



Technical Features:

1. Central control module based on DSP, realize high-speed and high-performance control

2. Control Mode: Vector Control W/O PG, Vector Control W/PG, V/F Control

3. Support vector control for asynchronous motor and permanent magnet synchronous motor, realize motor parameter automatic identification.

4. 150% torque when at low speed 0.5Hz running in the sensorless vector control mode.

5. Built in simple PLC function, 16 sections speed is available.

6. Multi-language OLED could display 3 parameter groups at the same time.

7. Equipped with DC fuse design with multiple protection features.

8. Optimized design for ventilation, advanced technology and small size.

9. The top-down wiring layout make the wiring and installation more convenient.

10. Support the standard Modbus communication protocol, support remote control with keyboard.

11. Entire coating can work in kinds of severe environment.

12. Unique EMC design, special software algorithm, minimizes pollute to power source.

EMC

Nameplate instruction:

inverter model →

input rating →

output rating →

Serial No. & Bar Code →

POWTRAN®

TYPE PI9400 045G3

SOURCE AC 3PH 380V 91A 50Hz/60Hz

OUTPUT AC 3PH 0-380V 45kW 90A 0-600Hz

ZPB1A0100001

DALIAN POWTRAN TECHNOLOGY CO.,LTD.

Serial Name 940: PI9100 Series

Class Code 0: Normal Configuration 1: Special Configuration 1 2: Special Configuration 2

Model code a: normal (elided) b: enhanced d: single board m: mini machine

Power capacity e.g.: 045: 45kW

PI 940 0 A 045 G 3

Input Voltage Level 2: 3-phase 220V 3: 3-phase 380V 4: 3-phase 480V 6: 3-phase 690V

Function Code Load Type: F: Flow Load (Air blower, Water pump) G: General Load



PI9400 series

High-performance vector control inverter



Vector Control Inverter

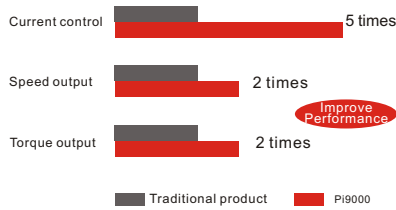
PI 9400 series



Production orientation:

Based on the lasted theory and technology of motor running and control,Powtran invent a new high performance vector control frequency inverter .Through decoupling the motor flux current and torque current , it can achieve high rapid response and high accuracy torque control , gain high precision with more wider range control in speed control and torque control as well .

Performance comparison:

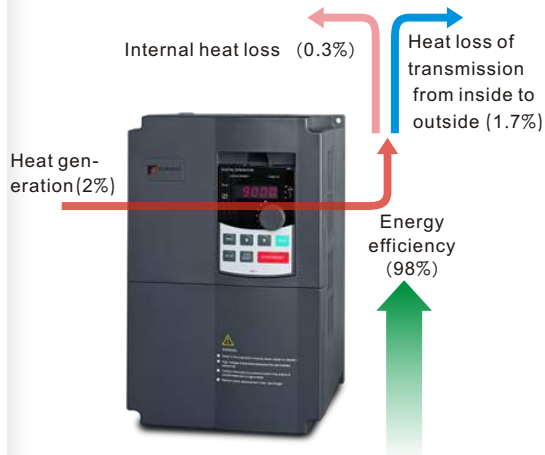


Capacity range:

Power range: 45~250kW
Maximum frequency: 600.0Hz
Voltage level: 3-phase 380V±10%
3-phase 480V±10%
3-phase 690V±10%

Application field:

Metallurgy, petroleum, chemical, textile, building material, coal, medicine, food, paper making, plastic, printing, hoist, washing, water supply, sewage treatment, etc
Machine industry:
Wire drawing machine, mixer, compressor, extruder, pump, air blower, grinder, conveyor, lifting machine, etc



Standard specification:

Item	Function	Specification
Power	Voltage and frequency levels	Three-phase 380V 50/60Hz Three-phase 480V 50/60Hz Three-phase 690V 50/60Hz
	Allowable fluctuation	Voltage:±10% Frequency:±5%
Control system	Control system	High performance vector control inverter based on DSP
	Output frequency	Vector control:0 to 300Hz V/F control:0 to 3200Hz
	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
Control system	Maximum frequency	Vector control:0 to 300Hz V/F control:0 to 3200Hz
	Carrier Frequency	0.5 to 15kHz;automatically adjust carrier frequency according to the load characteristics.
	Input frequency resolution	Digital setting: 0.01Hz Analog setting: maximum frequency×0.025%
	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: ≤ ± 0.5% (rated synchronous speed) Vector control W/ PG: ≤ ± 0.02% (rated synchronous speed)
	Speed control accuracy	Vector control W/O PG ≤ ± 0.3% (rated synchronous speed)
	Torque response	≤ 40ms (vector control W/O PG) ≤ 5ms (W/ 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 36.0 seconds, braking current value: 0.0% to 100.0% Jog Frequency Range: 0.00Hz to max. frequency; Jog Ac/deceleration time: 0.0s to 3600.0s
	Jogging control	Achieve up to 16-speed operation through the control terminal
	Multi-speed operation	
	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.
Persona-lization 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.
	Cycle-by-cycle 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 65535h).

Standard specification:

Item	Function	Specification
	input signal	Running method Frequency setting Start signal Multi-speed Emergency stop Wobblelate run Fault reset PID feedback signal Keyboard/terminal/communication 10 frequency settings available, including adjustable DC(0 to 10V),adjustable DC(0 to 20mA), panel potentiometer, etc. Rotate forward/reverse At most 16-speed can be set(run by using the multi-function terminals or program) Interrupt controller output Process control run When the protection function is active, you can automatically or manually reset the fault condition. Including DC(0 to 10V), DC(0 to 20mA)
	Running	output signal Running status Fault output Analog output Output signal Motor status display, stop, ac/deceleration, constant speed, program running status. Contact output - AC 250V 5A, DC 30V 5A 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). At most 3-way output,there are 40 signals each way
	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.
	Running command channel	Three channels: operation panel,control terminals and serial communication port. They can be switched through a variety of ways.
	Frequency source	Total 5 frequency sources: digital,analog voltage,analog current, multi-speed and serial port. They can be switched through a variety of ways.
	Input terminals	6 digital input terminals, compatible with active PNP or NPN input mode, one of them can be for high-speed pulse input(0 to 100KHZ square wave); 2 analog input terminals for voltage or current input.
	Output terminals	2 digital output terminals, one of them can be for high-speed pulse output(0 to 100KHZ square wave); one relay output terminal; 2 analog output terminals respectively for optional range (0 to 20mA or 0 to 10V),they can be used to set frequency, output frequency, speed and other physical parameters.
Protection function	Inverter protection	Overvoltage protection, undervoltage protection, overcurrent protection, overload protection, overheat protection, overcurrent stall protection, overvoltage stall protection, losing-phase 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
	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.
	Speed start tracking method	The inverter automatically tracks motor speed after it starts
display	Parameter protection function	Protect inverter parameters by setting administrator Password and decoding
	LED/OLED display keyboard	Running information Error message
	LED display	Monitoring objects including : running frequency, set frequency, actual motor current, DC bus voltage, output voltage, actual motor speed, cumulative running time, IGBT temperature, PID reference value, PID feedback value, input terminal status, output terminal status, analog AI1 value, analog AI2 value, current stage of multi-speed, torque set value.
	OLED display	At most save 3 error message, and the time, type, voltage, current, frequency and work status can be queried when the failure is occurred.
Communication	Copy parameter	Display parameters
	Key lock and function selection	Optional, prompts operation content in Chinese/English text.
		Quickly copy parameters by using the special keyboard(only for OLED)
Environment	RS485/RS232	Lock part or all of keys, define the function scope of some keys to prevent misuse.
	Environment temperature	The optional completely isolated RS485/RS232 communication module can communicate with the host computer.
	Storage temperature	-10 ℃ to 40 ℃ (temperature at 40 ℃ to 50 ℃, please derating for use)
	Environment humidity	-20 ℃ to 65 ℃
	Height and vibration	Less than 90% R.H, does not exceed 90% R.H
	Application sites	Below 1000m, below 5.9m/s² (= 0.6g)
Product standard	Altitude	Indoor where no sunlight or corrosive, explosive gas and water vapor, dust, flammable gas, oil mist, water vapor, drip or salt, etc.
	Pollution degree	Below 1000m
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	Product adopts safety standards.	IEC61800-5-1:2007
	Product adopts EMC standards.	IEC61800-3:2005
	Cooling method	Forced air cooling and natural air cooling