Инвертор воздушного компрессора серии PI500-C

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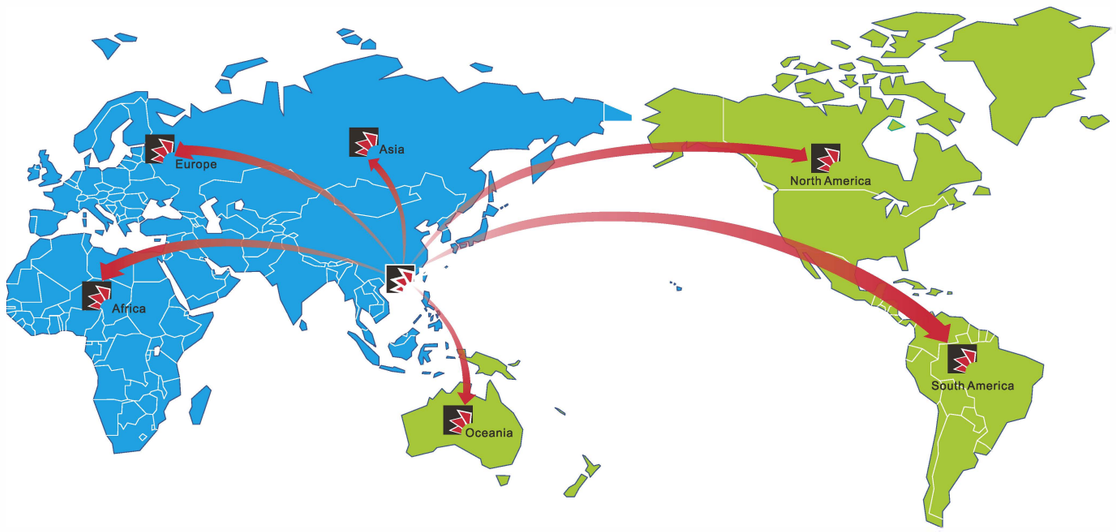


Powtran technology

A manufacturer of motor control intelligent products and devices based on motor design.

