Cenexe®

Frequency Inverter & Soft Starter

▸ Vector Control Inverter

▸ Frequency Inverter

▸Low consumption soft starter

Tianjin Century Electronics Co.,Ltd.

www.china-rectifier.com

Company Profile

Tianjin Century Electronics Co,.Ltd (hereafter referred to as TCEC) was registered in Tianjin Port Free Trade Zone as an independent legal entity. TCEC is a professional import & export corporation which mainly exports power electronic devices, power equipment and other related items. Tianjin Century Electronics Co,.Ltd has a global market network covering over 40 countries and regions. United States, Europe, South Asia, South Africa and Korea are the traditional markets. Meanwhile the emerging markets include Middle East, Africa and South America.

The major product category includes:

- Power electronic device and parts
- Medium-frequency furnace, High-frequency power and Related equipment
- Frequency converter & Soft starting device
- Power generating equipment from wind & solar energy
- Energy saving equipment
- Dual pressure switch & Transformation and distribution equipment

The earliest business that can be traced back to 1987 started with the export of home-made thyristors and its parts such as ceramic metal housing, ceramic rings and molybdenum discs. It is generally acknowledged that TCEC is the first specialized import & export company in the industry of power electronics in China. Currently, TCEC has entered a rapid growth period.

In 2009, a joint venture T&A Engineering Company has been established by a Pakistan company named AMTAC and our company. The joint venture commits itself to access Pakistan market for the business of kinds of equipment for metallurgical, forging or casting use. While the original business of power semiconductor devices is booming, kinds of complete sets of equipment such as power supply, generating equipment and metallurgical smelting equipment have gradually become the major products. Currently, the generators have been exported to United States and Venezuela, and the business of medium frequency heating and smelting unit has been dealt with Egypt, Tanzania, Morocco, Russia and Pakistan.

TCEC has been acknowledged by the accreditation of Standard ISO9001:2000 of Quality Management System since 2002, and it was rated as the highest AAA enterprise of Credit China System issued by Ministry of Commerce. TCEC is the Director of Power Electronics Society under China Electrical Equipment Industrial Association (CEEIA), and also serves as the Working Committee on International Trade of China Electronic Chamber of Commerce Special Committee of Power Supply (CPSSC).

Credit-worthiness is the core philosophy of our company, so TCEC always attaches the great importance to the quality of product and service. Therefore, TCEC provides the long term focused training in order to upgrade the skills of employees. All these positive factors will guarantee TCEC's sustainable development. We have established the friendly and long-term strategic cooperation with our current customers. If you're interested in our company and products, please do not hesitate to contact with us, our respected new customers.

森诚®
Cenexe®
Brands

CEC
Logo


企业诚信评价证书

CERTIFICATE OF ENTERPRISE CREDIT APPRAISEMENT


QUALITY MANAGEMENT SYSTEM CERTIFICATION

TOP Class DriversPI8000/8100 Series
Vector Control Inverter

Performance Profile

With the United States TI's latest high-performance 32-bit motor control dedicated data processors DSP, to achieve the complex currents of induction motor flux and torque decoupling current control. algorithm effe ctively, and to achieve closed-loop field oriented current vector control to meet the electrical High-precision wide-range of speed operation and torque control, then supply comprehensive solution for the areas of High-end. With the brand new hardware platform, stylish industrial design, scientific production technology and complete testing equipment, which ensures that the product efficiency, stability and feasibility.

- Low-frequency large torque output: a dead-time compensation and automatic compensation function deterioration to achieve 180%torque output under0.5Hz;and it runs smoothly, response fast.
- Variable speed control mode: PG speed senseless vector control (SVC),PG vector control (VC) and the V/F control, can debug and sent up easily
- Automatically identify motor parameters, self-turning to the best control mode;
- Unique keyboard design: "A key Shuttle," the keyboard can be customized spinner, two-way custom buttons, expansion according to the demand; humanizing multi-language menu, high-brightness OLED+LED, can display three groups state parameters in the same time
- Support Thermal Plug, can be stores, copied 4 groups operating parameters program.
- The EMC's unique design, make the pollution of power by inverter into minimize.

Main Parameter Range

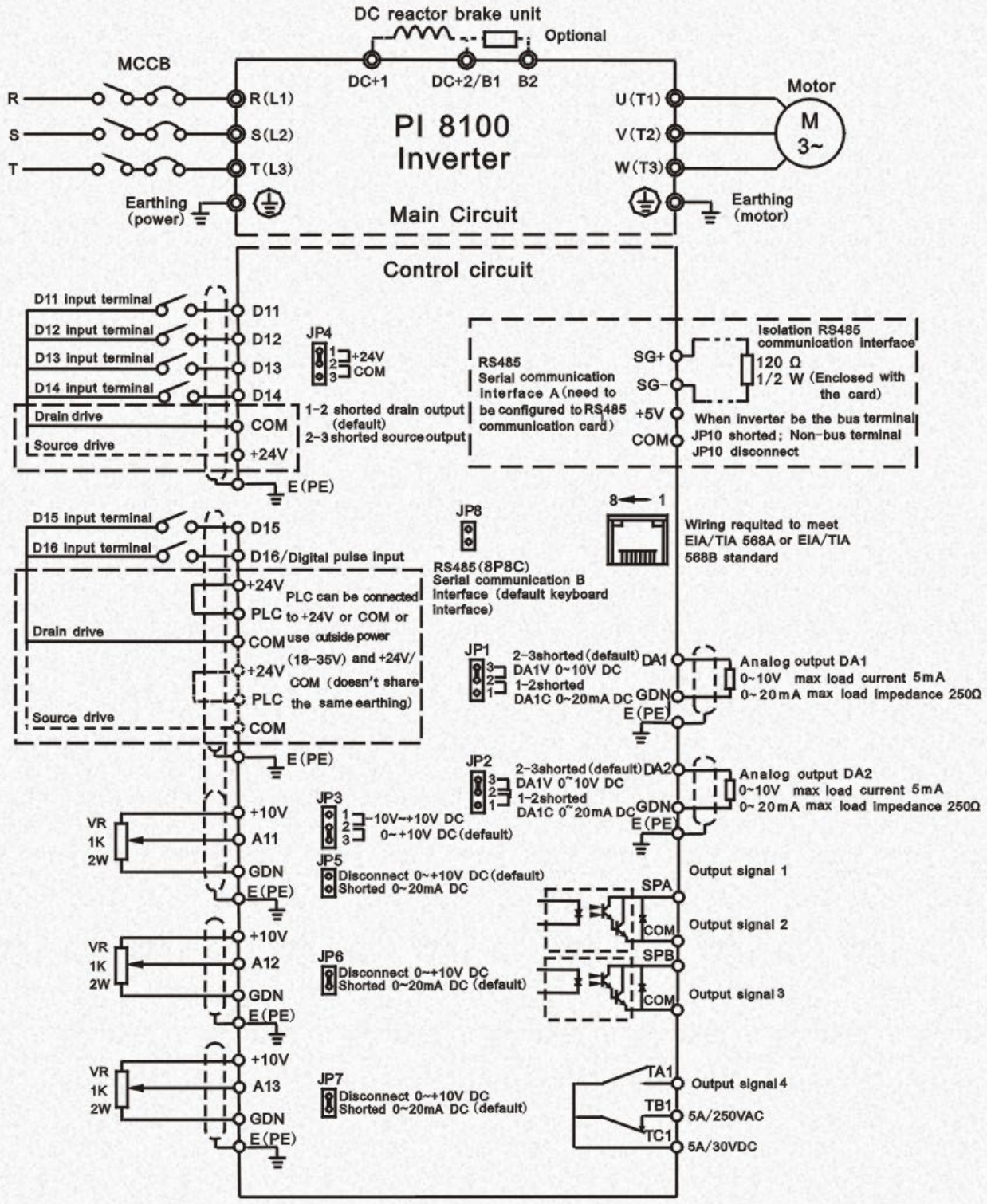
- Power range: 0.4-630kW
- Frequency range: 0.00-2000.00Hz,
- Voltage standard: 220V/380V/460V/575V/660V/1140V

Applications

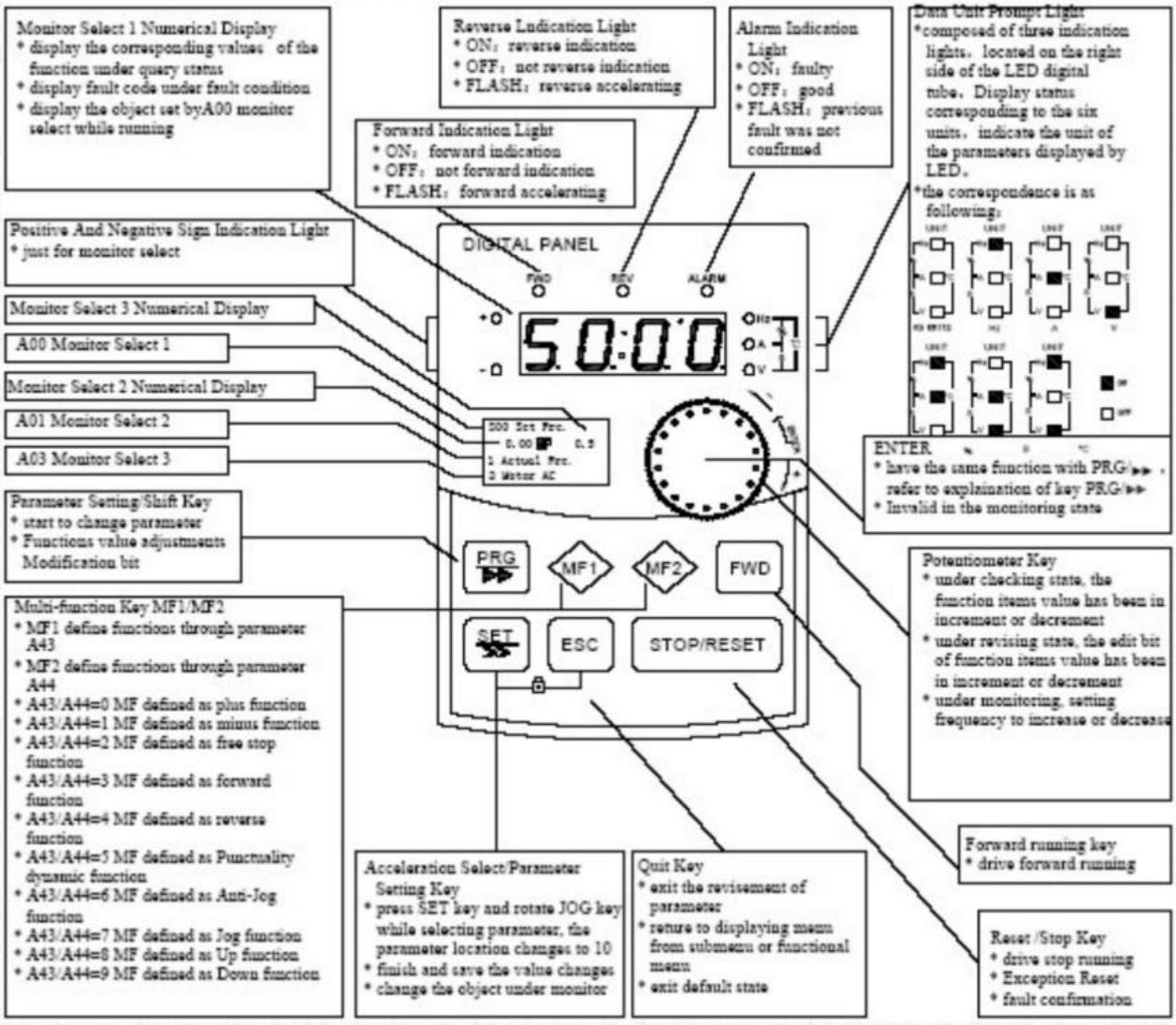
- metallurgy, petrochemistry, textile, electric power, medicine, food, paper-making, plastic, printworks, hoist, cable, washing machine, water supply, sewage treatment industry etc.
- wire drawing, mixer, extrusion press, metal cutter, winder, compressor, air pump, abrader, transfer band, centrifuger, speed governor machine etc.

