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## Selection Catalogue Low Voltage Frequency Inverter

hapn 



## Corporation Profile

China Hpan Electric Co., Ltd. was established in 1991. The company follows the ideas of "Development Driven by Science&Technology", insists on synchronizing with the world advanced energy saving technology. Hapn company has been cooperating with Shanghai Jiaotong University and other domestic research institutes in respect of technology development, in the meantime, joins the international technology venture solcom group to aim at designing and developing high-tech products unceasingly. Hapn company has grown to be a modern technologies enterprise that is integrated with R&D, production, trading, marketing and information technology, and developed multiple high quality products with state of the art technology covering medium voltage soft starter, low voltage soft starter, medium and low voltage frequency inverter, medium voltage permanent magnetic vacuum circuit breaker and medium voltage permanent magnetic vacuum contactor, etc. Hapn company cooperated with the international solcom group to establish a globalized technological joint-venture, Solcom&Hapn (Shanghai) Electric Co., Ltd. located in Shanghai, China with registered capital of US\$ 16.8 million, annual revenue of RMB420million and staff of 800 plus, occupying a factory area of 230000 square meters.

Hapn brand products have been applied widely to many national key engineering projects and oil&gas and mining industry applications at home and abroad such as the Three Gorges Hydropower Engineering, 2008 Beijing Olympics Game Facilities, 2010 Shanghai Expo Facilities, Sinopec, PetroChina, Russia Rosneft Oil, Russia Luk Oil Co., Ltd., Kazakstan Kumkol Oil Resources Company and Vietnam Zhanxi Coal Mine, etc., providing comprehensive green energy saving automation technical support for industries and power supply fields. The company takes "Humanity Culture and Technology imagine Green Peace" as its development ideas, focusing on gain market share by means of technology innovation and high quality services. Hapn products got over 30 national patents, joined the National Torch Technology Plan and received well in marketplaces. At the same time, the company was awarded by government departments and Banking system many society honorary titles such as "China Famous Brand", "AAA Grade Credit Enterprise" and "National High New Technology Enterprise", etc.



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## Content

HPI6000 Introduction&Model Instruction .....	3-4
HPI6000 Features .....	5-6
HPI6000 Technical Data .....	7-8
HPI6000 Installation of control Terminal Function.....	9
HPI6000 Basic Connection Diagram .....	10
HPI6000 Control Panel Installation .....	11
HPI6000 Installation Dimension.....	12
HPI6000 Applications .....	13-14
HPVFV Introduction&Main Characteristics .....	15-16
HPVFV Main Features&Main Parameters.....	17-18
HPVFV Model Selection&Protection Function .....	19-20
HPVFV KEYPAD Description .....	21
HPVFV WiringDiagram .....	22-24
HPVFV Applications .....	25

# HPI6000 Frequency Inverter

## Introduction

HPI6000(0.75-15) KW

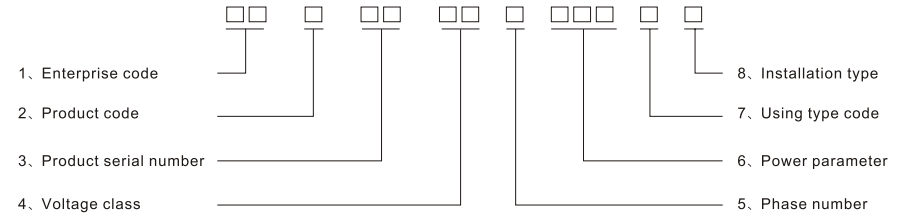
All plastic molding design, light weight, compact size, noble elegant model design make the product elegant appearance. The control panel can be disassembled with built-in speed potentiometer and easy to adjust frequency. Friendly user interface, programme operation, LED digital indication, built-in PID regulator, easy to meet the different requirements of automation.



## Classification of HPI6000 Series

Classification	Voltage class	Voltage range
HPI6002	AC220V	AC220~240V
HPI6003	AC380V	AC380~440V
HPI6004	AC460V	AC460~480V

## Instruction of Frequency Inverter Model



### Annotation:

- 1、Enterprise code: HP means hapn
- 2、Product code: R:soft starter, I :frequency inverter
- 3、Product serial number: 10:1000 series, 60:6000 series
- 4、Voltage class: 02:220V;03:380V;04:460V
- 5、Phase number: T:trip phase S :single phase
- 6、Power parameter: D75:0.75kW, 015:15kW
- 7、Using type code: G:constant torque type P:blower/water pump type
- 8、Installation type: A:cabinet machine B:hang-up machine



## Features

### Motor parameter automatic tuning

Built-in dynamic parameter automatic tuning function, automatically identify motor parameter, ensure stability and precision of system.

### Protection function in all fields

Protection of under-voltage, over-voltage, over-current, prevention of motor stall, over-load and over-heat.

### Three operating modes

1. Standard V/F mode: Sine PWM wave output, AC current output detection, compensation for distortion due to dead time effect, reduction of motor torque vibration.

Advantages: Improve operation characteristic at low frequency, optimize working condition, enhance efficiency.

2. Sensorless vector mode: Frequency inverter operates through sensorless vector control calculation system, supply extra torque compensation voltage, not only increases motor torque at low speed, but also compensates the slippage difference caused by the load increasing.

Advantages: Realize parameter automatic adjustment, high torque at low frequency, high precision of rotation speed. Adopt advanced programmable control terminals with the function of all kinds of machinery'parameter setting in advance to increase the additional value of inverter.