201811ED1.0

POWTRAN®

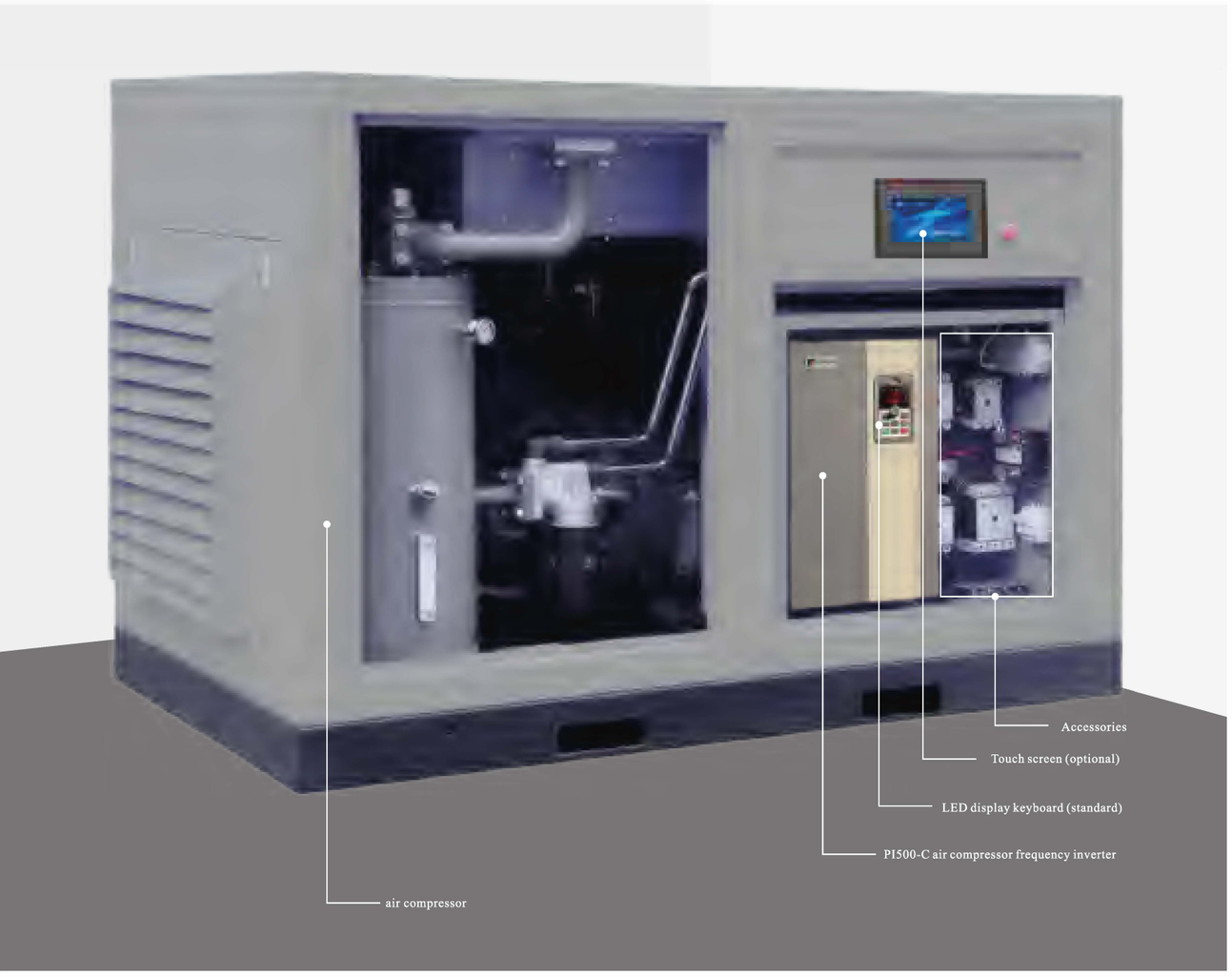
PI500-C series

Air Compressor Inverter

www.powtran.com

PI500-C series air compressor frequency inverter is designed for screw air compressor process control by Powtran Technology. The controparameters are set directly through the keyboard of frequency inverter or touch screen, both the Chinese and English interface are available. The frequency inverter can realizes all the functions required by screw air compressor, simple and convenient operation, compact size with more powerful function, it can control the permanent magnet synchronous motor and asynchronous motor air compressor .

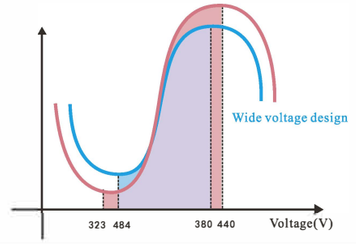
The PI500-C series frequency inverter was sucessfully used for the screw air compressor , it provides a more cost-effective way for the air compressor system, a variety of options, streamline the control system to reduce air compressor fault , but also provides a more convenient one-stop service, so that the installation and maintenance of screw air compressor become easy and fast



Technical Features

Excellent performance

1、good load adaptability, control both AC asynchronous motor and permanent magnet synchronous motor ;
2、unique double PID function for monitoring the current and pressure which makes the control more accurate, superior performance, more stable gas supply;
3、wide voltage applicable: AC 380V (-15%) to 440V (+10%) performance characteristics.

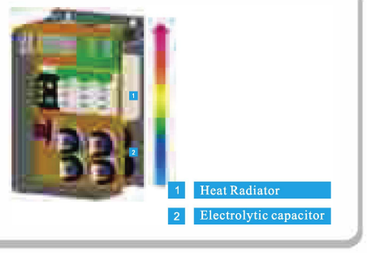


Good operability

1、integrated air compressor special interface, pressure feedback, temperature detection, loading control, fan control, alarm signal, etc., simple wiring , optimized cost control ;
2、Bluetooth function, mobile monitoring and operation, good human-machine interaction; 3, can be configured according to customer needs: air compressor Controller + frequency inverter, frequency inverter (including keyboard), touch screen + frequency inverter;
4、Supporting PT100 and PT1000 temperature signal detection,user friendly.

