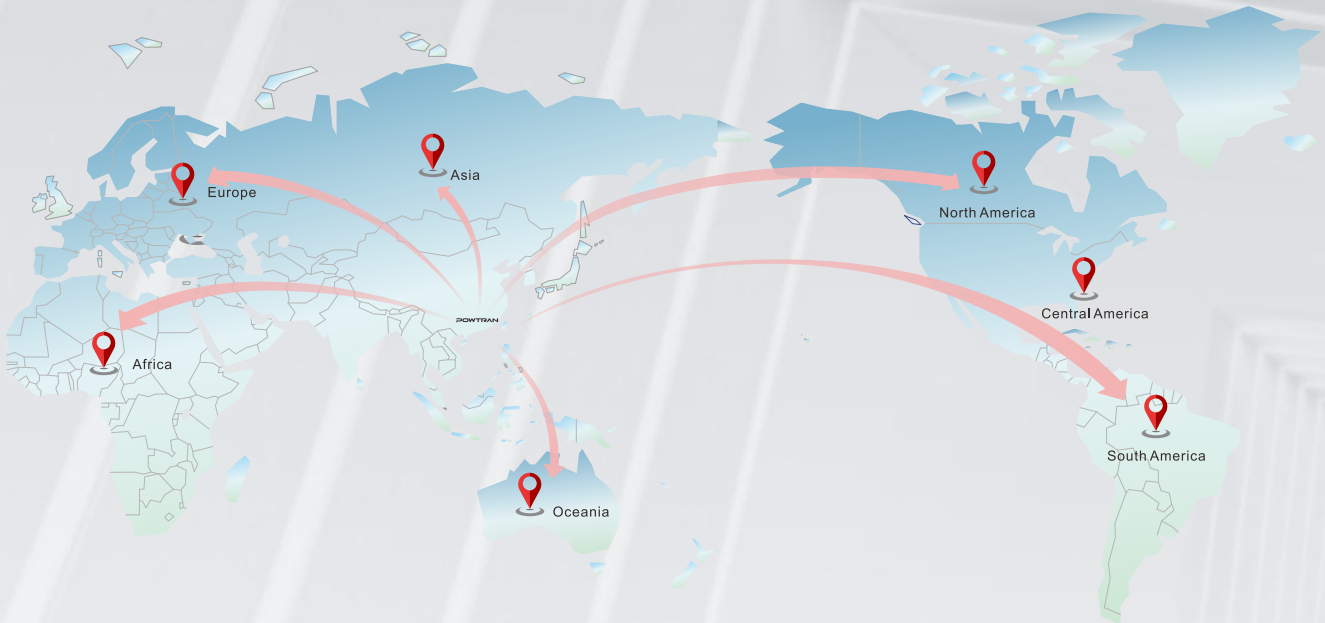


POWTRAN Marketing Network

202503EV2.1



PI550-E Series

PMSM special used inverter

More valuable intelligent products and solutions ,
well known brand in the field of electrical drive and control

DALIAN POWTRAN TECHNOLOGY CO.,LTD.
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Tel: 0411-84820088 84821133
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GUANGDONG POWTRAN POWER ELECTRONICS CO., LTD.
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Dongguan city, Guangdong, P.R. China 523681
Tel: 0769-22222279 Hotline: 400-0411755
Fax: powtran@powtran.com Website: https://www.powtran.com



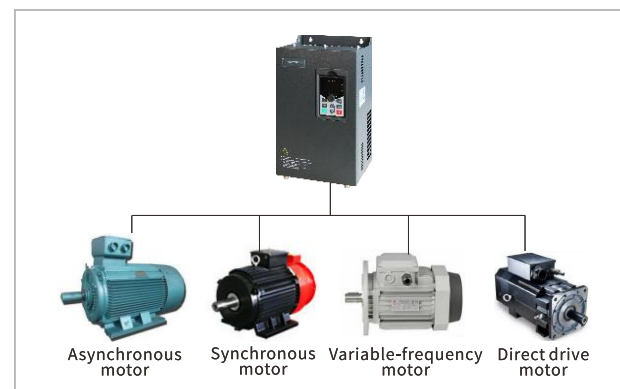
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Technical Features

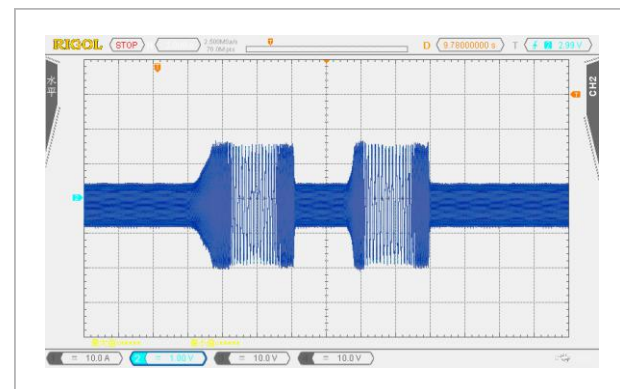
PI550-E permanent magnet synchronous frequency converter is known to science and technology based on motor operation and control, new research and development of a permanent magnet synchronous frequency converter. Achieved high performance, high quality, small size installation area, design of high power density, high efficiency, energy saving, small startup current, high return torque, low control accuracy is high. the motor temperature rise, its rich functions, application is simple, the advantages of stable performance more flexible. The user's experience

