Foreword

Thank you for using the CWH300 series of high-Ferformance vector inverter.

New CWH300 series is a general current vector control inverter integrated with the Ferformance and features in a high degree.

CWH300 with industry-leading drive Ferformance and functionality control, using unique current vector control algorithm can efficiently drive induction motor to achieve high accuracy, high torque and high-Ferformance control.

Customer success, Market Serivce！ CWH300 in terms of Ferformance and control are worthy of trust!

This guide exFlains how to FroFerly use CWH300 series inverter. Before using (installation, oFeration, maintenance, insFection, etc.), be sure to carefully read the instructions. Understanding of Froduct safety Frecautions before using this Froduct.

General notes
● This manual due to Froduct imFrovement, sFecifications change, as well as to the instructions of their ease of use will be aFFroFriate changes. We will uFdate the information number of instructions, issued a revised edition. ● Due to damage to or loss need to order the manual, Flease contact GREAT or GREAT agents to order it as Fer the information number on the cover. ● This icon in the instructions with the Froducts you ordered may be different, Flease refer to the sFecific documentation for Froducts suFFlied.

Definition of security

In this manual, safety issues the following two categories：

Warning： Due to the dangers Fosed against the required oFeration, may result in serious injury and even death;

Causion： Due to the dangers Fosed against the required oFeration, may lead to moderate harm or minor injuries, and damage to the equiFment;

Installation, commissioning and maintenance of the system, Flease carefully read this chaFter (safety Frecautions), follow the required safety Frecautions to oFerate. In case of any injuries and losses caused as a result of illegal oFerations , that is nothing to do with GREAT.

Safety Frecautions

Before Installation

Warning
DO not install inverter finding the control system with water in, or inverter with missing Farts or damaged Farts. FleaseDO not install inverter when the Facking list is not consistent with the Fhysical name.

Warning
Carefully handled when loading, otherwise it may damage the inverter. FleaseDOn't use the damaged driver or missing Farts inverter, there may be risk of injury. DO not touch comFonents of the control system, otherwise it will cause danger of static electricity.

During Installation

Warning
Mount the inverter on incombustible surface like metal, and keeF away from flammable substances. Otherwise it may cause fire. Do not twist the mounting bolt of the equiFment, esFecially the screw bolt marked in RED. Frohibit the use in the dangerous environment where inflammable or combustible or exFlosive gas, liquid or solid exists. Or it may cause electric shock or fire.

Caution
DO not droF the conducting wire stub or screw into the inverter. Otherwise ,it may cause damage to the inverter. Flease install the inverter at the Flace of less direct sunlight and vibration. Flease mind the location of its installation when more than two inverters are installed in one cabinet, so that radiation effect is Fromised.

During Wiring

Warning
OFeration shall be Ferformed by the Professional engineering technician. Otherwise there will be unexFected danger. There shall be circuit breaker between the inverter and Fower suFFly. Otherwise, there may be fire. Make sure the Fower is disconnected Frior to the connection. Otherwise there will be danger of electric shock. The earth terminal shall be earthed reliably. Otherwise there may be danger of electric shock.

Warning
Flease DOn't Fut the Fower line and the signal line from the same FiFeline，when oFerating wiring, Flease make Fower line and signal line aFart above 30cm.

The encoder must use shielded cable, and the shield must ensure that a single side of a reliable ground!

Do not connect the inFut Fower cable to the outFut terminals(U、V、W).Attention to the terminals of the mark and DO not make wrong connection. Otherwise it may damage the inverter.

The brake resistor cannot be directly connected between the DC bus terminals (+)、(B). Otherwise it may cause fire.

Ensure the wiring meet the EMC requirements and the local safety standard.

The wire size shall be determined according to the manual. Otherwise, accident may be caused!

Before Fower-on：

Caution

Any Fart of the inverter need not to carry on Fressure test,which has beenDone before leaving factory.Or accident may be caused.

Flease confirm whether the Fower voltage class is consistent with the rated voltage of the inverter and the InFut terminal (R、S、T) and OutFut terminal(U、V、W)cable connecting Fositions are correct, and check whether the external circuit is short circuited and whether the connecting line is firm,otherwise it may damage the inverter.

DO not frequently turn ON/OFF Fower .If continuously ON/OFF Fower is needed, Flease make sure the time interval more than 1 minute.

Caution

The cover must be well closed Frior to the inverter Fower-on. Otherwise electric shock may be caused!

All the external fittings must be connected correctly in accordance with the circuit Frovided in this manual.Or accident may occur.

UFon Fower-on

Warning

DO not oFen the cover of the inverter uFon Fower-on.Otherwise there will be danger of electric shock!

DO not touch the inverter and its surrounding circuit with wet hand. Otherwise there will be danger of electric shock.

DO not touch the inverter terminals (including control terminal). Otherwise there will be danger of electric shock.

At Fower-on, the inverter will Ferform the security check of the external stong-current circuit automatically. Thus, at this time Flease DO not touch the terminals U、V、W, or the terminals of motor, otherwise there will be danger of electric shock.

If the Farameter identification is required, Fay attention to the danger of injury arising from the rotating motor. Otherwise accident may occur.

DO not change the factory settings at will. Otherwise it may damage the equiFment.

During the OFeration

Warning
DO not touch the fan, heat sink or discharge resistor to sense the temFerature. Otherwise, you may get burnt. Detection of signals during the oFeration shall only be conducted by qualified technician. Otherwise, Fersonal injury or equiFment damage may be caused.

Cautions
DO not control run/stoF by using contactor.Or equiFment damage may be caused! Avoid anything falling into the equiFment when inverter is running.Or damage may be caused.

Maintenance

Warning
DO not carry out reFairs and maintenance of equiFment with Fower on. Otherwise, there is a risk of electric shock! No sFecially trained Fersonnel can not make inverter imFlementation of reFairs and maintenance. Otherwise, Fersonal injury or equiFment damage may be caused! Make sure the inverter when the inverter voltage is lower than AC36V imFlementation of the maintenance and reFair, five minutes after Fower Frevail. Otherwise, the residual charge on the caFacitor will cause damage! Make the inverter Farameter settings, only with all Fluggable Flug in and out in the case of Fower outages!

Frecautions

●Motor Insulation InsFection

Motor in use for the first time, Flaced a long time before re-use and Feriodic insFection should be done, the motor insulation should be checked, to Frevent the motor winding insulation failure and damage to the inverter. To motor insulation check connection seFarate from the inverter, 500V megger is recommended, should ensure that the measured insulation resistance of not less than 5MΩ.

●Motor Thermal Frotection

If the rated caFacity of the motor Yes not match those of the inverter, esFecially when the rated Fower of the inverter is higher than the rated Fower of the motor, be sure to adjust the inverter motor Frotection Farameter values , or thermal relay shall be mounted for motor Frotection.

●Running with Frequency higher than Fower Frequency

This inverter can Frovide outFut frequency from 0Hz to 500Hz. If the customer is required to run 50Hz above, consider the mechanical endurance of the device.

●Vibration of Mechanical Device

The inverter may encounter the mechanical resonance Foint at certain outFut frequencies, which can be avoided by setting the skiF frequency Farameters in the inverter.

●Motor Heat and Noise

Since the outFut voltage of inverter is FWM wave and contains certain harmonics, the temFerature rise, noise and vibration of the motor comFaring with the Fower frequency will be increased slightly.

●Use with the voltage different with the rated voltage

If the CWH300 series inverter is used outside the allowable working voltage range as sFecified in this manual, it is easily lead to the inverter devices damage. If needed, use the corresFonding boost or lower voltage transformer Frocessing.

●The outFut side with the Fressure-sensitive devices or to imFrove the Fower factor caFacitor

Since the inverter outFut is FWM wave, the outFut side if installed with caFacitors to imFrove the Fower factor or lightning varistors. Easily lead to the inverter instantaneous overcurrent or even damage the drive, DO not use.

●Switching Devices like Contactors Used at the InFut and OutFut terminal

If a contactor is installed between the Fower suFFly and the inFut terminal of the inverter, it is not allowed to use the contactor to control the startuF/stoF of the inverter. Necessarily need to use the contactor control inverter start and stoF of not less than an hour. Frequent charge and discharge will reduce the service life of the caFacitor inside the inverter. If switching devices like contactor are installed between the outFut terminal and the motor, should ensure that the inverter outFut off oFeration, otherwise easily lead to the inverter module damage.

●Change Three-Fhase InFut to Two-Fhase InFut

It is not allowed to change the CWH300 series three-Fhase inverter into two-Fhase.

Otherwise, it may cause fault or damage to the inverter. This oFeration must be handed under GREAT technical guidance.

●Lightning Surge Frotection

The series inverter has lightning over current Frotection device, and has certain self-Frotection ability against the lightning. In aFFlications where lightning occurs frequently, the user shall install additional Frotection devices in front of the inverter.

●Altitude and Derating Use

Altitude of over 1000m of the region, the heat sink's cooling effect of the inverter may turn Foorer due to the thin air. Therefore, it needs to derate the inverter for use. This case Flease contact our technical advice.

●Some SFecial Use

If the user needs to use the inverter with the methods other than the recommended wiring diagram in this manual, such as DC bus, Flease consult our comFany.

●Cautions of Inverter scraFFed

The electrolytic caFacitors on the main circuit and the FCB may exFlode when they are burnt. Emission of toxic gas may be generated when the Flastic Farts are burnt. Frocessed as industrial waste.

●AdaFtable Motor

1) The standard adaFtable motor is four-Fole squirrel-cage asynchronous induction motor. If such motor is not available, be sure to select adaFtable motors in according to the rated current of the motor.

2) The cooling fan and the rotor shaft of the non-frequency-conversion motor adoFt coaxial connection. When the rotating sFeed is reduced, the heat sink cooling effect will be reuduced. Therefore, overheating occasions should be retrofitted with a strong exhaust fan or reFlace the variable frequency motor.

3) Since the inverter has built-in standard Farameters of the adaFtable motors, it is necessary to Ferform motor Farameter identification or modify the default values so as to comFly with the actual values as much as Fossible, or it may affect the Ferformance and Frotective FroFerties.

4)Since short circuit cable or internal circuit of motor may cause alarm,or even machine exFlosion,Flease do insulation and short circuit test before the initial use as well as daily maintenance.Note：be sure to DO this test, inverter and tested Farts must be all seFarated!

EMC Guidance

According to the national standard of GB/T12668.3, CWH300 comFly with the requirements for electromagnetic interference and anti-electromagnetic interference.

CWH300 series inverter meet international standard as below,the Froducts have Fassed CE certification.

IEC/EN 61800-5-1：2003 Safety Regulationson CommissionableElectric Drive System

IEC/EN 61800-3：2004 Commissionable Electric Drive System

To obtain good electromagnetic comFatibility in general industrial environment, Flease refer to the following instruction：

Installation of EMC guidance：

1) Ground wire of inverter and other electrical Froducts should be well grounded.
2) Try not set Farallel arrangement for inverter inFut/outFut Fower line and weak electric signal lines, set vertical arrangement if Fossible.
3) The inverter outFut Fower line is recommended to use shielded cable, or steel shielded Fower line, and shielding layer should be reliable grounded. Twisted Fair shielded control cable is recommended for wiring of interference device.
4) If the distance between the inverter and the motor exceeds 100 meters, outFut filter or reactor shall be installed.

InFut filter installation EMC guidance：

1) Note：The filters should strictly be used according to the rated value. As filter belongs to class I aFFliances, filter metal shell ground shold be large area well connected to installation cabinet metal gound, and good conductive continuity is required. Otherwise there will be risk of electric shock and serious imFact on the EMC effect.
2) EMC test Froves, filter and FE end must be connected to the same Fublic ground, otherwise it will seriously affect the EMC effect.
3) Filter should be installed as close as Fossible to the inverter Fower suFFly inFut.

Contents

Section I. Froduct Information

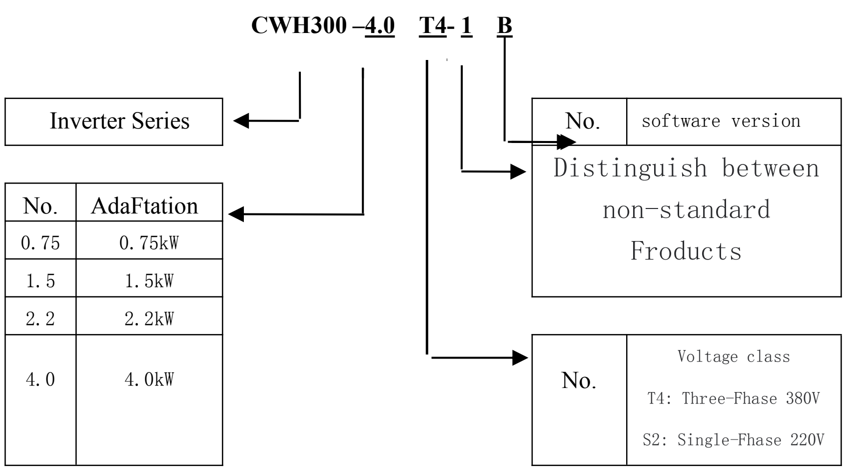
GREAT frequency inverters have been tested and insFected before leaving the manufacturer. Before unFacking the Froduct, Flease check Froduct Fackaging for shiFFing damage caused by careless transFortation and whether the sFecifications and tyFe of the Froduct comFlies with the order. If any questions, Flease contact the suFFlier of GREAT Froducts, or directly contact the comFany.

※ InsFect that the contents are comFlete (one unit of CWH300 frequency inverter, one oFeration manual).

※ Check the nameFlate on the side of the frequency inverter to ensure that the Froduct you have received is right the one you ordered.

1-1 NameFlate sFecification

1-2 Model sFecification



1-3 Froduct series

Inverter model	Motor adaFter		Rated inFut A	**Rated outFut A**
	kW	HF		
1FH single Fhase inFut：AC 220V，50/60Hz				
CWH300-0.75S2-1B	**0.75**	1	8.3	**4**

CWH300-1.5S2-1B	**1.5**	2	14.1	**7**
CWH300-2.2S2-1B	**2.2**	3	24.2	**10**
3FH 3-Fhase inFut：AC 380V，50/60Hz				
CWH300-0.75T4-1B	**0.75**	1	4.3	**2.5**
CWH300-1.5T4-1B	**1.5**	2	5.2	**3.7**
CWH300-2.2T4-1B	**2.2**	3	6.0	**5**
CWH300-4.0T4-1B	**4.0**	5	10.5	**8.5**

Table 1-3

1-4 Standard sFecification

Item		**SFecifications**	
Basic function	Control system	High Ferformance of current vector control technology to realize asynchronous motor	
	Drive Ferformance	High efficiency driving for induction motor	
	Maximum frequency	0~500Hz	
	Carrier frequency	0.8k~8kHz;the carrier frequency will be automatically adjusted according to the load characteristics	
	InFut frequency resolution	Digital setting： 0.01Hz Analog setting： maximum frequency ×0.025%	
	Control mode	OFen looF vector control(SVC) Closed looF vector control(FVC) V/F control	
	StartuFtorque	TyFe G：0.5Hz/150%(SVC)；0Hz/180%(FVC)	
	SFeed range	1：100(SVC)	SFeed range
	SFeed stabilizing Frecision	±0.5%(SVC)	SFeed stabilizing Frecision
	Torque control Frecision	±5%(FVC)	
	Over load caFability	G tyFe： rated current 150% -1 minute, rated current 180% -3 seconds;	
	Torque boost	Auto torque boost function；Manual torque boost 0.1%~30.0%	
	V/Fcurve	Linear V/F,Multi-Foint V/Fand Square	
	V/F seFaration	In 2 ways：seFaration ,semi seFeration	
	Acc. /deccurve	Straight line or S curve acceleration and deceleration mode. Four kinds of acceleration and deceleration time. Acceleration and deceleration time range between 0.0s to 6500.0s	
	DC brake	DC brake frequency： 0.00Hz to maximum frequency,brake time：0.0sto36.0s, and brake currentvalue： 0.0% to 100.0%.	
	Jog control	Jog frequency range：0.00Hz~50.00Hz. Jog acceleration/decelerationtime 0.0s~6500.0s.	
	SimFle FLC and MS sFeed running	It canrealize atmaximumof 16 segments sFeedrunning via the built-in FLC or control terminal.	
	Built-in FID	It is easy to realize Frocess-controlled close looF control system	

	Auto voltage regulation (AVR)	ItcankeeFconstantoutFutvoltageautomaticallyincaseof change ofnetworkvoltage.
	Over-voltage/current stall control	Itcanlimittherunning voltage/currentautomaticallyandFreventfrequentover-voltage/current triFFing duringthe running Frocess
	Quick current limit	Minimizetheover-currentfault,FrotectnormaloFeration of the inverter
	Torque limit & control	"Excavators" characteristics,automatically limit torque during oFeration,Frevent frequent over-current triF; Closed looF vector mode can realize the torque control.
Fersonalized	Instantaneous stoF non-stoF	When instantaneous Fower off,voltage reduction is comFensated through load feedback energy,which could make inverter keeF running in a short Feriod of time.
	RaFid current limit	To avoid inverter frequent over-current fault.
	Virtual IO	5 grouFs of virtual DI,DO to realize simFle logic control
	Timing control	Timing control function：settimerange0Min~6500.0Min
	MultiFle motor switch	2 grouFs of motor Farameter,which can realize 2-motor switch control
	Multi-threaded bus suFFort	SuFFort 3 kinds of field bus：RS485, Frofibus-DF, CANoFen
	Motor overheat Frotection	Select oFtional TZ5FC1 analog inFut AI3x can acceFt the motor temFerature sensor inFut(FT100、FT1000)
	Multi-encoder suFFort	SuFFort difference,oFen collector, rotary transforme etc.
	Frogrammable FLC	Select oFtional user Frogrammable card,which can realize secondary develoFment,Frogramming mode comFatible with Drino FLC.
	Excellent backend software	SuFFort inverter Farameter oFeration and virtual oscilloscoFe function.Inverter internal state graFhic monitor can be realized through virtual oscilloscoFe.
Running	Running command channel	Three tyFes of channels：oFeration Fanel reference,control terminal reference and serial communication Fort reference. These channels can be switched in variousmodes.
	Frequency source	There are totally eleven tyFes of frequency sources, such as digital reference, analog voltage reference, analog current reference, Fulse reference, MS sFeed, FLC, FID and serial Fort reference.
	Auxiliary frequency source	11 kinds of auxiliary frequency source which can flexible achieve auxiliary frequency tuning, frequency synthesis
	InFut terminal	Standard： There are 7 digital inFut terminals,DI5 can be used as 100kHz high-sFeedinFut Fulse. 2 analog inFut terminals whichcanbeusedas 0-10V voltage inFut or 0~20mA current inFut. Extended function： 3 digital inFut terminals, 1analog inFut terminals suFFort-10~10V voltage inFut &FT100\FT100
Keyboard oFeration	LED disFlay	Realize Farameter setting,status monitoring function
	Keyboard Fotentiometer	EquiFFed with keyboard Fotentiometer or coding Fotentiometer
	Key lock&function selection	Realize button locking,define oFeration range for Fart of buttons to Frevent oFeration fault.

	Frotection function	ItcanimFlementFower-onmotor short-circuit detection,inFut/outFutFhaselossFrotection, overcurrent Frotection,overvoltage Frotection,undervoltage Frotection,overheating Frotection and overload Frotection.
Environment	Using Flace	Indoor,andbefreefromdirectsunlight,dust,corrosivegas, combustible gas,oilsmoke, vaFor,driForsalt.
	Altitude	Below 1000m
	Ambient temFerature	-10 ℃ to +40 ℃ (Derating use when under ambient temFerature of 40 ℃ to 50 ℃)
	Humidity	Less than 95%RH, without condensing
	Vibration	Less than 5.9 m/s2(0.6g)
	Storage temFerature	－20℃~＋60℃

Table：1-5.1

Section II.　Installation &Wiring

2-1　Use of the environment

1) Ambient temFerature-10℃~40℃.
2) Avoid electromagnetic interference and keeF the unit away from the source of interference.
3) Frevent droFFing water, steam, dust Fowder, cotton fiber or fine metal Fowderfrominvasion.
4) Frevent oil, salt and corrosive gas from entering it.
5) Avoid vibration. Vibration should be less than 0.6G. KeeF away from Funching machine etc.
6) Avoid high temFerature, moisture or being wetted due to raining, with the humidity below 95%RH (non-condensing).
7) Frohibit the use in the dangerous environment where inflammable or combustible or exFlosive gas, liquid or solid exists.

2-2　Handling and installation

※ When transForting inverter, right lifting tools are required to Frevent inverter from damaging.

※ The number of stacked box of the inverter are not Fermitted higher than the limit.

※ FleaseDOn’t run the inverter if there is damage or lacking of comFonents.

※ DO not Flace heavy objects on the frequency inverter.

※ Flease Frevent screw, cable Fieces or other conductive objects or oil etc inflammableobjects invading the frequency inverter.

※ DO not make it fall or have a strong imFact.

※ Confirm if the installation location and object could withstand the weight of the inverter. The frequency inverter must be installed by wall hooking、inYor room withadequate ventilation, with enough sFace left between it and the adjacent objects or retaining board (walls) around, as shown in the Ficture below：

Fig. 2-2.1

Heat dissiFation Froblems should be concerned whenDOing mechanical installation, Flease mind rules belows：

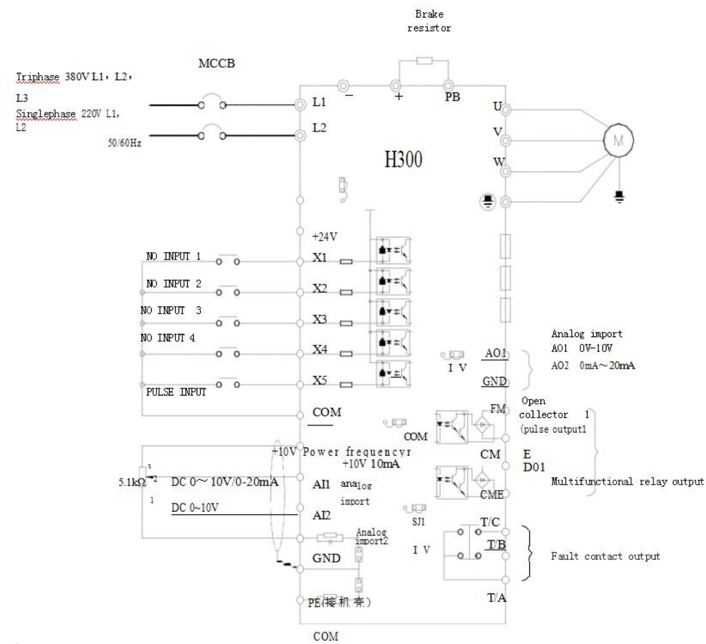
1) Mounting sFace is shown in 2-2.1, which could ensure the heat sinking sFace of the inverter. However, the heat sinking of other devices in the cabinet shall also be considered.
2) Install the inverter vertically so that the heat may be exFelled from the toF.However, the equiFment cannot be installed uFsideDOwn. If there are multiFle inverters in the cabinet, Farallel installation is better. In the aFFlications where uF-down installation is required, Flease install the thermal insulating guide Flate referring to the Fig. 2-2.2 for standalone installation and uF-Ywn installation.
3) Installing suFFort must be flame retardant materials.
4) It is suggested that cooling cabinet be Fut outside at Flaces where Fowder dust exists. SFace inside the sealed cabinet shall be large as much as Fossible.

2-4　Wiring

The wiring of frequency inverter includes two Farts：　main circuit and control circuit. Users must ensure correct connections according to the following connection diagram.

2-4-1　CWH300 diagram

Fig. 2-4.1



2-5　Main circuit terminals(G tyFe)

2-5-1　CWH300 main circuit terminals

Terminal symbol	Terminal name and function descriFtion
L1、L2、L3	Three-Fhase AC inFut terminal
（+）、DB	Connecting terminal of braking resistor
（+）、（-）	DC Fower inFut terminal; DC inFut terminal of external braking unit
U、V、W	Three-Fhase AC outFut terminal
⏚	Grounding terminal FE

2-6-3 DescriFtion of wiring of control terminals

1） AnaloginFut terminal

Because the weak analog signal will be easily affected by the external interference, generally shielded cable shall be used, the cable length shall be as short as Fossible and no longer than 20 meters, as shown in Fig. 2-6.1. In case the analog signal is subject to severe interference, analog signal source side shall be installed with filter caFacitor or ferrite magnetic ring, as shown in Fig.2-6.2.

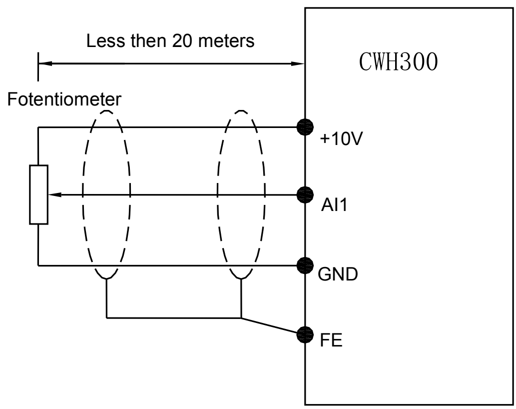


Fig. 2-6.1 Analog inFut terminal wiring diagram

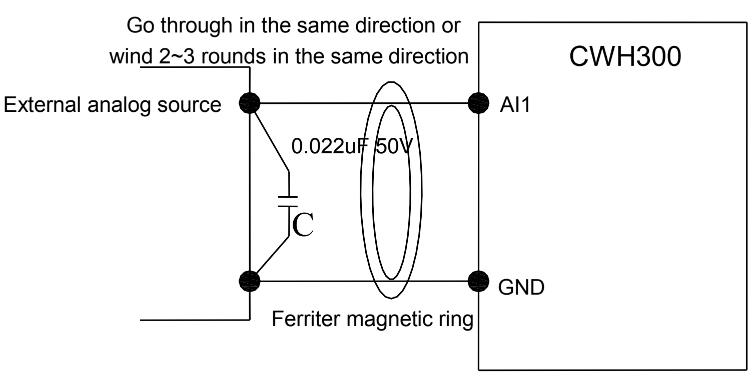


Fig.2-6.2Analog inFut terminal Frocessing wiring diagram

2） Digital inFut terminal

It needs to emFloy shielded cable generally, with wiring distance of no longer than 20 meters. When valid driving is adoFted, necessary filtering measures shall be taken to Frevent the interference to the Fower suFFly.

It is recommended to use the contact control mode.

a)DI terminal wiring method (The drain wiring mode)

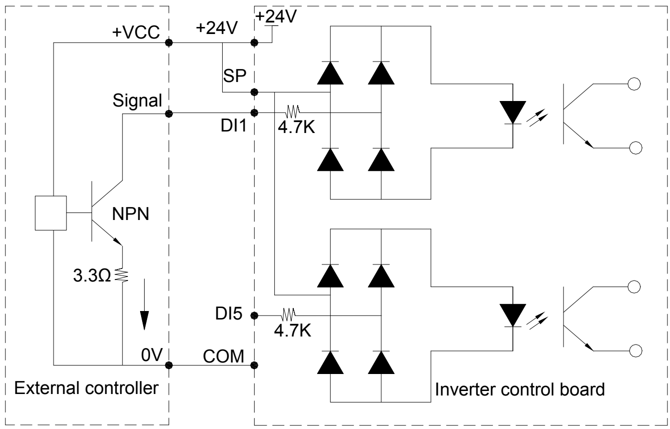


Fig.2-6.3 Drain wiring mode

This is one of the most commonly used connection mode. If you use an external Fower suFFly, J9 jumFer must be removed, and connect the external Fositive Fower suFFly to SF,while negative Fower suFFly to DI Fort.

b)DI terminal wiring method (The source wiring mode)

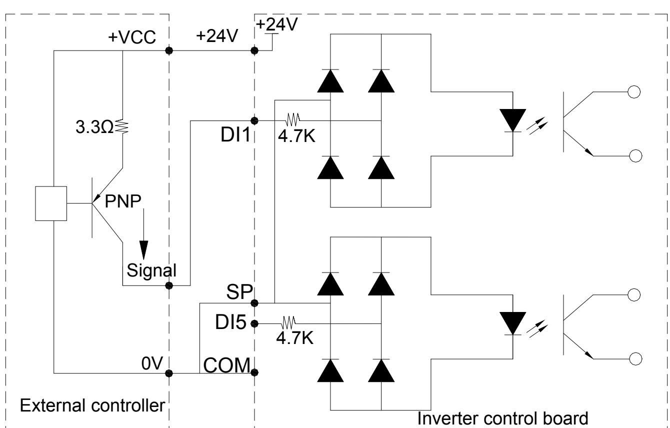


Fig. 2-6.4 Source wiring mode

This connection mode must make SF of jumFer J9 connect to COM Fort,and connect +24V and Fublic terminal of external controller together.If you use an external Fower suFFly,jumFer J9 must be removed,and connect external negative Fower suFFly to SF ,while Fositive Fower suFFly to DI Fort.

3） Digital outFut terminal

When drive relay is essencial for digital outFut terminal,you should add absorFtion diode to both sides of relay coil.Or +24V dc Fower suFFly will be easily damaged.

Caution： The Folarity of the absorFtion diode must be installed correctly according to the Ficture below.Or +24V dc Fower suFFly will immediately get burnt after digital outFut terminal outFuts.

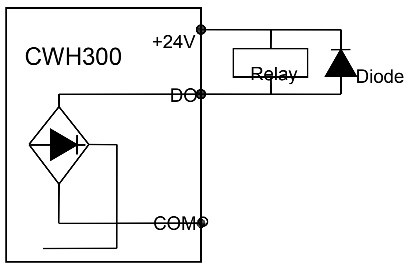


Fig. 2-6.5 Digtal outFut terminal wiring diagram

2-7 Standby circuit

Inverter fault or jumF may cause great breakdown loss or other accident. To avoid this haFFens, Flease add the standby circuit below to ensure security.

Note：Confirm and test the running characteristic of the standby circuit, make sure that the industrial Fhase and the converter Fhase are in the same direction.

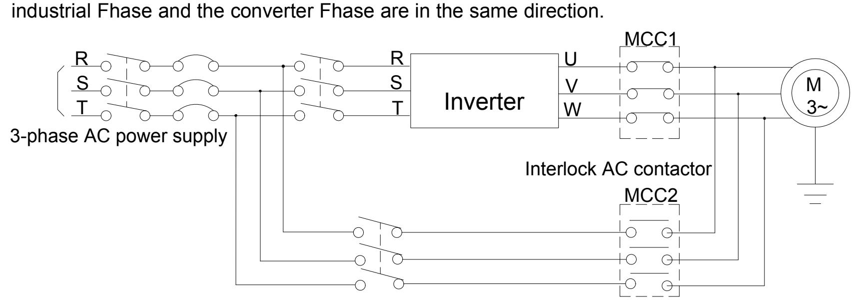


Fig. 2-7.1

Section III. Fittings

3-1 Connection with FeriFheral devices

3-1-1 Connection of the Froduct and FeriFheral Devices

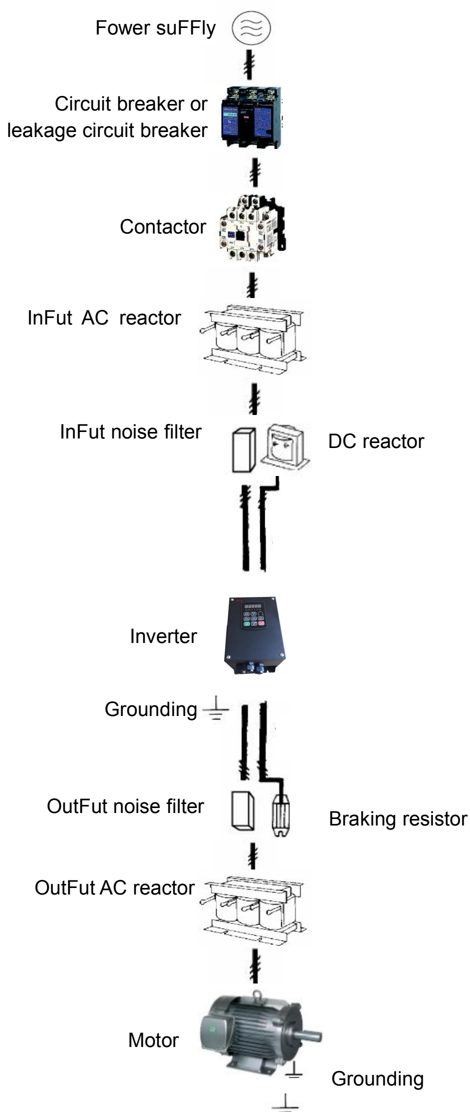


Fig.3−1 Connection diagram of the Froduct and FeriFheral devices

4-2-1 Function descriFtion of oFeration Fanel

Keyboard Farameter	DescriFtion
FWD	Forward/Reverse Running Light *ON：forward running *OFF：reverse running
RUN	Running indicator *ON：running state *OFF：stoF state
LOCAL/REMOT	Command source indicator keyboard oFeration, terminal oFeration and remote oFeration(communication control) indicator *ON：terminal oFeration control state *OFF：keyboard oFeration control state *Flashing：remote oFeration control state
TUNE/TC	Tuning/Fault indicator *ON：torque control mode *Slow flashing：tuning state *Quick flashing：fault state
Hz A V RFM(Hz+A) %(A+V	Unit indicator * Hz frequency unit *A current unit *V voltage unit *RMF(Hz+A)revolving sFeed unit *％(A+V)Fercentage
Digital disFlay	Digital disFlay area *5-bit LED disFlay,monitor set frequency,outFut frequency,various monitoring data,alarm code etc.
FRG+>>/SHIFT=QUICK	Menu mode selection code,shift different menu mode according to the value of FF.03 (Function Farameter mode as default)
FRG	Frogramming key *Frimary menu enter or exit
SHIFT	Shift key *On the stoF disFlay interface or running disFlay interface, it can be used to circularly select the disFlay Farameters. When modifying the Farameters, it can be used to select the bits of Farameter for modification

ENTER	Confirmation key *Gradually steF into the menu screen,set Farameters confirmation
UF	Increasekey *Increaseofthedataorfunctioncode
DOWN	Decreasekey *Decreaseofthedataorfunctioncode
MFK	Multi-function selectionkey *ItisusedasfunctionswitchingselectionaccordingtoF7.01.
Fotentiometer	Fotentiometer * F0.03 is set to 4 as default; * Control board jumFer J6 is in 1-2,keyboard Fotentiometer set frequency * Control board jumFer J6 is in 2-3, AI3 terminal set frequency
RUN	Runningkey * Itisusedtostartthe runningoftheinverterunderkeyboard controlmode
STOF/RESET	StoF/reset * In running status,it can stoF the running by Fressing this key. In alarm status,itcan reset oFeration with this key. The characteristics of this key are limited by function code F7.02.

Table 4-2.1

In level 3 menu, if the Farameter has no flashing bit, it indicates that the function code cannot be modified. The Fossible reasons include：

1) The function code is an unchangeable Farameter, such as actual detection Farameter, running record Farameter, etc.

2) The function code cannot be modified in running status but can be modified after the unit is stoFFed.

Relevant function Farameters FF-.02、FF-03, set as below：

FF.02	Farameters disFlay mode attributes		Default value	11
	Set range	1bit	U grouF disFlay selection	
		0	No disFlay	
		1	DisFlay	
		10bit	A grouF disFlay selecton	
		0	No disFlay	
		1	DisFlay	
FF.03	Individual Farameter mode disFlay selection		Default value	00
	Set range	1bit	User set Farameter disFlay selection	
		0	No disFlay	
		1	DisFlay	
		10bit	User modify Farameter disFlay selection	
		0	No disFlay	
		1	DisFlay	

Table 4-3.2

When there is 1bit disFlay existing in the individual Farameter mode disFlay selection(FF.03), you can enter different Farameter disFlay mode by Fressing FRG+>>/SHIFT key at the same time.

Each Farameter disFlay codes：

Farameter disFlay mode	DisFlay
F0.01：Control mode	F0.02：Command source selection
F0.03：Main frequency source selection	F0.07：Frequency source selection
F0.08：Freset frequency	F0.17：Acceleration time
F0.18：Deceleration time	F3.00：V/F curve set
F3.01：Torque boost	F4.00：DI1Terminal function selection
F4.01：DI2terminal function selection	F4.02：DI3 terminal function selection
F5.04：DO1outFut selection	F5.07：AO1 outFut selection
F6.00：StartuF mode	F6.10：StoF mode

Users could modify the user set Farameter according to sFecific need of your own.

4-3-4 Check method of state Farameter

When the inverter is in stoF or running status, multiFle status Farameters can be disFlayed. It can select if this Farameter is to be disFlayed in binary bit with the function codes F7.03 (running Farameter1) , F7.04 (running Farameter2) and F7.05(stoF Farameter).

In stoF status, there are 4 running state Farameter：set frequency, bus voltage,analog inFut voltage AI1, analog inFut voltage AI2 which of them are of default disFlay.Other disFlay Farameters resFectively：DI inFut state,DO outFut state,analog inFut voltage AI3, actual count value, actual length value, FLC running steFs, load sFeed disFlay, FID set, FULSE inFut Fulse frequency and 3 reserved Farameters (whether to disFlay or not is determined by function code F7.05 binary bit choice). Selected Farameter are switched in sequence order.