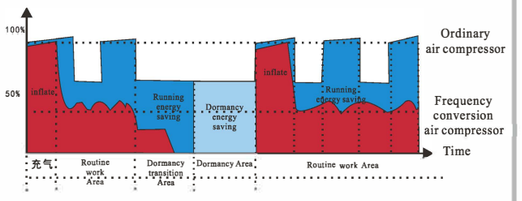
Optimized hardware structure

1、independent duct design, fan detachable, easily maintain, good heat dissipation;
2、imported paint for PCB board (moisture proof,corression proof, dust proof), can adapt to harsh working environment;
3、wall mounted, vertical mounted, flange installation, more assembly options for customer; 4,compact size, reduce installation space.



Green energy-saving

1、automatically adjust the motor frequency acorrding to the gas use amount, greatly reduce energy consumption, reduce electricity consumption;
2、smoothly motor control for motor start and stop, low starting current to reduce the impact on the grid , reduce the impact of motor and other mechanical machine, extend the motor lifetime, reduce system noise;
3、controllable sleep and wake-up function.

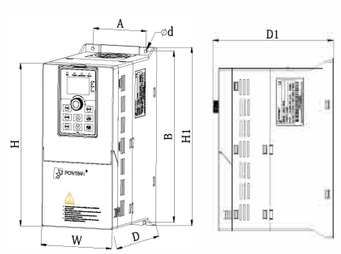


Frequency conversion energy saving analysis

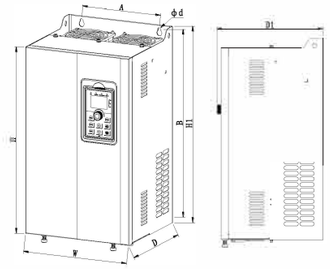
certification standards

products meet international standards:IEC 61800-3:2004+A1:2012
IEC 61000-6-3:2007+A1:2011

