Low Voltage Frequency Inverter

Product Guide

hapn

Contents

HPVFM

— Series —

High Performance Small Drive

HPVFM

series is a high-performance small frequency converter with a power range of 0.75/15kw. It has complete product protection functions, reliable quality, strong load-bearing capacity, and low temperature rise. The product shell is smaller than in the industry and has a wide range of applications. Product hardware design is advanced. External control applications are powerful.

Product Selection

	HP	VF	M	☐☐	☐	☐☐☐
	Enterprise code	Type	Series code	Voltage range 02 200 Vac ~240Vac 03 380 Vac ~460Vac	Phase Number T triple phase S single phase	Power rating

Model No.	Input rated voltage (V)	Rated output power(KW)	Rated output current(A)	Dimension	Remark
HPVFM02S0D75G	Single phase 220V ±15%	0.75KW	4A	155.5X85X106	A
HPVFM02S1D5G		1.5KW	7A	155.5X85X106	
HPVFM02S2D2G		2.2KW	9.6A	155.5X85X106	
HPVFM02S3D7G		3.7KW	17A	211X117.5X137	B
HPVFM02S5D5G		5.5KW	25A	259x148x167	C
HPVFM02T0D75G	3phase 220V ±15%	0.75KW	3.8A	155.5X85X106	A
HPVFM02T1D5G		1.5KW	5.1A	155.5X85X106	
HPVFM02T2D2G		2.2KW	9.6A	155.5X85X106	
HPVFM02T3D7G		3.7KW	17A	211x117.5x137	B
HPVFM02T5D5G		5.5KW	25A	259x148x167	C
HPVFM02T7D5G		7.5KW	32A	259x148x167	
HPVFM04T0D75G	3phase 380V ±15%	0.75KW	2.1A	155.5X85X106	A
HPVFM04T1D5G		1.5KW	3.8A	155.5X85X106	
HPVFM04T2D2G		2.2KW	5.1A	155.5X85X106	
HPVFM04T3D0G		3.0KW	6.8A	155.5X85X106	
HPVFM04T4D0G		4.0KW	9A	155.5X85X106	
HPVFM04T5D5G		5.5KW	13A	211X117.5X137	B
HPVFM04T7D5G		7.5KW	17A	211X117.5X137	
HPVFM04T11G		11KW	25A	259X148X167	C
HPVFM04T15G		15KW	32A	259X148X167	

Inverter Technology Data

Standard Configuration

1. "Dual digital display" keyboard

2. 485 communication, support Ethernet extension cable

3. 5 digital input terminals, support 100KHz pulse signal, support input signal polarity selection

4. One relay output

5. Support one 100KHz pulse signal output, support parameter setting "two relays", multi-functional expansion interface supports "eight relays"

6. 3 channels of analog input, AI1 and AI2 are independent, both support current 0/4 - 20mA or voltage 0~10V input, AI3 fixed panel potentiometer

7. One channel of voltage and current analog output,

8. Provide +10V and +24V two-way power supply at the same time

9. Brake unit

10. Simple PLC, support PID modification setting

11. Sixteen-stage speed control,

12. 4 groups of acceleration and deceleration time settings

13. VF mode, support fire emergency EPS

14. Jump frequency mode, frequency detection

15. High frequency output, support 3000Hz

16. Run/stop timing

17. Use time timing, support random password release, avoid malicious arrears

18. External temperature detection, support constant temperature control

19. The whole series of models will not explode in short circuit, input and output phase loss protection + conventional function protection

20. Support switching of parameter positions between main display and auxiliary display, and support arbitrary selection of display target content

21. One drag four constant pressure + auxiliary pump function, support arbitrary selection mode

22. Integrated one drag four constant + auxiliary pump operation status display

23. Support low-power single-phase 220V boost three-phase 380V

24. Support modification or addition of functional items, focus on meeting specific users and partners, customize differentiated special products, and facilitate coverage of wider market needs.

Inverter Technology Data

Running control

Control mode: Linear V/F control, square V/F control, V/F separation mode, SVPWM modulation

Overload capacity: G model: 150% overload for 60s, 180% overload for 3s;
P model: 120% overload for 60s, 150% overload for 3s

Carrier frequency: 1.0KHz ~ 8.0KHz

Functional Application

1. Frequency setting method: digital setting, analog setting, serial communication setting, multi-stage speed, PID setting, etc.

2. Simple PLC application, PID control function

3. Professional-level constant pressure water supply/constant temperature control application, automatic sleep and wake-up can be set arbitrarily

4. Multi-stage speed control function: 8-stage speed control, 16-stage speed control

5. 4 sets of linear acceleration and deceleration time, which can be switched according to requirements, the highest resolution is 0.01s

6. Shortcut multi-function keys, user-definable multi-function shortcut keys

7. The software current limiting/overvoltage function can be set to keep the output current not exceeding the limit according to the load change and avoid frequent alarms

8. Automatic voltage adjustment function: when the grid voltage changes, it can automatically keep the output voltage constant

9. Provide dozens of various fault protection functions: short circuit, software current limit, fast current limit, software overcurrent, overtemperature, overvoltage, undervoltage,Input/output phase loss protection function

10. Equipped with dual digital display keyboards as standard, two keyboards can be connected at the same time, and the keyboard type is automatically identified to support hot swapping

11. Independent trial time timing

Input and Output range

Input voltage range: single-phase 220V/three-phase 220V/three-phase 380V/three-phase 480V ±15%

Input frequency range: 47~63Hz

Output voltage range: 0 ~ rated input voltage

Output frequency range: 0.00Hz ~ 300.00Hz or 300.0Hz ~ 3000.0Hz two frequency outp

Inverter Technology Data

Peripheral Interface Features

1. Programmable digital input: 5 digital inputs (one of which supports high-speed pulse input)

2. Programmable high-speed input: up to 100KHz pulse input

3. Programmable analog input:

3 AI analog inputs; AI1 is the same as AI2: 0~10V or 0/4~20mA input, AI3: fixed as panel potentiometer

4. Analog output: 1 output, 0~20mA or 0~10V output can be selected respectively

5. Relay output: 1 independent output, contact load capacity 250VAC 3A

6. Programmable extension relay output: supports up to 100KHz pulse output, and supports parameter setting as collector open-drain switch output

7. Communication interface: 1 channel 485modbus communication interface

8. Digital input supports two kinds of signal input: sink type (NPN)/source type (PNP)

9. External temperature detection: support 0～5V/0～10V/4～20mA temperature transmitter temperature display/temperature control

10. Expansion interface: 8-way breaker can be expanded, and functions can be customized according to requirements
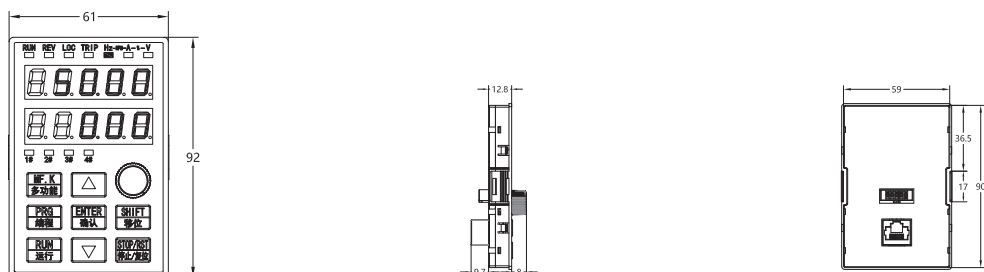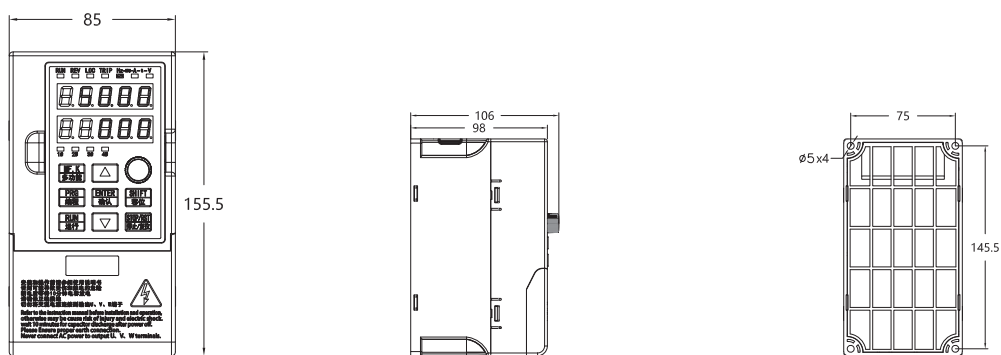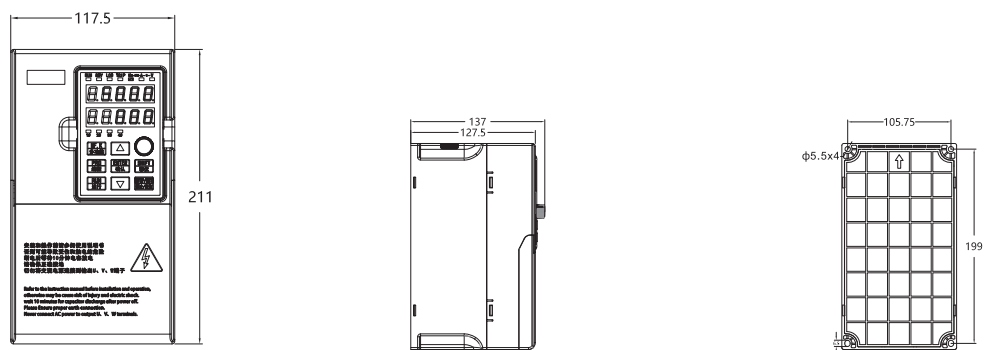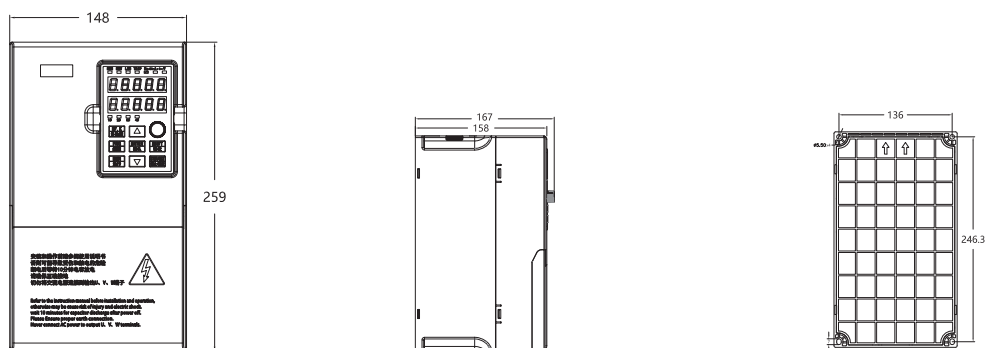
Product Dimension

