Foreword

Thank you for choosing D200 Series Frequency inverter.

Before using it, please read this manual carefully so as to guarantee correct operation. Erroneous operation might result in malfunction, faults or shortened life span of the equipment, or even personal injury. Therefore, users are advised to read carefully this manual and abide by it during operation. The manual is a standard attached document. Please keep it for maintenance and repair in the future.

Aside from operation instructions, this manual also presents some wiring diagrams for your reference. If you have any difficulty or special demands for using the frequency inverter, please contact our offices or distributors. You may also contact the customer service centre of our head office for our quality service. The manual noted that its content might change without further notice.

Please confirm following content during unpackaging:

1. If the product is damaged during process of transportation, if parts are damaged and dropped, or if main body is bruised.

2. If rated value marked on nameplate is consistent with your order requirement, or if there are ordered Unit, acceptance certificate, operation manual and guarantee shed in package.

The Company strictly complies with quality system during production and packaging, for any inspection miss, please contact our Company or supplier for settlement.

Content

Chapter I Safe Operation and Notices

Please read the manual carefully before install, operate, maintain or check D200 Series Frequency inverter.

To protect yourself, the equipment, and the property from any possible harm, please do read this chapter before using our D200 Series Frequency inverters. Precautions relevant to operation safety are categorized as “Warning” and “attention”.

Warning : Potentially dangerous condition, which maybe cause severe body injuries or dead if relevant requirement is ignored.

Attention : Potentially dangerous condition, which maybe cause middle, light injuries or device damage if relevant requirement is ignored, it also applies to unsafe operation.

1.1 Examination and Acceptance

Items to be examined are as follows:

Items	Note
1. Does the model conform to your order?	Check the Model indicated on the nameplate on one side of the frequency inverter.
2. Is there any damage to the components?	Survey the external appearance of the frequency inverter and make sure that no damage has occurred during transportation
3. Are the components properly fastened?	Remove the front cover and examine all visible components with appropriate tools.
4. Do you have the user’s manual, the quality certificate and the warranty claims form?	Check for the user’s manual, the quality certificate and the warranty claims form

If any of the above items is problematic, please contact us or our distributors.

1.2 Precautions for safe operation

 Warning	1. Installation and maintenance should be performed by professional only.
	2. Verify that rated voltage of the frequency inverter should conform with voltage level of AC power supply. Otherwise it shall cause hurt to human body or fire accident.
	3. Do not make supply power of AC loop connect with outputting terminal U, V and W. The connection will damage converser, thus guarantee card should be nonserviceable.
	4. Only connect it to input power supply after the panel is well installed. Do not remove the external lid when it is powered; otherwise it may cause electric shock.
	5. Forbid touching high voltage terminal inside the frequency inverter when it is powered on; otherwise, there is danger of electric shock.
	6. Because there is an amount of capacitance stored electric energy inside the frequency inverter, maintenance should be implemented at least 10 minutes after the power is off. At this time, charging indicator should be off thoroughly or positive or negative bus voltage is confirmed to be below 36V; otherwise there is danger of electric shock.

Electro Static Discharge (ESD)	7. Do not turn on or off line and connector when the circuit is powered on; otherwise it can cause hurt to human body.
	8. Electric elements can be easily damaged by static electricity. Do not touch electric elements.
	9. This frequency inverter should not undergo voltage withstand test, which might result in damages to the semiconductor devices in it.
	10. Before switching on the power supply, please put the cover board in position. Otherwise, electric shock or explosion might occur.
	11. Never confuse the input terminals. Otherwise, explosion or damage to the property might occur.
	12. For frequency inverter of which storage period exceeds half year, please increase the input voltage gradually by using regulator, to prevent from electric shock and explosion.
	13. Do not operate the frequency inverter with wet hand; otherwise, there is danger of electric shock.
	14. All parts should be replaced by professional only. It is strictly prohibitive to remain stub or metal object in machine, to prevent from fire.
	15. After replaced control board, please perform relevant parameter setting before operation to prevent from damage of materials.
Attention	1. If the motor is used for the first time or has been in leisure for a long time, remember to check its insulation first. It is advisable to use a 500V megger. Make sure the insulation resistance should not be less than 5 MΩ.
	2. If you need to operate the frequency inverter at frequencies beyond 50Hz, please consider the support capability of the mechanical devices.
	3. The output at certain frequencies might encounter the resonance points of load devices. This can be avoided by resetting the jump frequency parameter of the frequency inverter.
	4. Do not use three-phase frequency inverters as two-phase ones. Otherwise, fault or damage might occur.
	5. In regions at an altitude of more than 1000 meters, the heat dissipation capability of the frequency inverter might be compromised because of the thin air. Therefore, de-rated operation will be necessary. In such cases, please contact us for technical advice.
	6. The standard matched motor is a four-pole squirrel-cage asynchronous machine. In case of discrepancy, please choose appropriate frequency inverters in accordance with the rated current of the motor.
	7. Do not start or stop the frequency inverter with contactors. Otherwise, damage might occur to the equipment.
	8. Do not modify factory parameter of frequency inverter without authorization, or damage might be caused.

1.3 Safety mark of frequency converter:

To ensure the operation and maintenance safety of equipment, please do abide by the safety mark on equipment and do not damage or destroy such mark. Descriptions of safety mark:

●Make sure to read the Manual prior to installation and running to avoid an electric shock!

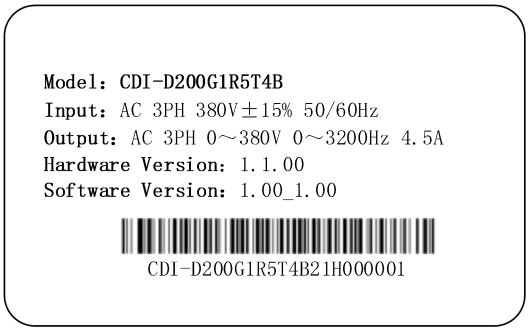
●Do NOT dismantle the cover plate when power is on or within 15min when power is cut off!

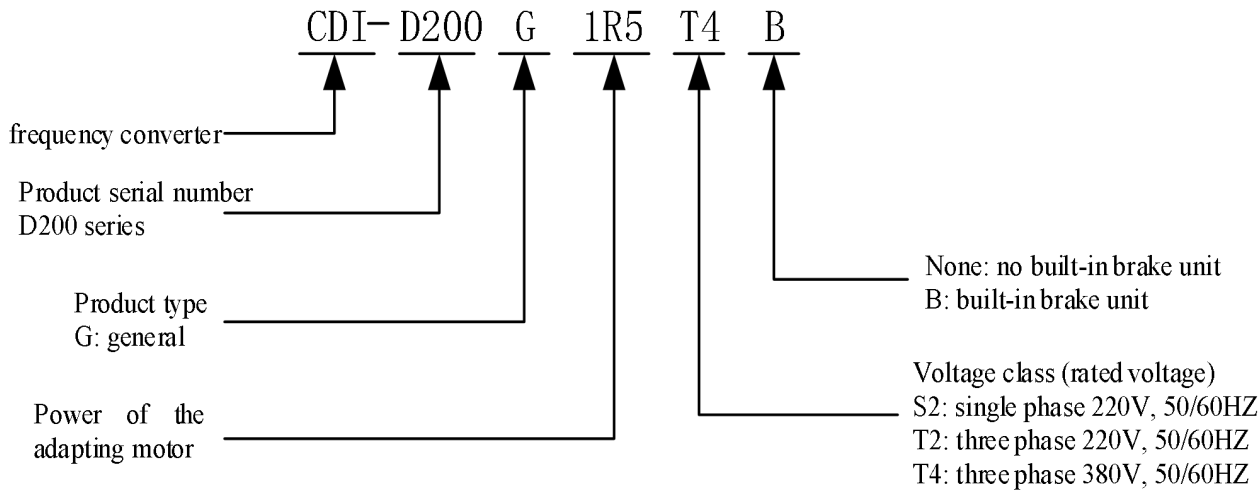
●Do NOT perform maintenance, inspection and wiring until the power supply at input/output side is cut off for over 15min and power indicator becomes off completely!

Chapter II Product Information

2.1 Nameplate data and naming rule

Nameplate data: take Model CDI-D200G1R5T4B for instance:





2.2 Technical specification

Item		Specification
Control	Control mode	V/F control Flux vector control
	Frequency Resolution	Digital: 0.02% Analog: 0.1%
	V/F curve	Linear, square root, random V/F
	Overload capability	150% rated current 60s; 180% rated current 3s
	Start torque	G type: 3Hz/150%（VF）；1Hz/150%（Flux vector ）
	Torque compensation	Manual torque compensation (0.1%-30.0%), automatic torque compensation
Configuration	Control power supply +24V	Max. output current 300mA
	Input terminal	4 channels digital input terminals (DI1 ~ DI4), Two analog input terminals, AVI is used for voltage (0V ~ 10V) input, ACI is used for current (0/4mA ~ 20mA) input.
	Output terminal	1 channel analog output terminal FM1, can output both voltage (0V ~ 10V) and current (0mA ~ 20mA). 1-way relay output T1, DC 30V/1A below AC 250V/3A below.
Operation	Mode of operation	Keyboard, terminal, RS485 communication
	Frequency source	14 main frequency sources, 14 auxiliary frequency sources. They can be combined and switched via multiple modes. The input mode of each frequency source can adopt multiple ways: keyboard potentiometer, external analog, digital reference, impulse reference, Multiplex Directive, simple PLC, communication, arithmetic results, etc.
	Acceleration and Deceleration Time	4-group straight line (terminal switch can be selected via acceleration and deceleration time), S curve 1 and S curve 2.
	Emergency stop	Interrupt frequency inverter output instantly
	Multiplex Speed	16-phase speed is allowable to set at most and use various combination of multiplex directive terminal to switch
	Simple PLC function	Continuously run 16-phase speed and independently set acceleration and deceleration time and running time
	Jogging Control	Independently set Jogging frequency and jogging acceleration and deceleration time, additionally, set the unit under running state and confirm whether the jogging is preferential
	Rotating Speed Tracking	Frequency inverter starts operation by tracking the load speed
	Fixed-length and fixed-distance control	Realize fixed-length and fixed-distance control function through Impulse Input

Item		Specification
Operation	Counting control	The counting function is realized via pulse input.
	Swing frequency control	Applied to the weaving and winding equipment.
	Built-in PID	The process control closed loop system can be realized.
	AVR function	In case of voltage surge of power grid, ensure stable output
	CD braking	Realize fast and stable shut-down
	Slip compensation	Compensate the rotation speed deviation due to load increasing
	Hopping Frequency	Prevent resonance with load
	Sagged Function	Balance the load of multiple motors with the same load.
	Timing control	Be able to realize automatic shutdown of the frequency inverter when reaching given time
	Built-in Virtual Delay Relay	Realize simple logic Programming to multi-functional output terminal function and digital input terminal signal, the logic results can not only be equivalent to digital input terminal function, but can be output through multi-functional terminal output
	Built-in timer	2 built-in timers can gather timing input signal and realize timing signal output. The 2 timers can be both used independently and together.
	Built-in operation module	One built-in 4-way operation module can realize simple plus, minus, multiplication, division, size judgment and integral operation.
communication		Standard RS485 communication interface
Motor type		Equipped with asynchronous motor
Display	Operation information	Given frequency, output current, output voltage, bus voltage, input signal, feedback value, module temperature, output frequency, motor synchronous speed, etc. Through >> Key, display 32 loops at most
	Error message	Save the historical information of 3 faults under running state of fault protection. Every piece of fault information includes frequency, current, bus voltage and input/output terminal status when fault happens.
Protection	Frequency inverter protection	Overcurrent, overvoltage, module fault protection, undervoltage, overload, external fault protection, EEPROM fault protection, ground protection, default phase,etc.
	Frequency inverter alarm	Locked rotor protection, overload alarm.
	Instant power-down	Less than 15 milliseconds: continuous operation
Ambient	Ambient temperature	More than 15 milliseconds: auto-reset is allowed
	Storage temperature	-10℃-40℃ -20℃-65℃
	Ambient humidity	Max. 90%RH (no moisture condensation)
	Height/vibration	Below 1000m, below 5.9m/s^2 (=0.6g)
	Application site	No corrosive gas, inflammable gas, oil mist or dust and others.
Type of cooling		Forced air cooling

2.3 Product list

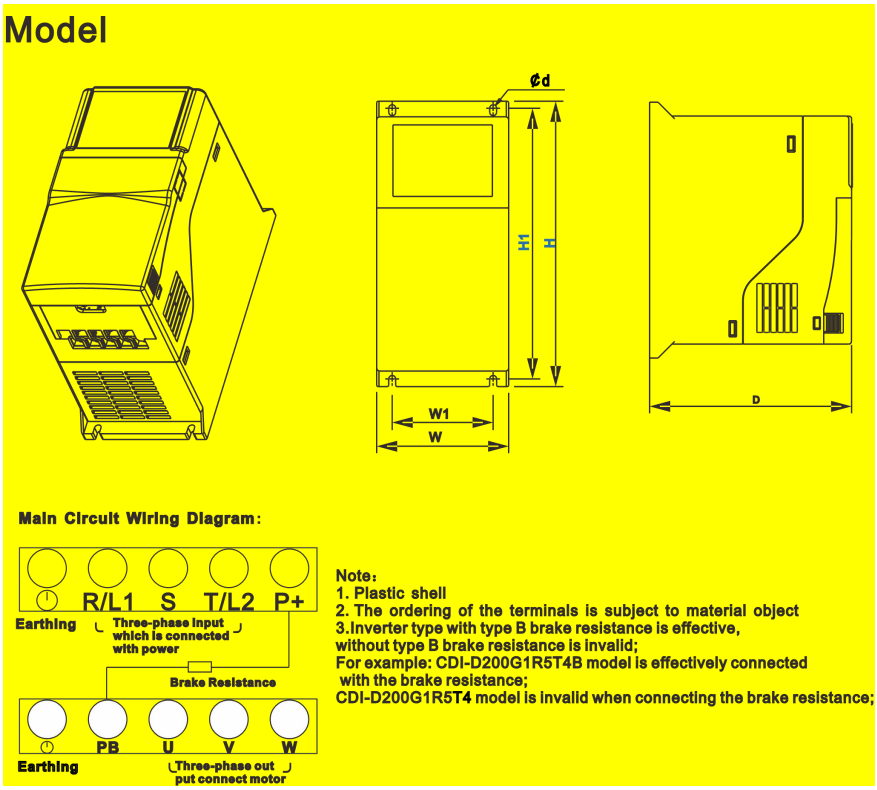
Frequency inverter type	Rated capacity (kVA)	Rated input current (A)	Rated output current (A)	Adaptive motor (kW)
S2 (Single-phase 220V, 50/60Hz)				
CDI-D200G0R4S2	0.8	5.0	3.0	0.4
CDI-D200G0R4S2B	0.8	5.0	3.0	0.4
CDI-D200G0R75S2	1.5	9	5.0	0.75
CDI-D200G0R75S2B	1.5	9	5.0	0.75
CDI-D200G1R5S2	2.7	15.7	7.0	1.5
CDI-D200G1R5S2B	2.7	15.7	7.0	1.5
CDI-D200G2R2S2	3.8	27	10.0	2.2
CDI-D200G2R2S2B	3.8	27	10.0	2.2
CDI-D201G0R4S2	0.8	5.0	3.0	0.4
CDI-D201G0R4S2B	0.8	5.0	3.0	0.4
CDI-D201G0R75S2	1.5	9	5.0	0.75
CDI-D201G0R75S2B	1.5	9	5.0	0.75
CDI-D201G1R5S2	2.7	15.7	7.0	1.5
CDI-D201G1R5S2B	2.7	15.7	7.0	1.5
CDI-D201G2R2S2	3.8	27	10.0	2.2
CDI-D201G2R2S2B	3.8	27	10.0	2.2
T2（Three-phase 220V, 50/60Hz）				
CDI-D200G0R4T2	5.9	10.5	10	2.2
CDI-D200G0R4T2B	5.9	10.5	10	2.2
CDI-D200G0R75T2	8.5	15.5	17	3.7
CDI-D200G0R75T2B	8.5	15.5	17	3.7
CDI-D200G1R5T2	17	26	25	5.5
CDI-D200G1R5T2B	17	26	25	5.5
CDI-D200G2R2T2	21	35	32	7.5
CDI-D200G2R2T2B	21	35	32	7.5
CDI-D201G0R4T2	0.8	2.6	3.0	0.4
CDI-D201G0R4T2B	0.8	2.6	3.0	0.4
CDI-D201G0R75T2	1.5	6	5.0	0.75
CDI-D201G0R75T2B	1.5	6	5.0	0.75
CDI-D201G1R5T2	2.7	8.8	7.0	1.5
CDI-D201G1R5T2B	2.7	8.8	7.0	1.5
CDI-D201G2R2T2	3.8	12.5	10.0	2.2
CDI-D201G2R2T2B	3.8	12.5	10.0	2.2
T4（Three-phase 380V, 50/60Hz）				
CDI-D200G0R75T4	1.5	4.4	3.0	0.75
CDI-D200G0R75T4B	1.5	4.4	3.0	0.75
CDI-D200G1R5T4	3.0	6.0	4.5	1.5
CDI-D200G1R5T4B	3.0	6.0	4.5	1.5
CDI-D200G2R2T4	4.0	6.8	6.0	2.2
CDI-D200G2R2T4B	4.0	6.8	6.0	2.2
CDI-D200G3R7T4	5.9	11	9.5	3.7
CDI-D200G3R7T4B	5.9	11	9.5	3.7
CDI-D201G0R75T4	1.5	4.4	3.0	0.75
CDI-D201G0R75T4B	1.5	4.4	3.0	0.75
CDI-D201G1R5T4	3.0	6.0	4.5	1.5

CDI-D201G1R5T4B	3.0	6.0	4.5	1.5
CDI-D201G2R2T4	4.0	6.8	6.0	2.2
CDI-D201G2R2T4B	4.0	6.8	6.0	2.2
CDI-D201G3R7T4	5.9	11	9.5	3.7
CDI-D201G3R7T4B	5.9	11	9.5	3.7

Order description:

When the user makes order, please indicate the corresponding model and specification of product. If possible, other related data such as motor parameters and load type shall be provided. In case of special requirement, please contact the Technical Department of our company.

2.4 Appearance and installation size



Dimensions are as follows:

W	W1	H	H1	D	Φ d
85	65	183.5	174	145	4.5

2.5 Routine maintenance

(1) Routine maintenance

Under influence of temperature, humidity, dust and vibration, internal elements of frequency inverter should be aged, which should cause potential fault, or decrease service life of frequency inverter. Therefore, it is significant to perform routine maintenance and regular inspection with the frequency inverter.

Routine checking items:

A Whether the sound becomes abnormal during the operation of motor.

B Whether vibration occurs during the operation of motor.

C Whether the installation condition of frequency inverter is changed.

D Whether the radiator fan of frequency inverter works normally.

Routine cleaning:

A. Keep cleanness of frequency inverter.

B. Remove dust from surface of frequency inverter effectively, to prevent frequency inverter from incursion of dust, or metal dust.

C. Remove oil sludge form radiating fan of frequency inverter effectively.

(2) Regular check

Please check the hidden place regularly.

Regular checking items:

A Check air duct and clean it regularly.

B Check whether screw is loosened.

C Check whether frequency inverter is corroded.

D Check whether the connecting terminal has arc trace.

(3) Replacement of worn parts

The frequency inverter worn parts include cooling fan and electrolytic capacitor used for filtering, the service life is closely related with the operating environment and maintenance status.

The user can confirm the replacement time according the operating time.

A Cooling fan

Potential damage reason: Shaft abrasion and vane aging.

Critical standard: If there is crack on vane of fan, or if abnormal sound occurs during starting.

B Filter ELCC

Potential damage reason: Bad input power, higher ambient temperature, frequent load switch, or aging of electrolyte. Critical standard: If liquid leaks, if safety valve bulged out, measure of static capacitance, and measure of insulated resistance.

(4) Storage of frequency inverter

After purchased the device, the following shall be noted for temporary storage and long-term storage:

A Please store it in original package as much as possible.

B Long term storage should cause aging of ELCC, please electrify it for 5 hours above twice a year during storing, in mode of raising voltage to rated voltage slowly via transformer.

(5) Guarantee of frequency inverter

Maintenance free is limited to the frequency inverter only.

Under normal use condition, the fault or damage occurs, if the inverter is used domestically (based on the company bar code), and if the product is exported overseas (not including domestic sale), the contract maintenance will be provided within 6 months after the product is purchased at local place for products manufactured by the Company, we will provide paid service for life anytime, or anywhere applied it.

The dealer, manufacturer and agent all over the country can provide after-sale service, and the condition of service is as follow:

A Perform "Class III" checking service at local place (including troubleshooting).

B Based on the after-sale service responsibility standard related with the contract contents signed by our company and the agent dealer.

C The compensated after-sale service can be required from agent dealer of our company (whether warranty is available or not).

If the product has quality problem or product accident, our company will only undertake the responsibility of repair, replacement and return free of charge, if the user requires more responsibility compensation assurance, please handle property insurance with the insurance company in advance.

Guarantee term of the product should be effective in 18 months after Bar code date.

For fault caused in following reason, user could obtain compensated maintenance only even guarantee term is effective:

A. Problem caused in incorrect operation (based on user's manual) or repair, modification without authorization.

B. Problem caused in violation of critical requirement.

C. Damage caused in undeserved transportation after purchased.

D. Aging or fault caused in bad environment.

E. Damage caused in earthquake, fire, disaster, lightning strike, abnormal voltage or other natural disaster and incidental disaster.

F. Damage occurs in transportation. (Note: transportation mode should be appointed by user of themselves, the Company should assist agent to conduct transfer of goods).

G. Brand, trade mark, SN, nameplate marked by manufacturer is damaged or unjustifiable.

H. Failure to pay off fund according to purchase contract.

I. Failure to describe actual conditions relating to installation, distribution, operation, maintenance, or other condition to the Company.

The Company should carry out responsibility of "Three guarantee" above mentioned only after received the returned goods, and confirmed responsibility attribution.

Should it involve an unpaid or untimely settlement due to the buyer, the ownership hereof still belongs to the supplier. In addition, the latter will assume no liability hereinabove, and the buyer shall have no disagreement.

All relevant service fees shall be calculated in accordance with the identical standards of the factory. In the event that an agreement or a contract exists, its priority shall be performed

Chapter III Installation and Connection of Frequency Inverter

3.1 Option of the Site and Space for Installation

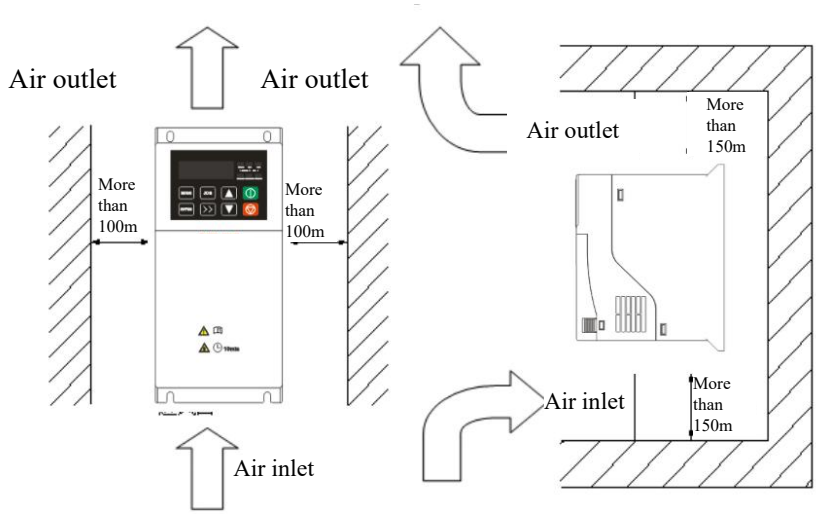
Option of installing position:

 **Warning**	1	Prevent from sunniness; Don’t use in the open air directly.
	2	Don't use in the environment containing corrosive gas and liquid.
	3	Don't use in the environment containing oil mist and splashing water.
	4	Don't use in the environment containing salt mist.
	5	Don't use in the rainy and moisture environment.
	6	If the air contains metal powder or silk fiber, the filter shall be installed.
	7	Don't use under mechanical shock and vibration condition.
	8	When the ambient temperature exceeds 40℃, it can be only used by taking temperature drop measures.
	9	Overcooling and over-temperature will cause equipment fault. Use under -10℃~+40℃.
	10	Keep away from power supply noise, for instance, the welding machine and utilization equipment with large power will influence the equipment operation.
	11	The active material will influence the operation of this device.
	12	The inflammable material, thinner and solvent shall be kept away from this device.

In order to ensure fine performance and long-term working service life, when the D200 Series Frequency inverter is installed, the above proposal shall be abided by, to prevent the inverter being damaged.

Option of the installation space:

When the D200 Series Frequency Inverter is installed vertically, sufficient heat elimination space shall be provided to ensure effective cooling.

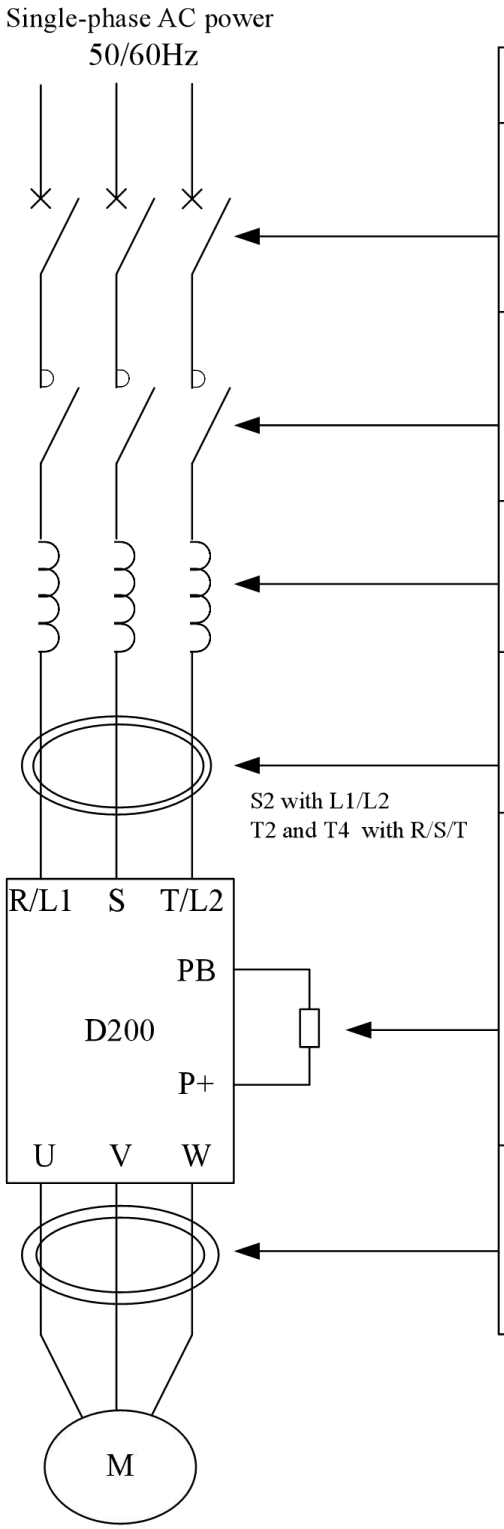


Installation space of D200 Series Frequency Inverter

Attention	1. The spaces to be left above/below and on the two sides of the frequency inverter are required both for the model with open bracket (IP00) and that with closed bracket (IP20)
	2. Permissible temperature at the air inlet: -10℃ ~ +40℃
	3. Adequate cooling spaces should be reserved both above and below the frequency inverter, so as to facilitate gas admission and emission.
	4. Do not drop anything into the air passage during installation. Otherwise the fan might be damaged.
	5. Mount filtering devices at the air inlet in cases of floating fiber or cotton or heavy dust.

3.2 Wiring of the Peripherals and Optional parts

The standard connection method for peripheral equipment and option of the D200 Series Frequency inverter is as follows:



Peripherals and Optional parts	Description
Moulded Case Circuit Breaker MCCB	Be used for rapidly cutting off the fault current of the frequency inverter and preventing fault of power supply from the frequency inverter and its line fault
Electromagnetic Contactor (MC)	When the frequency inverter breaks down, cut off main power supply and prevent restart after power off and fault
AC Reactor (ACL)	Be used for improving input power factor, reduce upper harmonics and restrain the power surge
Radio Noise Filter (NF)	Be used for reducing radio noise filter of the frequency inverter
Regenerative braking resistance Rb	When the brake torque is unable to meet the requirements, this is selected and used for occasions with large inertia load or frequent brake or rapid stop
Radio Noise Filter (NF)	Be used for reducing radio noise filter of the frequency inverter

3.3 Wiring of the main circuit

3.3.1 Wiring diagram for the main circuit and precautions

This section describes connection of main circuit of D200 frequency inverters.

Danger	1	The AC main circuit power can't be connected with the output terminal U, V and W.
	2	Connection can be only started after the power is switched off.
	3	Check whether the rated voltage of frequency inverter conforms to the input supply voltage.
	4	The frequency inverter can't perform withstand voltage test.
	5	Tighten the terminal screw according to the specified tightening torque.

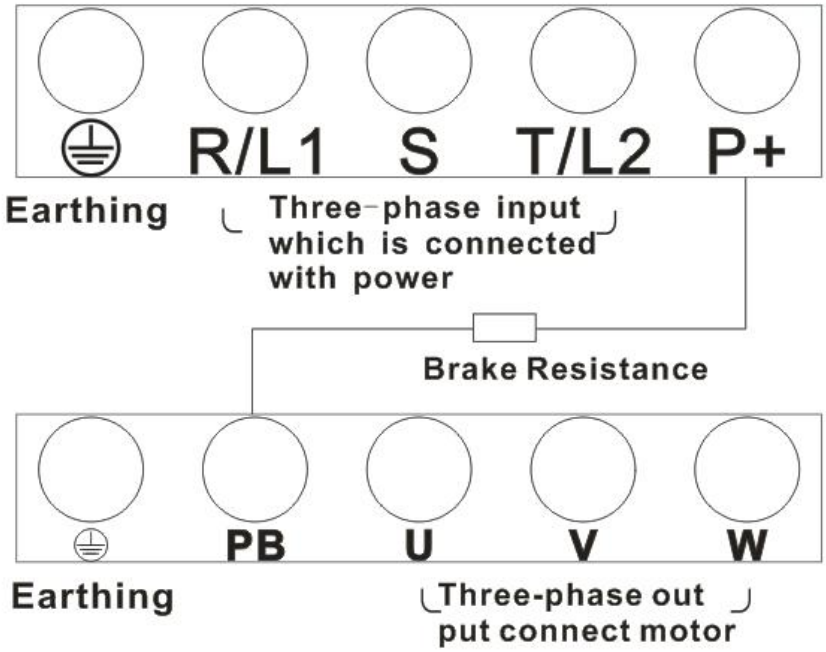
Attention	1	Ensure the grounding terminal has been grounded before the main circuit is connected. (Refer to 3.5)
	2	The terminal arrangement sequence is based on actual condition.
	3	Rated input voltage: AC single-phase 220V Frequency: 50/60Hz AC Three-phase 220V Frequency: 50/60Hz AC Three-phase 380V Frequency: 50/60Hz
	4	Permissible fluctuation voltage: +10% (temporary fluctuation ±15%) Permissible fluctuation frequency: ±2%

The main circuit connection diagram of D200 ：

Inverter type with type B brake resistance is effective, without type B brake resistance is invalid;

For example: CDI-D200G1R5T4B model is effectively connected with the brake resistance;

CDI-D200G1R5T4 model is invalid when connecting the brake resistance;



3.3.2 Precautions for wiring the input side of the main circuit

1 Installation of Circuit Breaker (MCCB)

In order to protect line, the MCCB or fuse must be connected between the AC main circuit and inverter input terminal R, S, T or L1,L2.

2 Installation of electric leakage circuit breaker

When one electric leakage circuit breaker is connected to the input terminal R, S ,T,or L1,L2 in order to prevent incorrect operation, the one without being affected by high frequency shall be selected.

For instance: NV series of Mitsubishi Electric Co., Ltd (manufactured in 1988 or later).

EG and SG series of Fuji Electric Co., Ltd (manufactured in 1984 or later).

CDM1 series circuit breaker manufactured by Delixi Group Co., Ltd.

3 Installation of the electromagnetic contactor (MC)

The frequency inverter may be used even if no electromagnetic contactor is installed on the power supply side. Electromagnetic contactor can take the place of MCCB for the sequence break of the main circuit. However, when the primary side is switched off, the regeneration brake will not function and the motor will stop running. When the primary side is closed/open, the electromagnetic contactor can cause loads to start/stop, but frequent close/open will lead to frequency inverter fault. Therefore, while using the brake resistor unit, you can always realize sequential control through the trip contact of the overload relay when the electromagnetic contactor is switched off.

4 Phase sequence connection of terminal

The phase wire of input power can be connected with any one terminal of R, S and T on the terminal board despite of the phase sequence.

5 AC reactor

When an frequency inverter is connected to a large-capacity power transformer (600KVA or beyond), or when a phase lead capacitor (power factor compensator) is connected or disconnected, the peak current through the input power circuit will be so strong that it will damage the rectifier-frequency inverter. Installing a DC reactor (optional) in the frequency inverter or adding an AC reactor (optional) at the input end can effectively improve the power factors at the power supply side.

6 Surge absorber

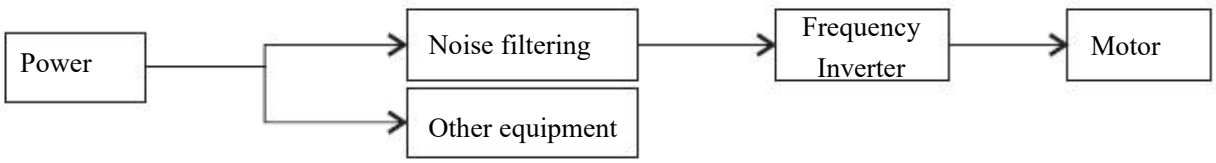
If a perceptual load (such as electromagnetic contactor, relay, solenoid valve, electromagnetic coil, electromagnetic brake and so on) is connected in the adjacent area, a surge suppressor should also be used while operating the frequency inverter.

7 Setting of noise filter at supply side

The high frequency sound wave from the frequency inverter to supply can be reduced by installing a noise filter.

Distribution instance 1: please use the noise filter special for frequency inverter.

The setting of noise filter at supply side is as follows:



3.3.3 Precautions for wiring the output side of the main circuit

1 Connection of output terminal and load

Connect the output terminal U, V and W with the motor lead-out wire U, V and W, verify the forward rotation of motor with the forward operation command (CCW: counter-clockwise rotation observed from motor load side).If the motor rotation is incorrect, interchange any two-phase of output terminal U, V and W.

2 The input power can't be connected with the output terminal U, V and W!!!

3 The output circuit can't be short circuit or grounded

Don't touch the output circuit directly or make output wire touch the inverter case, else the electric shock or ground fault will be caused, it'll be very dangerous. Furthermore, don't make output line be short-circuited.

4 The phase leading capacitor or LC/RC noise filter can't be connected

The phase leading capacitor or LC/RC noise filter can't be connected to output circuit.

5 Avoid installing magnetic starter

If a magnetic starter or a magnetic contactor is connected to the output circuit and if the frequency inverter is connected with load during operation period, the frequency inverter will actuate the over-current protection circuit due to the surged current. The magnetic contactor can only operate when the frequency inverter stops output.

6 Installation of thermal overload relay

The frequency inverter consists of an electronic overload protection mechanism. Admittedly, a thermal over-load relay should be installed when a frequency inverter is used in driving several motors or when a multi-pole motor is used. In addition, the rated current of the thermal over-load relay should be the same as the current indicated on the nameplate of the motor.

7 Setting of noise filter at output side

The radio noise and interfering noise can be reduced by installing a special noise filter at the output side of frequency inverter.

Interfering noise**:** because of electromagnetic interference, the noise might affect the signal line and result in the misoperation of the controller.

Radio noise**:** the noise can be produced from radio transmitters because of high-frequency waves emitted from the frequency inverter or cables.

8 Countermeasure for interfering noise

Aside from using noise filters, threading all the connecting wires into a ground metal pipe can also restrain interfering noise generated at the output terminal. If we put signal lines over 30cm away, the effect of interfering noise will be abated.

9 Countermeasure for radio noise

Aside from input and output wires, the frequency inverter itself also emits noise. It will help to handle the problem if we install noise filters at the input and output sides of the frequency inverter or apply shielded lines to the iron case of the frequency inverter. It is also very important to make sure that the connecting wire between the frequency inverter and the motor should be as short as possible

10 The wire distance between the frequency inverter and the motor

If the total wire length between the frequency inverter and the motor is too long or the carrier frequency of the frequency inverter (primary IGBT switch frequency) is rather high, the harmonic leakage current from the cables will exert negative influence on the frequency inverter and other external devices.

If connection line between the frequency inverter and the motor is too long, carrier frequency of the frequency inverter can be reduced as below. The carrier frequency can be given by Function Code P1.0.22.

Table of wire distance between the frequency inverter and the motor

Wire distance between the frequency inverter and the motor	Carrier frequency (P)
Max. 50m	10kHz or lower
Max. 100m	5kHz or lower
More than 100m	3kHz or lower

Output reactors should be installed when the wire distance exceeds 50 meters. Otherwise, the motor may get burnt down.

Due to the high frequency portion of the current flowing from the capacitor distributed between the output wiring of the converter, the external thermal relay may sometimes cause unnecessary operation.

3.3.4 Wiring and Supporting Peripherals for Main Circuits with Reference to the Table below

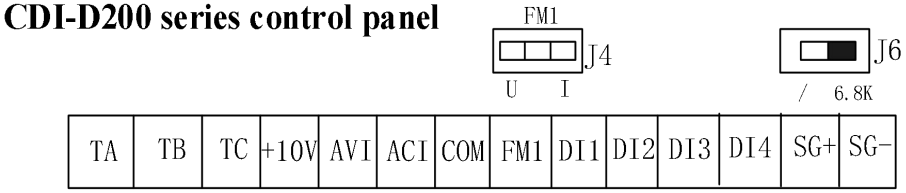
Type of Frequency inverter	Main Circuit Wire Gage (mm^2)	Control Circuit Wire Gage (mm^2)	Use-free air breaker MCCB (A)	Electromagnetic contactor MC (A)
S2 (Single-phase 220V)				
CDI-D200G0R4S2	2.5	1.0	16	10
CDI-D200G0R4S2B	2.5	1.0	16	10
CDI-D200G0R75S2	2.5	1.0	16	10
CDI-D200G0R75S2B	2.5	1.0	16	10
CDI-D200G1R5S2	2.5	1.0	20	16
CDI-D200G1R5S2B	2.5	1.0	20	16
CDI-D200G2R2S2	4.0	1.0	32	20
CDI-D200G2R2S2B	4.0	1.0	32	20
CDI-D201G0R4S2	2.5	1.0	16	10
CDI-D201G0R4S2B	2.5	1.0	16	10
CDI-D201G0R75S2	2.5	1.0	16	10
CDI-D201G0R75S2B	2.5	1.0	16	10
CDI-D201G1R5S2	2.5	1.0	20	16
CDI-D201G1R5S2B	2.5	1.0	20	16
CDI-D201G2R2S2	4.0	1.0	32	20
CDI-D201G2R2S2B	4.0	1.0	32	20
T2（Three-phase 220V）				
CDI-D200G0R4T2	4.0	1.0	25	16
CDI-D200G0R4T2B	4.0	1.0	25	16
CDI-D200G0R75T2	4.0	1.0	32	25
CDI-D200G0R75T2B	4.0	1.0	32	25
CDI-D200G1R5T2	4.0	1.0	63	40
CDI-D200G1R5T2B	4.0	1.0	63	40
CDI-D200G2R2T2	6.0	1.0	63	40
CDI-D200G2R2T2B	6.0	1.0	63	40
CDI-D201G0R4T2	4.0	1.0	25	16
CDI-D201G0R4T2B	4.0	1.0	25	16
CDI-D201G0R75T2	4.0	1.0	32	25
CDI-D201G0R75T2B	4.0	1.0	32	25

CDI-D201G1R5T2	4.0	1.0	63	40
CDI-D201G1R5T2B	4.0	1.0	63	40
CDI-D201G2R2T2	6.0	1.0	63	40
CDI-D201G2R2T2B	6.0	1.0	63	40
T4（Three-phase 380V）				
CDI-D200G0R75T4	2.5	1.0	10	10
CDI-D200G0R75T4B	2.5	1.0	10	10
CDI-D200G1R5T4	2.5	1.0	16	10
CDI-D200G1R5T4B	2.5	1.0	16	10
CDI-D200G2R2T4	2.5	1.0	16	10
CDI-D200G2R2T4B	2.5	1.0	16	10
CDI-D200G3R7T4	4.0	1.0	25	16
CDI-D200G3R7T4B	4.0	1.0	25	16
CDI-D201G0R75T4	2.5	1.0	10	10
CDI-D201G0R75T4B	2.5	1.0	10	10
CDI-D201G1R5T4	2.5	1.0	16	10
CDI-D201G1R5T4B	2.5	1.0	16	10
CDI-D201G2R2T4	2.5	1.0	16	10
CDI-D201G2R2T4B	2.5	1.0	16	10
CDI-D201G3R7T4	4.0	1.0	25	16
CDI-D201G3R7T4B	4.0	1.0	25	16

3.4 Connection of control circuit

3.4.1 Arrangement and connection of controlling circuit terminals

he wiring diagram of D200 main circuit and control circuit is as follows:

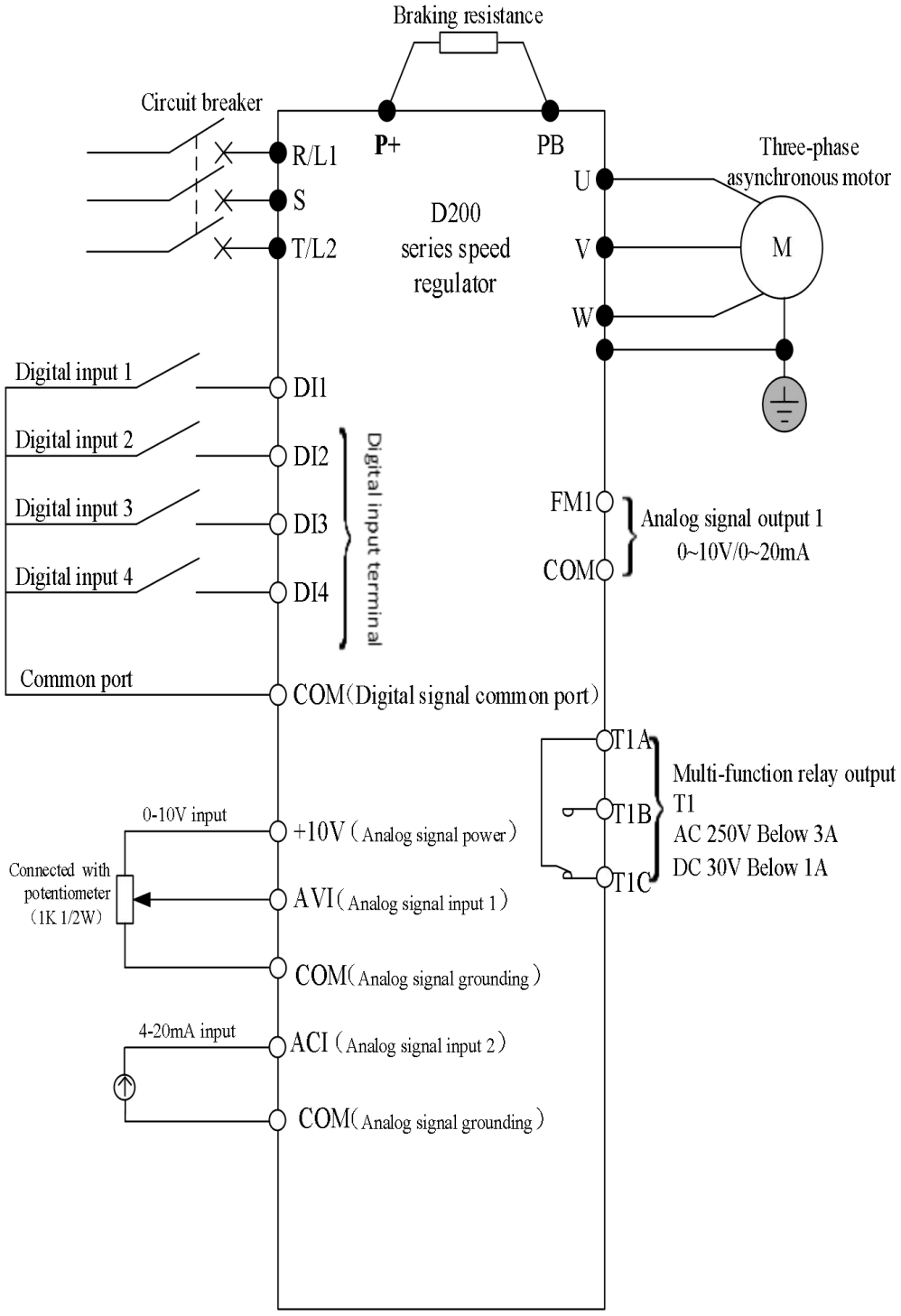


See the wiring diagram of D200 main loop and control loop（S2 connected with L1/L2，T2 and T4 conn ected with R/S/T）

Inverter type with type B brake resistance is effective, without type B brake resistance is invalid;

For example: CDI-D200G1R5T4B model is effectively connected with the brake resistance;

CDI-D200G1R5T4 model is invalid when connecting the brake resistance;


Braking resistance
Circuit breaker
P+
PB
R/L1
S
T/L2
D200
series speed
regulator
U
V
W
Three-phase
asynchronous motor
M
Digital input 1
Digital input 2
Digital input 3
Digital input 4
DI1
DI2
DI3
DI4
Digital input terminal
FM1
COM
Analog signal output 1
0~10V/0~20mA
Common port
COM(Digital signal common port)
T1A
T1B
T1C
Multi-function relay output
T1
AC 250V Below 3A
DC 30V Below 1A
0-10V input
+10V (Analog signal power)
Connected with
potentiometer
(1K 1/2W)
AVI(Analog signal input 1)
COM(Analog signal grounding)
4-20mA input
ACI (Analog signal input 2)
COM(Analog signal grounding)

3.4.2 Function of control circuit terminal

The Table below describes the functions of control circuit terminal, and connection is based on the function of each terminal.

Type	Terminal	Terminal name	Function description
Digital input	DI1	Digital input 1	The control panel is equipped with terminal, refer to the function description of P2.0.00~P2.0.03 for use.
	DI2	Digital input 2	
	DI3	Digital input 3	
	DI4	Digital input 4	
T1 relay	T1A	Multi-function relay output T1	TA-TB is normally open TA-TC is normally closed Driving Capability: AC250V below 3A DC30V below 3A
	T1B		
	T1C		
Analog input	10V	10V power output	Supply DC10V supply voltage which is used as the working power of external potentiometer. Driving Capability: below 50mA
	COM		
	AVI-COM	Analog input terminal 1	The terminal is standard on the control board. Used to receive external analog signal input, only used for 0V ~ 10V voltage signal
	ACI-COM	Analog input terminal 2	The terminal is standard on the control board. For receiving external analog signal input, only used for 0/4mA ~ 20mA current signal
Analog output	FM1-COM	Analog output terminal 1	Control panel with standard terminals. Output 0 ~ 10V voltage or 0 ~ 20mA current
Communication terminal	SG+	RS485 communication positive signal terminal	Control panel with standard terminals. Is the RS485 communication terminal
	SG-	RS485 communication negative signal terminal	

3.4.3 Wiring Instruction for Control Circuit

To avoid interfere, please distribute control loop apart from main loop and heavy current loop (relay contact, 220V program loop), the Shielded Twisted Cable or Shielded Twisted Pair should be used in wiring the control circuit; the shielding sheath should be connected to terminal PE of the frequency inverter and the wire distance should be less than 50 meters to prevent misoperation from interference.

1、Description for Circuit Wiring of Analog Input Terminal

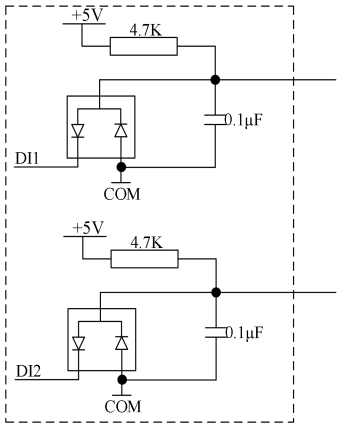
Control AVI channel, voltage signal input; Control ACI channel, current signal input.

2、Description for Circuit Wiring of Analog Output Terminal

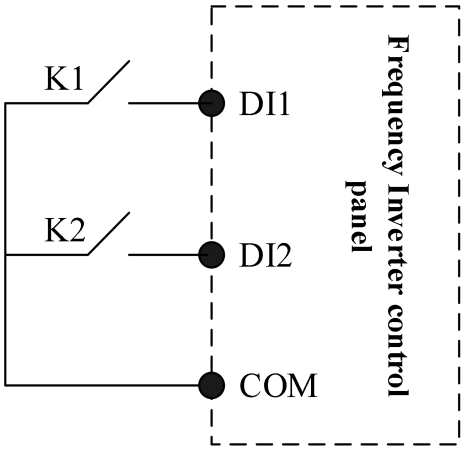
J4 is to control the FM1 channel and select the voltage/current signal output. When the current signal output is selected, the switching position of J4 should be located on the I side, and the voltage signal output should be located on the U side.

3、Description for Circuit Wiring of Digital Input Terminal

Digital input requires using shielding wire or twisted-pair shielding wire to prevent interference from external model, and the connection distance shall be less than 50m.



Wiring diagram on the control panel of digital input loop

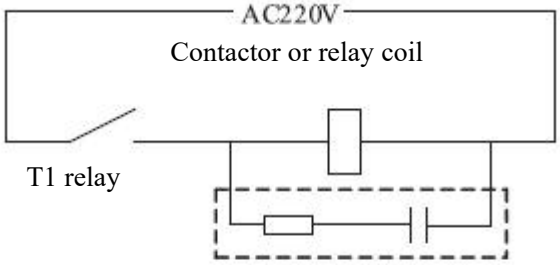


Mode of connection

4 Connection description of T1 output terminal loop

- AC loop

If the inductive load (for instance: electromagnetic relay and contactor) is driving, the surge voltage absorption circuit shall be equipped such as RC absorption circuit (the leakage current shall be less than the holding current of the controlled contactor or relay) as the Figure below:



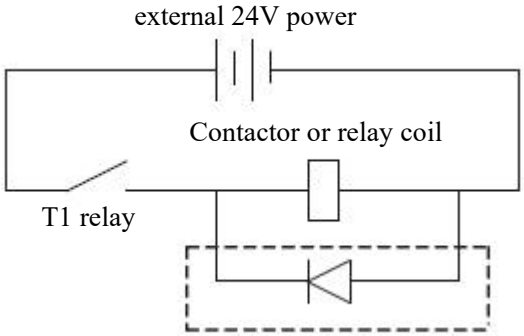
RC resistance capacitance absorption circuit

R：100~500Ω

C：0.1~0.2μF

- DC loop

If the DC electromagnetic loop is driven, the freewheeling diode (note polarity) shall be equipped as the Figure below:



DC absorption circuit

3.5 Grounding

1 Grounding resistance value:

200V grade: 100Ω or lower

400V grade: 10Ω or lower

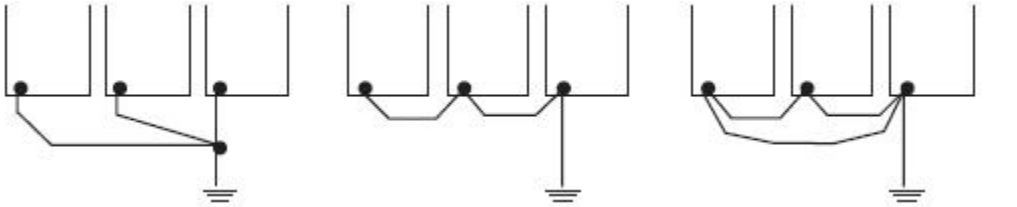
660V grade: 5Ω or lower

2 The D200 Series Frequency inverter can't be grounded with welding machine, motor and other strong current electric equipment commonly. The grounding wires in the tube and wire of strong current electric equipment shall be laid respectively.

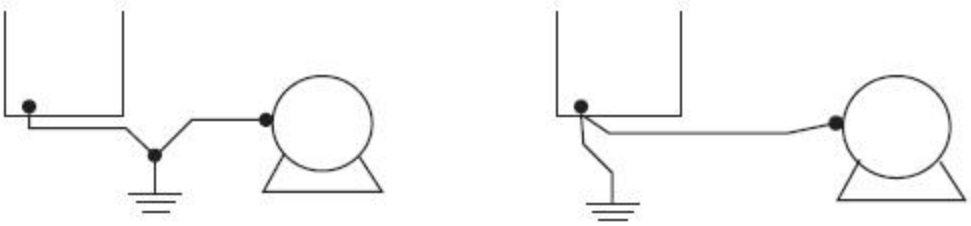
3 Use the standard grounding wire and the length shall be short as possible.

4 When multiple D200 Series Frequency inverters are used side by side, ground this device as the Figure (a), and the grounding wire can't form loop as Figure (c).

5 The grounding wire of D200 Series Frequency inverter and motor shall be connected as Figure (d).



(a) Correct (b) Incorrect (c) Not recommended



(d) Correct (e) Not recommended

6 Connection check:

Check the following items after installation and connection are completed.

A Whether connection is correct.

B Whether broken line or screw is left in the device.

C Whether screw is tightened.

D Whether the un-insulated conductor on the terminal contacts other terminals.

Chapter IV Keyboard Operation and Running

4.1 Option of operating mode

The D200 Series Frequency inverter provides three control modes, including keyboard operation, terminal operation and communication operation, and the user can select corresponding control mode according to the site environment and working demand. Refer to the 7.1 description for details.

4.2 Test run and inspection

4.2.1 Precautions and inspection before test run

 **Danger**	1	The input power can be only switched on after the front cover is in position, don't remove the outer cover when power is on, else electric shock will be caused.
	2	Do not get close to the frequency inverter or the load when selecting re-start because it may suddenly restart after being stopped just a moment ago. (Even though the frequency inverter can restart, its mechanical system can safeguard individual safety) otherwise it may cause hurt to human body.
	3	Because the function setting can make stop button out-of-work, an independent emergency stop button shall be installed, else personal injury will be caused.
	1	Don't touch the radiator or resistor because the temperature is very high which will cause burnt.
	2	Because the low speed operation will be turned into high speed operation, confirm the safe working range of motor and mechanical equipment, else personal injury and equipment damage will be caused.
	3	An independent internal contracting brake can be installed when necessary, else personal injury will be caused.
	4	During the operation process, don't change the wire, else equipment or frequency inverter will be damaged.