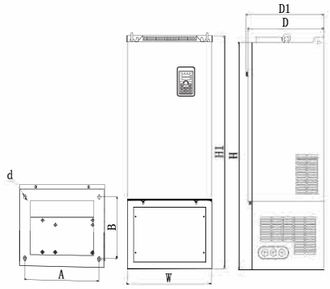
Inverter Size



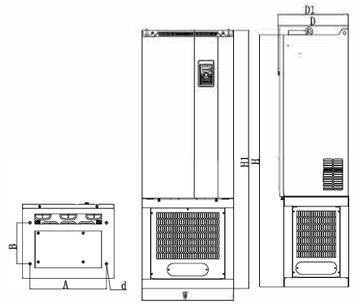
PI500 series plastic frame 7.5-11Kw



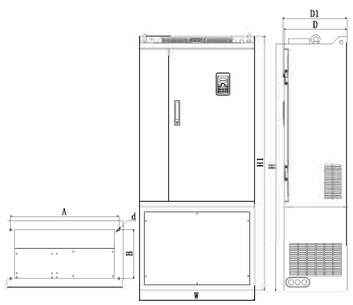
PI500 series metal frame 11-1100kW



PI500 series metal frame 132kW



PI500 series metal frame 160-220kW



PI500 series metal frame 250-400kW

Inverter model	Output power (kW)	Input current (A)	Output current (A)	Dimersion(H1xWxD1mm)					Installation(AxB dm)			N.W (KG)
				H	H1	W	D	D1	A	B	d	
PI500 7R5G3	7.5	20.5	17	280	300	190	190	198	140	285	6	7.2
PI500 011G3	11	26	25									
PI500 015G3	15	35	32									
PI500 018G3	18.5	38.5	37	330	350	210	190	198	150	335	6	9.5
PI500 022G3	22	46.5	45									
PI500 030G3	30	62	60	380	400	240	215	223	180	385	7	13
PI500 037G3	37	76	75									
PI500 045G3	45	91	90	500	520	300	275	283	220	500	10	41.2
PI500 055G3	55	112	110									
PI500 075G3	75	157	150									
PI500 093G3	93	180	176	550	575	355	320	328	250	555	10	58
PI500 110G3	110	214	210									
PI500 132G3	132	256	253	695	720	400	360	368	300	700	10	72.5
PI500 160G3	160	307	304	790	820	480	390	398	370	800	11	108
PI500 187G3	187	345	340									
PI500 200G3	200	385	380									
PI500 220G3	220	430	426									
PI500 250G3	250	468	465	940	980	705	410	418	550	945	13	190
PI500 280G3	280	525	520									
PI500 315G3	315	590	585									
PI500 355G3	355	665	650									
PI500 400G3	400	785	725									

Hmi Control Panel (option)

1、Perfect customer selection:

1) freely switch Chinese and English function version
2) Manual/automatic load and unload operation

3、Safety warming and alarm function

1) Warning state, only prompt warning does not affect the use
2) Alarm state, The electronic control system stops protecting immediately
3) Too high pressure, pressure sensor fault indication
4) Temperature too high, temperature sensor fault indication
5) Main motor fault indication
6) Phase sequence error, phase absence, fault indication for current detection

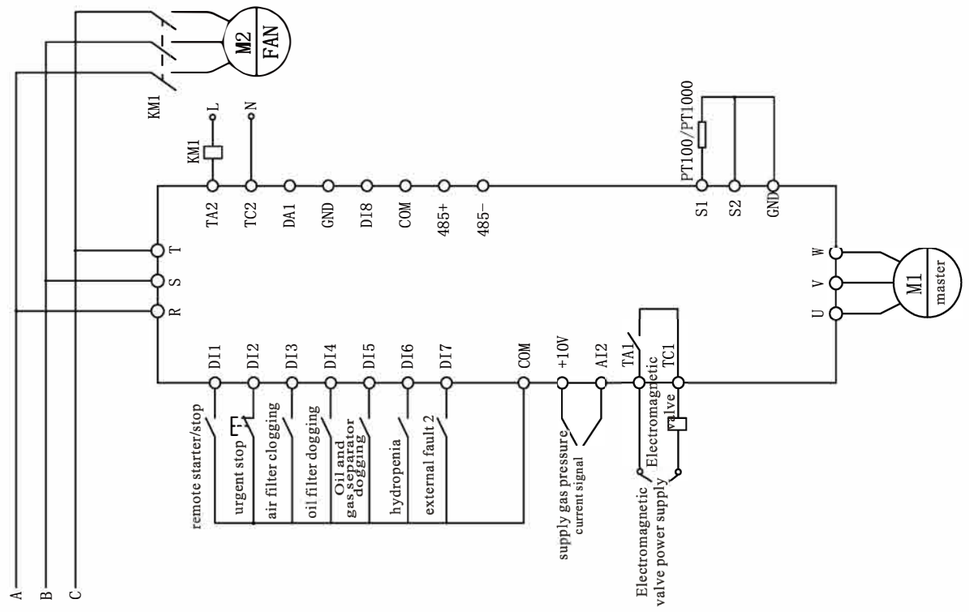
2、Detailed system display information

1) It includes all the normal control functions of constant pressure control of air compressor and the control of oil cooling fan
2) Air compressor constant pressure control dedicated PID, current PID control
3) The parameters of the frequency conversion unit can be directly modified and viewed through the touch screen
4) Contains system running state and frequency converter running state information
5) Intelligent sleep and wake function, energy saving effect is more remarkable
6) Three sets of system fault records can be recorded
7) Password protection design to protect user security

