

# PI550A1 Series

## Basic Frequency Inverter



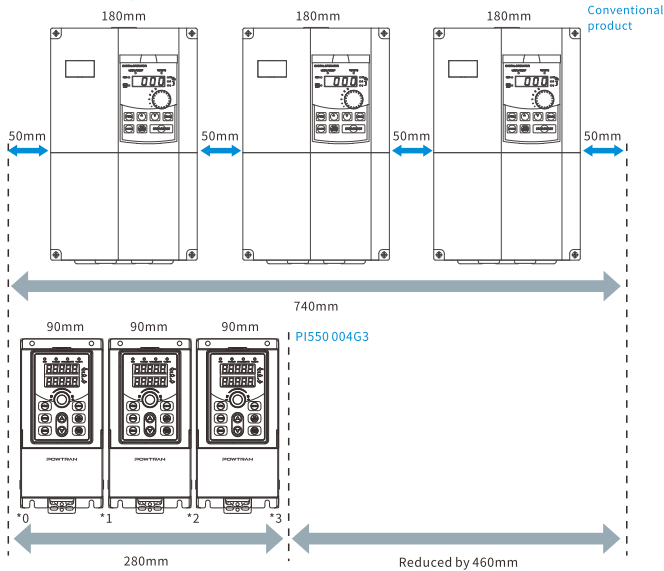
## Performance Feature

PI550A1 series basic inverter is based on the market demand of low power, small volume and simple speed regulation. As a small volume and large capacity of the basic inverter product, PI550A1 has high power density, high EMC specification design, high protection performance and other significant advantages, can be widely used in textile, paper, drawing, winding, machine tools, packaging, food, fan, water pump and other industries and small automated machinery.

### Compact design for miniaturization

- ▶ Optimal power density design, effectively minimize product volume;
- ▶ Book structure design with full power segment, support seamless installation in minimum space;
- ▶ Installation mode: Support wall mounting and guide rail installation.

#### 380V 4kW Example

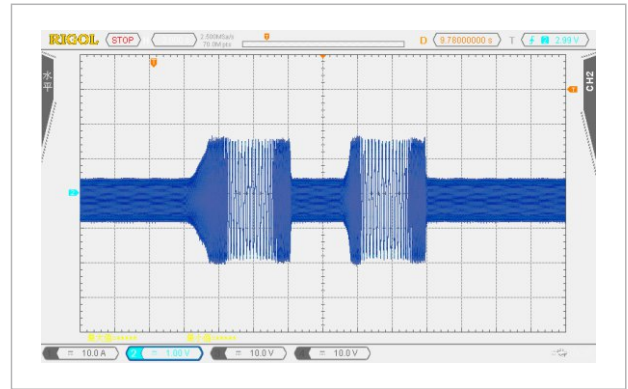


### Excellent control performance



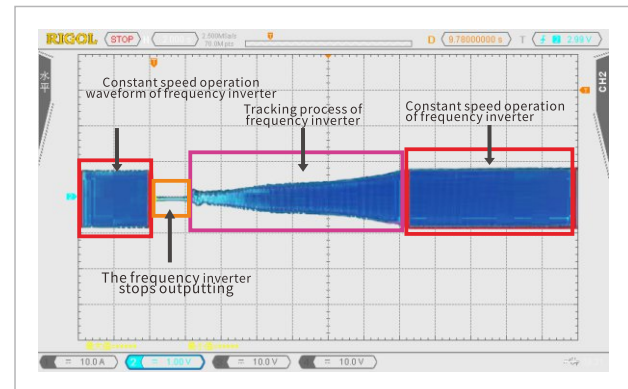
#### 1> Leading motor drive technology

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



#### 2> Excellent control performance

- ▶ Speed stability accuracy:  $\pm 0.5\%$ (without PG vector control),  $\pm 0.02\%$ (with PG vector control)
- ▶ Speed range: 1:100(without PG vector control), 1:1000(with PG vector control)
- ▶ Torque response:  $<40\text{ms}$  (without PG vector control),  $<5\text{ms}$  (with PG vector control)
- ▶ Heavy load overload capacity: 110% rated stable operation (110% continuous operation)150% rated load 1Min,180% rated load 5S.



