



POWTECH | 欧科传动



Powtech Introduction

2013 version

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Unity and integrity and pragmatic innovation

Shenzhen Powtech Co., LTD is dedicated in power transmission and industrial automation technology product research, development, production and sales, rely on European latest technology to set up our platform, self research and software development, we focus to high-quality high-performance products and provide convenient services for our clients. Supplier, Enterprise, Employees and users achieve success together.



Learning from others, Powtech brings together the elite team in the field of frequency conversion and control, has engaged in years of senior research, procurement and manufacture team, makes the high-quality products; Also introduced in the frequency converter industry engaged in more than 10 years of marketing team, to provide professional, high quality service to customers, "Integrity, unity, pragmatic, innovative" as Powtech's spirit, to build brand new high quality talents in the field of frequency conversion and control platform, and also welcome and seek people who come with common ideal for common development.

We insist on technology integration and independent innovation on the basis of the latest product technology in the world , currently has more than 10 of the patent . The main products are high - performance vector inverter , special inverter control one machine , soft starter , servo systems and automated control systems ; provide comprehensive power control solutions for equipment manufacturing , energy-saving and environmental protection , new energy and other fields . The products are widely used in machine tools, wire and cable , plastic , printing and packaging , metallurgy, textiles, building materials , coal mining , municipal , automotive and other industries .

Powtech through the integration of a variety of modes of cooperation , established the marketing and service network spread whole nation, products are exported to more than 100 countries and regions .



Chapter
one



About Powtech---CIS

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RoHS



CE-EMC



CE-LVD



Team building

Creating value for customers



International Markets

More than 10 people in international marketing services team, elite market from Anglo-American with high quality Powtech inverter series products for global customers



Marketing Team

The industry elite with years of professional sales; more than 40 people in sales and marketing management team are ready to provide customers with the latest products and solutions.



R&D team

Chief engineer of the research and development with European technical background, general research and development team of engineers more than 30 people, provide customers with the optimization of motion control products.



Manufacturing

Years of experience in the manufacturing of key personnel and more than 20 manufacturing engineers with ISO9001 quality management system, international standards.