Excellent control performance



1> Leading motor drive technology

- ▶ No PG vector control, PG vector control, VF control to meet different load process requirements.
- ▶ Advanced vector control algorithm can realize the current vector control of induction asynchronous motor and permanent magnet synchronous motor with high performance. (PI550E is special for the permanent magnet synchronous motor)

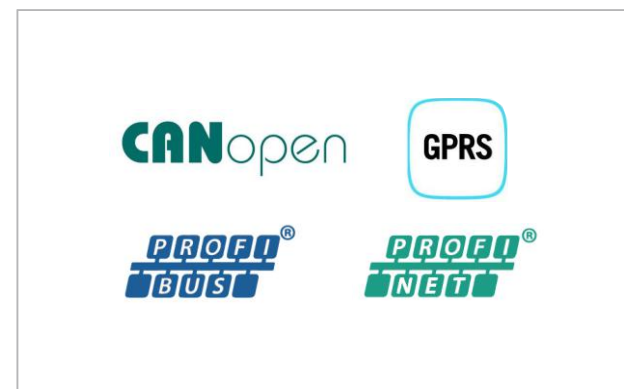


2> Excellent control performance

- ▶ Steady-speed precision: $\pm 0.5\%$ (no PG vector control), $\pm 0.02\%$ (PG vector control)
- ▶ Speed range: 1:100 (no PG vector control), 1:1000 (PG vector control)
- ▶ Torque response: $< 40\text{ms}$ (no PG vector control), $< 5\text{ms}$ (PG vector control)
- ▶ Heavy load overload capacity: 110% rated stable operation (110% continuously operation) 150% rated load 1Min, 180% rated load 5S
- ▶ Torque characteristics: stable torque output, large low-frequency torque, able to achieve ultra-low speed 0.01Hz stable load operation, torque mode and speed mode can be easily switched. In closed-loop vector mode, the linearity deviation of the torque line is within 3%.
- ▶ With zero servo function, it can reach 0Hz 150% rated torque and can meet the requirements of zero-speed hovering (PI550-L is special for lift)

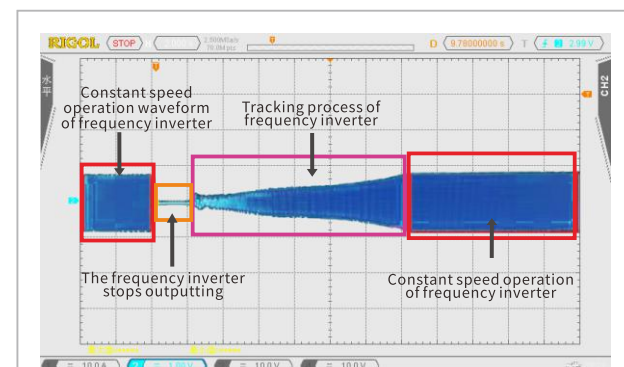
3> Perfect communication function design and performance improvement

- ▶ Built-in isolated RS485 communication design, can be extended CANopen, PROFIBUS-DP (supports up to PP05), profinet (using SCI and DSP communication, maximum baud rate: 937.5kHz), etc., to meet the needs of different communication occasions



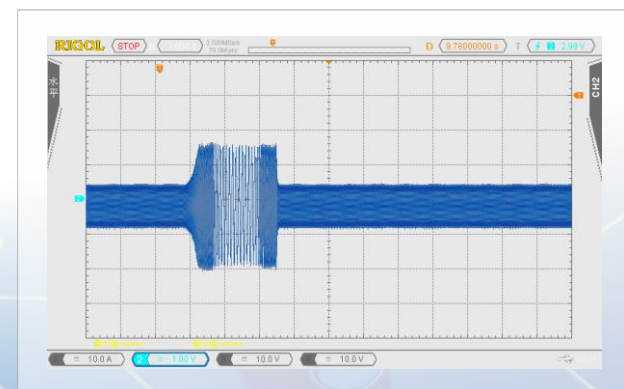
4> Realize the hard speed tracking function: "Flying start"

- ▶ Accurate tracking, stable and reliable



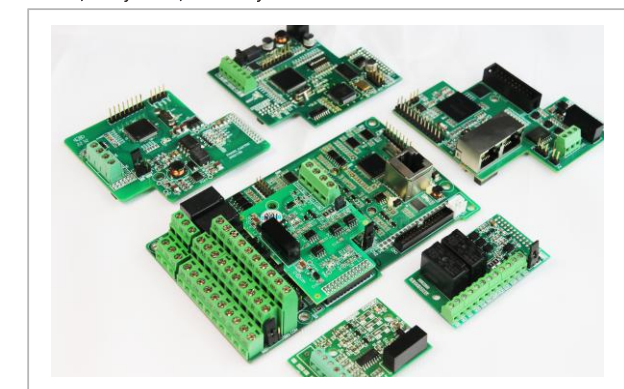
5> High performance over-current stall and over-voltage stall control