Structure Diagram

Keypad

Type A

TypeB

Type C

Product Profile

HPVFD
— Series —

Universal Vector
AC Drive

HPVFD
series is a high quality series, and suitable for the industrial engineering and commercial engineering field, through a unique current vector control, and the motor has excellent control characteristic, which suitable for all kinds of mechanical load. Saving a space narrow design is very suitable for enclosure installation with several pieces . It can be easily and quickly installed,connected and debugged, through the English prompt interface. HPVFD series has passed the CE EMC certification.

Technical Features

- Support V/F control, open loop vector control, closed loop vector control of asynchronous and synchronous motor control.
- VTC current vector control algorithm can reach to high start torque and low speed stable torque.
- HPVFD has combines the rich industrial application functions, so that it can realize all kinds of field control requirements.
- To design,test and produce converters in strict accordance with international standard, it is designed better in heat dissipation carrying capacity and   electromagnetic compatibility.
- It provides Multi-Functional 8 period of digital input, 2 road analog input , 2 road relay output and 2 road open collector output.
- All this configuration is RS485 serial communication interface. Products are using the standard Modbus communication protocol, and it is built-in input filter in 18.5-560KW.
- HPVFD series are provincial new products ,its functions of energy-saving operation and automatic current limiting function can ensure normal operation.
- It is convenient to handle by LED and LCD interface, meanwhile, it is easy to debug with panel parameter copy function.
- With flame retardant and high reliable main loop connection mode, all series products ensure its safety.

Application Industry

Packing machinery	Automatic production line	Textile machinery	Fan and water pump	Food machinery	Medical machinery	Municipal engineering

Hoisting machinery	Light industrial machinery	Woodworking machinery	Pharmaceutical machinery	Wire drawing machine	Textile and chemical fiber

Ordering Information

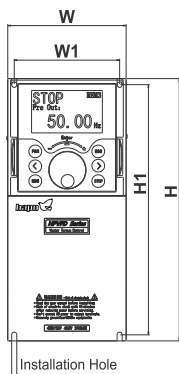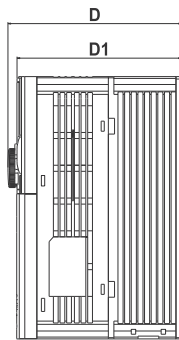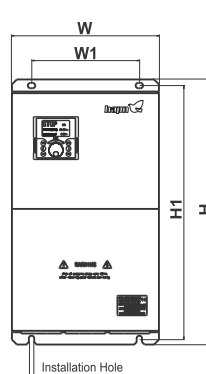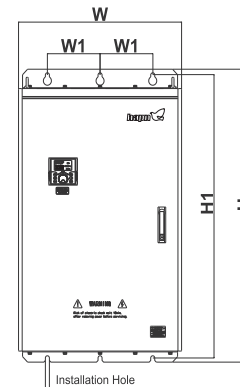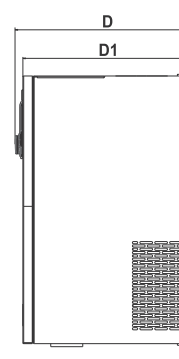| HP	VF	D6	0011G0015P	43	A
Enterprise code	Type	Series code	Power rating 0011G represents 11KW constant torque 0015P represents 15KW variable torque	Voltage level 21: 220 single phase 23: 220Vac 3 phase 43: 380Vac 3 phase	Structure version

A Stucture

B Stucture

C Stucture

Technical Specifications

Voltage	Model number	Power (KW)	Output Current (A)	Inverter Frame	W(mm)	H(mm)	D(mm	W1(mm)	H1(mm)	d(mm)
220Vac Single phase	HPVFD60D75G21B	0.75	3.8	A	105	160	137	94	150	4.5
	HPVFD601D5G21B	1.5	7.0		105	216	157	94	206	4.5
	HPVFD602D2G21A	2.2	9.0							
220Vac Three phase	HPVFD60D75G23B	0.75	3.8	A	105	160	137	94	150	4.5
	HPVFD601D5G23B	1.5	7.0		105	216	157	94	206	4.5
	HPVFD602D2G23A	2.2	9.0							
	HPVFD604D0G23A	4.0	13		126	260	183	110	246	6
	HPVFD605D5G23A	5.5	25							
	HPVFD607D5G23A	7.5	33		153	341	204	137	327	7
	HPVFD60011G23A	11	45							
	HPVFD60015G23A	15	60		180	423	204	120	420	9
	HPVFD618D5G23A	18.5	75							
	HPVFD60022G23A	22	91		191	471	242	120	450	9
380Vac Three phase	HPVFD60D75G01D5P43B	0.75/1.5	3.4/4.8	A	105	160	137	93.5	150	4.5
	HPVFD601D5G02D2P43B	1.5/2.2	4.8/6.2							
	HPVFD602D2G04D0P43A	2.2/4.0	6.2/11		105	216	157	93.5	206	4.5
	HPVFD604D0G05D5P43A	4.0/5.5	11/14							
	HPVFD605D5G07D5P43A	5.5/7.5	14/18		126	260	183	110	246	6
	HPVFD607D5G0011P43A	7.5/11	18/27							
	HPVFD60011G0015P43A	11/15	27/34		153	341	204	137	327	7
	HPVFD60015G18D5P43A	15/18.5	34/41							
	HPVFD618D5G0022P43A	18.5/22	41/52		180	423	204	120	420	9
	HPVFD60022G0030P43A	22/30	52/65							
	HPVFD60030G0037P43A	30/37	65/80		191	471	242	120	450	9
	HPVFD60037G0045P43A	37/45	80/96							
	HPVFD60045G0055P43A	45/55	96/128	B	300	541	314	220	516	11
	HPVFD60055G0075P43A	55/75	128/165							
	HPVFD60075G0090P43A	75/90	165/185		350	730	354	270	705	11
	HPVFD60090G0110P43A	90/110	185/224							
	HPVFD60110G0132P43A	110/132	224/260							
	HPVFD60132G0160P43A	132/160	260/302	C	500	780	354	180	755	11
	HPVFD60160G0200P43A	160/185	302/340		650	1060	414	210	1024	16
	HPVFD60200G0220P43A	200/220	380/450							
	HPVFD60220G0250P43A	220/250	450/480		750	1170	414	230	1128	18
	HPVFD60250G0280P43A	250/280	480/520							
	HPVFD60280G0315P43A	280/315	520/605							
	HPVFD60315G0350P43A	315/350	605/670		850	1280	464	275	1236	20
	HPVFD60350G0400P43A	350/400	670/750							
	HPVFD60400G0450P43A	400/450	750/810							
	HPVFD60450G0500P43A	450/500	810/860		1043	1426	464	250	1382	20
	HPVFD60500G0560P43A	500/560	860/990							
	HPVFD60560G0600P43A	560/630	990/1100							

Common Technical Standard

Iterm	Specifications	
Maximum frequency	• Vector control: 0-300 Hz • V/F control: 0-320 Hz	
Carrier frequency	1-16 kHz The carrier frequency is automatically adjusted based on the load	
Input frequency resolution	Digital setting: 0.01 Hz Analog setting: maximum frequency x 0.025%	
Control mode	• Sensorless flux vector control(SFVC) • Closed-loop vector control (CLVC) • Voltage/Frequency (V/F) control	
Startup torque	• G type: 0.5 Hz/150%(SFVC);0 hZ/180%(CLVC • P type: 0.5 Hz/100%	
Speed range	1:100(SVC)	1:1000(FVC)
Speed stability accuracy	±0.5%(SVC)	±0.02%(FVC)
Torque control accuracy	±5%(FVC)	
Overload capacity	• G type: 60s for 150% of the rated current, 3s for 180% ofthe rated current • P type: 60s for 120% of the rated current, 3s for 150% ofthe rated current	
Torque boost	Custonized boost 0.1%–30.0%	
V/F curve	• Straight-line V/F curve • Multi-point V/F curve • N-power V/F curve (1.2-power,1.4-power,1.6-power,1.8-power,square)	
V/Fseparation	Two types: complete separation; half separation	
Ramp mode	• Straight-line ramp • S-curve ramp Four groups of acceleration/deceleration time with the range of 0.0-6500.0s	
DC braking	DC braking frequency: 0.00 Hz to maximum frequency;Braking time:0.0-600.0s; Braking action current value: 0.0%-150.0%	
JOG control	JOG frequency range: 0.00-50.00 Hz;JOG acceleration/deceleration time:0.0-6500.0s	
Onboard multiple preset speeds	It implements up to 16 speeds via the simple PLC function or combination of DI terminal states.	
Onboard PID	It realizes process-controlled closed loop control system easily.	
Auto voltage regulation(AVR)	It can keep constant output voltage automatically when the mains voltage changes.	