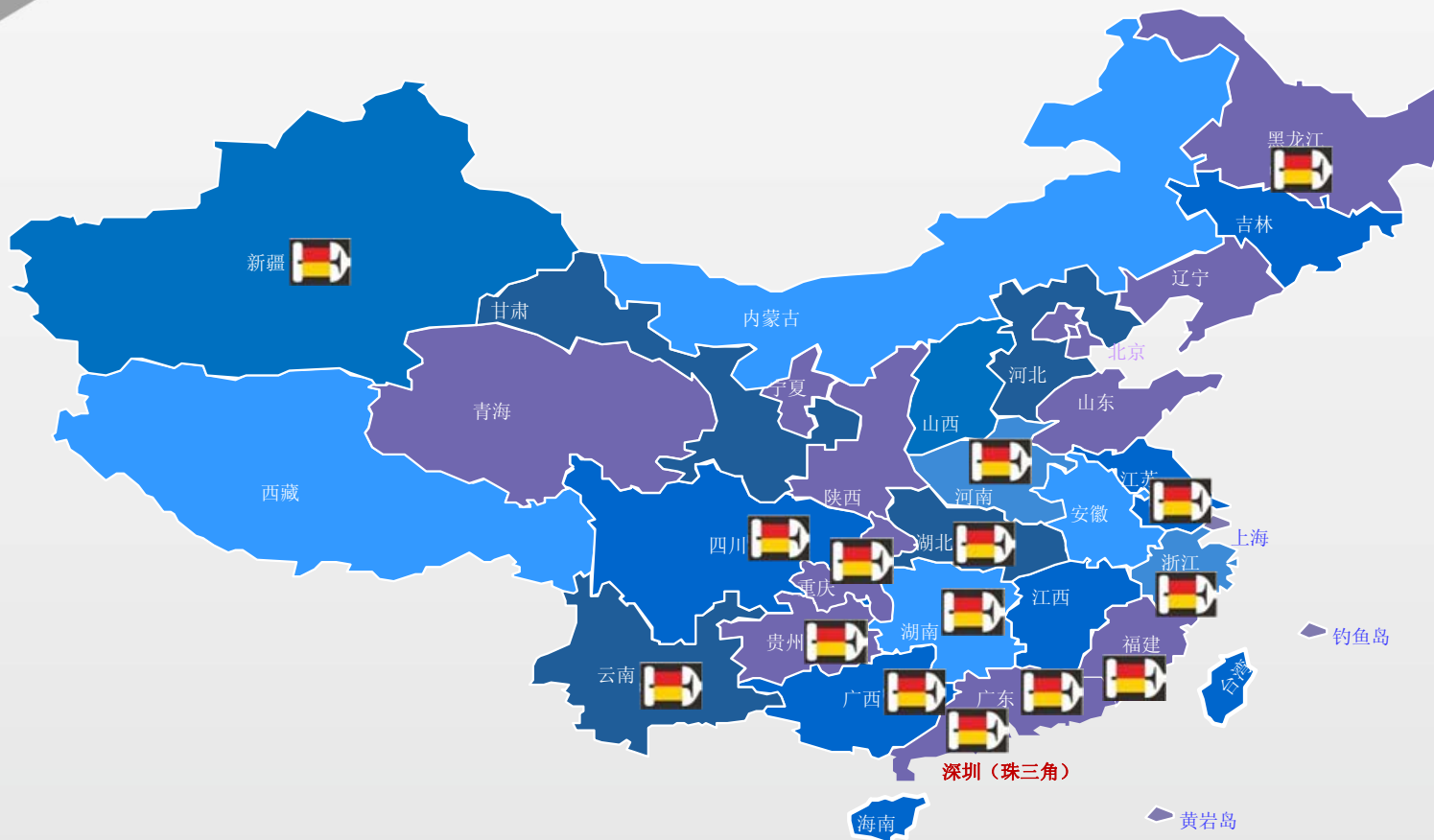


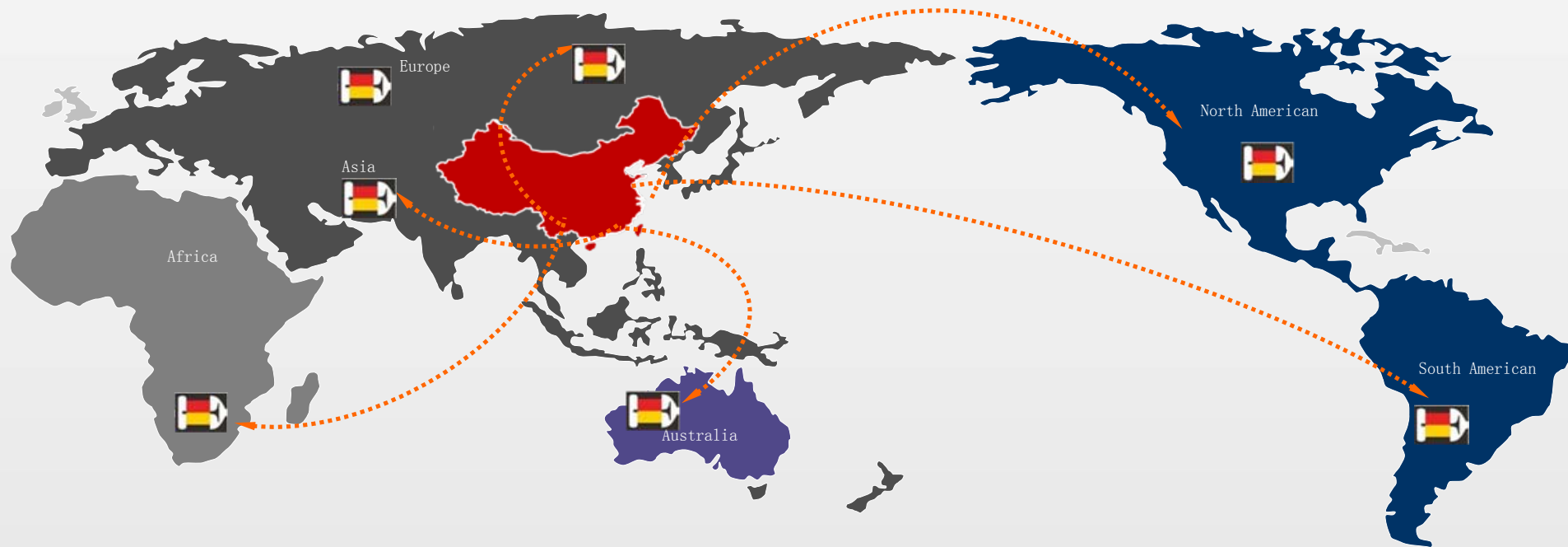
Technical Service

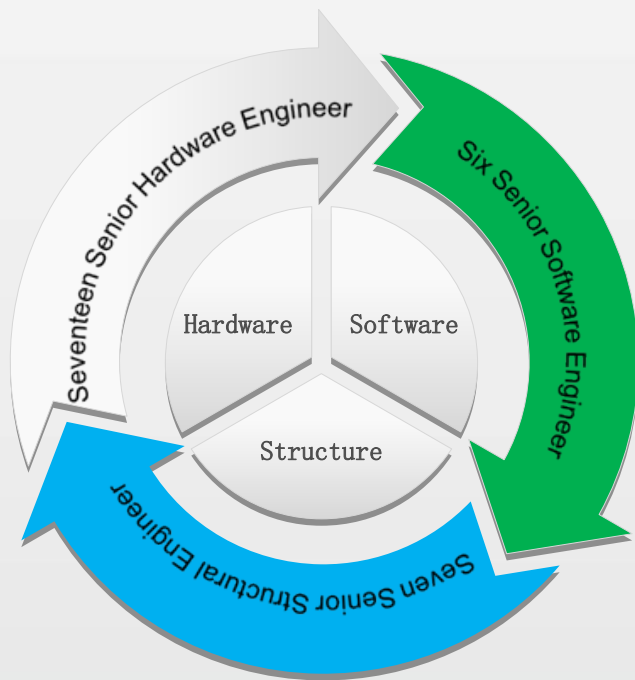
More than 20 professional and technical service engineers with years of experience in industrial applications, 24 hours to provide customers with full technical support services.











R & D team

R & D chief engineer with European technology background in more than 30 people R & D team to provide customers with optimum driving control products.



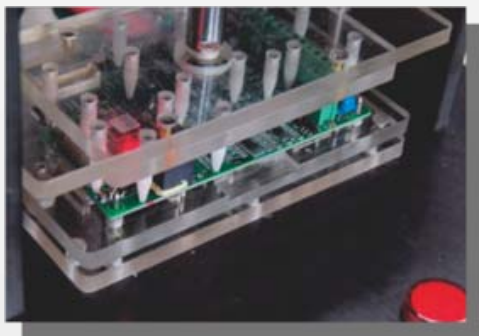
Experienced

R & D chief Engineer: automation and control senior engineer leading with 12 years experience and European professional technology company background.

Software Engineer: years of professional software development experience in the industry, with the application of the scene, can quickly develop applications targeted expansion.

Hardware Engineer: engineer with many years experience in electric drive, safety circuits, switching power supply, PCB layout design.

Structural Engineer: years of professional architects industrial control field with a number of companies working experience, and a wealth of practical experience.



