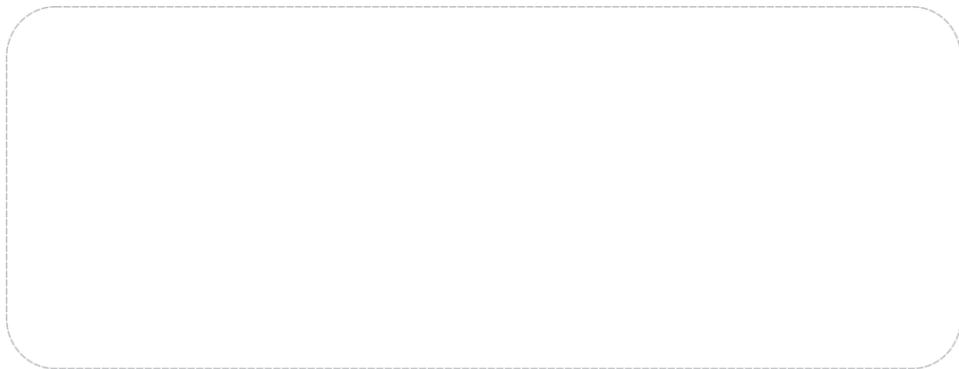


INNOVATION • DEDICATED • SERVICE • WIN-WIN



Product Selection Manual

Innovation Dedicated Service Win-win



FRECON

FRECON ELECTRIC (SHENZHEN) CO.,LTD

Add: 2nd,No.3 Zhenbao Industrial Zone,NO.137 Shiyan Road,
Shiyan Street,Bao'an District,Shenzhen,China

Tel: (+86)-0755-33067999

Fax: (+86)-0755-33067186

E-mail: overseas@frecon.com.cn

Website: www.frecon.com.cn



Frecon Website



WeChat ID
20191202 (V1.6)

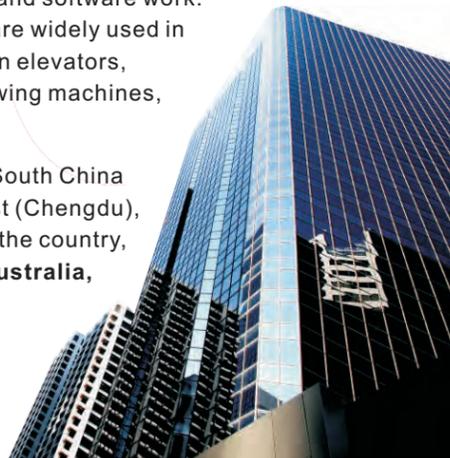


About Us

Frecon Electric (Shenzhen) Co., Ltd is High-tech enterprises supported by the state, and a double soft enterprise certified by Shenzhen Government. Which is a professional company in the fields of industrial automation, energy efficient, green and new energy. We have more than ten years experience in the development and application of inverters, servo drives, energy-saving control cabinets, industrial robots, solar inverter systems, electric vehicle drive and control systems. The product power range 0.2kW ~ 1MW, and the products aconformed to EU Safety Standard requirements in EMC and Safety Regulations and got **CE** certified. And also obtained more than 40 patents and copyrights including inventions, utility models, appearances, and software work. Quality system is compliance with the **ISO9001:2015** standard. Products are widely used in equipment manufacturing and energy-saving renovation projects, mainly in elevators, petroleum, chemicals, steel, ceramics, air compressors, textiles, wire drawing machines, machine tools, solar energy and many other fields.

Frecon established seven regional logistic centers in East China (Wuxi), South China (Shenzhen), North China (shijiazhuang), Northeast (Shenyang), Southwest (Chengdu), Northwest (Xi'an), Central China (Changsha). There are 21 offices across the country, and a nationwide logistics and service network has been established. In **Australia, Poland, Spain, South Africa, Russia, India, Vietnam, etc.** More than 40 countries have **UNPROFOR** and distribution networks.

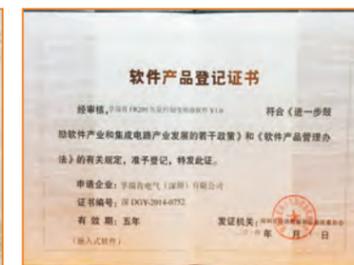
Company Vision: Becoming a leading supplier of products and solutions for the industrial control industry
Company mission: technology drives the future
Company values: innovation, dedicated, service, win-win



Service Network



Company Honor



China's leading brand and solution provider



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FR500L Series Special Purpose Inverter for Wire Drawing Machine		
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FR500D Series Special Purpose Inverter for Elevator		
FR500S Series Special Purpose Inverter for High Frequency		
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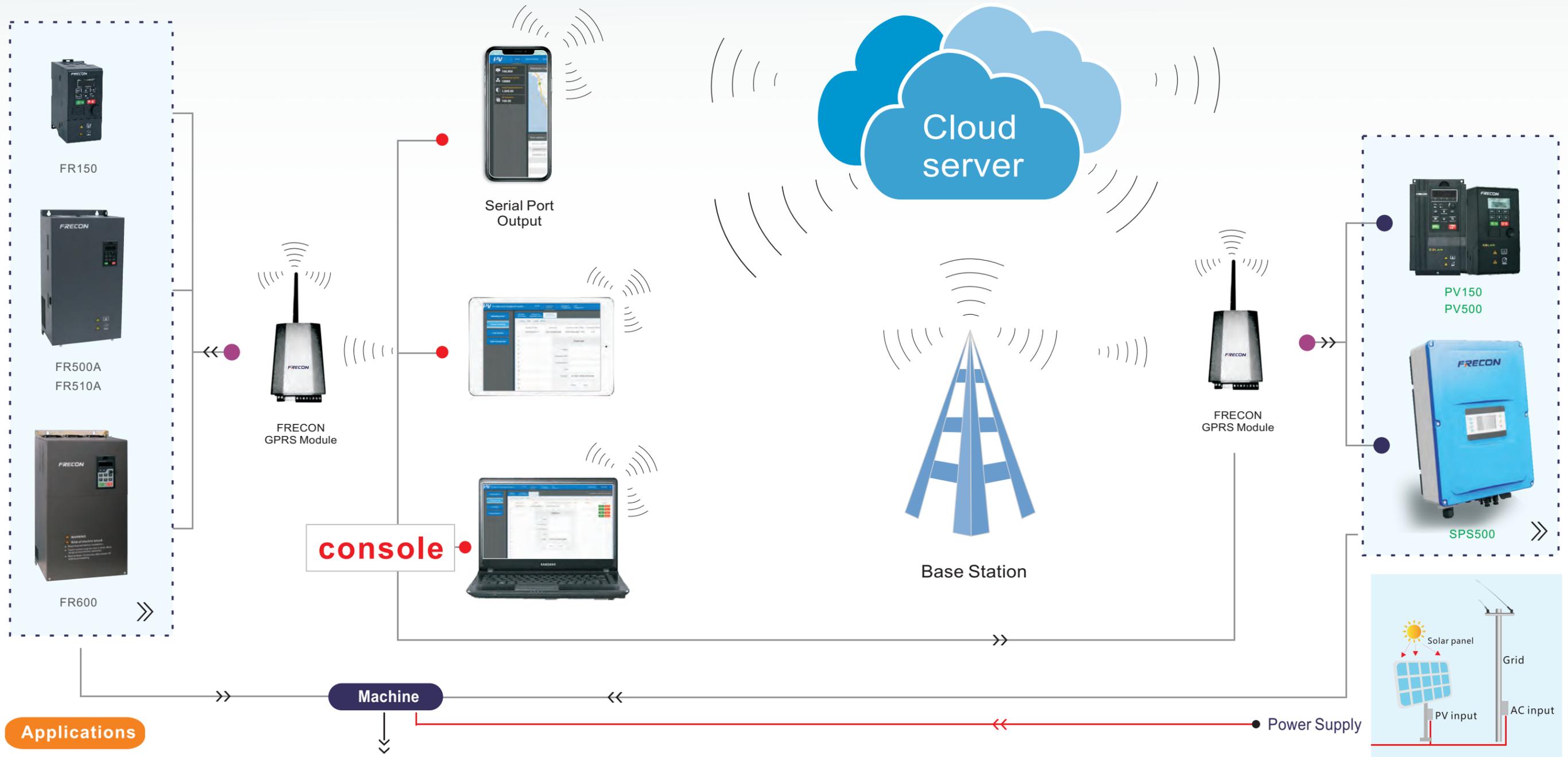
IOT Remote Control System

Simple configuration realize remote connection



1

IOT Remote Control System



1

IOT Remote Control System



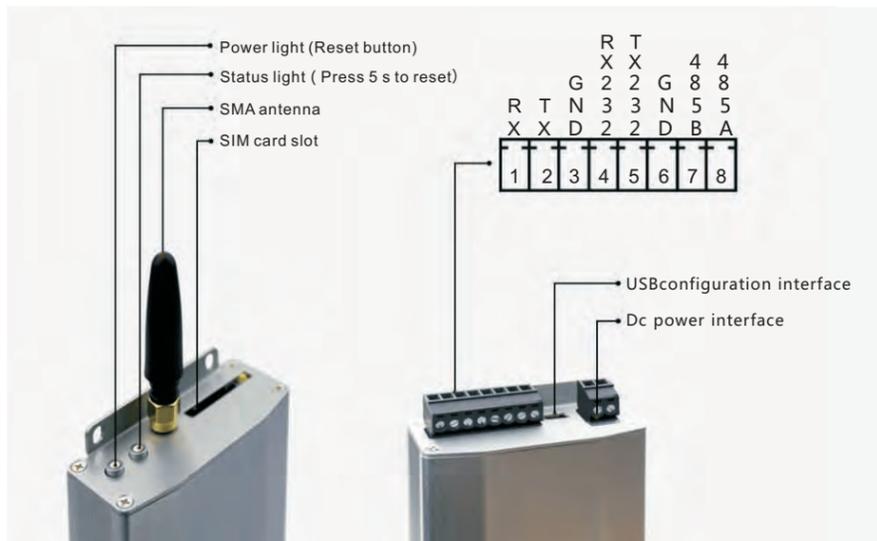


GPRS Module Function and Features

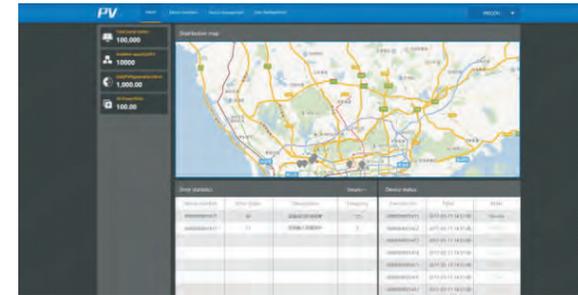
- ⊙ GPRS data transmission
- ⊙ Wide voltage power supply
- ⊙ Data rate:300~115200bps (default rate 115200bps)
- ⊙ 3 types of serial digital port:TTL/RS232/RS485
- ⊙ Support SMS checking, restarting, parameters setting.
- ⊙ USB configuration ,high accessibility