Standard functions

*More details please reference to manual book

Common Technical Standard

Iterm		Specifications
Individualized functions	Overvoltage /Overcurrent stall control	The current and voltage are limited automatically during the running process so as to avoid frequenttripping due to overvoltage/overcurrent.
	High-speed current limiting function	Minimize over-current fault and protect normal operation of AC drive.
	Torque limit and control	It can limit the torque automatically and prevent frequent over current tripping during the running process.Torque control can be implemented in the CLVC mode.
	High performance	Control of asynchronous motor and synchronous motor are implemented through the high-performance current vector control technology.
	Power dip ride through	The load feedback energy compensates the voltage reduction so that the AC drive can continue to run for a chort time.
	Rapid current limit	It helps to avoid frequent overcurrent faults of the AC drive.
	Timing control	Time range: 0.0-6500.0 minutes
	Multiple communication protocois	It supports communication via Modbus-RTU,PROFIBUSDP,CANlink and CANopen.
	Motor overheat protection	The optional I/O extension card enabies AI4 to receive the motor temperature sensor input (PT100, PT1000) so as to realize motor overheat protection.
	Multiple encoder types	It supports various encoders such as differential encoder, open-collector encoder, resolver, UVW encoder, and SIN/COS encoder.
	Advanced background	It supports the operation of AC drive parameters and virtual oscillograph function, via which the state inside the AC drive is monitored.
RUN	Running command source	• Operation panel • Control terminals • Serial communication port You can perform switchover between these sources in various ways.
	Frequency source	There are a total of 10 frequency sources, such as digital setting, analog voltage setting,an alog current setting,pulse setting and serial communication port setting. You can perform switchover between these sources in various ways.
	Auxiliary frequency source	There are ten auxiliary frequency sources. It can implement fine tuning of auxiliary frequency and frequency synthesis.
	Input terminal	Standard: 8 digital input (DI) terminals, one of which supports up to 50kHz high-speed pulse input 3 analog input (AI) terminals, two of which only supports 0-10 V voltage input and the other supports 0-10 V voltage input or 0-20 mA current input
	Output terminal	Standard: 1 high-speed pulse output terminal (open-collector) that supports 0-50 kHZ square wave signal output, 2 digital output (DO) terminal, 2 relay output terminal, 2 analog output (AO) terminal that supports 0-20 mA current output or 0-10 V voltage output

*More details please reference to manual book

Common Technical Standard

Iterm		Specifications
Display and operation the operation panel	LED display	It displays the parameters
	LCD display	Optional, Chinese/English prompt operation content
	Parameters copy	Quick copying of parameters can be realized through LCD operation panel option.
	Key locking and function selection	It can lock the keys partially at power-on, input/output phase loss protection, overcurrent protection, overvoltage protection, undervoltage protection, overheat protection and overload protection
Protection mode	Protection mode	Motor short-circuit detection at power-on, input/output phase loss protection, overcurrent protection, overvoltage protection, undervoltage protection, overheat protection and overload protection
Optional parts	Optional parts	LCD operation panel, braking unti, I/O extension card 1, I/O extension card 2 , user programmable card, RS485 communication card, PROFIBUS-DP communication card, CANink communication card, CANopen communication card, differential input PG card, UVW differential input PG card, resolver PG card and OC input PG card
Enviroment	Installation location	Indoor, free from direct sunlight, dust, corrosive gas, combustible gas, oil smoke, vapour, drip or salt.
	Altitude	Lower than 1000m
	Ambient	Minus 10℃ to+40℃ (derated if the ambient temperature is between 40℃ and 50°)
	Humidity	Less than 95%RH,without condensing
	Vibration	Less than 5.9m/s (0.6g)
	Storage	Minus 20℃~ +60℃
	IP level	IP20
	Pollution degree	PD2

*More details please reference to manual book

Peripheral Optional Accessories

Objective	Name	Detailed Description
Protection ac drive connection	Circuit braker for connection	In order to protect ac drive connection,must setting circuit braker for connection at power side
Prevent the brake resistor burn	Electromagnetic contactor	In the link braking resistor of the occasion, in order to prevent the burning of braking resistors, you must set the electromagnetic contactor, if set coil, must be attached to a surge suppressor
Switching stop outward transmission power	Surge suppressors	The switching surge absorption electromagnetic contactor and relay control, electromagnetic contactor and relay inverter around, please be sure to use the industrial electricity leakage absorber
Quarantine input and output signal	Isolator	It is the input and output singal of the insolation frequency inverter, which has the effect of reducing the degree of the industrial noise.
Improved ac drive input power	AC reactor	Need to improve the frequency inverter input power factor occasions, please set the input side,in addition to the power supply capacity in the use of 600KVA occasions,also please set the reactor
	DC reactor	
Influence of noise reduction on radio and other controllers	Input noise filter	The input power supply circuit connected with frequency inverter can reduce the noise emitted from wiring,and be as close as possible to the side of the inverter
	Output noise filter	To reduce the noise emitted from wiring,and be as close as possible to the side of inverter
Make the machine stop running within the set time	Brake resistor	Let the motor's regenerative energy consumption on the resistance, shorten the deceleration time (using 3%ED)
	Brake resistor unit	Let the motor's regenerative energy consumption on the resistance, shorten the deceleration time(using 10%ED),and inside have the protection relay
From the external use of ac drive operation	Remote operating digital operator	Away from the frequency inverter position, the frequency inverter can be operated at a distance
	Long distance operation extension cable	Role of the digital operator, as a extension of the cable
AC drive and field network connection	RS-485 line	The upper controller and the lower computer
From the external setting to monitor the ac drive and voltage	Frequency meter	In order to set frequency from the outside,monitoring the frequency of the device
	Frequency setting device	
	Frequency setting device button	
	Output voltmeter	Is the external monitoring of the output voltage of the device, PWM inverter dedicated
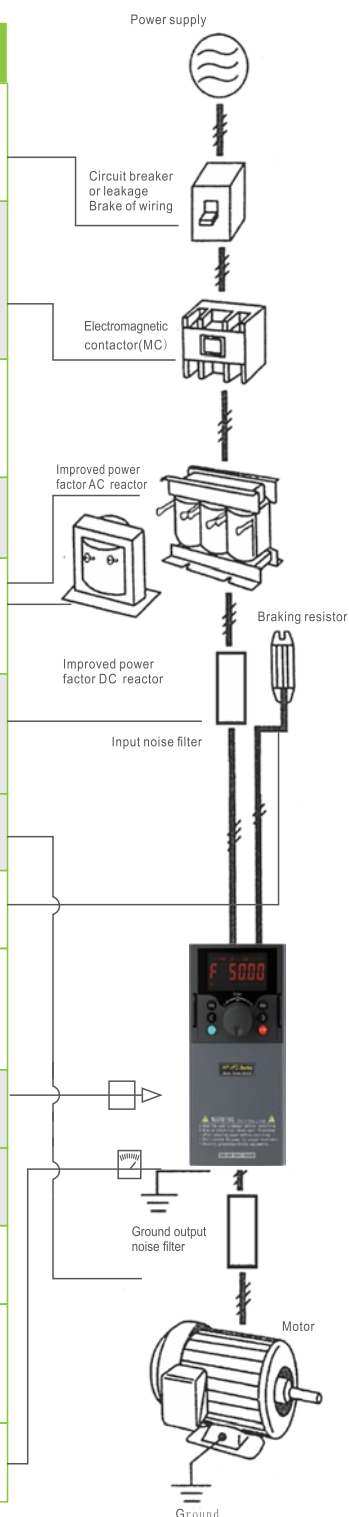
*Use the leakage circuit breaker, in order to prevent the wrong action, please select the current sense of 200mA above, action time of 0.1 second or more, or choose a high order harmonic.

Power supply

Circuit breaker or leakage Brake of wiring

Electromagnetic contactor(MC)

Improved power factor AC reactor

Braking resistor

Improved power factor DC reactor

Input noise filter

Ground output noise filter

Motor

Ground

HPVFT
Series

Solar Pump Inverter

HPVFT series solar pump inverter adopts MPPT (Maximum Power Point Tracking) and excellent motor drive technology to maximize the power output from solar panels. HPVFT inverters are compatible with both AC and DC input, and the AC output can be used for various kinds of normal AC pumps. When the solar power is not available, or the sunshine is not strong enough to drive the pump, the inverter could be automatically switched to single phase or three phase AC input power, such as generator, grid power.

HPVFT inverters are equipped with overall protection function (self-checking functions for dry running, weak sunshine, full water level, etc.), motor soft start and speed control functions, with perfect function, easy operation and installation.

