PREFACE

Thank you very much for choosing V600 series of sensorless vector inverter

This manual provides guidance of using the inverter safely and carefully, containing introduction of installation, wiring, parameter list, routine maintenance, operating rules and cautions, etc.

In order to make good use of the inverter properly and safely, please read this manual thoroughly before using. It may lead to abnormal operation and failure, reduce using life, even damage the equipment and cause personal injury if you use it wrongly.

This manual is attachment together with the inverter. Please keep it well and it would be available to engineering and installation personnel, repairing and maintaining during the product functioning period

We has the right to modify and ameliorate products, data and dimensions without notice, so this manual is updated and all the contents in this manual are subject to change without any notice.

Table of Contents

✧ PRECAUTIONS

In order to use the inverter properly and safely, please read this manual carefully before using. And you should follow the requirements of this manual to move, install, run, operate and repair the inverter.

1 Opening

Please check any damage that may have occurred during transportation.

[1] Please check whether the nameplate data of inverter is in accordance with your order, if anything wrong, please contact supplier immediately.

[2] Our product is manufactured, packed and transported in the strict quality system. But in case there is any error, please contact with our company or local agent, we will solve the problem as quickly as possible.

- Inverter's nameplate data

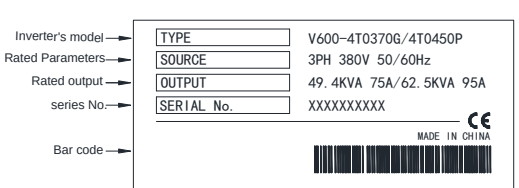


Fig 0-1 Nameplate

2 Safety regulations

There are two kinds of symbols being related with cautions as follows:

Danger: If user does not operate according to requirements, it will lead to death, grievous bodily harm or severe property loss.

Warning: If user does not operate according to requirements, it will lead to injury or damage of inverter.

2.1 Installing

[1] Do not put the inverter on the combustible material.

[2] V600 series inverter can't install in the explosive ambient.

[3] Do not drop other material into the inverter.

It is forbidden to disassemble and refit the inverter.

2.2 Wiring

[1] It must be operated by professional worker when wiring.

[2] Please be sure to turn off the power supply at least 10 min before wiring.

[3] Inverter and motor must be grounded correctly.

[4] Be sure to wire or inspect the inverter after power-off at least10 minutes.

[5] Electron components are sensitive about static electricity, so do not drop other material in inverter or touch the main circuit.

It is forbidden to connect an AC power supply with the U, V and W output terminals directly

3 Attention Notes:

[1] Be sure to install the inverter in a well-ventilated ambient.

[2] The temperature at variable-frequency will be higher than at line-frequency, which is normal phenomenon.

[3] The ordinary motor cannot run in the low speed for a long time, so user should select the special motor for inverter or reduce the motor load under the low speed.

[4] When the altitude is over 1000m, the inverter will be valid to decrease the rated current, and the rated current will decrease 10% when the attitude is increased 1500m.

4 Dispose:

When you dispose inverter and its parts, please pay attention to:

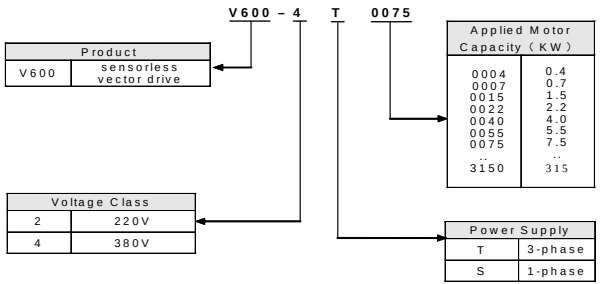
Capacitor: The capacitors in inverter may explode when they are burned.

Plastic: Poisonous gas may be generated when the front panel is burned, please pay attention to the waste gas when the plastic parts are burned.

Method: Please dispose inverter as industry rubbish.

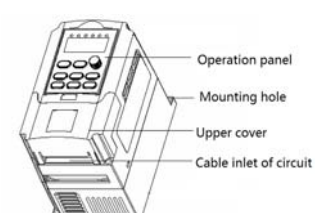
1. INTRODUCTION

1.1 Model explanation



1.2 Appearance description

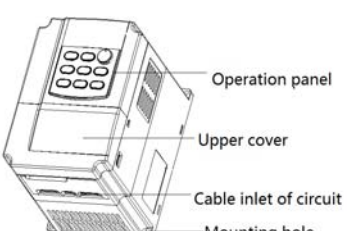
1.2.1 Appearance of model Ⅰ



It is fit for：

V600-2S0004～V600-2S0022

V600-4T0007～V600-4T0040

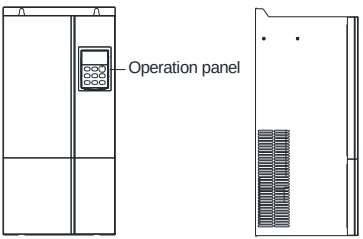


It is fit for：

V600-2S0040～V600-2S0055

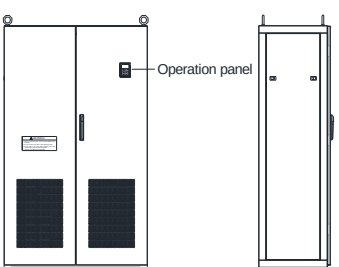
V600-4T0055～V600-4T0370

1.2.2 Appearance of model II



It is fit for：V600-4T0370G/4T0450P～V600-4T2500G/4T3150P

1.2.3 Appearance of model III



It is fit for：V600-4T3500G/4T4000P～V600-4T5600G/4T6300P

1.3 Model of Inverter

Model	General load (G-load)			Pump and fan load (P-load)		
	Rated Power (KVA)	Rated output current （A）	Applied motor Power (KW)	Rate Powe (W)	Rated output current （A）	Applied Motor Power (KW)
V600-2S0004G	1.1	3	0.4	--	--	--
V600-2S0007G	1.9	5	0.75	--	--	--
V600-2S0015G	2.9	7	1.5	--	--	--
V600-2S0022G	3.8	10	2.2	--	--	--
V600-2S0040G	5.7	16	4.0	--	--	--
V600-2S0055G	8.5	20	5.5	--	--	--
V600-4T0007G	1.6	2.5	0.75	--	--	--
V600-4T0015G	2.4	4.5	1.5	--	--	--
V600-4T0022G	3.6	5.5	2.2	--	--	--
V600-4T0040G	6.3	9.0	4.0	--	--	--
V600-4T0055G	8.6	13	5.5	--	--	--
V600-4T0075G	11	17	7.5	--	--	--
V600-4T0110G	16.5	25	11	--	--	--
V600-4T0150G	20.0	30	15	--	--	--
V600-4T0185G	25.7	39	18.5	--	--	--
V600-4T0220G	29.6	45	22	--	--	--
V600-4T0300G V600-4T0370P	39.5	60	30	--	--	--

V600-4T0370G V600-4T0450P	49.4	75	37	--	--	--
V600-4T0450G V600-4T0550P	60	91	45	73.7	112	55
V600-4T0550G V600-4T0750P	73.7	112	55	98.7	150	75
V600-4T0750G V600-4T0900P	98.7	150	75	116	176	90
V600-4T0900G V600-4T1100P	116	176	90	138	210	110
V600-4T1100G V600-4T1320P	138	210	110	171	260	132
V600-4T1320G V600-4T1600P	171	260	132	204	310	160
V600-4T1600G V600-4T1850P	204	310	160	237	360	185
V600-4T1850G V600-4T2000P	237	360	185	253	385	200
V600-4T2000G V600-4T2200P	253	385	200	276	420	220
V600-4T2200G V600-4T2500P	276	420	220	313	475	250
V600-4T2500G V600-4T2800P	313	475	250	352	535	280
V600-4T2800G V600-4T3150P	352	535	280	395	600	315
V600-4T3150G V600-4T3500P	395	600	315	424	645	350

1.4 **Specifications**

Input	Rated Voltage and freq.	Three-phase（4T） 380V, 50/60Hz	Single-phase（2S） 220V； 50/60Hz
	Permissible voltage fluctuation	Three-phase（4T） 300V ~ 460V	Single-phase（2S） 170V ~ 270V
Output	Voltage	Three-phase (4T) 0 ~380V	Single-phase(2S) 0~220V
	Frequency	0~600Hz	
	Over-loading Endurance	110% rated current for long-term； 150% rated current for 1min； 180% rated current for 2s	
Control Characteristics	Control System	V/F control	Sensorless current vector-control
	Torque start	the torque is 180% rated torque.	
	Speed range	1 ： 100	1 ： 200
	The lasting accuracy	±0.5%	±0.1%
	response time	≦ 20ms	≦ 5ms
	V/F curve	And V/F curve with multi-mode can be discretionally set. There are also three curves provided, Constant torque curve, Dec torque curve 1 and Dec torque curve 2.	

	Torque boost	Manual torque boost can be set between 0 and 20 percent; Automatic torque boost can be set according to output current.
	Current / voltage restraint	Current close-circuit control can avoid the current attack.
Freq. Control Resolution	Analog Input	0.1% of maximum output freq.
	Digital Input	0.01Hz
Freq. Precision	Analog Input	Within 0.2% of maximum output freq.
	Digital Input	Within 0.01% of setting freq.
Typical Functions	Multi-speed selection And Wobble freq. running	Up to 8 stages of programmable multi-speed control, 6 kinds of running mode Wobble freq. function is composed of preset freq., center freq. adjusted and saving state and restart when inverter just had power off.
	PID control	Embedded PID controller can preset freq.
	RS485 communication	Standard positioning RS485 Manifold communication protocols can be selected(MODBUS), having synchronous linkage function.
	Automatic energy saving	Input voltage and compensation for speed drop is adjusted by real-time output current.
	Voltage stabilizing running Automatically	To get the most stable running effect, user can select static stabilizing voltage, dynamics stabilizing voltage and non-stabilizing voltage.

	Determine speed and restart	To use the function of Smooth restarting and stop restarting during motor works.
	Counter	Embedded one counter, which will help the integration of system
	carrier frequency	1.5~12.0KHz ；
Freq. Setting	Analog input	DC 0～10V，DC current 0～20mA
	Digital input	It can be set by Operation panel, RS485, UP/DW terminal and combination setting.
Output Signa	Analog output	one output：0~10V voltage, 0~20mA current, and upper/lower limit can be set by user
	Digital output	Two OC output, 16 options can be selected, faults electric delay out can be selected .
Brake	Regenerative braking	75% above
	DC braking	Start and stop can be selected respectively, action freq. is form 0 to 50.0Hz, and action time is form 1 to 20.0s. Continuous action is also optional.
Protection/Warning Functions		Over current, over voltage, under current, under voltage, thermal relay, overheating, Short circuit, out voltage would be short of the phase, The parameters of motor is abnormal, Main contactor can't attract, Internal memory faults, etc.
Environmental Conditions	Ambient temperature	-10℃~+50℃
	Ambient	under 90%
	Ambient atmosphere	indoors (non-corrosive、non-inflammable、non-oil, non- fog etc.
	Altitude	lower than 1000m
	Enclosure	IP20

	Cooling	the cooling mode
	Vibration level	< 20m/s

2. INSTALLATION GUIDELINES

2.1 Environmental requirements:

V600 series inverter is hanging model, so it should be in vertical way. In order to ensure the air circulation around the inverter to aid in cooling, there should be enough space around the inverter shown as Fig. 2-1-A. Add the air deflector when apply the up-down installation shown as Fig. 2-1-B.

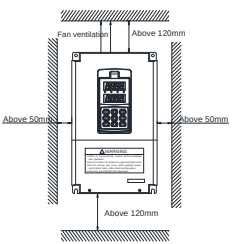


Fig2-1-A Interval distance

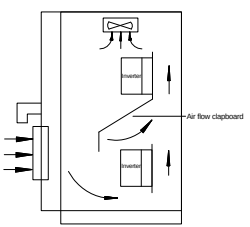
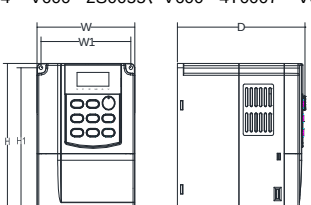


Fig2-1-BMulti-inverter Installation

2.2 Dimension of inverter

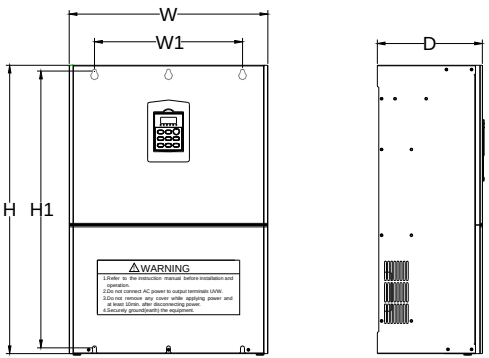
2.2.1 Model Ⅰ

It is fit for： V600- 2S0004 ~ V600 - 2S0055、V600 - 4T0007 ~ V600 - 4T0370



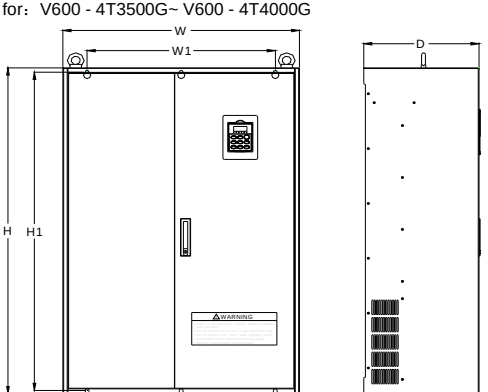
2.2.2 Model Ⅱ

It is fit for：V600 - 4T0450G ~ V600 - 4T2500G



2.2.3 Model Ⅲ

It is fit for：V600 - 4T3500G~ V600 - 4T4000G



2.3 Installation dimension of inverter, V600, is shown as following table

Inverter model 3-phase 400V	Inverter model 1-phase 220V	W1 (mm)	W (mm)	H1 (mm)	H (mm)	D (mm)	Screw
V600-4T0007G	V600-2S0004G	75	85	130	140	135	M4
V600-4T0015G	V600-2S0007G						
V600-4T0022G	V600-2S0015G						
V600-4T0040G	V600-2S0022G						
V600-4T0055G	V600-2S0040G	115	125	175	185	161	M5
V600-4T0075G	V600-2S0055G						
V600-4T0110G	--	136	150	231	245	176	M6
V600-4T0150G	--						
V600-4T0185G		201	217	308	320	203	M6
V600-4T0220G	--						
V600-4T0300G V600-4T0370P	--	200	290	475	490	235	M8
V600-4T0370G V600-4T0450P							
V600-4T0450G V600-4T0550P	--	250	310	530	550	260	M10
V600-4T0550G V600-4T0750P	--						
V600-4T0750G V600-4T0900P	--	280	380	630	650	300	M14
V600-4T0900G V600-4T1100P	--						

Inverter model 3-phase 400V	Inverter model 1-phase 220V	W1 (mm)	W (mm)	H1 (mm)	H (mm)	D (mm)	Screw
V600-4T1100G V600-4T1320P	--	380	510	710	740	270	M14
V600-4T1320G V600-4T1600P	--						
V600-4T1600G V600-4T1850P	--	400	580	760	793	300	M14
V600-4T1850G V600-4T2000P	--						
V600-4T2000G V600-4T2200P	--	480	640	776	810	330	M14
V600-4T2200G V600-4T2500P	--						
V600-4T2500G V600-4T2800P	--	580	730	1103	1130	355	M14
V600-4T2800G V600-4T3150P	--						
V600-4T3150G V600-4T3500P	--						

3. WIRING PROCEDURE

3.1 Precautions:

3.1.1. Installing a middle breaker between inverter and power supply in order to avoid enlarging the accident.

3.1.2. Reducing the electromagnetic interference (EMI), please connect surge absorber to the coils of electromagnetic contactors, relays, etc.