GPRS module specification and port definition

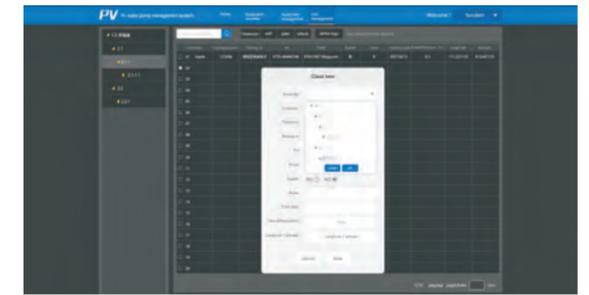


RCS Function Introduction



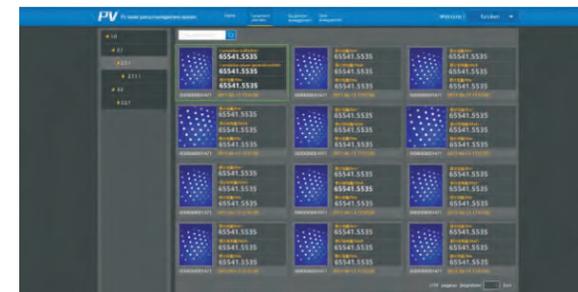
1. Checking the connecting devices , total power , today generated power and the accumulative generated power total of the current account and its sub account.
2. Fault statistics : current account and its sub account failure times counting, and ranking the failures. Showing failure details and failed device. It's convenient to get a clear image of devices' condition.
3. Displaying the current account's devices status (offline or on line) .
4. Displaying the location of devices on map.

RCS Account Management



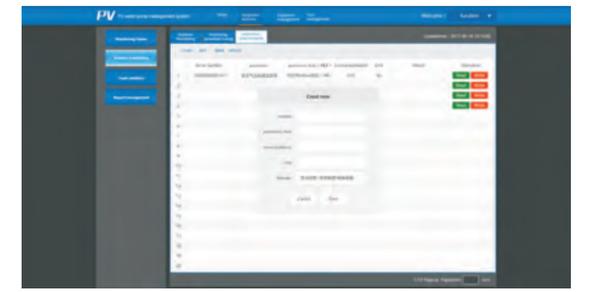
1. Create or delete account.
2. Multilevel Management, every account can checking its sub account's registration information (customer name, phone number, Email).

Device Management



1. Add or delete devices.
2. Devices management, checking the current account and its sub account's devices status and data information.

Remote Control



1. Monitor all selected devices' real time date.
2. Start, stop, reset devices.
3. Read and change the device's parameters.
4. Check the device's fault log.
5. Check monitoring parameters' data changing curves.
6. Output devices' monitoring parameters in 3 months.
7. Check the location of the device.
8. Monitor the device's generated power and water yield.

General Purpose Inverter



FR500A&510A Series Vector Control Inverter
 FR150 Series Multi-functional Inverter
 FR600 Series General Purpose Medium Voltage Inverter



FR500A&510A Series Vector Control Inverter

2 General Purpose Inverter



Three Phase 380V 0.75kW ~1000kW

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

Applications

FR500A series is a high performance, high quality, high power density design, new generation inverter of FRECON, which is with 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 higher requirements, such as the speed control accuracy and torque response speed, low frequency output characteristics.

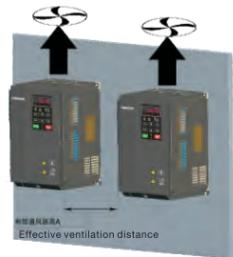


New Technology Platform, Large Surplus Derating Design

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

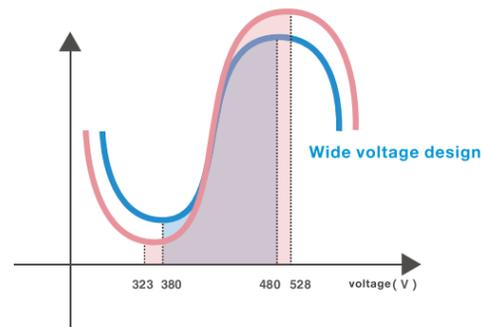
Independent Air Duct

- 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



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

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

Excellent Performance

- High-start torque characteristic
- 0.5Hz can provide 150% start torque (No PG vector control 1)
- 0.25Hz can provide 150% start torque (No PG 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

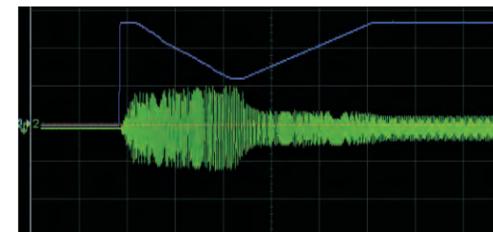
- Built-in two groups of PID parameters , which can automatically switch according to the deviation, DI terminal and frequency conditions
- Given and feedback source selection is various, practical
- Detect function of PID feedback loss , which is convenient for user to detect faults
- Support dormancy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



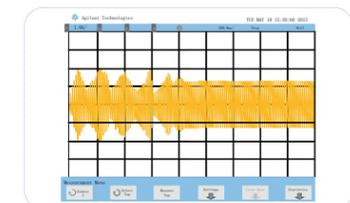
- Specialized upload and download module, convenient parameter debugging and backup
- According to the industry demand, develop a dedicated application macro

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

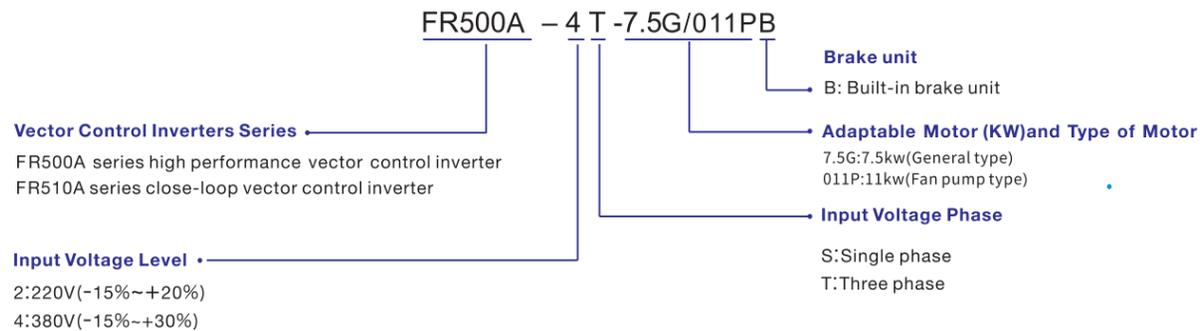


Oscillation suppression waveform

CE Certification

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

Name Plate



Model No.	Power Capacity kVA	Input Current A	Output Current A	Adaptable Motor		Mechanical specifications
				kW	HP	
3 Phase:380V.50/60Hz,Range: -15%~+30%						
FR 500A-4T-0.7G/1.5PB	1.5	3.4	2.5	0.75	1	R0
FR 500A-4T-1.5G/2.2PB	3	5.0	4.2	1.5	2	
FR500A-4T-2.2GB	4	5.8	5.5	2.2	3	
FR500A-4T-2.2G/4.0PB	4	5.8	5.5	2.2	3	
FR500A-4T-4.0GB	6	11	9.5	3.7、4	5	R1
FR 500A-4T-4.0G/5.5PB	6	11	9.5	3.7、4	5	
FR 500A-4T-5.5G/7.5PB	8.9	14.6	13	5.5	7.5	
FR 500A-4T-7.5GB	11	20.5	17	7.5	10	
FR 500A-4T-7.5G/011PB	11	20.5	17	7.5	10	R2
FR500A-4T-011G/015PB	17	26	25	11	15	R3
FR 500A-4T-015G/018PB	21	35	32	15	20	
FR 500A-4T-018G/022PB	24	38.5	37	18.5	25	
FR 500A-4T-022G/030PB	30	46.5	45	22	30	
FR 500A-4T-030G/037PB	40	62	60	30	40	R4
FR500A-4T-037GB	57	76	75	37	50	R5
FR500A-4T-037G/045P(B)	57	76	75	37	50	
FR 500A-4T-045G/055P(B)	69	92	91	45	60	
FR 500A-4T-055G/075P(B)	85	113	112	55	70	
FR 500A-4T-075G/090P(B)	114	157	150	75	100	R6
FR 500A-4T-090G/110P(B)	134	186	176	90	125	R7
FR 500A-4T-110G/132P	160	220	210	110	150	
FR 500A-4T-132G/160P	192	260	253	132	175	
FR 500A-4T-160G/185 P	231	310	304	160	210	
FR 500A-4T-185G/200P	240	355	350	185	250	R9
FR 500A-4T-200G/220P	250	382	377	200	260	
FR 500A-4T-220G/250P	280	430	426	220	300	
FR 500A-4T-250G/280P	355	475	470	250	330	
FR 500A-4T-280G/315P	396	535	520	280	370	R10
FR 500A-4T-315G/355P	445	610	600	315	420	
FR 500A-4T-355G/400 P	500	665	650	355	470	
FR 500A-4T-400G/450P	565	785	725	400	530	
FR 500A-4T-450G	623	865	800	450	600	R12