In order to ensure safety, before initial operation, the mechanical coupler shall be released, so that the motor can be separated from the mechanical equipment, if the motor is connected with the mechanical equipment before initial operation, handle it with care to prevent possible hazardous condition. The following items shall be checked before test run:

A Whether the wire is connected with terminal correctly.

B Whether the wire head causes short circuit.

C Whether the screw terminal is tightened.

D Whether the motor is installed reliably.

4.2.2 Test run

When the system gets ready, switch the power on and check whether the inverter works normally.

The numeric keyboard indicator lamp shall be on when power is on.

If any one problem is found, switch the power off immediately.

4.2.3 Operating inspection

Confirm the following items during the operation period:

A Whether the motor works normally.

B Whether the rotation direction of motor is correct.

C Whether the motor has abnormal vibration or noise.

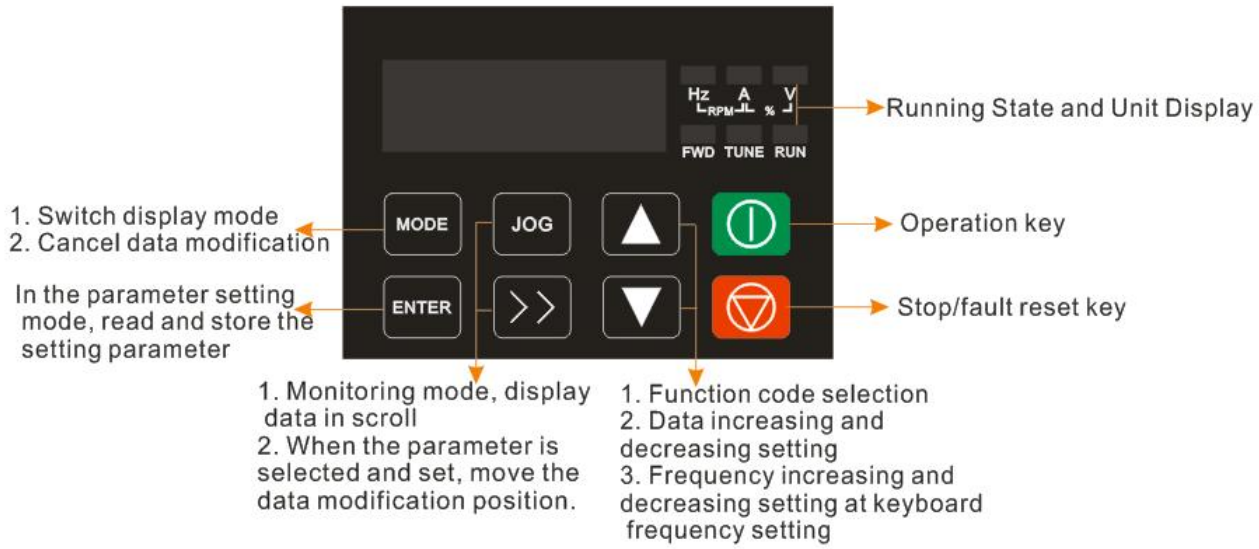
D Whether acceleration and deceleration are stable.

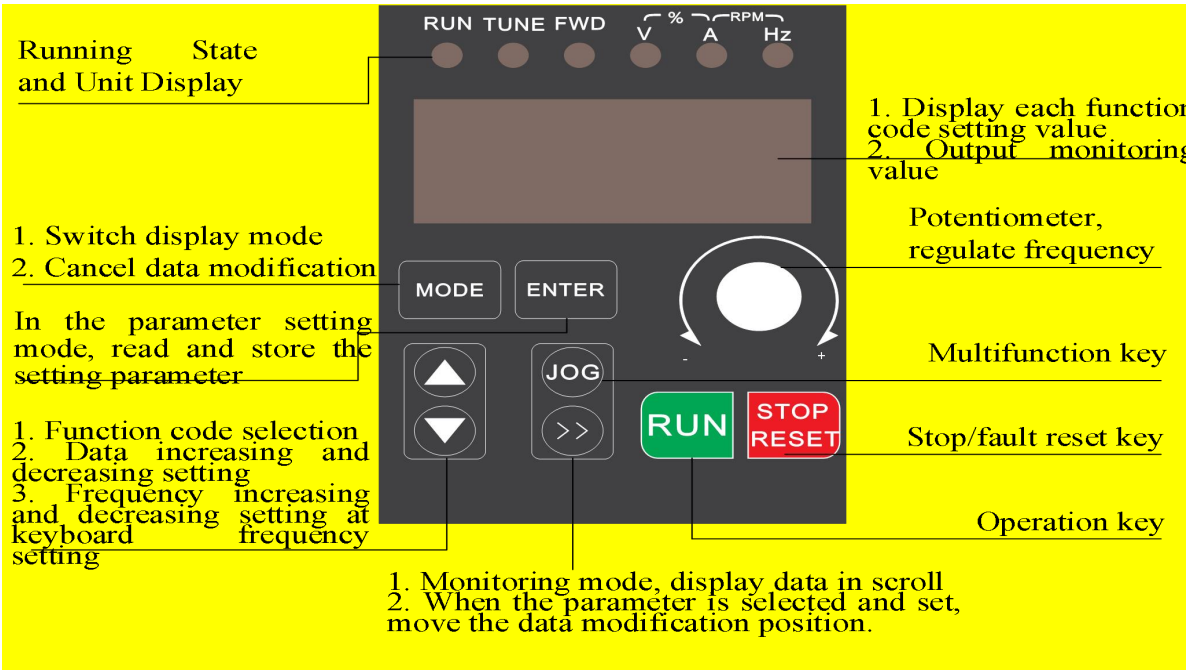
E Whether current matches the load.

F Whether the display of LED indicator lamp and numeric keyboard is correct.

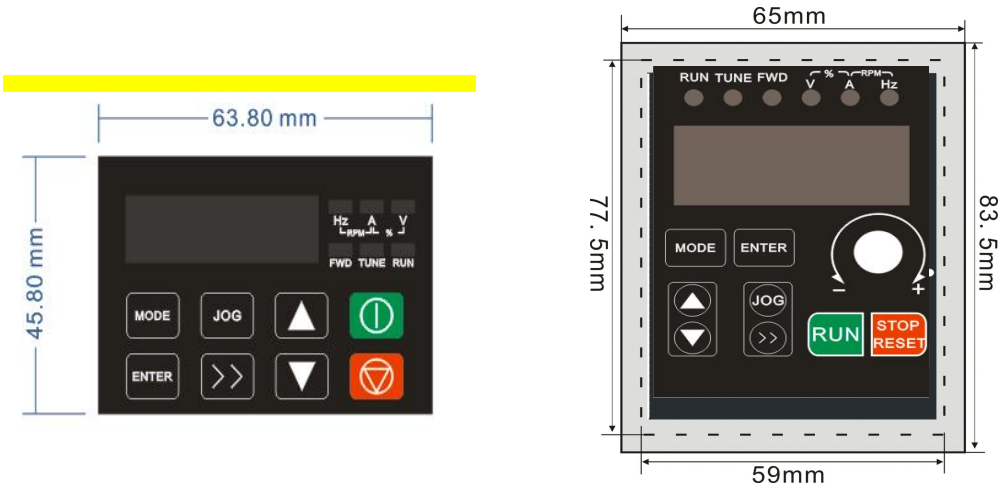
4.3 Operating method of keyboard

4.3.1 Keys on keyboard and their functions





Operation keyboard size



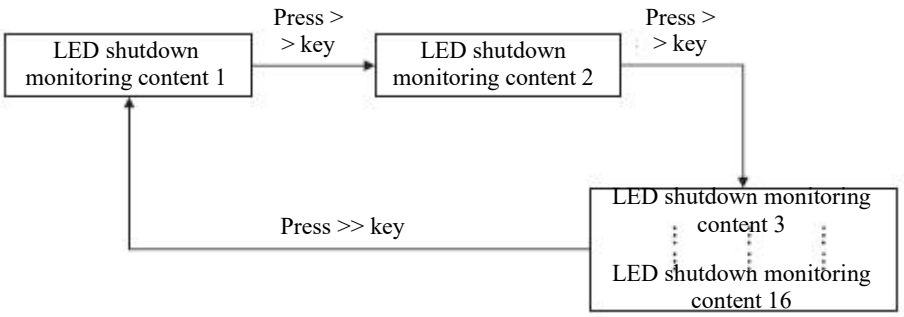
Indicator lamp function

NO	Наименование	Описание функций
1	FWD	Индикаторная лампочка горит при вращении в прямом направлении, при обратном – не горит
2	RUN	Когда частотный преобразователь находится в рабочем состоянии, горит данная индикаторная лампочка
3	V	Выражает значение напряжения
4	A	Выражает значение тока
5	Hz	Выражает частоту
6	V-%-A	Процентное выражение
7	A-RPM-Hz	Выражает скорость вращения

4.3.2 Data Monitoring Mode

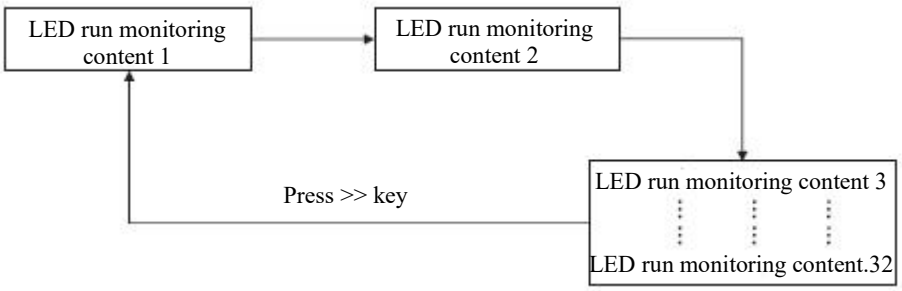
1 Cycle monitoring mode

When the monitoring mode is adopted, the display item will be changed by one after >> key is pressed every time, it can be used to browse current status information of frequency inverter.



At most 16 shut-down monitoring contents can be cycled under stop status, and specific displayed content in cycle depends on the function code P5.0.05. (Refer to P5.0.05 description for details)

Press > > key Press > > key



At most 32 operation monitoring contents can be cycled under run status, and specific displayed content is decided by function codes P5.0.02 and P5.0.03. (Refer to P5.0.02 and P5.0.03 description for details)

2 Fault/alarm monitoring mode

A When the operation monitoring mode is adopted and the fault and alarm occur, the fault and alarm information will be displayed automatically.

B If the fault disappears, press STOP/RESET.

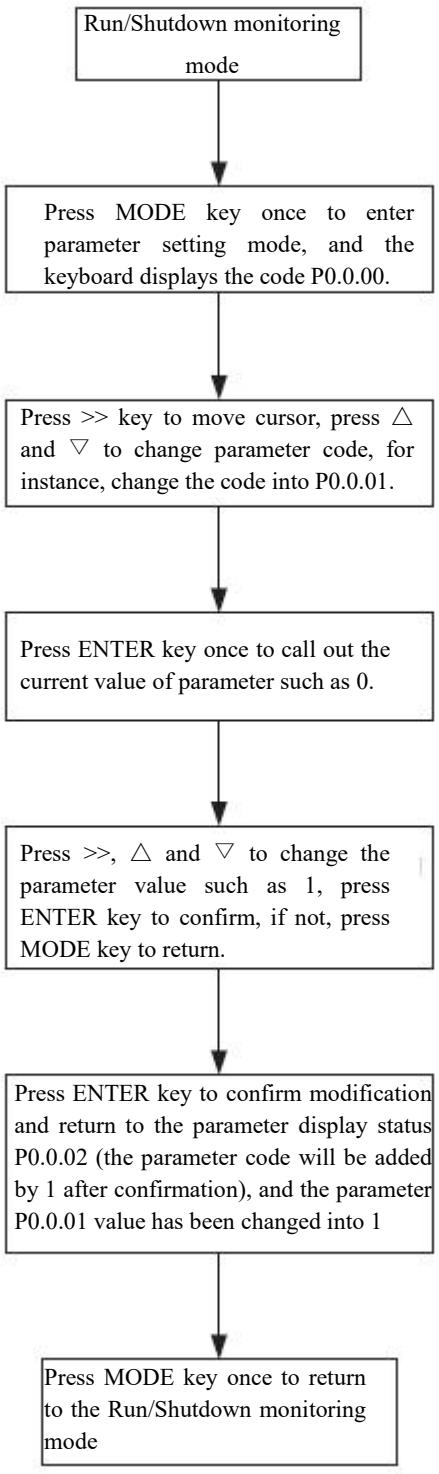
C If severe fault occurs, Reset can be only performed at power-off.

D If the fault isn't reset or the display isn't cleared, the keyboard will display the fault code all the time (refer to Chapter IX).

4.3.3 Use of Multi- Function Key JOG

Upon the demand of the users, set Function Code P5.0.00 and realize the definition of the users to Function Key JOG, and the Key JOG can choose dead and forward rotation jogging running, reverse rotation jogging running and switch between forward rotation and reverse rotation, in which forward rotation jogging running and reverse rotation jogging running are valid under any running control, and the switch between forward rotation and reverse rotation is only valid under keyboard control mode.

4.3.4 Parameter check and set methods (using digital keyboard)



For instance: the following instance that the acceleration time parameter P0.0.11 value is changed from 010.0 to 016.1.

1	50.00	Display the setting frequency 50.00Hz, press MODE key to enter the parameter setting mode.
2	P0.0.00	Display parameter P0.0.00, and the pointer blinks at the last data bit "0". Press ▽ and △ to select the function code to be set, press >> key to move data bit.
3	P0.0.11	Press >>, ▽, △ to modify the displayed value into P0.0.11 and then press ENTER key.
4	010.0	Check whether the Factory value of parameter is 010.0, and the pointer is at the last data bit "0".
5	016.0	Press >>, ▽, △ to modify the displayed value into 016.0 and then press ENTER key.
6	P0.0.12	Data is saved as 016.0, the parameter displays that the acceleration time has been changed from 010.0 to 016.0, and return to the parameter display P0.0.12.
7	P0.0.11	If ENTER isn't pressed at the 5th step instead of pressing MODE key directly, the keyboard will return parameter display P0.0.11, and the modified data isn't saved, and the acceleration time is still 010.0
8	50.00	Press MODE key to return to the monitoring setting frequency.

Note: When the following condition occurs, the data can't be changed.

1 The parameters which can't be regulated during the frequency inverter operation. (Refer to Function Parameter Table)

2 Start the parameter protection function in P5.0.18 (parameter write protection).

4.4 Function Code Display Mode

D200 Series Frequency inverter provides three kinds of Function Code Display Modes: Primary mode, User Mode and Check mode.

- Primary mode (P0.0.01=0)

In primary mode, the function code has the prefix with ‘P’. At this time, the Function Code P5.0.17 determines what parameters of the function codes are specifically displayed. Its ones, tens, hundreds and thousands respectively correspond to each function code group. Refer to the following table for explanation of specific meaning:

Function code	Setting scope		Description
Function code parameter displays P5.0.17 is selected	Ones	0	Only display fundamental group parameter
		1	Display menus at all levels
	Tens	0	Not display P7 group
		1	Display P7 group
		2	Reserved
	Hundreds	0	Not display correction group
		1	Display correction group

- User mode (P0.0.01=1)

Only the function code parameter of user function customization is displayed, which function code parameter of inverter depends on the 7.0 group function code, and at most 30 can be customized. Under user mode, the prefix of function code is ‘U’.

Function code		Setting scope	Description
Function code parameter displays P7.0 group is selected	P7.0.00	U0.0.01	When the function code parameter is set, it'll be regarded as the user customization function code. At most 30 codes can be selected.
	……	U0.0.00～UX.X.XX (Not including P7 and P8 group)	
	P7.0.29	U0.0.00～UX.X.XX (Not including P7 and P8 group)	

- Check mode (P0.0.01=2)

Only the modified parameter is displayed (when the parameter value of function mode is different from the Factory value, it'll be regarded as the modified one), under check mode, the prefix of function code is ‘C’.

Chapter 5 Tables of Function Parameters

Description for Tables of Function Parameters:

1. The function parameters of D200 Series Frequency inverter can be divided into 9 groups according to the function code parameter, each group includes several sub-groups, and each group includes several function codes, and the function codes can be set for different values.
2. The content such as PX.X.XX in the Function Table and other content of this Manual indicate the No. "XX" function code of Group "X.X"; for instance, "P0.0.01" indicates No. 01 function code of Group P0.0.
3. The column content of Function Table is described as follows:

The "Function code" of the 1st column: indicating the number of function code parameter; the "Function name" of the 2nd column: indicating the complete name of function code parameter; the "Setting scope" of the 3rd column: indicating the valid range of reference value of function code parameter; the "Factory value" of the 4th column: indicating the factory reference value of function code parameter; the "Modification limit" of the 5th column: indicating the modification attribute of function code parameter (namely whether modification is permitted or condition can be modified).

The description of function code parameter modification limit is as follows:

"☆": Indicating the reference value of this parameter can be modified when the frequency inverter is under stop and running state.

"★": Indicating the reference value of this parameter can't be modified when the frequency inverter is operated.

"●": Indicating the parameter value is the actual test value which can't be modified.

"O": Indicating this parameter can be only modified at P5.0.18=2.

Explanation:

The user shall read this Manual thoroughly when the frequency inverter parameter is modified. If the user doesn't know how to use special function, contact the Technical Department of our company, and we'll provide safe and reliable technical support service. The user can't modify the data randomly; else severe fault will occur to cause severe property loss. The user will undertake the consequence without abiding by this warning!

5.1 Group P0 - Basic Function

Function code	Function name	Setting scope	Factory value	Modification limit
Group P0.0: Basic Group				
P0.0.00	Type of Frequency inverter	1: G type (constant torque load type) 2: Reserved	Machine type	○
P0.0.01	Display mode	0: Primary mode (prefix is "P") 1: User mode (prefix is "U") 2: Check mode (prefix is "C")	0	○
P0.0.02	Control mode	0: V/F control	0	★
P0.0.03	Option of operation control mode	0: Keyboard control 1: Terminal control 2: Communication control	0	☆
P0.0.04	Option of A Frequency Source	0: Keyboard Reference (No Power-off Memory) 1: Keyboard Reference (Power-off Memory) 2: Keyboard Potentiometer Reference 3: External Terminal AVI Reference 4: External Terminal ACI Reference 5: PULS Impulse Reference (DI4) 6: Multiplex Directive Reference 7: Simple PLC Reference 8: PID Control Reference 9: Communication Reference 10: Operation Result 1 11: Operation Result 2 12: Operation Result 3 13: Operation Result 4	0	★
P0.0.05	Keyboard Frequency Reference	000.00~Highest Frequency	050.00	☆
P0.0.06	Running Direction	0: Default Direction 1: Negation of Direction 2: Determined by multi-functional input terminal	0	☆
P0.0.07	Max. frequency	050.00Hz~320.0Hz	050.00	★
P0.0.08	Upper limit frequency	Lower limit frequency ~ Max. frequency	050.00	★
P0.0.09	Lower limit frequency	000.00~Upper limit frequency	000.00	☆
P0.0.10	Lower frequency operation mode	0: Running at lower limit frequency 1: Stop 2: Zero-speed Running 3: Standby	0	☆
P0.0.11	Acceleration time	0000.0~6500.0s	Machine type	☆
P0.0.12	Deceleration time	0000.0~6500.0s	Machine type	☆
P0.0.13	Type of Motor	0: Common motor 1: Variable-frequency motor 2: Reserved	0	★
P0.0.14	Motor rated power	0000.1kw~1000.0kw	Machine type	★
P0.0.15	Motor rated frequency	000.01Hz~Highest Frequency	050.00	★
P0.0.16	Motor rated voltage	0001V~2000V	Machine type	★
P0.0.17	Motor rated current	000.01A~655.35A	Machine type	★

Function code	Function name	Setting scope	Factory value	Modification limit
P0.0.18	Motor Rated Rotating Speed	00001rpm~65535 rpm	Machine type	★
P0.0.19	Stator resistance of asynchronous motor	00.001~65.535	Machine type	★
P0.0.20	Rotor resistance of asynchronous motor	00.001~65.535	Machine type	★
P0.0.21	Leakage inductance of asynchronous motor	000.01 mH~655.35 mH	Machine type	★
P0.0.22	Mutual inductance of asynchronous motor	0000.1mH~6553.5 mH	Machine type	★
P0.0.23	Non-load current of asynchronous motor	000.01A~Motor rated current	Machine type	★
P0.0.24	Parameter identification control	0: No action 1: Static identification 2: Complete identification	0	★
Group P0.1: Expansion Group				
P0.1.00	Option of Frequency Source	0: Frequency Source A 1: Frequency Source B 2: Frequency Source A+B 3: Frequency Source A-B 4: Max. Value of A & B 5: Min. Value of A & B 6: Standby Frequency Source 1 7: Standby Frequency Source 2 8: Switch of Terminal among the above 8 kinds	0	☆
P0.1.01	Option of Frequency Source B	0: Keyboard Reference (No Power-off Memory) 1: Keyboard Reference (Power-off Memory) 2: Keyboard Potentiometer Reference 3: External Terminal AVI Reference 4: External Terminal ACI Reference 5: PULS Impulse Reference (DI4) 6: Multiplex Directive Reference 7: Simple PLC Reference 8: PID Control Reference 9: Communication Reference 10: Operation Result 1 11: Operation Result 2 12: Operation Result 3 13: Operation Result 4	0	★
P0.1.02	Adjustment Volume of: Frequency Source B at superposition	000%~150%	100%	☆
P0.1.03	Upper Limit Frequency Source	0: Digital Reference (P0.0.08) 1: External Terminal AVI Reference 2: External Terminal ACI Reference 3: Multiplex Directive Reference 4: PULS Impulse Reference (DI4) 5: Communication Reference 6: Operation Result 1 7: Operation Result 2 8: Operation Result 3 9: Operation Result 4	0	★

Function code	Function name	Setting scope	Factory value	Modification limit
P0.1.04	Upper Limit Frequency Offset	000.00~Highest frequency	000.00	☆
P0.1.05	Keyboard Reference frequency Shut-down Memory Selection	0: No Memory 1: Memory	0	☆
P0.1.06	Keyboard Reference frequency Action Benchmark at running	0: Running Frequency 1: Reference frequency	0	★
P0.1.07	Benchmark frequency of accelerating and Deceleration time	0: Highest Frequency 1: Reference frequency 2: 100Hz	0	★
P0.1.08	Jogging running frequency	000.00~Highest Frequency	002.00	☆
P0.1.09	Jogging acceleration time	0000.0s~6500.0s	0020.0	☆
P0.1.10	Jogging deceleration time	0000.0s~6500.0s	0020.0	☆
P0.1.11	Acceleration time 2	0000.0s~6500.0s	Machine type	☆
P0.1.12	Deceleration time 2	0000.0s~6500.0s	Machine type	☆
P0.1.13	Acceleration time 3	0000.0s~6500.0s	Machine type	☆
P0.1.14	Deceleration time 3	0000.0s~6500.0s	Machine type	☆
P0.1.15	Acceleration time 4	0000.0s~6500.0s	Machine type	☆
P0.1.16	Deceleration time 4	0000.0s~6500.0s	Machine type	☆
P0.1.17	Frequency Switch Point between Acceleration time 1 and Acceleration time 2	000.00~Highest Frequency	000.00	☆
P0.1.18	Frequency Switch Point between Deceleration time 1 and Deceleration time 2	000.00~Highest Frequency	000.00	☆
P0.1.19	Acceleration and deceleration mode	0: Straight line 1: Curve S 12: Curve S2	0	★
P0.1.20	Percentage of Starting Phase of Curve S	000.0%~100.0%	030.0	★
P0.1.21	Percentage of Ending Phase of Curve S	000.0%~100.0%	030.0	★
P0.1.22	Hopping Frequency 1	000.00~Highest Frequency	000.00	☆
P0.1.23	Hopping Frequency 2	000.00~Highest Frequency	000.00	☆
P0.1.24	Hopping Frequency scope	000.00~Highest Frequency	000.00	☆
P0.1.25	Jogging Priority	0: Valid 1: Valid	0	☆
P0.1.26 P0.1.34	Reserved			
P0.1.35	Switching frequency point of deceleration time 2 and deceleration time 3	000.00Hz ~ Highest frequency	000.00	☆
P0.1.36	Reserved	--	--	--
Group P0.2: Expansion Group				
P0.2.01	B Frequency source range selection	0: Relative to the highest frequency 1: relative to the A frequency source	0	☆
P0.2.02	B frequency offset at stacking	000.00Hz～Highest Frequency	0	☆
P0.2.03	Unit of acceleration and deceleration time	0：1s 1：0.1s 2：0.01s	1	★
P0.2.04	Frequency resolution	1：0.1Hz 2：0.01Hz	2	★
P0.2.05	Undervoltage point setting	60.0%～140.0%	100.0	☆
P0.2.06	Dead zone compensation switch	0: ban 1: allow 2: Reserved	1	☆
P0.2.08	Power on to ground short circuit protection function	0: Not enabled 1: can make	1	☆

5.2 Group P1 - Motor Control Parameter

Function code	Function name	Setting scope	Factory value	Modification limit
Group P0.0: Basic group				
P1.0.00	V/F Curve Mode	0: Straight Line 1: Multi-point Broken Line 2: Square V/F Curve 1 3: Square V/F Curve 2 4: Square V/F Curve 3	0	★
P1.0.01	Torque Boost	00.0% (Automatic Torque Boost) 00.1%~30.0%	04.0	☆
P1.0.02	Cutoff Frequency of Torque Boost	000.00~Highest Frequency	050.00	
P1.0.03	V/F Slip Compensation Gain	000.0%~200.0%	000.0	☆
P1.0.10	Start Mode	0: Direct Start 1: Speed Tracking Mode 2: Brake and Restart	0	☆
P1.0.11	Speed Tracking Mode	0: Start from Shutdown Frequency 1: Start from Zero Speed 2: Start from Highest Frequency	0	★
P1.0.12	Start Frequency	00.00Hz~10.00Hz	00.00	☆
P1.0.13	Hold Time of Start Frequency	000.0s~100.0s	000.0	★
P1.0.14	Start DC brake voltage	000%~100%	000	★
P1.0.15	Start DC brake time	000.0s~100.0s	000.0	★
P1.0.16	Stop mode	0: Stop by Deceleration 1: Free Stop	0	☆
P1.0.17	Stop DC Braking Initial Frequency	000.00Hz～Highest Frequency	000.00	☆
P1.0.18	Stop DC Braking Hold Time	000.0s~100.0s	000.0	☆
P1.0.19	Stop DC Braking Current	000%~100%	000	☆
P1.0.20	Stop DC Braking Time	000.0s~100.0s	000.0	☆
P1.0.21	Braking Use Rate	000%~100%	100	☆
P1.0.22	Carrier Frequency	00.5kHz~16.0 kHz	Machine type	☆
P1.0.23	Fan Control	0: Rotate at running 1: Continuous Running 2: Control based on Temperature	0	★
P1.0.24	Motor Overload Protection	0: Prohibition 1: Curve 1 2: Curve 2 3: Curve 3	1	☆
P1.0.25	Motor Overload Protection Level	00.20～10.00	01.00	☆
P1.0.26	Motor Overload Alarm System	050%～100%	080	☆

Function code	Function name	Setting scope	Factory value	Modification limit
Group P1.1: Expansion Group				
P1.1.00	Broken Line V/F Point 1 Frequency	000.00Hz~P1.1.02	000.00	★
P1.1.01	Broken Line V/F Point 1 Voltage	000.0%~100.0%	000.0	★
P1.1.02	Broken Line V/F Point 2 Frequency	P1.1.00~P1.1.04	000.00	★
P1.1.03	Broken Line V/F Point 2 Voltage	000.0%100.0%	000.0	★
P1.1.04	Broken Line V/F Point 3 Frequency	P1.1.02~Rated frequency of motor	000.00	★
P1.1.05	Broken Line V/F Point 3 Voltage	000.0%~100.0%	000.0	★
P1.1.06	V/F Overexcited Gain	000~200	120	☆
P1.1.09	Inversion Control Enable	0: Allow 1: Prohibit	0	☆
P1.1.10	Forward and Reverse Dead Time	0000.0s~3000.0s	0000.0	☆
P1.1.11	Power-on Running Selection	0: Running 1: Not running	0	☆
P1.1.12	Droop Control	00.00Hz~10.00Hz	00.00	☆
P1.1.20	VF oscillation suppression mode	1~4	1	★
P1.1.21	Response time of VF slip compensation	0-10.0s	0.5	★
P1.1.22	VF online torque compensation gain	0~200	100	★
P1.1.34	Tuning KP coefficient	1~200	100	☆
P1.1.35	Tuning KI coefficient	1~200	100	☆
Group P1.2: Expansion Group				
P1.2.01	VF oscillation suppression	0～100	Machine type	☆
P1.2.02	Whether the carrier frequency is adjusted with temperature	0：No 1：Yes	1	☆
P1.2.11	Speed tracking speed	1～100	20	★
P1.2.12	The DPWM switches the upper frequency	00.00Hz～15.00Hz	12.00	☆
P1.2.13	PWM modulation mode	Ones: 0：Asynchronous modulation 1：Synchronization modulation Tens: 0：Three-phase modulation and two-phase modulation coexist 1：All three - phase modulation Hundreds: 0：Low frequency carrier limit 1：Low-frequency carrier unlimited	0	☆
P1.2.14	Random PWM depth	00：Random PWM is invalid 01～10：PWM carrier random depth	00	☆
P1.2.15	Fast current limiting enablement	0: Not enabled 1: can make	1	☆
P1.2.16	Reserved			
P1.2.20	AVR function	0：effective 1：invalid	0	☆
P1.2.29	Enable phase short circuit detection	0: Not enabled 1: can make	1	☆

5.3 Group P2 - Input/Output Terminal Function

Function code	Function name	Setting scope	Factory value	Modification limit
Group P2.0: Basic Group				
P2.0.00	Di1Terminal Function	0: No Function 1: Forward (FWD) 2: Reverse (REV) 3: Three-wire Running Control 4: Forward Jogging 5: Reverse Jogging 6: Terminal UP 7: Terminal DOWN 8: Free Stop 9: Multiplex Directive Terminal 1 10: Multiplex Directive Terminal 2 11. Multiplex Directive Terminal 3 12: Multiplex Directive Terminal 4 13: Fault Reset (RESET) 14: Running Pause 15: External Fault Input 16: Acceleration & Deceleration Time Selection Terminal 1 17: Acceleration & Deceleration Time Selection Terminal 2 18: Frequency Source Selection Terminal 1 19: Frequency Source Selection Terminal 2 20: Frequency Source Selection Terminal 3 21: Running Command Selection Terminal 1 22: Running Command Selection Terminal 2 23: UP/DOWN Reference Reset 24: Prohibition of Acceleration & Deceleration 25: PID Pause 26: PLC State Reset 27: Wobbulating Pause 28: Counter Input 29: Counter Reset 30: Length Counting Input 31: Length Reset 32: Torque Control Prohibition 33: PULS Impulse Input 34: Immediate DC Brake 35: External Fault Normally-closed Input 36: Frequency Modification Enable 37: PID Action Direction Negation 38: External Stop Terminal 1 39: External Stop Terminal 2 40: PID Integral Stop 41: PID Parameter Switch 42: Speed Control/Torque Control Switch	01	★
P2.0.01	DI2 Terminal Function		02	★
P2.0.02	DI3 Terminal Function		09	★
P2.0.03	DI4 Terminal Function		10	★

Function code	Function name	Setting scope	Factory value	Modification limit
P2.0.04~ P2.0.09	Reserved	43: Emergency Stop 44: Deceleration DC Brake 45: User-Defined Fault 1 46: User-Defined Fault 2 47: Running Time Reset 48: Timer Input Terminal 1 49: Timer Input Terminal 2 50: Timer Reset Terminal 1 51: Timer Reset Terminal 2 52: Reserved 53: Reserved 54: Distance Reset 55: Integral Computation Reset 56: User Function 1 57: User Function 2 58: User Function 3 59: User Function 4 60. Start by tracing the rpm is prohibited.		
P2.0.10	Di Filtering Time	0.000s~1.000s	0.010	☆
P2.0.11	External Terminal Running Control Mode	0: Two-line Type 1 1: Two- line Type 2 2: Three- line Type 1 3: Three-line Type 2	0	★
P2.0.12	UP/DOWN Terminal Change Rate	00.001Hz/s~65.535 Hz/s	01.000	☆
P2.0.13	Minimum Input of Curve 1	00.00V~P2.0.15	00.00	☆
P2.0.14	Corresponding reference for Minimum Input of Curve 1	-100.0%~100.0%	000.0	☆
P2.0.15	Maximum Input of Curve 1	P2.0.13~10.00V	10.00	☆
P2.0.16	Corresponding reference for Maximum Input of Curve 1	-100.0%~100.0%	100.0	☆
P2.0.17	AVI Filtering time	00.00s~10.00s	00.10	☆
P2.0.18	Minimum Input of Curve 2	00.00V~P2.0.20	00.00	☆
P2.0.19	Corresponding reference for Minimum Input of Curve 2	-100.0%~100.0%	000.0	☆
P2.0.20	Maximum Input of Curve 2	P2.0.18~10.00V	10.0	☆
P2.0.21	Corresponding reference for Maximum Input of Curve 2	-100.0%~100.0%	100.0	☆
P2.0.22	ACI Filtering time	0.00s~10.00s	00.10	☆
P2.0.23	Minimum Input of PULS	0.00kHz~P2.0.25	000.00	☆
P2.0.24	Corresponding reference for Minimum Input of PULS	-100.0%~100.0%	000.0	☆
P2.0.25	Maximum Input of PULS	P2.0.23~100.00 kHz	050.00	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P2.0.26	Corresponding reference for Maximum Input of PULS	-100.0%~100.0%	100.0	☆
P2.0.27	PULS Filtering time	00.00s~10.00s	00.10	☆
P2.0.28	Reserved	0: No Function 1: Frequency inverter under Running 2: Fault Stop Output 3: Frequency Level Testing FDT1 Output 4: Frequency Arrival 5: Zero-speed Running (no output when shut down) 6: Motor Overload Pre-alarm 7: Frequency inverter Overload Pre-alarm 8: Reference Count Value Arrival 9: Designated Count Value Arrival 10: Length Arrival 11: PLC circulation cycle completed 12: Accumulative Running Time Arrival 13: Frequency Limit 14: Torque Limit 15: Ready for Running 16: AVI>ACI 17: Upper Frequency Arrival 18: Lower Frequency Arrival (no output when shut down) 19: Under-voltage state output 20: Communication Reference 21: AVI Output less than Lower Limit 22: AVI Output more Upper Limit 23: Zero-speed Running 2 (also output when shut down) 24: Accumulative Power-on Time Arrival 25: Frequency Level Testing FDT2 Output 26: Frequency 1 Arrival Output 27: Frequency 2 Arrival Output 28: Current 1 Arrival Output 29: Current 2 Arrival Output 30: Timing Arrival Output 31: AVI Input Over-limit 32: In Off-load 33: In Reverse Running 34: Zero-current State		
P2.0.29	T1 Relay Function Selection		1	☆
P2.0.30~ P2.0.32	Reserved			

Function code	Function name	Setting scope	Factory value	Modification limit
		35: Module Temperature Arrival 36: Output Current Over-limit 37: Lower Frequency Arrival (also output when shut down) 38: Alarm Output 39: PLC Phase Completed 40: Current Running Time Arrival 41: Fault Output (Not Output for Under-voltage) 42: Timer 1 Timing Arrival 43: Timer 2 Timing Arrival 44: Timer 1 Timing Arrival but Timer 2 Timing Not Arrival 45: User Function 1 46: User Function 2 47: User Function 3 48: User Function 4 49: User Function 5 50: Synchronization Intermediate Relay M1 51: Synchronization Intermediate Relay M2 52: Synchronization Intermediate Relay M3 53: Synchronization Intermediate Relay M4 54: Synchronization Intermediate Relay M5 55: Distance over Zero 56: Distance Set value 1 Arrival 57: Distance Set value 2 Arrival 58: Operation Result 2 greater than 0 59: Operation Result 4 greater than 0		
P2.0.33	Analog Output FM1 Reference	0: Run frequency 1: Reference frequency 2: Output Current 3: Output Torque (Absolute Value of Torque) 4: Output Power 5: Output Voltage 6: PULSE Impulse Input 7: AVI Voltage 8: ACI Voltage 9: Keyboard Potentiometer Voltage 10: Actual Length Value 11: Actual Counting Value 12: Communication Reference 13: Motor Speed 14: Output Current 15: Bus Voltage 16: Output Torque	00	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P2.0.35	Reserved	17: Operation Result 1 18: Operation Result 2 19: Operation Result 3 20: Operation Result 4		
P2.0.36	Analog FM1 Output Offset	-100.0%~100.0%	000.0	☆
P2.0.37	Analog FM1 Output Gains	-10.00~10.00	01.00	☆
Group P2.1: Expansion Group				
P2.1.00	Valid Model Selection 1 of Terminal DI	0: Active High Level 1: Active Low Level Ones: DI1 Tens: DI2 Hundreds: DI3 Thousands: DI4 Ten Thousands: Reserved	0	★
P2.1.02	Analog Input Curve Selection	Ones: Curve selected by AVI Tens: Curve selected by ACI 1: Curve 1 2: Curve 2 3: Curve 3 4: Curve 4 Hundreds: Input resolution of AVI Thousands: Input resolution of ACI Ten Thousands: Input resolution of keyboard potentiometer 0: 0.01Hz 1: 0.02 Hz 2:0.05 Hz 3:0.10 Hz 4: 0.20Hz 5: 0.50Hz 6: 01.00 Hz (Keyboard Potentiometer is ineffective)	31121	☆
P2.1.03	Selection for Curve less than Min. Reference	0: Corresponding Min. Input Reference 1: 0.0% Ones: AVI Tens: ACI	H.00	☆
P2.1.04	Min. Input of Curve 3	00.00V~P2.1.06	00.00	☆
P2.1.05	Corresponding reference for Min. Input of Curve 3	-100.0%~100.0%	000.0	☆
P2.1.06	Curve 3 Inflection Point 1 Input	P2.1.04~P2.1.08	03.00	☆
P2.1.07	Corresponding reference for Curve 3 Inflection Point 1 Input	-100.0%~100.0%	030.00	☆
P2.1.08	Curve 3 Inflection Point 2 Input	P2.1.06~P2.1.10	06.00	☆
P2.1.09	Corresponding reference for Curve 3 Inflection Point 2 Input	-100.0%~100.0%	060.00	☆
P2.1.10	Max. input of Curve 3	P2.1.08~10.00V	10.00	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P2.1.11	Corresponding reference for Max. input of Curve 3	-100.0%~100.0%	100.00	☆
P2.1.12	Min. Input of Curve 4	00.00V~P2.1.14	00.00	☆
P2.1.13	Corresponding reference for Min. Input of Curve 4	-100.0%~100.0%	-100.0	☆
P2.1.14	Curve 4 Inflection Point 1 Input	P2.1.12~P2.1.16	03.00	☆
P2.1.15	Corresponding reference for Curve 4 Inflection Point 1 Input	-100.0%~100.0%	-030.00	☆
P2.1.16	Curve 4 Inflection Point 2 Input	P2.1.14~P2.1.18	06.00	☆
P2.1.17	Corresponding reference for Curve 4 Inflection Point 2 Input	-100.0%~100.0%	030.0	☆
P2.1.18	Max. input of Curve 4	P2.1.16~10.00V	10.00	☆
P2.1.19	Corresponding reference for Max. input of Curve 4	-100.0%~100.0%	100.0	☆
P2.1.20 P2.1.21	Reserved			
P2.1.22	T1 relay output valid state	0:Positive logic 1:Negative logic	0	☆
P2.1.23	AVI Terminal Function as Digital Input	00: Use as Normal Analog 01 ~ 59: Digital Input Terminal Function	00	★
P2.1.24	ACI Terminal Function as Digital Input	00: Use as Normal Analog 01~59: Digital Input Terminal Function	00	★
P2.1.25	Valid state selection of analog input	0: Active High Level 1: Active Low Level Ones: AVI Tens: ACI	0	★
P2.1.26	DI1 effective Delay	0.0s~3600.0s	0000.0	☆
P2.1.27	DI2 effective Delay	0.0s~3600.0s	0000.0	☆
P2.1.28	DI3 effective Delay	0.0s~3600.0s	0000.0	☆
P2.1.29	Reserved			
P2.1.30	T1 Delay	0.0s~3600.0s	0000.0	☆
P2.1.31	Reserved			
P2.1.32	DI1 ineffective delay	0.0s～3600.0s	0000.0	☆
P2.1.33	DI2 ineffective delay	0.0s～3600.0s	0000.0	☆
P2.1.34	DI3 ineffective delay	0.0s～3600.0s	0000.0	☆
Group P2.2 Auxiliary Group				
P2.2.00	Accumulative Power-on Arrival Time Reference	00000h~65000h	00000	☆
P2.2.01	Accumulative Running Arrival Time Reference	00000h~65000h	00000	☆
P2.2.02	Detected Reference frequency Width upon Arrival	000.0%~100.0%	000.0	☆
P2.2.03	Frequency Detection FDT1	000.00Hz ~ Highest frequency	050.00	☆
P2.2.04	FDT1 Lagged Value	000.0%~100.0%	005.0	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P2.2.05	Frequency Detection FDT2	000.00Hz ~ Highest frequency	050.00	☆
P2.2.06	FDT2 Lagged Value	000.0%~100.0%	005.0	☆
P2.2.07	Detected Frequency Value 1 upon Arbitrary Arrival	000.00Hz ~ Highest frequency	050.00	☆
P2.2.08	Detected Frequency 1 Width upon Arbitrary Arrival	000.0%~100.0%	000.0	☆
P2.2.09	Detected Frequency Value 2 upon Arbitrary Arrival	000.00Hz ~ Highest frequency	050.0	☆
P2.2.10	Detected Frequency 2 Width upon Arbitrary Arrival	000.0%~100.0%	000.0	☆
P2.2.11	Zero Current Detection Level	000.0%~300.0% (100.0% corresponding to rated current of motor)	005.0	☆
P2.2.12	Delay Time for Zero Current Detection	000.01s~600.00s	000.10	☆
P2.2.13	Output Current Over-limit Value	000.0%: No detection 000.1%~300.0%	200.0	☆
P2.2.14	Delay Time for Current Over-limit Detection	000.00s~600.00s	000.00	☆
P2.2.15	Current Level Detection 1	000.0%~300.0%	100.0	☆
P2.2.16	Detection Width of Current Level 1	000.0%~300.0%	000.0	☆
P2.2.17	Current Level Detection 2	000.0%~300.0%	100.0	☆
P2.2.18	Detection Width of Current Level 2	000.0%~300.0%	000.0	☆
P2.2.19	AVI Input Lower Limit	00.00V~P2.2.20	03.10	☆
P2.2.20	AVI Input Upper Limit	P2.2.19~11.00V	06.80	☆
P2.2.21	Model Temperature Arrival Reference	000℃~100℃	075	☆
P2.2.22	Current Running Arrival Time Reference	0000.0min~6500.0min	0000.0	★

5.4 Group P3 - Programmable Function

Function code	Function name	Setting scope	Factory value	Modification limit
Group P3.0: Basic Group				
P3.0.00	Simple PLC Running Mode	0: End of Single Running and Stop 1: End of Single Running and Save Final Value 2: Continuous Running 3: Cycle N Times	0	☆
P3.0.01	Cycle Times N	00000~65000	00000	☆
P3.0.02	Option of PLC Power-off Memory	Ones: Option of Power-off Memory 0: No Power-off Memory 1: Power-off Memory Tens: Stop Memory Selection 0: No Stop Memory 1: Stop Memory	00	☆
P3.0.03	Phase Directive 0	-100.0%~100.0%	000.0	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P3.0.04	Phase 0 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.05	Phase Directive 1	-100.0%~100.0%	000.0	☆
P3.0.06	Phase 1 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.07	Phase Directive 2	-100.0%~100.0%	000.0	☆
P3.0.08	Phase 2 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.09	Phase Directive 3	-100.0%~100.0%	000.0	☆
P3.0.10	Phase 3 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.11	Phase Directive 4	-100.0%~100.0%	000.0	☆
P3.0.12	Phase 4 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.13	Phase Directive 5	-100.0%~100.0%	000.0	☆
P3.0.14	Phase 5 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.15	Phase Directive 6	-100.0%~100.0%	000.0	☆
P3.0.16	Phase 6 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.17	Phase Directive 7	-100.0%~100.0%	000.0	☆
P3.0.18	Phase 7 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.19	Phase Directive 8	-100.0%~100.0%	000.0	☆
P3.0.20	Phase 8 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.21	Phase Directive 9	-100.0%~100.0%	000.0	☆
P3.0.22	Phase 9 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.23	Phase Directive 10	-100.0%~100.0%	000.0	☆
P3.0.24	Phase 10 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.25	Phase Directive 11	-100.0%~100.0%	000.0	☆
P3.0.26	Phase 11 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.27	Phase Directive 12	-100.0%~100.0%	000.0	☆
P3.0.28	Phase 12 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.29	Phase Directive 13	-100.0%~100.0%	000.0	☆
P3.0.30	Phase 13 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.31	Phase Directive 14	-100.0%~100.0%	000.0	☆
P3.0.32	Phase 14 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.33	Phase Directive 15	-100.0%~100.0%	000.0	☆
P3.0.34	Phase 15 Running Time	0000.0s~6500.0s	0000.0	☆
P3.0.35	Phase 0 attribution	Ones: Acceleration & Deceleration Time Selection (Invalid Multiplex Directive) 0: Acceleration & Deceleration Time 1 1: Acceleration & Deceleration Time 2 2: Acceleration & Deceleration Time 3 3: Acceleration & Deceleration Time 4 Tens: Frequency Source Selection (Valid Multiplex Directive	H.000	☆
P3.0.36	Phase 1 attribution		H.000	☆
P3.0.37	Phase 2 attribution		H.000	☆
P3.0.38	Phase 3 attribution		H.000	☆
P3.0.39	Phase 4 attribution		H.000	☆
P3.0.40	Phase 5 attribution		H.000	☆
P3.0.41	Phase 6 attribution		H.000	☆
P3.0.42	Phase 7 attribution		H.000	☆
P3.0.43	Phase 8 attribution		H.000	☆
P3.0.44	Phase 9 attribution		H.000	☆
P3.0.45	Phase 10 attribution		H.000	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P3.0.46	Phase 11 attribution	0: Current Phase Directive 1: Keyboard Potentiometer 2: Keyboard Frequency Reference 3: AVI Input 4: ACI Input 5: PULS Impulse Reference (DI4) 6: PID Reference 7: Operation Result 1 8: Operation Result 2 9: Operation Result 3 A: Operation Result 4 Hundreds: running direction 0: Default direction 1: Reversed direction	H.000	☆
P3.0.47	Phase 12 attribution		H.000	☆
P3.0.48	Phase 13 attribution		H.000	☆
P3.0.49	Phase 14 attribution		H.000	☆
P3.0.50	Phase 15 attribution		H.000	☆
P3.0.51	Simple PLC Running Time Unit	0:Second 1:Hour 2:Minute	0	☆
Group P3.1: Expansion Group				
P3.1.00	Timing Function Selection	0: Ineffective 1: Effective (min) 2: Effective (h)	0	★
P3.1.01	Fixed Running Time Selection	0: Digital Reference (P3.1.02) 1: External Terminal AVI Reference 2: External Terminal ACI Reference (Analog input range corresponds to P3.1.02)	0	★
P3.1.02	Fixed Running Time	0000.0min/h~6500.0min/h (unit depends on P3.1.00)	0000.0	★
P3.1.03	Wobbulating Reference Mode	0: Relative to Reference frequency 1: Relative to Highest Frequency	0	☆
P3.1.04	Wobbulating Range	000.0%~100.0%	000.0	☆
P3.1.05	Kicking Range	00.0%~50.0%	00.0	☆
P3.1.06	Wobbulating Cycle	0000.1s~3000.0s	0010.0	☆
P3.1.07	Rise Time of Wobbulating Triangular Wave	000.0%~100.0%	050.0	☆
P3.1.08	Reference Length	00000m~65535m	01000	☆
P3.1.09	Actual Length	00000m~65535m	00000	☆
P3.1.10	Impulse Count per meter	00001~6553.5	0100.0	☆
P3.1.11	Reference Count Value	00001~65535	01000	☆
P3.1.12	Designated Count Value	00001~65535	01000	☆
P3.1.13	Distance Set value 1	-3200.0~3200.0	0000.0	☆
P3.1.14	Distance Set value 2	-3200.0~3200.0	0000.0	☆
P3.1.15	Impulse Count per Distance	000.00~600.00	000.00	☆

Function code	Function name	Setting scope	Factory value	Modification limit
Group P3.2: Built-in Logic PLC Function Group				
P3.2.00	Intermediate Delay Relay Control	0: the input of this relay is determined by this Relay Control Word A 1: the input of this relay is determined by this Relay Control Word B 2: the input of this relay is determined by this Relay Control Word C Ones: Relay 1 (M1) Tens: Relay 2 (M2) Hundreds: Relay 3 (M3) Thousands: Relay 4 (M4) Ten Thousands: Relay 5(M5)	00000	★
P3.2.01	Intermediate Relay Control Word A	0: Reference 0 1: Reference 1 Ones: M1 Tens: M2 Hundreds: M3 Thousands: M4 Ten Thousands: M5	00000	☆
P3.2.02	Intermediate Delay Relay M1 Control Word B	Ones: Control Logic 0: Input 1 1: Input 1 and NOT 2: Input 1 and Input 2 AND 3: Input 1 and Input 2 OR 4: Input 1 and Input 2 XOR 5: the valid reference of Input 1 is valid the valid Reference of Input 2 is invalid 6: Valid reference of Input 1 Rise Edge is valid Valid reference of Input 2 Rise Edge is invalid 7: Reverse valid signal of Input 1 Rising Edge 8: Input 1 Rise Edge is valid and output a impulse signal with width of 200ms 9: Input 1 Rise Edge and Input 2 AND Hundreds and Tens: Input 1 selection 0~3: DI1~DI4 4~9: Reserved 10~14: M1~M5 15~16: AVI,ACI 17~19: Standby 20~79: Corresponding output function 00~59 of multifunctional output terminal	00000	★
P3.2.03	Intermediate Delay Relay M2 Control Word B		00000	★
P3.2.04	Intermediate Delay Relay M3 Control Word B		00000	★
P3.2.05	Intermediate Delay Relay M4 Control Word B		00000	★

Function code	Function name	Setting scope	Factory value	Modification limit
P3.2.06	Intermediate Delay Relay M5 Control Word B	Ten Thousands and Thousands: Input 2 selection 0~3: DI1~DI4 4~9: Reserved 10~14: M1~M5 15~16: AVI,ACI 17~19: Standby 20~59: Corresponding output function 00~39 of multifunctional output terminal	00000	★
P3.2.07	Intermediate Delay Relay M1 Control Word C	Tens Ones: 00~59 Output Function 00~59 Corresponding to Digital Input Terminal Thousands Hundreds: Output Function 00~59 Corresponding to Multi-functional Output Terminal	0000	★
P3.2.08	Intermediate Delay Relay M2 Control Word C		0000	★
P3.2.09	Intermediate Delay Relay M3 Control Word C		0000	★
P3.2.10	Intermediate Delay Relay M4 Control Word C		0000	★
P3.2.11	Intermediate Delay Relay M5 Control Word C		0000	★
P3.2.12	M1 Connection Delay Time	0.0s~3600.0s	0000.0	☆
P3.2.13	M2 Connection Delay Time	0.0s~3600.0s	0000.0	☆
P3.2.14	M3 Connection Delay Time	0.0s~3600.0s	0000.0	☆
P3.2.15	M4 Connection Delay Time	0.0s~3600.0s	0000.0	☆
P3.2.16	M5 Connection Delay Time	0.0s~3600.0s	0000.0	☆
P3.2.17	M1 Disconnection Delay Time	0.0s~3600.0s	0000.0	☆
P3.2.18	M2 Disconnection Delay Time	0.0s~3600.0s	0000.0	☆
P3.2.19	M3 Disconnection Delay Time	0.0s~3600.0s	0000.0	☆
P3.2.20	M4 Disconnection Delay Time	0.0s~3600.0s	0000.0	☆
P3.2.21	M5 Disconnection Delay Time	0.0s~3600.0s	0000.0	☆
P3.2.22	Valid State Option of Intermediate Relay	0: Not Negation 1: Negation Ones: M1 Tens: M2 Hundreds: M3 Thousands: M4 Ten Thousands: M5	00000	☆
P3.2.23	Internal Timer Control Word	Ones: Timing Control 1 of Timer Tens: Timing Control 2 of Timer 0: Timer Running 1: Controlled by Timer Input Terminal 1 2: Negation Control of Timer Input Terminal 1 3: Controlled by Timer Input Terminal 2 4: Negation Control of Timer Input Terminal 2	00000	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P3.2.23	Internal Timer Control Word	Hundreds: Timer 1 Reset Control Thousands: Timer 2 Reset Control 0: Controlled by Timer Reset Terminal 1 1: Controlled by Timer Reset Terminal 2 Ten Thousands: Timing Unit 0: Second 1: Minute 2: Hour	00000	☆
P3.2.24	Timing Time of Timer 1	0.0s~3600.0s	0000.0	☆
P3.2.25	Timing Time of Timer 2	0.0s~3600.0s	0000.0	☆
P3.2.26	Operation Module Control	0: No Operation 1: Add Operation 2: Subtraction Operation 3: Multiply Operation 4: Division Operation 5: Greater than Judgment 6: Equal to Judgment 7: Equal to or Greater than Judgment 8: Integration 9~F: Reserved Ones: Operation 1 Tens: Operation 2 Hundreds: Operation 3 Thousands: Operation 4	H.0000	☆
P3.2.27	Operation Setting Coefficient Property	0: Operate the Setting Coefficient by multiplication without decimal 1: Operate the Setting Coefficient by multiplication with one decimal 2: Operate the Setting Coefficient by multiplication with two decimals 3: Operate the Setting Coefficient by multiplication with three decimals 4: Operate the Setting Coefficient by multiplication with four decimals 5: Operate the Setting Coefficient by division without decimal 6: Operate the Setting Coefficient by division with one decimal 7: Operate the Setting Coefficient by division with two decimals 8: Operate the Setting Coefficient by division with three decimals 9: Operate the Setting Coefficient by division with four decimals A: Operate the Setting Coefficient by division without decimal B: Operate the Setting Coefficient by division with one decimal C: Operate the Setting Coefficient by division with two decimals D: Operate the Setting Coefficient by division with three decimals E: Operate the Setting Coefficient by division with four decimals	H.0000	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P3.2.27	Operation Setting Coefficient Property	(The setting coefficient of A, B, C, D, E is the address number of function code) Ones: Operation 1 Tens: Operation 2 Hundreds: Operation 3 Thousands: Operation 4	H.0000	☆
P3.2.28	Input A of Operation 1	Thousands, Hundreds, Tens and Ones: express address of Input A of Operation 1 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000	☆
P3.2.29	Input B of Operation 1	Thousands, Hundreds, Tens and Ones: express address of Input B of Operation 1 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000	☆
P3.2.30	Setting Coefficient of Operation 1	00000~65535	00001	☆
P3.2.31	Input A of Operation 2	Thousands, Hundreds, Tens and Ones: express address of Input A of Operation 2 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000	☆
P3.2.32	Input B of Operation 2	Thousands, Hundreds, Tens and Ones: express address of Input B of Operation 2 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000	☆
P3.2.33	Setting Coefficient of Operation 2	00000～65535	00001	☆
P3.2.34	Input A of Operation 3	Thousands, Hundreds, Tens and Ones: express address of Input A of Operation 3 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000	☆
P3.2.35	Input B of Operation 3	Thousands, Hundreds, Tens and Ones: express address of Input B of Operation 3 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P3.2.36	Setting Coefficient of Operation 3	00000～65535	00001	☆
P3.2.37	Input A of Operation 4	Thousands, Hundreds, Tens and Ones: express address of Input A of Operation 4 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000	☆
P3.2.38	Input B of Operation 4	Thousands, Hundreds, Tens and Ones: express address of Input B of Operation 4 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000	☆
P3.2.39	Setting Coefficient of Operation 4	00000～65535	00001	☆