3.1.3. Separating the main circuit wire from the signal/process circuit wiring，paralleled wiring should be at a distance of over 10cm and crossed wiring should be vertical with each other.

3.1.4. The wire must be less than 30m between motor and inverter. When the length of wire is over 30m, the carrier frequency of inverter should be reduced properly.

3.1.5. Compressive resistance of all the wire should match with the voltage grade of inverter.

It is not allowed that U、V、W of inverter connect with the surge absorber capacitor or other surge absorber equipment and shown as following Fig..

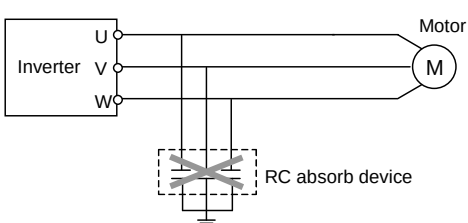


Fig.3-1 It is prohibited to connect RC absorb apparatus

3.2 Wiring of External Components

3.2.1 External Components

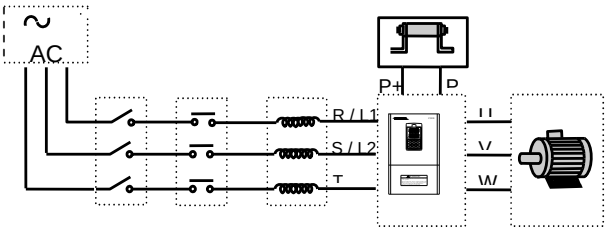


Fig.3-2 wiring

- Power Supply

  It is according to the rated input power specifications in manual.

- Air-break switch

  1. When the inverter is in maintenance or leave-unused, the air-break switch should isolate the inverter with power supply.
  2. Input side of inverter takes place the fault of short-circuits or low-voltage, the air-break will take the protection.

- Contactor

  Control the power-on or power-off of inverter expediently.

- AC electric reactor

  1. Improve the power factor.
  2. Reduce the harmonic wave input for the electric network.
  3. Weaken the imbalance effect on 3-phase power voltage.

- Brake resistor

  In the situation of regenerative braking, avoiding bringing voltage too highly.

3.2.3 Specification of commanded equipment is shown as following table.

Model	Applied Motor（KW）		Wire spec (Main circuit) (mm^2)	Air-break （A）	Magnetic contactor （A）
	G-load	P-load			
V600-2S0004	0.4	--	4	20	18
V600-2S0007	0.7	--	4	20	18
V600-2S0015	1.5	--	4	20	18
V600-2S0022	2.2	--	6	32	18
V600-2S0040	4.0	--	6	40	32
V600-2S0055	5.5	--	10	63	32
V600-4T0007	0.7	--	2.5	16	12
V600-4T0015	1.5	--	2.5	16	12
V600-4T0022	2.2	--	4	16	12
V600-4T0040	4.0	--	4	25	16
V600-4T0055	5.5	--	6	32	22
V600-4T0075	7.5	--	6	40	32
V600-4T0110	11	--	10	63	32
V600-4T0150	15	--	10	63	38
V600-4T0185	18.5	--	16	80	45
V600-4T0220	22	--	16	100	63
V600-4T0300	30	37	25	125	75
V600-4T0370	37	45	25	160	95
V600-4T0450	45	55	50	200	115
V600-4T0550	55	75	50	200	150
V600-4T0750	75	90	70	250	170
V600-4T0900	90	110	70	315	225

V600-4T1100	110	132	95	400	225
V600-4T1320	132	160	95	400	330
V600-4T1600	160	185	150	630	330
V600-4T1850	185	200	150	630	400
V600-4T2000	200	220	185	630	400
V600-4T2200	220	250	185	800	500
V600-4T2500	250	280	240	800	500
V600-4T2800	280	315	240	1000	630
V600-4T3150	315	350	300	1250	630

3.3 Basic wiring

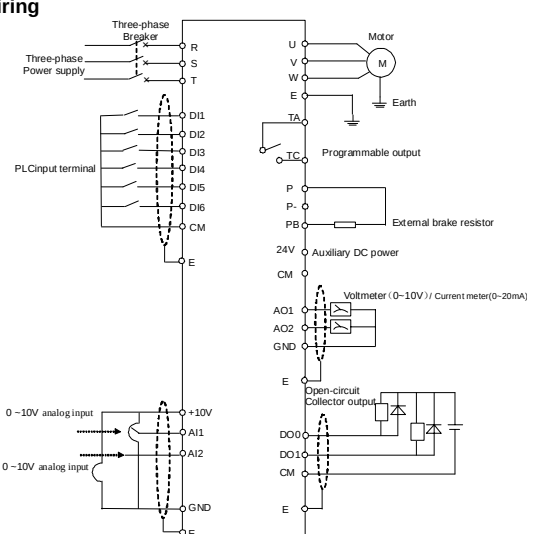
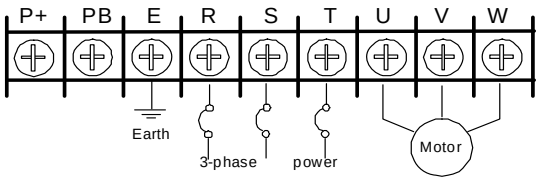


Fig.3-3 V600 series of inverter basic wiring

3.4 Terminal of main circuit

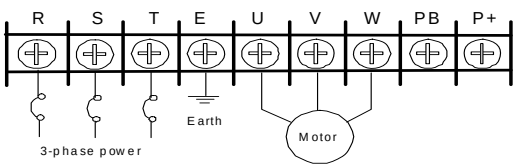
3.4.1. I model

It is fit for：V600 - 2S0004~2S0022 / V600 - 4T0007 ~4T0040



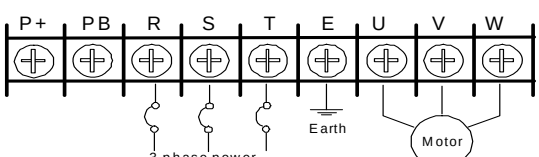
3.4.2. II model

It is fit for：V600 - 2S0040~2S0055 / V600 - 4T0055 ~4T0075



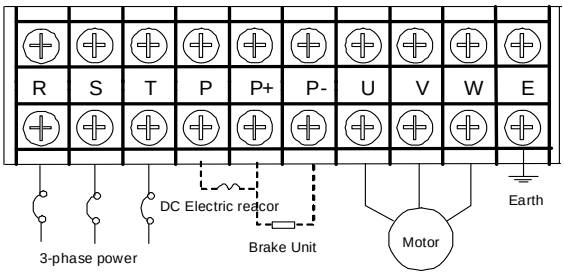
3.4.3. III model

It is fit for： **V600 - 4T0110G ~~V600 - 4T0370G**



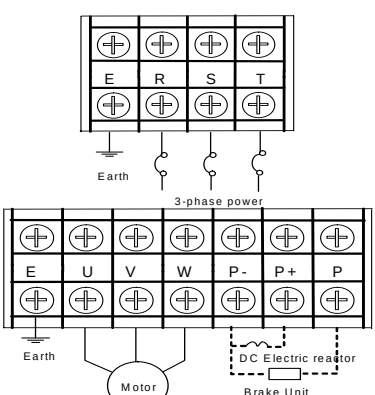
3.4.4. **IV model**

It is fit for： V600- 4T0450G/4T0550P~4T2200G/4T2500P



3.4.5. V model

It is fit for：V600-4T2500G/4T2800～4T3150G/4T3500P



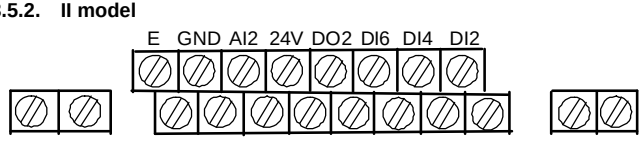
Description of terminal:

Terminal	Function
P	Positive Terminal of DC Negative
P-	Negative Terminal of DC / DC brake unite can be connected between P and P-.
P+	DC electric Reactor can be connected between P and P+.
PB	DC brake resistance can be connected between P and PB.
R、S、T	Connecting three-phase AC power supply
U、V、W	Connecting three-phase AC motor
E	Earth Terminal

3.5 Terminal of Control circuit

3.5.1. I model

3.5.2. II model



3.5.3. Description of control-circuit terminal:

Type	Terminal	Function	Notes
Analog Input/ Output	AI1—GND	Frequency setting voltage signal input1	0~10V/0-20mA
	A12—GND	Frequency setting voltage signal input2	0~10V
	AO1-GND	PLC voltage signal input terminal. It is set by P2.05	0~10V
Digital INPUT	DI1—CM	Multi-function input terminal 1	24Vdc / 5mA
	DI2—CM	Multi-function input terminal 2	
	DI3—CM	Multi-function input terminal 3	
	DI4—CM	Multi-function input terminal 4	
	DI5—CM	Multi-function input terminal 5	
	DI6—CM	Multi-function input terminal 6	
Digital Output	DO1—CM	PLC open-circuit collector output is set by P3.07	The maximum load-current is 50mA
	DO2—CM	PLC open-circuit collector output is set by P3.08	
	TA—TC	General , TA-TC is unconnected when TA-TC is connected，F3.8 is valid.	Capacity ： AC 250V 1A
Power	10V	10V/10mA power and is grounded by GND	The maximum load-current is 50mA
	GND	Common terminal of analog input signal	
	24V	+24V/50mA power and is grounded by CM.	The maximum load-current is 50mA
	CM	Common terminal of control	

RS485	RS＋ RS－	RS485 communication interface	MODBUS

4. OPERATIONS OF INVERTER AND SIMPLE RUNNING

4.1 Operation panel

4.1.1 Panel layout

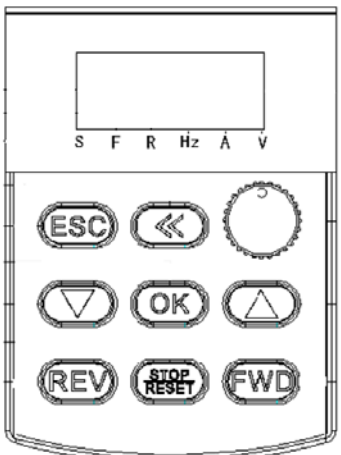


Fig.4-1-A Panel Layout

4.1.2 Keypad functions

Item	Function
Main LED	It displays current state and setting parameter.
S Light	Operation indicator light. The inverter is STOP
F Light	Operation indicator light. The inverter is running forward
R Light	Operation indicator light. The inverter is running backward
A、Hz、V Light	The corresponding unit of current display

	FWD key the inverter will running forward to setting frequency according to appointed ACC or DEC curve.
	REV key the inverter will be running backward to setting frequency according to appointed ACC or DEC curve.
	Stop and Reset key
	Return key Press this key in normal monitor state to enter query mode of not normal monitor state /monitor parameters to check running state. In any state, press this key to return the upper state.
	Set key
	Data modify key It is used to modify the function code and parameter. In state monitor mode, if P1.00 is 0, press this key will modify the frequency instruction.
	Shift key.

4.2 List of state monitor parameter

Monitor Code	Content	Unit
d-0	Current output frequent	Hz
d -1	output current (Valid)	A
d -2	DC bus voltage	V
d -3	Temperature of module	°C
d -4	output voltage (Valid)	V
d -5	Rotate speed of motor	rpm
d -6	Input voltage of inverter	V
d -7	Setting freq.	Hz
d -8	Count value of Internal	
d -9	PID setting value	
d -10	PID feedback value	
d -11	Running linear speed	
d -12	Setting linear speed	
d -13	Analog input AI1（voltage）	V
d -14	Analog input AI2（voltage）	V
d -15	Analog input AI1（current）	mA
d -16	Reserved	KHz
d -17	State of input terminal	
d -18	Analog output AO1	
d -19	Analog output AO2	
d -20	Magnetization current	A
d -21	Magnetization current setting	A
d -22	Torque current	A
d -23	Torque current setting	A
d -24	Reserved	Hz
d -25	Reserved	

d -26	First fault record	
d -27	Second fault record	
d -28	Third fault record	
d -29	Fourth fault record	
d -30	Fifth fault record	
d -31	Sixth fault record	
d -32	Output frequency of last fault	Hz
d -33	Setting frequency of last fault	Hz
d -34	Output current of last fault	A
d -35	Output voltage of last fault	V
d -36	DC voltage of last fault	V
d -37	Temperature of module of last	°C

5. PARAMETERS LIST

Symbol description:

★ means that this parameter can not be changed during operation.

▲ means that this parameter is related to the inverter's model.