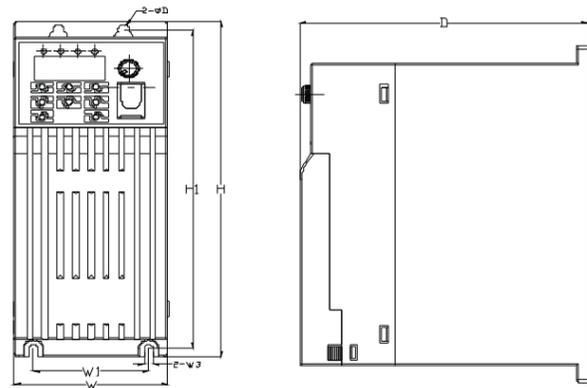
Note: 1. (B) Built-in brake unit is optional
2. For FR510A series model number, just need to replace FR500A to FR510A

Technical Parameters

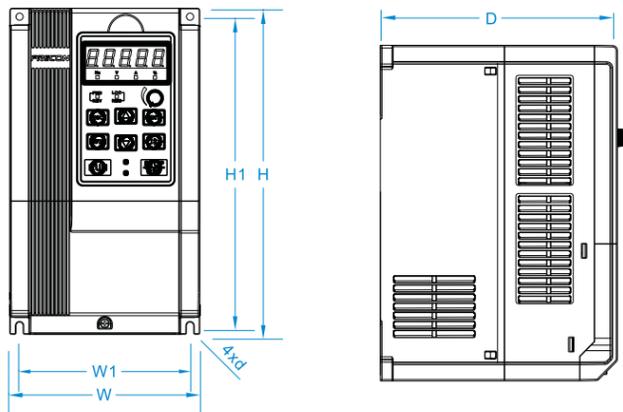
		Specification	
	Item	FR500A series	FR510A series
Power Input	Rated Input Voltage(V)	3 Phase 380V(-15%~+30%)	
	Rated Input Frequency (Hz)	50Hz/60Hz, ±5%	
Power Output	Maximum Output Voltage(V)	0VA~Uin, Error < ±3%	
	Maximum Output Frequency(Hz)	0.00~600.00Hz, Unit:0.01HZ	
Load	Types of motor	Single-phase 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 Current 10s, 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 °C (when environment temperature is in 40 ~ 50°C, please derating use.)	
Others	Installation	Wall-mounting or flang mounting	
	IP grade	IP 20	
	Cooling method	Forced air cooling	

Installation dimensions

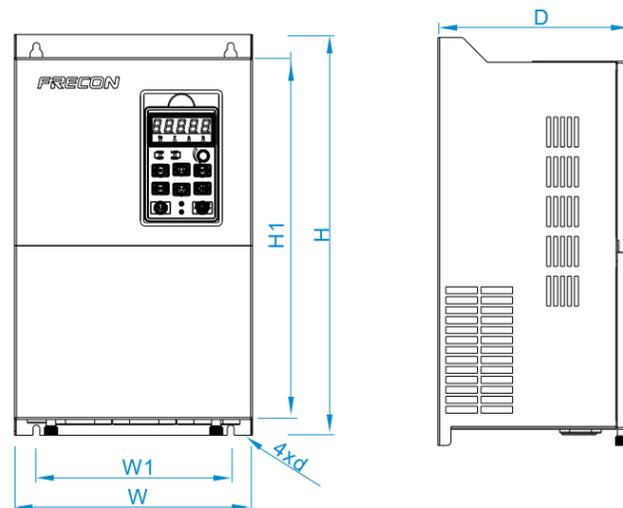
0.2-2.2kW structure diagram



4-22kW structure diagram



30-450kW 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-0.7G/1.5PB	80	60	200	190	150	6	1.25
FR500A-4T-1.5G/2.2PB							
FR500A-4T-2.2GB							
FR500A-4T-2.2G/4.0PB							
FR500A-4T-4.0GB							
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)	310	200	650	620	350	11.5	45
FR500A-4T-132G/160P(B)							
FR500A-4T-160G/185P(B)							
FR500A-4T-185G/200P	500	300	855	822	320	12	112
FR500A-4T-200G/220P							
FR500A-4T-220G/250P							
FR500A-4T-250G/280P	540	340	924.5	896	380	12	120
FR500A-4T-280G/315P							
FR500A-4T-315G/355P	620	400	996	963	390	12	133
FR500A-4T-355G/400P							
FR500A-4T-400G/450P	700	500	1025.5	988.5	390	14	
FR500A-4T-450G							

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

FR150 Series Multi-functional Inverter



- Single Phase 220V 0.2kW ~2.2kW
- Three Phase 220V 0.2kW ~2.2kW
- Three Phase 380V 0.75kW ~4.0kW

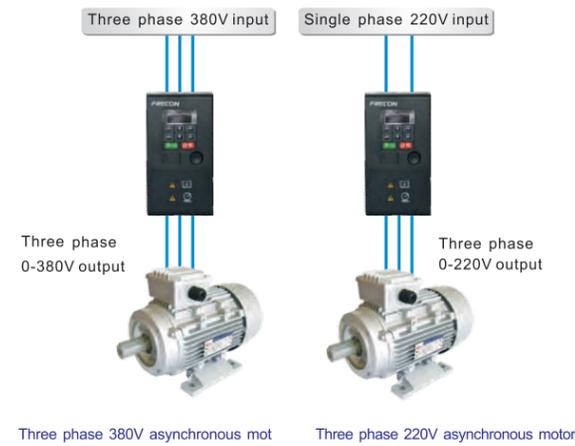
Applications

FR150 series is a new generation main models inverter of FRECON. It has advanced control methods, achieving high torque, high precision, high reliability, and wide-speed drive. Built-in simple PLC, PID adjustment, programmable input and output terminals, RS485 port, analog input and output and many other rich control functions. It provides highly integrated solutions for equipment matching, engineering transformation, automation control and special industrial applications. The power range is 0.2-4KW.



Suitable for several types of motor

Standard application wiring



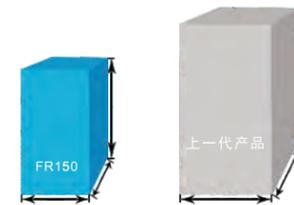
Special application wiring

(※ Please contact factory if using below application wiring)

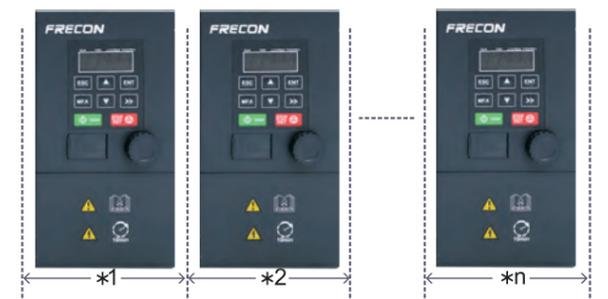


Optimized Structural Design, Leading Technology PI

- Compare with previous generation products of the same power, the size of FR150 series is smaller, greatly saves the installation space, it's convenient to layout the electronic control device; maximum installation area reduced by 40%, volume reduced by 50%.



Maximum installation area reduced by 40%,
volume reduce by 50%



Common DC bus

- When using several inverters, can parallel DC buses of drives to implement energy share, reduce braking resistance power or cancel braking resistor

Built-in braking unit in all ratings

- Only connect braking resistor to save cost

Support input phase lacking protection, short circuit protection between motor to ground and motor phases

- Comprehensive protection to ensure reliable operation

Built-in RS 485 communication (Modbus)

- 485+ 485- terminals, supports standard Modbus RTU communication, implement system integration



Built-in 485+485- terminal

Convenient debugging

- Powerful background software

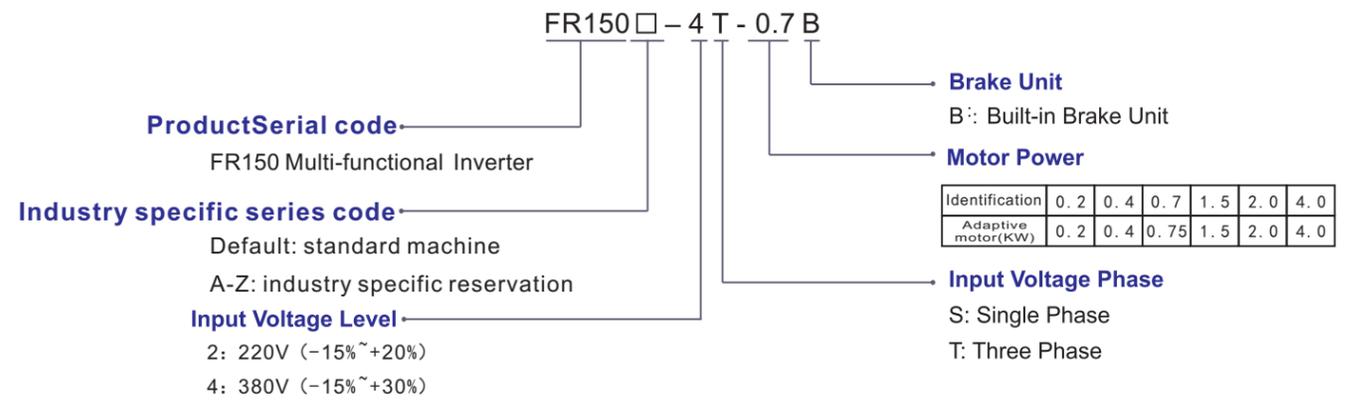


- Short-cut menu
Common parameters setting rapidly to save customer's time to read manual
- Unique upload and download module which is convenient for parameter commissioning
Restore factory parameters, backup user parameters
- Design special application macro according to industry demand