3. Output power (torque) control mode: To adjust the outputControl frequency according to the speed changing .

Advantages: This function can substitute the tension sensor, magnetic powder coupler, mechanical clutch and so on.

### Communication function

Built-in RS-485 standard communication, one or more frequency inverters can be dynamically. controlled by one computer at the same time, besides that, one computer may simultaneously control nearly 99 frequency inverters (Relay amplifier must be installed when the number of frequency inverters exceeds 31 units). Supply HPI6000 protocol and standard MODBUS Protocol.

### High output frequency

The range of output frequency of HPI6000 Vector Frequency Inverter is from 0 to 650Hz, much better than other traditional frequency inverter.Power of motor: 0.75~15KW,Voltage supply: 220V/380V/460V

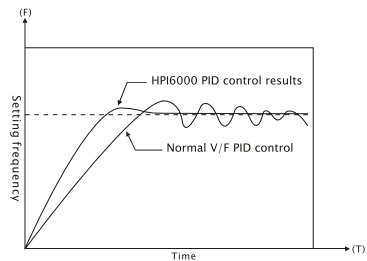
### Rich function of built-in PID regulator

Fan, pump, compressor, boiler, central air conditioning and so on, most of them belongs to depression torque load, achieve the close-loop circuit controlling by PID adjustment.HPI6000 frequency inverter adopts the up-to-date fuzzy control technology to achieve the best PID adjustment function (See the following diagram PID comparison with other traditional inverter)(See the left figure)

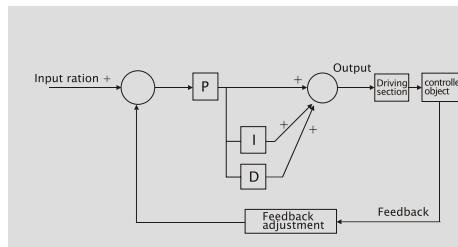
PID can be selected automatically by the digital signal terminal during the operation.

PID output value and related parameter can be monitored by analog AM output signal.(See the right figure)

Suitable for all kinds of the sensor PID feedback signal can be voltage(0-5/0-10v) or current (4-20mA)



HPI6000 comparison with other brand frequency inverter



HPI6000 PID control principle diagram

## Features

### Unique cooling Fan

Cooling fan with ON/OFF automatic control function so as to extend life of fan.

### Special control function for industrial mechanic design

HPI6000 sensorless vector inverter adopts the design of programmable control terminal, nearly 100 kinds of selective function from digital input and output terminals, 3 group of analog signal input, with many kinds modes for restart function after the trouble and instant power off and breakdown, built-in PID adjustment function, singal treatment function needed by gearing proportion ,Frequency oscillation function in spinning, more speed section choice, automatic operation function and so on.. HPI6000's unique torque limitation function can be used in winding machine.

### Unique variable carrier frequency (2~16KHz)

HPI6000 sensorless vector frequency inverter can switch the carrier frequency automatically during the operation.(See the left figure)

When operation frequency is higher than the turning point of carrier frequency, the carrier frequency becomes maximum setting value of the carrier frequency, otherwise the carrier frequency automatically adjusts between the maximum carrier frequency and the minimum carrier frequency according the operation frequency.

### Energy saving control

To achieve the high efficiency during the energy saving control operation of HPI6000 sensorless frequency inverter through maximum efficiency control, sensorless vector control and constant power control and V/F control. Not only fan and pump, but also ordinary mechanical apparatus run at extraordinary energy saving effect.(See the right figure)

### Safe and precise protection function

With the high speed and high precision current limitation control function to control the trip caused by over current and improve the operation continuity of restart after instantaneous stop and stall and restart from the trouble.

### More advantages of HPI6000 driving characteristics comparison with traditional products.

#### HPI6000 sensorless vector control mode

\*The function of automatic parameter identification and automatic slippy difference compensation

\*Stable dynamic performance, quick response

\* Rotating speed with high precision (highest precision 0.5%)

\*Achieve output torque (power) control mode

\*High torque at low rotor speed (150% rated torque at 15~300rpm)

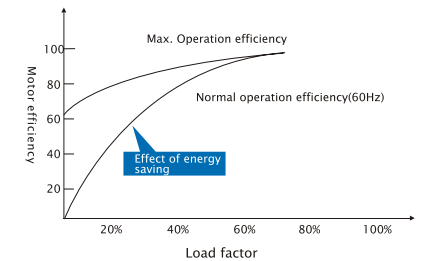
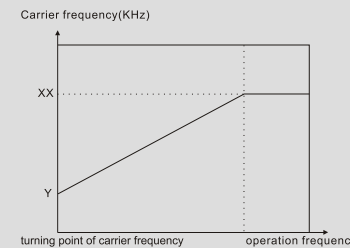
#### Spatial voltage vector control

\*Normal V/F control mode

\*Torque shortage at low frequency, motor oscillation at low rotating speed, high fluctuation of rotating speed

\*Open-loop circuit control, poor dynamic response. Torque cannot be adjusted even in the entire rotating speed range. Torque response is very poor when the rotating speed is near 0rpm.

\*Poor rotating speed adjustment.



