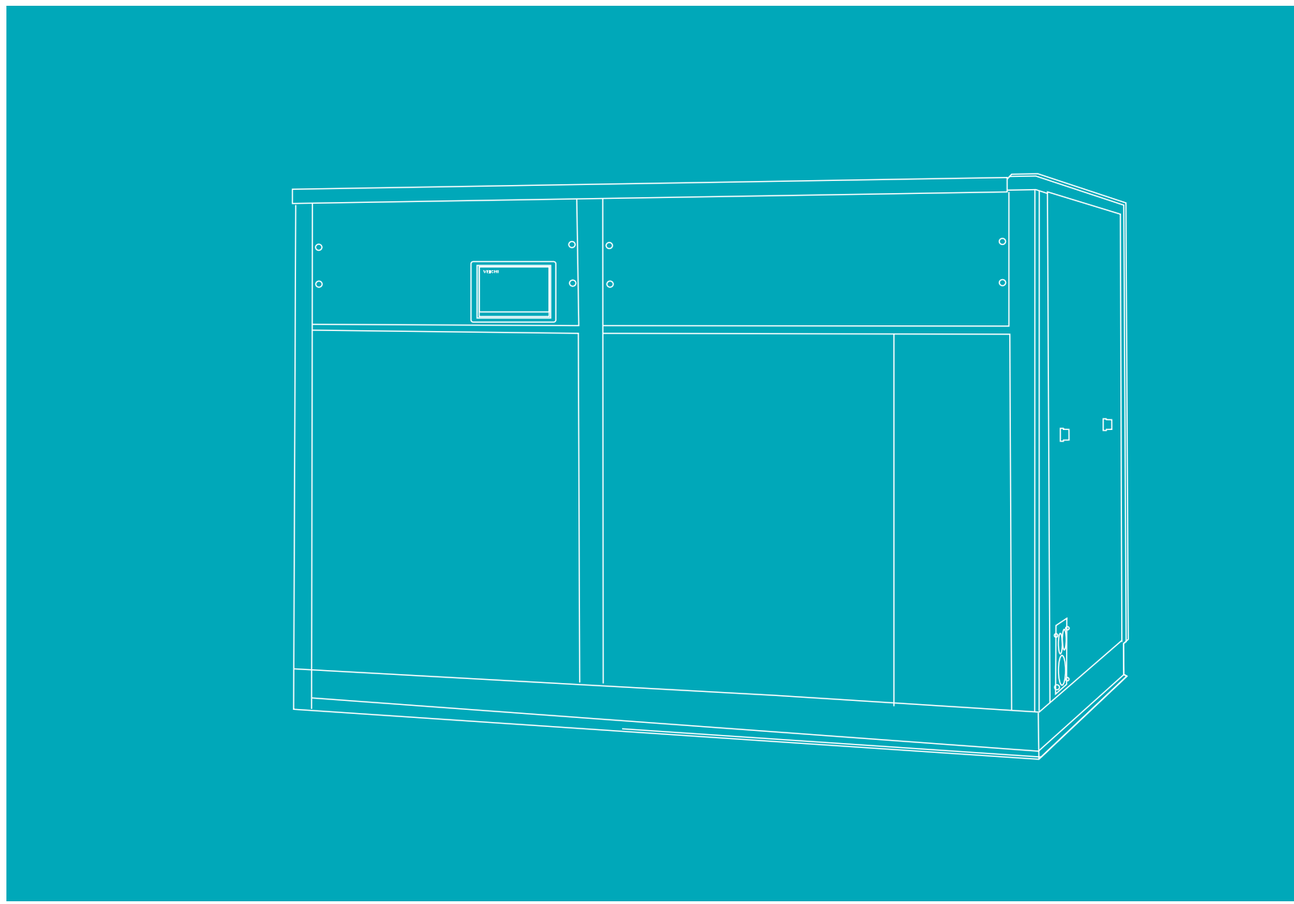
VEICHI

Air Compressor System Solution



VEICHI

Shenzhen Veichi Electric Co., Ltd

Third floor,Building Chunsheng,Lulingya Industrial Park,No.1 Tangtou community,Shiyan street,Baoan District,Shenzhen
Tel: +86-0755-3686 1688
Fax:+86-755-2968 5680 E-mail:overseas@veichi.com

Facebook: https://www.facebook.com/veichiglobal/

Suzhou Veichi Electric Co., Ltd

No.1000 Songjia road, Wuzhong Economic and Technological Development Zone, Suzhou
Tel:+86-512-6617 1988
Fax:+86-512-6617 3610

Whatsapp: +86- 138 2881 8903 Http://www.veichi.org

Wechat Official Account

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Company Profile

Established in 2005, VEICHI Electric is engaged in the development, ,manufacturing and marketing of industrial automation products. VEICHI owns powerful R&D team, relatively perfect production system, independent intellectual property and manufacturing bases in Shenzhen and Suzhou. . Veichi has been named National high-tech enterprise and Dual soft enterprise, and annual production has more than several hundred million after years of technological precipitation and development.

The main products of Veichi Electric include a variety of Variable Frequency Drive(VFD), servo and motion control systems, integrated special inverter and the Internet of Things, etc. VEICHI is providing the most valuable industrial automation system solutions to users. VEICHI will face a better future together with you in the spirit of Drive for Ever .

Honors and Certificates

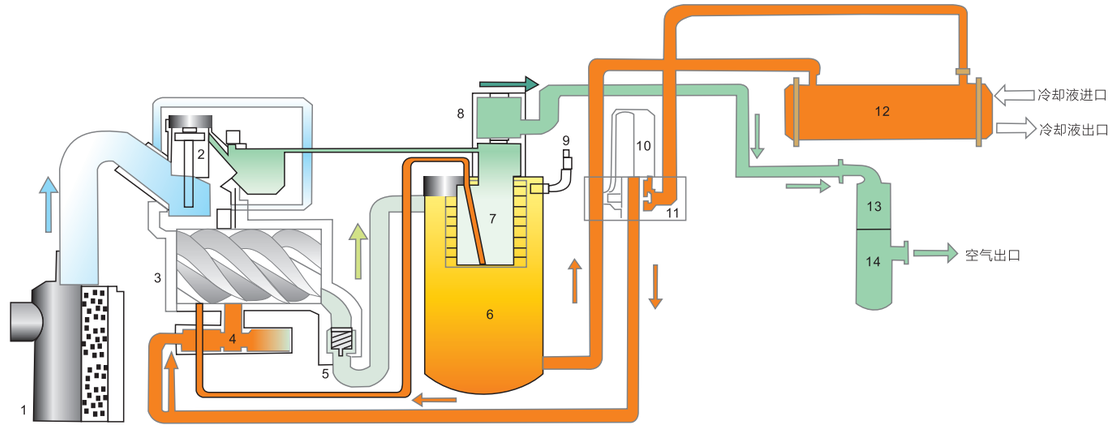
- Honors and certifications
- Invention patent
- Shenzhen high-tech enterprise
- National high-tech enterprise
- Top 10 outstanding inverter brands of Chinese electrical industry equipment
- The most competitive brand in the field of motion control

