



PS9500 series

Frequency inverter integrated cabinet



Company Introduction

Powtran Technology as a national high-tech enterprise, set up Wuxi, Guangzhou and more than 30 offices with the center of Shenzhen and Dalian cities and established a worldwide network of R & D, production, logistics and service. Composing the advanced technology from Japan Toshiba and Taiwan brand, Powtran provides a series of energy saving and automatic & drive control products, such as frequency inverters(including special power supply), soft starters, AC servo drive system, energy saver, vehicle motor drive system. Powtran products are verified by international authoritative organizations and now export to more than 100 countries.




Product Overview

The PS cabinet integrated cabinet is based on the technology of PI500 high performance vector inverter. It is modularly designed and integrated the corresponding peripheral including external control circuit and display units. The users can choose to the frequency inverter integrated cabinet with our standard configuration function, also can chose the customized product which we can integrate the peripheral control devices and the control panel according to kinds of application cases. After purchase the frequency inverter integrated cabinet, it can be used normally after properly connected with the power supply and motor. This can avoid the inconvenience for secondary wiring. The PS cabinet, featured with concise and beautiful appearance, easy to use. It improved the safety and reliability of the secondary distribution, and also reduce your cost. Independent air duct design, the best cooling effect, low pressure. High power, parallel maximum power can achieve 1200 K W/A C 380 V, voltage level A C 220-690 V



Nameplate Instruction

 POWTRAN CE	
Inverter model →	MODEL: PS9500 710G3
Output rating →	POWER: 710kW
Input rating →	INPUT: AC 3PH 380V± 10% 50Hz/60Hz
Output specifications →	OUTPUT: AC 3PH 0V~380V 1350A 0~400Hz

Serial Name → PS 95 0 0 710 G 3

- PS9500 Series → PS
- 0: whole machine hanging
3: 9000 movement
5: 500 movement → 95
- 0: Normal Configuration
1: Special Configuration → 0
- 0: Normal Configuration
1: Special Configuration → 0
- 710: 710kW → 710
- Product features
General model
H: heavy load
G: the constant torque load
F: fan pump light load → G
- Input Voltage Level
3: 3-phase 380V
4: 3-phase 480V
6: 3-phase 690V → 3
- Power capacity(●●●)
e.g. 710: 710kW → 3

Note: if you need other voltage grade products please contact with our technical department consulting

Appearance And Structure Of Standard Ps Cabinets



Single door cabinet
structure and panel layout



Double door cabinet
structure and panel layout

Selection guide

1. The load type of the motor, the start-stop frequency, the load inertia and other overload conditions, select the right PS model, the first selection needs to clear the following information to be dragged Machine nameplate data (fixed voltage, rated power, rated frequency, speed) with appropriate level of PS cabinet, according to the type of load, overload conditions to choose the appropriate margin. Generally Fan, pump light load According to the rated current of the motor 1.1 times P S cabinet capacity, constant torque, inertia load according to 1.1-1.2 times selection: impact load, wave. larger occasions, consider the most current and current, start frequently, four times every hour, it is need larger power .
2. PS cabinet general protection level is IP20, users need special protection level, need to explain in advance when ordering .
3. PS cabinet has a structural form of G G D, weitu, welding cabinets, etc. Our company generally uses welding cabinets, when the customer has no special requirements, according to our standards;
4. For color, our factory color RAL7035 (orPANT0NE420), special requirement should provide color code and communicate in advance .
5. PS cabinet is designed to meet the requirements of the end user, human nature design, to avoid on-site secondary processing wiring. Therefore, the user needs to be clear when ordering Requirement: environment, on-site installation conditions, EMC requirements and other design elements, including special packaging requirements. For details ,please read Customer Form .
6. P factory are usually equipped circuit breaker, voltmeter, ammeter, power / operation / fault indicator, run / stop / fault reset button, The specific configuration is subject to the written contract