## Technical Data

### Output power (torque) control mode

Apply in automatic tension control (Example: apply in reeling machine), output power (torque). This control mode can substitute the mechanical clutch and the magnetic power clutch. (See the left figure)

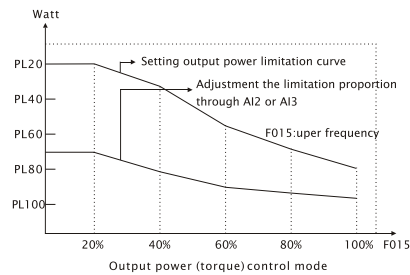
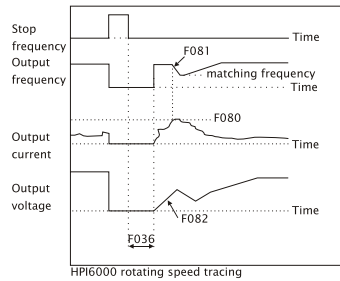
### Gearing proportion control

HPI6000 series frequency inverter with the function of the parameter automatic identification and slippery difference compensation, in this way, the slippery difference of low speed and high speed will be the same, the precision of speed adjusting will be higher, that is the reason to ensure the rotating speed precision and adjustment automatically under voltage changed and load factor changed.

It is specialized in mechanical system of high torque precision drive and more motors gearing proportion control.

### Speed tracing when instantaneous power off and restart after the trouble.

For speed tracing function, when restart after instantaneous power off, it can detect the rotating speed at that time, then input the proper frequency to reduce the surge current, it is specialized in fan and pump. (See the right figure)



### Operation frequency with the elastic choice, the time counter realizes the operation control automatically.

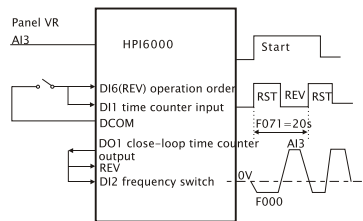
Note:

The function of DI1, DO1 can be set the time counter with period of 20sec by F041, F045 and F071.

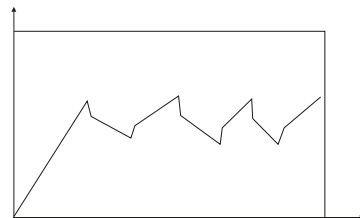
When SW1 is "on", the frequency inverter starts to run, the time counter starts. The output of time counter decides the motor REV or RST, repeat it every 20sec. The first 10sec, the frequency inverter RST with 60Hz. The last 10sec, the frequency inverter forward with VR setting value. (See the left figure)

### Automatic operation function

Automatic operation function with many kinds of changes instead of the simple PLC, it is for many special requirements, With simple setting, the operator can to achieve the industrial mechanical needed function. (See the right figure)



HPI6000 simple connection realizes file complex processing



## Technical Data and Specification List

HPI6000 sensorless vector frequency inverter	
Specification and structure	Type
Series	G series general type P series pump and fan type
Structure	Protection IP20
	Rated voltage 220V/380V/460V
Power input	Phase number and frequency 3 phase 50/60 Hz
	Permission mobility scale Voltage:±20%, frequency:±5%
	Low voltage protection point 80% rated voltage
Power output	Over current G series 150% one minute P series 120% one minute
	Cooling method Air cooling
	Temperature protection Fan starts when radiator temperature is above 45°C, trip to OH when 80°C
Control and output data	Control mode sensorless vector control output power (torque) control V/F control
	Frequency output scale 0.00~650.00Hz
	Frequency resolution Keyboard setting:0.01Hz analog setting:0.1Hz
	Basic frequency 0.5~650Hz
	Dynamic braking Under 11kw built in brake unit 15kw brake unit external connection
	DC braking DC braking voltage can be adjust 0~30%,permission 0.5~650Hz braking, braking adjusted 0.0~25sec. Accelerating time 0.1~6553sec
	Low frequency torque compensation 0~30%
	Motor overheat detection For motor overheat protection function, preset input terminal to be OH, open-loop can be run, close-loop trips and indicates O.H.
	Standard function Rotating speed tracing, suspension deceleration, PID control, automatic speed compensation automatic adjustment voltage output(AVR),16 section of speed operation. power(torque) control, frequency jump, torque limitation, more speed section operation automatically up-down control, frequency oscillation operation, signal superposition control, automatic reset, time counter, FWD and REV unit.
	Analog input 0~5/10V,0~20MA, protentionmeter,3groups,can be superposed.
Control signal	Analog output 0~10V programmable analog output
	Digital input 6 groups multifunction programmable digital input terminals,99 functions can be selected
	Digital output 2 groups programmable open loop electrode output, one of group with relay output, total 93 kinds of function can be selected
Communication interface	RS-485 Built-in communication, dynamic control more inverters up to 99
Indication function	7sections indication Output current, power factor angle, output power, input power, power factor, time of counter etc. Overload accumulation to be standard value, power output limitation output frequency switch calculation, DC bus bar voltage, output voltage, temperature etc.
Protection function	Standard function Circuit shortage, over-voltage, under-voltage protection, ground connection, motor over-heat
	Ambient temperater -10~50°C(radiator not up to 80°C) sunlight not perpendicular incidence
Installation environment requirement	Ambient humidity Within 90%RH(no water condensation)
	Ambient environment Without rust, flammability, explosivity, adsorbable dust.
	Shaking Below 0.5G
	Altitude Under 1000m, shall reduce the rated current if exceed

