

PXe-PI550 High Performance Current Vector Inverter

Sensorless vector and V/F motor control | 0.4kW to 22kW

The PXe-PI550 High Performance Current Vector Inverter provides variable-speed motor control for industrial machinery, process equipment and automation systems where speed stability, torque response and dependable operation under changing load are important.

Built around DSP control with V/F and sensorless vector operating modes, the range supports strong low-speed torque, built-in PID control, multiple speed references and RS485 / Modbus RTU communications.



Where this product fits

For pumps, fans, compressors, conveyors, textile and winding machinery, packaging equipment, machine tools, water-treatment systems and other industrial applications requiring controlled motor speed and torque.

Power range	Supply classes	Control	Communications
0.4kW to 22kW	1PH / 3PH 220V, 380V or 480V	V/F and sensorless vector	RS485 / Modbus RTU

Technical Highlights for Industrial Motor Control

Vector & V/F Motor Control

Stable speed and torque control across general industrial motor applications.

Strong Low-Speed Starting Torque

G-type duty provides 150% starting torque at 0.5Hz under sensorless vector control.

DSP Control with Built-In PID

Fast digital control with integrated PID for pressure, flow and other process-control duties.

Flexible Local & Remote Control

Keypad, terminal and serial command sources with programmable digital and analogue I/O.

Integrated Drive Protection

Protection functions include overvoltage, undervoltage, overcurrent, overload, applicable overheat protection, external fault, communication error, PID feedback abnormality and short-circuit-to-ground conditions.

Typical Applications

Pumps & Fans

Variable-flow and pressure systems using V/F or PID control.

Conveyors & Handling

Controlled acceleration and speed for material movement.

Compressors

Motor-speed control where starting duty and load changes matter.

Textile & Winding

Repeatable speed and torque for winding, drawing and textile machinery.

Machine Tools & Packaging

Compact panel integration with local or remote control.

Water & Process Systems

PID, analogue and serial control for general process equipment.

Selection starting point

Confirm the available supply, motor rated voltage and current, required speed range and torque, starting duty, braking demand, control method, analogue or pulse signals, communications, ambient conditions and available panel space.

Performance, control and integration

Sensorless vector performance, commissioning features and I/O

Motor-control performance

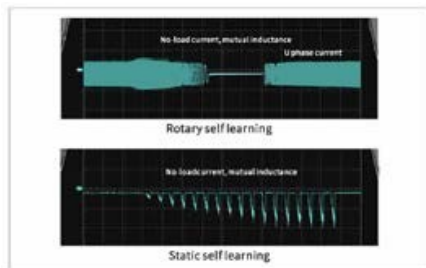
Function	Published value
Sensorless vector speed range	1:100
Steady-speed accuracy	$\leq 0.5\%$ of rated synchronous speed
Torque response	$\leq 20\text{ms}$, sensorless vector control
G-type starting torque	150% at 0.5Hz, sensorless vector control
F-type starting torque	100% at 0.5Hz, sensorless vector control
Vector-control frequency	0 to 300Hz
V/F maximum frequency	0 to 3200Hz
Digital frequency resolution	0.01Hz
Carrier frequency	0.5 to 16kHz, automatic load-dependent adjustment

G-type and F-type overload duty

Duty	1 minute	2 seconds
G type	150% rated current	180% rated current
F type	120% rated current	150% rated current

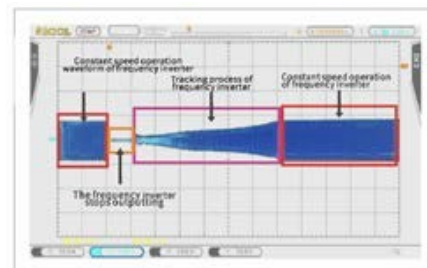
Select the duty type from the motor load, acceleration demand and expected overload. Motor kW alone is not sufficient for final drive selection.

Commissioning features



Motor self-learning

Rotary or static motor-parameter identification supports practical commissioning.



Hard speed tracking

Designed to track a rotating motor during restart and reduce disturbance to the driven process.