1 AC 220V output：0.4~15kW

3 AC 220V output：0.4~37kW

3 AC 380V output：0.75~110kW

Product feature

Flexibility

1. Suitable for all kinds of pumps, including single phase 220V pump
2. Compatible with all popular solar panels
3. Support AC input, could switch to grid power supply to make system work 24 hours

Smartness

1. Built-in MPPT technology with up to 99% efficiency
2. With water level detection function, automatically regulate the pump flow to prevent dry running, full water level, etc
3. Self-adaptation to the motor's power rating

High Cost-effectiveness

1. Plug-and-play system design, no need to set any parameter
2. Wide range of input voltage
3. No need battery, suitable for all kinds of applications
4. Easy installation and effortless maintenance
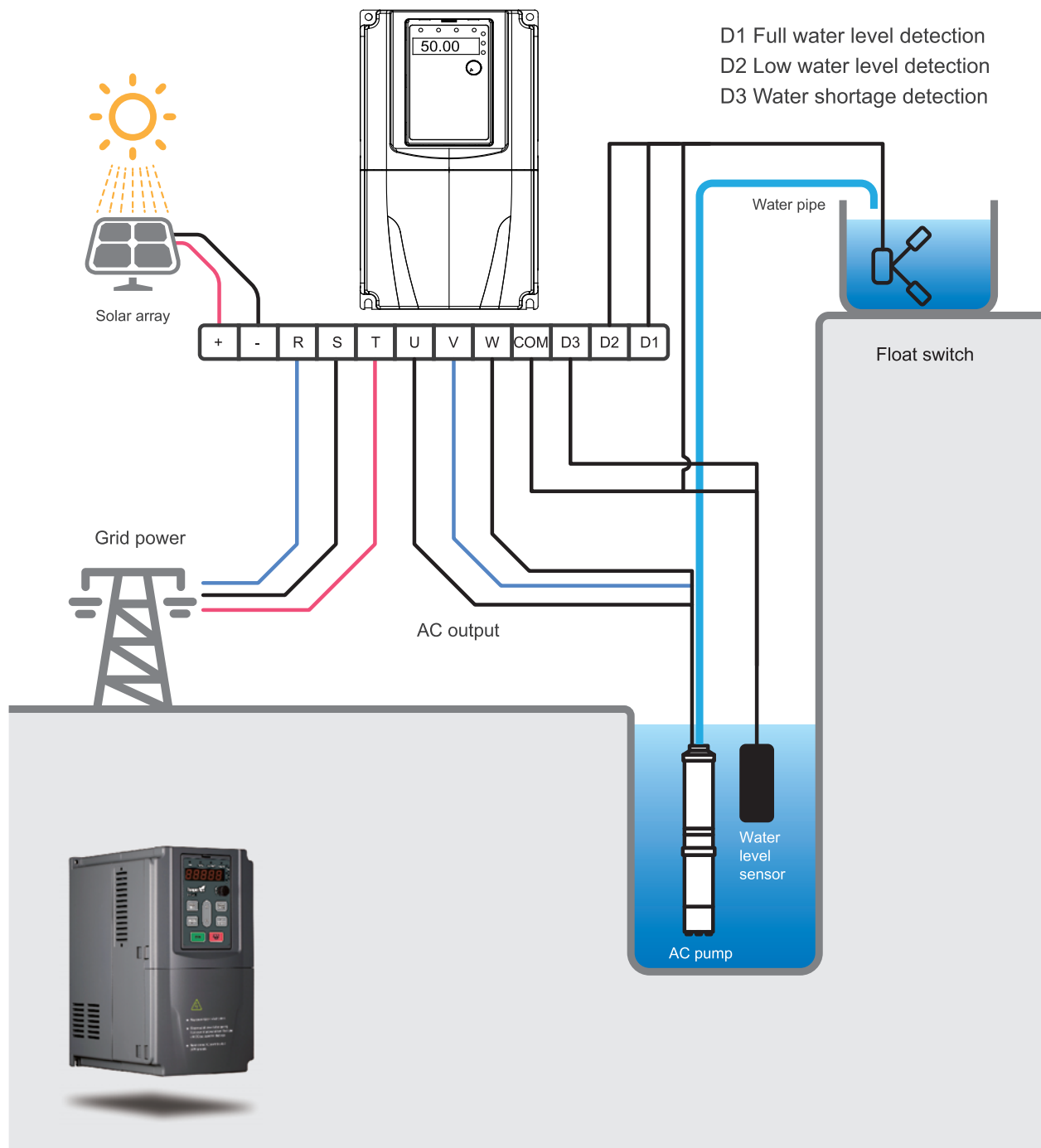
Reliability

1. 10-year market proven experience of leading motor and pump drive technology
2. Soft start feature to prevent water hammer and increase system life
3. Built-in overvoltage, overload, undervoltage and weak sunshine protection

Remote Monitoring

1. Standard RS485 interface, support to remote monitor the system with HAPN software on PC
2. Optional GPRS module for remote monitoring
3. Spots value of solar pump parameters monitoring available from anywhere
4. Support the lookup of the history parameters of solar pump system

Solar pump system

50.00

D1 Full water level detection
D2 Low water level detection
D3 Water shortage detection

Water pipe

Solar array

+	-	R	S	T	U	V	W	COM	D3	D2	D1

Float switch

Grid power

AC output

Water level sensor

AC pump

Single phase 220V 0.4, 0.75, 1.5 and 3 phase 220V 0.4, 0.75, 1.5   AC and DC couldnot be used together.

System feature &Application

System feature

Solar pump system, consisting of solar array, solar pump inverter, AC water pump and water tank, uses solar cell as power supply to directly take water from deep wells, rivers, lakes and other water sources through the water pump.Solar pump system, consisting of solar array, solar pump inverter, AC water pump and water tank, uses solar cell as power supply to directly take water from deep wells, rivers, lakes and other water sources through the water pump.

The solar array absorbs solar radiation and converts it into electric energy to provide power supply for the whole system. The solar pump inverter converts the DC output by the solar array into AC and drives the water pump; in addition, it adjusts the output voltage and frequency according to the sunshine intensity in real time to realize maximum power point tracking and to maximize the use of solar energy. When the sunshine intensity is low, the solar pump system can switch to grid power for complementary power supply.

- The system automatically starts in the morning and stops in the evening. It can run perfectly whenever there is sunshine, with no need of back-up battery.

- Applicable to and suits all applications requiring water pumps.

- Compatible with all types of solar panels and AC pumps (such as self-priming pump, submersible pump, deep-well pump and surface pump).

- Maximum operating ambient temperature 60°C.

- Remote monitoring for real time operation status and switching on/off by GPRS.

- Good performance even in cloudy weather.

- In the long run, the return on investment is much higher than diesel generators.

- Equipped with perfect protection, requires no man to be on duty, runs fully automatically.

- 18 months warranty for the whole system, 10 years warranty for solar panel.

The solar pump system is a presentation of low-carbon, energy-saving and environmental protection. It can obviously improve the living standard of people in areas lacking water and electricity. Therefore, it has broad market prospect and huge social value.

Application

Solar water pump system is mainly used for daily water supply, agricultural and forestry irrigation, desert control, livestock drinking water, sewage treatment, scenic fountain and swimming pool, etc.

| Swimming pool | Daily water supply | Agricultural irrigation | Livestock drinking water |

Technical specifications &Selection Guide

Technical specifications

Technical Index	Specification	
	220V inverter	380V inverter
Input DC voltage	200~450V	300~900V
Max input DC voltage	450V	900V
MPPT Voltage (Vmp)	160~380V	260~750V
Recommended MPPT Voltage (Vmp)	320	550
MPPT efficiency	99.9%	
Input AC voltage	1AC/3AC 220/230/240V	3AC 380/400/415/440V
Output AC voltage	1AC/3AC 0~220/230/240V	3AC 0~380/400/415/440V
Output frequency	0~300Hz	
IP level	IP20	
Fault protection function	Up to 30 general fault protections including overcurrent, overvoltage, undervoltage, overheating, default phase, overload, shortcut, etc., and also include water leverl sensor failure protection, full water, dry running, weak sunshine warning special protection functions for solar pump system. Could record the detailed running status during failure & has fault automatic reset function.	

Selection Guide

<div align="center">

HPVFT - 02S - 0D4G

</div>

Solar Pump Inverter

Output voltage:
02S：220Vac Single Phase
02T：220Vac 3 Phase
04T：380Vac 3 Phase

Power rating
0D4G：0.4KW

Selection guide

Model	Motor		Rated output current (A)	Suggested open circuit voltage (V)
	kW	HP		
Single phase ouput 220V				
HPVFT02S0D4G	0.4	0.5	4	350~400
HPVFT02S0D75G	0.75	1	7	350~400
HPVFT02S1D5G	1.5	2	9.6	350~400
HPVFT02S2D2G	2.2	3	15	350~400
HPVFT02S04G	4.0	5	23	350~400
HPVFT02S5D5G	5.5	7.5	32	350~400
HPVFT02S7D5G	7.5	10	45	350~400
HPVFT02S11G	11	15	60	350~400
HPVFT02S15G	15	20	90	350~400
Three phase ouput 220V				
HPVFT02T0D4G	0.4	0.5	2.3	350~400
HPVFT02T0D75G	0.75	1	4	350~400
HPVFT02T1D5G	1.5	2	7	350~400
HPVFT02T2D2G	2.2	3	9	350~400
HPVFT02T04G	4.0	5	17	350~400
HPVFT02T5D5G	5.5	7.5	25	350~400
HPVFT02T7D5G	7.5	10	32	350~400
HPVFT02T11G	11	15	45	350~400
HPVFT02T15G	15	20	60	350~400
HPVFT02T18G	18	25	75	350~400
HPVFT02T22G	22	30	90	350~400
HPVFT02T30G	30	40	110	350~400
HPVFT02T37G	37	50	150	350~400
Three phase ouput 380V				
HPVFT04T0D75G	0.75	1	2.1	625~750
HPVFT04T1D5G	1.5	2	3.8	625~750
HPVFT04T2D2G	2.2	3	6.0	625~750
HPVFT04T04G	4.0	5	9	625~750
HPVFT04T5D5G	5.5	7.5	13	625~750
HPVFT04T7D5G	7.5	10	17	625~750
HPVFT04T11G	11	15	25	625~750
HPVFT04T15G	15	20	32	625~750
HPVFT04T18D5G	18.5	25	37	625~750
HPVFT04T22G	22	30	45	625~750
HPVFT04T30G	30	40	60	625~750
HPVFT04T37G	37	50	75	625~750
HPVFT04T45G	45	60	90	625~750
HPVFT04T55G	55	75	110	625~750
HPVFT04T75G	75	100	150	625~750
HPVFT04T90G	90	125	176	625~750
HPVFT04T110G	110	150	210	625~750

Notice ：

1. According to the light condition of different areas, the required power of solar array is at least 1.3 times of the pump power.