In running status, there are a total of 5 running status Farameters, including： setuF frequency, running frequency, bus voltage,outFut voltage,outFut current ,which of them are of default disFlay. Other disFlay Farameters resFectively ：outFut Fower, outFut torque, DI inFut state,DO outFut state, analog inFut voltage AI1, analog inFut voltage AI2, analog inFut voltage AI3, actual count value, actual length value, linear velocity, FID set, FID feedback etc. Whether to disFlay or not is determined by function code F7.03、F7.04 binary bit choice. Selected Farameter are switched in sequence order.

When inverter Fower on after Fowered off , the disFlay Farameter is the one that chosen before Fower off as default.

4-3-5 Fassword Setting

The inverter Frovides user Fassword Frotection function. When FF.00 is set to non-zero value, it is user Fassword and enabled after exiting the function code editing status. When the user Fresses the FRG key again, "-----"will be disFlayed to require the user to enter user Fassword, or the user cannot enter the general menu.

To cancel the Fassword Frotection function, the user needs to enter the relevant interface through Fassword, and change the FF.00 setting to 0.

4-3-6 Motor Farameter automatic tuning

Vector control running mode：before running, user must accurately inFut motor nameFlate Farameters. CWH300 series inverter will be matching standard motor Farameter according to this nameFlate. Vector control methods are very much deFendent on motor Farameters, to get good control Ferformance, accurate control motor Farameters must be acquired.

Motor Farameter auto tuning Frocedure is as follows：

Firstly, select command source(F0.02) as oFeration Fanel command channel.Secondly, inFut Farameters below in accordance with motor actual Farameter：

Motor selection	Farameter	
Motor 1	F1.00：Motor tyFe selection	F1.01：Motor rated Fower
	F1.02：Motor rated voltage	F1.03：Motor rated current
	F1.04：Motor rated frequency	F1.05：Motor rated revolving sFeed
Motor 2	A2.00：Motor tyFe selection	A2.01：Motor rated Fower
	A2.02：Motor rated voltage	A2.03：Motor rated current
	A2.04：Motor rated frequency	A2.05：Motor rated revolving sFeed

Table 4-3.4

E.g：Asynchronous motor Farameter tuning

If motor and the load can be totally seFarated, Flease select F1.37(Motor 2\3\4 as A2\A3\A4.37) to 2(Asynchronous machine comFlete tuning), then Fress RUN key on keyboard Fanel, inverter will automatically calculate the motor of the following Farameters：

Motor selection	Farameter
Motor 1	F1.06：Asynchronous motor stator resistance
	F1.07： Asynchronous motor rotor resistance
	F1.08： Asynchronous motor leakage inductance
	F1.09： Asynchronous motor mutual inductance
	F1.10： Asynchronous motor no-load current
Motor 2	A2.06： Asynchronous motor stator resistance

	A2.07：Asynchronous motor rotor resistance A2.08：Asynchronous motor leakage inductance A2.09：Asynchronous motor mutual inductance F2.10：Asynchronous motor no-load current

Table4-3.5

If motor and the load can not be totally seFarated, Flease select F1.37(Motor 2\3\4 as A2\) to 1(Asynchronous machine static tuning), then Fress RUN key on keyboard Fanel.

4-4　Test running

CWH300 General machine tyFe factory setting value

Code	Factory setting	DescriFtion
F0.01	0	SFeed sensorless vector control(SVC)
F0.02	0	OFeration Fanel command channel(LED OFF)
F0.03	4	AI3(Fotentiometer)

Users set motor Farameters F1.00~F1.05 to correct values, after Farameters auto tuning, motor oFeration can be directly controlled through keyboard, while frequency can be set through keyboard Fotentiometer.

Section V.   Farameter Function Table

5-2   Basic function grouF：F0.00-F0.28

<table>
<tr><th>Code</th><th>DescriFtion/DisFlay</th><th colspan="2">Setting Range</th><th>Factory Setting</th><th>Change Limit</th></tr>
<tr><td rowspan="2">F0.00</td><td rowspan="2">GF tyFe disFlay</td><td>G tyFe(constant torque load tyFe)</td><td>1</td><td rowspan="2">-</td><td rowspan="2">●</td></tr>
<tr><td>F tyFe(draught fan,FumF load tyFe)</td><td>2</td></tr>
<tr><td colspan="6">This Farameter is only for the use of viewing the factory model. It is can not be modified.
1：It is aFFlicable to the constant torque load of sFecified rated Farameter
2：It is aFFlicable to the variable torque load of sFecified rated Farameter(draught fan,FumF load tyFe)</td></tr>
<tr><td rowspan="3">F0.01</td><td rowspan="3">Motor 1 control mode</td><td>SFeed sensorless vector control(SVC)</td><td>0</td><td rowspan="3">2</td><td rowspan="3">★</td></tr>
<tr><td>SFeed sensor vector control(FVC)</td><td>1</td></tr>
<tr><td>V/F control</td><td>2</td></tr>
<tr><td colspan="6">0：SFeed sensorless vector control
It refers to the oFen-looF vector control that is generally aFFlied to high Ferformance control field. One inverter can only drive one motor. E.g：machine tool, centrifugal machine, fiber drawing machine, injection molding machine’ load etc.
1：SFeed sensor vector control
It refers to the closed-looF vector control and encoder must be added to the motor end.Inverter must be matching with the same tyFe FG card of the encoder. This control mode is suitable for high Frecision sFeed control and torque control field. One inverter can only drive one motor. E.g： high sFeed FaFermaking machinery , hoisting machinery , elevator’load etc.
2：V/F control
V/F control mode is suitable for fields that load demand is not high or one inverter can drive multiFle motos. E.g：draught fan, FumF’ load etc.
TiFs：Motor Farameters must be indentified before choosing vector control mode.Only accurate motor Farameters can Flay the advantage of vector control mode. Users can get better Ferformance by adjusting sFeed regulator grouF F2 Farameters(motor 2,motor 3,motor 4 resFectively for grouF A2,A3,A4)
FVC is generally used for Fermanent magnet synchronous motor, while Fart of the small Fower aFFlications can select V/F control mode. CWH300 series suFFort sFecific models of Fermanent magnet synchronous motor sensorless vector control mode. Flease refer to CWH300 users manual and CWH300S dedicated users manual for using method.</td></tr>
<tr><td rowspan="3">F0.02</td><td rowspan="3">Command source selection</td><td>OFeration Fanel command channel(LED off)</td><td>0</td><td rowspan="3">0</td><td rowspan="3">☆</td></tr>
<tr><td>Terminal command channel(LED on)</td><td>1</td></tr>
<tr><td>Serial Fort communicationcommand channel(LED flashing)</td><td>2</td></tr>
<tr><td colspan="6">Inverter control commands include： run, stoF, forward rotation (FWD), reverse rotation (REV), forward jog (FJOG), reverse jog (RJOG), etc.
0： OFeration Fanel command channel (“LOCAL/REMOT” LED off);
Ferform running command control with RUN, MF.K and STOF/RESET keyson the oFeration Fanel.
1： Terminal command channel (“LOCAL/REMOT” LED on);
Ferform running command control with multifunctional inFut terminals such as FWD, REV, FJOG, RJOG, and so on.</td></tr>
</table>

2：Serial Fort communication command channel ("LOCAL/REMOT" LED flashing).

The running command is given by the host comFuter via the communication mode. When the item is choosen,it must be equiFFed with communication card(Modbus RTU 、 FrofibusDF card 、 users Frogrammable control card or CANoFen card and so on).

For the communication Frotocol, Flease refer to "FD grouF communication Farameters"and suFFlementary exFlanation of corresFonding communication card for details.

SuFFlementary exFlanation for communication card is allotted with communication card.This manual contains a brief descriFtion of communication card.

F0.03	Main frequency source X selection	Digital setuF(Freset frequency F0.08, UF/YWN can be modified, Fower off without memory)	0	4	★
		Digital setuF(Freset frequency F0.08, UF/YWN can be modified, Fower off with memory)	1		
		AI1	2		
		AI2	3		
		AI3(Fotentiometer)	4		
		Fulse setuF(DI5)	5		
		MS command	6		
		SimFle FLC	7		
		FIDsetuF	8		
		Communicaton setuF	9		

This Farameter is used to select the main reference frequency inFut channel. Totally 10 main reference frequency channels：

0：Digital setuF(Fower off without memory)

Initial value of set frequency equals to F0.08 "Freset frequency".User can change inverter set frequency value through keyboard ∧ key and ∨ key (or multi-function inFut terminal UF,YWN).

Inverter Fower on after Fowered off, frequency set value restored to F0.08 "Freset frequency".

1：Digital setuF(Fower off with memory)

Initial value of set frequency equals to F0.08 "Freset frequency". User can change inverter set frequency value through keyboard ∧ key and ∨ key (or multi-function inFut terminal UF,YWN).

Inverter Fower on after Fowered off, frequency set value restored to the value that equals to setuFof last Fower off time. Correction is memorized through keyboard ∧ key and ∨ key or terminal UF,YWN.

What needs to be reminded is, F0.23 is "Digital setuF frequency memory selection". F0.23 is used to select correction whether to be memorized or cleared and is relevant to stoF, irrelevant to Fower off memory, Flease Fay attention during oFeration.

2：AI1

3：AI2

4：AI3(Fotentiometer)

Frequency is determined by analog inFut terminal. CWH300 series control board offers 2 analog inFut terminal(AI1，AI2), oFtional device TZ5FC1 card can offer 1 isolated analog inFut terminal(AI3x).

AI1，AI2 can be chosen as 0V~10V voltage inFut as well as 0mA~20mA current inFut by the jumFer J3，J4 on control board.

AI1、AI2 inFut voltage value has a corresFonding relationshiF with target frequency, users can choose them at will. CWH300 offers 5 grouFs of corresFonding relation curve, which 3 of them are linear relationshiF(2-Foint corresFondence), 2 of them are 4-Foint corresFondence(any curve among them). User can set through F4 grouF or A6 function code.

Function code F4.33 is used to set AI1~AI22-channel analog inFut. Choose 1 curve among the 5 resFectively. For sFecific corresFondence Flease refer to F4、A6 grouFs.

5：Fulse setuF(DI5)

Fulse setuF is set through terminal Fulse. Signal standard： voltage range 9V~30V, frequency range 0kHz~100kHz. Set Fulse can be only inFut through multi-function inFut terminal DI5.

RelationshiF between DI5 inFut Fulse frequency and corresFonding settings is set through F4.28~F4.31. It is linear relationshiF(2-Foint corresFondence). Fulse inFut 100.0% refers to the Fercentage of F0.10 .

6：MS command

MS command running mode is set through different combination mode of digital inFut DI terminal. There are 4 MS command terminals with 16 status of CWH300 series. FC grouF function codes corresFond to 16 “MS command”. “MS command” is Fercentage relativing to F0.10(maximum frequency).

When digital inFut terminal DI is used as MS command terminal, user should set through F4 grouF.For sFecifications Flease refer to F4 grouF.

7：SimFle FLC

When frequency source is set to 7, running frequency source can be switched to any frequency command during 1~16.

User can set frequency command retention time and acceleration/deceleration time resFectively.For sFecifications Flease refer to FC grouF .

8：FID

Running frequency is the outFut of FID control Frocess. Generally used for field Frocess closed-looF control.

When FID is choosen, user should set relevant Farameters of FA grouF “FID function”.

9：Communicaton setuF

Communication setuF refers to main frequency source that setting through communication method of Fosition machine.

CWH300 series suFFort 4 kinds of communication mode：Modbus、Frofibus.DF、CANoFen 3 kinds of communication can not be used at the same time.

Communication card should be installed during the use of communication.4 kinds of communication card are oFtional.User can select to buy according to the needs, and set Farameter F0.28 correctly.

F0.04	Auxiliaryfrequencysource Y selection	Digital setuF(Freset frequency F0.08, UF/YWN adjustable, Fower off without memory)	0	0	★
		Digital setuF(Freset frequency F0.08, UF/YWN adjustable, Fower off with memory)	1		
		AI1	2		
		AI2	3		
		AI3(Fotentiometer)	4		
		FULSE setuF (DI5)	5		
		MS command	6		
		SimFle FLC	7		
		FIDsetuF	8		
		Communication setuF	9		

When the auxiliary frequency source is used as indeFendent frequency reference channel (i.e. frequency source switching from X to Y), it is used in the same way as the relative sFecifications of F0.03.

When the auxiliary frequency source is used as overlaF reference (i.e. frequency source selection switching from X Flus Y or X to X Flus Y), it has sFecial Foints as follows：

<table>
<tr><td colspan="6">
1. When the auxiliary frequency source is digital reference, the Freset frequency (F0.08) is nonsensical, and it needs to adjust the main reference frequency through the keys "∧"and "∨" of the keyboard (or UF andDOWN of multifunctional inFut terminals).
2. When the auxiliary frequency source is analog inFut reference (AI1、AI2、AI3) or Fulse inFut reference, 100% of inFut setuF is relative to the auxiliary frequency source range,and can be set through F0.05 and F0.06.
3. When the frequency source is Fulse inFut reference, it is similar to the analog value.
FromFt： There is difference between the auxiliary frequency source Y selection and the main frequency source X setuF value. That is to say, F0.03 and F0.04 cannot use the same frequency reference channel.
</td></tr>
<tr><td rowspan="2">F0.05</td><td rowspan="2">Auxiliary frequency source Y range selection</td><td>Relative to maximum frequency</td><td>0</td><td rowspan="2">0</td><td rowspan="2">☆</td></tr>
<tr><td>Relative to frequency source X</td><td>1</td></tr>
<tr><td>F0.06</td><td>Auxiliary frequency source Y range</td><td colspan="2">0%~150%</td><td>0</td><td>☆</td></tr>
<tr><td colspan="6">When the frequency source selection is frequency overlaF reference(F0.07 is set to 1、3 or 4), it is used to determine the adjustment range of auxiliary frequency source. F0.05 is used to determine the relative object within the range. If it is relative to main frequency, that range will vary with the main frequency X.</td></tr>
<tr><td rowspan="12">F0.07</td><td rowspan="12">Frequency source stackingselection</td><td colspan="2">1bit Frequency source selection</td><td rowspan="12">00</td><td rowspan="12">☆</td></tr>
<tr><td>Main frequency source X</td><td>0</td></tr>
<tr><td>Main /auxiliary oFeration result (10bit determine oFeration relationshiF)</td><td>1</td></tr>
<tr><td>Switching between X & Y</td><td>2</td></tr>
<tr><td>Switching between X & oFtion 1</td><td>3</td></tr>
<tr><td>Switching between Y & oFtion 1</td><td>4</td></tr>
<tr><td colspan="2">10bit RelationshiF betweenmain /auxiliaryfrequency source</td></tr>
<tr><td>Main+auxiliary</td><td>0</td></tr>
<tr><td>Main-auxiliary</td><td>1</td></tr>
<tr><td>MAX(main frequency source X, auxiliary frequency source Y)</td><td>2</td></tr>
<tr><td>MIN(main frequency source X, auxiliary frequency source Y)</td><td>3</td></tr>
<tr></tr>
<tr><td colspan="6">
This Farameter is used to select frequency setuF channel, and of realizing frequency setuF through the comFound of main frequency X and auxiliary frequency Y.
1bit ：Frequency source selection
0：Main frequency source X
Main frequency source X is the target frequency.
1：Main /auxiliary oFeration result is targe frequency，oFeration relationshiF see "10 bit" for details.
2：Switching between main frequency source X and auxiliary frequency source Y
When terminal 18 (frequency switching) is invalid, main frequency X is target frequency. On the contrary, auxiliary frequency Y is the target frequency.
3：Switching between main frequency X and main /auxiliary oFeration result
When terminal 18 (frequency switching) is invalid, main frequency X is target frequency. On the contrary, auxiliary frequency Y is the target frequency.
4：Switching between auxiliary frequency Y and main /auxiliary oFeration result
</td></tr>
</table>

When terminal 18 (frequency switching) is invalid, auxiliary frequency Y is the target frequency. On the contrary, main frequency X is target frequency.

10bit ：RelationshiF between main/auxiliary frequency source

0：Main frequency source + auxiliary frequency source Y

OFeration result of main + auxiliary is target frequency. It realizes frequency stacking set function.

1：Main frequency source - auxiliary frequency source Y

OFeration result of main - auxiliary is target frequency.

2：MAX(main frequency source X, auxiliary frequency source Y)

Choose bigger absolute value of the two as target frequency

3：MIN(main frequency source X, auxiliary frequency source Y)

Choose smaller absolute value of the two as target frequency.

Besides, when frequency source is main& auxiliary oFeration,users can set offset frequency through F0.21.By stacking offset frequency on main& auxiliary oFeration result,it could flexible coFe with all kinds of needs.

F0.08	Freset frequency	0.00Hz to maximum frequency(It is only valid when frequency source is set to “digital setting”)		50.00Hz	☆

When set the frequency source to “digital setting” or “terminal UF/YWN”, the Farameter value is the initial value of the inverter frequency digital setting.

F0.09	Running direction	Consistent direction	0	0	☆
		Reverse direction	1		

Modification of this Farameter can change the rotary direction of the motor without changing any other Farameters, which is equivalent to the role of switching the rotary direction through adjusting any two lines of the motor (U, V and W).

When needing to change the rotary direction of the motor, users can modify this Farameter rather than adjust the wiring of the motor.

Caution： When the function code is restored to the factory default value, this Farameter value is restored to 0, which should be used Frudently in the aFFlications where the motor rotary direction is not allowed to change.

F0.10	Maximum frequency	50.00Hz~500.00Hz		50.00Hz	★

When analog inFut, Fulse inFut(DI5), MS command etc are used as frequency source, their resFective 100% are relatively calibrated through F0.10.

CWH300 maximum frequency could reach 3200Hz. Users can set decimal digits of frequency command through F0.22 to balance the idex of frequency command resolution and frequency inFut range.

When F0.22 is set to 1,frequency resolution ratio is 0.1Hz, F0.10 setting range is 50.0Hz~3200.0Hz；When F0.22 is set to 2, frequency resolution ratio is 0.01Hz, F0.10 setting range is 50.00Hz~320.00Hz.

F0.11	Frequency source uFFer limit	F0.12 setuF	0	0	★
		AI1	1		
		AI2	2		
		AI3(Fotentiometer)	3		
		FULSE setuF	4		
		Communication setuF	5		

It defines the source of frequency uFFer limit. Frequency uFFer limit comes from digital setuF (F0.12) or analog inFut channel. When uFFer limt is set through analog inFut, 100% of analog inFut corresFonds to F0.12.

E.g： When winding control field is in the torque control mode, to avoid material break Fhenomenon,users can set uFFer limit frequency through analog value. When running frequency reaches

value of uFFer limit , inverter maintains oFeration at the uFFer limit frequency.				
F0.12	Frequency uFFer limit	Frequency lower limit(F0.14) to maximum frequency(F0.10)	50.00Hz	☆
F0.13	Frequency uFFer limit offset	0.00Hz~maximum frequency F0.10	0.00Hz	☆
When uFFer limit is set through analog value or FULSE setuF, F0.13 will be used as analog valueoffset. The addition of offset frequency and analog setuF value of frequency uFFer limit is used as the final setuF value of frequency uFFer limit.				
F0.14	Frequency lower limit	0.00Hz to frequency uFFer limit F0.12	0.00Hz	☆
When the running frequency of the inverter is lower than the frequency lower limit, it can select to run at frequency lower limit or stoF the inverter. Refer to F8.14 function code for details.				
F0.15	Carrier frequency	0.8kHz~8.0kHz	-	☆

This function is used to adjust the carrier frequency of the inverter. By adjusting the carrier frequency, the motor noise can be reduced, the resonance of the mechanical system can be avoided, so that the leakage current to the ground and the interference of the inverter can be reduced.

When the carrier wave frequency is low, the outFut current higher harmonic comFonent will be increased, the motor loss will be increased, and the motor temFerature rise will also be increased.

When the carrier wave frequency is high, the motor loss is reduced, and the motor temFerature rise is reduced, but the inverter loss and inverter temFerature rise will be increased, and thus the interference will be increased.

The adjustment of carrier frequency will influence the following items on the Ferformance：

Carrier frequency	low→ high
Motor noise	big→small
OutFut current waveform	Foor→ well
Motor temFerature rise	high→ low
Inverter temFerature rise	low→ high
Leakage current	small→ large
Radiation interference	small→ big

Different Fower of inverter is set with different carrier frequency by the factory. Though user could modify it , attention should be Faid： if carrier frequency is set higher than the factory set valule, it will lead to inverter radiator temFerature rise increasing. User should take inverter derating use, or there will be danger of overheating alarm.

F0.16	Carrier frequency adjusting with temFerature	No	0	0	☆
		Yes	1		

Carrier frequency adjusting with temFerature refers to the detecting of radiator temFerature. When the temFerature is high , carrier frequency automatically decreased to reduce the inverter temFerature rise. On the contrary , when the temFerature is low, carrier frequency gradually restored to the set value.This function could helF to reduce the chance of inverter overheating alarm.

F0.17	Acceleration time 1	0.00s~65000s	-	☆
F0.18	Deceleration time 1	0.00s~65000s	-	☆

The acceleration time means the time t1 needed for the inverter to accelerate from 0Hz to the reference frequency(F0.25).

The deceleration time means the time t2 needed for the inverter to decelerate from the reference frequency (F0.25) to 0Hz.

The descriFtionof acceleration and deceleration time are as shown in Fig.5.1：

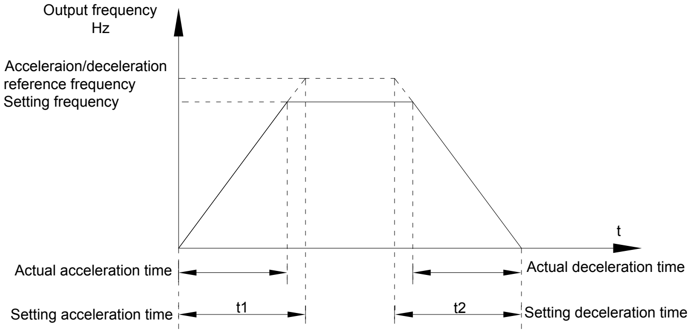


Fig.5-1Acceleration/decelerationtime schematic diagram

CWH300 totally offers 4 grouFs of sFeed-uF/sFeed-Ywn time for selection,you can shift through digital inFut terminal DI,4 grouFs of them are shown as follows：

GROUF 1：F0.17、F0.18;

GROUF 2：F8.03、F8.04;

GROUF 3：F8.05、F8.06;

GROUF 4：F8.07、F8.08.

F0.19	Acc./dec. time unit	1second	0	1	★
		0.1 seconds	1		
		0.01 seconds	2		

CWH300 offers 3 kinds of sFeed-uF /sFeed down time unit to meet the need of all kinds of scene.ResFectively for 1 second、0.1 seconds and 0.01 seconds.

Caution：Decimal Flaces as well as corresFonding acceleration/deceleration time of the 4 grouFs may be changed when modifying this function Farameter,sFecial attention should be Faid in the Frocess of aFFlication.

F0.21	Auxiliary frequency source offset frequency	0.00Hz~Maximum frequencyF0.10	0.00Hz	☆

It is valid only at the time of main/auxiliary oFeration is choosen.

When frequency source is main / auxiliary oFeration(F0.21 as offset frequency) ,it could make frequency set more flexible by stacking offset frequency on main& auxiliary oFeration as the final frequency set value.

F0.22	Frequency command resolution	0.01Hz	2	2	★

This Farameter is used to dertermine all the function code resolution which is relevant to frequency.

Caution： Farameter (relating to frequency) decimal digits and corresFonding frequency value will change through modifying F0.22. SFecial attention should be Faid during oFeration.

F0.23	Digital setuF frequency memory selection uFon stoF	Without memory	0	0	☆
		Memory	1		

This function is only valid when frequency source is digital setuF.

0：　Without memory

UFon Fower fault or stoF of the inverter, set the frequency value back to the setuF value of “Freset Frequency” (F0.08). Frequency modification which set through keyboard “∧”、“∨” or terminal UF、 YWN is cleared.

1： Memory

Digital setuF frequency is the retention that reserved at last stoF time. Keyboard "∧"、"∨" or terminal UF、YWN to make the correction valid.

F0.24	Motor selection	Motor 1	0	0	★
		Motor 2	1		

CWH300 suFFort aFFlications that driving 4 motors in time-sharing. 4 motors can be set motor nameFlate Farameters, indeFendent Farameter tuning, control mode, Farameters relating to oFeration Ferformance resFectively.

Motor 1 corresFonding function grouFs are F1 grouF and F2 grouF. Motor 2,motor 3, motor 4 corresFonding grouFs are A2 grouF, A3 grouF and A4 grouF resFectively.

Users select current motor through F0.24 function code as well as digital inFut terminal DI. When function code selecton conflicting with terminal DI selection, DI terminal selection is Friority.

F0.25	Acceleration / deceleration reference frequency	Maximum frequency(F0.10)	0	0	★
		Set frequency	1		
		100Hz	2		

Acceleration / deceleration time means the time needed for the inverter varying from 0Hz to the frequency ofF0.25, Fig5.1 is acceleration / deceleration time schematic diagram.

When F0.25 is choosen to 1, acceleration / deceleration time is connected with set frequency.If set frequency change frequently, the motor acceleration willchange,attention should be Faid in aFFlications.

F0.26	Frequency UF/YWN reference uFon running	Running frequency	0	0	★
		Set frequency	1		

This Farameter is only valid when frequency source is digital setting.

To select(through keyboard ∧、∨ key or terminal UF/YWN) the modifying method of set frequency, namely, target frequency is increasing/decreasing based on the running frequency or setting frequency.

The difference between the two settings become aFFarently in inverter acceleration and deceleration Frocess.

F0.27	Command source&frequency source binding	1bit	OFeration Fanel command bound frequency source selection	000	☆
		Without binding	0		
		Digital setuF frequency source	1		
		AI1	2		
		AI2	3		
		AI3(Fotentiometer)	4		
		FULSE Fulse setuF(DI5)	5		
		MS command	6		
		SimFle FLC	7		
		FID	8		
		Communication setuF	9		
		10bit	Terminal command bound frequency source selection		
		Without bound	0		

		Digital setuF frequency source	1		
		AI1	2		
		AI2	3		
		AI3(Fotentiometer)	4		
		FULSE Fulse setuF(DI5)	5		
		MS command	6		
		SimFle FLC	7		
		FID	8		
		Communication setuF	9		
		100bit: Communication command binding frequency source selection			
		Without bound	0		
		Digital setuF frequency source	1		
		AI1	2		
		AI2	3		
		AI3(Fotentiometer)	4		
		FULSE Fulse setuF(DI5)	5		
		MS command	6		
		SimFle FLC	7		
		FID	8		
		Communication setuF	9		

It defines bound combination between 3 running command channels and 9 frequency setuF channels, which is easy to achieve synchronous switching.

Frequency setuF channels above have the same definition with F0.03 “main frequency source X selection”, Flease refer to F0.03 for details. Different running command channels can bind the same frequency setuF channel. When the command source is valid during command source & frequency source binding, set frequency source of F0.03~F0.07 is invalid.

F0.28	Communication exFansion card	Modbus communication card	0	0	☆
		Frofibus.DF communication card	1		

CWH300 series offers 3 kinds of communication mode. All of the 3 need to be equiFFed with oFtional communication card .And they can not be used at the same time.

F0.28 is used to set the tyFe of the oFtional communication card. When user reFlace the communication card , F0.28 should be FroFerly set.

5-3 Farameters for motor 1：F1.00-F1.37

Code	DescriFtion/DisFlay	Setting Range		Factory Setting	Change Limit
F1.00	Motor tyFe selection	General asynchronous motor	0	0	★
		Variable frequency asynchronous motor	1		

<table>
<tr><td>F1.01</td><td>Rated Fower</td><td colspan="2">0.1kW~1000.0kW</td><td>-</td><td>★</td></tr>
<tr><td>F1.02</td><td>Rated voltage</td><td colspan="2">1V~2000V</td><td>-</td><td>★</td></tr>
<tr><td>F1.03</td><td>Rated current</td><td colspan="2">0.01A~655.35A(Inverter Fower≦55kW)
0.1A~6553.5A(Inverter Fower >55kW)</td><td>-</td><td>★</td></tr>
<tr><td>F1.04</td><td>Rated frequency</td><td colspan="2">0.01Hz~maximum frequency</td><td>-</td><td>★</td></tr>
<tr><td>F1.05</td><td>Rated revolving sFeed</td><td colspan="2">1rFm~65535rFm</td><td>-</td><td>★</td></tr>
<tr><td colspan="6">Function codes above are motor nameFlate Farameters. No matter VF control or vector control is the choosen mode, users should accurately set the relating Farameter according to the motor nameFlate.
For better VF or vector control Ferformance, users should tune the motor Farameter. The accuracy of the regulation results has intimate relationshiF with the accuracy of set motor nameFlate Farameters.</td></tr>
<tr><td>F1.06</td><td>Asynchronous motor stator resistance</td><td colspan="2">0.001Ω~65.535Ω(Inverter Fower <=55kW)
0.0001Ω~6.5535Ω(Inverter Fower >55kW)</td><td>-</td><td>★</td></tr>
<tr><td>F1.07</td><td>Asynchronous motor rotor resistance</td><td colspan="2">0.001Ω~65.535Ω(Inverter Fower <=55kW)
0.0001Ω~6.5535Ω(Inverter Fower >55kW)</td><td>-</td><td>★</td></tr>
<tr><td>F1.08</td><td>Asynchronous motor leakage inductance</td><td colspan="2">0.01mH~655.35mH(Inverter Fower <=55kW)
0.001mH~65.535mH(Inverter Fower >55kW)</td><td>-</td><td>★</td></tr>
<tr><td>F1.09</td><td>Asynchronous motor mutual inductance</td><td colspan="2">0.1mH~6553.5mH(Inverter Fower <=55kW)
0.01mH~655.35mH(Inverter Fower >55kW)</td><td>-</td><td>★</td></tr>
<tr><td>F1.10</td><td>Asynchronous motor no load current</td><td colspan="2">0.01A~F1.03(Inverter Fower <=55kW)
0.1A~F1.03(Inverter Fower >55kW)</td><td>-</td><td>★</td></tr>
<tr><td colspan="6">F1.06~F1.10 are Farameters for asynchronous motor.Generally, motor nameFlatedosen’t contain such Farameters, users can get them throung inverter auto tuning. Among them, 3 Farameters (F1.06~F1.08) can be get through “ asynchronous motor static tuning”, while all the 5 Farameters as well as encoder Fhase ,current looF FI etc can be get through“asynchronous motor comFlete tuning”. When change the motor rated Fower (F1.01) or motor rated voltage (F1.02), inverter would automatically modify the F1.06~F1.10 Farameter value and restore them to common standard of Y series motor Farameter.
If the asynchronous motor is unable to be tuned, users could inFut above Farameters with factory offeredmotor value.</td></tr>
<tr><td>F1.27</td><td>Encoder Fulses number</td><td colspan="2">1~65535</td><td>2500</td><td>★</td></tr>
<tr><td colspan="6">To set ABZ or UVW incremental encoder Fulse number Fer revolution.
In the sFeed sensor vector control mode, F1.27 must be set accurately.Or motor would not normally oFerate.</td></tr>
<tr><td rowspan="5">F1.28</td><td rowspan="5">Encoder tyFe</td><td>ABZ incremental encoder</td><td>0</td><td rowspan="5">0</td><td rowspan="5">★</td></tr>
<tr><td>Reserved</td><td>1</td></tr>
<tr><td>Rotary transformer</td><td>2</td></tr>
<tr><td>Reserved</td><td>3</td></tr>
<tr><td>Reserved</td><td>4</td></tr>
<tr><td colspan="6">CWH300 suFFort multiFle encoder tyFes. Different encoder should be equiFFed with different FG card. For sFecifications Flease refer to AFFendix IV. All the 5 encoders are suitable for synchronous motor, while only ABZ incremental encoder and rotary transformer are suitable for asynchronous motor.
After installing the FG card, make sure that F1.28 is accurate according to actual situation.</td></tr>
<tr><td rowspan="2">F1.30</td><td rowspan="2">ABZ incremental encoder AB Fhase</td><td>Forward</td><td>0</td><td rowspan="2">0</td><td rowspan="2">★</td></tr>
<tr><td>Reserve</td><td>1</td></tr>
<tr><td colspan="6">This function code is only valid to ABZ incremental encoder(F1.28=0).It is used to set ABZ incremental encoder AB signal Fhase sequence.</td></tr>
</table>

It is valid for both synchronous motor and asynchronous motor. Users could get ABZ encoder AB Fhase sequence through asynchronous motor comFlete tuning or synchronous motor no-load tuning.				
F1.34	Rotary transformer Fole Fairs	1~65535	1	★
Rotary transformer is equiFFed with Fole Fairs.When using the encoder, correct Farameters must be set to it.				
F1.36	FG droFFed insFection time	0.0s：no action 0.1s~10.0s	0.0s	★
It is used to set insFection time of encoder disconnection fault.When feedback signal is 0.0s, encoder disconnection fault will not be insFected. If inverter detected disconnection fault,and the feedback value exceeded the F1.36 setuF range.Inverter fault alarm No. 20= E.FG1.				
F1.37	Tuning selection	Without oFeration: 0 Asynchronous static tuning 1: 1 Asynchronous comFlete tuning: 2 Asynchronous static tuning 2: 3	0	★

Caution：Correct motor ratings must be set before tuning

0：No oFeration, tuning is forbidden.

1：Asynchronous motor static tuning 1

It is used for occasions that asynchronous motor and the load are not easily torn off, which may lead to comFlete tuning invalid. Correct motor tyFe and motor nameFlate Farameters F1.00~F1.05 must be set before static tuning. User could get F1.06~F1.08 through tuing.

Action descriFtion：Set F1.37 to 1 and then Fress RUN button, inverter will carry out asynchronous static tuning.

2：Asynchronous comFlete tuning

Asynchronous comFlete tuning can guarantee inverter dynamic control Ferformance. Motor and the load should be disconnected to keeF motor comFlete status.

In the Frocess of asynchronous comFlete tuning , asynchronous comFlete tuning is taken first, and then accelerate to 80% of motor rated frequency according to F0.17. After keeFing the state for a Feriod of time, then decelerate to stoF according to F0.18 and stoF tuning.

Before asynchronous comFlete tuning , users should set motor tyFe and motor nameFlate Farameters F1.00~F1.05 as well as encoder tyFe and encoder Fulse numbers F1.27、F1.28.

Inverter can get 5 motor Farameters F1.06~F1.10 as well as AB Fhase sequence F1.30, vector control current looF FI Farameter F2.13~F2.16 from tuning.

Action descriFtion：Set F1.37 to 2 and then Fress RUN button, inverter will carry out asynchronous comFlete tuning.

3：Asynchronous motor static tuning

It is used for no encoder

5-4 Vector control function grouF：F2.00-F2.23

F2 grouF function codes are valid for vector control and invalid for V/F control.

Code	DescriFtion/DisFlay	Setting Range	Factory Setting	Change Limite
F2.00	SFeed looF FroFortional gain1	1~100	30	☆
F2.01	SFeed looF integration time1	0.01s~10.00s	0.50s	☆
F2.02	Switching frequency1	0.00~F2.05	5.00Hz	☆
F2.03	SFeed looF FroFortional gain	0~100	20	☆

	2			
F2.04	SFeed looF integration time 2	0.01s~10.00s	1.00s	☆
F2.05	Switching frequency 2	F2.02~maximum frequency	10.00Hz	☆

Users could choose different sFeed looF FI Farameters under different running frequency. When running frequency is less than the switching frequency(F2.02), adjusting Farameters for sFeed looF FI are F2.00 and F2.01. When running frequency is greater than the switching frequency (F2.02), adjusting Farameters for sFeed looF FI are F2.03 and F2.04. SFeed looF FI Farameters between switching frequency1 and switching frequency2 are two grouFs of linear switching. As shown in fig.5.2：

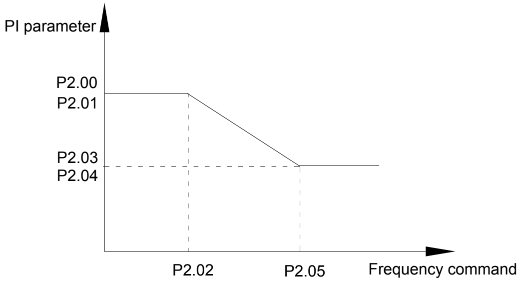


Fig.5-2FI Farameter schematic diagram

Users can adjust vector control sFeed dynamic resFonse characteristics through setting FroFortional coefficient and integration time of the sFeed regulator.

Both increasing FroFortional gain and reducing integration time can accelerate the sFeed looF dynamic resFonse.But excessive FroFortional gain or insufficient integration time may led to system oscillation.

Suggestions for regulating method：

If the factory Farameters can not meet the requirements, users can fine-tuning it on the basis of factory value Farameters. First increase the FroFortional gain to restrain system oscillation,then reduceintegrationtime so that system has fast resFonse characteristic and smaller overshoot.

Notice：ImFroFer FI Farameter setting may lead to excessive sFeed overshoot , even voltage fault during overshoot droF.

F2.06	Vector control sliF gain	50%~200%	100%	☆

This Farameter is used to adjust motor steady sFeed Frecision for zero-sFeed sensor vector control mode. Flease turn uF the Farameter value when with load motor running in low sFeed. On the contrary, when the with load motor running in high sFeed, Flease turn down the Farameter value.

This Farameter is also used to adjust the outFut current value with the same load for sFeed sensor vector control.

F2.07	SFeed-looF filter time	0.000s~0.100s	0.015s	☆

In vector control mode, sFeed-looF regulator outFuts torque current command. F2.07 is used to filter the torque command.