Control, I/O and process functions

Function	Specification
Digital inputs	6; DI5 supports 0 to 100kHz pulse input
AI1 analogue input	0 to 10V or 0 to 20mA
Preset speeds	Up to 16
PID feedback	0 to 10V DC or 0 to 20mA
Outputs	SPA open collector, relay and DA1 analogue
DA1 analogue output	0 to 10V or 0 to 20mA
Command sources	Keypad, terminals or serial communications
Frequency sources	9 sources including digital, analogue, multi-speed and serial
Communications	Built-in RS485 / Modbus RTU

Additional control functions

Built-in PID

Closed-loop process control for pump, fan, pressure and flow applications.

AVR

Maintains controlled motor output voltage as the incoming mains varies.

Quick current limiting

Reduces the likelihood of overcurrent trips during changing load conditions.

DC braking

Programmable braking frequency, time and current.

Common DC bus

Multiple compatible inverters can share a common DC bus where the system is engineered accordingly.

Protection and emergency-stop input

Protection includes overvoltage, undervoltage, overcurrent, overload, applicable overheat protection, external fault, communication error, PID feedback abnormality and short-circuit-to-ground conditions. The programmable emergency-stop input interrupts controller output but must not be assumed to provide a safety-rated E-stop function unless incorporated into a suitably designed and validated machine safety system.

Model range and selection

PXe-PI550A1 model family | full model code = PXe-PI550A1- + suffix

Use the model suffix together with the supply class, motor rating and duty type. G1S suffixes are identified in the source specification as variants intended for single-phase motor loads. Confirm motor compatibility and output arrangement before selection.

Single-phase 220V input

Suffix	kW	Duty	Frame	kg
0R4G1	0.4	G	A1	1.4
0R7G1	0.75	G	A1	1.4
1R5G1	1.5	G	A2	1.6
2R2G1	2.2	G	A2	1.6
004G1	4	G	A3	3.2
5R5G1	5.5	G	A4	5.9

Single-phase 220V - G1S motor-load models

Suffix	kW	Duty	Frame	kg
0R4G1S	0.4	G	A1	1.4
0R7G1S	0.75	G	A1	1.4
1R5G1S	1.5	G	A2	1.6
2R2G1S	2.2	G	A2	1.6
004G1S	4	G	A3	3.2
5R5G1S	5.5	G	A4	5.9

Three-phase 220V input

Suffix	kW	Duty	Frame	kg
0R4G2	0.4	G	A1	1.4
0R7G2	0.75	G	A1	1.4
1R5G2	1.5	G	A1	1.4
2R2G2	2.2	G	A2	1.6
004G2	4	G	A3	3.2
5R5G2	5.5	G	A3	3.2
7R5G2	7.5	G	A4	5.9
011G2	11	G	A4	5.9

Three-phase 380V input

Suffix	kW	Duty	Frame	kg
0R7G3	0.75	G	A1	1.4
1R5G3	1.5	G	A1	1.4
2R2G3	2.2	G	A1	1.4
004G3	4	G	A2	1.6
5R5G3	5.5	G	A3	3.2
7R5F3	7.5	F	A3	3.2
7R5G3	7.5	G	A3	3.2
011F3	11	F	A3	3.2
011G3	11	G	A3	3.2
015F3	15	F	A4	5.9
015G3	15	G	A4	5.9
018F3	18.5	F	A4	5.9
018G3	18.5	G	A4	5.9
022F3	22	F	A4	5.9
022G3	22	G	A4	5.9

Three-phase 480V input

Suffix	kW	Duty	Frame	kg
0R7G4	0.75	G	A1	1.4
1R5G4	1.5	G	A1	1.4
2R2G4	2.2	G	A1	1.4
004G4	4	G	A2	1.6
5R5G4	5.5	G	A3	3.2
7R5G4	7.5	G	A3	3.2
011F4	11	F	A3	3.2
011G4	11	G	A3	3.2
015F4	15	F	A4	5.9
015G4	15	G	A4	5.9
018F4	18.5	F	A4	5.9
018G4	18.5	G	A4	5.9
022F4	22	F	A4	5.9
022G4	22	G	A4	5.9