2. When used for deep well pump, or the output power line of inverter is longer, the inverter should be derated to use, and need to install output reactor.
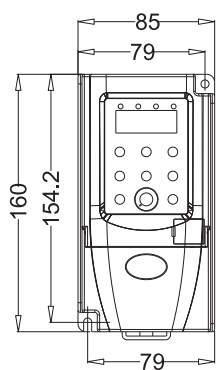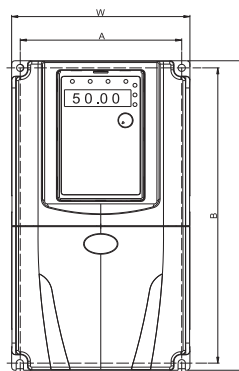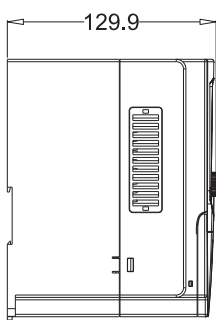
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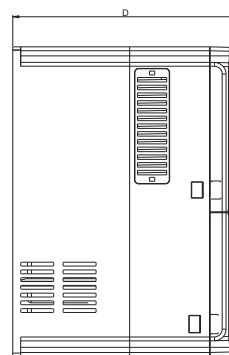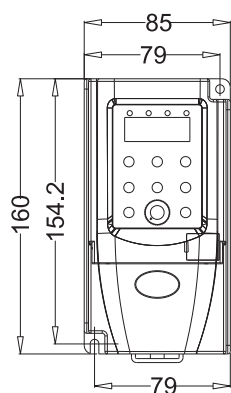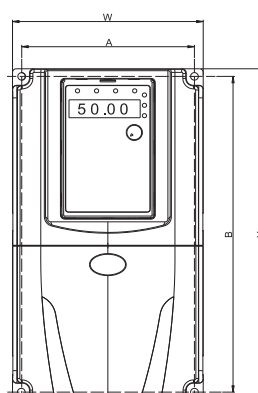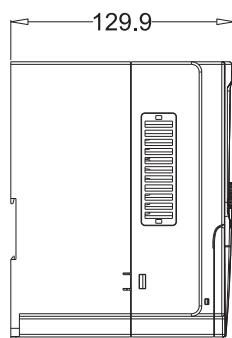
Single phase output 220V inverter

Power Range	External Dimension(mm)				Installation Dimension (mm)		Mounting Bolt Model
	W	H/H1	H2	D	A	B	
0.4~1.5kW	85	160		129.9	79	154.2	M4
2.2kW	110	185		153	98	174	M4
4kW	170	285		176	158	274	M4
5.5kW	200	329	300	177	90	317	M4
7.5kW	225	398	365	185	120	384	M5
11-15kW	255	440	402	210	140	424	M5

0.4-1.5KW

2.2-4KW

5.5-15KW
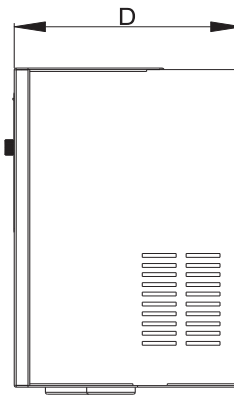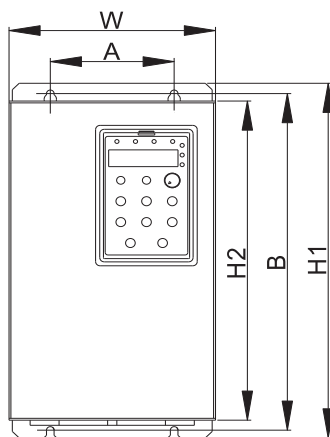
Dimensions

⊕ Three phase output 220V inverter

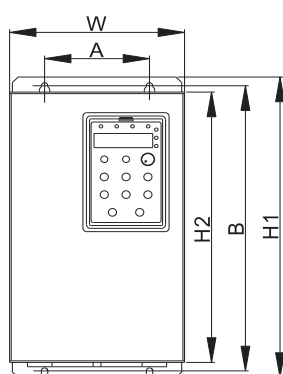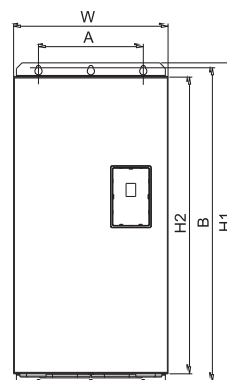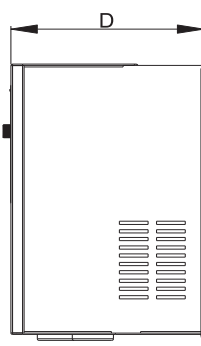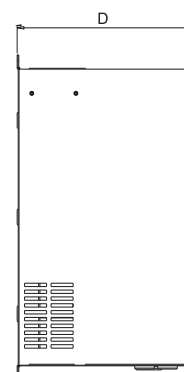| Power Range	External Dimension(mm)				Installation Dimension (mm)		Mounting Bolt Model
	W	H/H1	H2	D	A	B	
0.4~2.2kW	85	160		129.9	79	154.2	M4
4kW	135	240		173	123	229	M4
5.5kW	170	285		176	158	274	M4
7.5kW	200	329	300	177	90	317	M4
11kW	225	398	365	185	120	384	M5
15-18.5kW	255	440	402	210	140	424	M5
22kW	280	570	521	258	190	552	M6
30-37kW	320	600	552	330	230	582	M8

0.4- 2.2KW
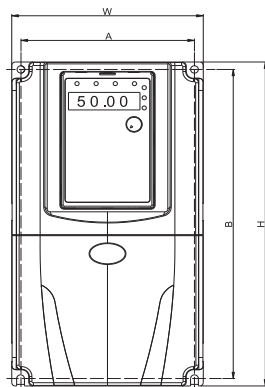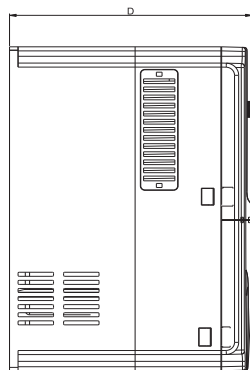
4- 5.5KW
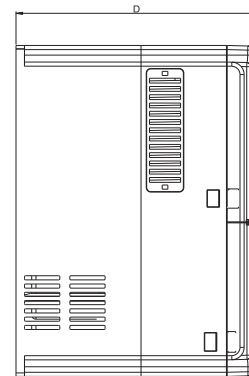
7.5- 15KW

18.5- 37KW

Dimensions

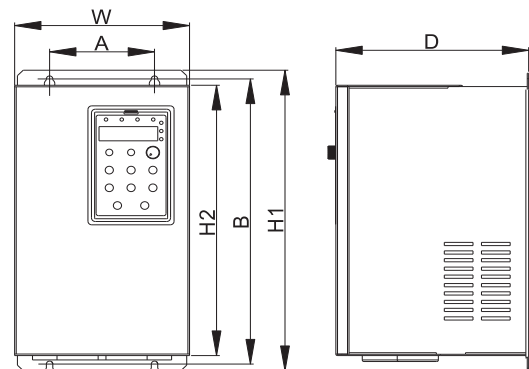## Three phase output 380V inverter

Power Range	External Dimension (mm)				Installation Dimension (mm)		Mounting Bolt Model
	W	H1	H2	D	A	B	
0.75~4kW	85	160		130	79	154.2	M4
5.5kW	110	185		153	98	174	M4
7.5kW	135	240		173	123	229	M4
11kW	170	285		176	158	273.5	M4
15~18kW	200	329	300	177.2	90	316.6	M4
22kW	225	398	365	185.2	120	384	M5
30kW	225	398	365	215	120	384	M5
37~45kW	255	440	402	210	140	424	M5
55~75kW	280	570	521	258	190	552	M6
90~110kW	320	600	552	330	230	582	M8

0.75-11KW

15-45KW

55-110KW

Wiring Diagram

Grid power

Solar panels

Q1

R   S   T

Q2

HPVFT

PB

(+)

(-)