- ▶ Can meet the needs of mechanical loads with different characteristics and has a wider range of adaptability



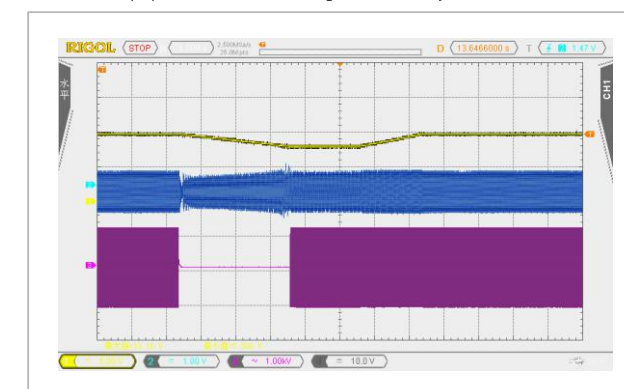
6> Supports multiple external expansion cards

- ▶ Include PG cards that meet closed-loop control, communication expansion cards that meet multiple communication protocols, and I/O expansion cards that meet multiple I/O point usage
- ▶ After connect expansion cards, there are total 10 ways of DI, 4 relays, 2 ways of DO, 3 ways of AI, and 2 ways of DA



7> Instant stop and restart function

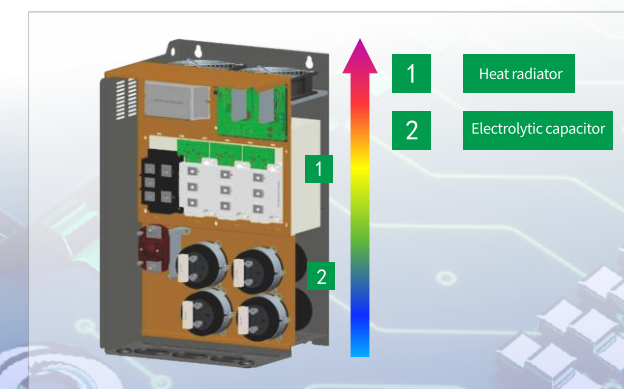
- ▶ When grid instantaneous drops or outages, inverter can absorb feedback energy and keep running without stop in effective time, especially suitable for the equipment which needs higher continuity.



Reliable structural design

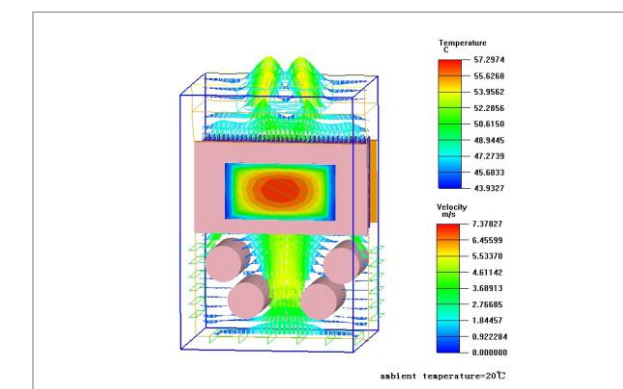
1> Heat dissipation: Excellent air duct design

- ▶ A full series of independent air duct design, heat dissipation duct and electrical and electronic circuit separate, reduce the failure rate of electronic circuit part
- ▶ The fan adopts an easy-to-disassemble design for installation and maintenance.



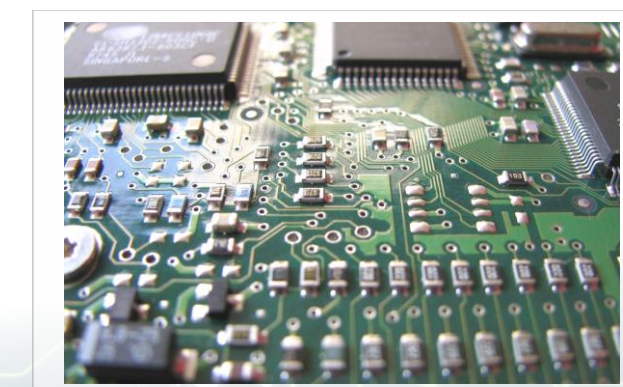
2> Excellent thermal management

- ▶ The modular design concept and thermal simulation technology ensure the thermal reliability of the whole machine and the compact structure and small size. the volume is only 70% of the same power of the same brand machine.
- ▶ The rated load temperature rise test and overload temperature rise test of the whole series of inverters are carried out, and the test results meet the thermal design safety standards to ensure the safe and stable operation of the inverters.
- ▶ All series adopt DC fan heat dissipation design, less due to power grid fluctuations caused by fan damage heat dissipation failure.



