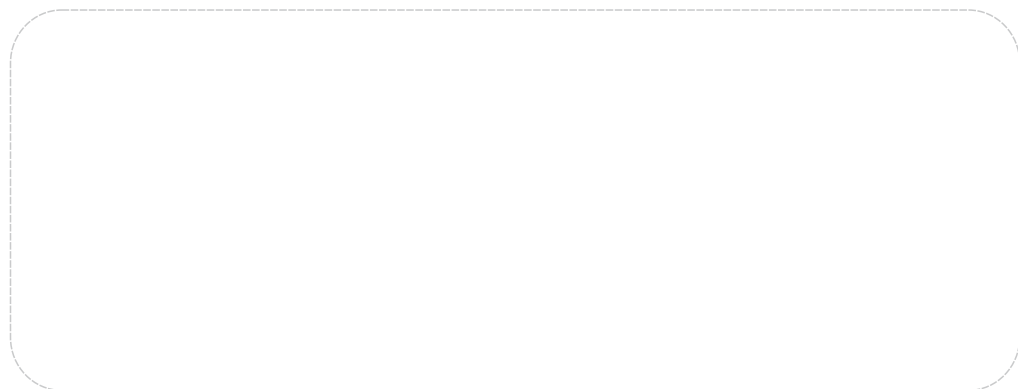


INNOVATION • DEDICATED • SERVICE • WIN-WIN



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FRECON



FR500A&FR510A Series Vector Control Inverter



FRECON ELECTRIC (SHENZHEN) CO.,LTD.

Overview

FR500A series is a high performance, high quality, high power density design, new generation inverter of FRECON, which is mainly for OEM customers of the mid-high market and for applications such as fan and pump, flexible design, embedded SVC and VF control, widely used in the applications with higher requirements, such as the speed control accuracy and torque response speed, low frequency output characteristics.

Based on FR500A series, FR510A series adds the following functions:

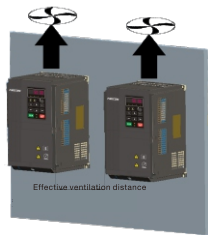
- Support synchronous motor
- Support multiple PG cards
- Support position control such as spindle orientation, pulse follow, zero servo.
- Support two groups of motor parameters

New Technology Platform, Large Surplus Derating Design

- Adopt Infineon new generation of IGBT hardware platform, with higher configuration and large surplus derating design

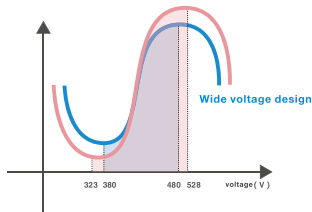
Independent Air Duct

- The independent air duct design, can effectively prevent the dust from entering the inverter and causing the fault of short circuit, improve the reliability
- Select the long-life and max air flow rate cooling fans, effectively reduce inverter temperature rise, ensure reliable and stable operation



Wide Range Voltage Input with International Standards

- Rated voltage: 3 phase 380-480V, 50Hz/60Hz
- Voltage fluctuation range: 325-528V, 50Hz/60Hz

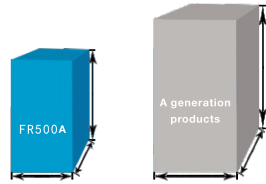


Comprehensive protection functions

- FR500A and FR510A series have comprehensive protection functions such as output to ground short circuit protection, fan drive circuit protection, external 24VDC short circuit protection, motor overload protection, optional PT100 / PT1000 motor temperature protection function, etc.
- According to the severity of the fault type, it can be selected as pre-warning, fault stop and continuous operation, it is convenient for maintenance

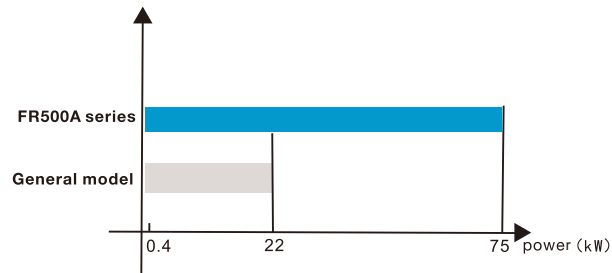
Optimized Structural Design, Leading Technology Platform

- Compare with previous generation products of the same power, the size of FR500A series is smaller, greatly saves the installation space, it's convenient to layout the electronic control device; maximum installation area reduced by 50%, volume reduced by 60%.