Full water level detection

D1

Low water level detection

D2

Water shortage detection

D3

D4

D5

Water level sensor

GND

D6

AI1

COM

AI2

PLC

10V

24V

TIA

TIB

AO1

TIC

AO2

T2A

485+

T2B

485-

T2C
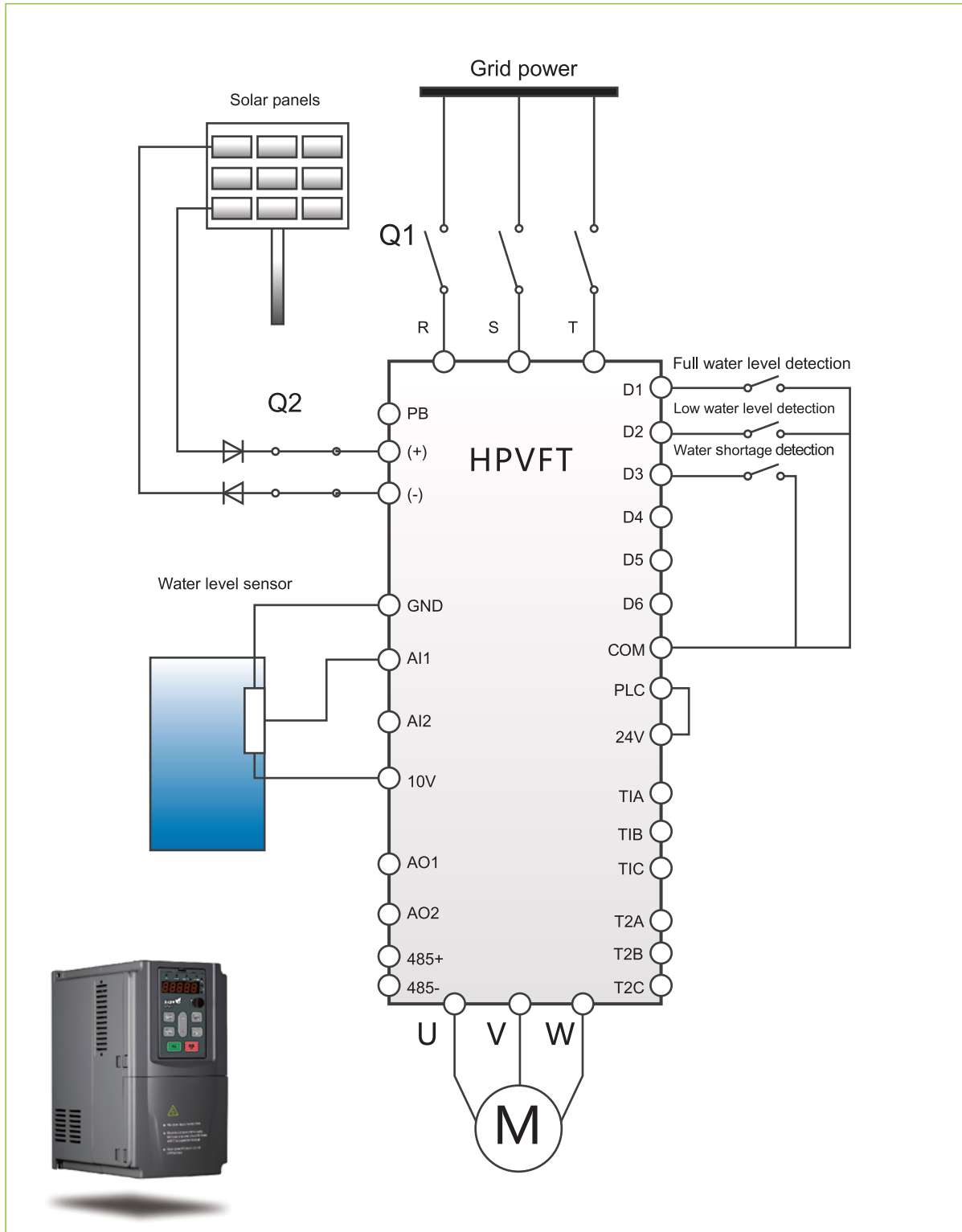
U   V   W
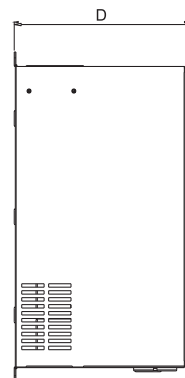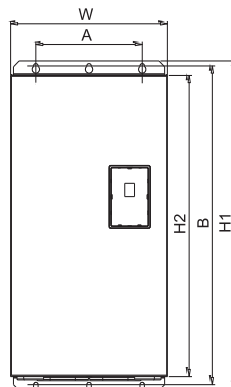
M

Application

Product Profile

HPVFP
High Performance Full Function Vector Frequency Inverter

CE

HPVFP series full function vector control frequency inverters feature high reliability,stability,flexibility and world leading motor control technology. With multifunction of protection for assuring safety running,compact structure,advanced process technology,it matches the requirements of multiple applications. The quick installation and commissioning offer the best solution for industry application.
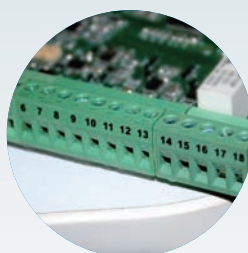
Power: 0.75~160kW Input Voltage: 3 phases,380~460V

| OLED display optional | Built in EMC filter Optional | Pluggable Control Terminals | High Quality Long-life Fans |

Performance of HPVFP Frequency Inverter

Modbus , Profibus and CAN

Applicable for multiple type motors

Built in Brake Unit

Built in Brake Resistor under 11kW Optional

Customised function

Safety Torque Function -STO

Safety Torque Off-STO (standard)	With	Without

HPVFP offer a safety torque off function to allow simple integration into machine critical safety circuits.

◆ Simple machine design reduces mounting time and cut down component cost,saves installation space.

◆ Faster shutdown and reset procedures save the maintenance time of system.

◆ Better safety standard than mechanical solution.

◆ Optimized motor connection. Single cable linking without contactor.

With:
Supply Supply
Mechanical safety circuit circuit
Not required input contactor
HPVFP Inverter
Safety relay

Without:
Supply
Mechanical safety circuit
Input contactor
Safety relay
VFD

Inverter Feature

Advanced motor control method

- ◆ Various control method: V/F control, V/F energy saving, sensorless vector speed control, sensorless vector torque control, close loop(encoder) speed control, close loop(encoder) torque control, open loop PM vector control.
- ◆ Various communication: Modbus, Profibus, CAN bus.
- ◆ Starting torque: 200% output torque at 0Hz.
- ◆ Multi-function: bluetooth function.
- ◆ More terminals: PLC.
- ◆ Adapt for various motors: PMSM, DC brushless motor, three phase AC asynchronous motor, SRM.
- ◆ Overload: 150% withstand 60s
- ◆ New protection: Safe torque off

Adapt for various motors

Threephase AC Permanent-Magnet synchronousMotor	Three phase AC asynchronous Motor	Synchronous reluctance Motor	DC brushless Motor

Inverter system running efficiency

With the raw material cost increasing, performance becomes an important factor of various of industry for transmission system. In many conditions, the final volume of performance will be effected by each components' performance, it does not means add each nominal performance simply. The real performance curve should take all system into consideration, which includes expected speed data and loading range.

Generally, the power factor of AC drive is 98%, it only representative the difference of input power and output power volume. Another factor, motor control scheme always been ignored which will highly effect the whole system performance.

Further more, HPVFP series frequency inverter was designed for various kinds of motors and make them in best performance condition.

Blue curve means a scheme of advanced running of high performance induction motor, AC frequency inverter and high performance shift together.

Red curve means AC drive controls PMSM. The running performance of AC drive increased the speed of motor and possibility of driving a loading. However, at low speed condition the performance was down, as well as the stability of speed.

Green curve means HPVFP series frequency inverter controls a motor. The performance at full speed and full loading range.

Above all, HPVFP series frequency inverter has maximum output torque per kilowatt consumption at full speed and torque range.
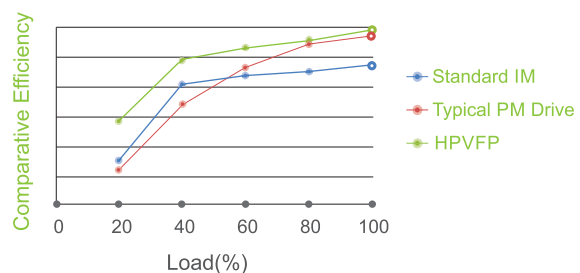
There are 2 factors in below chart:

- ◆ The whole performance of system running at different torque and loading is not a constant volume.
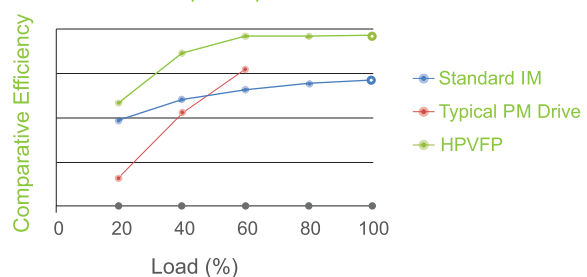- ◆ The running performance of motor will influence the whole system performance.

The chart displays the proportion of electricity grid and output torque power.

For example: 2.2kw motor
Enhanced torque output 100%

Enhanced torque output 100%

Product Application

Mining and quarry fodder conveyor belt, crusher, lift	Metal process grind, cut, polish, drill, whirl cut	Rubber, plastic Extruding/forming/ mixing/rolling machine	Food and beverages Conveyor belt, pump, mixing machine, stacking machine

Applications in different industries

Lifting Cranes	Compressor	Winding

Request:

- High torque while starting
- Exact and smooth moving while starting and stopping.
- Reliable braking
- Avoid gliding.
- Braking ability regenerate while going down.

Request:

- Guarantee a synchronous speed.
- high torque while starting
- Always full load
- Safe operation, avoid any danger or injury.

Request:

- Provide exact motor torque control at a wide speed range.
- provide exact tension control in any condition
- The frequency inverter convert to open loop or close loop up to tension sensor or coil diameter
- Frequency inverter has electricity leakage protection.

HPVFP series frequency inverter provides features:

- Special algorithm for lifting device.
- Vector control and with out encoder condition, 200% torque at 0Hz and speed.
- Pre-set speed curves and variable speed control.
- Built-in braking IGBT and braking unit, only need a matched resistor.