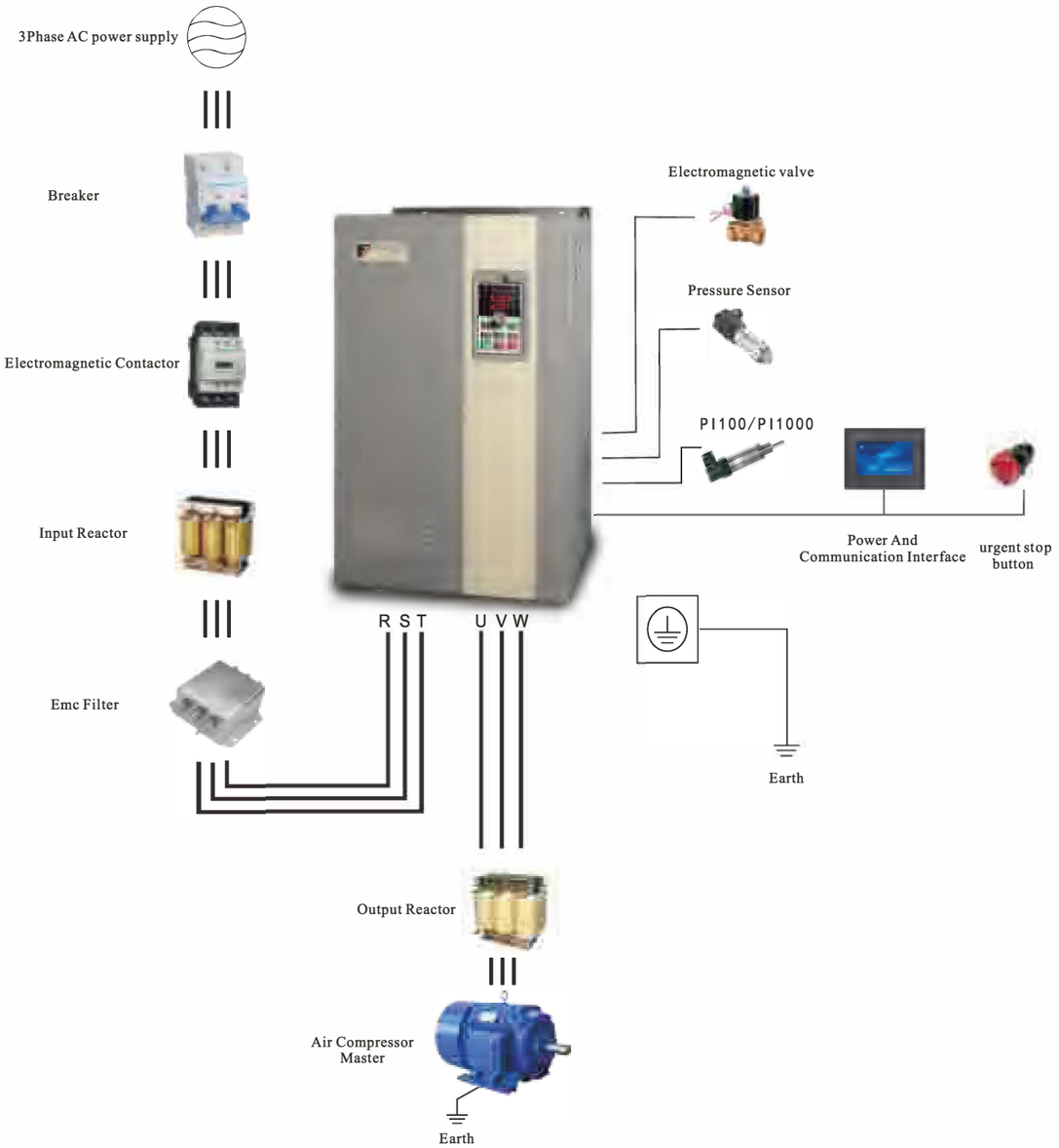
4、Comprehensive maintenance information remind function

1) Air filter usage time record and maintenance remind, add block sensor signals
2) Oil filter use time record and maintenance tips , add block sensor signals
3) Oil and gas separator use time record and maintenance remind, add block sensor signals
4) Lubrication oil, grease service time record and maintenance remind
5) Machine system use time record and maintenance tips