Technical Specification

Model	Rated Current	Machine configuration	Rack configuration	Cabinet size	
PS9550 018G3	37A	PI500 018-022G3	Precision cabinet	450*350*1300mm	
PS9550 022G3	45A				
PS9550 030G3	60A				
PS9550 037G3	75A	PI500 030-037G3		600*400*1600mm	
PS9550 045G3	90A	PI500 045-075G3		GGD Welding cabinet	800*450*1800mm
PS9550 055G3	110A				
PS9550 075G3	150A				
PS9550 093G3	176A	PI500 093-132G3	800*600*2000mm		
PS9550 110G3	210A				
PS9550 132G3	253A				
PS9550 160G3	304A	PI500 132-187G3		1000*600*2000mm	
PS9550 187G3	340A				
PS9550 200G3	380A				
PS9550 220G3	426A	PI500 200-280G3	1200*600*2000mm		
PS9550 250G3	465A				
PS9550 280G3	520A				
PS9550 315G3	585A	PI500 315-450G3		GGD Welding cabinet	1000*600*2000mm
PS9550 355G3	650A				
PS9550 400G3	725A				
PS9550 450G3	820A	PI9000 500-800F3	GGD Welding cabinet		1200*600*2000mm
PS9530 500G3	860A				
PS9530 560G3	950A				
PS9530 630G3	1100A				
PS9530 710G3	1250A				
PS9530 800F3	1430A				

Note: The structure of PS control cabinet includes GGD, Rittal, welding cabinet, etc. We generally uses welding cabinet, if customer has no special requirements, it will default to our standard production.

The above specifications & models take PS9550 as the example, which uses the PI500 series inverter core structure. If you need to order other specifications, please contact our business personnel.

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Description of control circuit terminals

Category	Symbol	Name	Function
Power supply	+10V-GND	+10V power supply	Output +10V powersupply, maximum output current: 10mA Generally it is used as powersupply of externalpotentiometer, potentiometer resistance range: 1kΩ to5kΩ.
	+24V-COM	+24V power supply	Output +24V powersupply, generally it is used as power supply of digital input and output terminals and external sensor. Maximum output current: 200mA.
	PLC	External power input terminal	When external signal is used to drive, please unplug PLC jumpers , PLC must be connected to external power supply, and to +24V (default).
Analog input	AI1-GND	Analog input terminal 1	1. Input range:(DC 0V to 10V/0 to 20mA), depends on the selected AI1 jumper on control panel. 2. Input impedance: 20kΩ with voltage input, 500Ω with current input.
	AI2-GND	Analog input terminal 2	1. Input range:(DC 0V to 10V/0to 20mA), depends on the selected AI2 jumper on control panel. 2. Input impedance: 20kΩ with voltage input, 500Ω with current input.
	AI3	Analog input terminal 3	1. Input range:DC-10V~+10V 2. Input voltage 20kΩ 3. AI3 reference potential GND or -10V.
Digital input	DI1	Multi-function digital input 1	1. Opto-coupler isolation, compatible with bipolar input, Jump line PLC selection decisions; 2. Input impedance: 4.7kΩ 3. Voltage range with level input: 19.2V to 28.8V;input impedance 3.3kΩ.
	DI2	Multi-function digital input 2	
	DI3	Multi-function digital input 3	
	DI4	Multi-function digital input 4	
	DI5	Multi-function digital input 5	
	DI6	Multi-function digital input 6	
	DI7	Multi-function digital input 7	
	DI8	Multi-function digital input 8	
	DI5	High-speedpulse input terminals	Except the function of DI1 to DI4,DI6 to DI8,DI5 can also be used as high-speed pulse input channels.Maximum input frequency: 100kHz.
Analog output	DA1-GND	Analog output 1	The selected DA1 jumper on control panel determines voltage or current output. Output voltage range: 0V to10V□ output current range: 0mA to 20mA.
	DA2-GND	Analog output 2	The selected DA2 jumper on control panel determines voltage or current output. Output voltage range: 0V to10V,output current range: 0mA to 20mA.
Digital output	SPA-COM	Digital output 1	Opto-coupler isolation, bipolar open collector output Output voltage range: 0V to 24V , output current range: 0mA to 50mA.
	SPB-COM	Digital output 2	
	SPB-COM	High-speed pulse output	Subject to function code(F2.00)"SPB terminal output mode selection" As a high-speed pulse output, the highest frequency up to 100kHz.
Relay output	TA1-TC1	Normally open terminals	Contactor drive capacity: normally closed contact 3A/AC250V, normally open contact 5 A/AC 250V, COS ϕ = 0.4. 1
	TB1-TC1	Normally closed terminals	
Motor temperature check input	S1-S2-GND	Pt100 inspect wire input	Pt100 temperature sensor.
Built-in RS485	485+	485 differential signal + terminal	485 communicationinterface,485 differential signal terminal, use twisted-pair or shieldedwire connect to the standard 485 communication interface 485 jump line in the control panel todecide whether to connect theterminal resistance.
	485-	485 differential signal - terminal	
auxiliary	J13	communication interface	CAN card, 26-pin terminal
interface	J10	PG card interface	12-pin terminal
	GND	GND ground interface	GND jump line decide whether to connect PE, improve the inverter anti-interference
	COM	COM ground interface	COM jump line decide whether to connectPE, improve the inverter anti-interference
	H1	COM Terminal interface	Consistent with the COM function onthe terminalline