HPVFP series frequency inverter provides features:

- In PMSM open loop condition, PMSM has maximum performance.
- Provide maximum torque while starting.
- In open loop condition, accuracy is better than 0.5%

HPVFP series frequency inverter provides features:

- PID closed loop tension information comes from pressure sensor or tension sensor.
- Optimized torque control in open loop condition.
- Encoder feedback function could provides wide motor speed range, even 0 rpm.
- Safe torque close function will provide emergency stop.

Product Option

Plug-in option modules

Extend the relay
Add 3 way relay output
Relay 3 - inverter display is normal
Relay 4, frequency converter fault occurs
Relay 5 - frequency converter operation instructions
This function can be programming/ adjustable

Extension I/O
add 3 way input
add the relay output

RJ45 extension port

The encoder feedback function
The encoder closed-loop feedback,
With incremental code
Compatible

PROFIBUS

Unique Function

- Built-in EMC filter, braking resistor, input and output filter, all conform to the requirements of the installation, fast communication

- Allows rapid replication between more than one frequency converter parameters

- Provide bluetooth wireless interface, can utilize the computer software to run a backup and storage of the inverter parameters

hapn Device Manager Ver 1.00Beta

Click the fllowing menu for getting more details

Parameter Setting

Free Programming

Warning: This computer program is proteced by copyright law and international treaties. Unauthorized reproduction or distrbution of this program, or any portion of it, may result in severe civil and criminal sanction, and will be prosecuted to the full extent of the law.
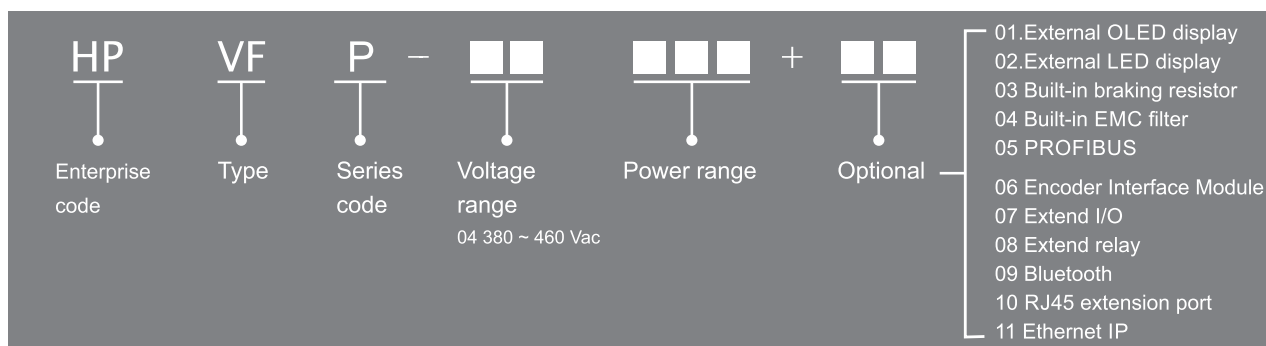
- Powerful PC software
- Inverter communication and parameter backup
- Parameters real-time editing functions
- Network communication function, frequency converter
- Simple, PLC programming function
- Parameter automatic updates, download, and storage capabilities

Product Selection

								01.External OLED display
HP	**VF**	**P**	– ▢▢	▢▢▢	+	▢▢		02.External LED display

```
HP          VF          P  –  ▢▢        ▢▢▢     +   ▢▢         01.External OLED display
                                                               02.External LED display
                                                               03 Built-in braking resistor
                                                               04 Built-in EMC filter
                                                               05 PROFIBUS
Enterprise  Type    Series    Voltage    Power range   Optional
code                code      range                              06 Encoder Interface Module
                              04 380 ~ 460 Vac                   07 Extend I/O
                                                                 08 Extend relay
                                                                 09 Bluetooth
                                                                 10 RJ45 extension port
                                                                 11 Ethernet IP
```

NOTE:01、02、05、09、10 cannot be used the same time;
06、07、08、11 cannot be used at the same time,
For example,when select 05(profibus),modbus can not be used.For instance, if choose 10, then 01 and 05,
or 02 and 05,or 01 and 09,or 02 and 09 can be used at the same time.
Optional built-in brake resistor for 0.75~11kW;Optional external brake resistor for 15~160kW;
Standard built-in brake unit for 0.75~37kW;Optional built-in brake unit for 45~160kW;
Optional built-in EMC filter for 0.75~11kW;Standard built-in DC reactor for 30~160kΩ.

Voltage	Model	Power (kW)	Horse Power (HP)	Rated Current (A)	Inverter Frame	Inverter Dimension	Weight (kg)
380-460V ±10%	HPVFP-040D75	0.75	1	2.2	A	106×210×180	2.6
	HPVFP-041D5	1.5	2	4.1			
	HPVFP-042D2	2.2	3	5.8			
	HPVFP-0404	4	5	9.5			
	HPVFP-045D5	5.5	7.5	14	B	130×259×206	4.1
	HPVFP-047D5	7.5	10	18			
	HPVFP-04011	11	15	24			
	HPVFP-04015	15	20	30	C	190×450×215	14
	HPVFP-0418D5	18.5	25	39			
	HPVFP-04022	22	30	46			
	HPVFP-04030	30	40	61	D	255×525×239	29
	HPVFP-04037	37	50	72			
	HPVFP-04045	45	60	90	E	330×660×300	55
	HPVFP-04055	55	75	110			
	HPVFP-04075	75	120	150	F	330×760×300	68
	HPVFP-04090	90	150	180			
	HPVFP-04110	110	175	202	G	336×1080×321	85
	HPVFP-04132	132	200	240			
	HPVFP-04160	160	250	302			

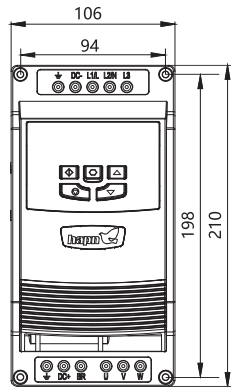NOTE: "D "represents "."in the model,for example ,5D5 expresses as 5.5.
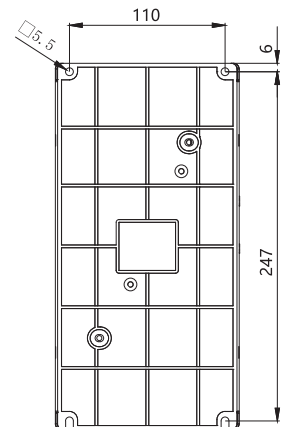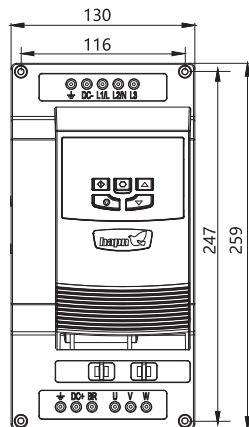"*"pls consult factory

Product Dimension

A

Dimensions:
- 106 / 94 (width)
- 198 / 210 (height)
- 179.9 (depth)
- 2-□5.5
- 6.5
- 199
- 7.25
- 5.5

B

Dimensions:
- 130 / 116 (width)
- 247 / 259 (height)
- 206 (depth)
- □5.5
- 110
- 6
- 247