■ Wiring Diagram

PI 8100 series 11kW and below (7N2/7N3/7N4)



Wiring Diagram



Green Technique, Quality Assurance

Technical Specifications and Outline Code

● Pi8000

Inverter type	Light load F		Standard load G		Medium load M		Heavy load H		Outline code
	P_F kW	I_F A	P_G kW	I_G A	P_Z kW	I_Z A	P_H kW	I_H A	
3 phase, 380V, 50/60 Hz									
PI8000●●●□3	15	32	11	25	7.5	16	7.5	16	8N3
PI8000●●●□3	18.5	38	15	32	11	25	11	25	8N3
PI8000●●●□3	22	45	18.5	38	15	32	11	25	8N4
PI8000●●●□3	30	60	22	45	18.5	38	15	32	8N4
PI8000●●●□3	37	75	30	60	22	45	18.5	38	8N5
PI8000●●●□3	45	90	37	75	30	60	22	45	8N5
PI8000●●●□3	55	110	45	90	37	75	30	60	8N6
PI8000●●●□3	75	150	55	110	45	90	37	75	8N6
PI8000●●●□3	93	170	75	150	55	110	45	90	8N7
PI8000●●●□3	110	210	93	170	75	150	55	110	8N7
PI8000●●●□3	132	250	110	210	93	170	75	150	8N8
PI8000●●●□3	160	300	132	250	110	210	93	170	8N8
PI8000●●●□3	187	340	160	300	132	250	110	210	8NA
PI8000●●●□3	200	380	187	340	160	300	132	250	8NA
PI8000●●●□3	220	415	200	380	187	340	160	300	8NA
PI8000●●●□3	250	470	220	415					8NA
PI8000●●●□3	280	520	250	470	200	380	187	340	8NB
PI8000●●●□3	315	600	280	520	220	415	200	380	8NB
PI8000●●●□3	355	640	315	600	250	470	220	415	8NB
PI8000●●●□3	400	750	355	640	280	520	250	470	8NB

● Pi8100

Inverter type	Light load F		Standard load G		Medium load M		Heavy load H		Outline code
	P_F kW	I_F A	P_G kW	I_G A	P_Z kW	I_Z A	P_H kW	I_H A	
Single phase, 220V, 50/60 Hz									
PI8100●●●□1	0.75	4	0.4	2.5					7N3
PI8100●●●□1	1.5	7	0.75	4	0.4	2.5			7N3
PI8100●●●□1			1.5	7	0.75	4	0.4	2.5	7N3
PI8100●●●□1	2.2	10	2.2	10	1.5	7	0.75	4	7N4
PI8100●●●□1	4	16	4	16	2.2	10	1.5	7	7N4
PI8100●●●□1	5.5	20	5.5	20	4	16	2.2	10	7N5

3 phase, 220V, 50/60 Hz									
PI8100●●●□2	0.75	4	0.4	2.5					7N3
PI8100●●●□2	1.5	7	0.75	4	0.4	2.5			7N3
PI8100●●●□2			1.5	7	0.75	4	0.4	2.5	7N3
PI8100●●●□2	2.2	10	2.2	10	1.5	7	0.75	4	7N4
PI8100●●●□2	4	16	4	16	2.2	10	1.5	7	7N4
PI8100●●●□2	5.5	20	5.5	20	4	16	2.2	10	7N5
3 phase, 380V, 50/60 Hz									
PI8100●●●□3			0.75	2.5	0.75	2.5	0.75	2.5	7N3
PI8100●●●□3	1.5	3.7	1.5	3.7	1.5	3.7	1.5	3.7	7N3
PI8100●●●□3	2.2	5	2.2	5	2.2	5	2.2	5	7N3
PI8100●●●□3	4	8.5	4	8.5	4	8.5	4	8.5	7N4
PI8100●●●□3	5.5	13	5.5	13	5.5	13			7N4
PI8100●●●□3	7.5	16	7.5	16	7.5	16	5.5	13	7N5
PI8100●●●□3	11	25					7.5	16	7N5

Standard Specification

Item		Specification		
Power supply	Voltage and frequency	Single-phase 200～240V, 50/60Hz Three-phase 220～240V, 50/60Hz Three-phase 380～415V, 50/60Hz Three-phase 440～460V, 50/60Hz Three-phase 575V, 50/60Hz Three-phase 660V, 50/60Hz Three-phase 1140V, 50/60Hz		
	Allowable fluctuation range	Voltage: ±15% frequency: ±5%		
Control	Control system	High performance vector control inverter based on 32 bit DSP		
	Output frequency	G/F/Z/S/T/M type: 0.00～800.0Hz, max. frequency can be set between 10.00 and 800.0Hz H type: 0.00～2000.0Hz, max. frequency can be set between 10.00 and 2000.0Hz		
	Control method	V/F Control	Sensorless vector control	Sensor close loop vector control
	Start torque	0.50 Hz 180%	0.25 Hz 180%	0.00 Hz 180%
	Adjustable speed range	1:100	1:200	1:2000
	Stabilizing speed precision	±0.5%	±0.2%	±0.02%
	Waveform produce method	Asynchronous space vector PWM, stepless sub-synchronous space vector PWM, two-phase optimization of space vector PWM		
	Auto torque boost function	Achieve low frequency (1Hz) and high output torque control under V/F control mode		
	Accelerate/decelerate control	Sub-set S curve acceleration and deceleration mode, max. acceleration and deceleration time is 3200 days		
	Long running time control	16 segments speed run, max. running time is 3200 days		
	Frequency setting accuracy	Digit: 0.01Hz (below 300Hz), 0.1Hz (above 300Hz) Analog: 1% of max. frequency		
	Frequency output accuracy	Speed control tolerance 0.01% (25℃±10℃)		
	V/F curve mode	Linear, 1.2 times the power, 1.7 times the power, 2 times the power, user-set 8V/F curve		

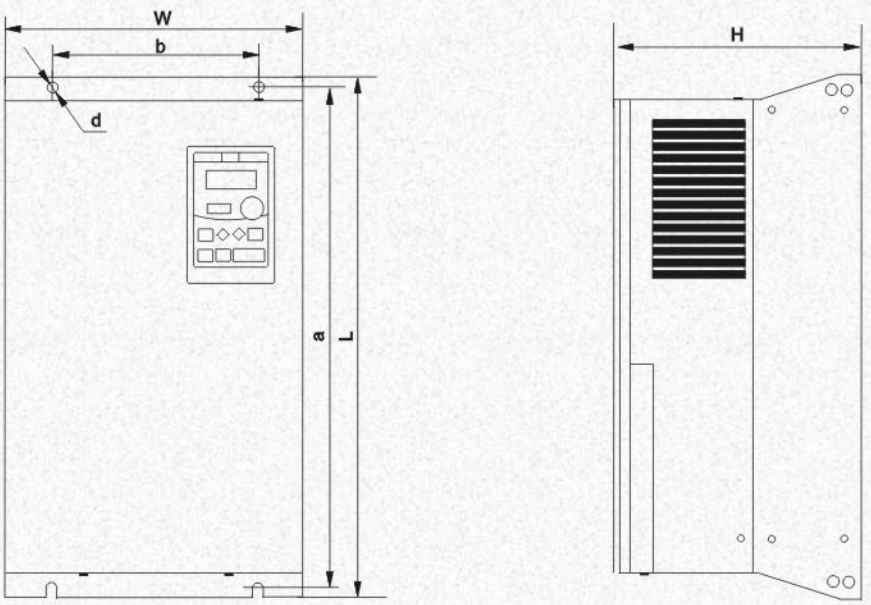
	Over load capability	G/S type: 150% of rated current-1 min, 200% of rated current -0.1 s; F type: 120% of rated current -1 min, 150% of rated current -0.1 s Z/M/T type: 180% of rated current -1 min, 250% of rated current -0.1 s H type: 250% of rated current -1 min, 300% of rated current -0.1 s
	Slip compensation	V/F control can automatically compensate for transposition
Running	Running method	Keyboard / terminal / communication
	Start signal	Forward running, reverse running, jog(parameter control direction), forward jog, reverse jog
	Emergency stop	Interrupt controller output
	Fault reset	When the protection function is active, you can automatically or manually reset the fault condition
	Running status	Motor status display, stop, acceleration, deceleration, constant speed, program running
	DC brake	Built-in PID regulator brake current, to ensure adequate braking torque in no over current
Protection	Inverter protection	Over voltage protection, under voltage protection, over current protection, over load protection, over temperature protection, speed loss protection, lack phase protection (optional), external fault, communication error, PID feedback signal abnormalities, PG fault
	IGBT temperature display	Display current IGBT temperature
	Inverter fan control	The fan starting temperature can be set (optional)
	Restart after momentary power off	Less than 15 ms: continuous operation Greater than 15 ms: automatic detection of motor speed, instantaneous power off and restart
	Speed starting track method	Automatically track motor speed when inverter start
	Parameter protection function	Protect inverter parameters by setting the password and decoding
IO	8 way switch input	Can be customized into 4 kinds of functions, to achieve forward running, reverse running, forward jog, reverse jog, emergency stop, reset, speed, acceleration, run-time switch and pulse counting
	3 way analog input	Can be defined as a switch input, to allow for max. input range: -10V～+10V, 0～20mA
	2 way analog output	Can be achieve output range: 0～+10V, 0～20mA
	Virtual terminal function	Can be set to a virtual terminal, using communication or keyboard control IO interface and display with the IO interface status
keyboard	Frequency set	6 main ways and auxiliary ways, keyboard, 3 ways analog input, pulse input, digital potentiometer
	Keyboard cable	8-core cable, in line with EIA T568A, EIA T568B standards
	Double keyboard interface	Support dual keyboard, synchronous control, independently of each other
	Double and multi function keys	MF1, MF2 can be customized as addition and subtraction, forward running, reverse running, forward jog, reverse jog, emergency stop, rise, fall, etc.
	4-parameter storage	Control panel can be realized upload and download of four groups parameters of inverter, with manufacturer password to reset factory setting
	Running information	At most simultaneously display 3 monitoring parameters, select by A00, A01, A02
	Fault information	At most store 5 groups error messages, you can check failure type, time, set frequency, output voltage, output current, running state, running time, IGBT temperature
communication	Double RS485 interface	At most simultaneously display 3 monitoring parameters, select by A00, A01, A02

	Running information	Can select can-bus module
Speed	16-segment speed	At most 16 segments can be set (use multi-functional terminal to shift or program runs)
	8-segment running time	At most 8 segments running time can be set (use multi-functional terminal to shift)
	8-segment acceleration	At most 8 segments acceleration time can be set(use multi-functional terminal to switch)
	7-segment speed disposition	At most 7 segments speed disposition can be set(use multi-functional terminal to switch)
PID	PID feedback signal	6 kinds of ways: keyboard, three way analog input, pulse input, digital potentiometer
	PID giving signal	6 kinds of ways: keyboard, three way analog input, pulse input, digital potentiometer
motor	2 groups of motor parameters	Parameters of motor can be selected, parameter identification automatic storage
	3 identification method	Nameplate calculation, static measurement, rotation measurement
	5 nameplate parameters	Rated frequency, rated current, rated voltage, number of pole pairs, rated rotating speed
	5 identification parameters	Non-loaded current, stator resistance, rotor resistance, stator inductance, mutual inductance
Environment	Environment temperature	-10℃～40℃, 40～50℃ derating use, the temperature is increased by 1 ℃, rated output current decreased of 1%
	Store temperature	-10℃～+70℃
	Environment humidity	5%～95%, non-condensation
	Height – vibration	0～2000m, ＞1000m derating use, the height increased by 100m, rated output current decreased of 1%
	Application location	Mounted vertically inside the control cabinet with good ventilation, do not allow the level, or other installation method. The cooling medium in air. Installed in the absence of direct sunlight, non dust, non corrosive and explosive gas, non oil mist, non steam, non drip
	Cooling method	Forced air cooling and natural air cooling

Outline and Install Size

PI8000 Series (8N3～8N8, 8NA, 8NB)

8N3～8N8 outline



● 8N3

Type	Power kW	Structure item	Shape mm			Installation dimension mm		
			L	W	H	a	b	d
F	15～18.5	8N3	360	235	207	340	150	Φ10
G	11～15							
M	7.5～11							
H	7.5～11							

● 8N4

Type	Power kW	Structure item	Shape mm			Installation dimension mm		
			L	W	H	a	b	d
F	22～30	8N4	410	264	242	390	165	Φ10
G	18.5～22							
M	15～18.5							
H	11～15							

● 8N5

Type	Power kW	Structure item	Shape mm			Installation dimension mm		
			L	W	H	a	b	d
F	37～45	8N5	560	300	243	540	200	Φ10
G	30～37							
M	22～30							
H	18.5～22							

● 8N6

Type	Power kW	Structure item	Shape mm			Installation dimension mm		
			L	W	H	a	b	d
F	55～75	8N6	660	365	293	640	250	Φ10
G	45～55							
M	37～45							
H	30～37							

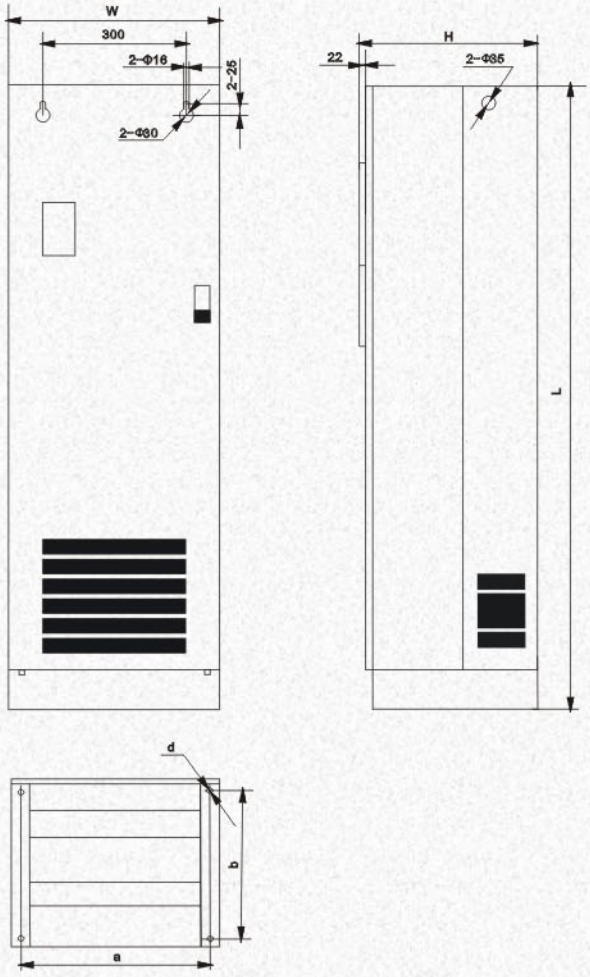
● 8N7

Type	Power kW	Structure item	Shape mm			Installation dimension mm		
			L	W	H	a	b	d
F	93～110	8N7	710	455	293	690	350	Φ10
G	75～93							
M	55～75							
H	45～55							

