

FR20 Series

General Vector Inverter



FRECON



ABOUT US

FRECON Electric (Shenzhen) Co., Ltd. is a national key high-tech enterprise, a dual-soft enterprise in Shenzhen, and a professional company in the fields of industrial automation, high efficiency and energy saving, and green new energy which was founded in 2013. We have more than 16 years of experience in the development and application of frequency converters, servo drives, energy-saving control cabinets, solar inverter systems etc.





FR20 Series Summary

FR20 series general-purpose inverter is a product developed by FRECON Electric for mid-to-high-end market applications. The entire series has built-in DC reactors, embedded SVC and VF control methods, and supports synchronous / asynchronous motor drive methods. It can be widely used in applications with high requirements for speed control accuracy, torque response speed, and low-frequency output characteristics.

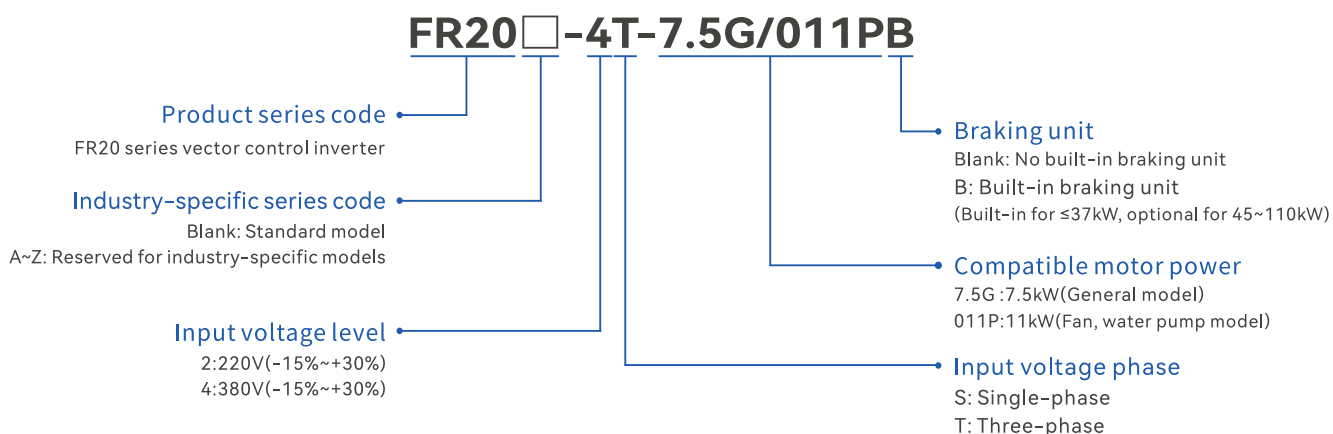


Features

- Built-in DC reactor
- Built-in brake unit
- Built-in STO function
- Supports common DC bus solution
- Support parameter copy Keypad
- Independent air duct design
- Supports through-wall installation

*Optional USB port (upgrade program, host computer)

Model Description



Features

Built-in DC reactor

- Improve the power factor: more energy - saving.
- Strong anti - shock ability: extend the service life.
- Suppress harmonics: balance the voltage fluctuation and make the output current more stable.

Built-in safe torque Stop function(STO)

- Stop the transmission in dangerous situations.
- Anti-error start switch.

High reliability design

- PCB three - proof paint coating, high adaptability to harsh environments.
- The independent air duct is designed to effectively prevent dust from entering the interior of the frequency converter, causing faults such as short - circuit and improve reliability.
- Select a cooling fan with long service life and large air volume to effectively reduce the temperature rise of the frequency converter and ensure its reliable and stable operation.

Speed tracking function

- In cases where rapid start - up is required, the frequency converter can achieve a smooth and non - impact start of the motor according to the current running direction and rotational speed of the motor.

V/F fully separated and semi-separated operation

- It can automatically carry out current compensation under heavy load to achieve a constant output voltage and meet the application requirements of the power supply industry.