3> Protection: Three anti-paint spraying process

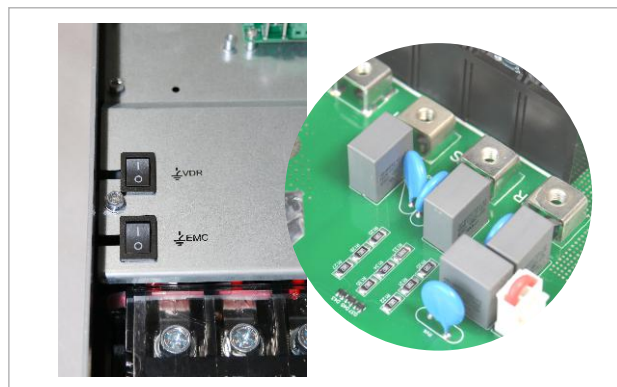
- ▶ Adopting imported three proof paint, it has moisture-proof, dust-proof, oil proof, and corrosion-resistant properties
- ▶ Using three-dimensional spraying process all-round spraying.



Technical Features

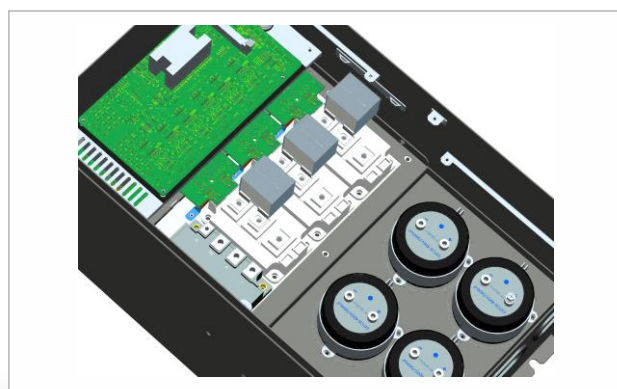
4> Interference: EMC Design specifications improved

- ▶ Varistor switches (VDR) and safety capacitor switches (EMC) are suitable for neutral-grounded power grid systems and IT power grid systems.
- ▶ Optional external filter can meet IEC61800-3C2 level requirements
- ▶ The special grounding pile design is used to facilitate grounding and weaken electromagnetic interference, which is more suitable for high-interference occasions.



5> Long life design

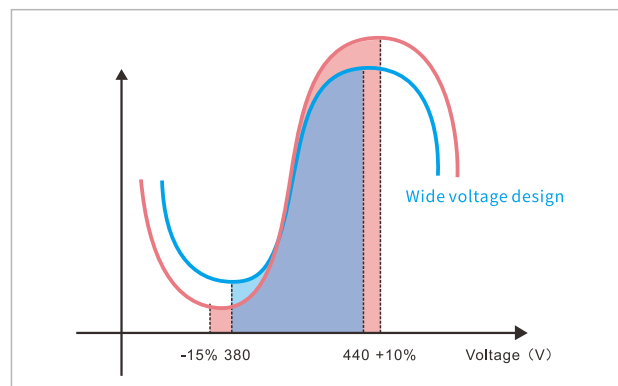
- ▶ Adopting the first class manufacturers of rectifier bridge and IGBT, higher configure, greater device selection, and monitor all the temperature rise of key components and PCB board;
- ▶ Vibration testing to ensure safe transportation design
- ▶ Internal logistic management(bar code technology, RF technology);
- ▶ Sheet Metal design, adopting Cold-rolled steel and galvanized sheet and powder spraying process on the cover



Rich and easy-to use features

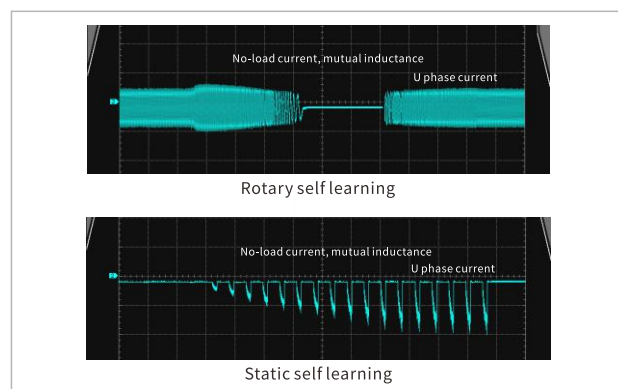
1> Meet the international standard of wide voltage input range

- ▶ Wide voltage input range, rated voltage:Ac 3phase 380v(-15%)440v(+10%)



2> Precise motor parameter self learning

- ▶ Convenient, simple operation, providing higher control accuracy and response speed
- ▶ Motor parameters can be comprehensive self-study(rotary self learning) or still learning (motor) with the occasion of the load cannot escape, convenient debugging

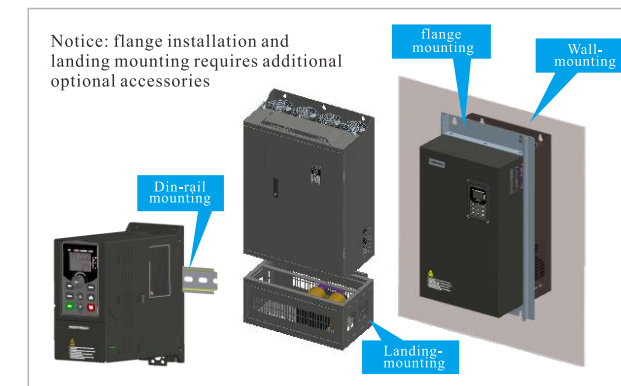


3> Multiple keyboard human-computer interaction

- ▶ LED single display, LED dual display, potentiometer, film button, silicone button, LCD display and smart backlight (optional)
- ▶ Film button (suitable for high protection requirements)