- Software product registration
- ISO quality system certification
- Top 10 national brands in China's electrical industry
- Software enterprise certification
- Appearance design patent certificate
- Chinese largest growth company in the inverter industry
- Top 10 inverter enterprise
- Utility model patent certificate
- Top 10 domestic brands of low-voltage inverter
- China Manufacturing Network certification supplier
- Computer software copyright patent certificate
- Environmental management system certification
- Top 10 domestic brands in China's low-voltage inverter market
- 3C certificate
- Occupational health and safety management system certification
- Shenzhen enterprise innovation record award
- Top 10 satisfied brands in China's electrical industry
- Top 10 inverter famous brands

Overview

The modern air compression technology is developing in the direction of miniaturization, lightweight and energy-saving, and screw compressor is gradually replacing the piston compressor. In recent years, the use of variable frequency air compressor starts increasing year by year, especially that the synchronous permanent magnet variable frequency compressor has become the trend of future development as it is high energy efficiency. Its high energy efficiency can achieve first-class energy efficiency. Compared with foreign products, the gap is gradually narrowing, some performances even exceed foreign products and have stronger competitiveness. It is a technological revolution in the domestic air compressor industry. The air compressor system solutions of VEICHI realizes the energy-saving dream of aerodynamic systems.

Working principle of variable frequency air compressor



1、Air filter
2、Easing valve
3、screw compressor
4、Shut-off valve
5、Check valve
6、Separation oil tank
7、Oil and gas separator
8、Minimum pressure valve
9、Safety valve
10、Oil filter
11、Thermostat valve
12、Oil cooler
13、After-cooler
14、Gas-water separator

Oil and gas mixture
Gas line
Oil line

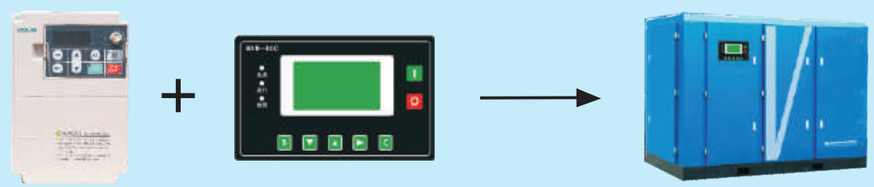
As the motor speed of air compressor and the actual power consumption has a first power relationship, so reducing the motor speed will reduce the actual power consumption. Variable frequency air compressor adopts the pressure sensor to sense the system's actual pressure and gas consumption in real time.

Air compressor controller controls the motor operating frequency, which also means controlling the motor speed. On the premise of not changing the compressor's motor torque, it can achieve immediate control in motor speed or output power. By varying the compressor speed to response to system pressure changes and maintain a stable system pressure (set value), it will achieve high quality air compression according to the actual demand. When the system consumption air volume reduces, the compressed air provided by air compressor is more than the system consumption. At this moment, variable frequency air compressor will reduce running speed, meanwhile reducing the amount of compressed air output. Otherwise, it will increase motor speed and the amount of compressed air output so as to maintain stable system pressure.

Air compressor system solution

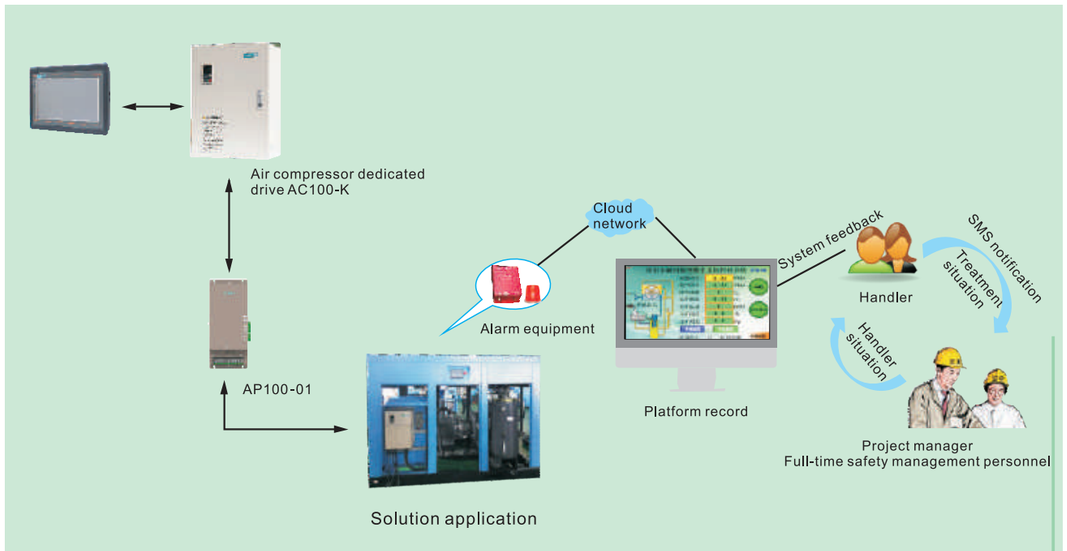
There are a variety of solutions to meet the different requirement.