## Instruction of Control Terminal Function

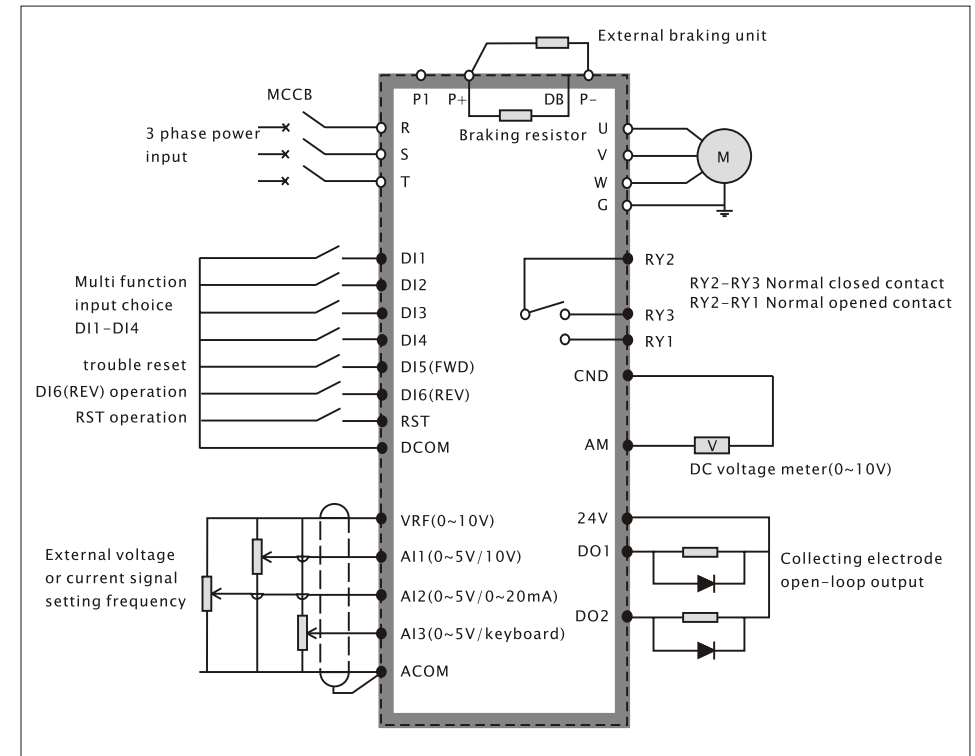
Type	No.	Function	Factory setting
Analog input output	AI1	Analog signal input (0~5V,0~10V)	0~10V
	AI2	Analog signal input (0~5V,0~20mA)	4~20mA
	AI3	Analog signal input (0~5V,potentiometer adjusting speed)	potentiometer adjusting speed
Control terminal	AM	Analog signal input (0~10V)	Output frequency
	DI1	Multifunction input terminal 1	Between DI <sub>n</sub> (n=1,2,3,4)-DCOM, circuit short connection to be effected, other function set by F041~F044
	DI2	Multifunction input terminal 2	
	DI3	Multifunction input terminal 3	
	DI4	Multifunction input terminal 4	
	DI5 (FWD)	FWD control terminal	Effective when COM terminal to be closed
	DI6 (REV)	REV control terminal	
	RST	Trouble reset input terminal	
digital output terminal	DO1 / DO2	Multifunction programmable collecting electrode output, setting by F045, F046	Max load current 50A, Max voltage 24V
Relay output terminal	RY1 RY2 RY3	Relay output terminal multifunction programmable relay output, setting by F047	Contact capacity 250VAC-3A 30VAC-1A
Power connection	24V	Supply power of 24 V	24V-100mA
	DCOM	Common terminal 24 V	
	VRF (5V)	Supply 10V/5V analog power 5V/50mA 10V/20mA	JP7 jump line choice 5VDC/10VDC
	ACOM	analog power ground terminal	

### Terminal function

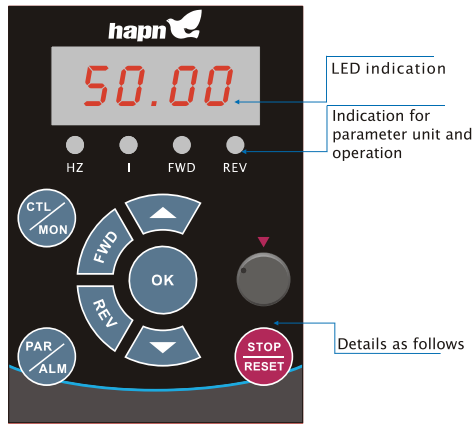
- \*6 groups digital programmable input (100 functions for option)
- \*3 groups analog input
- \*1 group analog programmable output (17 functions for option)
- \*2 groups collecting electrode(94 functions for option)
- \*1 group programmable relay output (94 functions for option)
- \*10V/5V accessory power supply output for analog setting input
- \*24V-100mA accessory power supply output for digital input

## Basic Connection Diagram

HPI6000 wiring diagram



## Control Panel Introduction



LED indication

Indication for parameter unit and operation

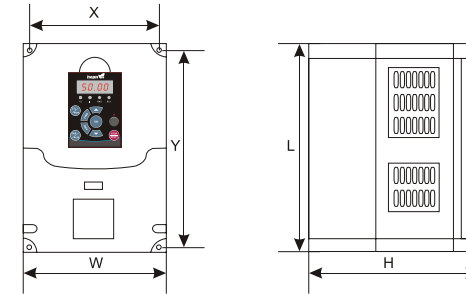
Details as follows

Monitor key	Programmable key	FWD key	REV key	Up key	Down key	Stop key	Read/write key
Inverter can be switch between CTL MODE and MON MODE	Inverter can be switch between PAR MODE and ALM MODE	When F039=0, FWD to be effected	When F039=0, REV to be effected	Parameter up	Parameter down	To stop during operation, To clear trouble and reset during the trouble, To move the position during the read/write status.	For read parameter data or confirm the input data.

