverter is stopped, the fan runs if the heat sink temperature exceeds 40°C and stops if the temperature drops below 40°C.
When set to 1, the fan runs continuously after power-on.

P8.49	Wake-up frequency	Factory Setting	0.00Hz
	Setting Range	Sleep frequency (P8.51) ~ Maximum frequency (P010)	
P8.50	Wake-up delay time	Factory Setting	0.0s
	Setting Range	0.0s ~ 6500.0s	
P8.51	Sleep frequency	Factory Setting	0.00Hz
	Setting Range	0.00Hz ~ Wake-up frequency (P8.49)	
P8.52	Sleep delay time	Factory Setting	0.0s
	Setting Range	0.0s ~ 6500.0s	

This set of parameters is used to implement the sleep and wake-up functions in water supply applications.
During the operation of the frequency inverter, when the set frequency is less than or equal to the P8.51 sleep frequency, after a P8.52 delay time, the frequency inverter enters the sleep state and automatically shuts down.
If the frequency inverter is in a sleep state and the current running command is valid, then when the set frequency is greater than or equal to the P8.49 wake-up frequency, after a delay time of P8.50, the frequency inverter will start to operate.
Generally, it is recommended to set the wake-up frequency to be greater than or equal to the sleep frequency. If both the wake-up frequency and the sleep frequency are set to 0.00Hz, then the sleep and wake-up functions will be ineffective.
When the sleep function is enabled, if the frequency source uses PID, the PID operation in the sleep state is affected by the function code PA.28. At this time, it is necessary to select the operation when the PID is shut down (PA.28 = 1).

P8.53	Current operation arrival time		Factory Setting	0.0Min
	Setting Range	0.0Min ~ 6500.0Min		

When the running time of the current startup reaches this time, the inverter's multi-functional digital output MO1 outputs the "Current running time reached" ON signal (P6.01=40).

P9 group: Faults and Protection

P9.00	Motor Overload Protection Selection		Factory Setting	1
	Setting Range	0	Disabled	
		1	Enabled	
P9.01	Motor Overload Protection Gain		Factory Setting	1.00
	Setting Range		0.20 ~ 10.00	

P9.00=0: No motor overload protection function is available, which may risk overheating and damage to the motor. It is recommended to install a thermal relay between the inverter and the motor.
P9.00=1: In this case, the inverter will determine whether the motor is overloaded according to the inverse time curve of motor overload protection. The inverse time curve stipulates that an alarm for motor overload fault will be triggered if the current reaches 220% × (P9.01) × motor rated current and lasts for 1 minute; an alarm will be triggered if the current reaches 150% × (P9.01) × motor rated current and lasts for 60 minutes.
Users need to correctly set P9.01 according to the actual overload capacity of the motor. If this parameter is set too large, the motor may be overheated and damaged without the inverter giving an alarm.

P9.02	Motor Overload Early Warning Coefficient	Factory Setting	80%
	Setting Range	50% ~ 100%	

P9.02 is used to send an early warning signal to the control system through MO1 before the motor overload fault protection is activated. The early warning coefficient determines the advance degree of the early warning action relative to the overload protection; the larger the value, the smaller the advance of the early warning.When the cumulative output current of the inverter exceeds the product of the overload inverse time curve and P9.02, the multi-functional digital output MO1 of the inverter will output an ON signal for "motor overload pre-alarm".

P9.03	Overvoltage stall gain	Factory value	30
	Setting Range	0 （No overvoltage stall） ~ 100	
P9.04	Overvoltage Stall Protection	Factory value	Model dependent
	Setting Range	200 ~ 2000V	

During the deceleration process of the inverter, when the DC bus voltage exceeds the overvoltage stall protection voltage, the inverter will stop decelerating and maintain the current operating frequency, and resume decelerating once the bus voltage drops.
The overvoltage stall gain is used to adjust the inverter's ability to suppress overvoltage during deceleration. The larger the value, the stronger the overvoltage suppression capability. On the premise that no overvoltage occurs, it is better to set the gain as small as possible.
For low-inertia loads, the overvoltage stall gain should be small; otherwise, it will cause the system's dynamic response to slow down. For high-inertia loads, this value should be large; otherwise, the suppression effect will be poor, which may lead to overvoltage faults. When the overvoltage stall gain is set to 0, the overvoltage stall function is disabled.

P9.05	Overcurrent Stall Gain	Factory Setting	20
	Setting Range	0 ~ 100	
P9.06	Overcurrent Stall Protection Current	Factory Setting	Determined by model
	Setting Range	100% ~ 200%	

During the acceleration/deceleration process of the inverter, when the output current exceeds the over current stall protection current, the inverter will stop the acceleration/deceleration process, maintain the current operating frequency, and resume acceleration/deceleration once the output current drops.

The over current stall gain is used to adjust the inverter's ability to suppress over current during acceleration/deceleration. The larger the value, the stronger the over current suppression capability. On the premise that no over current occurs, it is better to set the gain as small as possible.

For low-inertia loads, the over current stall gain should be small; otherwise, it will cause the system's dynamic response to slow down. For high-inertia loads, this value should be large; otherwise, the suppression effect will be poor, which may lead to over current faults. When the over current stall gain is set to 0, the over current stall function is disabled.

P9.07	Power-on Ground Short Circuit Protection Selection		Factory Setting	1
	Setting Range	0	Invalid	
		1	Valid	

You can select whether the inverter checks for motor-to-ground short circuits during power-on.

If this function is enabled, the inverter will output voltage at the UVW terminals for a short period after power-on.

P9.09	Fault Auto-reset Times		Factory Setting	0
	Setting Range	0 ~ 20		

When the inverter is set to fault auto-reset, this parameter is used to set the number of times it can be automatically reset. After exceeding this number, the inverter will remain in the fault state.

P9.10	Fault MO1 Action Selection During Fault Auto-reset	Factory Setting	0
	Setting Range	0: No action 1: Action	

If the frequency inverter is equipped with an automatic fault reset function, during the automatic fault reset process, whether the fault MO1 will act can be set through P9.10.

P9.11	Fault Auto-reset Interval	Factory Setting	1.0s
	Setting Range	0.1s ~ 100.0s	

The waiting time from inverter fault alarm to automatic fault reset. The NZ200 inverter does not have the function of detecting input phase loss.

P9.13	Output Phase Loss Protection Selection	Factory Setting	1
	Setting Range	0：Disabled 1：Enabled	

Select whether to enable protection against output phase loss.

P9.14	First Fault Type	0 ~ 99
P9.15	Second Fault Type	
P9.16	Third (Latest) Fault Type	

Record the latest three fault types of the inverter; 0 indicates no fault. For possible causes and solutions of each fault code, please refer to the relevant description in Chapter 5.

P9.17	Frequency at Third Fault	Frequency at the latest fault
P9.18	Current at Third Fault	Current at the latest fault
P9.19	Bus Voltage at Third Fault	Bus voltage at the latest fault
P9.27	Frequency at Second Fault	Same as P9.17 ~ P9.24
P9.28	Current at Second Fault	
P9.29	Bus Voltage at Second Fault	
P9.37	Frequency at First Fault	Same as P9.17 ~ P9.24
P9.38	Current at First Fault	
P9.39	Bus Voltage at First Fault	

P9.47	Fault Protection Action Selection 1		Factory Setting	00000
	Setting Range	Units place	Motor overload (OL1)	
		0	Free stop	
		1	Stop according to stop mode	
		2	Continue running	
		Tens place	Reserved	
		Hundreds place	Output phase loss (LO) (same as units place)	
		Thousands place	External fault (EF) (same as units place)	
		Ten-thousands place	Communication abnormality (CE) (same as units place)	
P9.48	Fault Protection Action Selection 2		Factory Setting	00000
	Setting Range	Units place	Reserved	
		0	Free stop	
		1	Switch to VF and stop according to stop mode	
		2	Switch to VF and continue running	
		Tens place	Function code read/write abnormality (EEP)	
		0	Free stop	
		1	Stop according to stop mode	
		Hundreds place	Reserved	
		Thousands place	Reserved	

		Ten-thousands place	Running time reached (END1) (same as units place of P9.47)
P9.49	Fault Protection Action Selection	Factory Setting	00000
	Setting Range	Units place	Reserved
		Tens place	Reserved
		Hundreds place	Power-on time reached (END2) (same as units
		Thousands place	Load loss (LOAD)
		0	Free stop
		1	Decelerate to stop
		2	Decelerate to 7% of motor rated frequency and continue running; automatically resume to set frequency when load is restored
		Ten-thousands place	PID feedback loss during operation (PIDE) (same as units place of P9.47)
P9.50	Reserved		

When "Free stop" is selected, the inverter displays the fault code and stops directly.
When "Stop according to stop mode" is selected: The inverter displays the alarm code, stops according to the stop mode, and displays the fault code after stopping.
When "Continue running" is selected: The inverter continues running, displays the alarm code, and the operating frequency is set by P9.54.

P9.52	Dual-display Keyboard Second Row Display Content Selection	Factory Setting	0
	Setting Range	0:D0.00 1:D0.01 2:D0.02 and so on...	
P9.54	Fault Continue Running Frequency	Factory Setting	0
	Setting Range	0	Run at current operating frequency
		1	Run at set frequency
		2	Run at upper limit frequency
		3	Run at lower limit frequency
		4	Run at abnormal standby frequency
P9.55	Abnormal Standby Frequency	Factory Setting	100.0%
	Setting Range	60.0% ~ 100.0%	

When a fault occurs during the operation of the inverter, and the handling method for the fault is set to continue operation, the inverter will display the alarm code and operate at the frequency specified by P9.54.When abnormal standby frequency operation is selected, the value set in P9.55 is a percentage relative to the maximum frequency.

P9.59	Instantaneous Power Failure Action Selection	Factory Setting	0
	Setting Range	0	Invalid
		1	Decelerate
		2	Decelerate to stop

P9.60	Instantaneous Power Failure Pause Judgment Voltage	Factory Setting	90.0%
	Setting Range	P9.62% ~ 100.0%	
P9.61	Instantaneous Power Failure Recovery Judgment Time	Factory Setting	0.50s
	Setting Range	0.00s ~ 100.00s	
P9.62	Instantaneous Power Failure Non-stop Action Judgment Voltage	Factory Setting	80.0%
	Setting Range	60.0% ~ 100.0%（standard bus voltage）	

This function means that when there is an instantaneous power failure or a sudden voltage drop, the inverter reduces the output speed to compensate for the drop of the inverter's DC bus voltage with the load feedback energy, so as to maintain the continuous operation of the inverter.

If P9.59=1, in case of instantaneous power failure or sudden voltage drop, the inverter decelerates; when the bus voltage returns to normal, the inverter accelerates to the set frequency normally. The basis for judging that the bus voltage returns to normal is that the bus voltage is normal and lasts for more than the time set by P9.61.

If P9.59=2, in case of instantaneous power failure or sudden voltage drop, the inverter decelerates until it stops.

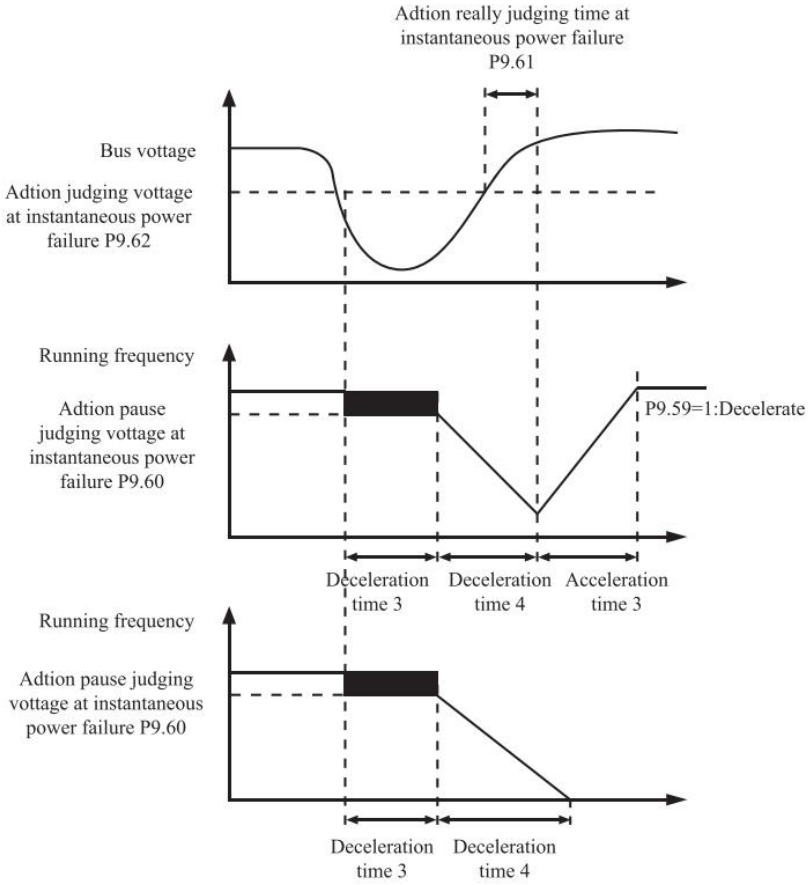


Figure 4-22 Schematic Diagram of Instantaneous Power Failure Operation

P9.63	Load Loss Protection Selection		Factory Setting	0
	Setting Range	0	Invalid	
		1	Valid	
P9.64	Load Loss Detection Level		Factory Setting	10.0%
	Setting Range		0.0% ~ 100.0%（motor rated current）	
P9.65	Load Loss Detection Time		Factory Setting	1.0s
	Setting Range		0.0s ~ 60.0s	

If the load loss protection function is enabled, the inverter's output frequency will automatically decrease to 7% of the rated frequency when the output current is less than the load loss detection level (P9.64) for longer than the load loss detection time (P9.65). During load loss protection, the inverter will automatically resume operation at the set frequency once the load is restored. Parameters P9.67 to P9.70 are reserved.

PA group - Process control PID function

PID control is a common method in process control. It performs proportional, integral, and derivative calculations on the difference between the feedback signal of the controlled variable and the target signal, and adjusts the output frequency of the inverter to form a closed-loop system, thereby stabilizing the controlled variable at the target value.

It is suitable for process control scenarios such as flow control, pressure control, and temperature control. Figure 4-23 shows the block diagram of the control principle for process PID.

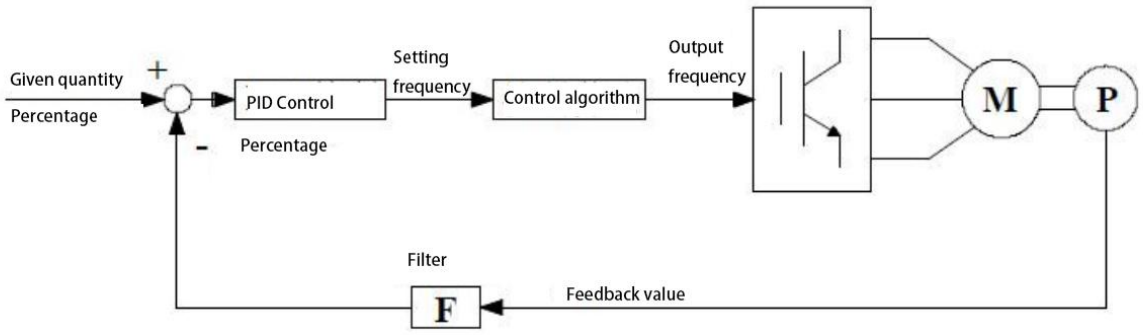


Figure 4-23　Principle Block Diagram of Process PID

PA.00	PID Setpoint Source		Factory Setting	0
	Setting Range	0	PA.01setting	
		1	FIV	
		2	FIC	
		3	Reserved	
		4	PULSE（S3）	
		5	Communication	
		6	Multi-segment command	
PA.01	PID Value Setting		Factory Setting	50.0%
	Setting Range		0.0% ~ 100.0%	

This parameter is used to select the channel for setting the target value of the process PID.

The set target value of the process PID is a relative value, and the set range is from 0.0% to 100.0%. Similarly, the feedback value of the PID is also a relative quantity. The function of the PID is to make these two relative values the same.

PA.02	PID Feedback Source		Factory vaule	0
	Setting range	0	FIV
		1	FIC
		2	Reserved
		3	FIV-FIC
		4	PULSE（S3）
		5	Communication
		6	FIV+FIC
		7	MAX(|FIV|,|FIC|)
		8	MIN (|FIV|,|FIC|)

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

The feedback value of the process PID is also a relative value, and the setting range is 0.0% to 100.0%.

PA.03	The direction of PID		Factory value	0
	Setting range	0	Direct action	
		1	Reverse action	

Direct action: When the PID feedback signal is less than the setpoint, the inverter output frequency rises. Such as in tension control of winding.

Reverse action: When the PID feedback signal is less than the setpoint, the inverter output frequency drops. Such as in tension control of unwinding. This function is affected by the multi-functional terminal "PID action direction inversion" (function 35), so attention should be paid during use.

PA.04	PID Setpoint Feedback Range	Factory Setting	1000
	Setting Range	0 ~ 65535	

The PID setpoint/feedback range uses a dimensionless unit and applies to PID setpoint display D0.15 and PID feedback display D0.16.

A relative value of 100.0% for PID setpoint/feedback corresponds to the setpoint/feedback range PA.04. For example, if PA.40 is set to 2000, when the PID setpoint is 100.0%, the PID setpoint display D0.15 will show 2000.

PA.05	Proportional Gain Kp1	Factory Setting	100.0
	Setting Range	0.0 ~ 100.0	
PA.06	Integral Time Ti1	Factory Setting	2.00s
	Setting Range	0.01s ~ 10.00s	
PA.07	Derivative Time Td1	Factory Setting	0.000s
	Setting Range	0.00 ~ 10.000	

Proportional gain Kp1:
Determines the adjustment intensity of the entire PID regulator; the larger Kp1 is, the greater the adjustment intensity. A value of 100.0 for this parameter means that when the deviation between the PID feedback quantity and the set quantity is 100.0%, the adjustment range of the PID regulator for the output frequency command equals the maximum frequency.

Integral time Ti1:
Determines the intensity of the integral adjustment of the PID regulator; the shorter the integral time, the greater the adjustment intensity. The integral time refers to the duration required for the integral regulator to achieve an adjustment amount equal to the maximum frequency through continuous adjustment, when the deviation between the PID feedback quantity and the set quantity is 100.0%.

Derivative time Td1:
Determines the intensity of the PID regulator's adjustment to the deviation change rate; the longer the derivative time, the greater the adjustment intensity. The derivative time refers to the duration within which, if the feedback quantity changes by 100.0%, the adjustment amount of the derivative regulator equals the maximum frequency.