Solution 1 Plot solution

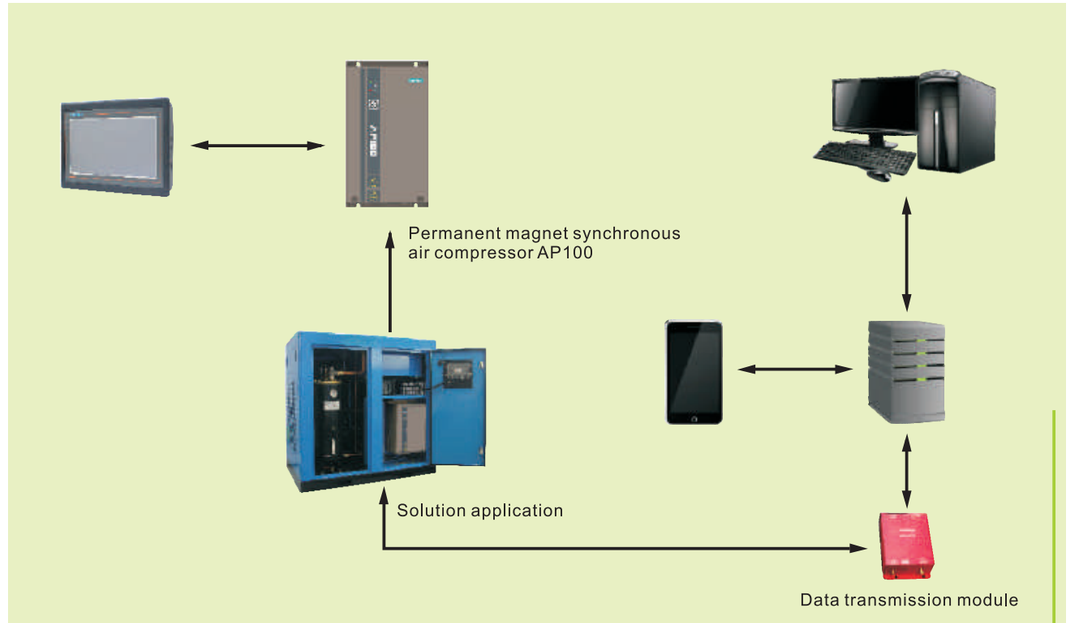


Solution 2 split machine solutions

Solution 3 split Machine (AP100-01) Solution



Solution 4 Integrated solution



AP100-K
air compressor dedicated drive

Three-in-one design to meet the multiple needs of customers

IP52 high protection level, strong environmental applicability

Perfectly drive synchronous and asynchronous multi-type screw compressors

Smart the Internet of Things can realize the remote monitoring air compressor field application environment

leading fuzzy PI algorithm

AP100-K
air compressor dedicated drive

AP100K air compressor dedicated drive features

Highly integrated, multiple experiences in one

Three-in-one design

High degree of protection IP52

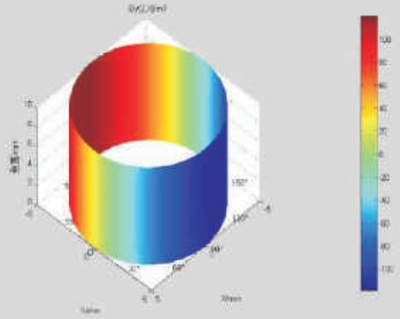
Working environment temperature up to 50℃

Three-in-one design of main unit, fan and oil temperature fan

VEICHI AP100-K integrated air compressor control process can easy wiring

More reliable and less noise with TI's high-performance DSP chip

Monitor the magnetic field of the motor to avoid demagnetization

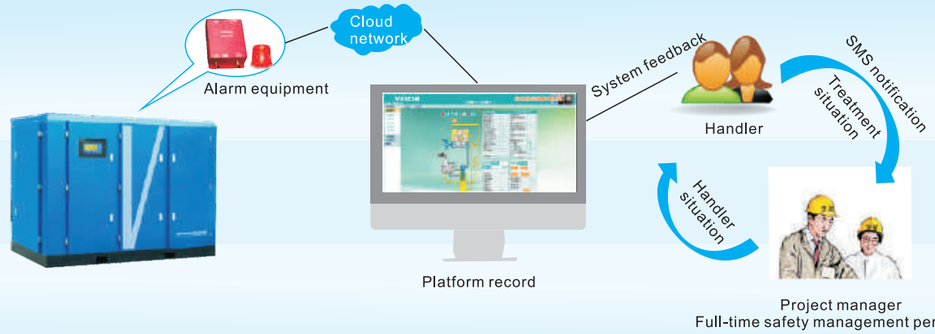


VEICHI AP100-K can directly monitor the motor magnetic field during operation

Timely warning in case of loss of magnetism occur, reducing the probability of motor loss of magnetism

High temperature detection to prevent irreversible degaussing of PMSM due to overheating

Smart Internet of Things, in the cloud



Real-time remote monitoring of air compressor field application

GPRS wireless transmission technology, intelligent fault detection, SMS notification

Support remote switch machine, reservation lock machine, maintenance information query and other functions

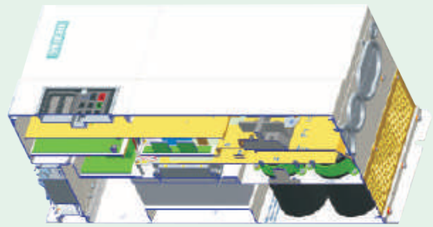
AC100-K
air compressor dedicated drive

High adaptable | Fast response | Low frequency torque | Intelligent PID control algorithm | Flexible application

AC100-K
air compressor dedicated drive

AP100-K air compressor dedicated drive features

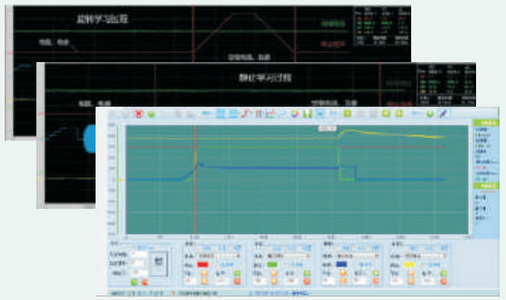
High adaptable



Strong adaptability to site environment, independent air duct, electrical components are not easily damaged by external corrosion, equipped with 24V high-speed dust-proof fan, can adapt to the harsh environment of the site and the high temperature.

Suitable for asynchronous motors, permanent magnet single and double stage compressors

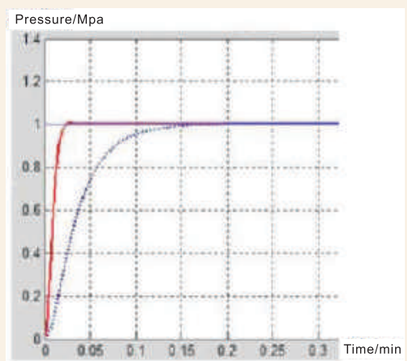
Stable performance



Fast response, complete response from the stop state operation to the rated speed of 50ms when the rated load is applied.

Low frequency torque, 0.5HZ can output 180% of rated torque without PG vector control, ensuring smooth operation of air compressor at starting

Fuzzy PI algorithm for air compressor



According to the size of the gas used in the field, the leading fuzzy PI algorithm is adjust the speed of the host to achieve accurate voltage regulation and meet the requirements of on-site gas in real-time.

The system presets the working time weekly according to the factory working hours . The air compressor can automatically open, shut down and automatically adjust the gas consumption, and achieve unattended work according to the set time schedule. The intelligent work is truly achieve 24 hours no person on duty.