Perfect Brake Circuit Scheme

- Strong braking ability: The short-time braking ability can reach 1.1-1.4 times of inverter's rated power
- Brake protection is more comprehensive and intelligent



- General model: 0.4 ~ 22 kw built-in brake unit
- FR500A series: Below 37 kw (including 37 kw), built-in brake unit. 45 kw ~ 75 kw built-in brake unit is optional

Strong Overload Ability

- Heavy load overload capacity:
 - 150% of rated load can keep 1 min
 - 180% of rated load can keep 10 s
 - 200% of rated load can keep 1 s

Excellent Performance

- High-start torque characteristic
- 0.5Hz can provide 150% start torque (Sensor-less vector control 1)
- 0.25Hz can provide 150% start torque (Sensor-less vector control 2)
- Sensorless vector control can reduce susceptibility of motor parameter, improve the field adaptability

Flexible and Diversified Terminal Functions

- Multi-function terminal DI, DO, AO with a variety of logic functions for selection
- AI terminal can be used as multi-function DI terminal
- Built-in multi-group virtual DI and DO function selection to reduce external DI/DO wiring
- Support high-speed pulse input and output, up to 100 KHZ

Built-in self-adaptive PID function module

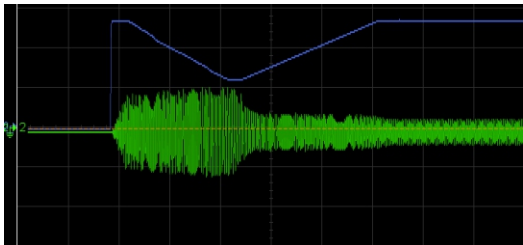
- Built-in two groups of PID parameters, which can automatically switch according to the deviation, DI terminal and frequency conditions
- Given and feedback source selection is various, practical
- Detect function of PID feedback loss, which is convenient for user to detect faults
- Support dormancy and wake up function, can be switched according to the frequency and pressure

V/F fully separated and semi-separated Operation

- Automatically compensate by voltage when overload, realize output voltage constant and meet the application requirements of power supply industry

Speed Tracking Function

- In the case of fast start, the inverter can make the motor to start smoothly according to the current operation direction and speed of the motor



Speed tracking output frequency and current waveform

Multiple Communication Expansion Card

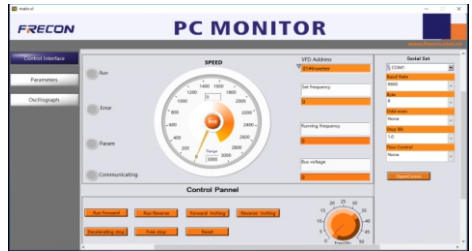
- Support PROFIBUS, CAN, GPRS DTU and other communications

Match a Variety Of Encoder (FR510A)

- Support the OC, push-pull, difference, EN1313, U/V/W rotating transformer and other kinds of encoder

Convenient Debugging

- Strong back ground software



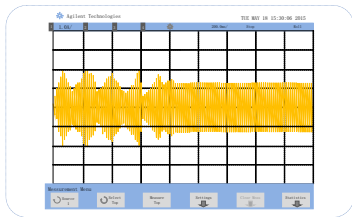
- Specialized upload and download module, convenient parameter debugging and backup
- According to the industry demand, develop a dedicated application macro

The Unique Dead Zone Compensation

- Ensure torque output smoothly under the low frequency

Oscillation Suppression Function

- When detected motor oscillation, automatic trimming output voltage and frequency make motor running smoothly