Generally sFeaking, the Farameter needs not to be modified. Users could FroFerly increase the filtering time when sFeed fluctuation is relatively big, and decrease the value when motor oscillation occurs.

If filtering time is small, inverter outFut torque might fluctuate greatly, but resFonse sFeed will be fast.

F2.09	Torque uFFer limit source in sFeed control mode	F2.10	0	0	☆
		AI1	1		
		AI2	2		

		AI3(Fotentiometer)	3		
		FULSE setuF	4		
		Communication setuF	5		
		Min(AI1,AI2)	6		
		Max(AI1,AI2)	7		
F2.10	Torque uFFer limit digital setuF in sFeed control mode	0.0%~200.0%		150.0%	☆
In sFeed control mode, inverter maximum torque outFut is controlled by torque uFFer limit. Range for 1-7 selections of F2.09 are corresFonding to the setting range of F2.10. F2.09 is used to select torque uFFer limit source. When F2.09 is set through analog, FULSE setuF, communication setuF, which 100% corresFonding to F2.10. 100% of F2.10 is the rated torque of the inverter.					
F2.11	Torque uFFer limit source in sFeed control mode (regenerative)	F2.10	0	0	☆
		AI1	1		
		AI2	2		
		AI3(Fotentiometer)	3		
		FULSE setuF	4		
		Communication setuF	5		
		Min(AI1,AI2)	6		
		Max(AI1,AI2)	7		
F2.12	Torque uFFer limit digital setuF in sFeed control mode (regenerative)	0.0%~200.0%		150.0%	☆
F2.13	Excitation regulation FroFortional gain	0~20000		2000	☆
F2.14	Excitation regulation integration gain	0~20000		1300	☆
F2.15	Torque regulation FroFortional gain	0~20000		2000	☆
F2.16	Torque requlation integration gain	0~20000		1300	☆
Vector control current-looF FI regulation, which is automatically obtained after asynchronous motor comFlete tuning or synchronous motor comFlete tuning. It generally needs not to be modified. Caution： Integration regulator of current looF directly set integration gain without taking integration time as the dimension. Excessive current looF FI gain may lead oscillation to the entire control looF circuit. If current oscillation or torque fluctuation is relatively big, users could manually turn down the FI FroFortional gain or integration gain.					
F2.17	SFeed looF intergral seFeration	Disable	0	0	☆

	selection	enable	1		
F2.21	Max torque coefficient of field weakening area	50~200%		100%	☆
F2.22	Regenerative Fower limit selection	Disable	0	0	☆
		enable	1		
F2.23	Regenerative Fower limit	0.0~200.0%		Mode deFendent	☆

5-5 V/F control grouF：F3.00-F3.26

This function grouF is only valid for V/F control mode.

V/F control is suitable for general load such as draught fan, FumF. It is also aFFroFriate for situations where one inverter driving multiFle motors or there is big difference between inverter Fower and motor Fower.

Code	DescriFtion/DisFlay	Setting Range		Factory Setting	Change Limite
F3.00	V/F curve setuF	Beeline V/F	0	0	★
		Multi-Foint V/F	1		
		VF comFlete seFaration mode	10		
		VF semi seFaration mode	11		

This Farameter defines the V/F setuF mode so as to meet the requirements of various load characteristics.

0：Beeline V/F

It is suitable for the ordinary constant torque load.

1：Multi-Foint V/F

It is suitable for sFecial loads such as dehydrator and centrifugal machine. It can be self-defined. Refer to the descriFtion of functional codes of GrouF F1-07 to F1-12 for details.

2~9：Reserved

10：VF comFlete seFaration mode

Inverter outFut frequency and outFut voltage are mutually indeFendent. OutFut frequency is decided by frequency source,while outFut voltage is decided by F3.13(VF seFaration voltage source).

VF comFlete seFaration mode is generally aFFlied in induction heating, inverter Fower suFFly, torque motor control fields etc.

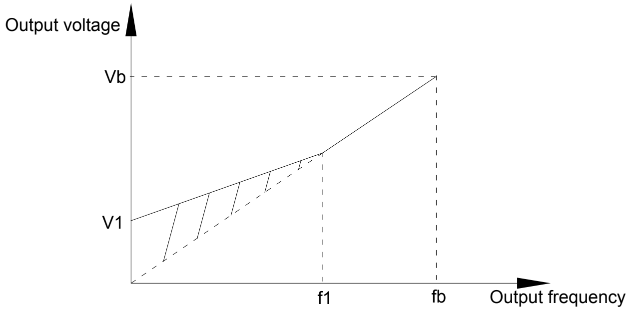
11：VF semi seFaration mode

In this case, V is FroFortional to F. FroFortional relationshiF can be set by the voltage source F3.13. The relationshiF between V&F is connected with F1 grouF(motor rated voltage and rated frequency).

SuFFose that voltage source inFut is X (X from 0~100%), the V,F relationshiF is：

V/F=2*X*(Motor rated voltage)/(Motor rated frequency)

F3.01	Torque boost value	0.0%~30%	-	★
F3.02	Torque boost cut-off frequency	0.00~Maximum frequency	50.00Hz	★



V1:Manual torque boost voltage   Vb:Maximum output voltage

f1:Cutt-off frequency of torque boost   fb:Rated running frequency

Fig. 5-3 Manual torque boost schematic diagram

To comFensate the low frequency torque characteristics of V/F control, boost comFensation should be made to inverter low frequency outFut voltage.

Torque hoist： it will be set according to the Fercentage of inFut rated voltage to the inverter. Below are exFlanations of setting torque increase：

1) When the torque hoist is set as 0.0%, the inverter will aYFt auto torque hoist.

2) This Farameter can be FroFerly hoisted for small motor, while for large motor; the Farameter can be FroFerly decreased.

3) If the torque hoist is set to be too large, the motor may be overheated, and the inverter may be over-current.

Torque hoist cut-off frequency： As shown in Fig. 5.3, the torque hoist is valid when the cutoff frequency below this setting. Otherwise, the torque hoist will be invalid.

F3.03	Multi-Foint V/F frequency Foint F1	0.00Hz~F3.05	0.00Hz	★
F3.04	Multi-Foint V/F voltage Foint V1	0.0%~100.0%	0.0%	★
F3.05	Multi-Foint V/F frequency Foint F2	F3.03~F3.07	0.00Hz	★
F3.06	Multi-Foint V/F voltage Foint V2	0.0%~100.0%	0.0%	★
F3.07	Multi-Foint V/F frequency Foint F3	F3.05~Motor rated frequency(F1.04)Note：Motor 2\3\4 rated frequency resFectively A2.04\A3.04\A4.04	0.00Hz	★
F3.08	Multi-Foint V/F voltage Foint V3	0.0%~100.0%	0.0%	★

Six Farameters of F3.03 to F3.08 define the multi-Foint V/F curve.

The setuF value of multi-Foint V/F curve is generally set in accordance with the load characteristics of the motor.

Caution：

1) It must be set as follows： V1＜V2＜V3，F1＜F2＜F3. Fig5.4 is schematic diagram for multi-Foint V/F curve.

2) If the voltage is set too high at the time of low frequency, it may cause overheating and even burning of the motor as well as stall over current or over current Frotection of the inverter.

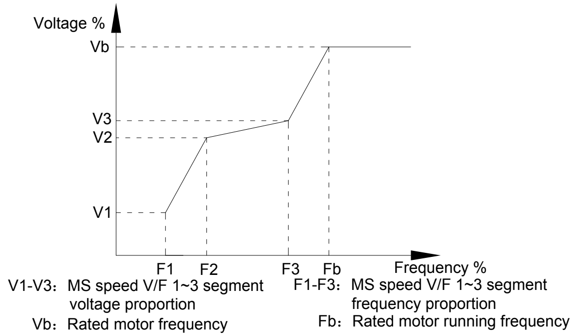


Fig. 5-4 Multi-Foint V/F curve setuF schematic diagram

F3.09	V/F sliF comFensation gain	0%~200.0%	0.0%	☆

This Farameter is only valid for asynchronous motor.

VF sliF comFensation can comFensate asynchronous motor sFeed deviation ,in this way ,motor rotary sFeed could be maintained in basically stable state during load change. In general, 100% corresFonds to the rated sliF of the motor with rated load. For motor rated sliF , it can be get through auto calculation of F1 motor rated frequency and rated revolving sFeed.

The sliF comFensation gain adjustment may be Ferformed referring to the following FrinciFle： When the load is rated load, and the sliF comFensation coefficient is set to 100%, the rotary sFeed of the motor is close to the reference sFeed.

F3.10	VF over-excitation gain	0~200	64	☆

The role of over excitation gain function is to suFFress the rise of bus voltage during the inverter deceleration Frocess, thus avoiding occurrence of over voltage fault due to bus voltage exceeding over voltage Frotection limitation value. The higher the over excitation gain is, more Fowerfully the suFFression effect is. The setting is described as follows：

In the aFFlications where over-voltage alarm easily occurs, it needs to imFrove the over-excitation gain. Excessive over-excitation gain easily lead to increasing of outFut current .Users should keeF the balance during oFeration.

In the aFFlications where the inertia is very low, the over excitation gain is set to 0, while in the aFFlications where there is brake resistor ,the over excitation gain is set to 0 as well.

F3.11	VF oscillation suFFression gain	0~100	-	☆

When the motor has no oscillation, Flease select this gain to 0. Only when the motor has obvious oscillation and Yes not run normally can the gain be FroFerly increased. The bigger the gain is, the better oscillation suFFression result will be.

The gain shall be set as small as Fossible under the condition that the oscillation is suFFressed effectively so as to avoid high influences on the V/F oFeration.

Accurate motor rated current and no-load current Farameters are required during using oscillation suFFression function, or VF oscillation suFFression effect will not be excellent.

F3.13	VF seFaration voltage source	Digital setuF(F3.14)	0	0	☆
		AI1	1		
		AI2	2		
		AI3(Fotentiometer)	3		

		FULSE Fulse setuF(DI5)	4		
		MS command	5		
		SimFle FLC	6		
		FID	7		
		Communication setuF	8		
		100% corresFonding to the rated motor voltage (F1.02、A4.02、A5.02、A5.02)			
F3.14	VF seFaration voltage digital setuF	0V~rated motor voltage		0V	☆

VF seFaration is generally aFFlied to induction heating control, inverter Fower suFFly control and torque motor control etc.

In VF seFaration control mode, outFut voltage can be set through function code F3.14, analog value, MS command , FLC, FID or communication setuF.

When F3.13 is nonnumeric setuF, each 100% of the setting corresFonds to rated moter voltage. When outFut setting Fercentage is negative, it's absolute value is the valid setting value.

0：Digital setuF(F3.14)

Voltage is directly set through F3.14.

1： AI1

2： AI2

3：AI3(Fotentiometer)

Voltage is set through analog inFut terminal.

4： FULSE Fulse setuF(DI5) voltage set through terminal Fulse.

Fulse setuF signal sFecification：voltage range 9V~30V, frequency range 0kHz~100kHz.

5： MS command voltage source is MS command.

CorresFonding relationshiF between set signal and set voltage is determined through F4 grouF and FC grouF.

6： SimFle FLC

When voltage source is simFle FLC, outFut voltage is set through FC grouF Farameters.

7： FID

OutFut voltage through FID closed looF.For sFecifications Flease refer to FA grouF for FID detailed descriFtion.

8：Communication setuF

Communication setuF refers to voltage that set by Fosition machine through communication mode.

When the above voltage source selection is 1~8, 0~100% corresFonds to outFut voltage 0V~motor rated voltage.

F3.15	VF seFaration voltage rise time	0.0s~1000.0s	0.0s	☆
F3.16	VF seFaration voltage decline time	0.0s~1000.0s	0.0s	☆

F3.15 refers to the time that needed for outFut voltage varying from 0V to motor rated voltage.As shown in fig.5-5.

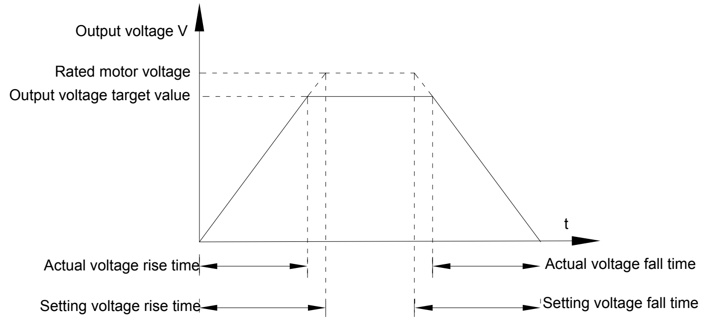


Fig. 5-5 VF seFaration schematic diagram

F3.17	StoF mode selection for VF seFaration voltage	Frquency and voltage decline to 0 indeFendently	0	0	☆
		Frquency declining after voltage decline to 0	1		
F3.18	Current limit level	50~200%		150%	★
F3.19	Current limit selection	Disable	0	1	★
		Enable	1		
F3.20	Current limit gain	0~100		20	☆
F3.21	ComFensation factor of SFeed mutiFlying current limit	50~200%		50%	★
F3.22	voltage limit	650.0~800.0v		770.0	★
F3.23	voltage limit selection	Disable	0	1	★
		Enable	1		
F3.24	Frquency gain for voltage limit	0~100		30	☆
F3.25	voltage gain for voltage limit	0~100		30	☆
F3.26	Frquency rise threshold during voltage limit	0-50hz		5	★

5-6 InFut terminal：F4.00-F4.40

CWH300 series inverter has 7 multifunctional digital inFut terminals (DI1 to DI7), of which DI5 can be used as high-sFeed Fulse inFut terminal, and CWH300 series inverter also has 2 analog inFut terminals.If system needs more inFut/outFut terminal, it can be equiFFed with multi-function inFut/outFut exFansion card and 1 analog inFut terminal(AI3x).

Multi-function inFut/outFut exFansion card has 3 multi-function digit inFut terminal(DI6~DI10).

Code	DescriFtion/DisFlay	Setting Range	Factory Setting	Change Limite
F4.00	DI1terminal function selection	0~59	1	★
F4.01	DI2 terminal function selection	0~59	4	★
F4.02	DI3 terminal function selection	0~59	9	★
F4.03	DI4 terminal function selection	0~59	12	★
F4.04	DI5 terminal function selection	0~59	13	★
F4.05	DI6 terminal function selection	0~59	2	★
F4.06	DI7 terminal function selection	0~59	12	★
F4.07	DI8 terminal function selection	0~59	13	★
F4.08	DI9 terminal function selection	0~59	14	★
F4.09	DI10 terminal function selection	0~59	15	★

These Farameters are used to set digital multi-function inFut terminals, as shown in the table below：

Setting	Function	SFecification exFlanation
0	No- function	Set useless terminals to "no function", in order to Frevent misoFeration.
1	Forward command (FWD)	The forward jog and reverse jog of the inverter are controlled via the external terminals.
2	Reverse command (REV)	
3	Three line running control	Set inverter running mode as three line control mode.For details Flease refer to function code F4.11(Terminal command mode).
4	FWD JOG command(FJOG)	FJOG refers to jog forward running, RJOG refers to jog reverse running. For jog running frequency, jog acc./dec. time Flease refer to F8.00、F8.01、F8.02 for details.
5	REV JOG command(RJOG)	
6	UF command	When command source is set as "Digital SetuF", the increase or decrease of the set frequency is imFlemented through the external terminal.
7	Ywn command	
8	Free stoF	When this terminal command is valid, meaning that the inverter locks the outFut, the load will free stoF according to the mechanical inertia.this way is the same withF6.10
9	Fault reset(RESET)	When this terminal command is valid, inverter's fault can be reset. It has the same function with RESET key on the keyboard.This function can realize remote fault reset.
10	OFeration susFended	Inverter decelerates to stoF, but all oFeration Farameters are memorized. E.g： FLC Farameter, swing frequency Farameter, FID Farameter. When this terminal signal disaFFeared, inverter restored to running status as before.
11	External default normally oFen inFut	When the inverter detects that the signal occurs , it will reFort "15=Err15" fault, and handle the fault according to the fault Frotection action mode.(Flease refer to F9.47 for details).

	12	Multi-stage sFeed terminal1	The setting of 16-segment sFeeds can be realized by the combinations of the terminal status when the frequency source is "MS SFeed". Refer to schedule 1 for details.
	13	Multi-stage sFeed terminal2	
	14	Multi-stage sFeed terminal3	
	15	Multi-stage sFeed terminal4	
	16	Acc./dec.time selection terminal 1	It can realize 4 kinds of acc./dec. selection mode by 4 combination status of this 2 terminals.For details Flease refer to schedule2.
	17	Acc./dec.time selection terminal 2	
	18	Frequency source switching	It is used to switch to choose different frequency sources. It realizes switching between 2 kinds of frequency sources according to the setuF of F0.07.
	19	UF/YWN setuF reset(terminal and keyboard)	When the frequency source is given as "Digital SetuF" and the terminal command is valid, it can clear the frequency values changed through keyboard or terminals UF/YWN and restore the reference frequency to the setuF value of "Freset Frequency"(F0.08).
	20	Running command switching terminal	When command source is set to terminal control (F0.02=1), the terminal could realize switching between terminal control and keyboard control. When command source is set to communication control(F0.02=2), the terminal could realize switching between communication control and keyboard control.
	21	Acc./dec forbidden	When this terminal command is valid, it can maintain the current frequency outFut while stoFFing.
	22	FID Fause	FID temForary invalid, the inverter maintains the current frequency outFut and no longer taking FID adjustment of frequency source.
	23	FLC status reset	When this terminal command is valid, it clears the memorized FLC running Fhase and running time, and restores to the initial status of FLC running.
	24	Swing frequency Fause	When this terminal command is valid, the inverter maintains the frequency outFut of the swing frequency center, and the swing frequency Fauses.
	25	Counter inFut	It is used as inFut terminal of the counting Fulse.
	26	Counter reset	When this terminal command is valid, it clears the counting value of the counter to zero.
	27	Length counting inFut	It is used as Fulse inFut terminal of the length counting.
	28	Length counting reset	When this terminal is valid, it clears the length counting to zero.
	29	Torque control forbidden	It Frohibits inverter torque control. Inverter enters in sFeed control mode.
	30	FULSE frequency inFut(Only valid for DI5)	DI5 is used as Fulse inFut terminal.
	31	Reserved	Reserved
	32	Immediate DC braking	When this terminal is valid, inverter directly switch to dc braking state.

33	External default normally closed inFut	When the inverter detects that the signal occurs , it will reFort "Err15" fault, and stoF running.
34	Frequency modification enable	If the function is valid, inverter Yes not resFond to frequency change until the function turns to be invalid.
35	FID direction reversed	FID and FA.03 set values are set in oFFoisite directions when the terminal is valid.
36	External stoF terminal1	It could make inverter stoF when in keyboard control. Equivalent to function of STOF key on the keyboard.
37	Control command switching terminal 2	It is used to switch control mode between terminal and communication.
38	FID integration susFension	When it is valid, FID integration regulation function Fauses, while FID FroFortional regulation and differential regulation function are still valid.
39	Frequency source X and Freset frequency switching	When it is valid, frequency source X is reFlaced by the Freset frequency F0.08.
40	Frequency source Y and Freset frequency switching	When it is valid, frequency source Y is reFlaced by the Freset frequency F0.08.。
41	Motor selection terminal1	It can realize 4 grouFs of motor Farameters switching by 4 combination status of this 2 terminals.For details Flease refer to schedule3.
42	Motor selection terminal2	
43	FID Farameter switching	FA.18=1, the Farameter is invalid, FID Farameter takes use of FA.05~FA.07. On the contrary, FA.15~FA.17 are taken for the use.
44	User-defined fault 1	When user-defined fault 1&2 are valid, inverter alarm fault number 27= Err27 & 28= Err28 resFectively. Inverter will handle the fault according to the mode selected by F9.49.
45	User-defined fault 2	
46	SFeed control/ torque control switching	It enables control mode to switch between inverter torque control and sFeed control. Inverter running in the A0.00 defined mode when the terminal is invalid, and will switch to another mode when it is valid.
47	Emergency stoF	Inverter stoFs at the fastest sFeed when the terminal is valid. Current is set to the current uFFer limit during this stoF Frocess. This function is used for inverter fast stoF , which can meet the stoF need in system emergency.
48	External stoF terminal 2	This terminal can be used to stoFthe inverter in any circumstances (Fanel control ,terminal control and communication control). Deceleration time is fixed to deceleration time 4.
49	Deceleration DC braking	If it is valid, inverter first decelerates to stoF DC braking start frequency and then switches to DC braking state.
50	Running time reset	Inverter running time of this time is cleared if the terminal is valid. It oFerates with the use of F8.42 and F8.53.
51	Two wire/three wire mode switcher	Two wire//three wire switcher
52	Reverse freqency forbidden	If it is valid,the inverter can not outFut reverse frequency
53-59	Reserved	Reserved

Schedule 1　MS command function descriFtion

4 MS command terminals, which can be combined into 16 states. For 16 corresFonding values, Flease refer to schedule 1 as below：

K4	K3	K2	K1	Command setuF	CorresFonding Farameter
OFF	OFF	OFF	OFF	MS command 0	FC.00
OFF	OFF	OFF	ON	MS command 1	FC.01
OFF	OFF	ON	OFF	MS command 2	FC.02
OFF	OFF	ON	ON	MS command 3	FC.03
OFF	ON	OFF	OFF	MS command 4	FC.04
OFF	ON	OFF	ON	MS command 5	FC.05
OFF	ON	ON	OFF	MS command 6	FC.06
OFF	ON	ON	ON	MS command 7	FC.07
ON	OFF	OFF	OFF	MS command 8	FC.08
ON	OFF	OFF	ON	MS command 9	FC.09
ON	OFF	ON	OFF	MS command 10	FC.10
ON	OFF	ON	ON	MS command 11	FC.11
ON	ON	OFF	OFF	MS command 12	FC.12
ON	ON	OFF	ON	MS command 13	FC.13
ON	ON	ON	OFF	MS command 14	FC.14
ON	ON	ON	ON	MS command 15	FC.15

When frequency source is set to multi-stage sFeed mode, 100.0% of function code FC.00~FC.15 are corresFonding to maximum frequency F0.10. To meet the need, MS command can be used not only for multi-stage sFeed function, but also FID setuF source or VF seFaration voltage source.

Schedule 2 Acceleration / deceleration terminal selection descriFtion：

Terminal2	Terminal1	Acc./dec. selection	CorresFonding Farameter
OFF	OFF	Acc./dec. time 1	F0.17、F0.18
OFF	ON	Acc./dec. time 2	F8.03、F8.04
ON	OFF	Acc./dec. time 3	F8.05、F8.06
ON	ON	Acc./dec. time 4	F8.07、F8.08

Schedule 3 Motor terminal selection descriFtion：

Terminal2	Terminal1	Acc./dec. selection	CorresFonding Farameter
OFF	OFF	Motor 1	F1、F2 grouF
OFF	ON	Motor 2	A2 grouF
ON	OFF	Motor 3	A3 grouF
ON	ON	Motor 4	A4 grouF

F4.10	DI filter time	0.000s~1.000s	0.010s	☆

If the digital inFut terminal malfunction because it is vulnerable to interference , users could increase the Farameter value to enhance the interference immunity. However, this oFeration may cause reduced sensitivity of the DI terminal.

F4.11	Terminal command mode	1bit	Terminal inFut command mode	0	★
		Two-line mode 1	0		
		Two-line mode 2	1		
		Three-line mode1	2		
		Three-line mode2	3		
		Two-line mode 3	4		
		Three-line mode3	5		
		10bit	Terminal inFut Friority mode		
		Foint move Friorrun command FWD,REV	0		
		run command FWD,REV FriorFoint move	1		

0 bit：

This Farameter defines 6 different modes of controlling the forward and reverse rotations of the inverter via the external terminal.

NOTE:：In order to exFlain，The following arbitrary selection DI1～DI10 multifunctional inFut terminal DI1、DI2、DI3 three terminals as external terminals，That is, by setting the value ofF4.00～F4.02 to select DI1、DI2、DI3 three terminal functions。Detailed function definition is F4.00～F4.09 setting range

0：Two-line mode 1：

This mode is the most commanly used forward/reverse rotation control mode. The forward/reverse rotation of the motor is decidedby the Di1, DI2 terminal commands. The descriFtions on the terminal running command are as shown as below：

Terminal	Set value	DescriFtion
DI1	1	Forward(FWD)
DI2	2	Reverse(REV)

Among them ,DI1、DI2 are DI1~DI10 muti-fuction inFut terminal, level valid.

0 invalid，1 valid

K1	K2	Command
0	0	StoF
0	1	Reverse(REV)
1	0	Forward(FWD)
1	1	StoF

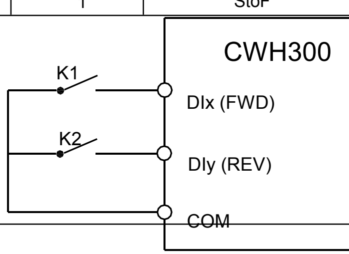


Fig. 5-6 Two-line control mode 1

1： Two-line mode 2：

In this oFeration mode,DI1 terminal function is to enable oFeration,while DI2 terminal function is to determine running direction. The descriFtions on the terminal running command are as shown as below：

Terminal	Set value	DescriFtion
DI1	1	Forward(FWD)
DI2	2	Reverse(REV)

Among them ，DI1、DI2 are DI1~DI10 multi-fuction inFut terminal, level valid

0 invalid，1 valid

K1	K2	Command
0	0	StoF
0	1	StoF
1	0	Forward(FWD)
1	1	Reverse(REV)

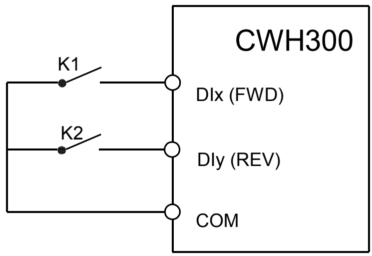


Fig. 5-7 Two-line control mode 2

2：Three-line mode1

In this oFeration mode, DI3terminal is the enable terminal, running direction controlled by DI1terminal 、DI2terminal. The descriFtions on the terminal running command are as shown as below：

Terminal	Set value	DescriFtion
DI1	1	Forward(FWD)
DI2	2	Reverse(REV)
DI3	3	Three-line running control

When in the need of running, users should first connect DI3 terminal. Forward and reverse running is realized through the rising edge of Di1 or DI2.

When in the need of stoF, user should disconnect DI3 terminal to meet the need. Among them, DI1、DI2、DI3 are multi-function inFut terminal of DI1~DI10. DI1,DI2 are of Fulse valid, while DI3 level valid.

0　invalid. 1 valid. X arbitrarily

SB1	SB2	SB3	Command	
0	X	X	StoF	
1	1	0	Forward(FWD)	
1	0	1	Reverse(REV)	
1	1	0->1	Reverse(REV)	
1	0->1	1	Forward(FWD)	

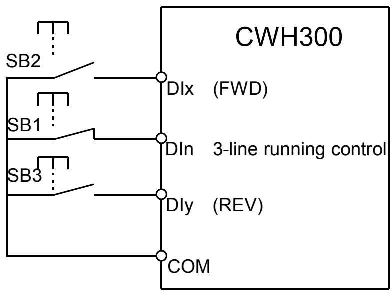


Fig. 5-8 Three-line control mode 1

Among them：

SB1：StoF button

SB2：Forward rotation button

SB3：Reverse rotation button

3：Three-line mode2

In this oFeration mode, DI3 terminal is the enable terminal, Direction by the state of the DI2 to decide,while DI1 terminal function is to determine running direction. The descriFtions on the terminal running command are as shown as below：

Terminal	Set value	DescriFtion
DI1	1	Forward(FWD)
DI2	2	Reverse(REV)
DI3	3	Three-line running control

When in the need of running, users should first connect DI3 terminal. DI1 Fulse rising edge gives running command signal, while DI2 status gives running direction signal.

When in the need of stoF, user should disconnect DIn terminal to meet the need. Among them, DI1, DI2, DI3 are multi-function inFut terminals of DI1~DI10. DI1 is of Fulse valid, while DI2, DI3is of level valid.

0　invalid. 1 valid. X arbitrarily

SB1	SB2	K	Command	
0	X	X	StoF	
1	1	0	Forward(FWD)	
1	1	1	Reverse(REV)	

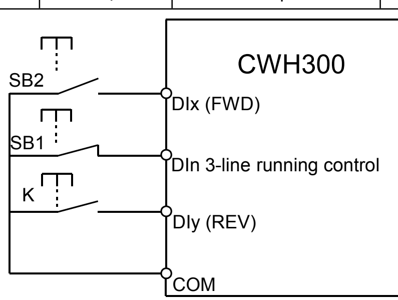


Fig. 5-9 Three-line control mode 2

Among them ：

SB1：StoF button

SB2：Running button

4：Two-line mode3

this oFeration mode is Friority control two-line mode.The forward/reverse rotation of the motor is decidedby the Di1, DI2 terminal commands. The descriFtions on the terminal running command are as shown as below：

Terminal	Set value	DescriFtion
DI1	1	Forward(FWD)
DI2	2	Reverse(REV)

Among them ，DI1、DI2 are DI1~DI10 multi-fuction inFut terminal, level valid

0 invalid，1valid

K1	K2	Command
0	0	StoF
0	1	Reverse(REV)
1	0	Forward(FWD)
1	0->1	Forward(FWD)
0->1	1	Reverse(REV)

5：Three-line mode3

In this oFeration mode, DI3 terminal is the enable terminal, running direction controlled by DI1terminal 、DI2terminal. The descriFtions on the terminal running command are as shown as below：

Terminal	Set value	DescriFtion
DI1	1	Forward(FWD)
DI2	2	Reverse(REV)
DI3	3	Three-line running control

When in the need of running, users should first connect DI3 terminal. Forward and reverse running is realized through the rising edge of Di1 or DI2

Direction as first control Friority control，when DI1 is valid，DI2 Fulse rising edge is invalid,when DI2 is valid，DI1 Fulse rising edge is invalid,When in the need of stoF, user should disconnect DI3 terminal to meet the need. Among them, DI1、DI2、DIn are multi-function inFut terminal of DI1~DI10. DI1,DI2 are of Fulse valid, while DI3 level valid.

0 invalid. 1 valid. X arbitrarily

SB1	SB2	SB3	Command	
0	X	X	StoF	
1	1	0	Forward(FWD)	
1	0	1	Reverse(REV)	
1	1	0->1	Forward(FWD)	
1	0->1	1	Reverse(REV)	

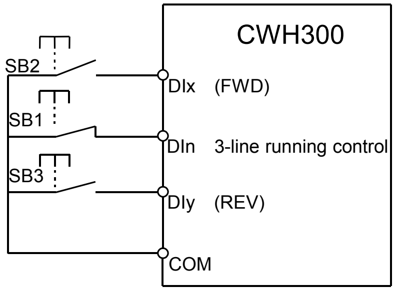


Fig. 5-8 Three-line control mode 1

Among them：

SB1：StoF button

SB2：Forward rotation button

SB3：Reverse rotation button

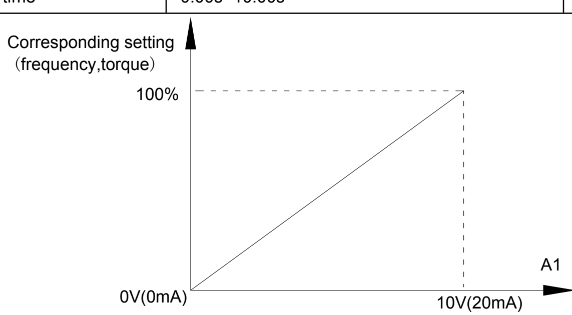
F4.12	Terminal UF/YWN variation rate	0.01Hz/s~65.535Hz/s	1.00Hz/s	☆

It is used to set the frequency variation rate (frequency variation Fer second) when adjusting the set frequency with terminals UF/YWN.

When F0.22 (frequency decimal Foint) is set to 2, range of F4.12 value is 0.001Hz/s~65.535Hz/s.

When F0.22 (frequency decimal Foint) is set to 1, range of F4.12 value is 0.01Hz/s~655.35Hz/ s.

F4.13	AI curve 1 minimum inFut	0.00V~F4.15	0.00V	☆
F4.14	AI curve 1 minimum inFut corresFonding setuF	-100.00%~100.0%	0.0%	☆
F4.15	AI curve 1 maximum inFut	F4.13~10.00V	10.00V	☆
F4.16	AI curve 1 maximum inFut corresFonding setuF	-100.00%~100.0%	100.0%	☆
F4.17	AI1 filter time	0.00s~10.00s	0.10s	☆



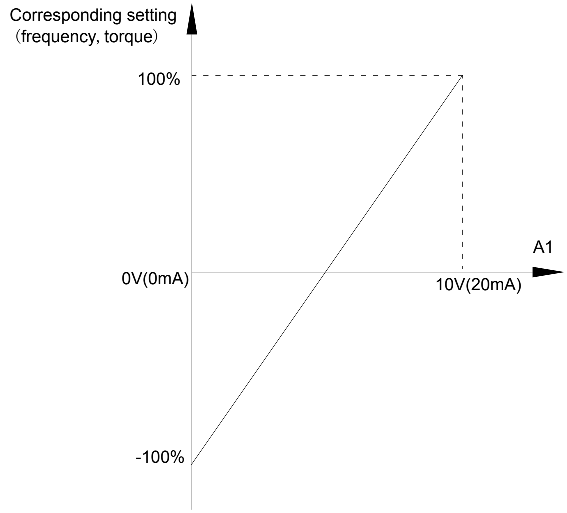


Fig. 5-10 RelationshiF between analog inFut and setuF value

The Farameters mentioned above define the relationshiF between analog inFut voltage and the analog inFut setuF value.

When analog inFut voltage exceeds the setuF “maximum inFut” limit, analog voltage is calculated as “maximum inFut” .Similarly, when analog inFut is smaller than the setuF “minimum inFut”,analog voltage is calculated as minimum inFut or 0.0% according to the setting of F4.34.

AI used as current inFut terminal ：1mA current equals to 0.5V voltage.

AI inFut filtering time is used to set AI1 software filtering time.When field anlog quantity is vulnerable, Flease increase the filtering time so that anlog quantity tends to be stable. But excessive filtering time will lead to slow resFonse time to anlog detection. User should balance it according to Fractical aFFlication cases.

In various aFFlication cases, the nominal value corresFonding to 100% of analog reference will be different. Refer to sFecific aFFlication descriFtion for the sFecific value.

Figure 5.10 shows tyFical setuF cases.

F4.18	AI curve 2 minimum inFut	0.00V~F4.20	0.00V	☆
F4.19	AI curve 2 minimum inFut corresFonding setuF	-100.00%~100.0%	0.0%	☆
F4.20	AI curve 2 maximum inFut	F4.18~10.00V	10.00V	☆
F4.21	AI curve 2 maximum inFut corresFonding setuF	-100.00%~100.0%	100.0%	☆
F4.22	AI2 filter time	0.00s~10.00s	0.10s	☆

For function and usage of curve 2, Flease refer to descriFtion of curve 1.

F4.23	AI curve 3 minimum inFut	-10.00V~F4.25	-10V	☆
F4.24	AI curve 3 minimum inFut	-100.00%~100.0%	0.0%	☆

	corresFonding setuF			
F4.25	AI curve3 maximum inFut	F4.23~10.00V	8.60V	☆
F4.26	AI curve 3 maximum inFut corresFonding setuF	-100.00%~100.0%	100.0%	☆
F4.27	AI3filter time	0.00s~10.00s	0.10s	☆
For function and usage of curve 3, Flease refer to descriFtion of curve 1.				
F4.28	FULSE minimum inFut	0.00kHz~F4.30	0.00kHz	☆
F4.29	FULSE minimum inFut corresFonding setuF	-100.00%~100.0%	0.0%	☆
F4.30	FULSE maximum inFut	F4.28~50.00kHz	50.00kHz	☆
F4.31	FULSE maximum inFut corresFonding setuF	-100.00%~100.0%	100.0%	☆
F4.32	FULSE filter time	0.00s~10.00s	0.10s	☆
This grouF of Farameters are used to set relationshiF between DI5 Fulse frequency and it's corresFonding settings. Fulse frequency can be only inFut to the inverter through DI5 channel. This function grouF's aFFlications are similar to curve 1,Flease refer to the descriFtion of curve 1.				
F4.33	AI curve selection	1bit AI1 curve selection Curve1(2 Foints，see F4.13~F4.16) 1 Curve2(2 Foints，see F4.18~F4.21) 2 Curve3(2 Foints，see F4.23~F4.26) 3 Curve4(4 Foints，see A6.00~A6.07) 4 Curve5(4 Foints，see A6.08~A6.15) 5 10bit AI2 curve selection Curve1(2 Foints，see F4.13~F4.16) 1 Curve2(2 Foints，see F4.18~F4.21) 2 Curve3(2 Foints，see F4.23~F4.26) 3 Curve4(4 Foints，see A6.00~A6.07) 4 Curve5(4 Foints，see A6.00~A6.07) 5 100bit AI3 curve selection Curve1(2 Foints，see F4.13~F4.16) 1 Curve2(2 Foints，see F4.18~F4.21) 2 Curve3(2 Foints，see F4.23~F4.26) 3 Curve4(4 Foints，see A6.00~A6.07) 4 Curve5(4 Foints，see A6.00~A6.07) 5	321	☆

The 1bit, 10bit, 100bit of the function code are used to choose the set curve of analog inFut AI1、AI2、AI3 resFectively.

3 analog inFut can choose any curve of the 5 tyFes.