Technical Parameters

Item		Specification
Input Power	Rated Input Voltage(V)	Single phase 220 V (-15% ~ +20%) Three phase 380 V (-15% ~ +30%)
	Rated Input Frequency (Hz)	50Hz/60Hz, ±5%
Output Power	Maximum Output Voltage (V)	0 ~ Rated input voltage, Error<±3%
	Maximum Output Frequency (Hz)	0.00~600.00 Hz, Units: 0.01Hz
Control Characteristic	Control mode	V/f control Sensor-less vector control 1 Sensor-less vector control 2
	Speed range	1:50 (V/f control) 1:100 (sensor-less vector control 1) 1:200(sensor-less vector control 2)
	Speed accuracy	±0.5% (V/f control) ±0.2% (sensor-less vector control 1 & 2)
	Speed fluctuation	±0.3% (sensor-less vector control 1 & 2)
	Torque response	< 10ms (sensor-less vector control 1 & 2)
	Starting torque	0.5Hz: 180% (V/f control, sensor-less vector control 1) 0.25Hz: 180% (sensor-less vector control 2)
Basic functions	Carrier frequency	0.7kHz ~ 16kHz
	Overload capability	150% Rated Current 60s, 180% Rated Current 10s, 200% Rated Current 2s
	Torque boost	Automatic torque boost; Manual torque boost 0.1% ~ 30.0%
	V/F Curve	Three ways: Straight; multi-point type; NTh-type V / F curve
	Acceleration and deceleration Curve	Line or curve acceleration and deceleration mode. Four kinds of acceleration and deceleration time, Ramp Time Range :0.0~6000.0s
Run	DC brake	DC brake start frequency: 0.00~600.00Hz DC brake time:0.0s~10.0s DC brake current:0.0%~150.0%
	Command source	Given the control panel, control terminal, serial communication port given.
	Frequency given	9 kinds of frequency sources
	Input terminal	5 Switch input terminals, one way to make high-speed pulse input. 2-channel analog inputs, including 1-way voltage input, one way voltage and current options
Output terminal	Output terminal	1-way switch output terminal, 1 relay output terminals, 1 analog output terminal
	Featured functions	Parameter copy、parameter backup、flexible parameter displayed & hidden. Reliable speed search started. Timing control、fixed length control、count function、three faults recorded、Over excitation brake、overvoltage stall protection programmable、under voltage stall protection、programmable、restart upon power loss、Motor thermal protection、Wobble frequency control、High-precision torque control
Protection function	Provide fault protection dozen: Over current、Overvoltage、Under voltage、Over temperature、Overload Etc Protection.	
Environment	Place of operation	Indoors, no direct sunlight, free from dust, corrosive gases, flammable gases, oil mist, water vapor, water drop and salt, etc.
	Altitude	0 ~ 2000m De-rate 1% for every 100m when the altitude is above 1000 meters
	Ambient temperature	-10°C ~ 40°C(De-rate from 40°C ~ 50°C)
Others	Efficiency	Rated power; ≥93%
	Installation	Wall-mounted or Flange mounting
	IP grade	IP20
	Cooling method	Fan cooled

Product Installation Dimension



Main Power Voltage	Model No.	Motor Power (kW)	Power Capacity (kVA)	Input Current (A)	Output Current (A)	Size of the Case	Dimension (W*H*D) (mm)
220VAC 1~	FR150-2S-0.2B	0.2	0.5	4.9	1.6	F1-3	75*150*117
	FR150-2S-0.4B	0.4	1.0	6.5	2.5		
	FR150-2S-0.7B	0.75	1.5	9.3	4.2		
	FR150-2S-1.5B	1.5	3.0	15.7	7.5	F1-4	93*171*130
	FR150-2S-2.2B	2.2	4.0	24	9.5		
380VAC 3~	FR150-4T-0.7B	0.75	1.5	3.4	2.5	F1-3	75*150*117
	FR150-4T-1.5B	1.5	3.0	5.0	4.2		
	FR150-4T-2.2B	2.2	4.0	5.8	5.5	F1-4	93*171*130
	FR150-4T-4.0B	4	6.0	11	9.5		



Three Phase 550V 0.75kW~400kW
 Three Phase 690V 5.5kW~630kW

Applications

FR600 Series Vector Control Inverter is with good performance and high reliability. Its customized and industry-oriented design could better meet the demand of high-end and midrange applications. It has been widely used in metallurgy, Crane, Petro, Chemical and Mining industries etc.



High Performance SVC Control Mode

- Speed Control Accuracy : $\pm 0.5\%$
- Speed Control Range : 1:100
- Torque Control Response time : $< 200\text{ms}$
- Starting Torque : 180% Rated Torque/0.5Hz

Excellent Master-Slave Control

- Power balance for multi-motors to extend life of motor

Rich Autotuning Function

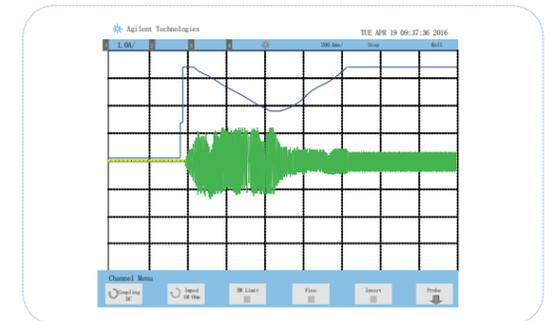
- Rotary Autotuning
- Static Autotuning

Multi I/O Interface

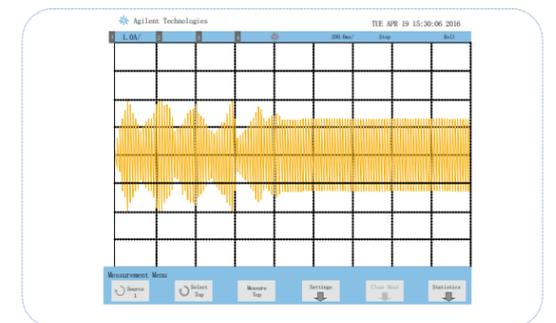
- 7 channels programmable digital input, one of them support high speed pulse input
- 3 channels analog input, two of them support 0~10V or 0~20mA choice, one of them support -10V~+10V
- 2 channels programmable relay output
- 2 channels programmable collector output
- 2 channels programmable analog output
- 1 channel support MODBUS-RTU standard RS-485 interface
- 1 channel 24V power, max output current 200mA
- 1 channel 10V power, max output 10mA

Multi-protection

- Built-in Motor protection, Over Current Protection, Over Voltage Protection, Over Temperature Protection, Ground Protection and so on



Speed tracing output frequency and Current Oscillogram



Oscillation Suppression Oscillogram

Model No. and Electric Spec

FR600 - 6 T - 075

- Motor Power
075:75kW
- Input Voltage Phase
T: Three Phase
- Input Voltage Level
5:550V
6:690V
- Inverter Series

Main Power Voltage	Model No.	Motor Power (kW)	Power Capacity (kVA)	Input Current (A)	Output Current (A)	Size of the Case	Dimension (W*H*D) (mm)
Three Phase 550VAC	FR600-5T-011	11	20	21	20	F6-1	270*545*270
	FR600-5T-015	15	28	30	28		
	FR600-5T-018	18.5	35	37	35		
	FR600-5T-022	22	40	42	40		
	FR600-5T-030	30	52	55	52	F6-2	355*620*290
	FR600-5T-037	37	64	68	65		
	FR600-5T-045	45	77	82	77		
	FR600-5T-055	55	97	103	98		
	FR600-5T-075	75	125	130	124	F6-3	430*825*305
	FR600-5T-090	90	148	157	150		
	FR600-5T-110	110	178	189	180		
	FR600-5T-132	132	217	231	220		
	FR600-5T-160	160	257	273	260	F6-4	660*1030*359
	FR600-5T-185	185	297	315	300		
	FR600-5T-200	200	326	346	330		
	FR600-5T-220	220	356	378	360		
	FR600-5T-250	250	410	435	414	F6-5	810*1167*460
	FR600-5T-280	280	452	480	458		
	FR600-5T-315	315	505	535	510		
	FR600-5T-355	355	565	600	573		
FR600-5T-400	400	632	670	646			

690VAC	FR600-6T-015	15	27	23	20	F6-1	270*545*270
	FR600-6T-018	18.5	35	30.0	25		
	FR600-6T-022	22	37	35.0	28		
	FR600-6T-030	30	43	40.0	35		
	FR600-6T-037	37	51	47.0	45	F6-2	355*620*290
	FR600-6T-045	45	65	52.0	52		
	FR600-6T-055	55	80	67.0	65		
	FR600-6T-075	75	93	82.0	86		
	FR600-6T-090	90	123	96.0	98	F6-3	430*825*305
	FR600-6T-110	110	147	120.0	124		
	FR600-6T-132	132	166	145.0	150		
	FR600-6T-160	160	229	175.0	180		
	FR600-6T-185	185	236	190.0	200	F6-4	660*1030*359
	FR600-6T-200	200	258	210.0	220		
	FR600-6T-220	220	286	235.0	245		
	FR600-6T-250	250	316	255.0	270		
	FR600-6T-280	280	346	290.0	300	F6-5	810*1167*460
	FR600-6T-315	315	367	335.0	350		
	FR600-6T-355	355	454	370.0	390		
	FR600-6T-400	400	488	415.0	430		
FR600-6T-450	450	559	460	480			
FR600-6T-500	500	645	520	540			
FR600-6T-560	560	660	580	600			
FR600-6T-630	630	812	655	680			