High integration and simple debugging

Air compressor special control system has high system integration, debugging on the touch screen and no need to set parameters on the inverter, it is simple to debugging.

Flexible application requirements

Multi-party design to meet the needs of different customers; include asynchronous motor, permanent magnet motor, single-stage compression, multi-stage compression, IOT control, remote linkage control, etc.

AC100-K naming rules

AC100 - T 3 - 022 - K

Inverter type
K: for air compressor

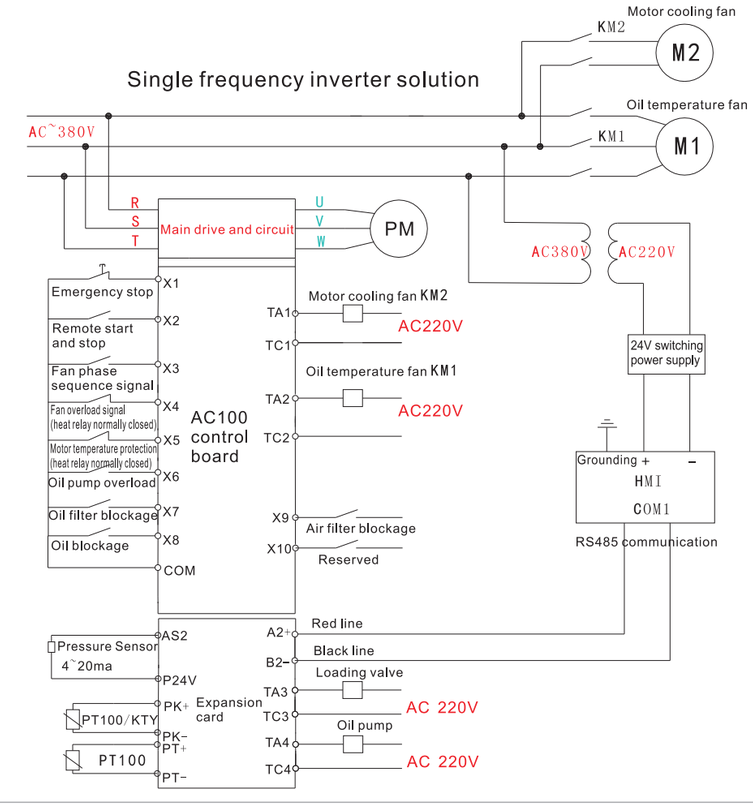
Adapted motor power (KW)

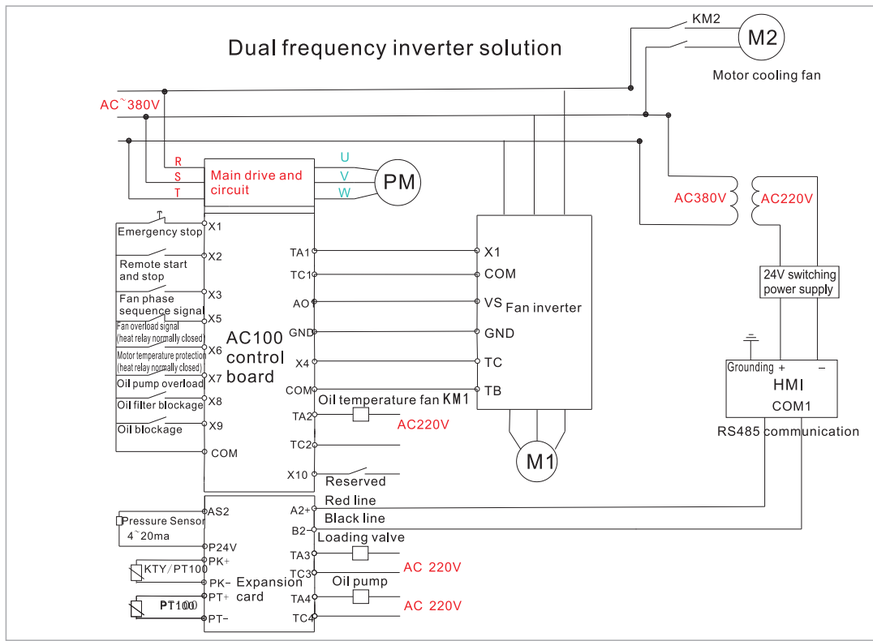
Voltage level
2 : 220V
3 : 380V

Voltage level
T: three phase
S: single phase

Inverter series
AC100 series

AC100-K wiring scheme

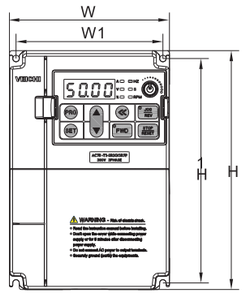


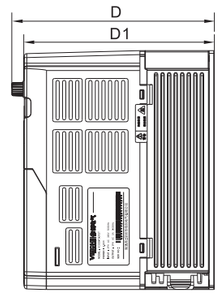


AC100-K terminal description

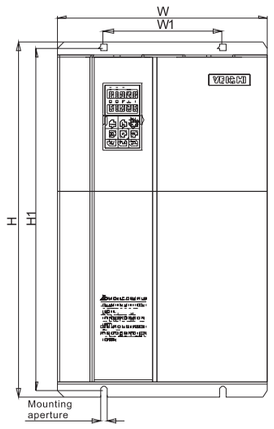
Species	Terminal symbol	Terminal name	Terminal function definition
Passive contact output	TA1	1# relay normally open contact	Programmable set action object, maximum contact capacity: 3A/240VAC 5A/30VDC
	TB1	1# relay normally closed contact	
	TC1	1# relay common contact	
	TA2	2# relay normally open contact	
	TB2	2# relay normally closed contact	
	TC2	2# relay common contact	
Status output	Y	Open collector output	Programmable set action object, maximum output capacity: DC30V/50mA
Auxiliary power	+24V	Auxiliary power output positive	Maximum output 24VDC/100mA
	COM	Auxiliary power output negative	
Multi-function contacts input	PLC	Common of multi-function contact input	XI-X7/pul corresponds to internal photoelectric converter, programmable set action object, input condition: maximum DC30V/8mA. Note: The factory setting switch handle is placed in the +24 block for the common collector characteristic input. If you need to use the common emitter characteristic input, please set the handle to the COM block. If the signal is externally input, adjust to PLC block. X7/PUL pulse range is 0.0-50.00KHz, default open collector input, active pulse input toggle to PLC block or COM block.
	X1	Multi-function contact input 1	
	X2	Multi-function contact input 2	
	X3	Multi-function contact input 3	
	X4	Multi-function contact input 4	
	X5	Multi-function contact input 5	
	X6	Multi-function contact input 6	
Pulse input	X7/PUL	Multi-function contact input 17 / high speed pulse input	
Analog output	AO1	Analog output 1	Conjunction with the function code [F3-21], the action object can be programmed. The output signal type: 0-10VDC (K2 block), 0-20mA (K1 block), 4-20mA (K1 block)
	AO2	Analog output 2	Conjunction with the function code [F3-21], the action object can be programmed, and the output signal type: 0-10VDC (J3 block), 0-20mA (J2 block), 4-20mA (J2 block), frequency pulse output (J1 block), transfer switch J1, J2, J3 selection
Analog input	AS	Current analog input	As the frequency control signal or feedback signal, the action range and response speed can be set by program. AS port internal resistance: 250 Ω. VS terminal internal resistance: 75KΩ; dial K3 block: AI is current type input, dial K4 block: AI is a voltage type input.
	VS	Voltage analog input	
	AI	Voltage or current analog input	
Signal auxiliary power supply	+10V	Signal auxiliary power supply	Maximum output 10VDC/50mA
	GND	Signal auxiliary power supply	Common point of analog input and output signal auxiliary power supply
Communication terminal	A+	Communication terminal A+	RS485 communication port
	B-	Communication terminal B-	