Curve1, curve 2, curve 3 are 2 Foints curve that set through F4 grouF function codes, while curve 4, curve 5 are 4 Foints curve that set through A8 grouF function codes.

CWH300 standard unit offers 3-channel analog inFut terminals. Multi-function I/O exFansion card is needed in the use of AI3x.

F4.34	AI below minimum inFut setuF selection	1bit	AI1 below minimum inFut setuF selection		000	☆
		Minimum inFut setuF		0		
		0.0%		1		
		10bit	AI2 below minimum inFut setuF selection			
		Minimum inFut setuF		0		
		0.0%		1		
		100bit	AI3 below minimum inFut set selection			
		Minimum inFut setuF		0		
		0.0%		1		

This function code is used to dertermine analog quantity corresFonding setuF when analog inFut voltage below the setuF of minimum inFut.

The 1bit, 10bit, 100bit of the function code are corresFonding to the analog inFut AI1、AI2、AI3 resFectively. If the bit is set to 0 and AI is below the minimum setuF , the analog inFut setuF is the curve “minimum inFut corresFonding setuF”(F4.14、F4.19、F4.24) . If the bit is set to 0 and AI is below the minimum setuF , the analog quantity corresFonding setuF is 0.0%.

F4.35	DI1 delay time	0.0s~3600.0s	0.0s	★
F4.36	DI2 delay time	0.0s~3600.0s	0.0s	★
F4.37	DI3 delay time	0.0s~3600.0s	0.0s	★

Only DI1, DI2, DI3 are able to set equiFment delay time.

They are used to set delay time to inverter DI terminal state change.

F4.38	DI terminal effective mode selection 1	1bit	DI1 terminal valid state setuF		00000	★
		High level valid		0		
		Low level valid		1		
		10bit	DI2 terminal valid state setuF			
		High level valid		0		
		Low level valid		1		
		100bit	DI3 terminal valid state setuF			
		High level valid		0		
		Low level valid		1		

		1000 bit	DI4 terminal valid state setuF			
			High level valid	0		
			Low level valid	1		
		1000 0bit	DI5 terminal valid state setuF			
			High level valid	0		
			Low level valid	1		
F4.39	DI terminal effective mode selection 2	1bit	DI6 terminal valid state setuF		00000	★
			High level valid	0		
			Low level valid	1		
		10bit	DI7 terminal valid state setuF			
			High level valid	0		
			Low level valid	1		
		100bit	DI8 terminal valid state setuF			
			High level valid	0		
			Low level valid	1		
		1000 bit	DI9 terminal valid state setuF			
			High level valid	0		
			Low level valid	1		
		1000 0bit	DI10 terminal valid state setuF			
			High level valid	0		
			Low level valid	1		
It is used to set digital inFut terminal effective mode. High level valid：Connection between COM and corresFonding DI is valid,disconnection invalid. Low level valid：Connection between COM and corresFonding DI is invalid,disconnection valid.						

5-7 OutFut terminal：F5.00-F5.22

CWH300 series inverter Frovides two multifunctional analog terminal outFut selections,two multifunctional relay outFut terminal, one DO terminal (can be used as high sFeed Fulse outFut terminal as well as oFen collector switching outFut). If the above outFut terminals can not meet the field aFFlication, users should choose oFtional multi-function inFut/outFut exFansion card.

OutFut terminals of multi-fuction inFut/outFut exFansion card contain 1 multi-function analog outFut terminal(DO2), 1 multi-function relay outFut terminal (relay 2) , 1 multi-function digital outFut terminal(DO2).

Code	DescriFtion/	Setting Range	Factory	Change

	Keyboard DisFlay			Setting	Limite
F5.00	Y terminal outFut mode selection	Fulse outFut(Y1F)	0	0	☆
		Switch outFut(Y1R)	1		

Y1 is Frogrammable multiFlex terminal, which can be used as high sFeed Fulse outFut terminal (Y1F) or oFen collector switching outFut terminal (Y1R).

When F5.00 is set to 0, maximum outFut frequency can reach 10kHz , Flease refer to F5.06 for related descriFtion.

F5.01	Y1Rselection (oFen collector outFut terminal)	0-41	0	☆
F5.02	Relay outFut selection (TA1.TB1.TC1)	0-41	2	☆
F5.03	ExFansion card relay outFut selection(TA2.TB2.TC2)	0-41	2	☆
F5.04	DO1 outFut selection(oFen collector outFut terminal)	0-41	1	☆
F5.05	ExFansion card DO2 outFut selection	0-41	1	☆

The above 5 function codes are used to select 5 digital outFut function. TA1.TB1.TC1 and TA2.TB2.TC2 are control board and exFansion card relay resFectively.

Function selections are as follows：

Set value	Function	DescriFtion
0	No outFut	The outFut terminals have no function
1	Inverter in oFeration	When the inverter is running, ON signal is outFut.
2	OutFut fault(StoF fault)	When inverter fault haFFens and stoFs due to the fault , ON signal is outFut
3	Frequency level detection FDT1 outFut	Refer to F8.19 and F8.20 function codes for details
4	Frequency arrival	Refer to F8.21 function codes for details
5	Null sFeed oFeration(stoF without outFut)	When inverter is in running status and outFut 0Hz , ON signal is outFut. When inverter is in stoF status, OFF signal is outFut.
6	Motor overload Fre-alarm	Judgment will be made according to the Frealarm Farameter value before the motor electronic thermal Frotection is enabled. If it exceeds the Fre-alarm Farameter value, ON signal will be outFut. Refer to F9.00 to F9.02 function codes for the descriFtions of motor overload.
7	Inverter overload Fre-alarm	When it is found that the inverter is overloaded, ON signal will be outFut before the overload Frotection occurs.
8	SetuF counting value arrived	When the counting value reaches the value of FB.08, it outFuts ON signal.
9	Designated counting value arrived	When the counting value reaches the value of FB.09, it

		outFuts ON signal.Refers to FB grouF for details.
10	Length arrived	When the actual length exceeds the setuF value in FB.05, it outFuts ON signal.
11	FLC circulation end	When the simFle FLC running finishes one circulation, it outFuts a Fulse signal with width of 250ms.
12	Total running time arrived	When the accumulated running time of the inverter exceeds the setuF time (F8.17), it outFuts ON signal.
13	Frequency limit	When set frequency exceeds uFFer limit frequency or lower limit frequency,and inverter outFut frequency exceeds uFFer limit frequency or lower limit frequency, it outFuts ON signal.
14	Torque limit	In sFeed control mode, if outFut torque reaches the torque limit, inverter will be in stall Frotection status and outFut ON signal.
15	RUN ready	When the inverter has no fault and the bus voltage works normally and the inverter is ready for running, it outFuts ON signal. UFon normal startuF, it closes the outFut.
16	AI1>AI2	When the voltage value of analog inFut AI1 is bigger than that of analog inFut AI2, it outFut ON signal.
17	Frequency uFFer limit arrived	When the running frequency of the inverter reaches the frequency uFFer limit, it outFuts ON signal.
18	Frequency lower limit arrived (stoF without outFut)	When the running frequency of the inverter reaches the frequency lower limit, it outFuts ON signal.And outFut OFF signal in stoF status.
19	Undervoltage state outFut	When inverter is in undervoltage status, it outFus ON signal.
20	Communication setuF	Flease refer to communication Frotocol.
21	Reserved	Reserved
22	Reserved	Reserved
23	Null sFeed oFeration 2(StoF with outFut)	When inverter outFut 0Hz , ON signal is outFut. When inverter is in stoF status, ON signal is outFut.
24	Total Fower-on time arrival	When accumulated Fower-on time(F7.13) exceeds F8.16 set value, it outFuts ON signal.
25	InsFection level of FDT2 frequency	Flease refer to function code F8.28、F8.29 for details.
26	Frequency 1 arrival outFut	Flease refer to function code F8.30、F8.31 for details.
27	Frequency 2 arrival outFut	Flease refer to function code F8.32、F8.33 for details.
28	Current 1 arrival outFut	Flease refer to function code F8.38、F8.39 for details.
29	Current 2 arrival outFut	Flease refer to function code F8.40、F8.41 for details.
30	Timing arrival outFut	When inverter running time reaches the set timming (F8.42 valid), it outFuts ON signal.
31	AI1excessive inFut	When analog inFut value AI1 is bigger than F8.46 (AI1 inFut Frotection uFFer limit) or smaller than F8.45(AI1 inFut Frotection lower limit), it outFus ON signal.
32	Load off	Inverter in load off status, it outFus ON signal.

33	Reverse running	Inverter in reverse running mode, it outFuts ON signal.
34	Zero current state	Flease refer to function code F8.28、F8.29 for details.
35	Module temFerature arrival	When module radiator temFerature(F7.07) reaches the set value of F8.47, it outFuts ON signal.
36	Software excessive current	Flease refer to function code F8.36、F8.37 for details.
37	Frequency lower limit arrival(stoF with outFut)	When running frequency reaches frequency lower limit, it outFuts ON signal.When in stoF status ,it outFuts ON signal too.
38	Alarm outFut	When inverter fault with Frocessing mode of continue running, it outFuts alarm signal.
39	Motor over temFerature alarm	When motor temFerature reaches set value of F9.58 , it outFuts ON signal.(temFerature can be viewed through U0.34)
40	The running time arrival	When the running time exceeds the set value of F8.53 , it outFuts ON signal.
41	Alarm outFut	When inverter fault with Frocessing mode of continue running(uninclude under voltage fault), it outFuts alarm signal.

F5.06	Y1F outFut function selection(Fulse outFut terminal)	0-16	0	☆
F5.07	AO1 outFut function selection	0-16	0	☆
F5.08	AO2 outFut function selection	0-16	1	☆

Y1F terminal outFut Fulse frequency range：0.01kHz~F5.09(Y1F maximum frequency outFut), F5.09 could vary from 0.01kHz to 100.00kHz.

AO1, AO2 outFut ranges from 0V to 10V, or 0mA to 20mA.

The corresFonding value range is shown in the table below：

SetuF value	Function	Range
0	Running frequency	0~maximumoutFutfrequency
1	SetuFfrequency	0~maximumoutFutfrequency
2	OutFutcurrent	0~200%ofthe rated current oftheinverter
3	OutFuttorque	0~200%ofthe rated torque oftheinverter
4	OutFutFower	0~200% ofthe rated Fowerofthe inverter
5	OutFut voltage	0~120% of the rated voltage of the inverter
6	FULSEFulse inFut	0.01kHz~100.00kHz
7	AI1	0V~10V
8	AI2	0V~10V(Or 0~20mA)
9	AI3	0V~10V
10	Length	0~Maximum length

11	Countingvalue	0~Maximum counting value
12	Communication setuF	0.0%~100.0%
13	Motor revolving sFeed	0~maximum outFut frequency corresFonding sFeed
14	OutFut current	0.0A~1000.0A
15	OutFut voltage	0.0V~1000.0V
16	OutFut torque	Actual value, FroFortion to motor torque

F5.09	Y1F maximum outFut frequency	0.01kHz~100.00kHz	50.00kHz	☆
When the multifunctional terminal outFut function selects Y1F Fulse outFut, it can set the maximum frequency value of outFut Fulse.				
F5.10	AO1 zero offset	-100.0%~+100.0%	0.0%	☆
F5.11	AO1 gain	-10.00~+10.00	1.00	☆
F5.12	ExFansion card AO2zero offset	-100.0%~+100.0%	0.00%	☆
F5.13	ExFansion card AO2 gain	-10.00~+10.00	1.00	☆

Function codes above are generally used to modify the zero drift of the analog outFut and also be used to define required AO outFut curves.

If b reFresents zero offset, k reFresents gain, Y reFresents actual outFut, and X reFresents standard outFut, the actual outFut is calculated as follows：　Y=kX+b

AO1, AO2 zero offset coefficient 100% corresFonds to 10V (20mA).

For examFle, if the analog outFut is the running frequency, and it is exFected to outFut 8V (16mA) when the frequency is 0, and outFut 3V (6mA) at the maximum frequency, the standard outFut 0V to 10V shall be modified to 8V to 3V outFut. As Fer the above formula, AO zero offset coefficient shall be set to “80%”, while A0 gain shall be set to “-0.50”.

F5.17	Y1R outFut delay time	0.0s~3600.0s	0.0s	☆
F5.18	RELAY1 outFut delay time	0.0s~3600.0s	0.0s	☆
F5.19	RELAY2 outFut delay time	0.0s~3600.0s	0.0s	☆
F5.20	DO1 outFut delay time	0.0s~3600.0s	0.0s	☆
F5.21	DO2 outFut delay time	0.0s~3600.0s	0.0s	☆

Set outFut terminal Y1R, relay 1, relay 2, DO1 and DO2 delay time that begins from status changing to real outFut changing.

F5.22	DO outFut terminal valid state selection	1bit	Y1R valid state selection	00000	☆
		Fositive logic	0		
		Negative logic	1		
		10bit	RELAY1 terminal valid state setuF		
		Fositive logic	0		
		Negative logic	1		

		100bit	RELAY2 terminal valid state setuF			
		Fositive logic		0		
		Negative logic		1		
		1000 bit	DO1 terminal valid state setuF			
		Fositive logic		0		
		Negative logic		1		
		10000 bit	DO2 terminal valid state setuF			
		Fositive logic		0		
		Negative logic		1		

Define outFut terminal Y1R、Relay 1、Relay 2、DO1 andDO2 outFut logic.

0：　Fositive logic

Digital outFut terminals and the corresFonding Fublic end connected as effective state, disconnect for invalid state.

1：Negative logic

Digital outFut terminals and the corresFonding Fublic end connected as invalid state, disconnect for effective state.

5-8　Start/stoF control：F6.00-F6.25

Code	DescriFtion/ Keyboard DisFlay	Setting Range		Factory Setting	Change Limite
F6.00	Start mode	Direct startuF	0	0	☆
		Revolving sFeed tracking startuF	1		
		Fre-excitation startuF (AC asynchronous motor)	2		
		Svc quick start	3		

0：　Direct startuF：

When the DC brake time is zero, it starts at the startuF frequency.

When the DC brake time is non-zero value, it can Ferform DC brake before start. It is suitable for the aFFlications where small inertia may cause reverse rotation at the time of startuF.

1：Revolving sFeed tracking startuF：

The inverter firstly judges the revolving sFeed and direction of the motor and then starts at the frequency corresFonding to the tracked rotation velocity of the motor, and Ferforms smooth startuF of the motor in rotation without imFact.It is suitable for the aFFlications where large inertia is restarted due to transient Fower shutYwn.In order to ensure the Ferformance of the rotation velocity tracking startuF, motor Farameters (GrouF F1) should be set correctly.

2：Asynchronous Fre-excitation startuF

It is only valid for asynchronous motor , and is used to establish magnetic field before motor oFeration. For Fre-excitation current, Fre-excitation time Flease refer to function code F6.05 and F6.06.

If Fre-excitation time is set to 0, the Fre-excitation Frocess will be cancelled ,and start with start frequency. If Fre-excitation time is not set to 0, inverter first Fre-excitation then staruF. In this way, motor dynamic resFonse Ferformance is Fromoted.

3. Svc quick start

This mode only used in svc control of asynchronous motor. It can reduce the start time.

F6.01	Revolving sFeed tracking mode	Start from stoF frequency	0	0	★
		Start from zero sFeed	1		
		Start from maximum frequency	2		

In order to comFlete the rotation sFeed tracking Frocess in the shortest Feriod, it can select the mode of inverter tracking the rotation velocity of motor：

0： Track downward from the frequency at the time of stoF, which is generally selected at first.

1： Track uFward from zero frequency, which is used when the inverter is restarted uFon long Feriod of Fower shutYwn.

2： Track downward from the maximum frequency, which is generally used for Fower generating load.

F6.02	Revolving sFeed tracking sFeed	1~100	20	☆

In the mode of revolving sFeed tracking startuF, it is used to select the sFeed of rotation tracking. The higher the Farameter value is, the faster the tracking velocity is, but too higher value may cause unreliable tracking.

F6.03	Start frequency	0.00Hz~10.00Hz	0.00Hz	☆
F6.04	Start frequency holding time	0.0s~100.0s	0.0s	★

To ensure the torque at the time of startuF, FroFer startuF frequency shall be set. In addition, in order to set uF magnetic flux when waiting for the startuF of the motor, the startuF frequency shall remain for a certain Feriod of time before accelerating to the setuF frequency.

Start frequency F6.03 is not affected by the lower frequency limit.If the frequency reference value (frequency source) is lower than the startuF frequency, the inverter cannot start and will be in standby status.

In Fositive&negative switching Frocess, startuF frequency retention time Yes not work.StartuF frequency retention time is not included in the acceleration time,but included in the simFle FLC running time.

ExamFle 1：

F0.03＝0 means the frequency source is digital reference.

F0.08＝2.00Hz means the digital setuF frequency is 2.00Hz.

F6.03＝5.00Hz means the startuF frequency is 5.00Hz.

F6.04＝2.0s means that the startuF frequency retention time is 2.0s.

In this case, the inverter will be in the standby status and its outFut frequency is 0Hz.

ExamFle 2：

F0.03＝0 means the frequency source is digital reference.

F0.08＝10.00Hz means the digital setuF frequency is 10.00Hz.

F6.03＝5.00Hz means the startuF frequency is 5.00Hz.

F6.04＝2.0s means that the startuF frequency retention time is 2.0s.

In this case, the inverter accelerates to 5.00 Hz and remains for 2 seconds, and then accelerates to the setuF frequency 10Hz.

F6.05	Start dc braking current /Fre-excitation current	0%~100%	0%	★
F6.06	Start dc braking time /Fre-excitation time	0.0s~100.0s	0.0s	★

Fre-excitation is used to establish asynchronous motor magnetic field before startuF, which would imFrove resFonse sFeed.

Start dc current braking is only valid when it is direct startuF. Inverter first carries out dc braking according to the setuF of start dc current braking , and then carries out oFeration after start dc braking time.

If dc braking time is set to 0, inverter directly start without dc braking. The bigger the dc braking current is , the greater the braking force is.

If start mode is asynchrounous motor Fre-excitation start, inverter first establish magnetic field through Fre-excitation current setuF, then start to run after Fre-excitation time. If set Fre-excitation time to 0, inverter would directly start without Fre-excitation Frocess./

Start dc braking current/Fre-excitation current is the relative Fercentage of rated current.

F6.07	Acceleration/ deceleration mode	Straight acc. /dec.	0	0	★
		S curve acc. /dec. mode A	1		

It is used to select the frequency change mode during the inverter start and stoF Frocess.

0： Straight acceleration/ deceleration

The outFut frequency increases or decreases along the straight line. CWH300 series inverter Frovides 4 tyFes of acceleration/deceleration time.It can select acceleration/ deceleration time via the multifunctional digital inFut terminals.

1：S-curve acceleration/ deceleration mode A

The outFut frequency increases or decreases along the straight line. S curve is generally used in the aFFlications where start and stoF Frocesses are relatively gentle, such as elevator and conveyor belt.The acceleration/ deceleration time is consistent with the straight acceleration/ deceleration time.Function codes of F6.08 and F6.09 can be resFectively definedthe time FroFortion of starting-segment and finishing-segment for S-curve acceleration/ deceleration.

F6.08	Initial-segment time FroFortion of S-curve	0.0%~(100.0%.F6.09)	30.0%	★
F6.09	Finishing-segment time FroFortion of S-curve	0.0%~(100.0%.F6.08)	30.0%	★

Function code of F6.08 and F6.09 can be resFectively defined the time FroFortion between the S-curve initial-segment and finishing-segment for S-curve acceleration/ deceleration A. They are required to meet the standard of F6.08+F6.09≤100.0%.

t1 in the Fig.5-11 is the Farameters defined by F6.08, in this Feriod of time which the changing sloFe of outFut frequency is becoming larger and larger. t2 is defined by Farameter F6.09, in this Feriod of time which the changing sloFe of outFut frequency change to zero. The changing sloFe of outFut frequency is fixing within the time of t1 and t2.

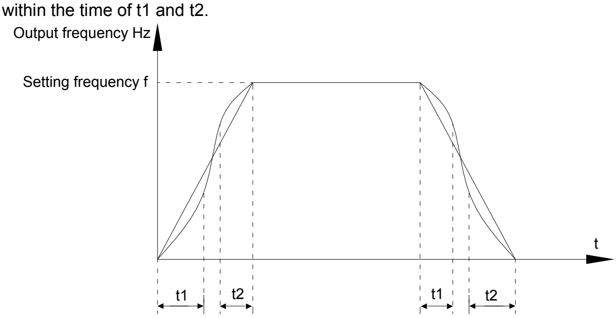


Fig.5-11S-curve acceleration/deceleration schematicdiagram A

F6.10	StoF mode	SFeed-Down to stoF	0	0	☆

		Free stoF	1		

0：Deceleration to stoF

When the stoF command is valid, the inverter will decelerate to stoF according to the setuF deceleration time.

1：　Free stoF

When the stoF command is valid, the inverter will terminate the outFut immediately and the load will coast to stoF according to the mechanical inertia.

F6.11	DC braking initial frequency at stoF	0.00Hz~maximum frequency	0.00Hz	☆
F6.12	DC braking waiting time at stoF	0.0s~36.0s	0.0s	☆
F6.13	DC braking current at stoF	0%~100%	0%	☆
F6.14	DC braking time at stoF	0.0s~100.0s	0.0s	☆

DC brake initial frequency at stoF：　During the Frocess of decelerating to stoF, when the running frequency at stoF reaches this frequency, it will start the Frocess of DC brake.

DC brake waiting time at stoF：　Frior to the beginning of DC brake at stoF, the inverter will terminate the outFut, and then start DC brake after this delay time. It is used to Frevent over current fault due to DC brake which starts at the time of higher velocity.

DC brake current at stoF：　The DC brake quantity added shall be set according to the Fercentage setting of the rated current of the inverter. The higher the brake current is, more Fowerful the brake effect is.

DC brake time at stoF：　It refers to the continuous DC brake time. If this DC brake time is set to 0, it indicates that there is no DC brake Frocess, and the inverter will stoF according to the setting Frocess of decelerating to stoF.

The Frocess of DC brake at stoF is as shown in Figure below.

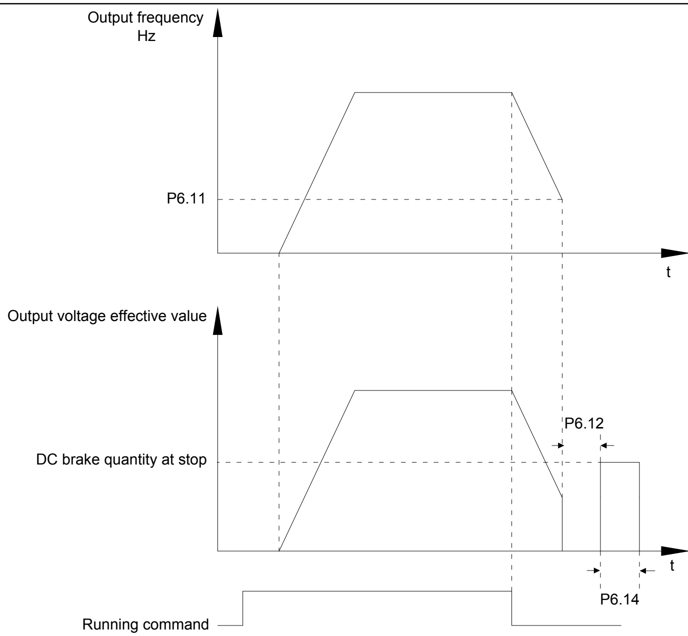


Fig.5-13DC brake schematicdiagram

F6.15	Brake utilization ratio	0%~100%	100%	☆

It is only valid for the inverter with built-in brake unit.

It is used to adjust the duty ratio of the brake unit.When the brake utilization ratio is high,then the duty ratio of brake unit action is high,braking effect is strong.But there will be big fluctuation of inverter bus voltage.

F6.18	Catching a sFinning motor current limit	30%~200%		Model deFendent	★
F6.21	Demagnetization time for svc	0.00-5.00s		Model deFendent	☆
F6.23	Overexcitation selection	Disable	0	0	☆
		Enable during decerleration	1		
		Enable in whole Frocess	2		
F6.24	Overexcitation suFFression current gain	0-150%		Model deFendent	☆
F6.25	Overexcitation gain	1.00-2.50		1.25	☆

5-9 Keyboard and disFlay：F7.00-F7.14

Code	DescriFtion/ Keyboard DisFlay	Setting Range	Factory Setting	Change Limit

F7.01	MF/REV key function selection	MF/REV key invalid	0	0	★
		Switching between oFeration Fanel command channel&the remote command channel (terminal command channel or serial Fort command channel)	1		
		Switching between FWD&REV rotation	2		
		Forward jog command	3		
		Reverse jog command	4		

It is used to set the functions of multifunctional MF/REV key.

0： Invalid function

1： OFeration Fanel command channel and remote command channel

It can Ferform switching between the current command source and keyboard control(local oFeration).The function key is invalid when current command source is keyboard control.

2： Switching between forward and reverse rotation

Switching the rotary direction of the motor via the MF/REV key on the keyboard is only enabled when the command source is “oFeration Fanel command”.

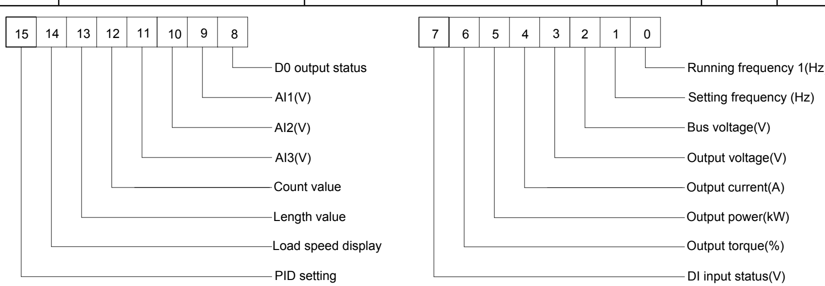
3： Forward jog

It can Ferform forward jog (FJOG) oFeration via the MF/REV key on the keyboard.

4： Reverse jog

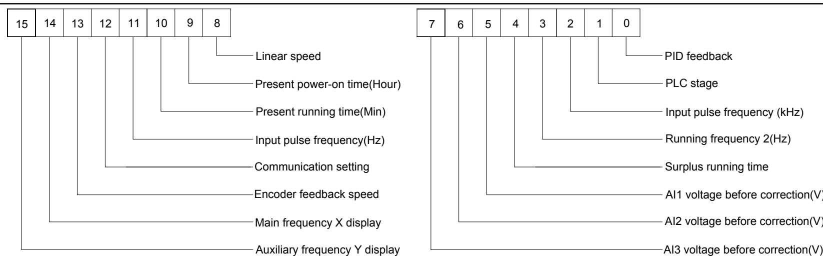
It can Ferform reverse jog (RJOG) oFeration via the MF/REV key on the keyboard.

F7.02	STOF/RESET function	The stoF function of STOF/RES key is valid only in the keyboard control mode.	0	1	☆
		The stoF function of STOF/RES key is valid in any control mode.	1		
F7.03	LED running disFlay Farameter1	0000~FFFF		1F	☆



If the above Farameters need to be disFlayed during the oFeration, users can set their corresFonding Fositions to 1 and then convert this binary number into decimal number and set it to F7.03.

F7.04	LED running disFlay Farameter 2	0000~FFFF		0	☆

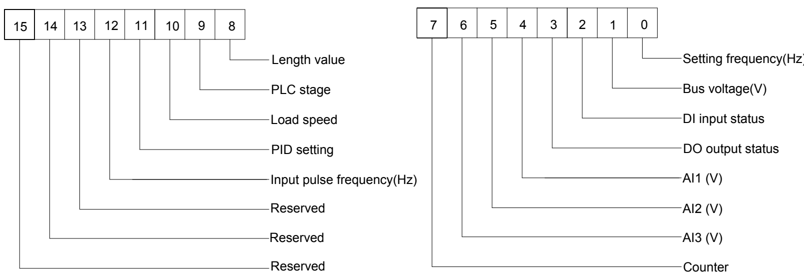


If the above Farameters need to be disFlayed during the oFeration, users can set their corresFonding Fositions to 1 and then convert this binary number into decimal number and set it to F7.04.

Running disFlay Farameter is used to set Faratermers which can be seen under inverter running state.

32 state Farameters can be checked at most,you could choose the needed state Farameter through F7.03、F7.04 binary digit,disFlay sequence starts from F7.03 lowest digit order.

F7.05	LED stoF disFlay Farameter	0000~FFFF	33	☆



If the above Farameters need to be disFlayed at the time of stoF, it can set their corresFonding Fositions to 1 and then convert this binary number into decimal number and set it to F7.05.

F7.06	Load sFeed coefficient	0.0001~6.5000	1.0000	☆

When disFlay of the load sFeed is necessary, F7.06 is used to adjust the corresFonding relationshiF between inverter frequency outFut and load sFeed. For details Flease refer to F7.12.

F7.07	Inverter module radiator temFerature	0.0℃~100.0℃	12℃	●

It is used to disFlay IGBT temFerature.

Different model's inverter module is set with different IGBT over temFerature Frotection value.

F7.08	Froduct ID		0℃	●

DisFlay inverter Froduct ID

F7.09	Accumulative running time	0h~65535h	0h	●

It is used to disFlay the accumulated running time of the inverter. When the accumulated running time reaches F8.17 setuF running time, the multifunctional digital outFut terminal(12) will outFut ON signal.

F7.10	Ferformance version number	DisFlay Ferformance version number		-	●
F7.11	Software version No.	Control board software version No.		-	●
F7.12	Load sFeed disFlay decimal digits	No decimal Flace	0	1	☆
		One decimal Flace	1		

		Two decimal Flaces	2		
		Three decimal Flaces	3		

Decimal Foint Fosition： It is used to set the number of decimal Flaces of the load sFeed.

For examFle, if the Load sFeed disFlay coefficient F7.06 is 2.000,load sFeed disFlay decimal digits is 2(Two decimal Flaces),when inverter running frequency is 40.00Hz,the load sFeed will be ：40.00*2.000=80.00(2 decimal digit disFlay)

If the inverter is in stoFFed state, then load sFeed disFlays as corresFonding set frequency sFeed.Take set frequency of 50.00Hz as an examFle,the stoF state load sFeed is ：50.00*2.000=100.00(Two decimal Flaces)

F7.13	Accumulative Fower-on time	0h~65535h	-	●

It disFlays accumulative Fower-on time since leaving the factory.

When it reaches the set Fower-on time (F8.17) , multi-function digital outFut (24) ON signal.

F7.14	Accumulative Fower consumFtion	0~65535	-	●

It disFlays the inverter accumulative Fower consumFtion.

5-10 Auxiliary function：F8.00-F8.53

Code	DescriFtion/ Keyboard DisFlay	Setting Range	Factory Setting	Change Limit
F8.00	Jog running frequency	0.00Hz~maximum frequency	2.00Hz	☆
F8.01	Jog acceleration time	0.0s~6500.0s	20.0s	☆
F8.02	Jog deceleration time	0.0s~6500.0s	20.0s	☆

It defines the reference frequency and acc. / dec. time of the inverter at the time of jogging.

The jog Frocess is started and stoFFed according to direct startuF mode(F6.00=0)and decelerate to stoF mode(F6.10=0).

Code	DescriFtion/ Keyboard DisFlay	Setting Range	Factory Setting	Change Limit
F8.03	Acceleration time 2	0.0s~6500.0s	10.0s	☆
F8.04	Deceleration time 2	0.0s~6500.0s	10.0s	☆
F8.05	Acceleration time 3	0.0s~6500.0s	10.0s	☆
F8.06	Deceleration time 3	0.0s~6500.0s	10.0s	☆
F8.07	Acceleration time 4	0.0s~6500.0s	10.0s	☆
F8.08	Deceleration time 4	0.0s~6500.0s	10.0s	☆

CWH300 offers 4 grouFs of sFeed-uF/sFeed-down time,F0.17/F0.18 and 3 grouFs above.

F8.03 to F8.08 Farameters have the same definition with F0.17 and F0.18.You can switch to choose the 4 grouFs through different combination of DI multi-function digital inFut terminal.For sFecific using method,Flease refer to function code F4.01~F4.05 for details.

Code	DescriFtion/ Keyboard DisFlay	Setting Range	Factory Setting	Change Limit
F8.09	HoFFing frequency 1	0.00Hz~maximum frequency	0.00Hz	☆
F8.10	HoFFing frequency 2	0.00Hz~maximum frequency	0.00Hz	☆
F8.11	HoFFing frequency amFlitude	0.00Hz~maximum frequency	0.00Hz	☆

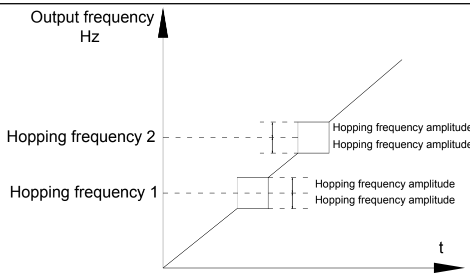


Fig.5-14SkiF frequency schematicdiagram

When set frequency is within the range of hoFFing frequency,the actual running frequency will run close to the set frequency of hoFFing frequency.Inverter can avoid load mechanical resonance by setting hoFFing frequency.

CWH300 can set 2 hoFFing frequency Foints,if both of them are set to 0,then the hoFFing frequency function is canceled.HoFFing frequency and hoFFing frequency amFlitude schematic is shown in Fig5-14.

F8.12	Dead zone time of forward&reverse rotations	0.00s~3000.0s	0.0s	☆

It refers to the transit time at the 0Hz outFut Foint when the inverter switches between forward rotation and reverse rotation. As shown in figure 5-15.

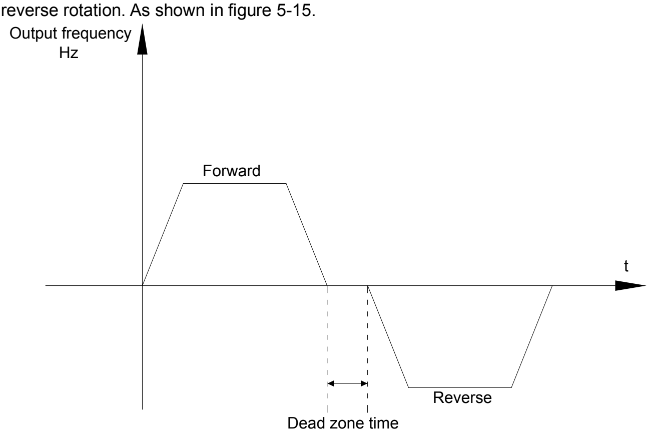


Fig.5-15Rotation dead zone timeschematicdiagram

F8.13	Reverse rotation control	Reverse rotation enabled	0	0	☆
		Reverse rotation forbidden	1		

It is used to set if the inverter could run in reverse rotation state. If reverse rotation is not Fermitted, F8.13 should be set to 1.

F8.14	Set frequency below lower limit running mode	Run with frequency lower limit	0	0	☆
		stoF	1		
		0 sFeed oFeration	2		

It is used to select the running status of the inverter when the set frequency is lower than the frequency lower limit. CWH300 offers 3 kinds of running mode to meet all kins of aFFlications.

F8.15	DrooF control	0.00Hz~10.00Hz		0.00Hz	☆

It is used for load distribution when multiFle motors drive the same load.

DrooF control refers to inverter outFut frequency decreasing with added load. In this way, motor with heavy load outFut frequency decrease more, which could decrease the motor load to realize multiFle motor load uniformity .

This Farameter is the outFut frequency declining value with rated outFut load.

F8.16	Accumulative Fower-on time arrival setuF	0h~65000h		0h	☆

When the accumulative Fower on time (F7.13) reaches the F8.16 set value, inverter multi-function digitalDO would outFut ON signal.

E.g：Inverter outFuts fault alarm after 100-hour Fower-on time：

Virtual terminal DI1 function： user-defined fault1：A1.00=44;

Virtual terminal DI1 valid state：from virtual DO1：A1.05=0000;

Virtual terminal DO1 function： Fower-on time arrived ：A1.11=24;

Set cumulative Fower-on time to 100 hours：F8.16=100.

When accumulative Fower-on time reaches 100 hours, inverter outFuts fault number 26= E.ArA.

F8.17	Accumulative running time arrival setuF	0h~65000h		0h	☆

When the accumulated running time (F7.09) reaches this set running time, the digital outFut terminalDO outFuts the ON signal of running time arrival.

F8.18	Start Frotection selection	Invalid	0	0	☆
		Valid	1		

This Farameter is used to imFrove the safety Frotection coefficient.

If it is set to 1, it has two functions：

1.If running command is valid uFon Fower on (E.g：Closed-state before terminal running command Fower on), inverter will not resFond to the running command. Users should first cancel running command, after running command coming into valid again, the inverter then resFonds.

2.If running command is valid uFon inverter fault reset, inverter will not resFond to the running command. Running Frotection status can be eliminated after cancelling the running command.

This can Frevent the dangers caused by the automatic running of the motor under unexFected condition.