● 8N8

Type	Power kW	Structure item	Shape mm			Installation dimension mm		
			L	W	H	a	b	d
F	132～160	8N8	910	480	342	890	350	Φ10
G	110～132							
M	93～110							
H	75～93							

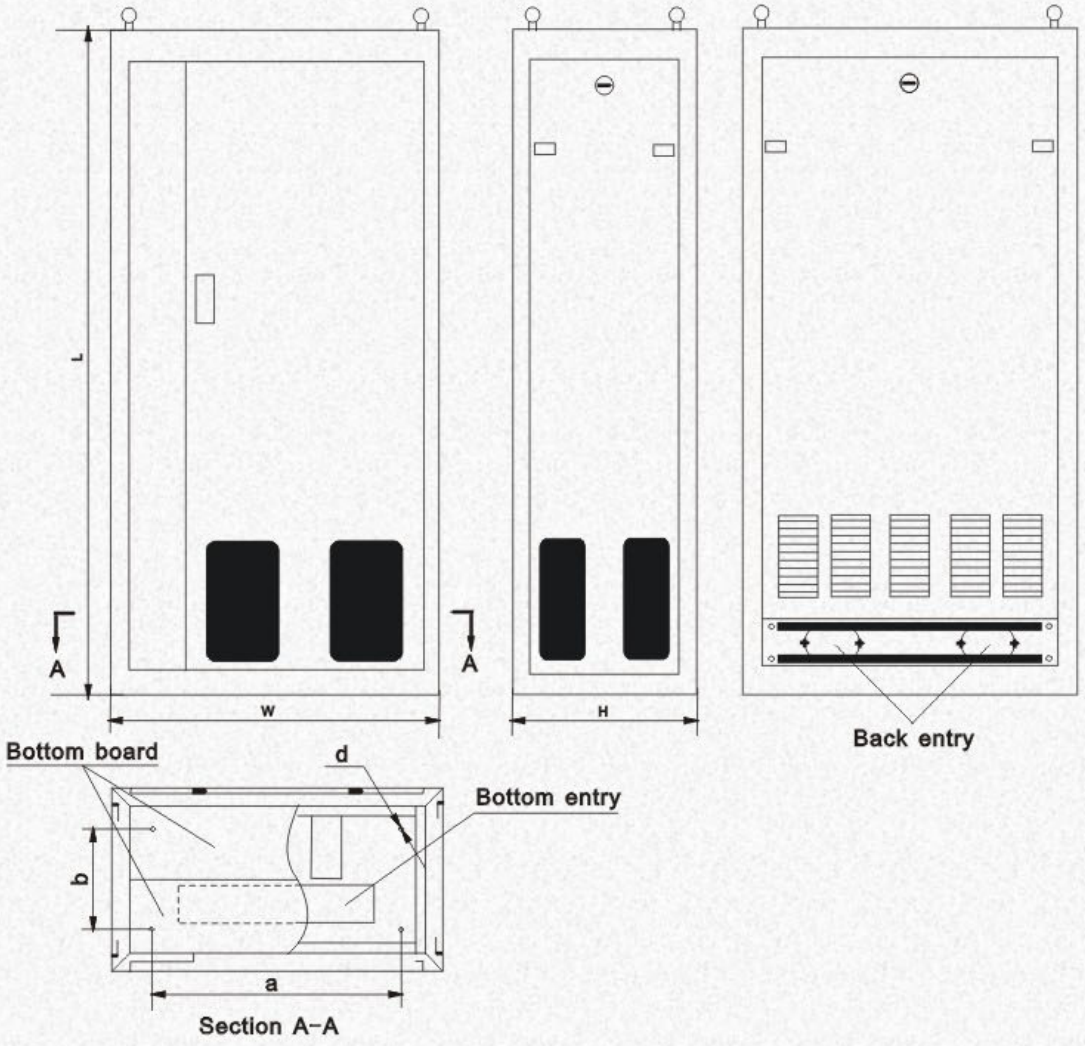
8NA outline



● 8NA

Type	Power kW	Structure item	Shape mm			Installation dimension mm		
			L	W	H	a	b	d
F	187～250	8NA	1540	515	443	465	367	Φ13
G	160～220							
M	132～187							
H	110～160							

8NB outline

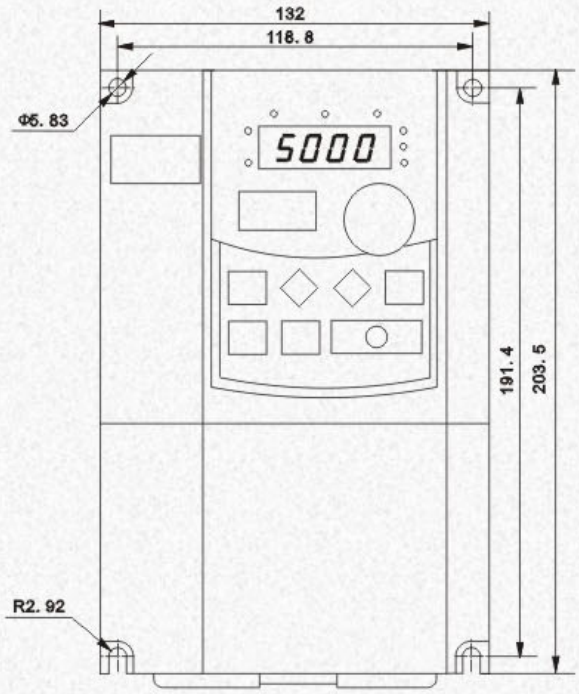


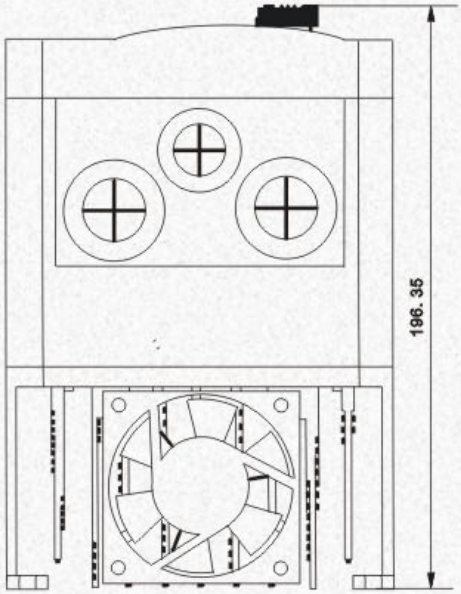
● 8NB

Type	Power kW	Structure item	Shape mm			Installation dimension mm		
			L	W	H	a	b	d
F	280～400	8NB	1700	850	492	640	260	Φ13
G	250～355							
M	200～280							
H	187～250							

■ PI8100 Series (7N2～7N4)

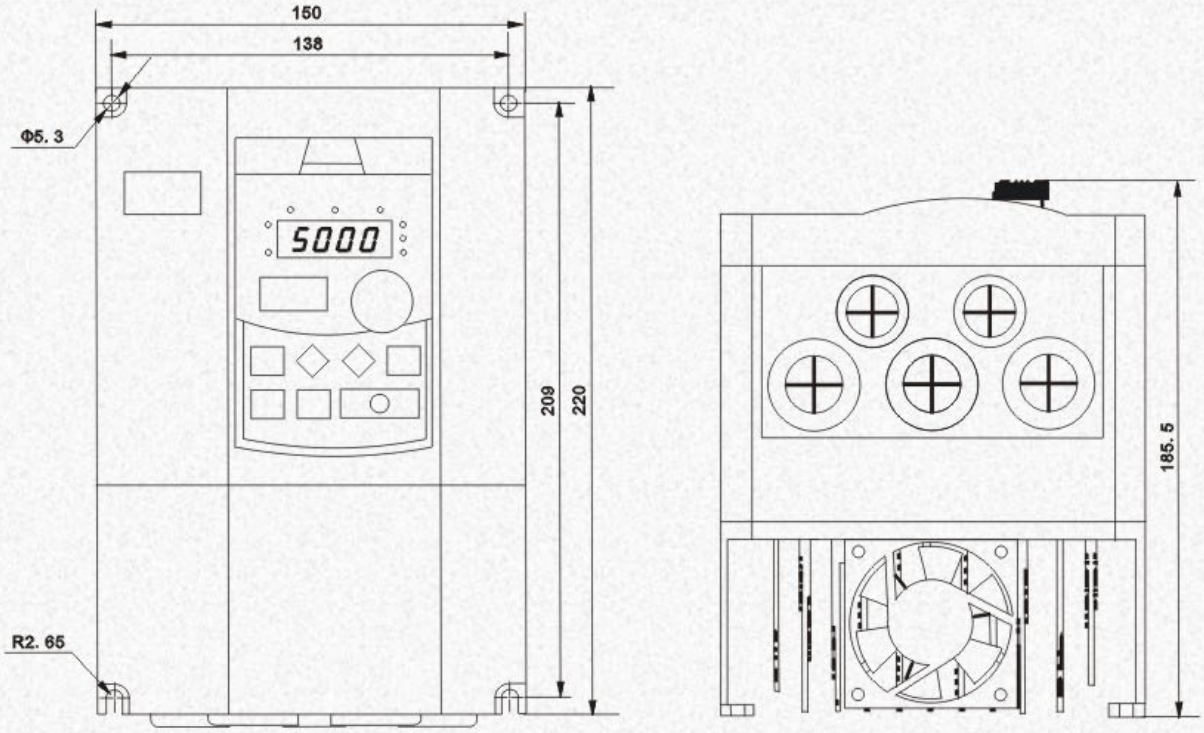
●7N2





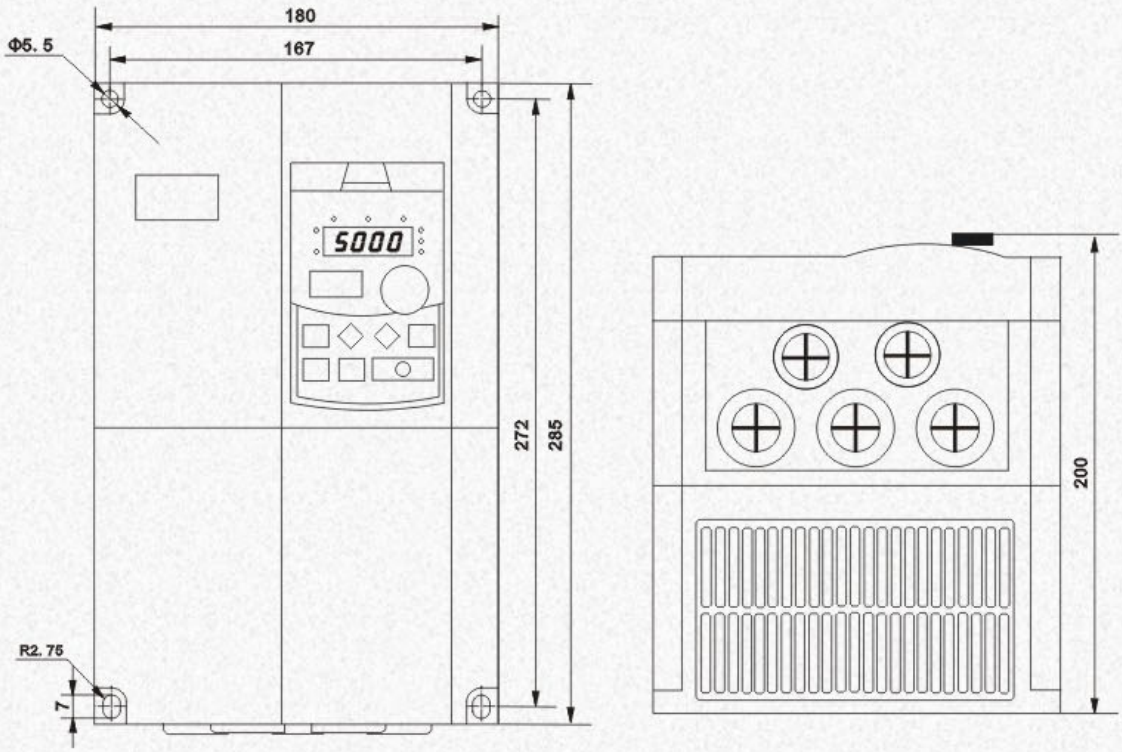
Power type	Type	Power kW
Single phase 220V	F	0.75～1.5
	G	0.4～1.5
	M	0.4～0.75
	H	0.4
3 Phase 220V	F	0.75～1.5
	G	0.4～1.5
	M	0.4～0.75
	H	0.4
3 Phase 380V	F	1.5～2.2
	G	0.75～2.2
	M	0.75～2.2
	H	0.75～2.2

● 7N3



Power type	Type	Power kW
Single phase 220V	F	2.2~4
	G	2.2~4
	M	1.5~2.2
	H	0.75~1.5
3 Phase 220V	F	2.2~4
	G	2.2~4
	M	1.5~2.2
	H	0.75~1.5
3 Phase 380V	F	4~5.5
	G	4~5.5
	M	4~5.5
	H	4

● 7N4



Power type	Type	Power kW
Single phase 220V	F	5.5
	G	5.5
	M	4
	H	2.2
3 Phase 220V	F	5.5
	G	5.5
	M	4
	H	2.2
3 Phase 380V	F	7.5～11
	G	7.5
	M	7.5
	H	5.5～7.5

Frequency InverterPI7600/7800 Series

■ Product Features

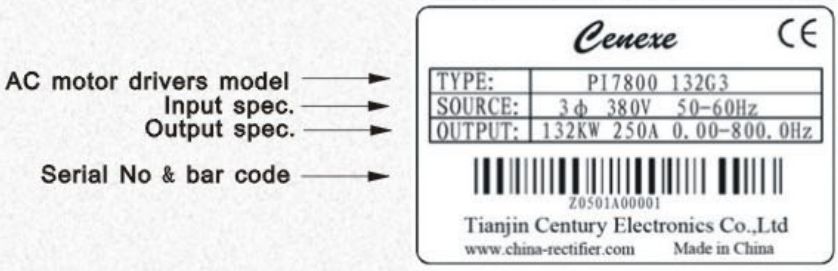
PI7600/7800 series frequency inverter is a newly -updated product meeting the market requirement. with advanced space voltage vector. SPWM control technology, high-powered IGBT and DSP chip. Built-in current control-loop, achieve high-accuracy closed loop control. Reaches high accuracy requirement on output voltage & frequency. Also brand-new production craft and perfect testing equipments, which ensure the high working stability, PI7600/7800 inverter will offer you better motor control solution.