5.5 Group P4 - PID Control and Communication Control

Function code	Function name	Setting scope	Factory value	Modification limit
Group P4.0: PID Control Group				
P4.0.00	PID Reference Source	0: Digital Reference (P4.0.01) 1: Keyboard Potentiometer Reference 2: External Terminal AVI Reference 3: External Terminal ACI Reference 4: PULS Impulse Reference (DI4) 5: Communication Reference 6: Multiplex Directive Terminal Reference 7: Simple PLC Reference 8: Operation Result 1 9: Operation Result 2 10: Operation Result 3 11: Operation Result 4	00	☆
P4.0.01	PID Value Reference	000.0%~100.0%	050.0	☆
P4.0.02	PID Feedback Source	0: External Terminal AVI Reference 1: External Terminal AVI Reference 2: AVI-ACI 3: AVI+ACI 4: PULS Reference (DI4) 5: Communication Reference 6: MAX[AVI, ACI] 7: MIN[AVI, ACI] 8: Switch of Multiplex Directive Terminal on the above conditions 9: Operation Result 1 10: Operation Result 2 11: Operation Result 3 12: Operation Result 4	00	☆
P4.0.03	PID Action Direction	0: Direct Action 1: Reverse Action	0	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P4.0.04	PID Reference Feedback Range	00000~65535	01000	☆
P4.0.05	Proportional Gains KP1	000.0~100.0	020.0	☆
P4.0.06	Integral Time TI1	00.01s~10.00s	02.00	☆
P4.0.07	Derivative Time TD1	00.000s~10.000s	00.000	☆
P4.0.08	PID Deviation Limit	000.0%~100.0%	000.0	☆
P4.0.09	PID Feedback Filtering time	00.00s~60.00s	00.00	☆
P4.0.10	Proportional Gains KP2	000.0~100.0	020.00	☆
P4.0.11	Integral Time TI2	00.01s~10.00s	02.00	☆
P4.0.12	Derivative Time TD2	00.000s~10.000s	00.000	☆
P4.0.13	PID Switch Conditions	0: No Switch 1: Switch through Terminals 2: Switch through Deviation	0	☆
P4.0.14	PID Switch Deviation 1	000.0%~P4.0.15	020.0	☆
P4.0.15	PID Switch Deviation 2	P4.0.14~100.0%	080.0	☆
P4.0.16	PID Initial Value	000.0%~100.0%	000.0	☆
P4.0.17	PID Initial Value Hold Time	000.00~650.00s	000.00	☆
P4.0.18	PID Feedback Loss Detection	000.0%: No Judgment on Feedback Loss 000.1%～100.0%	000.0	☆
P4.0.19	PID Feedback Loss Detection Time	00.0s~20.0s	00.0	☆
P4.0.20	PID Stop Operation	0: No Operation 1: Operation	0	☆
Group P4.1: Communication Group				
P4.1.00	Baud Rate	Ones: MODBUS baud rate 0:1200 1:2400 2:4800 3:9600 4:19200 5:38400 6:57600 Tens: Invalid Hundreds：The upper computer protocol was enabled	03	☆
P4.1.01	Data Format	0: No check (8-N-2) 1:Even parity check (8-E-1) 2:Odd parity check(8-0-1) 3:No check (8-N-1)	0	☆
P4.1.02	Local Machine Address	000: Broadcast Address 001～249	001	☆
P4.1.03	Response Delay	00～20ms	02	☆
P4.1.04	Communication Timeout	00.0 (Invalid) 00.1s～60.0s	00.0	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P4.1.05	Data Transmission Format	Ones: MODBUS data format 0: ASCII mode (Reserved) 1: RTU mode Tens: Invalid	01	☆
P4.1.06	MODBUS communication data reply or not	0: Reply 1: No reply	0	☆
P4.1.07	Troubleshooting of communication error	0: Bypassed 1: Shutdown 2: Communication fault	0	☆
Group P4.2: Expansion Group				
P4.2.01	PID reverses the cut-off frequency	0.00～Highest frequency	0	☆
P4.2.02	PID differential limiting	0.00%～100.00%	000.10	☆
P4.2.03	PID gives the change time	0.00s～650.00s	0	☆
P4.2.04	PID feedback filtering time	0.00s～60.00s	0	☆
P4.2.05	PID output filtering time	0.00s～60.00s	0	☆
P4.2.06	Two output deviations positive maximum	0.00%～100.00%	001.00	☆
P4.2.07	Two output deviations reverse maximum	0.00%～100.00%	001.00	☆
P4.2.08	PID integral attribute	Ones：Integral separation 0：invalid 1：effective Tens：Whether to stop integration after the output reaches the limit value 0：Continue to integral 1：Stop the integral	0	☆

5.6 Group P5 - Keyboard Display

Function code	Function name	Setting scope	Factory value	Modification limit
Group P5.0: Basic Group				
P5.0.00	Keyboard JOG Key Function Reference	0: Invalid 1: Forward Jogging 2: Reverse Jogging 3: Forward and Reverse Switch	1	★
P5.0.01	Keyboard STOP Key Stop Function	0: Only valid in Keyboard Operation Mode 1: Valid for any Mode	1	☆
P5.0.02	LED Running Display Parameter 1	H.0001~H.FFFF Bit00: Running Frequency (Hz) Bit01: Reference frequency (Hz) Bit02: Output Current (A) Bit03: Output Voltage (V) Bit04: Bus Voltage (V) Bit05: Output Torque (%) Bit06: Output Power (kW) Bit07: Input Terminal State Bit08: Output Terminal State Bit09: AVI Voltage (V) Bit10: ACI Voltage (V) Bit11: Customized Display Value Bit12: Actual Count Value Bit13: Actual Length Value Bit14: PID Reference Bit15: PID Feedback	H.001F	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P5.0.03	LED Running Display Parameter 2	H.0000~H.FFFF Bit00: PULSE Impulse frequency (0.01kHz) Bit01: Feedback Speed (Hz) Bit02: PLC Phase Bit03: AVI Voltage before Correction (V) Bit04: ACI Voltage before Correction (V) Bit05: Line Speed Bit06: Current Power-on Time (min) Bit07: Current Running Time (min) Bit08: Residual Running Time (min) Bit09: Frequency of Frequency Source A(Hz) Bit10: Frequency of Frequency Source B(Hz) Bit11: Communication Set value (Hz) Bit12:PULSE Impulse Frequency (Hz) Bit13: Encoder Feedback Speed (r/min) Bit14: Actual Distance Value Bit15: User Standby Monitoring Value 1	H.0000	☆
P5.0.04	Automatic Time Switch of LED Running Display Parameter	000.0: No Switch 000.1s~100.0s	000.0	☆
P5.0.05	LED Stop Display Parameter	H.0001~H.FFFF Bit00: Reference frequency (Hz) Bit01: Bus Voltage (V) Bit02: Input Terminal State Bit03: Output Terminal State Bit04: AVI Voltage (V) Bit05: ACI Voltage (V) Bit06: Actual Count Value Bit07: Actual Length Value Bit08: PLC Phase Bit09: Customized Display Value Bit10: PID Reference Bit11: PID Feedback Bit12:PULSE Impulse Frequency (Hz) Bit13: User Standby Monitoring Value 1 Bit14: Reserved Bit15: Reserved	H.0033	☆
P5.0.06~ P5.0.14	Reserved			
P5.0.15	Customized Display of Coefficient	0.0001~6.5000	1.0000	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P5.0.16	User-defined display control word	Ones: user-defined decimal place displaying 0: zero decimal place 1: one decimal place 2: two decimal places 3: three decimal places Tens: source of user-defined display value 0: determined by hundreds place of user-defined display control word. 1: determined by set value of P5.0.15, and 0.0000～0.0099 corresponds to P9.0.00～P9.0.99 of P9 Group. Hundreds: selection of user-defined displaying coefficient 0: user-defined displaying coefficient is P5.0.15. 1: user-defined displaying coefficient is calculation result 1 2: user-defined displaying coefficient is calculation result 2 3: user-defined displaying coefficient is calculation result 3 4: user-defined displaying coefficient is calculation result 4	001	☆
P5.0.17	Selection Display of Function Parameter Group	Ones: 0: Only display basic group 1: Display the menus at all levels Tens 0: Don’t display Group P7 1: Display Group P7 2: Reserved Hundreds: 0: Don’t display correction parameter group 1: Display correction parameter group Thousands: Reserved Ten Thousands: Reserved	11	☆
P5.0.18	Function Password Protection	0: Modifiable 1: Non-modifiable 2: Allowable Modification to GP Type	0	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P5.0.19	Parameter Initialization	00: No Operation 01: Clearance of Record Information 09: Reset to Factory Parameter, excluding motor parameter, correction group, password group 19: Reset to Factory Parameter, excluding motor parameter, password group 30: Users Current Parameter Backup 60: Reset to User Backup Parameters 100~999: Reset to User Factory Parameters	000	★
P5.0.20	User Password	00000~65535	00000	☆
Group P5.1: Expansion Group				
P5.1.00	Accumulative Running Time	00000h~65000h		●
P5.1.01	Accumulative Power On Time	00000h~65000h		●
P5.1.02	Accumulative Power Consumption	00000 kW•h ~65000 kW•h		●
P5.1.03	Module Temperature	000℃~100℃		●
P5.1.04	Hardware Version No.	180.00		●
P5.1.05	Performance software version number	000.00～655.35		●
P5.1.06	Program Non-standard Label	0000~9999		●
P5.1.07	Functional software version number	000.00～655.35		●

5.7 Group P6 - Fault Display and Protection

Function code	Function name	Setting scope	Factory value	Modification limit
Group P6.0: Fault Display Group				
P6.0.00	Fault Record 1 (Last Time)	0: No Fault 1: Constant Over-current		●
P6.0.01	Fault Record 2	2: Accelerated Over-current		●
P6.0.02	Fault Record 3	3: Decelerated Overcurrent 4: Constant Overvoltage 5: Accelerated Overvoltage 6: Decelerated Overvoltage 7: Module Fault 8: Under-voltage 9: Frequency inverter Overload 10: Motor Overload 11: Input Default Phase 12: Output Default Phase 13: External Fault 14: Communication Abnormity 15: Frequency inverter Overheat 16: Frequency inverter Hardware Fault		●

Function code	Function name	Setting scope	Factory value	Modification limit
		17: Motor-to-ground Short Circuit 18: Motor Identification Error 19: Motor Off-load 20: PID Feedback Loss 21: User Customized Fault 1 22: User Customized Fault 2 23: Power-on Time Arrival 24: Running Time Arrival 25: Reserved 26: Parameter Read-Write Abnormity 27: Motor Overheat 28: Larger Speed Deviation 29: Motor Over-speed 30: Initial Position Error 31: Current Detection Fault 32: Contactor 33: Abnormity of Current Detection 34: Fast Current-limiting Timeout 35: Motor Switch at Running 36~39: Reserved 40: Buffer Resistance Fault		
P6.0.03	Fault Frequency 1			●
P6.0.04	Fault Current 1			●
P6.0.05	Bus Voltage 1 when at Fault			●
P6.0.06	Input Terminal State 1 when at fault			●
P6.0.07	Output Terminal State 1 when at fault			●
P6.0.08	Frequency inverter State 1 when at fault			●
P6.0.09	Power-on Time 1 when at fault			●
P6.0.10	Running Time 1 when at fault			●
P6.0.11	Fault Frequency 2			●
P6.0.12	Fault Current 2			●
P6.0.13	Bus Voltage 2 when at Fault			●
P6.0.14	Input Terminal State 2 when at fault			●
P6.0.15	Output Terminal State 2 when at fault			●
P6.0.16	Frequency inverter State 2 when at fault			●
P6.0.17	Power-on Time 2 when at fault			●
P6.0.18	Running Time 2 when at fault			●
P6.0.19	Fault Frequency 3			●
P6.0.20	Fault Current 3			●

Function code	Function name	Setting scope	Factory value	Modification limit
P6.0.21	Bus Voltage 3 when at Fault			●
P6.0.22	Input Terminal State 3 when at fault			●
P6.0.23	Output Terminal State 3 when at fault			●
P6.0.24	Frequency inverter State 3 when at fault			●
P6.0.25	Power-on Time 3 when at fault			●
P6.0.26	Running Time 3 when at fault			●
Group 6.1: Protection Control Group				
P6.1.00	Input Default Phase Protection	0: Prohibited 1: Allowed	1	☆
P6.1.01	Output Default Phase Protection	0: Prohibited 1: Allowed	1	☆
P6.1.02	Over-voltage Stall Protection Sensitivity	0~100	5	☆
P6.1.03	Over-voltage Stall Protection Voltage Point	115%～150%	130	☆
P6.1.04	Over-current Stall Protection Sensitivity	0~100	020	☆
P6.1.05	Over-current Stall Protection current	100%~200%	150	☆
P6.1.06	Fault Auto Reset Number	0~20	00	☆
P6.1.07	Waiting Interval Time of Fault Auto Reset	0.1s~100.0s	001.0	☆
P6.1.08	Fault Protective Action Selection 1	0: Free Stop 1: Stop by its Mode 2: Continuous Running Ones: Motor Overload Tens: Input Default Phase Hundreds: Output Default Phase Thousands: External Default Ten Thousands: Communication Abnormality	00000	☆
P6.1.09	Fault Protective Action Selection 2	0: Free Stop 1: Stop by its Mode 2: Continuous Running Ones: Motor Overload Tens: Feedback Loss Hundreds: User Customized Fault 1 Thousands: User Customized Fault 2 Ten Thousands: Power-on Time Arrival	00000	★

Function code	Function name	Setting scope	Factory value	Modification limit
P6.1.10	Fault Protective Action Selection 3	Ones: Running Time Arrival 0: Free Stop 1: Stop by its Mode 2: Continuous Running Tens: Reserved Hundreds: Parameter Read-Write Abnormity 0: Free Stop 1: Stop by its Mode Thousands: Motor Overhear 0: Free Stop 1: Stop by its Mode 2: Continuous Running Ten Thousands: Fault of 24V Power Supply 0: Free Stop 1: Stop by its Mode	00000	☆
P6.1.11	Fault Protective Action Selection 4	0: Free Stop 1: Stop by its Mode 2: Continuous Running Ones: Larger Speed Deviation Tens: Motor Over-speed Hundreds: Initial Position Error Thousands: Reserved Ten Thousands: Reserved	00000	☆
P6.1.12	Continuous Running Frequency Selection when at Fault	0: Running at Current Frequency 1: Running at Reference frequency 2: Running at Upper Frequency 3: Running at Lower Frequency 4: Running at Back Frequency for Abnormality	0	☆
P6.1.13	Backup Frequency for Abnormality	000.0%～100.0%	100.0	☆
P6.1.14	Action Selection for Momentary Interruption	0: Invalid 1: Deceleration 2: Stop by Deceleration	0	☆
P6.1.15	Judgment Time of Momentary Interruption Voltage Recovery	000.00s~100.00s	000.50	☆
P6.1.16	Voltage Judgment for Momentary Interruption Action	60.0%~100.0% (Standard Bus Voltage)	080.0	☆
P6.1.17	Voltage Judgment for Suspension of Momentary Action	80.0%~100.0% (Standard Bus Voltage)	090.0	☆

Function code	Function name	Setting scope	Factory value	Modification limit
P6.1.18	Off-load Protection Selection	0: Invalid 1: Valid	0	☆
P6.1.19	Off-load Detection Level	000.0%~100.0%	010.0	☆
P6.1.20	Off-load Detection Time	00.0s~60.0s	01.0	☆
P6.1.21~ P6.1.24	Reserved			
P6.1.25	Fault Output Terminal Action Selection during Fault Auto Reset Period	0: No Action 1: Action	0	☆
P6.1.26	Input Default Phase Protection Sensitivity	01~10 (The smaller it is, the more sensitivity it is)	05	☆

5.8 Group P7 - User Function Customization

Function code	Function name	Setting scope	Factory value	Modification limit
Group P7.0: Basic Group				
P7.0.00	User Function 0	U0.0.01	U0.001	●
P7.0.01	User Function 1	U0.0.00~UX.X.XX(exclude P7, P8)	U0.002	☆
P7.0.02	User Function 2	U0.0.00~UX.X.XX(exclude P7, P8)	U0.003	☆
P7.0.03	User Function 3	U0.0.00~UX.X.XX(exclude P7, P8)	U0.007	☆
P7.0.04	User Function 4	U0.0.00~UX.X.XX(exclude P7, P8)	U0.008	☆
P7.0.05	User Function 5	U0.0.00~UX.X.XX(exclude P7, P8)	U0.017	☆
P7.0.06	User Function 6	U0.0.00~UX.X.XX(exclude P7, P8)	U0.018	☆
P7.0.07	User Function 7	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.08	User Function 8	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.09	User Function 9	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.10	User Function 10	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.11	User Function 11	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.12	User Function 12	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.13	User Function 13	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.14	User Function 14	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.15	User Function 15	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.16	User Function 16	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.17	User Function 17	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.18	User Function 18	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.19	User Function 19	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.20	User Function 20	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.21	User Function 21	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.22	User Function 22	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.23	User Function 23	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.24	User Function 24	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.25	User Function 25	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.26	User Function 26	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.27	User Function 27	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.28	User Function 28	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆
P7.0.29	User Function 29	U0.0.00~UX.X.XX(exclude P7, P8)	U0.000	☆

5.9 Group P8 - Manufacturer Function

Function code	Function name	Setting scope	Factory value	Modification limit
Group P8.0: Manufacturer Function Group				
P8.0.00	Manufacturer Password	00000~65535	00000	☆
Group P8.1: Parameter Correction Group				
P8.1.00	Voltage Input of Potentiometer Correction Point 1	00.00V~P8.1.02	00.20	☆
P8.1.01	Corresponding reference of Potentiometer Correction Point 1	-100.0%~100.0%	000.0	☆
P8.1.02	Voltage Input of Potentiometer Correction Point 2	P8.1.00~10.00V	09.50	☆
P8.1.03	Corresponding reference of Potentiometer Correction Point 2	-10.0%~100.0%	100.0	☆
P8.1.04	Filtering time of potentiometer	00.00s~10.00s	00.10	☆
P8.1.05	AVI actual voltage 1	0.500V~4.000V	2.000	☆
P8.1.06	AVI display voltage 1	0.500V~4.000V	2.000	☆
P8.1.07	AVI actual voltage 2	6.000V~9.999V	8.000	☆
P8.1.08	AVI display voltage 2	6.000V~9.999V	8.000	☆
P8.1.09	ACI actual voltage 1	0.500V~4.000V	2.000	☆
P8.1.10	ACI display voltage 1	0.500V~4.000V	2.000	☆
P8.1.11	ACI actual voltage 2	6.000V~9.999V	8.000	☆
P8.1.12	ACI display voltage 2	6.000V~9.999V	8.000	☆
P8.1.13	FM1 target voltage 1	0.500V~4.000V	2.000	☆
P8.1.14	FM1 actual voltage 1	0.500V~4.000V	2.000	☆
P8.1.15	FM1 target voltage 2	6.000V~9.999V	8.000	☆
P8.1.16	FM1 actual voltage 2	6.000V~9.999V	8.000	☆

5.10 Group P9 - Monitoring Parameter

Function code	Function name	Description	Unit
P9.0.00	Running Frequency	Output frequency when the frequency inverter runs	0.01Hz
P9.0.01	Reference frequency	Reference frequency of the frequency inverter	0.01Hz
P9.0.02	Output Current	Output current when the frequency inverter runs	0.01A
P9.0.03	Output Voltage	Output voltage when the frequency inverter runs	1V
P9.0.04	Bus Voltage	Voltage on DC Bus of the frequency inverter	0.1V
P9.0.05	Output Torque	When the frequency inverter runs, the output torque is the percentage of rated torque of the motor	0.1%
P9.0.06	Output Power	Output frequency when the frequency inverter runs	0.1kW
P9.0.07	Input Terminal Status	Check whether the input terminal has signal input	
P9.0.08	Output Terminal Status	Check whether the output terminal has signal output	
P9.0.09	AVI Voltage	Check the voltage between AVI and COM	0.01V
P9.0.10	ACI Voltage	Check the voltage between ACI and COM	0.01V
P9.0.11	Custom Display Value	Display coefficient P5.0.15 and the value after conversion of Decimal Point P5.0.16 through customization	
P9.0.12	Actual Counting Value	View actual counting value of the frequency inverter for counting function	1

Function code	Function name	Description	Unit
P9.0.13	Actual Length Value	View actual counting value of the frequency inverter for fixed-length function	1m
P9.0.14	PID Reference	Product of PID reference value and PID reference feedback quantity	
P9.0.15	PID Feedback	Product of PID feedback value and PID reference feedback rang	
P9.0.16	PULS Impulse Frequency	View the frequency of PULSE Impulse Input	0.01kHz
P9.0.17	Feedback Speed	Actual output frequency when the frequency inverter runs	0.1Hz
P9.0.18	PLC Phase	Display which stage the Simple PLC runs at	1
P9.0.19	Voltage before AVI Correction	Voltage between AVI and COM before AVI correction	0.001V
P9.0.20	Voltage before ACI Correction	Voltage between ACI and COM before ACI correction	0.001V
P9.0.21	Line Speed	The sampling line speed of DI4 impulse is equal to the acquisition of impulse count per minute/ per meter	1m/min
P9.0.22	Current Power-on Time	Length of current power-on time	1min
P9.0.23	Current Running Time	Length of current running time	0.1min
P9.0.24	Residual Running Time	Residual running time at Timing Function of P3.1.00	0.1min
P9.0.25	Frequency of Frequency Source A	View the frequency given by Frequency A	0.01Hz
P9.0.26	Frequency of Frequency Source B	Check the frequency given by Frequency B	0.01Hz
P9.0.27	Communication Set value	The value set by corresponding communication address A001 is the percentage of the highest frequency	%
P9.0.28	PULSE Impulse frequency	Check the frequency of PULSE Impulse Input	1Hz
P9.0.29	Reserved		
P9.0.30	Actual Distance Value	Check actual distance value of the distance value of the frequency inverter	
P9.0.31~ P9.0.45	Reserved		
P9.0.46	Operation Result 1	Check the value of operation result 1	
P9.0.47	Operation Result 2	Check the value of operation result 2	
P9.0.48	Operation Result 3	Check the value of operation result 3	
P9.0.49	Operation Result 4	Check the value of operation result 4	
P9.0.50～ P9.0.54	User Standby Monitoring Value	Check the value of user special function	

Chapter 6 Description of Parameters

6.1 Group 0 - Basic Function

P0.0 Group – Basic Group

Function code	Function name	Setting scope	Factory value
P0.0.00	Type of Frequency inverter	1:G Type (constant torque load type) 2: Reserved	Machine type

This function code is only for the users to check the factory type of the frequency inverter and is generally not allowed to be modified by the users. If modification is required, the function code P5.0.18 must be first changed to 2.

1: G type Applicable for constant torque load

Function code	Function name	Setting scope	Factory value
P0.0.01	Display Mode	0: Primary mode (prefix is "P") 1: User mode (prefix is "U") 2: Check mode (prefix is ‘C’)	0

This function code is used to confirm which display mode of frequency inverter is selected， When P5.0.18 is equal to 2, it can be modified.

0: Primary mode (prefix is "P")
The function code parameter display of frequency inverter depends on the function code P5.0.17 (refer to the description of function code P5.0.17 for details).

1: User mode (prefix is "U")
Only the user function customization parameter is displayed, the function code parameter display of frequency inverter depends on the function code of P7.0 group (refer to the description of P7.0 group for details). The prefix of function code is ‘U’.

2: Check mode (prefix is ‘C’)
Only the modified parameter is displayed (when the parameter value of function mode is different from the factory value, it'll be regarded as the modified one), under check mode, the prefix of function code is ‘C’.

Note: No matter whether the prefix of function code is ‘P’ or ‘U’ or ‘C’, the meaning of relative parameter is same. It’s only for classification of display mode. For instance, U0.0.01 in the User Mode is P0.0.01 in the Primary Mode.

Function code	Function name	Setting scope	Factory value
P0.0.02	Control Mode	0:V/F Control	0

0: V/F control

Applicable to the condition that load requirement is low or one set of frequency inverter drives several motors.

Function code	Function name	Setting scope	Factory value
P0.0.03	Option of operation control mode	0: Keyboard Control 1: Terminal Control 2: Communication Control	0

0: Keyboard control

Key RUN, STOP and JOG on operating panel control start, stop and FWD& REV switch of the frequency inverter

1: Terminal input

Use the digital input terminal to control FWD, REV and stop of the frequency inverter.

2: Communication control

Use the principal computer to control l FWD, REV, stop, jog and reset (Refer to Chapter VIII for more details)

Refer to 7.1.1 for 3 detailed control modes.

Function code	Function name	Setting scope	Factory value
P0.0.04	Option of A Frequency Source	0: Keyboard Reference (No Power-off Memory） 1: Keyboard Reference (Power-off Memory) 2: Keyboard Potentiometer Reference 3: External Terminal AVI Reference 4:External Terminal ACI Reference 5:PULS Impulse Reference (DI4) 6: Multiplex Directive Reference 7:Simple PLC Reference 8:PID Control Reference 9:Communication Reference 10:Operation Result 1 11:Operation Result 2 12:Operation Result 3 13:Operation Result 4	0

0: Keyboard Reference (No Power-off Memory)

The initial value of the reference frequency is the value set by Function Code P0.0.05, and it can be changed through Key▲ & ▼ on the keyboard or Terminal UP/DOWN, please set the parameter P0.1.05 to confirm whether the stop memory is modified or not (keyboard reference frequency stop memory selection). After the frequency inverter powers on again after power off, the reference frequency is set to value set by P0.0.05.

1: Keyboard Reference (Power-off Memory)

The initial value of the reference frequency is the value set by Function Code P0.0.05, and it can be changed

through Key▲ & ▼ on the keyboard or Terminal UP/DOWN, please set the parameter P0.1.05 to confirm whether the stop memory is modified or not (keyboard reference frequency stop memory selection). After the frequency inverter powers on again after power off, the reference frequency is the frequency at the time of power off, and it can be saved through Key▲ & ▼ on the keyboard or Terminal UP/DOWN.

2: Keyboard Potentiometer Reference
The reference frequency is given by the potentiometer on operation panel. The impact of zero-offset or voltage attenuation caused by overlong keyboard lines can be adjusted through Function Code P8.1.00~P8.1.04.

3: External Terminal AVI Reference

4: External Terminal ACI Reference
The reference frequency is given by the analog input terminal. D200 Series Frequency inverter provides 2-way analog input terminal (AVI、ACI). AVI is used for voltage (0V ~ 10V) input, ACI is used for current (0/4mA ~ 20mA) input. As for corresponding relation curve between the input of AVI and ACI and the reference frequency, the users can freely choose from four kinds of the relation curves through function code P2.1.02, in which Curve 1 and Curve 2 are linear relationship able to be set through Function Code P2.0.13~P2.0.22, and Curve 3 and Curve 4 are broken line relationship with two inflection points able to be set through Function Code P2.1.04~P2.1.19. The deviation between actual voltage and sampling voltage of the analog input terminal can be adjusted through Function Code P8.1.05~P8.1.12.

5: PULS Impulse Reference (DI4)
The frequency reference is given by high-speed impulse frequency of digital input terminal DI4 (the terminal function is not defined). The corresponding relationship between high-speed impulse frequency and torque upper limit value can be set through Function Code P2.0.23~P2.0.26, that is, line relationship.

6: Multiplex Directive Terminal Reference
The reference frequency is given by different composite state of Multiplex Directive Terminal. D200 Series Frequency inverter is able to set four Multiplex Directive Terminals (Terminal Function 9~12, refer to the Description for Multiplex Directive Terminal Function of P2.0.00~P2.0.03 for more details)

7: Simple PLC Reference
The reference frequency is given by Simple PLC Function, the running frequency of the frequency inverter can be switched among 1~16 arbitrary frequency directives, the sources, hold time and acceleration & deceleration time of each frequency directive can be set through Function Code 3.0.03~P3.0.50.

8: PID Control Reference
The reference frequency is given by the frequency calculated from PID Control. When setting the frequency calculated from PID Control, it is required to setting related parameters of “PID Control Group” (P4.0.00~P4.0.20).

9: Communication Reference
The reference frequency is given by the principal computer through communication mode (Refer to Chapter VIII for more details)

10: Operation Result 1

11: Operation Result 2

12: Operation Result 3

13: Operation Result 4

The reference frequency is determined by the operation results after setting calculation of the internal operation module. Refer to the Description of Function Codes P3.2.26~P3.2.39 for more details of the operation module. The operation results can be viewed through Function Codes P9.0.46~P9.0.49.

Function code	Function name	Setting scope	Factory value
P0.0.05	Keyboard Frequency Reference	000.00~ Highest Frequency	050.00

When the Function Code P0.0.04 or P0.1.01 is set to 0 or 1, the initial value of the reference frequency is given by this function code.

Function code	Function name	Setting scope	Factory value
P0.0.06	Running Direction	0: Default Direction 1: Negation of Direction 2: Determined by multi-function input terminal	0

The modification on this function code can realize the purpose of changing the motor steering without changing the connection of the motor and its role is equivalent to adjust any two lines of Motor U, V and W to realize the conversion of the steering direction of the motors. This function code is valid in any running control mode. When P0.0.06 is set to 2, the running direction is determined by multi-function input terminal. The function code of multi-function input terminal is 37, and the terminal signal is valid and adopts reversed direction.

Note: Reset to factory parameters, the running direction of the motor can restore to original state. It should be used with caution for occasions that forbid from changing the motor steering after completing the debugging of the system.

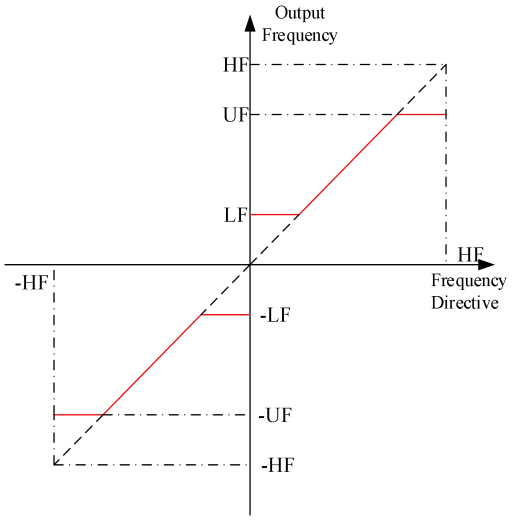
Function code	Function name	Setting scope	Factory value
P0.0.07	Highest Frequency	050.00Hz~320.00Hz	050.00

The highest frequency refers to the maximum frequency that the frequency inverter allows to output.
When the analog input, PULS Impulse Input, multiplex directive input and simple PLC in D200 Series Frequency inverter are adopted as frequency source, each percentage is set based on the value given by corresponding function code.

Note: the modification to this set value can change the data which takes the set value of this function code as calibration.

Function code	Function name	Setting scope	Factory value
P0.0.08	Upper frequency	Lower frequency ~ Highest frequency	050.00
P0.0.09	Lower frequency	000.00~ Upper frequency	000.00

The upper limit frequency is the Highest Frequency allowed to run set by the users. At P0.1.03=0, the set value of Function Code P0.0.08 determines the Highest Frequency that the frequency inverter allows to run.
The lower limit frequency is the minimum frequency allowed to run set by the users.
The relationship among Highest Frequency, Upper Limit Frequency and Lower Limit Frequency are shown in the figure below:



HF: Highest Frequency UF: Upper Frequency LF: Lower Frequency

Function code	Function name	Setting scope	Factory value
P0.0.10	Lower frequency operation mode	0:Running at lower limit frequency 1: Stop 2: Zero-speed Running 3: Standby	0

0: Run at lower limit frequency

When the reference frequency is less than the lower limit frequency (value set by P0.0.09), the frequency inverter runs at lower limit frequency

1: Stop

When the setting frequency is below the lower limit frequency, the frequency inverter will stop.

2: Zero-speed run

When the setting frequency is below lower limit frequency, the frequency inverter will run at 0Hz.

3：Standby

When the given frequency is lower than the lower limit frequency, the frequency converter is in standby state, and when the frequency is higher than the lower limit frequency, the frequency converter runs.

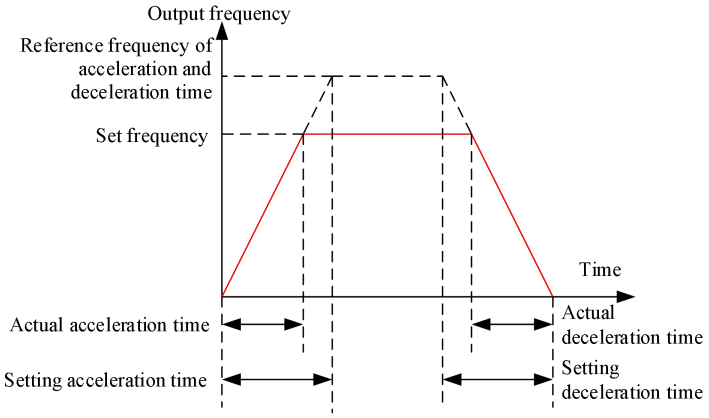
Note: In case of running at 0Hz, the frequency inverter will output certain voltage, pay special attention to use.

Function code	Function name	Setting scope	Factory value
P0.0.11	Acceleration Time	0000.1s~6500.0s	Machine type
P0.0.12	Deceleration Time	0000.1s~6500.0s	Machine type

The acceleration time refers to time required to raise the frequency inverter from zero frequency to reference frequency of the acceleration and deceleration time (set by Function Code P0.1.07).

The deceleration time refers to time required to reduce the frequency inverter reference frequency of the acceleration and deceleration time to zero frequency.

See the Description of the Figure below:



Function code	Function name	Setting scope	Factory value
P0.0.13	Type of Motor	0:Common motor 1:Variable-frequency motor 2:Reserved	0

This function code is used to set the motor type of frequency inverter with load.

0: Common motor

Because the heat elimination effect becomes worse when common motor runs at low speed, the corresponding electronic thermal protection value shall be regulated properly; the low speed compensation characteristic of motor protection mode is to reduce the motor over-load protection threshold when the running frequency is below 30Hz.

1: Variable-frequency motor

The special variable-frequency motor adopts forced air cooling, and the heat elimination effect won't be influenced by the rotation speed, so it's not necessary to reduce the protection threshold at low speed running.

Function code	Function name	Setting scope	Factory value
P0.0.14	Motor rated power	0000.1kW~1000.0 kW	Machine type
P0.0.15	Motor rated frequency	000.01Hz~Highest Frequency	050.00
P0.0.16	Motor rated voltage	0001V~2000V	Machine type
P0.0.17	Motor rated current	000.01A~655.35A	Machine type
P0.0.18	Motor Rated Rotating Speed	00001rpm ~65535 rpm	Machine type
P0.0.19	Stator resistance of asynchronous motor	00.001~65.535	Machine type
P0.0.20	Rotor resistance of asynchronous motor	00.001~65.535	Machine type
P0.0.21	Leakage inductance of asynchronous motor	000.01mH~655.35 mH	Machine type
P0.0.22	Mutual inductance of asynchronous motor	0000.1mH~6553.5 mH	Machine type
P0.0.23	No-load current of asynchronous motor	000.01A~Rated current of motor	Machine type

The function codes P0.0.14~P0.0.23 are the built-in parameter of AC asynchronous motor, no matter whether V/F

control or vector control is adopted, certain requirement is for motor parameter, especially vector control, the P0.0.19～P0.0.23 values must be much close to the built-in parameter of motor, the more accurate the parameter value is, the better the vector control performance is. When the vector control is adopted, the motor shall be identified via the function code P0.0.24. If the motor can't be identified on the site, the parameter provided by the motor manufacturer can be input into the above corresponding function code.

Function code	Function name	Setting scope	Factory value
P0.0.24	Parameter Identification Control	0:No action 1:Static identification 2:Complete identification	00

Refer to 7.1.20 (Parameter Identification) for detailed description.

Group P0.1 Expansion Group

Function code	Function name	Setting scope	Factory value
P0.1.00	Option of Frequency Source	0:Frequency Source A 1:Frequency Source B 2:Frequency Source A+B 3:Frequency Source A-B 4: Max. Value of A & B 5:Min. Value of A & B 6:Standby Frequency Source 1 7:Standby Frequency Source 2 8: Switch of Terminal among the above 8 kinds	0

0: Frequency Source A
The reference frequency is given by Frequency Source A (P0.0.04).

1: Frequency Source B
The reference frequency is given by Frequency Source B (P0.1.01).

2: Frequency Source A+B
The reference frequency is given by Frequency Source A+B.

3: Frequency Source A-B
The reference frequency is given by A-B Frequency, if A-B Frequency is negative value; the frequency inverter runs in opposite direction

4: Max. Value of A & B
The reference frequency is determined by the maximum value between Frequency Source A and B.

5: Min. Value of A & B
The reference frequency is determined by the minimum value between Frequency Source A and B.

6: Standby Frequency Source 1

7: Standby Frequency Source 2
Standby Frequency Source 1 and Standby Frequency Source 2 are reserved by the manufacturer as frequency sources used for special occasions in future, so the users may ignore them as usual.

8: Switch of Terminal among the above 8 kinds

The reference frequency is switched among the above 8 kinds of frequency sources by selecting different composite state of the terminals. The D200 Series Frequency Inverter can set 3 kinds of frequency sources to choose the terminals (Terminal Function 18~20, refer to the instruction for Terminal Selection Function of Frequency Source P2.0.00~P2.0.03 for more details)

Function code	Function name	Setting scope	Factory value
P0.1.01	Option of Frequency Source B	0:Keyboard Reference (No Power-off Memory) 1:Keyboard Reference (Power-off Memory) 2:Keyboard Potentiometer Reference 3: External Terminal AVI Reference 4:External Terminal ACI Reference 5:PULS Impulse Reference (DI4) 6: Multiplex Directive Reference 7:Simple PLC Reference 8:PID Control Reference 9:Communication Reference 10:Operation Result 1 11:Operation Result 2 12:Operation Result 3 13:Operation Result 4	0

This function case has the same function with “Option of Frequency Source A” (P0.0.04), if it is needed to use, please refer to the setting method for Function Code P0.0.04 to set.

Function code	Function name	Setting scope	Factory value
P0.1.02	Adjustment Volume of: Frequency Source B at superposition	000%~150%	100

When the reference frequency of frequency inverter is given by Frequency Source A+B and Frequency Source A-B, it defaults A to main reference and B to auxiliary Reference. This function code determines the regulation size of Frequency Source B, which is the percentage relative to the scope of Frequency Source B (set by Function Code P0.2.01)

At P0.2.01=0, the frequency of Frequency Source B is regulated relative to Highest Frequency.

At P0.2.01=1, the frequency of Frequency Source B is regulated relative to frequency of Frequency Source A.

Function code	Function name	Setting scope	Factory value
P0.1.03	Upper Limit Frequency Source	0: Digital Reference (P0.0.08) 1: External Terminal AVI Reference 2: External Terminal ACI Reference 3: Multiplex Directive Reference 4: PULS Impulse Reference (DI4) 5: Communication Reference 6: Operation Result 1 7: Operation Result 2 8: Operation Result 3 9: Operation Result 4	0

This function code determines the source of the upper limit frequency.

0: Digital Reference (P0.0.08)
The upper limit frequency is determined by the value set by Function Code P0.0.08.

1: External Terminal AVI Reference

2: External Terminal ACI Reference
The upper limit frequency is given by the analog input terminal. D200 Series Frequency inverter provides 2-way analog input terminal (AVI, ACI). AVI is used for voltage (0V ~ 10V) input, ACI is used for current (0/4mA ~ 20mA) input. As for corresponding relation curve of the input of AVI and ACI and the upper limit frequency, the users can freely choose from four kinds of the relation curves through function code P2.1.02, in which Curve 1 and Curve 2 are linear relationship able to be set through Function Code P2.0.13~P2.0.22, and Curve 3 and Curve 4 are broken line relationship with two inflection points able to be set through Function Code P2.1.04~P2.1.19. The deviation between actual voltage and sampling voltage of the analog input terminal can be adjusted through Function Code P8.1.05~P8.1.12.

3: Multi-section command terminal setting
The setting frequency is set via various combination states of multi-section command terminal. The D200 Series Frequency inverter can set 4 multi-section command terminals (terminal function 9～12, refer to the function description of P2.0.00～P2.0.03 multi-section command terminal for details).

4: PULS Impulse Reference
The upper limit frequency is set by high-speed impulse frequency of digital input terminal DI4 (the terminal function is not defined). The corresponding relationship between high-speed impulse frequency and upper limit frequency can be set through Function Code P2.0.23~P2.0.26, that is, linear relationship.

5: Communication Reference
The upper limit frequency is set by the upper computer through communication mode (refer to Chapter VIII for more details).

6: Operation Result 1

7: Operation Result 2

8: Operation Result 3

9: Operation Result 4

The upper limit frequency is determined by data after setting calculation of the internal operation module. Refer to the Description of Function Codes P3.2.26~P3.2.39 for more details of the operation module. The operation results can be viewed through Function Codes 9.0.46~P9.0.49.

Note: The upper limit frequency can't be set for negative value. If it is, the upper limit frequency will be invalid.

Function code	Function name	Setting scope	Factory value
P0.1.04	Upper Limit Frequency Offset	000.00~Highest Frequency	000.00

The reference value of this function code is the offset of upper limit frequency, the superposition of this offset and upper limit frequency value set by the function code P0.1.03 will be used as the final reference value of upper limit frequency.

Function code	Function name	Setting scope	Factory value
P0.1.05	Keyboard Reference frequency Shut-down Memory Selection	0: No Memory 1: Memory	0

0: No Memory
After the frequency inverter stops, the reference frequency is reset to the value given by Function Code P0.0.05, and the frequency allowance, which is conducted through Key▲&▼on the keyboard or Terminal UP/DOWN, is cleared .

1: Memory
After the frequency inverter stops, the reference frequency is the frequency set before stop, and the frequency allowance, which is conducted through Key▲&▼on the keyboard or Terminal UP/DOWN, is saved.

Note: this function code is valid only when the frequency source is set by the keyboard.

Function code	Function name	Setting scope	Factory value
P0.1.06	Keyboard Reference frequency Action Benchmark at running	0: Running Frequency 1: Reference frequency	0

When this function code is adopted to determine the action of Key▲&▼on the keyboard or Terminal UP/DOWN, it is to confirm what a kind of mode is adopted to correct the frequency and the increase & decrease shall be done on the basis of running frequency or reference frequency .

0: Running Frequency
The regulation shall be made on the basis of running frequency

1: Reference frequency
The regulation shall be made on the basis of reference frequency
The difference between two settings is obvious when the frequency inverter is in the process of acceleration and deceleration, namely, when the running frequency differs from the reference frequency, different Option of parameters leads to great difference.

Note: this function code is valid only when the frequency source is set by the keyboard.

Function code	Function name	Setting scope	Factory value
P0.1.07	Benchmark frequency of accelerating and Deceleration time	0: Highest Frequency 1: Reference frequency 2: 100Hz	0

0: Highest Frequency
The acceleration and deceleration time refers to the time from frequency 0 to highest frequency, and it can change with the change of the highest frequency at this time.

1: Reference Frequency
The acceleration and deceleration time refers to the time from frequency 0 to highest frequency, and it can change with the change of the reference frequency at this time.

2:100Hz
The acceleration and deceleration time refers to the time from frequency 0 to 100Hz, and it is a fixed value at this time.

Note: the jogging acceleration and deceleration time is also subject to its control.

Function code	Function name	Setting scope	Factory value
P0.1.08	Jogging running frequency	000.00~Highest Frequency	002.00
P0.1.09	Jogging Acceleration time	0000.0s~6500.0s	0020.0
P0.1.10	Jogging Deceleration time	0000.0s~6500.0s	0020.0

The function codes above define the reference frequency and acceleration and deceleration time when the frequency inverter is at jogging running.

Function code	Function name	Setting scope	Factory value
P0.1.11	Acceleration time 2	0000.00s~6500.0s	Machine type
P0.1.12	Deceleration time 2	0000.00s~6500.0s	Machine type
P0.1.13	Acceleration time 3	0000.00s~6500.0s	Machine type
P0.1.14	Deceleration time 3	0000.00s~6500.0s	Machine type
P0.1.15	Acceleration time 4	0000.00s~6500.0s	Machine type
P0.1.16	Deceleration time 4	0000.00s~6500.0s	Machine type

The function codes above have the same definitions with P0.0.11 and P0.0.12; refer to the Description of P0.0.11 and P0.0.12 for more details

The D200 Series Frequency inverter totally provides 4 groups of acceleration and deceleration time of the straight line, which can switch among 4 groups of acceleration and deceleration time through different composite state of acceleration and deceleration time selection terminals. It can set 2 acceleration and deceleration time selection terminals (terminal function 16~17, refer to the Description of Code P2.0.00~P2.0.03 for Acceleration and Deceleration Time Selection Terminal Function of Function for more details)

Function code	Function name	Setting scope	Factory value
P0.1.17	Frequency Switch Point between Acceleration time 1 and Acceleration time 2	000.00Hz~Highest Frequency	000.00
P0.1.18	Frequency Switch Point between Deceleration time 1 and Deceleration time 2	000.00Hz~Highest Frequency	000.00

The function codes above are adopted to set the frequency of the switch point of acceleration and deceleration time 1 and acceleration and deceleration time 2. When the running frequency of the frequency inverter is less than the set value of these two function codes, the acceleration and deceleration time 2 is adopted, otherwise the acceleration and deceleration time 1 is adopted.

Note: When this function is used, the acceleration and deceleration time 1 and acceleration and deceleration time 2 can't be set for 0s.

Function code	Function name	Setting scope	Factory value
P0.1.19	Acceleration and Deceleration Mode	0: Straight Line 1: Curve S1 2: Curve S2	0

0: Acceleration and Deceleration of the Straight Line

The output frequency increases or decreases by the straight line. D200 Series Frequency inverter provides 4

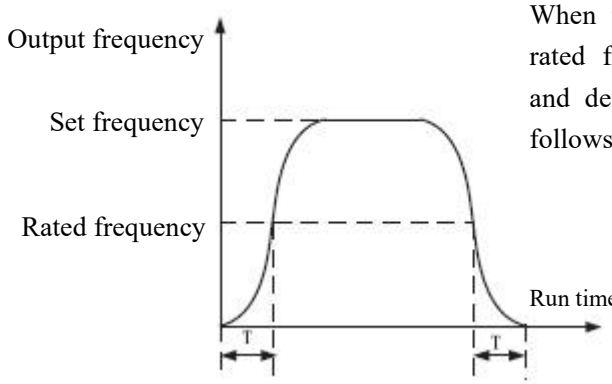
groups of acceleration and deceleration time of the straight line, namely, P0.0.11 and P0.0.12, P0.1.11 and P0.1.12, P0.1.13 and P0.1.14 and P0.1.15 and P0.1.16. The switch can be selected through different composite state of acceleration and deceleration time selection terminals.

1: Curve S1

The output frequency increases or decreases by Curve S1. Curve S1 is used for occasions required for gradual start or stop. Parameter P0.1.20 and P0.1.21 respectively defines the time scale of starting point and ending point of Curve S1.

2: Curve S2

In the Curve S2, the rated frequency of the motor is always the inflection point of Curve S, as shown in the figure below. Generally, it applies for the occasions that the high-speed area above the rated frequency requires to rapidly accelerate and decelerate.

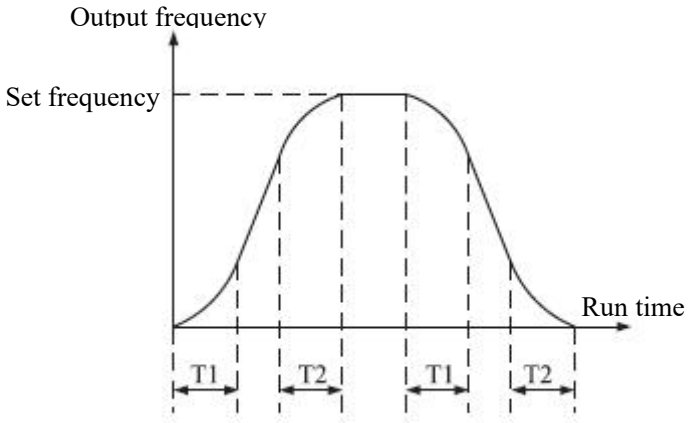


When the set frequency exceeds rated frequency, the acceleration and deceleration time will be as follows:

$$t = \left(\frac{4}{9} \times \left(\frac{\text{Set frequency}}{\text{Rated frequency}}\right)^2 + \frac{5}{9}\right) \times T$$

Function code	Function name	Setting scope	Factory value
P0.1.20	Percentage of Starting Phase of Curve S	000.0%~100.0%	030.0
P0.1.21	Percentage of Ending Phase of Curve S	000.0%~100.0%	030.0

Parameter P0.1.20 and P0.1.21 respectively defines the time scale of starting point and ending point of Curve S 1. These two parameters need to meet P0.1.20+P0.1.21≤100.0%, refer to the Description for the figure below:



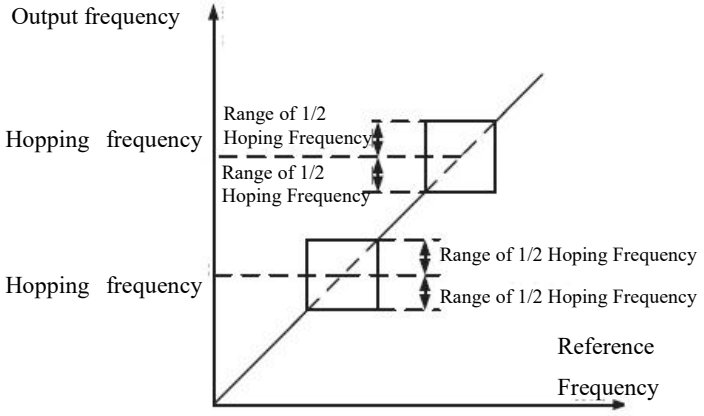
T1 is the value set by Function Code P0.1.20, the slope of the output frequency gradually increases from zero within this period of time.

T2 is the value set by Function Code P0.1.21, the slope of the output frequency gradually decreases to zero within this period of time.

Within the time between T1 and T2, the change on slope of the output frequency keeps constant.

Function code	Function name	Setting scope	Factory value
P0.1.22	Hopping Frequency 1	000.00Hz~Highest Frequency	000.00
P0.1.23	Hopping Frequency 2	000.00Hz~Highest Frequency	000.00
P0.1.24	Hopping Frequency Scope	000.00Hz~Highest Frequency	000.00

The hopping frequency function is set so that running frequency of the frequency inverter can avoid load resonance band of the driving system. The D200 Series Frequency inverter can set two hopping frequency points, after setting, even the reference frequency is within load resonance band, the output frequency of the frequency inverter will also be automatically adjusted out of load resonance band to avoid running on resonant frequency, refer to the Description for the figure below:



Function code	Function name	Setting scope	Factory value
P0.1.25	Jogging Priority	0: Invalid 1: Valid	0

This function code is used to set whether the priority of the jogging function is the highest. The jogging function includes Keyboard Jogging Function and Terminal Jogging Function.

When at P0.1.25=1, if the jogging command occurs in the running process, the switch of frequency inverter is the jogging running state.

The target frequency is the jogging frequency and the acceleration and deceleration time is the jogging acceleration and deceleration time.

Function code	Function name	Setting scope	Factory value
P0.1.35	Switching frequency point of deceleration time 2 and deceleration time 3	000.00Hz～Highest frequency	000.00

The above function code is used to set the frequency of the switching point between deceleration time 2 and deceleration time 3. When the frequency of the frequency converter is less than the set value of this function code, the deceleration time 3 is used, otherwise the deceleration time 2 is used.

Group P0.2: Expansion Group

Function code	Function name	Setting scope	Factory value
P0.2.01	B Frequency source range selection	0: Relative to the highest frequency 1: relative to the A frequency source	0

This function code is used to select the relative value regulated by function code P0.102. Refer to the setting of P0.102 for detailed usage.

Function code	Function name	Setting scope	Factory value
P0.2.02	B frequency offset at stacking	000.00Hz～Highest Frequency	000.00

This function code is used to set the frequency offset of the B frequency source, which is superimposed with the frequency value of the B frequency source as the final frequency value given by the B frequency source.

Function code	Function name	Setting scope	Factory value
P0.2.03	Unit of acceleration and deceleration time	0：1s 1：0.1s 2：0.01s	1

As various loads have different requirements on acceleration and deceleration time, D200 series frequency converters provide three units of addition and subtraction time, which are 1 second, 0.1 second and 0.01 second respectively.

Note: When modifying this function parameter, the decimal number displayed by all acceleration and deceleration times will change, and the corresponding acceleration and deceleration times will also change. Please pay special attention to the use process.

Function code	Function name	Setting scope	Factory value
P0.2.04	Frequency resolution	1：0.1Hz 2：0.01Hz	2

This function code is used to determine the resolution of all frequency-dependent function code parameters.

When P0.2.04=1, the maximum output frequency of D200 series inverter can reach 3200.0Hz.

When P0.2.04=2, the maximum output frequency of D200 series inverter is 320.00Hz.

Note: when modifying this function parameter, the decimal number of all parameters related to frequency will change, and the corresponding frequency value will also change, so pay special attention to the use.

Function code	Function name	Setting scope	Factory value
P0.2.05	Undervoltage point setting	60.0%～140.0%	100.0

This function code is used to set the frequency converter bus voltage at what voltage value when the undervoltage. This function code is set as a percentage relative to the normal undervoltage point.

Detected DC under-voltage value:

Level S2/ T2 : 200V*P0.2.05/100

Level T4 : 350V*P0.2.05/100

Function code	Function name	Setting scope	Factory value
P0.2.06	Dead zone compensation switch	0: ban 1: allow 2: keep	1

The function code is used to set whether the PWM dead zone of the frequency converter is compensated. 0 means no compensation, and 1 means compensation.