C

Dimensions:
- □7
- 10
- 430 / 450 (height)
- 130 / 190 (width)
- 204 / 215 (depth)
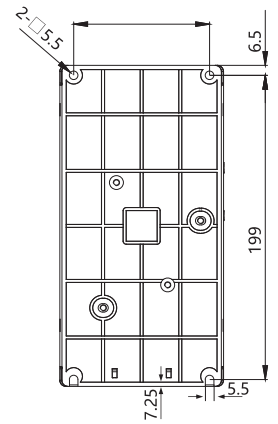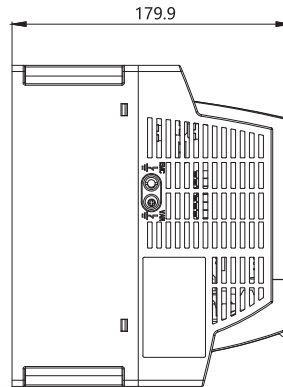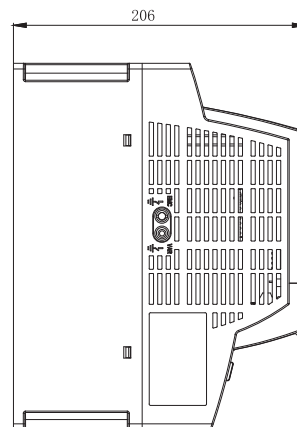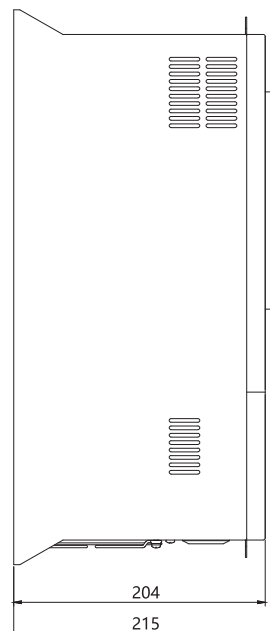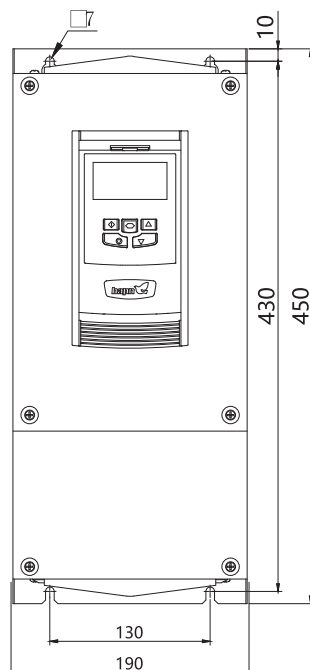
Product Dimension
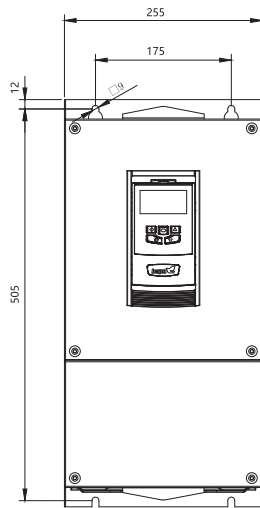
D
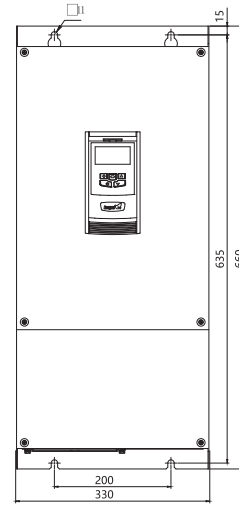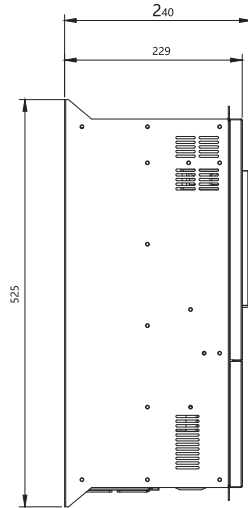
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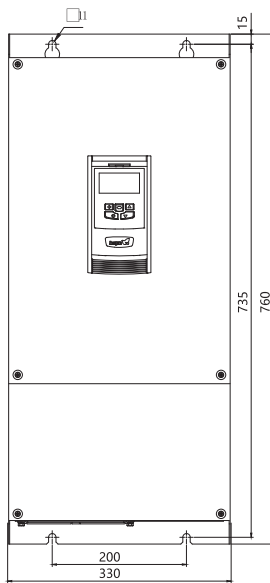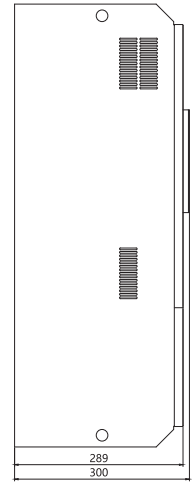
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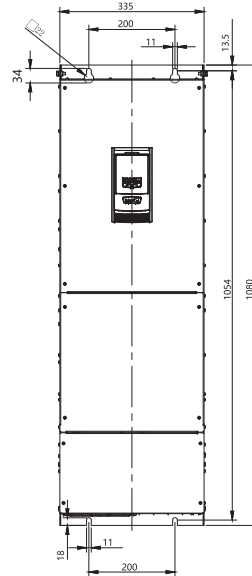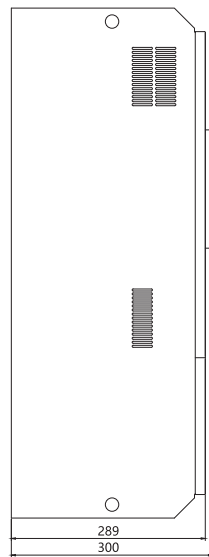
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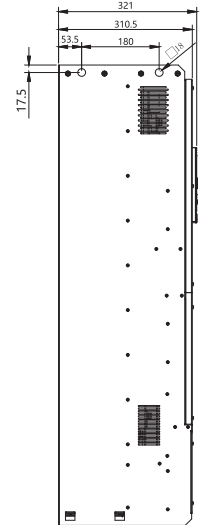
Inverter Technology Data

Specification			
Rated Input	Supply voltage	400V	380-460V ±10%
	Supply frequency	48-62Hz	
	Phase unbalance	Max 3%	
	Inrush current	Lower than rated current	
	Power period	120/hour,evenly distributed	
	The basic power factor	＞ 0.97	
Rated Output	Output power capacity	400V 3 phase power supply	0.75kW ?160kW
	Over capacity	150% / 60s	
		200% / 3s	
	Output frequency	0-500Hz	
Environmental Condition	Temperature	Storage	-40- +60℃
		Work	-10 - +40℃
	Altitude	Max altitude 1000m, >1000m should reduce the nominal power, 1%/100m	
		Max 95% , non-condensing	
Shell	Humidity	Standard IP20	
Programmable	Display	Standard	7 LED
		Optional	OLED text display
	PC	PC adjust software	
Control Specification	Control method	V/F control	
		V/F energy-saving mode	
		Sensorless speed control	
		Sensorless torque control	
		Closed-loop speed control	
		Closed-loop torque control (with encoder)	
		Open loop PM vector control	
	PWM frequency	4~32kHz	
	Stop mode	Slope stopped, the user is adjustable 0.1-600s	
		Free stop	
	Braking	Magnetic flux brake of motor	
		Built-in brake thyristor (optional E,F)	
	Jump frequency	Single point, the user can adjust	
	Set value control	Analog signal	0~10V 10~0V、 -10~$10V$、 0~20mA、 20~0mA、 4~20mA、 20~4mA
		Digital value	Digital potentiometer (panel)
		Optional	Profibus 、 Profinet 、 EtherNet/IP
I/O Specification	Supply voltage	Short-circuit protection	
		Potentiometer	
	Programmed input	Standard 5 way(additional 3 way)	
		3 way digital(additional 3 way)	
		2 way analog/Digital value optional	
	Digital input	Internal or external power supply, positive logic	
		Response time <4 ms	
	Analog input	Resolution	12 digits+sign
		Response time	＜4ms
		Accuracy	When the full<+/- 2%, the scale and bias adjustable
	Programmable output	Total 4 way (additional 3 way)	
		2 way relay(additional 3 way)	
		2 way analog /digital value	
	Analog output	0-10V、 0-20mA、 4-20mA	
	Relay output	Max voltage	250VAC、 30VDC
		On/off current	6A AC、 5A DC
Control Feature	Lifting run	Special lifting mode	
	PID control	Internal PID control can be displayed through feedback	
Maintenance and Diagnostic	Fault record	Recently four fault code display	
	Data record	The data records of the frequency inverter be diagnosed as Purpose before the trip	
		Output current, temperature frequency converter, dc bus voltage	
	Maintenance indicator	The built-in user can modify maintenance interval of maintenance Instructions	
	Monitoring	In hours of running time timer , reset or not reset watt-hour meter	

Wiring Diagram

+24V		1
DIN 1		2
DIN 2		3
DIN 3		4
+10V		5
AIN 1		6
0V		7
AO1		8
0V		9
AIN 2		10
AO2		11
STO+		12
STO-		13
RL 1 -C		14
RL 1-NO		15
RL 1-NC		16
RL 2-NO		17
RL 2-C		18
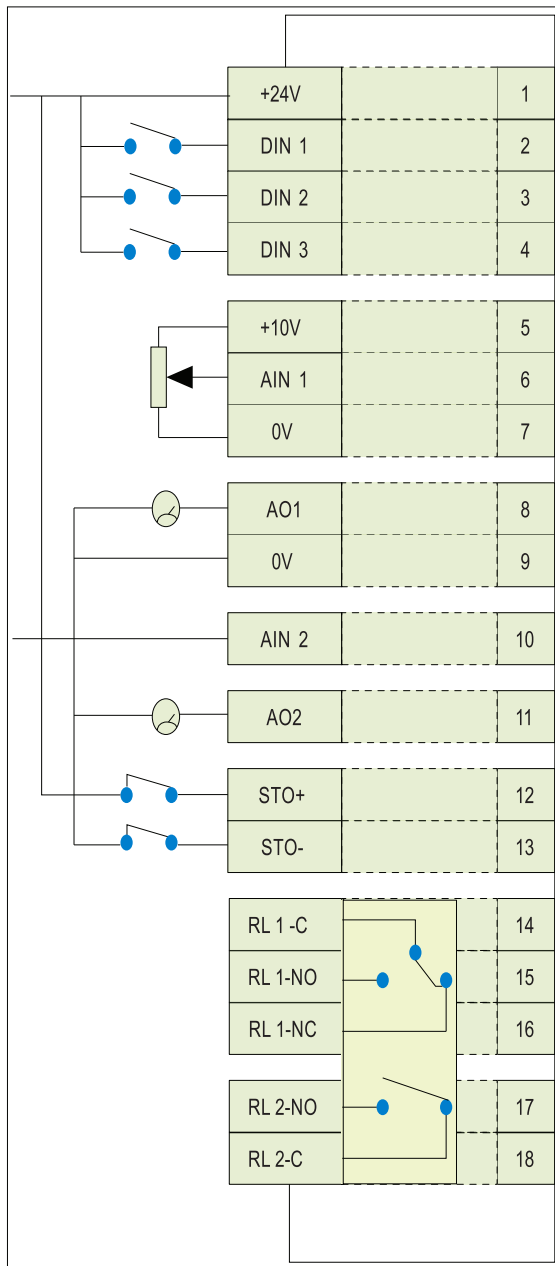
Function	Default setting
24VDC input(max 100mA) 、 12VDC output	
digital input 1	inverter enabled
digital input 2	Forward/reverse
digital input 3	preset speed
＋10V 5mA	
analog input 1	
0V	
analog input 1	motor speed
0V	
analog input 2	
analog output 2	motor current
Safety input torque off	
Safety input torque off	
relay output 1	inverter without fault /with fault
relay output 2	inverter run

Green peace

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