- Brand-new software & hardware design
- Excellent feature upgrade
- Higher quality insurance
- Fashionable industrialized appearance
- DSP-base IGBT, achieve high-efficiency & high-powered control
- V/F,V/F+PG, vector +PG3 control functions
- 3 types of space voltage vector Wave produce mode
- Dead zone compensation function, achieves low frequency high power output
- Automatic slip compensation
- 10 methods to set frequency. imitation terminals can accept user defined signal within 0-10V,0-20A.
- Maximum 7 sections speed and 8 sections acceleration control.
- 6 programmable output control terminals
- Build-in PID control function, achieves high-powered close loop control.
- Supports 0-10V,1-5V,0-20Ma,4-20mA return signal.
- PID based DC brake.
- Speed pursue starting and restart after momentary power loss
- Strong communication function, supports standard RS485 and Can Bus, remote keyboard input function as well.
- Human-based display list, LCD display with LED, displays 3 status parameter in the mean time.
- Particular IGBT temperature rise supervising function, adjusts the fan, and reduce the motor noise and temperature rise duly.
- High-efficiency failure checking and recording function, facilitates removal of fault.
- Parameter protect function
- Unique design to reduce the pollution to power

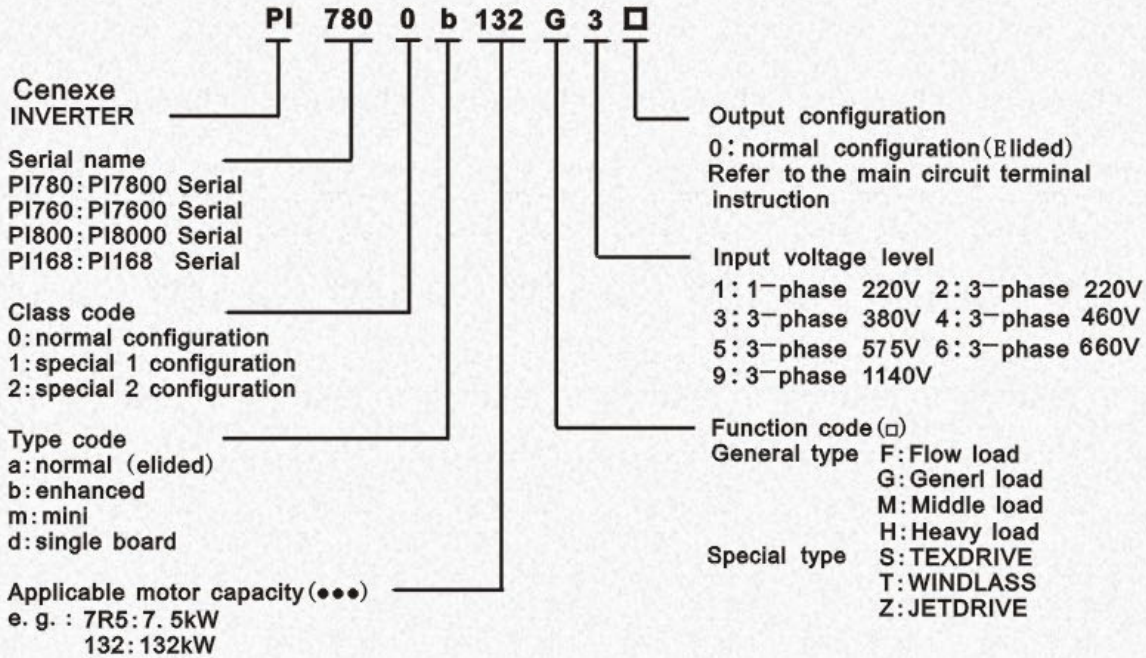
Industry Application

- Steel: converter trending, lance lifting, crystal concussion, rollgang of cold machine, automatically charging of electric arc stove,
- Port: bucket coal-whipper, shock absorption for oil dock screw pump, bridge lifting device...
- Municipal administration: Boiler system, central air conditioner system, sewage disposal, water supply and drainage engineering...
- Coal mine: Main fan blower in the entrance of mine, gas concemtration control in mine, heavy medium in coal washery...
- Chemical industry: chemical reaction heating calcination furnace, filter separator, first ammonia pump...
- Textile: scale linkage, mucilage glue filature, braiding machine, printing machine...
- Oil field: offshore platform oil electric pump, pump jack, oil converying system
- Machine: food machinery, packing machinery, printing machinery, frequency converter air conditioner, plastic machinery...
- Electric power: boiler mill exhauster, boiler system, coal transportation...
- Pharmacy: fermentation tank control, stirring control, conrrelative blower and bump control...

Instruction on Name Plate (giving 132kW/380V as sample)



Model Designation :



Technical Specifications and Outline Code

● PI7600 Series

Inverter type	Light load F		Standard load G		Medium load M		Heavy load H		Outline code
	P_F kW	I_F A	P_G kW	I_G A	P_Z kW	I_Z A	P_H kW	I_H A	
1 phase, 220V, 50/60 Hz									
PI7600●●●□1	0.75	4	0.4	2.5					4N2B
PI7600●●●□1	1.5	7	0.75	4	0.4	2.5			4N2B
PI7600●●●□1			1.5	7	0.75	4	0.4	2.5	4N2B
PI7600●●●□1	2.2	10	2.2	10	1.5	7	0.75	4	4N3B
PI7600●●●□1	4	16	4	16	2.2	10	1.5	7	4N3B
PI7600●●●□1	5.5	20	5.5	20	4	16	2.2	10	4N4B
3 phase, 220V, 50/60 Hz									
PI7600●●●□2	0.75	4	0.4	2.5					4N2B
PI7600●●●□2	1.5	7	0.75	4	0.4	2.5			4N2B
PI7600●●●□2			1.5	7	0.75	4	0.4	2.5	4N2B
PI7600●●●□2	2.2	10	2.2	10	1.5	7	0.75	4	4N3B
PI7600●●●□2	4	16	4	16	2.2	10	1.5	7	4N3B
PI7600●●●□2	5.5	20	5.5	20	4	16	2.2	10	4N4B
3 phase, 380V, 50/60 Hz									
PI7600●●●□3			0.75	2.5	0.75	2.5	0.75	2.5	4N2B
PI7600●●●□3	1.5	3.7	1.5	3.7	1.5	3.7	1.5	3.7	4N2B
PI7600●●●□3	2.2	5	2.2	5	2.2	5	2.2	5	4N2B
PI7600●●●□3	4	8.5	4	8.5	4	8.5	4	8.5	4N3B
PI7600●●●□3	5.5	13	5.5	13	5.5	13			4N3B
PI7600●●●□3	7.5	16	7. 5	16	7.5	16	5.5	13	4N4B
PI7600●●●□3	11	25					7.5	16	4N4B

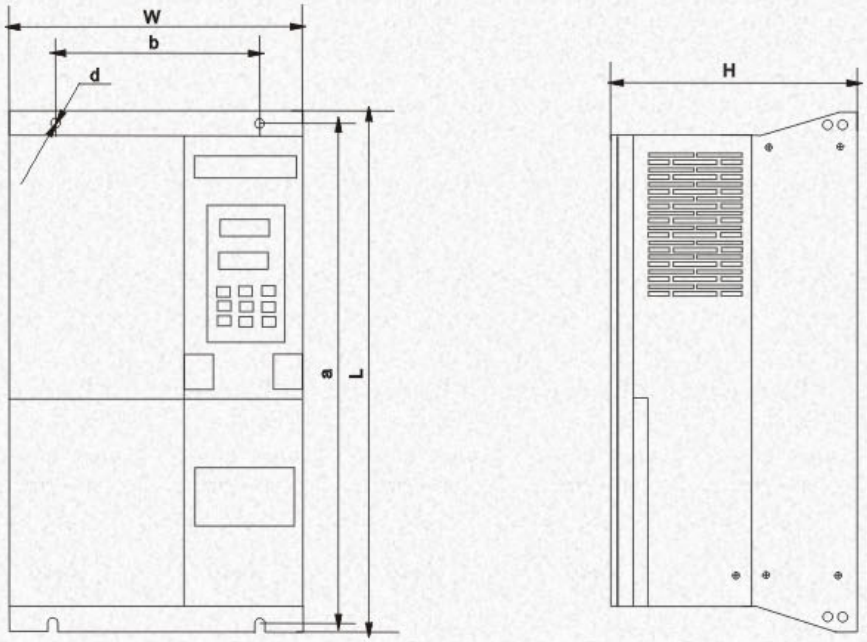
● PI7800 Series

Inverter type	Light load F		Standard load G		Medium load M		Heavy load H		Outline code
	P_F kW	I_F A	P_G kW	I_G A	P_Z kW	I_Z A	P_H kW	I_H A	
3 phase, 380V, 50/60 Hz									
PI7800●●●□3	11	25	7.5	16	5.5	13	5.5	13	1N2
PI7800●●●□3	15	32	11	25	7.5	16	7.5	16	1N2
PI7800●●●□3	18.5	38	15	32	11	25	11	25	1N2
PI7800●●●□3	22	45	18.5	38	15	32	11	25	1N3
PI7800●●●□3	30	60	22	45	18.5	38	15	32	1N3
PI7800●●●□3	37	75	30	60	22	45	18.5	38	2N1
PI7800●●●□3	45	90	37	75	30	60	22	45	2N1

PI7800●●●□3	55	110	45	90	37	75	30	60	2N2
PI7800●●●□3	75	150	55	110	45	90	37	75	2N2
PI7800●●●□3	93	170	75	150	55	110	45	90	2N2
PI7800●●●□3	110	210	93	170	75	150	55	110	2N3
PI7800●●●□3	132	250	110	210	93	170	75	150	2N3
PI7800●●●□3	160	300	132	250	110	210	93	170	2N4
PI7800●●●□3	187	340	160	300	132	250	110	210	2N4
PI7800●●●□3			132	250					3N1
PI7800●●●□3			160	300					3N1
PI7800●●●□3	200	380	187	340	160	300	132	250	3N1
PI7800●●●□3	220	415	200	380	187	340	160	300	3N1
PI7800●●●□3	250	470	220	415					3N1
PI7800●●●□3	280	520	250	470	200	380	187	340	3N2
PI7800●●●□3	315	600	280	520	220	415	200	380	3N2
PI7800●●●□3	355	640	315	600	250	470	220	415	3N2
PI7800●●●□3	400	750	355	640	280	520	250	470	3N2

Outline and Install Size

PI7800 Series (1N2～1N3、2N1～2N4)



● 1N2

Type	Power kW	Outline code	Shape mm			Installation dimension mm			Net weight kg	Gross weight kg	keypad
			L	W	H	a	b	d			
F	11～18.5	1N2	360	235	207	340	150	Φ10	10	11	JP6E7800
G	7.5～15										
M	5.5～11										
H	5.5～11										

● 1N3

Type	Power kW	Outline code	Shape mm			Installation dimension mm			Net weight kg	Gross weight kg	keypad
			L	W	H	a	b	d			
F	22~30	1N3	410	264	242	390	165	Φ10	14	15.5	JP6E7800
G	18.5~22										
M	15~18.5										
H	11~15										

● 2N1

Type	Power kW	Outline code	Shape mm			Installation dimension mm			Net weight kg	Gross weight kg	keypad
			L	W	H	a	b	d			
F	37~45	2N1	560	300	243	540	200	Φ10	22	23.5	JP6E7800
G	30~37										
M	22~30										
H	18.5~22										

● 2N2

Type	Power kW	Outline code	Shape mm			Installation dimension mm			Net weight kg	Gross weight kg	keypad
			L	W	H	a	b	d			
F	55~93	2N2	660	365	293	640	250	Φ10	40	48	JP6E7800
G	45~75										
M	37~55										
H	30~45										

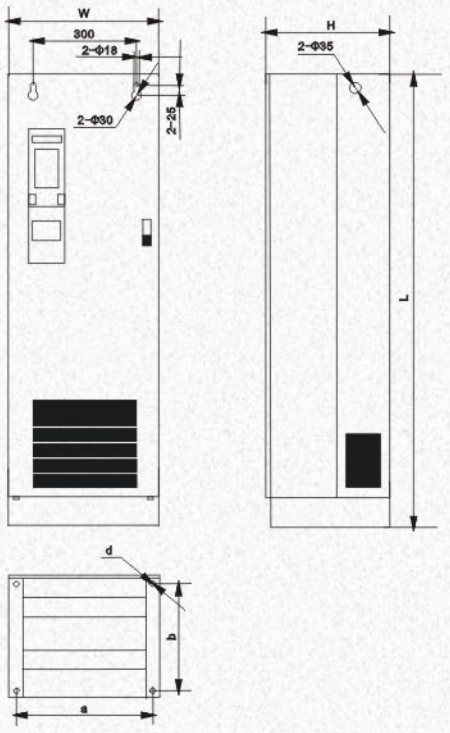
● 2N3

Type	Power kW	Outline code	Shape mm			Installation dimension mm			Net weight kg	Gross weight kg	keypad
			L	W	H	a	b	d			
F	110~132	2N3	710	455	293	690	350	Φ10	57	68	JP6E7800
G	93~110										
M	75~93										
H	55~75										