Note:

HZ: Indication of frequency data  
 I: Indication of current  
 FWD: Indication of Forward  
 REV: Indication of REV

## Installation Dimension



Power degree (kW)	L (mm)	W (mm)	H (mm)	X (mm)	Y (mm)	Mounting hole (Φ)	Gross weight (kg)
0.75~2.2	170	125	165	112	157	6	1.7~2.4
3.7~7.5	220	150	180	135	207	6	3
11~15	300	220	210	201	287	6.5	5.5

## Model Instruction

Power (KW)	HPI6002T		HPI6003T		HPI6004T	
	Norninal value	Current (A)	Norninal value	Current (A)	Norninal value	Current (A)
0.75	D75GB	4	D75GB	2.5	D75GB	2.5
1.5	1D5GB	7	1D5GB	3.7	1D5GB	3.7
2.2	2D2GB	10	2D2GB	5	2D2GB	5
4	3D7GB	16	3D7GB	9	3D7GB	8
5.5	5D5GB	20	5D5GB	13	5D5GB	11
7.5	7D5GB	30	7D5GB	16	7D5GB	15
11	011GB	42	011GB	25	011GB	22
15	015GB	55	015GB	32	015GB	27

1: over-current multiple of G type is 1.5; over-current multiple of P type is 1.2;  
 2: within braking unit when power is under 15kW.

## Applications

Application for one motor drive, such as: pump,blower, compressor, extruding machine, mixer, ball mill machine, mine elevator, metallurgical mill machine.(See the left figure)

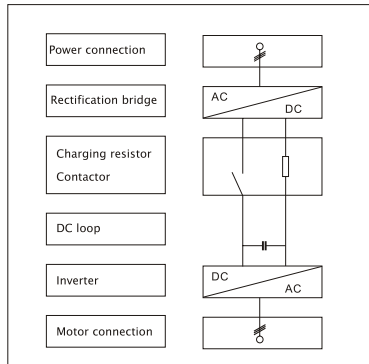
### Application in injection molding machine

- 1)Easy to operate
- 2)High reliability
- 3)Soft start, extending the service life of equipment and mold
- 4)Reducing the noise,improving the working environment
- 5)To detect the signal of pressure and flowrate and trace to control automatically, then supply the proper power to achieve the energy saving, energy saving up to 30%-70%.

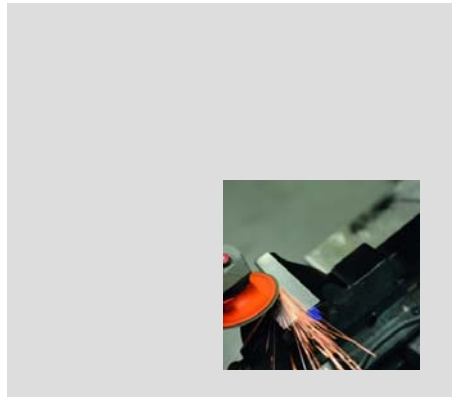
### Application in air compressor

To supply high torque under low speed.

- 1)Keep the pressure of compressed air constant
- 2)Energy saving, reduce the cost of operation.
- 3)Improve the pressure control precision
- 4)Extending the service life of compressor
- 5)Reduce the noise of compressor



Basic structure



## Applications

### Application in water pump

HPI6000 frequency inverter adopts the technology of changing frequency to adjust the speed.It can adjust the speed of the motor to control flowrate and balance the demand and supply to reduce the consumption of the motor.It also realizes to control the speed of motor with stepless speed regulation.

### Application in blower

HPI6000 frequency inverter adopts the built-in PID to adjust and control the rotating speed of blower to keep the air flowrate constantly, in this way, to meet the requirement of energy saving.

- 1)High efficiency: To adopt the technology of changing frequency to adjust speed, adjust the air flowrate directly, reduce the useless power, increase the working efficiency of system.
- 2)Energy saving: After changing frequency to adjust the speed, the blower operates at 30-45HZ,energy saving above 25%-70%, the frequency is lower, the energy saving rate is higher.
- 3)Extending system life: To realize the changing frequency soft starting, reduce the strike of electric net and motor itself, increasing the life of the motor and the system.
- 4)To boost the quality of blower operation: After changing frequency to adjust the speed, it can adjust the rotating speed and frequency to control the proper air flowrate.

### Application in textile machinery

- 1) To control the speed of motor with stepless speed regulation.
- 2) High precision speed, stable speed value.
- 3)Easy to adjust the speed
- 4)To protect the motor and start smoothly.

### Application in woodworking machinery

Stable speed adjustment and high efficiency.

### Application in printing machine

HPI6000 frequency inverter shall adjust the speed of main motor and rinsing motor to achieve the process of paper feed, inking, printing and ink rinsing.

### Application in horizontal type paper soaking production line

- 1)Adopt the RS485 communication to contact computer and ensure the system stable.
- 2)Technical grade modulation design, precision control synchronous, succinct man-machine conversation.