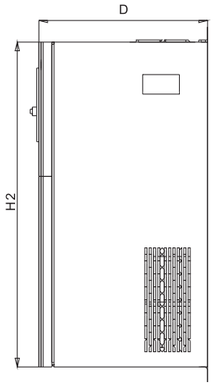
AC100-K dimensions



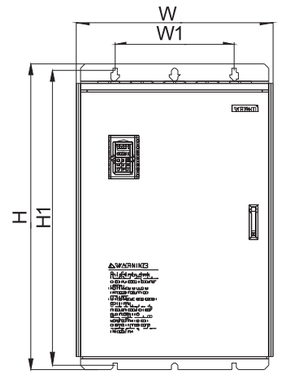


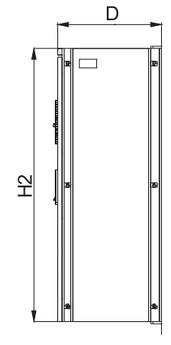
VFD model	Appearance dimensions				Mounting hole		Mounting aperture
	W	H	D	D1	W1	H1	
AC100-T3-R75K	122	182	154.5	145	112	171	ϕ5
AC100-T3-1R5K							
AC100-T3-2R2K							
AC100-T3-004K	159	246	157.5	148	147.2	236	ϕ5.5
AC100-T3-5R5K							
AC100-T3-7R5K	195	291	167.5	158	179	275	ϕ7
AC100-T3-011K							





VFD model	Appearance dimensions				Mounting hole		Mounting aperture
	W	H	D	D1	W1	H1	
AC100-T3-015K	235	345	200	311	160	331.5	ϕ7
AC100-T3-018K							
AC100-T3-022K	255	410	225	370	180	395	ϕ7
AC100-T3-030K							
AC100-T3-037K	305	570	260	522	180	550	ϕ9
AC100-T3-045K							
AC100-T3-055K							
AC100-T3-075K	380	620	290	564	240	595	ϕ11
AC100-T3-093K							
AC100-T3-110K							

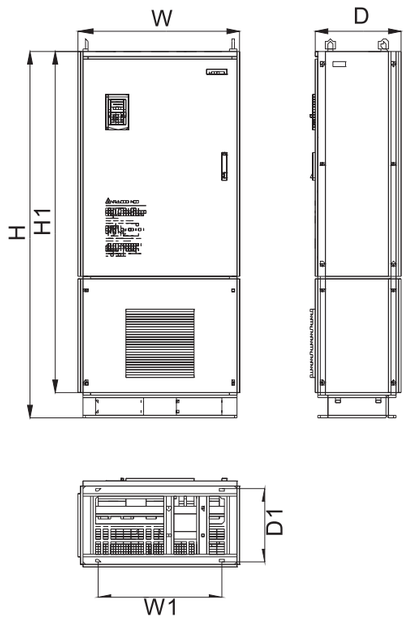




Wall model mounting size

VFD model	Appearance dimensions				Mounting hole		Mounting aperture
	W	H	D	D1	W1	H1	
AC100-T3-132K	500	780	340	708	350	755	ϕ11
AC100-T3-160K	650	1060	400	950	400	1023	ϕ16
AC100-T3-185K							
AC100-T3-200K							
AC100-T3-220K	750	1170	400	1050	460	1128	ϕ18
AC100-T3-250K							
AC100-T3-280K							
AC100-T3-315K	850	1280	450	1150	550	1236	ϕ20
AC100-T3-355K							
AC100-T3-400K							

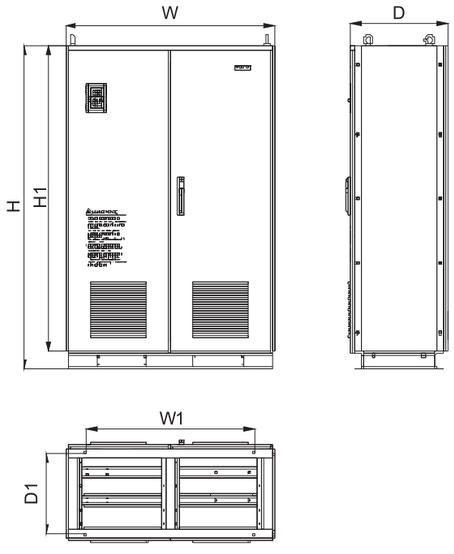
Note: DC reactor is not built in



Cabinet mounting size

VFD model	Appearance dimensions				Mounting hole		Mounting aperture
	W	H	D	H1	W1	D1	
AC100-T3-160KD	650	1600	400	1500	492	332	ф14
AC100-T3-185KD							
AC100-T3-200KD							
AC100-T3-220KD	750	1700	400	1600	582	332	ф14
AC100-T3-250KD							
AC100-T3-280KD							
AC100-T3-315KD	850	1800	450	1700	622	382	ф14
AC100-T3-355KD							
AC100-T3-400KD							

Note: DC reactor is not built in.