Technical Parameters

Main Power	Input Voltage	Three Phase 690VAC (-30% ,+10%)	Three Phase 550VAC (-30% ,+10%)
	Input Frequency	50/60Hz	
Motor Connections	Output Voltage	0VAC ~ Uin	
	Output Frequency	0Hz ~ 600Hz	
	Frequency Resolution	0.01Hz	
	Overload Capacity	150% 1 min, 180% 10s, 200% 1s	
Control Characteristic	Control Mode	V/F Control, No PG Vector Control 1, No PG Vector Control 2, With PG Vector Control	
	Carrier Frequency	0.7kHz ~ 16kHz	
	Acce Time	0.1s ~ 6000.0s	
	Dece Time	0.1s ~ 6000.0s	
	Torque Boost	Auto torque boost, manually torque boost 0.1	
	DC Brake	DC Brake Frequency: 0~Max Frequency; Brake Time: 0.0 ~ 10.0s; Brake Action Current Value: 0.0~ 150.0%	

Special Purpose Inverter



- SY380 Series** Voltage Boosting Inverter Single-phase 220V to Three-phase 380V
- FR500B Series** Crusher special Inverter
- FR500L Series** Special Purpose Inverter for Wire Drawing Machine
- FR500H Series** Special Purpose Inverter for Multi-pumps Water Supply
- FR500D Series** Special Purpose Inverter for Elevator
- FR500S Series** Special Purpose Inverter for High Frequency
- FR500F Series** Special Purpose Inverter for Textile Machine
- FR500KFJ Series** Special Purpose Inverter for Open-frame
- CT500 Series** Demagnetizing machine dedicated Inverter



SY380 Series
Voltage Boosting Inverter
Single-phase 220V to
Three-phase 380V



Single Phase 220V 4kW ~ 22kW

- More compact and with lower cost compared with the transformer scheme
- Rich functions as general converter
- Multiple protections
- Derating design of components thus assure long life and high reliability of the product

Applications

SY380 series dedicated inverter is specialized in the occasions that with only civil power grid (220 VAC) and motor voltage is 380 VAC; no need to add the transformer, customer can easily drive 380 VAC motor with this model.





FR500B Series
Crusher special Inverter



Three phase 380V 15kW ~ 630kW

- ⦿ Independent PID adjustment controller
- ⦿ Fast speed response
- ⦿ Stable speed adjustment

Applications

FR500B series crusher inverter, is a special-purpose inverter developed on the basis of the core algorithm of FR500 inverter and the application requirements of the crusher. Widely used in the mining, road, railway, and water conservancy industries.



FR500L Series
Special Purpose Inverter
for Wire Drawing Machine



Three Phase 380V 0.75kW ~ 132kW

- ⦿ **Macro applications**
Provides different kinds of macro applications according to the solution
- ⦿ **Compact structure**
Can be installed side by side
- ⦿ **Multi purpose device**
Can drive different kinds of Wire drawing machine: water tank type wire drawing host, water tank type wire winding machine, Straight Drawing Machine
- ⦿ **Not broken wire starting at any position**
system can start up at any position of balance bar
- ⦿ **Constant tension**
Tension Balance bar keeps in center of the balance bar in any case

Applications

FR500L series special purpose inverter is designed specially for wire drawing machine, based on the core control arithmetic of FR500 vector control inverters and combined with the control requirements of wire drawing machine application. Starting is available on any position of lower-limit, point zero or upper-limit on tension rod.





FR500H Series
Special Purpose Inverter
for Multi-pumps Water Supply

Three Phase 380V 0.75kW ~ 400kW

FR500H series special purpose inverters are developed for multi-pump constant voltage watersupply, based on the core control arithmetic of FR500 vector control inverters, combined with the control requirements of multi-pump constant voltage watersupply application.

Featured with the multi-pump watersupply and watertreatment function of living district and municipal engineering, the inverters can achieve the flexible setting of industry-frequency pump, variable frequency pump, dormancy pump and blow-down pump, and auto-control switch according to the system status, also achieve timing constant voltage watersupply, dormancy control, blow down control, timing turn-switch control, featured with perfect tank liquid level, tube pressure detection and protection.



Applications



FR500D Series
Special Purpose Inverter
for Elevator

Three Phase 380V 4.0kW ~ 75kW

- ⊙ Can drive AC three-phase asynchronous motor and AC permanent magnet synchronous motor
- ⊙ Support open loop and close loop control
- ⊙ Specific S curve and no sense weighing functions
- ⊙ Starts/stops with no shaking, comfortable and accurate leveling
- ⊙ Unique short floor function
- ⊙ Emergency operation mode supported by UPS power.
- ⊙ Built-in elevator dedicated brake logic control



Applications

FR500D series special purpose inverter, are developed for elevator, based on the core control arithmetic of FR500 vector control inverters, combined with the control requirements of elevator application.





FR500S Series
Special Purpose Inverter
for High Frequency

Three Phase 380V 0.75kW ~ 400kW

- ⊙ Adjustable within 0Hz~2000Hz;
- ⊙ Stable current, no speed fluctuation, high frequency and high torque;
- ⊙ Quick start and stop, good current waveform, high precision;
- ⊙ Perfect protection functions: input/output default phase protection, short circuit protection, over current protection, overload protection etc;
- ⊙ Quick torque speed, small volume, lightweight, low material consumption, low noise, low vibration etc.



Applications

Frecon independent R&D inverter FR500S series high frequency motor drive Inverter with max. 2000Hz output, could satisfy the electric spindle field very well, such as the customers' demands in the field of engraving machine, computer engraving machine, CNC engraving machine, precision grinding machine etc.



FR500F Series
Special Purpose Inverter
for Textile Machine

Three Phase 380V 0.75kW ~ 400kW

- ⊙ Compact structure design, small size, reliable performance;
- ⊙ 16 segments speed and running time can be set freely;
- ⊙ Function of brown-out recording and wobulation;
- ⊙ Arbitrary combination setting of Multi frequency input channels;
- ⊙ Support step by step operation mode and linear operation mode;
- ⊙ Wide voltage input function, adaptable to factory environment.
- ⊙ Automatic/manual torque boost mode, provide low frequency and high torque



Applications

Response to market demands, FRECON published a new product FR500F Series Textile machine Inverter, applying advanced current vector control technology and adopting high performance power module and DSP chips, it meets the high stability and accuracy requirements of voltage and frequency output. The brand-new production technology and complete testing equipment ensured the stability and reliability of product application.





FR500KFJ Series Special Purpose Inverter for Open-frame

Three Phase 380V 18.5kW ~ 400kW

- ① Customized construction
Supply customized service: users can design the product appearance according to actual situation, consistent with the overall style of equipment
- ② Supply OEM service, reduce the cost for customers
- ③ Ultra-thin design, save thickness space up to 20%~50%
- ④ Intermediate compartment installation, suit for safty isolation between heat source and electric system
- ⑤ Function and performance are the same with FR500 series
- ⑥ Protection grade: IP00, users must install with electrical control cabinet



Applications

Response to marketing requirements, FRECON published FR500KFJ series open frame inverter, composed by chips and radiators, the function and performance are similar with FR500.



CT500 Series Demagnetizing machine dedicated Inverter

Three phase 380V 11kW ~ 90kW

- ① The whole circuit design is based on high-power devices
- ② High performance large capacity capacitor energy storage device
- ③ Fast thyristor electronic switch
- ④ Stable current output



Applications

CT500 is a dedicated inverter for charging and demagnetizing machines. It is designed for charging and demagnetizing various magnetic materials. Applicable to various types of ferrite, neodymium iron boron, aluminum nickel cobalt, samarium cobalt, plastic magnetic charge and demagnetization, can be used with a variety of charging and demagnetizing coils, magnetizing various magnets, so that it has the basics of never demagnetizing characteristic. The whole circuit design is based on high-power devices, high-performance large-capacity capacitors are energy storage devices, fast thyristors are electronic switches, and stable current output.



Solar pumping inverter

PV150&500 series PV Pumping Inverter
SPS500 series PV Pumping Inverter



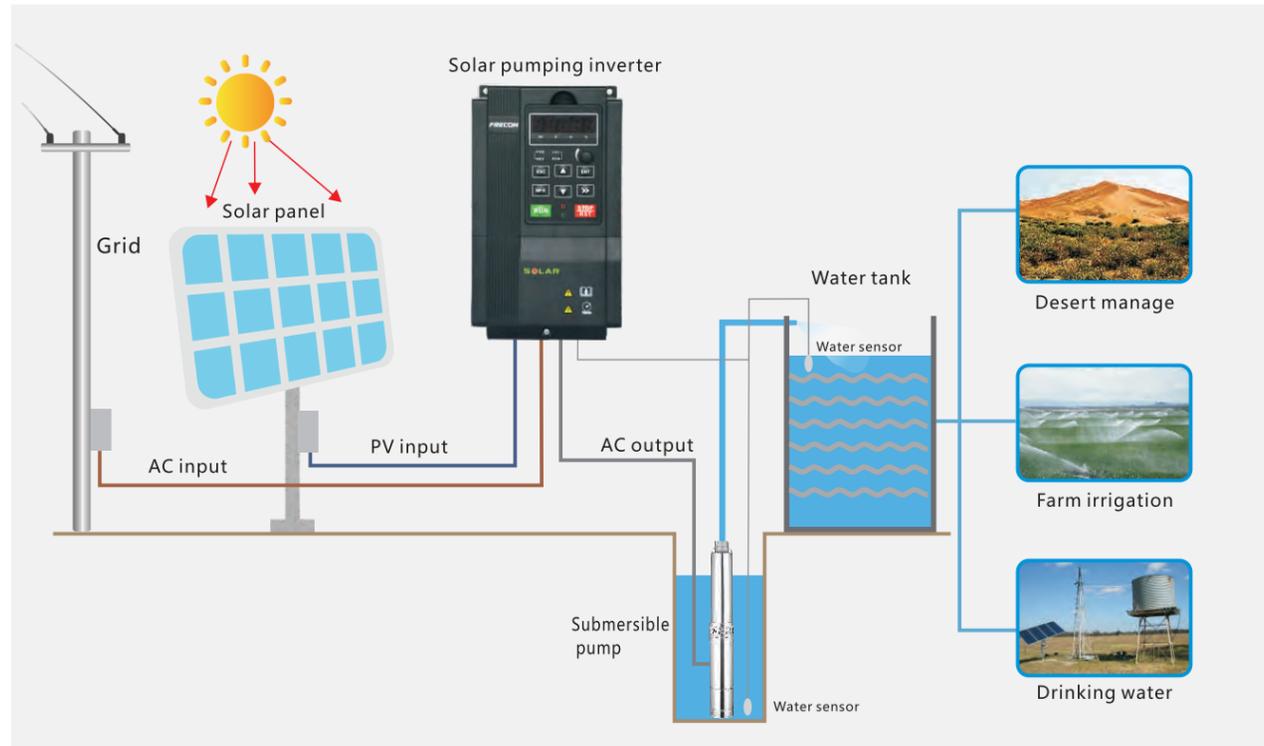
DC 80V~450V 0.2kW~75kW
DC 230V~800V 0.75kW~200kW