Function code	Function name	Setting scope	Factory value
P0.2.08	Power on to ground short circuit protection function	0: Not enabled 1: can make	1

This function code is used to set whether to turn on the power-on short-circuit protection function to the ground.

6.2 Group P1 - Motor Control Parameter

Group P1.0 - Basic Group

Function code	Function name	Setting scope	Factory value
P1.0.00	V/F Curve Mode	0:Straight Line 1: Multi-point Broken Line 2: Square V/F Curve 1 3: Square V/F Curve 2 4: Square V/F Curve 3	0

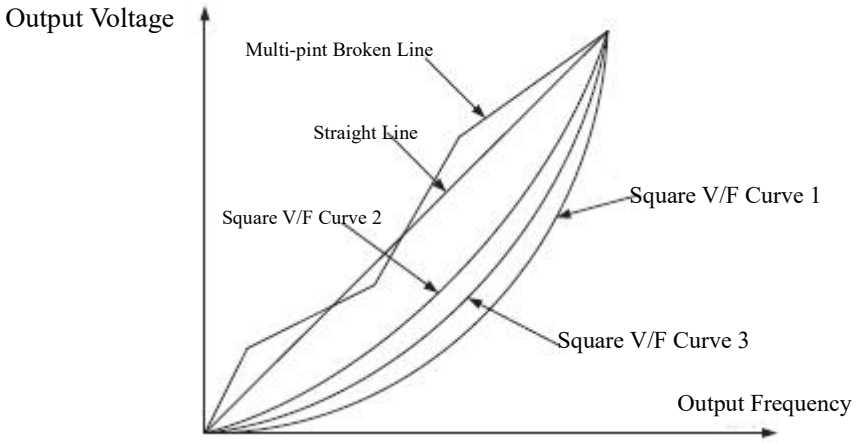
0: Straight Line V/F
Applicable for common constant torque load

1: Multi-point Broken Line
VF Relation Curve of any broken lines can be acquired through setting Function Codes P1.1.00 ~ P1.1.05.

2: Square V/F
Adapted to light centrifugal loading

3: Square V/F Curve 2

4: Square V/F Curve 3
Refer to relation curve between straight line V/F and square V/F
Each curve is shown in the figure below:



Function code	Function name	Setting scope	Factory value
P1.0.01	Torque Boost	00.0% (Automatic Torque Boost) 00.1%~30.0%	04.0
P1.0.02	Cutoff Frequency of Torque Boost	000.00Hz~Highest Frequency	050.00

In order to compensate the property of controlling the lower frequency torque by V/F, the boosting compensation is conducted for output voltage in low-frequency working area. Under normal circumstances, the factory value can meet the requirements, if the compensation is too great, the current fault may occur. When the load is heavier and the low-frequency torque of the motor is not enough, it suggests increasing this parameter.

When the load is lighter, this parameter can be reduced. The frequency inverter is automatic torque boost when the torque boost is set at 00.0%, the frequency inverter can automatically calculate the required torque boost value based on the parameters of the motor as stator, resistance, etc.

Torque Boost Cut-off Frequency: when the output frequency is below this set value, the torque boost is valid, in case of exceeding this set value, the torque boost is invalid

Function code	Function name	Setting scope	Factory value
P1.0.03	V/F Slip Compensation Gain	000.0%~200.0%	000.0

This function code is only valid for asynchronous motor and the percentage relative to rated slip of motor. When it is the slip that is compensated by the motor for rated load, the rated slip of the motor can be calculated and acquired based on rated frequency of the motor and rated speed. V/F Slip Compensation can compensate asynchronous motor for the speed deviation of the motor occurred from load increase so as to make the speed able to basically keep stable.

Function code	Function name	Setting scope	Factory value
P1.0.10	Start Mode	0: Direct Start 1: Speed Tracking initiated 2: Brake and Restart	0

0: Direct Start
The frequency inverter starts running from start frequency.
1: Speed Tracking initiated
The frequency inverter shall first judge the rotating speed and direction of the motor and then track down the start frequency of motor, the rotating motor smoothly starts without any surge. It is applicable for momentary interruption restart of the high inertia loads. In order to ensure the performance of rotating speed before start, accurate setting of the motor parameters is required.
2: Brake before Start
First conduct DC braking and them start running from start frequency.

Function code	Function name	Setting scope	Factory value
P1.0.11	Speed Tracking Mode	0: Start from Shutdown Frequency 1: Start from Zero Speed 2: Start from Highest Frequency	0

0: Start from Stop Frequency
Track down from the frequency at the moment of stop and adopt this method as usual.

1: Start from Zero Speed
Track up from zero frequency and adopt this method when start after longer stop time.

2: Start from Highest Frequency
Track down from highest frequency
Note: This function code is only valid when the start mode adopts speed tracking start (namely P1.0.10=1).

Function code	Function name	Setting scope	Factory value
P1.0.12	Start Frequency	00.00Hz~10.00Hz	00.00
P1.0.13	Hold Time of Start Frequency	000.0s~100.0s	000.0

Start Frequency: refer to running frequency when the frequency inverter starts.

In order to ensure that the motor has a certain start torque, proper start frequency shall be given. If the setting is too great, the over-current may occur. When the reference frequency is less than start frequency, the frequency inverter cannot start and is at ready mode (when jogging, it is not subject to the impact of start frequency).

Hold Time of Start Frequency: refer to the running time of starting the frequency during the process of start.

Function code	Function name	Setting scope	Factory value
P1.0.14	Starting DC Brake Current	000%~100%	000
P1.0.15	Starting DC Brake Time	000.0s~100.0s	000.0

Starting DC brake current: indicating the current output by the frequency inverter during the starting DC brake process, which is the percentage corresponding to the rated current of motor, the higher the starting DC braking current is, the bigger the braking force is.

Starting DC brake time: indicating the duration of outputting DC braking current during the start process of frequency inverter. When the starting DC brake time is set for 000.0, the start-up DC braking function will be invalid.

Function code	Function name	Setting scope	Factory value
P1.0.16	Shutdown Mode	0: Stop by Speed Deceleration 1: Free Stop	0

0: Stop by Speed Deceleration

After the stop command is effective, the frequency inverter reduces the output frequency based on deceleration time and stops after the frequency is reduced to 0.

1: Free Stop

After the stop command is effective, the frequency inverter immediately stops outputting and the motor stops freely based on mechanical inertia at this time.

Function code	Function name	Setting scope	Factory value
P1.0.17	Stop DC Braking Initial Frequency	000.00Hz~Highest Frequency	000.00
P1.0.18	Stop DC Braking Hold Time	000.0s~100.0s	000.0
P1.0.19	Stop DC Braking Current	000%~100%	000
P1.0.20	Stop DC Braking Time	000.0s~100.0s	000.0

During the process of stop via deceleration, when the output frequency is decreased to the frequency set by P1.0.17 and wait for the waiting time set by P1.0.18, start outputting the braking current set by P1.0.19 to implement DC braking until reaching the DC braking time set by P1.0.20, and then the frequency inverter will stop DC braking.

Through properly setting the waiting time of stop DC braking P1.0.18, the faults such as over-current due to DC braking started at higher speed can be avoided. The stop DC braking current P1.0.19 is the percentage corresponding to the rated current of motor. The higher the stop DC braking current is, the bigger the braking force is. When the stop DC braking time is set for 000.0, the stop DC braking function will be invalid.

Note: P1.0.17 and P1.0.18 can also achieve climbing function of inverter. This function can improve the instability of stopping. During the stopping process, the inverter decelerates to frequency set by P1.0.17. After pausing for time set by P1.0.18, the inverter continues to decelerate until fully stop. Generally, P1.0.17 IS SET AS 0.05 Hz and P1.0.18 is set as 0.1s,

Function code	Function name	Setting scope	Factory value
P1.0.21	Braking Use Rate	000%~100%	100

The function code is used to regulate the duty ratio of braking unit. The higher the braking use rate is, the higher the braking unit operation duty ratio is, the stronger the braking effect is, however, the bus voltage surge of frequency inverter is bigger during the braking process.

Function code	Function name	Setting scope	Factory value
P1.0.22	Carrier Frequency	0.50kHz~16.0kHz	Type

This function code is used to regulate the carrier frequency of the frequency inverter. The regulation of the carrier frequency can lower the noise of the motor and reduce the line-to-ground leakage current and the interference arising from the frequency inverter. When the carrier frequency is lower, the high-order harmonic components of output current increase, the losses of motor increase and the temperature of the motor rises. When the carrier frequency is higher, the losses of motor are reduced and the temperature rise of the motor decreases, but the losses of the frequency inverter increase and the temperature of the frequency inverter rise, so the interference is enhanced.

The regulation of the carrier frequency can influence the following performance:

Carrier Frequency	Low → High
Noise of Motor	Large → Small
Output Current Waveform	Bad → Good
Temperature Rise of Motor	High → Low
Temperature Rise of Frequency inverter	Low → High
Current Leakage	Small → Large
External Radiation Interference	Small → Large

Function code	Function name	Setting scope	Factory value
P1.0.23	Fan Control	0: Rotate at running 1: Continuous Running 2: Control based on Temperature	0

The function code is used to select the operation mode of cooling fan.

P1.0.23=0, the fan will work when the frequency inverter runs and the fan will stop when the frequency inverter stops.

P1.0.23=1, after the frequency inverter is powered on, the fan will work all the time.

P1.0.23=2, when the heat radiator temperature exceeds 35℃, the fan will work, when the temperature is below 35℃, the fan won't work.

Function code	Function name	Setting scope	Factory value
P1.0.24	Motor Overload Protection	0: Prohibition 1 :Curve 1 2 :Curve 2 3 :Curve 3	1
P1.0.25	Motor Overload Protection Level	00.20~10.00	01.00
P1.0.26	Motor Overload Alarm System	050%~100%	080

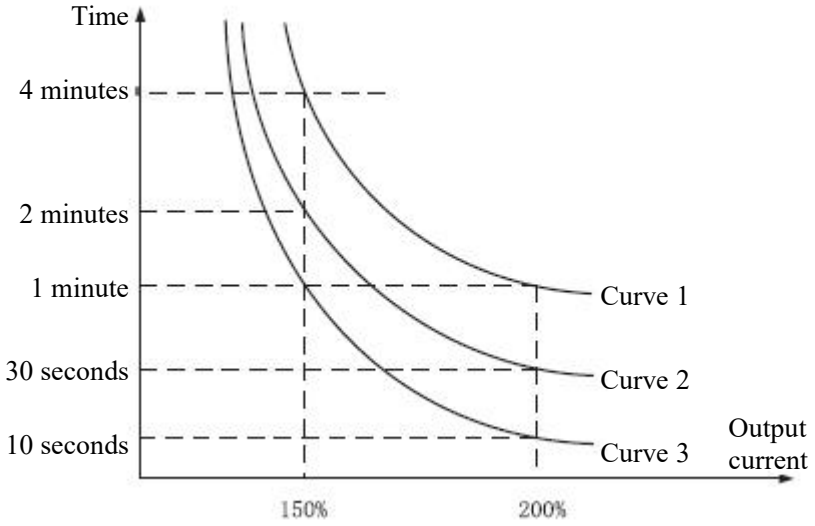
When at P1.0.24=0, the frequency inverter hasn’t had overload protection function to the motor, it suggests heating the relay between frequency inverter and motor.

When at P1.0.24=1,2 or 3, the frequency inverter shall judge whether the motor is overload or not based on inverse-time characteristic curve of the overload protection of the motor.

The users need to correctly set the value of P1.0.25 based on actual overload capability and load conditions of the motor, if the set value is too small, it is easy to report the motor overload fault (Err10), while the set value is too large, the motor may have the risk of being burnt, especially for the conditions that the rated current of the frequency inverter is larger than the rated current of the motor. When at P1.0.25=01.00, it means that the motor overload protection level is 100% rated current of the motor.

The Function Code P1.0.26 is used to define when the early alarm is given before overload fault protection of the motor. The larger the value is, the smaller the early alarm lead is. When the accumulative output current of the frequency inverter is larger than product of multiplying overload inverse time curve by P1.0.26, the multi-functional output terminal of the frequency inverter outputs Signal ON, and the corresponding multi-functional output terminal is overload pre-alarm of the motor (6).

The overload inverse-time characteristic curve of D200 Series Frequency inverter is shown in the figure below:

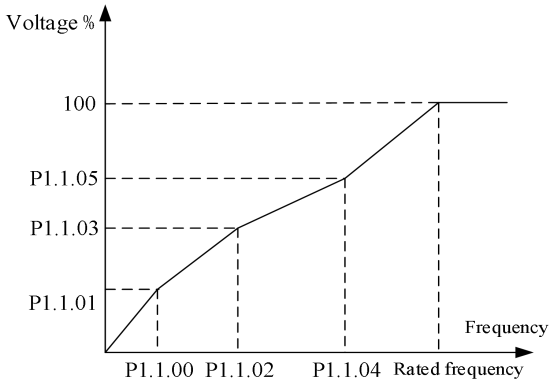


Overload Inverse-time Characteristic Curve

Group P1.1: Expansion Group

Function code	Function name	Setting scope	Factory value
P1.1.00	Broken Line V/F Point 1 Frequency	000.00Hz~P1.1.02	000.00
P1.1.01	Broken Line V/F Point 1 Voltage	000.0%~100.0%	000.0
P1.1.02	Broken Line V/F Point 2 Frequency	P1.1.00~P1.1.04	000.00
P1.1.03	Broken Line V/F Point 2 Voltage	000.0%~100.0%	000.0
P1.1.04	Broken Line V/F Point 3 Frequency	P1.1.02~Rated frequency of motor	000.00
P1.1.05	Broken Line V/F Point 3 Voltage	000.0%~100.0%	000.0

The above functions define V/F Curve with multi-point broken line, and the voltage of the above broken points is the percentage relative to the rated voltage of the motor. V/F Curve with multi-point broken line is given based on the load characteristics of the motor, but attention shall be paid that the relationship between three voltage points and frequency points must meet: P1.1.00<P1.1.02<P1.1.04, P1.1.01<P1.1.03<P1.1.05, refer to the Description in the figure below:



Note: The voltage can't be set too high at low frequency, else the frequency inverter will give over-current alarm or will be burnt.

Function code	Function name	Setting scope	Factory value
P1.1.06	V/F Overexcited Gain	000~200	120

In the deceleration process of the frequency inverter, the pumping voltage can make DC bus voltage rise, the overexcited control can restrain the rise of DC bus voltage to avoid occurrence of over-voltage fault. The larger the overexcited gain is, the stronger the restraint effect is, but if the overexcited gain is too large, it is easy to lead to increase of the output current, even over-current fault. As for the occasions where the rise of DC bus voltage is not great or has brake resistance, it suggests setting the overexcited gain at 0.

Note: this function code is only valid when the control mode is V/F Control (namely P0.0.02=0).

Function code	Function name	Setting scope	Factory value
P1.1.09	Inversion Control Enable	0: Allow 1: Prohibit	0

This function code is used to set whether the frequency inverter is allowed to run at reverse state.

When at P1.1.09=0, the frequency inverter is allowed to run at reversal state.

When at P1.1.09=1, the frequency inverter is prohibited to run at reversal state, which is mainly used for the occasions that the load is unable to reverse.

Note: the director of this function code is defined by the set value relative to running direction (P0.0.06)

Function code	Function name	Setting scope	Factory value
P1.1.10	Forward and Reverse Dead Time	0000.0s~3000.0s	0000.0

This function code is used to set the duration time of outputting 0Hz when the frequency inverter is in the process of forward and reverse switch.

Function code	Function name	Setting scope	Factory value
P1.1.11	Power-on Running Selection	0: Running 1: Not Running	0

This function code is used to set when the frequency inverter runs in response to valid running command at the moment of power-on.

When at P1.1.11=0, the frequency inverter directly responds to the running

When at P1.1.11=1, frequency inverter can't respond to the running. It cannot run until the running command is valid again after it is cancelled.

Function code	Function name	Setting scope	Factory value
P1.1.12	Droop Control	00.00Hz~10.00Hz	00.00

When multiple motors drive the same load, unbalanced load distribution will be caused. The droop control will make the output frequency be decreased with increasing of load, so as to realize balanced load of multiple motors. The reference value of function code is the decreased frequency at rated load.

Function code	Function name	Setting scope	Factory value
P1.1.20	VF oscillation suppression mode	1～4	1

VF oscillation suppression mode: when the motor oscillates, different oscillation suppression methods can achieve different oscillation suppression effects.

Function code	Function name	Setting scope	Factory value
P1.1.21	Response time of VF slip compensation	0-10.0s	0.5

When the slip compensation function P1.0.03 is enabled, the function code P1.1.21 can be used to adjust the slip compensation response time. The smaller the response time is, the faster the compensation response is. When the compensation is slow, the function code value is reduced. When there is oscillation, lengthen the value of the function code.

Function code	Function name	Setting scope	Factory value
P1.1.22	VF online torque compensation gain	0～200	100

In the automatic torque lifting (P1.0.01=0), the torque compensation can be improved by using this function code. Generally, the function code does not need to be changed after stator resistance identification. Too little may cause too little compensating torque. Excessive compensation current is too large. You are advised to set the function code to 100 after parameter identification.

Function code	Function name	Setting scope	Factory value
P1.1.34	Tuning KP coefficient	1～200	100

KP parameter used in parameter identification. When there is oscillation, the value is reduced by a step size of 20 until it does not oscillate. Too small will lead to inaccurate identification, and too large will lead to oscillations and inaccurate identification, which generally do not need to be adjusted.

Function code	Function name	Setting scope	Factory value
P1.1.35	Tuning KI coefficient	1～200	100

KI parameter used in parameter identification. When there is oscillation, the value is reduced by a step size of 20 until no oscillation occurs. Too small will lead to inaccurate identification, and too large will lead to oscillations and inaccurate identification, which generally do not need to be adjusted.

Group P1.2: Expansion Group

Function code	Function name	Setting scope	Factory value
P1.2.01	VF oscillation suppression	0～100	Machine type

This function code is used to set the suppression effect when the motor oscillates. The greater the setting value, the better the suppression effect. However, if the setting is too large, it will adversely affect the VF operation. Therefore, the value should be as small as possible under the premise of satisfying the suppression.

Note: Only accurate rated current and no-load current value can produce good suppression effect.

Function code	Function name	Setting scope	Factory value
P1.2.02	Whether the carrier frequency is adjusted with temperature	0：No 1：Yes	1

This function code is used to set whether the carrier frequency is adjusted in a certain range with the heat sink temperature.

When P1.2.02=0, the carrier frequency does not adjust with the radiator temperature, and keeps the given value unchanged

When P1.2.02=1, when the heat sink temperature increases, the carrier frequency automatically decreases; when the heat sink temperature decreases, the carrier frequency restores to the given value.

Function code	Function name	Setting scope	Factory value
P1.2.11	Speed tracking speed	1～100	20

This function code is used to set the speed tracking speed when the startup mode is tracking (that is, P1.0.10=1). The larger the value is, the faster the tracking is. However, if the value is too large, the tracking effect is poor.

Function code	Function name	Setting scope	Factory value
P1.2.12	The DPWM switches the upper frequency	00.00Hz～15.00Hz	12.00

This function code is valid only for VF control

When the asynchronous machine VF is running, the wave mode is determined. If the value is lower than this, it is the 7-segment continuous modulation mode. Conversely, it is the 5-segment intermittent modulation mode.

The switching loss of the inverter is larger, but the current ripple is smaller. 5 section continue debugging mode switch loss is small, current ripple is large; But at high frequency may lead to motor operation instability, generally do not need to modify.

Function code	Function name	Setting scope	Factory value
P1.2.13	PWM modulation mode	Ones: 0: Asynchronous modulation 1: Synchronization modulation Tens: 0: Three-phase modulation and two-phase modulation coexist 1: All three - phase modulation Hundreds: 0: Low frequency carrier limit 1: Low-frequency carrier unlimited	0

Three - phase modulation is a 7 - segment continuous modulation method. Two - phase modulation is a 5 - segment intermittent modulation method. 0: Switches between segment 7 and segment 5 based on function code P1.2.12. 1: The whole process is seven-stage wave.

0: The low frequency carrier decreases.

1: Low frequency carrier is not reduced, subject to carrier frequency setting.

Function code	Function name	Setting scope	Factory value
P1.2.14	Random PWM depth	00: Random PWM is invalid 01～10:PWM carrier random depth	00

The setting of random PWM can make the monotonous and harsh motor sound more gentle, and can help to reduce the external electromagnetic interference. When the random PWM depth is set to 0, the random PWM is invalid. Adjusting random PWM to different depths will get different effects.

Function code	Function name	Setting scope	Factory value
P1.2.15	Fast current limiting enablement	0: Not enabled 1: can make	1

Enabling the fast current limiting function can minimize the overcurrent fault of the converter and ensure the uninterrupted operation of the converter.

If the frequency converter is in the fast current limiting state for a long time, the frequency converter may be damaged by overheating, which is not allowed. Therefore, the frequency converter will report the fast current limiting timeout fault (Err34) when it is in the fast current limiting state for a long time, indicating that the frequency converter is overloaded and needs to stop.

Function code	Function name	Setting scope	Factory value
P1.2.20	AVR function	0：effective 1：invalid	0

This function code is used to set whether to enable the AVR function.

Function code	Function name	Setting scope	Factory value
P1.2.29	Enable phase short circuit detection	0: Not enabled 1: can make	1

This function code is used to set whether to enable the power-on interphase short circuit protection function.

6.3 Group P2 - Input/Output Terminal Function

Group P2.0: Basic Group

Function code	Function name	Setting scope	Factory value
P2.0.00	DI1 Terminal Function Selection	0~59	01 (FWD Running)
P2.0.01	DI2 Terminal Function Selection	0~59	02 (REV Running)
P2.0.02	DI3 Terminal Function Selection	0~59	09 (Multiplex Directive Terminal 1)
P2.0.03	DI4 Terminal Function Selection	0~59	10 (Multiplex Directive Terminal 2)

The above function codes are used to set the function of digital input terminals, the available functions are Table below:

Setting value	Function	Description
0	No Function	Define the not in-service terminals as “Unused” to prevent malfunctions.
1	Forward Running (FWD)	Control FWD and REV of the frequency inverter through these two terminals.
2	Reverse Running (REV)	
3	3-line Running Control	Confirm that the running mode of the frequency inverter is three-line control mode through this terminal. Refer to the Description for Terminal Control in 7.1.1.
4	Forward Jogging	Control FWD Jogging and REV Jogging through of the frequency inverter through these two terminals and be valid for any running control mode. The running frequency and acceleration & deceleration time of the inching refer to the description for P0.1.08, P0.1.09 and P0.1.10.
5	Reverse Jogging	
6	Terminal UP	When the reference frequency is given by the keyboard, increase or decreases the reference frequency through these two terminals.
7	Terminal DOWN	
8	Free Stop	When the terminal state is valid, the frequency inverter is blocked to output, the shut-down of the motor is not subject to the control of the frequency inverter at this moment. This mode has same meaning of free stop described in P1.0.16.
9	Multiplex Directive Terminal 1	Realize the references of 16 kinds of the directive through 16 kinds of states of these four terminals.
10	Multiplex Directive Terminal 2	
11	Multiplex Directive Terminal 3	
12	Multiplex Directive Terminal 4	
13	Fault Reset (RESET)	Realize remote fault reset through this terminal and have same function with RESET Key on Keyboard.
14	Running Pause	When this terminal state is valid, the terminal slows down and stops, but all running parameter are memorized. When this terminal state is invalid, the frequency inverter is resets to running state before stop.
15	External Fault Input	When this terminal state is valid, the frequency inverter gives an alarm of Err13, and then the fault is handled based on fault protection action mode.
16	Acceleration & Deceleration Time Selection Terminal 1	Realize the switch among four groups of straight acceleration and deceleration time, refer to Attached Table 3 for more details.
17	Acceleration & Deceleration Time Selection Terminal 2	
18	Frequency Source Selection Terminal 1	When P0.1.00=8, the function of these terminals will be valid. The 8 frequency sources are switched via the 8 states of 3 terminals. Refer to Attached Table 2 for detailed contents.
19	Frequency Source Selection Terminal 2	
20	Frequency Source Selection Terminal 3	
21	Running Command Selection Terminal 1	The running control modes are switched via the ON/OFF state of the two terminals. Refer to Attached Table 4 for detailed contents.
22	Running Command Selection Terminal 2	
23	UP/DOWN Reference Reset	When the reference frequency is given by the keyboard, this terminal can remove the frequency allowance adjusted by Terminal UP/DOWN or Key▲ &▼ on Keyboard to reset the reference frequency to the value given by P0.0.05.
24	Prohibition of Acceleration & Deceleration	When this terminal state is valid, the output frequency of the frequency inverter is not impacted by the signal (except for stop command)

Setting value	Function	Description
25	PID Pause	PID Control fails temporarily, the frequency inverter maintains the running of current output frequency and can't conduct PID Regulation of the frequency source.
26	PLC State Reset	During executing process of PLC, the frequency inverter is reset the frequency inverter to initial state of Simple PLC through this terminal
27	Wobbulating Pause	The frequency inverter outputs in central frequency and the wobbulating function suspends.
28	Counter Input	Be used for defining the output terminal of count impulse. If it is high-speed pulse, connect Terminal DI4
29	Counter Reset	Conduct reset handling to counter.
30	Length Counting Input	Be used for defining the output terminal of length count impulse. If it is high-speed pulse, connect Terminal D14.
31	Length Reset	Conduct reset handling to length.
32	Torque Control Prohibition	Prohibit the frequency inverter from running in torque control mode, and the frequency inverter only can run in speed control mode.
33	PULS Impulse Input	Define PULS Impulse Input Terminal and connect Terminal DI4.
34	Immediate DC Brake	When this terminal state is valid, the frequency inverter is directly switched to DC Switch State.
35	External Fault Normally-closed Input	When this terminal state is invalid, the frequency inverter gives an alarm of Err13, and then the fault is handled based on fault protection action mode.
36	Frequency Modification Enable	When this terminal state is invalid, the frequency inverter cannot respond the modification to frequency. When this terminal state is valid, the frequency inverter responds the modification to frequency.
37	PID Action Direction Negation	When this terminal state is valid, the direction of PID Action is opposite to the direction given by P4.0.03. Additionally, when P0.0.06=2, the terminal is valid and the running direction adopts reversed direction.
38	External Stop Terminal 1	When the running control mode is keyboard control (P0.0.03=0), the terminal can stop through this terminal.
39	External Stop Terminal 2	In any of running control modes, the frequency inverter can slow down and stop at deceleration time 4 through this terminal.
40	PID Integral Stop	When the units digit of P4.2.08 is 1 (namely the integral separation is valid and this terminal is valid, the functions of integral regulation of PID stops temporarily, but the functions of proportional regulation and integral regulation of PID are still valid.
41	PID Parameter Switch	When the switch conditions of PID parameters are the terminal (P4.0.13=1), this terminal state is invalid, adopt PID Parameter 1. When this terminal state is valid, adopt PID Parameter 2.
42	Speed Control/Torque Control Switch	Realize the switch of the frequency inverter between torque control mode and speed control mode. This terminal state is invalid, the frequency inverter runs in setting mode of P1.1.13 (Speed/Torque Control Mode), when this terminal state is valid, it is switched to another mode.
43	Emergency Stop	When this terminal is valid, the frequency inverter outputs the voltage in enclosed mode and freely stops by inertia.
44	Deceleration DC Brake	When the terminal state is valid, the frequency inverter slows down to Start Frequency of Stop DC Brake and then is switched to Stop DC Brake State.
45	User-Defined Fault 1	When: User-Defined Fault 1 and 2 are valid, the frequency inverter respectively give an alarm of Err21 and Err22 and then the faults are handled based on fault protection action mode.
46	User-Defined Fault 2	

Setting value	Function	Description
47	Running Time Reset	During the running process, it is to conduct reset handling for current running time, current running time can be viewed through Function Code P9.0.23.
48	Timer Input Terminal 1	When internal timer is controlled by this terminal, this terminal controls the Start or Stop of the timer, refer to the Description of Function Code P3.2.23.
49	Timer Input Terminal 2	When internal timer is controlled by this terminal, this terminal controls the Start or Stop of the timer, refer to the Description of Function Code P3.2.23.
50	Timer Reset Terminal 1	When internal timer reset is controlled by this terminal, this terminal state is valid, the timer resets, refer to the Description of Function Code P3.2.23.
51	Timer Reset Terminal 2	When internal timer reset is controlled by this terminal, this terminal state is valid, the timer resets, refer to the Description of Function Code P3.2.23.
52	Reserved	
53	Reserved	
54	Distance Reset	Conduct reset handling to the distance
55	Integral Computation Reset	Reset the integral computation in operation module
56~59	User Function 1~4	Reserved
60	Start by tracing rmp is prohibited	When set as starting by tracing rmp (P1.0.10=1), this terminal is effective and turns to start directly.

Attached Table 1 Description for Functions of Multiplex Directive Terminals

Terminal 4	Terminal 3	Terminal 2	Terminal 1	Multiplex Directive Reference	Corresponding parameter
OFF	OFF	OFF	OFF	Multiplex Directive 0	P3.0.03
OFF	OFF	OFF	ON	Multiplex Directive 1	P3.0.05
OFF	OFF	ON	OFF	Multiplex Directive 2	P3.0.07
OFF	OFF	ON	ON	Multiplex Directive 3	P3.0.09
OFF	ON	OFF	OFF	Multiplex Directive 4	P3.0.11
OFF	ON	OFF	ON	Multiplex Directive 5	P3.0.13
OFF	ON	ON	OFF	Multiplex Directive 6	P3.0.15
OFF	ON	ON	ON	Multiplex Directive 7	P3.0.17
ON	OFF	OFF	OFF	Multiplex Directive 8	P3.0.19
ON	OFF	OFF	ON	Multiplex Directive 9	P3.0.21
ON	OFF	ON	OFF	Multiplex Directive 10	P3.0.23
ON	OFF	ON	ON	Multiplex Directive 11	P3.0.25
ON	ON	OFF	OFF	Multiplex Directive 12	P3.0.27
ON	ON	OFF	ON	Multiplex Directive 13	P3.0.29
ON	ON	ON	OFF	Multiplex Directive 14	P3.0.31
ON	ON	ON	ON	Multiplex Directive 15	P3.0.33

Explanation: when the multiplex directive corresponds to frequency, the corresponding parameter is the percentage relative to highest frequency.

When the multiplex directive corresponds to torque, the corresponding parameter is the percentage relative to digital reference torque.

When the multiplex directive corresponds to PID, the corresponding parameter is the percentage relative to PID Reference Feedback range.

Attached Table 2 Description for Functions of Frequency Source Selection Terminals

Terminal 3	Terminal 2	Terminal 1	Option of frequency source
OFF	OFF	OFF	Frequency source A (correspond to P0.1.00=0)
OFF	OFF	ON	Frequency source B (correspond to P0.1.00=1)
OFF	ON	OFF	Frequency source A+B (correspond to P0.1.00=2)
OFF	ON	ON	Frequency source A-B (correspond to P0.1.00=3)
ON	OFF	OFF	Max. value of A & B (correspond to P0.1.00=4)
ON	OFF	ON	Min. value of A & B (correspond to P0.1.00=5)
ON	ON	OFF	Backup frequency source 1 (correspond to P0.1.00=6)
ON	ON	ON	Backup frequency source 2 (correspond to P0.1.00=7)

Attached Table 3 Description for Functions of Acceleration and Deceleration Time Selection Terminals

Terminal 2	Terminal 1	Option of acceleration/ deceleration time	Corresponding parameters
OFF	OFF	Acceleration and deceleration time 1	P0.0.11, P0.0.12
OFF	ON	Acceleration and deceleration time 2	P0.1.11, P0.1.12
ON	OFF	Acceleration and deceleration time 3	P0.1.13, P0.1.14
ON	ON	Acceleration and deceleration time 4	P0.1.15, P0.1.16

Attached Table 4 Description for Functions of Running Command Selection Terminals

Current Running Control Mode	Terminal 2	Terminal 1	Running Control Mode
Keyboard Control (P0.0.03=0)	OFF	ON	Terminal Control
	ON	OFF	Communication Control
	ON	ON	Communication Control
Terminal Control (P0.0.03=1)	OFF	ON	Keyboard Control
	ON	OFF	Communication Control
	ON	ON	Keyboard Control
Communication Control (P0.0.03=2)	OFF	ON	Keyboard Control
	ON	OFF	Terminal Control
	ON	ON	Keyboard Control
Note: when Terminal 1 and Terminal 2 are OFF, it is the running control mode set by Function Code P0.0.03.			

Function code	Function name	Setting scope	Factory value
P2.0.10	DI Filtering Time	0.000s~1.000s	0.010

This function code is used to set the software filtering time of terminal DI input state. If the occasions, which use Terminal DI Input, are easily to lead to false operation by interference, this parameter can be increased to enhance the anti-interference ability, but the increase of the filtering time may cause slow response of Terminal DI.

Function code	Function name	Setting scope	Factory value
P2.0.11	External Terminal Running Control Mode	0: Two-line Type 1 1: Two- line Type 2 2: Three- line Type 1 3: Three-line Type 2	0

This function code defines that when the control running mode is terminal control (namely P0.0.03=1), there are four different modes to control the running of the frequency inverter. Refer to Terminal Control in 7.1.1 for more details.

Function code	Function name	Setting scope	Factory value
P2.0.12	UP/DOWN Terminal Change Rate	00.001Hz/s~65.535Hz/s	01.000

The function code defines that when Terminal UP/DOWN is used to regulate the reference frequency, set the rate of frequency variation.
When P0.2.04 (Decimal Point of Frequency) is 2, the value range is 00.001Hz/s~65.535Hz/s.
When P0.2.04 (Decimal Point of Frequency) is 1, the value range is 000.01Hz/s~655.35Hz/s.

Function code	Function name	Setting scope	Factory value
P2.0.13	Minimum Input of Curve 1	00.00V~P2.0.15	00.00
P2.0.14	Corresponding reference for Minimum Input of Curve 1	-100.0%~100.0%	000.0
P2.0.15	Maximum Input of Curve 1	P2.0.13~10.00V	10.00
P2.0.16	Corresponding reference for Maximum Input of Curve 1	-100.0%~100.0%	100.0
P2.0.17	AVI Filtering time	00.00s~10.00s	00.10

The above function codes are used to set the relation between analog input and corresponding reference value, that is, straight line relationship.
When the voltage of analog input is greater than the given “Max. Input of Curve 1” (P2.0.15), the analog is calculated at “Max. Input of Curve 1”; similarly when the voltage of analog input is lower than the given “Min. Input of Curve 1” (P2.0.13), the calculation shall be at min. input or 0.0% according to the setting of “ Curve below Mix. Input Reference Selection”.
AVI Input Filtering time is used to set the software filtering time of AVI, when the on-site analog is easily to be interrupted, the filtering time shall be increased to make the detected analog tend to be stable, but the greater filtering time makes the response speed of the analog detection become slow, how to set needs to balance based on actual situations of the applications.
Explanation: when the analog inputs corresponding frequency, the corresponding given value is the percentage relative to highest frequency.
When the analog inputs corresponding torque, the corresponding given value is the percentage relative to digital reference torque.
When the analog inputs corresponding PID, the corresponding reference value is the percentage relative to PID Reference Feedback range.
When the analog inputs corresponding time, the corresponding given value is the percentage relative to running time (P3.1.02).
NOTE: The default value of inverter’s analog input is 0V ~ 10V. If the input is 0mA ~ 20mA, it will remain 0V ~ 10V; if the input is 4mA ~ 20mA, it will remain 2V ~ 10V.

Function code	Function name	Setting scope	Factory value
P2.0.18	Minimum Input of Curve 2	00.00V~P2.0.20	00.00
P2.0.19	Corresponding reference for Minimum Input of Curve 2	-100.0%~100.0%	000.0
P2.0.20	Maximum Input of Curve 2	P2.0.18~10.00V	10.00
P2.0.21	Corresponding Reference for Maximum Input of Curve 2	-100.0%~100.0%	100.0
P2.0.22	ACI Filtering Time	00.00s~10.00s	00.10

Please refer to the description of curve 1 for the function and application method of curve 2.

Function code	Function name	Setting scope	Factory value
P2.0.23	PULS Min. input	0.00kHz~P2.0.25	000.00
P2.0.24	Corresponding Setting of PULSE Min. input	-100.0%~100.0%	000.0
P2.0.25	PULS Max. input	P2.0.23~100.00kHz	050.00
P2.0.26	Corresponding Setting of PULSE Max. input	-100.0%~100.0%	100.0
P2.0.27	PULS Filtering Time	00.00s~10.00s	00.10

The above function codes are used to set the relation between PULS frequency and corresponding reference value, belonging to linear relation.

When the input impulse frequency is more than the setting "PULS Max. input" (P2.0.25), the impulse frequency will be calculated according to "PULS Max. input"; in a similar way, when the input impulse frequency is less than the setting "PULS Min. input" (P2.0.23), the impulse frequency will be calculated according to "PULS Min. input".

The PULS filtering time is used to set the software filtering time input by PULS frequency when the impulse is prone to be interfered on the site, please increase the filtering time to stabilize the impulse frequency, however, the longer the filtering time is, the slower the response speed of impulse frequency detection is, and the actual application shall be considered for setting.

Description: When the PULS frequency input is corresponding to frequency, the reference value will be the percentage corresponding to the highest frequency.

When the PULS frequency input is corresponding to torque, the reference value will be the percentage corresponding to digit setting torque.

When the PULS frequency input is corresponding to PID, the reference value will be the percentage corresponding to PID setting feedback value.

Function code	Function name	Setting scope	Factory value
P2.0.29	T1 Relay Function Selection	0~59	1

This function code is used to select the function of T1 relay.

The Descriptions of multi-functional output terminals are as below:

Function code	Function name	Description
0	No function	Multi-function output terminal provides no any function
1	Frequency inverter is running	When the frequency inverter is running, the output frequency (0 can be set) will be generated and the ON signal will be output.
2	Fault stop output	When the frequency inverter stops due to fault, the ON signal will be output.
3	Frequency level detection FDT1 output	Please refer to the description of the function codes P2.2.03 and P2.2.04.

Setting value	Function	Description
4	Frequency Arrival	Refer to the Description for Function Code P2.2.02.
5	Zero-speed Running (no output when shut down)	When the frequency inverter is at running state and the output frequency is 0Hz, output Signal ON.
6	Motor Overload Pre-alarm	Before overload protection action of the motor, the judgment can be made according to the threshold value of early alarm to overload, after exceeding the threshold value of early alarm, output Signal ON. Refer to the Description for Function Code P1.0.25 and P1.0.26.
7	Frequency inverter Overload Pre-alarm	The frequency inverter outputs Signal ON 10s prior to occurrence of overload protection.
8	Reference Count Value Arrival	When actual accounting value reaches the set value of Function Code P3.1.11, output Signal ON.
9	Designated Count Value Arrival	When actual accounting value reaches the set value of Function Code P3.1.12, output Signal ON.
10	Length Arrival	When actual length (P9.0.13) reaches the length set by Function Code P3.1.08,output Signal ON.
11	PLC circulation cycle completed	When simple PLC running completes a cycle, output the impulse signal with the width of 250ms.
12	Accumulative Running Time Arrival	When the accumulative running time of the frequency inverter reaches the time set by Function Code P2.2.01, output Signal ON.
13	Frequency Limit	When the output frequency of the frequency inverter reaches upper frequency or lower frequency, output Signal ON.
14	Torque Limit	When the output torque of frequency inverter reaches limit value of the torque in speed control mode, output Signal ON.
15	Ready for Running	When main circuits and control circuit power of the frequency inverter have been stable and the inventor hasn’t defected out any fault information, and the frequency inverter is in running state, output Signal ON.
16	AVI>ACI	When the input value of AVI is greater than the input value of ACI, output Signal ON.
17	Upper Frequency Arrival	When the output frequency reaches upper frequency, output Signal ON.
18	Lower Frequency Arrival (no output when shut down)	When the output frequency reaches lower frequency and the frequency inverter is in running state, output Signal ON.
19	Under-voltage state output	When the frequency inverter is in under-voltage state, output Signal ON.
20	Communication Reference	Refer to the Description of Chapter 8.
21	AVI Output less than Lower Limit	When the value of the Analog AVI Input is less than the value set by Function Code P2.2.19 (Lower Limit of AVI Input), output Signal ON.
22	AVI Output more than Upper Limit	When the value of the Analog AVI Input is greater than the value set by Function Code P2.2.20 (Upper Limit of AVI Input), output Signal ON.

Setting value	Function	Description
23	Zero-speed Running 2 (also output when shut down)	When the output frequency of the frequency inverter is 0Hz, output Signal ON. In Stop Mode, this signal is ON.
24	Accumulative Power-on Time Arrival	When the accumulative power-on time of the frequency inverter reaches the time set by Function Code P2.2.00, output Signal ON.
25	Frequency Level Testing FDT2 Output	Refer to the Description of Function Code P2.2.05 and P2.2.06.
26	Frequency 1 Arrival Output	Refer to the Description of Function Code P2.2.07 and P2.2.08
27	Frequency 2 Arrival Output	Refer to the Description of Function Code P2.2.09 and P2.2.10.
28	Current 1 Arrival Output	Refer to the Description of Function Code P2.2.15 and P2.2.16.
29	Current 2 Arrival Output	Refer to the Description of Function Code P2.2.17 and P2.2.18.
30	Timing Arrival Output	When the timing function selection (P3.1.00=1) is valid, this running time reaches the given timing time, the frequency inverter automatically shuts down, output Signal ON in the process of shutdown and stop.
31	AVI Input Over-limit	When the value of the analog input is greater than the value (Upper Limit of AVI Input) set by Function Code P2.2.20 or less than the value (Lower Limit of AVI Input) set by Function Code P2.2.19, output Signal ON
32	In Off-load	In off-load state, the frequency inverter outputs Signal ON.
33	In Reverse Running	In reverse running state, the frequency inverter outputs Signal ON.
34	Zero-current State	Refer to the Description of Function Code P2.2.11 and P2.2.12.
35	Module Temperature Arrival	When the radiator temperature of the module of the frequency inverter reaches the temperature set by Function Code P2.2.21, output Signal ON.
36	Output Current Over-limit	Refer to the Description of Function Codes P2.2.13 and P2.2.14.
37	Lower Frequency Arrival (also output when shut down)	When the output frequency reaches lower frequency or the reference frequency is less than the lower frequency in stop state, output Signal ON.
38	Alarm Output	When the frequency inverter fails, if the fault handling mode is continuous running, output Signal ON. If the fault handling mode is shutdown by speed reduction, output Signal ON in the process of shutdown by speed reduction.
39	PLC Phase Completed	When each phase of simple PLC is completed, output an impulse signal with the width of 200ms.
40	Current Running Time Arrival	When current running time of the frequency inverter exceeds the value set by Function Code P2.2.22, output Signal ON and the frequency inverter cannot shut down.
41	Fault Output (Not Output for Under-voltage)	When the frequency inverter fails and shuts down, output Signal ON. Output Signal OFF in under-voltage state.
42	Timer 1 Timing Arrival	When the time of Timer 1 reaches the time set by Function Code P3.2.24, output Signal ON.

Setting value	Function	Description
43	Timer 2 Timing Arrival	When the time of Timer 2 reaches the time set by Function Code P3.2.25, output Signal ON.
44	Timer 1 Timing Arrival but Timer 2 Timing Not Arrival	When the time of Timer 1 reaches the time set by Function Code P3.2.24 and the time of Timer 2 fails to reach the time set by Function Code P3.2.25, output Signal ON.
45	User Function 1	Reserved
46	User Function 2	Reserved
47	User Function 3	Reserved
48	User Function 4	Reserved
49	User Function 5	Reserved
50	Synchronization Intermediate Relay M1	Have the same action with M1
51	Synchronization Intermediate Relay M2	Have the same action with M2
52	Synchronization Intermediate Relay M3	Have the same action with M3
53	Synchronization Intermediate Relay M4	Have the same action with M4
54	Synchronization Intermediate Relay M5	Have the same action with M5
55	Distance over Zero	When actual distance (P9.0.30) is greater than 0, output Signal ON.
56	Distance Set value 1 Arrival	When actual distance (P9.0.30) reaches the distance set by Function Code P3.1.13, output Signal ON.
57	Distance Set value 2 Arrival	When actual distance (P9.0.30) reaches the distance set by Function Code P3.1.14, output Signal ON.
58	Operation Result 2 greater than 0	When the result 2 of the operation module is greater than 0, output Signal ON.
59	Operation Result 4 greater than 0	When the result 4 of the operation module is greater than 0, output Signal ON.

Function code	Function name	Setting scope	Factory value
P2.0.33	Analog Output FM1 Reference	0~20	00

Function code P2.0.33 Defines the function of the analog output FM1.

Analog output FM1 output range of 0V to 10V voltage signal or 0mA to 20mA current signal. The deviation between actual output voltage and target output voltage of the analog output terminal can be adjusted through Function Codes P8.1.13~P8.1.20.

The calibration relationship between the output range of analog quantities and corresponding functions is shown in the following table:

Setting value	Function	Impulse or analog outputs 0.0%~100.0% corresponding function
0	Running Frequency	0~Max. Output Frequency
1	Reference Frequency	0~Max. Output Frequency
2	Output Current	0~2 Times of Rated Current of the Motor
3	Output Torque	0~2 Times of Rated Torque of the Motor
4	Output Power	0~2 Times of Rated Power
5	Output Voltage	0~1.2 Times of Rated Voltage of the Frequency inverter
6	PULSE Impulse Input	0.01kHz~100.00kHz
7	AVI Voltage	0V~10V
8	ACI Voltage	0 V to 10V corresponds to the input current of 0/4 ma to 20mA
9	Keyboard Potentiometer Voltage	0V~10V
10	Actual Length Value	0~Reference Length Value (Set value of Function Code P3.1.08)
11	Actual Counting Value	0~Designated Count Value (Set value of Function Code P3.1.12)
12	Communication Reference	Refer to the Description of Chapter VIII.
13	Motor Speed	0~Corresponding Speed of Max. Output Frequency
14	Output Current	0.0A~1000.0A
15	Bus Voltage	0.0V~1000.0V
16	Output Torque	-2 Times of Rated Torque of the Motor ~ 2 Times of Rated Torque of the Motor
17	Operation Result 1	-1000~1000
18	Operation Result 2	0~1000
19	Operation Result 3	-1000~1000
20	Operation Result 4	0~1000

Function code	Function name	Setting scope	Factory value
P2.0.36	Analog FM1 Output Offset	-100.0%~100.0%	000.0
P2.0.37	Analog FM1 Output Gains	-10.00~10.00	01.00

The above function codes are generally used for correcting zero drift of analog output and deviation of output amplitude, but also can be used to customize the required analog output curve.

Actual Analog Output= Standard Analog Output * Analog Output Gain+ Analog Output Offset

Standard Analog Output refers to the output analog value without offset and gain correction. Namely, voltage output is 0 ~ 10V and current output is 0 ~ 20mA

The analog output bias is percentage of the Max. voltage 10 V or current 20mA of standard analog output

For example: if output current signal is 4 ~ 20mA, analog output bias is set to 20% and analog output gain is set to 0.8.

Group P2.1 Expansion Group

Function code	Function name	Setting scope	Factory value
P2.1.00	Valid Model Selection 1 of Terminal DI	0: Active High Level 1: Active Low Level Ones: DI1 Tens: DI2 Hundreds: DI3 Thousands: DI4 Ten Thousands: Reserved	0

Be used for setting valid state mode of digital input terminal.
When selecting active high level, it is not valid until corresponding Terminal DI is connected, and the disconnection is invalid.
When selecting active low level, it is not valid until corresponding Terminal DI is connected, and the disconnection is invalid.

Function code	Function name	Setting scope	Factory value
P2.1.02	Analog Input Curve Selection	Ones: Curve selected by AVI Tens: Curve selected by ACI 1: Curve 1 2: Curve 2 3: Curve 3 4: Curve 4 Hundreds: Input resolution of AVI Thousands: Input resolution of ACI Ten Thousands: Input resolution of keyboard potentiometer 0: 0.01Hz 1: 0.02 Hz 2:0.05 Hz 3:0.10 Hz 4: 0.20Hz 5: 0.50Hz 6: 01.00 Hz (Keyboard Potentiometer is ineffective)	31121

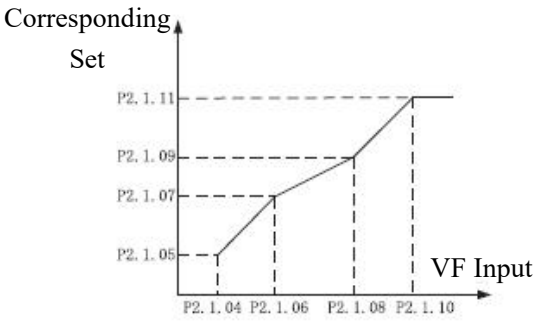
The Ones and Tens of this function code are respectively used to select the reference curves corresponding to analog input AVI and ACI. 2-way analog input can respectively select random one of 4 curves. The Curve 1 and Curve 2 belong to linear relationship, refer to the setting of P2.0.13~P2.0.22 for detailed contents; the Curve 3 and Curve 4 belong to the broken line relationship with two inflection points, refer to the setting of P2.1.04~P2.1.19 for detailed contents. Hundreds, thousands, ten thousands are used to select AVI, ACI, input resolution of keyboard potentiometer, also known as min fluctuation value.

Function code	Function name	Setting scope	Factory value
P2.1.03	Selection for Curve less than Min. Reference	Ones: AVI less than Min. Input Tens: ACI less than Min. Input 0: Corresponding Min. Input Reference 1: 0.0%	H.00

This function code is used to set how to determine the corresponding reference of the analog when the analog input is less than the given “Min. Input”.
The Ones and Tens of this function code respectively correspond to AVI and ACI. If it is 0, when AVI、ACI input is lower than“ Min. Input”, this corresponding reference of this analog is “Corresponding reference of Min. Input” (P2.0.14, P2.0.19, P2.1.05, P2.1.13) of the selected curve. If it is 1, when AVI、ACI input is lower than “Min. Input”, this corresponding reference of this analog is 0.0%.

Function code	Function name	Setting scope	Factory value
P2.1.04	Min. Input of Curve 3	00.00V~P2.1.06	00.00
P2.1.05	Corresponding reference for Min. Input of Curve 3	-100.0%~100.0%	000.0
P2.1.06	Curve 3 Inflection Point 1 Input	P2.1.04~P2.1.08	03.00
P2.1.07	Corresponding reference for Curve 3 Inflection Point 1 Input	-100.0%~100.0%	030.00
P2.1.08	Curve 3 Inflection Point 2 Input	P2.1.06~P2.1.10	06.00
P2.1.09	Corresponding reference for Curve 3 Inflection Point 2 Input	-100.0%~100.0%	060.0
P2.1.10	Max. Input of Curve 3	P2.1.08~10.00V	10.00
P2.1.11	Corresponding reference for Max. Input of Curve 3	-100.0%~100.0%	100.0

The functions and use methods of Curve 3 is roughly the same with Curve 1 and Curve 2 (refer to the Description of Curve 1), the difference is that Curve 1 and Curve 2 are linear relationship without inflection point, but curve 3 is broken line relationship with two inflection point in the middle, refer to the Description in the figure below:



Function code	Function name	Setting scope	Factory value
P2.1.12	Min. Input of Curve 4	00.00V~P2.1.14	00.00
P2.1.13	Corresponding reference for Min. Input of Curve 4	-100.0%~100.0%	-100.0
P2.1.14	Curve 4 Inflection Point 1 Input	P2.1.12~P2.1.16	03.00
P2.1.15	Corresponding reference for Curve 4 Inflection Point 1 Input	-100.0%~100.0%	-030.00
P2.1.16	Curve 4 Inflection Point 2 Input	P2.1.14~P2.1.18	06.00
P2.1.17	Corresponding reference for Curve 4 Inflection Point 2 Input	-100.0%~100.0%	030.0
P2.1.18	Max. Input of Curve 4	P2.1.16~10.00V	10.00
P2.1.19	Corresponding reference for Max. Input of Curve 4	-100.0%~100.0%	100.0

As for the functions and use methods of Curve 4, refer to the Description of Curve 3.

Function code	Function name	Setting scope	Factory value
P2.1.22	Valid State of T1 relay	0: Positive Logic 1: Negative Logic	0

This function code defines the output logic of T1 relay.

0: Positive Logic
When the output signal is valid, T1 relay will be connected. When the output signal is invalid, T1 relay will be disconnected.

1: Negative Logic
When the output signal is invalid, T1 relay will be connected. When the output signal is valid, T1 relay will be disconnected.

Function code	Function name	Setting scope	Factory value
P2.1.23	AVI Terminal Function as Digital Input	00: Used as Normal Analog 01~59: Digital Input Terminal Function	00
P2.1.24	ACI Terminal Function as Digital Input	00: Used as Normal Analog 01~59: Digital Input Terminal Function	00

This group of function code is used to set the function when the analog input terminal AVI、ACI is used as the digital input terminal DI. When AVI、ACI is used as DI and AVI、ACI is connected with 10V, the AVI、ACI Terminal State will be high level, when AVI、ACI is disconnected with 10V, AVI、ACI Terminal State will be low level. Refer to the setting of function codes P2.0.00~P2.0.03 for detailed function description.

Function code	Function name	Setting scope	Factory value
P2.1.25	Effective state selection of analog input	0: Active High Level 1: Active Low Level Ones: AVI Tens: ACI	0

This function code is used to confirm that the analog input terminal AVI、ACI is used as digital input terminal DI, AVI、ACI Terminal State is active high level or active low level. Ones and Tens respectively represent AVI and ACI.

Active High Level: the connection of AVI、ACI and 10V is valid, but disconnection is invalid.

Active Low Level: the connection of AVI、ACI and 10V is valid, but disconnection is invalid.

Function code	Function name	Setting scope	Factory value
P2.1.26	DI1 effective Delay	0.0s~3600.0s	0000.0
P2.1.27	DI2 effective Delay	0.0s~3600.0s	0000.0
P2.1.28	DI3 effective Delay	0.0s~3600.0s	0000.0

The above function code is used to set the delay time when DI1, DI2 and DI3 signals are effective until the signal has an effect on the frequency converter.

Function code	Function name	Setting scope	Factory value
P2.1.30	T1 Delay	0.0s~3600.0s	0000.0

The above function codes are used for the time from setting frequency inverter T1 signal to outputting T1 signal.

Function code	Function name	Setting scope	Factory value
P2.1.32	DI1 ineffective delay	0.0s~3600.0s	0000.0
P2.1.33	DI2 ineffective delay	0.0s~3600.0s	0000.0
P2.1.34	DI3 ineffective delay	0.0s~3600.0s	0000.0

The above function code is used to set the delay time when DI1, DI2 and DI3 signals are invalid.