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P0	P0. 00	G/P selection	0：General-purpose lode 1：Fan and pump lode	1	0	★
	P0. 01	Parameter write-protec	1：Forbid to modify All parameter except P1.01 and P0.01 2：Forbid to modify all parameter, except P0.01	1	0	
	P0. 02	Copy parameter function	0：Forbid 1：Allow	1	0	
	P0. 03	Parameter initialization	0：Parameter initialization is off. 1：Parameter initialization is on. 2：Clean fault records	1	0	★
	P0. 04	Manufactory password	0 ~ 9999	1	0	
	P0. 05	Monitor item selection	0～50	1	0	
	P0. 06	Reserved	------	------	------	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P0	P0.07	The lower Limit frequency	0.0 Hz~ [P0.08]	0.01	0.0	
	P0.08	The upper limit frequency	[P0.07] ~600.00Hz	0.01	50.00	
	P0.09	Base running frequency	5.00 ～ the upper limit frequency	0.01	50.00	
	P0.10	Base running voltage	200～500V 100～250V	1	380 220	
	P0. 11	Carrier wave frequency	1.5~ 12.0 KHz	0.1	▲	
	P0. 12	Carrier wave characteristics	The second part of LED 0：The relation between out current and Carrier wave is off. 1：The relation between out current and Carrier wave is on. The third part of LED: 0：The relation between module temp and Carrier wave is off. 1：The relation between module temp and Carrier wave is on. The third part of LED 0：The relation between out frequent and Carrier wave is off. 1：The relation between out frequent and Carrier wave is on.	1	1110	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P1	P1. 00	Frequency input channel selection	0：Frequency setting by operation panel 1：UP/DW Acc and Dec control 2：RS485 interface 3：Panel potentiometer 4：External voltage signal AI1（0V~10V） 5：External voltage signal A12（0V~10V） 6：External current signal AI1（0~20mA） 7：Reserved 8：Combination setting 9：External terminals	1	0	
	P1. 01	Frequency digital setting	0.00 ~ the upper limit frequency	0.01	0.0	
	P1.02	Auxiliary control of frequency digital setting	The first part of LED 0：Setting freq. will save after power down 1：Setting freq. will not save after power down The second part of LED： 0：Setting freq. is keep when stopping 1：Setting freq. will save in P1.01 whenstopping 2：Setting freq. is clear when stopping	1	0000	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P1	P1.03	Modified rated of UP/DW terminals	0.01～100.0Hz/Sec	0.01	10.00	
	P1.04	Reserved	------	------	------	
	P1. 05	Operation channel selection	0：Panel control 1：External terminals control 2：RS485 interface	1	0	
	P1.06	Combination methods of instruction terminals	0：Two-line mode A 1：Two-line mode B 2：Three-line mode	1	0	★
	P1.07	Acc time 1	0.1 ~ 6000 Sec	0.1	▲	
	P1.08	Dec time 1	0.1 ~ 6000 Sec	0.1	▲	
	P1.09	Acc time 2	0.1～6000 Sec	0.1	▲	
	P1.10	Dec time 2	0.1～6000 Sec	0.1	▲	
	P1.11	Acc time 3	0.1～6000 Sec	0.1	▲	
	P1.12	Dec time 3	0.1～6000 Sec	0.1	▲	
	P1.13	Acc time 4 /Jog Acc time	0.1～6000 Sec	0.1	▲	
	P1.14	Dec time 1 / Jog Dec time	0.1～6000 Sec	0.1	▲	
	P1.15	Jog frequency	0.0～the upper limit freq.	0.01	5.00	
	P1.16	Characteristics parameter of Acc and Dec	0：Beeline 1：S curve	1	0	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P1	P1.17	Acc/Dec initial section proportion of S curve	10.0~ 50.0 （%）	0.1	20.0	★
	P1.18	Acc/Dec ascending/ decline section proportion of S curve	10.0 ~ 80.0 （%）	0.01	60.0	★
	P1.19	Start mode	0：Routine mode 1：Detect speed and restart	1	0	★
	P1.20	Start frequency	0.0～10.00Hz	0.01	0.5	
	P1.21	Start frequency duration	0.0～20.0 Sec	0.1	0.0	★
	P1.22	DC braking current when starting	0.0 ～ 100.0（%）	0.1	50.0	
	P1.23	DC braking time when starting	0.0 ～ 20.0 Sec	0.1	0.0	★
	P1.24	Selection of starting pre-excitation	The first part of LED 0：Starting pre-excitation is Valid 1：Starting pre-excitation is Invalid The second part of LED: 0：Prepare pre-excitation is valid when zero frequency 1：Prepare pre-excitation is invalid when zero frequency	1	0001	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P1	P1.25	Pre-excitation of starting time	0.10～2.00Sec	0.01	0.30	★
	P1.26	Stop mode	0：Decelerate mode 1：Uncontrolled stop	1	0	
	P1.27	Initial freq. of DC braking when stopping	0.0～50.00Hz	0.01	3.00	
	P1.28	Waiting time of DC braking when stopping	0.0～5.0 Sec	0.1	0.1	
	P1.29	Action time of DC braking when stopping	0.0～20.0 Sec	0.1	0.0	★
	P1.30	DC braking current when stopping	0.0～100（%）	0.1	50.0	
	P1.31	Restart after power down setting	The first part of LED： 0：Invalid 1： Valid The second part of LED： 0：Routine mode 1：Detect speed and restart mode	1	0010	★
	P1.32	Waiting time of restart after power down	0.0～10.0 Sec	0.1	0.5	★
	P1.33	Dead time of FWD&REV	0.0～5.0 Sec	0.1	0.0	★
	P1.34	Running threshold of zero freq.	0.0～100.0Hz	0.01	0.0	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P1	P1.35	Return different of zero freq.	0.0～50.00Hz	0.01	1.00	
	P1.36	Start voltage of dynamic braking	600~720V	1	700	
	P1.37	Action ratio of dynamic braking	10~100（%）	1	60	
	P1. 38	Torque Boost	0.0~30.0（%）	0.1	▲	
	P1.39	Torque boost pattern	0：Manual 1：Automatic	1	0	★
	P1.40	Compensate for slip freq.	0.0～150.0（%）	1	0	
	P1.41	Automatic voltage regulation（AVR）	0： Invalid 1： Dynamic valid 2： Static valid	1	0	
	P1.42	Energy-saving running	0：Invalid 1：Valid	1	0	★
P2	P2.00	Input lower limit voltage AI1 (voltage)	0.0 ~ [P2.01]	0.1	0.0	
	P2.01	Input upper limit voltage AI1 (voltage)	[P2.00] ~ 10.0V	0.1	5.0	
	P2.02	Input lower limit voltage AI2 (voltage)	0.0V ~ [P2.03]	0.1	0.0	
	P2.03	Input upper limit voltage AI2 (voltage)	[P2.02] ~ 10.0V	0.1	10.0	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P2	P2.04	Characteristics selection of input channel	The first part of LED AI1channel:(voltage) 0：positive characteristics 1：Negative characteristics The second part of LED AI2 channel: 0：positive characteristics 1：Negative characteristics The third part of LED： AI1channel:(current) 0：positive characteristics 1：Negative characteristics	1	0000	★
	P2.05	Analog output selection (AO1、AO2）	The first part of LED： AO1 output 0：Output freq. 1：Output current 2：Output voltage 3：Rotate speed of applied motor 4：PID setting 5：PID feedback The second part of LED： AO2 output 0：Output freq. 1：Output current 2：Output voltage 3：Rotate speed of applied motor 4：PID setting 5：PID feedback	1	0010	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P2	P2.06	The lower limit of analog output (AO1)	0.0～[P2.07]	0.1	0.0	
	P2.07	The upper limit of analog output (AO1)	[P2.06]～12.0	0.1	10.0	
	P2.08	The lower limit of analog output (AO2)	0.0～[P2.09]	0.1	2.0	
	P2.09	The upper limit of analog output (AO2)	[P2.08]～12.0	0.1	10.0	
	P2.10	External freq. set time constant of filtering	0.01～1.00Sec	0.01	0.10	
	P2.11	Input lower limit voltage AI1 (current)	0.0~[P2.12]	0.1	4.0	
	P2.12	Input upper limit voltage AI1 (current)	[P2.11]~20MA	0.1	20.00	
	P2.13	Frequency with the min setting	0.0~[P2.14]	0.01	0.00	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P2	P2.14	Frequency with the max setting	[P2.13]~600.0HZ	0.01	50.00	
P3	P3. 00	Function selection of Input terminal DI1	0：Control terminal is idle 1：Multi-speed control terminal 1 2：Multi-speed control terminal 2 3：Multi-speed control terminal 3 4：Wobble freq. is valid 5：State of wobble freq. reset 6：FWD jog control 7：REV jog control 8：Acc& Dec time selection terminal 1 9：Acc& Dec time selection terminal 2 10：Freq. setting channel selection 1 11：Freq. setting channel selection 2 12：Freq. setting channel selection 3 13：Freq. is controlled gradually increase（UP） 14：Freq. is controlled gradually increase（DW） 15：UP-DW freq. clear 16：Uncontrolled stop control	1	0	
	P3. 01	Function selection of Input terminal DI2		1	0	
	P3. 02	Function selection of Input terminal DI3		1	27	
	P3. 03	Function selection of Input terminal DI4		1	0	

	P3. 04	Function selection of Input terminal DI5	17：Fault signal of peripheral equipment input 18：Three-line mode running control 19：DC braking control 20：Inner counter clear 21：Inner counter timer 22：PLC running valid 23：PID running valid 24：Reserved 25：PLC state reset after stopping 26： RESET 27： FWD 28： REV	1	0	
	P3. 05	Function selection of Input terminal DI6		1	0	
	P3.06	Input terminals Function setting	The second part of LED： 0：It will valid when Input terminals are connected. 1：It will valid when Input terminals are disconnected.	1	0000	P3. 06
	P3. 07	Output terminal D01	0：In the running； 1：Frequency reaching； 2：Freq. level detection signal（FDT）； 3：Over-loading alarm； 4：External fault halt； 5：Output frequency reaches the upper-limit； 6：Output frequency reaches the lower-limit； 7：Running in zero speed； 8：Inverter will stop when	1	0	
	P3. 08	Output terminal D02		1	1	

	P3. 09	TA,andTC of relay contacts	under voltage； 9：PLC stage is end of run； 10：PLC periodic is end of run； 11：Reserved； 12：Setting value of counter arrives； 13：Designated value of counter arrives； 14：Reserved； 15：Reserved； 16：Inverter fault； 17：Restrictions on wobble freq. of the upper and lower limit freq.	1	16	
P4	P4.00	Type of V/F Curve	0：Constant torque curve 1：Low-freq. torque curve 1 2：Low-freq. torque curve 2 3：V/F user-defined curve	1	0	
	P4.01	V/F freq. 3	[F1.7] ~ [F1.3]	0.01	0.0	★
	P4.02	V/F voltage 3	[F1.8] ~ 100.0(%)	0.1	0.0	★
	P4.03	V/F freq. 2	[F1.9] ~ [F1.5]	0.01	0.0	★
	P4.04	V/F voltage 2	[F1.10] ~ [F1.6]	0.1	0.0	★
	P4.05	V/F freq.1	0.0 ~ [F1.7]	0.01	0.0	★
	P4.06	V/F voltage 1	[F1.1] ~ [F1.8]	0.1	0.0	★
	P4.07	Characteristics selection of input channel V/F	The first part of LED Start Characteristics: 0：Soft characteristics 1：Hard characteristics The second part of LED Stop Characteristics: 0 Soft characteristics 1：Hard characteristics	1	0000	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P5	P5.00	Control methods	0：V/F method； 1：Vector control	1	0000	★
	P5.01	Rated voltage of applied motor	200～500V 100～250V	1	380V 220V	★
	P5.02	Rated freq. of applied motor	5.00～600.00Hz	0.01	50.00	★
	P5.03	Rated current of applied motor	0.01～300.0A	0.01	▲	★
	P5.04	Rated rev of applied motor	300～6000rpm	1	▲	★
	P5.05	Exciting current of applied motor	[P5.03]/4~[P5.03]×3/4	0.01	▲	★
	P5.06	Parameters self-determination	0：Invalid 1：Determine parameters when motor is stop 2：Determine parameters when motor is run	1	0	★
	P5.07	Self-adapting rectify of motor parameters	The first part of LED 0：Self-adapting rectify of stator Resistance will invalid. 1：Self-adapting rectify of stator resistance will valid. The second part of LED： 0：Self-adapting rectify of excitation current will invalid. 1：Self-adapting rectify of excitation current will valid.	1	0010	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P5	P5.08	Stator resistance	0.000～20.000	0.001	▲	★
	P5.09	Rotor resistance	0.000～20.000	0.001	▲	★
	P5.10	Rotor inductance	0.00～600.00（mH）	0.01	▲	★
	P5.11	Inductance of excitation	0.00～600.00（mH）	0.01	▲	★
	P5.12	Leakage inductance (coefficient)	0.00～100.00（mH）	0.01	▲	★
	P5.13	Gain of compensation for speed drop	0.50～1.50	0.01	1.00	
P6	P6.00	Multi-speed running mode	The first part of LED PLC setting 0：PLC is invalid. 1：PLC is valid. 2：PLC is conditional invalid. The second part of LED： Simple PLC running mode selection 0：Single loop mode 1：Single loop and stop mode 2：Continuous loop mode 3：Continuous loop and stop mode 4：Keep the end value 5：Keep the end value and stop mode	1	0000	★

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P6	P6.00	Multi-speed running mode	The third part of LED 0：Restart from the first stage freq. 1：Restart from running freq., which is saved before running is break 2：Restart from setting freq. when Running is break. The fourth part of LED： PLC save state 0：Non-save after power off 1：Save after power off	1	0000	★
	P6.01	Multi-speed frequency 1	0.0 ~ the upper limit freq.	0.01	35.00	
	P6.02	Multi-speed frequency 2	0.0 ~ the upper limit freq.	0.01	15.00	
	P6.03	Multi-speed frequency 3	0.0 ~ the upper limit freq.	0.01	3.00	
	P6.04	Multi-speed frequency 4	0.0 ~ the upper limit freq.	0.01	20.00	
	P6.05	Multi-speed frequency 5	0.0 ~ the upper limit freq.	0.01	25.00	
	P6.06	Multi-speed frequency 6	0.0 ~ the upper limit freq.	0.01	30.00	
	P6.07	Multi-speed frequency 7	0.0 ~ the upper limit freq.	0.01	35.00	
	P6.08	Multi-speed frequency 8	0.0 ~ the upper limit freq.	0.01	40.00	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P6	P6.09	Running time of Multi-speed 1	0.0～6000 Sec	0.1	10.0	
	P6.10	Running time of Multi-speed 2	0.0～6000 Sec	0.1	10.0	
	P6.11	Running time of Multi-speed3	0.0～6000 Sec	0.1	10.0	
	P6.12	Running time of Multi-speed 4	0.0～6000 Sec	0.1	10.0	
	P6.13	Running time of Multi-speed 5	0.0～6000 Sec	0.1	10.0	
	P6.14	Running time of Multi-speed 6	0.0～6000 Sec	0.1	10.0	
	P6.15	Running time of Multi-speed 7	0.0～6000 Sec	0.1	10.0	
	P6.16	Running time of Multi-speed 8	0.0～6000 Sec	0.1	10.0	
	P6.17	Running direction of PLC multi-speed	The first part of LED 0：Stage 1 FWD 1：Stage 1 REV The second part of LED： 0：Stage 2 FWD 1：Stage 2 REV The third part of LED： 0：Stage 3 FWD 1：Stage 3 REV The fourth part of LED： 0：Stage 4 FWD 1：Stage 4 REV	1	0000	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P6	P6.18	Running direction of PLC multi-speed	The first part of LED 0：Stage 5 FWD 1：Stage 5 REV The second part of LED： 0：Stage 6 FWD 1：Stage 6 REV The third part of LED： 0：Stage 7 FWD 1：Stage 7 REV The fourth part of LED： 0：Stage 8 FWD 1：Stage 8 REV	1	0000	
P7	P7.00	Running direction control	The first part of LED 0：Running direction is consistent with setting direction 1：Running direction is in contradiction To setting direction The second part of LED： 0：Prevention REV is valid 1：Prevention REV is invalid	1	0000	
	P7.01	Frequency reach the checkout amplitude	0.0~20.00Hz	0.01	5.00	
	P7.02	FDT setting 1	0.0~ the upper limit freq.	0.01	10.00	
	P7.03	FDT output delay time 1	0.1~200.0 Sec	0.1	2.0	★
	P7.04	FDT setting 2	0.0~ the upper limit freq.	0.01	10.00	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P7	P7.05	FDT output delay time 2	0.1~200.0 Sec	0.1	2.0	★
	P7.06	Final value setup of internal counter	1～60000	1	1	★
	P7.07	Internal timer setup	1～60000	1	1	★
	P7.08	Skip freq. 1	0.0～the upper limit freq.	0.01	0.0	
	P7.09	Amplitude accumulation Of Skip freq. 1	0.0～5.00Hz	0.01	0.0	
	P7.10	Skip freq. 2	0.0～the upper limit freq.	0.01	0.0	
	P7.11	Amplitude accumulation Of Skip freq. 2	0.0～5.00Hz	0.01	0.0	
	P7.13	Close-loop analog coefficient setting	0.01～10.00	0.01	1.00	
	P7.14	Rotator speed coefficient setting	0.01～10.00	0.01	1.00	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P7	P7.15	Wobble freq. running mode	The first part of LED 0：Function of wobble freq. is invalid. 1：Function of wobble freq. is valid. 2：Function of wobble freq. is conditional valid. The second part of LED: restart mode 0： Restart according to parameters saved before stop 1： Restart The third part of LED: wobble freq characteristics 0：The wobble freq. is changeable. 1：The wobble freq. is fixed The fourth part of LED: Storage characteristics of wobble freq. 0：It will not save the running state of wobble freq. after power off 1：It will save the running state of wobblereq. after power off	1	1000	★