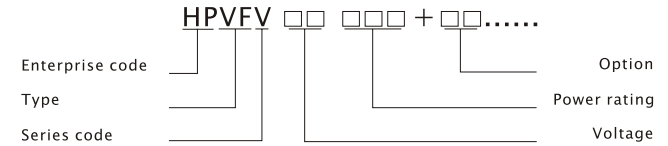
## HPVFV Vector Inverter

### Introduction

HPVFV inverter is specifically designed for accurate speed adjustment, with excellent performance, stable and reliable. The goal is high-power output, convenient use, high security. This inverter possesses auto tuning, PID control, multi-speed control and multi-functional input/output control etc.



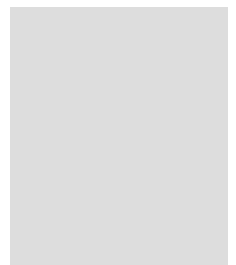
### Model



### Main Voltage

Frequency	Mode	Nominal voltage	Voltage range
50Hz/60Hz	02	230VAC	220~240VAC
	04	400VAC	380~420VAC
	06	660VAC	660~690VAC
	12	1140VAC	1140~1200VAC
Powering rating (see seletion table)			
Option function	Mode	Function	
	01	RFI filter	
	02	Braking control unit (30kW~200kW)	
	03	Incremental Photo-electricity Encoder	
	04	Communications RS-485 MODBUS	
	05	Communications RS-485 PROFIBUS	
	06	Synchronization card	

NOTE:when select 04,05,06 options,you must select 03 option.



## Main Characteristic

HPVFV inverter, using high-performance digital signal processor and optimizing control algorithm, provides fans and pumps etc with high speed ,flexible, safety control.

Including V/F control, field orientation vector control , Sensorless Vector control (this control can effectively improve the problem speed along with the change of load). PID function and auto tuning function are more suitable for fans and pumps to realize better energy saving.

System startup or reaching set value, through the S-Curve function, can realize smooth change of speed, so as to improve the large inertia load control functions.

## Main Features

### Perfect protection function

Over voltage, over current, low voltage, over temperature, over load,  
Zero-sequence current, out of control.

### Torque control

Quick torque response for the changable load(low speed with high torque)

Starting output torque 150%

- 1) Reversing deceleration control
- 2) Stop torque control

No feedback device, correct torque control

Synchronous run control

### Double speed run control

### PID control function

PID control built\_in, is mainly applied in process control to control flow rate, temperature, pressure etc. Use proportion, integral, differential realize variable closed-loop control. To add the PID processing controller outside the speed control loop. So the inverter, without PID controller and PLC, can realize many kind of function. PID compensation function can be used in control of the scroll tension.

### Communication procedures

Profibus、Modbus、RS485/232C、CAN

- Monitoring function
- Provide communication program (option)
- Fault Trace

### Fault Trace

Preservation current, voltage, frequency, torque, etc. in 1 second before trip.

### Flying start

Restart for deceleration load and instant power failure.

### Auto tuning

Automatic measurement motor parameters with simple operation, reflect the best control function

## Main Parameters

1 Input rated voltage 400V (660V、1140V option) , Rated power 5.5~400kW

2 Input frequency 50/60Hz

3 Speed adjustment error less than 1%

4 Maximum line unbalanced level of three-phase input voltage is 3%

5 Overload 150% for 60s, 175% for 2s

6 Starting torque

Sensorless vector control 150%(0.5 Hz)

Sensor vector control 200% (0Hz)

7 Output frequency/speed:

Sensor 0 8000[rpm]

8 Frequency reference

Analog Input resolution 10bit, accuracy±0.1%

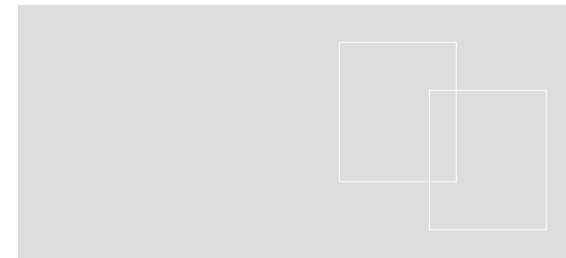
Keypad Resolution 0.01Hz / 0.1Hz

9 Acceleration time

Sensorless&Sensored vector control: -0.00~3000.00[sec]

10 Deceleration time

Sensorless&Sensored vector control: -0.00~3000.00[sec]



## Model Selection

Voltage 380~420VAC Selection table

Model	Rated power	Rated current	Type	Dimension	Weight
HPVFV0405D5	5.5	12	I	195x368x180	7
HPVFV0407D5	7.5	16			
HPVFV04011	11	23.5			
HPVFV04015	15	31	II	195x460x290	15
HPVFV0418D5	18.5	38			
HPVFV04022	22	45			
HPVFV04030	30	61	III	284x490x312	28
HPVFV04037	37	72			
HPVFV04045	45	88			
HPVFV04055	55	107	IV	256x780x338	48
HPVFV04075	75	146			
HPVFV04090	90	174			
HPVFV04110	110	212	V	496x860x420	83
HPVFV04132	132	252			
HPVFV04160	160	305			
HPVFV04200	200	382	VI	550x1050x450	90
HPVFV04250	250	478			
HPVFV04315	315	598			
HPVFV04400	400	759			

- Note
1. "D" represents "." in the model, for example, 5D5 expresses as 5.5.
  2. 660V, 1120V inverter's Dimension and weight, please consult manufacturer. Special customization please explain in advance.
  3. 5.5~22kW, brake control unit (standard)  
30~200kW, brake control unit (optional)



## Protection Function

Fault	Over voltage, under voltage, over current, over temperature, open-phase protection, over load protection, speed order losing	
Warning	stop, over load, temperature sensor abnormal	
Instant power failure	≤8.3ms continue to run, 8.3ms>: restart	
Panel	Run information	Output frequency, output current, output voltage, frequency reference, speed, DC voltage
	Fault information	Display fault when protection function start. Display 9 history faults.