VFD model	Appearance dimensions				Mounting hole		Mounting aperture
	W	H	D	H1	W1	D1	
AC100-T3-450K	1200	1850	550	1750	960	466	ф14
AC100-T3-500K							
AC100-T3-560K							

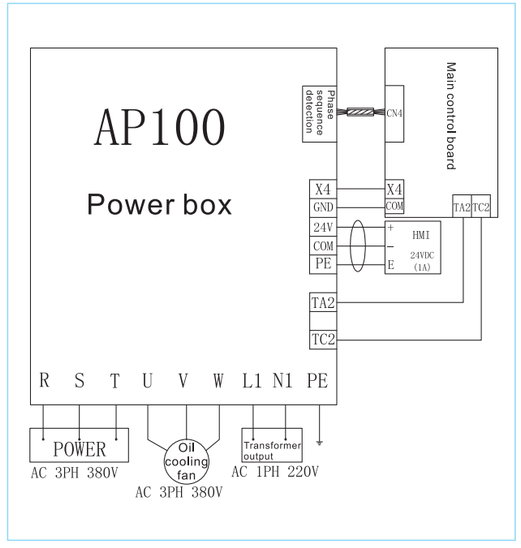
Air compressor dedicated power module AP100-01

AP series air compressor dedicated power module is a special module for air compressor industry. 2 channels of AC220V output is provides working power for external solenoid valve and contactor, 1 channel DC24V provides power for touch screen, and integrates phase sequence internally. The detection function brings great convenience to the air compressor manufacturer.

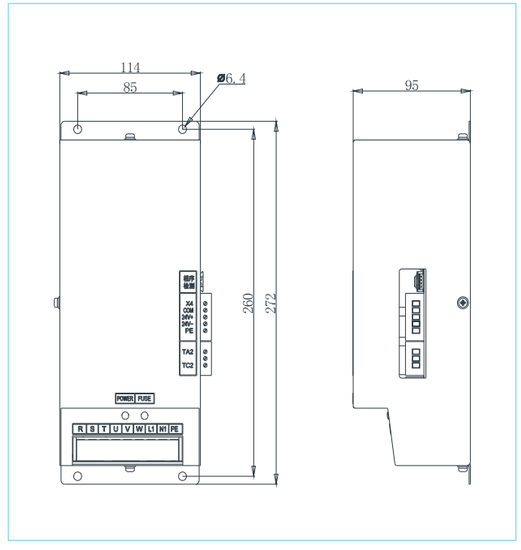
API00 series power module product specifications

Parameter Description		Technical indicators
Oil cooling fan	Rated voltage (v)	380VAC~460VAC 50Hz/60Hz（-15%~+10%）
	Rated current (A)	0-12A, fuse size is slow-breaking type 500V 16A
	Rated frequency (Hz)	50Hz / 60Hz allowable range ± 5%
Power Output	AC output voltage (V)	AC 1PH 220V（-15%）~254V（+10%）
	AC output current (A)	220V/0.14A, fuse size is slow-breaking type 500V 2A
	AC output power (KW)	30W
	AC output frequency (Hz)	50Hz/60Hz, allowable range ±5%
	DC output voltage (V)	24VDC±5%
	DC output current (A)	1A
	DC output power (W)	24W
Running function	Phase sequence detection	Connect to the R, S, T three-phase power supply, the phase sequence detection output is connected to the driver control board CN4, and the function can be selected to be turned on or off on the touch screen.
	Oil temperature fan control unit	The following power section oil temperature fan control units are available: 0.75KW: DIP switch only SI-1 ON 1.5KW: DIP switch only SI-2 ON 2.2KW: DIP switch only S2-1ON 4KW/4.4KW: DIP switch only S2-2 ON

Standard wiring



Structure size installation diagram



AC100-KK
air compressor integrated machine

High integration

Two installation methods

Synchronous and asynchronous motor integration

Intelligent Internet to realize remote monitoring of air compressor field application

Perfect human-machine interface

AC100-KK
air compressor integrated machine

AC100-KK air compressor machine features

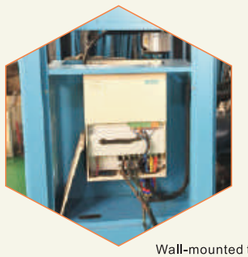
High products integration

Integrated cooling fan management to support single / dual frequency inverter solution

Integrated AC220V and DC24V power output, built-in anti-overcurrent fuse

Single-frequency integrated fan control contactor and thermal relay, no need to install additional contactors, transformers and other control devices

Easy installation and meeting multiple needs



Wall-mounted type

Cabinet type

The ACI00-KK series air compressor integrated machine supports two installation methods: wall-mounted and vertical cabinet. It is easy to install and operate.

Stable performance, energy saving and efficient

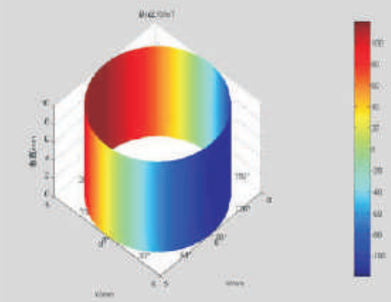
Supports synchronous and asynchronous motors for fast and stable pressure control performance.

Double frequency inverter machine, efficient, quiet and energy saving

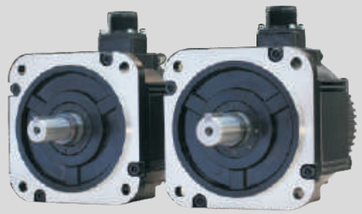
Intelligent Internet of Things, real-time remote monitoring

Support communication devices such as the Internet of Things, enabling remote monitoring operations and other functions

Effectively prevent motor over temperature / demagnetization



Integrated motor temperature sampling and protection function, can effectively prevent motor over temperature / demagnetization



Integrated separate oil pump control, integrated pressure sampling control

Excellent customer experience

All parameters of the air compressor are debugged on the touch screen, and the operating status of the air compressor is displayed in real time.