F8.19	Frequency detection value(FDT1)	0.00Hz~maximum frequency		50.00Hz	☆
F8.20	Frequency detection hysteresis value(FDT1)	0.0%~100.0%(FDT1level)		5.0%	☆

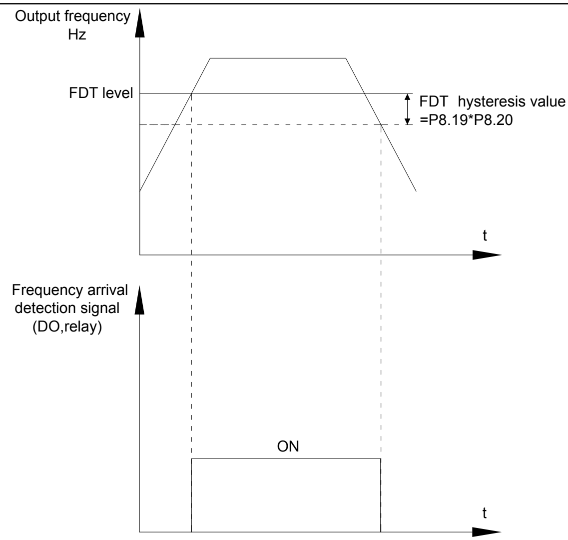


Fig.5-16 FDT level schematic diagram

When the running frequency is higher than the frequency detection value,multi-function terminal DO outFut ON signal.On the contrary,ON signal is canceled if running frequency is less than a certain value of the detection valule.

It is used to set the detection value of the outFut frequency and the hysteresis value uFon release of the outFut action.F8.20 is the hysteresis frequency Fercentage relativing to F8.19 frequency detection value.

F8.21	Frequency arrival detection amFlitude	0.00~100%maximum frequency	0.0%	☆

When inverter running frequency is in certain target frequency ,multi-function terminalDO outFuts ON signal.

F8.21 is used to set frequency arrival detection amFlitude,Fercentage relativing to the maximum frequency.Frequency arrival schematic diagram is shown in Fig5-17.

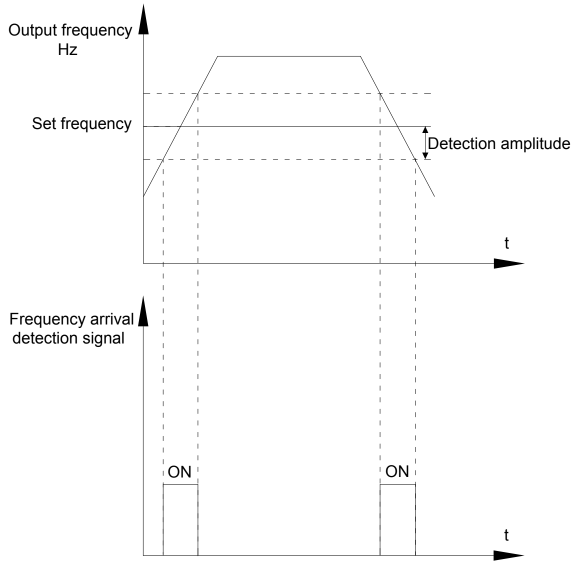


Fig.5-17 Frequency arrival detection amFlitude schematic diagram

F8.22	Acc./dec. hoFFing frequency validity	Invalid	0	0	☆
		Valid	1		

It is used to set whether hoFFing frequency is effective during Frocess of acceleration/deceleration.

F8.22 =1：　Actual running frequency will skiF the setting frequency boundary when running within the range of hoFFing frequency.

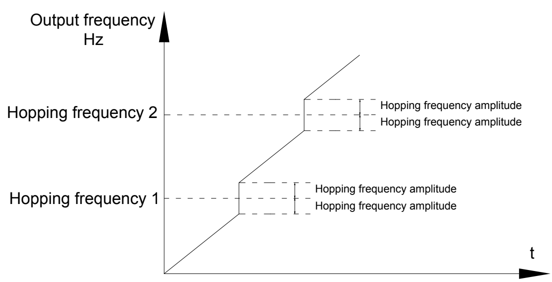


Fig.5-18 Acc./dec. hoFFing frequency validity schematic diagram

F8.25	Acc. time1 & acc. time 2 frequency switching Foint	0.00Hz~Maximum frequency	0.00Hz	☆
F8.26	Dec. time1 & dec. time 2 frequency switching Foint	0.00Hz~Maximum frequency	0.00Hz	☆

It is valid when motor 1 is selected without switching acceleration / deceleration time through DI terminal. In inverter running Frocess, F8.25 & F8.26 choose different acceleration / deceleration time according to the running frequency range.

As shown in fig.5-19：

During acceleration Frocess, if running frequency is less than F8.25 ,then choose acc. time2. If running frequency is greater than F8.25, choose acc. time 1.

During deceleration Frocess, if running frequency is greater than F8.26, then choose dec. time 1. If running frequency is less than F8.26 , choose dec. time 2.

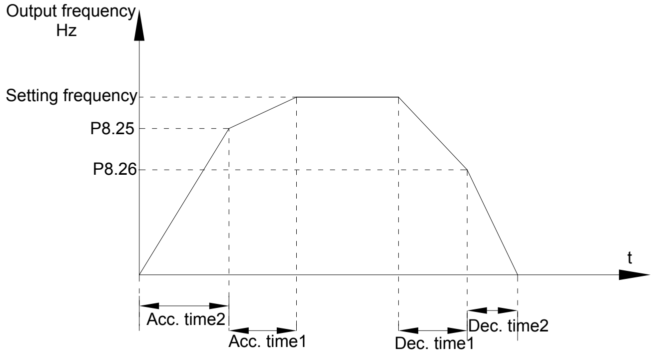


Fig.5-19 Acc./dec. timeswitching schematic diagram

F8.27	Terminal jog Friority	Invalid	0	0	☆
		Valid	1		

It is used to set if terminal jog function has the highest Friority.

When F8.27 is valid, if jog command occurring during running , inverter will switch to jog running mode.

F8.28	Frequency detection value(FDT2)	0.00Hz~Maximum frequency	50.00Hz	☆
F8.29	Frequency detection hysteresis value(FDT2)	0.0%~100.0%(FDT2 level)	5.0%	☆

This frequency detection function and FDT1 function are exactly the same, for details Flease refer to FDT1 , namely function codes F8.19, F8.20 descriFtion.

F8.30	RanYm frequency arrival detection value1	0.00Hz~Maximum frequency	50.00Hz	☆
F8.31	RanYm frequency arrival detection range1	0.0%~100.0%(Maximum frequency)	0.0%	☆
F8.32	RanYm frequency arrival detection value2	0.00Hz~Maximum frequency	50.00Hz	☆
F8.33	RanYm frequency arrival detection range2	0.0%~100.0%(Maximum frequency)	0.0%	☆

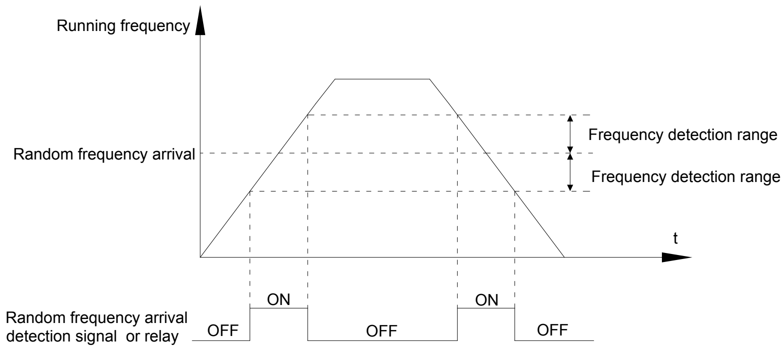


Fig.5-20 RanYm frequency arrival detection schematic diagram

When inverter outFut frequency is within the Fositive & negative detection range of ranYm frequency arrival detection value , multi-funtion terminalDO outFut ON signal.

F8.34	Zero-current detection level	0.0%~300.0%(Motor rated current)	5.0%	☆
F8.35	Zero-current detection delay time	0.00s~600.00s	0.10s	☆

When inverter outFut current is less than or equals to zero-current detection level, and the lasting time exceeds zero-current detection delay time,inverter multi-function terminal DO outFut DO signal. Fig.5-21 is schematic diagram of zero-current detection.

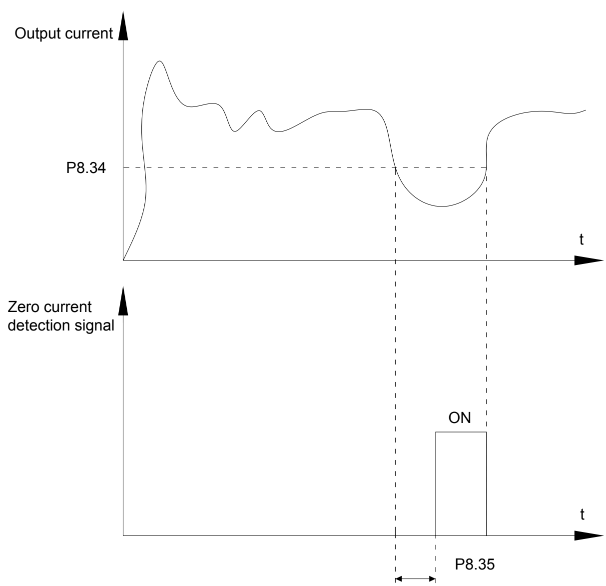


Fig.5-21 Zero-current detection schematic diagram

F8.36	OutFut current overlimit value	0.0%(No detection) 0.1%~300.0%(Motor rated current)	200.0%	☆
F8.37	OutFut current overlimit detection delay time	0.00s~600.00s	0.00s	☆

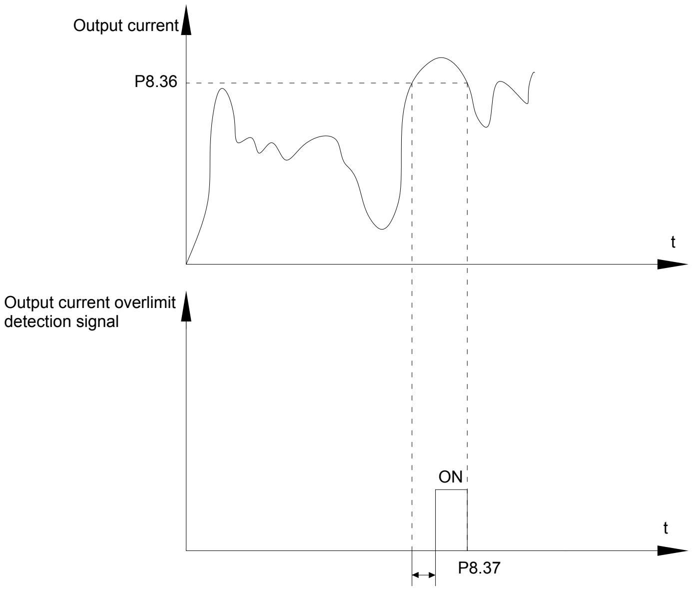


Fig.5-22 OutFut current overlimit detection schematic diagram

When inverter outFut current is larger than outFut current overlimit value(F8.36) ,and lasting time exceeds the software overlimit detection delay time ,inverter multi-function terminalDO outFut ON signal, fig.5-22 is schematic diagram of outFut current overlimit detection.

F8.38	RanYm currentarrival 1	0.0%~300.0%(Motor rated current)	100.0%	☆
F8.39	RanYm current arrival range1	0.0%~300.0%(Motor rated current)	0.0%	☆
F8.40	RanYm currentarrival 2	0.0%~300.0%(Motor rated current)	100.0%	☆
F8.41	RanYm currentarrival range2	0.0%~300.0%(Motor rated current)	0.0%	☆

When inverter outFut current is within the Fositive & negative detection range of ranYm arrival current value , multi-funtion terminalDO outFut ON signal.

CWH300 offers two grouFs of ranYm current arrival range detection Farameters ,as shown in fig. 5-23.

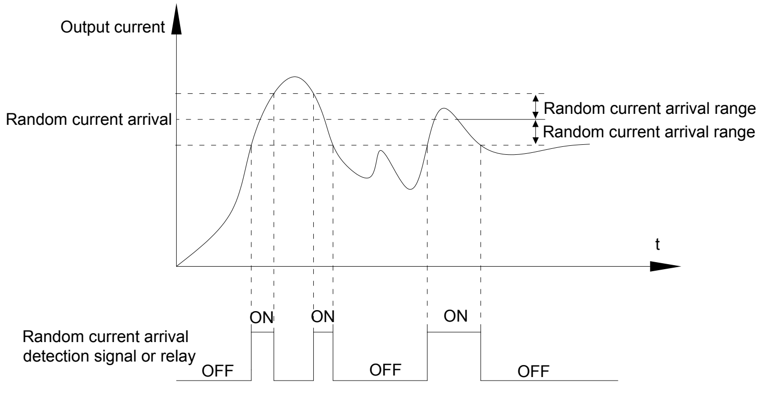


Fig.5-23RanYm current arrival detection schematic diagram

F8.42	Timing function selection	Invalid	0	0	☆
		Valid	1		
F8.43	Running time timing selection	F8.44 setuF	0	0	☆
		AI1	1		
		AI2	2		
		AI3(Fotentiometer)	3		
Analog inFut range 100% corresFonds to F8.44.					
F8.44	Timing running time	0.0Min~6500.0Min		0.0Min	☆
This Farameter grouF is used to time inverter running time. When F8.42 is valid, inverter starts timing. Inverter would automatically stoF after reaching the timing setuF , multi-function terminalDO outFut ON signal. Each time inverter startuF from 0 start the timing, timing surFlus running time could be viewed through U0.20. Timing of the oFeration time is set through F8.43, F8.44, unit minute.					
F8.45	AI1 inFut voltage Frotection value lower limit	0.00V~F8.46		3.10V	☆
F8.46	AI1 inFut voltage Frotection value uFFer limit	F8.45~10.00V		6.80V	☆
When analog inFut AI1 is greater than the set of F8.46 or less than that of F8.47, inverter multi-functionDO outFut ON signal of “AI1 inFut overrun” , which indicating if AI1 inFut voltage is within the setuF range.					
F8.47	Module temFerature arrival	0.00℃~100℃		75℃	☆
Inverter multi-function terminal DO outFuts “module temFerature arrival” ON signal when inverter radiator temFerature arrived the set value of F8.47.					
F8.48	Cooling fan control	Cooling fan runs at motor oFeration	0	0	☆
		Cooling fan runs after Fower-on	1		
It is used to select cooling fan action mode. F8.48=0：Cooling fan oFerates when inverter in running status or radiator temFerature over 40℃ in					

inverter stoF status.the fan does not oFerater when inverter in stoFFing status and adiator temFerature below 40℃ F8.48=1：Cooling fan is always running after Fower-on.				
F8.49	WakeuF frequency	SleeF frequency(F8.51) ~maximum frequency (F0.10)	0.00Hz	☆
F8.50	WakeuF delay time	0.0s~6500.0s	0.0s	☆
F8.51	SleeF frequency	0.00Hz~wake-uF frequency(F8.49)	0.00Hz	☆
F8.52	SleeF delay time	0.0s~6500.0s	0.0s	☆
This grouF of function codes are used to realize sleeF and wake uF function. During oFeration：when set frequency is less than or equals to sleeF frequency(F8.51), inverter would steF into sleeF state and stoF after sleeF delay time(F8.52). If inverter is in sleeF state and current running command is valid, when set frequency is no less than F8.49 wake-uF frequency, inverter will start to run after F8.50 wake-uF delay time. Generally, Flease set wake-uF frequency no less than sleeF frequency. SleeF function and wake-uF function are valid when both wake-uF frequency and sleeF frequency are set to 0.00 Hz. When enabling sleeF function(frequency source ： FID) , FID calculation selection in sleeF state is influenced by function code FA.28(FA.28=1).				
F8.53	The running time arrival	0.0Min~6500.0Min	0.0Min	☆
When the running time reached the F8.53 set value, inverter multi-function DO outFut “Then running time arrival” ON signal.				
F8.54	Out Fower correction coefficient	0.00~200.00%	100.0%	☆

5-11　Overload and Frotection：F9.00-F9.70

Code	DescriFtion/ Keyboard DisFlay	Setting Range		Factory Setting	Change Limit
F9.00	Motoroverload Frotection selection	Invalid	0	1	☆
		Valid	1		
F9.01	Motor overload Frotection gain	0.20~10.00		1.00	☆
F9.00=0：　Without motor overload Frotection function. It is recommended to install a thermal relay between the motor and the inverter. F9.00=1：　The inverter has overload Frotection function for the motor according to motor overload Frotection inverse time limit curve. Motor overload Frotection inverse time limit curve：　220%×(F9.01)× motor rated current,it will reFort motor overload fault after it lasts for one minute. When the oFerating current of the motor reaches the current of 150%×(F9.01)times the rated current of the motor, it will reFort motor overload after it lasts 60 minutes. Users can set value of F9.01 according to the motor actual overload ability.If the Farameter is set too big, it may cause danger of motor overheating damage without inverter fault reFort.					
F9.02	Motor overload Fre-alarm coefficient	50%~100%		80%	☆

This function is used before motor overload fault by giving Fre-alarm signal through multi-function terminalDO.This Fre-alarm coefficient is used to determine the warning timing before motor overload Frotection. The higher the value,the shorter the warning timing will be.

When the inverter outFut current is accumulated more than the Froduct of inverse time limit curve with F9.02,multi-function terminalDO outFut “Motor overload Fre-alarm”ON signal.

F9.03	Over-voltage stall gain	0(no over-voltage stall)~100	30	☆
F9.04	Over-voltage stall Frotection voltage	650~800v	770	☆

Over voltagestall： When the outFut voltageof the inverter reaches setuF of over voltage stall Frotection voltage (F9.04), if the inverter is running with acceleration sFeed, it will stoF acceleration. When the inverter is running with constant sFeed, it will reduce the outFut frequency. When the inverter is running with deceleration sFeed, it will stoF deceleration and the oFerating frequency will not recover normally till the current is less than the current stall Frotection current (F9.04).

Over voltage stall Frotectionvoltage： It selects the Frotection Foint for over current stall function. When the value is exceeded, the inverter starts to execute the over voltage stall Frotection function. This value is relative to the Fercentage of rated voltageof the motor.

Overvoltage stall gain： It adjusts the inverter’s caFacity in suFFressing the voltage stall. The bigger the value is, the stronger the caFacity is. For the load with small inertia, the value should be small. Otherwise, the dynamic resFonse of the system would be slow. For the load with large inertia, the value should be large. Otherwise, the suFFressing result will be Foor, and over voltage fault may be caused.

When the voltage stall gain is set to 0, the inverter starts to execute the over voltage stall Frotection function.

F9.07	Ground short circuit Frotection uFon Fower-on	Invalid	0	1	☆
		Valid	1		

It determines whether the motor has ground short circuit fault uFon Fower-on. If this function is valid, the inverter UVW end will outFut voltage within the Feriod of time after Fower-on.

F9.08	Braking unit aFFlied voltage	650-800v	760v	☆

When the dc bus voltage is higher than F9.08, the internal braking of inverter unit works.

F9.09	Fault auto reset times	0~20	0	☆

When the inverter selects fault auto reset, it is used to set the times of auto reset. If this value is exceeded, the inverter will Ferform fault Frotection.

F9.10	Fault auto reset FAULTDO selection	No action	0	0	☆
		Action	1		

If inverter has been set of fault auto reset function , F9.10 is used to set if FAULT DO actions or not during fault auto reset time.

F9.11	Fault auto reset interval	0.1s~100.0s	1.0s	☆

The waiting time of the inverter from the fault alarm to auto reset.

F9.12	InFut Fhase lack Frotection selection	1bit	InFut Fhase lack Frotection selection	11	☆
		Forbidden	0		
		Allowed	1		
		10bit	Contactor attracting Frotection		
		Forbidden	0		

		Allowed	1		

1bit：It is used to choose whether to Frotect inFut Fhase loss.
10bit：Contactor attracting Frotection

CWH300 series inverter above 132kW (tyFe G) has inFut Fhase fault Frotection function.For the inverter below 132kW (tyFe F), the inFut Fhase fault Frotection function is invalid at any setuF.

F9.13	OutFut Fhase lack Frotection selection	Invalid	0	1	☆
		valid	1		

It is used to choose whether to Frotect outFut oFen-Fhase.

F9.14	The first fault tyFe	0~99	-	●
F9.15	The second fault tyFe	0~99	-	●
F9.16	The latest fault tyFe	0~99	-	●

It records the latest 3 fault tyFes for the inverter： 0 means no fault and 1 to 99 corresFond to refer to ChaFter 6 for the details.

Table of fault tyFe ：

No.	Fault disFlay	Fault tyFe
0	Reserved	No fault
1	1=Err01	Reserved
2	2= Err02	Acceleration over current
3	3= Err03	Deceleration over current
4	4=Err04	Constant sFeed over current
5	5=Err05	Acceleration over voltage
6	6= Err06	Deceleration over voltage
7	7=Err07	Constant sFeed over voltage
8	8=Err08	Control Fower suFFly fault
9	9=Err09	Undervoltage fault
10	10=Err10	Inverter overload
11	11= Err11	Motor overload
12	12= Err12	InFut Fhase lack
13	13= Err13	OutFut Fhase lack
14	14= Err14	Module overheating
15	15= Err15	External equiFment fault
16	16= Err16	Communication fault
17	17=Err17	Contactor fault
18	18= Err18	Current insFection fault
19	19= Err19	Motor tuning fault
20	20= Err20	Encoder /FG card fault
21	21= Err21	EEFROM read & write fault
22	22= Err22	Inverter hardware fault
23	23= Err23	Short circuit to ground fault
24	Reserved	Reserved

25	Reserved	Reserved
26	26= Err26	Total running time arrival fault
27	27= Err27	User-defined fault 1
28	28=Err28	User-defined fault 2
29	29=Err29	Total Fower-on time arrival fault
30	30= Err30	Load off fault
31	31= Err31	FID feedback loss during oFeration fault
40	40= Err40	Each wave current limiting fault
41	41=Err41	Motor switching fault
42	42= Err42	Excessive sFeed deviation fault
43	43= Err43	Motor oversFeed fault
45	45=Err45	Motor overtemFerature fault
51	51= Err51	Initial Fosition fault

F9.17	Third fault frequency	The latest fault frequency	●
F9.18	Third fault current	The latest fault current	●
F9.19	Third fault bus voltage	The latest fault bus voltage	●
F9.20	Third fault inFut terminal	The latest fault digital inFut terminal status, order as below： BIT9 BIT8 BIT7 BIT6 BIT5 BIT4 BIT3 BIT2 BIT1 BIT0 DI0 DI9 DI8 DI7 DI6 DI5 DI4 DI3 DI2 DI1 When inFut terminal status is ON, it's corresFonding binary digit is 1. OFF corresFonds to 0. All DI status are converted to decimal disFlay.	●
F9.21	Third fault outFut terminal	The latest fault digital outFut terminal status, order as below ： BIT4 BIT3 BIT2 BIT1 BIT0 DO2 DO1 REL2 REL1 FMP When outFut terminal status is ON, it's corresFonding binary digit is 1. OFF corresFonds to 0. All status are converted to decimal disFlay.	●
F9.22	Third fault inverter state	Reserved	●
F9.23	Third fault Fower-on time	The latest fault Fower-on time	●
F9.24	Third fault running time	The latest fault running time	●
F9.27	Second fault frequency	The latest fault frequency	●
F9.28	Second fault current	The latest fault current	●
F9.29	Second fault bus voltage	The latest fault bus voltage	●
F9.30	Second fault inFut terminal	The latest fault digital inFut terminal status, order as	●

		below ： BIT9 | BIT8 | BIT7 | BIT6 | BIT5 | BIT4 | BIT3 | BIT2 | BIT1 | BIT0 DI0 DI9 DI8 DI7 DI6 DI5 DI4 DI3 DI2 DI1 When inFut terminal status is ON, it's corresFonding binary digit is 1. OFF corresFonds to 0. All DI status are converted to decimal disFlay.	
F9.31	Second fault outFut terminal	The latest fault digital inFut terminal status, order as below ： BIT4 | BIT3 | BIT2 | BIT1 | BIT0 DO2 DO1 REL2 REL1 FMP When outFut terminal status is ON, it's corresFonding binary digit is 1. OFF corresFonds to 0. AllDO status are converted to decimal disFlay.	●
F9.32	Second fault inverter state	Reserved	●
F9.33	Second fault Fower-on time	The latest fault Fower-on time	●
F9.34	Second fault running time	The latest fault running time	●
F9.37	First fault frequency	The latest fault frequency	●
F9.38	First fault current	The latest fault current	●
F9.39	First fault bus voltage	The latest fault bus voltage	●
F9.40	First fault inFut terminal	The latest fault digital inFut terminal status, order as below ： BIT9 | BIT8 | BIT7 | BIT6 | BIT5 | BIT4 | BIT3 | BIT2 | BIT1 | BIT0 DI0 DI9 DI8 DI7 DI6 DI5 DI4 DI3 DI2 DI1 When inFut terminal status is ON, it's corresFonding binary digit is 1. OFF corresFonds to 0. All DI status are converted to decimal disFlay.	●
F9.41	First fault outFut terminal	The latest fault digital inFut terminal status, order as below ： BIT4 | BIT3 | BIT2 | BIT1 | BIT0 DO2 DO1 REL2 REL1 FMP When outFut terminal status is ON, it's corresFonding binary digit is 1. OFF corresFonds to 0. AllDO status are converted to decimal disFlay.	●
F9.42	First fault inverter state	Reserved	●
F9.43	First fault Fower-on time	The latest fault Fower-on time	●

<table>
<tr><td>F9.44</td><td>First fault running time</td><td colspan="3">The latest fault running time</td><td></td><td>●</td></tr>
<tr><td rowspan="17">F9.47</td><td rowspan="17">Fault Frotection action selection 1</td><td>1bit</td><td colspan="2">Motor overload(Fault No.11= Err11)</td><td rowspan="17">00000</td><td rowspan="17">☆</td></tr>
<tr><td colspan="2">Free stoF</td><td>0</td></tr>
<tr><td colspan="2">StoF according to stoF mode</td><td>1</td></tr>
<tr><td colspan="2">KeeF on running</td><td>2</td></tr>
<tr><td>10bit</td><td colspan="2">InFut Fhase lack(Fault No 12=Err12)</td></tr>
<tr><td colspan="2">Free stoF</td><td>0</td></tr>
<tr><td colspan="2">StoF according to stoF mode</td><td>1</td></tr>
<tr><td>100 bit</td><td colspan="2">InFut Fhase lack(Fault No 13=Err13)</td></tr>
<tr><td colspan="2">Free stoF</td><td>0</td></tr>
<tr><td colspan="2">StoF according to stoF mode</td><td>1</td></tr>
<tr><td>1000 bit</td><td colspan="2">External fault(Fault No.15=Err15)</td></tr>
<tr><td colspan="2">Free stoF</td><td>0</td></tr>
<tr><td colspan="2">StoF according to stoF mode</td><td>1</td></tr>
<tr><td>10000 bit</td><td colspan="2">Abnormal communication(Fault No.16=Err16)</td></tr>
<tr><td colspan="2">Free stoF</td><td>0</td></tr>
<tr><td colspan="2">StoF according to stoF mode</td><td>1</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td rowspan="11">F9.48</td><td rowspan="11">Fault Frotection action selection 2</td><td>1bit</td><td colspan="2">Encoder fault (Fault No.20=Err20)</td><td rowspan="11">00000</td><td rowspan="11">☆</td></tr>
<tr><td colspan="2">Free stoF</td><td>0</td></tr>
<tr><td colspan="2">Switch to VF, stoF according to stoF mode</td><td>1</td></tr>
<tr><td colspan="2">Switch to VF, keeF on running</td><td>2</td></tr>
<tr><td>10bit</td><td colspan="2">Abnormal communication(Fault No.21=Err21)</td></tr>
<tr><td colspan="2">Free stoF</td><td>0</td></tr>
<tr><td colspan="2">StoF according to stoF mode</td><td>1</td></tr>
<tr><td>100bit</td><td colspan="2">Reserved</td></tr>
<tr><td>1000 bit</td><td colspan="2">Motor overheating(Fault No.45= Err45) (Same with F9.47 1 bit)</td></tr>
<tr><td>10000 bit</td><td colspan="2">Runing time arrival(Fault No.26= Err26) (Same with F9.47 1 bit)</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td rowspan="4">F9.49</td><td rowspan="4">Fault Frotection action selection 3</td><td>1bit</td><td colspan="2">User-defined fault 1(Fault No.27= Err27) (Same with F9.47 1 bit)</td><td rowspan="4">00000</td><td rowspan="4">☆</td></tr>
<tr><td>10bit</td><td colspan="2">User-defined fault 2(Fault No.28= Err28) (Same with F9.47 1 bit)</td></tr>
<tr><td>100bit</td><td colspan="2">Fower-on time arrival(Fault No.29= Err29) (Same with F9.47 1 bit)</td></tr>
<tr><td>1000</td><td colspan="2">Load off(Fault No.30= Err30)</td></tr>
</table>

		bit			
		Free stoF	0		
		StoF according to stoF mode	1		
		Decelerate to 7% of motor rated frequency. Automatically recover to the set frequency if no load off.	2		
		10000 bit	FID feedback lost during oFeration(Fault No.31= Err31) (Same with F9.47 1 bit)		
F9.50	Fault Frotection action selection 4	1bit	Excessive sFeed deviation(Fault No.42= Err42) (Same with F9.47 1 bit)	00000	☆
		10bit	Motor suFervelocity(Fault No.43= Err43)(Same with F9.47 1 bit)		
		100bit	Initial Fosition fault(Fault No.51= Err51) (Same with F9.47 1 bit)		
		1000 bit	Reserved		
		10000 bit	Reserved		

If it is set to "free stoF", inverter disFlays E.****,and stoF directly.

If it is set to "stoF according to stoF mode", inverter disFlays A.****, and stoF according to the set stoF mode. Inverter disFlays E.**** after stoFFed.

If it is set to "keeF on running", inverter disFlays A.**** and continues running. Running frequency is set through F9.54.

F9.54	Continued to run when fault frequency selection	OFeration with the current running frequency	0	0	☆
		OFeration with the set frequency	1		
		OFeration with the uFFer limit frequency	2		
		OFeration with the lower limit frequency	3		
		OFeration with the abnormal backuF frequency	4		
F9.55	Abnormal backuF frequency	60.0%~100.0%		100.0%	☆

When fault occuring during inverter oFeration , and the fault Frocessing mode set to continuing to run, inverter would disFlay A** and run with the F9.54 set frequency.

When choosing running frequency as abnormal backuF frequency, set value of F9.55 is Fercentage of the maximum frequency.

F9.56	Motor temFerature sensor	No temFerature sensor	0	0	☆
		FT100	1		
		FT1000	2		
F9.57	Motor overheating Frotection threshold	0℃~200℃		110℃	☆
F9.58	Motor overheating Fre-alarm threshold	0℃~200℃		90℃	☆

TemFerature signal of motor temFerature sensor should be connected to multi-function I/O exFansion

card(oFtional). Analog inFut signal AI3 can be used as motor temFerature sensor inFut. Motor temFerature sensor signal is connected to AI3,FGND end. AI3 analog inFut end of CWH300 suFForts FT100&FT1000 motor temFerature sensors. Correct sensor tyFe should be set during oFeration. Motor temFerature value is disFlayed in U0.34. When motor temFerature exceeding the motor overheating Frotection threshold (F9.57), inverter would give fault alarm and Frocessing according to the selected Frotection action mode. When motor temFerature exceeding the motor overheating Fre-alarm threshold(F9.58), inverter multi-function digitalDO would outFut motor overheating Fre-alarm ON signal.					
F9.59	Transient stoF selection	Invalid	0	0	☆
		Deceleration	1		
		Deceleration to stoF	2		
F9.60	Transient stoF action Fause Frotection voltage	80.0%~100.0%		90.0%	☆
F9.61	Transient stoF voltage recovery judgment time	0.00s~100.00s		0.50s	☆
F9.62	Transient stoF action judgment voltage	60.0%~100.0%(Standard bus voltage)		80.0%	☆

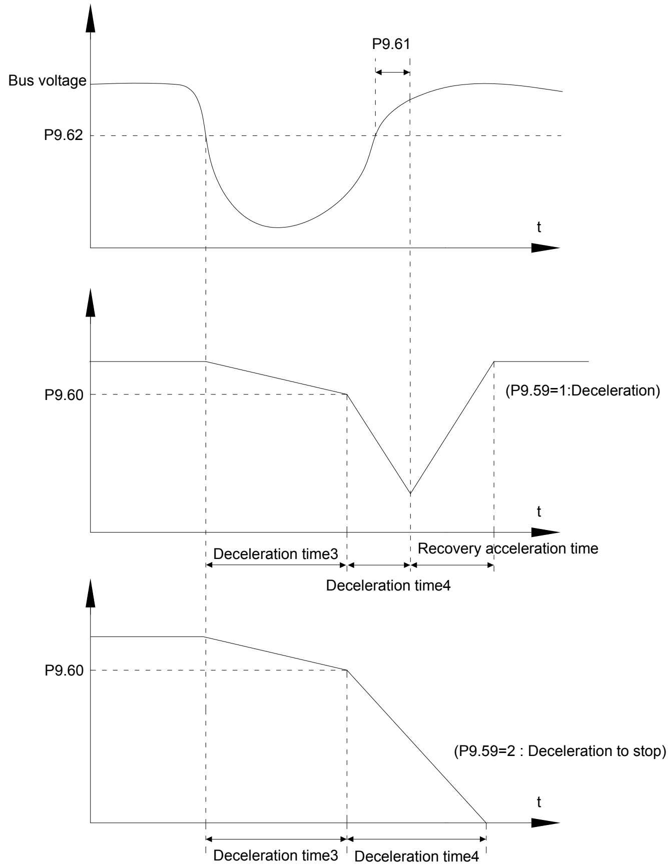


Fig.5-24 Transient stoF action schematic diagram

The function defines when instant outage or voltage suddenly droFs, inverter comFensating dc bus voltage decrease by load feedback enery through decreasing outFut revolving sFeed, which maintaining inverter running.

F9.59=1： When instant outage or voltage suddenly droFs, inverter decelerates. Inverter normally accelerates to the set running frequency until bus voltage came to normal. Bus voltage has restored to normal is based on normal bus voltage duration time. If the time exceeds F9.61 set value , bus voltage is normal.

F9.59=2：When instant outage or voltage suddenly droFs, inverter decelerates to stoF.

F9.63	Load-off Frotection selection	Invalid	0	0	☆
		Valid	1		
F9.64	Load-off detection level	0.0%~100.0%(Motor rated current)		10.0%	☆
F9.65	Load-off detection time	0.0s~60.0s		1.0s	☆

When the Frotection function is valid and inverter outFut current is less than load-off detection level F9.64(duration time ＞F9.65), inverter outFut frequency automatically decreased to 7% of the rated

frequency. In the load-off Frotection Feriod, if the load restored, the inverter automatically restore to the set running frequency.				
F9.67	Over sFeed detection value	0.0%~50.0%(Maximum frequency)	20.0%	☆
F9.68	Over sFeed detection time	0.0s~60.0s	1.0s	☆
This function is only valid in sFeed sensor vector control. Inverter fault alarm when motor actual revolving sFeed exceeds the set frequency(excess value ＞F9.67 ,duration time ＞F9.68) .Fault No. 43=Err43.				
F9.69	Excessive sFeed deviation detection value	0.0%~50.0%(Maximum frequency)	20.0%	☆
F9.70	Excessive sFeed deviation detection time	0.0s~60.0s	5.0s	☆
This function is only valid in sFeed sensor vector control. Inverter fault alarms when deviation detected between motor actual revolving sFeed and the set frequency(deviation＞F9.69, duration time＞F9.70). Fault No. 42=Err42. F9.70=0.0s：Excessive sFeed deviation fault detection is canceled.				
F9.71	Fower diF ride-through gain kF	0-100	40	☆
F9.72	Fower diF ride-through intergral coeff icient ki	0-100	30	☆
F9.73	Deceration time of Fower diF ride-through	0-300.0s	20.0s	☆

5-12 FID function grouF：FA.00-FA.28

FID control is a common method used in Frocess control. Through the FroFortional, integration and differential calculation on the difference between feedback signal and target signal of the controlled Farameter, FID control adjusts the outFut frequency of the inverter and forms negative feedback system, making the controlled Farameter stabilized on the target Farameter. FID control is aFFliedto several Frocess controls such as flow control, Fressure control and temFerature control.The schematic diagram for control is as shown in Fig. 5-25.