Automatic control board tester



Excitation power supply testing



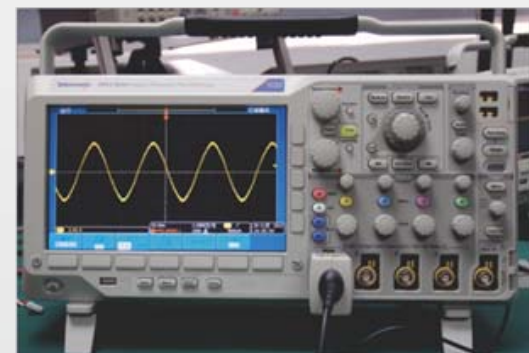
ITECH DC Electronic Load meter



Fluke handheld instrument troubleshooting



Fluke thermal imager



Tektronix Oscilloscope



ITECH DC power supply



LeCroy Oscilloscope



current waveform



Agilent Oscilloscopes

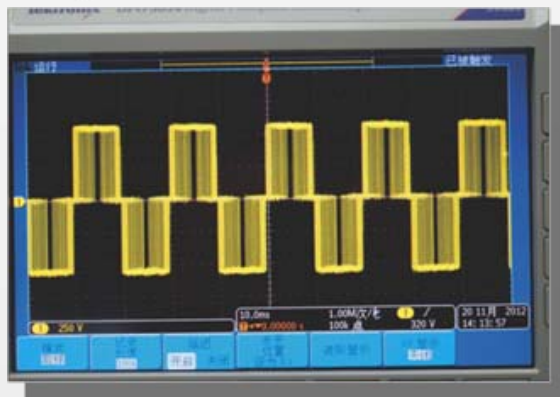


Tektronix High sensitivity current probe



PWM waveform





Phase voltage waveform

Powtech inverters apply international advanced SPWM algorithm to control and modulation, its high precision phase voltage output waveform, reflects the phase voltage waveform effect when the Powtech inverters running, reflects the perfect combination of software language and modern power device, to make the control more simple.



Harmonic test parameters

Powtech series inverter, all in strict accordance with the European CE certification of the EMC standard IEC61800-3: 2004+A1:2001 and LVD standard IEC61800-5-1 2007, different frequency were tested respectively, the total harmonic distortion rate is only 2.27%, reflecting the high steady speed precision and anti-interference ability.



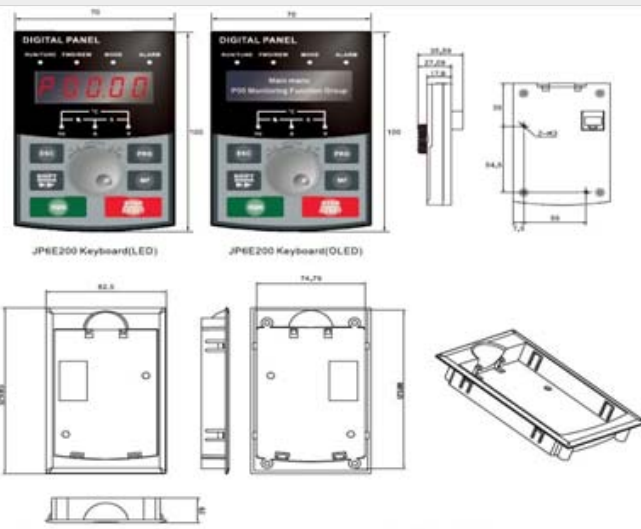
PC monitoring software

Powtech frequency inverters as a high-voltage electrical equipment widely used in industrial production with large output power, the excellent control effect and low cost, is an essential part of the industrial control network. Through the Powtech inverter upper monitoring software, it can facilitate communication between the implementation of the inverter and the upper machine, making the inverter action command code for putting on, shutdown, frequency setting, reading parameters, and make the three-phase asynchronous ac motor's speed control.



The keyboard control software

Powtech inverters has made the keyboard control software built-in before shipment. users only need to via the keyboard and then it can achieve a variety of control functions. At the same time, Powtech inverters supports keyboard hotplug, when using the optional OLED multi-language keyboard, it also can realize the graphical operation.



Panel installation keyboard cartridge, prescription required hole size: (74.78 $\pm$ 0.1) * (123.88 $\pm$ 0.5)



Standard operation and, strict quality control

Each of Powtech inverters strictly follow European CE standard and ISO9001 quality managing system and research or develop every machine through circuit design, component configuration ,structure layout.PCB board temperature aging, drive board, automatic inspection of control board and whole machine aging, final products inspection and packaging to stock strict compliance with EU industrial control products imported standardized operating standards, so that every aspect of the record, there is a file of each product. each batch traceability. Strive for every Powtech provide users with high-quality, high-reliability products.

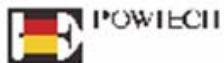
Excellence





Excellence





Chapter one

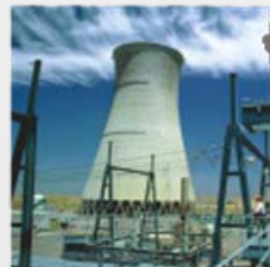


Industry applications

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- Iron and steel metallurgy
- Textile and injection molding
- Coal mine
- Chemical and light industry
- Thermal
- Petroleum and petrochemical
- Cement building materials
- Crane lifting
- HVAC and water connection
- Food and Drug
- Printing and dyeing, mixing
- Fan and water pump