Input supply windows

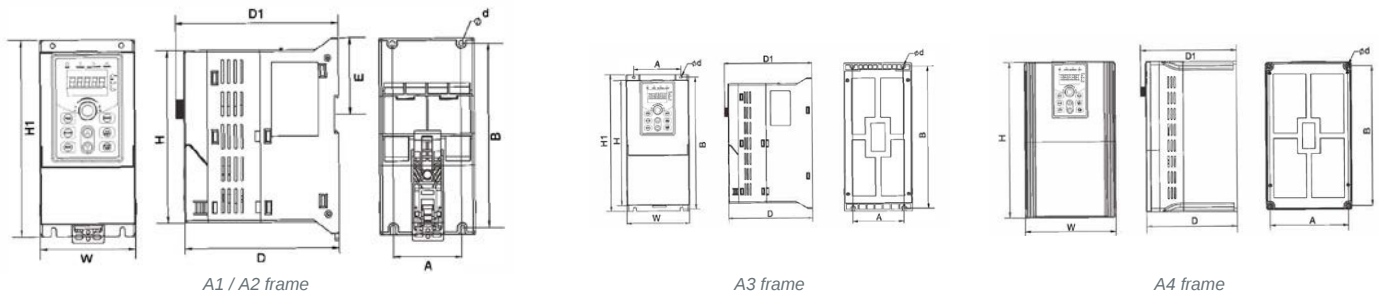
1PH 220V 220-240V AC, -15% / +10%	3PH 220V 220-240V AC, -15% / +10%	3PH 380V 380-440V AC, -15% / +10%	3PH 480V 480V AC +/-10%
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Selection and project information			
Supply Input voltage, phase, frequency and upstream protection.	Motor Rated power, voltage, current, frequency, speed and connection.	Load duty Starting torque, acceleration time, continuous/cyclic duty and braking demand.	
Control Local, terminal or RS485 operation; analogue, pulse and PID requirements.	Installation Frame size, panel space, cooling, ambient temperature, altitude and access.	Accessories DC reactor, braking resistor and project documentation requirements.	

Mechanical dimensions, wiring and installation

Frame dimensions, environmental limits and interface reference

Frame drawings



Frame	H	H1	W	D	D1	A	B	d	E	kg
A1	163	185	90	146	154	65	174	5	72.5	1.4
A2	163	185	90	166	174	65	174	5	72.5	1.6
A3	238	260	120	182	190	90	250	5	-	3.2
A4	290	-	170	193	201	155	276	5	-	5.9

H, H1, W, D and D1 are overall frame dimensions. A, B and d are installation dimensions. E is the DIN-rail mounting dimension where applicable. All dimensions are in millimetres. Weights shown are the model-table values used for handling estimates.

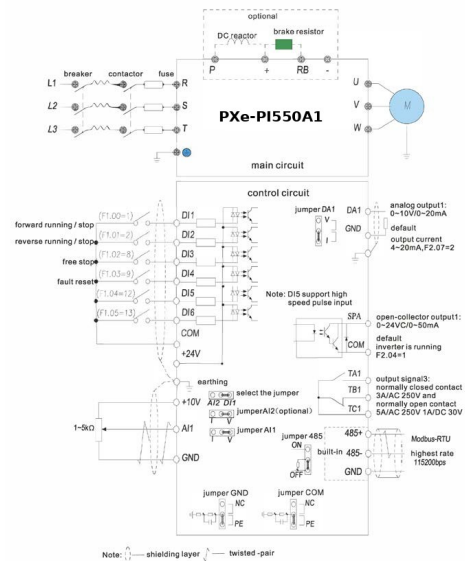
Installation and environment

Parameter	Specification
Operating temp.	-10C to 40C; derate from 40C to 50C
Storage temp.	-20C to 65C
Humidity	<90% RH, non-condensing
Vibration	<5.9m/s ² (0.6g)
Altitude	No derating <1000m; 1%/100m above; max 3000m
Protection	IP20
Cooling	Forced air
Safety standard	IEC 61800-5-1:2007
EMC standard	IEC 61800-3:2005

Installation notes

Indoor installation only. Keep the inverter away from direct sunlight, corrosive or explosive gas, water vapour, conductive dust, flammable gas, oil mist, dripping water and salt contamination. Confirm mains and motor terminals, protective earth, jumper positions, DC reactor or braking resistor requirements and terminal functions against the operating manual before energising the drive.

Wiring and interfaces



Interface reference

DI1-DI6 digital inputs; DI5 supports high-speed pulse input. AI1 and DA1 support selectable voltage/current modes. Outputs include SPA open collector and relay contacts. Built-in RS485 / Modbus RTU is shown in the source diagram with a maximum stated rate of 115200bps.

Final specification and support

Confirm the selected model, motor data, duty, braking requirements and control architecture with PX Electronics before ordering.

+44 118 206 7525
info@pxelectronic.com
www.pxelectronic.com