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P7	P7.16	Preset freq. of wobble freq.	0.0～the upper limit freq	0.01	10.00	
	P7.17	Waiting time of preset freq.	0.0～6000.0Sec	0.1	0.0	★
	P7.18	Amplitude of wobble freq.	0.0～50.0（%）	0.1	10.0	
	P7.19	Jumping freq.	0.0～80.0（%）	0.1	10.0	
	P7.20	Triangular rise time	0.1～1000.0Sec	0.1	10.0	
	P7.21	Triangular fall time	0.1～1000.0Sec	0.1	10.0	
	P7.22	Preset center freq. of wobble freq.	0.0～the upper limit freq	0.01	10.00	
	P7. 23	Inverter stop when motor is cut off	0：Off 1：Inverter will run when motor is connected with it.	1	0	★
P8	P8.00	Inner PID control	The first part of LED Inner PID control 0：Inner PID control is invalid 1：Inner PID control is valid 2：Inner PID control is conditional valid. The second part of LED： PID controller selection 0：proportion 1：Integral 2：Proportion and integral The third part of LED： 0：positive interaction 1：Reactor The fourth part of LED: 0： unidirectional control 1： two directions control	1	0020	★

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P8	P8.01	Inner PID setting and channel selection	The first part of LED 0：Digital setting. It is set by parameter 1：Serials interface setting 2：Panel potentiometer setting, it is on the operation panel. 3：External voltage signal AI1（0～10V） 4：External voltage signal AI2（0～10V） 5：External current signal AI1（0～20MA） The second part of LED：Reserved. The third part of LED： It is used to set PID feedback channel. 0：Digital setting. It is set by parameter 1：Serials interface setting 2：Panel potentiometer setting, it is on the operation panel. 3：External voltage signal AI1（0～10V） 4：External voltage signal AI2（0～10V） 5：External current signal AI1（0～20MA）	1	0000	★

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P8	P8.02	Inner PID close-loop digital setting	0.00～10.00V	0.01	0.0	
	P8.03	Minimum fixed value	0.0～[P8.04]	0.01	0.0	
	P8.04	Maximum fixed value	[P8.03]～10.00	0.01	10.00	
	P8.05	Feedback of minimum fixed value	0.0～10.00	0.01	0.0	
	P8.06	Feedback of maximum fixed value	0.0～10.00	0.1	10.00	
	P8.07	Proportion gain	0.0～5.00	0.01	1.00	
	P8.08	Integral time constant	1.0～500.0 Sec	0.1	10.0	
	P8.09	Allowable deviation limit	0～20.0（%）	0.1	0.0	
	P8.10	Preset freq. for close-loop	0.0～the upper limit freq	0.01	0.0	
	P8.11	Holding time of preset freq. for close-loop	0.0～6000.0Sec	0.0	0.0	★
	P8.12	Sleeping threshold	0.0～10.00	0.01	10.00	
	P8.13	Awakening threshold	0.0～10.00	0.01	0.0	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P9	P9.00	Communication setting	The first part of LED： It is used to set baud rate of serials communication. 0： Reserved 1: 1200bps 2: 2400bps 3: 4800bps 4: 9600bps 5: 19200bps The second part of LED： To set data format of serials communication. 0：Close 1： Even 2：Odd	1	0015	★
	P9.01	Local address	0～30	1	1	
	P9.02	Response delay of local	0～1000ms	1	5ms	
	P9.03	Function setting of communication Auxiliary function	The first part of LED 0: The inverter is guest 1: The inverter is host The second part of LED： Act selection after communication is lost 0：Stop 1：Keep	1	0010	
	P9.04	Checkout time of communication overtime	0.0～100.0 Sec	0.1	10.0	
	P9.05	Linkage setting proportion	0.01～10.00	0.01	1.00	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
P9	P9.06	Rectify channel of linkage setting proportion	0：Close 1：Panel potentiometer Rectify channel 2： External voltage signa l AI1（0 ~ 10V） Rectify channel 3： External voltage signal AI2（0 ~ 10V） Rectify channel 4： External current signal AI1（0 ~ 20mA）	1	0	
PA	PA.00	Under voltage protection level	320～480V	1	390	
	PA.01	Over voltage limit level	660～760V	1	700	
	PA.02	Current amplitude limiting level	150～200（%）	1	180	
	PA.03	Acc torque level	110～200（%）	1	150	
	PA.04	Braking torque lever	10～150（%）	1	80	
	PA.05	Motor over-lode protection	50～110（%）	1	110	
	PA.06	Over-loading alarm level	50~200（%）	1	110	
	PA.07	Over-loading alarm delay time	0.0~20.0 Sec	0.1	2.0	★

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
PA	PA.08	Protection function in operation	The first part of LED Under voltage compensation intensity The second part of LED： Over voltage inhibit intensity The third part of LED： Over current inhibit intensity The fourth part of LED： Self-adapting braking torque adjust intensity	1	3333	
	PA.09	Action function selection	the first part of LED Cooling fan control 0：Cooling fan run after inverter run. 1：Cooling fan will automatic run when inverter is power on. The second part of LED： Variable speed control of cooling fan 0：Invalid 1：Valid Cooling fan always keep the max speed. The third part of LED： Voltage over modulation 0：Invalid 1：Valid The fourth part of LED： Reserved.	1	0100	

Type	Code	Name	Setting range	Minimum	Manu-facture	Limi
PA	PA.10	Reserved	------	------	------	
	PA.11	Reserved	------	------	------	
	PA.12	Rotate speed coefficient	0.10～5.00	0.01	1.00	
	PA.13	Gain of closed loop of rotate speed	0.50～1.20	0.01	1.00	
	PA.14	Integral time constants of closed loop of rotate speed	0.10～10.00	0.01	1.00	
	PA.15	Compensation rectify of dead zone	0～25	1	0	
	PA.16	Fault self-recovery time	0，1，2	1	0	★
	PA.17	Interval time of fault self-recovery	0.2～20 Sec	0.1	2.0	★
	PA.18	Program version	2100～2199	1	▲	

6. DESCRIPTION OF SPECIFIC FUNCTIONS

6.1 Basic operation parameter unit

P0.00 Load pattern selection	Setting range 0，1

0： General-purpose load.

1： Fan and pump load.

P0.01 Parameter write-protect	Setting range 0---2

It is used for preventing error modify about data.

1：Forbid to modify all parameter except P1.01 and P0.01

2：Forbid to modify all parameter, except P0.01

P0.02 Copy parameter function	Setting range 0，1

0：Forbid

It is forbidden to copy the backup data form operation panel to inverter, but this function doesn't affect the copy and read parameter function.

1：Allow

P0.03 Parameter initialization	Setting range 0~2

It is used for modifying inverter's parameters to manufacture setting.

0：Parameter initialization is off.

1：Parameter initialization is on.

2：Clean fault records.

P0.04 Manufactory password	Setting range 0~9999

Don't modify this parameter without our permission.

P0.05 Monitor item selection	Setting range 0~50

This parameter is used for confirming display content of operation panel in state monitor mode.

P0.07 The lower Limit frequency	Setting range 0~ **[P0.08]**
P0.08 the upper limit frequency	Setting range **[P0.07]**~600.00

When setting freq. is lower than lower limit freq., the inverter will run in lower limit freq.

P0.09 Base running frequency	Setting range 5.00~ [P0.08]
P0.10 Base running voltage	Setting range 200 ~500V 100 ~250V

Basic running frequency is corresponding minimum frequency when output voltage of inverter is highest. Usually, it is rated frequency of motor.

Max output voltage is corresponding output voltage when inverter outputs the basic running frequency. Usually, it is rated voltage of motor.

P0.11 Carrier wave frequency	Setting range 1.5~ 12.0KHZ
P0.12 Carrier wave characteristics	Setting range 0000~1112

Carrier wave frequency influences audio-frequency noise and calorific effect in running.When environment temperature is too high and motor's load is too heavy, carrier frequency should be decreased properly to improve the heat thermal performance.

6.1 **Primary application of parameter unit**

P1.00 Frequency input channel selection	Setting range 0~9

It is used for selecting input channel of frequency instruction.

0： Frequency setting by operation panel

Set frequency of inverter can be set by parameter **[P1.01]**as well as by the key and  on the operation panel in normal monitor mode.

1： UP/DW Acc and Dec control

Running frequency is set by terminals UP and DW. And controlled terminals UP and DW can be selected by parameters **[P3.00]~[P3.05]**. When UP is on, the running frequency will increase. When UP is on, the running frequency will decrease. When UP and DW is on or off together with CM, running frequency will fix. The rate of modified frequency of terminals UP and DW is set by parameter **[P1.03].**

2： RS485 interface

It receives instruction of setting frequency form the master.

3： Panel potentiometer

Running frequency can be set by potentiometer on the operation panel.

4： External voltage signal **AI1**（voltage）

Running frequency is set by external voltage signal **AI1**. (**AI1** is form 0.0 to 10.0V)

Please set the **AI1** by the parameters **[P2.00]** and **[P2.01]**.

5： External voltage signal **AI2**（voltage）

Running frequency is set by external voltage signal **AI2**. (**AI2** is form 0.0 to 10.0V)

Please set the **AI2** by the parameters **[P2.02]** and **[P2.03]**

6： External current signal **AI1**（current）

Running frequency is set by external current signal **AI1**. (**AI1**is form 0.0 to 20.0mA)

Please set the **AI1** by the parameters **[P2.11]** and **[P2.12]**

9： External terminals

External terminals set input channel of frequency. And it can be set by parameters **[P3.00]～[P3.05]；**

Freq. Setting terminal 3	Freq. Setting terminal 3	Freq. Setting terminal 3	Freq. Setting channel
0	0	0	Frequency setting by operation panel
0	0	1	UP/DW Acc and Dec control
0	1	0	RS485 interface
0	1	1	Panel potentiometer
1	0	0	External voltage signal AI1
1	0	1	External voltage signal AI2
1	1	0	External current signal AI1

P1.01 Frequency digital setting	Setting range 0.00~ the upper limit frequency

When **[P1.00]** is 0, Frequency digital setting controls output frequency of inverter. In normal monitor state, user can use the key  and  to modify this parameter.

P1.02 Auxiliary control of frequency digital setting	Setting range 0000~ 0021

The first part of LED(form right to left)：

0：Inverter will run in setting freq. that is storage in**[P1.01]**after stopping

1：Setting freq. will loss after stopping. And inverter will run in 0.0Hz when restarting

The second part of LED(form right to left)：

0：Setting freq. is kept when stopping

1：Setting freq. will save in **[P1.01]** when stopping

2：Setting freq. is clear when stopping

P1.05 Operation channel selection	Setting range 0~2

0：Panel control

The inverter is controlled by key **FWD ,REV , STOP**, and **JOP** on the panel. And FWD state will affect output phase sequence of inverter. When FWD is on with CM, output phase sequence will reverse with setting sequence, contrariwise, output phase sequence will go the same way with setting sequence.

1：External terminals control

2： RS485 interface

The inverter will receive running instruction from master.

P1.06 Combination methods of instruction terminals	Setting range 0~2

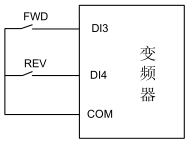
Function selection of Input termina DI3 **[P3.02]=27**，

Function selection of Input termina DI4 **[P3..03]=28**

Function selection of Input termina DI5 **[P3.04]=18**

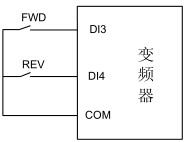
0：Two-line mode A

DI4	**DI3**	**Run instruction**
OFF	OFF	STOP
OFF	ON	FWD
ON	OFF	REV
ON	ON	STOP

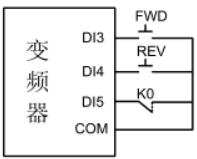


1：Two-line mode **B**

DI4	**DI3**	**Run instruction**
OFF	OFF	STOP
OFF	ON	FWD
ON	OFF	REV
ON	ON	STOP



2：Three-line mode



P1.07 Acc time 1	Setting range 0.1~6000 Sec
P1.08 Dec time 1	Setting range 0.1~6000 Sec
P1.09 Acc time 2	Setting range 0.1~6000 Sec
P1.10 Dec time 2	Setting range 0.1~6000 Sec
P1.11 Acc time 3	Setting range 0.1~6000 Sec
P1.12 Dec time 3	Setting range 0.1~6000 Sec
P1.13 Acc time 4/Jog Acc time	Setting range 0.1~6000 Sec
P1.14 Dec time 1/ Jog Dectime	Setting range 0.1~6000 Sec

Acc time 1 is the time of output frequency accelerating from 0.0 Hz to 50.00Hz.

Dec time 1 is the time of output frequency decelerating from 50.00 Hz to 0.00Hz.

P1.15 Jog frequency	Setting range 0.0~**[P0.08]**

Jog running is special running method of inverter.

Whatever the initial state of inverter is stop or run, jog signal will be received. The transition form initial running freq. to jog freq. is act according to parameters **[P1.13]** and **[P1.14]**.

P1.16 Characteristics parameter of Acc and Dec	Setting range 0~1

0：Beeline

Output freq. of inverter will increase or decrease according to fixed rated.

1：S curve

Output freq. of inverter will increase or decrease according to graded rated. Characteristics of S curve is set by parameter **[P1.17]**and **[P1.18]**.

P1.17 Acc/Dec initial section proportion of S curve	Setting range 10.0~50.0（%）
P1.18 Acc/Dec ascending /declinesectionproportion of S curve	Setting range 10.0~80.0（%）

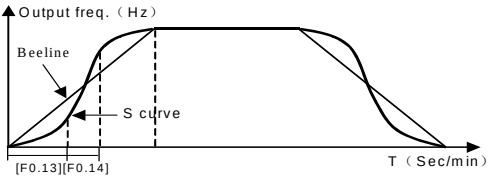


Fig.6-0 Acc/Dec curve

Parameters **[P1.17]** and **[P1.18]** define characteristics of S curve. It is totally divide into three sections, shown as fig6-13.

Acc/Dec initial section is process that slope of output freq. is gradual increase form 0. The slope will fix in Acc/Dec ascending/decline section. And the slope will gradual decrease to 0 in end section.

P1.19	Start mode	Setting range	0~1
P1.20	Start frequency	Setting range	0.0~10.00HZ
P1.21	Start frequency duration	Setting range	0.0~20.0 Sec

Those parameters are used for defining characteristics with relation to start mode, shown as fig6-1.

The explanation of **P1.19** is shown as following.

0： Routine mode

It is fit for mostly load, which have not special demand.

1：Detect speed and restart

It is fit for fault reset and restart occasion, or, power off and restart occasion. Inverter will judge automatically running speed and direction of motor. Motor, which have not stop, will start up directly according to detect result.

Start frequency ：It is fit for system, which is big inertia, heavy load and high start torque.