PA.08	PID Reverse Cutoff Frequency	Factory Setting	2.00Hz
	Setting Range	0．00 ~ Maximum frequency	

In some cases, only when the PID output frequency is negative (i.e., the inverter reverses), it is possible for the PID to control the setpoint and feedback quantity to the same state.

However, an excessively high reverse frequency is not allowed in some occasions. PA.08 is used to determine the upper limit of the reverse frequency.

PA.09	PID Deviation Limit	Factory Setting	0.0%
	Setting Range	0. 0% ~ 100.0%	

When the deviation between the PID setpoint and the feedback quantity is less than PA.09, the PID stops adjusting. In this way, the output frequency remains unchanged when the deviation between the setpoint and the feedback is small, which is effective in some closed-loop control occasions.

PA.10	PID Derivative Limit	Factory Setting	0.10%
	Setting Range	0.00% ~ 100.00%	

The derivative action in the PID regulator is sensitive and easily causes system oscillation. Therefore, the effect of PID derivative is generally limited to a small range. PA.10 is used to set the range of the PID derivative output.

PA.11	PID Setpoint Change Time	Factory Setting	0.00s
	Setting Range	0.00s ~ 650.00s	

PID setpoint change time refers to the time required for the PID setpoint value to change from 0.0% to 100.0%.

When the PID setpoint changes, the PID setpoint value changes linearly according to the setpoint change time, so as to reduce the adverse impact of sudden changes in the setpoint on the system.

PA.12	PID Feedback Filter Time	Factory Setting	0.00s
	Setting Range	0.00s ~ 60.00s	
PA.13	PID Output Filter Time	Factory Setting	0.00s
	Setting Range	0.00s ~ 60.00s	

PA.12 is used to filter the PID feedback quantity, which helps reduce the impact of interference on the feedback quantity but will affect the response performance of the process closed-loop system.

PA.13 is used to filter the PID output frequency, which will weaken the sudden change of the inverter output frequency but also affect the response performance of the process closed-loop system.

PA.15	Proportional Gain Kp2	Factory Setting	20.0
	Setting Range	0.0 ~ 100.0	
PA.16	Integral Time Ti2	Setting Range	2.00s
	Setting Range	0.01s ~ 10.00s	
PA.17	Derivative Time Td2	Setting Range	0.000s
	Setting Range	0.00 ~ 10.000	

PA.18	PID Parameter Switching Condition		Setting Range	0
	Setting Range	0	No switching	
		1	Switch via S terminal	
		2	Automatic switching according to deviation	
PA.19	PID Parameter Switching Deviation 1	Setting Range		20.0%
	Setting Range	0.0% ~ PA.20		
PA.20	PID Parameter Switching Deviation 2	Setting Range		80.0%
	Setting Range	PA.19% ~ 100.0%		

In some application scenarios, a set of PID parameters may not be sufficient to meet the requirements of the entire operation process. Therefore, different PID parameters need to be adopted in different situations.

This set of function codes is used for switching between two sets of PID parameters. The setting method of the regulator parameters PA.15 to PA.17 is similar to that of parameters PA.05 to PA.07.

The two sets of PID parameters can be switched through the multi-functional digital S terminals, or they can be automatically switched according to the deviation of the PID.

When switching to the multi-functional S terminal, the multi-functional terminal function selection should be set to 43 (the PID parameter switching terminal).

When this terminal is invalid, select parameter group 1 (PA.05 to PA.07), and when the terminal is valid, select parameter group 2 (PA.15 to PA.17).When the selection is for automatic switching, if the absolute value of the deviation between the set value and the feedback is less than the PID parameter switching deviation 1 (PA.19), then the PID parameter selects parameter group 1. If the absolute value of the deviation between the set value and the feedback is greater than the PID switching deviation 2 (PA.20), then the PID parameter selects parameter group 2. If the deviation between the set value and the feedback is between the switching deviation 1 and the switching deviation 2, the PID parameter is the linear interpolation value of the two sets of PID parameters, as shown in Figure 4-24.

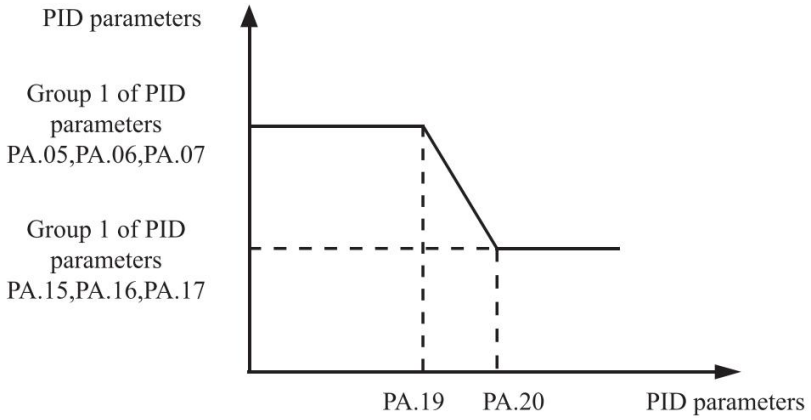


Figure 4-24 PID Parameter Switching

PA.21	PID Initial Value	Factory Setting	0.0%
	Setting Range	0.0% ~ 100.0%	
PA.22	PID Initial Value Hold Time	Factory Setting	0.00s
	Setting Range	0.00s ~ 650.00s	

When the frequency inverter is started, the PID output is fixed at the initial value of PID, PA.21. After a duration of PA.22 for maintaining the initial PID value, the PID begins to perform closed-loop regulation calculations.

Figure 4-25 is the functional schematic diagram of the PID initial value.

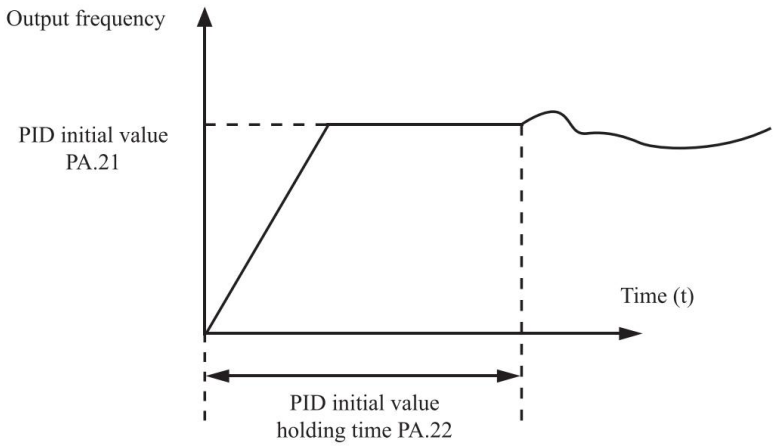


Figure 4-25 is the functional schematic diagram of the PID initial value.

PA.23	Maximum Positive Deviation Between Two Outputs		Factory Setting	1.00%
	Setting Range	0.00% ~ 100.00%		
PA.24	Maximum Negative Deviation Between Two Outputs		Factory Setting	1.00%
	Setting Range	0.00% ~ 100.00%		

PA.23 and PA.24 correspond to the maximum absolute values of output deviations during forward and reverse rotation, respectively.

This function is used to limit the difference between two beats (2ms/beat) of the PID output, so as to suppress excessive changes in the PID output and make the inverter operation stable.

PA.25	PID Integral Attribute	Factory Setting	00
	Setting Range	Units place	Integral separation
		0	Invalid
		1	Valid
		Tens place	Whether to stop integral when output reaches limit
		0	Continue integral
		1	Stop integral

Integral separation:

If integral separation is set to valid, when the multi-functional digital S integral pause (function 22) is valid, the PID integral stops operating, and only proportional and derivative actions of PID are valid at this time.

When integral separation is set to invalid, integral separation is invalid regardless of whether the multi-functional digital S is valid. Whether to stop integral when output reaches limit: After the PID operation output reaches the maximum or minimum value, you can choose whether to stop the integral action. If you choose to stop integral, the PID integral stops calculating at this time, which may help reduce the overshoot of PID.

PA.26	PID Feedback Loss Detection Value	Factory Setting	0.0%
	Setting Range	0.0%：Do not judge feedback loss 0.1% ~ 100.0%	
PA.27	PID Feedback Loss Detection Time	Factory Setting	0.0s
	Setting Range	0.0s ~ 20.0s	

This function code is used to judge whether the PID feedback is lost.

When the PID feedback quantity is less than the feedback loss detection value PA.26 and lasts for longer than the PID feedback loss detection time PA.27, the inverter alarms the fault PIDE and processes it according to the selected fault handling mode.

PA.28	PID Stop Calculation		Factory Setting	0
	Setting Range	0	Stop calculation when stopped	
		1	Calculate when stopped	

Used to select whether PID continues to calculate when the inverter is in the stop state. In general applications, PID should stop calculating in the stop state.

Group Pb: Swing Frequency, Fixed Length, and Counting

The swing frequency function is suitable for industries such as textiles and chemical fibers, as well as applications requiring traversing or winding functions. This function causes the inverter's output frequency to oscillate above and below a central set frequency. The trajectory of the operating frequency over time is shown in Figure 4-26, where the swing amplitude is set by Pb.00 and Pb.01. When Pb.01 is set to 0, the swing amplitude is zero, rendering the swing frequency function inactive.

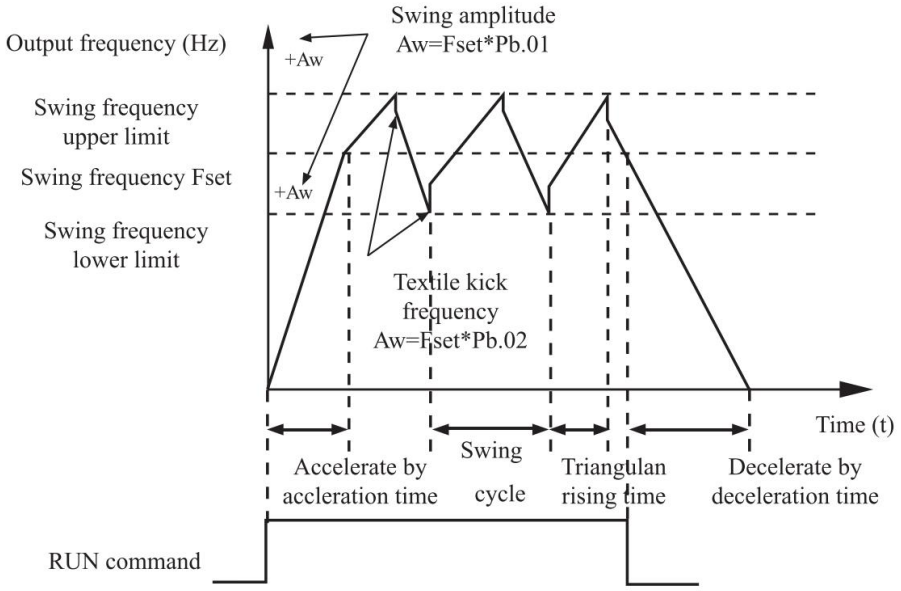


Figure 4-26 Frequency Swing Working Schematic Diagram

Pb.00	Swing Amplitude Setting Mode		Factory Setting	0
	Setting Range	0	Relative to center frequency	
		1	Relative to maximum frequency	

This parameter is used to determine the reference quantity of the swing amplitude.

0: Relative to the center frequency (P0.03 frequency source), which is a variable swing amplitude system. The swing amplitude changes with the center frequency (set frequency).

1: Relative to the maximum frequency (P0.12), which is a fixed swing amplitude system with a fixed swing amplitude.

Pb.01	Swing Frequency Amplitude	Factory Setting	0.0%
	Setting Range	0.0% ~ 100.0%	
Pb.02	Sudden Jump Frequency Amplitude	Factory Setting	0.0%
	Setting Range	0.0% ~ 50.0%	

This parameter is used to determine the values of the swing amplitude and jump frequency.

When the swing amplitude is set relative to the center frequency (Pb.00=0), the swing amplitude AW = frequency source P0.03 × swing amplitude percentage Pb.01. When the swing amplitude is set relative to the maximum frequency (Pb.00=1), the swing amplitude AW = maximum frequency P0.12 × swing amplitude percentage Pb.01.

The jump frequency amplitude refers to the percentage of the jump frequency relative to the swing amplitude during swing frequency operation, i.e.: Jump frequency = Swing amplitude AW × Jump frequency amplitude Pb.02.If the swing amplitude is selected to be relative to the center frequency (Pb.00=0), the jump frequency is a variable value. If the swing amplitude is selected to be relative to the maximum frequency (Pb.00=1), the jump frequency is a fixed value.

The swing frequency operating range is constrained by the upper and lower frequency limits.

Pb.03	Swing Frequency Period	Factory	10.0s
	Setting Range	0.0s ~ 3000.0s	
Pb.04	Triangle wave rise time coefficient	Factory Setting	50.0%
	Setting Range	0.0% ~ 100.0%	

Swing frequency period: The time value of a complete swing frequency cycle.
Triangle wave rise time coefficient (Pb.04) refers to the percentage of the triangle wave rise time relative to the swing frequency period (Pb.03).
Triangle wave rise time = Swing frequency period (Pb.03) × Triangle wave rise time coefficient (Pb.04), in seconds.
Triangle wave fall time = Swing frequency period (Pb.03) × (1 − Triangle wave rise time coefficient (Pb.04)), in seconds.

Pb.05	Set Length	Factory	1000m
	Setting Range	0m ~ 65535m	
Pb.06	Actual Length	Factory	0m
	Setting Range	0m ~ 65535m	
Pb.07	Pulses per Meter	Factory	100.0
	Setting Range	0.1 ~ 6553.5	

The above function codes are used for fixed-length control.
Length information needs to be collected via multi-function digital input terminals. The actual length (Pb.06) can be calculated by dividing the number of pulses sampled by the terminal by the pulses per meter (Pb.07). When the actual length is greater than the set length (Pb.05), the multi-function digital MO1 outputs the "length reached" ON signal.
During fixed-length control, the length reset operation can be performed via multi-function S terminals (with the S function set to 28); for details, refer to P5.00 to P5.05.
In applications, the function of the corresponding input terminal must be set to "length counting input" (function 27). When the pulse frequency is high, the S3 port must be used.

Pb.08	Set Count Value	Factory Setting	1000
	Setting Range	1 ~ 65535	
Pb.09	Specified Count Value	Factory Setting	1000
	Setting Range	1 ~ 65535	

Count values need to be collected via multi-function digital input terminals. In applications, the function of the corresponding input terminal must be set to "counter input" (function 25). When the pulse frequency is high, the X5 port must be used.

When the count value reaches the set count value (Pb.08), the multi-function digital MO1 outputs the "set count value reached" ON signal, and then the counter stops counting.

When the count value reaches the designated count value (Pb.09), the multi-function digital MO1 outputs the "designated count value reached" ON signal, and the counter continues counting at this time until it reaches the "set count value" when it stops.

The designated count value (Pb.09) should not be greater than the set count value (Pb.08). Figure 4-27 is a schematic diagram of the functions for set count value reached and designated count value reached.

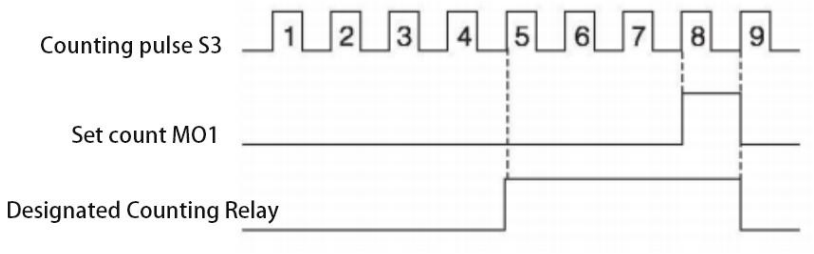


Figure 4-27 Schematic Diagram of Set Count Value Given and Specified Count Value Given

Group PC Multi-segment Command and Simple PLC Function

The multi-segment commands of NZ200 have more extensive functions than conventional multi-speed functions. In addition to realizing multi-speed functions, they can also serve as the voltage source for VF separation and the setpoint source for process PID. For this reason, the dimension of multi-segment commands is a relative value.

The Simple PLC function is different from the user-programmable function of NZ200. The Simple PLC can only perform simple combined operations on multi-segment commands, while the user-programmable function is more comprehensive and practical. Please refer to the relevant descriptions in Group PC.

PC.00	Multi-segment Command 0	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.01	Multi-segment Command 1	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.02	Multi-segment Command 2	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.03	Multi-segment Command 3	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.04	Multi-segment Command 4	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.05	Multi-segment Command 5	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.06	Multi-segment Command 6	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.07	Multi-segment Command 7	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.08	Multi-segment Command 8	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.09	Multi-segment Command 9	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.10	Multi-segment Command 10	Factory Setting	0.0Hz
	Setting Range	-100.0% ~ 100.0%	

PC.11	Multi-segment Command 11	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.12	Multi-segment Command 12	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.13	Multi-segment Command 13	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.14	Multi-segment Command 14	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
PC.15	Multi-segment Command 15	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	

The multi-segment commands can be used in three scenarios: as a frequency source, as a voltage source for V/F separation, and as a setpoint source for process PID.

In all three applications, the multi-segment command values are expressed as relative percentages ranging from -100.0% to 100.0%:

*When used as a frequency source, the value represents a percentage of the maximum frequency (P0.12).
*When used as a voltage source for V/F separation, the value represents a percentage of the motor's rated voltage.
*When used as a PID setpoint source, no unit conversion is needed since PID setpoints are inherently relative values.

The selection among different multi-segment command values is controlled by the status of the multi-function digital input terminal S. Refer to Group P5 for detailed configuration instructions.

PC.16	Simple PLC Operation Mode		Factory Setting	0
	Setting Range	0	Stop after single operation	
		1	Hold final value after single operation	
		2	Cycle continuously	

The Simple PLC function serves two purposes: as a frequency source or as a voltage source for V/F separation.
Figure 4-28 illustrates the Simple PLC function when configured as a frequency source. When operating in this mode, the sign (positive or negative) of parameters PC.00 to PC.15 determines the motor's direction of rotation. A negative value indicates reverse operation of the inverter.