Convenient debugging

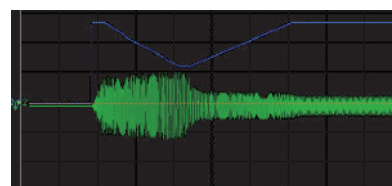
- Powerful background software
- Dedicated upload and download module, convenient parameter debugging, backup
- Develop dedicated application macros based on industry needs

Oscillation suppression function

- When the motor oscillation is detected, the output voltage is automatically fine-tuned. And the frequency makes the motor run smoothly



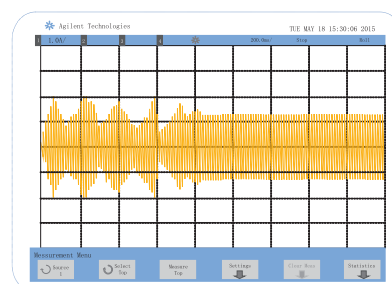
Electric reactor



Speed tracking output frequency and current waveform



Background software



Waveform diagram of oscillation suppression

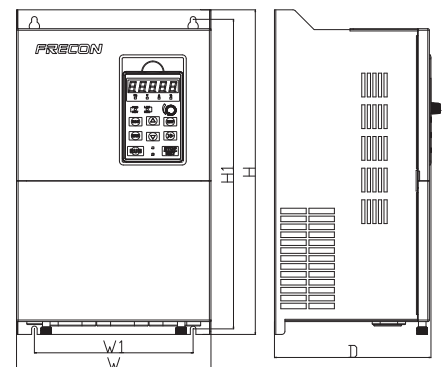
Electric Specification

Model	Power Capacity (KVA)	Rated input current (A)	Rated output current (A)	Adapted Motor	
				kW	HP
Three phase: 380V, 50/60Hz Range: -15% ~ +30%					
FR20-4T-5.5G/7.5PB-H	8.9	14.6	13	5.5	7.5
FR20-4T-7.5G/011PB-H	11	20.5	17	7.5	10
FR20-4T-011G/015PB-H	17	26	25	11	15
FR20-4T-015G/018PB-H	21	35	32	15	20
FR20-4T-018G/022PB-H	24	38.5	37	18.5	25
FR20-4T-022G/030PB-H	30	46.5	45	22	30
FR20-4T-030G/037PB-H	40	62	60	30	40
FR20-4T-037G/045PB-H	57	76	75	37	50
FR20-4T-045G/055P(B)-H	69	92	91	45	60
FR20-4T-055G/075P(B)-H	85	113	112	55	70
FR20-4T-075G/090P(B)-H	114	157	150	75	100
FR20-4T-090G/110P(B)-H	134	186	176	90	125
FR20-4T-110G/132P(B)-H	160	220	210	110	150
FR20-4T-132G/160P-H	192	260	253	132	175
FR20-4T-160G/185P-H	231	310	304	160	210
FR20-4T-185G/200P-H	240	355	350	182	250
FR20-4T-200G/220P-H	250	382	377	200	260

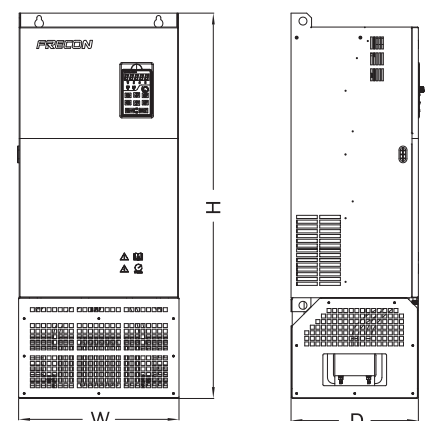
Note: For general-model products with power rating of 37kW and below, the braking unit is built-in; for 45kW to 110kW, the built-in braking unit is available as an option.