Applications

PV150&500 Series special inverters are developed for outdoor PV power supply of water pumps, based on the core control arithmetic of FR150&500 vector control inverters and combined with the control requirements of PV water pump application. The MPPT, dormant at weak light, wake up at strong light, high water level dormant, under-load pre-warning and other control protection functions can ensure normal operation of water pumps according to the customers' requirements to switch to the grid power supply.



Solar Pumping System Diagram



PV Series

- Application**
 - Applicable to AM, PMSM, BLDC etc.
- Advanced MPPT algorithms**
 - Efficiency reaches 99%
- Hybrid power supply**
 - Support solar power DC/Power grid AC input, and DC/AC auto switch
- Dormancy and Wake-up function**
 - Inverter will entry dormancy mode and wake up automatically according to sunshine intensity
- Built-in protection**
 - Support over-current, over-voltage, phase loss, short circuit, over-temperature and etc. protection
- Eco-friendly**
 - Operation without battery
- Large water yield**
 - Larger water yield under same condition
- Water level control**
 - Dry run protection, tank water level control
- Recording functions**
 - Recording for total power generated (Kw/h), water flow(m3), and operation time(H)
- Options**
 - DC boost module**
 - 0.4~2.2Kw models can be configured with DC boost module to reduce quantity of solar panel
 - GPRS module**
 - All models can be configured with GPRS module for real-time remote monitoring and operation in WEB

Technical Specification

Model	Rated Output Current(A)	Output Frequency(Hz)	DC Input Voltage Range(V)	Recommended Solar Power (KW)	Recommended Solar Open Circuit Voltage(VOC)	Pump Power(kW)
1S model: DC input 70-450V, AC input 1 phase 110-220V; Output 3 phase 110VAC						
PV150-1S-1.5B	7.5	0-600	70-450	0.8	170-300	0.4
PV150-1S-2.2B	9.5	0-600	70-450	1.5	170-300	0.75
2S model: DC input 70-450V, AC input 1 phase 220V (-15%~20%); Output 1 phase / 3 phase 220VAC						
PV150-2S-0.4B	2.5	0-600	70-450	0.8	360-430	0.4
PV150-2S-0.7B	4.2	0-600	70-450	1.5	360-430	0.75
PV150-2S-1.5B	7.5	0-600	70-450	1.9	360-430	1.5
PV150-2S-2.2B	9.5	0-600	70-450	2.8	360-430	2.2
4T model: DC input 230-800V, AC input 3 phase 380V (-15%~30%); Output 3 phase 380VAC						
PV150-4T-0.7B	2.5	0-600	230-800	1	600-750	0.75
PV150-4T-1.5B	4.2	0-600	230-800	1.9	600-750	1.5
PV150-4T-2.2B	5.5	0-600	230-800	2.8	600-750	2.2
PV500-4T-4.0B	9.5	0-600	230-800	5	600-750	4.0
PV500-4T-5.5B	13	0-600	230-800	6.9	600-750	5.5
PV500-4T-7.5B	17	0-600	230-800	9.4	600-750	7.5
PV500-4T-011B	25	0-600	230-800	13.8	600-750	11
PV500-4T-015B	32	0-600	230-800	18.8	600-750	15
PV500-4T-018B	37	0-600	230-800	23.2	600-750	18.5
PV500-4T-022B	45	0-600	230-800	27.5	600-750	22
PV500-4T-030B	60	0-600	230-800	37.5	600-750	30
PV500-4T-037	75	0-600	230-800	46.3	600-750	37
PV500-4T-045	91	0-600	230-800	56.3	600-750	45
PV500-4T-055	112	0-600	230-800	68.8	600-750	55
PV500-4T-075	150	0-600	230-800	93.8	600-750	75
PV500-4T-090	176	0-600	230-800	112.5	600-750	90
PV500-4T-110	210	0-600	230-800	137.5	600-750	110
PV500-4T-132	253	0-600	230-800	165	600-750	132
PV500-4T-160	304	0-600	230-800	200	600-750	160
PV500-4T-185	350	0-600	230-800	231.3	600-750	185
PV500-4T-200	377	0-600	230-800	250	600-750	200



SPS500 Series PV Pumping Inverter

DC 450V~800V 0.75KW~5.5KW



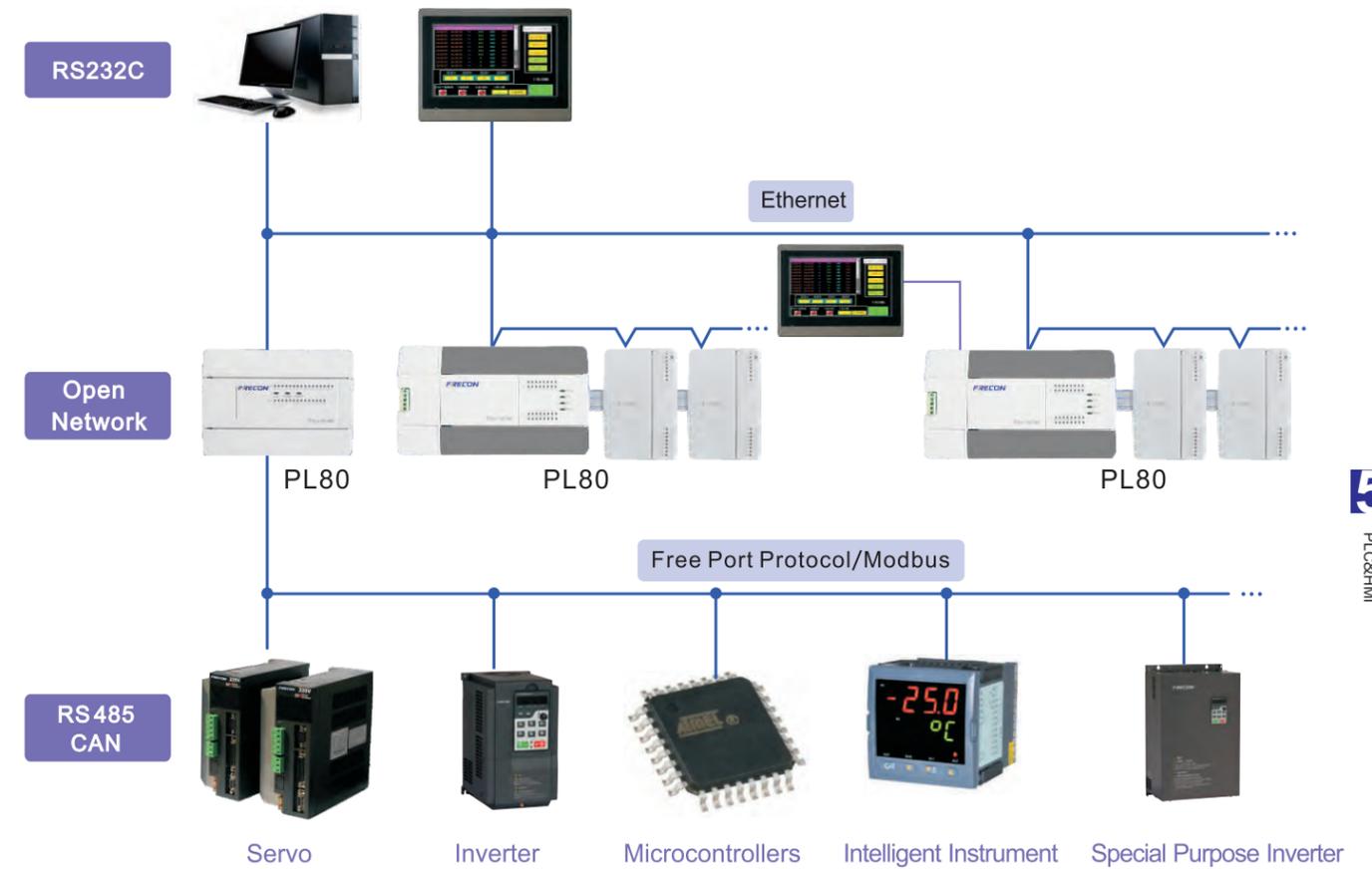
- Applicable to AM, PMSM, BLDC etc
- Dynamic VI MPPT algorithm, efficiency higher than 99%
- Supporting soft start function of pump, have complete motor protection function
- Each input is equipped with anti-reverse circuit
- Protection grade: IP65, can be installed directly outdoors, no need be installed in cabinet
- Operating temperature -20~+60c
- Low power(KW) models built-in with voltage boost modules, enable flexible configuration of solar panels
- Optional upper and lower water level monitoring float to prevent overflow and dry pumping
- Optional solar/ grid power supply complementary input, to meet 24-hour work requirements
- Optional RS485/GPRS modules to realize remote monitoring. Support mobile App

Applications

SPS500 and photovoltaic pump machine is on the basis of PV500 photovoltaic water pump frequency converter, combining with the market requirement, the application of photovoltaic pump developed a outdoor specifically for photovoltaic (pv) power supply pump all-in-one. Mainly used in agricultural irrigation, water supply system, etc.