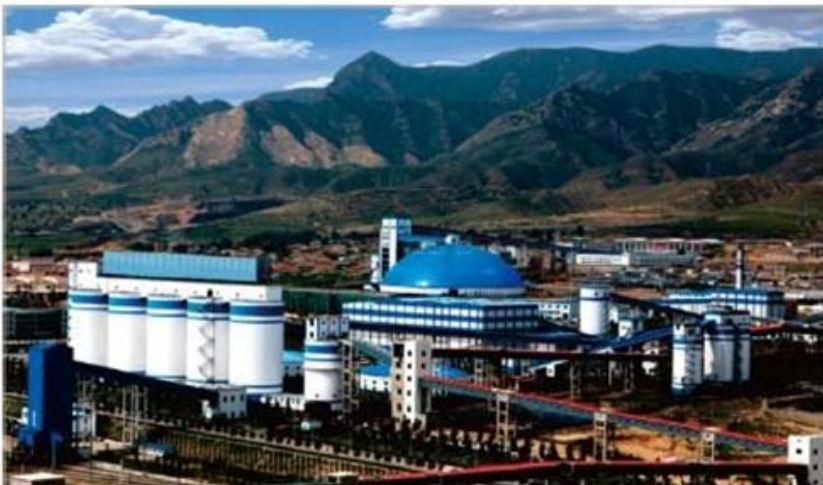
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High efficiency, Energy saving

The fan pump load frequency transformation, mainly by regulating the motor speed, as an alternative to conventional damper, baffle way, the energy conservation principle is as follows:

Case on fan of cement factory



Calculation condition:

Motor Power: $\eta_m=95\%$ Inverter efficiency: $\eta_{INV}=96\%$

Fan shaft power: $P=1000KW$ when $Q=0$, $H_m=1.4p.u$

Fan operation mode: When air volume 100%,
Annual operation time 20%

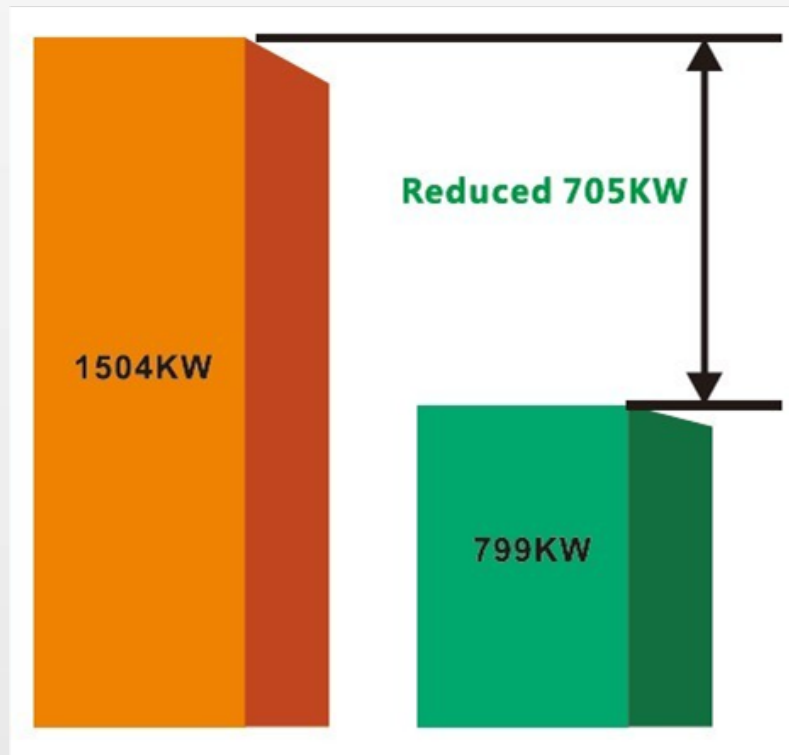
When air volume 80%, Annual operation time 40%

When air volume 60%, Annual operation time 40%



Save energy: (for 8000 hours of annual operation time)

$$P-P' = (1504 - 799) \times 0.4 \times 8000 = 2256000 \text{KWh}$$





PT200 series small power
vector frequency inverter



PT200 series high power
vector frequency inverter



PT100 mini series inverter



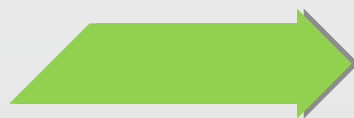
PT2000 series brake unit



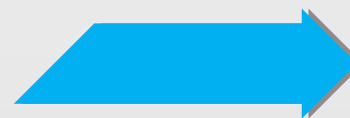
HMI



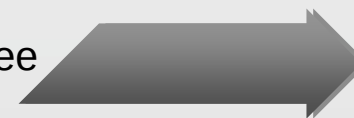
Step one



Step two



Step three





PT100 series mini vector frequency inverter

PT100 series: stable operation, simple to use, easy to maintain and affordable

1. Using DSP as the core control unit to achieve high speed high performance control
2. Motor parameter self learning, intelligent setting to the optimal control model
3. High performance of Mitsubishi IPM intelligent modules, protection function such as under voltage, over current, over temperature, over the ground short circuit, etc
4. Low frequency torque under 0.25 Hz 180% big torque output
5. Unique design of EMC, minimizing the pollution to power

Power range: 0.4 to 2.2 kW

Frequency range: 0.00 ~ 400.00 Hz

Voltage levels: single-phase 220 V $\pm 15\%$ / three-phase 380 V $\pm 15\%$

Areas of application: medical, food, packaging, engraving, washing and other industries machinery equipment, a variety of small-scale machinery equipment.