Group P2.2 - Auxiliary Group

Function code	Function name	Setting scope	Factory value
P2.2.00	Accumulative Power-on Arrival Time Reference	0h~65000h	00000

This function code is used to set accumulative power-on time of the frequency inverter from the date of leaving the factory. When actually accumulative power-on time reaches the value set by Function Code P2.2.00, the multi-functional output terminals of the frequency inverter output Signal ON. The corresponding function of multi-functional output terminals is accumulative power-on time arrival (24). The frequency inverter gives an alarm of Fault Err23. If the setting is 0, the accumulative power-on time is not limited. Actually accumulative power-on time can be viewed through Function Code P5.1.01.

Note: Only when actually accumulative power-on time (P5.1.01) is less than the value set by Function Code P2.2.00, the frequency inverter can enter into normal running, if the setting is 0, the accumulative power-on time is not limited.

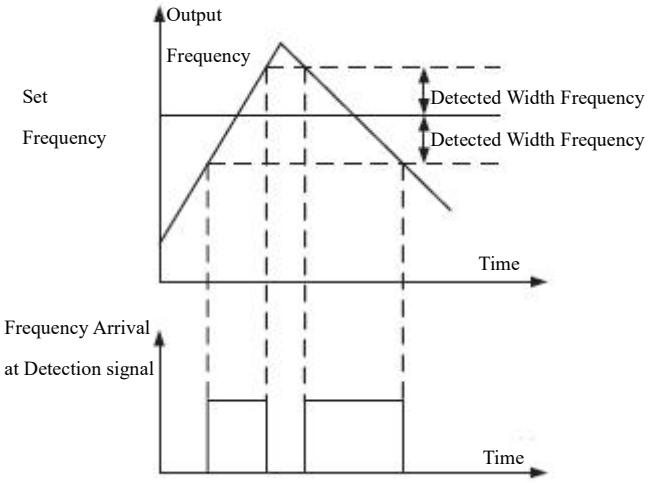
Function code	Function name	Setting scope	Factory value
P2.2.01	Accumulative Running Arrival Time Reference	0h~65000h	00000

This function code is used to set accumulative running time of the frequency inverter. When actually accumulative running time reaches the value set by Function Code P2.2.01, the multi-functional output terminals of the frequency inverter output Signal ON and the frequency inverter shuts down automatically. The corresponding function of multi-functional output terminals is accumulative running time arrival (12). The frequency inverter gives an alarm of Fault Err24. Actually accumulative running time can be viewed through Function Code P5.1.00.

Note: Only when actually accumulative running time (P5.1.00) is less than the value set by Function Code P2.2.01, the frequency inverter can enter into normal running, if the setting is 0, the accumulative running time is not limited.

Function code	Function name	Setting scope	Factory value
P2.2.02	Detected Reference frequency Width upon Arrival	000.0%~100.0%	000.0

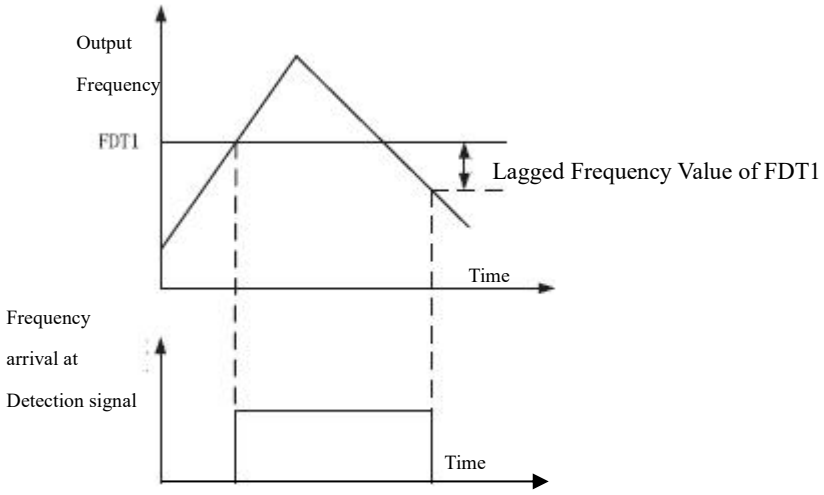
When the running frequency of frequency inverter is within positive and negative frequency with detected width of the reference frequency, the multi-functional output terminals of the frequency inverter output Signal ON. The reference value of this function code is the percentage relative to the high reference frequency. Corresponding function of multi-functional output terminals is frequency arrival (4), refer to the Description of the figure below:



Detected Width Frequency= Detected Reference frequency Width upon Arrival (P2.2.02) * Highest Frequency (P0.0.07)

Function code	Function name	Setting scope	Factory value
P2.2.03	Frequency Detection FDT1	000.00Hz~Highest frequency	050.00
P2.2.04	FDT1 Lagged Value	000.0%~100.0%	005.0

When the output frequency of the frequency inverter exceeds one value, the multi-functional output terminals of the frequency inverter output Signal ON, this value is called as Detected Frequency FDT1. When the output frequency of the frequency inverter is lower than a certain value of Detected Frequency FDT1, the multi-functional output terminals of the frequency inverter output Signal OFF, this value is called as Lagged FDT1 Frequency Value. Corresponding function of multi-functional output terminals is Detected FDT1 Output of Frequency Level (3), refer to the Description of the figure below:



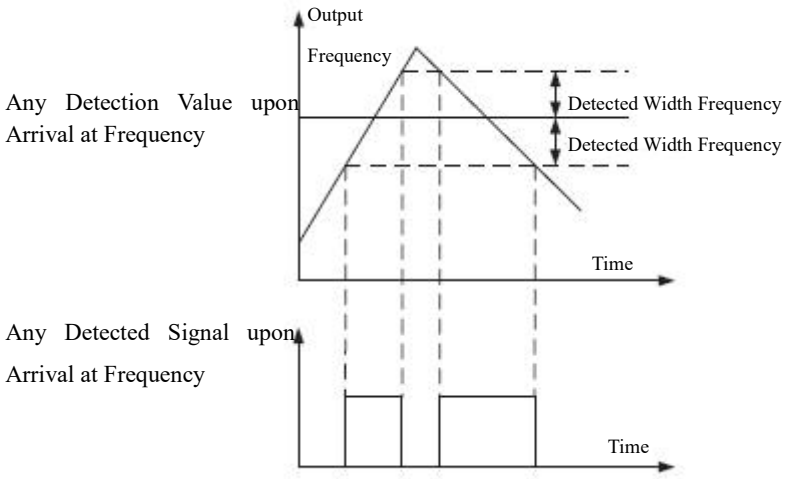
FDT1 lag frequency value = frequency detection FDT1 (P2.2.03) ×FDT1 lag value (P2.2.04)

Function code	Function name	Setting scope	Factory value
P2.2.05	Frequency Detection FDT2	000.00Hz~Highest frequency	050.00
P2.2.06	FDT2 Lagged Value	000.0%~100.0%	005.0

FDT2 has the same function with FDT1, refer to the Description for FDT1 (P2.2.03 and P2.2.04）for more details. Corresponding function of multi-functional output terminals is Frequency Level Detection FDT2 (25).

Function code	Function name	Setting scope	Factory value
P2.2.07	Detected Frequency Value 1 upon Arbitrary Arrival	000.00Hz~Highest frequency	050.00
P2.2.08	Detected Frequency 1 Width upon Arbitrary Arrival	000.0%~100.0%	000.0

When the running frequency of frequency inverter is within the positive & negative detected width frequency of arbitrary arrival frequency detection value 1, the frequency inverter output terminal will output ON signal. When the running frequency of frequency inverter is not within the positive & negative detected width frequency of arbitrary arrival frequency detection value 1, the frequency inverter output terminal will output OFF signal. The corresponding multi-function output terminal function is the frequency 1 arrival output (26) as Figure below:



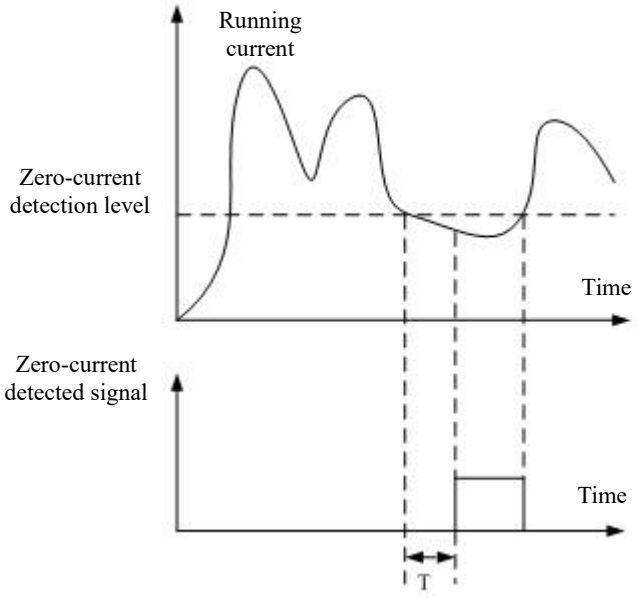
Detected Width Frequency = Any Detected Width upon Arrival at Frequency 1 (P2.2.08) * Highest Frequency (P0.0.07)

Function code	Function name	Setting scope	Factory value
P2.2.09	Detected Frequency Value 2 upon Arbitrary Arrival	000.00Hz~Highest Frequency	050.00
P2.2.10	Detected Frequency 2 Width upon Arbitrary Arrival	000.0%~100.0%	000.0

The above function codes have the same function with Function Codes P2.2.07 and P2.2.08, refer to the Description of P2.2.07 and P2.2.08 for more details. Corresponding function of the multi-functional output terminals is Frequency 2 Arrival Output (27).

Function code	Function name	Setting scope	Factory value
P2.2.11	Zero Current Detection Level	000.0%~300.0% (100.0% corresponds to rated current of motor)	005.0
P2.2.12	Delay Time for Zero Current Detection	000.01s~600.00s	000.10

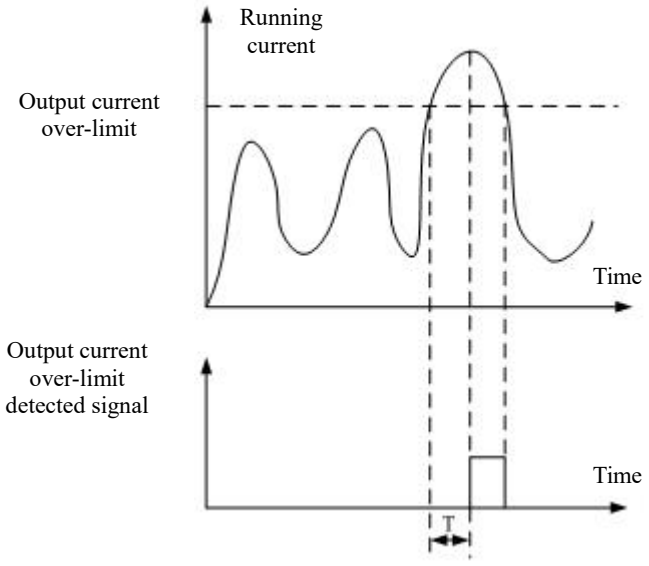
When the running current of the frequency inverter is less than or equal to zero-current detection level and the duration exceeds the delay time of zero-current detection, the multi-functional output terminals of the frequency inverter output Signal ON, once the running current resets to the current detection level larger than zero, the multi-functional output terminals of the frequency inverter output Signal OFF. Corresponding function of the multi-functional output terminals is zero-current state (34), refer to the Description of the figure below:



Current Detection Delay Time when T at 0

Function code	Function name	Setting scope	Factory value
P2.2.13	Output Current Over-limit Value	000.0 (No Detection) 000.1%~300.0%	200.0
P2.2.14	Delay Time for Current Over-limit Detection	000.00s~600.00s	000.00

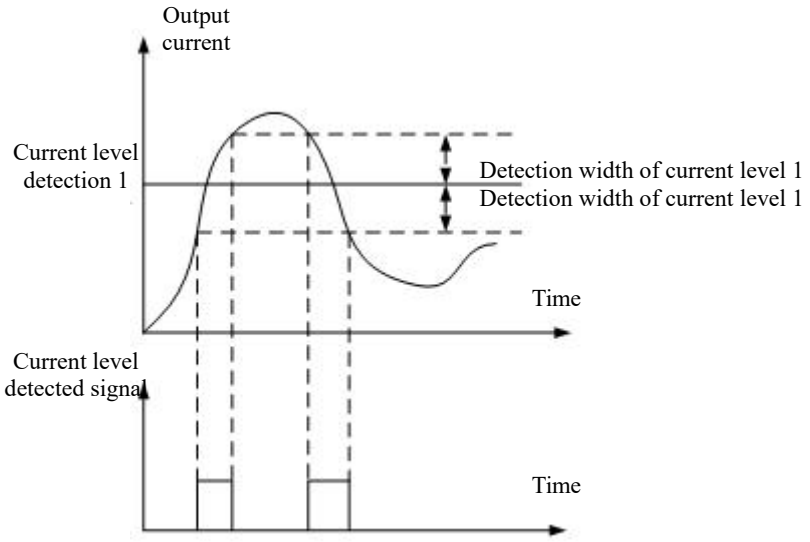
When the running current of the frequency inverter is greater than the value set by Function Code P2.2.13 and the duration exceeds the value set by Function Code P2.2.14, the multi-functional output terminals of the frequency inverter output Signal ON, once the running current resets to the value less than and equal to over-limit of output current, the multi-functional output terminals of the frequency inverter output Signal OFF. Corresponding function of the multi-functional output terminals is output current over-limit (36), refer to the Description of the figure below:



The output current over-limit is the percentage of rated current of the motor. T refers to the delay time of detecting out current over-limit.

Function code	Function name	Setting scope	Factory value
P2.2.15	Current Level Detection 1	000.0%~300.0%	100.0
P2.2.16	Detection Width of Current Level 1	000.0%~300.0%	000.0

When the running current of the frequency inverter is within the positive & negative detected width of current level detection 1, the frequency inverter multi-functional output terminal will output ON signal. When the running current of frequency inverter is not within the positive & negative detected width of current level detection 1, the frequency inverter multi-functional output terminal will output OFF signal. The reference value of above function code is the percentage corresponding to the rated current of motor. The corresponding multi-function output terminal function is the Current 1 Arrival Output (28) as Figure below:



Function code	Function name	Setting scope	Factory value
P2.2.17	Current Level Detection 2	000.0%~300.0%	100.0
P2.2.18	Detection Width of Current Level 2	000.0%~300.0%	000.0

The above function codes have the same functions with Function Codes P2.2.15 and P2.2.16, and refer to the Description of Function Codes P2.2.15 and P2.2.16 for more details. Corresponding function of the multi-functional output terminals is Current 2 Arrival Output (29).

Function code	Function name	Setting scope	Factory value
P2.2.19	AVI Input Lower Limit	00.00V~P2.2.20	03.10
P2.2.20	AVI Input Upper Limit	P2.2.19~11.00V	06.80

When the input value of Analog AVI is less than the value set by the Function Code P2.2.19, the frequency inverter multi-functional output terminal will output ON signal, and the corresponding multi-functional output terminal function is that AVI input is less than lower limit (21) or AVI input is over-limit (31)

When the input value of Analog AVI is more than the value set by the Function Code P2.2.20, the frequency inverter multi-functional output terminal will output ON signal, and the corresponding multi-functional output terminal function is that AVI input is more than upper limit (22) or AVI input is over-limit (31).

Function code	Function name	Setting scope	Factory value
P2.2.21	Model Temperature Arrival Reference	000℃~100℃	075

The module temperature of the frequency inverter reaches the value set by Function Code P2.2.21, the multi-functional output terminals of the frequency inverter output Signal ON. Corresponding function of the multi-functional output terminals is Module Temperature Arrival (35). Actual module temperature can be viewed through Function Code P5.1.03.

Function code	Function name	Setting scope	Factory value
P2.2.22	Current Running Arrival Time Reference	0000.0~6500.0min	0000.0

The frequency inverter needs to restart timing for every start, when reaching the value set by Function Code P2.2.22, the frequency inverter continues to run and the multi-functional output terminals of the frequency inverter output Signal ON. Corresponding function of multi-functional output terminals is Current Running Time Arrival (40). If the set is 0, current running time is not limited. Actual time of current running can be viewed through Function Code P9.0.23 (when the frequency inverter shuts down, the display value of P9.0.23 automatically resets to 0).

6.4 Group P3 - Programmable Function

Group P3.0 - Basic Group

Function code	Function name	Setting scope	Factory value
P3.0.00	Simple PLC Running Mode	0: End of Single Running and Stop 1: End of Single Running and Save Final Value 2: Continuous Running 3: Cycle N Times	0

0: Stop after End of Single Cycle

After the frequency inverter completes a cycle, it'll stop according to the stop mode set by P1.0.16.

1: Keep Final Value after End of Single Running

After the frequency inverter completes a cycle, it'll run according to the final phase of reference frequency.

2: Continuous Cycle

The frequency inverter continues to run until the stop command is given.

3: N Times of Cycle

The frequency inverter stops automatically after cycling N times. N is set by reference value of Function Code P3.0.01.

Function code	Function name	Setting scope	Factory value
P3.0.01	Cycle Times N	00000~65000	00000

This function code is used to set the times of cycle running at Function Code P3.0.00=3.

Function code	Function name	Setting scope	Factory value
P3.0.02	Option of PLC Power-off Memory	Ones: Option of Power-off Memory 0: No Power-off Memory 1: Power-off Memory Tens: Stop Memory Selection 0: No Stop Memory 1: Stop Memory	00

PLC Power-off Memory means running phase and running frequency of PLC before memory power-off, when powering on next time, the frequency inverter continues to run from memory phase. If it is selected not to memory, every power-on needs to restart the process of PLC.

PLC Stop Memory means running phase and running frequency of PLC before memory shutdown, when running next time, the frequency inverter continues to run from memory phase. If it is selected not to memory, every start needs to restart the process of PLC.

In addition, PLC recycling times can be realized memorizing by selecting this function.

Function code	Function name	Setting scope	Factory value
P3.0.03	Phase Directive 0	-100.0%~100.0%	000.0
P3.0.04	Phase 0 Running Time	0000.0s～6500.0s	0000.0
P3.0.05	Phase Directive 1	-100.0%~100.0%	000.0
P3.0.06	Phase 1 Running Time	0000.0s～6500.0s	0000.0
P3.0.07	Phase Directive 2	-100.0%~100.0%	000.0
P3.0.08	Phase 2 Running Time	0000.0s～6500.0s	0000.0
P3.0.09	Phase Directive 3	-100.0%~100.0%	000.0
P3.0.10	Phase 3 Running Time	0000.0s～6500.0s	0000.0
P3.0.11	Phase Directive 4	-100.0%~100.0%	000.0
P3.0.12	Phase 4 Running Time	0000.0s～6500.0s	0000.0
P3.0.13	Phase Directive 5	-100.0%~100.0%	000.0
P3.0.14	Phase 5 Running Time	0000.0s～6500.0s	0000.0
P3.0.15	Phase Directive 6	-100.0%~100.0%	000.0
P3.0.16	Phase 6 Running Time	0000.0s～6500.0s	0000.0
P3.0.17	Phase Directive 7	-100.0%~100.0%	000.0
P3.0.18	Phase 7 Running Time	0000.0s～6500.0s	0000.0
P3.0.19	Phase Directive 8	-100.0%~100.0%	000.0
P3.0.20	Phase 8 Running Time	0000.0s～6500.0s	0000.0
P3.0.21	Phase Directive 9	-100.0%~100.0%	000.0
P3.0.22	Phase 9 Running Time	0000.0s～6500.0s	0000.0
P3.0.23	Phase Directive 10	-100.0%~100.0%	000.0
P3.0.24	Phase 10 Running Time	0000.0s～6500.0s	0000.0

Function code	Function name	Setting scope	Factory value
P3.0.25	Phase Directive 11	-100.0%~100.0%	000.0
P3.0.26	Phase 11 Running Time	0000.0s～6500.0s	0000.0
P3.0.27	Phase Directive 12	-100.0%~100.0%	000.0
P3.0.28	Phase 12 Running Time	0000.0s～6500.0s	0000.0
P3.0.29	Phase Directive 13	-100.0%~100.0%	000.0
P3.0.30	Phase 13 Running Time	0000.0s～6500.0s	0000.0
P3.0.31	Phase Directive 14	-100.0%~100.0%	000.0
P3.0.32	Phase 14 Running Time	0000.0s～6500.0s	0000.0
P3.0.33	Phase Directive 15	-100.0%~100.0%	000.0
P3.0.34	Phase 15 Running Time	0000.0s～6500.0s	0000.0

When the tens for each phase property of the multiplex directive is 0, the corresponding reference value of Simple PLC Running and each phase of the multiplex directive are the percentage relative to the highest frequency.

The phase running time is the duration of PLC running at the frequency of each phase (including acceleration and deceleration time and FWD and REV Dead Time).

Function code	Function name	Setting scope	Factory value
P3.0.35	Phase 0 Attribute	Ones: Acceleration & Deceleration Time Selection (Invalid Multiplex Directive) 0: Acceleration & Deceleration Time 1 1: Acceleration & Deceleration Time 2 2: Acceleration & Deceleration Time 3 3: Acceleration & Deceleration Time 4 Tens: Frequency Source Selection (Valid Multiplex Directive) 0: Current Phase Directive 1: Keyboard Potentiometer 2: Keyboard Frequency Reference 3: AVI Input 4: ACI Input 5: PULS Reference (DI4) 6: PID Reference 7: Operation Result 1 8: Operation Result 2 9: Operation Result 3 A: Operation Result 4 Hundreds unit: running direction 0: Default Direction 1: Reversed Direction	H.000
P3.0.36	Phase 1 Attribute		H.000
P3.0.37	Phase 2 Attribute		H.000
P3.0.38	Phase 3 Attribute		H.000
P3.0.39	Phase 4 Attribute		H.000
P3.0.40	Phase 5 Attribute		H.000
P3.0.41	Phase 6 Attribute		H.000
P3.0.42	Phase 7 Attribute		H.000
P3.0.43	Phase 8 Attribute		H.000
P3.0.44	Phase 9 Attribute		H.000
P3.0.45	Phase 10 Attribute		H.000
P3.0.46	Phase 11 Attribute		H.000
P3.0.47	Phase 12 Attribute		H.000
P3.0.48	Phase 13 Attribute		H.000
P3.0.49	Phase 14 Attribute		H.000
P3.0.50	Phase 15 Attribute		H.000

The ones of the phase property determine the acceleration and deceleration time of Simple PLC running at each phase and the tens of phase property determine the frequency source of Simple PLC Running or Multiplex Directive at each phase. The hundreds unit of phase attribute is determined by running direction of simple PLC at each phase.

Function code	Function name	Setting scope	Factory value
P3.0.51	Simple PLC Running Time Unit	0：Second 1：Hour 2：Minute	0

Refer to the unit of phase running time when the frequency inverter is at Simple PLC Running.

Function code	Function name	Setting scope	Factory value
P3.1.00	Timing Function Selection	0: Ineffective 1: Effective (min) 2: Effective (h)	0
P3.1.01	Fixed Running Time Selection	0: Digital Reference (P3.1.02) 1: External Terminal AVI Reference 2: External Terminal ACI Reference (Analog input range corresponds to P3.1.02)	0
P3.1.02	Fixed Running Time	0000.0min/h~6500.0min/h (unit depends on P3.1.00)	0000.0

The above function codes are used to complete the timing run function of the frequency inverter. Refer to 7.1.8 for more details (Timing Function).

Function code	Function name	Setting scope	Factory value
P3.1.03	Wobbulating Reference Mode	0: Relative to Reference frequency 1: Relative to Highest Frequency	0
P3.1.04	Wobbulating Range	000.0%~100.0%	000.0
P3.1.05	Kicking Range	00.0%~50.0%	00.0
P3.1.06	Wobbulating Cycle	0000.1s~3000.0s	0010.0
P3.1.07	Rise Time of Wobbulating Triangular Wave	000.1%~100.0%	050.0

The above function codes are used for wobbulating function. Refer to 7.1.16 for more details (wobbulating function).

Function code	Function name	Setting scope	Factory value
P3.1.08	Reference Length	00000m~65535m	01000
P3.1.09	Actual Length	00000m~65535m	00000
P3.1.10	Impulse Count per meter	0000.1~6553.5	0100.0

The above function codes are used for fixed-length control. Refer to 7.1.9 for more details (fixed-length function).

Function code	Function name	Setting scope	Factory value
P3.1.11	Reference Count Value	00001~65535	01000
P3.1.12	Designated Count Value	00001~65535	01000

The above function codes are used for counting control. Refer to 7.1.10 for more details (Counting Function).

Function code	Function name	Setting scope	Factory value
P3.1.13	Distance Set value 1	-3200.0~3200.0	0000.0
P3.1.14	Distance Set value 2	-3200.0~3200.0	0000.0
P3.1.15	Impulse Count per Distance	000.00~600.00	000.00

The above function codes are used for distance control. Refer to 7.1.11 for more details (Distance Control Function).

P3.2 Built-in Logic PLC Function

Function code	Function name	Setting scope	Factory value
P3.2.00	Intermediate Delay Relay Control	0: the input of this relay is determined by this Relay Control Word A 1: the input of this relay is determined by this Relay Control Word B 2: the input of this relay is determined by this Relay Control Word C Ones: Relay 1 (M1) Tens: Relay 2 (M2) Hundreds: Relay 3 (M3) Thousands: Relay 4 (M4) Ten Thousands: Relay 5 (M5)	00000

This function is used to set which control word determines the Intermediate Delay Relay.
When at 0, the Intermediate Delay Relay is determined by Control Word A, refer to the Description for Function Code P3.2.01.

When at 1, the Intermediate Delay Relay is determined by Control Word B, refer to the Description for Function Code P3.2.02~P3.2.06.

When at 2, the Intermediate Delay Relay is determined by thousands and hundreds of Control Word C, refer to the Description for Function Code P3.2.07~P3.2.11.

Refer to the explanation for 7.1.12 (Simple Internal Relay Programmable Function).

Function code	Function name	Setting scope	Factory value
P3.2.01	Intermediate Relay Control Word A	0: Reference 0 1: Reference 1 Ones: M1 Tens: M2 Hundreds: M3 Thousands: M4 Ten Thousands: M5	00000

When which digit of Function Code P3.2.00 is 0, this function Code is used to compulsorily set corresponding relay of this digit at 0 or 1. Refer to 7.1.12 for more details (Simple Internal Relay Programmable Function).

Function code	Function name	Setting scope	Factory value
P3.2.02	Intermediate Delay Relay M1 Control Word B	Ones: Control Logic 0: Input 1 1: Input 1 and NOT 2: Input 1 and Input 2 AND 3: Input 1 and Input 2 OR 4: Input 1 and Input 2 XOR	00000
P3.2.03	Intermediate Delay Relay M2 Control Word B		00000
P3.2.04	Intermediate Delay Relay M3 Control Word B		00000

P3.2.05	Intermediate Delay Relay M4 Control Word B	5: the valid reference of Input 1 is valid the valid Reference of Input 2 is invalid 6: Valid reference of Input 1 Rise Edge is valid Valid reference of Input 2 Rise Edge is invalid 7: Reverse valid signal of Input 1 Rising Edge 8:Input 1 Rise Edge is valid and output a impulse signal with width of 200ms 9: Input 1 Rise Edge and Input 2 AND Hundreds and Tens: Input 1 Selection 0~3:DI1~DI4； 4~9: Reserved 10~14:M1~M5 15~16:AVI,ACI 17~19:Standby 20~79: Output Function 00~59 Corresponding to Multi-functional Output Terminal Ten Thousands: Input 2 Selection 0~3:DI1~DI4； 4~9: Reserved 10~14:M1~M5 15~16:AVI,ACI 17~19:Standby 20~59: Output Function 00~39 Corresponding to Multi-functional Output Terminal	00000
P3.2.06	Intermediate Delay Relay M5 Control Word B		00000

When which digit of Function Code P3.2.00 is 1, the relay of this digit is controlled by the above corresponding function code. The ones of the above function codes are used to set the logic operation function of Input 1 and Input 2. The hundreds and tens are used to set the option for Input 1. Ten Thousands and Thousands are used to set the option for Input 2. The Intermediate Delay Relay M is the result from simple logic operation of Input 1 and Input 2.

M=Logic Operation (Input 1 and Input 2)

Refer to 7.1.12 for more details (Simple Internal Relay Programmable Function).

Function code	Function name	Setting scope	Factory value
P3.2.07	Intermediate Delay Relay M1 Control Word C	Tens Ones: 00~59 Output Function 00~59 Corresponding to Digital Input Terminal Thousands Hundreds: 00~59 Output Function 00~59	0000
P3.2.08	Intermediate Delay Relay M2 Control Word C		0000
P3.2.09	Intermediate Delay Relay M3 Control Word C		0000

P3.2.10	Intermediate Delay Relay M4 Control Word C	Corresponding to Multi-functional Output Terminal	0000
P3.2.11	Intermediate Delay Relay M5 Control Word C		0000

The Tens and Ones of the above function codes are used to set the action destination of acquiring the Intermediate Delay Relay after logic operation results, that is, action to be performed (it can correspond to any one kind of digital input functions), and the Thousands and Hundreds are used to control corresponding relay when which digit of Function Code P3.2.00 is 2 (it can correspond to any one kind of multi-functional output terminal functions). Refer to 7.1.12 for more details（Simple Internal Relay Programmable Function）

Function code	Function name	Setting scope	Factory value
P3.2.12	M1 Connection Delay Time	0.0s~3600.0s	0000.0
P3.2.13	M2 Connection Delay Time	0.0s~3600.0s	0000.0
P3.2.14	M3 Connection Delay Time	0.0s~3600.0s	0000.0
P3.2.15	M4 Connection Delay Time	0.0s~3600.0s	0000.0
P3.2.16	M5 Connection Delay Time	0.0s~3600.0s	0000.0
P3.2.17	M1 Disconnection Delay Time	0.0s~3600.0s	0000.0
P3.2.18	M2 Disconnection Delay Time	0.0s~3600.0s	0000.0
P3.2.19	M3 Disconnection Delay Time	0.0s~3600.0s	0000.0
P3.2.20	M4 Disconnection Delay Time	0.0s~3600.0s	0000.0
P3.2.21	M5 Disconnection Delay Time	0.0s~3600.0s	0000.0

The above function codes are used to set the delay time of connecting or disconnecting the Intermediate Delay Relays.

Function code	Function name	Setting scope	Factory value
P3.2.22	Valid State Option of Intermediate Relay	0: Not Negation 1: Negation Ones: M1 Tens: M2 Hundreds: M3 Thousands: M4 Ten Thousands: M5	00000

This function code is used to set valid state of the Intermediate Delay Relay.

If which digit is 0, it means that the relay of this digit will output the signal of acquired results.

If which digit is 1, it means that the relay of this digit will invert the signal of acquired results and output it.

Function code	Function name	Setting scope	Factory value
P3.2.23	Internal Timer Control Word	Ones: Timing Control 1 of Timer Tens: Timing Control 2 of Timer 0: Timer Running 1: Controlled by Timer Input Terminal 1 2: Negation Control of Timer Input Terminal 1 3: Controlled by Timer Input Terminal 2 4: Negation Control of Timer Input Terminal 2 Hundreds: Timer 1 Reset Control Thousands: Timer 2 Reset Control 0: Controlled by Timer Reset Terminal 1 1: Controlled by Timer Reset Terminal 2 Ten Thousands: Timing Unit 0: Second 1: Minute 2: Hour	00000

The Ones and Tens of this function code is used to set the timing control of Timer 1 and Timer 2 respectively.

0: Indicate that the timer is uncontrollable and continuously counting.

1: Conduct control by Timer Input Terminal 1, when this terminal state is valid, the timer starts counting, when the terminal state is invalid, the timer stops counting and keeps current value.

2: Conduct inverse control by Timer Input Terminal 1, when this terminal state is invalid , the timer starts counting, when the terminal state is valid, the timer stops counting and keeps current value.

3~4: Refer to Description for 1 and 2.
The Hundreds and Thousands of this function code are respectively used to set reset control of Timer 1 and Timer 2.

0: Control by Timer Reset Terminal 1, when this terminal state is valid, the timing value of the timer is reset to zero.

1: Control by Timer Reset Terminal 2, when this terminal state is valid, the timing value of the timer is reset to zero.

The Ten Thousands of this function is used to set the timing unit. 0 indicates, 1 indicates second and minute and 2 indicates hour respectively.

Refer to the explanation of 7.1.13 (Internal Timer Function).

Function code	Function name	Setting scope	Factory value
P3.2.24	Timing Time of Timer 1	0.0s~3600.0s	00000
P3.2.25	Timing Time of Timer 2	0.0s~3600.0s	00000

The Function Codes P3.2.24 and P3.2.25 are respectively used to set the time of Timer 1 and Timer 2.

Function code	Function name	Setting scope	Factory value
P3.2.26	Operation Module Operation Module	0: No Operation 1: Add Operation 2: Subtraction Operation 3: Multiply Operation 4: Division Operation 5: Greater than Judgment 6: Equal to Judgment 7: Equal to or Greater than Judgment 8: Integration 9~F: Reserved Ones: Operation 1 Tens: Operation 2 Hundreds: Operation 3 Thousands: Operation 4	H.0000

The ones, tens, hundreds and thousands of this function code respectively correspond to one-way operation. Each operation can select different operation methods. Refer to the explanation of 7.1.14 for more details (Internal Operation Function).

Function code	Function name	Setting scope	Factory value
P3.2.27	Operation Setting Coefficient Property	0: Operate the Setting Coefficient by multiplication without decimal 1: Conduct setting at one decimal fraction to system by multiplication algorithm 2: Conduct setting at two decimal fractions to system by multiplication algorithm 3: Conduct setting at three decimal fractions to system by multiplication algorithm 4: Conduct setting at four decimal fractions to system by multiplication algorithm 5: Conduct setting at no decimal fraction to system by division algorithm 6: Conduct setting at one decimal fractions to system by division algorithm 7: Conduct setting at two decimal fractions to system by division algorithm 8: Conduct setting at three decimal fractions to system by division algorithm 9: Conduct setting at four decimal fractions to system by division algorithm A: Conduct setting at no decimal fraction to system by division algorithm B: Conduct setting at one decimal fractions to system by division algorithm C: Conduct setting at two decimal fractions to system by division algorithm D: Conduct setting at three decimal fractions to system by division algorithm E: Conduct setting at four decimal fractions to system by division algorithm (The setting coefficient of A, B, C, D, E is the address number of function code) Ones: Operation 1 Tens: Operation 2 Hundreds: Operation 3 Thousands: Operation 4	H.0000

The scope of the operation results is not certainly equal to the setting scope of the function codes of the frequency inverter, so a setting coefficient is required to set the scope of the operation results to the setting scope of the function codes of the frequency inverter. When the setting value is 0~9, the operation setting coefficient is a number which can be included in operation directly. When the setting value is A~E, the operation setting coefficient is a address number of function code and only the number in the address of function code can be included in operation. This function code is used to set the functions of the setting coefficient. The Ones, Tens, Hundreds and Thousands of this function code respectively correspond to one-way operation. Refer to the Description of 7.1.14 for more details (Internal Operation Function).

Function code	Function name	Setting scope	Factory value
P3.2.28	Input A of Operation 1	Thousands, Hundreds, Tens and Ones: express address of Input A of Operation 1 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000
P3.2.29	Operation 1 input B	Thousand's place, Hundred's place, Ten's place, Unit's place: indicating operation 1 input B address Ten thousand's place: indicating the input operation mode 0:Input applies operation with unsigned number 1:Input applies operation with signed number	00000
P3.2.30	Setting Coefficient of Operation 1	00000~65535	00001

The above function codes are used to set input address and setting coefficient of Operation 1. The Thousands, Hundreds, Tens and Ones of Function Code P3.2.28 and Function Code P3.2.29 represent the address of Input A of Operation 1 and Input B of Operation 1 respectively. The input address corresponds to all function codes, e.g. Address 0005 corresponds to Function Code P0.0.05. If the input address has no corresponding function code, the default value in the input address is 0. The ten thousands in P3.2.28 and P3.2.29 indicate the operation mode of the digital value in input address. 0 means the operation by unsigned number and 1 means the operation by signed number.

The Function Code P3.2.30 is used to set the setting coefficient of Operation 1. When the Ones unit of P3.2.27 is set to 0~9, the numbers in function code P3.2.30 can be included in operation directly; when the Ones unit of P3.2.27 is set to A ~ E, only the numbers which are the address numbers of function code P3.2.30 can be included in operation, namely indirect addressing.

Function code	Function name	Setting scope	Factory value
P3.2.31	Input A of Operation 2	Thousands, Hundreds, Tens and Ones: express address of Input A of Operation 2 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000

Function code	Function name	Setting scope	Factory value
P3.2.32	Input B of Operation 2	Thousands, Hundreds, Tens and Ones: express address of Input B of Operation 2 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000
P3.2.33	Setting Coefficient of Operation 2	00000~65535	00001
P3.2.34	Input A of Operation 3	Thousands, Hundreds, Tens and Ones: express address of Input A of Operation 3 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000
P3.2.35	Input B of Operation 3	Thousands, Hundreds, Tens and Ones: express address of Input B of Operation 3 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000
P3.2.36	Setting Coefficient of Operation 3	00000~65535	00001
P3.2.37	Input A of Operation 4	Thousands, Hundreds, Tens and Ones: express address of Input A of Operation 4 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000
P3.2.38	Input B of Operation 4	Thousands, Hundreds, Tens and Ones: express address of Input B of Operation 4 Ten Thousands: express input operation model 0: Input is operation by unsigned number 1: Input is operation by signed number	00000
P3.2.39	Setting Coefficient of Operation 4	00000~65535	00001

The above function codes are used to set the input address and setting coefficient of Operation 2, 3, 4. Refer to the explanation of Function Codes P3.2.28~P3.2.30 for more details.

6.5 Group P4 PID Control and Communication Control

P4.0 PID Control Group

Function code	Function name	Setting scope	Factory value
P4.0.00	PID Reference Source	0: Digital Reference (P4.0.01) 1: Keyboard Potentiometer Reference 2: External Terminal AVI Reference 3: External Terminal ACI Reference 4: PULS Impulse Reference (DI4) 5: Communication Reference 6: Multiplex Directive Terminal Reference 7: Simple PLC Reference 8: Operation Result 1 9: Operation Result 2 10: Operation Result 3 11: Operation Result 4	00

0: Digital Reference (P4.0.01）

PID Reference Value is determined by the value by Function Code P4.0.01.

1: Keyboard Potentiometer Reference

PID Reference Value is determined by Keyboard Potentiometer.

2: External Terminal AVI Reference

3: External Terminal ACI Reference

PID Reference Value is set by the analog input terminal. The D200 Series Frequency inverter provides 2-way analog input terminal (AVI, ACI). AVI is used for voltage (0V ~ 10V) input, ACI is used for current (0/4mA ~ 20mA) input. As for corresponding relation curve between the input value of AVI and ACI and PID value, the users can freely choose from four kinds of the relation curves through function code P2.1.02, in which Curve 1 and Curve 2 are linear relationship able to be set through Function Code P2.0.13~P2.0.22, and Curve 3 and Curve 4 are broken line relationship with two inflection points able to be set through Function Code P2.1.04~P2.1.19. The deviation between actual voltage and sampling voltage of the analog input terminal can be adjusted through Function Code P8.1.05~P8.1.12.

4: PULS Impulse Reference (DI4)

PID Reference Value is set by high-speed impulse frequency of digital input terminal DI4 (the terminal function is not defined). The corresponding relationship between high-speed impulse frequency and PID value can be set through Function Code P2.0.23~P2.0.26, that is, linear relationship.

5: Communication Reference

PID Reference Value is set by the upper computer through communication mode (refer to Chapter 8 for more details).

6: Multiplex Directive Terminal Reference

PID Reference Value is given by different composite state of Multiplex Directive Terminal. D200 Series Frequency inverter is able to set four Multiplex Directive Terminals (Terminal Function 9~12, refer to the explanation for Multiplex Directive Terminal Function of P2.0.00~P2.0.03 for more details)

7: Simple PLC Reference

PID Reference Value is given by Simple PLC Function, PID Reference of the frequency inverter can be switched among 1~16 arbitrary frequency directives, the sources, hold time and acceleration & deceleration time of each frequency directive can be set through Function Code 3.0.03~P3.0.50.

8: Operation Result 1

9: Operation Result 2

10: Operation Result 3

11: Operation Result 4

PID Reference Value is determined by the operation results after setting calculation of the internal operation module. Refer to the Description of Function Codes P3.2.26~P3.2.39 for more details of the operation module. The operation results can be viewed through Function Codes P9.0.46~P9.0.49.

Function code	Function name	Setting scope	Factory value
P4.0.01	PID Value Reference	000.0%~100.0%	050.0%

When at Function Code P4.0.00=0, PID Reference is determined by the value set by this function code.

Function code	Function name	Setting scope	Factory value
P4.0.02	PID Feedback Source	0: External Terminal AVI Reference 1: External Terminal ACI Reference 2: AVI-ACI 3: AVI+ACI 4: PULS Impulse Reference (DI4) 5: Communication Reference 6: MAX[AVI, ACI] 7: MIN[AVI, ACI] 8: Switch of Multiplex Directive Terminal on the above conditions 9: Operation Result 1 10: Operation Result 2 11: Operation Result 3 12: Operation Result 4	00

0: External Terminal AVI Reference

1: External Terminal ACI Reference

PID Feedback Value is set by the analog input terminal.

2: AVI-ACI

PID Feedback Value is set by the analog AVI-ACI input.

3: AVI+ACI

PID Feedback Value is set by the analog AVI+ACI input.

4: PULS Impulse Reference

PID Reference Value is set by high-speed impulse frequency of digital input terminal DI4 (the terminal function is not defined). The corresponding relationship between high-speed impulse frequency and corresponding PID value can be set through Function Code P2.0.23~P2.0.26, that is, linear relationship.

5: Communication Reference

PID Reference Value is set by the upper computer through communication mode (refer to Chapter VIII for more details).

6: MAX[AVI, ACI]
PID Feedback Source is set by maximum value between Analog AVI and ACI Input.

7: MIN[AVI, ACI]
PID Feedback Source is set by minimum value between Analog AVI and ACI Input.

8: Multiplex directive terminal switches among the above among the above conditions

PID Reference Value switches among the above 8 kinds of conditions by different composite state of Multiplex Directive Terminal. D200 Series Frequency inverter is able to set four Multiplex Directive Terminals, when in use, it is to take three terminal functions (Terminal Function 9~11), refer to the table below for more details:

Terminal 3	Terminal 2	Terminal 1	Feedback channel
0	0	0	AVI (correspond to P4.0.02=0)
0	0	1	ACI (correspond to P4.0.02=1)
0	1	0	AVI–ACI (correspond to P4.0.02=2)
0	1	1	AVI+ACI (correspond to P4.0.02=3)
1	0	0	PULS Impulse reference (correspond to P4.0.02=4)
1	0	1	Communication reference (correspond to P4.0.02=5)
1	1	0	MAX [AVI, ACI](correspond to P4.0.02=6)
1	1	1	MIN [AVI, ACI](correspond to P4.0.02=7)

9: Operation Result 1

10: Operation Result 2

11: Operation Result 3

12: Operation Result 4

PID Reference Value is determined by the operation results after setting calculation of the internal operation module. Refer to the explanation of Function Codes P3.2.26~P3.2.39 for more details of the operation module. The operation results can be viewed through Function Codes 9.0.46~P9.0.49.

Function code	Function name	Setting scope	Factory value
P4.0.03	PID Action Direction	0: Direct Action 1: Reverse Action	0

This function code is used to set the change conditions of the frequency with the feedback quantity.

0: Direct Action

The output frequency of the frequency inverter is in proportion to its feedback quantity, when the feedback quantity is less than the given quantity, the output frequency of the frequency inverter rises to make the feedback quantity rise accordingly and final feedback quantity equal to the given quantity.

1: Reverse Action

The output frequency of the frequency inverter is in inverse proportion to its feedback quantity, when the feedback quantity is greater than the given quantity, the output frequency of the frequency inverter rises to make the feedback quantity decline accordingly and final feedback quantity equal to the given quantity.

Function code	Function name	Setting scope	Factory value
P4.0.04	PID Reference Feedback Range	00000~65535	01000

The feedback range of PID Reference is dimensionless unit, which is the range of PID Reference showing P9.0.14 and PID Feedback showing P9.0.15. If P4.0.04 is set at 5000, when the feedback value of PID is 100.0%, PID Feedback showing P9.0.15 is 5000. PID Reference and Feedback are set based on this parameter.

Function code	Function name	Setting scope	Factory value
P4.0.05	Proportional Gains KP1	000.0~100.0	020.0
P4.0.06	Integral Time TI1	00.01s~10.00s	02.00
P4.0.07	Derivative Time TD1	00.000s~10.000s	00.000

The greater the value of proportional gain KP1 is, the larger the adjustment volume is and the faster the response is, but the too large value can generate the system oscillation, the smaller the value of KP1 is, the more stable the system is and the slower the response is.

The greater the value of Integral Time TI1 is, the slower the response is and the more stable the output is, the worse the fluctuation control ability of the feedback quantity is, the smaller the value of TI1 is, the faster the response is and the greater the output fluctuation is, the too small value can generate the oscillation.

The Derivative Time TD1 can set the limit for gain provided by the derivator to ensure that a pure derivative gain can be obtained at low frequency and a constant derivative gain can be obtained at high frequency. The longer the derivative time is, the greater the adjusting strength is.

Function code	Function name	Setting scope	Factory value
P4.0.08	PID Deviation Limit	000.0%~100.0%	000.0

This function code is used to determine whether PID is adjusted to prevent unstable output frequency when the deviation between reference and feedback is small.

When the deviation between reference quantity and feedback quantity is less than the value set by P4.0.08, stop the adjustment to PID and the frequency inverter keeps stable output.
When the deviation between reference quantity and feedback quantity is greater than the value set by P4.0.08, adjust PID.

Function code	Function name	Setting scope	Factory value
P4.0.09	PID Feedback Filtering Time	00.00~60.00s	00.00

This function code is used to set the software filtering time of feedback value input, when the feedback value is prone to be interfered on the site, please increase the filtering time to stabilize the feedback value of detection; however, the longer the filtering time is, the slower the response speed of feedback value detection is, and the value shall be set by considering the actual application.

Function code	Function name	Setting scope	Factory value
P4.0.10	Proportional Gains KP2	000.0~100.0	020.0
P4.0.11	Integral Time TI2	00.01s~10.00s	02.00
P4.0.12	Derivative Time TD2	00.000s~10.000s	00.000

The above function codes have the same functions with Function Codes P4.0.05~P4.0.07, refer to the Description for P4.0.05~P4.0.07.

Function code	Function name	Setting scope	Factory value
P4.0.13	PID Switch Conditions	0: No Switch 1: Switch through Terminals 2: Switch through Deviation	0

In some occasions of special applications, better PID Parameter is required to be adopted for control under different conditions. This function code is used to set under what condition PID Parameter is required to be switched.

0: No Switch
Adopt PID parameters of P4.0.05~P4.0.07 by default.

1: Switch through Terminal
The switch is made through digital input terminal (set this terminal function at 41: switch of PID parameter). When the terminal signal is valid, adopt PID parameters of P4.0.05~P4.0.07. When the terminal signal is valid, adopt PID parameters of this group of P4.0.10~P4.0.12.

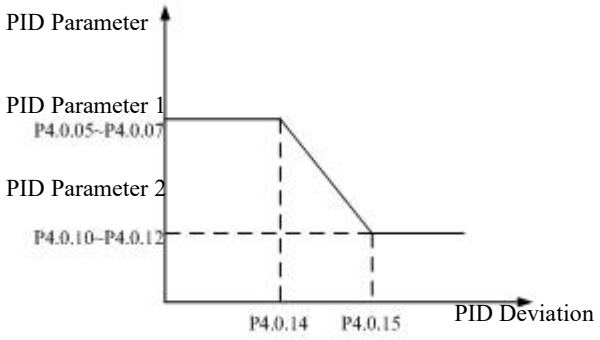
2: Switch based on Deviation

The switch is made based on setting value of Function Codes P4.0.14 and P4.0.15, refer to the Description of Function Codes P4.0.14 and P4.0.15.

Function code	Function name	Setting scope	Factory value
P4.0.14	PID Switch Deviation 1	000.0%~P4.0.15	020.0
P4.0.15	PID Switch Deviation 2	P4.0.14~100.0%	080.0

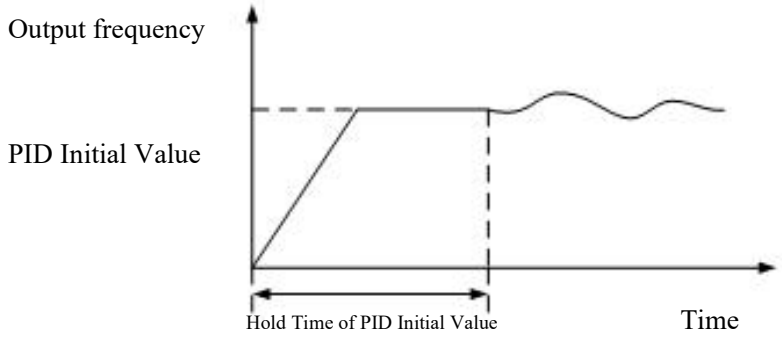
When at P4.0.13=2, it is to determine whether the switch of PID parameters needs to be done through these two function codes. The setting value of these two function codes is the percentage relative to Function Code P4.0.04 (PID Reference Feedback Range).

When the deviation between reference and feedback is less than PID Switch Deviation 1, adopt PID Parameter of P4.0.05~P4.0.07. When the deviation between reference and feedback is greater than PID Switch Deviation 2, adopt PID Parameter of P4.0.10~P4.0.12. When the deviation between reference and feedback is between PID Switch Deviation 1 and PID Switch Deviation 2, PID Parameter is the linear interpolation value of these two groups of PID Parameters, refer to the description of the figure below:



Function code	Function name	Setting scope	Factory value
P4.0.16	PID Initial Value	000.0%~100.0%	000.0
P4.0.17	PID Initial Value Hold Time	000.00~650.00s	000.00

When the frequency inverter starts, first speed it up to initial value of PID at acceleration time and then keep running at initial state of PID, after the duration of time reaches the time given by P4.0.17, conduct regulation to PID. Initial Value of PID is the percentage relative to the highest frequency, refer to the description of the figure below:



Function code	Function name	Setting scope	Factory value
P4.0.18	PID Feedback Loss Detection	000.0%:Not judge feedback loss 000.1%~100.0%	000.0
P4.0.19	PID Feedback Loss Detection Time	00.0s~20.0s	000.0

These two function codes are used to judge whether the feedback signal of PID is missing.

When at P4.0.18=0.0%, no judgment is made for whether the feedback signal of PID is missing.

When at P4.0.18>0.0%, actual PID Feedback Value is less than the value given by P4.0.18 and the duration of time exceeds the time given by P4.0.19, the frequency inverter gives an alarm of Err20 Fault, it is deemed that the feedback signal of PID is missing

Function code	Function name	Setting scope	Factory value
P4.0.20	PID Stop Operation	0:No operation 1:Operation	0

This function code is used to set whether PID operates when the frequency inverter is in shutdown state.

0: No Operation

When the frequency inverter runs, PID operates; when the frequency inverter shuts down, PID can't operate (choose this under general conditions)

1: Operation

No matter what the state of the frequency inverter is, running state or shutdown state, PID operates.

P4.1 Communication Group

Function code	Function name	Setting scope	Factory value
P4.1.00	Baud Rate	0:1200 1:2400 2:4800 3:9600 4:19200 5:38400 6:57600 Tens: Invalid Hundreds：The upper computer protocol was enabled	3
P4.1.01	Data Format	0:No parity (8-N-2) 1:Even parity (8-E-1) 2:Odd parity (8-0-1) 3:No parity (8-N-1)	0
P4.1.02	Local Machine Address	000: Broadcast Address 001~249	001
P4.1.03	Response Delay	0ms~20ms	02
P4.1.04	Communication Timeout	00.0（Invalid） 00.1~60.0s	00.0
P4.1.05	Data Transmission Format	0:ASCII mode (Reserved) 1:RTU mode	01
P4.1.06	MODBUS communication data reply or not	0: Reply 1: No reply	0
P4.1.07	Troubleshooting of communication error	0: Bypassed 1: Shutdown 2: Communication fault	0

When the D200 Series inverter realizes the communication with other equipments through communication terminal RS-485, it is required to set the above function codes. Refer to Communication RS-485 of the D200

Series Frequency Inverter in Chapter 8 for more details.

Group P4.2: Expansion Group

Function code	Function name	Setting scope	Factory value
P4.2.01	PID reverses the cut-off frequency	0.00～Highest frequency	0

In some PID control conditions, PID adjustment will make the converter run from forward to reverse, to achieve the effect of PID adjustment, P4.201 is used to limit the converter can be allowed to reverse the maximum frequency of operation.

Function code	Function name	Setting scope	Factory value
P4.2.02	PID differential limiting	0.00%～100.00%	000.10

In PID regulation, the role of differential is more sensitive, it is easy to cause system oscillation, users should according to the use of the environment and control requirements, set reasonable P4.202 parameters, PID differential effect in a certain range of effective, improve the stability of the system.

Function code	Function name	Setting scope	Factory value
P4.2.03	PID gives the change time	0.00s～650.00s	0

This function code is used to set the time required for the PID given value to linearly change from 0.00% to 100.00%. According to the requirements of equipment and system control, set reasonable P4.2.03 parameters to avoid the adverse effects caused by rapid change or mutation of PID given value.

Function code	Function name	Setting scope	Factory value
P4.2.04	PID feedback filtering time	0.00s～60.00s	0
P4.2.05	PID output filtering time	0.00s～60.00s	0

PID feedback filtering time: This setting can improve the anti-jamming ability of feedback and frequency output stability of frequency converter, but the fast response performance of the system is reduced.

PID output filtering time: This setting can reduce the frequency converter output mutation, but the system's fast response performance will also be reduced.

Function code	Function name	Setting scope	Factory value
P4.2.06	Two output deviations positive maximum	0.00%～100.00%	001.00

This function code is used to set the maximum deviation of output allowed at an interval of 2ms when PID adjustment is made to make the inverter in forward rotation. In order to prevent the frequency conversion in the PID adjustment output changes too fast.

Function code	Function name	Setting scope	Factory value
P4.2.07	Two output deviations reverse maximum	0.00%～100.00%	001.00

This function code is used to set the maximum deviation of output allowed at an interval of 2ms when PID adjustment makes the inverter in reverse. In order to prevent the frequency conversion in the PID adjustment output changes too fast.

Function code	Function name	Setting scope	Factory value
P4.2.08	PID integral attribute	Ones：Integral separation 0：invalid 1：effective Tens：Whether to stop integration after the output reaches the limit value 0：Continue to integral 1：Stop the integral	0

Integral separation

When integral separation is effective (that is, the unit bit of P0.4.08 is 1), when the "PID integral pause" (the function given by the digital input terminal is 40) terminal is effective, the integral adjustment function of PID is suspended, but the proportional adjustment and differential adjustment function of PID is still effective.