● 2N4

Type	Power kW	Outline code	Shape mm			Installation dimension mm			Net weight kg	Gross weight kg	keypad
			L	W	H	a	b	d			
F	160~187	2N4	910	480	342	890	350	Φ10	72	86	JP6E7800
G	132~160										
M	110~132										
H	93~110										

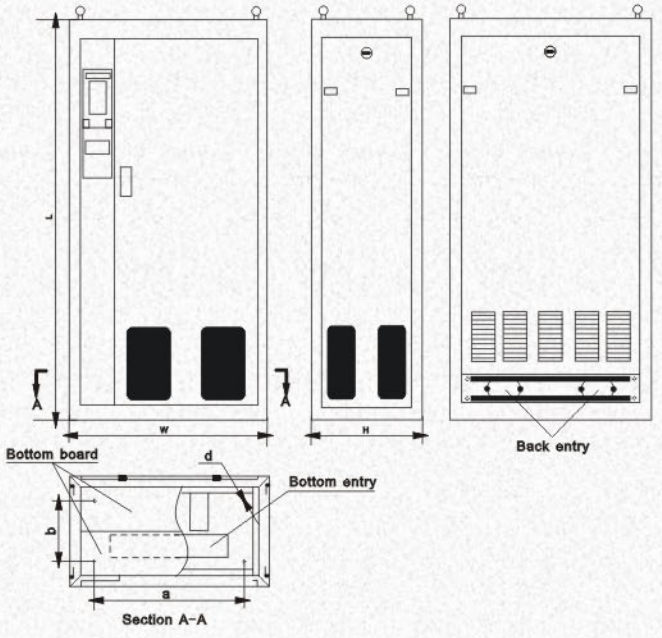
PI7800 (3N1)



● 3N1

Type	Power kW	Outline code	Shape mm			Installation dimension mm			Net weight kg	Gross weight kg	keypad
			L	W	H	a	b	d			
F	200～250	3N1	1540	515	443	465	367	Φ13	160	190	JP6E7800
G	187～220										
M	160～187										
H	132～160										

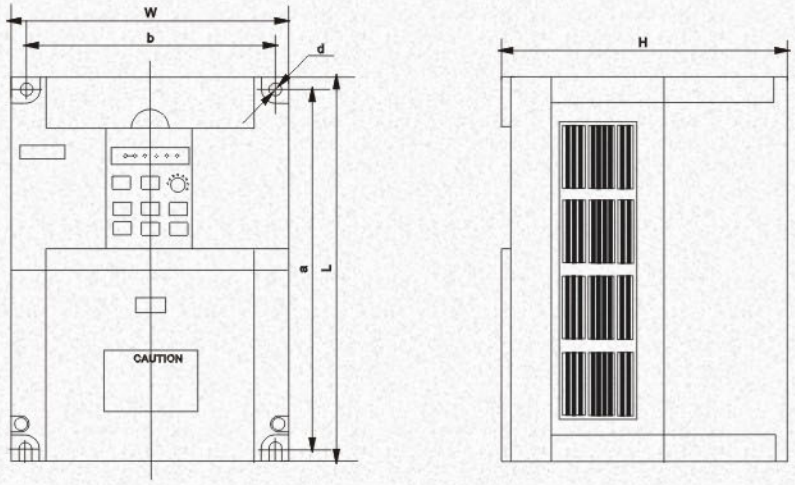
PI7800 (3N2)



● 3N2

Type	Power kW	Outline code	Shape mm			Installation dimension mm			Net weight kg	Gross weight kg	keypad
			L	W	H	a	b	d			
F	280~400	3N2	1700	850	492	640	260	Φ13	280	350	JP6E7800
G	250~355										
M	200~280										
H	187~250										

PI7600 Series （4N2B~4N4B）



● 4N2B

Power grade	Type	Power kW	Outline code	Shape mm			Installation dimension mm			Net weight kg	Gross weight kg	Keypad
				L	W	H	a	b	d			
3phase 380V	F	1.5~2.2	4N2B	170	125	162	160	112	Φ5	2	2.4	JP5E7800
	G	0.75~2.2										
	M	0.75~2.2										
	H	0.75~2.2										

● 4N3B

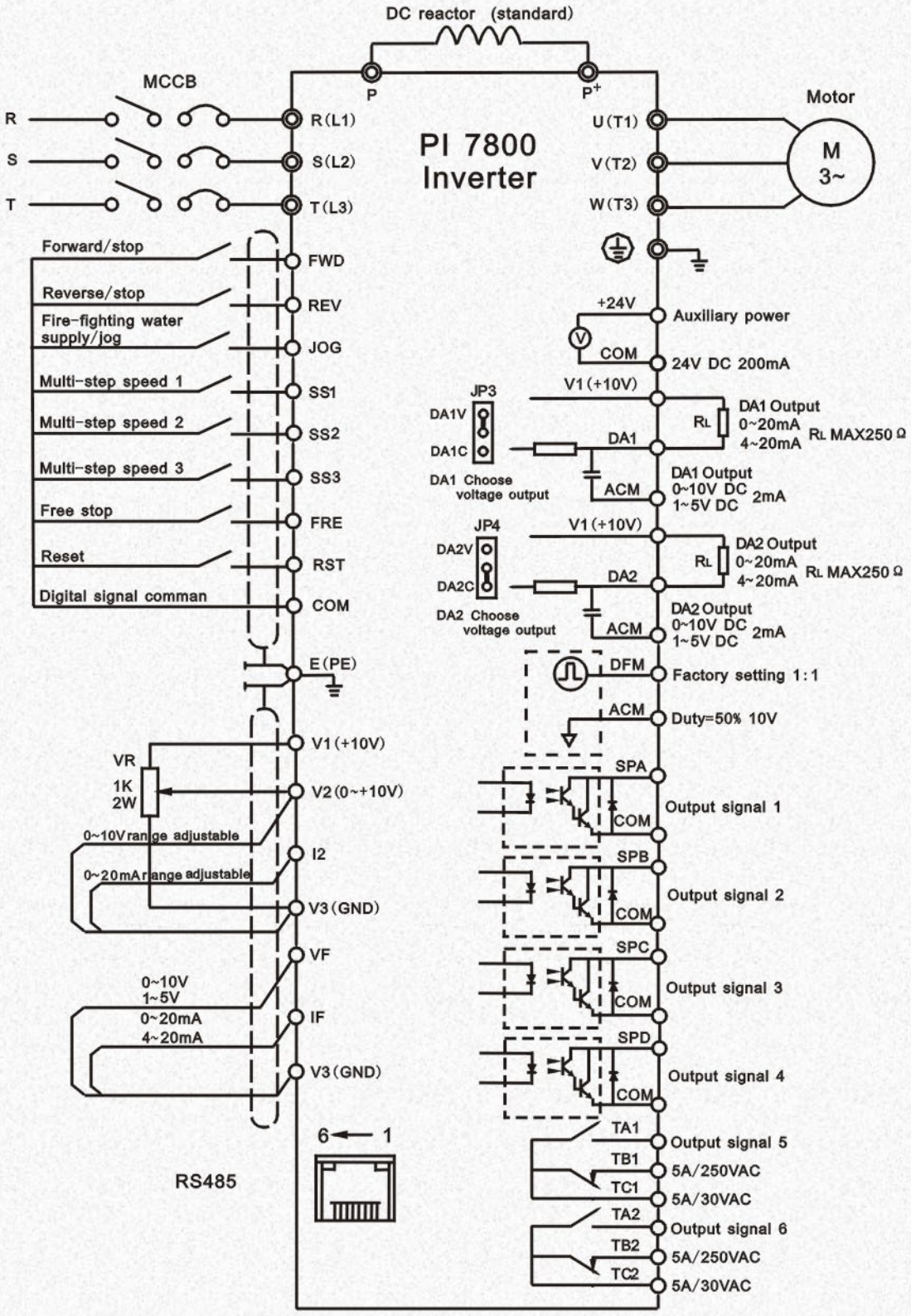
Power grade	Type	Power kW	Outline code	Shape mm			Installation dimension mm			Net weight kg	Gross weight kg	Keypad
				L	W	H	a	b	d			
3phase 380V	F	4~5.5	4N3B	220	150	178	205	138	Φ5.5	3	3.5	JP5E7800
	G	4~5.5										
	M	4~5.5										
	H	4										

● 4N4B

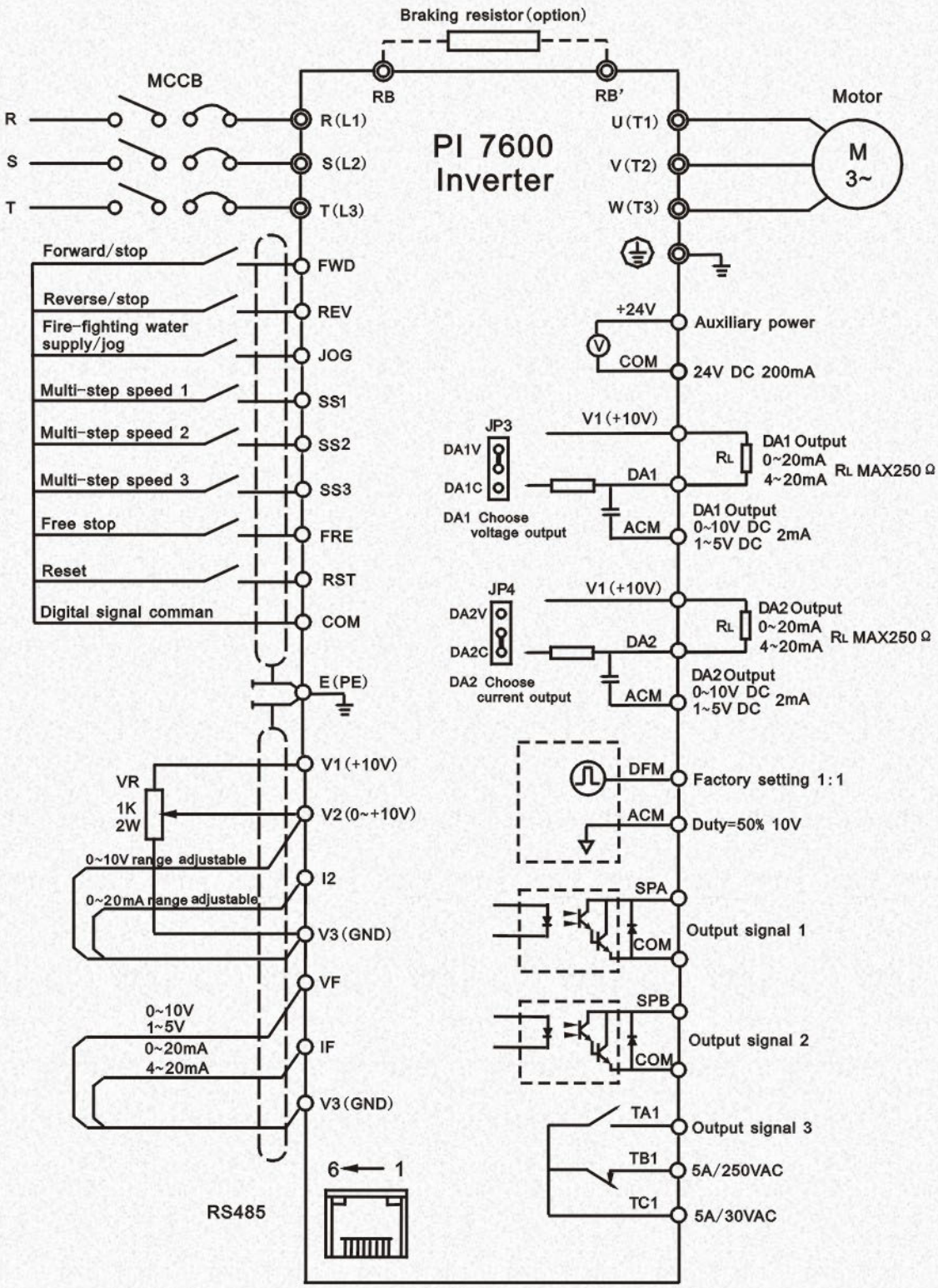
Power grade	Type	Power kW	Outline code	Shape mm			Installation dimension mm			Net weight kg	Gross weight kg	Keypad
				L	W	H	a	b	d			
3phase 380V	F	7.5~11	4N4B	300	218	212	288	203	Φ6.5	6	7	JP6E7800
	G	7.5										
	M	7.5										
	H	5.5~7.5										