PLC & HMI



Optional Spare Parts



Brake Unit, Brake Resistance

Voltage Level	Motor Power	Brake Unit	Brake Resistance (ED=10%、100% Brake Torque)	
			Resistance Value	Qty.
Three Phase 380V	0.75kW	Built-in	360Ω/200W	1
	1.5kW	Built-in	360Ω/200W	1
	2.2kW	Built-in	180Ω/400W	1
	4.0kW	Built-in	180Ω/400W	2
	5.5kW	Built-in	60Ω/1000W	1
	7.5kW	Built-in	60Ω/1000W	1
	11kW	Built-in	30Ω/2000W	1
	15kW	Built-in	30Ω/2000W	1
	18.5kW	Built-in	30Ω/2000W	1
	22kW	Built-in	30Ω/2000W	2
	30kW	Built-in	30Ω/2000W	2
	37kW	Built-in Optional or FRBU-4T-045	30Ω/2000W	2
	45kW	Built-in Optional or FRBU-4T-045	30Ω/2000W	3
	55kW	Built-in Optional or FRBU-4T-132	30Ω/2000W	4
	75kW	Built-in Optional or FRBU-4T-132	30Ω/2000W	4
	90kW	FRBU-4T-132	13.6Ω/9600W	2
	110kW	FRBU-4T-132	20Ω/6000W	3
	132kW	FRBU-4T-132	20Ω/6000W	4
	160kW	FRBU-4T-315	13.6Ω/9600W	4
	185kW	FRBU-4T-315	13.6Ω/9600W	4
200kW	FRBU-4T-315	16Ω/9600W	5	
220kW	FRBU-4T-315	16Ω/9600W	5	
250kW	FRBU-4T-315	16Ω/9600W	5	
280kW	FRBU-4T-315	16Ω/9600W	6	
315kW	FRBU-4T-315	16Ω/9600W	6	

Filter

The Inverter	Input Filter	Output Filter
0.75kW	FLT-4T-P005	FLT-4T-L005
1.5kW		
2.2kW	FLT-4T-P010	FLT-4T-L010
4.0kW		
5.5kW	FLT-4T-P020	FLT-4T-L020
7.5kW		
11kW	FLT-4T-P036	FLT-4T-L036
15kW		
18.5kW	FLT-4T-P065	FLT-4T-L065
22kW		
30kW		
37kW	FLT-4T-P100	FLT-4T-L100
45kW		
55kW	FLT-4T-P150	FLT-4T-L150
75kW		
90kW	FLT-4T-P250	FLT-4T-L250
110kW		
132kW		
160kW	FLT-4T-P400	FLT-4T-L400
185kW		
200kW		
220kW	FLT-4T-P600	FLT-4T-L600
250kW		
280kW		
315kW	FLT-4T-P900	FLT-4T-L900
355kW		
400kW		
450kW		
500kW	FLT-4T-P1200	FLT-4T-L1200
560kW		
630kW		

Note: The input EMI meet the requirement of C2 after adding input filters.

Reactor

The Inverter	Input Reactor	DC Reactor	Output Reactor
2.2kw	ACL-4T-2.2	/	OCL-4T-2.2
4.0kw	ACL-4T-4.0	/	OCL-4T-4.0
5.5kw	ACL-4T-5.5	/	OCL-4T-5.5
7.5kw	ACL-4T-7.5	/	OCL-4T-7.5
11kw	ACL-4T-011	/	OCL-4T-011
15kw	ACL-4T-015	/	OCL-4T-015
18.5kw	ACL-4T-018	/	OCL-4T-018
22kw	ACL-4T-022	/	OCL-4T-022
30kw	ACL-4T-030	/	OCL-4T-030
37kw	ACL-4T-037	/	OCL-4T-037
45kw	ACL-4T-045	/	OCL-4T-045
55kw	ACL-4T-055	/	OCL-4T-055
75kw	ACL-4T-075	/	OCL-4T-075
90kw	ACL-4T-090	/	OCL-4T-090
110kw	ACL-4T-110	Optional external	OCL-4T-110
132kw	ACL-4T-132	Optional external	OCL-4T-132
160kw	ACL-4T-160	Optional external	OCL-4T-160
185kw	ACL-4T-185	Optional external	OCL-4T-185
200kw	ACL-4T-200	Optional external	OCL-4T-200
220kw	ACL-4T-220	Optional external	OCL-4T-220
250kw	ACL-4T-250	Optional external	OCL-4T-250
280kw	ACL-4T-280	Optional external	OCL-4T-280
315kw	ACL-4T-315	Optional external	OCL-4T-315
355kw	ACL-4T-355	Optional external	OCL-4T-355
400kw	ACL-4T-400	Optional external	OCL-4T-400
450kw	ACL-4T-450	Optional external	OCL-4T-450
500kw	ACL-4T-500	Optional external	OCL-4T-500
560kw	ACL-4T-560	Optional external	OCL-4T-560
630kw	ACL-4T-630	Optional external	OCL-4T-630

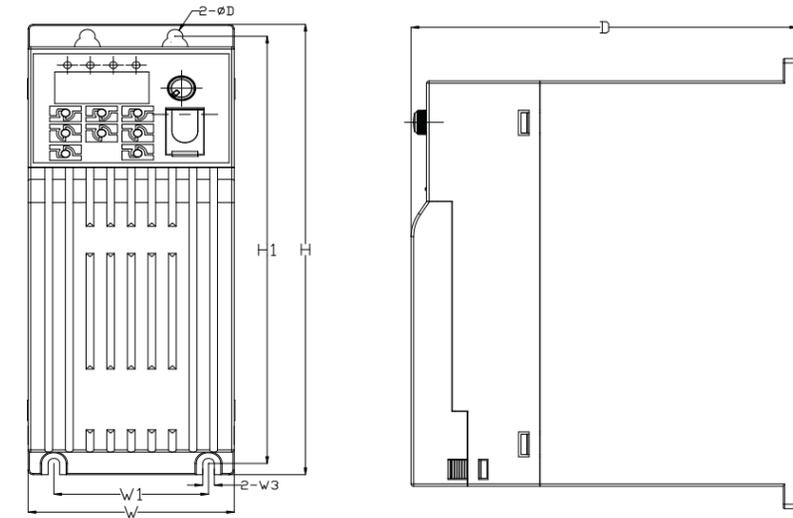
Note: The input EMI meet the requirement of C2 after adding input filters.

Built-in Optional Cards

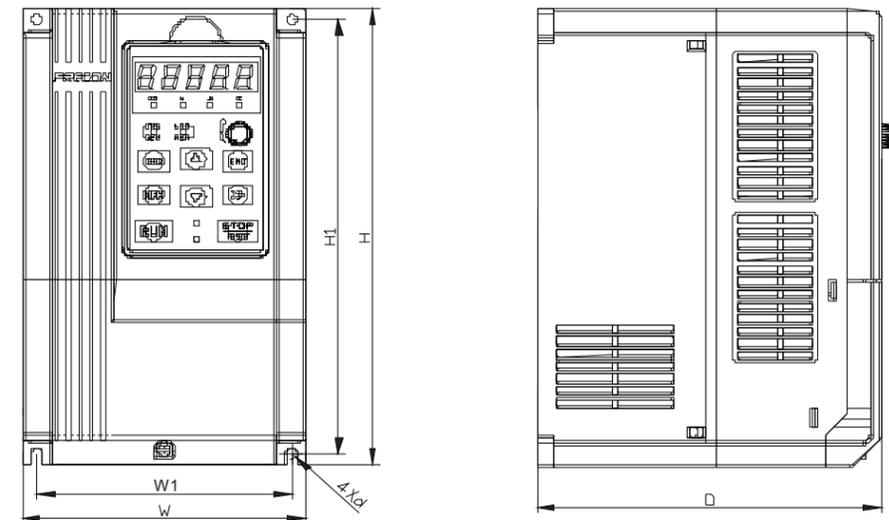
Type	Name	Order No.	Functions
PG Speed Control Card	The differential input incremental encoder interface	EXC-PG01	1.A+/A-, B+/B-, Z+/Z- Pulse Input 2.Max Input Frequency : 300KHz 3.PG Power Output:+5V, Max Current 200mA
	OC, Push input incremental encoder interface	EXC-PG02	1.A、 B、 Z Pulse Input 2.Max Input Frequency : 100KHz 3.PG Power Output:+12V, Max Current 200mA
	Rotate transformer encoder interface	EXC-PG03	Supply Rotate Transformer Encoder Interface, Include pumping signal EXC+/- and feedback signal SIN+/-、 COS+/-,10KHz
	UVW incremental encoder interface	EXC-PG04	1.U、 V、 W pulse input 2.Max input frequency:200KHz 3.PG power output:+5V,max current 100mA.
	ENDAT2.2 type encoder interface	EXC-PG05	Provide ENDAT2.2 type encoder interface Support HEIDENHAIN ECN1313 Rotate Transformer Encoder
	Sine and cosine encoder interface	EXC-PG06	HEIDENHAIN ERN 1387 suitable machine 1.Max Input Frequency : 20KHz 2.PG Power Output : +5V, Max Current200mA
Communication Optional Card	PROFIBUS-DP Communication Interface	EXC-COM01	Communication with upper controller PROFIBUS-DP, to use for inverters' run/stop, parameter setting/view or monitor
	CANopen communication interface (developping)	EXC-COM02	Communication with upper controller CAN-OPEN, to use for inverters' run/stop, parameter setting/view or monitor
	DeviceNet communication interface (developping)	EXC-COM03	Communication with upper controller DeviceNet, to use for inverters' run/stop, parameter setting/view or monitor
	Ethernet/IP communication interface (developping)	EXC-COM04	Communication with upper controller Ethernet, to use for inverters' run/stop, parameter setting/view or monitor
Others	Injection moulding machine Expansion card	EXC-PM1	Support 2 channels analog input, current input range: 0-1A and 0-2A optional
	Upload/Download Card	EXC-COP1	1. Support upload/download parameters 2. Max transmission frequency : 100KHz 3. Parameters can be viewed and modified by USB power supply
	LED Keypad	*	Five digital tube display interface and function operation button
	LCD Keypad	*	Chinese, English and Russian version display interface and function operation button
	keypad extension cord	*	To remote control by extending the operating keypad