PT200 Series High Performance Vector Frequency Inverter (ABS case)

Input voltage: single-phase 220 V $\pm 15\%$ / three-phase 380 V $\pm 15\%$

Output power: 0.4KW-7.5KW

Frequency range: 0.00~400.0Hz;

Control system: Based on DSP high performance vector control

Control modes: V/F control , Open loop flux vector control, PG vector control

Start torque: G type: 0.5Hz/180% ; P type : 0.5Hz/120%





PT200 Series High Performance Vector Frequency Inverter (Iron case)

Input voltage: Three phase 380V $\pm$ 15%

Output power: 11KW-110KW

Frequency range: 0.00~400.0Hz;

Control system: Based on DSP high performance vector control
Control modes: V/F control , Open loop flux vector control, PG
vector control

Start torque: G type: 0.5Hz/180% ; P type : 0.5Hz/120%





PT200 Series High Performance Vector Frequency Inverter (Iron case)

Input voltage: Three phase 380V $\pm$ 15%

Output power: 160KW-630KW

Frequency range: 0.00~400.0Hz;

Control system: Based on DSP high performance vector control

Control modes: V/F control , Open loop flux vector control, PG vector control

Start torque: G type: 0.5Hz/180% ; P type : 0.5Hz/120%

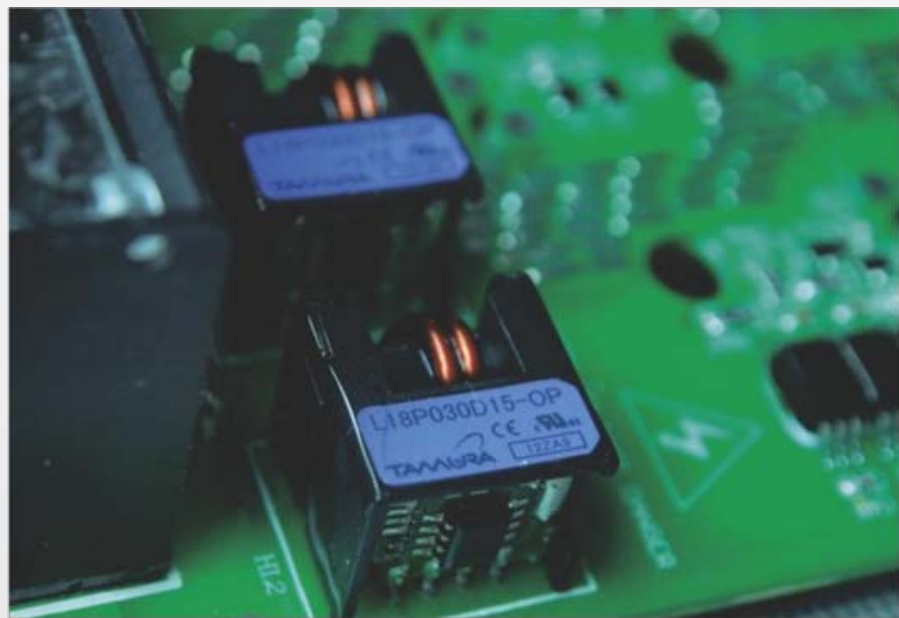




PT200 Series Brake Unit

- Allow large changes in the power grid occasions
- Good cost performance
- Power resistor is an optional piece , custom resistance box
- Short circuit, low voltage, over voltage, fast fuse protection
- Ensure brake IGBT in saturation
- Match all brands inverter





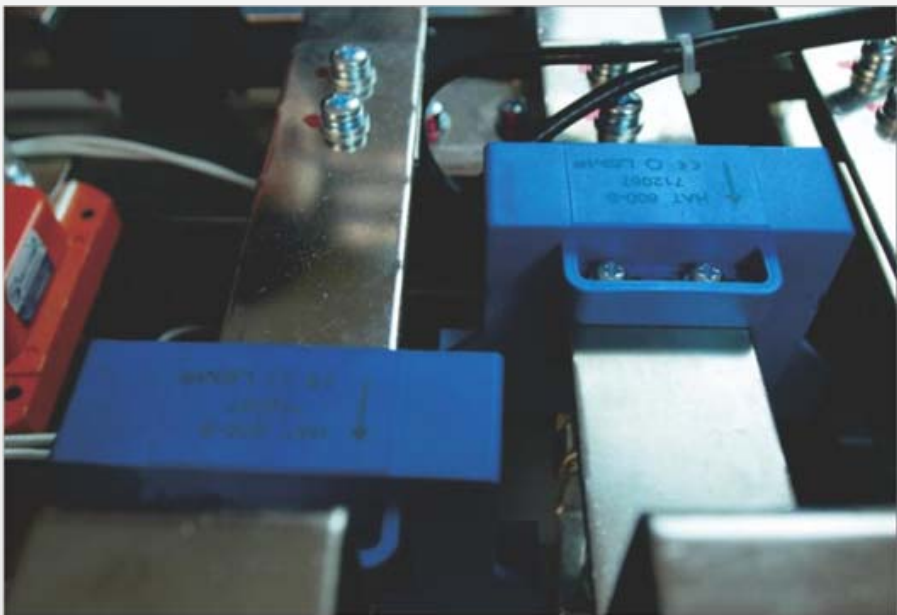
Multiple protection mechanisms

POWTECH inverter with overvoltage protection, undervoltage protection , overcurrent protection, overload protection, thermal protection, Over the loss of speed protection , over-voltage stall protection , phase protection , external fault , communication error , PID Feedback signal abnormalities , PG fault current detection failure Autotune fault , EEPROM.Operation failure , the brake unit failure , such as multiple protection mechanisms.

Powerful phase short circuit protection

0.3 microsecond transient protection





IGBT module protection

Input current regulation

Resistance to external magnetic interference

POWTECH inverter design using two Hall , current generated due to magnetic interference caused by the error Less than 0.5% , for most applications , the interference of the magnetic field is sufficient , but a strong magnetic field Interference to take appropriate measures.