Whether to stop the integration after output to the limit value

Whether to stop the integration after the output reaches the limit refers to whether to stop the integral adjustment function of PID when the OUTPUT of PID operation reaches the maximum or minimum value. If you choose to stop integration (that is, the ten's place of P04.28 is 1), the integral adjustment function of PID will be suspended. If continuous integration is selected (that is, the ten's place of P04.28 is 0), the integral adjustment function of PID will continue to participate in the adjustment.

6.6 Group P5 Keyboard Display

P5.0 Basic Group

Function code	Function name	Setting scope	Factory value
P5.0.00	Keyboard JOG Key Function Reference	0: Invalid 1: Forward Jogging 2: Reverse Jogging 3: Forward and Reverse Switch	1

This function code is used to set the function of Multi-functional Key JOG.

When at P5.0.00=0, the function of Key JOG is invalid

When at P5.0.00=1, the function of Key JOG is forward jogging function

When at P5.0.00=2, the function of Key JOG is reverse jogging function

When at P5.0.00=3, the function of Key JOG is forward and reverse switch function

Note: Forward Jogging Function and Reserve Jogging Function are valid under any running control mode, but the forward and reverse switch function is only valid under keyboard control mode (namely P0.0.03=0)

Function code	Function name	Setting scope	Factory value
P5.0.01	Keyboard STOP Key Stop Function	0: Only valid in keyboard operation mode 1: Valid for any mode	1

This function code is used to set shutdown function of Key Stop.

When at P5.0.01=0, the shutdown function is only valid under Keyboard Control Mode (namely P0.0.03=0)

When at P5.0.01=1, the shutdown function is valid under any running control modes.

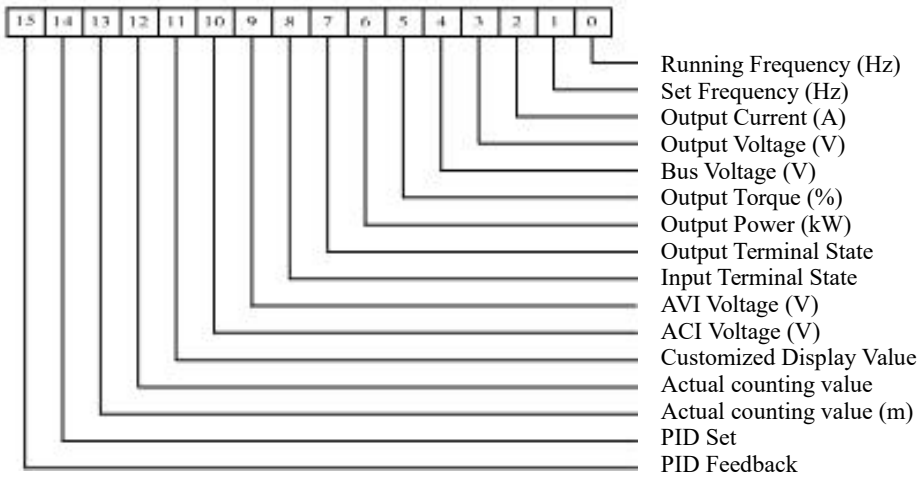
Note: The fault reset function is always valid.

Function code	Function name	Setting scope	Factory value
P5.0.02	LED Running Display Parameter 1	H.0001~H.FFFF	H.001F
P5.0.03	LED Running Display Parameter 2	H.0000~H.FFFF	H.0000
P5.0.04	Automatic Time Switch of LED Running Display Parameter	000.0：Not switch 000.1~100.0s	000.0

Function codes P5.0.02 and P5.0.03 determine the content of LED display when the inverter is in operation.
The Function Codes P5.0.04 determines the length of time that displays Parameter 1 and Parameter 2. When setting this to 0, only shown the display parameter given by P5.0.02, or it is to switch between display parameter set by P5.0.02 and display parameter set by P5.0.03 based on the reference time.

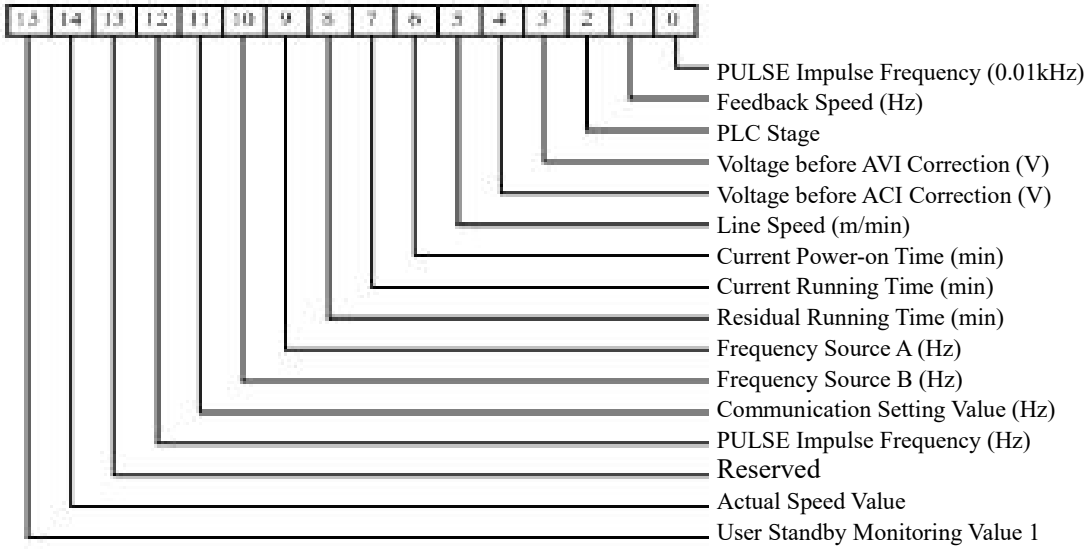
The format for specific display contents is as below:

Running Display Parameter 1 of LED



In operation, if it is required to display each parameter above, set corresponding position to 1, after transfer binary system to hexadecimal system, set at P5.0.02.

Running Display Parameter 2 of LED



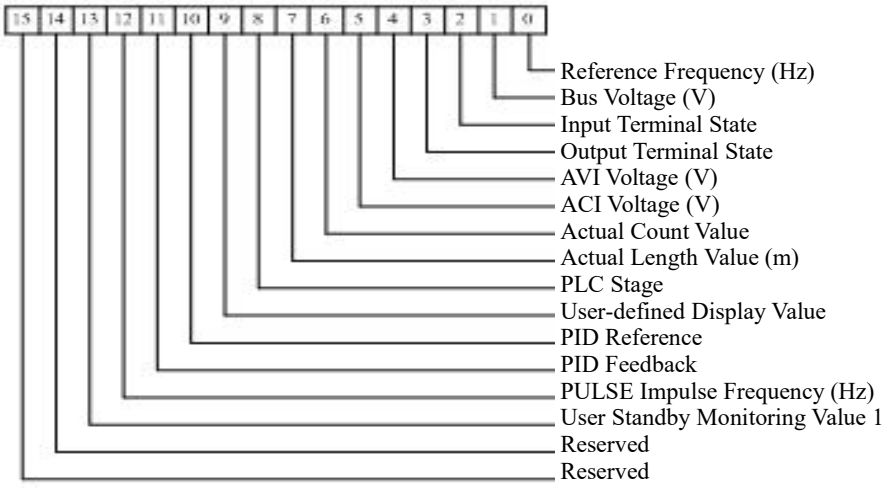
In operation, if it is required to display each parameter above, set corresponding position to 1, after transfer binary system to hexadecimal system, set at P5.0.03.

Function code	Function name	Setting scope	Factory value
P5.0.05	LED Shutdown Display Parameter	H.0001~H.FFFF	H.0033

This function code determines the contents displayed by LED when the frequency inverter is at shutdown state.

The format for specific display contents is as below:

Stopping Display Parameter of LED



In shutdown state, if the above parameters are required to display, the corresponding position is set at 1, after the binary digit is converted into hexadecimal digit, it is set at P5.0.05.

Function code	Function name	Setting scope	Factory value
P5.0.15	Customized Display of Coefficient	0.0001~6.5000	1.0000
P5.0.16	User-defined Display control word.	Ones unit: user-defined decimal place displaying 0: 0-digit Decimal Point 1: 1-digit Decimal Point 2: 2-digit Decimal Point 3: 3-digit Decimal Point Tens unit: source of user-defined display value 0: determined by hundreds place of user-defined Display control word. 1: determined by set value of P5.0.15, and 0.0000 ~ 0.0099 corresponding to P9.0.00 ~ P9.0.99 of P9 Group. Hundreds unit: selection of user-defined displaying coefficient 0: user-defined displaying coefficient is P5.0.15. 1: user-defined displaying coefficient is calculation result 1 2: user-defined displaying coefficient is calculation result 2 3: user-defined displaying coefficient is calculation result 3 4: user-defined displaying coefficient is calculation result 4	001

In some conditions, the users want to let the frequency inverter not display the frequency, but some values that have linear relationship with frequency. The users can adjust the corresponding relation between display value and frequency of the frequency inverter through modification to Function Code P5.0.15, P5.0.16. This display value is called user-defined display value. Additionally, if want to display any parameter of Group P9, it can be modified through P5.0.15 & P5.0.16.

The Ones unit of P5.0.16 is used to set up the decimal places of user-defined display value.

The Tens unit of P5.0.16 is used to set up the source of user-defined display value. If set up to 0, display value will be a number in relation with frequency; if set up to 1, display value will be a number in relation with P9 Group, see details as follows:

Ten's place of P5.0.16	Display control word	Description	
0	Hundreds unit of P5.0.16	0	Displayed value=Frequency*P5.0.15
		1	Displayed value=Frequency * Calculation Result 1/ 10000
		2	Displayed value=Frequency * Calculation Result 2/ 10000
		3	Displayed value=Frequency * Calculation Result 3/ 10000
		4	Displayed value=Frequency * Calculation Result 4/ 10000
1	P5.0.15	The setting value 0.0000～0.0099 of P5.0.15 corresponds to P9.0.00～P9.0.99 of P9 Group. Example: if P5.0.15=0.0002, display value is the value of P9.0.02.	
Note: places of decimal of user-defined decimal are not considered for the above operation			

Example: The user-defined displaying coefficient of P5.0.15 is 0.5000, the user-defined display control word of P5.0.16 is 003, and the frequency is 20.00Hz, the user-defined display value shall be 2000*0.5000 = 1.000 (display three decimal places).

If the user-defined display control word P5.0.16 is 103, the result 1 is 500, the frequency is 20.00, the customized displayed value shall be 2000*500/10000=0.100 (display three decimal places)

If the user-defined display control word P5.0.16 is 013, P5.0.15 is 0.0002, P9.0.02=1000, the user-defined display value will be 1.000 (display three decimal places).

Function code	Function name	Setting scope	Factory value
P5.0.17	Selection Display of Function Parameter Group	Ones: 0: Only display basic group 1: Display the menus at all levels Tens: 0: Don't display Group P7 1: Display Group P7 2: Reserved Hundreds: 0: Don't display correction parameter group 1: Display correction parameter group Thousands: Reserved Ten Thousands: Reserved	00011

When the function code is at P0.0.01=0, its function determine what the parameters of the function code is displayed in detail.

Function code	Function name	Setting scope	Factory value
P5.0.18	Function Password Protection	0: Modifiable 1: Non-modifiable 2: Allowable Modification to GP Type	0

This function code is used to set whether the parameters of the frequency inverter can be modified.

When at P5.0.18=0, the parameters of all function codes can be modified;

When at P5.0.18=1, the parameters of all function codes can only be viewed but not be modified, such a way can effectively prevent the parameters of the function from incorrect modification.

When at P5.0.18=2, Function Code P0.0.00 is allowed to modify.

Function code	Function name	Setting scope	Factory value
P5.0.19	Parameter Initialization	00: No Operation 01: Clearance of Record Information 09 Reset to Factory Parameter, excluding motor parameter, correction group, password group 19: Reset to Factory Parameter, excluding motor parameter, password group 30: Users Current Parameter Backup 60: Reset to User Backup Parameters 100~999: Reset to User Factory Parameters	000

00: No Operation

01: Clearance of Record Information
Clear fault record information, accumulative running time, accumulative power-on time and accumulative power consumption of the frequency inverter

09: Reset to factory parameter, excluding motor parameter, correction group, password group

The frequency inverter resets to factory parameter, excluding motor parameter, correction group, password group.

19: Reset to Factory Parameter, excluding motor parameter, password group

The frequency inverter resets to factory parameter, excluding motor parameter, password group.

30: Users Current Parameter Backup

Back up all current function parameters of the users to the memory, after the parameters adjustment in disorder, the user can easily reset the disordered parameters to back-up function parameters.

60: Reset to User Backup Parameters

Reset to the back-up user parameters last time, i.e. reset to the parameters that are backed up last time when P5.0.19 is set at 30.

100~999: Reset to User Factory Parameters

This function is used to reset special tailor-made factory parameter of the users. Generally, the users cannot conduct operation to this reset.

Function code	Function name	Setting scope	Factory value
P5.0.20	User Password	00000～65535	00000

P5.0.20 is the user password reference, that is, any non-zero five digits, the password protection function becomes effective. When enter into the menu next time, if display "—", input correct password and then view and modify the function parameters. P5.0.20 parameter has edit enable control, only by changing P5.0.18=2 can edit P5.0.20.

If you want to cancel the password protection, only use the password to enter into system and then change P5.0.20 into 00000, the password protection function becomes invalid.

Group P5.1 Expansion Group

Function code	Function name	Setting scope	Factory value
P5.1.00	Accumulative Running Time	Display accumulated running time of frequency inverter	0h~65000h
P5.1.01	Accumulative Power On Time	Display accumulated electrifying time of frequency inverter since exworks	0h~65000h
P5.1.02	Accumulative Power Consumption	Display accumulated power consumption of frequency inverter up to now	0~65000 kW•h
P5.1.03	Module Temperature	Display current temperature of the module	000℃~100℃
P5.1.04	Hardware Version No.	Hardware version number	180.00
P5.1.05	Performance Software version	Performance Software version	000.00～655.35
P5.1.06	Program Nonstandard Label	Version number of dedicated program	0000~9999
P5.1.07	Function Software version	Function Software version	000.00～655.35

6.7 Group P6 - Fault Display and Protection Control

P6.0 Fault Display Group

Function code	Function name	Setting scope	Factory value
P6.0.00	Fault Record 1 (Last Time)	0~40	00
P6.0.01	Fault Record 2	0~40	00
P6.0.02	Fault Record 3	0~40	00

The above function codes record the fault types in the last three times, 0 indicates no fault. Concerning possible cause of each fault code and solutions, refer to related explanation of Chapter 9.

Function code	Function name	Parameter description
P6.0.03	Fault frequency 1	The frequency at the latest fault
P6.0.04	Fault current 1	The current at the latest fault
P6.0.05	Bus voltage 1 at fault	The bus voltage at the latest fault
P6.0.06	Input Terminal State 1 when at fault	Input terminal state of the fault in the last time with the sequence as below: ACI | AVI | | | | | | | DI4 | DI3 | DI2 | DI1 When the input terminal is ON and its corresponding binary digit is 1. OFF is 0, it is to convert binary digit into denary digit.
P6.0.07	Output Terminal State 1 when at fault	Output terminal state of the fault in the last time with the sequence as below: M5 | M4 | M3 | M2 | M1 | | | | T1 | When the input terminal is ON and its corresponding binary digit is 1. OFF is 0, it is to convert binary digit into denary digit.
P6.0.08	Frequency inverter State 1 when at fault	Use of manufacturer
P6.0.09	Power-on Time 1 when at fault	Current power-on time of the fault in the last time
P6.0.10	Running Time 1 when at fault	Current running time of the fault in the last time

Function code	Function name	Parameter description
P6.0.11	Fault Frequency 2	Same as P6.0.03~P6.0.10
P6.0.12	Fault Current2	
P6.0.13	Bus Voltage 2 when at Fault	
P6.0.14	Input Terminal State 2 when at fault	
P6.0.15	Output Terminal State 2 when at fault	
P6.0.16	Frequency inverter State 2 when at fault	
P6.0.17	Power-on Time 2 when at fault	
P6.0.18	Running Time 2 when at fault	
P6.0.19	Fault Frequency 3	Same as P6.0.03~P6.0.10
P6.0.20	Fault Current3	
P6.0.21	Bus Voltage 3 when at Fault	
P6.0.22	Input Terminal State 3 when at fault	
P6.0.23	Output Terminal State 3 when at fault	
P6.0.24	Frequency inverter State 3 when at fault	
P6.0.25	Power-on Time 3 when at fault	
P6.0.26	Running Time 3 when at fault	

Group P6.1: Protection Control Group

Function code	Function name	Setting scope	Factory value
P6.1.00	Input Default Phase Protection	0: Prohibited 1: Allowed	1

This function code is used to set whether the frequency inverter protects the input default phase.

When at P6.1.00=0, the frequency inverter can't provide protection to input default phase.

When at P6.1.00=1, if the input default phase or three-phase input imbalance is detected out, the frequency inverter gives an alarm of Fault Err11.The allowable degree of three-phase input imbalance is determined by Function Code P6.1.26, the higher the value is, the duller the response is and the higher the allowed degree of three-phase imbalance is. Attention shall be paid that if the frequency inverter cannot operate or the load of the motor is lighter, even the setting value of P6.1.26 is set smaller, it is possible that no alarm is given.

Function code	Function name	Setting scope	Factory value
P6.1.01	Output Default Phase Protection	0: Prohibited 1: Allowed	1

This function code is used to set whether the frequency inverter protects the output default phase.

When at P6.1.01=0, the frequency inverter can't provide protection to output default phase.

When at P6.1.01=1, if the output default phase or three-phase input imbalance is detected out, the frequency inverter gives an alarm of Fault Err12.

Function code	Function name	Setting scope	Factory value
P6.1.02	Over-voltage Stall Protection Sensitivity	000: without protection to over-voltage and stalling speed 001~100	005
P6.1.03	Over-voltage Stall Protection Sensitivity	115%～150%	130

In the deceleration process of the frequency inverter, after the DC Bus Voltage exceeds over-voltage stall protection voltage point, the frequency inverter stops reducing the speed and keeps current running frequency until the bus voltage is reduced to below over-voltage stall protection voltage point and then the frequency inverter continues to reduce the speed. The setting value of Function Code P6.1.03 is the percentage relative to normal bus voltage.

The over-voltage stall protection sensitivity is used to regulate the capability of frequency inverter to suppress over-voltage during the deceleration process. The bigger the value is, the stronger the over-voltage suppression capability is. On the premise of no over-voltage, the smaller the value is, the better the effect is.

Function code	Function name	Setting scope	Factory value
P6.1.04	Over-voltage Stall Protection Voltage Point	000: without protection to over-current and stalling speed 001~100	020
P6.1.05	Over-current Stall Protection Sensitivity	100%~200%	150

In the acceleration and deceleration process of the frequency inverter, after the output current exceeds the over-current stall protection current, the frequency inverter stops the acceleration and deceleration process and keeps current running frequency, and then continues to accelerate and decelerate after the decline of the output current. The setting value of the function code P6.1.05 is the percentage relative to rated current of the motor.

The Over-current Stall Protection Sensitivity is used to adjust the capability of the frequency inverter on restraining the over-current in its acceleration and deceleration process. The greater this value is, the stronger the capability of restraining the over-current is, under the precondition that no over-current fault occurs, the smaller the setting value is, and the better it is.

Function code	Function name	Setting scope	Factory value
P6.1.06	Fault Auto Reset Number	0～20	00
P6.1.07	Waiting Interval Time of Fault Auto Reset	0.1s～100.0s	001.0

When at P6.1.06=0, the frequency inverter keeps fault state for there is no automatic fault reset function.

When at P6.1.06>0, the frequency inverter selects the times of automatic fault reset. In case of exceeding the selected times, the frequency inverter keeps fault state.

Function P6.1.07 refers to the waiting time from fault alarm of the frequency inverter to automatic fault reset.

Function code	Function name	Setting scope	Factory value
P6.1.08	Fault Protective Action Selection 1	0: Free Stop 1: Stop by its Mode 2: Continuous Running Ones: Motor Overload Tens: Input Default Phase Hundreds: Output Default Phase Thousands: External Default Ten Thousands: Communication Abnormality	00000
P6.1.09	Fault Protective Action Selection 2	0: Free Stop 1: Stop by its Mode 2: Continuous Running Ones: Motor Overload Tens: Feedback Loss Hundreds: User Customized Fault 1 Thousands: User Customized Fault 2 Ten Thousands: Power-on Time Arrival	00000
P6.1.10	Fault Protective Action Selection 3	Ones: Running Time Arrival 0: Free Stop 1: Stop by its Mode 2: Continuous Running Tens: Reserved Hundreds: Parameter Read-Write Abnormity 0: Free Stop 1: Stop by its Mode Thousands: Motor Overhear 0: Free Stop 1: Stop by its Mode 2: Continuous Running Ten Thousands: Fault of 24V Power Supply 0: Free Stop 1: Stop by its Mode	00000
P6.1.11	Fault Protective Action Selection 4	0: Free Stop 1: Stop by its Mode 2: Continuous Running Ones: Larger Speed Deviation Tens: Motor Over-speed Hundreds: Initial Position Error Thousands: Reserved Ten Thousands: Reserved	00000

The Function Codes P6.1.08~P6.1.11 are used to set the actions of the frequency inverter after fault alarm. Each digit among the options for fault protection action corresponds to a kind of fault protection, if it is 0, it indicates that the frequency inverter stops freely; if it is 1, it indicates that the frequency inverter shuts down in stop mode after fault alarm; if it is 2, it indicates that the frequency inverter continues to run at frequency selected by Function Code P6.1.12 after fault alarm.

Function code	Function name	Setting scope	Factory value
P6.1.12	Continuous Running Frequency Selection when at Fault	0: Running at Current Frequency 1: Running at Reference frequency 2: Running at Upper Frequency 3: Running at Lower Frequency 4: Running at Back Frequency for Abnormality	0

When the frequency inverter breaks down in the running process, if the handling mode of this fault is continuous running, the frequency inverter displays A** (** is its fault code), it continues to run at frequency selected by P6.1.12. If the handling mode of this fault is shut-down by reducing the speed, the frequency inverter displays A** in the process of deceleration, the stop state display Err**.

0: Run at Current Frequency
When the frequency inverter gives an alarm of fault, run at current frequency

1: Run at Reference Frequency
When the frequency inverter gives an alarm of fault, run at reference frequency

2: Run at Upper Frequency
When the frequency inverter gives an alarm of fault, run at upper frequency

3: Run at Lower Frequency
When the frequency inverter gives an alarm of fault, run at lower frequency

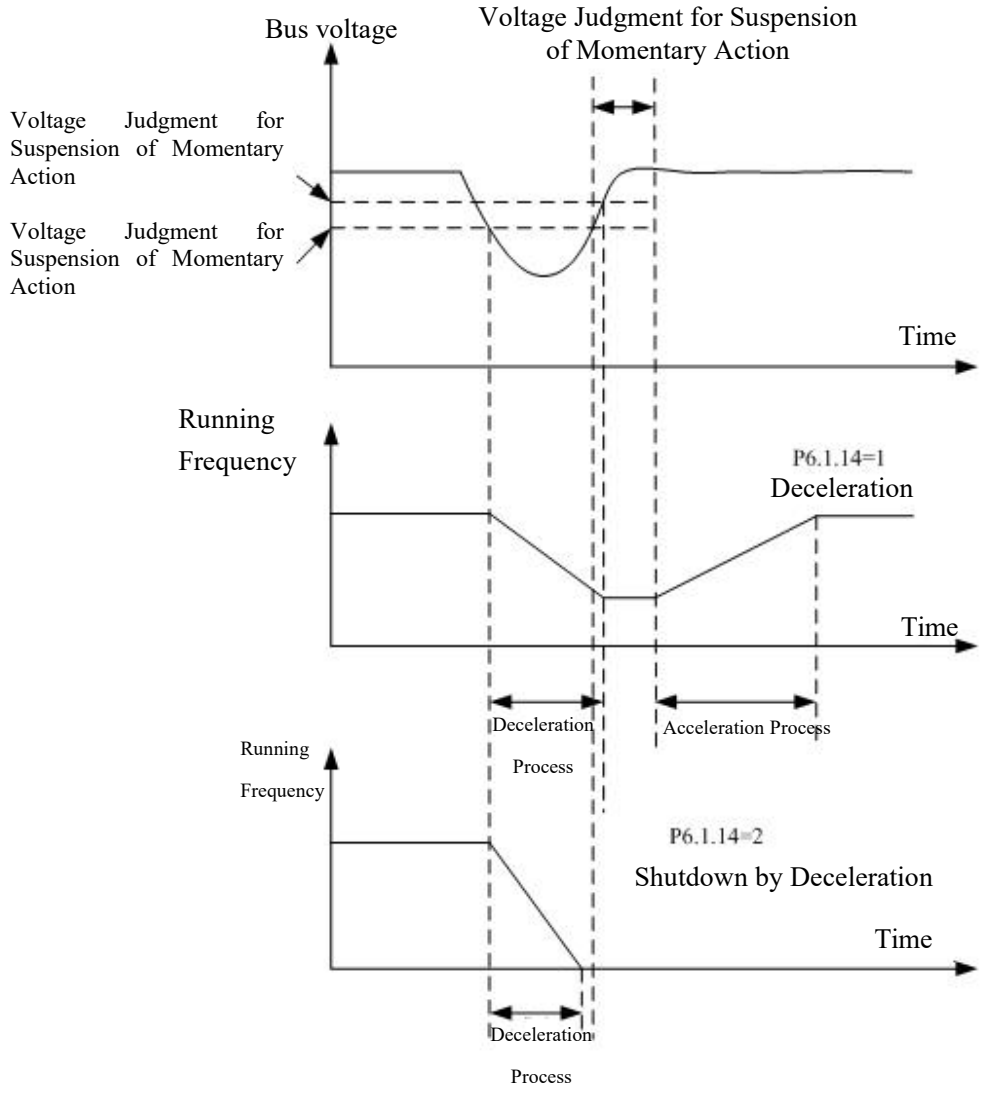
4: Run at Standby Frequency for Abnormality
When the frequency inverter gives an alarm of fault, it'll run at frequency set by Function Code P6.1.13.

Function code	Function name	Setting scope	Factory value
P6.1.13	Backup Frequency for Abnormality	000.0%~100.0%	100.0

When at Function Code P6.1.12=4, the setting value of this function code determines the running frequency when the frequency inverter gives an alarm of fault, which is the percentage relative to highest frequency.

Function code	Function name	Setting scope	Factory value
P6.1.14	Action Selection for Momentary Interruption	0: Invalid 1: Deceleration 2: Stop by Deceleration	0
P6.1.15	Judgment Time of Momentary Interruption Voltage Recovery	0.00s~100.00s	000.50
P6.1.16	Voltage Judgment for Momentary Interruption Action	60.0%~100.0% (Standard Bus Voltage)	080.0
P6.1.17	Voltage Judgment for Suspension of Momentary Action	80.0%~100.0% (Standard Bus Voltage)	090.0

When at P6.1.14=0, the frequency inverter continues to run at current frequency in interrupt power-supply or sudden reduction of voltage.
When at P6.1.14=1, in case of interrupt power-supply or sudden reduction of voltage, after the bus voltage reduces to corresponding voltage of the setting value of P6.1.16 below, the frequency inverter slows down and runs; after the bus voltage resets to corresponding voltage of the setting value of P6.1.16 above and the duration of time exceeds the time set by P6.1.15, the frequency inverter runs after it is normally accelerated to reference frequency. In the process of deceleration, if the bus voltage resets to corresponding voltage of the setting value of P6.1.17, the frequency inverter stops slowing down and keeps running at current frequency.
When at P6.1.14=2, in case of interrupt power-supply or sudden reduction of voltage, after the bus voltage reduces to below corresponding voltage of the setting value of P6.1.16, the frequency inverter slows down and runs; after it slows down to 0Hz and the bus voltage hasn't recovered, the frequency inverter stops.



Function code	Function name	Setting scope	Factory value
P6.1.18	Off-load Protection Selection	0: Invalid 1: Valid	0
P6.1.19	Off-load Detection Level	000.0%~100.0%	010.0
P6.1.20	Off-load Detection Time	00.0s~60.0s	01.0

The function code P6.1.18 is used to set whether the off-load protection function is valid. 0: Invalid 1: Valid.

If the off-load protection function is valid and the fault handling mode is continuous run or stop by speed reduction, when the output current of the frequency inverter is less than corresponding current value of off-load detection level of P6.1.19 and the duration is over off-load detection level of P6.1.20, the output frequency of the frequency inverter automatically reduces to 7% of rated frequency, the frequency inverter gives an alarm of A19 in running or decelerating state; in shutdown state, the frequency inverter gives an alarm of Err19, if the load is recovered, the frequency inverter is automatically recovered to run at reference frequency.

Function code	Function name	Setting scope	Factory value
P6.1.25	Fault Output Terminal Action Selection during Fault Auto Reset Period	0: No Action 1: Action	0

This function code is used to set whether the fault output terminals act during the period of automatic fault reset.

When at P6.1.25=0, the fault output terminals cannot act during the period of automatic fault reset.

When at P6.1.25=1, the fault output terminals act during the period of automatic fault reset. After automatic fault reset, the fault output terminals also reset.

Function code	Function name	Setting scope	Factory value
P6.1.26	Input Default Phase Protection Sensitivity	01～10	05

This function code is used to set the sensitivity of the input phase loss protection. The smaller the value, the more sensitive it is.

6.8 Group P7 User Function Customization

P7.0 Basic Group

Function code	Function name	Setting scope	Factory value
P7.7.00	User Function 0	U0.0.01	U0.0.01
P7.7.01	User Function 1	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.02
P7.7.02	User Function 2	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.03
P7.7.03	User Function 3	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.07
P7.7.04	User Function 4	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.08
P7.7.05	User Function 5	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.17
P7.7.06	User Function 6	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.18
P7.7.07	User Function 7	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.08	User Function 8	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.09	User Function 9	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.10	User Function 10	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.11	User Function 11	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.12	User Function 12	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.13	User Function 13	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.14	User Function 14	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.15	User Function 15	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.16	User Function 16	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.17	User Function 17	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.18	User Function 18	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.19	User Function 19	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.20	User Function 20	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.21	User Function 21	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.22	User Function 22	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.23	User Function 23	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.24	User Function 24	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.25	User Function 25	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.26	User Function 26	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.27	User Function 27	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.28	User Function 28	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00
P7.7.29	User Function 29	U0.0.00~UX.X.XX(exclude P7, P8)	U0.0.00

The function codes of this group are User Customized Parameter Group. The users can summarize the parameters of the function codes (exclude Group P7 and P8) selected from function codes for display to Group P7.0 as User Customized Parameter for easy operation as view and medication, and the User Customized Parameter Group is not more than 30.

6.9 Group P8 Manufacturer Function

P8.0 Manufacturer Function

Function code	Function name	Setting scope	Factory value
P8.0.00	Manufacturer Password	00000~65535	00000

This function code is the manufacturer password entry and displays dedicated function code of the manufacturer, the users don't operate it.

P8.1 Correction Group

Function code	Function name	Setting scope	Factory value
P8.1.00	Voltage Input of Potentiometer Correction Point 1	00.00V~P8.1.02	00.20
P8.1.01	Corresponding reference of Potentiometer Correction Point 1	-100.0%~100.0%	000.0
P8.1.02	Voltage Input of Potentiometer Correction Point 2	P8.1.00~10.00V	09.50
P8.1.03	Corresponding reference of Potentiometer Correction Point 2	-100.0%~100.0%	100.0
P8.1.04	Filtering time of potentiometer	00.00s~10.00s	00.10

The function codes of this group are used to correct the potentiometer to get rid of the impact of zero-offset or voltage attenuation caused by overlong keyboard lines. When leaving the factory, the function parameters of this group have been corrected, when resetting to factory value, the reset value is the value after factory correction. Generally, the application site is not required to conduct correction.

Function code	Function name	Setting scope	Factory value
P8.1.05	AVI actual voltage 1	0.500V~4.000V	2.000
P8.1.06	AVI indicated voltage 1	0.500V~4.000V	2.000
P8.1.07	AVI actual voltage 2	6.000V~9.999V	8.000
P8.1.08	AVI indicated voltage 2	6.000V~9.999V	8.000
P8.1.09	ACI actual voltage 1	0.500V~4.000V	2.000
P8.1.10	ACI indicated voltage 1	0.500V~4.000V	2.000
P8.1.11	ACI actual voltage 2	6.000V~9.999V	8.000
P8.1.12	ACI indicated voltage 2	6.000V~9.999V	8.000

The function codes of this group are used to correct analog input AVI、ACI to get rid of the impact of AVI、ACI input zero-offset or gain. When leaving the factory, the function parameters of this group have been corrected, when resetting to factory value, the reset value is the value after factory correction. Generally, the application site is not required to conduct correction.

Actual Voltage: use the measuring instruments to measure the voltage such as multi-meter, etc.

Voltage Display: the voltage display value from the sampling of the frequency inverter refers to voltage display before AVI、ACI correction of Group P9 (P9.0.19, P9.0.20).

When correcting, input two voltage values on each AVI、ACI input terminal and then input actually measured voltage value and display voltage to corresponding function codes, the frequency inverter can conduct correction automatically.

Function code	Function name	Setting scope	Factory value
P8.1.13	FM1 target voltage 1	0.500V~4.000V	2.000
P8.1.14	FM1 actual voltage 1	0.500V~4.000V	2.000
P8.1.15	FM1 target voltage 2	6.000V~9.999V	8.000
P8.1.16	FM1 actual voltage 2	6.000V~9.999V	8.000

The function codes of this group are used to correct analog output FM. If the correction has been done when leaving the factory, when resetting to factory value, the reset value is the value after factory correction. Generally, the application site cannot need to conduct correction.

Actually Measured Voltage: use the measuring instruments to measure the voltage between terminal FM and terminal COM, such as multi-meter, etc.

Target Voltage: refer to theoretical voltage value of the frequency inverter based on corresponding relationship of analog output.

When correcting, output two voltage values on each FM terminal and then input actually measured voltage value and target voltage to corresponding function codes, the frequency inverter can conduct correction automatically.

6.10 Group P9- Monitoring Parameter

P9.0 Basic Monitoring Parameter

P9 Parameter Group is used to monitor running state information of the frequency inverter, the users can set corresponding parameter as required, which can not only be rapidly viewed through panel for easy debugging and maintenance on site, but also read through communication for monitoring of upper computer.

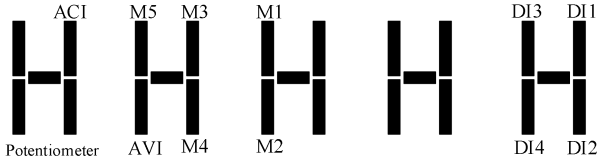
Function code	Function name	Description	Unit
P9.0.00	Running Frequency	Output frequency when the frequency inverter runs	0.01Hz
P9.0.01	Reference frequency	Reference frequency of the frequency inverter	0.01Hz
P9.0.02	Output Current	Output current when the frequency inverter runs	0.01A
P9.0.03	Output Voltage	Output current when the frequency inverter runs	1V
P9.0.04	Bus Voltage	Voltage on DC Bus of the frequency inverter	0.1V
P9.0.05	Output Torque	When the frequency inverter runs, the output torque is the percentage of rated torque of the motor	0.1%
P9.0.06	Output Power	Output frequency when the frequency inverter runs	0.1kW
P9.0.07	Input Terminal Status	Check whether the input terminal has signal input	
P9.0.08	Output Terminal Status	Check whether the output terminal has signal output	
P9.0.09	AVI Voltage	Check the voltage between AVI and COM	0.01V
P9.0.10	ACI Voltage	Check the voltage between ACI and COM	0.01V
P9.0.11	Custom Display Value	Display coefficient P5.0.15 and the value after conversion of Decimal Point P5.0.16 through customization	
P9.0.12	Actual Counting Value	View actual counting value of the frequency inverter for counting function	1
P9.0.13	Actual Length Value	View actual counting value of the frequency inverter for fixed-length function	1m
P9.0.14	PID Reference	Product of PID reference value and PID reference feedback quantity	
P9.0.15	PID Feedback	Product of PID feedback value and PID reference feedback rang	

Function code	Function name	Description	Unit
P9.0.16	PULS Impulse Frequency	View the frequency of PULSE Impulse Input	0.01kHz
P9.0.17	Feedback Speed	Actual output frequency when the frequency inverter runs	0.1Hz
P9.0.18	PLC Stage	Display which stage the Simple PLC runs at	1
P9.0.19	Voltage before AVI Correction	Voltage between AVI and COM before AVI correction	0.001V
P9.0.20	Voltage before ACI Correction	Voltage between ACI and COM before ACI correction	0.001V
P9.0.21	Line Speed	The sampling line speed of DI4 impulse is equal to the acquisition of impulse count per minute/ per meter	1m/min
P9.0.22	Current Power-on Time	Length of current power-on time	1min
P9.0.23	Current Running Time	Length of current running time	0.1min
P9.0.24	Residual Running Time	Residual running time at Timing Function of P3.1.00	0.1min
P9.0.25	Frequency of Frequency Source A	View the frequency given by Frequency A	0.01Hz
P9.0.26	Frequency of Frequency Source B	Check the frequency given by Frequency B	0.01Hz
P9.0.27	Communication Set value	The value set by corresponding communication address A001 is the percentage of the highest frequency	%
P9.0.28	PULSE Impulse frequency	Check the frequency of PULSE Impulse Input	1Hz
P9.0.29	Reserved		
P9.0.30	Actual Distance Value	Check actual distance value of the distance value of the frequency inverter	
P9.0.31~P 9.0.45	Reserved		
P9.0.46	Operation Result 1	Check the value of operation result 1	
P9.0.47	Operation Result 2	Check the value of operation result 2	
P9.0.48	Operation Result 3	Check the value of operation result 3	
P9.0.49	Operation Result 4	Check the value of operation result 4	
P9.0.50	User Standby Monitoring Value 1	Check the value of user special function	
P9.0.51	User Standby Monitoring Value 2	Check the value of user special function	
P9.0.52	User Standby Monitoring Value 3	Check the value of user special function	
P9.0.53	User Standby Monitoring Value 4	Check the value of user special function	
P9.0.54	User Standby Monitoring Value 5	Check the value of user special function	

Corresponding Relationship of Input and Output Terminal State

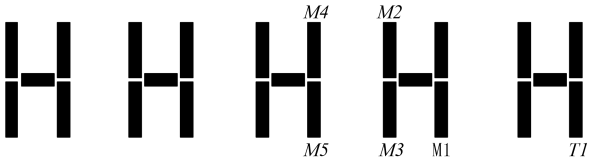
Whether the vertical line of the digital tube of each digit lights on, it indicates that whether the input and output terminal of each digit has the signal or not. If it lights on, it indicates that corresponding input terminal of this vertical line has signal input or the output terminal has signal output.

The display rules of Function Code P9.0.07 are shown as below:



The display rules of Function Code P9.0.08 are shown as below:

(M is internal Intermediate Delay Relay)



Chapter 7 Common Function and Application Case

7.1 Common Function

7.1.1 Start and Stop Control

The D200 Series Frequency inverter has three kinds of start and stop control modes: keyboard control, terminal control and communication control.

1、Keyboard Control (Set P0.0.03=0)

Press “RUN” Key on the keyboard, the frequency inverter starts; press “STOP” Key on the keyboard, the frequency inverter stops; the running direction is controlled by Function Code P0.0.06, it is forward rotation when at P0.0.06=0 and it is reverse rotation when at P0.0.06=1.

2、Terminal Control (Set P0.0.03=1)

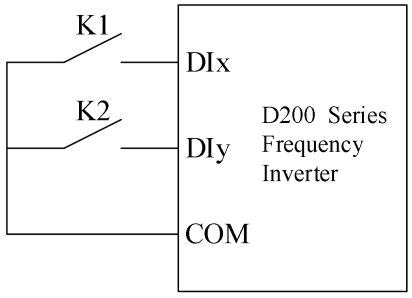
Provide four kinds of terminal start and stop modes for option of the users: two-line mode 1, two-line mode 2, three-line mode 1 and three-line mode 2. Specific use methods are as below:

- Two-line Mode 1 (Set P2.0.11=0)

Any two terminals of DIx and DIy among multifunctional terminals are used to determine forward and reverse running of the more and all are the active level. The terminal function references are as below:

Terminal	Reference value	Description
DIx	1	Forward Running (FWD)
DIy	2	Reverse Running (REV)

K1	K2	Run Command
0	0	Stop
0	1	REV
1	0	FWD
1	1	Stop

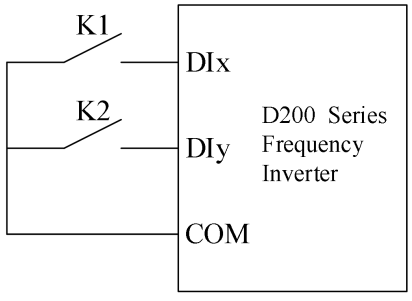


- Two-line Mode 2 (Set P2.0.11=1)

Any two terminals of DIx and DIy among multifunctional terminals are used to determine forward and reverse running of the motor, in which Terminal DIx is used as running enable terminal and DIy is used as terminal of confirming the running direction, all are the active level. The terminal function references are as below:

Terminal	Setting value	Description
DIx	1	Forward Running (FWD)
DIy	2	Reverse Running (REV)

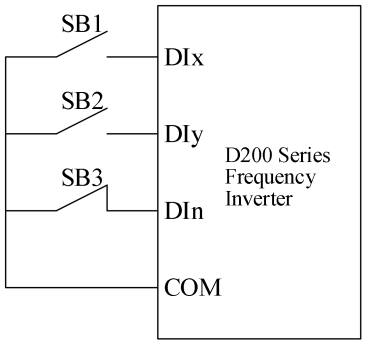
K1	K2	Run Command
0	0	Stop
0	1	Stop
1	0	FWD
1	1	REV



- Three-line Mode 1 (Set P2.0.11=2)

Any three terminals of DIx, DIy and DIn among multifunctional terminals are used to determine forward and reverse running of the motor, in which Terminal DIn is used as running enable terminal and DIx & DIy are used as terminal of confirming the running direction, Din is the active level and DIx & DIy are the active PLS. When the running is needed, the Terminal DIn must be closed at first and then the PLS of DIx or DIy are used to realize forward or reverse control of the motor. When the shutdown is needed, it is realized through disconnecting the signal of Terminal Din. The terminal function references are as below:

Terminal	Setting value	Description
DIx	1	Forward Running (FWD)
DIy	2	Reverse Running (REV)
DIn	3	3-line Running Control



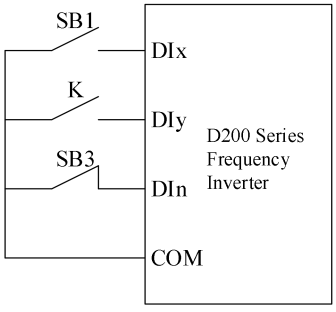
SB1 is the button of normally opened forward running, SB2 is the button of normally opened reverse running and SB3 is the button of normally closed stop

- 3-line Control Mode 2 (Set P2.0.11=3)

Any three terminals of DIx, DIy and DIn among multifunctional terminals are used to determine forward and reverse running of the motor, in which Terminal DIn is used as enable terminal, DIx is used as running terminal and DIy is used as terminal of confirming the running direction, DIn and DIy are the active level and DIx is the active PLS. When the running is needed, the Terminal DIn must be closed at first and then the PLS of DIx is used to realize the running of the motor and the state of DIy is used to determine the running direction. When the shutdown is needed, it needs to be realized through disconnecting the signal of Terminal DIn. The terminal function references are as below:

Terminal	Reference Value	Description
DIx	1	Forward Running (FWD)
DIy	2	Reverse Running (REV)
DIn	3	3-line Running Control

K	Running Direction
0	FWD
1	REV



SB1 is the button of normally opened forward running, SB3 is the button of normally closed stop and K is the button of running direction option.

3、Communication Control (Set P0.0.03=2)

The start, stop, FWD and REV of the frequency inverter is realized by the upper computer through Communication Mode RS-485. The D200 series frequency inverter supports Standard MODBUS Protocol, refer to Chapter VIII Communication RS-485 for more details.

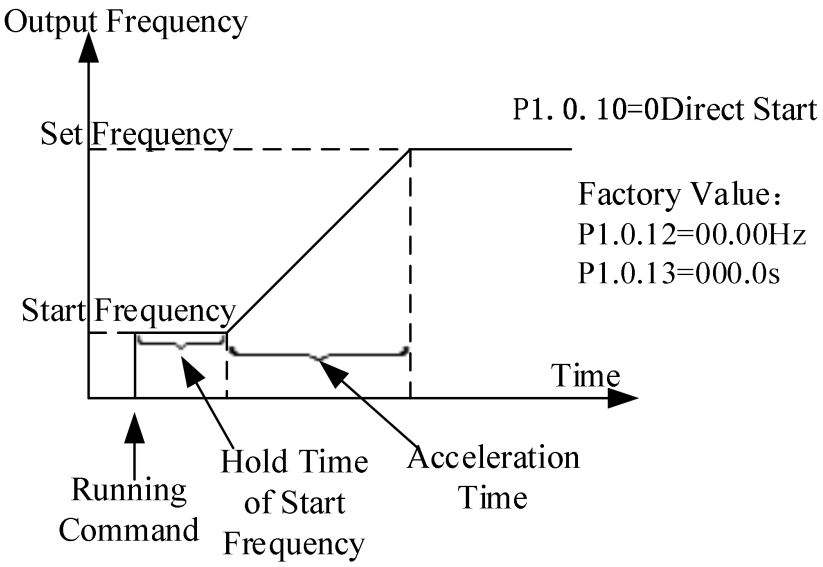
7.1.2 Start and Stop Mode

1. Start Mode

The D200 series frequency inverter includes 3 start modes: direct start, speed tracking start and start after brake.

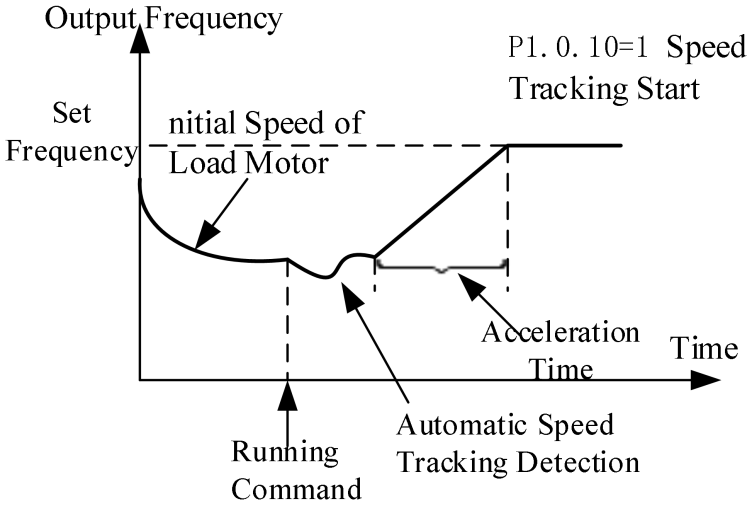
- Direct Start (set P1.0.10=0)

The frequency inverter starts according to given start frequency (P1.0.12) and start frequency hold time (P1.0.13)and then speeds up to the reference frequency according to the selected acceleration time.



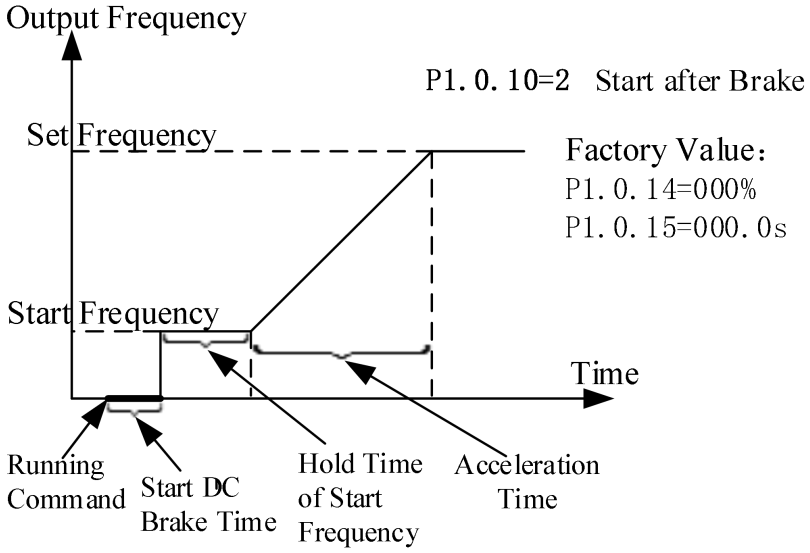
- Speed Tracking Start (Set P1.0.10=1)

The frequency inverter starts the speed tracking according to the speed tracking mode given by speed tracking mode P1.0.11 to track the running speed of the motor at which the frequency inverter starts until being accelerated or decelerated to reference frequency. When the motor hasn't stopped stably or is unable to stop, this function shall be adopted.



- Start after Brake (Set P1.0.10=2)

Before starting the motor normally, the frequency converter firstly deploys DC braking in accordance with the data set up in the parameters about starting DC braking current (P1.0.14) and starting DC braking time (P1.0.15). If the motor rotates reversely at low speed before starting, this function shall be used when starting the motor by rotating it forward.



2. Stop Mode

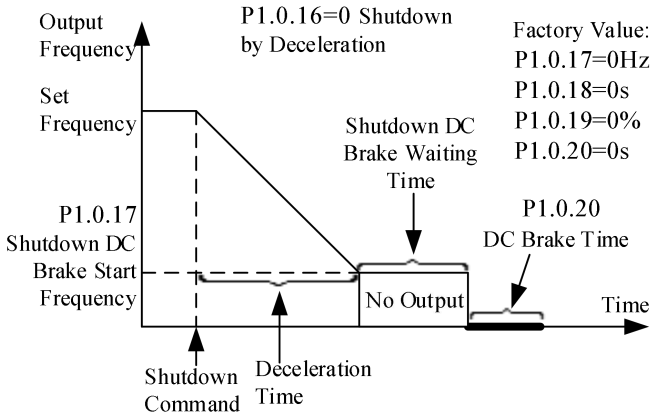
The D200 series frequency inverter includes two stop modes: Deceleration Stop and Free Stop.

- Deceleration Stop (Set P1.0.16=0)

After the stop command is effective, the frequency inverter reduces the output frequency according to the selected deceleration time, and it stops when the output frequency is reduced to 0.

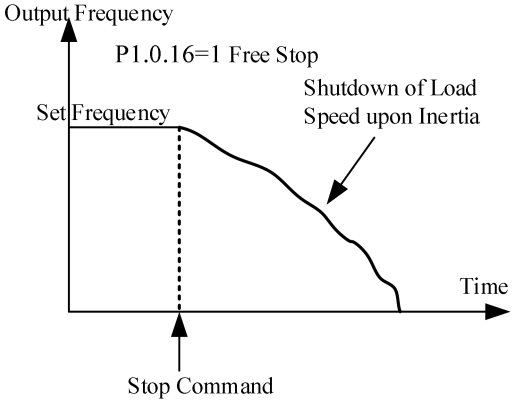
When it is required to prevent the frequency inverter from sliding and jittering when it quickly stops or stops at low speed, the stop DC brake function can be used, after the frequency inverter is reduced to frequency given by P1.0.17, it is to wait for the time given by P1.0.18 and start DC brake at current given by P1.0.19 until the time given by P1.0.20 is reached and then the frequency inverter stops DC brake.

When it is required to quickly stop at high speed, the dynamic braking shall be adopted. The built-in brake units of D200 series frequency inverter 15kW and below set the parameters of brake utilization rate P1.0.21 and externally connect brake resistance to adopt dynamic braking; the frequency inverters with power above 15kW can adopt dynamic braking only when they are configured with brake units and brake resistance. Refer to Appendix A2.5 for externally configured brake units and brake resistance.



- Free Stop (Set P1.0.16=1)

After the stop command is effective, the frequency inverter immediately terminates the output and the motor stop freely by mechanical inertia. The users haven't had the stop requirements for load or when the load itself has the brake function, the function of free stop can be selected.



7.1.3 Acceleration and Deceleration Mode

Different load characteristics have different requirements for acceleration and deceleration time, the D200 series frequency inverter provides three kinds of acceleration and deceleration modes: Straight Line, Curve S1 and Curve S2, which are selected through Function Code P0.1.19. Additionally, the acceleration and deceleration time unit can be adjusted and set through Function Code P0.2.03.

- Straight Line (Set P0.1.19=0)

Start the linear speed from start frequency to reference frequency. The D200 series frequency inverter provides four kinds of linear acceleration and deceleration modes, which can be switched among different terminal combinations that are selected through acceleration and deceleration time.

- Curve S1 (Set P0.1.19=1)

The output frequency increases or decrease by Curve S. Curve S is the used for occasions required gentle start or stop. The parameters P0.1.20 and P0.1.21 respectively define the time scale of starting period and ending period of Curve S1.

- Curve S2 (Set P0.1.19=2)

In acceleration and deceleration of Curve S, the rated frequency of the motor is always the inflection point of Curve S. Generally, it is used for occasions that the high-speed areas above rated frequency require acceleration and deceleration.

7.1.4 Jogging Function

The D200 series frequency inverter provides two kinds of the modes to realize jogging function: Keyboard Control and Terminal Control.

- Keyboard Control

Set the function of multi-functional Key JOG as forward jogging or reverse jogging (P5.0.00=1 or 2).The frequency inverter can use Key JOG to realize Jogging Function when it stops，and the jogging running frequency and acceleration and deceleration time can be set through Function Codes P0.1.08~P0.1.10.