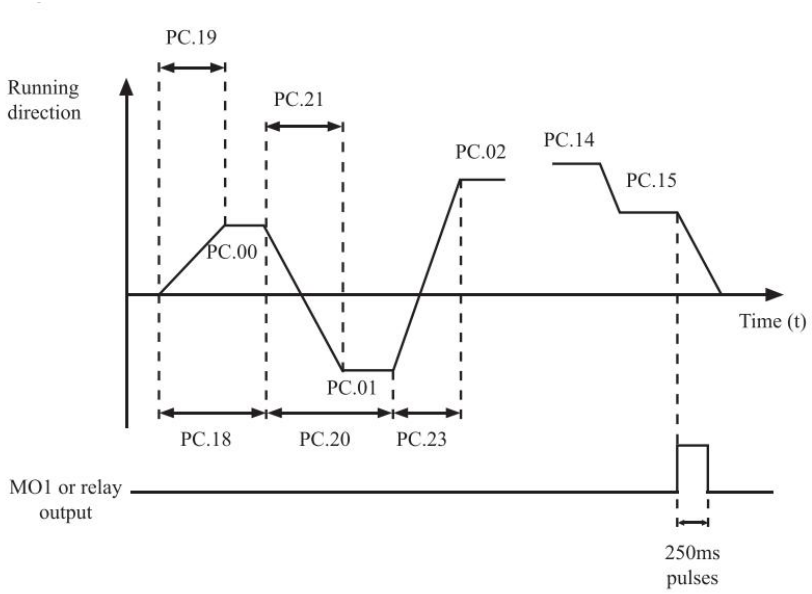


Figure 4-28 Schematic Diagram of Simple PLC

When used as a frequency source, PLC has three operation modes, which are not available when used as a VF separation voltage source. Among them:

0: Stop after single operation

The inverter automatically stops after completing a single cycle and needs to be given a run command again to start.

1: Hold final value after single operation

After the inverter completes a single cycle, it automatically holds the operating frequency and direction of the last segment.

2: Cycle continuously

After the inverter completes a cycle, it automatically starts the next cycle until a stop command is received.

PC.17	Simple PLC Power-off Memory Selection		Factory Setting	00
	Setting Range	Units place	Power-off memory selection	
		0	No power-off memory	
		1	Power-off memory	
		Tens place	Stop memory selection	
		0	No stop memory	
		1	Stop memory	

PLC Power-Off Memory refers to the function that memorizes the PLC's operating stage and frequency before a power failure, allowing it to resume operation from the memorized point when power is restored. If this function is disabled, the PLC will restart from the initial stage each time power is applied.

PLC Stop Memory records the PLC's operating stage and frequency when the system is intentionally stopped, enabling it to continue from the memorized point during the next startup. Disabling this function will cause the PLC to restart from the beginning each time it is activated.

PC.18	Simple PLC Segment 0 Run Time	Factory Setting	0.0s(h)
	Setting Range	0.0s(h) ~ 6553.5s(h)	
PC.19	Simple PLC Segment 0 Acceleration/Deceleration Time	Factory Setting	0
	Setting Range	0 ~ 3	
PC.20	Simple PLC Segment 1 Run Time	Factory Setting	0.0s(h)
	Setting Range	0.0s(h) ~ 6553.5s(h)	
PC.21	Simple PLC Segment 1 Acceleration/Deceleration Time	Factory Setting	0
	Setting Range	0 ~ 3	
PC.22	Simple PLC Segment 2 Run Time	Factory Setting	0.0s(h)
	Setting Range	0.0s(h) ~ 6553.5s(h)	
PC.23	Simple PLC Segment 2 Acceleration/Deceleration Time	Factory Setting	0
	Setting Range	0 ~ 3	
PC.24	Simple PLC Segment 3 Run Time	Factory Setting	0.0s(h)
	Setting Range	0.0s(h) ~ 6553.5s(h)	
PC.25	Simple PLC Segment 3 Acceleration/Deceleration Time	Factory Setting	0
	Setting Range	0 ~ 3	
PC.26	Simple PLC Segment 4 Run Time	Factory Setting	0.0s(h)
	Setting Range	0.0s(h) ~ 6553.5s(h)	
PC.27	Simple PLC Segment Acceleration/Deceleration Time	Factory Setting	0
	Setting Range	0 ~ 3	
PC.28	Simple PLC Segment 5 Run Time	Factory Setting	0.0s(h)
	Setting Range	0.0s(h) ~ 6553.5s(h)	
PC.29	Simple PLC Segment 5 Acceleration/Deceleration Time	Factory Setting	0
	Setting Range	0 ~ 3	
PC.30	Simple PLC Segment 6 Run Time	Factory Setting	0.0s(h)
	Setting Range	0.0s(h) ~ 6553.5s(h)	
PC.31	Simple PLC Segment 6 Acceleration/Deceleration Time	Factory Setting	0
	Setting Range	0 ~ 3	
PC.32	Simple PLC Segment 7 Run Time	Factory Setting	0.0s(h)
	Setting Range	0.0s(h) ~ 6553.5s(h)	
PC.33	Simple PLC Segment 7 Acceleration/Deceleration Time	Factory Setting	0

	Setting Range		0 ~ 3	
PC.34	Simple PLC Segment 8 Run Time		Factory Setting	0.0s(h)
	Setting Range		0.0s(h) ~ 6553.5s(h)	
PC.35	Simple PLC Segment 8 Acceleration/Deceleration Time		Factory Setting	0
	Setting Range		0 ~ 3	
PC.36	Simple PLC Segment 9 Run Time		Factory Setting	0.0s(h)
	Setting Range		0.0s(h) ~ 6553.5s(h)	
PC.37	Simple PLC Segment 9 Acceleration/Deceleration Time		Factory Setting	0
	Setting Range		0 ~ 3	
PC.38	Simple PLC Segment 10 Run Time		Factory Setting	0.0s(h)
	Setting Range		0.0 s(h) ~ 6553.5s(h)	
PC.39	Simple PLC Segment 10 Acceleration/Deceleration Time		Factory Setting	0
	Setting Range		0 ~ 3	
PC.40	Simple PLC Segment 11 Run Time		Factory Setting	0.0s(h)
	Setting Range		0.0s(h) ~ 6553.5s(h)	
PC.41	Simple PLC Segment 11 Acceleration/Deceleration Time		Factory Setting	0
	Setting Range		0 ~ 3	
PC.42	Simple PLC Segment 12 Run Time		Factory Setting	0.0s(h)
	Setting Range		0.0s(h) ~ 6553.5s(h)	
PC.43	Simple PLC Segment 12 Acceleration/Deceleration Time		Factory Setting	0
	Setting Range		0 ~ 3	
PC.44	Simple PLC Segment 13 Run Time		Factory Setting	0.0s(h)
	Setting Range		0.0s(h) ~ 6553.5s(h)	
PC.45	Simple PLC Segment 13 Acceleration/Deceleration Time		Factory Setting	0
	Setting Range		0 ~ 3	
PC.46	Simple PLC Segment 14 Run Time		Factory Setting	0.0s(h)
	Setting Range		0.0s(h) ~ 6553.5s(h)	
PC.47	Simple PLC Segment 14 Acceleration/Deceleration Time		Factory Setting	0
	Setting Range		0 ~ 3	
PC.48	Simple PLC Segment 15 Run Time		Factory Setting	0.0s(h)
	Setting Range		0.0s(h) ~ 6553.5s(h)	
PC.49	Simple PLC Segment 15 Acceleration/Deceleration Time		Factory Setting	0
	Setting Range		0 ~ 3	
PC.50	Simple PLC Run Time Unit		Factory Setting	0
	Setting Range	0	S（seconds）	
		1	h（hours）	
PC.51	Multi-segment Command 0 Set Mode		Factory Setting	0
	Setting Range	0	Set by function code PC.00	
		1	FIV	

		2	FIC
		3	Reserved
		4	PULSE
		5	PID
		6	Set by preset frequency (P0.10), adjustable by UP/DOWN

This parameter determines the setpoint channel for multi-segment command 0.
In addition to selecting PC.00, multi-segment command 0 offers multiple other options, facilitating switching between multi-segment commands and other setpoint modes. Whether multi-segment commands act as the frequency source or the Simple PLC acts as the frequency source, switching between these two frequency sources can be easily achieved.

Group PD Communication Parameters

Please refer to the *NZ200 Communication Protocol*

Group PP User Function Codes

PP.00	User Password	Factory Setting	0
	Setting Range	0 ~ 65535	

Setting any non-zero value for parameter PP.00 activates the password protection function. Upon subsequent menu access, the correct password must be entered to view or modify parameters. Please securely store your password.
Setting PP.00 = 00000 clears the password and disables protection.

PP.01	Parameter Initialization		Factory Setting	0
	Setting Range	0	No operation	
		1	Restore factory parameters (excluding motor parameters)	

Restore factory default settings (excluding motor parameters). When PP.01 is set to 1, most of the inverter's function parameters will be restored to the manufacturer's factory defaults. However, the following parameters will not be restored: motor parameters, decimal point for frequency commands (P0.22), fault record information, cumulative operating time (P7.09), cumulative power-on time (P7.13), and cumulative power consumption (P7.14).

Group C0: Torque control and parameter limitations

C0.00	Speed/Torque Control Mode Selection		Factory Setting	0
	Setting Range	0	Speed Control	
		1	Torque Control	

Used to select the inverter's control mode: speed control or torque control.The multi-function digital S terminals of NZ200 have two functions related to torque control: torque control disable (function 29) and speed control/torque control switching (function 46). These two terminals need to be used in conjunction with C0.00 to realize switching between speed and torque control.When the speed control/torque control switching terminal is inactive, the control mode is determined by C0.00; if the speed control/torque control switching is active, the control mode is equivalent to the inverse of the value of C0.00.In any case, when the torque control disable terminal is active, the inverter is fixed in speed control mode.

C0.01	Torque Setpoint Source in Torque Control Mode		Factory Setting	0
	Setting Range	0	Digital setting (C0.03)	
		1	FIV	
		2	FIC	
		3	Reserved	
		4	PULSE	
		5	Communication setting	
		6	MIN(FIV,FIC)	
		7	MAX(FIV,FIC)	
C0.03	Torque Digital Setting in Torque Control Mode		Factory Setting	150%
	Setting Range	-200.0% ~ 200.0%		

C0.01 is used to select the torque setting source, with a total of 8 torque setting modes. Torque setting adopts relative values, where 100.0% corresponds to the inverter's rated torque. The setting range is -200.0% to 200.0%, indicating that the maximum torque of the inverter is twice its rated torque.

When torque setting uses modes 1 to 7, 100% of communication, analog input, and pulse input correspond to C0.03.

C0.05	Maximum Forward Frequency in Torque Control	Factory Setting	50.00Hz
	Setting Range	0.00Hz ~ Maximum Frequency（P0.12）	
C0.06	Maximum Reverse Frequency in Torque Control	Factory Setting	50.00Hz
	Setting Range	0.00Hz ~ Maximum Frequency（P0.12）	

Used to set the maximum forward or reverse operating frequency of the inverter in torque control mode.
When the inverter is in torque control mode, if the load torque is less than the motor's output torque, the motor speed will keep increasing. To prevent accidents such as mechanical overs peed (runaway), it is necessary to limit the maximum motor speed during torque control.

C0.07	Torque Control Acceleration Time	Factory Setting	0.00s
	Setting Range	0.00s ~ 6500.0s	
C0.08	Torque Control Deceleration Time	Factory Setting	0.00s
	Setting Range	0.00s ~ 6500.0s	

In torque control mode, the difference between the motor's output torque and the load torque determines the rate of change of the motor and load speed. Therefore, the motor speed may change rapidly, causing issues such as noise or excessive mechanical stress. By setting the torque control acceleration/deceleration time, the motor speed can be made to change smoothly.

However, in applications requiring rapid torque response, the torque control acceleration/deceleration time should be set to 0.00s. For example:When two motors are rigidly connected to drive the same load, configure one inverter as the master using speed control and the other as the slave using torque control. The master's actual output torque is used as the torque command for the slave. In this scenario, the slave's torque must quickly follow the master, so its torque control acceleration/deceleration time should be 0.00s.

Group C5 Control Optimization Parameters

C5.00	DPWM Switching Upper Limit	Factory Setting	12.00Hz
	Setting Range	0.00Hz ~ 15Hz	

This parameter is only effective for V/F control. It determines the PWM waveform generation mode during V/F operation of an asynchronous motor: 7-segment continuous modulation mode is used when the frequency is below this value, while 5-segment discontinuous modulation mode is used when the frequency is above this value.
The 7-segment continuous modulation mode results in higher switching losses but lower current ripple, while the 5-segment discontinuous modulation mode reduces switching losses at the cost of increased current ripple and potential motor instability at high frequencies, which typically does not require adjustment.
Refer to function code **P4.11** for V/F operation instability and **P0.17** for inverter losses and temperature rise.

C5.01	PWM Modulation Mode		Factory Setting	0
	Setting Range	0	Asynchronous modulation	
		1	Synchronous modulation	

Only effective for V/F control.

Synchronous modulation is recommended at higher output frequencies (above 100Hz) to improve output voltage quality.

C5.02	Dead-time Compensation		Factory Setting	1
	Setting Range	0	No compensation	
		1	Compensation mode 1	

This parameter generally does not require modification.

C5.03	Random PWM Depth		Factory Setting	0
	Setting Range	0	Random PWM disabled	
		1-10	PWM carrier frequency random depth	

When setting the depth of the random PWM, it can reduce motor noise and minimize electromagnetic interference.

C5.04	Fast Current Limit Enable		Factory Setting	1
	Setting Range	0	Disabled	
		1	Enabled	

Enabling fast current limiting minimizes overcurrent faults and ensures continuous inverter operation. However, prolonged fast current limiting may cause overheating and trigger fault CBC (Fast Current Limiting Fault), requiring shutdown.

C5.05	Current Detection	Factory Setting	0
	Setting Range	Reserved	

This is used for setting the current detection compensation for the frequency inverter. It is not recommended to make any modifications.

C5.06	Undervoltage Threshold Setting	Factory Setting	Model-dependent
	Setting Range	70 ~ 2000	

Sets the voltage threshold for the inverter's undervoltage fault (LU). Inverters with different voltage ratings correspond to different thresholds:

Single-phase 220V or three-phase 220V: 200V Three-phase 380V: 350V

C5.07	No PG optimization mode selection		Factory value	1
	Setting Range	1	Optimization Mode 1	
		2	Optimization Mode 2	

Optimization Mode 1: Used when higher linearity of torque control is required.

Optimization Mode 2: Used when higher speed smoothness is required.

C5.09	Overvoltage Threshold Setting	Factory Setting	Model-dependent
	Setting Range	200 ~ 2200	

Used to set the voltage value for the inverter's overvoltage fault. Inverters of different voltage classes correspond to different voltage points, as follows:

Single-phase 220V or three-phase 220V: 400V

Three-phase 380V: 350V

Group C6: FI Curve Setting (FI refers to FIV or FIC)

C6.00	FI Curve 4 Minimum Input	Factory Setting	0.00V
	Setting Range	0.00V ~ C6.02	
C6.01	FI Curve 4 Minimum Input Corresponding Setting	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
C6.02	FI Curve 4 Inflection Point 1 Input	Factory Setting	3.00V
	Setting Range	C6.00 ~ C6.04	
C6.03	FI Curve 4 Inflection Point 1 Input Corresponding Setting	Factory Setting	30.0%
	Setting Range	-100.0% ~ 100.0%	
C6.04	FI Curve 4 Inflection Point 2 Input	Factory Setting	6.00V
	Setting Range	C6.02 ~ C6.06	
C6.05	FI Curve 4 Inflection Point 2 Input Corresponding Setting	Factory Setting	60.0%
	Setting Range	-100.0% ~ 100.0%	
C6.06	FI Curve 4 Maximum Input	Factory Setting	10.00V
	Setting Range	C6.06 ~ 10.00V	
C6.07	FI Curve 4 Maximum Input Corresponding Setting	Factory Setting	100.0%
	Setting Range	-100.0% ~ 100.0%	
C6.08	FI Curve 5 Minimum Input	Factory Setting	0.00V
	Setting Range	0.00V ~ C6.10	
C6.09	FI Curve 5 Minimum Input Corresponding Setting	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
C6.10	FI Curve 5 Inflection Point 1 Input	Factory Setting	3.00V
	Setting Range	C6.08 ~ C6.12	
C6.11	FI Curve 5 Inflection Point 1 Input Corresponding Setting	Factory Setting	30.0%
	Setting Range	-100.0% ~ 100.0%	
C6.12	FI Curve 5 Inflection Point 2 Input	Factory Setting	6.00V
	Setting Range	C6.10 ~ C6.14	

C6.13	FI Curve 5 Inflection Point 2 Input Corresponding Setting	Factory Setting	60.0%
	Setting Range	-100.0% ~ 100.0%	
C6.14	FI Curve 5 Maximum Input	Factory Setting	10.00V
	Setting Range	C6.14 ~ 10.00V	
C6.15	FI Curve 5 Maximum Input Corresponding Setting	Factory Setting	100.0%
	Setting Range	-100.0% ~ 100.0%	

Curves 4 and 5 function similarly to Curves 1 to 3; however, Curves 1 to 3 are straight lines, while Curves 4 and 5 are 4-point curves, enabling more flexible corresponding relationships. Figure 4-29 shows a schematic diagram of Curves 4 to 5.

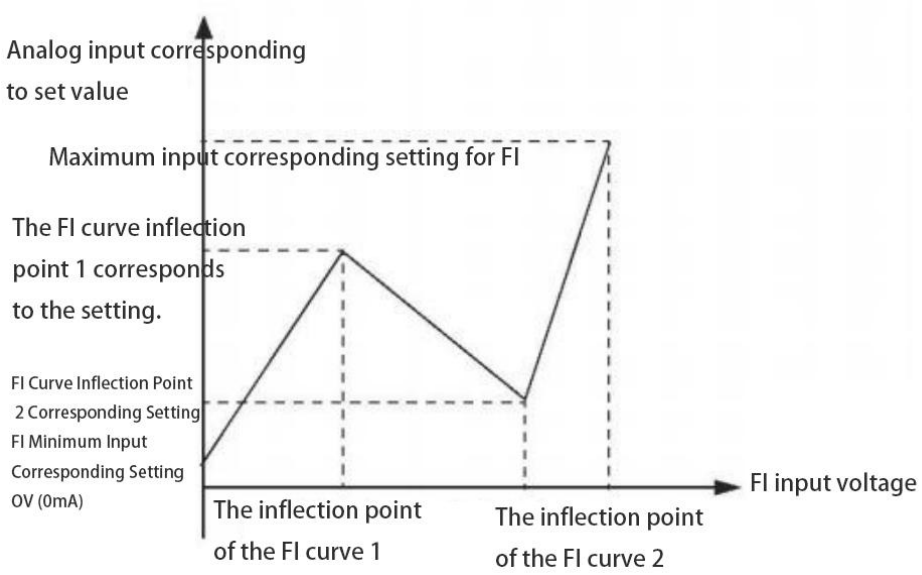


Figure 4-29 Schematic Diagram of Curve 4 and Curve 5

When setting Curve 4 and Curve 5, it should be noted that the minimum input voltage, inflection point 1 voltage, inflection point 2 voltage, and maximum voltage of the curve must increase in sequence.

FI curve selection (P5.33) is used to determine how analog inputs FIV ~ FIA are selected among the 5 curves.