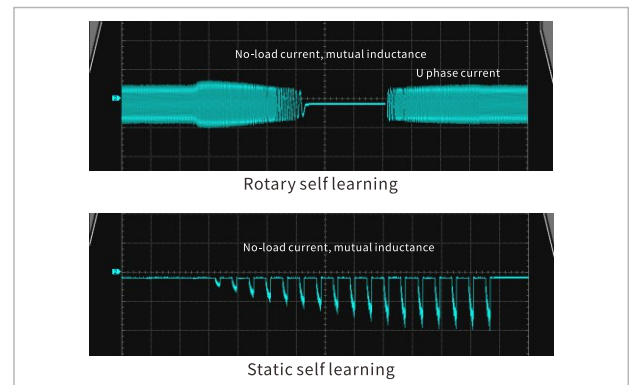
#### 3> Real hard speed tracking function: "car start"

- ▶ Accurate, stable and reliable tracking

### Rich easy-to-use features

#### 1> Self-learning of accurate motor parameters

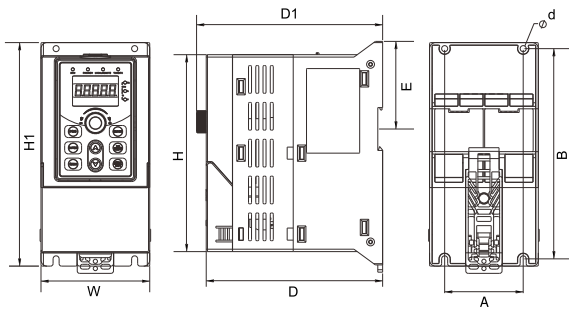
- ▶ Convenient, simple operation, providing higher control accuracy and response speed
- ▶ Can be fully self-learning motor parameters (rotation self-learning) or static self-learning (motor and load can not be separated from the occasion), debugging