- Terminal control

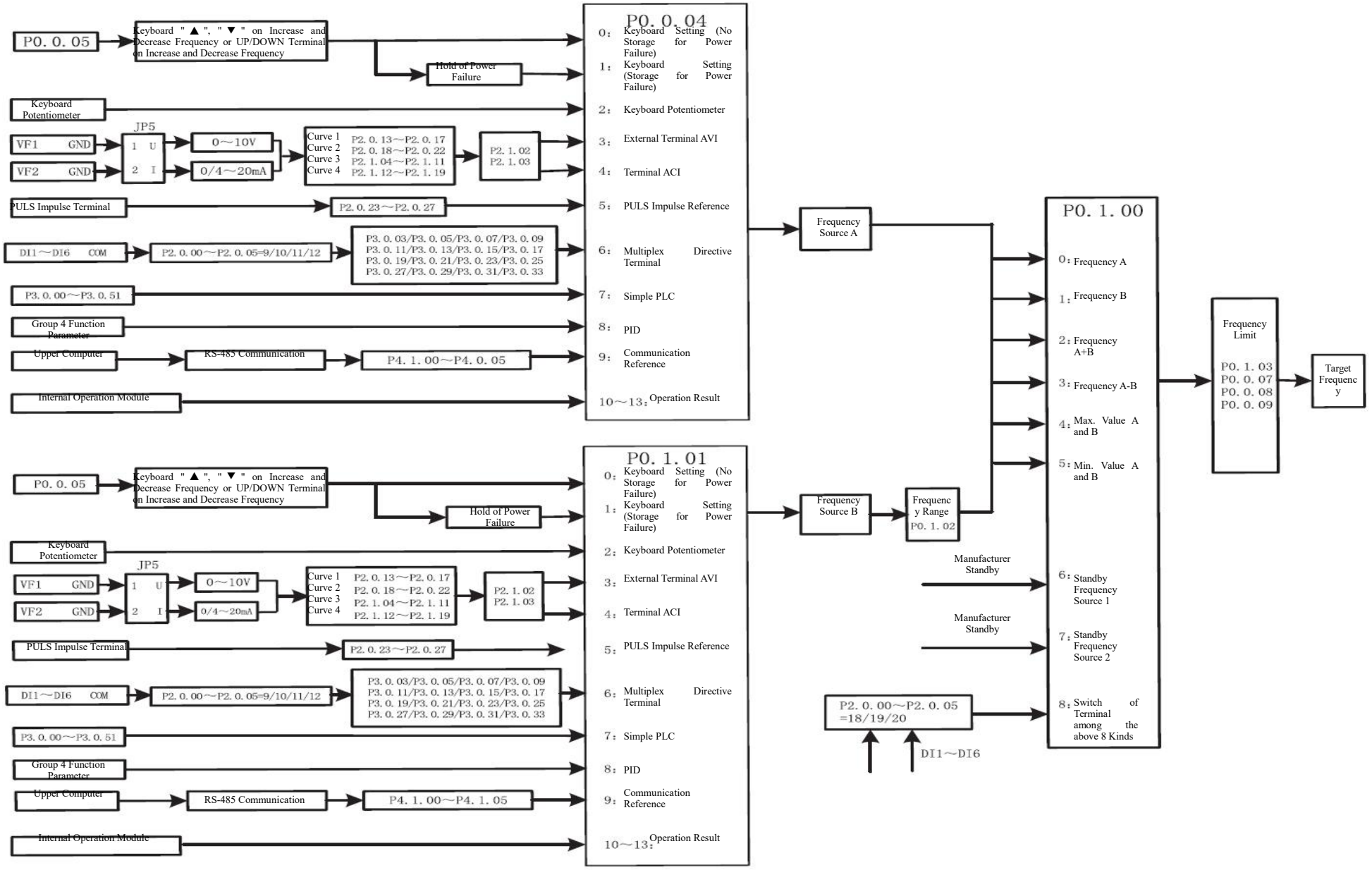
Set the function of multi-functional DIx and DIy as forward jogging or reverse jogging. When the frequency inverter stops, it can use DIx and DIy to realize Jogging Function， and the jogging running frequency and acceleration and deceleration time can be set through Function Codes P0.1.08~P0.1.10.

Note: The jogging function of the above reference modes is the jogging effect when the frequency inverter is at stop state. If the frequency inverter is required to be at running state and the priority is given to the effect of Jogging Function, it is to set Function Code P0.1.25=1.

7.1.5 Running Frequency Control

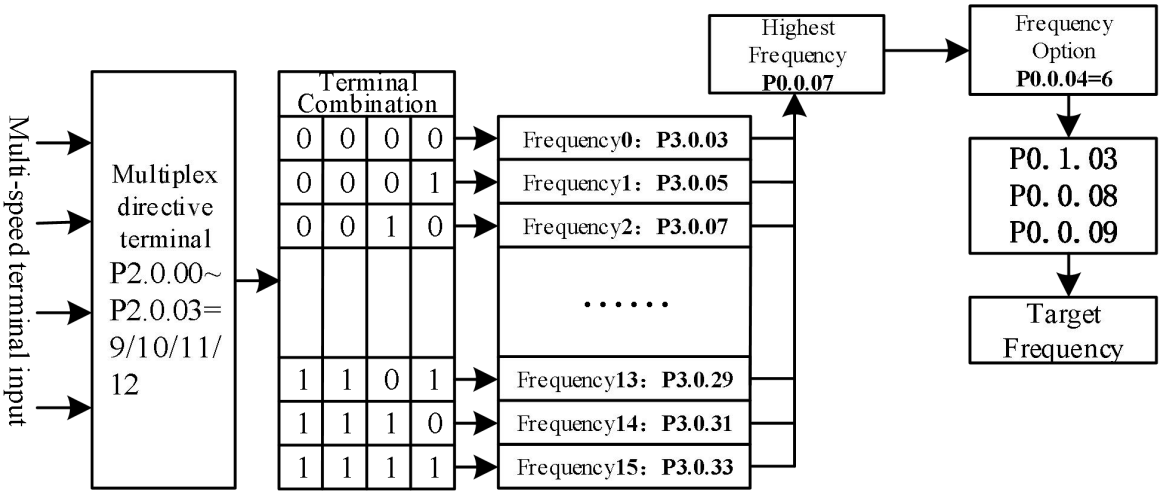
The D200 series frequency inverter provides two Frequency Source Input Channels, that is, Frequency Source A and Frequency Source B respectively, they not only can work independently, but in combination mode through computer. Each frequency source has 14 kinds of references for option, so the optional requirements for different frequencies at different sites can be greatly satisfied. The factory default of the frequency inverter is Frequency Source A Reference. When two frequency sources are combined, Frequency Source A is main channel and Frequency Source B is auxiliary channel by default.

Detailed explanation for realization process of frequency selection is shown as the figure below:


P0. 0. 05
Keyboard " ▲ ", " ▼ " on Increase and Decrease Frequency or UP/DOWN Terminal on Increase and Decrease Frequency
Hold of Power Failure
Keyboard Potentiometer
JP5
VF1 GND
VF2 GND
1 U
2 I
0～10V
0/4～20mA
Curve 1 P2. 0. 13～P2. 0. 17
Curve 2 P2. 0. 18～P2. 0. 22
Curve 3 P2. 1. 04～P2. 1. 11
Curve 4 P2. 1. 12～P2. 1. 19
P2. 1. 02
P2. 1. 03
PULS Impulse Terminal
P2. 0. 23～P2. 0. 27
DI1～DI6 COM
P2. 0. 00～P2. 0. 05=9/10/11/12
P3. 0. 03/P3. 0. 05/P3. 0. 07/P3. 0. 09
P3. 0. 11/P3. 0. 13/P3. 0. 15/P3. 0. 17
P3. 0. 19/P3. 0. 21/P3. 0. 23/P3. 0. 25
P3. 0. 27/P3. 0. 29/P3. 0. 31/P3. 0. 33
P3. 0. 00～P3. 0. 51
Group 4 Function Parameter
Upper Computer
RS-485 Communication
P4. 1. 00～P4. 0. 05
Internal Operation Module
P0. 0. 04
0: Keyboard Setting (No Storage for Power Failure)
1: Keyboard Setting (Storage for Power Failure)
2: Keyboard Potentiometer
3: External Terminal AVI
4: Terminal ACI
5: PULS Impulse Reference
6: Multiplex Directive Terminal
7: Simple PLC
8: PID
9: Communication Reference
10～13: Operation Result
P0. 1. 01
0: Keyboard Setting (No Storage for Power Failure)
1: Keyboard Setting (Storage for Power Failure)
2: Keyboard Potentiometer
3: External Terminal AVI
4: Terminal ACI
5: PULS Impulse Reference
6: Multiplex Directive Terminal
7: Simple PLC
8: PID
9: Communication Reference
10～13: Operation Result
Frequency Source A
Frequency Source B
Frequenc y Range P0. 1. 02
P0. 1. 00
0: Frequency A
1: Frequency B
2: Frequency A+B
3: Frequency A-B
4: Max. Value A and B
5: Min. Value A and B
Manufacturer Standby
6: Standby Frequency Source 1
Manufacturer Standby
7: Standby Frequency Source 2
P2. 0. 00～P2. 0. 05 =18/19/20
DI1～DI6
8: Switch of Terminal among the above 8 Kinds
Frequency Limit
P0. 1. 03
P0. 0. 07
P0. 0. 08
P0. 0. 09
Target Frequenc y

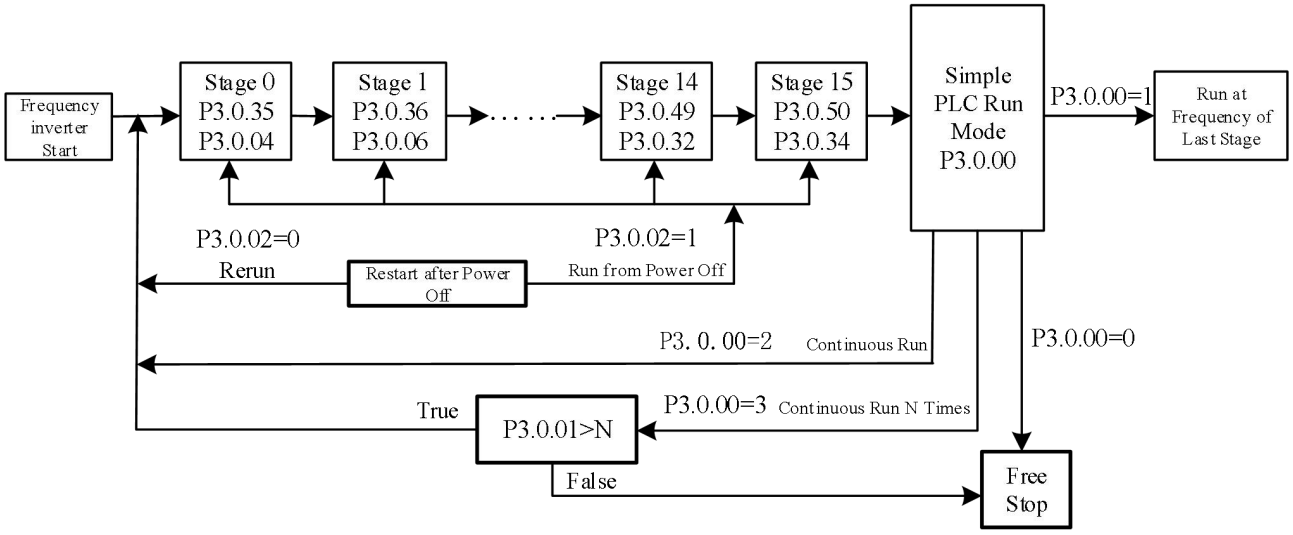
7.1.6 Multi-speed Function

The D200 series frequency inverter can realize the switch of 16-stage speed at most through different combination state of multiplex directive terminal. As for missing set digit, the calculation is made at state 0.



7.1.7 Simple PLC

The D200 series frequency inverter can automatically run at 16-stage speed at most, the acceleration and deceleration time and the length of running time of each stage can be set independently (refer to Function Code P3.0.03~P3.0.50). Additionally, the times of cycle required can be set through P3.0.00 and P3.0.01.



7.1.8 Timing Function

Function Code	Function Name	Setting Scope	Factory Value
P3.1.00	Timing Function Selection	0: Ineffective 1: Effective (min) 2: Effective (h)	0
P3.1.01	Tinning Running Time Selection	0: Digit Reference (P3.1.02) 1: External Terminal AVI Reference 2: External Terminal ACI Reference (Analog input range corresponds to P3.1.02)	0
P3.1.02	Tinning Running Time	0000.0min/h~6500.0min/h (unit depends on P3.1.00)	0000.0

The D200 series frequency inverter has built-in Timing Function to complete its timing running.

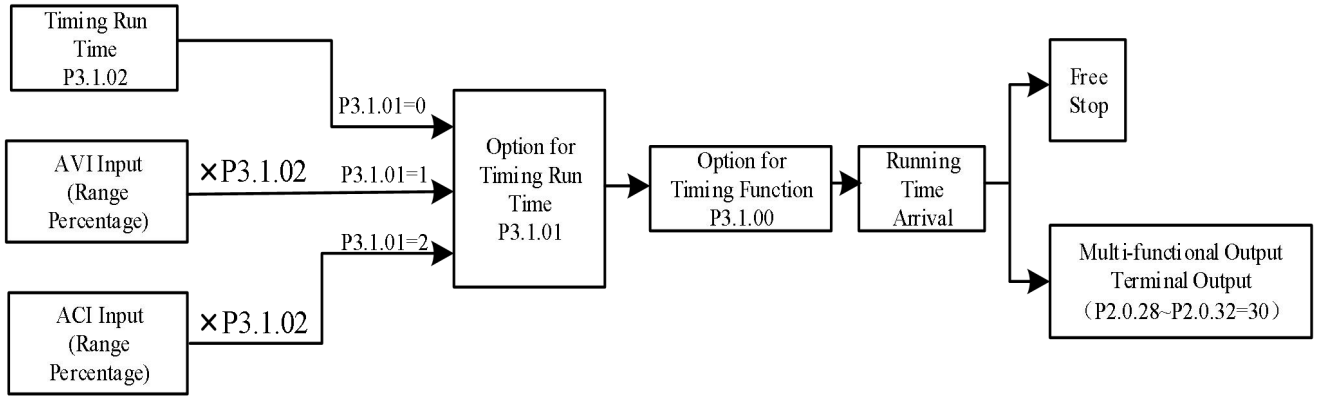
Function Code P3.1.00 determines whether the timing function is valid.

Function Code P3.1.01 determines the source of fixed running time.

When at P3.1.01=0, the fixed running time is given by the value set by Function Code P3.1.02.

When at P3.1.01=1 or 2, the fixed running time is given by external analog input terminal. The D200 series frequency inverter provides 2-way analog input terminal (AVI, ACI). AVI is used for voltage (0V ~ 10V) input, ACI is used for current (0/4mA ~ 20mA) input. As for corresponding relation curve between the input of AVI and ACI and fixed running time, the users can freely choose from 4 kinds of the relation curves through function code P2.1.02, in which Curve 1 and Curve 2 are linear relationship able to be set through Function Codes P2.0.13~P2.0.22, and Curve 3 and Curve 4 are broken line relationship with two inflection points able to be set through Function Codes P2.1.04~P2.1.19. At this time, the analog input range corresponds to the value given by Function Code P3.1.02.

When the Timing Function is effective, the frequency inverter needs to restart timing for every start, when reaching the reference time, the frequency inverter stops automatically. During the process of stop, the multi-functional output terminals of the frequency inverter output Signal ON. When the stop process ends, multi-functional output terminals output Signal OFF. Corresponding multi-functional output terminals are Timing Arrival Output (30). When the reference time is 0, the fixed time is not limited. Actual time of current running can be viewed through Function Code P9.0.23 (when the frequency inverter shuts down, the display value of P9.0.23 automatically resets to 0).



7.1.9 Fixed-length Function

Function Code	Function Name	Setting Scope	Factory Value
P3.1.08	Reference Length	00000m~65535m	01000
P3.1.09	Actual Length	00000m~65535m	00000
P3.1.10	Impulse Count per meter	0000.1~6553.5	0100.0

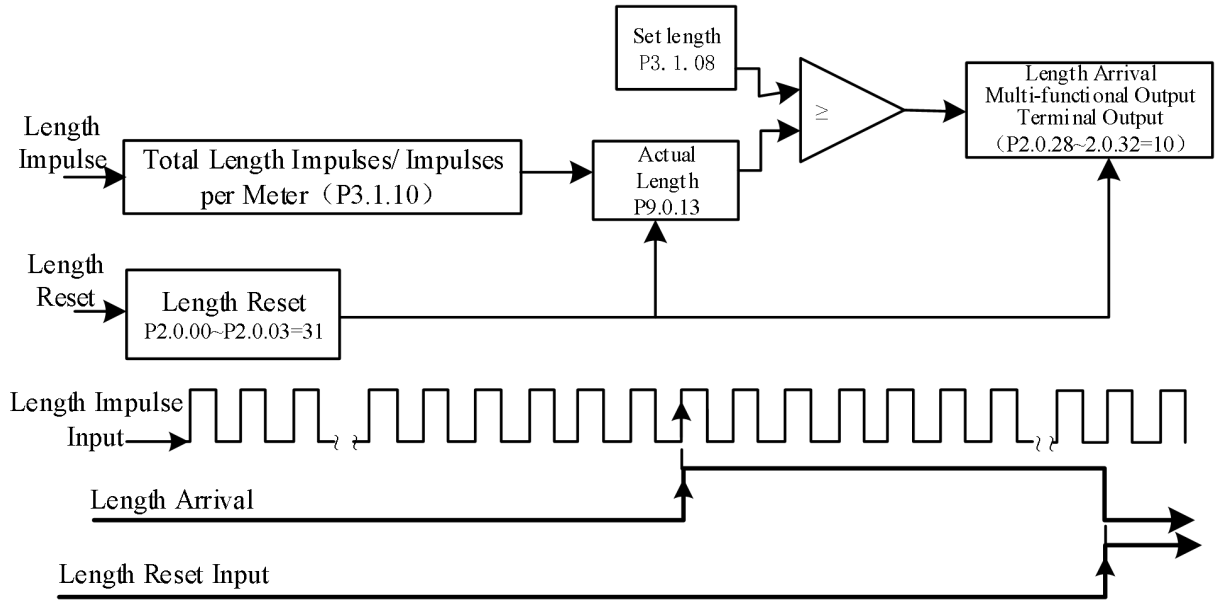
The D200 series frequency inverter has built-in fixed-length function to realize fixed-length control. In the application, corresponding digital input terminal is required to be set as “Length Counting Input” (Function 30). When the input impulse frequency is higher, Terminal DI4 must be adopted. The formula for length calculation is as below:

Actual Length= Total Impulses from Acquisition of Terminal/ Impulses per meter

When actual length reaches the reference length (value set by P3.1.08), the multi-functional output terminals of the frequency inverter can output Signal ON. Corresponding multi-functional output terminal function is Length Arrival (10).

In the process of fixed-length control, the reset operation to actual length can be realized through digital input terminal. Corresponding digital input terminal function is Length Reset (31).

Actual length can be viewed through Function Codes P3.1.09 or P9.0.13.



7.1.10 Counting Function

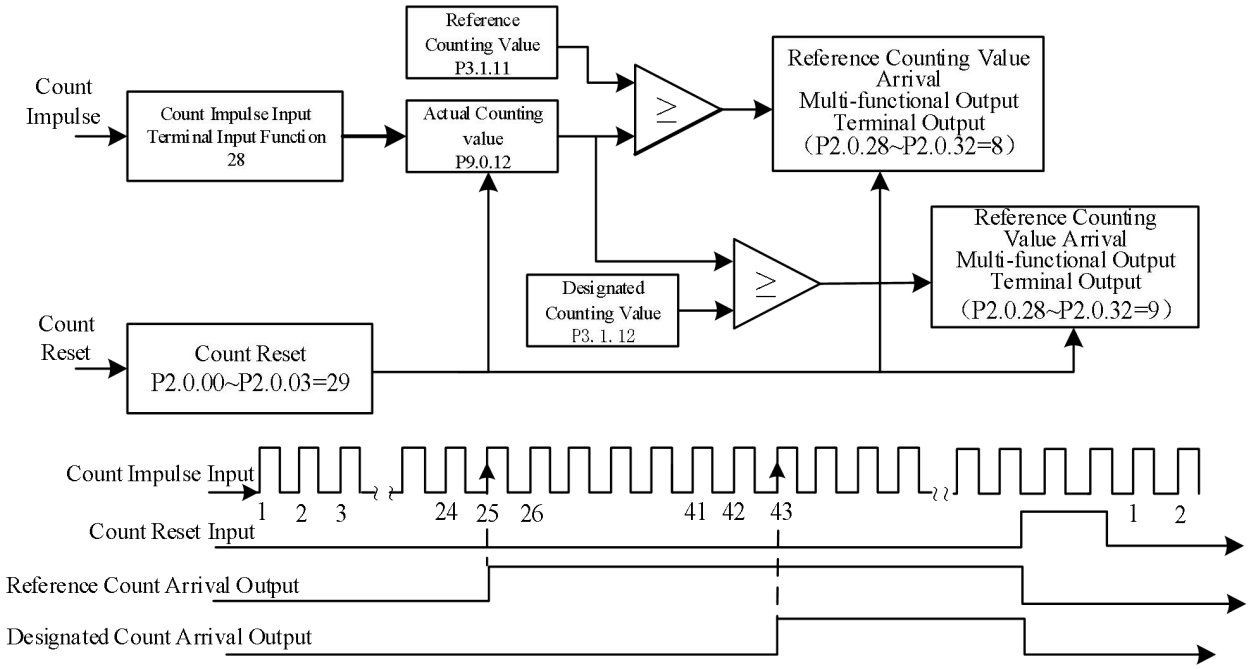
Function Code	Function Name	Setting Scope	Factory Value
P3.1.11	Reference Count Value	00001~65535	01000
P3.1.12	Designated Count Value	00001~65535	01000

The counting function of D200 series frequency inverter has two-level signal output, that is, reference counting value arrival and designated counting value arrival. In the application, corresponding digital input terminal function is required to be set as “Counter Input” (Function 28). When the impulse frequency is higher, Terminal DI4 must be adopted.

When actual counting value reaches the reference value (set by P3.1.11), the multi-functional output terminals of the frequency inverter can output Signal ON. Corresponding multi-functional output terminal function is Reference Counting Value Arrival (8).

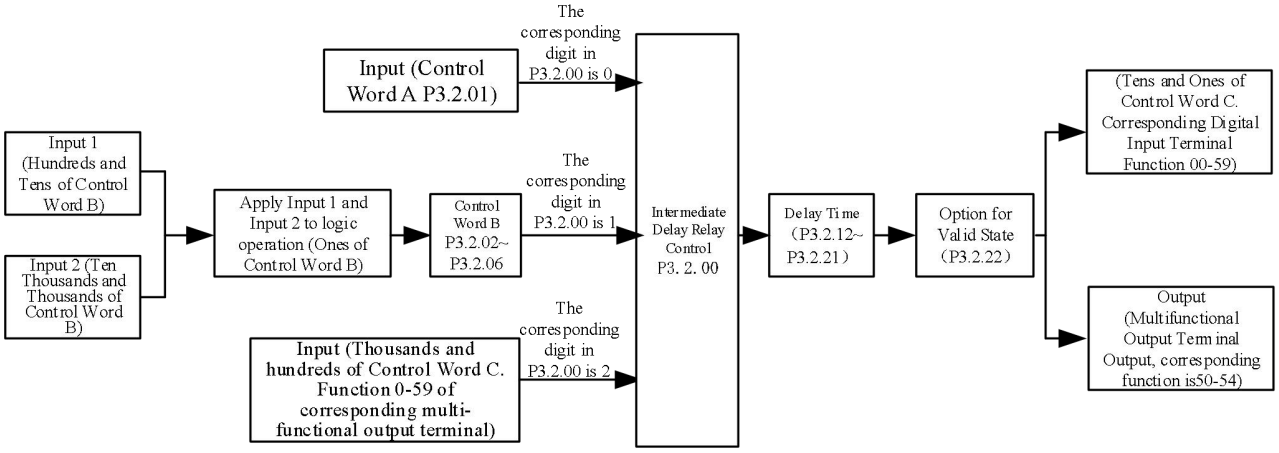
When actual counting value reaches the reference value (set by P3.1.12), the multi-functional output terminals of the frequency inverter can output Signal ON. Corresponding multi-functional output terminal function is Reference Counting Value Arrival (9).

In the counting process, the reset operation to actual counting value can be realized through digital input terminal. Corresponding digital input terminal function is Counter Reset (29). Actual counting value can be viewed through Function Code P9.0.12.



7.1.11 Simple Internal Relay Programmable Function

The D200 series frequency inverter has 5 built-in virtual Intermediate Delay Relays, which not only can collect the physical signals of digital input terminal of the frequency inverter, but virtual signals of multi-functional output terminals (00~59). And then it is to conduct simple logic running and output the results to multi-functional output terminals or equivalent digital input terminal.

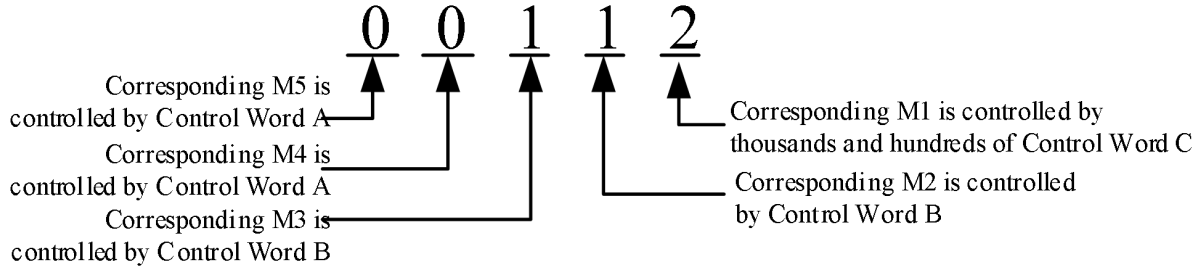


Description for Control Logic Function of Intermediate Delay Relay Control Word B

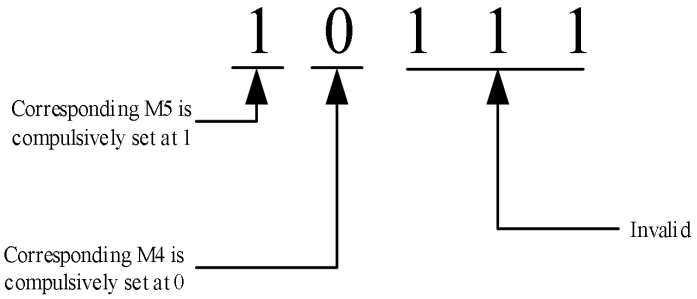
Function code	Setting value for unit's digit	Function	Description
P3.2.02 P3.2.03 P3.2.04 P3.2.05 P3.2.06	0	Input 1	If input 1 is true, the logic result is true, If input 1 is false, the logic result is false
	1	Input 1 and NOT	If input 1 is true, the logic result is false If input 1 is false, the logic result is true
	2	Input 1 and Input 2 AND	If Input 1 and Input 2 are true, the logic result is true, else false
	3	Input 1 and Input 2 OR	Any one of Input 1 and Input 2 is true, the logic result is true,
	4	Input 1 and Input 2 XOR	If Input 1 and Input 2 are opposite logic, the logic result is true If Input 1 and Input 2 have same logic, the logic result is false
	5	The valid reference of Input 1 is valid The valid Reference of Input 2 is invalid	If input 1 is true, the logic result is true, If input 2 is true and input 1 is false, the logic result is true, the logic result is false

Function code	Setting value for unit's digit	Function	Description
P3.2.02 P3.2.03 P3.2.04 P3.2.05 P3.2.06	6	Valid reference of Input 1 Rise Edge is valid Valid reference of Input 2 Rise Edge is invalid	If Input 1 Rising Edge is true, the logic result is true If Input 2 Rising Edge is true, the logic result is false
	7	Reverse valid signal of Input 1 Rising Edge	If Input 1 Rising Edge is true, the logic result is reverse
	8	Input 1 Rise Edge is valid and output a impulse signal with width of 200ms	If Input 1 Rising Edge is true, the logic result is true, after keeping it 200ms, the logic result becomes false
	9	Input 1 Rise Edge and Input 2 AND	If Input 1 Rising Edge and Input 2 Rising Edge are true, the logic result is true or false

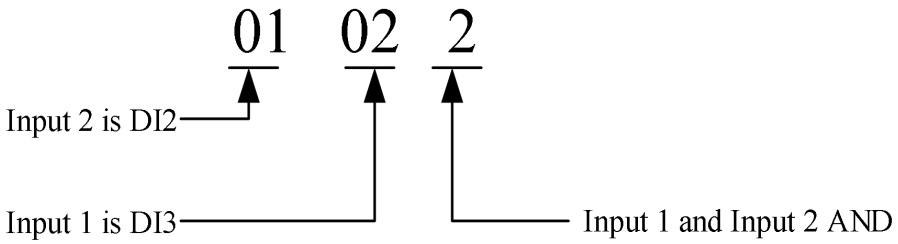
For instance, in case of setting Function Code P3.2.00 (Intermediate Delay Relay Control)=00112, we can learn from referring to the explanation of Function Code P3.2.00 that Relay 5 (M5) & Relay 4 (M4) are determined by Control Word A and Relay 3 (M3) & Relay 2 (M2) are determined by Control Word B, and Relay 1 (M1) is determined by thousands and hundreds of Control Word C, as shown in the figure below:



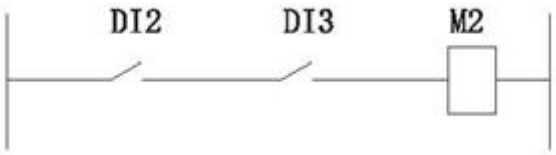
In combination with the example above, in case of setting P3.2.01 (Intermediate Delay Relay Control Word A))=10111, it is to compulsively set M5=1 and M4=0.
For M3, M2 and M1 are not determined by Control Word A, so the setting of P3.2.01 to M3, M2 and M1 is invalid.



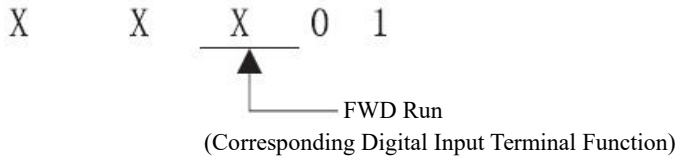
In combination with the example above, in case of setting P3.2.03 (Control Word B of Corresponding M2)=01022, we can learn from referring to the explanation of Function Code P3.2.03 that M2=DI2&&DI3, as shown in the figure below:



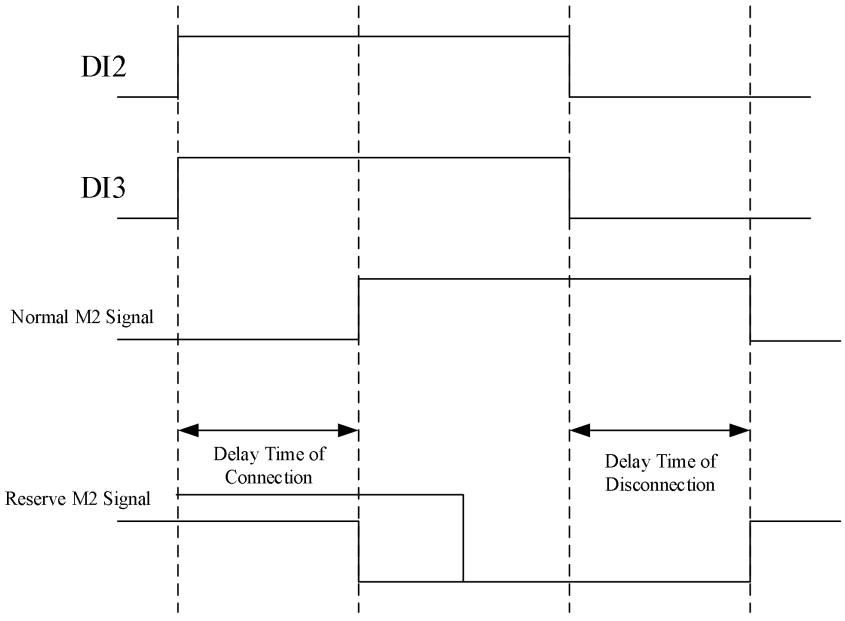
Equivalent as shown in the figure below:



In combination with the example above, in case of setting the tens and ones of P3.2.08 (Control Word C of Corresponding M2) at 01 (input terminal function of corresponding digital), it indicates that the function of M2 is forward running. If 51(Synchronous Intermediate Relay M2) is set among P2.0.28~P2.0.32 at the same time, corresponding multi-functional output terminal outputs the signal.

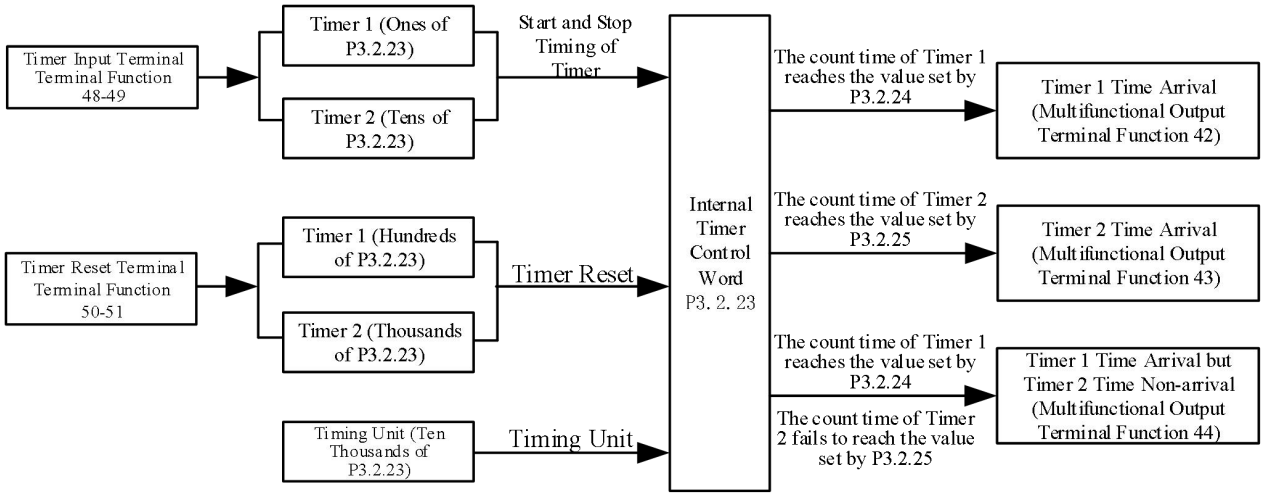


The Intermediate Relay can not only respectively preset the delay time for its connection and disconnection through Function Codes P3.2.12~P3.2.16 and P3.2.17~P3.2.21, but preset whether the reverse operation is conducted for output signals through Function Code P3.2.22. In combination with the example above, in case of setting P3.2.13 (delay time of corresponding M2 connection) =10.0s and P3.2.18 (delay time of corresponding M2 disconnection)=5.0s, when DI2 and DI3 are connected, M2 is not immediately connected, but connected after waiting for 10.0s. Similarly, when one of DI2 or DI3 is disconnected, M2 is not immediately disconnected, but disconnected after waiting for 5.0s.



7.1.12 Internal Timer Function

The D200 series frequency inverter has 2 built-in timers, their start, shutdown timing and timer reset can be realized through digital input terminal. The fixed time arrival can output the signals through multi-functional output terminal.



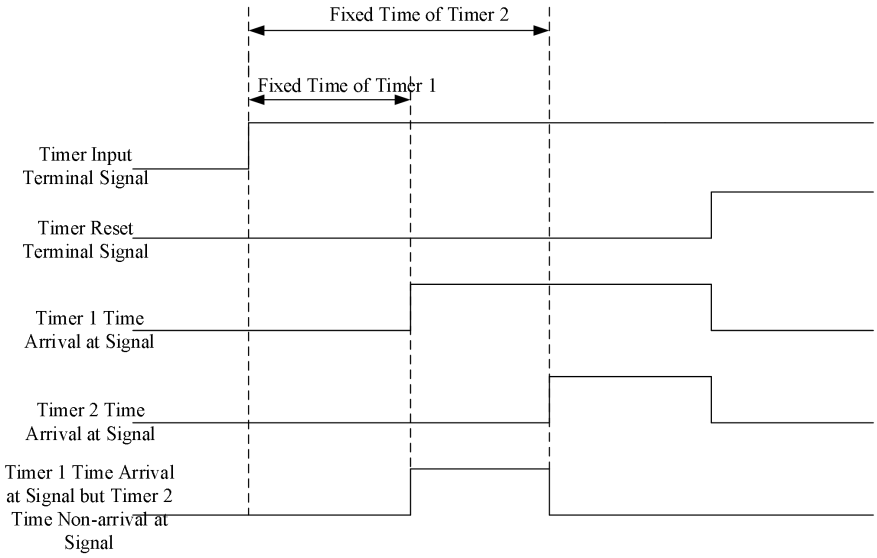
When the signal of the output terminal of the timer (terminal function 48~49) is valid, the timer starts timing. When the signal of the input terminal of the timer is invalid, the timer stops timing and keeps current value.

When actual timing value of Timer 1 reaches the value set by P3.2.24, the multi-functional output terminals of the frequency inverter can output Signal ON. Corresponding multi-functional output terminal function is the Timer 1 Time Arrival (42).

When actual timing value of Timer 2 reaches the value set by P3.2.25, the multi-functional output terminals of the frequency inverter can output Signal ON. Corresponding multi-functional output terminal function is the Timer 2 Time Arrival (43).

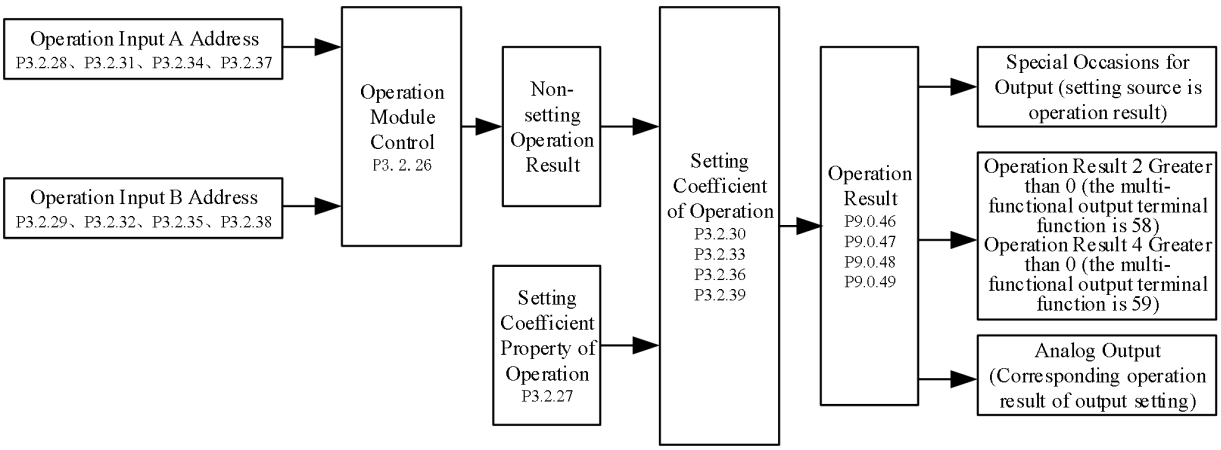
When actual timing value of Timer 1 reaches the value set by P3.2.24, but actual timing value of Timer 2 fails to reach the value set by P3.2.25, the multi-functional output terminals of the frequency inverter output Signal ON. When actual timing value of Timer 2 reaches the value set by P3.2.25, the multi-functional output terminals of the frequency inverter output Signal OFF. Corresponding multi-functional output terminal function is Timer 1 Time Arrival, but Timer 2 Time Non-Arrival (44).

In the process of timing, the reset operation to actual timing value can be realized through digital input terminal. Corresponding digital input terminal function is the Timer Reset Terminal (50~51).



7.1.13 Internal Operation Module Function

The D200 series frequency inverter has one 4-way built-in operation module, which collects the data of two function codes of the frequency inverter (remove the value after the decimal point) to conduct simple operation and finally output the operation results into special use occasions .Certainly, the operation results can also be used to realize the actions of multi-functional output terminals and the output of the analog signal.



Control Explanation for Operation Module

Function code	Corresponding setting value	Function	Description
P3.2.26	0	No Operation	No operation conducted
	1	Add Operation	Address A data + Address B data
	2	Subtraction Operation	Address A data - Address B data
	3	Multiply Operation	Address A data * Address B data
	4	Division Operation	Address A data / Address B data
	5	Greater than Judgment	If Address A data>Address B data, the non-setting operation result is 1, else it is 0.
	6	Equal to Judgment	If Address A data=Address B data, the non-setting operation result is 1, else it is 0.
	7	Equal to or Greater than Judgment	If Address A data≥Address B data, the non-setting operation result is 1, else it is 0.
	8	Integration	Time of every Address B Data (ms as unit) means Address A Data added to non-setting operation result, for example, if Address A Data is 10 and Address B Data is 1000, it indicates that 10 is added to non-setting operation result per 1000ms. The scope of the operation results is -32767~32767. When the operation results is less than -9999, all displayed decimal points of the digital tube completely indicate minus value, e.g. “1.0.1.0.0” means -10100.
	9~F	Reservation	Reservation

Explanation for Setting Coefficient Property of Operation:

Function code	Corresponding setting value	Function	Description
P3.2.27	0	Conduct setting at no decimal fraction to system by multiplication algorithm	Non-setting Operation Result * Setting Coefficient of Operation
	1	Operate the Setting Coefficient by multiplication with one decimal	Non-setting Operation Result * Setting Coefficient of Operation/10
	2	Operate the Setting Coefficient by multiplication with two decimals	Non-setting Operation Result * Setting Coefficient of Operation/100
	3	Operate the Setting Coefficient by multiplication with three decimals	Non-setting Operation Result * Setting Coefficient of Operation/1000
	4	Operate the Setting Coefficient by multiplication with four decimals	Non-setting Operation Result * Setting Coefficient of Operation/10000
	5	Operate the Setting Coefficient by division without decimal	Non-setting Operation Result / Setting Coefficient of Operation
	6	Operate the Setting Coefficient by division with one decimal	Non-setting Operation Result / Setting Coefficient of Operation *10
	7	Operate the Setting Coefficient by division with two decimals	Non-setting Operation Result / Setting Coefficient of Operation *100
	8	Operate the Setting Coefficient by division with three decimals	Non-setting Operation Result / Setting Coefficient of Operation *1000
	9	Operate the Setting Coefficient by division with four decimals	Non-setting Operation Result / Setting Coefficient of Operation *10000
	A	Operate the Setting Coefficient by division without decimal	Non-setting operation result / number of function code corresponding to operation setting coefficient
	B	Operate the Setting Coefficient by division with one decimal	Non-setting operation result / number of function code corresponding to operation setting coefficient * 10
	C	Operate the Setting Coefficient by division with two decimals	Non-setting operation result / number of function code corresponding to operation setting coefficient * 100
	D	Operate the Setting Coefficient by division with three decimals	Non-setting operation result / number of function code corresponding to operation setting coefficient * 1000
	E	Operate the Setting Coefficient by division with four decimals	Non-setting operation result / number of function code corresponding to operation setting coefficient * 10000
Note: 5~9 are operation setting coefficients and can be directly included in the operation, and A～E are not operation setting coefficients and can't be directly included in the operation. The operation setting coefficient is used to point to a function code number and only the number of function code can be included in the operation.			

Control Explanation for Operation Results

Operation Results oriented	Scope of Operation Results
Operation Results Oriented Reference Frequency	-Highest Frequency ~ Highest Frequency (Remove Decimal Point)
Operation Results Oriented Reference Upper Frequency	0~Highest Frequency (Remove Decimal Point)
Operation Results Oriented PID Reference	-1000~1000 means -100.0%~100.0%
Operation Results Oriented PID Feedback	-1000~1000 means -100.0%~100.0%
Operation Results Oriented Torque Reference	-1000~1000 means -100.0%~100.0%
Operation Results Oriented Analog Output	Operation Result 1: -1000~1000
	Operation Result 2: 0~1000
	Operation Result 3: -1000~1000
	Operation Result 4: 0~1000

The operation result 1 can be reviewed through Function Code P9.0.46.
The operation result 2 can be reviewed through Function Code P9.0.47.
The operation result 3 can be reviewed through Function Code P9.0.48.
The operation result 4 can be reviewed through Function Code P9.0.49.

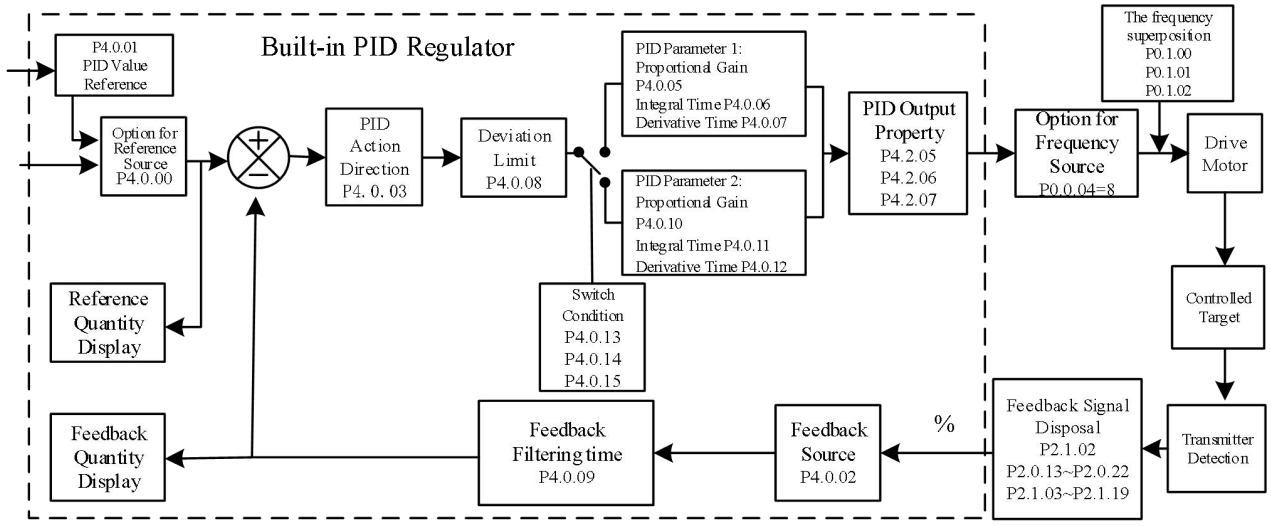
For instance: the sum of AVI Reference and ACI Reference can be used to torque reference through Operation 2. When the scope of torque reference is 0.0%~100.0%, the desired scope of operation results is 0~1000. For the scope of reference voltage of AVI and ACI is 00.00~10.00m, the scope of the non-setting operation results of Operation 2 is 0~2000, but the desired scope of operation results can be reached through division by two. The parameters of the function code are required to be set as below:

Function code	Function name	Setting value	Explanation
P1.1.14	Torque Reference Source	9	Torque Reference Source from Operation Result 2
P3.2.26	Operation Module	H.0010	Select addition operation for operation 2
P3.2.27	Operation Setting Coefficient Property	H.0050	Operate the setting coefficient by division without decimals
P3.2.31	Input A of Operation 2	09009	Operate corresponding Function Code P9.0.09 by unsigned number
P3.2.32	Input B of Operation 2	09010	Operate corresponding Function Code P9.0.10 by unsigned number
P3.2.33	Setting Coefficient of Operation 2	2	The setting coefficient is 2

The above description means:
Operation result = (number in P9.0.09 + number in P9.0.10) /2
If P3.2.27= H.00A0, the above description means:
Operation result = (number in P9.0.09 + number in P9.0.10) / number in P0.0.02
If P0.0.02=1,
Operation result = (number in P9.0.09 + number in P9.0.10) / 1

7.1.14 PID Function

The D200 series frequency inverter has built-in PID Regulator, which is configured with the option for signal reference channel and signal feedback channel, the users can easily realize automatic regulation of process control and control applications on constant voltage, constant flow, constant temperature, tension, etc. When in use of PID Frequency Closed-loop Control, the users need to preset the running frequency and reference mode and select P0.0.04 as 8 (PID Control), that is, PID Automatic Regulation on Output Frequency, related parameters of PID are given in Group P4 and the use methods of PID are as below:



The frequency inverter has 2 built-in equivalent PID computing units ,the performance parameters can be preset separately to realize optimum usage of regulating speed and accuracy, the users can use multi-functional terminals or setting deviation adjustment to freely switch different regulation performance required by different stage.

7.1.15 Wobbulating Function

Function code	Function name	Setting scope	Factory Value
P3.1.03	Wobbulating Reference Mode	0: Relative to Reference frequency 1: Relative to Highest Frequency	0
P3.1.04	Wobbulating Range	000.0%~100.0%	000.0
P3.1.05	Kicking Range	00.0%~50.0%	00.0
P3.1.06	Wobbulating Cycle	0000.1s~3000.0s	0010.0
P3.1.07	Rise Time of Wobbulating Triangular Wave	000.1%~100.0%	050.0

In some occasions, the Wobbulation can improve the control performance of the equipments, e.g. winding equipments in textile, fiber, etc., the use of the Wobbulating Function can improve the uniform tightness of the winding of spindle. Through setting Function Code P3.1.03~P3.1.07, it is to realize the reference frequency as wobbulating performance of the central frequency.

The Function Code P3.1.03 is used to confirm the reference quantity of amplitude. The Function Code P3.1.04 is used to determine the size of the amplitude. The Function Code P3.1.05 is used to confirm the size of mutation frequency of the wobbulation.

When at P3.1.03=0, the amplitude is variable amplitude system in relative to reference frequency, which will change along the reference frequency

Amplitude = Reference Frequency *Amplitude of Wobbulation

Mutation Frequency = Reference Frequency *Amplitude of Wobbulation *Sudden Jump of Amplitude

When at P3.1.03=1, the amplitude is fixed amplitude system in relative to reference frequency, which is a fixed amplitude.

Amplitude = Reference Frequency *Amplitude of Wobbulation

Mutation Frequency = Reference Frequency *Amplitude of Wobbulation *Sudden Jump of Amplitude

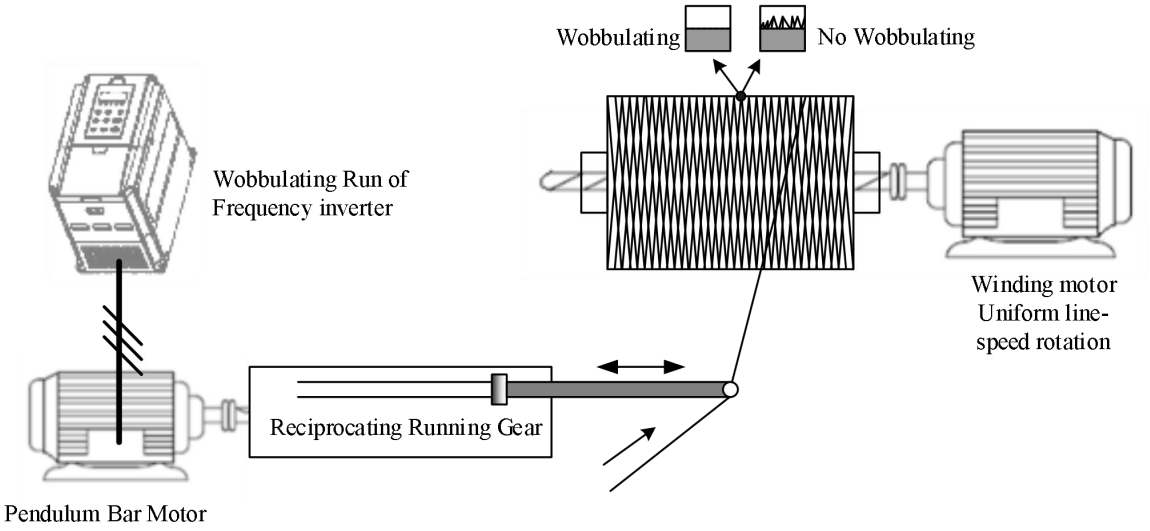
Wobbulating Cycle: refer to the time value of a complete wobbulating cycle.

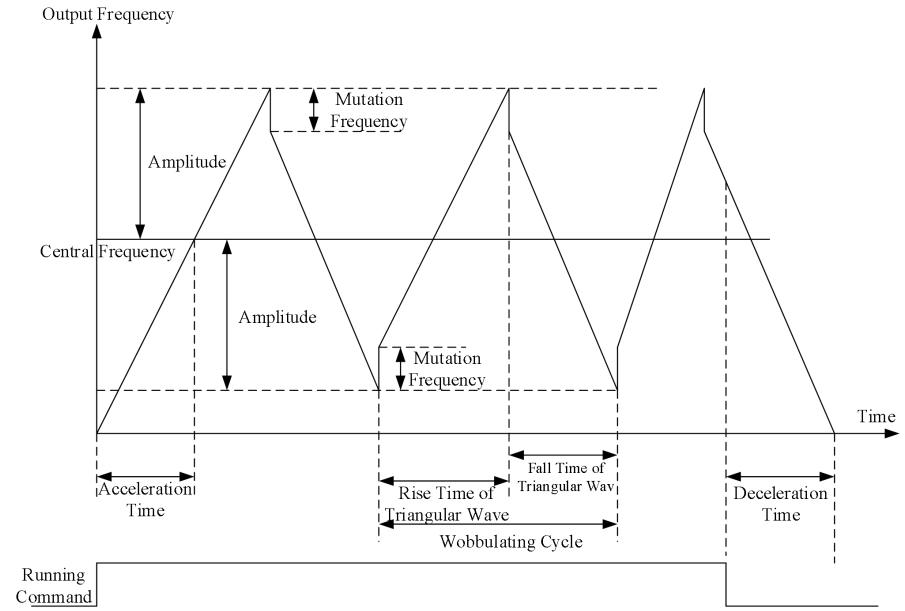
Triangular Wave Rise Time of Wobbulation: refer to the percentage of Triangular Wave Rise Time relative to wobbulating cycle (P3.1.06).

Triangular Wave Rise Time ＝ Wobbulating Cycle*Triangular Wave Rise Time of Wobbulation, Unit: Second.

Triangular Wave Fall Time ＝ Wobbulating Cycle*(1-Triangular Wave Rise Time of Wobbulation), Unit: Second.

Refer to the figure below for explanation:





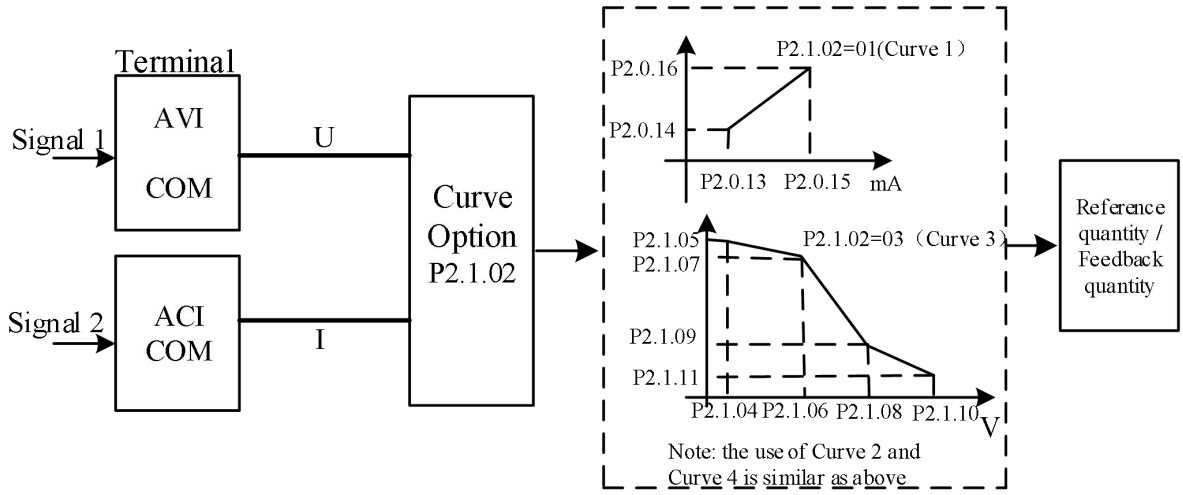
Note: the output frequency of wobbulation is subject to upper frequency and lower frequency

7.1.16 Analog Input/Output Use

1. Analog Input

The D200 series frequency inverter supports 2-way analog input, AVI can only be a voltage signal ranging from 0V to 10V, and ACI can only be a current signal ranging from 0/4mA to 20mA.