C6.16	FIV Set Jump Point	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
C6.17	FIV Set Jump Range	Factory Setting	0.5%
	Setting Range	0.0% ~ 100.0%	
C6.18	FIC Set Jump Point	Factory Setting	0.0%
	Setting Range	-100.0% ~ 100.0%	
C6.19	FIC Set Jump Range	Factory Setting	0.5%
	Setting Range	0.0% ~ 100.0%	

The analog inputs FIV to FIC of NZ200 all have a setpoint jump function.The jump function means that when the corresponding setpoint of the analog quantity fluctuates within the range around the jump point, the corresponding setpoint of the analog quantity will be fixed to the value of the jump point.

For example: The voltage of analog input FIV fluctuates around 5.00V, with a fluctuation range of 4.90V to 5.10V. The minimum input of FIV (0.00V) corresponds to 0.0%, and the maximum input (10.00V) corresponds to 100.0%. In this case, the detected corresponding setpoint of FIV fluctuates between 49.0% and 51.0%.If the FIV setpoint jump point (C6.16) is set to 50.0% and the FIV setpoint jump amplitude (C6.17) is set to 1.0%, then for the above FIV input, after processing by the jump function, the corresponding setpoint of the FIV input will be fixed at 50.0%, converting FIV into a stable input and eliminating fluctuations.

Group C9: PID Function Expansion (P0.04=8)

Function Code	Description	Setting Range	Factory Setting
C9.00	Sleep Frequency	0 ~ P0.12	0.00Hz
C9.01	Sleep Duration	0 ~ 5000.0S	10.0S
C9.02	Wake-up Value	0% ~ 100.0%	60.0%

Function Description:

During operation, if the output frequency < sleep frequency (C9.00), the duration > C9.01, and the PID feedback > 90% of the setpoint, the output frequency drops to 0, entering sleep mode. The inverter panel displays **"SLP"**.

If the feedback value < C9.02 × setpoint during sleep, the inverter exits sleep mode and resumes normal operation. During sleep, the cooling fan stops if the inverter temperature is below 42°C.

C9.05	Multi-turn Potentiometer Resolution	0: 0.01Hz 1: 0.1Hz 2: 1Hz	1

Group CC FIFO Calibration

CC.00	FIV/Keypad Potentiometer Measured Voltage1	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	
CC.01	FIV/Keypad Potentiometer Display Voltage1	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	
CC.02	FIV/Keypad Potentiometer Measured Voltage2	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	

CC.03	FIV/Keypad Potentiometer Display Voltage2	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	
CC.04	FIC/AVI Measured Voltage1	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	
CC.05	FIC/AVI Display Voltage1	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	
CC.06	FIC/AVI Measured Voltage2	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	
CC.07	FIC/AVI Display Voltage2	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	

This group of function codes is used to calibrate the analog input FI to eliminate the effects of zero offset and gain at the FI input port. The functional parameters in this group have been calibrated at the factory and will revert to the factory-calibrated values when restoring factory defaults. Generally, calibration is not required at the application site. Measured voltage refers to the actual voltage measured by a multimeter or other measuring instruments. Displayed voltage refers to the voltage value sampled and displayed by the inverter, as shown in Group D0 (D0.21, D0.22) for pre-calibration voltage display.

During calibration, input two voltage values to each FI input port. Accurately enter the values measured by the multimeter and the values read from Group D0 into the above function codes. The inverter will then automatically calibrate the zero offset and gain of FI.

CC.12	FOV Target Voltage1	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	
CC.13	FOV Measured Voltage1	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	
CC.14	FOV Target Voltage2	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	
CC.15	FOV Measured Voltage2	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	
CC.16	FOC Target Voltage1	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	
CC.17	FOC Measured Voltage1	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	
CC.18	FOC Target Voltage2	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	
CC.19	FOC Measured Voltage2	Factory Setting	Factory Calibrated
	Setting Range	-10.00V ~ 10.000V	

This group of function codes is used to calibrate the analog outputs FOV/FOC. The functional parameters in this group have been calibrated at the factory and will revert to the factory-calibrated values when restoring factory defaults. Generally, calibration is not required at the application site. Target voltage refers to the theoretical output voltage

value of the inverter. Measured voltage refers to the actual output voltage value measured by a multimeter or other instruments.

Group D0 Monitoring

Group D0 parameters are used to monitor the inverter's operating status information. Users can view these parameters via the panel for on-site debugging or read them through communication for host computer monitoring. Among them, D0.00 to D0.31 are the operating and stopping monitoring parameters defined in P7.03 and P7.04.Refer to the table below for specific parameter function codes, parameter names, and minimum units.

Function Code	Name	Unit
D0.00	Operating Frequency (Hz)	0.01Hz
D0.01	Set Frequency (Hz)	0.01Hz
D0.02	Bus Voltage (V)	0.1V
D0.03	Output Voltage (V)	1V
D0.04	Output Current (A)	0.01A
D0.05	Output Power (kW)	0.1kW
D0.06	Output Torque (%)	0.1%
D0.07	S Input Status	1
D0.08	MO1 Output Status	1
D0.09	FIV Voltage (V)	0.01V
D0.10	FIC Voltage (V)	0.01V
D0.11	Reserved	
D0.12	Count Value	1
D0.13	Length Value	1
D0.14	Load Speed Display	1
D0.15	PID Setpoint	0.1
D0.16	PID Feedback	0.1
D0.17	PLC Stage	1
D0.18	PULSE Input Pulse Frequency (Hz)	0.01kHz
D0.19	Reserved	
D0.20	Remaining Operating Time	0.1Min
D0.21	FIV Pre-Calibration Voltage	0.001V
D0.22	FIC Pre-Calibration Voltage	0.001V
D0.23	Reserved	
D0.24	Linear Speed	1m/Min
D0.25	Current Power-On Time	1Min
D0.26	Current Operating Time	0.1Min
D0.27	PULSE Input Pulse Frequency	1Hz
D0.28	Communication Set Value	0.01%

D0.29	Reserved	
D0.30	Main Frequency X Display	0.01Hz
D0.31	Auxiliary Frequency Y Display	0.01Hz
D0.32	View Arbitrary Memory Address	1
D0.33	Reserved	
D0.34	Reserved	
D0.35	Target Torque (%)	0.1%
D0.36	Reserved	
D0.37	Power Factor Angle	0.1
D0.38	Reserved	
D0.39	VF Separation Target Voltage	1V
D0.40	VF Separation Output Voltage	1V
D0.41	Reserved	
D0.42	Reserved	
D0.43	Reserved	
D0.44	Reserved	
D0.45	Fault Information	0

Chapter 5 Fault Detection and Resolution

5-1 Fault Alarm and Countermeasures

The NZ200 inverter is equipped with multiple warning information and protection functions. In the event of a fault, the protection functions will actuate: the inverter stops output, its fault relay contacts operate, and a fault code is displayed on the inverter's display panel. Before seeking service, users can first conduct self-inspection in accordance with the prompts in this section to analyze the cause of the fault and find a solution. If the cause falls into the scope described within the dashed box, please seek service by contacting the distributor of the inverter you purchased or our company directly.

Note: The fault types shown in this manual apply universally to all series of inverters of our company and are not faults unique to this series. Therefore, they are for reference only. The final interpretation right shall belong to our company. For any questions, please contact our company's technical personnel or distributors.

1：Fault Name	Acceleration Overcurrent
Operation Panel Display	OC1
Fault Cause Investigation	1. The inverter output circuit has a ground or short circuit. 2. Vector control is used without parameter identification.

	3. Acceleration time is too short. 4. Manual torque boost or V/F curve is inappropriate. 5. Voltage is too low. 6. Starting a rotating motor. 7. Sudden load increase during acceleration. 8. The inverter is undersized.
Troubleshooting Measures	1. Eliminate external faults. 2. Perform motor parameter identification. 3. Increase acceleration time. 4. Adjust manual torque boost or V/F curve. 5. Adjust voltage to the normal range. 6. Select speed tracking start or start after the motor stops. 7. Eliminate sudden load increase. 8. Use an inverter with a higher power rating.
2：Fault Name	Deceleration Overcurrent
Operation Panel Display	OC2
Fault Cause Investigation	1. The inverter output circuit has a ground or short circuit. 2. Vector control is used without parameter identification. 3. Deceleration time is too short. 4. Voltage is too low. 5. Sudden load increase during deceleration. 6. No brake unit and brake resistor are installed.
Troubleshooting Measures	1. Eliminate external faults. 2. Perform motor parameter identification. 3. Increase deceleration time. 4. Adjust voltage to the normal range. 5. Eliminate sudden load increase. 6. Install a brake unit and resistor.
3：Fault Name	Steady-state Overcurrent
Operation Panel Display	OC3
Fault Cause Investigation	1. The inverter output circuit has a ground or short circuit. 2. Vector control is used without parameter identification. 3. Voltage is too low. 4. Sudden load increase during operation. 5. The inverter is undersized.
Troubleshooting Measures	1. Eliminate external faults. 2. Perform motor parameter identification. 3. Adjust voltage to the normal range. 4. Eliminate sudden load increase. 5. Use an inverter with a higher power rating.
4：Fault Name	Acceleration Overvoltage
Operation Panel Display	OU1
Fault Cause Investigation	1. Input voltage is on the high side 2. External force drags the motor during acceleration

	3. Acceleration time is too short 4. No brake unit and brake resistor are installed
Troubleshooting Measures	1. Adjust the voltage to the normal range 2. Eliminate this external force or install a brake resistor 3. Increase the acceleration time 4. Install a brake unit and resistor
5：Fault Name	Deceleration Overvoltage
Operation Panel Display	OU2
Fault Cause Investigation	1. Input voltage is on the high side 2. External force drags the motor during deceleration 3. Deceleration time is too short 4. No brake unit and brake resistor are installed
Troubleshooting Measures	1. Adjust the voltage to the normal range 2. Eliminate this external force or install a brake resistor 3. Increase the deceleration time 4. Install a brake unit and resistor
6：Fault Name	Steady-state Overvoltage
Operation Panel Display	OU3
Fault Cause Investigation	1. Input voltage is on the high side 2. External force drags the motor during operation
Troubleshooting Measures	1. Adjust the voltage to the normal range 2. Eliminate this external force or install a brake resistor
7：Fault Name	Control Power Fault
Operation Panel Display	POF
Fault Cause Investigation	1. Input voltage is not within the range specified in the specifications
Troubleshooting Measures	1、1. Adjust the voltage to the range required by the specifications
8：Fault Name	Undervoltage Fault
Operation Panel Display	LU
Fault Cause Investigation	1. Instantaneous power failure 2. Voltage at the inverter input terminal is not within the range required by the specifications 3. Bus voltage is abnormal 4. Rectifier bridge and buffer resistor are abnormal 5. Driver board is abnormal 6. Control board is abnormal
Troubleshooting Measures	1. Reset the fault 2. Adjust the voltage to the normal range 3. Seek technical support 4. Seek technical support 5. Seek technical support 6. Seek technical support
9：Fault Name	Inverter Overload

Operation Panel Display	OL2
Fault Cause Investigation	1. Whether the load is too heavy or the motor is locked-rotor 2. Inverter is undersized
Troubleshooting Measures	1. Reduce the load and check the motor and mechanical conditions 2. Select an inverter with a higher power rating
10：Fault Name	Motor Overload
Operation Panel Display	OL1
Fault Cause Investigation	1. Whether the motor protection parameter P9.01 is set appropriately 2. Whether the load is too heavy or the motor is locked-rotor 3. Inverter is undersized
Troubleshooting Measures	1. Set this parameter correctly 2. Reduce the load and check the motor and mechanical conditions 3. Select an inverter with a higher power rating
11：Fault Name	Output Phase Loss（Reserved）
Operation Panel Display	LI
Fault Cause Investigation	1. Three-phase input power supply is abnormal 2. Driver board is abnormal 3. Lightning protection board is abnormal 4. Main control board is abnormal
Troubleshooting Measures	1. Check and eliminate issues in the peripheral circuits 2. Seek technical support 3. Seek technical support 4. Seek technical support
12：Fault Name	Output Phase Loss
Operation Panel Display	LO
Fault Cause Investigation	1. Leads from the inverter to the motor are abnormal 2. Three-phase output of the inverter is unbalanced during motor operation 3. Driver board is abnormal 4. Module is abnormal
Troubleshooting Measures	1. Eliminate peripheral faults 2. Check if the three-phase windings of the motor are normal and eliminate faults 3. Seek technical support 4. Seek technical support
13：Fault Name	Module Overheating
Operation Panel Display	OH
Fault Cause Investigation	1. Ambient temperature is too high 2. Air duct is blocked 3. Fan is damaged 4. Module thermistor is damaged

	5. Inverter module is damaged
Troubleshooting Measures	1. Reduce ambient temperature 2. Clean the air duct 3. Replace the fan 4. Replace the thermistor 5. Replace the inverter module
14：Fault Name	External Fault
Operation Panel Display	EF
Fault Cause Investigation	1. External fault signal is input through multi-functional terminal S
Troubleshooting Measures	1. Reset and run
15：Fault Name	Communication Fault
Operation Panel Display	CE
Fault Cause Investigation	1. Upper computer works abnormally 2. Communication line is abnormal 3. Communication parameters in group PD are set incorrectly
Troubleshooting Measures	1. Check the wiring of the upper computer 2. Check the communication connection line 3. Set communication parameters correctly
16：Fault Name	Contactor Fault
Operation Panel Display	rAy
Fault Cause Investigation	1. Driver board and power supply are abnormal 2. Contactor is abnormal
Troubleshooting Measures	1. Replace the driver board or power board 2. Replace the contactor
17：Fault Name	Current Detection Fault
Operation Panel Display	IE
Fault Cause Investigation	1. Check if the Hall device is abnormal 2. Driver board is abnormal
Troubleshooting Measures	1. Replace the Hall device 2. Replace the driver board
18：Fault Name	Motor auto-tuning Fault
Operation Panel Display	TE
Fault Cause Investigation	1. Motor parameters not set according to the nameplate 2. Parameter identification process timed out
Troubleshooting Measures	1. Correctly set motor parameters according to the nameplate 2. Check the leads from the inverter to the motor
19：Fault Name	EEPROM Read/Write Fault
Operation Panel Display	EEP
Fault Cause Investigation	1. EEPROM chip is damaged
Troubleshooting	1. Replace the main control board

Measures	
20：Fault Name	Ground Short Circuit Fault
Operation Panel Display	GND
Fault Cause Investigation	1. Motor is short-circuited to ground
Troubleshooting Measures	1. Replace the cable or motor
21：Fault Name	Cumulative Operating Time Reaching Fault
Operation Panel Display	END1
Fault Cause Investigation	1. Cumulative operating time reaches the set value
Troubleshooting Measures	1. Use the parameter initialization function to clear the recorded information
22：Fault Name	Cumulative Power-On Time Reaching Fault
Operation Panel Display	END2
Fault Cause Investigation	1. Cumulative power-on time reaches the set value
Troubleshooting Measures	1. Use the parameter initialization function to clear the recorded information
23：Fault Name	Load Loss Fault
Operation Panel Display	LOAD
Fault Cause Investigation	1. Inverter operating current is less than P9.64
Troubleshooting Measures	1. Confirm whether the load is disconnected or whether the settings of parameters P9.64 and P9.65 are in line with the actual operating conditions
24：Fault Name	PID Feedback Loss Fault During Operation
Operation Panel Display	PIDE
Fault Cause Investigation	1. PID feedback is less than the set value of PA.26
Troubleshooting Measures	1. Check the PID feedback signal or set PA.26 to an appropriate value
25：Fault Name	Wave-by-Wave Current Limiting Fault
Operation Panel Display	CBC
Fault Cause Investigation	1. Whether the load is too heavy or the motor is locked-rotor 2. Inverter is undersized
Troubleshooting Measures	1. Reduce the load and check the motor and mechanical conditions 2. Select an inverter with a higher power rating
26：Fault Name	Excessive Speed Deviation Fault
Operation Panel Display	ESP
Fault Cause	1. Parameter identification not performed 2. The settings of excessive speed deviation detection

Investigation	parameters P9.69 and P9.60 are unreasonable
Troubleshooting Measures	1. Perform motor parameter identification 2. Set the detection parameters reasonably according to actual conditions
27：Fault Name	Motor Overspeed Fault
Operation Panel Display	oSP
Fault Cause Investigation	1. The user did not perform auto-tuning.
Troubleshooting Measures	1. The user needs to perform auto-tuning.

5-2 Common Faults and Their Solutions

During the operation of the inverter, the following fault conditions may be encountered. Please refer to the methods below for simple fault analysis:

Common Faults and Their Handling Methods：

No.	Phenomena	Potential Cause	Solution
1	Power-on but no display	No grid voltage or voltage too low; switching power supply failure on the inverter drive board; rectifier bridge damage; inverter buffer resistor damage; control board or keyboard failure; broken connection between the control board and drive board/keyboard.	Check the input power supply; Check the bus voltage; Seeking manufacturer's services;
2	Displays "2000" upon power-up	Poor contact in the connection between the drive board and the control board; damage to related components on the control board; ground short circuit in the motor or motor cable; Hall fault; low grid voltage;	Seeking manufacturer's services
3	Power-on display shows "GND" alarm	The motor or the output line is short-circuited to the ground; the frequency inverter is damaged.	Measure the insulation of the motor and the output line using a megohmmeter; Seeking manufacturer's services;
4	Upon power-up, the inverter displays normally; once it starts running, it shows "2000" and shuts down	Fan damage or locked-rotor; short circuit in the wiring of peripheral control terminals;	Replace the fan; eliminate the external short-circuit fault;

	immediately.		
5	Frequent occurrence of OH (IGBT overheating) faults	Carrier frequency set too high; fan damage or air duct blockage; damaged internal components of the inverter	Reduce the carrier frequency (P0.17); replace the fan and clean the air duct; seek service from the manufacturer.
6	After inverter starts operating, the motor does not rotate.	Check the motor and motor cables; incorrect inverter parameter settings (motor parameters); poor connection between the drive board and control board; drive board malfunction.	Reconfirm the wiring between the inverter and the motor; replace the motor or eliminate mechanical faults; check and reset the motor parameters.
7	The S terminal is malfunctioning.	Parameter setting error; External signal error; Control board failure;	Check and reset the relevant parameters of the P5 group; Reconnect the external signal lines; Seeking manufacturer's services;
8	Reserved		
9	The inverter frequently reports over current and over voltage faults.	The motor parameters are set incorrectly; the acceleration and deceleration times are inappropriate; there is load fluctuation;	Reset the motor parameters or conduct motor auto-tuning; Set appropriate acceleration and deceleration times; Seeking manufacturer's services;
10	Displays "rAY" upon power-up (or during operation)	The contactor is not engaged.	Check if the contactor cables are loose; check if the contactor is faulty; check if the 24V power supply for the contactor is faulty; seek service from the manufacturer.