Installation Dimensions

Model	External and installation dimensions(mm)					
	W	W1	H	H1	D	Installation hole
Three phase: 380V, 50/60Hz Range: -15% ~ +30%						
FR20-4T-5.5G/7.5PB-H						
FR20-4T-7.5G/011PB-H	155	110	432	418	214	7
FR20-4T-011G/015PB-H						
FR20-4T-015G/018PB-H						
FR20-4T-018G/022PB-H	195	150	473	460	210.2	7
FR20-4T-022G/030PB-H						
FR20-4T-030G/037PB-H						
FR20-4T-037G/045PB-H	250	200	483	461	227	7
FR20-4T-045G/055P(B)-H						
FR20-4T-055G/075P(B)-H	310	200	545	523.5	260	7
FR20-4T-075G/090P(B)-H						
FR20-4T-090G/110P(B)-H	338	270	583	561.3	308.8	9.5
FR20-4T-110G/132P(B)-H						
FR20-4T-132G/160P-H	312.4	/	920	/	352.4	Floor mounting
FR20-4T-160G/185P-H	403	/	968	/	320	
FR20-4T-185G/200P-H	500	/	1221	/	370	
FR20-4T-200G/220P-H						



5.5-110kW structure diagram

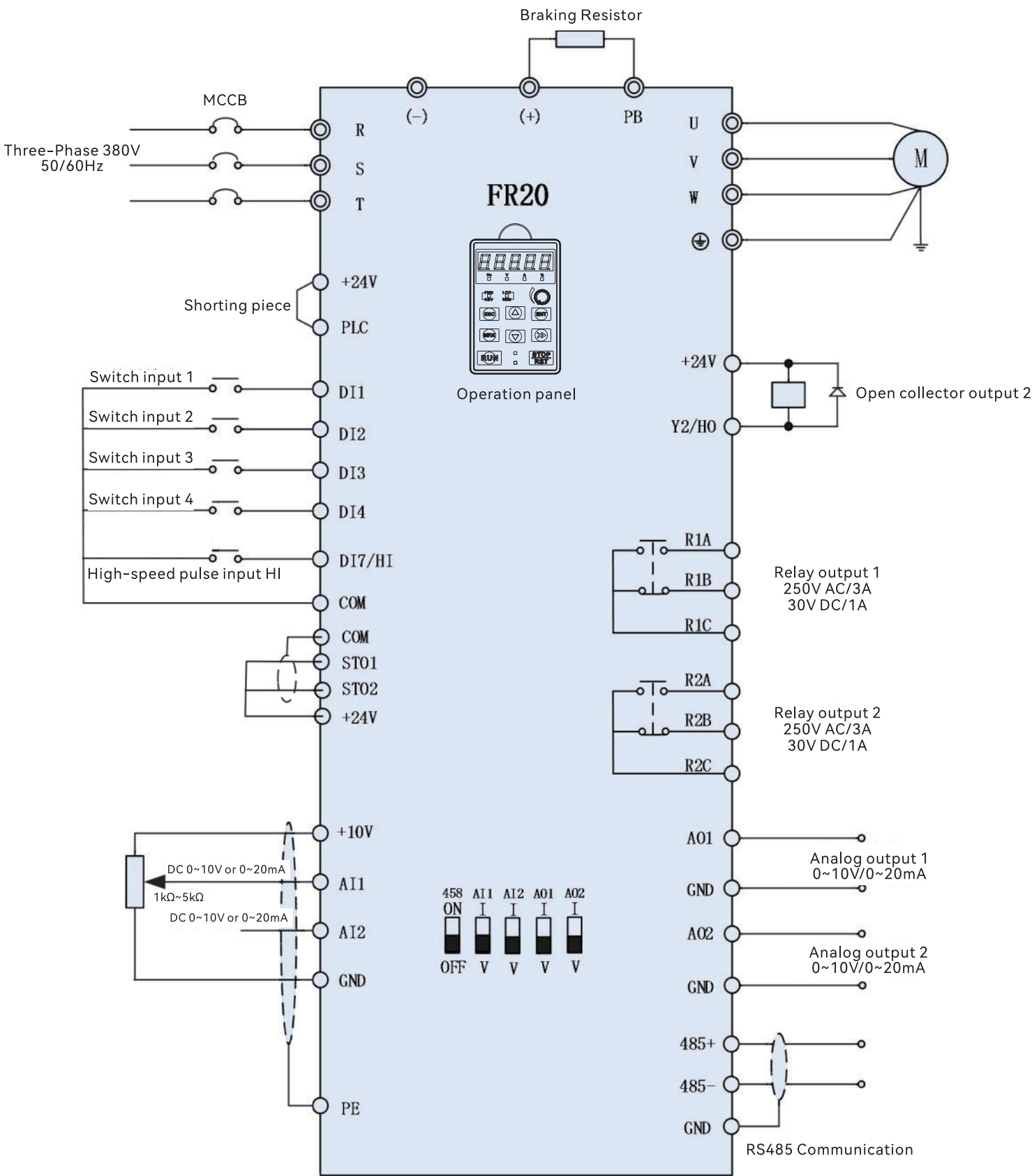


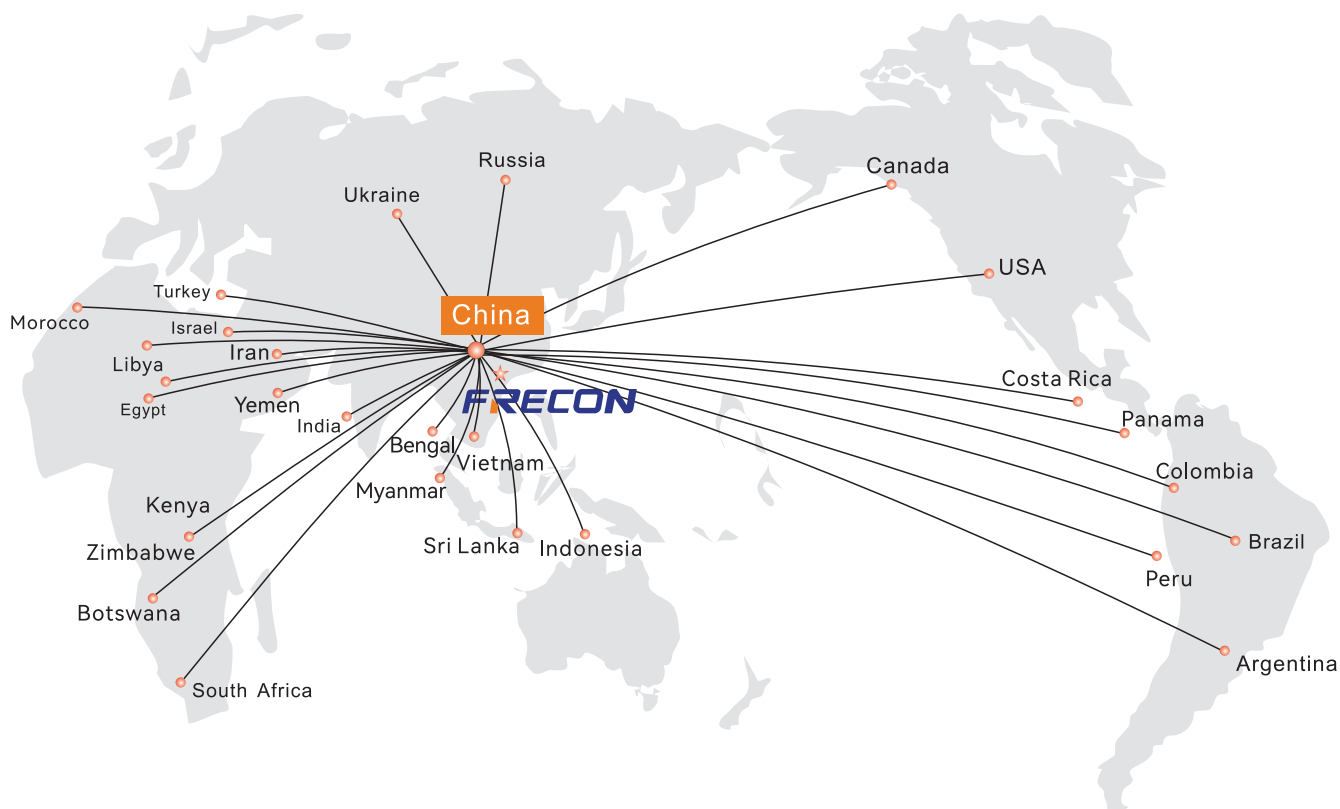
132-200kW structure diagram

Technical Parameters

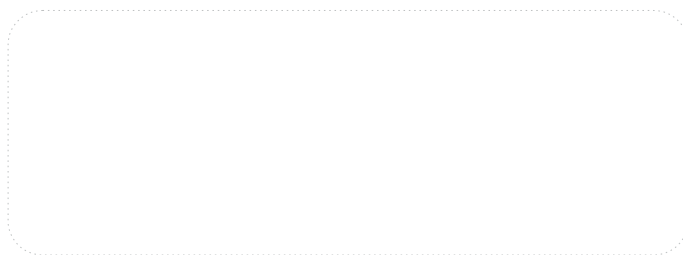
Item		Specifications
Input power	Rated input voltage (V)	3-phase 380 V (-15%~+30%)
	Rated input frequency (Hz)	50Hz/60Hz, $\pm 5\%$
Output power	Rated output voltage (V)	0~rated input voltage, error $\leq \pm 3\%$
	Rated output frequency (Hz)	0.00~590.00 Hz, unit: 0.01Hz
Control characteristics	Control 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 control precision	$\pm 0.5\%$ (V/F control) ; $\pm 0.3\%$ (sensor-less vector control 1 & 2)
	Speed fluctuation	$\pm 0.3\%$ (sensor-less vector control 1 & 2)