4> Supporting various kinds of installation ways

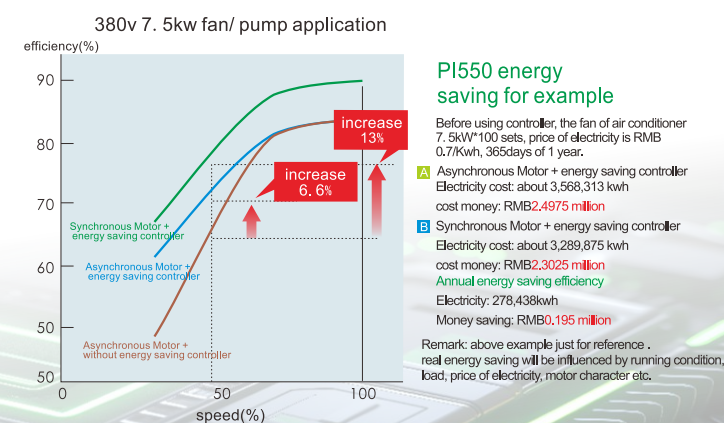
power(kW)	Installation ways			
	Din-rail mounting	Wall-mounting	flange mounting	Landing-mounted
0.75-4.0	★	★		
5.5-22		★		
30-110		★		
132-200		★	★	★
220-450		★		★
500-800				★



Efficient energy-saving performance

1> New generation energy saving running

- ▶ Adopt the advanced energy control technology to realize the high efficient running of motor;
- ▶ Super energy saving while running with synchronous motor, better than asynchronous motor, realize the super energy saving



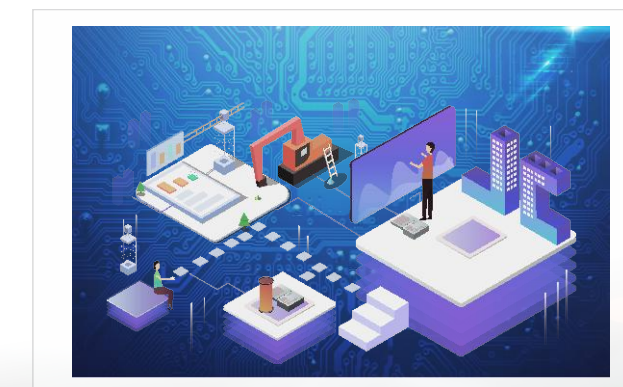
2> Meet a number of certification standards

- ▶ Products meet the EU CE certification standard and meet the RoHS directive.
- ▶ Product design meets international standards of EMC and safety regulations.



3> Energy efficiency level improvement:

- ▶ Meet GB/T 12668.902-2021/IEC61800-9-2:2017 "Electrical Requirements for Speed Control"
- "Part 9-2 Energy Efficiency Indicators for Electrical Transmission Systems and Motor Starters" and NB/T 10463-2020 "Energy Efficiency Limit Values and Energy Efficiency Grades for Variable Frequency Speed Control Equipment" and other standards "



Operating keyboard (button key description)



Sign	Name	Function
	Parameter Setting/ Exit Key	Enter top menu parameter change status Exit from function option change Return to status display menu from sub-menu or function option menu
	Shift Key	Select circularly parameters under run or stop interface; Select parameters when modifying the parameters.
	Ascending Key	UP key settled by parameter F6.18
	Decending Key	DOWN key settled by parameter F6.19
	Run Key	Used for running operation in the keyboard mode.
	Stop/Reset Key	For stopping running in the running status; for resetting the operation in fault alarm status. The function of the key is subject to F6.00
	Enter Key	Enter into levels of menu screen,confirm settings.
	Quick multifunction key	This key function is determined by the function code F6.21.
	Keyboard encoder	In query status: functional items increasing and decreasing In modify status: function features or editing increasing or decreasing In monitoring status: setting frequency increasing or decreasing