Anti lightning design

Instantaneous high voltage discharging to ground

POWTECH inverter complies with the European CE certification in strict accordance with EMC standards IEC61800-3: 2004 + A1:2001 and LVD standards IEC61800-5-1: 2007 execution , using the IEC safety capacitor , when the moment Voltage is too high , the conventional capacitor failure, is discharged to ground to prevent electric shock , and personal protective equipment Safety . Safety capacitor including the X and Y capacitors are two types of capacitors , FireWire zero line between the X capacitor ,FireWire and Ground the Y capacitors . POWTECH inverter safety capacitor voltage rating is X1 large high pressure at 2.5 kV, less than equal to 4 kV; Y2 high pressure greater than 5 kV.





Independent power supply

Unique software algorithms

POWTECH inverter using proprietary core software algorithms , using cutting-edge European electricity Machine control technology and mature and stable switching power supply device , through the low-frequency and high-frequency software algorithms Optimization, as well as adjustment of the power factor can be controlled to reduce the opening of controllable turn-off loss of the device Consumption of impact, thereby to obtain a good sine wave. Effectively suppresses the harmonics , reduce

Own power loss and disturbance to surrounding equipment , reducing vibration, noise, electromagnetic pollution, To achieve a good energy-saving effect .





Board to ground

PCB board is the core foundation of internal control inverter , which EMC and temperature are higher, Step in inverter using high thermal conductivity and high conductivity copper studs for instantaneous release of PCB induction electric conduction on the ground , while the rapid transfer of heat to complete the PCB .



Back to ground

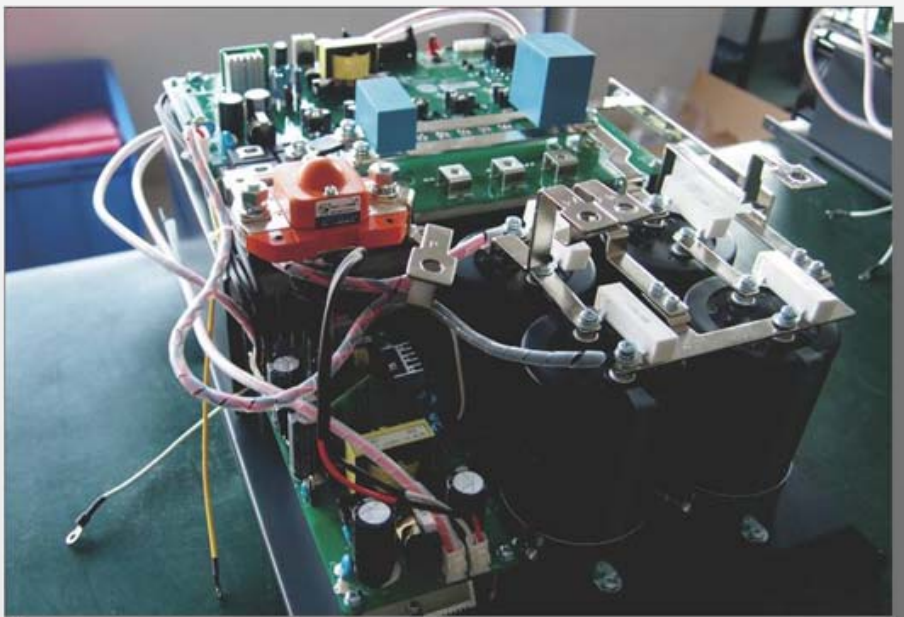
To achieve good ground , in addition to ground terminal outside the inverter chassis and also requires a good grounding between the control , POWTECH inverter series are made of metal backplane or between the radiator and the control cabinet directly to ground , so that the safe operation of interference the details of the deal everywhere.



Terminal to ground

Industrial electrical grounding process is the primary task of safe operation of equipment . POWTECH inverter from the circuit board , components, structural parts of the ground are in strict accordance with the safety requirements for the grounding process , which is designed for first EMC safety requirements of professional users eventually need to give the correct terminal is grounded , complete perfect control .

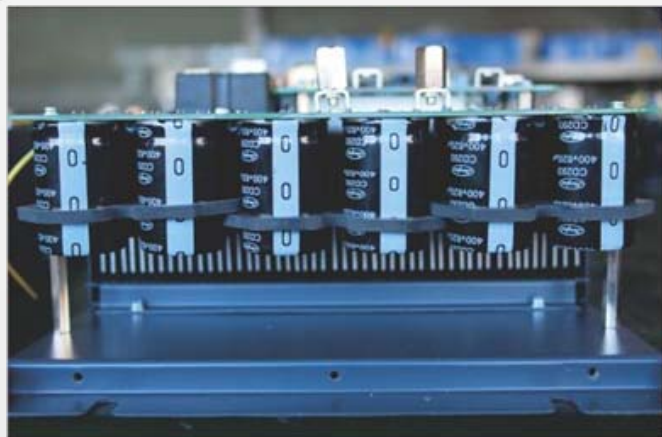




Dual power supply design

POWTECH inverter using dual power supply design, all the way to power for the switching power supply and driver board provides a power source , all the way to DC power supply and cooling fan contactor to provide a power source . Driving power source separate from the power source and cooling , ensuring a good run POWTECH inverter , enhanced product reliability and stability.





Independent air duct

Powtech inverter using separate duct design, from chassis cabinets , infrastructure components , temperature control system is installed to the drive control board , have carried out scientific duct design layout , ensuring compact size , but also very good isolated part of the circuit and the cooling duct for electronic components away from the wind tunnel . Optoelectronics and humid air in special circumstances , can achieve optimal heat dissipation.



Capacitance of the forced air cooling

Except that there are lots of heat need for radiating, Electrolytic capacitors also have amount of heat followed, the transmission structure design is difficult to solve the problem of electrolytic capacitor of the heat dissipation. Powtech inverter adopts the independent air duct design, at the same time also puts electrolytic capacitors in the independent air duct, improve the service life of electrolytic capacitors, greatly reduces the overall temperature rise.