Wiring Diagram

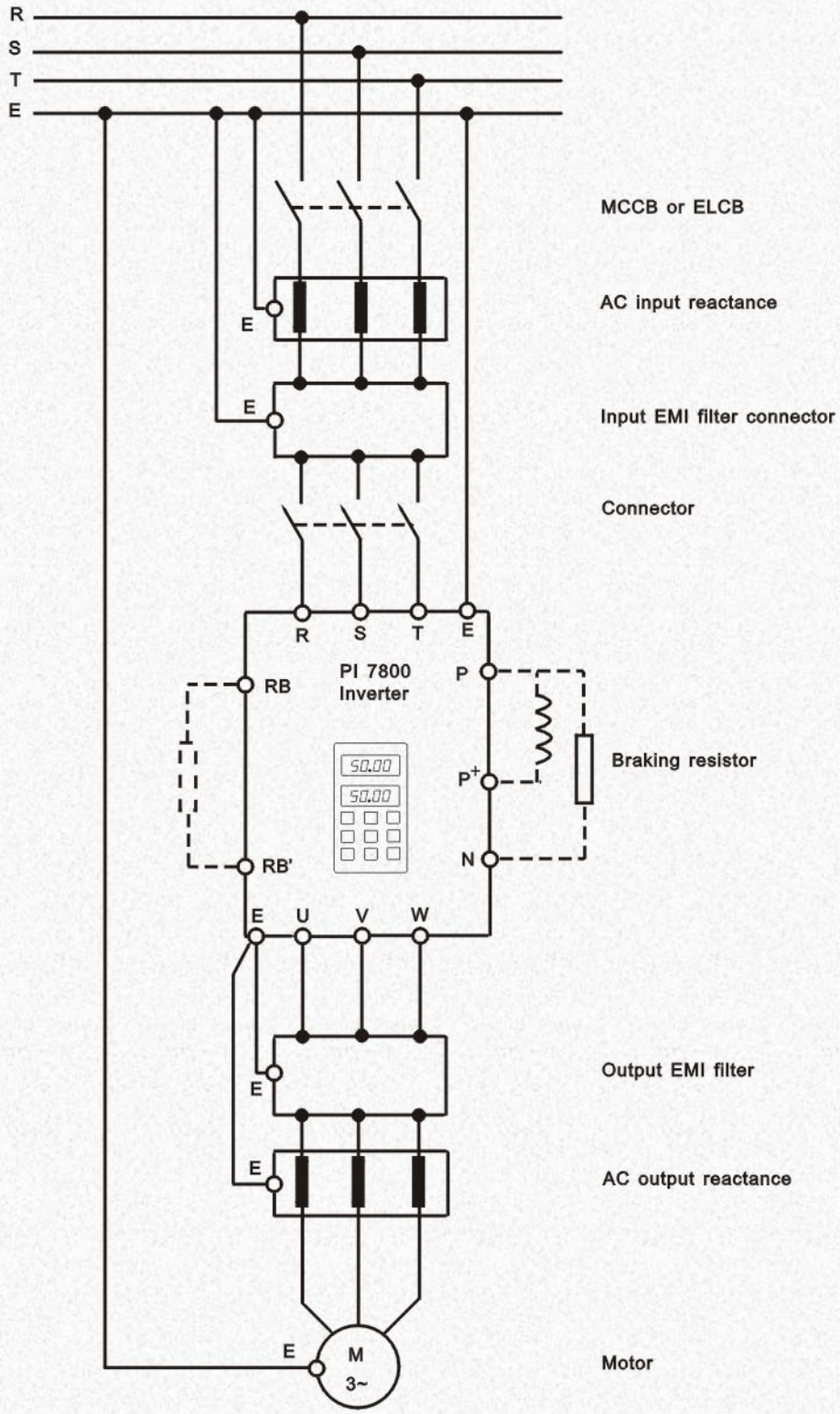
PI 7800 series
Wiring diagram 187kW - 355kW



PI 7600 series
Wiring diagram 7. 5kW and below



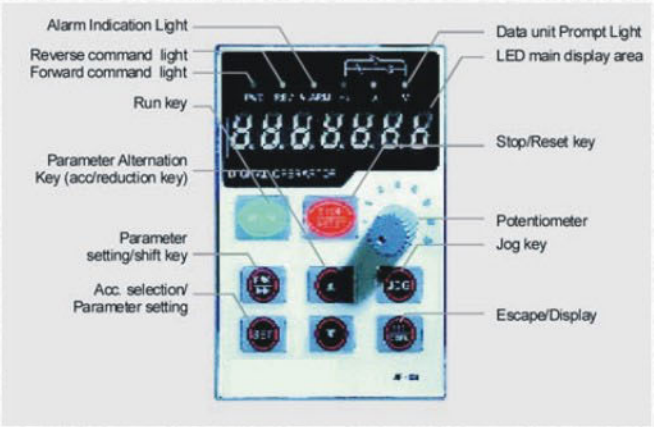
The series can acquire the peripheral equipment by user because if the different using condition and requirement .See the wiring diagram as below



Other model wiring diagram please see the manual

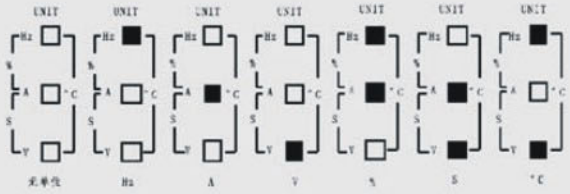
Keyboard Specification and Function Description

JP5E7800 series



Data unit prompt Light:

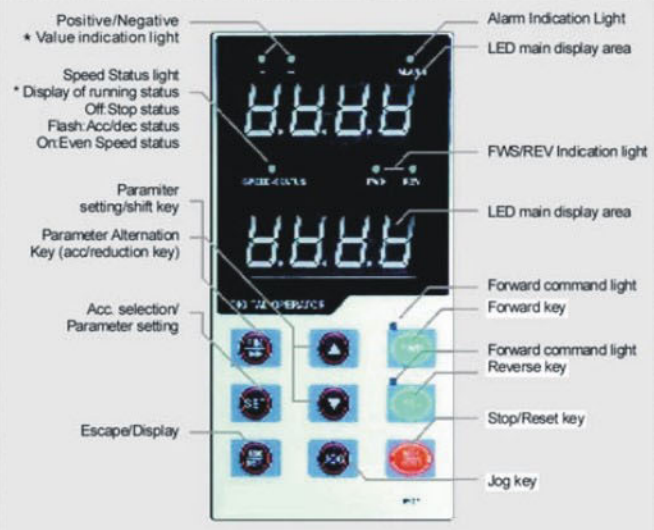
It is formed up by 3 instruction light on the right upside of the keyboard, different status indicates different unit of the current parameter displayed in the LED. The units for the parameters as blow



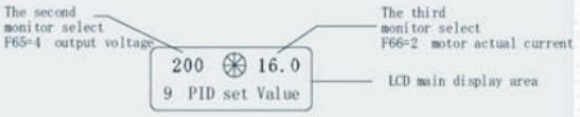
The standard keyboard for PI7800, PI7600 Family inverter.

For the 4 keypads, when the keypad is unlocked, press the ESC/DISPL and STOP/RESET simultaneously for 3 seconds, the keypad is locked, LED displays normally after displaying "LoC" for 2 seconds; when the keypad is locked, press the ESC/DISPL and STOP/RESET simultaneously for 3 seconds, the keypad is unlocked, LED displays normally after displaying "ULoC" for 2 seconds.

JP6E7800 Series



The standard keyboard for PI7800, PI7600 Family inverter. JP6C7800 keyboard has the same structure and instruction with those of JP6E7800. The difference is that the lower LED display is changed into LCD display which displays the state and parameters in English. JP6C7800 is the optional keyboard for PI7800, PI7600. The chart gives JP6C7800 the LCD liquid crystal display of the keyboard Description



Standard Specification:

Items		Specifications
Voltage and frequency		Single-phase 200-240V, 50/60Hz Three-phase 200-240V, 50/60Hz Three-phase 380-415V, 50/60Hz Three-phase 440-460V, 50/60Hz Three-phase575V, 50/60Hz Three-phase 660V, 50/60Hz Three-phase 1140V, 50/60Hz
Allowable Fluctuation range		Voltage:±15% frequency: ±5%
Control system		High performance vector control inverter based on DSP
Output frequency		G/F/Z/S/T/M:0.00-800.0Hz, the maximum frequency range is 10.00-800.0Hz H: 0.00-2000.0Hz, the maximum frequency range is 10.00-2000.0Hz.
Control method		V/F control, V/F PG control, vector PG control
Waveform produce methods		Asynchronous space vector PWM, step less and subsection synchronous space vector PWM, 2 phase optimized vector PWM
Auto torque boost function		Realize low frequency (Hz) and large output torque control under the V/F control mode
Accelerate/decelerate control		Acceleration / Deceleration S curve subsection set mode. The maximum running time is 26 hours.
Program running control		7 step speed program running, the maximum running time is 88 hours
Frequency setting accuracy		Digital references: 0.01Hz (300Hz and below).0.1Hz (above 300Hz) Analog references: 0.05Hz/60Hz
Frequency accuracy		Speed control tolerance 0.01% (25℃±10℃)
V/F Curve mode		Linear, square, 8V/F curve set by user
Over load Capability		G/S: 150% for one minute, 200% for 0.1 second F: 120% for one minute, 150% for 0.1 second Z/M/T: 180% for one minute, 250% for 0.1 second H: 250% for one minute, 300% for 0.1 second
Slip compensation		0-10% automatic slip compensation
Input signal	Running method	Keypad / Terminal / Communication mode
	Frequency setting	There are 11 frequency setting modes, including DC 0-10V, DC 0-20mA, DC 4-20 mA, potentiometer on the keyboard.
	Start signal	Forward, reverse
	Multi-segment speed	Can set 7 steps speed at most (using multi function or program running)
	Multi-segment acceleration	At most & steps acceleration can be set (using multi function terminals or program running)
	Instant stop	Interrupt controller's output
	Traverse running	Program control running
	jog	Running in low speed
	Fault reset	When the protection function is affective, system can reset fault state automatically
	PID feedback	DC 0-10V, DC 1-5V, DC 0-20mA, DC 4-20mA.
Output signal	Running state	Motor state display, stop, accelerate / decelerate, seven-speed, program running state
	Fault output	Relay fault output: AC 250V 5A, DC 30V 5A
	Analog output	2 analog output, & signals could be selected: frequency, current, voltage, temperature, etc, the output signal range is 0-10V/0-20mA
	Output signal	6 output signals, each one with 32 signals for option.
Running function		Limit frequency, skip frequency, torque difference compensation, reverse protection, automatic adjustment, PID control
DC brake		On base of non-OC, internal PID can regulate braking current to ensure enough braking torque
Inverter protection		Over voltage, under voltage, over current, over load, overheat, over current stall, over voltage shall, phase loss (options). external fault, communication fault, PID feedback abnormity, PG fault.
IGBT temperature display		Display of current IGBT temperature

TJCS6000 online low-consumption soft starter

Features

- No by-pass contract art
- Reliability higher than the contactor
- Save energy 99% compared with the thyristor on line
- Save energy 60% compared with by-pass type
- Direct start
- Communicate interface arbitrary

Introduction

TJCS6000 series intelligent on-line low power consumption motor soft starter can be applicable for three phase AC squirrel-cage asynchronous motors which rated voltage is AC 220V/380V/440V/660V, 50/60 Hz, and rated current is 800A and below. The soft starter unit is modularization, and installed in cabinet or box to compose of control circuit of motor without bypass contactor and thermal relay, using switches. The soft starter can realize starting and stopping control, overload, failure-phase, three-phase unbalance, over voltage and under voltage protection.

Model Speciation

TJC S 6□□□ □/□ □ □ – □

- Rate working voltage
  - 2: AC220V
  - 3: AC380V
  - 4: AC440V
  - 6: AC660V
- F: Antisepsis type
- N: General type
- L: Out connecting human-machine communication interface
- N: No out connecting human-machine commnication interface
- X: PROFIBUS fieldbus
- M: MODBUS fieldbus
- N: RS485 communication interface
- "P" Means by-pass type nothing means on-line type
- Match the power of motor (kW) (Model table may refer to structure explanation)
- Design series number
- Soft starter symbol
- Company symbol

Characteristics of Chinese-English Display Human Machine Interface

- Low-consumption operation online (bypass contact is built in)
- Marginal triggering thyristor withstanding the high surge current
- Intelligent type digitization, three microcontrollers and high reliable circuit design
- Chinese-English display menu realizing the human machine dialogue
- Displaying the working voltage and circuit while running
- Installed the motor overload, phase-failure etc. protection
- Advanced soft starting and stopping function
- Installed the communication interface (optional)
- 4-20mA analogy signal outputting the motor working circuit
- Delayed starting function
- Strong controlling and protection function
- Fault diagnosis and humanity design
- Natural wind cooling, small size and pretty design

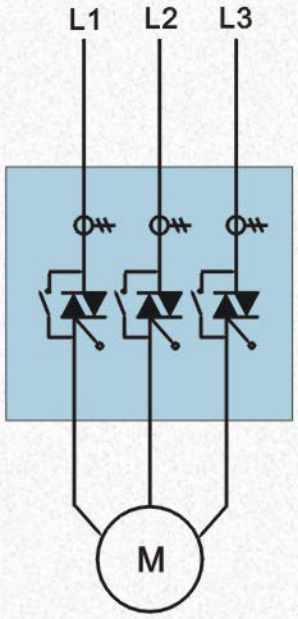
Many items of patents Enriches the quintessence of the world

Technology Index

- Control voltage: AC 220V±20%, ≥60W, 50/60 Hz.
- Power voltage: AC 220V/380V/440V/660V, 50/60 Hz
- Matched motor: three phase squirrel-cage asynchronous motor, and the rate power of motor in step with the rate power of soft starter
- Reset frequency: less than 6 times per hour
- Cooling way: natural wind cooling
- Environment temperature: -15℃~40℃
- Environment Humidity: relative humidity should be less than 93% without agglomeration
- Applicable location: the indoor will be in the condition without erosion gas and conductivity dust. Indoor room with adequate ventilation, shake less than 0.5g
- Altitude height: less than 2000 meters .If higher than 2000 meter, it need used by reduce one grade type , if higher than 6000 meter, it only can be use in 440V or below
- Protection grade: Ip20
- Human machine interface: display the programme menu, and alternate, protect and control the index through the keyboard.