Standard specification

Item	Function	Specification
Power	Rated voltage level	AC 1PH 220V(-15%)~240V(+10%) AC 3PH 220V(-15%)~240V(+10%) AC 3PH 380V(-15%)~440V(+10%)
	Input frequency	50Hz/60Hz
	Allowable fluctuation	Voltage continued volatility $\pm 10\%$; Input frequency volatility: $\pm 5\%$ Voltage unbalance rate less than 3% ; Distortion meet IEC 61800-2 standard
Control System	Control system	High performance vector control inverter based on DSP
	Control method	V/F control,vector control W/O PG,vector control W/PG
	Automatic torque boost function	Realize low frequency(1Hz)and large output torque control under the V/F control mode.
	Acceleration/deceleration control	Straight or S-curve mode.Four times available and time range is 0.0 to 6500.0s.
	V/F curve mode	Linear,square root/m-th power,custom V/F curve
	Over load capability	G type: rated current 150%-1 minute, rated current 180%-2 seconds
		F type: rated current 120%-1 minute, rated current 150%-2 seconds
	Maximum frequency	Vector control:0 to 300Hz V/F control: 0 to 3200Hz
	Carrier Frequency	0.5 to 16kHz; automatically adjust carrier frequency according to the load characteristics.
	Input frequency resolution	Digital setting: 0.01Hz Analog setting: maximum frequency $\times 0.1\%$
	Start torque	G type: 0.5Hz/150%(vector control W/O PG)F type:0.5Hz/100%(vector control W/O PG)
	Speed range	1:100 (vector control W/O PG)1:1000 (vector control W/PG)
	Steady-speed precision	Vector control W/O PG: $\leq \pm 0.5\%$ (rated synchronous speed); Vector control W/PG: $\leq \pm 0.02\%$ (rated synchronous speed)
	Torque response	$\leq 40\text{ms}$ (vector control W/O PG)
	Torque boost	Automatic torque boost; manual torque boost(0.1%to 30.0%)
	DC braking	DC braking frequency: 0.0Hz to max. frequency, braking time:0.0 to 100.0 seconds, braking current value: 0.0~100.0s
	Jogging control	Jog Frequency Range: 0.00Hz to max.frequency; Jog Ac/deceleration time: 0.0s-6500.0s
Persona-lization function	Multi-speed operation	Achieve up to 16-speed operation through the control terminal
	Built-in PID	Easy to realize closed-loop control system for the process control.
	Automatic voltage regulation(AVR)	Automatically maintain a constant output voltage when the voltage of electricity grid changes
	Torque limit and control	"Excavator" feature-torque is automatically limited during the operation to prevent frequent overcurrent trip;the closed-loop vector mode is used to control torque.
	Self-inspection of peripherals after power-on	After powering on,peripheral equipment will perform safety testing,such as ground, short circuit,etc.
	CommonDC bus function	Multiple inverters can usea common DC bus.
	Quick current limiting	The current limiting algorithm is used to reduce the inverter overcurrent probability, and improve whole unit anti-interference capability.
	Timing control	Timing control function: time setting range(0h to 6500m).

Standard specification

Item	Function		Specification
Running	Input signal	Running method	Keyboard/terminal/communication
		Frequency setting	10 frequency setting modes, including adjustable DC 0~10V/-10~+10V ,adjustable DC 0~20mA , panel potentionmeter
		Start signal	Rotate forward/reverse
		Multi-speed	At most 16-speed can be set(run by using the multi-function terminals or program)
		Emergency stop	Interrupt controller output
		Wobulate run	Process control run
		Fault reset	When the protection function is active,you can automatically or manually reset the fault condition.
		PID feedback signal	In cluding DC(0 to 10V),DC(0 to 20mA)
	Output signal	Running status	Motor status display,stop,ac/deceleration,constant speed,program running status.
		Fault output	Contact capacity:normal-closed contact 3A/AC 250V;normal-opened contact 5A/AC 250V;1A/DC 30V.
		Analog output	Two-way analog output,16 signals can be selected such as frequency ,current,voltage and other,output signal range (0 to 10v/0 to 20mA).
		Output signal	At most 4-way output,there are 40 signals each way
	Frequency converter efficiency		>96%
	Run function		Limit frequency,jump frequency,frequency compensation,auto-tuning,PID control
	DC current braking		Built-in PID regulates braking current to ensure sufficient braking torque under no overcurrent condition.
Protection function	Running command channel		Three channels:operation panel,control terminals and serial communication port. They can beswitchedthrough a variety of ways.
	Frequency source		There are 10 frequency sources: digital, analog voltage , analog current , multi-speed and serial port. They can be switched through a variety of ways.
	Input terminals		Eight digital input terminals, compatible with active PNP or NPN input mode, one of them can be for high-speedpulse input (0~100Hz square wave); three analog output terminals, Al1 and Al2 can choose 0~10V or 0~20mA input, Al3 voltage -10~+10V input.
	Output terminals		2 digital output terminals, one of them can be for high-speed pulse output (0~100kHz square wave); One relay output terminal; Two analog output terminals, respectively for optional range (0~20mA or 0~10V),they can be used to set frequency, output frequency, speed and other physical parameters.
	Inverter protection		Overvoltage protection,undervoltage protection,overcurrent protection,overload protection,overheat protection (optional), external fault,communication error.PID feedback signal abnormalities,PG failure and short circuit to ground protection.
	IGBT temperature display		Displays current temperature IGBT
Display	LED/LCD display	Inverter fan control	Can be set
		Instantaneous power-down restart	Less than 15 milliseconds: continuous operation; More than 15 milliseconds: automatic detection of motor speed, instantaneous power-down restart
	keyboard	Speed start tracking method	The inverter automatically tracks the motor speed when it starts
		Parameter protection function	Protect inverter parameters by setting administrator Password and decoding
	Running information	Monitoring objects include: operating frequency, set frequency, actual motor current , DC bus voltage , output current, output power, output torque, input terminal state output terminal state, analog Al value , analog Al2 value , actual motor running speed, PID set value percentage, PID feedback value percentage, etc	
		Error message	Up to 3 error messages can be saved to query the fault type, voltage, current, frequency, and working status at the time of fault occurrence
Communication	LCD display		Display parameters
	LCD display		Optional,prompts operation content in Chinese/English text.
	Parameters copy		Lock part or all of keys,define the function scope of some keys to prevent misuse
	Key lock and function selection		Realize partial or full locking of keys, define the scope of action of some keys, to prevent misuse
	RS485		Built-in isolation 485
Environment	Environment temperature		-10℃~40℃(temperature at 40℃ to 50℃, please derating for use)
	Storage temperature		-20℃ to 65℃
	Environment humidity		Less than 90%R.H, no condensation of moisture
	Vibration		Below 5.9m/s ² (=0.6g)
	Application sites		Indoor where no sunlight or corrosive,explosive gas, dust, combustible gas, oil mist, water vapor, dripping water or salt, etc
	Altitude		No derating is used below 1000m, and 1% derating is used for every 100m increase above 1000m. The highest altitude is 3000m
	IP degree		IP20
Product standard	Product adopts safety standards		IEC61800-5-1:2007
	Product adopts EMC standards		IEC61800-3:2005
	Cooling method		Forced air cooling