Standard specification

Item	Function	Specification	
Power	Rated voltage level	AC 3PH 480V(-10%)~480V(+10%) AC 3PH 380V(-15%)~440V(+10%) AC 1PH 220V(-15%)~240V(+10%) AC 3PH 220V(-15%)~240V(+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 36.0 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
		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.		
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).	

Standard specification

Item	Function	Specification	
Running	Input signal	Running method	Keyboard/terminal/communication
		Frequency setting	10 frequency setting available, including adjustable DC 0~10V / -10~+10V , adjustable DC 0~20mA , panel potentiometer
		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
		Wobble run	Process control run
Fault reset		When the protection function is active, you can automatically or manually reset the fault condition.	
Output signal	PID feedback signal	Including DC(0 to 10V), DC(0 to 20mA)	
	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).	
Run function	Output signal	Output signal	At most 4-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 10 frequency sources: digital,analog voltage,analog current, multi-speed and serial port. They can be switched through a variety of ways.	
	Input terminals	8 digital input terminals, compatible with active PNP or NPN input mode, one of them can be for high-speed pulse input(0~100Hz square wave); 3 analog output terminals,AI1 and AI2 can choose 0~10V or 0~20mA input, AI3 voltage is -10~+10V input.	
Protection function	Output terminals	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.
		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	Parameter protection function	Protect inverter parameters by setting administrator Password and decoding
		LED/OLED 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.
		keyboard	At most save 3 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.
Communication	Parameters copy	Parameters copy	Can uploading or downloading the function code information of frequency inverters, do the parameter copy quickly.
		Key lock and function selection	Lock part or all of keys, define the function scope of some keys to prevent misuse.
Environment	Key lock and function selection	RS485	The optional completely isolated RS485 communication module can communicate with the host computer.
		Environment temperature	-10 °C to 40 °C (temperature at 40 °C to 50 °C, please derating for use)
		Storage temperature	-20 °C to 65 °C
		Environment humidity	Does not exceed 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 and water vapor, dust, flammable gas, oil mist, water vapor, drip or salt, etc.
		Altitude	Below 1000m
Product standard	Pollution degree	Pollution degree	2
		IP degree	IP20
		Product adopts safety standards.	IEC61800-5-1:2007
Product adopts EMC standards.	IEC61800-3:2005		
Cooling method	Forced air cooling		

Assembly drawing

Ammeter

Voltmeter

keyboard

- ★ Self-developed intelligent operation panel, easy to use
- ★ Multi-machine drive system display and control for single machine
- ★ Optional GPS/GPRS function module for positioning and positioning and Remote data interaction

Circuit breaker (optional)

- ★ Adopting well-known brand circuit breakers, the maximum breaking capacity is up to 100KA, comprehensive protection
- ★ function, convenient for installation and maintenance, high reliability.