Product Installation Dimension

R0~R12 Structure Dimension Diagram



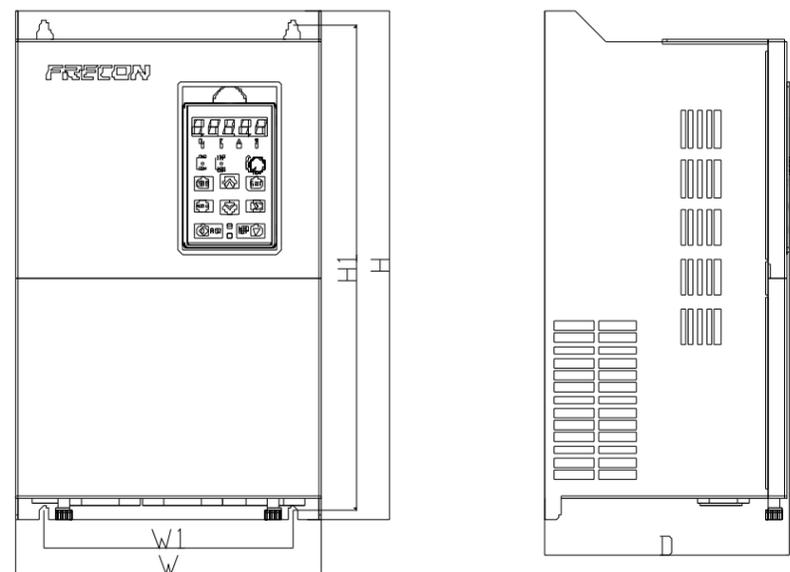
◆0.7~2.2KW dimensions and wall mounting dimensions



◆4~22KW dimensions and wall mounting dimensions

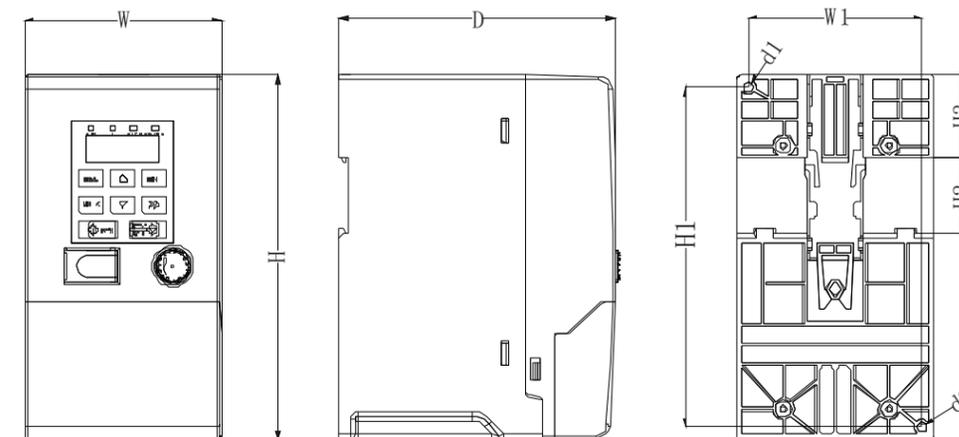
Appendix

Product Installation Dimension



◆ 30~450KW dimensions and wall mounting dimensions

F1-3~F1-4 Structure Dimension Diagram

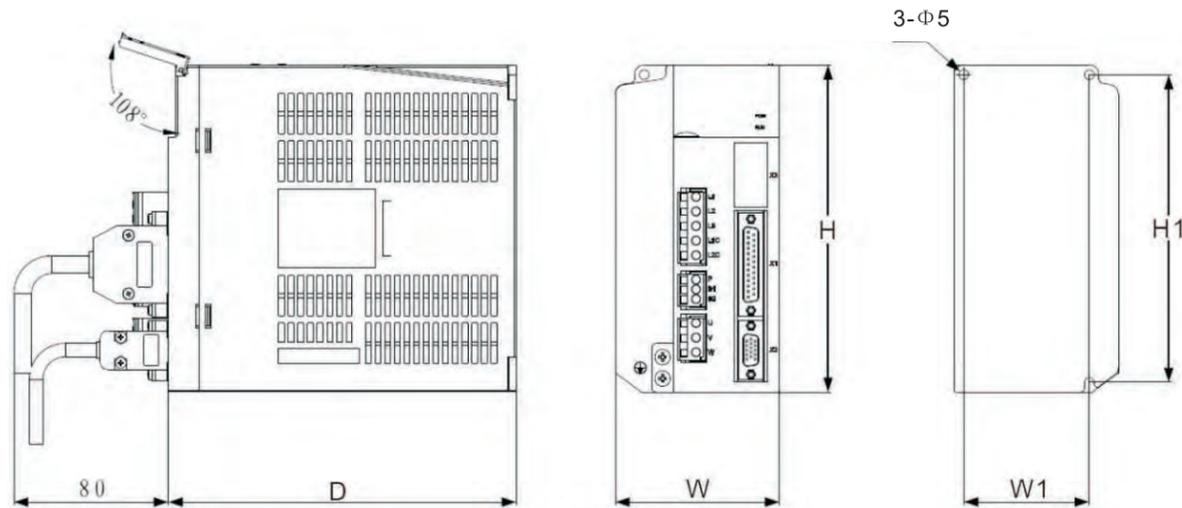


Size of the case	External and installation dimensions (mm)		
	W	H	D
R0	80	200	150
R1	116.6	186.6	175
R2	146	249	177
R3	198	300	185
R4	245	410	200
R5	275	470	215
R6	310	620	262
R7	310	650	350
R8	400	750	300
R9	500	855	320
R10	540	924.5	380
R11	620	996	390
R12	700	1025.5	390

Size of the case	External and installation dimensions (mm)								Weight (kg)	
	W	H	D	W1	H1	H2	H3	Mounting Hole Diam d1		Mounting Hole Diam d2
F1-3	75	150	117	65	140	35	38.5	4.5	4.5	0.85
F1-4	93	171	130	82	160	35	39	4.5	4.5	1.35

Product Installation Dimension

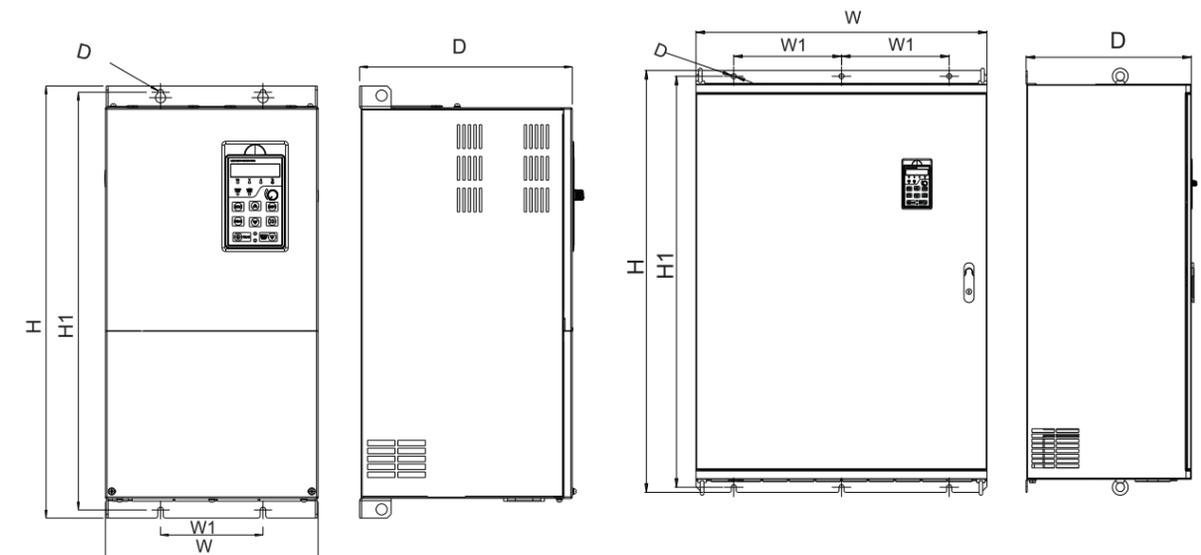
S1-1~S1-11 Structure Dimension Diagram



Size of the case	External and installation dimensions (mm)					
	W	W1	H	H1	D	Mounting Hole Diameter
S1-1	55	/	168	158	150	5
S1-2	65	55	168	158	150	5
S1-3	85	65	168	158	180	5
S1-4	95	65	168	158	180	5
S1-5	95	65	200	189	180	5
S1-6	105	94	220	209	180	5
S1-7	115	104	250	239	210	5
S1-8	95	65	168	158	180	5
S1-9	95	65	200	189	180	5
S1-10	105	94	220	209	180	5
S1-11	115	104	250	239	210	5

Product Installation Dimension

F6-1~F6-6 Structure Dimension Diagram



Size of the case	External and installation dimensions (mm)					
	W	W1	H	H1	D	Mounting Hole Diameter
F6-1	270	130	545	527	270	7
F6-2	357	230	620	602	290	7
F6-3	430	320	825	798	305	12
F6-4	660	230	1030	1000	359	14
F6-5	810	300	1167	1137	460	14