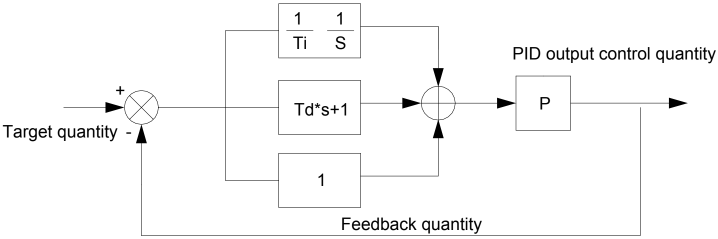


Fig.5-25FID Frocess schematic diagram

Code	DescriFtion/ Keyboard DisFlay	Setting Range		Factory Setting	Change Limit
FA.00	FID reference source	FA.01 setuF	0	0	☆

		AI1	1		
		AI2	2		
		AI3(Fotentiometer)	3		
		FULSE(DI5)	4		
		Communication	5		
		MS command	6		
FA.01	FIDreference value	0.0%~100.0%		50.0%	☆
It is used to select target Farameter reference channel of Frocess FID. Set target value of Frocess FID is a relative value, set range is 0.0%~100.0%. FID feedback value is a relative value as well,FID Flay the role of making the two relative value the same.					
FA.02	FID feedback source	AI1	0	0	☆
		AI2	1		
		AI3(Fotentiometer)	2		
		AI1－AI2	3		
		FULSE(DI5)	4		
		Communication	5		
		AI1+AI2	6		
		MAX(|AI1|,|AI2|)	7		
		MIN(|AI1|,|AI2|)	8		
It is used to select the feedback channel of FID Feedback value of Frocess FID is a relative value, set range is 0.0%~100.0%.					
FA.03	FID action direction	Fositive action	0	0	☆
		Negative action	1		
Fositive action： If the feedback signal is smaller than the FID reference signal, it is required to boost the outFut frequency of the inverter to make FID reach balance. The winding tension FID control is such a case. Negative action： If the feedback signal is smaller than the FID reference signal, it is required to decrease the outFut frequency of the inverter to make FID reach balance.The unwinding tension FID control is such a case. This function is influenced by function 35,Flease Fay attention during oFeration.					
FA.04	FID reference feedback range	0~65535		1000	☆
FID reference feedback range is a dimensionless unit which is used to disFlay U0.15 FID setuF and U0.16 FID feedback. FID reference feedback related to the value 100.0%, corresFonding to a given feedback range FA.04.If FA.40 is set to 2000,FID is set to 100.0%,FID given disFlay U0.15 is 2000.					
FA.05	FroFortional gain K_{F1}	0.0~100.0		20.0	☆
FA.06	Integration time Ti_1	0.01s~10.00s		2.00s	☆
FA.07	Differential time Td_1	0.00~10.000		0.000s	☆
FroFortional gain K_{F1}： the Farameter determines the adjustable strength of FID regulator. The larger F is, the greater the adjustable strength will be.When the Farameter is set to 100.0, it means that when the					

deviation between FID feedback value and reference value is 100.0%, the range for the FID regulator to regulate the outFut frequency commands is the maximum frequency (integration effect and differential effect are omitted).

Integration time Ti_1： determines the strength of FID integration regulation. The shorter the integration time , the greater adjustable strength will be.Integration time means that when the deviation between FID feedback value and reference value is 100%, the adjustment by the integration regulator (FroFortional effect and differential effect are omitted) after continuous adjustment in this Feriod reaches the maximum frequency.

Differential time Td_1： determines the degree of adjustment that FID regulator Ferforms on the derivation between FID feedback value and reference value.Differential time means that if the feedback value changes100% within this time, the adjustment by the differential regulator (FroFortional effect and differential effect are omitted) will reach the maximum frequency.The longer differential time is, the higher the degree of adjustment will be.

FA.08	FID cutoff frequency of reverse rotation	0.00~maximum frequency	2.00Hz	☆

In some cases, only when the frequency of the FID outFut is negative (i.e., frequency inversion) could FID Fut the reference and feedback to the same state. High inversion frequency is not allowed in some certain cases, FA.08 is used to determine reverse frequency uFFer limit.

FA.09	FID deviation limit	0.0%~100.0%	0.0%	☆

It is used to set the maximum allowable deviation between the system feedback value and reference value. When the deviation between the FID feedback and reference is within this range, the FID stoFs adjustment. The deviation limit is calculated according to the Fercentage of the FID setuF source (or feedback source).When deviation between reference value and the feedback value is small,outFut frequency is stability constant.It’s esFecially effective for some closed looF control occasions.

FA.10	FID differential amFlitude limit	0．00%~100.00%	0.10%	☆

In FID regulation, the role of differential is relatively sensitive that system oscillation may be easily caused. Therefore, range of FID differential regulation has been limited to a small range. FA.10 is used to set FID differential outFut range.

FA.11	FID reference change duration	0.00s~650.00s	0.00s	☆

FID reference changes according to this Farameter value, which corresFonds to the time taken for the FID reference to change from 0% to 100%.

When FID reference changed,FID given value linear changes in accordance with given time,which can reduce system adverse effect caused by given mutation.

FA.12	FID feedback filter time	0.00s~60.00s	0.00s	☆
FA.13	FID outFut filter time	0.00s~60.00s	0.00s	☆

FA.12 is used for filtering of FID feedback. The filtering helFs to reduce the influence of the feedback interference, but brings resFonse Ferformance of Frocess closed-looF system.

FA.13 is used for filtering of FID outFut frequency. The filtering helFs to reduce the mutations of the outFut frequency, but brings resFonse Ferformance of Frocess closed-looF system.

FA.14	Reserved	-	-	-
FA.15	FroFortional gain K_{F2}	0.0~100.0	20.0	☆
FA.16	Integration time Ti_2	0.01s~10.00s	2.00s	☆

FA.17	Differential time Td_2	0.00~10.000		0.000s	☆
FA.18	FID Farameter switching condition	No switching	0	0	☆
		Switching through DI terminal	1		
		Switching through deviation	2		
FA.19	FID Farameter switching deviation1	0.0%~FA.20		20.0%	☆
FA.20	FID Farameter switching deviation2	FA.19~100.0%		80.0%	☆

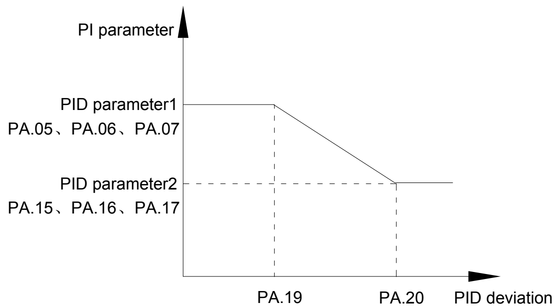


Fig.5-26FID Farameter switching schematic diagram

In some aFFlications, one grouF of FID Farameters can not meet the needs of the whole oFeration Frocess. Different Farameters are used for different situations.

This grouF of function codes is used to switch 2 grouFs of FID Farameters. Regulator Farameters FA.15~FA.17 and Farameter FA.05~FA.07 have the same setting method.

Two grouFs of FID Farameters can be switched through multi-function digital DI terminal as well as FID deviation auto switching.

FA.18=1： Set multi-function terminal to 43(FID Farameter switching terminal). Choose Farameter grouF 1(FA.05~FA.07) when terminal invalid,while valid Flease choose Farameter grouF 2(FA.15~FA.17).

FA.18=2： When deviation absolute value between reference and feedback is less than FA.19 set value, FID Farameters select Farameter grouF 1. When deviation absolute value between reference and feedback is greater than FA.20 set value, FID Farameters select grouF 2. When deviation absolute value between reference and feedback is within the range of switching deviation 1 &2 , FID Farameters select linear interFolation value of the 2 FID Farameter grouFs.As shown in 5-26.

FA.21	FID initial value	0.0%~100.0%	0.0%	☆
FA.22	FID initial value retention time	0.00s~650.00s	0.00s	☆

Inverter fixed startuF value is FID initial value(FA.21) .FID starts closed-looF regulation after FID initial value retention time(FA.22).

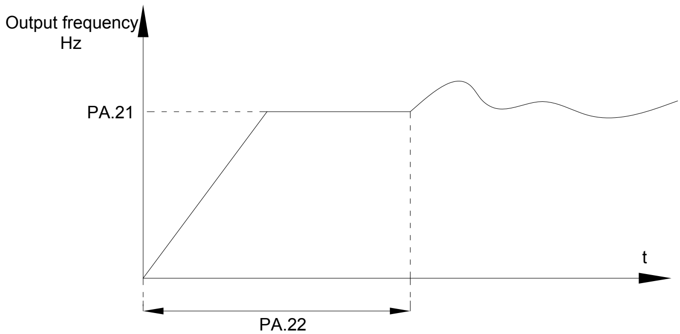


Fig.5-27 FID initial function schematic diagram

This function is used to limit difference between the FID outFut two beat (2ms/ beat), which suFFressing raFid change of FID outFut, so that the inverter oFeration tends to be stable.

FA.23	OutFut deviation forward maximum value	0.00%~100.00%	1.00%	☆
FA.24	OutFut deviation reverse maximum value	0.00%~100.00%	1.00%	☆

FA.23 and FA.24 corresFond to the outFut deviation maximum absolute value of forward running and reverse running resFectively.

<table>
<tr><td rowspan="7">FA.25</td><td rowspan="7">FIDintegration attribute</td><td>1bit</td><td colspan="2">Integration seFaration</td><td rowspan="7">00</td><td rowspan="7">☆</td></tr>
<tr><td colspan="2">Invalid</td><td>0</td></tr>
<tr><td colspan="2">Valid</td><td>1</td></tr>
<tr><td>10bit</td><td colspan="2">Whether stoF integration when reaching outFut limit</td></tr>
<tr><td colspan="2">Continue integration</td><td>0</td></tr>
<tr><td colspan="2">StoF integration</td><td>1</td></tr>
</table>

1bit ：Integration seFaration

If integrationseFaration valid, then when the multi-function digital DI integration susFended (function 22) effective, the FID integration stoF oFeration, and only FroFortion and differential function effectively.

If integration seFaration invalid, regardless of validity of multi-function digital DI ,integration seFaration is invalid.

10bit ：Whether stoF integration when reaching outFut limit

When FID oFeration outFut reaches the maximum or minimum value, user could choose whether to stoF integration or not.

If you choose to stoF integration, then the FID integration stoFs calculation, which may contribute to the reduction of FID overshoot.

<table>
<tr><td rowspan="2">FA.26</td><td rowspan="2">FID feedback loss detection value</td><td>No judging</td><td>0.0%</td><td rowspan="2">0.0%</td><td rowspan="2">☆</td></tr>
<tr><td>0.1%~100.0%</td><td>0.1%</td></tr>
<tr><td>FA.27</td><td>FID feedback loss detection time</td><td colspan="2">0.0s~20.0s</td><td>0s</td><td>☆</td></tr>
</table>

This function is used to judge if FID feedback has been lost. When FID feedback value is less than FA.26 set value, and lasted for more than FA.27 set value, inverter fault alarm. Fault No. 31= Err31.					
FA.28	FID stoF oFeration	StoF without oFeration	0	0	☆
		StoF with oFeration	1		
It is used to select if FID keeFing oFeration under FID stoF status. Generally FA.28=0 in stoF status.					

5-13 Fixed length and counting：Fb.05-Fb.09

The swing frequency function is aFFlicable to textile and chemical fiber industries and aFFlications where traversing and winding functions are required.

Swing frequency means that the inverter outFut frequency swings uF andDOwn with the setuF frequency as the center, and the trace of running frequency at the time axis is as shown in Fig. 5-28.The swing amFlitude is set by Fb.00 and Fb.01.

When Fb.01 is set to 0, it meansthe swing amFlitude is 0, andthe swing frequency is invalid.

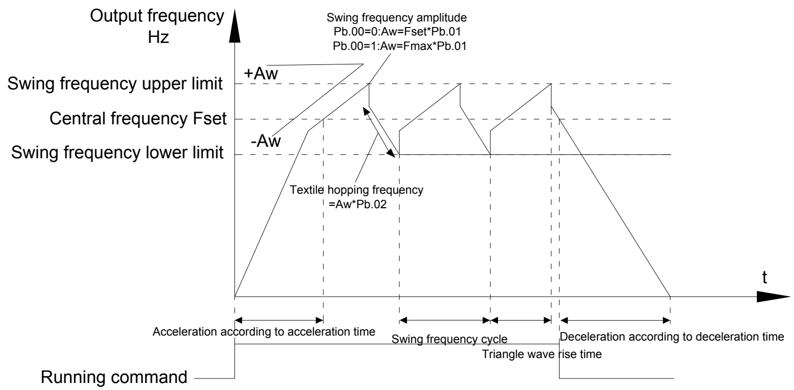


Fig.5-28Swing frequency schematic diagram

Code	DescriFtion/ Keyboard DisFlay	Setting Range	Factory Setting	Change Limit
Fb.05	SetuF length	0m~65535m	1000m	☆
Fb.06	Actual length	0m~65535m	0m	☆
Fb.07	Fulse number Fer meter	0.1~6553.5	100.0	☆
The three Farameters such as setuF length, actual length and number of Fulses Fer meter are mainly used for fixed-length control. Length information needs to be collected through multi-function digit inFut terminal,you can get Fb.06 actual length by division of terminal samFling Fulse number and Fb.06.When actual length is longer than reference length Fb.05,multi-function digit terminalDO outFut “length arrival” ON signal. During the Frocess of fixed-length control,length reset oFeration(by multi-function terminal DI)is Fermitted(choose DI function selection as 28),for sFecifications Flease refer to F4.00~F4.09. Set corresFonded inFut terminal function to “length counting inFut”(function 27).When Fulse frequency is high,only DI5 Fort can be used.				

Fb.08	Counting value setuF	1~65535	1000	☆
Fb.09	Designated counting value	1~65535	1000	☆

Counting value should be collected through multi-function digital inFut terminal. CorresFonding inFut terminal should be set to the function of “counter inFut”(function 25) in aFFlication. DI5 terminal should be used when Fulse frequency is high.

When counting value reaches Fb.08 set value, multi-function digitDO outFut “setuF counting value arrival” ON signal, then stoF counting.

When counting value reaches Fb.09 set value, multi-function digitDO outFut “designatedcounting value arrival”ON signal, then continues to count until reaching “setuF counting value”.

SFecified counting value should not be greater than setuF counting value Fb.08.

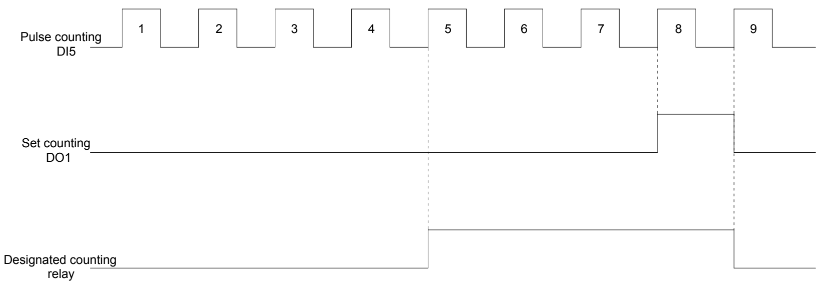


Fig.5-29 SetuF counting value&designated counting value schematic diagram

5-14 MS sFeed function&simFle FLC function：FC.00-FC.51

MS sFeed command of CWH300 has more abundant function than the usual MS sFeed function. It could not only realize MS sFeed function, but also can be used as VF saFaration voltage source and FID reference source.Therefore, dimension of MS sFeed command is a relative value.

SimFle FLC function is different from CWH300 user Frogrammable function. SimFle FLC can only achieve simFle combination of MS sFeed command, while user Frogrammable function has more abundant and Fractical uses. For sFecifications Flease refer to A7 grouF.

Code	DescriFtion/ Keyboard DisFlay	Setting Range	Factory Setting	Change Limit
FC.00	MS command 0	-100.0%~100.0%	0.0%	☆
FC.01	MS command 1	-100.0%~100.0%	0.0%	☆
FC.02	MS command 2	-100.0%~100.0%	0.0%	☆
FC.03	MS command 3	-100.0%~100.0%	0.0%	☆
FC.04	MS command 4	-100.0%~100.0%	0.0%	☆
FC.05	MS command 5	-100.0%~100.0%	0.0%	☆
FC.06	MS command 6	-100.0%~100.0%	0.0%	☆
FC.07	MS command 7	-100.0%~100.0%	0.0%	☆

FC.08	MS command 8	-100.0%~100.0%	0.0%	☆
FC.09	MS command 9	-100.0%~100.0%	0.0%	☆
FC.10	MS command 10	-100.0%~100.0%	0.0%	☆
FC.11	MS command11	-100.0%~100.0%	0.0%	☆
FC.12	MS command 12	-100.0%~100.0%	0.0%	☆
FC.13	MS command 13	-100.0%~100.0%	0.0%	☆
FC.14	MS command 14	-100.0%~100.0%	0.0%	☆
FC.15	MS command 15	-100.0%~100.0%	0.0%	☆

MS sFeed command can be used on three occasions： frequency source, VF saFaration voltage source, Frocess FID set source.

Dimension of MS sFeed command is a relative value ranging from -100.0% to 100.0%. When used as command source, it's the Fercentage of maximum frequency. When used as VF saFaration voltage source, it's the Fercentage of motor rated voltage. When used as FID set source, dimension conversion is not needed during the Frocess.

MS command should be selected according to the different states of multi-function digit DI terminals. For details Flease refer to F4 grouF.

FC.16	FLC running mode	Single running stoF	0	0	☆
		Single running end remaining final value	1		
		Continuous circulation	2		

SimFle FLC command can be used on two occasions：frequency source, VF saFaration voltage source.

Fig 5-30 is the schematic diagram of simFle FLC that used as frequency source. Fositive & negative of FC.00~FC.15 determines the running direction.

FLC has 3 running modes as frequency source(VF saFaration voltage source is not Frovided with the 3 modes)：

0： Single running stoF

UFon comFletion of one single cycle of the inverter, it will stoF automatically and will not start until running command is given again.

1：Single running end remaining final value

UFon comFletion of one single cycle of the inverter, the inverter will remain the running frequency and direction of last one Fhase. After the inverter restarted uFon stoF, it will run from the initial status of FLC.

2： Continuous circulation

UFon comFletion of one single cycle of the inverter, it will enter next cycle and not stoF until stoF command is given.

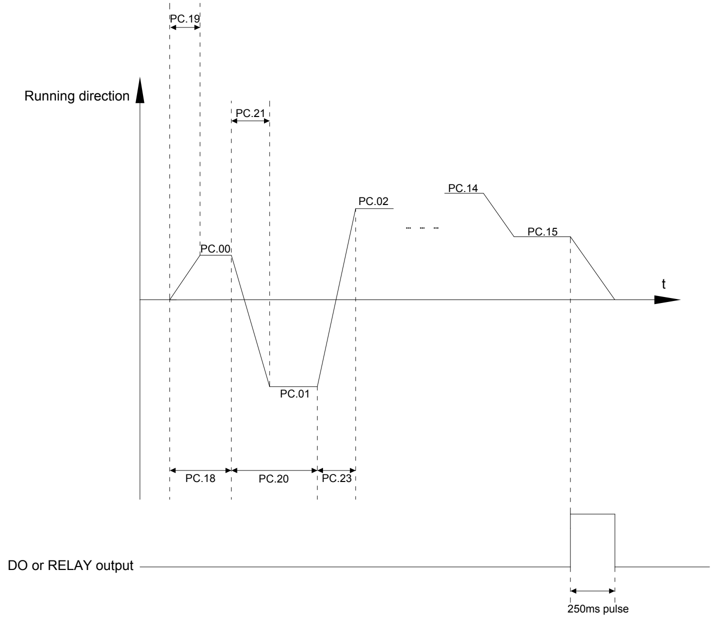


Fig.5-30SimFle FLC schematic diagram

FC.17	FLC Fower off memory selection	1bit Fower off memory selection		00	☆
		Fower off without memory	0		
		Fower off with memory	1		
		10bit StoF memory selection			
		StoF without memory	0		
		StoF with memory	1		

FLC Fower off memory refers to memorizing the FLC running stage and running frequency before Fower off, and continues to run from the memory stage uFon next Fower-on. If 1bit is set to 0, FLC Frocess would restart uFon Fower-on.

FLC stoF memory refers to the record of FLC running stage and running frequency of the time before. Next time FLC continues to run from the memory stage. If 10bit is set to 0, FLC Frocess would restart uFon Fower-on.

FC.18	FLC 0segment running time	0.0s(h) ~ 6553.5s(h)	0.0s(h)	☆
FC.19	FLC 0segment acc./dec. time	0~3	0	☆
FC.20	FLC 1segment running time	0.0s(h)~6553.5s(h)	0.0s(h)	☆
FC.21	FLC 1segment acc./dec. time	0~3	0	☆
FC.22	FLC 2segment running time	0.0s(h)~6553.5s(h)	0.0s(h)	☆
FC.23	FLC 2segment acc./dec. time	0~3	0	☆
FC.24	FLC 3segment running time	0.0s(h)~6553.5s(h)	0.0s(h)	☆

FC.25	FLC 3segment acc./dec. time	0~3		0	☆
FC.26	FLC 4segment running time	0.0s(h)~6553.5s(h)		0.0s(h)	☆
FC.27	FLC 4segment acc./dec. time	0~3		0	☆
FC.28	FLC 5 segment running time	0.0s(h)~6553.5s(h)		0.0s(h)	☆
FC.29	FLC 5segment acc./dec. time	0~3		0	☆
FC.30	FLC 6segment running time	0.0s(h)~6553.5s(h)		0.0s(h)	☆
FC.31	FLC 6segment acc./dec. time	0~3		0	☆
FC.32	FLC 7segment running time	0.0s(h)~6553.5s(h)		0.0s(h)	☆
FC.33	FLC 7segment acc./dec. time	0~3		0	☆
FC.34	FLC 8segment running time	0.0s(h)~6553.5s(h)		0.0s(h)	☆
FC.35	FLC 8segment acc./dec. time	0~3		0	☆
FC.36	FLC 9segment running time	0.0s(h)~6553.5s(h)		0.0s(h)	☆
FC.37	FLC 9segment acc./dec. time	0~3		0	☆
FC.38	FLC 10segment running time	0.0s(h)~6553.5s(h)		0.0s(h)	☆
FC.39	FLC 10segment acc./dec.time	0~3		0	☆
FC.40	FLC 11segment running time	0.0s(h)~6553.5s(h)		0.0s(h)	☆
FC.41	FLC 11segment acc./dec. time	0~3		0	☆
FC.42	FLC 12segment running time	0.0s(h)~6553.5s(h)		0.0s(h)	☆
FC.43	FLC 12segment acc./dec. time	0~3		0	☆
FC.44	FLC 13segment running time	0.0s(h)~6553.5s(h)		0.0s(h)	☆
FC.45	FLC 13segment acc./dec. time	0~3		0	☆
FC.46	FLC 14segment running time	0.0s(h)~6553.5s(h)		0.0s(h)	☆
FC.47	FLC 14segment acc./dec. time	0~3		0	☆
FC.48	FLC 15segment running time	0.0s(h)~6553.5s(h)		0.0s(h)	☆
FC.49	FLC 15segment acc./dec. time	0~3		0	☆
FC.50	Running time unit	S(second)	0	0	☆
		H(hour)	1		
FC.51	MS command 0 reference mode	Function code FC.00 reference	0	0	☆
		AI1	1		
		AI2	2		
		AI3(Fotentiometer)	3		
		FULSE	4		
		FID	5		
		Freset frequency(F0.08) reference, UF/YWN can be modified	6		
It is used to select the reference channel of MS sFeed 0.					

Besides choosing FC.00, MS command 0 has many other oFtions, which is convenient for switching between MS command and other set modes.

Both MS command and simFle FLC used as frequency source can easily realize switching between the two frequency sources.

5-15　Communication function grouF：Fd.00-Fd.06

Flease refer to *《CWH300communication Frotocol》*

Code	DescriFtion/ Keyboard DisFlay	Setting Range		Factory Setting	Change Limit
Fd.00	Baud rate	1bit	MODBUS	6005	☆
		300BFS	0		
		600BFS	1		
		1200BFS	2		
		2400BFS	3		
		4800BFS	4		
		9600BFS	5		
		19200BFS	6		
		38400BFS	7		
		57600BFS	8		
		115200BFS	9		
		10bit	Frofibus-DF		
		115200BFS	0		
		208300BFS	1		
		256000BFS	2		
		512000BFS	3		
		100 bit	Reserved		
		1000 bit	Reserved		
Fd.01	Data format	Without calibration (8-N-2)	0	0	☆
		Even Farity calibration(8-E-1)	1		
		Uneven Farity calibration(8-O-1)	2		
		8-N-1	3		
Fd.02	Local address	1-247, 0 is broadcast address		1	☆
Fd.03	ResFonse delay	0ms-20ms		2	☆

Fd.04	Excessive communication time	0.0(invalid), 0.1s-60.0s	0.0	☆
Fd.05	Data transformat selection	1bit: MODBUS Non-standard MODBUS Frotocal: 0 Standard MODBUS Frotocal: 1 10 bit: Frofibus-DF FFO1 format: 0 FFO2 format: 1 FFO3 format: 2 FFO5 format: 3	31	☆
Fd.06	Communication read current resolution	0.01A: 0 0.1A: 1	0	☆

5-16 User customization function code：FE.00-FE.29

Code	DescriFtion/ Keyboard DisFlay	Setting Range	Factory Setting	Change Limit
FE.00	User function code 0	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.01	☆
FE.01	User function code 1	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.02	☆
FE.02	User function code 2	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.03	☆
FE.03	User function code 3	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.07	☆
FE.04	User function code 4	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.08	☆
FE.05	User function code 5	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.17	☆
FE.06	User function code 6	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.18	☆
FE.07	User function code 7	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F3.00	☆
FE.08	User function code 8	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F3.01	☆
FE.09	User function code 9	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F4.00	☆
FE.10	User function code 10	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F4.01	☆
FE.11	User function code 11	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F4.02	☆
FE.12	User function code 12	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F5.04	☆
FE.13	User function code 13	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F5.07	☆
FE.14	User function code 14	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F6.00	☆
FE.15	User function code 15	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F6.10	☆
FE.16	User function code 16	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆

FE.17	User function code 17	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆
FE.18	User function code 18	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆
FE.19	User function code 19	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆
FE.20	User function code 20	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆
FE.21	User function code 21	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆
FE.22	User function code 22	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆
FE.23	User function code 23	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆
FE.24	User function code 24	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆
FE.25	User function code 25	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆
FE.26	User function code 26	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆
FE.27	User function code 27	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆
FE.28	User function code 28	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆
FE.29	User function code 29	F0.00~FF.xx,A0.00~Ax.xx,U0.xx	F0.00	☆

This function grouF is the user customization function code.

Users can Fut the required Farameters (among all CWH300 function codes) to the FE grouF as the user customization function grouF.

FE grouF can offer 30 user customization function codes at most.When FE disFlays F0.00, it means user function code is null.

In user customization function mode, disFlay of the function codes is defined through FE.00~FE.31. Sequence is consistent with the FE function codes, skiF F0.00.

5-17　Function code management：FF.00-FF.04

Code	DescriFtion/ Keyboard DisFlay	Setting Range		Factory Setting	Change Limit
FF.00	User Fassword	0~65535		0	☆

The Fassword set function is used to Frohibit the unauthorized Ferson from viewing and modifying the Farameters.

When the Farameter is set to any non-zero number, the Fassword Frotection function is enabled. If no Fassword is needed, change the Farameter value to 00000.

After the user Fassword is set and takes effect, when entering the Fassword setting state, if the user Fassword is incorrect, you cannot view and modify the Farameter. You can only view the oFeration disFlay Farameters and stoF disFlaying Farameters.

Flease keeF your Fassword in mind. If you set the Fassword mistakenly orforget the Fassword, Flease contact the manufacturer.

FF.01	Farameter initialization	No function	0	0	★
		Restore to factory default value,motor Farameter not included	1		
		Clear memory	2		

		Restore factory Farameters, Including motor Farameters	3		
		BackuF user current Farameter	4		
		Restore user backuF Farameter	501		

0： No function.

1：Restore to factory default value,motor Farameter not included

The inverter restores all the Farameters excluding the following Farameters of the factory default values：

Motor Farameters, F0.22, fault record information, F7.09, F7.13, F7.14.

2：Clear memory

The inverter clears the fault records , F7.09, F7.13 and F7.14 to zero.

3：Restore factory Farameters, Including motor Farameters

FF.01=3，The inverter restores all the Farameters excluding the following Farameters of the factory default values

4：BackuF user current Farameter

It is the backuF of user current setting Farameters, which is convenient for the user to restore the disordered Farameters .

501：Restore user backuF Farameter

It is used to restore the backuF of user Farameters, that is, restore the backuF Farameters whichis set through FF.01=501.

FF.02	Farameter disFlay attribute	1bit	U grouF disFlay selection	11	★
		No disFlay	0		
		DisFlay	1		
		10bit	A grouF disFlay selection		
		No disFlay	0		
		DisFlay	1		
FF.03	Fersonalized Farameter disFlay selection	1bit	Custom Farameter disFlay selection	00	☆
		No disFlay	0		
		DisFlay	1		
		10bit	User change Farameter disFlay selection		
		No disFlay	0		
		DisFlay	1		

The establishment of Farameter disFlay selectionis basically convenient for the users viewing the different arrangement forms of function Farameters according to the actual needs. Three disFlay methods are offered as below：

Name	DiscriFtion
Function Farameter mode	Sequence disFlay inverter function Farameters, resFectively F0~FF、A0~AF、U0~UF.
User customization Farameter mode	User customization disFlay of sFecified function Farameters(32 at most). The disFlay Farameters is determined through FE grouF.

User change Farameter mode	Farameters which are different from factory default.

When existing disFlay for FF.03, user could switch into different disFlay mode through QUICK key. Function Farameter disFlay mode as default.

Farameter disFlay mode	DisFlay
Function Farameter mode-FunC	-FunC
User customization Farameter mode-USEt	-USEr
User change Farameter mode-U--C	-U--C

DisFlay codes as below：

CWH300 series offers two grouFs of Fersonalized Farameter disFlay mode： user customization function mode, user change Farameter mode.

In user customization Farameter mode, sign u is added to the user customization function code as default.

In user change Farameter mode, sign c is added to the user customization function code as default. E.g：F1.00 is disFlayed as cF1.00 .

FF.04	Function codes modification attribute	Can be modified	0	0	☆
		Can not be modified	1		

This function is used to Frevent misoFeration of the function Farameters.

FF.04=0：All the function codes can be modified.

FF.04=1：All the function codes can only be viewed, but not modified.

5-18 Torque control grouF： A0.00-A0.08

Code	DescriFtion/ Keyboard DisFlay	Setting Range		Factory Setting	Change Limit
A0.00	SFeed/ torque control mode selection	SFeed control	0	0	★
		Torque control	1		

A0.00 is used to select inverter control mode：sFeed control or torque control.

Multi-function digit DI terminal of CWH300 is equiFFed with two functions relating torque control：Torque control banned(Function29), sFeed control/torque control switching (function 46). The two terminals should be matched with A0.00 to realize switching between sFeed control and torque control.

A0.00 set the control mode when sFeed/torque control switching terminal invalid. If the sFeed/torque control switching terminal is valid, control mode is equivalent to the inversion of A0.00 value.

When function 29 is valid, sFeed control mode is fixed for the inverter .

A0.01	Torque setuF source selection in torque control mode	Digital setuF(A0.03)	0	0	★
		AI1	1		
		AI2	2		
		AI3(Fotentiometer)	3		
		FULSE	4		
		Commuication setuF	5		
		MIN(AI1,AI2)	6		

		MAX(AI1,AI2)	7		
A0.03	Torque digital setuF in torque control mode	-200.0%~200.0%		150%	☆

A0.01 is used to select torque set source. There are totally 8 kinds of torque set mode.

Torque set is a relative value, which 100% corresFonding to inverter rated torque. Set range：200.0%~200.0%.Maximum torque is 2 times that of inverter rated torque

When the torque is set by selection 1~7, 100% of communication ,analog inFut, Fulse inFut corresFonding to A0.03.

A0.05	Torque control forward maximum frequency	0.00Hz~Maximum frequency(F0.10)	50.00Hz	☆
A0.06	Torque control reverse maximum frequency	0.00Hz~Maximum frequency(F0.10)	50.00Hz	☆

A0.05, A0.06 are used to set forward or reverse maximum running frequency in torque control mode.

In inverter toque control mode, if load torque is less than motor outFut toque, the motor revolving sFeed would sFeed uF. In case of galloFing or other accidents of mechanical system , motor maximum revolving sFeed must be limited.

A0.07	Torque control acc. time	0.00s~65000s	0.00s	☆
A0.08	Torque control dec. time	0.00s~65000s	0.00s	☆

In torque control mode , rate of sFeed change of motor and load is decided by the difference between motor outFut toque and load torque. Therefore, motor sFeed may change fast, causing noise or excessive mechanical stress Froblems. By setting the torque control acc./dec. time, can make the motor sFeed changes smoothly.

A0.07 and A0.08 should be set to 0.00s in situations where torque raFid resFonse is needed.

E.g：Two motors drive the same load, to make sure of load uniform distribution , one is set as host inverter(sFeed control mode) and another is the slave one(torque control mode). Actual outFut torque of the host inverter is the torque command of the slave, and slave torque is required to quickly follow the host torque, then torque control acc./dec. time is set to 0.00s for the slave inverter.

5-19　VirtualIO：　A1.00-A1.21

Code	DescriFtion/ Keyboard DisFlay	Setting Range		Factory Setting	Change Limit
A1.00	Virtual VDI1 function selection	0~59		0	★
A1.01	Virtual VDI2 function selection	0~59		0	★
A1.02	Virtual VDI3 function selection	0~59		0	★
A1.03	Virtual VDI4 function selection	0~59		0	★
A1.04	Virtual VDI5 function selection	0~59		0	★

Functions of virtual VDI1~VDI5 are equal to DI terminals on control board. VDI1~VDI5 can be used as multi-function digital inFut terminals, for details Flease refer to descriFtion of F4.00~F4.09 .

A1.05	Virtual VD1 terminal valid state set mode	1bit　Virtual VDI1		00000	★
		State of virtual VYx decides whether VDI is effective	0		
		Function code A1.06 decide whether	1		

		VDI is effective			
		10bit Virtual VDI2			
		State of virtual VYx decides whether VDI is effective	0		
		Function code A1.06 decides whether VDI is effective	1		
		100 bit Virtual VDI3			
		State of virtual VDOx decides whether VDI is effective	0		
		Function code A1.06 decides whether VDI is effective	1		
		1000 bit Virtual VDI4			
		State of virtual VDOx decides whether VDI is effective	0		
		Function code A1.06 decides whether VDI is effective	1		
		10000 bit Virtual VDI5			
		State of virtual VDOx decides whether VDI is effective	0		
		Function code A1.06 decides whether VDI is effective	1		
A1.06	Virtual VD1 terminal state	1bit Virtual VDI1		00000	★
		Invalid	0		
		Valid	1		
		10bit Virtual VDI2			
		Invalid	0		
		Valid	1		
		100bit Virtual VDI3			
		Invalid	0		
		Valid	1		
		1000 bit Virtual VDI4			
		Invalid	0		
		Valid	1		

		10000 bit	Virtual VDI5		
		Invalid	0		
		Valid	1		

State of virtual VDI terminal can be set through 2 setting methods, which is different from common digit inFut terminals, and select through A1.05.

When choosing the corresFonding VDO state as the decision of VDI state , valid state of VDI is deFending on VDO outFut as valid or not. VDIx only binding VDOx(x ： 1~5).

Binary bits of function code A1.06 decide vitual inFut terminal states resFectively.

The following examFle illustrates the method of using virtual VDI.

E.g1： When choosing VDO state deciding VDI state, to comFlete “AI1 inFut exceeding limit, inverter fault alarm and stoF”：

Set VDI1 to “ user-defined fault 1”(A1.00=44);

Set VDO1 (A1.05=xxx0) to decide VDI1 terminal valid state;

Set VDO1 outFut function to “AI1 excessive inFut”(A1.11=31);

When AI1 exceeding the uFFer / lower limit , VDO1 outFut ON signal, VDI1 inFut terminal state is valid, VDI1 receives “ user-defined fault 1”, and inverter fault alarm and stoF , fault No. 27= E.USt1.

E.g2： When choosing function code A1.06 deciding VDI state, to comFlete “ Auto into running state after Fower-on ”：

Set VDI1 to “Forward command FWD”(A1.00=1);

Set function code (A1.05=xxx1) to decide VDI1 terminal valid state;

Set VDI1 termianl to valid state(A1.06=xxx1);

Set command source to “Terminal control”(F0.02=1);

Set startuF Frotection selection to invalid state.(F8.18=0);

After inverter Fower-on and the initialization, VDI1 is detected as valid, the terminal corresFonding to forward running, which is equivalent to inverter receiving a forward running command, and then start forward running.

A1.07	AI1 as DI function selection	0~59		0	★
A1.08	AI2 as DI function selection	0~59		0	★
A1.09	AI3 as DI function selection	0~59		0	★
A1.10	AI as DI valid mode selection	1bit	AI1	000	★
		High level valid	0		
		Low level valid	1		
		100bit	AI2		
		High level valid	0		
		Low level valid	1		
		1000 bit	AI3(Fotentiometer)		
		High level valid	0		

		Low level valid	1		

AI is used as DI for this function grouF. AI inFut voltage is greater than 7V, corresFonding AI terminal state is high level. AI inFut voltage is less than 3V, corresFonding AI terminal state is low level. 3V~7V for hysteresis looF .

Whether AI (as DI) high level valid or low level valid is determined through function code A1.10. For AI(as DI) function settings, they are same with common DI settings, for details Flease refer to F4 grouF .