ACI00-KK naming rules

AC100 - T 3 - 037 KK 2

Equipment type
1: single frequency inverter
2: double frequency inverter

Inverter type
KK: Air compressor machine

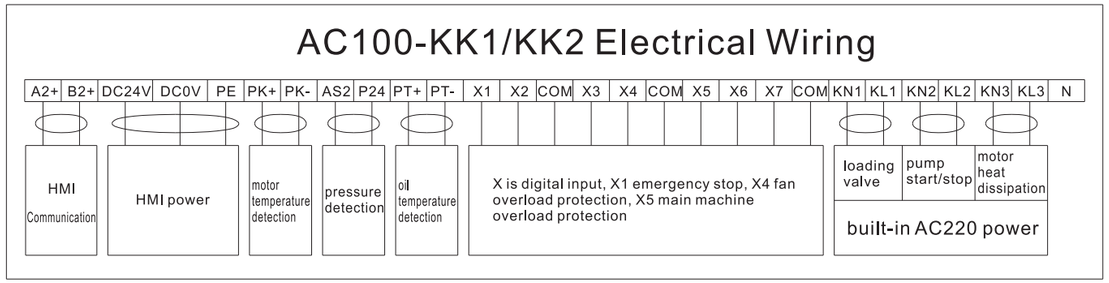
Adapted motor power (KW)

Voltage level
3 : 380V

Voltage level
T : three phase

Inverter series
AC100 series

ACI00-KK process wiring

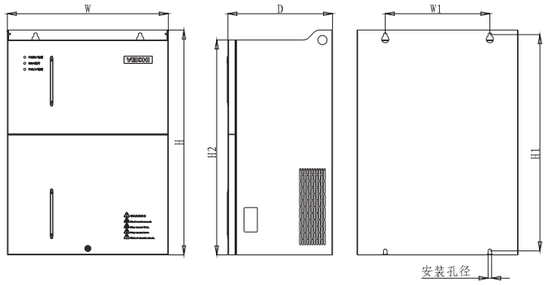


ACI00-KK control terminal description

Classification	Terminal symbol	Terminal function description	Technical specifications
Digital input	X1～X7	Multi-function input terminal, XI is emergency stop, X4 is fan overload protection, X5 is host overload protection	Isolated bipolar digital signal input, level input voltage range: 10-30V, input impedance 4.4KΩ
	COM	Multi-function input terminal ground	
Power Output	24V	External 24V power supply	+24V power output, accuracy 5%, external output capacity 0.6A
	0V	24V power supply reference ground	Internal and COM independent
	PE	Touch screen grounding	Ground terminal, grounding resistance <10Ω
485 communication	A2+	RS485 communication +	Half-duplex RS485 communication, baud rate <250KBPS, the 485 signal is connected to the touch screen communication port
	B2-	RS485 communication -	
Temperature detection input	PK+,PK-	Motor temperature detection terminal port	Compatible with PT100, KTY84 two types of temperature sensor, -20°C-250°C temperature range detection temperature deviation is ± 1 ° C
	PT+,PT-	Pt100 oil temperature detection terminal port	-20°C-250°C temperature range detection temperature deviation is ±5°C
Pressure signal input	AS2	Pressure sensor signal terminal	4-20mA input
	P24V	Pressure sensor 24V power supply	24VDC power supply output accuracy is 1%, external output is 0.1A
Relay output	KL1,KN1	Relay output built-in 220VAC power supply	Air loading valve, normally open, contact load: 3A/240VAC
	KL2,KN2		Oil pump start and stop, normally open, contact load: 3A/240VAC
	KL3,KN3		Motor cooling fan, normally closed, contact load: 3A/240VAC

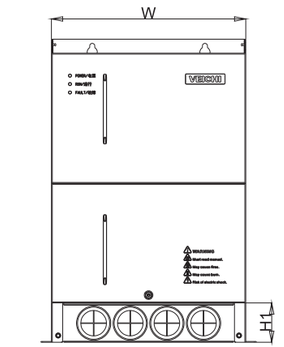
ACI00-KK Dimensions

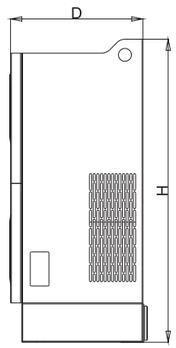
Wall shape and installation size

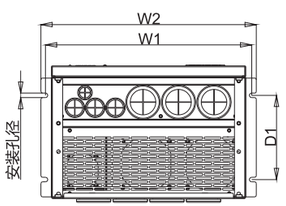


VFD model	Appearance dimensions				Mounting hole		Mounting aperture
	W	H	D	H2	W1	H1	
AC100-T3-7R5KK	250	435	200	416	150	420	ф7
AC100-T3-011KK							
AC100-T3-015KK	330	460	210	440	200	441	ф7
AC100-T3-018KK							
AC100-T3-022KK							
AC100-T3-030KK	345	470	235	445	200	448	ф9
AC100-T3-037KK							
AC100-T3-045KK	400	560	260	535	260	540	ф9
AC100-T3-055KK							
AC100-T3-075KK	425	568	288	543	260	550	ф9

Vertical cabinet shape and installation size





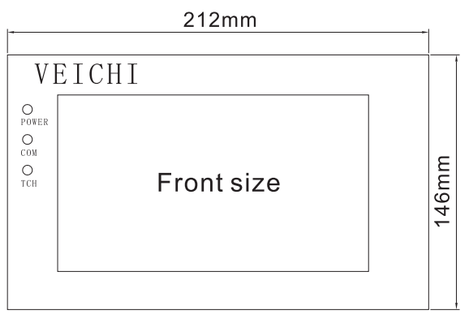


VFD model	Appearance dimensions					Mounting hole		Mounting aperture
	W	H	D	W2	H1	W1	D1	
AC100-T3-7R5KK	250	505	200	280	70	265	120	ф7
AC100-T3-011KK								
AC100-T3-015KK	330	530	210	366	70	350	132	ф7
AC100-T3-018KK								
AC100-T3-022KK								
AC100-T3-030KK	345	540	235	382	70	366	150	ф9
AC100-T3-037KK								
AC100-T3-045KK	400	640	260	436	80	418	160	ф9
AC100-T3-055KK								
AC100-T3-075KK	425	648	288	460	80	445	210	ф9

HMI

VI10-070S series HMI color page is used to TFT liquid crystal display panel. Using the latest LED backlight technology, the screen resolution is up to 480*800. There are multiple communication methods and multiple serial ports for optional, and VI10-070S series HMI exceeds others with the high-performance 32-bit RISC CPU,128MFLASH and 64 DDRAM performance.