Inverter system circuit drawing



Connection Diagram



Standard specification

Item	Function		Specification
Power	Input frequency		50Hz/60Hz
Control system	Control system		High performance vector control inverter based on DSP
	Control method		V/F control, vector control W/O PG
	Automatic torqueboost function		Realize low frequency (1Hz) and large output torque control underthe V/F control mode
	V/F curve mode		Linear,square root/m-th power, custom V/F curve
	Over load capability		Rated current 150% - 1 minute, rated current 180% - 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
	Start torque		0.5Hz/150% (vector control W/O PG)
	Torque boost		Automatic torque boost; manual torque boost 0.1% to 30.0%
	Jogging control		Jog Frequency Range: 0.00Hz to max. frequency;Jog Ac/deceleration time: 0.0s to 6500.0s
	Speed start tracking function		The motor in rotation can be started smoothly without impact
	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
	Air compressor special function		No-load dormancy and wake function, pressure setting value, cooling fan start and stop temperature closed loop, no-load frequency, no-load delay time, setting of dormant time,Load delay time, constant pressure control of air compressor,constant current control, start and stop control of electromagnetic valve, maintenance function of timing components,Current PID regulation
Personalization function	Self-inspection of peripherals after power-on		After powering on, peripheral equipment will perform safety testing, such as ground, short circuit, etc
	Quick current limiting		The current limiting algorithm is used to reduce the inverter over current probability, and improve whole unit anti-interference capability
	Timing control		Timing control function: time setting range(0m to 6500m)
Running	Input signa	digital input	7 digital input terminals, compatible with active PNP or NPN input modes, in which one channel can be used for high-speed pulse input (0-100khz square wave)
		Analog input	3 -ways analog input terminals (AI1, AI2, Ai3), in which AI1 andAI2 can choose 0-10v or 0-20mA input, AI3 voltage is -10～+10V input
	Output Signal	Relay output	Standard 2-ways programmable relay output, can extend 2 paths at most Contact capacity :3A/AC 250V,1A/DC 30V
		Analog output	2-ways analog output(DA1,DA2), 16 signals can be selected such as frequency, current, voltage , PT100 and other, output signal range (0to 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
	Frequency source		Total 10 frequency sources: digital, analog voltage, analog current, multi-speed and serial port. They can be switched through a varietyof ways
Protection function	Inverter protection		Overvoltage protection, undervoltage protection, overcurrent protection, overload protection, overheat protection, overcurrent stall protection, overvoltage stall protection, losting-phase protection (optional), communication error, PID feedback signal abnormalities, PG failure and short circuit to ground protection
Display	LED/ OLED 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, analog AI2 value, motor Actual running speed,PID set value percentage, PID feedback value percentage
		Error message	At most save three error message, and the time, type, voltage, current, frequency and work status can be queried when the failure is occurred
	LED display		Display parameters
	OLED display		Optional, prompts operation content in Chinese/English text
	Copy parameter		Can upload and download function code information of frequency converter, rapid replication parameters
	Key lock and function selection		Lock part or all of keys, define the function scope of some keys to prevent misuse
Commu nication	RS485		Built-in RS485 communication
Environment Product standard	Environment temperature		-10℃to 40℃ (temperature at 40 ℃to 50℃, please derating for use)
	Storage temperature		−20℃～65℃
	Environment humidity		Less than 90% R.H, no condensation
	Vibration		Below 5.9m/s² (= 0.6g)
	Application sites		Indoor where no sunlight or corrosive, explosive gas and water vapor, dust, flammable gas, oil mist, water vapor, drip or salt, etc
	Altitude		Below 1000m
	Pollution degree		2
	Protection level		IP20
roduct standar	Product adopts safety standards		IEC61800-5-1:2007
	Product adopts EMC standards		IEC61800-3:2005
	Cooling method		Forced air cooling

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