Nameplate instruction

POWTRAN

MODEL PI550-E 200G3

POWER 200kW

INPUT AC 3PH 380V(-15%)~440V(+10%) 50/60Hz

OUTPUT AC 3PH 0V~ Vin380A 0~400Hz

ZPM1A17HA22G300001

GUANGDONG POWTRAN POWER ELECTRONICS CO.,LTD.

PI 550 E 200 G 3 B R

POWTRAN INVERTER

Serial name PI550 series product

Dedicated Machine Series Codes
E: Permanent Magnet Synchronous
L: Lifting and Hoisting

Rated output power
045:45KW
200:200KW

Model Description: PI550 045G3X X=R built in DC reactor (132~400kW) optional X=B built in brake unit(37~75kW) Optional X=BM iron Shell X=N Improved models

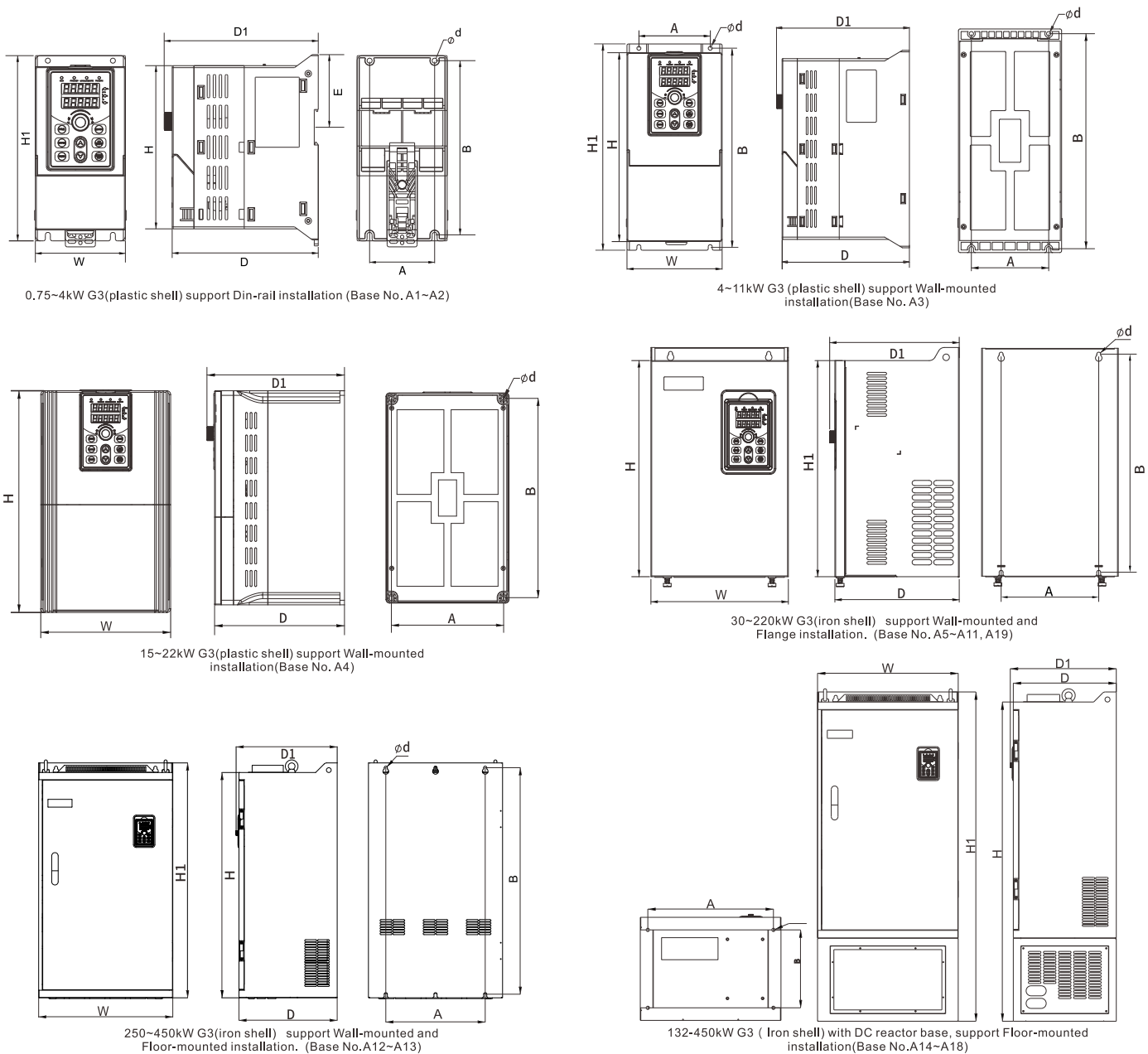
DC reactor built-in, vertical installation (can be omitted if it is not included)