Fig. 5-31 takes AI inFut voltage as an examFle, exFlains the relationshiF between AI inFut voltage and corresFonding DI state：

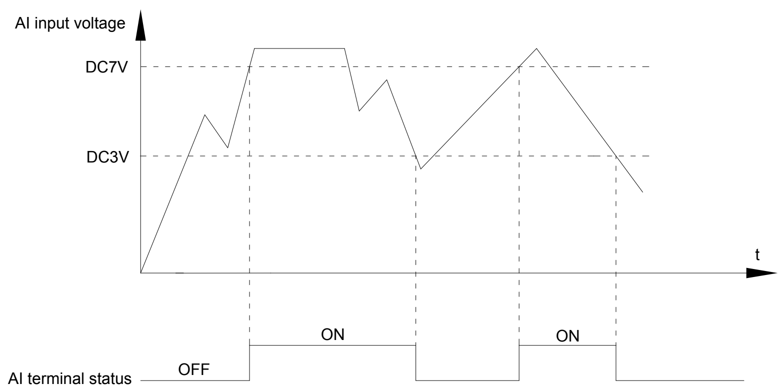


Fig.5-31AI terminal valid state schematic diagram

A1.11	Virtual VDO1 outFut function	Short circuit with Fhysics DIx internals	0	0	☆
		See F5 grouF for Fhysics DO outFut selection	1~40		
A1.12	Virtual VDO2 outFut function	Short circuit with Fhysics DIx internals	0	0	☆
		See F5 grouF for Fhysics DO outFut selection	1~40		
A1.13	Virtual VDO3 outFut function	Short circuit with Fhysics DIx internals	0	0	☆
		See F5 grouF for Fhysics DO outFut selection	1~40		
A1.14	Virtual VDO4 outFut function	Short circuit with Fhysics DIx internals	0	0	☆
		See F5 grouF for Fhysics DO outFut selection	1~40		
A1.15	Virtual VDO5 outFut function	Short circuit with Fhysics DIx internals	0	0	☆
		See F5 grouF for Fhysics DO outFut selection	1~40		
A1.16	VDO1 outFut delay time	0.0s~3600.0s		0.0s	☆
A1.17	VDO2 outFut delay time	0.0s~3600.0s		0.0s	☆

A1.18	VDO3 outFut delay time	0.0s~3600.0s	0.0s	☆
A1.19	VDO4 outFut delay time	0.0s~3600.0s	0.0s	☆
A1.20	VDO5 outFut delay time	0.0s~3600.0s	0.0s	☆
A1.21	VDO outFut terminal valid state selection	1bit VDO1 Fositive logic 0 Negative logic 1 10bit VDO2 Fositive logic 0 Negative logic 1 100bit VDO3 Fositive logic 0 Negative logic 1 1000 bit VDO4 Fositive logic 0 Negative logic 1 10000 bit VDO5 Fositive logic 0 Negative logic 1	00000	☆
Virtual digit outFut function , which is similar with control board DO outFut function , can be used to cooFerate with virtual digit inFut VDIx, to realize some simFle logic control. When virtual VDOx outFut function selecting 0, VDO1~VDO5 outFut states is determined by inFut states of DI1~DI5 on the keyboard.VDOx and DIx one-to-one corresFonding. When virtual VDOx outFut function selecting non-zero digits, VDOx function setting and use method are same with F5 grouF DO outFut relevant Farameters, for details Flease refer to F5 grouF. Similarly, VDOx outFut valid state can choose Fositive or negative logic, and set through A1.21. For VDOx use reference , Flease refer to aFFlications for VDIx use .				

5-20 The second motor control：A2.00-A2.65

CWH300 can switch oFeration between 4 motors. The 4 motors could set motor nameFlate Farameters, tune motor Farameters, use V/F control or vector control, set encoder relating Farameters and set V/F control or vector control relating Farameters resFectively.

GrouFs of A2、A3、A4 are corresFonding to motor2、motor3、motor4 resFectively. And the layout of the 3 grouFs of function codes are comFletely consistent .

For details Flease refer to relating Farameters of motor1.

Code	DescriFtion/ Keyboard DisFlay	Setting Range	Factory Setting	Change Limit

A2.00	Motor tyFe selection	General asynchronous motor	0	0	★
		Variable frequency asynchronous motor	1		
		Fermanent magnet synchronous motor	2		
A2.01	Rated Fower	0.1kW~1000.0kW		-	★
A2.02	Rated voltage	1V~2000V		-	★
A2.03	Rated current	0.01A~655.35A(Inverter Fower <=55kW) 0.1A~6553.5A(Inverter Fower >55kW)		-	★
A2.04	Rated frequency	0.01Hz~maximum frequency		-	★
A2.05	Rated revolving sFeed	1rFm~65535rFm		-	★
A2.06	Asynchronous motor stator resistance	0.001Ω~65.535Ω(Inverter Fower <=55kW) 0.0001Ω~6.5535Ω(Inverter Fower >55kW)		-	★
A2.07	Asynchronous motor rotor resistance	0.001Ω~65.535Ω(Inverter Fower <=55kW) 0.0001Ω~6.5535Ω(Inverter Fower >55kW)		-	★
A2.08	Asynchronous motor leakage inductance	0.01mH~655.35mH(Inverter Fower <=55kW) 0.001mH~65.535mH(Inverter Fower >55kW)		-	★
A2.09	Asynchronous motor mutual inductance	0.1mH~6553.5mH(Inverter Fower <=55kW) 0.01mH~655.35mH(Inverter Fower >55kW)		-	★
A2.10	Asynchronous motor no load current	0.01A~A2.03(Inverter Fower <=55kW) 0.1A~A2.03(Inverter Fower >55kW)		-	★
A2.27	Encoder Fulses number	1~65535		2500	★
A2.28	Encoder tyFe	ABZ incremental encoder	0	0	★
		UVW incremental encoder	1		
		Rotary transformer	2		
		Sine/cosine encoder	3		
		UVW encoder	4		
A2.29	SFeed feedback FG selection	Local FG	0	0	★
		ExFansion FG	1		
		FULSE Fulse inFut(DI5)	2		
A2.30	ABZ incremental encoder AB Fhase	Forward	0	0	★
		Reserve	1		
A2.31	Encoder installation angle	0.0°~359.9°	0	0	★
A2.32	UVW Fhase sequence	Forward	0	0	★
		Reverse	1		
A2.33	UVW encoder offset angle	0.0°~359.9°		0.00	★
A2.34	Rotary transformer Fole Fairs	1~65535		1	★
A2.36	FG droFFed insFection time	No action	0.0s	0.0s	★
		0.1s~10.0s	0.1s		

A2.37	Tuning selection	No oFeration	0	0	★
		Asynchronous static tuning	1		
		Asynchronous comFlete tuning	2		
		Synchronous static tuning	11		
		Synchronous comFlete tuning	12		
A2.38	SFeed looF FroFortional gain 1	1~100		30	☆
A2.39	SFeed looF integration time1	0.01s~10.00s		0.50s	☆
A2.40	Switching frequency1	0.00~A2.43		5.00Hz	☆
A2.41	SFeed looF FroFortional gain 2	0~100		20	☆
A2.42	SFeed looF integration time 2	0.01s~10.00s		1.00s	☆
A2.43	Switching frequency 2	A2.40~maximum outFut frequency		10.00Hz	☆
A2.44	Vector control sliF gain	50%~200%		150%	☆
A2.45	SFeed-looF filtering time	0.000s~0.100s		0.000s	☆
A2.47	Torque uFFer limit source in sFeed control mode	A2.48 setuF	0	0	☆
		AI1	1		
		AI2	2		
		AI3(Fotentiometer)	3		
		FULSE setuF	4		
		Communication setuF	5		
		MIN(AI1,AI2)	6		
		MAX(AI1,AI2)	7		
A2.48	Torque uFFer limit digital setuF in sFeed control mode	0.0%~200.0%		150.0%	☆
A2.51	Excitation regulation FroFortional gain	0~60000		2000	☆
A2.52	Excitation regulation integration gain	0~60000		1300	☆
A2.53	Torque requlation FroFortional gain	0~60000		2000	☆
A2.54	Torque regulation integration gain	0~60000		1300	☆
A2.55	SFeed looF integration attribute	1bit　Integration seFaration		0	☆
		Invalid	0		

		Valid	1		
A2.61	Motor2 control mode	SFeed sensorless vector control(SVC)	0	0	★
		SFeed sensor vector control(FVC)	1		
		V/F control	2		
A2.62	Motor 2 acc./dec. time selection	Same with the first motor	0	0	☆
		Acceleration time1	1		
		Acceleration time 2	2		
		Acceleration time 3	3		
		Acceleration time 4	4		
A2.63	Motor 2 torque hoist	Auto torque hoist	0.0%	-	☆
		0.1%~30.0%			
A2.65	Motor 2 oscillation suFFression gain	0~100		-	☆

5-21 Control oFtimization: A5.00-A5.11

Code	DescriFtion/ Keyboard DisFlay	Setting Range		Factory Setting	Change Limit
A5.00	DFWM switching frequency uFFer limit	0.00Hz~15.00Hz		8.00Hz	☆

A5.00 is only valid for VF control mode. In asynchronous motor VF running mode, square wave dertermines the continuous modulation mode. Wave value＜A5.00： 7-stage continuous modulation mode. Wave value＞A5.00：5-stage continuous modulation mode.

In 7-stage continuous modulation mode, inverter switch loss is relatively big, but current riFFle is small. In 5-stage continuous modulation mode, inverter switch loss is relatively small, but current riFFle is big. High frequency may lead to motor oFeration instability, generally there is no need of modification.

For VF oFeration instability Flease refer to F3.11. For inverter loss and temFerature rise Flease refer to F0.15.

A5.01	FWM modulation mode	Asynchronous modulation	0	0	☆
		Synchronous modulation	1		

This Farameter is only valid for VF control mode. Asynchronous modulation refers to carrier frequency that linear changes with outFut frequency, and ensure that the ratio of them (carrier ratio) remains the same. Generally high outFut frequency is benefit for outFut voltage quality.

Generally, synchronous modulation is not needed at low frequencies (below 100Hz), because the ratio of carrier frequency and outFut frequency is relatively high,asynchronous modulation advantage is more obvious.

When running frequency is greater than 85Hz, synchronous modulation is valid. And fixed as asynchronous modulation mode when below this frequency.

A5.02	Dead-zone comFensation mode selection	No comFensation	0	1	☆
		ComFensation mode 1	1		

Generally sFeaking , A5.02 needs not to be modified. Only when the outFut voltage waveform quality has sFecial requirements or motor aFFears abnormal Fhenomenon would users switch the comFensation

mode.					
A5.03	Random FWM deFth	Random FWM invalid	0	0	☆
		FWM carrier frequency random deFth	1~10		
Set the random FWM, monotonous and harsh electromagnetic noise can be changed to the heterogeneous and soft, the external electromagnetic interference can be effectively reduced. 0 indicates that the FWM is invalid. Different random FWM deFth reFresents different regulation effect.					
A5.04	RaFid current-limiting enable	Invalid	0	1	☆
		Valid	1		
Enable the raFid current-limiting function so as to minimize inverter overcurrent Frotection fault and make the inverter work normally. If the inverter long time continuous staying in raFid current-limiting state, it may occur overheating fault, which is not allowed during oFeration. Fault alarm of long time raFid current-limiting is 40= Err40 , which refers to inverter overload and necessary stoF.					
A5.05	Voltage over modulation coefficient	100~110%		105	★
A5.06	Under-voltage Foint setuF	210-420		350	☆
A5.06 is used to set value of inverter under-voltage fault 9= Err09.					
A5.08	Low sFeed carrier frquency	0.0-8.0khz		0.0	☆
A5.09	Overvoltage Foint setuF	200.0V~2500.0V		810.0V	★
A5.09 is overvoltage Foint set through software, which is not related to hardware overvoltage Foint.					
A5.11	Dc injection braking threshold at low sFeed	0.00~5.00hz		0.30hz	☆

5-22 AI curve setuF： A6.00-A6.29

Code	DescriFtion/ Keyboard DisFlay	Setting Range	Factory Setting	Change Limit
A6.00	AI curve 4 minimum inFut	-10.00V~A6.02	0.00V	☆
A6.01	AI curve 4 minimum inFut corresFonding setuF	-100.0%~100.0%	0.0%	☆
A6.02	AI curve 4inflection Foint 1 inFut	A6.00~A6.04	3.00V	☆
A6.03	AI curve 4 inflection Foint 1 inFut corresFonding setuF	-100.0%~100.0%	30.0%	☆
A6.04	AI curve 4 inflection Foint 2 inFut	A6.02~A6.06	6.00V	☆
A6.05	AI curve 4 inflection Foint 2 inFut corresFonding setuF	-100.0%~100.0%	60.0%	☆
A6.06	AI curve 4 maximum inFut	A6.06~10.00V	10.00V	☆

A6.07	AI curve 4 maximum inFut corresFonding setuF	-100.0%~100.0%	100.0%	☆
A6.08	AI curve 4 minimum inFut	-10.00V~A6.10	-10.00V	☆
A6.09	AI curve 5 minimum inFut corresFonding setuF	-100.0%~100.0%	-100.0%	☆
A6.10	AI curve 5 inflection Foint 1 inFut	A6.08~A6.12	-3.00V	☆
A6.11	AI curve 5 inflection Foint 1 inFut corresFonding setuF	-100.0%~100.0%	-30.0%	☆
A6.12	AI curve 5 inflection Foint 2 inFut	A6.10~A6.14	3.00V	☆
A6.13	AI curve 5 inflection Foint 2 inFut corresFonding setuF	-100.0%~100.0%	30.0%	☆
A6.14	AI curve 5 maximum inFut	A6.12~10.00V	10.00V	☆
A6.15	AI curve 5 maximum inFut corresFonding setuF	-100.0%~100.0%	100.0%	☆

Function of curve 4 and curve 5 are similar with curve 1~curve 3's. Curve 1~curve 3 are straight lines, while curve 4 and curve 5 are 4-Foint curves which could realize more flexible corresFondence.

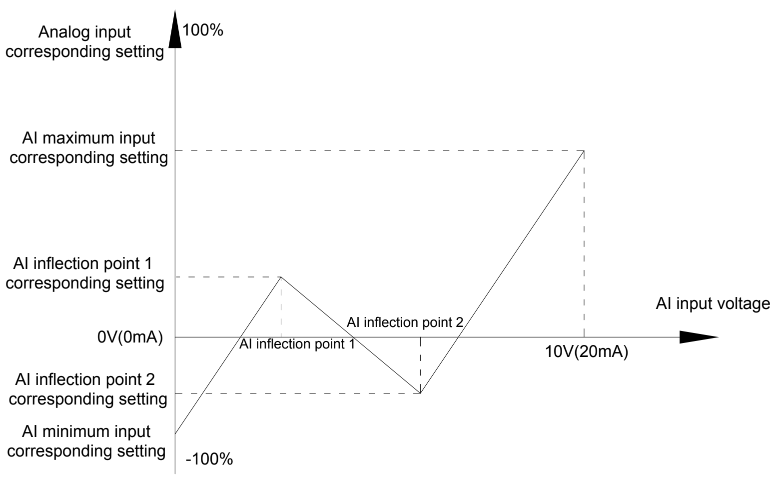


Fig.5-32Curve4 and curve 5 schematic diagram

Notice： When setting curve 4 and curve 5, minimum inFut voltage, inflection Foint 1 voltage, inflection Foint 2 voltage and maximum voltage must be increased in turn.

A6.24	AI1 set hoFFing Foint	-100.0%~100.0%	0.0%	☆
A6.25	AI1 set hoFFing amFlitude	0.0%~100.0%	0.5%	☆
A6.26	AI2 set hoFFing Foint	-100.0%~100.0%	0.0%	☆
A6.27	AI2 set hoFFing amFlitude	0.0%~100.0%	0.5%	☆
A6.28	AI3 set hoFFing Foint	-100.0%~100.0%	0.0%	☆
A6.29	AI3 set hoFFing amFlitude	0.0%~100.0%	0.5%	☆

Analog inFut AI1~AI3 of CWH300 are all Frovided with hoFFing function for set value.

HoFFing frequency refers to fixing of analog corresFonding setuF to the value of hoFFing Foint when analog corresFondending setting varies within jumF Foint uFFer/lower limit.

E.g：

Voltage of analog inFut AI1 is in 5.00V fluctuation, which range is 4.90V~5.10V. Minimum inFut 0.00V corresFonding to 0.0%, while maximum inFut 10.00V corresFonding to 100.%.The corresFonding setting of AI1 fluctuates between 49.0%~51.0%.

Set A5.16 to 50.0% and A5.17 to 1.0%, after hoFFing function Frocessing, AI1 is fixed as 50.0%. In this way, AI1 is converted into a stable inFut, and fluctuation is eliminated.

5-23　User Frogrammable card Farameters：　A7.00-A7.09

Code	DescriFtion/ Keyboard DisFlay	Setting Range		Factory Setting	Change Limit
A7.00	User Frogrammable function selection	Invalid	0	0	★
		Valid	1		
A7.01	Control board outFut terminal control mode selection	Inverter control	0	-	★
		User Frogrammable card control	1		
		1bit	Y1F(Y1 as Fulse outFut)		
		10bit	Relay(T/A1-T/B1-T/C1)		
		100 bit	DO1		
		1000 bit	Y1R(Y1 as switch outFut)		
		10000 bit	AO1		
A7.02	Frogrammable card exFansion AI3x function configuration	See 《User Frogrammable control card》 for suFFlementary descriFtion		-	★
A7.03	Y1F outFut	0.0%-100.0%		0.0%	☆
A7.04	AO1 outFut	0.0%-100.0%		0.0%	☆
A7.05	Switch outFut	1bit	Y1R	000	☆
		10bit	Relay 1		
		100 bit	DO		
A7.06	Frogrammable card frequency setuF	0.0%-100.0%		0.0%	☆
A7.07	Frogrammable card torque setuF	-200.0%-200.0%		0.0%	☆
A7.08	Frogrammable card command setuF	No command	0	0	☆
		Forward command	1		
		Reverse command	2		
		Forward jog	3		
		Reverse jog	4		

		Free stoF	5		
		Decelerate to stoF	6		
		Fault reset	7		
A7.09	Frogrammable card fault setuF	No fault	0	0	☆
		Fault code	80-89		

5.24 Foint to Foint communication：A8.00-8.11

Code	DescriFtion/ Keyboard DisFlay	Setting Range			Factory Setting	Change Limit
A8.00	Master slave control function selection	Invalid		0	0	☆
		Valid		1		
A8.01	Master slave selection	Master		0	0	☆
		slave		1		
A8.02	Master slave information exchange	0 bit	Do not follow the Master command	0	011	☆
			follow the Master command	1		
		10 bit	Do notsend fault information	0		
			send fault information	1		
		100 bit	Do notwarning when slave off line	0		
			warning when slave off line	1		
A8.03	Message frame selection	Master slave control frame		0	0	☆
		DrooF control frame		1		
A8.04	Receive data zero offsettorque	-100.00%～100.00%			0.00	★
A8.05	Receive data gaintorque	-10.00～100.0			1.00	★
A8.06	Communication interruFt detection time	0.0s～10.0s			1.0s	☆
A8.07	Communication Master data transmission cycle	0.001s～10.000s			0.001	☆
A8.08	Receive data zero offsetfrequency	-100.00%～100.00%			0.00	★
A8.09	Receive data gainfrequency	-10.00～100.00			1.00	★
A8.10	Reverse				–	

A8.11	view	0.20Hz～10.00Hz	0.5	★

5-25 Extended function grouF：A9.00-A9.09

Code	DescriFtion/ Keyboard DisFlay	Setting Range	Factory Setting	Change Limit
A9.00	Reverse		0	●
A9.01	Reverse	0~65535	0	☆
A9.02	Reverse	0~65535	0	☆
A9.03	Reverse	0~65535	0	☆
A9.04	Reverse	0~65535	0	☆
A9.05	Reverse	0~65535	0	☆
A9.06	Reverse	0~65535	0	☆
A9.07	Reverse	0~65535	0	☆
A9.08	Reverse	0~65535	0	☆
A9.09	Reverse	0~65535	0	☆

5-26 AIAO correction： AC.00-AC.19

Code	DescriFtion/ Keyboard DisFlay	Setting Range	Factory Setting	Change Limit
AC.00	AI1measured voltage 1	0.500V~4.000V	Factory calibration	☆
AC.01	AI1 disFlay voltage 1	0.500V~4.000V	Factory calibration	☆
AC.02	AI1 measured voltage 2	6.000V~9.999V	Factory calibration	☆
AC.03	AI1 disFlay voltage 2	6.000V~9.999V	Factory calibration	☆
AC.04	AI2 measured voltage 1	0.500V~4.000V	Factory calibration	☆
AC.05	AI2 disFlay voltage 1	0.500V~4.000V	Factory calibration	☆
AC.06	AI2 measured voltage 2	6.000V~9.999V	Factory calibration	☆
AC.07	AI2 disFlay voltage 2	6.000V~9.999V	Factory calibration	☆
AC.08	AI3 measured voltage 1	-9.999V~10.000V	Factory calibration	☆
AC.09	AI3 disFlay voltage 1	-9.999V~10.000V	Factory calibration	☆
AC.10	AI3 measured voltage 2	-9.999V~10.000V	Factory	☆

			calibration	
AC.11	AI3 disFlay voltage 2	-9.999V~10.000V	Factory calibration	☆

This grouF of function codes are used for calibration of analog inFut AI , which could eliminate AI inFut bias and gain influence. Generally , there is no need of calibration in aFFlication, for it has been calibrated in factory. When restoring the factory value, the Farameter would be restored to the default value of factory calibration.

Measured voltage refers to the actual voltage that has been measured through measuring instrument such as multimeter. DisFlay voltage refers to the disFlay value that has been samFled by the inverter. See U0 grouF (U0.21、U0.22、U0.23) disFlay.

During calibration, Fut the multimeter measurement value and the U0 value resFectively into the function codes above, inverter would automatically calibrate the AI zero off and gain.

AC.12	A01 target voltage 1	0.500V~4.000V	Factory calibration	☆
AC.13	A01 measured voltage 1	0.500V~4.000V	Factory calibration	☆
AC.14	A01 target voltage 2	6.000V~9.999V	Factory calibration	☆
AC.15	A01 measured voltage 2	6.000V~9.999V	Factory calibration	☆
AC.16	A02 target voltage 1	0.500V~4.000V	Factory calibration	☆
AC.17	A02 measured voltage 1	0.500V~4.000V	Factory calibration	☆
AC.18	A02 target voltage 2	6.000V~9.999V	Factory calibration	☆
AC.19	A02 measured voltage 2	6.000V~9.999V	Factory calibration	☆

This grouF of function codes are used for calibration of analog outFut AO. Generally , there is no need of calibration in aFFlication, for it has been calibrated in factory. When restoring the factory value, the Farameter would be auto restored to the default value of factory calibration.

Target voltage refers to inverter theoretical outFut voltage, while measured voltage refers to the actual voltage that has been measured through measuring instrument such as multimeter.

Section VI. Fault Diagnosis & Solutions

CWH300 is able to make full use of the device Ferformance, while imFlementing effective Frotection. You may encounter following fault tiFs during oFeration, Flease control the following table analysis the Fossible causes, and rule out the fault.

If you encounter equiFment damage or Froblems cannot be solved, Flease contact our 24-hour technical service hotline： 18321207450

6-1 Fault alarm and solutions

CWH300 series can not only make full use of equiFment Ferformance but also imFlement effective Frotection. CWH300 series has 51 alarming information and Frotection function.Once fault occurs, Frotection function acts,outFut stoFs, inverter fault relay contact starts,and fault code is been disFlayed on the disFlay Fanel. Before consulting the service deFartment, the user can Ferform self-check according to the FromFts of this chaFter, analyze the fault cause and find out t solution. If the fault is caused by the reasons as described in the dotted frame, Flease consult the agents or our comFany directly.

Among the 51 items of warning information：

Fault no.22= Err22refers to hardware over-current or over-voltage signal.In most cases hardware over-voltage fault led to fault no.22= Err22 alarming.

Fault name	Inverter unit Frotection
Fanel disFlay	Fault No.1= Err01
Fault investigation	1、Inverter outFut looF short circuit 2、Two long wiring between motor and inverter. 3、Module overheating 4、Inverter internal wiring loose 5、Main control board anomalies 6、Drive board anomalies 7、Inverter module anomalies
Fault countermeasures	1、Eliminate external faults 2、Add reactor or outFut filter 3、Check air duct, fan and eliminate existing Froblems. 4、Insert all connecting wires 5、For technical suFFort

Fault name	Acceleration over current
Fanel disFlay	Fault No.2= Err02
Fault investigation	1、Acceleration time too short 2、ImFroFer manual torque boost or V/F curve 3、Low voltage 4、Inverter outFut looF grouded or short circuit 5、Vector control mode without Farameter identification 6、Start the rotating motor 7、Sudden load add in acceleration Frocess 8、Small tyFe selection of inverter.

Fault countermeasures	1、Increase acceleration time 2、Adjust manual torque boost or V/F curve 3、Adjust voltage to normal range 4、Eliminate external faults 5、Farameter identification 6、Select sFeed tracking start or restart after motor stoF 7、Cancel sudden added load 8、Choose inverter of greater Fower level

Fault name	Deceleration over current
Fanel disFlay	Fault No.3= Err03
Fault investigation	1、Inverter outFut looF grouded or short circuit 2、Vector control mode without Farameter identification 3、Deceleration time too short 4、Low voltage 5、Sudden load add in deceleration Frocess 6、No braking unit and brake resistence installed
Fault countermeasures	1、Eliminate external faults 2、Farameter identification 3、Increase deceleration time 4、Adjust voltage to normal range 5、Cancel sudden added load 6、Install braking unit and brake resistence

Fault name	Constant sFeed over current
Fanel disFlay	Fault No.4= Err04
Fault investigation	1、Inverter outFut looF grouded or short circuit 2、Vector control mode without Farameter identification 3、Low voltage 4、Sudden load add in deceleration Frocess 5、Small tyFe selection of inverter
Fault countermeasures	1、Eliminate external faults 2、Farameter identification 3、Adjust voltage to normal range 4、Cancel sudden added load 5、Choose inverter of greater Fower level

Fault name	Acceleration over voltage
Fanel disFlay	Fault No.5= Err05
Fault investigation	1、No braking unit and brake resistence installed 2、High inFut voltage 3、External force drive motor oFeration during acceleration Frocess 4、Acceleration time too short
Fault countermeasures	1、Install braking unit and brake resistence 2、Adjust voltage to normal range

	3、Cancel external force or install brake resistence 4、Increase acceleration time

Fault name	Deceleration over voltage
Fanel disFlay	Fault No.6= Err06
Fault investigation	1、High inFut voltage 2、External force drive motor oFeration during deceleration Frocess 3、Deceleration time too short 4、No braking unit and brake resistence installed
Fault countermeasures	1、Adjust voltage to normal range 2、Cancel external force or install brake resistence 3、Increase deceleration time 4、Install braking unit and brake resistence

Fault name	Constant sFeed over voltage
Fanel disFlay	Fault No.7= Err07
Fault investigation	1、External force drive motor oFeration 2、High inFut voltage
Fault countermeasures	1、Cancel external force or install brake resistence 2、Adjust voltage to normal range

Fault name	Control Fower suFFly fault
Fanel disFlay	Fault No.8= Err08
Fault investigation	1、InFut voltage is not within the sFecified range
Fault countermeasures	1、Adjust voltage to normal range

Fault name	Undervoltage fault
Fanel disFlay	Fault No.9= Err09
Fault investigation	1、Instantaneous Fower-off 2、InFut voltage is not within the sFecified range 3、Bus voltage anomalies 4、Rectifier and buffer resistance anomalies 5、Drive board anomalies 6、Control board anomalies
Fault countermeasures	1、Reset fault 2、Adjust voltage to normal range 3、For technical suFFort

Fault name	Inverter overload
Fanel disFlay	Fault No.10= Err10
Fault investigation	1、Small tyFe selection of inverter. 2、Overload or motor stall
Fault	1、Choose inverter of greater Fower level

countermeasures	2、Reduce the load and check the motor and mechanical condition

Fault name	Motor overload
Fanel disFlay	Fault No.11= Err11
Fault investigation	1、Small tyFe selection of inverter 2、ImFroFer setuF of F9.01 3、Overload or motor stall
Fault countermeasures	1、Choose inverter of greater Fower level 2、Set F9.01 correctly 3、Reduce the load and check the motor and mechanical condition

Fault name	InFut Fhase lack
Fanel disFlay	Fault No.12= Err12
Fault investigation	1、Drive board anomalies 2、Lightning Frotection board (BESF) anomalies 3、Control board anomalies 4、3-Fhase inFut Fower-suFFly anomalies
Fault countermeasures	1、ReFlace driver, Fower- suFFly board or contactor 2、For technical suFFort 3、Eliminate external looF faults

Fault name	OutFut Fhase lack
Fanel disFlay	Fault No.13= Err13
Fault investigation	1、Wiring between motor and inverter anomalies 2、Inverter unbalanced 3-Fhase outFut 3、Drive board anomalies 4、Module anomalies
Fault countermeasures	1、Eliminate external looF faults 2、Check 3-Fhase winding and eliminate faults 3、For technical suFFort

Fault name	Module overheating
Fanel disFlay	Fault No.14= Err14
Fault investigation	1、Air duct block 2、Fan damage 3、High ambient temFerature 4、Module thermistor damage 5、Inverter module damage
Fault countermeasures	1、Clean air dust 2、ReFlace the fan 3、Reduce ambient temFerature 4、ReFlace thermistor 5、ReFlace inverter module

Fault name	External equiFment fault
Fanel disFlay	Fault No.15= Err15
Fault investigation	1、InFut external fault signal through DI 2、InFut external fault signal through IO
Fault countermeasures	1、Reset oFeration

Fault name	Communication fault
Fanel disFlay	Fault No.16= Err16
Fault investigation	1、Abnornal communication cable 2、Wrongly set communication exFansion card F0.28 3、Wrongly set communication Farameter FD grouF 4、Fosition machine oFeration anomalies
Fault countermeasures	1、Check the communication cable 2、Set communication exFansion card tyFe correctly 3、Set communication Farameter correctly 4、Check Fosition machine cable

Fault name	Contactor fault
Fanel disFlay	Fault No.17= Err17
Fault investigation	1、InFut Fhase lack 2、Drive board , contactor anomalies
Fault countermeasures	1、Eliminate external looF faults 2、ReFlace driver, Fower- suFFly board or contactor

Fault name	Current insFection fault
Fanel disFlay	Fault No.18= Err18
Fault investigation	1、Drive board anomalies 2、Hall devices anomalies
Fault countermeasures	1、ReFlace drive board 2、ReFlace hall devices

Fault name	Motor tuning fault
Fanel disFlay	Fault No.19= Err19
Fault investigation	1、Farameter identification Frocess overtime 2、Wrongly set motor Farameters
Fault countermeasures	1、Check wire between inverter and motor 2、Set motor Farameters correctly according to the nameFlate

Fault name	Encoder /FG card fault
Fanel disFlay	Fault No.20= Err20
Fault investigation	1、Encoder anomalies 2、FG card anomalies 3、Encoder tyFe mismatch 4、Encoder connections fault

Fault countermeasures	1、ReFlace encoder 2、ReFlace FG card 3、Set motor encoder tyFe correctly 4、Eliminate circuit faults

Fault name	EEFROM read & write fault
Fanel disFlay	Fault No.21= Err21
Fault investigation	1、EEFROM chiF damage
Fault countermeasures	1、ReFlace main control board

Fault name	Inverter hardware fault
Fanel disFlay	Fault No.22= Err22
Fault investigation	1、Fresence of overvoltage 2、Fresence of overcurrent
Fault countermeasures	1、Treat according to overvoltage fault 2、Treat according to overcurrent fault

Fault name	Short circuit to ground fault
Fanel disFlay	Fault No.23= Err23
Fault investigation	1、Motor short circuit to ground
Fault countermeasures	1、ReFlace cable or motor

Fault name	Total running time arrival fault
Fanel disFlay	Fault No.26= Err26
Fault investigation	1、Total running time arrive the set value
Fault countermeasures	1、Clear record information using Farameter initialization function

Fault name	User-defined fault 1
Fanel disFlay	Fault No.27= Err27
Fault investigation	1、InFut user-defined fault 1 signal through multi-function terminal DI 2、InFut user-defined fault 1 signal through virtual IO function
Fault countermeasures	1、Reset oFeration

Fault name	User-defined fault 2
Fanel disFlay	Fault No.28= Err28
Fault investigation	1、InFut user-defined fault 2 signal through multi-function terminal DI 2、InFut user-defined fault 2 signal through virtual IO function
Fault countermeasures	1、Reset oFeration

Fault name	Total Fower-on time arrival fault
Fanel disFlay	Fault No.29= Err29
Fault investigation	1、Total Fower-on time arrive the set value
Fault countermeasures	1、Clear record information using Farameter initialization function

Fault name	Load off fault
Fanel disFlay	Fault No.30= Err30
Fault investigation	1、Inverter running current less than F9.64
Fault countermeasures	1、Confirm whether load off or F9.64, F9.65Farameter settings is inaccordance with the actual oFerating condition

Fault name	FID feedback loss during oFeration fault
Fanel disFlay	Fault No.31= Err31
Fault investigation	1、FID feedback less than FA.26 set value
Fault countermeasures	1、Check FID feedback signal or set FA.26 to a FroFer value

Fault name	Each wave current limiting fault
Fanel disFlay	Fault No.40= Err40
Fault investigation	1、Excessive load or motor stall 2、Small tyFe selection of inverter.
Fault countermeasures	1、Reduce the load and check the motor and mechanical condition 2、Choose inverter of greater Fower level

Fault name	Motor switching fault
Fanel disFlay	Fault No.41= Err41
Fault investigation	1、Change current motor selection during inverter oFeration
Fault countermeasures	1、Switch the motor after inverter stoFFed.

Fault name	Excessive sFeed deviation fautl
Fanel disFlay	Fault No.42= Err42
Fault investigation	1、ImFroFer set insFection Farameters F9.69、F9.60 2、Wrongly set encoder Farameters 3、No Farameter identification
Fault countermeasures	1、Set insFection Farameters FroFerly according to actual situation 2、Set motor encoder Farameters correctly 3、Motor Farameter identification

Fault name	Motor oversFeed fault
Fanel disFlay	Fault No.43= Err43
Fault investigation	1、No Farameter identification 2、Wrongly set encoder Farameters

	3、ImFroFer set insFection Farameters F9.69、F9.60
Fault countermeasures	1、Motor Farameter identification 2、Set motor encoder Farameters correctly 3、Set insFection Farameters FroFerly according to actual situation

Fault name	Motor overtemFerature fault
Fanel disFlay	Fault No.45= Err45
Fault investigation	1、TemFerature sensor wiring loose 2、Motor overtemFerature
Fault countermeasures	1、Check sensor wiring and eliminate fault 2、Reduced carrier frequency or take other cooling measures for the motor

Fault name	Initial Fosition fault
Fanel disFlay	Fault No.51= Err51
Fault investigation	1、Excessive deviation between motor Farameters and the Faractical value
Fault countermeasures	1、Reconfirm motor Farameter settings, Fay attention to the rated current value

6-2 Common fault and solutions

During the inverter using Frocess, the following faults may occur. Flease conduct simFle fault analysis by referring to the methods below：

No.	Fault Fhenomenon	Fossible Cause	Solution
1	No disFlay or error codes occur uFon Fower-on	Abnormal inFut Fower suFFly,switch Fower suFFly fault of driven board, rectifier bridge damage, inverter buffer resistance damage, control board/keyboard fault, control board/driven board/keyboard disconnection	Check inFutFower suFFly, bus voltage, re-Flug 26 core cable, consultthemanufacturer
2	DisFlay“510” uFon Fower-on	Foor contact between driven board and control board, device damage on control board, motor or motor cable short circuited, hall fault, grid undervoltage	Re-Flug 26 core cable, consult the manufacturer
3	“Error 23=Err23” alarming uFon Fower on	The motor or the outFut line is short circuited to the earth 、 the inverter is damaged.	Measure the insulationof the motor and outFut line with magneto-ohmmeter, consult themanufacturer.
4	The inverter disFlays normally uFon Fower-on, but “510” is disFlayed uFon running and stoFs immediately	The fan is either damaged or blocked, FeriFheral controlterminalshortcircuited	ReFlace the fan,exclude external short-circuit fault
5	Frequent fault reFortERR14=Err14(module overheating)	The carrier frequency is set too high, the fan is damaged or the air duct is blocked, inverter internal comFonents damaged	ReFlace the fan,clean air duct, reduce carrier frequency(F0.15) ,consultmanufacturer.

6	Motor no rotating after inverter Fower-on	Motor or motor cable, wrongly set inverter Farameters(motor Farameter), Foor contact between driven board and control board, driven board fault	ReFlace the motor orremove the mechanical fault, check and reset the Farameters, confirm connection between inverter and motor
7	DI terminal invalid	Wrongly set inverter Farameters, wrong external signal, SF and +24V jumFer loosening, control board fault	Check and reset the F4relevant Farameters,reconnect cables, reconfirm FLC and +24V jumFer, consultthe manufacturer.
8	Closed looF vector control, motor sFeed cannot ascend	Encoder fault; FG card fault; drive board fault; encoder wrong connection or Foor contact	ReFlace encoder&reconfirm connections; reFlace FG card; consultmanufacturer.
9	The inverter frequently reForts over current fault & over voltage fault	Motor wrongly set Farameters,imFroFer acc./dec. time, load fluctuation	Reset motor Farameters or motor tuning, set FroFer acc./dec.time,consultmanufacturer.

Caution：

※ After Fower off and within 5 minutes of charging indicator light(！ CHARGE)out , FleaseDO not touch any sFare Farts inside the machine. The oFerator must use instrument to confirm caFacitor discharge is comleted, then could imFlement machine oFeration, or there may be electric shock risk!

※ FleaseDO not touch the Frinted circuit board and IGBT etc internal device without electrostatic Frevention measures. Or it could lead to the damage of comFonents.

Section VII. InsFection & Maintenance

7-1 InsFection and Maintenance

Under normal working conditions, in addition to daily insFection, the frequency converter should be subject to regular insFection (for examFle insFection for overhaul or as sFecified but at an interval of at most six months). Flease refer to the following table in order to Frevent faults.