## Parameters

Operation	Keypad/terminals/communication	
Frequency reference	Analog 0~10V/-10~+10V/0(4)~20mA	
	Digital panel	
Input signal	Direction	Forward Reverse
	Multi-step	16 steps reference
	Accel/Decel	0.00~3000.00s, 4 selections per type
	Time selection	Accel/Decel output: Linear, S-curve
	Emergency stop	Instant isolate output
Output signal	Jog	Jog run
	Restart	Remove error status when protection function starting
	Run status	Check Frequency, over load, over voltage, over temperature, RUN, STOP etc.
RUN function	Output	Digital output (D01, D02): AC 250V, 5A DC 30V, 5A
		DC-brake, frequency limit, slip compensation, in case of reverse, auto restart Auto tuning, PID control

## Control Mode

Control mode	Filed orientation vector control, V/F control Sensorless Vector control
Frequency resolution	Digital 0.01Hz (less than 100Hz) 0.1Hz (more than 100Hz)
	Analog 0.01Hz/60Hz
Frequency degree	Digital Max. output frequency 0.01Hz
	Analog Max. output frequency 0.01Hz
V/F	Linear, S-Curve
Over load built in	110% 2min, 120% 1min
Torque setup	manual Torque setup (0~15%) . Auto Torque setup

## Keypad Description

The keypad of HPVFV inverter is composed with 9 keys, (ESC, ENTER, RUN, STOP, MENU, Left, Right, UP and Down scroll key). Users can set up parameters and monitor the operation status and start/ stop the motor with keypad, etc.



**LCD Display :**  
If there are no work for certain time , the backlight will be off. And it will be automatically turned on when it starts working. The default value is 30 minutes.

**ESC Key :**  
Move to upper menu. Reset when a Fault occurs.

**MENU Key :**  
When a fault occurs, this is for moving to the last item, this moves to the inverter status monitor.(toggle button)

**ENTER key :**  
When moving to the lower menu or Executing

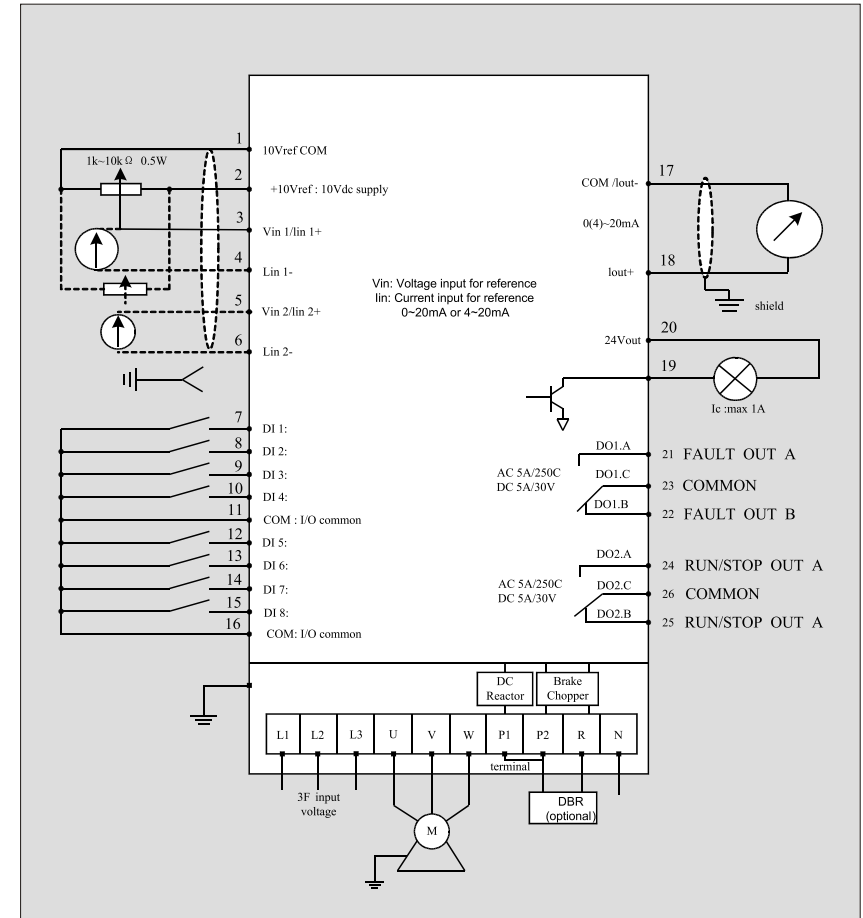
**U/D scroll key :**  
When moving to the Menu page, Monitor item and parameter items