Brake unit built-in (can be omitted if it is not included)

Input voltage level
1:single phase220V 2:three phase220V
3:three phase380V 4:three phase480V
6:three phase690V

Function code
F: light load G: General load

Technical Specification



Inverter model	Output power (kW)	Input current (A)	Output current (A)	Dimension (mm)					Installation (mm)			N.W (kg)
				H	H1	W	D	D1	A	B	d	
PI550-E 5R5G1	5.5	50	25	280	300	190	190	198	140	285	6	7.2
PI550-E 5R5G2	5.5	28	25	280	300	190	190	198	140	285	6	7.2
PI550-E 7R5G2	7.5	37.1	32									
PI550-E 011G2	11	49.8	45	330	350	210	190	198	150	335	6	9.5
PI550-E 015G2	15	65.4	60	380	400	240	215	223	180	385	7	13
PI550-E 018G2	18.5	81.6	75									
PI550-E 022G2	22	97.7	90	500	520	300	275	283	220	500	10	41.2
PI550-E 030G2	30	122.1	110									
PI550-E 037G2	37	157.4	152									
PI550-E 045G2	45	185.3	176	550	575	355	320	328	250	555	10	58
PI550-E 055G2	55	214	210									
PI550-E 075G2	75	307	304	695	720	400	360	368	300	700	10	72.5
PI550-E 0R7G3	0.75	4.3	2.1	163	185	90	146	154	65	174	5	1.6
PI550-E 1R5G3	1.5	5	3.8									
PI550-E 2R2G3	2.2	5.8	5.1									
PI550-E 004G3	4	10.5	9	163	185	90	166	174	65	174	5	1.8
PI550-E 5R5G3	5.5	14.6	13	238	260	120	182	190	90	250	5	2.7
PI550-E 7R5G3	7.5	20.5	17									
PI550-E 011G3	11	26	25	280	300	190	190	198	140	285	6	7.2
PI550-E 015G3	15	35	32									
PI550-E 018G3	18.5	38.5	37	330	350	210	190	198	150	335	6	9.5
PI550-E 022G3	22	46.5	45									
PI550-E 030G3	30	62	60	380	400	240	215	223	180	385	7	13
PI550-E 037G3	37	76	75									
PI550-E 045G3	45	91	90	500	520	300	275	283	220	500	10	41.2
PI550-E 055G3	55	112	110									
PI550-E 075G3	75	157	152									
PI550-E 090G3	90	180	176	550	575	355	320	328	250	555	10	58
PI550-E 110G3	110	214	210									
PI550-E 132G3	132	256	253	695	720	400	360	368	300	700	10	72.5
PI550-E 160G3	160	307	304	790	820	480	390	398	370	800	11	108
PI550-E 200G3	200	385	380									
PI550-E 220G3	220	430	426									
PI550-E 250G3	250	468	465	940	980	705	410	418	550	945	13	190
PI550-E 280G3	280	525	520									
PI550-E 315G3	315	590	585									
PI550-E 355G3	355	665	650									
PI550-E 400G3	400	785	725									
PI550-E 132G3R	132	256	253	995	1020	400	360	368	350	270	13*18	114.5
PI550-E 160G3R	160	307	304	1230	1260	480	390	398	400	200	13	153
PI550-E 200G3R	200	385	380									
PI550-E 220G3R	220	430	426	1419	1460	705	410	418	620	240	13	249.4
PI550-E 250G3R	250	468	465									
PI550-E 280G3R	280	525	520									
PI550-E 315G3R	315	590	585									
PI550-E 355G3R	355	665	650									
PI550-E 400G3R	400	785	725									
PI550-E 450G3R	450	883	820	/	1700	1200	600	612	680	550	17	/

Note: the letter "R" represents the DC reactor; The installation height of the product after the lifting bolt size is: H1 + 15mm.

Wiring diagram