Tips:

Arranging the location of the components in the cooling air duct is the necessary condition to ensure inverter radiating scientific and comply with the temperature rising standards. So when installation, it should be designed to make the device in the radiator to mechanical processing, otherwise it will produce stress to increase the thermal resistance. The heating device installed on the air duct, combined with the natural air cooling and forced air cooling, is conducive to power devices cooling and can decrease the temperature inside the machine. In Natural air cooling, it should make the radiator of the cross section parallel to the horizontal direction. In Forced air cooling, it should make the flow of air flow direction parallel to the radiator fin.





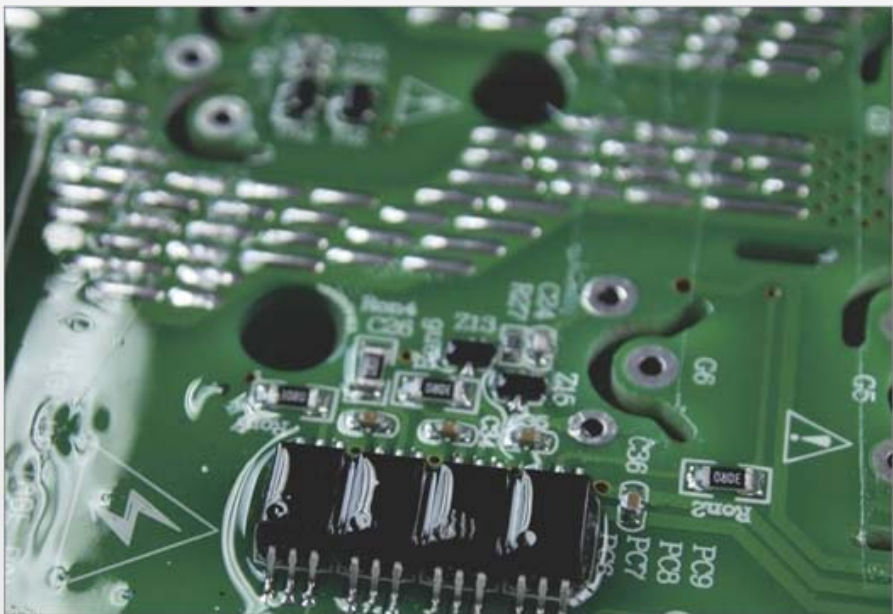
Smart fan control

Powtech inverter, all series adopt intelligent fan start stop control, when the inverter is up and running to start the fan heat dissipation. When the inverter is dormancy or outage into a state, cooling fan will delay stop, later will stop running automatically, greatly reduce the field noise and service life of fan.



Tips:

Cooling fan is used to produce the wind for inverter radiating, only when the fan speed achieves rated speed, the cooling effect will be full playing. With motor in parallel, then under the function of the inverter, power supply frequency based on motor speed could be within small range, the fan is not in rated speed, the inverter heat dissipation effect is very poor and cannot meet the heat dissipation effect, even if the inverter have no heat scattered to make the temperature rise of the frequency converter to improve the fault occurs. So Powtech inverter uses independent power to provide electricity to the cooling fan, and then it ensure the stable operation of the cooling fan, so as to ensure the good heat dissipation effect of the inverter.



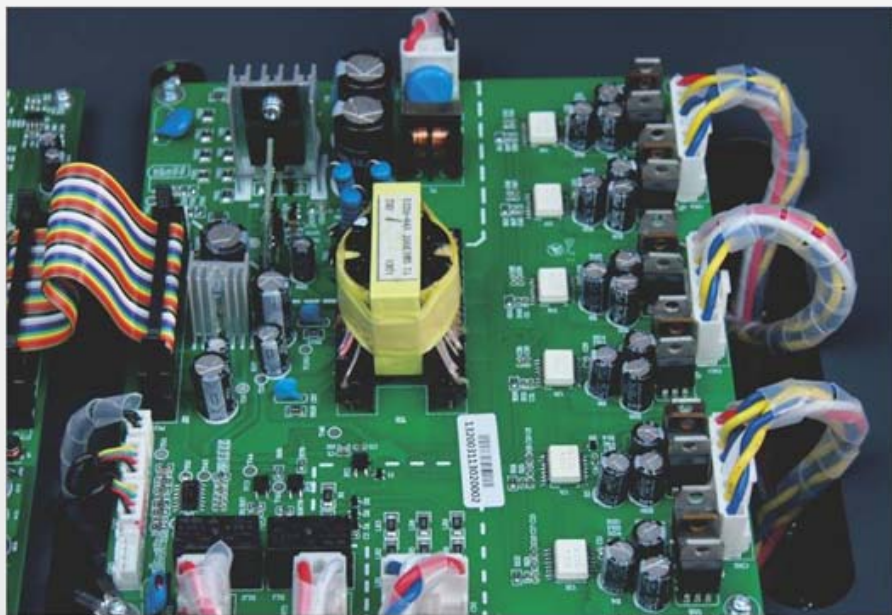
Three thickened anti-corrosion coating

Powtech inverter circuit board in response to adverse environmental conditions, adopts acrylate, organic silicone, polyurethane and other materials for a variety of three anti-thick coating, thus forming a cured thickness of about 25-50 microns three defenses (moisture, salt spray, anti-static) transparent protective film



Tips

Anti-corrosion paint, also called electronic circuit board PCB, applying a coating of oil, moistureproof paint, anti-corrosion paint, lacquer business proof, dustproof paint, paint protection, only the paint, anti-corrosion adhesive, etc, Used PCB circuit board has a waterproof anti-corrosion paint, Dust "three properties" And It has superior properties such as insulation, moistureproof, prevent leakage, shockproof, dustproof, corrosion resistance, salt fog resistance, mildew resistance, anti-aging, corona resistant. It can prevent circuit board from chemical substances(for example: fuel, coolant etc.), shock, moisture, salt spray, humidity and temperatures ,so that it can improve the reliability, increase the safety coefficient and guarantee the service life of the inverter.