# Standard specifications

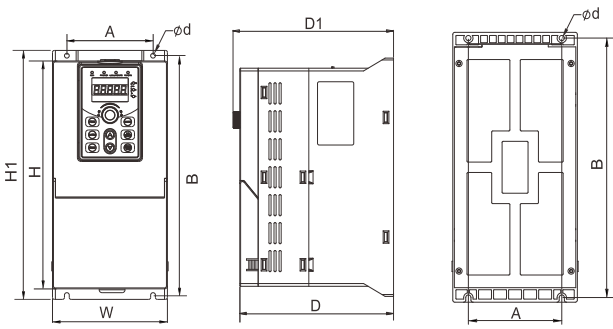
Items	Function	Specification	
Power Input	Rated voltage	AC 1PH 220V(-15%)~240V(+10%)/AC 3PH 220V(-15%)~240V(+10%) AC 3PH 380V(-15%)~440V(+10%)/AC 3PH 480V(-10%)~480V(+10%)	
	Input frequency	50Hz/60Hz	
	Allowable fluctuation	Continuous voltage fluctuation: $\pm 10\%$ The voltage imbalance rate is less than 3% Input frequency fluctuation: $\pm 5\%$ Distortion rate meets the standard IEC61800-2	
control system	Control system	High performance vector control inverter based on DSP	
	Control method	V/F control, vector control W/O PG	
	Automatic torque boost function	Realize low frequency (1Hz) and large output torque control under theV/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	1、 Vector control:0 to 300Hz; 2、 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; Minimum analog quantity: Maximum frequency 0.025%	
	Starting torque:	G-type machine: 0.5Hz/150% (without PG vector control) ; F-type machine: 0.5Hz/100% (without PG daily control)	
	Speed range:	1: 100 (without PG vector control)	
	Steady speed accuracy:	No PG vector control: $\leq 0.5\%$ (rated synchronous speed)	
	Torque response:	$\leq 20\text{ms}$ (without PG vector control)	
	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		
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		
Personalization function	Self-inspection of peripherals after power-on	After powering on, peripheral equipment will perform safety testing, such as ground, short circuit, etc.	
	Common DC bus function	Multiple inverters can use a 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).	
Running	Input signal	DI1 input terminal	6 digital input terminal, DI5 can be high speed pulse input (0~100kHz square wave)
		AI1 analog input	1 analog AI1 input terminal, can choose 0~10v or 0~20mA input
		Multi-speed	At most 16-speed can be set(run by using the multi-function terminals or program)
		Emergency stop	Interrupt controller output
		Fault reset	When the protection function is active, you can automatically or manually reset the fault condition
	PID feedback signal	Including DC(0 to 10V), DC(0 to 20mA)	
	Output signal	Output terminal	1 collector output terminal SPA; 1 relay output terminal; 1 DA1 analog output terminal
SPA / relay output		each port has 40 signals can be optional, contact capacity of relay: normally open contact 5A/AC 250V; 1A/DC 30V	
DA1 analog output		1 analog output, 16 signals can be selected such as frequency, current, voltage and other, output signal range (0 to 10V / 0 to 20mA)	
Running command channel	Three channels: operation panel, control terminals and serial communication port. They can be switched through a variety of ways.		
Run function	Limit frequency, jump frequency, frequency compensation, auto-tuning, PID control		
Frequency source	Total 9 frequency sources: digital, analog voltage, multi-speed and serial port. They can be switched through a variety of ways		
Protection function	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.	
Display	LED display keyboard	Running information	Monitoring objects including: running frequency, set frequency, bus voltage, output voltage, output current, output power, output torque, input terminal status, output terminal status, analog AI1 value, motor actual running speed, PID set value percentage, PID feedback value percentage
		Error information	At most save three error message, and the time, type, voltage, current, frequency and work status can be queried when the failure is occurred
	Key lock and function selection	Lock part or all of keys, define the function scope of some keys to prevent misuse	
	IGBT temperature	Display current IGBT temperature	
communication	RS485	Built-in RS485	
Environment	Environment temperature	-10°C~40°C (temperature at 40°C to 50°C, please derating for use)	
	Storage temperature	-20°C to 65°C	
	Environment humidity	Less than 90%R.H, no condensation of moisture	
	Vibration	Below 5.9m/s <sup>2</sup> (=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	

## Technical Specification

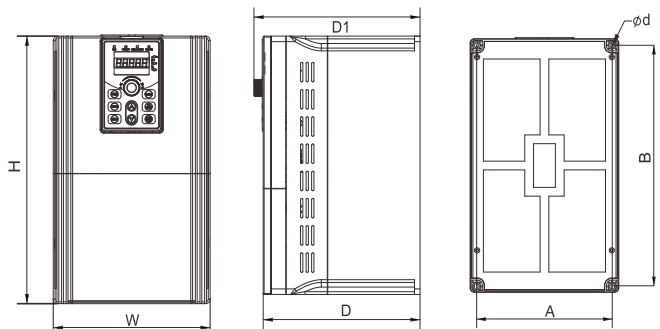


0.75~4kW G3 (plastic shell) support Din-rail installation (Base No. A1~A2)

Base No.	Dimension (mm)					Installation (mm)			Din-Rail mounting (mm) E	N.W (kg)
	H	H1	W	D	D1	A	B	d		
A1	163	185	90	146	154	65	174	5	72.5	1.6
A2	163	185	90	166	174	65	174	5	72.5	1.8
A3	238	260	120	182	190	90	250	5	/	2.7
A4	290	/	170	193	201	155	276	5	/	5.8



4~11kW G3 (plastic shell) support Wall-mounted installation (Base No. A3)



15~22kW G3 (plastic shell) support Wall-mounted installation (Base No. A4)

## Configuration parameter

Base No.	Inverter model	Output power (kW)	Dimension (mm)					Installation (mm)			Din-Rail mounting (mm) E	N.W (kg)
			H	H1	W	D	D1	A	B	d		