Appendix 1: Summary Table of Function Parameters

When PP.00 is set to a non-0 value, that is, a parameter protection password is set. In both the function parameter mode and the user change parameter mode, the parameter menu can only be accessed after the correct password is entered. To cancel the password, PP.00 needs to be set to 0.

The parameter menu in the user-defined parameter mode is not password-protected. Group P and Group C are the basic functional parameters, while Group D is the monitoring functional parameter. The symbols in the function menu are described as follows:

"☆" : Indicates that the set value of this parameter can be changed when the frequency inverter is off or in operation.
"★" : Indicates that the set value of this parameter cannot be changed when the frequency inverter is in operation.

"●" : Indicates that the value of this parameter is the actual detection record value and cannot be changed.
"*" : Indicates that this parameter is a "manufacturer parameter", which can only be set by the manufacturer and is prohibited for users to operate.
"Reserve" : Indicates that this parameter will not be modified or applied within this software.

The basic functional parameter summary is as follows:

Function code	Name	Predetermined area	Factory default	Communication function code	Change
Group P0 Basic function group					
P0. 00	G / P type display	1 : G type (constant torque load type) 2 : P type (fan, water pump load type)	Model dependent	F000H	★
P0.01	Control mode selection	0 : V/F control 1 : No PG (speed sensor) vector control	0	F001H	★
P0.02	Command source selection	0 : Keyboard command channel (LED off) 1 : Terminal command channel (LED on) 2 : Communication command channel (LED flashes)	0	F002H	☆

P0.03	Frequency source superposition selection	Unit's digit: Frequency source selection 0: Main frequency source X 1: X and Y operation(operation relationship determined by ten's digit) 2: Switchover between X and Y 3: Switchover between X and "X and Y operation" 4: Switchover between Y and "X and Y operation" Ten's digit (X and Y operation) 0: X+Y 1: X-Y 2: Maximum 3: Minimum	00	F003H	☆
P0.04	Main frequency source X selection	0 : Digital setting (preset frequency P0.10 , UP/DOWN can be modified, no memory after power failure) 1 : Digital setting (preset frequency P0.10 , UP/DOWN can be modified, power-off memory) 2 : FIV/Keyboard Potentiometer 3 : FIC/AVI 4 : Keyboard encoder 5 : PULSE setting (S3) 6 : Multi-segment instruction 7 : Simple PLC 8 : PID 9 : Communication given	2	F004h	★
P0.05	Auxiliary frequency source Y selection	The same as P0.04（Main frequency source X selection）	0	F005H	★
P0.06	Auxiliary frequency source superposition Y range selection	0: Relative to the maximum frequency 1: Relative to frequency source X	0	F006H	☆
P0.07	Auxiliary frequency source superposition Y range selection	0% ~ 150%	100%	F007H	☆
P0.08	Acceleration time 1	0.00s ~ 6500.0s	Model dependent	F008H	☆

P0.09	Deceleration time 1	0.00s ~ 6500.0s	Model dependent	F009H	☆
P0.10	Preset frequency	0.00Hz ~ Maximum frequency (P0.12)	50.00Hz	F00AH	☆
P0.11	Rotation direction	0: Same direction 1: Opposite direction	0	F00BH	☆
P0.12	Maximum frequency	50.00Hz ~ 32 0.00Hz	50.00Hz	F00CH	★
P0.13	Upper limit frequency source	0: P0.12 setting 1: FIV /Keyboard Potentiometer 2: FIC/AVI 3: Reserved 4: PULSE setting 5: Communication given	0	F00DH	★
P0.14	Upper limit frequency	Lower limit frequency P0.1 6 ~ Maximum frequency P0 . 1 2	50.00Hz	F00EH	☆
P0.15	Upper limit frequency offset	0.00Hz ~ Maximum frequency P0. 12	0.00Hz	F00FH	☆
P0.16	Frequency lower limit	0.00Hz ~ upper limit frequency P0.14	0.00Hz	F010H	☆
P0.17	Carrier frequency	1.0kHz ~ 16.0kHz	Model dependent	F011H	☆
P0.18	The carrier frequency is adjusted with temperature	0: No 1: yes	1	F012H	☆
P0.19	Acceleration and deceleration time unit	0 : 1 second 1 : 0.1 seconds 2 : 0.01 seconds	1	F013H	★
P0.21	Frequency offset of auxiliary source for x and y operation	0.00Hz ~ Maximum frequency P0. 1 2	0.00Hz	F015H	☆
P0.22	Frequency command resolution	1 : 0.1Hz 2 : 0.01Hz	2	F016H	★
P0.23	Digital setting frequency shutdown memory selection	0: Not memory 1: Memory	0	F017H	☆
P0. 24	Acceleration and deceleration time reference frequency	0 : Maximum frequency (P0.12) 1 : set frequency 2 : 100Hz	0	F018H	★

P0.25	Base frequency for UP/DOWN modification during running	0 : Running frequency 1 : Setting frequency	0	F019H	★
P0.26	Binding command source to frequency source	Units digit: Binding operation panel command to frequency source 0 : No binding 1 : Frequency source by digital setting 2 : FIV 3 : FIC/AVI 4: Reserved 5 : PULSE setting (S3) 6 : Multi-reference 7 : Simple PLC 8 : PID 9 : Communication setting Ten's digit: Binding terminal command to frequency source (0-9, same as unit's digit) Hundred's digit: Binding communication command to frequency source (0-9, same as unit's digit)	000	F01AH	☆
P0.27	Communication type	0 : Modbus	0	F01BH	☆
Group P1 Start-stop control					
P1. 00	Start method	0 : Direct start 1 : Speed tracking restart 2 : Pre-excitation start (AC asynchronous motor)	0	F100H	☆
P1.01	Speed tracking method	0 : Start from stop frequency 1 : Start from zero speed 2 : start from maximum frequency	0	F101H	★
P1. 02	Rotational speed tracking rate	1 to 100	20	F102H	☆
P1. 03	Start frequency	0.00Hz ~ 10.00Hz	0.00Hz	F103H	☆
P1. 04	Start frequency hold time	0.0s ~ 100.0s	0.0s	F104H	★
P1. 05	Start DC braking current / pre-excitation	0% to 100%	0%	F105H	★

	current				
P1. 06	Start DC braking time / pre-excitation time	0.0s ~ 100.0s	0.0s	F106H	★
P1. 07	Acceleration and deceleration mode	0 : Linear acceleration/deceleration 1 : S -curve acceleration/deceleration A 2 : S -curve acceleration/deceleration B	0	F107H	★
P1. 08	Proportion of time at the beginning of the S -curve	0.0% ~ （ 100.0%- P1. 09 ）	30.0%	F108H	★
P1. 09	Proportion of time at the end of the S -curve	0.0% ~ （ 100.0%- P1. 08 ）	30.0%	F109H	★
P1.10	Stop mode	0 : Decelerate to stop 1 : Free to stop	0	F10AH	☆
P1.11	Shutdown DC Braking Starting Frequency	0.00Hz ~ Maximum frequency	0.00Hz	F10BH	☆
P1.12	Shutdown DC Braking Waiting Time	0.0s ~ 100.0s	0.0s	F10CH	☆
P1.13	Stop DC braking current	0% to 100%	0%	F10DH	☆
P1.14	Stop DC braking time	0.0s ~ 100.0s	0.0s	F10EH	☆
P1.15	Brake use ratio	0% ~ 100%	100%	F10FH	☆
Group P2 Motor parameters					
P2. 00	Motor type	0-Ordinary asynchronous motor 1-Variable frequency asynchronous motor	0	F200H	★
P2. 01	Motor rated power	0.1kW ~ 450.0kW	Model dependent	F201H	★
P2. 02	Motor rated voltage	1V ~ 2000V	Model dependent	F202H	★
P2.03	Motor rated current	0.01A ~ 655.35A (Inverter power ≤55kW) 0.1A ~ 6553.5A (Inverter power >55kW)	Model dependent	F203H	★
P2.04	Motor rated frequency	0.01Hz ~ Maximum frequency	Model dependent	F204H	★

P2. 05	Rated motor rotational speed	1rpm ~ 65535rpm	Model dependent	F205H	★
P2. 06	Asynchronous motor stator resistance	0.001Ω ~ 65.535Ω (Inverter power ≤55kW) 0.0001Ω ~ 6.5535Ω (Inverter power >55kW)	Tuning parameters	F206H	★
P2. 07	Asynchronous motor rotor resistance	0.001Ω ~ 65.535Ω (Inverter power ≤55kW) 0.0001Ω ~ 6.5535Ω (Inverter power >55kW)	Tuning parameters	F207H	★
P2. 08	Asynchronous motor leakage inductive reactance	0.01mH ~ 655.35mH (Inverter power ≤55kW) 0.001mH ~ 65.535mH (Inverter power >55kW)	Tuning parameters	F208H	★
P2. 09	Asynchronous motor mutual inductive reactance	0.1mH ~ 6553.5mH (Inverter power ≤55kW) 0.01mH ~ 655.35mH (Inverter power >55kW)	Tuning parameters	F209H	★
P2.10	Asynchronous motor no-load current	0.01A to P2. 03 (Inverter power ≤55kW) 0.1A to P2. 03 (Inverter power >55kW)	Tuning parameters	F20AH	★
P 2.11~ P 2.3 6 Reserved					
P2.37	Auto-tuning selection	0 : No operation 1 : Asynchronous motor static auto-tuning 1 : Asynchronous motor complete auto-tuning	0	F225H	★
Group P3 Motor vector control parameters					
P3.00	Speed loop proportional gain 1	1 to 100	30	F300H	☆
P3.01	Speed loop integral time 1	0.01s ~ 10.00s	0.50s	F301H	☆
P3.02	Switchover frequency 1	0.00 to P3.05	5.00Hz	F302H	☆
P3.03	Speed loop proportional gain 2	1 to 100	20	F303H	☆
P3.04	Speed loop integral time 2	0.01s ~ 10.00s	1.00s	F304H	☆

P3.05	Switch over frequency 2	P3. 02 ~ Maximum frequency output	10.00Hz	F305H	☆
P3.06	Vector control slip gain	50% to 200%	100%	F306H	☆
P3.07	Speed loop filtering time constant	0.000s ~ 0.100s	0.050s	F307H	☆
P3.08	Vector control overexcitation gain	0 to 200	64	F308H	☆
P3.09	Torque upper limit source in speed control mode	0 : Function code P3.10 setting 1 : FIV /Keyboard Potentiometer 2 : FIC /AVI 3 : Reserved 4 : PULSE setting 5 : Communication given 6 : MIN (FIV/Keyboard Potentiometer , FIC/AVI) 7 : MAX (FIV/Keyboard Potentiometer , FIC/AVI) Full scale of options 1-7 corresponds to P3.10	0	F309H	☆
P3.10	Torque upper limit number in speed control mode set up	0.0% to 200.0%	150.0%	F30AH	☆
P3.13	Excitation adjustment proportional gain	0 to 60000	2000	F30DH	☆
P3.14	Excitation adjustment integral gain	0 to 60000	1300	F30EH	☆
P3.15	Torque adjustment proportional gain	0 to 60000	2000	F30FH	☆
P3.16	Torque adjustment integral gain	0 to 60000	1300	F310H	☆
P3.17	Speed loop integral property	Units: Integral separation 0 : Invalid 1 : Valid	0	F311H	☆
P3.18 Reserved					
P3.19 Reserved					
P3.20 Reserved					
P3.21 Reserved					
P3.22 Reserved					

Group P4 V/F control parameters					
P4. 00	VF curve setting	0 : Linear V/F 1 : Multi-point V/F 2 : Square V/F 3 : 1.2 power V/F 4 : 1.4 power V/F 6 : 1.6 power V/F 8 : 1.8 power V/F 9 : reserved 10 : VF fully separated mode 11 : VF semi-separation mode	0	F400H	★
P4. 01	Torque boost	0.0% : (Auto torque boost) 0.1% to 30.0%	Model dependent	F401H	☆
P4.02	Torque boost cut-off frequency	0.00Hz ~ Maximum frequency	50.00Hz	F402H	★
P4.03	Multipoint VF Frequency Point 1（F1）	0.00Hz to P4.05	0.00Hz	F403H	★
P4.04	Multipoint VF Voltage Point 1(V1)	0.0% to 100.0%	0.0%	F404H	★
P4. 05	Multipoint VF Frequency Point 2(F2)	P4.03 to P4.07	0.00Hz	F405H	★
P4.06	Multipoint VF Voltage Point 2(V2)	0.0% to 100.0%	0.0%	F406H	★
P4.07	Multi-point VF frequency point 3(F3)	P4. 05 ~ Motor rated frequency (P1. 04)	0.00Hz	F407H	★
P4.08	Multipoint VF Voltage Point 3(V3)	0.0% to 100.0%	0.0%	F408H	★
P4. 09	VF slip compensation gain	0.0% to 200.0%	0.0%	F409H	☆
P4.10	VF overexcitation gain	0 to 200	64	F40AH	☆
P4.11	VF oscillation suppression gain	0 to 100	Model is determined	F40BH	☆
P4.13	VF separated voltage source	0 : Digital setting (P4.14) 1 : FIV/Keyboard Potentiometer 2 : FIC/AVI	0	F40DH	☆

		3 : reserved 4 : PULSE setting (S3) 5 : Multi-segment instruction 6 : Simple PLC 7 : PID 8 : Communication given Note: 100.0% corresponds to the rated voltage of the motor			
P4.14	Voltage digital setting for VF separation	0V ~ Motor rated voltage	0V	F40EH	☆
P4.15	Voltage Rise Time for VF Separation	0.0s ~ 1000.0s Note: Indicates the time from 0V to the rated voltage of the motor	0.0s	F40FH	☆
Group P5 Input terminal parameter					
P5. 00	FWD terminal function selection	0: No function 1: Forward operation (FWD) 2: Reverse operation (REV) 3: Three-wire operation control 4: Forward jog (FJOG) 5: Reverse jog (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Free stop 9: Fault reset (RESET) 10: Operation pause 11: External fault normally open input 12: Multi-step command terminal 1 13: Multi-step command terminal 2 14: Multi-step command terminal 3 15: Multi-step command terminal 4 16: Acceleration/deceleration time selection terminal 1 17: Acceleration/deceleration time selection terminal 2 18: Frequency source switching 19: UP/DOWN setting clear (Terminal, keypad)	1	F500H	★
P5.01	REV terminal function selection		2	F501H	★
P5.02	S1 terminal function selection		9	F502H	★
P5.03	S2 terminal function selection		12	F503H	★
P5.04	S3 terminal function selection		0	F504H	★
P5. 05	S4 terminal function selection		0	F505H	★
P5.06	Reserve		0	F506H	★
P5. 07	Reserve		0	F507H	★
P5.08	Reserve		0	F508H	★
P5. 09	Reserve		0	F509H	★

		20: Operation command switching terminal 21: Acceleration/deceleration disable 22: PID pause 23: PLC status reset 24: Swing frequency pause 25: Counter input 26: Counter reset 27: Length counting input 28: Length reset 29: Torque control disable 30: PULSE frequency input (valid only for S3) 31: Reserved 32: Instant DC braking 33: External fault normally closed input 34: Frequency modification enable 35: PID action direction inversion 36: External stop terminal 1 37: Control command switching terminal 2 38: PID integral pause 39: Switching between frequency source X and preset frequency 40: Switching between frequency source Y and preset frequency 41: Reserved 42: Reserved 43: PID parameter switching 44: Reserved 45: Reserved 46: Speed control/torque control switching 47: Emergency stop 48: External stop terminal 2 49: Deceleration DC braking 50: This time of operation has been reset to zero. 51-59: Reserved			
P5.10	Switch filter time	0.000s ~ 1.000s	0.010s	F50AH	☆
		0 : Two-wire type 1	0	F50BH	★

P5.11	Terminal command mode	1 : Two-wire type 2 2 : Three-wire type 1 3 : Three-wire type 2			
P5.12	Terminal UP/DOWN change rate	0.001Hz/s ~ 65.535Hz/s	1.00Hz/s	F50CH	☆
P5.13	FI curve 1 minimum input	0.00V to P5.15	0.00V	F50DH	☆
P5.14	FI curve 1 minimum input corresponding setting	-100.0% to +100.0%	0.0%	F50EH	☆
P5.15	FI curve 1 maximum input	P5. 13 ~ +10.00V	10.00V	F50FH	☆
P5.16	FI curve 1 maximum input corresponding setting	-100.0% to +100.0%	100.0%	F510H	☆
P5.17	FI curve 1 filter time	0.00s ~ 10.00s	0.10s	F511H	☆
P5.18	FI curve 2 minimum input	0.00V to P5.20	0.00V	F512H	☆
P5.19	FI curve 2 minimum input corresponding setting	-100.0% to +100.0%	0.0%	F513H	☆
P5.20	FI curve 2 maximum input	P5. 18 ~ +10.00V	10.00V	F514H	☆
P5.21	F I curve 2 maximum input corresponding setting	-100.0% to +100.0%	100.0%	F515H	☆
P5.22	FI curve 2 filter time	0.00s ~ 10.00s	0.10s	F516H	☆
P5.23	FI curve 3 minimum input	-10.00V to P5.25	0.00V	F517H	☆
P5.24	FI curve 3 minimum input corresponding setting	-100.0% to +100.0%	-100.0%	F518H	☆
P5.25	FI curve 3 maximum input	P5. 23 ~ +10.00V	10.00V	F519H	☆
P5.26	FI curve 3	-100.0% to +100.0%	100.0%	F51AH	☆

	maximum input corresponding setting				
P5.27	FI curve 3 filter time	0.00s ~ 10.00s	0.10s	F51BH	☆
P5.28	PULSE minimum input	0.00kHz to P5.30	0.00kHz	F51CH	☆
P5.29	PULSE minimum input corresponding setting	-100.0% to 100.0%	0.0%	F51DH	☆
P5.30	PULSE max input	P5. 28 ~ 100.00kHz	50.00kHz	F51EH	☆
P5.31	PULSE maximum input corresponding setting	-100.0% to 100.0%	100.0%	F51FH	☆
P5.32	PULSE filter time	0.00s ~ 10.00s	0.10s	F520H	☆
P5.33	FI curve selection	Unit's digit: FIV curve selection 1 : Curve 1 (2 points, see P5.13 ~ P5.16) 2 : Curve 2 (2 points, see P5.18 ~ P5.21) 3 : Curve 3 (2 points, see P5.23 ~ P5.26) 4 : Curve 4 (4 points, see C6.00 ~ C6.07) 5 : Curve 5 (4 points, see C6.08 ~ C6.15) Ten's digit: FIC curve selection （1~5,same as FIV） Hundred's digit: FIA curve selection（1~5, same as FIV）	321	F521H	☆
P5.34	Setting selection for FI less than minimum input	Unit's digit: setting for FIV less than minimum input 0: Minimum value 1: 0.0% Ten's digit: Setting for FIC less than minimum input(0~1,same as FIV) Hundred's digit: Setting for FIA less than minimum input(0~1, same as FIV)	000	F522H	☆
P5.35	FWD delay time	0.0s ~ 3600.0s	0.0s	F523H	★
P5.36	REV delay time	0.0s ~ 3600.0s	0.0s	F524H	★