Wide voltage design

Powtech transducer with wide voltage design, the input voltage range is 320-460 v, when using, it can avoid the effects of voltage fluctuation, especially in the peak season or voltage instability in remote areas, is still able to normal boot, stable and reliable.



Tips

Fast voltage is the high adaptability from electrical against voltage of. Within a certain range it can apply different levels of voltage. Fast voltage to the voltage fluctuation has a strong adaptability, whether it is a city of peak demand or insufficient power supply in remote areas, it can normal operate. Average only about 380 v can normal operation, the voltage is too high to burn out, too low can't run properly. Powtech inverter, all the series products adopt wide voltage (because of AC - DC - AC transform), nad it is not like ordinary motor voltage in a narrow range of hard to work properly. Therefore it is suitable for wide voltage inverter better than the ordinary energy-saving, durable.



Automatic Voltage Regulation (AVR)

The Powtech inverter has automatic voltage adjustment function, when the grid voltage is in range $\pm 10\%$, it can automatically keep the output voltage constant.

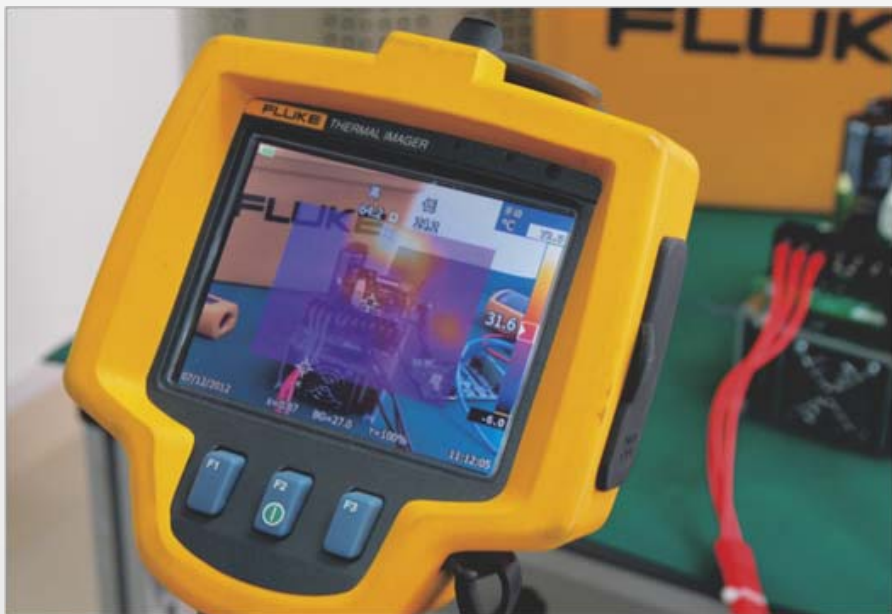
P01.16	AVR function selection	0: Invalid 2: deceleration invalid	1: valid for the entire
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Tips

Automatic ac voltage stabilizer is composed of contact auto voltage regulator and automatic control circuit, when the grid voltage instability or load change, automatic sampling control circuit sends a signal to drive motor to adjust the carbon brush of auto voltage regulator, and then the output voltage is adjusted to rated value and reach the stable state. Three-phase high precision automatic ac voltage stabilizer, its system of three phase four wire system, input phase line voltage 380 v, output voltage within the scope of the rated capacity, can be used for three-phase 380 v power supply, and is equipped with overvoltage protection function.





Allow 45 °C ambient temperature

Powtech inverter adopts independent air duct design, scientific structure layout, reasonable use of the hardware configuration at the same time; Significantly reduced the product temperature rise as a whole. All products under the rise of temperature of the IEC standard, the inverter can be used in the industrial environment of 45 °C.





0.1 seconds instantaneous braking

Powtech inverter with extremely excellent braking effect, can instantaneously brake in 0.1 seconds when below 50Hz. The current senseless vector with $\pm 0.5\text{Hz} / 180\%$ rated torque output, $\pm 0.5\%$ of the steady-state accuracy, 1:100 speed ratio provides 0.1 second faster start and stop performance to ensure the motor mutations of reversible phase sequence and torque ripple.



Tips

In variable frequency speed regulation system, slow down and stop of motor by frequency decreases. When the frequency decreases, the motor of the synchronous speed drops, but because of mechanical inertia, the motor speed is not changed. When the synchronous speed is less than the rotor speed, rotor current phase is almost changed 180 degrees, from electric motor state into power generation; At the same time, the torque on the motor shaft into a braking torque, the motor speed decreases rapidly, the motor in the regenerative braking state. Motor renewable electricity after fly-wheel diode full-wave rectifier feedback to dc, dc brake.



• Multiple control modes

Powtech inverter has V/F control, sensorless vector control, open loop flux vector control, open loop torque control and PG vector control. The technology of speed sensorless vector control make ac motor decoupling realized and make running to DC motor control. 0.25Hz/180% of rated torque output. independent Current loop control realize the realize torque control, supporting torque and speed control switch.



Tips

Vector control induction motor stator current vector is decomposed to produce magnetic field of the current component (excitation current and torque current component of the current (torque) control respectively, and at the same time control the amplitude and phase between the two components, namely the control of stator current vector, so that this control method is called vector control mode. In short, vector control is the flux and torque decoupling, and is beneficial to design the controller, respectively in order to realize high performance speed control of ac motor. Vector control mode and control based on slip frequency vector control mode, no speed sensor vector control mode and speed sensor vector control mode, etc.



Make Running
More Stable

产品特性 Product features

坚如磐石 稳定可靠

PT200系列高性能矢量变频器



Make Running More Stable