### Single phase 220VAC external dimension diagram and installation dimensions

A1	PI550A1 0R4G1	0.4	163	185	90	146	154	65	174	5	72.5	1.4
	PI550A1 0R7G1	0.75										
A2	PI550A1 1R5G1	1.5	163	185	90	166	174	65	174	5	72.5	1.6
	PI550A1 2R2G1	2.2										
A3	PI550A1 004G1	4	238	260	120	182	190	90	250	5	/	3.2
A4	PI550A1 5R5G1	5.5	290	/	170	193	201	155	276	5	/	5.9

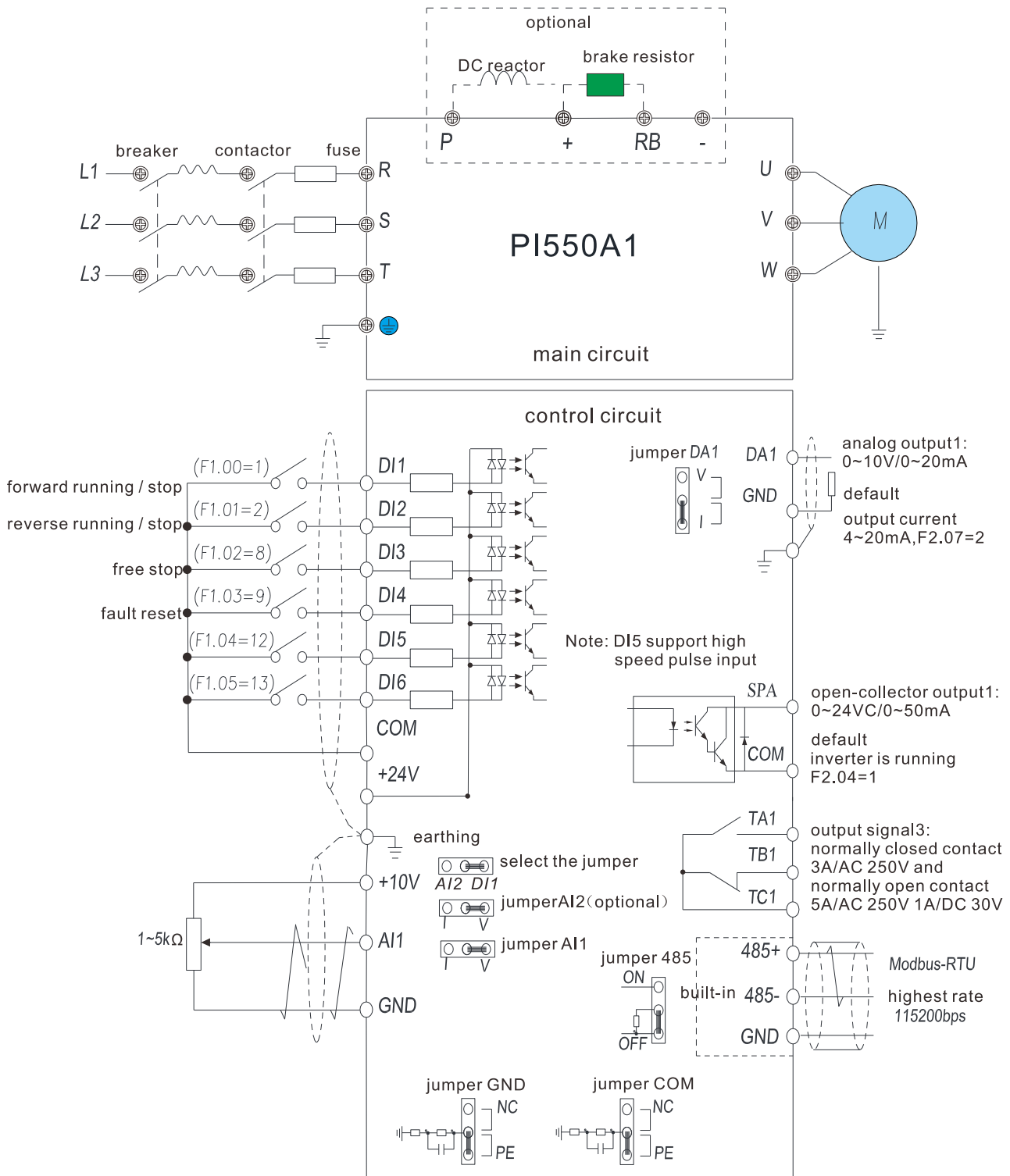
### Single phase 220VAC external dimension diagram and installation dimensions, load for single-phase motor, only valid for PI550A1G1S model