P5.37	S1 delay time	0.0s ~ 3600.0s	0.0s	F525H	★
P5.38	S terminal valid mode selection 1	0 : High level Vaild 1 : Low level Vaild Unit's digit: FWD Ten's digit: REV Hundred's digit: S1 Thousand's digit: S2 Ten thousand's digit: S3	00000	F526H	★
P5.39	S terminal valid mode selection 2	0: High level valid 1: Low level valid Unit's digit: S4 Ten's digit: Reserved Hundred's digit: Reserved Thousand's digit: Reserved Ten thousand's digit: Reserved	00000	F527H	★
Group P6 output terminal					
P6. 00	MO1 terminal output mode selection	0: Reserved 1: Digital Output (MO1)	0	F600H	☆
P6. 01	MO1 output function selection	0 : No output 1 : Inverter is running 2 : Fault output (stop) 3 : Frequency level detection FDT1 output 4 : Frequency arrives 5 : Running at zero speed (no output when stopped) 6 : Motor overload pre-alarm 7 : Inverter overload pre-alarm 8 : Set the count value to reach 9: Designated count value reached 10 : Length reached 11 : PLC cycle completed 12 : Accumulated running time reached 13 : Frequency limited 14 : Torque limited 15 : Ready to run 16 : FIV/Keyboard Potentiometer > FIC/AVI 17 : The upper limit frequency is reached	0	F601H	☆
P6. 02	Control Board Relay Function Selection (RA-RB-RC)		2	F602H	☆
P6. 03	Reserved			F603H	☆
P6. 04	Reserved			F604H	☆
P6. 05	Reserved			F605H	☆

		18 : Lower limit frequency reached (no output at stop) 19 : Undervoltage status output 20 : Communication settings 21 : Positioning completed (reserved) 22 : Positioning close (reserved) 23 : Zero-speed running 2 (also output when stopped) 24 : Cumulative power-on time arrives 25 : Frequency level detection FDT2 output 26 : Frequency 1 arrives at the output 27 : Frequency 2 arrives at the output 28 : Current 1 reaches the output 29 : Current 2 reaches the output 30 : Timed arrival output 31 : FIV input limit exceeded 32 : Load becoming 0 33 : Reverse operation 34 : Zero current state 35 : Module temperature reached 36 : Software current limit exceeded 37 : Frequency lower limit reached (having output at stop) 38 : Alarm output (continue operation) 39 : Reserved 40 : The running time has arrived			
P6. 06	Reserved	0 : Running frequency 1 : set frequency 2 : Output current 3 : Output torque 4 : Output power 5 : Output voltage 6 : PULSE input (100.% corresponds to 100.0kHz) 7 : FIV/Keyboard Potentiometer 8 : FIC/AVI	0	F606H	☆
P6.07	F O V output function selection		0	F607H	☆
P6.08	FOC Output Function Selection (Optional)		1	F608H	☆

		9 : reserved 10 : length 11 : count value 12 : Communication settings 13 : Motor speed 14 : Output current (100.0% corresponds to 1000.0A) 15 : Output voltage (100.0% corresponds to 1000.0V) 16 : Reserved			
P6. 09	Reserved			F609H	☆
P6.10	FOV zero bias coefficient	-100.0% to +100.0%	0.0%	F60AH	☆
P6.11	F O V gain	-10.00 to +10.00	1.00	F60BH	☆
P6.12	F O C zero bias coefficient	-100.0% to +100.0%	0.0%	F60CH	☆
P6.13	F O C gain	-10.00 to +10.00	1.00	F60DH	☆
P6.17	MO1 output delay time	0.0s ~ 3600.0s	0.0s	F611H	☆
P6.18	RA-RB-RC output delay time	0.0s ~ 3600.0s	0.0s	F612H	☆
P6.19	Reserved				
P6.20	Reserved				
P6. 21	Reserved				
P6.22	Output terminal valid state selection	0 : Positive logic 1 : Negative logic Unit’s digit: MO1 Ten’s digit: RA-RB-RC Hundreds: reserved Thousands: reserved Ten thousand: reserved	00	F616H	☆
Group P7 keyboard and display					
P7.01	JOG function parameter	0: This key has no function. 1: Switching between keyboard command and remote operation. It refers to the switching of command sources, i.e., switching between the current command source and keyboard control (local operation). If the current command source is keyboard control, this key has no function. 2: Forward/reverse switching -	0	F701H	★

		Switch the direction of the frequency command via the JOG key. This function is only valid when the command source is the operation panel command channel. 3: Forward jog - Realized via the keyboard JOG key (JOG-FWD). 4: Reverse jog - Realized via the keyboard JOG key (JOG-REV). 5: 6-key keyboard, with the stop key being valid.			
P7. 02	STOP/RESET key function	0：STOP/RESET key enabled only in operation panel control 1：STOP/RESET key enabled in any operation mode	1	F702H	☆
P7.03	LED running display parameter 1	0000 to FFFF Bit00: Running frequency 1 (Hz) Bit01: set frequency (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (kW) Bit06: Output torque (%) Bit07: S input status Bit08: MO1 output status Bit09: FIV/Keyboard Potentiometer Voltage (V) Bit10: FIC/AVI voltage (V) Bit11: Reserved Bit12: count value Bit13: length value Bit14: Load speed display Bit15: PID setting	1F	F703H	☆
P7.04	LED running display parameter 2	0000～FFFF Bit00: PID feedback Bit01: PLC phase Bit02: PULSE input pulse frequency (kHz) Bit03: Operating frequency 2 (Hz) Bit04: Remaining operating time Bit05: FIV/keyboard potentiometer pre-calibration	0	F704H	☆

		voltage (V) Bit06: FIC/AVI pre-calibration voltage (V) Bit07: Reserved Bit08: Linear velocity Bit09: Current power-on time (Hour) Bit10: Current operating time (Min) Bit11: PULSE input pulse frequency (Hz) Bit12: Communication set value Bit13: Reserved Bit14: Main frequency X display (Hz) Bit15: Auxiliary frequency Y display (Hz)			
P7. 05	LED stop display parameters	0000～FFFF Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02: X input status Bit03: MO1 output status Bit04: FIV/keyboard potentiometer voltage (V) Bit05: FIC/AVI voltage (V) Bit06: Reserved Bit07: Count value Bit08: Length value Bit09: PLC phase Bit10: Load speed Bit11: PID setting Bit12: PULSE input pulse frequency (kHz) Bit13: PID feedback value	33	F705H	☆
P7.06	Load speed display coeffcient	0.0001 to 6.5000	1.0000	F706H	☆
P7. 07	Inverter module heat sink temperature	0.0 ℃ ~ 100.0 ℃	-	F707H	●
P7. 08	Temporary software version	0.0 ℃ ~ 100.0 ℃	-	F708H	●
P7. 09	Cumulative running time	0h ~ 65535h	-	F709H	●
P7.11	Software version	-	-	F70BH	●

P7.12	Load speed display decimal places	Units digit: 0: 0 decimal places 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places Tens digit: Reserved	21	F70CH	☆
P7.13	Cumulative power-on time	0h ~ 65535h	-	F70DH	●
P7.14	Cumulative power consumption	0 kwh ~ 65535 kwh	-	F70EH	●
Group P8 Auxiliary Functions					
P8.00	Jog running frequency	0.00Hz ~ Maximum frequency	2.00Hz	F800H	☆
P8.01	Jog acceleration time	0.0s ~ 6500.0s	20.0s	F801H	☆
P8.02	Jog deceleration time	0.0s ~ 6500.0s	20.0s	F802H	☆
P8.03	Acceleration time 2	0.0s ~ 6500.0s	Model dependent	F803H	☆
P8.04	deceleration time 2	0.0s ~ 6500.0s	Model dependent	F804H	☆
P8. 05	Acceleration time 3	0.0s ~ 6500.0s	Model dependent	F805H	☆
P8. 06	Deceleration time 3	0.0s ~ 6500.0s	Model dependent	F806H	☆
P8.07	Acceleration time 4	0.0s ~ 6500.0s	Model dependent	F807H	☆
P8.08	Deceleration time 4	0.0s ~ 6500.0s	Model dependent	F808H	☆
P8.09	Hop Frequency 1	0.00Hz ~ Maximum frequency	0.00Hz	F809H	☆
P8.10	Hop Frequency 2	0.00Hz ~ Maximum frequency	0.00Hz	F80AH	☆
P8.11	Hop Frequency Amplitude	0.00Hz ~ Maximum frequency	0.0 0 Hz	F80BH	☆
P8.12	Forward/Reverse rotation dead-zone time	0.0s ~ 3000.0s	0.0s	F80CH	☆
P8.13	Reversed control	0 : Enable 1 : Disable	0	F80DH	☆
P8.14	The set frequency is lower than the lower limit frequency operating mode	0 : operate at the lower frequency limit 1 : stop 2 : Zero speed operation	0	F80EH	☆
P8.15	Droop control	0.00Hz ~ 10.00Hz	0.00Hz	F80FH	☆

P8.16	Accumulative power-on time threshold	0h ~ 65000h	0h	F810H	☆
P8.17	Accumulative running time threshold	0h ~ 65000h	0h	F811H	☆
P8.18	Boot protection selection	0: Not protected 1: Protected	0	F812H	☆
P8.19	Frequency detection value (FDT1)	0.00Hz ~ Maximum frequency	50.00Hz	F813H	☆
P8.20	Frequency detection hysteresis value (FDT1)	0.0% to 100.0% (FDT1 level)	5.0%	F814H	☆
P8.21	Frequency arrival detection width	0.0% to 100.0% (maximum frequency)	0.0%	F815H	☆
P8.22	Jump frequency during acceleration and deceleration is it effective	0 : Invalid 1 : Valid	0	F816H	☆
P8.25	Acceleration time 1 and acceleration time 2 switch frequency points	0.00Hz ~ Maximum frequency	0.00Hz	F819H	☆
P8.26	Deceleration time 1 and deceleration time 2 switch frequency points	0.00Hz ~ Maximum frequency	0.00Hz	F81AH	☆
P8.27	Terminal jog priority	0 : Invalid 1 : Valid	0	F81BH	☆
P8. 28	Frequency detection value (FDT2)	0.00Hz ~ Maximum frequency	50.00Hz	F81CH	☆
P8.29	Frequency detection hysteresis value (FDT2)	0.0% to 100.0% (FDT2 level)	5.0%	F81DH	☆
P8.30	Any frequency reaching detection value 1	0.00Hz ~ Maximum frequency	50.00Hz	F81EH	☆
P8.31	Any frequency reaching	0.0% to 100.0% (maximum frequency)	0.0%	F81FH	☆

	detection amplitude 1				
P8.32	Any frequency reaching detection value 2	0.00Hz ~ Maximum frequency	50.00Hz	F820H	☆
P8.33	Any frequency reaching detection amplitude 2	0.0% to 100.0% (maximum frequency)	0.0%	F821H	☆
P8.34	Zero current detection level	0.0% to 300.0% 100.0% corresponds to the rated current of the motor	5.0%	F822H	☆
P8.35	Zero current detection delay time	0.01s ~ 600.00s	0.10s	F823H	☆
P8.36	Output current over-limit value	0.0% (not detected) 0.1% to 300.0% (motor rated current)	200.0%	F824H	☆
P8.37	Delay time for output current over-limit detection	0.00s ~ 600.00s	0.00s	F825H	☆
P8.38	Arbitrary arrival current 1	0.0% to 300.0% (motor rated current)	100.0%	F826H	☆
P8.39	Arbitrary arrival current 1 width	0.0% to 300.0% (motor rated current)	0.0%	F827H	☆
P8.40	Arbitrary arrival current 2	0.0% to 300.0% (motor rated current)	100.0%	F828H	☆
P8.41	Arbitrary arrival current 2 width	0.0% to 300.0% (motor rated current)	0.0%	F829H	☆
P8.42	Timing function selection	0: invalid 1: valid	0	F82AH	☆
P8.43	Timing run time selection	0 : P8.44 setting 1 : FIV/Keyboard Potentiometer 2 : FIC/AVI 3 : reserved Analog input range corresponds to P8. 44	0	F82BH	☆
P8.44	Timed running time	0.0Min ~ 6500.0Min	0.0Min	F82CH	☆
P8.45	FIV/keyboard potentiometer input voltage protection lower	0.00V to P8.46	3.10V	F82DH	☆

	limit				
P8.46	FIV input voltage protection value upper limit	P8. 45 ~ 10.00V	6.80V	F82EH	☆
P8.47	Module temperature threshold	0 ℃ ~ 100 ℃	75 ℃	F82FH	☆
P8.48	Cooling Fan Control	0 : Fan runs during operation 1 : The fan keeps running	0	F830H	☆
P8.49	Wake up frequency	Sleep frequency (P8.51) ~ maximum frequency (P0.12)	0.00Hz	F831H	☆
P8.50	Wake up delay time	0.0s ~ 6500.0s	0.0s	F832H	☆
P8.51	Sleep frequency	0.00Hz ~ Wake-up frequency (P8.49)	0.00Hz	F833H	☆
P8.52	Sleep delay time	0.0s ~ 6500.0s	0.0s	F834H	☆
P8.53	Current run arrival time setting	0.0Min ~ 6500.0Min	0.0Min	F835H	☆
Group P9 Fault and Protection					
P9. 00	Motor overload protection selection	0 : Disable 1 : Enable	1	F900H	☆
P9.01	Motor overload protection gain	0.20 to 10.00	1.00	F901H	☆
P9.02	Motor Overload Early Warning Coefficient	50% to 100%	80%	F902H	☆
P9.03	Overvoltage Stall Gain	0 to 100	30	F903H	☆
P9.04	Overvoltage stall protection voltage	200-2000V	Model dependent	F904H	☆
P9.05	Overcurrent Stall Gain	0 to 100	20	F905H	☆
P9.06	Overcurrent Stall Protection Current	50% to 200%	Model dependent	F906H	☆
P9.07	Power-on Short Circuit to Ground Protection Selection	0 : Invalid 1 : Valid	1	F907H	☆
P9.09	Fault automatic reset times	0 to 20	0	F909H	☆
P9.10	Action Selection of Fault MO1 During	0 : No action 1 : Action	0	F90AH	☆

	Automatic Fault Reset				
P9.11	Fault automatic reset interval time	0.1s ~ 100.0s	1.0s	F90BH	☆
P9.12	Reserved			F90CH	☆
P9.13	Output phase loss protection selection	0 : Disable 1 : Enable	1	F90DH	☆
P9.14	Type of first failure	0: No fault 1: Inverter unit protection 2: Over-current during acceleration 3: Over-current during deceleration 4: Over-current at constant speed 5: Over-voltage during acceleration 6: Over-voltage during deceleration 7: Over-voltage at constant speed 8: Buffer resistance overload 9: Under voltage 10: AC drive overload 11: Motor overload 12: Reserved	-	F90EH	●
P9.15	Second fault type	13 : Output phase loss 14 : Module overheating 15 : External equipment fault 16 : Communication error 17 : The contactor is abnormal 18 : Abnormal current detection 19 : Motor auto-tuning fault 20 : Reserved 21 : EEPROM read-write fault 22 : AC drive hardware fault 23 : Motor short circuit to ground 24 : Reserved 25 : Reserved	-	F90FH	●
P9.16	Third (latest)	26 : Accumulative power running time reached 27: Reserved 28: Reserved 29: Accumulative power-on time reached	-	F910H	●

	failure type	30 : Load becoming 0 31 : Loss of PID feedback during runtime 40 : Fast Current Limiting Timeout 41 : Reserved 42: Reserved 43 : Reserved 51 : Reserved			
P9.17	The third (latest) frequency at the time of the fault	-	-	F911H	●
P9.18	The third (latest) current at the time of the fault	-	-	F912H	●
P9.19	The third (latest) bus voltage at the time of the fault	-	-	F913H	●
P9.27	Frequency at second fault	-	-	F91BH	●
P9.28	Current at the second fault	-	-	F91CH	●
P9.29	Bus voltage at the second fault	-	-	F91DH	●
P9.37	The frequency at the time of the first fault	-	-	F91EH	●
P9.38	The current at the time of the first fault	-	-	F925H	●
P9.39	The bus voltage at the time of the first fault	-	-	F926H	●
P9.47	Fault protection action selection 1	Units place: Motor overload (OL1) 0: Free stop 1: Stop according to the stop mode 2: Continue operation Tens place: Reserved Hundreds place: Output phase loss (LO) Thousands place: External fault (EF) Ten-thousands place:	00000	0927H	☆

		Communication abnormality (CE)			
P9.48	Fault protection action selection 2	Units place: Reserved 0: Free stop Tens place: Function code read-write abnormality (EEP) 0: Free stop 1: Stop according to the stop mode Hundreds place: Reserved Thousands place: Reserved Ten-thousands place: Running time reached (END1)	00000	F92FH	☆
P9.49	Fault protection action selection 3	Units place: Reserved 0: Free stop 1: Stop according to the stop mode 2: Continue operation Tens place: Reserved 0: Free stop 1: Stop according to the stop mode 2: Continue operation Hundreds place: Power-on time reached (END2) 0: Free stop 1: Stop according to the stop mode 2: Continue operation Thousands place: Load loss (LOAD) 0: Free stop 1: Decelerate to stop 2: Decelerate to 7% of the motor's rated frequency and continue operation; automatically resume operation at the set frequency when the load is not lost	00000	F931H	☆