Power supply cabinet

Frequency inverter cabinet

- ★ Standard cabinet size 1200mm*600mm*2000mm

Control loop

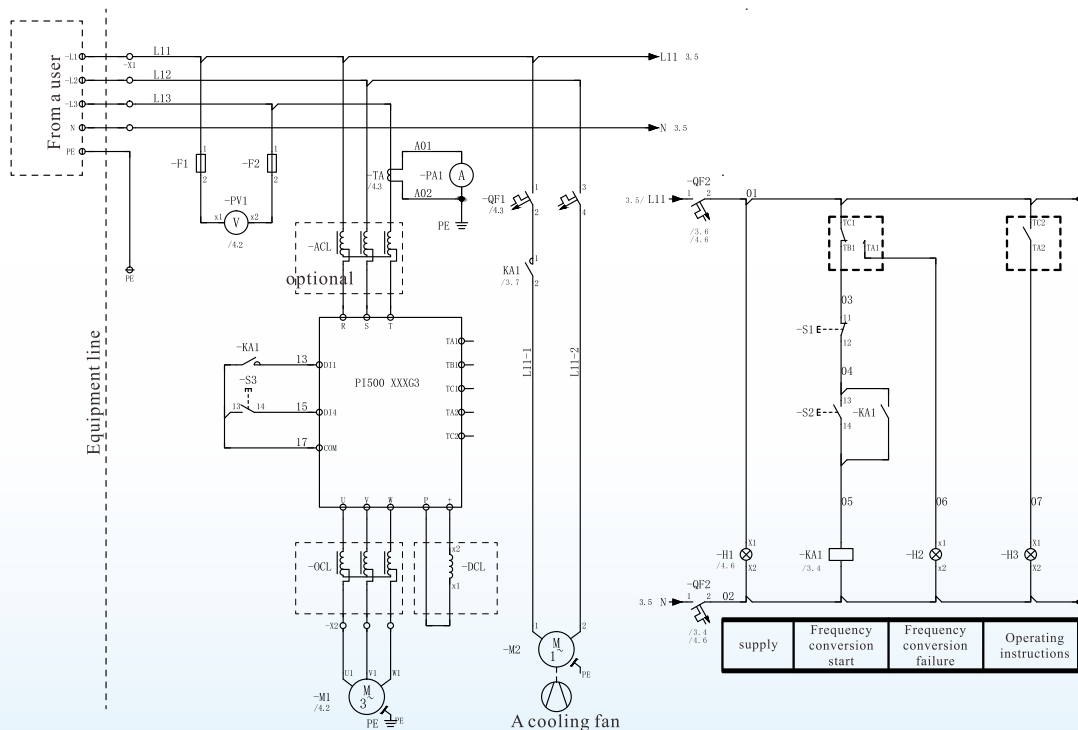
- ★ To simplify the wiring, the user only needs to do the power supply and the motor wiring, ensuring quick installation and debugging, and simultaneously assembling all the main circuit components into the frequency conversion cabinet except the load, easy for management, improve the safety factor of the individual cooling air duct design, while ensuring that the temperature rise is within a reasonable range.
- ★ Multi-loop control is provided: the power frequency loop and the backup loop can be increased according to customers' requirements to increase their choice.

Touch screen HMI (optional)

Using the advanced Cortex-A8 cpu as the core
Widescreen HD, large capacity, rich interface, high transmission speed










Reactor

Internal electrical schematic













Operation panel



Sign	Name	Features
	Parameter Setting/Esc Key	<ul style="list-style-type: none"> * Enter into the modified status of main menu * Esc from functional parameter modification * Esc submenu or functional menu to status menu
	Shift Key	*Choose displayed parameter circularly under running or stop interface; choose parameter's modified position when modifyparameter
	Increasing Key	*Parameter or unction number increasing, set by parameter F6.18.
	Decreasing key	*Parameter or function number decreasing, set by parameter F6.19
	Running key	*For starting running in the mode of keyboard control status
	Stomp/Reset Key	*For stopping running in the running status; for resetting the operation in fault alarm status. The function of the key is subjectto F6.00
	Enter Key	*Enter into levels of menu screen, confirm setting
	Quick multifunction key	*This key function is determined by the function code F6.21.
	Keyboard encoder	<ul style="list-style-type: none"> * In query status, function parameter increasing or decreasing * In modified status, the function parameter or modified position increasing or decreasing. * In monitoring status, frequency setting increasing or decreasing

The selection of peripheral accessories

Name	Brand	Quantity	Picture
Inlet and outlet terminals	*	4+3	
Breaker	CHINT/Tianshui	1	
AC contactor	CHINT/Tianshui	1	
Reactor	Sudun	1	
Input filter	Sudun	1	
Output filter	Sudun	1	
Braking resistor	POWTRAN	1	
Ammeter	Dajiang	1	
Voltmeter	Dajiang	1	
Current Transformer	Dajiang	1	

Application field



Field application case

(1) A tire rubber group company

1. Load type: twin-screw tablet press Motor
Rated frequency: 50Hz; Power: 250kW;
Rated current: 466A; Rated speed: 980 r/min;
2. On-site process conditions: the twin-screw tablet driven by the inverter after the rubber particles are softened by heating and softening. The rubber enters the model, and the rubber formed by the abrasive is pressed to form a tire film;
3. grid status: grid voltage inverter does not work before the voltage is 385V, the inverter works. Pressed at 380V, the load does not pull down the grid voltage;
4. Equipment operation mode: After the inverter is started, the frequency is adjusted by the touch screen to 50Hz fixed frequency, frequency conversion. The acceleration time is 40S;
5. equipment running time: the inverter works 24 hours a day.