HMI size and installation size



High speed permanent magnet synchronous motor dedicated drive AC100

New motor algorithm

Precise motor excitation decoupling

High frequency and speed output

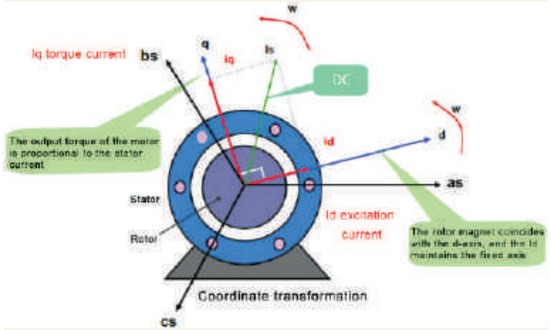
Leading open loop control technology

High speed permanent magnet synchronous motor dedicated drive AC100

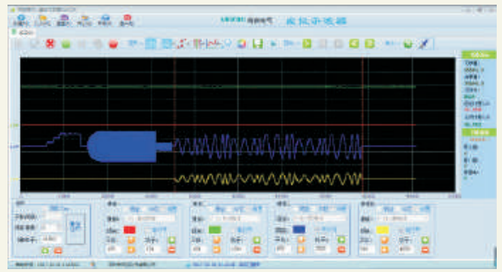
Air suspension, magnetic suspension high-speed permanent magnet motor drive is a special drive that developed for high-speed permanent magnet motor on AC100 platform. VEICHI is the first manufacturer in China to control air suspension and magnetic suspension high-speed permanent magnet motor technology. The product has high speed and high efficiency, the maximum speed can reach 72000Rpm, and the motor efficiency is over 98%. The technology such as the segmented wave method makes the system temperature rise low (driver, permanent magnet motor), which improves the efficiency of the whole system and makes the system more energy efficient.

Features

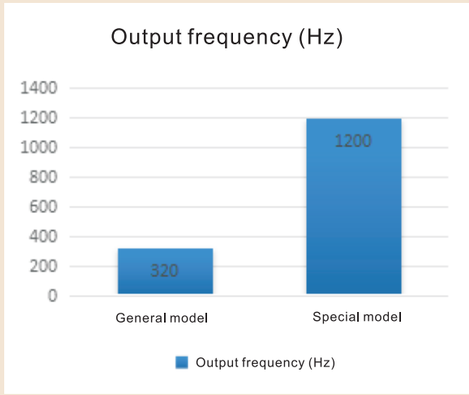
New high-speed permanent magnet motor algorithm and precise motor excitation decoupling



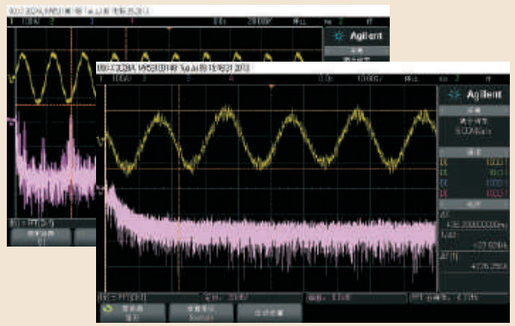
Motor parameter learning under static conditions



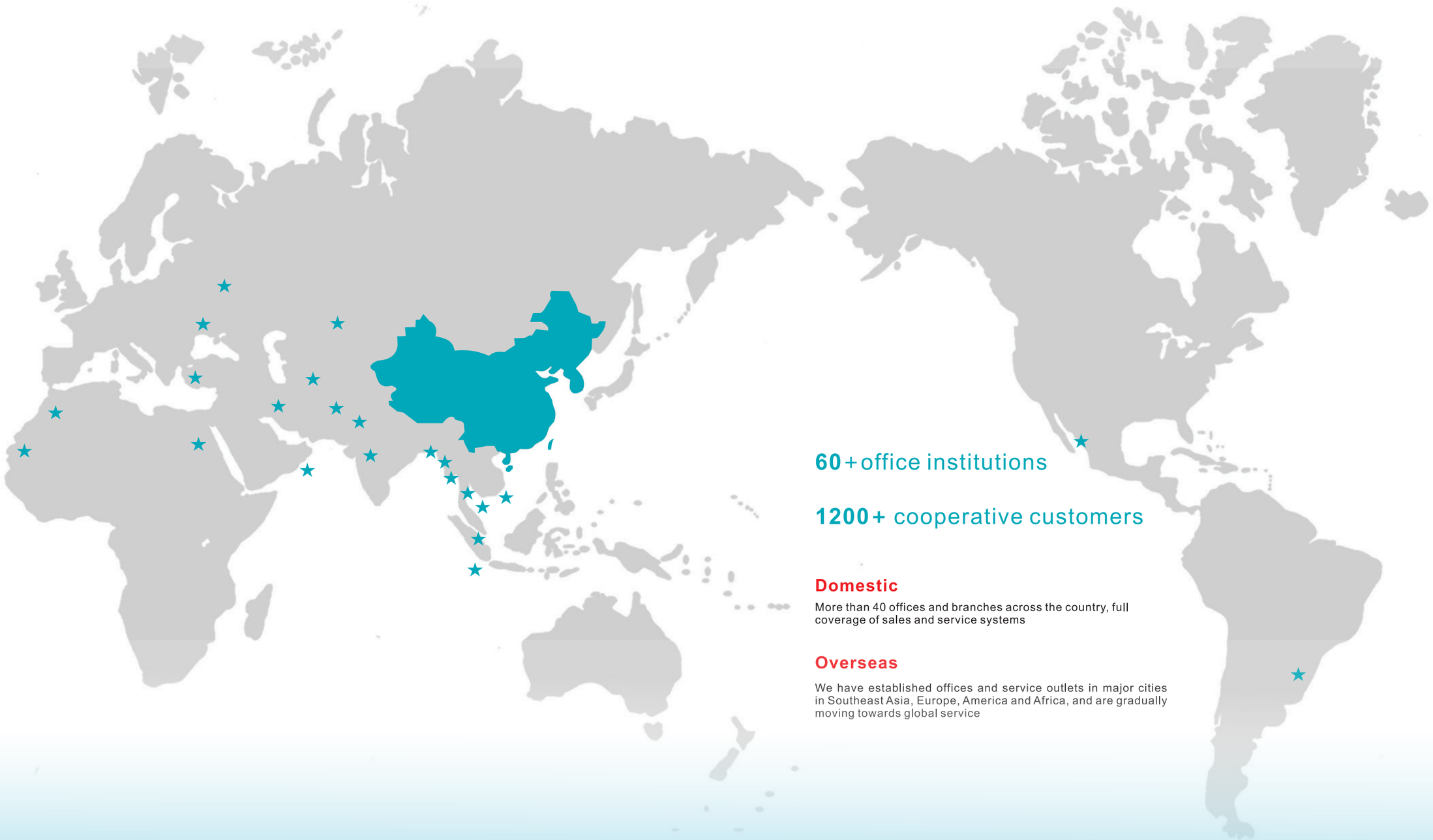
High frequency and high efficiency output features



Segmented wave method effectively reduces drive and motor temperature rise and noise



Market and Sales Area



60+office institutions

1200+ cooperative customers

Domestic

More than 40 offices and branches across the country, full coverage of sales and service systems

Overseas

We have established offices and service outlets in major cities in Southeast Asia, Europe, America and Africa, and are gradually moving towards global service