		Ten-thousands place: PID feedback loss during operation (PIDE) 0: Free stop 1: Stop according to the stop mode 2: Continue operation			
P9.50	Reserved			F932H	☆
P5.02	Display content selection for the second row of the dual-display keyboard	0~50	04	F934H	
P9.54	Selection of continuous operation frequency during fault	0: Operate at the current operating frequency 1: Operate at the set frequency 2: Operate at the upper limit frequency 3: Operate at the lower limit frequency 4: Operate at the abnormal standby frequency	0	F936H	☆
P9.55	Abnormal backup frequency	0.0% to 100.0% (100.0% corresponds to maximum frequency P0.12)	100.0%	F937H	☆
P9.59	Action selection at instantaneous power failure	0 : Invalid 1 : Decelerate 2 : Decelerate to stop	0	F93BH	☆
P9.60	Action pause judging voltage at instantaneous power failure	80.0% ~ 100.0%	90.0%	F93CH	☆
P9.61	Voltage rally judging time at instantaneous power failure	0.00s ~ 100.00s	0.50s	F93DH	☆
P9.62	Instantaneous non-stop action to judge the voltage	60.0% to 100.0% (standard bus voltage)	80.0%	F93EH	☆
P9.63	Protection upon load becoming 0	0 : Invalid 1 : Valid	0	F93FH	☆
P9.64	Detection level of load	0.0 to 100.0 %	10.0%	F940H	☆

	becoming 0				
P9.65	Detection time of load becoming 0	0.0 ~ 60.0s	1.0s	F941H	☆
P9.67	Reserved				☆
P9.68	Reserved				☆
P9.69	Reserved				☆
P9.70	Reserved				☆
Group PA: Process Control PID Function					
PA. 00	PID given source	0: Set by PA.01 1: FIV/Keyboard potentiometer 2: FIC/AVI 3: Reserved 4: PULSE pulse setting (S3) 5: Communication given 6: Multi-segment command given	0	FA00H	☆
PA. 01	PID digital setting	0.0% to 100.0%	50.0%	FA01H	☆
PA. 02	PID feedback source	0 : FIV/Keypad Potentiometer 1 : FIC/AVI 2 : Reserved 3 : FIV/Keyboard Potentiometer - FIC/AVI 4 : PULSE setting (S3) 5 : Communication given 6 : FIV/keyboard potentiometer + FIC/AVI 7 : MAX (| FIV/Keyboard Potentiometer |, | FIC/AVI |) 8 : MIN (| FIV/Keyboard Potentiometer |, | FIC/AVI |)	0	FA02H	☆
PA. 03	PID action direction	0 : Positive action 1 : Reverse action	0	FA03H	☆
PA. 04	PID given feedback range	0 to 65535	1000	FA04H	☆
PA. 05	Proportional gain Kp1	0.0 ~ 1000.0	100.0	FA05H	☆
PA. 06	Integration time Ti1	0.01s ~ 10.00s	2.00s	FA06H	☆
PA. 07	Derivative Time Td1	0.000s ~ 10.000s	0.000s	FA07H	☆
PA. 08	PID reverse cutoff frequency	0.00 to maximum frequency	2.00Hz	FA08H	☆
PA. 09	PID Deviation Limit	0.0% to 100.0%	0.0%	FA09H	☆
PA. 10	PID Derivative Limit	0.00% to 100.00%	0.10%	FA0AH	☆

PA. 11	PID given change time	0.00 ~ 650.00s	0.00s	FA0BH	☆
PA. 12	PID feedback filter time	0.00 ~ 60.00s	0.00s	FA0CH	☆
PA. 13	PID output filter time	0.00 ~ 60.00s	0.00s	FA0DH	☆
PA. 14	Reserved	-	-	FA0EH	☆
PA. 15	Proportional gain Kp2	0.0 to 100.0	20.0	FA0FH	☆
PA. 16	Integration time Ti2	0.01s ~ 10.00s	2.00s	FA10H	☆
PA. 17	Derivative Time Td2	0.000s ~ 10.000s	0.000s	FA11H	☆
PA. 18	PID parameter switchover conditions	0: Not switch 1: Switch via S terminal 2: Auto-switch according to deviation 3: Reserved	0	FA12H	☆
PA. 19	PID parameter switching deviation 1	0.0% to PA. 20	20.0%	FA13H	☆
PA. 20	PID parameter switching deviation 2	PA. 19 to 100.0%	80.0%	FA14H	☆
PA. 21	PID initial value	0.0% to 100.0%	0.0%	FA15H	☆
PA. 22	PID initial value hold time	0.00 ~ 650.00s	0.00s	FA16H	☆
PA. 23	Maximum deviation between two PID outputs in forward	0.00% to 100.00%	1.00%	FA17H	☆
PA. 24	Maximum deviation between two PID outputs in reverse	0.00% to 100.00%	1.00%	FA18H	☆
PA. 25	PID integral properties	Units place: Integral separation 0: Invalid 1: Valid Tens place: Whether to stop integration after the output	00	FA19H	☆

		reaches the limit value 0: Continue integration 1: Stop integration			
PA. 26	PID feedback loss detection value	0.0%:Not judging feedback loss 0.1%~100.0%	0.0%	FA1AH	☆
PA. 27	PID feedback loss detection time	0.0s ~ 20.0s	0.0s	FA1BH	☆
PA. 28	PID shutdown operation	0: No PID operation at stop 1: PID operation at stop	0	FA1CH	☆
Group Pb: Swing Frequency, Fixed Length and Count					
Pb. 00	Swing frequency setting mode	0: Relative to the central frequency 1: Relative to the maximum frequency	0	FB00H	☆
Pb. 01	Swing frequency amplitude	0.0% to 100.0%	0.0%	FB01H	☆
Pb. 02	Amplitude of frequency jump	0.0% to 50.0%	0.0%	FB02H	☆
Pb. 03	Swing frequency cycle	0.1s ~ 3000.0s	10.0s	FB03H	☆
Pb. 04	Rise time of the triangular wave of swing frequency	0.1% to 100.0%	50.0%	FB04H	☆
Pb. 05	Setting length	0m ~ 65535m	1000m	FB05H	☆
Pb. 06	Actual length	0m ~ 65535m	0m	FB06H	☆
Pb. 07	Number of pulses per meter	0.1 to 6553.5	100.0	FB07H	☆
Pb. 08	Set count value	1 to 65535	1000	FB08H	☆
Pb. 09	Designated count value	1 to 65535	1000	FB09H	☆
Group PC: Multi-Reference and Simple PLC Function					
PC. 00	Multi-segment instruction 0	-100.0% to 100.0%	0.0%	FC00H	☆
PC. 01	Multi-segment instruction 1	-100.0% to 100.0%	0.0%	FC01H	☆
PC. 02	Multi-segment instruction 2	-100.0% to 100.0%	0.0%	FC02H	☆
PC. 03	Multi-segment instruction 3	-100.0% to 100.0%	0.0%	FC03H	☆
PC. 04	Multi-segment instruction 4	-100.0% to 100.0%	0.0%	FC04H	☆
PC. 05	Multi-segment instruction 5	-100.0% to 100.0%	0.0%	FC05H	☆

PC. 06	Multi-segment instruction 6	-100.0% to 100.0%	0.0%	FC06H	☆
PC. 07	Multi-segment instruction 7	-100.0% to 100.0%	0.0%	FC07H	☆
PC. 08	Multi-segment instruction 8	-100.0% to 100.0%	0.0%	FC08H	☆
PC. 09	Multi-segment instruction 9	-100.0% to 100.0%	0.0%	FC09H	☆
PC. 10	Multi-segment instruction 10	-100.0% to 100.0%	0.0%	FC0AH	☆
PC. 11	Multi-segment instruction 11	-100.0% to 100.0%	0.0%	FC0BH	☆
PC. 12	Multi-segment instruction 12	-100.0% to 100.0%	0.0%	FC0CH	☆
PC. 13	Multi-segment instruction 13	-100.0% to 100.0%	0.0%	FC0DH	☆
PC. 14	Multi-segment instruction 14	-100.0% to 100.0%	0.0%	FC0EH	☆
PC. 15	Multi-segment instruction 15	-100.0% to 100.0%	0.0%	FC0FH	☆
PC. 16	Simple PLC operation mode	0 : Stop after a single operation 1 : Keep the final value at the end of a single run 2 : Keep looping	0	FC10H	☆
PC. 17	Simple PLC power-down memory selection	Units place: Power-off memory selection 0: Does not remember when power-off 1: Remembers when power-off Tens place: Shutdown memory selection 0: Does not remember when shutdown 1: Remembers when shutdown	00	FC11H	☆
PC. 18	Simple PLC section 0 running time	0.0s (h) ~ 6553.5s (h)	0.0s(h)	FC12H	☆
PC. 19	Simple PLC section 0 acceleration and deceleration time selection	0 to 3	0	FC13H	☆

PC. 20	Running time of simple PLC reference1	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC14H	☆
PC. 21	Acceleration/ deceleration time of simple PLC reference 1	0 to 3	0	FC15H	☆
PC. 22	Running time of simple PLC reference2	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC16H	☆
PC. 23	Acceleration/ deceleration time of simple PLC reference 2	0 to 3	0	FC17H	☆
PC. 24	Simple PLC section 3 running time	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC18H	☆
PC. 25	Simple PLC section 3 acceleration and deceleration time selection	0 to 3	0	FC19H	☆
PC. 26	Running time of simple PLC reference 4	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC1AH	☆
PC. 27	Acceleration/ deceleration time of simple PLC reference 4	0 to 3	0	FC1BH	☆
PC. 28	Simple PLC section 5 running time	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC1CH	☆
PC. 29	Simple PLC section 5 acceleration and deceleration time selection	0 to 3	0	FC1DH	☆
PC. 30	Simple PLC section 6 running time	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC1EH	☆
PC. 31	Simple PLC section 6 acceleration and deceleration time	0 to 3	0	FC1FH	☆

	choose				
PC. 32	Simple PLC section 7 running time	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC20H	☆
PC. 33	Simple PLC section 7 acceleration and deceleration time choose	0 to 3	0	FC21H	☆
PC. 34	Simple PLC section 8 running time	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC22H	☆
PC. 35	Simple PLC section 8 acceleration and deceleration time choose	0 to 3	0	FC23H	☆
PC. 36	Simple PLC section 9 running time	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC24H	☆
PC. 37	Simple PLC section 9 acceleration and deceleration time choose	0 to 3	0	FC25H	☆
PC. 38	Simple PLC section 10 running time	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC26H	☆
PC. 39	Simple PLC section 10 acceleration and deceleration time choose	0 to 3	0	FC27H	☆
PC. 40	Simple PLC section 11 running time	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC28H	☆
PC. 41	Simple PLC section 11 acceleration and deceleration time choose	0 to 3	0	FC29H	☆
PC. 42	Simple PLC section 12 running time	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC2AH	☆

PC. 43	Simple PLC section 12 acceleration and deceleration time choose	0 to 3	0	FC2BH	☆
PC. 44	Simple PLC section 13 running time	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC2CH	☆
PC. 45	Simple PLC section 13 acceleration and deceleration time choose	0 to 3	0	FC2DH	☆
PC. 46	Simple PLC section 14 running time	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC2EH	☆
PC. 47	Simple PLC section 14 acceleration and deceleration time selection	0 to 3	0	FC2FH	☆
PC. 48	Simple PLC section 15 running time	0.0s (h) ~ 6553.5s (h)	0.0s (h)	FC30H	☆
PC. 49	Simple PLC section 15 acceleration and deceleration time selection	0 to 3	0	FC31H	☆
PC. 50	Simple PLC running time unit	0 : s (seconds) 1 : h (hours)	0	FC32H	☆
PC. 51	Multi-segment Instruction 0 Setting Mode	0: Set by Function Code PC.00 1: FIV/Keyboard Potentiometer 2: FIC/AVI 3: Reserved 4: PULSE (Pulse) 5: PID 6: Set by Preset Frequency (P0.10), modifiable via UP/DOWN	0	FC33H	☆
Group PD: Communication Parameters					
PD. 00	Baud rate	Unit’s digit: MODBUS 0 : 300BPS 1 : 600BPS			

		2 : 1200BPS 3 : 2400BPS 4 : 4800BPS 5 : 9600BPS 6 : 19200BPS 7 : 38400BPS 8 : 57600BPS 9 : 115200BPS Ten's digit: reserved Hundred's digit: reserved Thousand's digit: reserved	0005	FD00H	☆
PD. 01	Data Format	0: No check, data format <8,N,2> 1: Even parity check, data format<8,E,1> 2: Odd Parity check, data format<8,0,1> 3:No check, data format <8,N,1> Valid for Modbus	3	FD01H	☆
PD. 02	Local address	1 to 247 , 0 is the broadcast address	1	FD02H	☆
PD. 03	Response delay	0ms ~ 20ms	2	FD03H	☆
PD. 04	Communication timeout	0.0 (invalid), 0.1s to 60.0s	0.0	FD04H	☆
PD. 05	Modbus protocol selection	Unit's digit: Modbus protocol 0: Non-standard Modbus protocol 1: Standard Modbus protocol Ten's digit: reserved	1	FD05H	☆
PD. 06	Communication reading current resolution	0 : 0.01A 1 : 0.1A	0	FD06H	☆
Group PE: reserved					
Group PP: User-Defined Function Codes					
PP. 00	User password	0 to 65535	0		☆
PP. 01	Restore default settings	000: No operation 001: Restore factory parameters, excluding motor parameters	0		★
Group C0: Torque Control and Restricting Parameters					
C0.00	Speed / torque control mode selection	0 : Speed control 1 : Torque control	0	4000H	★
C0.01	Torque setting source in	0 : Digital setting (C0.03) 1 : FIV/Keyboard Potentiometer 2 : FIC/AVI	0	4001H	★

	torque control	3 : reserved 4 : PULSE setting 5 : Communication given 6 : MIN (FIV/Keyboard Potentiometer , FIC/AVI) 7 : MAX (FIV/keyboard potentiometer , FIC/AVI) (full scale of options 1-7 , corresponding to C0.03 digital setting)			
C0.03	Torque digital setting in torque control mode	-200.0% to 200.0%	150.0%	4003H	☆
C0.05	Torque control forward maximum frequency	0.00Hz ~ Maximum frequency	50.00Hz	4005H	☆
C0.06	Torque control reverse maximum frequency	0.00Hz ~ Maximum frequency	50.00Hz	4006H	☆
C0.07	Torque control acceleration time	0.00s ~ 650.00s	0.00s	4007H	☆
C0.08	Torque control deceleration time	0.00s ~ 650.00s	0.00s	4008H	☆
Group C1-C4: reserved					
Group C5: Control Optimization Parameters					
C5.00	DPWM switching upper limit frequency	5.00Hz to P0.12 Maximum Frequency	12.00Hz	4500H	☆
C5.01	PWM modulation method	0 : Asynchronous modulation 1 : Synchronous modulation	0	4501H	☆
C5.02	Dead zone compensation mode selection	0 : No compensation 1 : Compensation mode 1	1	4502H	☆
C5.03	Random PWM depth	0 : Random PWM is invalid 1 to 10 : PWM carrier frequency random depth	0	4503H	☆
C5.04	Fast Current Limiting Enable	0 : Disable 1 : enable	1	4504H	☆
C5.05	Current detection compensation	Reserved	0	4505H	☆
C5.06	Undervoltage threshold	70 ~ 2000V	Model dependent	4506H	☆
C5.07	PG-less Optimization	1: Optimization Mode 1 2: Optimization Mode 2	2	4507H	☆

	Mode Selection				
C5.09	Overvoltage threshold	200 ~ 2200V	Model dependent	4508H	☆
Group C6: FIV/Keyboard Potentiometer, FIC/AVI Curve Setting					
C6.00	F I Curve 4 Minimum Input	0.00V to C6.02	0.00V	4600H	☆
C6.01	F I curve 4 minimum input corresponding setting	-100.0% to +100.0%	0.0%	4601H	☆
C6.02	F I curve 4 inflection point 1 input	C6.00 to C6.04	3.00V	4602H	☆
C6.03	F I curve 4 inflection point 1 input corresponding setting	-100.0% to +100.0%	30.0%	4603H	☆
C6.04	F I curve 4 inflection point 2 input	C6.02 to C6.06	6.00V	4604H	☆
C6.05	F I curve 4 inflection point 2 input corresponding setting	-100.0% to +100.0%	60.0%	4605H	☆
C6.06	F I Curve 4 Maximum Input	C6.06 ~ + 10.00V	10.00V	4606H	☆
C6.07	F I curve 4 maximum input corresponding setting	-100.0% to +100.0%	100.0%	4607H	☆
C6.08	F I Curve 5 Minimum Input	0.00V to C6.10	0.00V	4608H	☆
C6.09	F I curve 5 minimum input corresponding setting	-100.0% to +100.0%	-100.0%	4609H	☆
C6.10	F I curve 5 inflection point 1 input	C6.08 to C6.12	3.00V	460AH	☆
C6.11	F I curve 5 inflection point 1	-100.0% to +100.0%	-30.0%	460BH	☆

	input corresponding setting				
C6.12	F I curve 5 inflection point 2 input	C6.10 to C6.14	3.00V	460CH	☆
C6.13	F I curve 5 inflection point 2 input corresponding setting	-100.0% to +100.0%	30.0%	460DH	☆
C6.14	F I Curve 5 Maximum Input	C6. 12 ~ +10.00V	10.00V	460EH	☆
C6.15	F I curve 5 maximum input corresponding setting	-100.0% to +100.0%	100.0%	460FH	☆
C6.16	FIV/Keyboard potentiometer set jump point	-100.0% to 100.0%	0.0%	4610H	☆
C6.17	FIV/Keyboard potentiometer set jump amplitude	0.0% to 100.0%	0.5%	4611H	☆
C6.18	FIC/AVI set jump point	-100.0% to 100.0%	0.0%	4612H	☆
C6.19	FIC/AVI set jump amplitude	0.0% to 100.0%	0.5%	4613H	☆
Group C9 PID function increased					
C9.00	Sleep frequency PID	0~P0.12	0.00Hz	4900H	☆
C9.01	Sleep duration PID	0~6000.0S	10.0S	4901H	☆
C9.02	PID wakeup value	0~100.0%	60.0%	4902H	☆
C9.05	Multi-turn Potentiometer Resolution	0: 0.01Hz 1: 0.1Hz 2: 1Hz	1	4905H	☆
Group CC FI/FO correction					
CC.00	FIV/Keyboard Potentiometer Measured Voltage 1	-10.00V ~ 10.000V	Factory Calibration	4C00H	☆
CC.01	FIV/Keyboard potentiometer shows voltage 1	-10.00V ~ 10.000V	Factory Calibration	4C01H	☆