	Torque response	< 10ms (sensor-less vector control 1 & 2)
	Starting torque	0.5Hz: 150% (V/f control, sensor-less vector control 1); 0.25Hz: 150% (sensor-less vector control 2)
Basic functions	Carrier frequency	0.7kHz~16kHz
	Overload capability	G type: 150% rated current 60s, 180% rated current 10s, 200% rated current 1s P type: 120% rated current 60s, 145% rated current 10s, 160% rated current 1s
	Torque boost	Automatic torque boost, Manual torque boost 0.1%~30.0%
	V/F Curve	Three modes: linear type; multi-point type; N-th power type V/F curve (1.2th power, 1.4th power, 1.6th power, 1.8th power, 2nd power)
	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
	DC brake	DC brake start frequency: 0.00~Max Hz; DC brake time: 0.0s~10.0s; DC brake current: 0.0%~150.0%
	Jog control	Jog frequency range: 0.00Hz~50.00Hz; Jog acceleration/deceleration time 0.0s~6000.0s
	Simple PLC, multi-speed operation	Achieve up to 16 speeds via built-in PLC or control terminals
	Built-in PID	Conveniently implement process control closed-loop control system
	Automatic voltage regulation (AVR)	When the grid voltage changes, it can automatically keep the output voltage constant
	Quick current limiting function	Minimize overcurrent faults and protect the normal operation of the inverter
	Overvoltage and overspeed stall control	Automatically limit current and voltage during operation to prevent frequent over-current and over-voltage tripping
Operate	Command source	Given the control panel, control terminal, serial communication port given