● Delay start: it can set up within 0~999s, and the delay start index is set. When the start button is pressed, the display will countdown the time. The motor will start when the delay start index is 0

● The communication interface (option):
PROFIBUS fieldbus communication protocol,
MODBUS fieldbus communication protocol or the RS485 communication interface



Line current connection of soft starter

The Technology Parameter Table of TJCS6000 Series Soft Starter

● The technology parameter table of TJCS6000 series soft starter (220V)

Model	Frame grade current A	Rated current A	Adopted motor power kW	Start consumption W	Operation consumption VA/W	Control circuit consumption VA
TJCS6015	125	63	30	190	30	2.5
TJCS6022		80	37	240	40	
TJCS6030		125	55	375	65	
TJCS6045	400	160	75	720	100	2.5
TJCS6055		200	90	900	120	
TJCS6075		280	132	1260	175	
TJCS6090		315	160	1410	210	
TJCS6115		400	200	1800	300	
TJCS6132	800	500	250	2250	195	2.5
TJCS6160		630	320	2830	360	
TJCS6200		700	355	3150	425	
TJCS6220		800	400	3600	530	

Note: The by-pass type ‘s technology parameter table is same with on-line type.

● The technology parameter table of TJCS6000 series soft starter (380V/440V)

Model	Frame grade current A	Rated current A	Adopted motor power kW	Start consumption W	Operation consumption VA/W	Control circuit consumption VA
TJCS6015	125	32	15	100	25	2.5
TJCS6022		50	22	150	30	
TJCS6030		63	30	190	30	
TJCS6037		80	37	240	40	
TJCS6045		100	45	300	50	
TJCS6055		125	55	375	65	
TJCS6075	400	160	75	720	100	2.5
TJCS6090		200	90	900	120	
TJCS6132		280	132	1260	175	
TJCS6160		315	160	1410	210	
TJCS6200		400	200	1800	300	
TJCS6250	800	500	250	2250	195	2.5
TJCS6320		630	320	2830	360	
TJCS6355		700	355	3150	425	
TJCS6400		800	400	3600	530	

Note: The by-pass type ‘s technology parameter table is same with on-line type.

● The technology parameter table of TJCS6000 series soft starter (660V)

Model	Frame grade current A	Rated current A	Adopted motor power kW	Start consumption W	Operation consumption VA/W	Control circuit consumption VA
TJCS6132	400	160	132	720	100	2.5
TJCS6160		200	160	900	120	
TJCS6200		250	200	1260	175	
TJCS6250		315	250	1410	210	
TJCS6320		400	320	1800	300	
TJCS6355		450	355	2020	360	
TJCS6400	800	500	400	2250	195	2.5
TJCS6450		550	450	2480	285	
TJCS6500		550	500	2480	285	
TJCS6550		630	550	2830	360	
TJCS6630		700	630	3150	425	
TJCS6750		800	750	3600	530	

Note: The by-pass type ‘s technology parameter table is same with on-line type.

Operating Function

● Start method:

A. Current limitation (applicable for normal load starting):

The machine will start according to the set maximum current. After the motor starts, it will recover to the rated current. (refer to figure 1)

Starting current limited value (Ix)

It can be set by the keyboard in the scope of 50%~450% rated current.

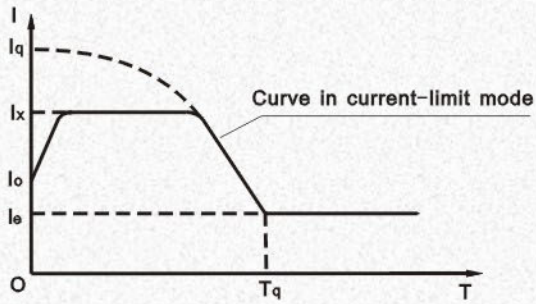


Figure 1

B. Voltage ramp methods (applicable for heavy duty starting)

The equipment will be started based on the setted start voltage and boosting voltage time. Meanwhile, the soft starter will limit the maximum current not over 4.5 times of the rated current. When reaching the boosting voltage time, voltage will rise to the rated voltage. (refer to figure 2)

The motor which start voltage at the scope of 30~70% rated value can be set by the keyboard in 0~60s after beginning start

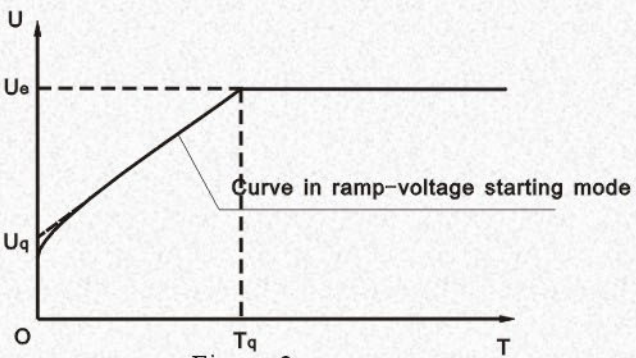


Figure 2

C. Direct start (applicable for the motor urgent starting)

This is a emergent measure for producing when soft starter meets fault. When soft starter meets fault, it can not start electromotor as a rule. We can use direct start on condition of electric web and mechanical equipment's permission. When using direct start, inner touch apparatus will attract at once. Mend it from producer after electromotor work. Soft starter will protect motor about overload under this mode. Other protection will be not act or give an alarm. Forbid this mode to start when soft starter work as a rule.

D. Ramp mode of torque voltage (applicable for the big fan over-load starting)

Based on the voltage ramp starting methods, it will be added with 100ms impulse voltage after 100ms since beginning starting, in order to start the motor in ramp mode of torque voltage after super static torque. (refer to figure 3).

The motor which start voltage at the scope of 30~70% rated value can be set by the keyboard in 0~60s after beginning start.

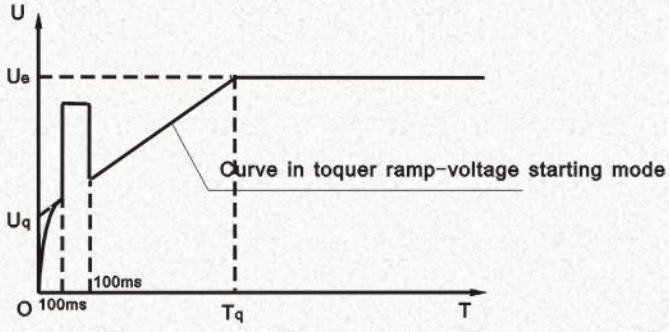


Figure 3

● Stopping method

A.Free stop: After received the signal "stop", the motor's connection terminal will lose the voltage, it will stop freely according to torque inertia.

B.Soft stop: After the soft starter received the signal "stop", it will let the output torque of the motor gradually and smoothly reduce to zero in fixed time, let the motor and drag equipments stop smoothly, and let the water pump load not drip water. In the whole process of the stopping, the program control current will not exceed the motor's running current, it can be set by keyboard when the stopping time is within 0~60s.

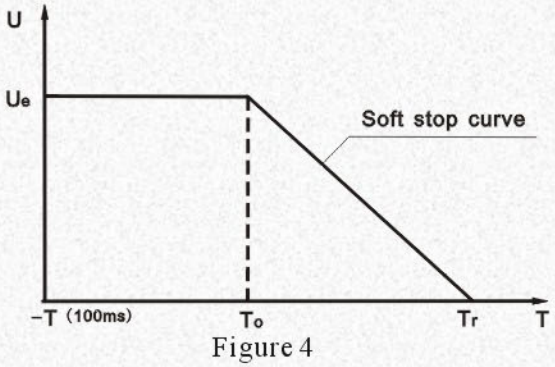


Figure 4

■ Protect Function Instruction

This soft starter has 6 items of protection functions to maintain safe utilization of soft starter and motor. The character of their action is divided into two functions which can be set by the keyboard. One is to show the alarm signal and stop automatically, the other is only show the alarm signal but not stop the motor automatically, if anyone who want to stop the machine; it should sent a command by a person.

● Overload protection:

The soft starter on its own gets the three phase current value though the current transformer. To judge whether the motor overloaded or not through the micro-controller intelligence protection program. Program is written according to the criterion of hot overload relay act inverse time curve, So characteristic of action can't be changed by environment.

Running current /setting current	1.05	1.2	1.5	6.0
Action time	No action in 2h	<2h	<2min	<5s

● Phase-failure protection:

It has an up interface and a down interface which are displayed in the human machine interface. The action time is 5s

● Three phase unbalance:

Because the micro-controller on its own get the three phase current value though the current transformer, the program edition added the three phase unbalance protection.

● Over voltage protection:

It can be set by keyboard when the action parameter at the scope of 100~120%Ue, the action time is 5s.

● Under voltage protection:

It can be set by keyboard when the action parameter at the scope of 80~90%Ue, the action time is 5s.

● Thyristor protection:

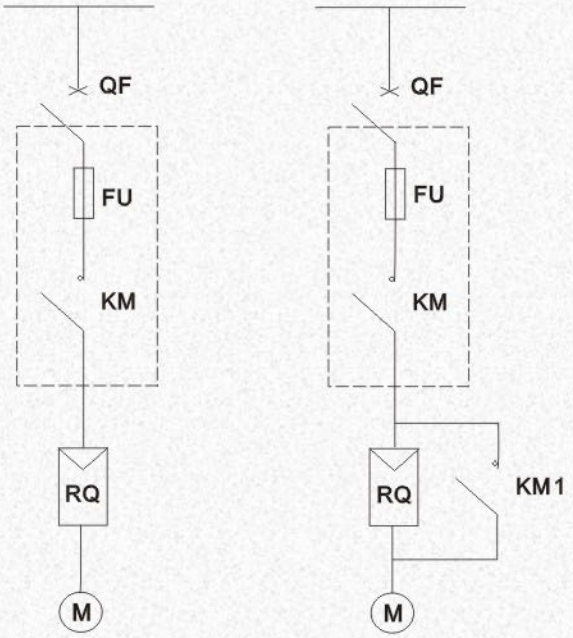
When the thyristor is broken-down, the soft starter can not start, and the temperature of the radiator is over 90℃, the way of action is the same as above.

● Operation protection:

The starting location can be set on the keyboard. outline control、keyboard control、outline and keyboard control、outline and keyboard can refuse running.

Electric Connection

● main connection wire(shown as Figure 5)



a. on-line type b. by-pass type

Figure 5

QF: Breaker

FU: High speed fuse (option)

KM: Input Contactor (option)

KM1: By-pass contactor

RQ: soft starter unit

M: Motor

Contactors in the dashed rectangle are optional parts. They are not connected when the motor be frequently used; it can be connected to the soft starter directly by reclosers.

● Control terminal connection (shown as Figure 6)

A. Soft start control terminal: No 9 terminal is the soft start control terminal, close valid. When No 10 and 9 terminal closed, the soft starter begin start .The start characteristics can be seen in the operating speciation.

B. Soft stop control terminal: No 8 terminal is the soft stop control terminal, break valid. When No 10 and 8 terminal are broken, the soft starter begin to soft stop. If set the soft stop time "zero", it will stop instantaneously. The stop characteristics can be seen in the operating specification.

C. Start and stop controlled by relay: combined No 8 and 9 terminal parallel connection through a contact of a relay can control the start and stop. Closed means soft starter, broken means soft stopper. If the soft stopper time set "zero", when the relay contact break off, it will stop instantaneously(shown as Figure.10b).

D. Emergency stop control terminal: No 7 terminal is Emergency stop control terminal, break off valid. "TP" in the figure means contact piece. If need the transient stop, one should unfolded TP and series connect relay. When the contacts break off (No. 10 and No 7 terminal break off), the motor stop instantaneously.

E. Controllable relay output contact (K1 relay): One is normally open terminal, and the other is normally close terminal. No. 1 terminal is a shared terminal. This relay can be set to "by-pass output" or "begin start" by soft starter menu . If it be sent to "by-pass output", the action of the relay be in step with the action of inside by-pass contactor,, and do not affected by "Program delay". If it be set to "begin start" and "program delay" is set to "0", the relay is acting when the soft starter begin start ,resume when soft stop over .If "program delay" is set to "X" which is not "0" value , the relay is acting after the soft starter begin start "X" seconds later ,resume when soft stop over .

F. Fault output relay (K2 relay): One is normally open terminal, and the other is normally close terminal. N0.4 terminal is a shared terminal. If soft starter check thyristor of the soft starter be break down, or motor overload, failure-phase, three phases unbalance, over voltage, under voltage and so on, this terminal acts.