A1	PI550A1 0R4G1S	0.4	163	185	90	146	154	65	174	5	72.5	1.4
	PI550A1 0R7G1S	0.75										
A2	PI550A1 1R5G1S	1.5	163	185	90	166	174	65	174	5	72.5	1.6
	PI550A1 2R2G1S	2.2										
A3	PI550A1 004G1S	4	238	260	120	182	190	90	250	5	/	3.2
A4	PI550A1 5R5G1S	5.5	290	/	170	193	201	155	276	5	/	5.9

## Configuration parameter

Base No.	Inverter model	Output power (kW)	Dimension (mm)					Installation (mm)			Din-Rail mounting (mm)	N.W (kg)
			H	H1	W	D	D1	A	B	d	E	
Outline dimension diagram and installation dimensions of three-phase 220VAC												
A1	PI550A1 0R4G2	0.4	163	185	90	146	154	65	174	5	72.5	1.4
	PI550A1 0R7G2	0.75										
	PI550A1 1R5G2	1.5										
A2	PI550A1 2R2G2	2.2	163	185	90	166	174	65	174	5	72.5	1.6
A3	PI550A1 004G2	4	238	260	120	182	190	90	250	5	/	3.2
	PI550A1 5R5G2	5.5										
A4	PI550A1 7R5G2	7.5	290	/	170	193	201	155	276	5	/	5.9
	PI550A1 011G2	11										
Outline dimension diagram and installation dimensions of three-phase 380VAC												
A1	PI550A1 0R7G3	0.75	163	185	90	146	154	65	174	5	72.5	1.4
	PI550A1 1R5G3	1.5										
	PI550A1 2R2G3	2.2										
A2	PI550A1 004G3	4	163	185	90	166	174	65	174	5	72.5	1.6
A3	PI550A1 5R5G3	5.5	238	260	120	182	190	90	250	5	/	3.2
	PI550A1 7R5F3	7.5										
	PI550A1 7R5G3	7.5										
	PI550A1 011F3	11										
	PI550A1 011G3	11										
A4	PI550A1 015F3	15	290	/	170	193	201	155	276	5	/	5.9
	PI550A1 015G3/PI550A1 018F3	15/18.5										
	PI550A1 018G3/PI550A1 022F3	18.5/22										
	PI550A1 022G3	22										
Outline dimension diagram and installation dimensions of three-phase 480VAC												
A1	PI550A1 0R7G4	0.75	163	185	90	146	154	65	174	5	72.5	1.4
	PI550A1 1R5G4	1.5										
	PI550A1 2R2G4	2.2										
A2	PI550A1 004G4	4	163	185	90	166	174	65	174	5	72.5	1.6
A3	PI550A1 5R5G4	5.5	238	260	120	182	190	90	250	5	/	3.2
	PI550A1 7R5G4	7.5										
	PI550A1 011F4	11										
	PI550A1 011G4	11										
A4	PI550A1 015F4	15	290	/	170	193	201	155	276	5	/	5.9
	PI550A1 015G4/PI550A1 018F4	15/18.5										
	PI550A1 018G4/PI550A1 022F4	18.5/22										
	PI550A1 022G4	22										

# Wiring diagram



Note: — shielding layer — twisted-pair

# POWTRAN Marketing Network



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