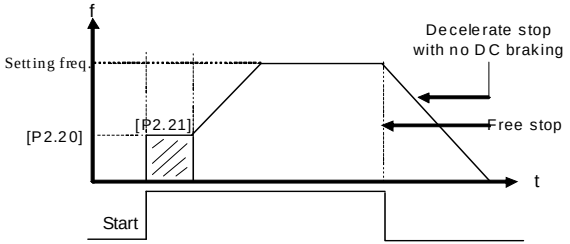


Fig6-1 Start and stop freq. output curve

P1.22 DC braking current when starting	Setting range 0.0~100.0%
P1.23 DC braking time when starting	Setting range 0.0~20.0 Sec

Those parameters are fit for occasion that inverter needs brake before start. Shown as Fig.6-2

$$P1.22=\frac{\text{DC braking current when starting}}{\text{Rated current of inverter}}\times 100\%$$

When rated current of motor is lower than rated current of inverter, please pay attention to set P1.22.Make sure that DC braking current is lower than rated current of motor.

Parameter P1.23 defines duration that inverter output DC braking current. When F1.12 is 0, DC braking is invalid when starting.

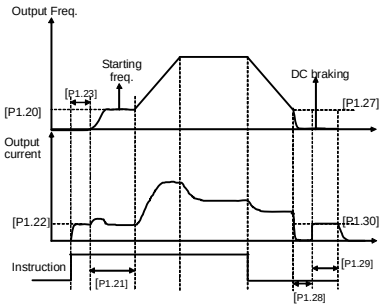


Fig.6-2 Process of start and stop

P1.24 Selection of starting pre-excitation	Setting range 0.0~100.0%
P1.25 Pre-excitation of starting time	Setting range 0.0~20.0 Sec

Those parameters are used for defining pre-excitation of motor startup.

It needs some time to set motor air-gas flux (approximate rotor time). In order to get enough start torque, it must set air-gas flux beforehand when motor is stop but it will start.Those parameters will be valid while inverter takes vector control method only.

parameters[P2.24] （set by binary system）

The first part of LED (form right to left): To start Pre-excitation

0：To start Pre-excitation is invalid.

It doesn't need to set air-gas flux beforehand when motor is from stopping to start.

In order to achieve vector control, inverter will forcibly give motor an excitation current, even parameter P2.24 is set 0.

1：To start pre-excitation is valid

To give motor a pre-excitation before it startup, Pre-excitation of starting time is set by parameter [P1.25].

The second part of LED (form right to left): zero-freq. excitation preparation

0：Prepare pre-excitation is invalid when zero frequency

When inverter's Instruction is running, but the output freq. is 0, inverter will close off output power and the stator current of motor is 0.

1：Prepare pre-excitation is valid when zero frequency

When inverter is running, it will output excitation current even the freq. output is 0. So there is no pre-excitation of starting time when start-up motor.

The second and third part of LED (form right to left) reserved.

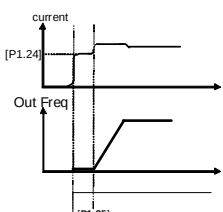


Fig. 6-3 TO start pre-excitation

P1.26 Stop mode	Setting range 0~1

0： Decelerate mode

Inverter will gradually decrease output freq. to 0 according to Dec time when stopping.

1： Uncontrolled stop

Inverter will output zero freq. and lock output signal when stop, so motor will uncontrolled stop.

If user needs restart motor before motor complete stop, function of detect speed and restart must be valid when inverter is uncontrolled stop.

P1.27 Initial freq. of DC braking when stopping	Setting range 0~50.00 HZ
P1.28 Waiting time of DC braking when stopping	Setting range 0.0~5.0 Sec
P1.29 Action time of DC braking when stopping	Setting range 0.0~20.0 Sec
P1.30 DC braking current when stopping	Setting range 0~100%

When output freq. is lower than setting freq. of Parameter **[P1.27]**, inverter will lock output and start DC braking function after waiting setting time of parameter **[P1.28]**.

DC braking when stopping is invalid while **[P1.29]** is 0.

DC braking current when stopping is the percentage of rated current of inverter. When capability of applied motor is lower than inverter capability, please be sure to set **[P1.30]**.

P1.31 Restart after power down setting	Setting range 0000~0011
P1.32 Waiting time of restart after power down	Setting range 0.0~10.0 Sec

The first part of LED：

0：Invalid 1： Valid

When restart after power down setting is invalid, the inverter will clear automatically all running command and run according to new command after power on.

When restart after power down setting is valid, the inverter will save all running command and run according to the save command after power on.

Please make sure that other equipments in system are ready before using function of restart after power down.

The second part of LED：

Applied motor is still running when user select restart. Here, user have to select function of detect speed and restart.

P1.33 Dead time of FWD&REV	Setting range 0~5.0 Sec

The parameter means that the duration at zero frequency when the inverter changes its running direction, and it is shown as the following fig.6-4. FWD and REV dead time is set for the big inertia load which has the mechanical dead zone

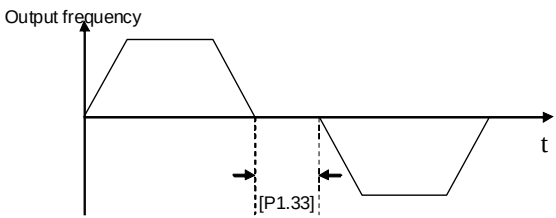


Fig.6-4 Dead zone between FWD and REV

P1.34 Running threshold of zero freq.	Setting range 0.0～100.0Hz
P1.35 Return different of zero freq.	Setting range 0.0～50.00Hz

Those parameters define characteristics of freq. zero-crossing.

When inverter takes analog input freq. to set freq., analog signal will fluctuate around zero to cause astable input. Those parameters have lagging function to avoid fluctuating around zero. appropriate set.

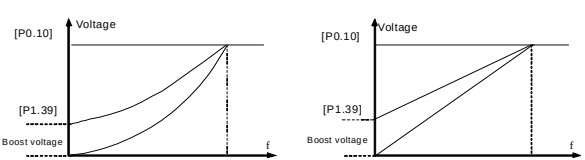
P1.36 Start voltage of dynamic braking	Setting range 600~720V
P1.37 Action ratio of dynamic braking	Setting range 10~100%

Those parameters are valid for inverter with the inner brake unit. And they define the action parameter of inner brake unit. When inner DC voltage of inverter is higher than the start voltage of dynamic braking, the inner brake unit will act. If inverter connects external brake resistance, DC energy of inverter will be release by it to decline DC voltage. When DC voltage declines to the certain value (**[P1.36]-40V**);

Brake unit action ratio is used for defining the voltage on brake resistor, and the voltage on brake unit is Voltage PWP. Duty cycle equals brake action ratio. The ratio is larger, and the energy is consumed more quickly, at the same time, the power of brake resistor is bigger. User can set parameter according to the resistance and power of resistor and actual brake effect.

P1.38 Torque Boost	Setting range 0.0~30%
P1.39 Torque boost pattern	Setting range 0~1

It is used for improving the low-frequency torque characteristics. In low-frequency running, it will make boost compensation for the output voltage of inverter, as shown in Fig.6-5.



（1）Decreasing torque curve　　（2）Constant torque curve

Fig.6-5 Torque boost

P1.40 Compensate for slip freq.	Setting range 0~150.0%

The inverter will modify output freq. automatically to offset effects that is act on rotate speed of motor form load.

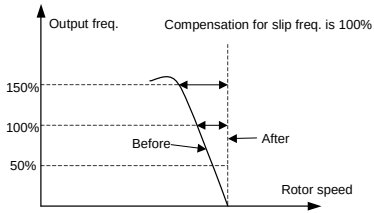


Fig.6-6 Compensate for slip freq.

P1.41 Automatic voltage regulation（AVR）	Setting range 0~2

0 The function of Automatic voltage regulation is to ensure the output voltage of inverter not to fluctuate with the input voltage. When the range of fluctuation of power supply voltage is too large, and expect to motor have the stabilized stator voltage and current, this function should be open.

0：Invalid 1： Dynamic valid 2： Static valid

When user selects dynamic voltage regulation, fast dynamic voltage regulation can inhibit form increasing current cause by DC voltage in motor deceleration. But it easy brings current resonance.

P1.42 Energy-saving running	Setting range 0~1

0：Valid 1：Invalid

When **P1.42** is 0, inverter will detect motor load automatically and real-time rectify output voltage.

Energy-saving running works high efficiency under occasions that the range of freq. is small and the range of speed is wide.

Because of fan or pump have a specified relationship with rotate speed, it can compendiary judge load state according output freq. Low-freq. torque curve V/F is a typical example in energy-saving running. When user takes low-freq. torque curve, function of energy-saving running needn't valid.

6.2 Analog control parameter group

P2.00 Input lower limit voltage AI1 (voltage)	Setting range 0.0~[**P2.01**]
P2.01 Input upper limit voltage AI1 (voltage)	Setting range [**P2.00**]~10.0V
P2.02 Input lower limit voltage AI2 (voltage)	Setting range 0.0~[**P2.03**]
P2.03 Input upper limit voltage AI2 (voltage)	Setting range [**P2.02**]~10.0V

P2.00 and **P2.01** define the range of analog input voltage channel AI1, and it should be set according to the actual input signal.

P2.02 and **P2.03** define the range of analog input voltage channel AI2, and it should be set according to the actual input signal.

P2.04 Characteristics selection of input channel	Setting range 0000~0111

It is used for selecting input characteristics of external analog value or pulse value.

The first part of LED (form right to left):It defines characteristics of voltage signal analog input AI1(voltage).

0： positive characteristics 1：Negative characteristics

The second part of LED (form right to left): It defines characteristics of voltage signal analog input AI2(voltage).

0： positive characteristics 1：Negative characteristics

The third part of LED (form right to left): It defines characteristics of current signal analog input AI1(current).

0： positive characteristics 1：Negative characteristics

The corresponding relation is shown as fig.6-7 between input signal and setting freq.

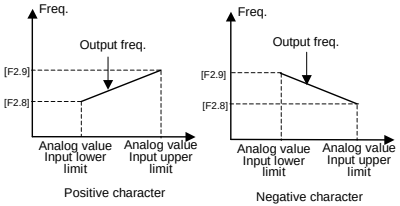


Fig.6-7 corresponding relation between analog input and setting freq.

P2.05 Analog output selection	Setting range 0000~0055

It defines meaning of AO1、AO2.

The first part of LED: it defines the meaning of analog output terminal AO1.

The second part of LED: it defines the meaning of analog output terminal AO2.

0：Output freq.

Amplitude accumulation of AO1 and AO2 are in direct ratio to the output frequency. **[P2.07]** and **[P2.09]** are corresponding to the upper limit freq.

1：Output current

Amplitude accumulation of AO1 and AO2 are in direct ratio to the output current. **[P2.07]** and **[P2.09]** are twice rated current of inverter.

2：Output voltage

Amplitude accumulation of AO1 and AO2 are in direct ratio to the output voltage. **[P2.07]** and **[P2.09]**are corresponding to **[P0.10]**.

3：Rotate speed of applied motor

Amplitude accumulation of AO1 and AO2 are in direct ratio to the motor rotate speed of inverter. **[P2.07]** and **[P2.09]** are corresponding rotate speed that is corresponded the upper limit freq..

4：PID setting

Amplitude accumulation of AO1 and AO2 are in direct ratio to the setting value of PID. F2.15 and F2.17 are corresponding to feedback of 10.00.

5：PID feedback

Amplitude accumulation of AO1 and AO2 are in direct ratio to the PID feedback. **[P2.07]** and **[P2.09]** are corresponding to feedback of 10.00.

P2.06 The lower limit of analog output AO1	Setting range 0.0~[**P2.07**]
P2.07 The upper limit of analog output AO1	Setting range [**P2.06**]~12.0V
P2.08 The lower limit of Analog output AO2	Setting range 0.0~[**P2.09**]
P2.09 The upper limit of analog output AO2	Setting range [**P2.08**]~12.0V

Those parameters define the max and min value of analog output AO1and AO2, shown as fig 6-8.

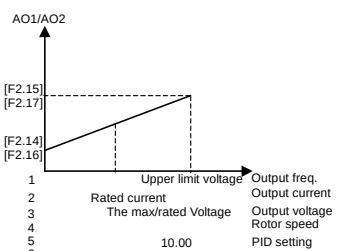


Fig.6-8 output of analog terminals

P2.10 External freq. set time constant of filtering	Setting range 0.01~1.00 Sec

Setting freq. set by external analog input will be filtered to eliminate fluctuate. Time constant of filtering have to appropriate set according to fluctuate of external input signal.

6.3 Digital control parameter group

P3.00 Function selection of Input terminal DI1	Setting range 0~28
P3.01 Function selection of Input terminal DI2	Setting range 0~28
P3.02 Function selection of Input terminal DI3	Setting range 0~28
P3.03 Function selection of Input terminal DI4	Setting range 0~28
P3.04 Function selection of Input terminal DI5	Setting range 0~28
P3.05 Function selection of Input terminal DI6	Setting range 0~28

0： Control terminal is idle

1： Multi-speed control terminal 1

2： Multi-speed control terminal 2

3： Multi-speed control terminal 3

Combination of multi-speed control terminals is used for selecting output freq. of multi-speed.

4： Wobble freq. is valid

When **[P7.15]** is ###2 and any of those parameters is set 4, wobble freq. is valid.

5： State of wobble freq. reset

When inverter is stop and **[P7.15]** is ##0#, forcible reset will work by setting those parameters.

6： FWD jog control

7： REV jog control

8： Acc& Dec time selection terminal 1

9： Acc& Dec time selection terminal 2

They are used for selecting external terminals Acc/Dec time 1~4.

10： Freq. setting channel selection 1

11： Freq. setting channel selection 2

12： Freq. setting channel selection 3

When [P1.00] is 9, Frequency input channel is set by terminals state of 10, 11 and

13： Freq. is controlled gradually increase (UP)

14： Freq. is controlled gradually decrease (DW)

15： UP-DW freq. clear

16： Uncontrolled stop control

If one of terminal DI1~DI6 defined by this parameter is connected with CM, the inverter will lock output signal and applied motor will uncontrolled stop. Then inverter will detect speed and restart after terminal is disconnected with CM.

17： Fault signal of peripheral equipment input

When one of terminal DI1~DI6 is defined by this parameter is connected with CM, peripheral equipment is fault. The inverter will lock output signal and display EU.16.

18： Three-line mode running control

When [P1.06] is 2, one of external terminal DI1~DI6 defined by this parameter is stop trigger switch of inverter. See explanation about [P1.06].

19： DC braking control

When inverter is stop and one of external terminals DI1~DI6 defined by this parameter is connected with CM and output freq. is lower than Initial freq. of DC braking, function of DC braking is valid until terminal is disconnected with CM. Refer to explanation about [P1.20]~ [P1.23].

20： Inner counter clear

21： Inner counter timer

Only terminal DI6 is used for Inner timer, namely parameter P3.05 is 21.

22： PLC running valid

When [P6.00] is ###2 and any of those parameters is set 22, PLC running is valid.

23： PID running valid

When [P8.00] is ###2 and any of those parameters is set 23, PID running is valid.

24： Reserved

25： PLC state reset after stopping

26： RESET

27： FWD

28： REV

P3.06 Input terminals Function setting	Setting range 0000~0010

The first part of LED(form right to left)： Reserved.

The second part of Le define active level of external control terminals。

0：It is valid when terminals are close.

1：It is valid when terminals are open.

The third and fourth part of LED：Reserved.

P3.07 Output terminal DO1	Setting range 0~20
P3.08 Output terminal DO2	Setting range 0~20
P3.09 TA,andTC of relay	Setting range 0~20

It defines expression content of relay contact and terminals OC1 and OC 2 when collector is open-circuit. Shown as fig.6-9.