	Frequency given	9 kinds of frequency sources
	Input terminal	5-way switch input terminal, 1 of which can be used as high-speed pulse input. 2DI can be expanded, compatible with active open collector NPN, PNP and dry contact input methods. 2-way analog input terminal, 0~10V/0~20mA voltage and current optional, 1-way can be expanded
	Output terminal	1 switch output terminal, 1 of which supports a maximum 100kHz high-speed pulse output. 2 relay output terminals 2 analog output terminals, with voltage and current selectable, can realize the output of physical quantities such as set frequency and output frequency
Protection	Provide fault protection dozen: Over-current, Over-voltage, Under-voltage, Over-temperature, Over-load Etc Protection	
Keypad	LED Display	Display Parameters
	Key lock and function selection	Realize some or all of the keys locked, scope definition section keys to prevent misuse
	Run and stop monitoring information	In the run or stop can be set to monitor U00 group 4 objects were
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, De-rate 1% for every 100m when the altitude is above 1000 meters
	Storage temperature	-10°C~40°C(When environment temperature above 40°C, derating use)
	Humidity	5~95%, condensation is not allowed
	Vibration	Less than 5.9 m/s ² (0.6g)
	Ambient temperature	-20°C~+70°C
Others	Installation	Wall-mounted or Flange mounting
	IP grade	IP20
	Cooling method	Forced air cooling

Wiring Diagram





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