(2) An oilfield power group

1. Load type: water injection pump Motor
Rated frequency: 50Hz; Power: 250kW;
Rated current: 457.0A; Rated speed: 990r/min;
2. Description of on-site working conditions: The frequency converter is applied to the piston injection pump, and the grid voltage is about 390V.
3. sets of 250KW water injection pumps, 2 with 1 spare, and rotate once every half a month.



(3) A certain city Heavy load Machinery Co., Ltd.

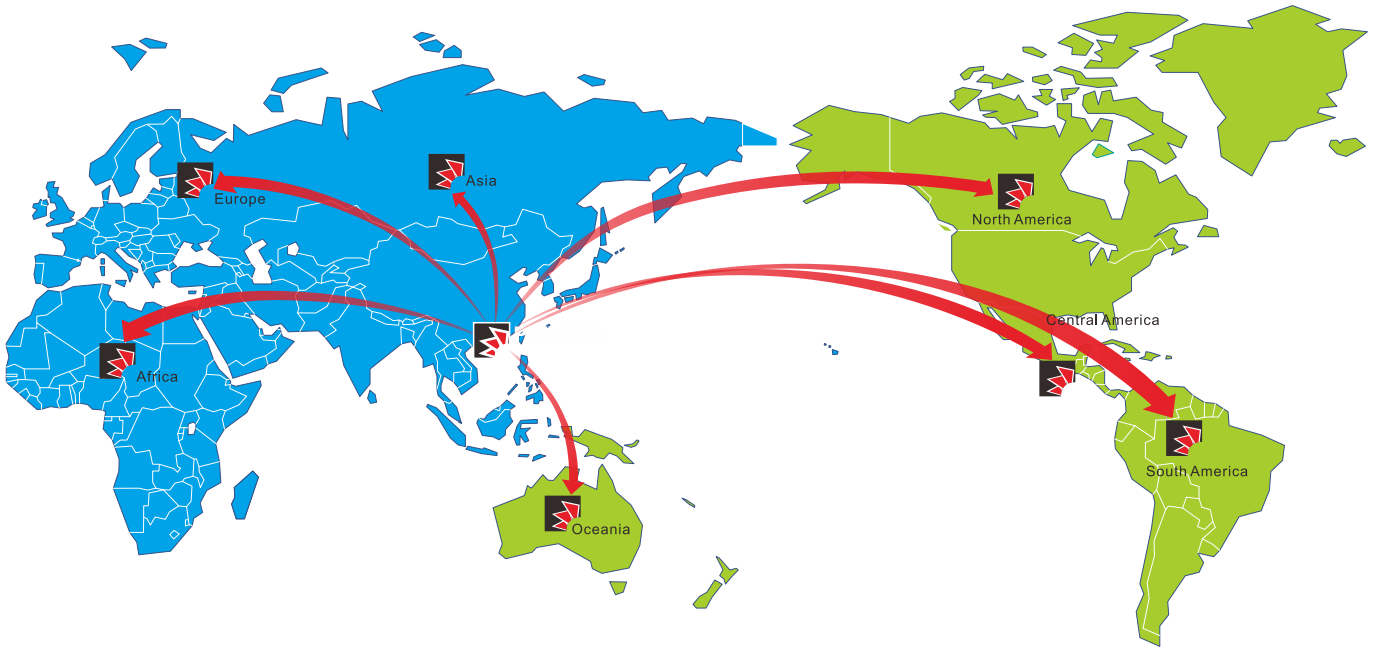
The project is a newly developed tourism project that adds pneumatic amusement equipment;

1. Load type: transfer. Rated motor frequency: 50Hz; Power: 630kW; Rated current: 1093A; Rated speed: 960 r/min
2. Description of on-site working conditions: After the inverter is on site, it is responsible for guiding customer installation, guiding wiring and electrical debugging. During the last two days of the first tourism conference of City, Party A hopes that the manufacturer's technical personnel can ensure that the field equipment can operate normally on site;
3. Operation result: After the on-site engineer debugging is completed, the general-purpose inverter runs stably. The flight distance of the personnel is about 3 meters from the ground. It is affirmed by the leaders of the provincial party committee and the municipal party committee. The boss who invested in the project is satisfied with the general-purpose inverter. Leaders and neighboring city leaders visited and experienced on-site, successfully completed flight tests, and the professional flight height reached 4-5 meters.



Service Network:

202007EV2.0



Powtran technology

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

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