When the frequency inverter uses the analog input as frequency source reference, torque reference, PID reference or feedback, corresponding curve can be chosen for the relationship between the voltage or current value and reference value or feedback quantity through function code P2.1.02, and the corresponding curve parameters are set. The sampling value of Terminal VF can be viewed through Function Codes P9.0.09 and P9.0.10. Refer to the figure below for explanation:



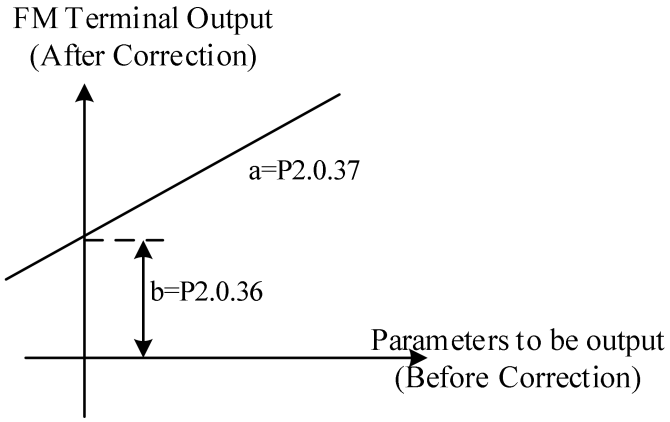
NOTE: The default value of inverter's analog input is 0V～10V. If the input is 0mA～20mA, it will remain 0V～10V; if the input is 4mA～20mA, it will remain 2V～10V.

2. Analog Output

The D200 series frequency inverter supports 1-way analog output, which can be voltage signal or can also be current signal.

Output	FM1	Voltage source	Shift switch J4 to U side, which enable to receive the signal at 0V~10VDC.
		Current source	Shift switch J4 to I side, which enable to receive the signal at 0mA~20mA.

FM1 can indicate internal running parameters through output analog mode. The indicated contents of the parameters can be selected through Function Codes P2.0.33. The analog output signal can be corrected through Function Codes P2.0.36 and P2.0.37 before output, the correction effect is shown in the figure below:



Corrected Output Y= aX+b (X means running parameters to be output, a means output gain and b is output offset).

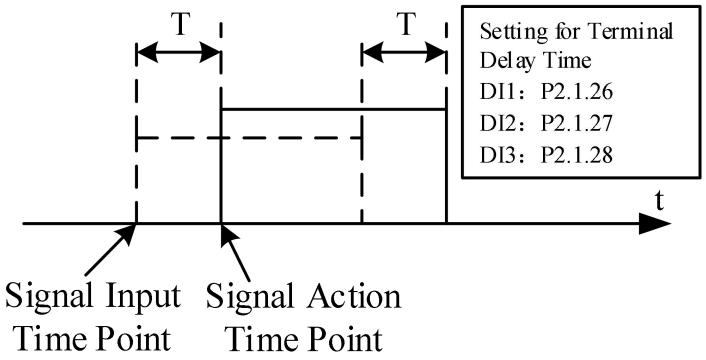
7.1.17 Digital Input/Output Use

1. Digital Input

The D200 series frequency inverter provides 4 digital input ports, the number is DI1～DI4, AVI and ACI can be also set as digital input via the function codes P2.1.23 and P2.1.24.

The digital input terminal adopts internal power by factory default, which is valid for short circuit to Terminal COM (indicated as 1) and invalid for disconnection (indicated as 0), it also can make its indicated effect reverse through setting Function Code P2.1.00 and P2.1.01. When AVI、ACI is used as digital input, the short circuit of 10V Power Terminal of the frequency inverter and AVI、ACI is valid, but invalid for disconnection, and the indicated effect can also be reversed through Function Code P2.1.25.

Terminal DI1~DI3 can also be used to set the delay effect time through Function Code P2.1.26~P2.1.28 and available for the occasions that require to delay the signal effect.



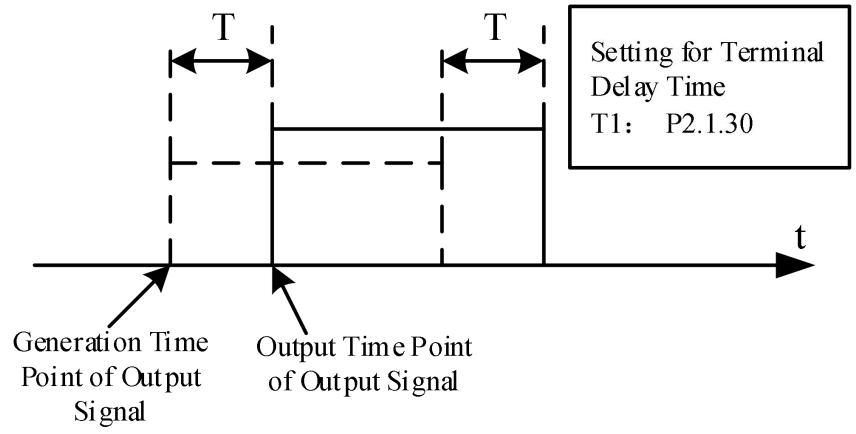
T is the delayed time

2. Digital Output

The D200 series frequency inverter provides 1 multi-function output port, namely T1 relay.

Port name	Function code	Output description
T1 relay	P2.0.29	Relay: drive capability: 250VAC, 3A below or 30VDC, 3A below

The delay output time of T1 output port can be also set via the function code P2.1.30, and it can be used where the signal delay output is required.

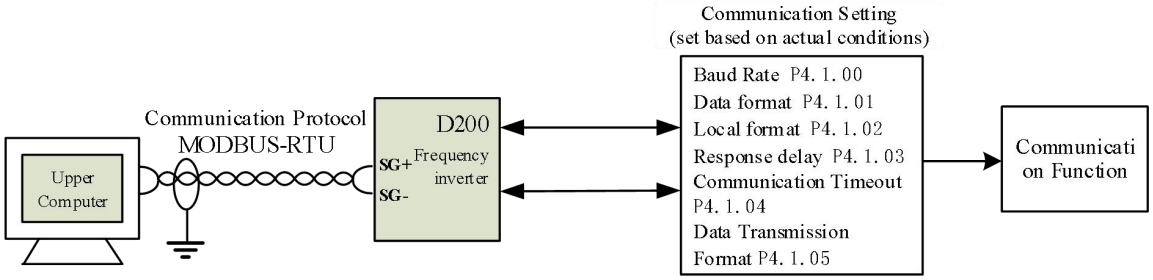


T is the delayed time

7.1.18 Communication of Upper Computer

With the use of automation control more and more widely, the application of the upper computer to control the operation of the inverter by means of communication is more and more, the use of RS485 network, can communicate with Delixi D200 series inverter. D200 series inverter control board standard with communication interface, the upper computer can be correctly connected to achieve communication.

The D200 Series Frequency Inverter adopts MODBUS-RTU Protocol, which can only be used as slave station, namely, it can only handle and reply the data from upper computer, but not initiatively send the data. When communicating, it is required to set the parameters of Function Code P4.1.00~P4.1.05. These parameters need to be set based on actual conditions, if the setting is improper, it may cause the communication unable to be done or abnormal communication. When the communication timeout (P4.1.04) is set at non-zero data, the frequency inverter automatically shuts down after the fault of communication timeout to avoid the frequency inverter from running without control to lead to adverse consequence when the communication or upper computer breaks down. As for specific use of Communication Protocol, refer to the Description of Chapter VIII for more details. The figure below is communication diagram of D200.



7.1.19 Parameter Identification

The accuracy of motor parameters P0.0.19 ~ P0.0.23 directly affects the control performance of frequency converter. If the frequency converter needs to have good control performance and operation efficiency, the frequency converter must obtain the accurate parameters of the controlled motor. If you know exactly the motor parameters, you can manually input the motor parameters to P0.0.19 ~ P0.0.23; otherwise, you need to use the parameter identification control function.

The Parameter Identification Control Modes include Static Identification, Complete Identification, Load Synchronous Machine Identification and Non-load Synchronous Machine Identification. As for Parameter Identification Control of the asynchronous motor, it suggests using the Complete Identification Mode at on-load run. (P0.0.24=2)

Parameter Identification Control Mode	Applicable Occasions	Identification Effect
Static Identification	Only applicable for occasions not convenient to separate the motor and rotating system from asynchronous motor	Worse
Complete Identification	Only applicable for occasions able to completely separate the motor and rotating system from asynchronous motor	Best

As for the occasions hard to separate the asynchronous motor and rotating system, the motor with same brand and type can be used, after complete identification, the parameters for properties of the motor are copied to corresponding parameter of P0.0.19~P0.0.23.

Function code	Function name	Setting scope	Factory Value
P0.024	Parameter Identification Control	0: No action 1: Static identification 2: Complete identification	0

0: No Action

When the frequency inverter is under normal operating state, the parameter identification is not required to be done.

1: Static Identification

When the load cannot completely separate from the asynchronous motor, this mode can be adopted. Before conducting the identification, the parameter value of P0.0.13~P0.0.18 must be set correctly. After completing the setting and pressing Key RUN, the frequency inverter operates the static identification, the completion of the identification only can acquire three parameter values of P0.0.19~P0.0.21.

2: Complete Identification

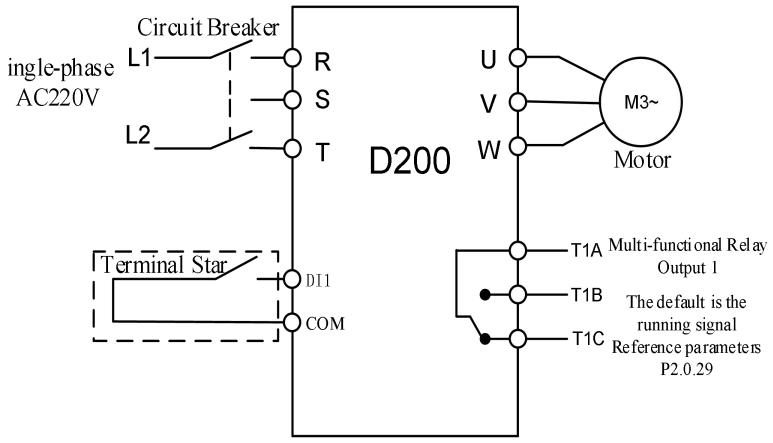
When the load completely separates from the asynchronous motor, this mode can be adopted (if the conditions allow, please try to adopt this mode, for it has better effect). Before conducting the identification, the parameter value of P0.0.13~P0.0.18 must be set correctly. After completing the setting and pressing Key RUN, the frequency inverter operates the complete identification, the completion of the identification only can acquire five parameter values of P0.0.19~P0.0.23.

Steps for Motor Parameter Identification:

1. If the motor can completely separate from the load, please confirm its state and the motor cannot influence other related devices when the motor is rotating.
2. After power-on, please confirm that the Parameter P0.0.13~P0.0.18 of the frequency inverter is the same with corresponding parameter on the nameplate of the motor.
3. Please confirm that when the running control mode of the frequency inverter is at P0.0.03=0, the panel control is adopted (i.e. only Key RUN on the control panel can identify the running signal).
4. Set Function Code P0.0.24 and select the mode of parameter identification. If the Complete Identification is selected, the Function Code is at P0.0.24=2, press Key “ENTER” and then press Key “RUN”, the keyboard displays “TESt”, the indicator of “RUN” lights on and the indicator of “TUNE” keeps flashing. The parameter identification continues running about 30s~60s, when the display of “TESt” disappears, the indicator of “TUNE” lights off, such a condition means the end of parameter identification, the frequency inverter can automatically store the identified the characteristic parameters of the motor into corresponding function code.

7.2 Application case

7.2.1 Ball mill



General parameters of ball mill (Before debugging of ball mill is started, please input 102 into P5.0.19)

Function code	Function Name	Setting scope	Factory Value
P0.0.01	Display mode	0: Primary mode (prefix is ‘P’) 1: User mode (prefix is ‘U’) 0: Check mode (prefix is ‘C’)	1
P0.0.02	Control mode method	0: V/F control	0
P0.0.03	Running control Mode selection	0: Keyboard control 1: Terminal control 2: Communication control	0
P0.011	Acceleration time	0000.0～6500.0s	Machine type
P0.012	Deceleration time	0000.0～6500.0s	Machine type
P0.016	Timing arrival deceleration time	0000.0～6500.0s	Machine type
P3.0.00	Cycle running mode	0: End of Single Running and Stop 1: End of Single Running and Save Final Value 2: Continuous Running 3: Cycle N Times	2
P3.0.01	Cycle time	00000～65000	00000
P3.0.02	Option of PLC Power-off Memory	Ones: Option of Power-off Memory 0: No Power-off Memory 1: Memory for shutdown and power-off Tens: Stop Memory Selection 0: No Stop Memory 1: Stop Memory	00

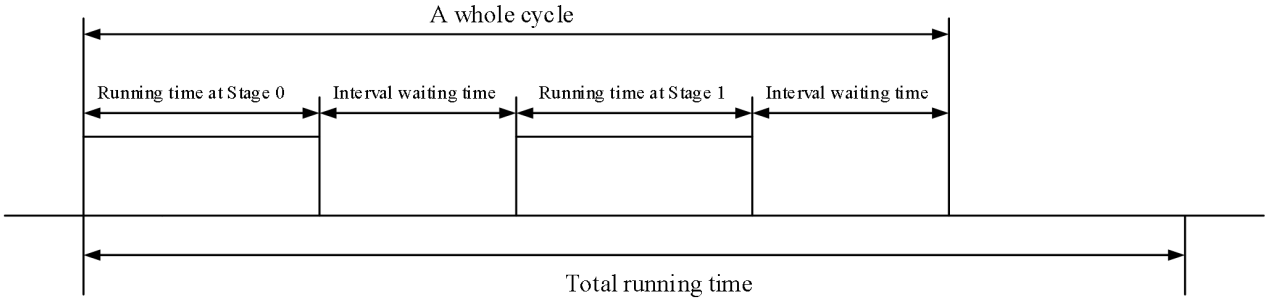
Function code	Function Name	Setting scope	Factory Value
P3.0.04	Stage 0 running time	0000.0s～6500.0s	100.0
P3.0.06	Stage 1 running time	0000.0s～6500.0s	100.0
P3.0.35	Stage 0 running time	H.010: Default direction H.110: Reversed direction	H.010
P3.0.36	Stage 1 running time	H.010: Default direction H.110: Reversed direction	H.010
P3.0.51	Timing operation Control	0: seconds 1: Hour 2: Minute	2
P3.2.11	Timing running control	4200: No timing 4239: Timing	4200
P3.2.17	Interval stand-by time	0.0～3600.0s	0000
P3.2.24	Total running time	0.0～3600.0m	1000.0
P5.0.15	Customized display coefficient	0.0001～6.5000	0.288
P5.0.19	Recover default value	00: No action 30: Backup of user's present parameter 60: Recover user's backup parameter 102: Recover factory parameter of ball mill	00

Description:

1. This system can both realize auto-stop via cycle time and timing.
2. When the user mode is adopted (P0.0.01=1), only the above parameters are displayed, other parameters will be shielded.
3. If the direction of stage 0 and stage 1 is uniform, it'll mean one-way running, if direction is on the contrary, it'll mean alternate running (see Sketch).
4. If vector control is adopted, refer to the Manual for motor parameter setting and parameter identification (V/F control is adopted by default).

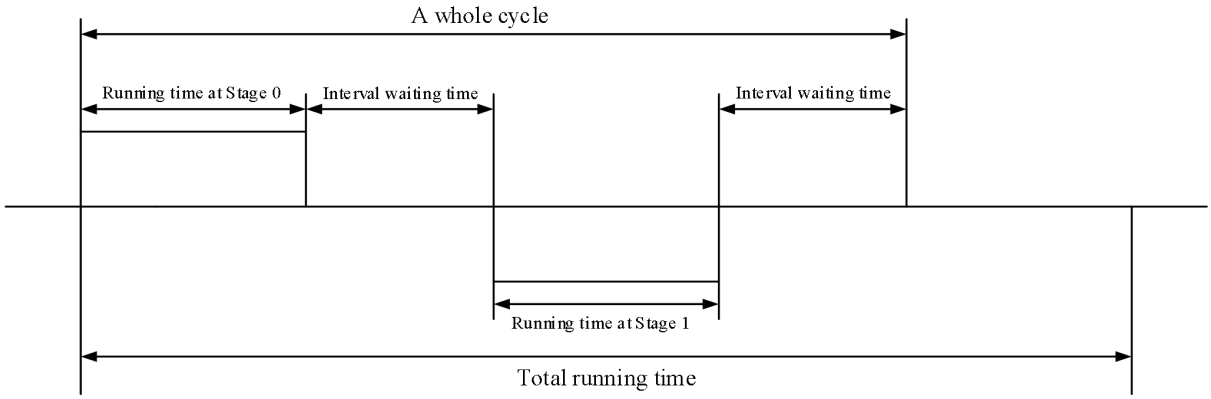
Description of system running sketch

Uniform running direction of stage 0 and stage 1



If the running with no timing is adopted, the system will run cycle by cycle until stop command is given. If the running with timing is adopted, the system will stop freely when reaching the total running time.

The running direction of stage 0 and stage 1 is reverse.



If the running with no timing is adopted, the system will run cycle by cycle until stop command is given. If the running with timing is adopted, the system will stop freely when reaching the total running time.

Method of displaying rotation speed

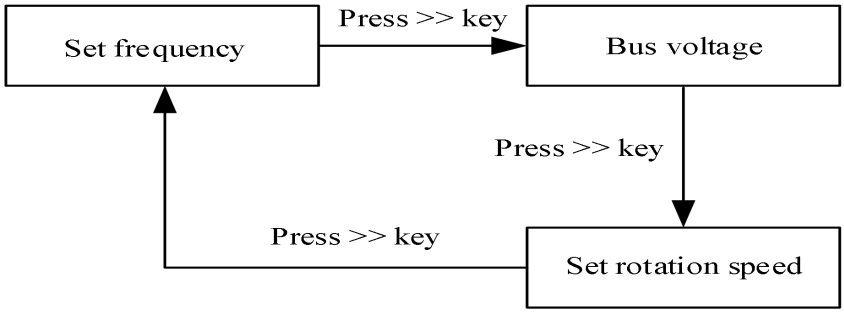
If the user requires displaying rotation speed, set the customized display coefficient into P5.0.15 according to the result of computing formula below, then press >> key, when the indicators of V, A and Hz are all OFF, it'll be rotation speed.

Customized display coefficient = rated speed/(rated frequency * 100)/transmission ratio

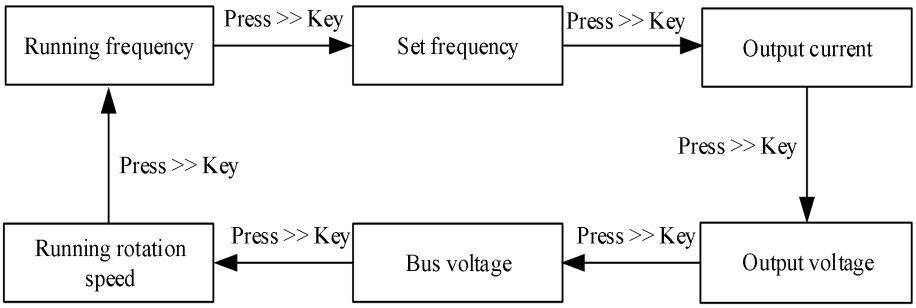
For instance, if the rated speed of motor is 1440rpm, the rated frequency is 50.00Hz, and the equipment transmission ratio is 2, then

Customized display coefficient = 1440/(50.00*100)/2=0.144

Monitoring content under stop state



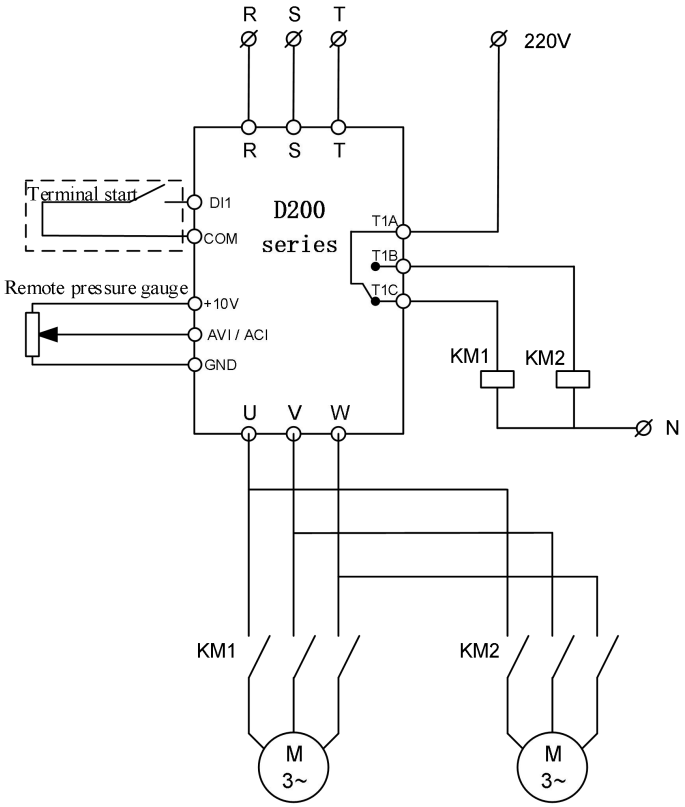
Monitoring content under running state:



Manufacturer parameter (used for built-in function calling, modification is forbidden)

Function code	Setting value	Function code	Setting value	Function code	Setting value
P0.0.04	7	P3.2.09	0048	P3.2.04	21113
P3.2.00	21112	P3.2.05	121	P5.0.05	H.0203
P3.2.07	3914	P3.2.10	0050	P5.0.02	H081F
P3.2.03	00100	P3.2.23	10001		
P3.2.18	1.0	P3.0.51	2		

7. 2. 2 Dual Pump Switch Function



Common Parameters of Dual Pump Function (please enter 100 to P5.0.19 before user has debugging of dual pump function)

Function Code	Name	Set Value	Description
P0.0.03	Selection of running control method	0	Start via RUN key on panel (default)
		1	Start via external terminal DI1 (P2.0.00=01)
P0.0.11	Acceleration time	20.0	
P0.0.12	Deceleration time	20.0	P3.2.13 needs adjustment after modification of this parameter
P3.0.00	Running mode of simplified PLC	0	Shutdown after completion of single running
		1	Maintain final value after completion of single running
		2	Continuous cycle (default)
		3	Cycle for N times
P3.0.01	Cycle times N	0	Cycle switch times of dual pumps when P3.0.00=3
P3.0.02	Selection of PLC power-off memory	11	Support memory in case of shutdown and power-off
P3.2.13	Pump switch time point	22.0s	This set value should be higher than the actual deceleration time of inverter
P3.2.17	Restart time point	24.0s	This set value is higher than the set value of P3.2.13
P3.0.04	Pump 1 running period	24.0	Running period of Pump 1
P3.0.06	Pump 2 running period	24.0	Running period of Pump 2
P3.0.35	Pump 1 frequency source	H.010	Decided by keyboard potentiometer (default)
		H.020	Given by keyboard frequency
		H.030	AVI input
		H.040	ACI input
		H.060	Given by PID
P3.0.36	Pump 2 frequency source	H.010	Decided by keyboard potentiometer (default)
		H.020	Given by keyboard frequency
		H.030	AVI input

		H.040	ACI input
		H.060	Given by PID
P4.0.01	PID set value	50.0%	Given by PID value (given pressure)
P3.0.51	Unit of pump running period	0	Second
		1	Hour
		2	Minute
P5.0.19	Recover default value	00	No operation
		09	Recover default value
		30	Backup user's current parameter
		60	Recover user backup parameters
		100	Recover default parameters of dual pump function

Chapter 8 D200 Series Frequency Inverter RS-485 Communication

1. Explanation for D200 series frequency inverter RS-485 Communication Terminal

D200 series inverter control board has its own RS-485 communication terminal.

SG+: 485 Signal Positive

SG-: 485 Signal Negative

2. Explanation for D200 series frequency inverter Communication Parameter

"The RS-485 communication terminal isn't equipped. The external communication expansion card must be connected to realize communication. The "Baud Rate", "Data Format" and "Communication Address" of frequency inverter must be set via the keyboard.

Function Code	Function Name	Setting Scope	Factory Value
P4.1.00	Baud Rate	Ones: 0: 1200 1: 2400 2: 4800 3: 9600 4: 19200 5: 38400 6: 57600	03
P4.1.01	Data Format	0: No Check (8-N-2) 1: Even Parity Check (8-E-1) 2: Odd Parity Check (8-O-1) 3: No Check (8-N-1)	0
P4.1.02	Local Machine Address	000 is Broadcast Address 001～249	1
P4.1.03	Response Delay	0ms ~ 20ms	2
P4.1.04	Communication Timeout	0.0(Invalid) 0.1s ~ 60.0s	0.0
P4.1.05	Data Transmission Format	Ones: 0: ASCII mode (Reserved) 1: RTU mode	01

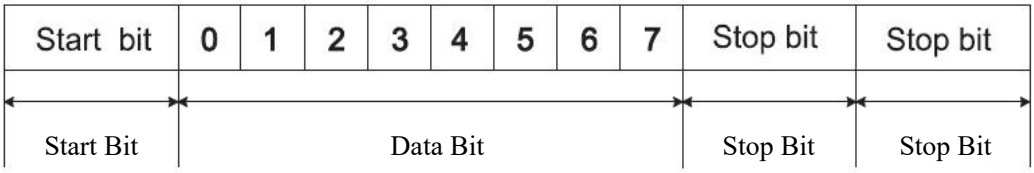
Response Delay: when the frequency inverter receives the data and after the time set by Function Code P4.1.03 is delayed, the frequency inverter starts recovering the data.

Communication Timeout: the interval between data frames received by the frequency inverter is over the time set by Function Code P4.1.04, the frequency inverter gives an alarm of Fault Err14, it is deemed as abnormal communication. If it is set at 0.0, the communication timeout is invalid.

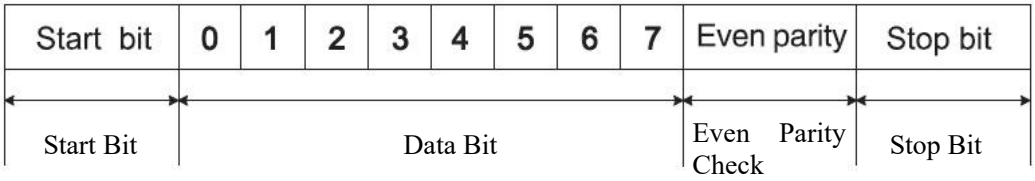
3. Description for Standard MODBUS Communication Format

3.1 String Structure

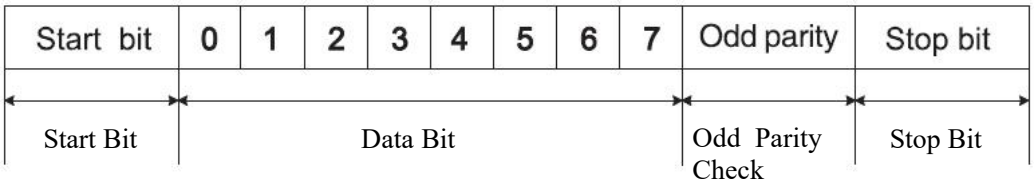
(8-N-2, P4.1.01=0)



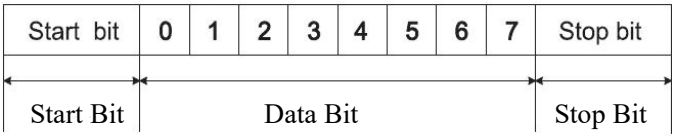
(8-E-1, P4.1.01=1)



(8-0-1, P4.1.01=2)



(8-N-1, P4.1.01=3)



3.2 Communication Data Structure

ADR	Slave Machine (Frequency inverter) Address The address scope of the frequency inverter is (001~249), (8-digit hexadecimal number) **Note**: When the address is ADR=000H, it is valid for all slave machines and all slave machines can't respond message (broadcast mode)
CMD	Function Code of Data Package (06: write the contents of a register; 03: read out the contents of one or more than one register(s)) (8-digit hexadecimal number)
ADRESS	Sending of Host Machine: when at Function Code 06, it means data address (16-digit hexadecimal number); when at Function Code 03, it means data initial address (16-digit hexadecimal number) Slave Station Responds: refer to data address when at function code 06 (16-digit hexadecimal number); refer to data number when at function code 03 (8-digit hexadecimal number)
DATA	Sending of Host Machine: when at Function Code 06, it means data address (16-digit hexadecimal number); when at Function Code 03, it means data initial address (16-digit hexadecimal number) Slave Station Responds: when at Function Code 06, it means data address (16-digit hexadecimal number); when at Function Code 03, it means data initial address (16-digit hexadecimal number in N)
CRC	CHK (CHECKSUM) (16-digit hexadecimal number)

RTU adopts CRC CHK (CHECKSUM), which is calculated as the following steps:

Step 1: Load 16-digit register with content of FFFFH (CRC Register).

Step 2: Conduct XOR operation for the first byte of the communication data and the contents of CRC Register and store the results into CRC Register.

Step 3: Move 1bit of the contents of CRC Register to the minimum significant bit and fill in 0 to the maximum significant bit, and check the minimum significant bit of CRC Register.

Step 4: If the minimum significant bit is 1, the CRC Register and preset value conduct XOR operation. If the minimum significant bit is 0, no action is taken.

Step 5: After repeat 8 times of Step 3 and 4, the handling to this byte is finished.

Step 6: Repeat Step 2-5 for next byte of the communication data until the handling to all bytes are completed, the final content of CRC Register is the value of CRC. When transmitting CRC Value, first add the low byte and then high byte, that is, the low byte is first transmitted.

In case of any fault of the communication, the slave machine responds the data of ADRESS and DATA as below:

ADRESS	DATA	Description	ADRESS	DATA	Description
FF01	0001	Invalid address	FF01	0005	Invalid parameter
FF01	0002	CRC Check Error	FF01	0006	Invalid Modification to Parameter
FF01	0003	Read and Write Command Error	FF01	0007	System Lock
FF01	0004	Password Error	FF01	0008	Parameter under Storage

The master station writes the command string format:

Name of Character	Slave Station	Write Command 06H	Function Code Address	Data content	CRC Check
Length of Character	1Byte	1Byte	2Byte	2Byte	2Byte
Example	01H	06 H	0005 H	1388H	949DH

The slave station responds the command string format:

Name of Character	Slave Station	Write Command 06H	Function Code Address	Data content	CRC Check
Length of Character	1Byte	1Byte	2Byte	2Byte	2Byte
Example	01H	06H	0005H	1388H	949DH

The master station reads the command string format:

Name of Character	Slave Station	Read Command 03H	Initial Address of Function Code	Data content	CRC Check
Length of Character	1Byte	1Byte	2Byte	2Byte	2Byte
Example	01H	03 H	9000 H	0003H	28CBH

The slave station responds the read command string format:

Name of Character	Slave Station	Read Command 03H	Data content	Data content 1	Data content 2	Data content 3	CRC Check
Length of Character	1Byte	1Byte	1Byte	2Byte	2Byte	2Byte	2Byte
Example	01H	03 H	06H	0000H	0000H	0000H	2175H

The slave station responds the write command error string format:

Name of Character	Slave Station	Write Command 06H	Read and Write Error Mark	Read and Write Error Type	CRC Check
Length of Character	1Byte	1Byte	2Byte	2Byte	2Byte
Example	01H	03 H	FF01 H	0005H	281DH

The slave station responds the read command error string format:

Name of Character	Slave Station	Read Command 03H	Read and Write Error Mark	Read and Write Error Type	CRC Check
Length of Character	1Byte	1Byte	2Byte	2Byte	2Byte
Example	01H	03 H	FF01H	0005H	E41DH

4. Definition for Parameter Address of Communication Protocol

The D200 series frequency inverter not only has many multifunctional function code parameters, but some non-multifunctional function code parameters. Specific read and write properties are as below:

Function Code Parameter	P1~P8	Readable, writable
	P9	Only Readable
Non-function Code Parameter	A000H, A001H, A002H, A003H, A010H, A011H	Only writable
	B000H, B001H	Only Readable

Explanation for Read and Write Address of Function Code Parameters:

The group and level of function code parameters are used to form the high position of the parameter address, and the sequence number is used to form the low position of the parameter address.

Converts the high-order address of the parameter address as a hexadecimal number and the low-order address as a decimal number to a hexadecimal number. The higher-order and lower-order addresses are then combined into a 4-bit hexadecimal number.

For example P2.1.12

The high-order address is 21 in hexadecimal. The low address is 12 in decimal and is converted to 0C in hexadecimal. So the address is denoted as 0x210C.

Table of Definitions for Non-functional Function Code Parameter Address

Definition	Function Code	Parameter Address	Description for Function	
Command to frequency inverter	06H	A000H	0001H	Forward Run
			0002H	Reverse Run
			0003H	Forward Jogging
			0004H	Reverse Jogging
			0005H	Free Stop
			0006H	Shutdown By Speed Reduction
			0007H	Fault Rest
		A001H	Frequency Command or Upper Frequency Source (refer to the percentage of the highest frequency without storage) (00.00~100.00 indicates 00.00%~100.00%)	
		A002H	BIT2	T1 relay
			If it is required to make T1 relay signal valid, set corresponding position to 1, after transfer binary system to hexadecimal system, send it to address A002.	
		A003H	FM1 Output Address (00.0~100.0 indicates 00.0%~100.0%)	
		A010H	PID Reference Value	
		A011H	PID Feedback Value	

Definition	Function Code	Parameter Address	Description for Function	
Running status of monitoring frequency inverter	03H	B000H	0001H	Forward Run
			0002H	Reverse Run
			0003H	Stop

Table of Definitions for Non-functional Function Code Parameter Address

Definition	Function Code	Parameter Address	Description for Function	
Monitoring to Fault of Frequency inverter	03H	B001H	00	No fault
			01	Over-current at constant speed
			02	Over-current at acceleration
			03	Over-current at deceleration
			04	Over-voltage at constant speed
			05	Over-voltage at acceleration
			06	Over-voltage at deceleration
			07	Module Fault
			08	Under-voltage
			09	Frequency inverter Overload
			10	Motor Overload
			11	Input Default Phase
			12	Output Default Phase
			13	External Fault
			14	Abnormal Communication
			15	Frequency inverter Overheat
			17	Motor Earthing Short Circuit
			18	Motor Identification Error
			19	Motor Off-load
			20	PID Feedback Loss
			21	User-Defined Fault 1
			22	User-Defined Fault 2
			23	Accumulative Power-on Time Arrival
			24	Accumulative Running Time Arrival
			26	Parameter Read-Write Abnormity
			27	Motor Overheat
			31	Current Detection Fault
			33	Abnormity of Current Detection
			34	Fast Current-limiting Timeout
			38	Output short circuit
			40	Buffer resistance fault
			54	Internal communication is abnormal

5. Example

Example 1: Forward Start No.1 Frequency Inverter

The host machine sends data package

ADR	01H
CMD	06H
ADRESS	A0H
	00H
DATA	00H
	01H
CRC	6AH
	0AH

The slave machine responds the data package

ADR	01H
CMD	06H
ADRESS	A0H
	00H
DATA	00H
	01H
CRC	6AH
	0AH

Example 2: Reference No.1 Frequency inverter Frequency (Not store)

The frequency value of Reference 1# Frequency inverter is the highest frequency 100.00%.

Methods are as below: after removal of the decimal point of 100.00, it is 10000D=2710H.

The host machine sends data package

ADR	01H
CMD	06H
ADRESS	A0H
	01H
DATA	27H
	10H
CRC	E0H
	36H

Respond the data package

ADR	01H
CMD	06H
ADRESS	A0H
	01H
DATA	27H
	10H
CRC	E0H
	36H

Example 3: Inquire the running frequency of No.1 Frequency inverter Frequency

In running state, inquire the “Output Frequency” of the Frequency inverter 1#

Methods are as below: the Function Code Parameter No. of the output frequency is P9.0.00, after conversion into address, it is 9000H.

If the “Output Frequency” of the Frequency inverter 1# is 50.00Hz, it is 5000D=1388H

The host machine sends data package

ADR	01H
CMD	03H
ADRESS	90H
	00H
DATA	00H
	01H
CRC	A9H
	0AH

The slave machine responds the data package

ADR	01H
CMD	03H
ADRESS	02H
DATA	13H
	88H
CRC	B5H
	12H

Chapter 9 Fault Handling

9.1 Frequency inverter Fault and Exclusion Measure

Fault display	Description	Details	Fault elimination
Err00	No Fault		
Err01	Over-current at constant speed	The output current exceeds the over-current value while the frequency inverter is running at a constant speed	● Check whether the output circuit of the frequency inverter has short circuit; ● Check whether the input voltage is relatively low; ● Check whether the load has mutation; ● Conduct parameter identification or improve low frequency torque compensation; ● Check whether the rated power of the motor or frequency inverter is large enough;
Err02	Over-current at acceleration	When the frequency inverter accelerates, output current exceeds over-current	● Check whether the motor is and its lines are short circuit, grounded or too long; ● Check whether the input voltage is relatively low; ● Delay the acceleration time ● Conduct parameter identification or improve low frequency torque compensation or adjust V/F Curve; ● Check whether the load has mutation; ● Check whether it is to select speed tracking or start after the motor stops stably; ● Check whether the rated power of the motor or frequency inverter is large enough;
Err03	Over-current at deceleration	When the frequency inverter decelerates, output current exceeds over-current	● Check whether the motor is and its lines are short circuit, grounded or too long; ● Conduct parameter identification ● Delay the deceleration time; ● Check whether the input voltage is relatively low; ● Check whether the load has mutation; ● Install additional brake unit and brake resistance;
Err04	Over-voltage at constant speed	When the frequency inverter runs at constant speed, DC voltage of the main circuit exceeds this set value. Detected DC over-voltage value: Level S2/T2 : 400V LevelT4 : 800V	● Check whether the input voltage is too high; ● Check whether the bus voltage display is normal; ● Check whether the motor is dragged to run by external force in the running process;

Fault display	Description	Details	Fault elimination
Err05	Over-voltage at acceleration	When the frequency inverter runs at constant speed, DC voltage of the main circuit exceeds this set value. The detected over-voltage value is the same as above.	● Check whether the input voltage is too high; ● Check whether the bus voltage display is normal; ● Delay the deceleration time; ● Check whether the motor is dragged to run by external force in the process of deceleration; ● Install additional brake unit and brake resistance;
Err06	Over-voltage at deceleration	When the frequency inverter runs at constant speed, DC voltage of the main circuit exceeds this set value. The detected over-voltage value is the same as above.	● Check whether the input voltage is too high; ● Check whether the bus voltage display is normal; ● Delay the deceleration time; ● Check whether the motor is dragged to run by external force in the process of deceleration; ● Install additional brake unit and brake resistance;
Err08	Under-voltage	Under-voltage in the main circuit, check the electric level: Detected DC under-voltage value: Level S2/ T2 : 200V*P0.2.05/100 Level T4 : 350V*P0.2.05/100	● Check the lines of supply power contact well; ● Check whether the incoming voltage is within regulated scope; ●Check whether there is momentary interruption; ● Check whether the display of the bus voltage is normal; ● Check whether the setting bridge and charge resistance are normal;
Err09	Frequency inverter overloaded	Motor and current exceed the rated load	●Check whether the motor is in locked-rotor conditions or the load to motor needs to be reduced; ● Replace the frequency inverter with larger power;
Err10	Motor overload	Motor and current exceed the rated current	● Check the protection parameter P1.0.25 Reference of the motor is proper; ●Check whether the motor is in locked-rotor conditions or the load to motor needs to be reduced; ● Correctly preset the rated current of the motor; ● Replace the frequency inverter with larger power;
Err11	Missing phase	Error of missing phase or unbalanced three phases	● Check main circuit voltage whether it is missing phase or unbalanced three phases ● Check whether the connecting terminal is loosing. ● Seek technical support

Fault display	Description	Details	Fault elimination
Err12	Output Default Failure	Output Default Failure or 3-phase Imbalance Fault	● Check whether the output circuit has output default failure or 3-phase imbalance fault ● Check whether the wiring terminals are loose ● Seek technical support
Err13	External Fault	Fault caused by External Control Circuits	● Check the signal input circuit of external fault ● Reset Run
Err14	Abnormal Communication	Abnormity for communication of frequency inverter and other equipments	● Check external communication lines ● The upper computer doesn't work normally ● The setting for communication parameter is not correct ● The communication protocol is inconsistent
Err15	Frequency inverter Overheat	Radiator temperature ≥ oh Detection Value (about 80℃, from temperature switch)	● Check the running state of the fan and ventilation state ● Check whether the surrounding temperature is too high and the cooling measures are required to be taken; ● Check whether the thermistor or temperature switch is damaged; ● Clear the dirt on the exterior of radiator and air intake;
Err17	Motor-to-ground short circuit	Motor-to-ground short circuit	● Check whether the output line or motor of the frequency inverter has ground short circuit
Err18	Motor Identification Error	When conducting the parameter identification, the fault occurs in motor	● Check whether the motor parameter is consistent with the nameplate of the motor ● Whether the frequency inverter and main cable of the motor are connected well;
Err19	Motor Off-load	Refer to the value of running current less than off-load current P6.1.19 and duration of P6.1.20	● Check whether the load separates; ● Check whether the value set by Parameter P6.1.19 and P6.1.20
Err20	PID Feedback Loss	Refer to the value of PID feedback value less than value of P4.0.18 and duration of P4.0.19	● Check whether PID Feedback Signal is normal ● Check whether the value set by Parameter P4.0.18 and P4.0.19 meets actual running conditions;
Err21	User-Defined Fault 1	Fault 1 Signal given by the users through multi-functional terminals or PLC Programming Function	● Check whether the User-Defined Fault 1 is removed and then run after reset;
Err22	User-Defined Fault 2	Fault 2 Signal given by the users through multi-functional terminals or PLC Programming Function	● Check whether the User-Defined Fault 2 is removed and then run after reset;
Err23	Accumulative Power-on Time Arrival	Refer to the time given by accumulative power-on time arrival P5.1.01 of the frequency inverter	● Use the parameter initialization function to clear the record information
Err24	Accumulative Running Time Arrival	Refer to the time given by accumulative power-on time arrival P5.1.00 of the frequency inverter	● Use the parameter initialization function to clear the record information

Fault display	Description	Details	Fault elimination
Err26	Parameter Read-Write Abnormity	Damage of EEPROM Chip	● Change main control panel
Err27	Motor Overheat	Detection on excessive temperature of the motor	● Check whether the temperature of the motor is too high; ● Check whether the temperature sensor is damaged or its wirings are loose;
Err31	Current Detection Fault	Circuit fault after current detection	● Check whether the Hall device has defaults; ● Check whether the circuit has fault after detection of the driver board ● Check whether the driver board has fault
Err33	Abnormity of Current Detection	Circuit fault after current detection leads to abnormal current detection value	● Check whether the Hall device has defaults; ● Check whether the circuit has fault after detection of the driver board ● Check whether the driver board has fault
Err34	Fast Current-limiting Timeout	The running current of the frequency inverter continues to be larger, which exceeds allowable current–limit time	● Check whether the load is too large or is stalled; ● Check whether the size of the frequency inverter is too small;
Err38	Output short circuit	3-phase output inter-phase short circuit	● Check insulation of motor wire and motor
Err40	Buffer Resistance	The bus voltage fluctuates strongly	● Check whether the contactor is normal ● Check the fluctuations of incoming voltage
Err54	Internal communication is abnormal	Internal communication is abnormal	● Check internal communication lines; ● Seek technical support

9.2 Motor Fault and Exclusion Measure

If any of the faults below occurs to your motor, find out the causes and take corresponding corrective measures. If the fault persists, please contact your DELIXI distributor immediately. Motor Fault and Its Elimination:

Fault	Tips for checking	Corrective measures
The motor does not rotate.	Has the power voltage been delivered to the terminals R and S?	Switch on the power supply; switch it off and on again; check power voltage; make sure the terminal bolts have been tightened
	Measure the voltages of terminals U, V and W with a rectifier-type voltmeter. Are they right?	Cut off power supply and switch it on again
	Has the motor been locked due to overload?	Reduce load and lift the lock
	Is there any fault information displayed on the monitor of the operator?	Check the fault according to the table of faults
	Has the instruction for forward or reverse rotation been fed in?	Check the wiring
	Has the frequency-setting signal been fed in?	Change the wiring, check the frequency-setting voltage
	Has the running mode been set up correctly?	Input the correct setup
The motor rotates in opposite direction	Is the wiring of terminals U, V and W correct?	Wire them to the lead wires U, V and W of the motor in accordance with the phase sequence
	Is the input signal connection right for the forward/backward rotation?	Change the wiring
The motor rotates, but is incapable of speed changing.	Is the wiring of the frequency reference circuit correct?	Change the wiring
	Has the operation mode been correctly set up?	Check the selected running mode with an operator
	Is the load too much?	Reduce load
The rotation speed (rpm/min) of the motor is too high or too low.	Are the rated values (number of poles, voltage) right?	Check the technical data on the nameplate of the motor
	Is the acceleration/deceleration gear shifting ratio of the gear wheel right?	Checking the shifting gears (like the gear wheel and so on)
	Has the maximum output frequency been correctly set up?	Check the set value of the maximum output frequency
	Check the voltage between the terminals of the motor with a rectifier-type voltmeter. Is there too much voltage drop?	Check the V/F characteristic value
The rotation speed (rpm/min) of the running motor is unsteady	Is the load too much?	Reduce load
	Is the change of load too much?	Reduce load change, increase the motor capacity of the frequency inverter
	What about the power supply. Is it a 3-phase or a single-phase one? If it is a 3-phase one, is there any phase loss?	Check the wiring of the 3-phase power supply for possible phase loss.

Appendix 1 Regular Maintenance and Inspection Methods

Inspection location	Items for inspection	Description	Period			Inspection method	Criteria	Measuring instrument
			Daily	Yearly	Biennial			
Exterior	Surroundings	Is there any dust? Are the ambient temperature and humidity appropriate?	√			See the precautions	Temperature: -10~+40℃; no dust; humidity: below 90% and no dew formation	Thermometer, hygrometer and a recorder
	Equipment	Is there any abnormal vibration or noise?	√			Look, see	No abnormality	
	Input voltage	Is the input voltage of the main circuit normal?	√			Measure the voltage between the terminals R, S and T		Digital AVO meter/ tester
Main Circuit	The entire operating site	Megger examination (of the resistance between the main circuit and earth) for any loosened parts. Overheat on any parts? Clean?		√		Disconnect the frequency inverter, Short-circuit the terminals R, S, U, V, W and measure the resistance between them and the earth. Tighten the bolts Check with naked eyes	Over 5 MΩ and fault free	DC 500V-type megger
	Conductor wiring	Conductor rusty? Wire sheath damaged?		√		Check with naked eyes	No fault	
	Terminals	Any damage?		√		Check with naked eyes	No Fault	
	IGBT module / diode	Check the impedance between terminals			√	Disconnect the frequency inverter, and measure with a tester the resistance between the group of R, S, <-> +, - and the group of U, V, W <-> +, - respectively		Digital AVO meter / analog measuring meter
	Insulation resistance	Megohmmeter inspection (between output terminal and grounding terminal)			√	Release connection of U, V and W and fasten motor wire	Exceed 5MΩ	500V type megohmmeter

Inspection location	Items for inspection	Description	Period			Inspection method	Criteria	Measuring instrument
			Daily	Yearly	Biennial			
Main Circuit	Filter capacitor	Is there any liquid seepage? Is the safety hole bulging out? Is the capacitor bulging out?	√	√		Check with naked eyes Measure with capacitance meters and no fault is found	Exceed 85% of the rated capacity	Devices for measuring capacitance
	Relay	Any wobbling noise during operation? Any damage to the contacts?		√		Listen Check with naked eyes.	No fault	
	Resistance	Whether resistance insulation is damaged Whether resistor wire is damaged (open circuit)		√		Visual inspection Disconnect one and measure it with test instrument.	There is no fault Error must be within ±10% of resistance value	Digital multimeter/simulation test instrument
Protection circuit and control circuit	Operation check	Is the output voltage balanced for all the phases? After executing sequential protection, there should be no fault in the display circuit		√		Measure the voltage among terminals U, V and W Short circuit and open frequency inverter protection circuit output	For 200V model, the difference in the voltage of each phase should not exceed 4V	Digital AVO meter/ calibrating voltmeter
Cooling system	Cooling fan	Any abnormal vibration or noise? Any loosened connections?	√	√		Turn the tightening connection of the fan after switching off the power supply	Rotation smooth and no fault	
Display	Meter	Is the displayed value correct?	√	√		Check the reading of the meter outside the panel	Check the set values	Voltmeter/ ammeter
Motor	The entire operating site	Any abnormal vibration or noise? Any abnormal smells?	√			Check with your ears, nose, and eyes; Check for overheat or damage	No fault	

Appendix 2 Guideline for Option of Optional Parts

Users of this series product can choose to install additional peripherals in accordance with the operating conditions and needs.

A2.1Alternative Current Reactor (ACL)

Alternative current reactor can be used to suppress the high-order harmonic of the input current from the frequency inverter, thus improve its power factors. It is recommended for the following situations:

1. The ratio of the capacity of the power source to that of the frequency inverter exceeds 10:1.
2. Silicon controlled load or power factor compensation devices with switch control is wired to the same power supply.
3. The 3-phase power has a high degree of voltage unbalance. (≥3%)

Table of Matching Alternating Current Reactors:

Power (kW)	Current (A)	Inductance (υH)	Power (kW)	Current (A)	Inductance (μH)
0.4	2.0	4.6	1.5	7.0	1.6
0.75	4.0	2.4	2.2	10	1.0

A2.2Radio noise filter

Radio noise filters are used to restrain the transmission of electromagnetic interfering noises generated by the frequency inverter. They can also be used to restrain interference with the motor from external radio, instantaneous impact and surges.

Table of matching 3-phase 3-wire Radio Noise Filters:

Voltage V	Motor power kW	Filter model	Key filter parameters					
			Common-mode input loss dB			Common-mode input loss dB		
			0.1 MHz	1 MHz	30 MHz	0.1 MHz	1 MHz	30 MHz
220	0.4 ~ 0.75	DL-5EBT1	75	85	55	55	80	60
	1.5 ~ 2.2	DL-10EBT1	70	85	55	45	80	60

In situations requiring stronger anti-radio interference capability or conformity to CE, UL, or CSA standards, or when there are devices with poor anti-interference capabilities in the vicinity, filters should be installed. While installing, make sure the wiring is as short as possible, that is, the filter should be as close to the frequency inverter as possible.

A2.3Remote Operation Keyboard

Our series frequency inverters have all been equipped with operation keyboards, exquisitely designed and easily operated. If you wish to use it away from the frequency inverter or other places, an extended cable would serve the purpose. You just need to demand it when you place an order. Since the serial communication mode is employed to link the keyboard and the frame, you can remove the keyboard to work area as far as 10m away. Or if you want to or need to work father away, then you can buy a remote operation keyboard from the suppliers concerned, or from our company.

A2.4Energy Consumption Brake Unit and Brake Resistance

The D200 series frequency inverter is equipped with built-in brake unit, if the brake torque is required to be increased, it is to directly connect the brake resistance.

The formula for simple calculation for brake unit and brake resistance is as below:

Generally, the brake current is 1/2 I of the rated current of the motor, the generated brake torque is approximately equal to the rate torque of the motor. Therefore, proper brake current IB shall be selected based on requirements of load inertia and shutdown time. The greater the load inertia is, the shorter the shutdown time requires and the greater the selected brake current IB is.

$$IB = (1/2\sim3/2)*I$$

According to brake current, the value of resistance to brake unit and brake resistance can be selected.

The peak current of the brake unit (only aim at brake unit of Delixi) is larger than IB.

Size of Brake Resistance Value

$$RB=U/IB \text{ (in S2 and T2 Series, U takes 400V; in T4 Series, U takes 800V)}$$

Size of Brake Resistance Power

$$PB=K*U*U/RB$$

In formula, K indicates braking coefficient with range of 0.1~0.5, and the braking coefficient shall be selected based on requirements of load inertia and shutdown time. The greater the load inertia is, the shorter the shutdown time requires and the greater the selected braking coefficient K is. General load can select 0.1~0.2 and the large load inertia selects 0.5.

The following sizing table is available when IB is approximately equal to 1/2I and K is between 0.1~0.2. The greater the load inertia is, the shorter the shutdown time requires, and proper adjustment shall be made according to the formula above.

Type of Frequency inverter	Type of Brake Unit	Brake Resistance Value (Ω)	Brake Resistance Power (W)
S2(single-phase 220V)			
CDI-D200G0R4S2B	Built-in, allowable Max. Current 8A	400	80
CDI-D200G0R75S2B	Built-in, allowable Max. Current 8A	200	160
CDI-D200G1R5S2B	Built-in, allowable Max. Current 15A	120	250
CDI-D200G2R2S2B	Built-in, allowable Max. Current 15A	80	400
CDI-D201G0R4S2B	Built-in, allowable Max. Current 8A	400	80
CDI-D201G0R75S2B	Built-in, allowable Max. Current 8A	200	160
CDI-D201G1R5S2B	Built-in, allowable Max. Current 15A	120	250
CDI-D201G2R2S2B	Built-in, allowable Max. Current 15A	80	400
T2(Three-phase 220V)			
CDI-D200G0R4T2B	Built-in, allowable Max. Current 10A	350	160
CDI-D200G0R75T2B	Built-in, allowable Max. Current 10A	200	160
CDI-D200G1R5T2B	Built-in, allowable Max. Current 25A	100	250
CDI-D200G2R2T2B	Built-in, allowable Max. Current 25A	75	400
CDI-D201G0R4T2B	Built-in, allowable Max. Current 10A	350	160
CDI-D201G0R75T2B	Built-in, allowable Max. Current 10A	200	160
CDI-D201G1R5T2B	Built-in, allowable Max. Current 25A	100	250
CDI-D201G2R2T2B	Built-in, allowable Max. Current 25A	75	400

T4(Three-phase 380V)			
CDI-D200G0R75T4B	Built-in, allowable Max. Current 10A	600	160
CDI-D200G1R5T4B	Built-in, allowable Max. Current 10A	400	250
CDI-D200G2R2T4B	Built-in, allowable Max. Current 15A	250	400
CDI-D200G3R7T4B	Built-in, allowable Max. Current 25A	150	600
CDI-D201G0R75T4B	Built-in, allowable Max. Current 10A	600	160
CDI-D201G1R5T4B	Built-in, allowable Max. Current 10A	400	250
CDI-D201G2R2T4B	Built-in, allowable Max. Current 15A	250	400
CDI-D201G3R7T4B	Built-in, allowable Max. Current 25A	150	600