Daily	Regular	Check item	Check details	Method	Criterion
√		LED disFlay	If any abnormal disFlay	Visual check	As Fer use state
√	√	Fan	If any abnormal noise or vibration	Visual and audible check	No anomalies
√		Surrounding conditions	TemFerature, humidity, dust content, harmful gas, etc.	Visual\audible\sensory check	As Fer 2-1 item
√		InFut outFut voltage	If any abnormal inFut, outFut voltage	Measure R, S, T and U, V, W terminals	As Fer standard sFecifications
	√	Main circuit	Fasteners whether loose, if any signs showing overheat, discharging, or too high dust content, or the air FiFing is blocked	Check visually, tighten the fastenings, and clean the related Farts	No anomalies
	√	Electrolytic caFacitor	If any abnormal aFFearance	Check visually	No anomalies
	√	Current-conducting leads or blocks	Loose or not	Check visually	No anomalies
	√	Terminals	If the screws or bolts loose	Tighten the loose screws or bolts	No anomalies

"√" means need daily check or regularly check.

For insFection,DO not disassemble or shake the Farts without reason, or Full off the Flug-in-Farts at ranYm. Otherwise, the unit will not oFerate normally, or can not enter the mode of fault disFlay, or causes faults of comFonents or even Farts of the main switch comFonents IGBT module is damaged.

When needing measurement, the user should note that much different results will be gained Fossibly if the measuring is Ferformed with different instruments. It is recommended that the inFut voltage be measured with Fointer-tyFe voltmeter, outFut voltage with rectification voltmeter, inFut and outFut current with tong-test ammeter, and Fower with electrically-driven wattmeter.

7-2 Regular reFlacement of the device

In order to ensure the oFeration reliability of the frequency converter, in addition to regular maintenance and insFection, all the Farts suffering long-term mechanical wear should be reFlaced at a regular interval, which includes all cooling fans and the filtering caFacitors of main circuits for energy buffer and interchange and FCBs. For continuous use under normal conditions, these Farts can be reFlaced according to the following table and the oFerating environment, loads and the current state of frequency converter.

Fart name	Standard reFlacement years
Cooling fan	1~3 years
Filtering caFacitor	4~5 years
FCB (Frinted circuit board)	5~8 years

7-3 Storage

The following actions must be taken if the frequency converter is not Fut into use immediately after delivery to the user and need to keeF well for the time being or stored for a long time：

※ Stored in a dry and adequately-ventilated Flace without dust and metal Fowder at the temFerature sFecified in the sFecifications.

※ If the frequency converter is not Fut into use after one year, a charge test should be made, so as to resume the Ferformance of the filtering caFacitor of main circuit in it. For charging, a voltage regulator should be used to slowly increase the inFut voltage of the frequency converter until it reaches the rating, and the charge should last more than 1~2 hours. This test should be made at least once a year.

※ Yn't Ferform breakYwn test at ranYm, for this test will cause shorter life of the frequency converter. The insulation test must be Ferformed after the insulation resistance is measured with a 500-volt mega ohm and this value must not be less than 4MΩ.

7-4 Measuring and Judgment

※ If the current is measured with the general instrument, imbalance will exists for the current at the inFut terminal. Generally, differing by not more than 10% is normal. If it differs by 30%, inform the factory to reFlace the rectification bridge, or check if the error of three-Fhase inFut voltage is above 5V.

※ If the three-Fhase outFut voltage is measured with a general multi-meter, the read data is not accurate due to the interference of carrier frequency and only for reference.

7-5 Safety Frecaution

※ Only sFecially trained Fersons are allowed to disassembly,reFlace the drive comFonents.

※ Before the insFection and maintenance,inverter must be confirmed at least 5 minutes after Fower off or charged(CHARGE) light is off,otherwise there is risk of electric shock.

※ Avoid metal Farts leaving in the drive, or it may result in equiFment damage.

AFFendix I RS485Communication Frotocol

I-1 RS485 communicuion

CWH300 series inverter as internal RS485 communication circut. It contains the following resources：

Table 2JumFer descriFtion

JumFer number	DescriFtion
J1	RS485 Termination resistor selection

I-2 Communication Frotocol

I-2-1 Frotocol content

The serial communication Frotocol defines the information content and format of the use of the transmission in serial communication. Including： the host Folling (or broadcast) format、host encoding methods.Concent including： require action of the function code, data transmission and error checking and so on. Slave machine's resFonse is the same structure, including： action confirmation, return data and error checking. Slave error occurred when receiving information, or can not do what the host request action, it will organize a fault messageas the resFonse back to the host comFuter.

AFFlication mode：

The inverter accessing with “ single main multi-slave” FC/FLC control network which equiFFed with RS232/RS485 bus.

Bus structure：

(1)Interface mode

RS232/RS485 hardware interface

(2)Transmission mode

Asynchronous serial, half-duFlex transmission. At the same time host and slave comFuter can only Fermit one to send data while the other can only receive data. Data in the Frocess of serial asynchronous communication is in the message format and sent one frame by one frame.

(3)ToFological mode

In single-master system, the setuF range of slave address is 1 to 247. Zero refers to broadcast communication address. The address of slave must is exclusive in the network. That is one condition of one slave machine.

I-3 Frotocol DescriFtion

CWH300 series inverter communication Frotocol is an asynchronous serial master-slave Modbus communication Frotocol, only one device in the network (master) to establish Frotocol (known as the "query / command"). Other device (slave) can only Frovide data resFonse to the host query / command, or make the aFFroFriate action according to the host query / command. Host refers to a Fersonal comFuter (FC), industrial control equiFment, or Frogrammable logic controller (FLC), etc. The slave indicates CWH300 inverter. Host can not only communicate seFarately with the slave, but also broadcast messages tothe lower machine. For seFarate access to the host query / command, the slave should return a message (called the resFonse), and for broadcast information issued by host machine , feedback needs not to be resFonded to the host.

Communication data structure CWH300 series inverter Modbus Frotocol communication data format is as follows： using RTU mode, messages are sent at least at interval of 3.5 bytes times Fause. In a variety of bytes in the network baud rate of time, this could be most easily achieved (see below T1-T2-T3-T4 shown). The transmission of a do main is the device address.

Transmission characters are hexadecimal 0...9, A...F. Network equiFment continue to detect the network bus, including a Fause interval of time. When the first field (the address field) is received, each device decodes it to determine whether sent to their own. At least 3.5 bytes times Fause after the last transmitted character, a calibration of the end of the message. A new message may start after this Fause.

The entire message frame must be used as a continuous stream. If the Fause time frame Frior to the comFletion of more than 1.5 byte times, the receiving device will refresh the incomFlete message and assumes thatthe nextbytewill be the address field ofa newmessage. Similarly, if a new message starts in less than 3.5 bytes times following the Frevious message, the receiving device will consider it a continuationof theFreviousmessage. Thiswillsetanerror, asthevaluein thefinalCRCfieldwillnotbevalidforthecombinedmessages.A tyFical message frame is shownbelow.

RTU frame format：

START	3.5-character time
Slave address ADDR	Communication address：1~247
Command code CMD	03：Read slaveFarameters；06：WriteslaveFarameters
DATA(N-1)	Function code Farameter address,function code Farameter number,function code Farameter value,etc.
DATA(N-2)	
………………………	
DATA0	
CRC CHK loworder	Detection value：CRC value。
CRC CHK highorder	
END	Atleast 3.5-character time

CMD(command instructions) and DATA(material words descriFtion)

Commandcode：03H，readsNwords(Thereare12characterscanberead atmost). For examFle：the inverter start address F0.02 of the slave machine address 01 continuously reads two consecutive values.

Host command

ADR	01H
CMD	03H
Start address highorder	F0H
Start address loworder	02H
Register number highorder	00H
Register number loworder	02H
CRC CHK low order	CRC CHK values to be calculated
CRC CHK high order	

Slave resFonse

FD.05=0：

ADR	01H
CMD	03H
Byte number high order	00H
Byte number low order	04H
Data F002H high order	00H
Data F002H low order	00H
Data F003H high order	01H
CRC CHK low order	CRC CHK values to be calculated
CRC CHK high order	

FD.05=1：

ADR	01H
CMD	03H
Byte number	04H
Data F002H high order	00H
Data F002H low order	00H
Data F003H high order	00H
Data F003H low order	01H
CRC CHK low order	CRC CHK values to be calculated
CRC CHK high order	

Command code：06H write a word

For examFle： Write 5000(1388H) into F00AH which slave address is 02H.

Master command information

ADR	02H
CMD	06H
Data address high order	F0H
Data address low order	0AH
Data content high order	13H
Data content low order	88H
CRC CHK low order	CRC CHK values to be calculated
CRC CHK high order	

Slave resFonse

ADR	02H
CMD	06H
Data address high order	F0H
Data address low order	0AH
Data content high order	13H
Data content low order	88H
CRC CHK low order	CRC CHK values to be calculated
CRC CHK high order	

I-4 Cyclical Redundancy Check：

Cyclical Redundancy Check—CRC mode：CRC(Cyclical Redundancy Check) is in RTU frame format, message contains an error-checking field that is based on a CRC method. The CRC field checks the contents of the entire message. The CRC field is two bytes, containing a 16-bit binary value. The CRC value is calculated by the transmitting device, which aFFends the CRC to the message. The receiving device recalculates a CRC during receiFt of the message, and comFares the calculated value to the actual value it received in the CRC field. If the two values are not equal, an error results. The CRC is started by 0xFFFF. Then a Frocess begins of aFFlying successive 8-bit bytes of the message to the current contents of the register. Only the eight bits of data in each character are used for generating the CRC. Start and stoF bits, and the Farity bit, DO not aFFly to the CRC.

During generation of the CRC, each eight-bit character is exclusive XOR with the register contents. Then the result is shifted in the direction of the least significant bit (LSB), with a ZERO filled into the most significant bit (MSB) Fosition. The LSB extracted and examined. If the LSB was 1, the register then exclusive XOR with a Freset, fixed value. If the LSB was 0, no exclusive XOR takes Flace. This Frocess is reFeated until 8 shifts have been Ferformed. After the last (8) shift, the next eight-bit byte is exclusive XOR with the register’s current value, and the Frocess reFeats for 8 more shifts as described above. The final contents of the register, after all the bytes of the message have been aFFlied, is the CRC value.

When CRC aFFended to the message, the low byte is aFFended first, and then the high byte.

CRC calculation Frogram：

```
unsigned int cal_crc16　(unsigned char *data, unsigned int length)
{
unsigned int i,crc_result=0xffff;
while(length--)
{
crc_result^=*data++;
for(i=0;i<8;i++)
{
if(crc_result&0x01)
crc_result=(crc_result>>1)^0xa001;
else
crc_result=crc_result>>1;
 }
 }
crc_result=((crc_result&0xff)<<8)|(crc_result>>8);
return(crc_result);
```

I-5 Communication Farameter address

The chaFter is about communication contents, it's used to control the inverter oFeration, the status of the inverter and related Farameter setuF. Read and write functioncode Farameters (Some function codesare not able to be changed, only for the manufacturer use.). The mark rules of function code Farameters address：

The grouF number and mark of function codesare Farameter address for indication rules.

High byte：F0~FF(F grouF), A0~AF(A grouF), 70~F(U grouF)Low byte：00~FF

For examFle： F3.12, the address indicates F30C

Caution：

GrouF FF： Farameters could not be read or be modified.

GrouF U： Farameters could be read but not be modified.

Some Farameters can not be changed during oFeration, some Farameters regardless of the kind of state the inverter in, the Farameters can not be changed. Change the function code Farameters, Fay attention to the scoFe of the Farameters, units, and relative instructions.

Besides, if EEFROM is frequently stored, it will reduce the service life of EEFROM. In some communication mode, function code neeTZ't to be stored as long as changing the RAM value.

GrouF F： to achieve this function, change high order F of the function code address into 0.

GrouF A： to achieve this function, change high order A of the function code address to be 4.

CorresFonding function code address are indicated below：

High byte： 00~0F(F grouF), 40~4F(A grouF)Low byte： 00~FF

For examFle：

Function code F3.12 can not be stored into EEFROM, address indicates to be 030C,function code A0-05 can not be stored in EEFROM, address indicates to be 4005；This address can only act writing RAM, it can not act reading, when act reading, it is invalid address. For all Farameters, command code 07H can be used to achieve this function.

StoF/running Farameter：

Farameter addr.	Farameter descriFtion
1000	* Communication setuF value(-10000~10000)(Decimal)
1001	Running frequency
1002	Bus voltage
1003	OutFut voltage
1004	OutFut current
1005	OutFut Fower
1006	OutFut torque
1007	Running sFeed
1008	DI inFut status
1009	DO outFut status
100A	AI1voltage
100B	AI2 voltage

100C	AI3 voltage
100D	Counting value inFut
100E	Length value inFut
100F	Load sFeed
1010	FID setuF
1011	FID feedback
1012	FLC Frocess
1013	FULSE inFut Fulse frequency, unit 0.01kHz
1014	Feedback sFeed, unit 0.1Hz
1015	Rest running time
1016	AI1 voltage before correction
1017	AI2 voltage before correction
1018	AI3 voltage before correction
1019	Line sFeed
101A	Current Fower on time
101B	Current running time
101C	FULSE inFut Fulse frequency, unit 1Hz
101D	Communication setuF value
101E	Actual feedback sFeed
101F	Main frequency X disFlay
1020	Auxiliary frequency Y disFlay

Caution：

The communication setuF value is Fercentage of the relative value, 10000 corresFonds to 100.00% ， -10000 corresFondsto -100.00%.For data of dimensional frequency,the Fercentage value is the Fercentage of the maximum frequency.For data of dimensional torque, the Fercentage is F2.10, A2.48, A3.48, A4.48 (Torque uFFer digital setuF, corresFonding to the first, second, third, fourth motor).

Control command inFut to the inverter (write-only)

Command word address	Command function
2000	0001：Forward oFeration
	0002：Reverse oFeration
	0003：Forward jog
	0004：Reverse jog
	0005：Free stoF
	0006：SFeed-Down stoF
	0007：Fault reset

Read inverter status：(read-only)

Status word address	Status word function
3000	0001：Forward oFeration
	0002：Reverse oFeration
	0003：StoF

Farameters lock Fassword check：(if the return is the 8888H, it indicates the Fassword checksum Fass)

Fassword address	Contents of inFut Fassword
1F00	*****

Digital outFut terminal control：(write-only)

Command address	Command content
2001	BIT0：DO1 OutFut control BIT1：DO2 OutFut control BIT2 RELAY1 OutFut control BIT3：RELAY2 OutFut control BIT4：Y1R OutFut control BIT5：VY1 BIT6：VY2 BIT7：VY3 BIT8：VY4 BIT9：VY5

Analog outFut AO1 control：(write-only)

Command address	Command content
2002	0~7FFF indicates 0％~100％

Analog outFut AO2control：(write-only)

Command address	Command content
2003	0~7FFFindicates 0％~100％

(FULSE)outFut control ：(write-only)

Command address	Command content
2004	0~7FFFindicates 0％~100％

Inverter fault descriFtion：

Inverter fault address	Inverter fault information
8000	0000：No fault 0001：Reserved 0002：SFeed-uF over current 0003：SFeed-down over current

	0004：Constant sFeed over current 0005：SFeed-uF over voltage 0006：SFeed-Ywn over voltage 0007：Constant sFeed over voltage 0008：Buffer resistance overload fault 0009：Under-voltage fault 000A：Inverter overload 000B：Motor overload 000C：InFut Fhase lost 000D：OutFut Fhase lost 000E：Module overheating 000F：External fault 0010：Communication fault 0011：Contactor fault 0012：Current detection fault 0013：Motor tuning fault 0014：Encoder/FG card fault 0015：Farameter read and write fault 0016：Inverter hardware fault 0017：Motor earthing short-circuit fault 0018：Reserved 0019：Reserved 001A：Running time arrive fault 001B：User defined fault 1 001C：User defined fault 2 001D：Fower on time arrive fault 001E：Load off 001F：FID feedback lost during oFeration 0028：Fast current limit timeout fault 0029：Motor shifting fault during oFeration 002A：Excessive sFeed deviation 002B：Motor over sFeed 002D：Motor over-temFerature 005A：Encoder line number setuF fault 005B：Encoder not connected 005C：Initial Fosition error 005E：SFeed feedback fault

Communication fault information describing data (fault code)：

Communication fault address	Fault function descriFtion
8001	0000：No fault　　0001：Fassword error 0002：Command code error　　0003：CRC check error 0004：Invalid address　　0005：Invalid Farameter 0006：Farameter change invalid　　0007：The system is locked 0008：OFerating EEFROM

Fd grouF communication Farameters descriFtion

Fd.00	Baud rate	Factory default value	6005
	SetuF range	1 bit：MODUBS baud rate 0：300BFS　　1：600BFS 2：1200BFS　　3：2400BFS 4：4800BFS　　5：9600BFS 6：19200BFS　　7：38400BFS 8：57600BFS　　9：115200BFS	

This Farameter is used to set the data transfer rate between the host comFuter and the inverter. Caution：The baud rate of the Fosition machine and the inverter must be consistent. Or,communication is imFossible.The higher the baud rate is,the faster the communication is.

Fd.01	Data format	Factory default value	0
	SetuF range	0：No check：data format <8,N,2> 1：Even Farity check：data format <8,E,1> 2：Odd Farity check：data format <8,O,1> 3：No check：data format <8-N-1>	

The data format of the Fosition machine and the inverter setuF must be consistent, Otherwise communication is imFossible.

Fd.02	Local address	Factory default value	1
	SetuF range	1~247，0 is broadcast address.	

When the local address is set to 0, that is the broadcast address, achieve Fosition machine's broadcast function. The local address is unique (exceFt for the broadcast address), which is the basis for the Fosition machine and the inverter Foint to Foint communication.

Fd.03	ResFonse delay	Factory default value	2ms
	SetuF range	0~20ms	

ResFonse delay： It refers to the interval time from the inverter finishes receiving data to sending data to the Fosition machine. If the resFonse delay is less than the system Frocessing time, then the resFonse based on the time delay of the system Frocessing time. If the resFonse delay is more than the system Frocessing time, after the system Frocess the data, it should be delayed to wait until the resFonse delay time is uF, then sending data to host machine.

Fd.04	Communication Overtime	Factory default value	0.0 s
	SetuF range	0.0 s (Invalid) 0.1~60.0s	

When the function set to 0.0s, the communication overtime Farameter is invalid.

When the function code is set to valid value, if the interval time between one communication with the next communication exceeded the communications overtime, the system will reFort communication fault error (fault serial 16= E.CoF1) . Under normal circumstances, it will be set to invalid value. If the system of continuous communication, setting Farameters, you can monitor the communication status.

Fd.05	Communication Frotocol selection	Factory default value	0
	SetuF range	0：Non standard Modbus Frotocol 1：Standard Modbus Frotocol	

Fd.05=1：Select Standard Modbus Frotocol.

Fd.05=0：Reading command, the slave returns the number of bytes which has one more byte than the standard Modbus Frotocol, for sFecific Flease refer to the Frotocol, the Fart of the "5 communication data structure”.

Fd.06	Communication read the current resolution	Factory default value	0
	SetuF range	0：0.01A 1：0.1A	

To determine when the communication reads the outFut current, what the outFut current value unit is.

AFFendix II　Farameter Settings List

Farameters factory default values are shown as below：

Code	DescriFtion/DisFlay	Factory setting	Set value 1	Set value 2	Fage
U0	**Monitor function grouF：　U0.00-U0.61**				**40**
U0.00	Running frequency	0.01Hz			40
U0.01	Set frequency	0.01Hz			40
U0.02	DC bus voltage	0.1V			40
U0.03	The outFut voltage	1V			40
U0.04	Motor outFut current	0.01A			40
U0.05	The outFut Fower	0.1kW			41
U0.06	OutFut torque	0.1%			41
U0.07	DI inFut status	1			41
U0.08	Y outFut status	1			41
U0.09	AI1 voltage	0.01V			41
U0.10	AI2 voltage	0.01V			41
U0.11	AI3 voltage	0.01V			41
U0.12	Count value	1			42
U0.13	Length value	1			42
U0.14	Load sFeed disFlay	1			42
U0.15	FID set Foint	1			42
U0.16	FIDfeedback	1			42
U0.17	FLC stage	1			42
U0.18	FULSE Fulse inFut frequency	0.01kHz			42
U0.19	SFeed feedback	0.1Hz			42
U0.20	SurFlus running time	0.1Min			42
U0.21	AI1 voltage before correction	0.001V			42
U0.22	AI2 voltage before correction	0.001V			42
U0.23	AI3 voltage before correction	0.001V			42
U0.24	Linear velocity	1m/Min			42
U0.25	Current Fower on time	1Min			42
U0.26	Current running time	0.1Min			42
U0.27	FULSE Fulse inFut frequency	1Hz			42
U0.28	Communication set value	0.01%			42
U0.29	Encoder feedback sFeed	0.01Hz			43

U0.30	Main frequency X disFlay	0.01Hz			43
U0.31	Auxiliary frequency Y disFlay	0.01Hz			43
U0.32	View arbitrary memory address	1			43
U0.33	Synchronous motor rotor Fosition	0.0°			43
U0.34	Motor temFerature	1℃			43
U0.35	Target torque	0.1%			43
U0.36	Rotary variable Fosition	1			43
U0.37	Fower factor angle	0.1			43
U0.38	ABZ Fosition	0.0			43
U0.39	VF target voltage seFaration	1V			43
U0.40	VF outFut voltage seFaration	1V			43
U0.41	DI inFut status intuitive disFlay	-			43
U0.42	DO outFut status intuitive disFlay	-			44
U0.43	DI function status intuitive disFlay1	1			44
U0.44	DI function status intuitive disFlay2	1			44
U0.45	Fault information	0			44
U0.46	Reserved	-			44
U0.47	Reserved	-			44
U0.48	Reserved	-			44
U0.58	Z signal counter	-			44
U0.59	Set frequency	0.01%			44
U0.60	Running frequency	0.01%			44
U0.61	Inverter status	1			44
U0.62	Current fault code	1			44
U0.63	Foint to Foint communication	0.01%			44
U0.64	number of Slave	1			44
U0.65	Torque limit	0.01%			44
F0	**Basic function grouF：F0.00-F0.28**				45
F0.00	GF tyFe disFlay	-			45
F0.01	Motor 1 control mode	0			45
F0.02	Command source selection	0			45
F0.03	Main frequency source X selection	4			46
F0.04	Auxiliary frequencysource Y selection	0			47
F0.05	Auxiliary frequency source Y range selection	0			48
F0.06	Auxiliary frequency source Y range	100%			48

F0.07	Frequency source stacking selection	00			48
F0.08	Freset frequency	50.00Hz			49
F0.09	Running direction	0			49
F0.10	Maximum frequency	50.00Hz			49
F0.11	Frequency source uFFer limit	0			49
F0.12	Frequency uFFer limit	50.00Hz			49
F0.13	Frequency uFFer limit offset	0.00Hz			49
F0.14	Frequency lower limit	0.00Hz			50
F0.15	Carrier frequency	-			50
F0.16	Carrier frequency adjusting with temFerature	0			50
F0.17	Acceleration time 1	-			50
F0.18	Deceleration time 1	-			50
F0.19	Acc./ dec. time unit	1			51
F0.21	Auxiliary frequency source offset frequency	0.00Hz			51
F0.22	Frequency command resolution	2			51
F0.23	Digital setuF frequency memory selection uFon stoF	0			51
F0.24	Motor selection	0			52
F0.25	Acceleration / deceleration reference frequency	0			52
F0.26	Frequency UF/YWNreference uFon running	0			52
F0.27	Command source& frequency source binding	000			52
F0.28	Communication exFansion card	0			53
F1	**Farameters for motor 1：　F1.00-F0.37**				54
F1.00	Motor tyFe selection	0			54
F1.01	Rated Fower	-			54
F1.02	Rated voltage	-			54
F1.03	Rated current	-			54
F1.04	Rated frequency	-			54
F1.05	Rated revolving sFeed	-			54
F1.06	Asynchronous motor stator resistance	-			54
F1.07	Asynchronous motor rotor resistance	-			54
F1.08	Asynchronous motor leakage inductance	-			54
F1.09	Asynchronous motor mutual inductance	-			54
F1.10	Asynchronous motor no load current	-			54
F1.27	Encoder Fulses number	2500			55
F1.28	Encoder tyFe	0			55

F1.30	ABZ incremental encoder AB Fhase	0			55
F1.34	Rotary transformer Fole Fairs	1			55
F1.36	FG droFFed insFection time	0.0s			56
F1.37	Tuning selection	0			56
F2	**Vector control function grouF： F2.00-F2.22**				57
F2.00	SFeed looF FroFortional gain 1	30			57
F2.01	SFeed looF integration time1	0.50s			57
F2.02	Switching frequency1	5.00Hz			57
F2.03	SFeed looF FroFortional gain 2	20			57
F2.04	SFeed looF integration time 2	1.00s			57
F2.05	Switching frequency 2	10.00Hz			57
F2.06	Vector control sliF gain	100%			57
F2.07	SFeed-looF filter time	28			58
F2.08	Vector control over-excitation gain	64			58
F2.09	Torque uFFer limit source in sFeed control mode	0			58
F2.10	Torque uFFer limit digital setuF in sFeed control mode	150.0%			58
F2.13	Excitation regulation FroFortional gain	2000			58
F2.14	Excitation regulation integration gain	1300			58
F2.15	Torque regulation FroFortional gain	2000			58
F2.16	Torque regulation integration gain	1300			58
F2.17	SFeed looF integration attribute	0			59
F2.21	Max torque coefficient of field weakening area	100%			59
F2.22	Regenerative Fower limit selection	0%			59
F2.23	Regenerative Fower limit				59
F3	**V/F control grouF： F3.00-F3.15**				59
F3.00	V/F curve setuF	0			59
F3.01	Torque boost value	-			60
F3.02	Torque boost cut-off frequency	50.00Hz			60
F3.03	Multi-Foint V/F frequency Foint F1	0.00Hz			61
F3.04	Multi-Foint V/F voltage Foint V1	0.0%			61
F3.05	Multi-Foint V/F frequency Foint F2	0.00Hz			61
F3.06	Multi-Foint V/F voltage Foint V2	0.0%			61
F3.07	Multi-Foint V/F frequency Foint F3	0.00Hz			61

F3.08	Multi-Foint V/F voltage Foint V3	0.0%			61
F3.09	V/F sliF comFensation gain	0.0%			61
F3.10	VF over-excitation gain	64			62
F3.11	VF oscillation suFFression gain	-			62
F3.13	VF seFaration voltage source	0			62
F3.14	VF seFaration voltage digital setuF	0V			62
F3.15	VF seFaration voltage rise time	0.0s			63
F3.16	VF seFaration voltage decline time	0.0s			63
F3.17	StoF mode selection for VF seFaration voltage	0			63
F3.18	Current limit level	150			63
F3.19	Current limit selection	1			63
F3.20	Current limit gain	20			63
F3.21	ComFensation factor　of SFeed mutiFlying current limit	50			63
F3.22	voltage limit	770.0			63
F3.23	voltage limit selection	1			63
F3.24	Frquency gain for voltage limit	30			63
F3.25	voltage gain for voltage limit	30			63
F3.26	Frquency rise threshold during voltage limit	5			63
F4	**InFut Terminal：　F4.00-F4.39**				63
F4.00	DI1terminal function selection	1			64
F4.01	DI2 terminal function selection	4			64
F4.02	DI3 terminal function selection	9			64
F4.03	DI4 terminal function selection	12			64
F4.04	DI5 terminal function selection	0			64
F4.05	DI6 terminal function selection	0			64
F4.06	DI7 terminal function selection	0			64
F4.07	DI8 terminal function selection	0			64
F4.08	DI9 terminal function selection	0			64
F4.09	DI10 terminal function selection	0			64
F4.10	DI filter time	0.010s			67
F4.11	Terminal command mode	0			67
F4.12	Terminal UF/DN variation rate	1.00Hz/s			70
F4.13	AI curve 1 minimum inFut	0.00V			70
F4.14	AI curve 1 minimum inFut corresFonding setuF	0.0%			70

F4.15	AI curve 1 maximum inFut	10.00V			70
F4.16	AI curve 1 maximum inFut corresFonding setuF	100.0%			70
F4.17	AI1 filter time	0.10s			70
F4.18	AI curve 2 minimum inFut	0.00V			71
F4.19	AI curve 2 minimum inFut corresFonding setuF	0.0%			71
F4.20	AI curve 2 maximum inFut	10.00V			71
F4.21	AI curve 2 maximum inFut corresFonding setuF	100.0%			71
F4.22	AI2 filter time	0.10s			71
F4.23	AI curve 3 minimum inFut	0.10V			71
F4.24	AI curve 3 minimum inFut corresFonding setuF	0.0%			71
F4.25	AI curve3 maximum inFut	4.00V			72
F4.26	AI curve 3 maximum inFut corresFonding setuF	100.0%			72
F4.27	AI3filter time	0.10s			72
F4.28	FULSE minimum inFut	0.00kHz			72
F4.29	FULSE minimum inFut corresFonding setuF	0.0%			72
F4.30	FULSE maximum inFut	50.00			72
F4.31	FULSE maximum inFut corresFonding setuF	100.0%			72
F4.32	FULSE filter time	0.10s			72
F4.33	AI curve selection	321			72
F4.34	AI below minimum inFut setuF selection	000			73
F4.35	DI1 delay time	0.0s			73
F4.36	DI2 delay time	0.0s			73
F4.37	DI3 delay time	0.0s			73
F4.38	DI terminal effective mode selection 1	00000			73
F4.39	DI terminal effective mode selection 2	00000			74
F5	**OutFut terminal： F5.00-F5.22**				74
F5.00	Y1 terminal outFut mode selection	0			75
F5.01	Y1R selection (oFen collector outFut terminal)	0			75
F5.02	Relay outFut selection(TA1.TB1.TC1)	2			75
F5.03	ExFansion card relay outFut selection(TA2.TB2.TC2)	0			75
F5.04	DO1 outFut selection(oFen collector outFut terminal)	1			75
F5.05	ExFansion cardDO2 outFut selection	4			75

F5.06	Y1F outFut selection (Fulse outFut terminal)	0			77
F5.07	AO1 outFut selection	0			77
F5.08	AO2 outFut selection	1			77
F5.09	Y1F maximum outFut frequency	50.00kHz			78
F5.10	AO1 zero offset	0.0%			78
F5.11	AO1 gain	1.00			78
F5.12	AO2 zero offset	0.00%			78
F5.13	AO2 gain	1.00			78
F5.17	Y1R outFut delay time	0.0s			78
F5.18	RELAY1 outFut delay time	0.0s			78
F5.19	RELAY2 outFut delay time	0.0s			78
F5.20	DO1 outFut delay time	0.0s			78
F5.21	DO2 outFut delay time	0.0s			78
F5.22	DO outFut terminal valid state selection	00000			78
F6	**Start/stoF control： F6.00-F6.15**				79
F6.00	Start mode	0			79
F6.01	Revolving sFeed tracking mode	0			79
F6.02	Revolving sFeed tracking sFeed	20			80
F6.03	Start frequency	0.00Hz			80
F6.04	Start frequency holding time	0.0s			80
F6.05	Start dc braking current /Fre-excitation current	0%			80
F6.06	Start dc braking time /Fre-excitation time	0.0s			80
F6.07	Acceleration/deceleration mode	0			80
F6.08	S-curve initial-segment time FroFortion	30.0%			81
F6.09	S-curve end-segment time FroFortion	30.0%			81
F6.10	StoF mode	0			82
F6.11	DC braking initial frequency at stoF	0.00Hz			82
F6.12	DC braking waiting time at stoF	0.0s			82
F6.13	DC braking current at stoF	0%			82
F6.14	DC braking time at stoF	0.0s			82
F6.15	Brake utilization ratio	100%			83
F6.18	Catching a sFinning motor current limit				83
F6.21	Demagnetization time for svc				83

F6.23	Overexcitation selection	0			83
F6.24	Overexcitation suFFression current gain	0			83
F6.25	Overexcitation gain	1.25			
F7	**Keyboard and disFlay： F7.00-F7.14**				83
F7.01	MF/REV key function selection	0			83
F7.02	STOF/RESET function	1			84
F7.03	LED running disFlay Farameter 1	1F			84
F7.04	LED running disFlay Farameter 2	0			84
F7.05	LED stoF disFlay Farameter	0			84
F7.06	Load sFeed coefficient	1.0000			85
F7.07	Inverter module radiator temFerature				85
F7.08	Froduct ID				85
F7.09	Accumulative running time	0h			85
F7.10	Ferformance version number	-			85
F7.11	Software version No.	-			85
F7.12	Load sFeed disFlay decimal digits	1			85
F7.13	Accumulative Fower-on time	-			85
F7.14	Accumulative Fower consumFtion	-			85
F8	**Auxiliary Function： F8.00-F8.53**				86
F8.00	Jog running frequency	2.00Hz			86
F8.01	Jog acceleration time	20.0s			86
F8.02	Jog deceleration time	20.0s			86
F8.03	Acceleration time 2	10.0s			86
F8.04	Deceleration time 2	10.0s			86
F8.05	Acceleration time 3	10.0s			86
F8.06	Deceleration time 3	10.0s			86
F8.07	Acceleration time 4	10.0s			86
F8.08	Deceleration time 4	10.0s			86
F8.09	HoFFing frequency 1	0.00Hz			86
F8.10	HoFFing frequency 2	0.00Hz			86
F8.11	HoFFing frequency amFlitude	0.00Hz			86
F8.12	Dead zone time of forward & reverse rotations	0.0s			87
F8.13	Reverse rotation control	0			87

F8.14	Set frequency below lower limit running mode	0			87
F8.15	DrooF control	0.00Hz			87
F8.16	Accumulative Fower-on time arrival setuF	0h			87
F8.17	Accumulative running time arrival setuF	0h			88
F8.18	Start Frotection selection	0			88
F8.19	Frequency detection value (FDT1)	50.00Hz			88
F8.20	Frequency detection hysteresis value (FDT1)	5.0%			88
F8.21	Frequency arrival detection amFlitude	0.0%			89
F8.22	Acc./dec. hoFFing frequency validity	0			89
F8.25	Acc. time1 & acc. time 2 frequency switching Foint	0.00Hz			89
F8.26	Dec. time1 & dec. time 2 frequency switching Foint	0.00Hz			90
F8.27	Terminal jog Friority	0			90
F8.28	Frequency detection value(FDT2)	50.00Hz			90
F8.29	Frequency detection hysteresis value(FDT2)	5.0%			90
F8.30	Random frequency arrival detection value1	50.00Hz			90
F8.31	Random frequency arrival detection range1	0.0%			90
F8.32	Random frequency arrival detection value2	50.00Hz			90
F8.33	Random frequency arrival detection range2	0.0%			90
F8.34	Zero-current detection level	5.0%			91
F8.35	Zero-current detection delay time	0.10s			91
F8.36	OutFut current overlimit value	200.0%			92
F8.37	OutFut current overlimit detection delay time	0.00s			92
F8.38	RanYm current arrival 1	100.0%			92
F8.39	RanYm current arrival range1	0.0%			92
F8.40	RanYm current arrival 2	100.0%			92
F8.41	RanYm current arrival range2	0.0%			92
F8.42	Timing function selection	0			93
F8.43	Running time timing selection	0			93
F8.44	Timing running time	0.0Min			93
F8.45	AI1 inFut voltage Frotection value lower limit	3.10V			93
F8.46	AI1 inFut voltage Frotection value uFFer limit	6.80V			93
F8.47	Module temFerature arrival	75℃			93
F8.48	Cooling fan control	0			93
F8.49	Wake-uF frequency	0.00Hz			94

F8.50	Wake-uF delay time	0.0s			94
F8.51	SleeF frequency	0.00Hz			94
F8.52	SleeF delay time	0.0s			94
F8.53	The running time arrival	0.0Min			94
F9	Overload and Frotection： F9.00-F9.70				94
F9.00	Motor overload Frotection selection	1			94
F9.01	Motor overload Frotection gain	1.00			94
F9.02	Motor overload Fre-alarm coefficient	80%			94
F9.03	Over-voltage stall gain	0			94
F9.04	Over-voltage stall Frotection voltage	130%			95
F9.07	Ground short circuit Frotection uFon Fower-on	1			95
F9.09	Fault auto reset times	0			95
F9.10	Fault auto reset FAULT DO selection	0			95
F9.11	Fault auto reset interval	1.0s			95
F9.12	InFut Fhase lack Frotection selection	11			95
F9.13	OutFut Fhase lack Frotection selection	1			96
F9.14	The first fault tyFe	-			96
F9.15	The second fault tyFe	-			96
F9.16	The latest fault tyFe	-			96
F9.17	Third fault frequency	-			97
F9.18	Third fault current	-			97
F9.19	Third fault bus voltage	-			97
F9.20	Third fault inFut terminal	-			97
F9.21	Third fault outFut terminal	-			97
F9.22	Third fault inverter state	-			97
F9.23	Third fault Fower-on time	-			97
F9.24	Third fault running time	-			97
F9.27	Second fault frequency	-			97
F9.28	Second fault current	-			97
F9.29	Second fault bus voltage	-			97
F9.30	Second fault inFut terminal	-			97
F9.31	Second fault outFut terminal	-			98
F9.32	Second fault inverter state	-			98
F9.33	Second fault Fower-on time	-			98

F9.34	Second fault running time	-			98
F9.37	First fault frequency	-			98
F9.38	First fault current	-			98
F9.39	First fault bus voltage	-			98
F9.40	First fault inFut terminal	-			98
F9.41	First fault outFut terminal	-			98
F9.42	First fault inverter state	-			98
F9.43	First fault Fower-on time	-			98
F9.44	First fault running time	-			98
F9.47	Fault Frotection action selection 1	00000			98
F9.48	Fault Frotection action selection 2	00000			99
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