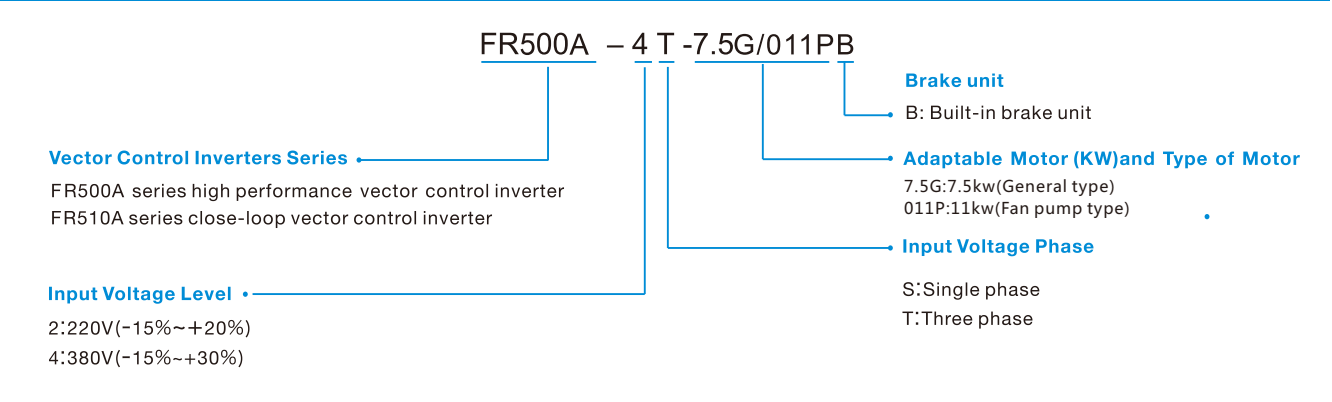


Oscillation suppression waveform

CE Certification

- The inverters comply with the directive requirements of the 'New method of technical coordination and standardization' in EU

Name Plate



Electric Specification

Model No.	Power Capacity (kVA)	Input Current (A)	Output Current (A)	Adaptable Motor	
				(kW)	(HP)
3 Phase:380V.50/60Hz,Range: -15%~+30%					
FR500A-4T-4.0G/5.5PB	6	11	9.5	3.7、4	5
FR500A-4T-5.5G/7.5PB	8.9	14.6	13	5.5	7.5
FR500A-4T-7.5GB	11	20.5	17	7.5	10
FR500A-4T-7.5G/011PB	11	20.5	17	7.5	10
FR500A-4T-011G/015PB	17	26	25	11	15
FR500A-4T-015G/018PB	21	35	32	15	20
FR500A-4T-018G/022PB	24	38.5	37	18.5	25
FR500A-4T-022G/030PB	30	46.5	45	22	30
FR500A-4T-030G/037PB	40	62	60	30	40
FR500A-4T-037GB	57	76	75	37	50
FR500A-4T-037G/045P(B)	57	76	75	37	50
FR500A-4T-045G/055P(B)	69	92	91	45	60
FR500A-4T-055G/075P(B)	85	113	112	55	70
FR500A-4T-075G/090P(B)	114	157	150	75	100
FR500A-4T-090G/110P(B)	134	186	176	90	125
FR500A-4T-110G/132P	160	220	210	110	150
FR500A-4T-132G/160P	192	260	253	132	175
FR500A-4T-160G/185P	231	310	304	160	210