When TA is on with TC, setting functions will be available.

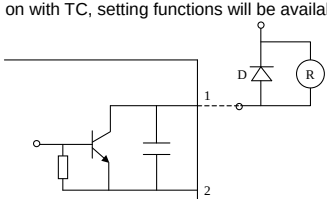


Fig.6-9 Inner wiring diagram of output terminals

0：In the running

When the inverter is in the running state, it will output the valid signal. While the inverter is in stop mode, it will output the invalid signal.

1：Frequency reaching

When the output frequency of inverter approaches the certain range of the setting frequency. (The range is decided by parameter P3.09), it outputs valid signal, otherwise, outputs the invalid signal (High-resistance).

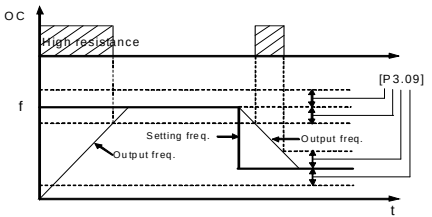


Fig.6-10 Freq. reaching signal

2：Freq. level detection signal（FDT）

When the output frequency of inverter is over FDT Frequency level, the inverter will output the valid signal (Low electrical level) after the setting delay time. When the output frequency of inverter is lower than FDT frequency level, after the same delay time, it will output the invalid signal (High resistance).

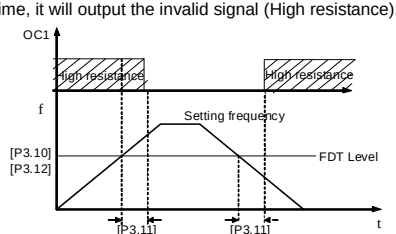


Fig. 6-11 Freq. level detection signal（FDT）

3. Over-loading alarm

When the output current of inverter is over the over-loading alarm level, it will output the valid signal (Low level) after the setting alarm delay time. When the output current is lower than the over-loading alarm level, it will output the invalid signal (High resistance) after the same delay time.

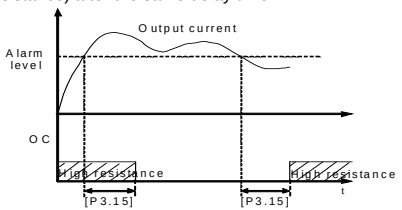


Fig.6-12 Over-load alarm

4：External fault halt

When the external fault input signal is valid and it will lead to stop-machine, the terminal will output the valid signal (Low level), otherwise it will output the invalid signal (High resistance).

5：Output frequency reaches the upper-limit

When the output frequency reaches the upper-limit frequency, the terminal will output the valid signal (Low level). Otherwise, it will output the invalid signal (High resistance).

6：Output frequency reaches the lower-limit

When the output frequency reaches the lower-limit frequency, the terminal will output the valid signal (Low level). Otherwise, it will output the invalid signal (High resistance)

7：Running in zero speed

Running instruction is valid and output freq. is 0, if inverter is input freq., the terminal will output the valid signal (Low electrical level). If inverter is not input freq., the terminal will output the invalid signal (High resistance).

8：Internal timer reaches the setting time

When the internal timer reaches the setting time, the terminal will output the valid pulse signal of 0.5 Sec pulse widths. (Low electrical level)

9：PLC stage is end of run

When simple PLC is valid and current stage is end, this port will output pulse signal with 0.5s pulse width.

10：PLC periodic is end of run

When simple PLC is valid and current period is end, this port will output pulse signal with 0.5s pulse width.

11：Reserved

12：Setting value of counter arrives

See the explanation about parameter P7.06.

13：Designated value of counter arrives

See the explanation about parameter P7.07.

14：Reserved

15：Reserved

16：Inverter fault

When inverter is running with fault, it will output available signal (low level).

17：Restrictions on wobble freq. of the upper and lower limit freq.

When parameters setting about wobble freq. result in that running freq. is beyond the upper and lower limit freq., this port will output available signal (lower lever). Generally, this port output high resistance.

18：Reserved

6.4 V/F Control management parameter group

P4.00 Type of V/F Curve	Setting range 0~3

0: Constant torque curve

The output voltage of inverter is in direct ratio to the output frequency, and most load take this mode.

1: low-freq. torque curve 1

The output voltage of inverter is conic with the output frequency, which is suited to the fan and pump load.

2: low-freq. torque curve 2

The output voltage of inverter is conic with the output frequency, which is suited to the constant power load, such as fan, pump, etc. If there is some unstable phenomenon in light-load running, please switch to run in the decreasing torque curve 1.

3: V/F user-defined curve

It is used for setting user-defined curve which user needs.

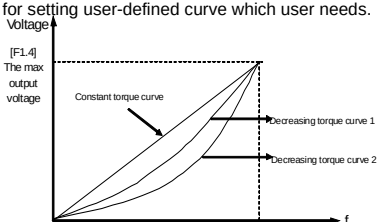


Fig. 6-13 V/F

P4.01 V/F 频率 3	Setting range **[P4.03]~ [P0.09]**
P4.02 V/F 电压 3	Setting range **[P4.04]~ 100.0%**
P4.03 V/F 频率 2	Setting range **[P4.05]~ [P4.01]**
P4.04 V/F 电压 2	Setting range **[P4.06]~ [P4.02]**
P4.05 V/F 频率 1	Setting range **0.0 ~ [P4.03]**
P4.06 V/F 电压 1	Setting range **[P1.38]~ [P4.04]**

Those parameters are used for setting user-defined curve which user need. Shown as Fig.6-11 below:

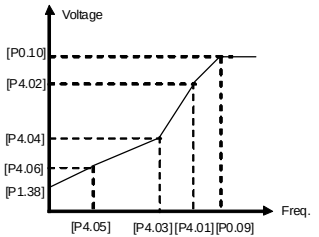


Fig.6-14 V/Fuser-defined curve

6.5 Vector control parameter group

P5.00 Control methods	Setting range 0~0221

It is used for selecting control method when inverter is working.

0：V/F method

It is used for variable speed inverter occasions where do not demand high performance of speed control and low-frequency torque.

1：Vector control

It is used for the variable speed inverter occasions with high performance.

P5.01 Rated voltage of applied motor	Setting range 200~500 V 100~250 V
P5.02 Rated freq. of applied motor	Setting range 5.0~600.00 HZ
P5.03 Rated current of applied motor	Setting range 0.01~300.0 A
P5.04 Rated rev of applied motor	Setting range 300~6000 RPM
P5.05 Exciting current of applied motor	Setting range P5.03/4~ P5.03*3/4

Those parameters are nameplate data of applied motor. And they need input one by one according to capacity of applied motor, when inverter takes vector method. Generally, exciting current of applied motor needn't modify. Because it will automatic update when rated current of applied motor is modified.

P5.06 Parameters self-determination	Setting range 0~2

1： Determine parameters when motor is stop

2： Determine parameters when motor is run（Reserved）

Both vector control method and panel control method are valid, parameter **P5.06** will act.

When parameter **P5.06** is valid, inverter will determine parameters by press key Parameters will save automatically in inverter's memory and Parameter **P5.06** will to clear.

Before start function of Parameters self-determination, please make sure that nameplate parameters of motor（**P5.01** ~ **P5.05**）are input correctly and motor stops.

P5.08	Stator resistance	Setting range0.0~20.000
P5.09	Rotor resistance	Setting range0.0~20.000
P5.10	Rotor inductance	Setting range0.00~600.00mh
P5.11	Inductance of excitation	Setting range0.00~600.00mh
P5.12	Leakage inductance	Setting range0.00~100.00mh

Those parameters are used for setting motor's basic parameter. They are necessary for complete vector control arithmetic. Client can use inverter's interior parameters when capacity of inverter matches motor's. When the performance of inverter can't satisfy the users' demand, you can use function of parameters self-determination to renew some parameters. If user can get these parameters precisely beforehand, parameters also can be input one by one. When parameters are initializing, inverter will renew interior acquiescence parameter according to type. Before start function of parameters self-determination, user must make sure that input nameplate parameter of motor.

P5.13 Gain of compensation for speed drop	Setting range 0.50~1.50

Parameter **P5.13** is valid when inverter takes vector control method. It is used for offsetting error of setting motor rotor parameter. The parameter is read only.

6.6 Multi stage control parameter group

P6.00 Multi-speed running mode	Setting range 0000~1252

P6.01 Multi-speed frequency 1	Setting range 0.0~ the upper limit freq
P6.02 Multi-speed frequency 2	Setting range 0.0~ the upper limit freq
P6.03 Multi-speed frequency 3	Setting range 0.0~ the upper limit freq
P6.04 Multi-speed frequency 4	Setting range 0.0~ the upper limit freq
P6.05 Multi-speed frequency 5	Setting range 0.0~ the upper limit freq
P6.06 Multi-speed frequency 6	Setting range 0.0~ the upper limit freq
P6.07 Multi-speed frequency 7	Setting range 0.0~ the upper limit freq
P6.08 Multi-speed frequency 8	Setting range 0.0~ the upper limit freq

P6.09 Running time of Multi-speed 1	Setting range 0.0~6000 Sec

P6.10 Running time of Multi-speed 2	Setting range 0.0~6000 Sec
P6.11 Running time of Multi-speed 3	Setting range 0.0~6000 Sec
P6.12 Running time of Multi-speed 4	Setting range 0.0~6000 Sec
P6.13 Running time of Multi-speed 5	Setting range 0.0~6000 Sec
P6.14 Running time of Multi-speed 6	Setting range 0.0~6000 Sec
P6.15 Running time of Multi-speed 7	Setting range 0.0~6000 Sec
P6.16 Running time of Multi-speed 8	Setting range 0.0~6000 Sec

P6.17 Running direction of PLC multi-speed	Setting range 0000~1111
P6.18 Running direction of PLC multi-speed	Setting range 0000~1111

Parameter P5.00 is multi-speed running mode. It is used for setting basic characteristics of multi-speed running.

The first part of LED(form right to left)：

Simple PLC selection

0：Simple PLC is invalid.

1：Simple PLC is valid. If priority of freq. channel is permit after starting, inverter will run at simple PLC state.

2：Simple PLC is conditional valid. If external DI1~DI6 terminals is valid (P3.00~P3.05 is set as 22), inverter will run at simple PLC state.

Priority of freq. channel is shown as following table.

Priority	Priority	Setting freq.
High	1	JOG freq
↓	2	Wobble freq running
	3	PID output
	4	PLC multi-speed freq
	5	External terminals select multi-speed freq
Low	6	Freq setting channel selection

The second part of LED：Simple PLC running mode selection

0：Single loop mode

The inverter will run in setting freq of the first stage and in turn output freq. of each stage according to setting running time. If setting running time of a certain stage is 0, the inverter will skip this stage. When a cycle operation is end of run, inverter will stop input until user input available running instrument to restart a next cycle.

1：Single loop and stop mode

Its function has an analogy with single loop mode. The difference is that output freq. is be reduced to 0 within the given decelerate time after a certain stage is end of run and inverter will run next stage.

2：Continuous loop mode

Inverter will run eight stages in turn. If the eighth stage is end of run, the inverter will run the next cycle form the first stage.

3：Continuous loop and stop mode

Its function has an analogy with Continuous loop mode. The difference is that output freq. is be reduced to 0 within the given decelerate time after a certain stage is end of run and inverter will run next stage.

4：Keep the end value

Its function has an analogy with single loop mode. The difference is that inverter will run in the last stage with non-zero speed.

5：Keep the end value and stop mode

Its function has an analogy with keep the end value. The difference is that inverter will reduce the output freq. to 0 after arriving setting value of Acc time after a certain stage is end of run and, then inverter will run the next stage.

The third part of LED

0：Restart from the first stage freq.

When inverter is stop caused by fault or receiving stop instrument in PLC running, it will clear current running state and restart form the first stage freq.

1：Restart from running freq., which is saved before running is break

When inverter is stop caused by fault or receiving stop instrument in PLC running, inverter will restart from running time and freq. that is saved before running is break.

2：Restart from setting freq. when running is break.

When inverter is stop caused by fault or receiving stop instrument in PLC running, setting of running time and freq. of a certain stage will be save. And inverter will restart form setting of running time and freq. the different between mode 1 and mode 2 is initial freq. Shown as fig6-24.

The fourth part of LED：PLC save state

0：Non-save after power off

It will not save PLC running state after power off. Inverter will run form the stage 1 when power on.

1：Save after power off

It will save PLC running state after power off. Inverter will run form the stage 1 when power on.

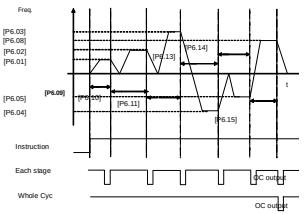


Fig.6-15 Stop mode of single circle

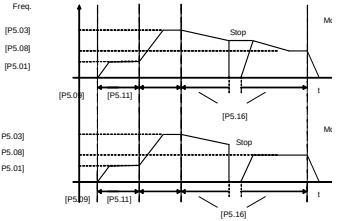


Fig.6-16 PLC recover running after restart

[P5.01]～[P5.08] Multi-speed freq.1～8

Those parameters are used for setting output freq. of multi-speed.

[P5.09]～[P5.16] Running time of Multi-speed 1~8

Those parameters are used for confirming running time of each stage.

[P5.17]、[P5.18] Running direction of PLC multi-speed

Those parameters are used for defining running direction of PLC multi-speed.

[P5.17] The first part of LED(form right to left):

0: Stage 1 FWD 1: Stage 1 REV

The second part of LED:

0: Stage 2 FWD 1: Stages 2 REV

The third part of LED:

0: Stage 3 FWD 1: Stages 3 REV

The fourth part of LED:

0: Stage 4 FWD 1: Stages 4 REV

[P5. 18] The first part of LED(form right to left):

0: Stage 5 FWD 1: Stages 5 REV

The second part of LED:

0: Stage 6 FWD 1: Stages 6 REV

The third part of LED:

0: Stage 7 FWD 1: Stages 7 REV

The fourth part of LED：

0： Stage 8 FWD 1：Stages 8 REV

6.7 Application management parameter group

P7.00 Running direction control	Setting range 0000~0011

This parameter is used for modifying the present output phase sequence of inverter, which modifies the running motor direction. Control effect of panel control method is shown as following table.

DI1(FWD **P3.00=27)**，DI2(REV **P3.01=28)**：

DI1-CM	DI2-CM	[P7.00]	Direction
ON	OFF	# # 1 #	FWD
OFF	ON	# # 1 #	FWD
ON	OFF	# # 0 0	FWD
OFF	ON	# # 0 0	REV
ON	OFF	# # 0 1	REV
OFF	ON	# # 0 1	FWD

P7.01 Frequency reach the checkout amplitude	Setting range 0.0~20.00hz

If output freq. of inverter is within setting value that is set in **P7.01**, selected terminal will output valid signal.

P7.02 FDT setting 1	0.0~ the upper limit freq
P7.03 FDT output delay time 1	0.1~200.0 Sec
P7.04 FDT setting 2	0.0~ the upper limit freq
P7.05 FDT output delay time 2	0.1~200.0 Sec

The parameter is used for setting the frequency detection level. When output frequency is higher than the setting value of FDT, after the setting delay time, terminals will output the valid signal, shown as fig.6-14.