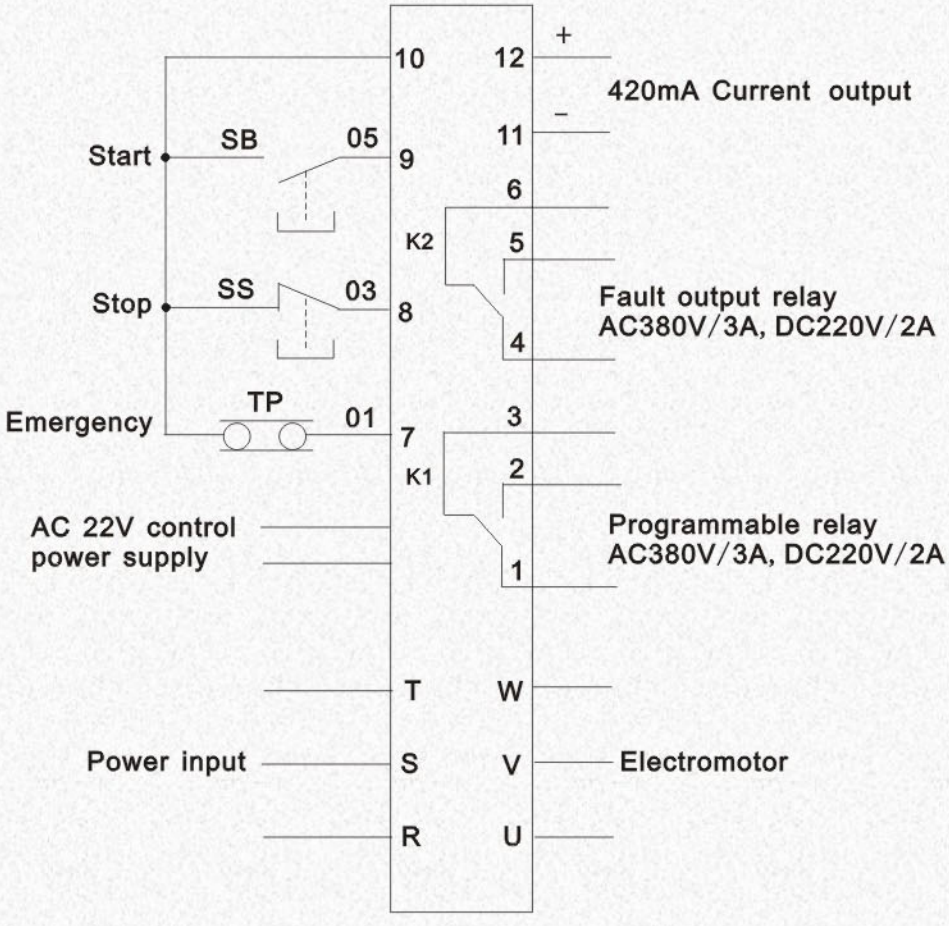


Figure 6 a. The Second Wire Connection of the Divided Start and Stop Control

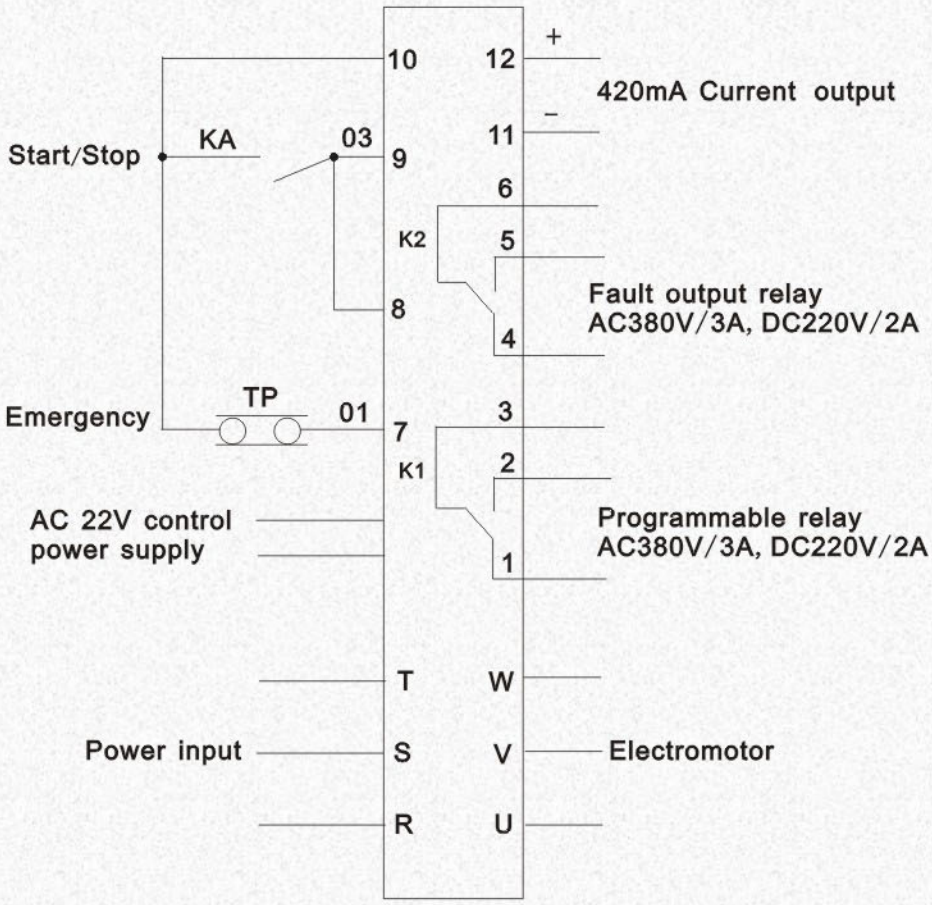


Figure 6 b. The Second Wire Connection of the Closed Start and Stop Relay Control

● The out connecting keyboard

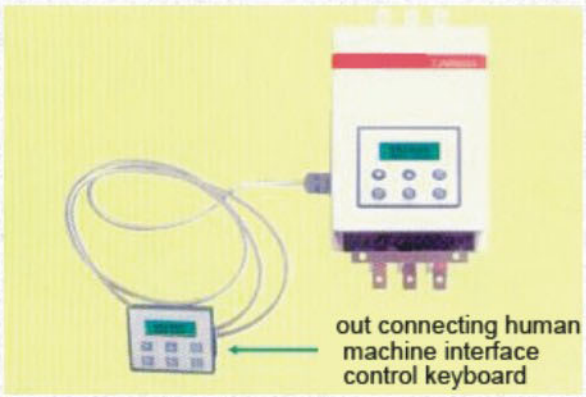


Figure 7: Out connecting keyboard

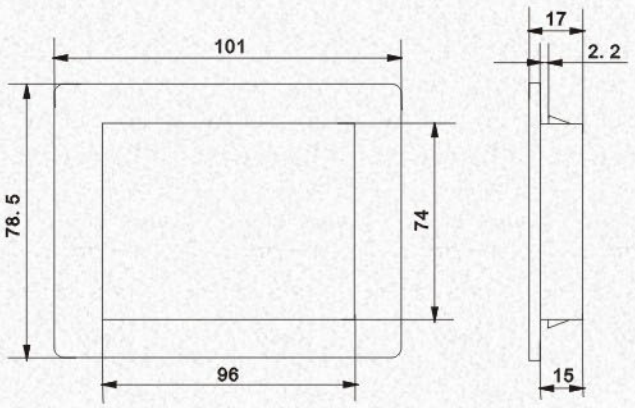


Figure 8: Out connecting keyboard open hole

TJCS6000 soft starter human machine interface keyboard can move onto the unit cabinet through the RS485 communicate interface of the soft starter, and also can keep its position, with another human machine interface keyboard on the unit cabinet or drawer board connecting to soft starter. (The maximum communication distance is 300 meters.) The parameters are modulated through human machine interface keyboard on the board of the unit cable, and human-machine conversation is realized. Meanwhile, human machine interface shows the running voltage and current under the normal condition. When the soft starter connected line

connection, it shows the motor's line current; when the soft starter adopted the inside connecting way, it shows the phase current which is v3 (1.732) times than line current. The keyboard is card type installment; only need to take a 97*75 square hole in the cabinet door. (shown as Figure 7, Figure 8)

- Standard Signal Output (4-20mA)

TJCS6000 soft starter have 4-20mA standard signal output contacts (No. 11 and 12 contacts), which output the motor 's running current. 4mA means 0A, and 20mA means 4 times of motor rated current. It can be automatically monitored, collected and controlled by DCS and PLC, also can directly connect to the digital displayed galvanometer of the standard signal to show the motor's running current. This method can avoid to using the current transformer matched on the normal galvanometer.

- Communicate interface

TJCS6000 soft starter has two communicate interfaces. One is RS485 interface, used to connectthe outside human machine interface control keyboard; the other is optional part, the scope is RS485 and PROFIBUS fieldbus communicate interface, MODBUS fieldbus communicate interface.

Appearance

- TJCS6000 soft starter appearance (380V/440V)

Model	Frame grade current A	Rated current A	Matched motor power kW	Appearance size mm			Install size mm		Install hole Diameter mm	Weight kg
				W	H	D	a	b		
TJCS6015	125	32	15	153	300	180	138	234	Φ7	4.5
TJCS6022		50	22							
TJCS6030		63	30							
TJCS6037		80	37							
TJCS6045		100	45							
TJCS6055		125	55							
TJCS6075	400	160	75	254	485	220	225	441	Up: Φ7 Down : Φ9	16
TJCS6090		200	90							
TJCS6115		230	115							
TJCS6132		280	132							
TJCS6160		315	160							
TJCS6200		400	200							
TJCS6250	800	500	250	290	526	220	261	481	Up: Φ7 Down : Φ9	18
TJCS6320		630	320							
TJCS6355		700	355							
TJCS6400		800	400							

Note : The by-pass type 's appearance table is same with on-line type

● TJCS6000 soft starter appearance (660V)

Model	Frame grade current A	Rated current A	Matched motor power kW	Appearance size mm			Install size mm		Install hole Diameter mm	Weight kg
				W	H	D	a	b		
TJCS6132	400	160	132	254	485	220	225	441	Φ7 Down : Φ9	16
TJCS6160		200	160							
TJCS6200		215	200							
TJCS6250		315	250							
TJCS6320		400	320							
TJCS6355		450	355							
TJCS6400	800	500	400	290	526	220	261	181	Up: Φ7 Down : Φ9	18
TJCS6450		550	450							
TJCS6500		550	500							
TJCS6550		630	550							
TJCS6630		700	630							
TJCS6690		750	690							
TJCS6750		800	750							

Note : The by-pass type 's appearance table is same with on-line type

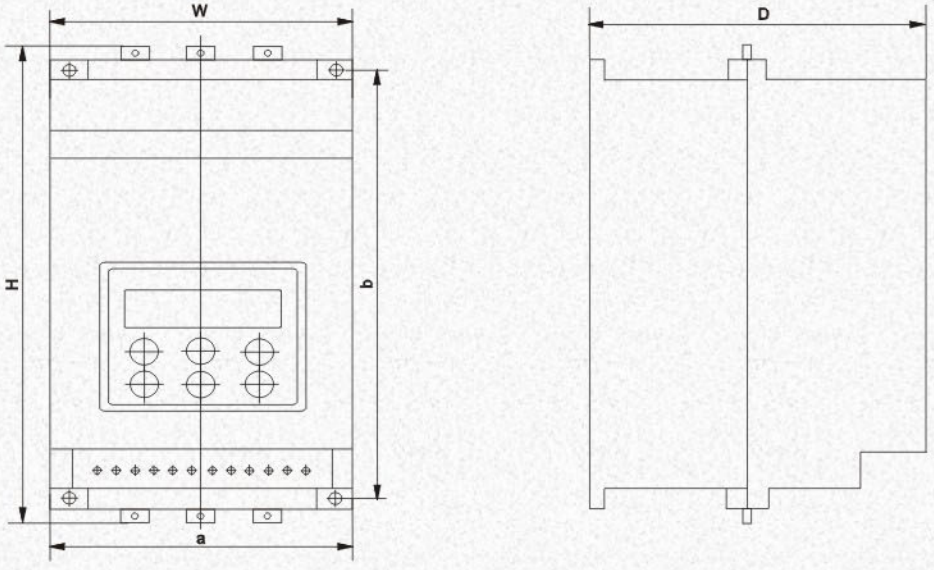


Figure 9

Appearance

No	Function value	parameter	Initialization	Instruction
1	Initial voltage	30%-70%	50%	Ramp voltage model; in current model, initial voltage is 40%
2	Start time	2-6s	10s	The process time is from initial voltage to rated voltage; current-limit model is unavailable
3	Stop time	0-60s	0s	The process time of soft stop
4	Start delay time	0-999s	0s	Time from signal given to start, screen gives counting down display
5	Program delay	0-999s	0s	KI output electrical relay delay close time
6	Interval resume time	0-999s	120s	The minimum interval time between first and second start time, the motor overload resume time
7	Start current limit	50%-500%	300%	Current-limit model is available; the max ramp voltage model can be choosed 450%
8	Max work current	50%-200%	100%	According to rated current, when current exceed this value, actualize inverse time heat-limit protection
9	Fault action mode	Refer to (2)	Alarm and stop running	The state of softstarter before appearing error
10	Under voltage protection	80%-90%	80%	The protection will effect while the input voltage is lower then the set value
11	Upper voltage protection	100%-120%	110%	The protection will effect while the input voltage is higher then the set value
12	Start mode set	Refer to (4)	Ramp voltage	According to the load degree, choose one model from four start models
13	Overload protection mode	Refer to (4)	Standard	The protection model when the motor is overload
14	Control location	Refer to (8)	Keyboard outline	Select one model from eight control models
15	Resume mode	Refer to (2)	Automatic resume	Choose fault resume model
16	Parameters revisable	Refer to (2)	Allow modification	Whether the parameter is protected, under the protection, the parameter can't be changed
17	Communicate address	0-255	00	Use for communication between many softstarters and one position machine
18	Program output	Refer to (2)	Start	The electrical relay start time of KI output
19	Soft stop current limit	20%-100%	80%	The max current when soft stop
20	Rated current	Less than2kW	2kW	Input the rated nameplate motor current
21	Choose operate language	Chinese/ English	English	Choose Chinese and English, the others can negotiate

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