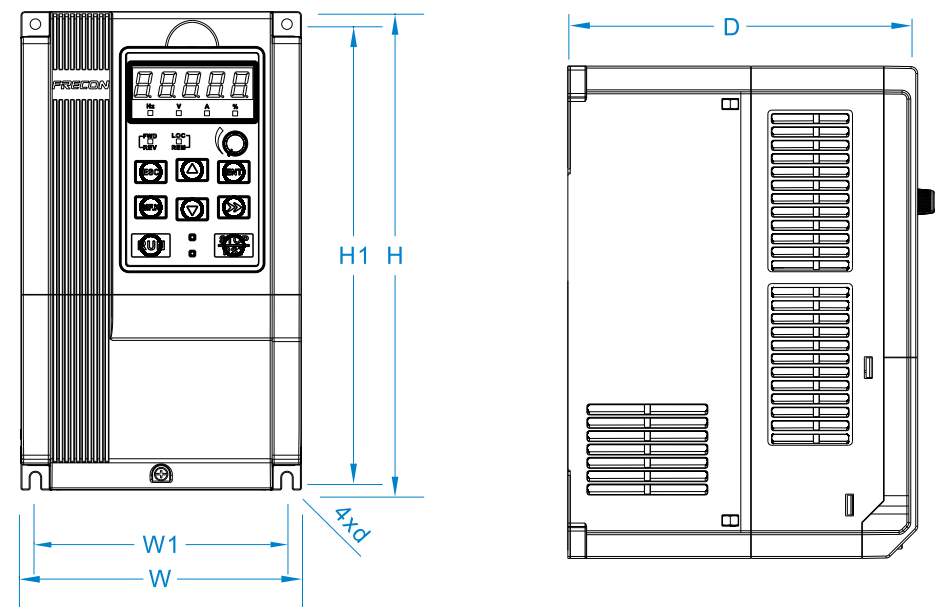
Note: 1. (B) Built-in brake unit is optional
2. For FR510A series model number, just need to replace FR500A to FR510A

Technical Parameters

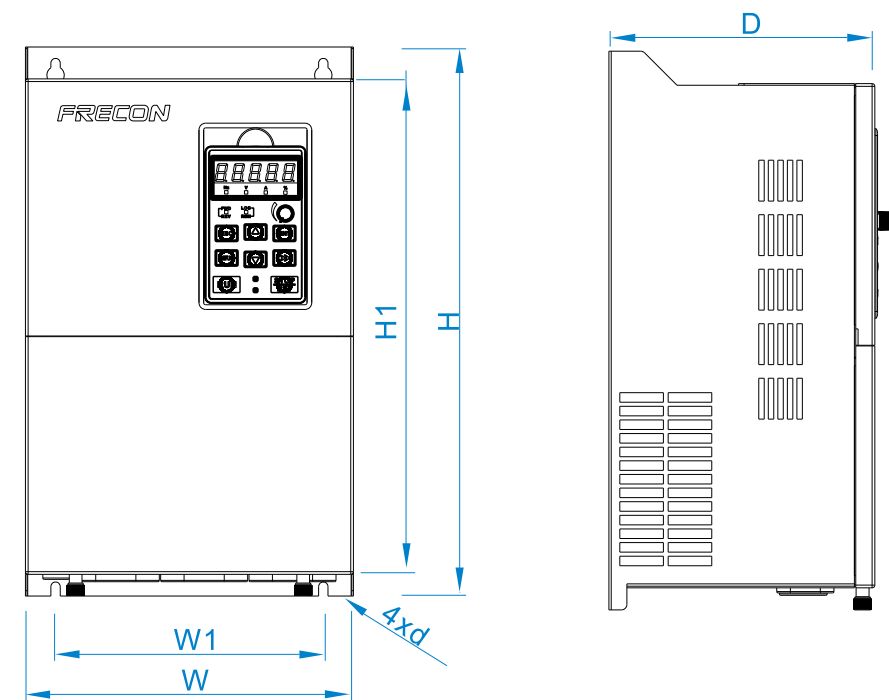
Specification			
Item		FR500A series	FR510A series
Power Input	Rated Input Voltage(V)	3 Phase 380V(-15%~+30%)	
	Rated Input Frequency (Hz)	50Hz/60Hz, ±5%	
Power Output	Maximum Output Voltage(V)	0VA~Uin, Error <±3%	
	Maximum Output Frequency(Hz)	0.00~600.00Hz, Unit:0.01HZ	
Load	Types of motor	Single-phase asynchronous motor Three-phase asynchronous motor	Single-phase asynchronous motor Three-phase asynchronous motor Three-phase permanent magnet synchronous motor
	Control mode	Speed, torque	Speed, torque, position
	Motor parameters	1Group	2 Groups
Control Characteristics	Control Mode	V/f control, Sensor-less Vector Control 1 Sensor-less Vector Control 2	V/f control, Sensor-less Vector Control 1 Sensor-less Vector Control 2 Close-loop Vector Control
	Speed range	1:50(V/f control),1:100(Sensor-less Vector Control 1) 1:200(Sensor-less Vector Control 2),1:1000(Close-loop Vector Control)	
	Speed Control Precision	±0.5%(V/f control),±0.2%(Sensor-less Vector Control 1&2),±0.1%(Close-loop Vector Control)	
	Speed Fluctuation	±0.3%(Sensor-less Vector Control 1&2),±0.1%(Close-loop Vector Control)	
	Torque Response	<10ms(Sensor-less Vector Control 2)	
	Start Torque	0.5Hz:150%(V/f control,Sensor-less Vector Control 1),0.25Hz:150%(Sensor-less Vector Control 2) 0.0Hz:180%(Close-loop Vector Control)	
Basic Function	Carrier Frequency	0.7kHz~16kHz	
	Overload Capacity	150% Rated Current 60s, 180% Rated Current10s, 200% Rated Current 1s	
	Torque Boost	Auto Torque Boost, Manual Torque Boost 0.1%~30%	
	V/F Curve	Three models: Straight line; Multi-point; NTh-type V/F curve	
	Acceleration and Deceleration Curve	Straight line or S curve acceleration and deceleration mode. Four kinds of acceleration and deceleration time Ramp time range:0.0~6000.0s	
	DC brake	DC brake start frequency: 0.00~Max frequency, DC brake time:0.0s~10.0s DC brake current:0.0%~150%	
Featured function	Parameters copy, parameters backup, flexible function code shown and hidden, reliable speed search, timing control, fixed-length control function and counting function, 14 group of fault records, over voltage stall, under voltage stall, power-on restart, restarting function, the motor temperature protection function, frequency control operation , high accuracy of torque limiting, Sensor-less torque control		
Protection function	Provide adozen fault protection : over-voltage, over-current,under-voltage, over-temperature, overload,etc		
Environment	Operation Place	Indoors, no direct sunlight, no dust, no corrosive gases, no flammable gases, no oil mist, no water vapor, no water drop and salt, etc	
	Altitude	0~2000m Derate 1% for every 100m when the altitude is above 1000 meters	
	Ambient temperature	- 10 ~ 40 ℃ (when environment temperature is in 40 ~ 50℃, please derating use.)	
Others	Installation	Wall-mounting or flang mounting	
	IP grade	IP 20	
	Cooling method	Forced air cooling	