Parameters **P7.02** and **P7.03** are used for setting FDT of OC1, parameters **P7.04** and **P7.05** are used for setting FDT of OC2.

P7.06 Final value setup of internal counter	Setting range 1~60000
P7.07 Internal timer setup	Setting range 1~60000

The parameter defines the counting action of internal counter, and the clock terminals of counter is selected by parameter P3.05.

The counting value of counter for the external clock reaches the value appointed by parameter **P7.06**, and the corresponding Terminal OC outputs a valid signal of same width with the external clock cycle.

When the counting value of counter for external clock reached the value appointed by Parameter **P7.07**, the corresponding Terminal OC will output the valid signal, Go on counting to the value provided by parameter **P7.06**, which will lead to reset and the output valid signal will be withdrawn.

The clock cycle of counter should be over 5ms and the min width should be 2ms.

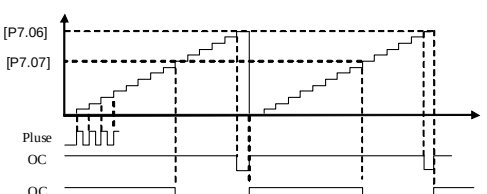


Fig.6-17 Internal counter function

P7.08 Skip freq. 1	Setting range 0.0~上限频率
P7.09 Amplitude accumulation Of Skip freq. 1	Setting range 0.0~5.00
P7.10 Skip freq. 2	Setting range 0.0~上限频率
P7.11 Amplitude	Setting range 0.0~5.00

accumulation Of Skip freq. 2	

It is used for avoiding resonance point of mechanical load. Shown as fig. 6-27.

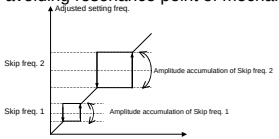


Fig.6-18Skip freq.

P7.13 Close-loop analog coefficient setting	Setting range 0.01~100.0
P7.14 Rotator speed Coefficient setting	Setting range 0.01~10.00

PID feedback value（d.10）= P7.13 × actual feedback value

PID setting value（d.09）= P7.13 × setting value

rotator speed（d.5）= F6.11 × actual output rotator speed

P7.15 Wobble freq. Running mode	Setting range 0000~1112

It is used for setting basic characteristics of wobble freq. running.

The first part of LED (form right to left) ：

0： Function of wobble freq. is invalid.

1： Function of wobble freq. is valid.

2： Function of wobble freq. is conditional valid.

The second part of LED: restart mode

0：Restart according to parameters saved before stop

1：Restart

The third part of LED:

wobble freq. characteristics（See explanation about parameter P7.18）

0：The wobble freq. is fixed　　1：The wobble freq. is changeable.

The fourth part of LED:

Storage characteristics of wobble freq.

0：It will not save the running state of wobble freq. after power off

1：It will save the running state of wobble freq. after power off

P7.16 Preset freq. of wobble freq	Setting range 0.0 ~ the upper limit freq
P7.17 Waiting time of preset freq.	Setting range 0.0 ~ 6000.0 Sec

Preset freq. of wobble freq. is running freq. before inverter is in or out wobble freq. mode.

When [P7.15]＝###1，inverter will start and run in preset freq. of wobble freq., then run in wobble freq. mode after the setting time of P7.18.

When [P7.15]＝###2 and the terminals of wobble freq. is valid (P3.0~P3.5 is 4)，the inverter will run in wobble freq. mode. When [P7.15]＝###2 and the terminals of wobble freq. is invalid, inverter will output preset freq. [P7.16].

P7.18 Amplitude of wobble freq.	Setting range 0 ~ 50.0 %

P7.18 is rate of amplitude of wobble freq.

When [P7.15]＝#0##，

Amplitude of wobble freq.＝ **[P7.18]**×the upper limit freq. **[P0.08]**

When [P7.15]＝#1##，

Amplitude of wobble freq. ＝ **[P7.18]**×（Preset center freq. of wobble freq. **[P7.22]** + External setting freq.）

P7.19 Jumping freq.	Setting range 0.0 ~ 80.0 %

When freq. arrives the upper limit freq. , the freq. will fast decline. or when freq. arrives the lower limit freq., the freq. will fast ascend. Jumping freq. is amplitude, which freq. is ascending or declining. Shown as fig6-26.

Actual jumping freq. = **[P7.19]**×Amplitude of wobble freq. **[P7.18]**

P7.20 Triangular rise time	Setting range 0.1 ~ 1000.0 Sec
P7.21 Triangular fall time	Setting range 0.1 ~ 1000.0 Sec
P7.21 Preset center freq. Of wobble freq.	Setting range 0.0～the upper limit freq

P7.20 defines the running time from lower limit freq. to upper limit freq. of wobble freq., namely Acc time

P7.21 defines the running time form upper limit freq. to lower limit freq. of wobble freq., namely Dec time

The sum of **P7.20** and **P7.21** is running cycle of wobble freq.

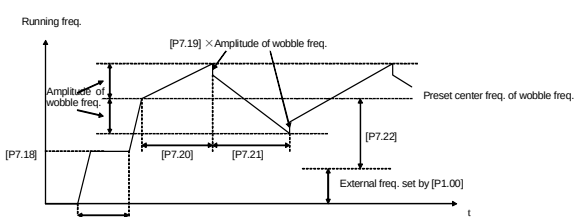


Fig.6-19 Running process of wobble freq.

6.8 PID Control parameter group

P8.00 Inner PID control	Setting range 0000 ~ 1122

The first part of LED： Inner PID control

0：Inner PID control is invalid 1：Inner PID control is valid

2：Inner PID control is conditional valid. Inner PID is set by external terminals DI1～DI6 .

The second part of LED： PID controller selection

0： proportion 1：Integral 2：Proportion and integral

The third part of LED： Regulating property of PID controller

0： positive interaction 1：Reactor

The fourth part of LED: The pole choosing of PID controller

0: Monopole PID control 1: ambipolar PID control

Under the monopole PID control mode, the output phase sequence of inverter is mono-direction; and the external terminal decides the direction of output that it has no relation with the output of PID controller. The adjusting effect of PID controller only affect the output frequency of inverter. Please refer to fig 6-30.

Monopole PID control applies in water and voltage supply which do not need the setting of motor's reversion.

Under the ambipolar PID control mode, when the adjusting effect of PID controller makes the output frequency as 0, and it has margin between PID setting and feedback, the output phase sequence and motor's reversion would change. That is to say, the external terminal and PID controller decide the motor's reversion together under this control mode. Please refer to fig 6-21.

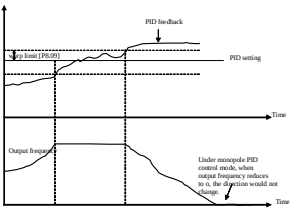


Fig 6-20 Monopole PID control mode

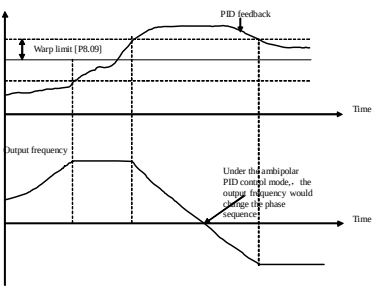


Fig 6-21 Ambipolar PID control mode

P8.01 Inner PID setting and channel selection	Setting range 0000 ~ 0104

It is used for setting inner PID and feedback channel.

The first part of LED(form right to left)：It is used for setting PID channel 。

0：Digital setting. It is set by parameter P8.02.

1：Serials interface setting

2：Panel potentiometer setting, it is on the operation panel.

3：External voltage signal A11（0V~10V）。

4：External voltage signal AI2（0V~10V）。

5：External current signal AI1（0~20mA）。

The second part of LED： Reserved.

The third part of LED： It is used for setting PID feedback channel.

0：External voltage input AI1 is as feedback channel, which is in the range of 0~10V.

1：External voltage input AI2 is as feedback channel, which is in the range of 0~10V.

2：External current input AI1 is as feedback channel, which is in the range of 0~20mA.

P8.02 Inner PID close-loop digital setting	Setting range 0.00 ~ 10.00

If P8.01 is 0#00, setting value will be set by P8.02.

P8.03 Minimum fixed value	Setting range 0.0 ~ [P8.04]
P8.04 Maximum fixed value	Setting range [P8.03] ~ 10.00
P8.05 Feedback of minimum fixed value	Setting range 0.0 ~ 10.00
P8.06 Feedback of maximum fixed value	Setting range 0.0 ~ 10.00

Parameters P8.03 and P8.04 define the upper and lower limit value of PID setting. Parameters P8.05 and P8.06 define corresponding relation with PID feedback value. Shown as fig.6-22.

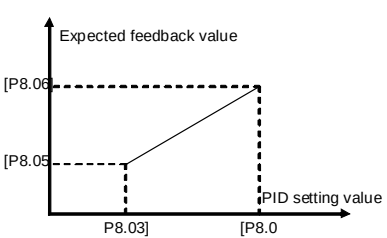


Fig.6-22 Relation between PID fixed value and expected feedback value

P8.07 Proportion gain	Setting range 0.00~5.00
P8.08 Integral time constant	Setting range 0.1 ~ 500.0 Sec

Those parameters are inner parameters of PID.

P8.09 Allowable deviation limit	Setting range 0.0 ~ 20.0(%)

The parameter is the allowable deviation value relative to the setting max value. When the difference between feedback value and the setting value is lower than this setting value, PID controller will stop. Shown as fig.6-33.

This function is mainly suited for the system that has lower control precision and needs to avoid adjusting frequently, for example, water-supply with constant pressure system.

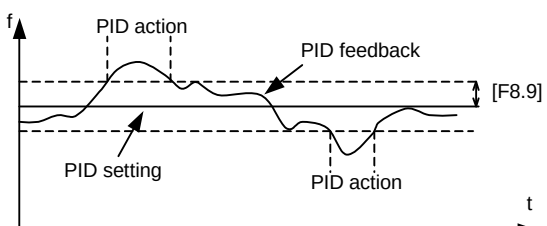


Fig.6-23 PID Control allowable deviation limit

P8.10 Preset freq. for close-loop	Setting range 0.00 ~ 上限频率
P8.11 Holding time of preset freq. for close-loop	Setting range 0.0 ~ 6000.0 Sec

Those parameters define freq. and running time of inverter before actual PID control is valid. In some control systems, inverters will forcible output a certain freq. (P8.10) and keep it in setting time (P8.11) for controlled object arrives fast targeted value. When controlled object almost arrives targeted value, PID controller will be valid to improve response speed.

P8.12 Sleeping threshold	Setting range 0.0 ~ 10.0

It defines measuring range of long-distance manometer, user have to input it.

P8.13 Awakening threshold	Setting range 0.0 ~ 10.0

It defines feedback value while inverter goes sleep state. When actual feedback value is bigger than setting value and inverter arrives lower limit value, the inverter will go sleep.

6.9 Communication management parameter group

P9.00 Communication setting	Setting range 0000~0025

The first part of LED(form right to left)： It is used for setting baud rate of serials communication.

0： Reserved 1：1200bps 2: 2400bps

3: 4800bps 4: 9600bps 5: 19200bps

To make sure both sides have the same baud rate, when client use serials communication.

The second part of LED： To set data format of serials communication.

0：Close 1： Even 2：Odd

To make sure both sides have the same data format, when client use serials communication.

P9.01 Local address	Setting range 0 ~ 30

P9.02 Response delay of local	Setting range 0 ~ 1000 ms

It defines waiting time, which is the time, receiving local correct code to send response data frames.

P9.03 Function setting of communication Auxiliary function	Setting range *0000 ~ 2011*

The first part of LED(form right to left)：

0： The inverter is slave 1： The inverter is master

The second part of LED： Act selection after communication is lost

0： Stop 1：Keep

P9.04 Checkout time of communication overtime	Setting range 0.0 ~ 100.0s

If the local doesn't receive correct data signals in regulate time, the communication is fault. Inverter will keep on running or stopping according to setting of parameter P9.03.

P9.05 Linkage setting proportion	Setting range 0.01 ~ 10.00
P9.06 Rectify channel of linkage setting proportion	Setting range 0 ~ 3

It is used for setting proportion of output freq. between master and slave, when takes linkage setting control.

When P9.06 is 0, rectify channel of linkage setting proportion is invalid.

Slave freq. = Master freq.**×** [P9.05]

When P9.06 is 1, 2,3 or 4, rectify channel of linkage setting proportion is valid.

Slave freq. = Master freq.**×** [P9.05]**×**value of rectify channel or the max value of rectify channel

P9.06 is used for selecting rectify channel.

Rectify channel 1：Panel potentiometer

Rectify channel 2：External voltage signal AI1（0 ~ 5V）

Rectify channel 3：External voltage signal AI2（0 ~ 10V）

Rectify channel 4：External current signal AI1（0 ~ 20mA）

6.10 Reliability management parameter group

PA.00 Under voltage protection level	Setting range 320V ~ 480V

It defines lower limit voltage which terminals P+ and P- are allow while inverter is working normally. For some low voltage conditions, user can decrease under voltage protection level to ensure that inverter is running normally.

PA.01 Over voltage limit level	Setting range 660V ~ 760V

It defines threshold of voltage stall protection while motor is decelerating. If DC voltage caused by decelerating is beyond setting value of FC.1, deceleration time will automatic prolong.

PA.02 Current amplitude limiting level	Setting range 150 ~ 200%

It defines the max output current that is inverter permit. Whatever the operation mode is, inverter will adjust output freq. to inhibit current within the range of regulation, when output current of inverter is beyond setting value of PA.02

PA.03 Acc torque level	Setting range 110 ~ 200%
PA.04 Braking torque lever	Setting range 10 ~ 150%

It is used for setting permissible output level of torque current under motor acceleration state.

The restriction on torque level is set by PA.03. It is percentage of rated current of inverter. For example, PA.03 set 150% that means the max output current is 150 percentage of rated current.

When output current of inverter is beyond setting value of PA.03, inverter will prolong Acc/Dec time to inhibit output current in setting value of PA.03.

It fits for occasions where demand high performance with braking torque. If setting value of parameter PA.04 is big, the Braking effect will obvious. But inverter will alarm about over voltage if inverter is not connect braking resistance.

PA.05 Motor over-lode protection	Setting range 50 ~ 110 （%）

The parameter is used for setting the sensitivity of thermal relay protection for applied motor. When the rated current of applied motor doesn't match with the rated current of inverter, it can accomplish the correct heat protection for the motor to set this parameter.

PA.06 Over-loading alarm level	Setting range 50 ~ 200（%）
PA.07 Over-loading alarm delay time	Setting range 0.0 ~ 20.0 秒

If output freq. beyond the setting value set by parameter PA.06, after the setting delay time set by parameter PA.07, terminals output valid signal.

PA.08 Protection function in operation	Setting range 0000 ~ 9999

It is used for setting some coefficients with special function in running process. Generally, user needn't set.

The first part of LED(form right to left)： Under voltage compensation intensity

The second part of LED： Over voltage inhibit intensity

The third part of LED： Over current inhibit intensity

The fourth part of LED：Self-adapting braking torque adjust intensity

PA.09 Action function selection	Setting range 0000 ~ 0111

The first part of LED(form right to left)： Cooling fan control

0：Cooling fan run after inverter run.

Cooling fan will stop after inverter stop. When temperature is above 40℃, the cooling fan also will also run.

1：Cooling fan will automatic run when inverter is power on.