**L/R scroll key :**  
When users change parameters, these keys move the digits of parameter values.

**RUN Key :**  
When running the motor with keypad.

**STOP Key :**  
When stopping the motor with Keypad

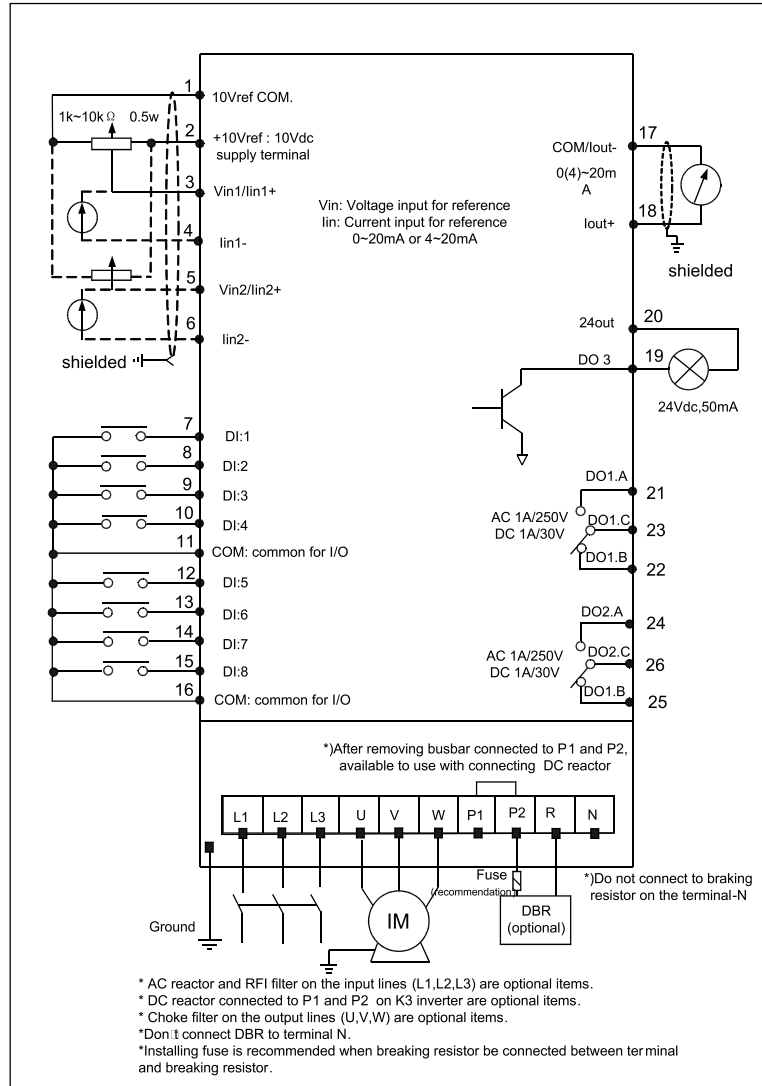
## WiringDiagram



**Note:**

- 1.AC Reator and RFI filter on the input lines(L1,L2,L3) are optional items.
- 2.Chokefilter on the output lines(U,V,W) is optional items.
3. Installing Fuse is recommended when breaking resistor be connected between terminal R+ and breaking resistor.

## Wiring Diagram



## Terminal Description

NO	Terminal	Description	NO	Terminal	Description
1	Vref.COM	Voltage reference group	14	DI.07	Multi-step 1
2	Vref. +10V	10Vdc supply terminal	15	DI.08	Multi-step 2
3	AI 1.P	Analog input 1 terminal	16	DI.COM	Digital input group
4	AI 1.N	0~10V use as volt. Ref.	17	AO1.N/DI.COM	Analog output 0(4)~20mA
5	AI 2.P	Analog input 2 terminal	18	AO.P	Analog output 0(4)~20mA
6	AI 2.N	0(4)~20mA use as cur. Ref.	19	DO3.OC	Digital output 3-open collector
7	DI.01	Forward run	20	DO3.24V	Digital output +24V
8	DI.02	Reverse run	21	DO1.A	
9	DI.03	Drive enable	22	DO1.B	Brake control
10	DI.04	External fault input	23	DO1.C	
11	DI.COM	Digital input group	24	DO2.A	
12	DI.05	Fault reset	25	DO2.B	Fault output
13	DI.06	Multi-step 0	26	DO2.C	



## Applications

### Application in CNC lathe

The frequency inverter can detect the parameter of motor dynamic operation and adjust the parameter automatically, in this way, ensure the highest efficiency during the motor operation.

### Application in escalator

For escalator, it will be waste when it operates with no passenger, if use energy saving technology of HPVFV frequency inverter, the escalator will operates when passenger on according to the sensor, the escalator also can decrease the speed or stop when passenger off according to the sensor.

### Application in elevator

HPVFV frequency inverter adpots sensorless vector control technology to meet the requirement of elevator with high starting torque, it means the frequency inverter can supply 150%torque when 0HZ.

### Application in mixer

HPVFV frequency inverter adopts voltage /frequency control to start motor softly, in order to avoid the strike of electric net and motor itself and other equipments from motor starting with full voltage.

### Application in extruding machine

- 1)High torque output when 0HZ
- 2)Automatic energy saving operation function can reduce the current accordeing to the torque changing, in this way, not only energy saving, but also guarantee the reliable and stable.

### Application in pulping papermaking production line

- 1)The frequency inverter with small volume and light weight, easy to install, simple testing, easy to operate, low noise without shaking.
- 2)Speed adjustment with high precision, the motor rotating speed without changed when the load and net voltage changed, so the frequency inverter has a good adaptability.
- 3)The frequency inverter with complete protection function, high integrated level, so it is more reliable, easy to maintain due to self-diagnosis function.
- 4)Good energy saving to save about 30% .
- 5)To adjust the motor with infinitely variable speeds, low starting current, and without the strike of electric net and motor itself and other equipments.