CC.02	FIV/keyboard potentiometer measured voltage 2	-10.00V ~ 10.000V	Factory Calibration	4C02H	☆
CC.03	FIV/Keyboard potentiometer shows voltage 2	-10.00V ~ 10.000V	Factory Calibration	4C03H	☆
CC.04	FIC/AVI measured voltage 1	-10.00V ~ 10.000V	Factory Calibration	4C04H	☆
CC. 05	FIC/AVI display voltage 1	-10.00V ~ 10.000V	Factory Calibration	4C05H	☆
CC.06	FIC/AVI measured voltage 2	-10.00V ~ 10.000V	Factory Calibration	4C06H	☆
CC.07	FIC/AVI display voltage 2	-10.00V ~ 10.000V	Factory Calibration	4C07H	☆
CC.08	Reserved	-10.00V ~ 10.000V		4C08H	☆
CC.09	Reserved	-10.00V ~ 10.000V		4C09H	☆
CC.10	Reserved	-10.00V ~ 10.000V		4C0AH	☆
CC.11	Reserved	-10.00V ~ 10.000V		4C0BH	☆
CC.12	FOV target voltage 1	-10.00V ~ 10.000V	Factory Calibration	4C0CH	☆
CC.13	FOV measured voltage 1	-10.00V ~ 10.000V	Factory Calibration	4C0DH	☆
CC.14	FOV target voltage 2	-10.00V ~ 10.000V	Factory Calibration	4C0EH	☆
CC.15	FOV measured voltage 2	-10.00V ~ 10.000V	Factory Calibration	4C0FH	☆
CC.16	FOC target voltage 1	-10.00V ~ 10.000V	Factory Calibration	4C10H	☆
CC.17	FOC measured voltage 1	-10.00V ~ 10.000V	Factory Calibration	4C11H	☆
CC.18	FOC target voltage 2	-10.00V ~ 10.000V	Factory Calibration	4C12H	☆
CC.19	FOC measured voltage 2	-10.00V ~ 10.000V	Factory Calibration	4C13H	☆

Monitoring parameter summary :

Function code	Name	Unit	Communication function code
D0 group Basic monitoring parameters			
D 0.00	Operating frequency (Hz)	0.01Hz	7000H
D0.01	Set frequency (Hz)	0.01Hz	7001H
D0.02	Bus voltage (V)	0.1V	7002H
D0.03	Bus Voltage (V)	1V	7003H

D0.04	Output current (A)	0.01A	7004H
D0.05	Output power (kW)	0.1kW	7005H
D0.06	Output torque (%)	0.1%	7006H
D0. 07	X input state	1	7007H
D0.08	MO1 output status	1	7008H
D0.09	FIV/Keypad Potentiometer Voltage (V)	0.01V	7009H
D0.10	FIC/AVI voltage (V)	0.01V	700AH
D0.11	Reserved		
D0.12	Count value	1	700CH
D0.13	Length	1	700DH
D0.14	Load speed display	1	700EH
D0.15	PID setting	0.1	700FH
D0.16	PID feedback	0.1	7010H
D0.17	PLC stage	1	7011H
D0.18	PULSE input pulse frequency (Hz)	0.01kHz	7012H
D0.19	Feedback speed (unit: 0.1Hz)	0.1Hz	7013H
D0. 20	Remaining running time	0.1Min	7014H
D0.21	FIV/Keyboard potentiometer voltage before calibration	0.001V	7015H
D0.22	FIC/AVI correction before calibration	0.001V	7016H
D0.23	Reserved		
D0.24	Linear speed	1m/Min	7018H
D0.25	Current power-on time	1Min	7019H
D0.26	Current running time	0.1Min	701AH
D0. 27	PULSE input pulse frequency	1Hz	701BH
D0. 28	Communication settings value	0.01%	701CH
D0. 29	Reserved		
D0.30	Main frequency X display	0.01Hz	701CH
D0.31	Auxiliary frequency Y display	0.01Hz	701DH
D0.32	View arbitrary memory address value	1	701EH
D0.33	Reserved		
D0.34	Reserved		
D0.35	Target torque (%)	0.1%	7023H
D0.36	Reserved		
D0.37	Power factor angle	0.1°	7025H
D0.38	Reserved		
D0.39	VF separation target voltage	1V	7027H
D0.40	Output voltage upon VF separation	1V	7028H
D0.41	Reserved		
D0.42	Reserved		
D0.43	Reserved		
D0.44	Reserved		
D0.45	Current fault code	0	702DH

Fault code table:

Error code	Name	Error code	Name
OC1	Acceleration	RAY	Contactor failure

	overcurrent		
OC2	Deceleration overcurrent	IE	Current detection failure
OC3	Constant speed overcurrent	TE	Motor auto-tuning fault
OU1	Accelerating overvoltage	EEP	EEPROM read and write failure
OU2	Deceleration overvoltage	GND	Ground short circuit fault
OU3	Constant speed overvoltage	END1	Cumulative running time reached fault
POF	Control power failure	END2	The cumulative power-on time reaches the fault
LU	Undervoltage fault	LOAD	Load loss fault
OL2	Inverter overload	PIDE	PID feedback loss fault during runtime
OL1	Motor overload	CBC	Fast current limit fault
LI	Input phase loss	ESP	Excessive speed deviation fault
LO	Output phase loss	OSP	Motor overspeed fault
OH	Module overheating	CE	Communication fail
EF	External device failure		

Appendix 2: NZ200 Modbus Communication Protocol

The NZ200 series inverters are equipped with an RS485 communication interface and support the Modbus communication protocol. Users can achieve centralized control via computers or PLCs. Through this communication protocol, they can set inverter operation commands, modify or read function code parameters, and read the inverter's working status, fault information, etc.

1: Protocol Content

This serial communication protocol defines the content and format of information

transmitted in serial communication. It includes: master polling (or broadcasting) format; master encoding method, which covers function codes for required actions, transmitted data, error checking, etc. The slave response adopts the same structure, including action confirmation, returned data, error checking, etc. If a slave encounters an error when receiving information or fails to complete the action required by the master, it will organize a fault message as a response to feed back to the master.

2：Application method

The frequency inverter is connected to the "single-master-multiple-slave" PC/PLC control network with an RS485 bus.

3: Bus structure

(1) Interface Mode: RS485 hardware interface.

(2) Transmission Mode: Asynchronous serial, half-duplex transmission. At any given time, only the master or a slave can transmit data while the other receives. Data is transmitted frame by frame in the form of messages during serial asynchronous communication.

(3) Topology: Single-master, multi-slave system. Slave addresses are configurable from 1 to 247, with 0 reserved for broadcast communication. All slave addresses on the network must be unique.us structure

4：Protocol description

The NZ200 Series Inverter Communication Protocol is an asynchronous serial master-slave Modbus communication protocol. In the network, only one device (the master) can initiate communication (referred to as a "query/command"). Other devices (slaves) can only respond to the master's "query/command" by providing data or perform corresponding actions based on the master's instructions. The master device refers to a personal computer (PC), industrial control equipment, or a programmable logic controller (PLC), while the slave device refers to the NZ200 inverter. The master can either communicate with a specific slave individually or broadcast messages to all subordinate slaves. For individually addressed master "queries/commands", the slave must return a message (referred to as a response). However, for broadcast messages from the master, slaves are not required to send a response back to the master.

5: Communication data structure

The Modbus protocol communication data format for the NZ200 Series Inverters is as follows:

It uses the RTU mode, where message transmission must begin with a pause of at least 3.5 character times.

This is the most feasible implementation given the varying character times at different network baud rates. The first field transmitted is the device address.

Transmission characters used are hexadecimal 0...9, A...F. Network devices continuously monitor the network bus, including during the pause intervals. When the first field (address field) is received, each device decodes it to determine if the message is intended for itself. After the last transmitted character, a pause of at least 3.5 character times marks the end

of the message. A new message can begin after this pause.
The entire message frame must be transmitted as a continuous stream. If there is a pause exceeding 1.5 character times before the frame is complete, the receiving device will discard the incomplete message and assume the next byte is the address field of a new message. Similarly, if a new message begins less than 3.5 character times after the previous one, the receiving device will interpret it as a continuation of the previous message. This will result in an error because the CRC field value at the end will not be correct.

RTU frame format：

Frame header START	3.5 character times
Slave Address ADR	Communication address: 1 to 247
Command Code CMD	03: Read slave parameters; 06: Write slave
Data content DATA(N-1)	Data content: function code parameter address, function code parameter quantity, function code parameter value, etc.
Data content DATA(N-2)	
……	
Data content: DATA0	
CRC CHK high	Measurement value: CRC value.
CRC CHK low	
END	3.5-character time

CMD (Command Instruction) and DATA (Data Word Description)
Command Code: 03H, Read N Words (up to 12 words maximum). Example: Continuously read 2 consecutive values starting from address F105 on the inverter with slave address 01.
Master command information

ADR	01H
CMD	03H
starting address high	F1H
starting address low	05H
number of registers high	00H
number of registers low	02H
CRC CHK high	The CRC CHK value needs to be calculated.
CRC CHK low	

Slave response information

ADR	01H
CMD	03H
number of bytes high	04H
number of bytes low	00H
Data F002H high	00H
Data F002H low	00H
Data F003H high	00H
Data F003H high	01H
CRC CHK high	The CRC CHK value needs to be calculated.
CRC CHK low	

Command Code: 06H (Write a single word (Word)); for example, write 3000 (BB8H) to address F00AH of the inverter with slave address 05H.

Master command information

ADR	05H
CMD	06H
data address high	F0H
data address low	0AH
data content high	0BH
data content low	B8H
CRC CHK high	The CRC CHK value needs to be calculated.
CRC CHK low	

Slave response information

ADR	05H
CMD	06H
Data address high byte	F0H
Data address low byte	0AH
Data content high byte	0BH
Data content low byte	B8H
CRC CHK high	The CRC CHK value needs to be calculated.
CRC CHK low	

Check Method – CRC Check Method: CRC (Cyclical Redundancy Check) uses the RTU frame format, and the message includes an error detection field based on the CRC method. The CRC field checks the content of the entire message; it is two bytes containing a 16-bit binary value, calculated by the transmitting device and then added to the message. The receiving device recalculates the CRC of the received message and compares it with the value in the received CRC field, and if the two CRC values are not equal, it indicates a transmission error.

CRC starts by storing 0xFFFF, then a process is called to process the consecutive 8-bit bytes in the message with the value in the current register. Only the 8-bit data in each character is valid for CRC; start bits, stop bits, and parity bits are all invalid.

In the CRC generation process, each 8-bit character is individually XORed with the register content. The result is shifted towards the least significant bit (LSB) direction, with the most significant bit (MSB) filled with 0. The LSB is extracted for detection; if the LSB is 1, the register is individually XORed with a preset value, and if the LSB is 0, no such operation is performed. The entire process is repeated 8 times. After the last bit (8th bit) is completed, the next 8-bit byte is again individually XORed with the current value of the register. The final value in the register is the CRC value after all bytes in the message have been processed.

When CRC is added to the message, the low byte is added first, followed by the high byte.

The simple CRC function is as follows:

```
 unsigned int crc_cal_value(unsigned char *data_value,unsigned char data_length)
{
int i;
unsigned int crc_value=0xffff;
    while(data_length--)
{
crc_value^=*data_value++;
    for(i=0;i<8;i++)
    {
If(crc_value&0x0001)
crc_value=(crc_value>>1)^0xa001;
            else
crc_value=crc_value>>1;
        }
    }
Return(crc_value);
}
```

Address Definition of Communication Parameters:

This part covers communication content for controlling the operation of the inverter, its status, and setting related parameters. Reading and writing function code parameters (some function codes cannot be modified and are only for manufacturer use or monitoring purposes): Rules for indicating function code parameter addresses: The parameter address is indicated based on the function code group number and label as follows: High byte: F0～FF (Group P), A0～AF (Group C), 70～7F (Group D); Low byte: 00～FF. For example: Function code P3.12 is represented as address F30C; Note: Group PF: parameters cannot be read or modified; Group D: parameters can only be read and cannot be modified. Some parameters cannot be modified when the inverter is in operation; some parameters cannot be modified regardless of the inverter's state; when modifying function code parameters, attention should also be paid to the parameter range, unit, and related instructions. In addition, frequent storage operations on EEPROM will reduce its service life, so some function codes in communication mode do not need to be stored; it is sufficient to modify the value in RAM. For Group P parameters, to achieve this function, simply change the high byte "F" of the function code address to "0"; for Group C parameters, to achieve this function, simply change the high byte "A" of the function code address to "4". The corresponding function code address representation is as follows: High byte: 00～0F (Group P), 40～4F (Group C); Low byte: 00～FF. For example: The function code P3.12, which is not stored in EEPROM, is represented as address 030C; the function code C0.05, which is not stored in EEPROM, is represented as address 4005; this address representation can only be used for writing to RAM, not for reading, and it is an invalid address when reading. For all parameters, this function can also be implemented using command code 07H.

Shutdown/Operation Parameters Section:

Parameter address	Parameter description
1000（write-only）	*Communication setting value (-10000 to 10000) (decimal)
1001（read-only）	Running frequency
1002（read-only）	Bus voltage
1003（read-only）	Output voltage
1004（read-only）	Output current
1005（read-only）	Output power
1006（read-only）	Output torque
1007（read-only）	Running speed
1008（read-only）	S Input Flag
1009（read-only）	MO1 Output Flag
100A（read-only）	FIV/Keyboard Potentiometer Voltage
100B（read-only）	FIC/AVI voltage
100C（read-only）	Reserved
100D（read-only）	Count value input
100E（read-only）	Length value input
100F（read-only）	loading speed
1010（read-only）	PID setting
1011（read-only）	PID feedback
1012（read-only）	PLC steps
1013（read-only）	PULSE input pulse frequency, unit 0.01 kHz
1014（read-only）	Reserved
1015（read-only）	Remaining running time
1016（read-only）	FIV/Keyboard potentiometer calibration before voltage
1017（read-only）	Voltage before FIC/AVI calibration
1018（read-only）	Reserved
1019（read-only）	linear velocity
101A（read-only）	Current power-on time
101B（read-only）	Current running time
101C（read-only）	PULSE input pulse frequency, unit 1Hz
101D（read-only）	Communication setting value
101E（read-only）	reserved
101F（read-only）	Main frequency X display
1020（read-only）	Auxiliary frequency Y display

**Note：

The communication setting value is a percentage of the relative value, where 10,000 corresponds to 100.00% and -10,000 corresponds to -100.00%. For data with a frequency dimension, this percentage is relative to the maximum frequency (P0.12); for data with a torque dimension, this percentage is relative to P3.10.

Control command input to the frequency inverter: (Just write)

Command word address	Command Function
2000	0001：Forward rotation operation
	0002：Reverse operation
	0003：Forward jog
	0004：Reverse jog
	0005：Free stop

	0006：Deceleration shutdown
	0007：Fault reset

Read inverter status: (Read-only)

Status word address	Status word function
3000	0001：Forward rotation operation
	0002：Reverse operation
	0003：STOP

Parameter lock password verification: (If the return value is 8888H, it indicates the password verification is successful)

Password address	The input of the password content
1F00	*****
Command Address	Command content
2001	BIT0：（Reserved） BIT1：（Reserved） BIT2：RA-RB-RC Output control BIT3：Reserved BIT4：MO1 Output Control

Analog Output FOV Control: (Write-only)

Command Address	Command content
2002	0 to 7FFF represents 0% to 100%.

Analog Output FOC Control: (Write-only)

Command Address	Command content
2003	0～7FFF represents 0％～100％

Pulse (PULSE) Output Control: (Write-only)

Command Address	Command content
2004	0～7FFF represents 0％～100％

Description of Frequency Inverter Fault：

Frequency inverter fault address	Frequency inverter fault information
8000	0000：No malfunction 0001：Inverter unit protection 0002：Acceleration overcurrent 0003：Deceleration overcurrent 0004：Constant speed overcurrent 0005：Acceleration overvoltage 0006：Deceleration overvoltage 0007：Constant speed overvoltage

	0008：Control power failure 0009：Under-voltage fault 000A：Frequency inverter overload 000B：Motor overload 000C：Reserved 000D：Output Phase Loss 000E：Module overheating 000F：External fault 0010：Communication failure 0011：Contactor malfunction 0012：Current detection failure 0013：Auto tuning fault 0014：Reserved 0015：Parameter read/write exception 0016：Inverter hardware fault 0017：Motor ground short circuit fault 0018：Reserved 0019：Reserved 001A：Running time reached 001B: Reserved 001C: Reserved 001D: Power-on time reached 001E：Load loss 001F：Loss of PID feedback during operation 0028：Fast current-limiting timeout failure 0029：Motor switching fault during operation 002A: Excessive speed deviation 002B：Motor overspeed 002D：Motor overheating 005A：Encoder line count setting error 005B：Unconnected encoder 005C：Incorrect initial position
8001	0000：No malfunction 0001：Password incorrect 0002：Command code error 0003：CRC error detection 0004：invalid address 0005：invalid parameter 0006：Parameter change is invalid 0007：System is locked 0008：the EEPROM is in operation

PD Group Communication Parameter Description

PD.00	Baud rate	Factory value	0005
	Setting range	Units digit: MODBUS baud rate 0：300BPS 1：600BPS 2：1200BPS 3：2400BPS 4：4800BPS 5：9600BPS 6：19200BPS 7：38400BPS 8：57600BPS 9：115200BPS	

This parameter is used to set the data transmission rate between the host computer and the inverter. Note that the set baud rate of the host computer and the inverter must be consistent; otherwise, communication cannot be performed. The higher the baud rate, the faster the communication speed.

PD.01	Data format	Factory value	0
	Factory value	0：No verification: Data format <8, N, 2> 1：Even parity: Data format <8,E,1> 2：Odd parity: Data format <8,O,1> 3：No verification: Data format <8, N, 1>	

The set data format of the host computer and the inverter must be consistent; otherwise, communication cannot be performed.

PD.02	local address	Factory value	1
	Setting range	1–247, 0 is the broadcast address	

When the local address is set to 0, it serves as the broadcast address, enabling the broadcast function of the host computer. The local address is unique (except for the broadcast address), which forms the basis for realizing point-to-point communication between the host computer and the inverter.

PD.03	Response delay	Factory value	2ms
	Setting range	0 ~ 20ms	

Response Delay: It refers to the interval from the end of the inverter's data reception to the transmission of data to the host computer. If the response delay is less than the system processing time, the response delay shall be based on the system processing time. If the response delay is longer than the system processing time, after the system finishes

processing the data, it shall wait with a delay until the response delay time elapses before sending data to the host computer.

PD.04	Communication timeout period	Factory value	0.0 s
	Setting range	0.0 s（invalid） 0.1 ~ 60.0s	

When this function code is set to 0.0 s, the communication timeout parameter is invalid. When this function code is set to a valid value, if the interval between one communication and the next exceeds the communication timeout time, the system will report a communication failure error (CE). Under normal circumstances, it is set to invalid. If in a system with continuous communication, setting this parameter can monitor the communication status.

PD.05	Selection of communication protocol	Factory value	1
	Setting range	0：Non-standard Modbus protocol 1：Standard Modbus protocol	

PD.05=1: Select the standard Modbus protocol.
PD.05=0: When issuing a read command, the slave returns one byte more than the standard Modbus protocol. Refer to the "Communication Data Structure" section of this protocol for details.

PD.06	Communication Read Current Resolution	Factory value	1
	Setting range	0：0.01A 1：0.1A	

This parameter group is used to determine the output unit of the current value when reading the output current via communication.

Thank you for using the NZ200 series inverter.