The second part of LED： Variable speed control of cooling fan

0：Invalid 1：Valid

Cooling fan always keep the max speed.

The third part of LED： Voltage over modulation

0：Invalid 1：Valid

PA.16 Fault self-recovery time	Setting range 0~2
PA.17 Interval time of fault self-recovery	Setting range 0.2~20.0 Sec

PA.16 is used for resetting some faults and run again.

PA.17 defines interval time between fault starting and fault recovery. If inverter can't recover in setting value of PA.16 it will output fault signal. Inverter will check speed and restart.

7. FAULT DIAGNOSIS AND COUNTERMEASURES

7.1 Protective functions and Countermeasures

Code	Faults	Probably Cause	Solutions
Ec.1	Over-current during Acc	1. Acceleration time is too short. 2. V/F curve is not suitable. 3. User start rotating motor, but doesn't set function of detect speed and restart. 4. Value of torque boost set too high. 5. Mains voltage is too low	1. Prolong the acceleration time 2. Descend the torque boost or adjust the V/F curve 3. To set function of detect speed and restart 4. To decrease voltage of torque boost 5. Check mains voltage
Ec.2	Over-current during Dec	Deceleration time is too short.	Prolong the deceleration time
Ec.3	Over-current during running or stopping	1. Load occurs mutation 2. Mains voltage is too low	Decrease load fluctuation
Ec.4	Over-voltage during Acc	1.Input voltage is too high 2. Power supply is switched on or off frequently.	1.Check power supply 2. Control the on-off of inverter by the control terminal

Ec.5	Over-voltage during Dec	1. Deceleration time is too short. 2. Input-voltage is abnormal	1. Extend the deceleration time 2. Check power supply voltage 3. Install or select the brake resistance
Ec.6	Over-voltage during running	1. Power supply is abnormal 2. There are energy feedback load	1. Check power supply 2. Install or select brake resistor
Ec.7	Over voltage at stop	Power supply is abnormal	Check power supply voltage
Ec.8	Under-voltage during running	1. Power supply is abnormal 2. There is great fluctuation of load in electric network.	1. Check power supply voltage 2. Provide the power supply separately
Ec.9	Inverter protective action	1. Output is short-circuit or ground 2. Load is too heavy	1. Check wiring 2. Reduce the load 3. Check whether brake resistor is short-circuit
Ec.10	Output ground	1.The output terminal of inverter grounds 2. The wire is too long between inverter and motor and the carrier frequency is too high.	1. Check the connecting wire 2. Shorten the connection wire or reduce the carrier frequency.

Ec.11	Interfere	Faultaction causing by electromagnetism interfere	Add absorb circuit
Ec.12	Inverter over-loading	1. Load is too heavy. 2. Acceleration time is too short. 3. Torque boost is too high or V/F curve is not suitable. 4. Voltage of Power supply is too low 5. User starts rotating motor, but doesn't set function of detect speed and restart.	1. Reduce the load or replace with higher capacity inverter. 2. Prolong Acc time. 3. Decrease the torque boost or adjusting V/F curve. 4. Check Voltage of Power supply 5. To set function of detect speed and restart
Ec.13	Motor over-loading	1. Load is too heavy. 2. Acceleration time is too short. 3. The setting of protection factor is too small 4. Torque boost is too high or V/F curve is not suitable.	1. Reduce the load 2. Prolong Acc time 3. Increase the over-loading protection factor of motor 4.Decrease torque boost voltage and adjust V/F curve.
Ec.14	Inverter overheat	1. Wind hole is blocked 2. Environmental temperature is too high 3. Fan is damaged	1. Clear air duct or improve the air condition.

Ec.16	Peripheral equipment occur error	There is signal input on the peripheral. Equipment fault input terminal of Inverter	Check the signal source and the pertinent equipments
Ec.17	Inverter output	Inverter output lack	Check the wire of
Ec.19	Main contactor of inverter is poor contact	1. Power supply is too low 2.Contactoris damaged. 3. Starting resistance id damaged. 4. Control circuit is damaged.	1. Check power supply 2. Replace contactor 3. Replace starting resistance. 4. Contract Us
Ec.20	Current detecting error	1.The current detecting equipment or circuit is damaged 2.Auxiliary power supply has problem	Contract Us
Ec.21	Temperature sensor occur faults	1. Signal line of temperature is poor contact 2. Temperature sensor is damage.	1. Check jack 2. Contract Us

7.2 Fault record inquiry

V600 series inverter records the last six fault codes and the output parameters of last fault. This information is aid in looking up the fault causes. Fault information and state monitor parameters are stored uniformly, so please refer to the operation way to look up the information.

Monitor Item	Contents	Monitor Item	Contents	Monitor Item	Contents
d-26	First fault record	d-30	Fifth fault record	d-34	Output current of last fault
d-27	Second fault record	d-31	Sixth fault record	d-35	Output voltage of last fault
d-28	Third fault record	d-32	Output frequency of last fault	d-36	DC voltage of last fault
d-29	Fourth fault record	d-33	Setting frequency of last fault	d-37	Module temperature of last fault

7.3 Reset

(1) Be sure to check the fault cause and exclude it before reset, otherwise, which may lead to the inverter, the permanent damaged.
(2) If the inverter can not be reset or occur the fault again after reset, please find out the reason. Continuous reset will damage the inverter
(3) Over-load or over-heat protective action should delay 5 minutes to reset.

When the inverter happens to the fault, you can reset the inverter to resume the normal running by any way as follows:

I. External reset input-terminal RST and CM terminal are closed, then off.

II. While the fault code is displayed, press STOP key.

III. Turn the power source off.

IV. It will send fault reset instrument by RS485 interface.

8. MAINTENANCE

As a result of ambient temperature, humidity, dust, vibration and aging of internal components of inverter, the inverter will probably appear the potential problem during running. In order to ensure the inverter to run steadily for a long time, the inverter should be checked up once at 3 or 6 months.

First of all, turn the inverter's power off. And professional worker performs

8.1 Daily Maintenance

Maintenance points

Inspection items	Time		Inspection contents	
	Daily	Period		
Running Environment	√		1.Temperature, Humidity 2.Dust, gases	1.When temperature is over 40℃, the panel should be opened. Humidity is less than 90%,
Cooling system		√	1.Installation Environment 2. Fan in inverter	1. Installation environment is well ventilated, and the duct is not blocked. 2. Fan is normal and no abnormal voice.
Inverter	√		1.Vibration, Temperature raise 2. Noises	1. Vibration smooth, the temperature of air outlet is normal. 2. Not abnormal voice and no peculiar
Motor	√		1.Vibration, Temperature raise	1. Running smooth, and temperature is normal 2. No abnormal and smooth noises.
Input/output Parameters	√		1. Input voltage 2. Output	1. Input-voltage is in the setup range 2. Output-current is under the rated value

Input voltage	Moving-coil voltmeter
Output voltage	Rectifier-type voltmeter
O/I current	Tong-type ammeter

(1) Inverter has done the electric insulating experiment before leave-factory, so user don't need to do the withstand voltage test.
(2) Do the insulation test to the inverter if necessary, all of I/O terminals must be connected in short-circuit (R, S, T, U, V, W, P, P-, PB). Strictly prohibited from doing the insulation test for the single terminal. Please use 500V Meg-ohmmeter to perform this test.
(3) Control circuit can not be used the Meg-ohmmeter to test.
(4) For insulation test to motor, the connection wire between motor and inverter should be disassembled.

8.2 Damageable parts maintenance

Some cells in inverter are worn out or the performance descends in the process of usage process, in order to ensure the stable running of inverter, so the inverter needs to do the preventative maintenance or replace the part if necessary.

(1) Filter capacitor

Pulse current in main circuit will take effect on the performance of aluminum electrolytic filter capacitor, and the degree of effect has relation with the ambient temperature and usage condition. In normal condition, the electrolytic capacitor of inverter should be replaced at 4 to 5 years.

When the electrolytic capacitor leaks out, safety valve falls out or main block of capacitor expands, the corresponding parts should be replaced immediately.

⑵ Cooling fan

The lifetime of all the cooling fans in the inverter is about 15000 hours (that inverter is used continuously about two years). If the fan occurs the abnormal noise or vibration, it should be replaced immediately.

8.3 Storage

If the inverter isn't used for a long time, please notice the following items:

(1) To avoid storing the inverter at the environment with high-temperature，humidity, vibration or metal dust, and ensure the well ventilation.

(2) If the inverter is not used for a long time, it should be energized to resume the capability of electrolyte capacitor once at 2 years，at the same time, check the functions of inverter. When the inverter is electrified, its voltage should be increased by an autotransformer step by step and the time should not be less than 5 hours.

If inverter is not used for a long time, the performance of internal filter capacitor will descend.

8.4 After sale services

Guarantee time of this inverter is 18 months (From the day of purchase). In guarantee time, if the inverter occurs fault or be damaged in normal usage, our company will provide the free repair service or replacement.

Guarantee scale is just the mainframe of inverter.

In guarantee time, if the faults are caused by the following cases, certain service cost would be charged.

① Malfunction is caused by not following the operation manual or over using the standard specification;

② Malfunction is caused by repairing without admision.

③ Malfunction is caused by the bad-storage.

④ Malfunction is due to application of inverter for abnormal functional needs.

⑤ Damage is caused by fire, salt-corrode, gas-corrode, earthquake, storm, flood, lightning strike, voltage abnormal or other force majored.

Even if over guarantee time, our company will provide the paid service forever.

9. USAGE EXAMPLE

9.1 Panel on-off control, Panel potentio- meter setting frequency and V/F control

9.1.1 Parameters setting

1. When P5.00 is 0, V/F method is valid.
2. When P1.15 is 00#0, panel control is valid.
3. When P1.00 is 3, panel potentiometer is valid.

9.1.2 Basic wiring

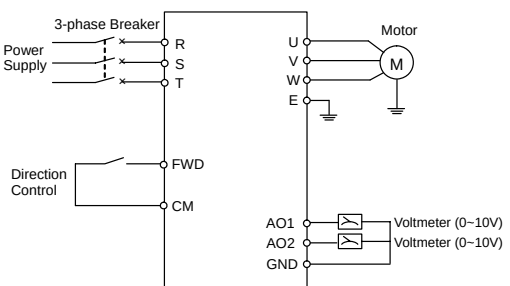


Fig9-1 Basic wiring

9.1.3 Operation

Press FWD key to start the inverter, and then rotate the button of panel potentiometer in clockwise to increased setting frequency step by step. Contrarily, rotate in anti-clockwise to decreased setting frequency step by step.

Press STOP key to stop the inverter.

External control terminal FWD decides the running direction of motor.

9.2 External control mode, external voltage setting frequency and V/F control

9.2.1 Parameters setting

1. When F0.0 is 0, V/F method is valid.
2. When F0.4 is 00#1, external terminals control is valid.
3. When F0.1 is 5, external voltage VC2（0~10V）is valid.

9.2.2 Basic wiring

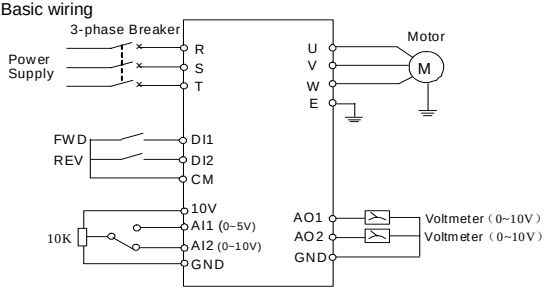


Fig9-2 Basic wiring

9.2.3 Operation

DI1-CM is off，the motor will running forward. DI2-CM is off, the motor will running backward. FWD-CM and REV- CM are off or on at the same time, the inverter will stop.Setting frequency is set by external voltage signal A12.

(**[P3.00]**=27 ,**[P3.01]**=28)

9.3 Multi-speed running, external control mode and V/F control

9.3.1 Parameters setting

1. When P5.00 is 0, V/F method is valid.
2. When P1.05 is 00#1,external terminals is valid.
3. To set external terminals DI1, DI2 and DI3 as multi-speed terminals. (Namely, parameter [P3.00]~[P3.02])
4. To set running freq. of each stage according to user needs.（namely, parameter[P6.01]~[P6.07]）。

9.3.2 Basic wiring

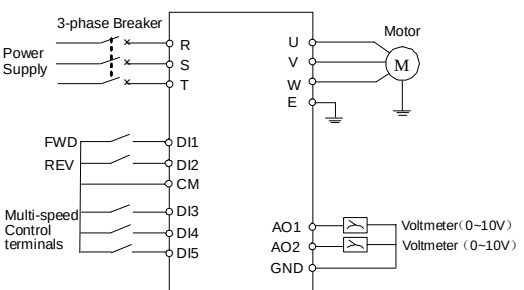


Fig9-3 Basic wiring

9.3.3 Operation

DI1-CM is off，the motor will running forward. DI2-CM is off, the motor will running backward. DI1-CM and DI2- CM are off or on at the same time, the inverter will stop.

If DI3, DI4 and DI5 are all opened with CM, the multi-speed running is invalid. The inverter will run as the setting instruction speed.

If one terminal or all of DI3, DI4 and DI5 are connected with CM terminal, the inverter will run as the multi-speed frequency selected by DI3, DI4 and DI5.

(**[P3.00]**=27,**[P3.01]**=28,**[P3.02]**=10 ,**[P3.03]**=11, **[P3.04]**=12)

9.4 Panel on-off control，Panel potentiometer setting frequency and linkage control with inverters

9.4.1 Parameters setting

Master setting：

1. Freq. setting channel is panel potentiometer mode. Namely P0.00 is 3.
2. Operation channel selection is panel control, namely P1.05 is 00#0.
3. Communication setting (Parameter P9.00) is default.
4. If P9.03 is 0001, the inverter is master.

Slave setting：

1. Freq. setting channel is RS485 interface. Namely P1.00 is 2.
2. Operation channel selection isRS485 interface. Namely P1.05 is 00#2.
3. Communication setting (Parameter P9.00) is default.
4. If P9.03 is 0000, the inverter is slave.
5. Linkage setting proportion (Parameter P9.05) will be set by user needs.
6. Rectify channel of linkage setting proportion is external voltage signal AI2. Namely P9.06 is 2.

9.4.2 Basic wiring

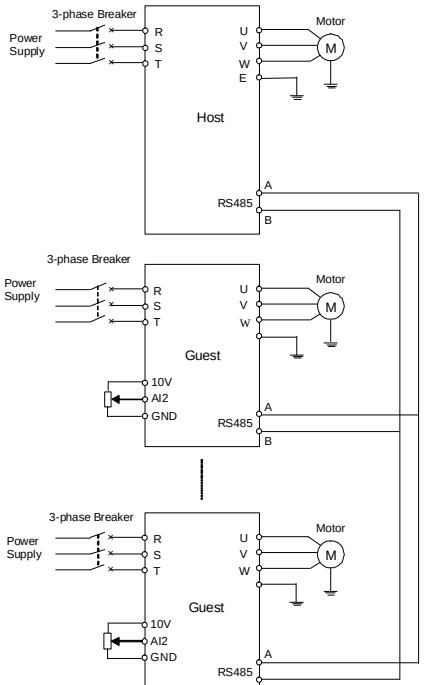


Fig9-4 Basic wiring

9.4.3 Operation

Running freq. of slave has a certain proportion with master's. Linkage setting proportion is set by parameter P9.05.

In this example, freq. proportion of master and slaves can get across by AI1 channel.