Installation dimensions

4-22kw structure diagram



30-160kw structure diagram



Installation dimensions

Model No.	Appearance and installation dimensions(mm)						Weight (Kg)
	W	W1	H	H1	D	Installation hole	
Three-phase power supply:380V,50/60Hz range:-15%~+30%							
FR500A-4T-4.0G/5.5PB	116.6	106.6	186.6	176.6	175	4.5	2.5
FR500A-4T-5.5G/7.5PB							
FR500A-4T-7.5GB							
FR500A-4T-7.5G/011PB	146	131	249	236	177	5.5	3.9
FR500A-4T-011G/015PB							
FR500A-4T-015G/018PB	198	183	300	287	185	5.5	6.2
FR500A-4T-018G/022PB							
FR500A-4T-022G/030PB							
FR500A-4T-030G/037PB	245	200	410	391	200	7	11.8
FR500A-4T-037GB							
FR500A-4T-037G/045P(B)	275	200	470	451	215	7	15
FR500A-4T-045G/055P(B)							
FR500A-4T-055G/075P(B)							
FR500A-4T-075G/090P(B)	310	200	620	601	262	9.5	26
FR500A-4T-090G/110P(B)							
FR500A-4T-110G/132P(B)	400	300	750	724	300	11.5	—
FR500A-4T-132G/160P(B)							
FR500A-4T-160G/185P(B)							

Note: 1. 0.75- 2.2 KW and from 160 KW are in development,please visit our website to know the latest news.
2. For FR510A series model number, just need to replace FR500A to FR510A