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SHCKELE 川肯电子

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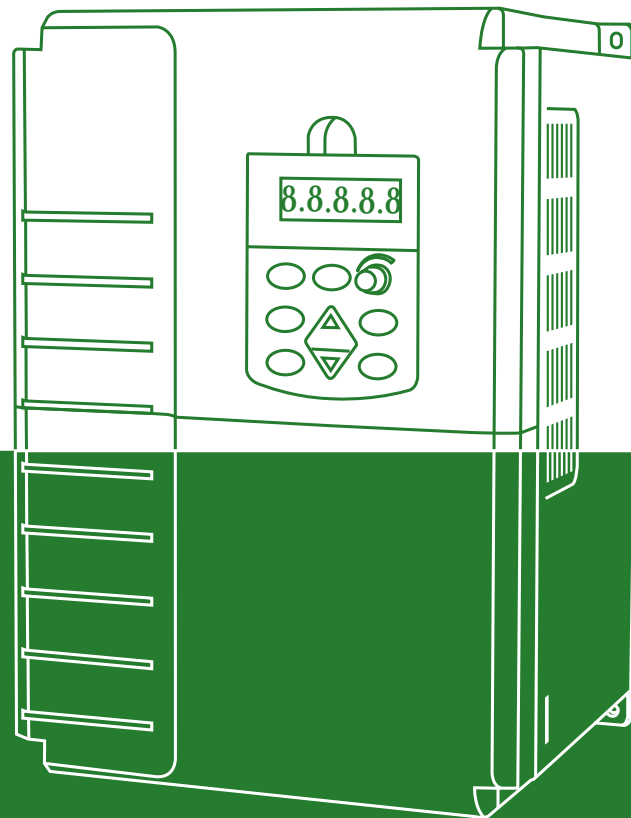


INVERTER Selection Guide

Inverter | 选型指南

SHCKELE 川肯电子

---- Motor drive control field solution provider



海纳百川 | Be tolerant to diversity
肯于创新 | willing to innovation

About chuanken

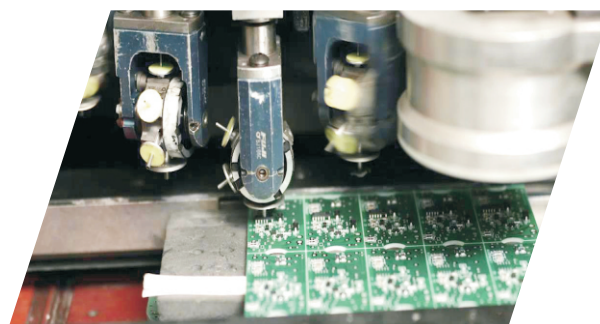
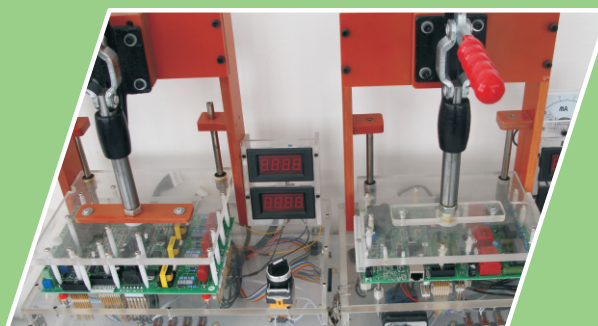
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A new and high technology enterprise with the courage to innovate and constantly seek breakthroughs, integrating production and research and development, is committed to the product upgrading and technological innovation in the field of industrial automation control; With strong technical strength and continuous spirit of innovation, it annotates the transcendental development of science and technology enterprises. Under the joint efforts of the company's employees over the years, the company has become a well-known brand in China in the fields of motor starting and protection and automatic energy saving control -- Shanghai chuanken electronic technology co., LTD

Chuanken electronics adhering to the "technology innovation as the soul, customer-oriented" value system, adhere to the leading technology, customer first, full participation, continuous improvement of quality management concept; At present, the company has been successful to market more intelligent soft series, inverter products, developed products with completely independent intellectual property rights, performance can satisfy the demands of various customers widely electronics has a senior r&d team, has two major research and development center in Shanghai, wenzhou, focus on product innovation and upgrade in the field of industrial automation control, including within the company is specialized in research and development personnel accounted for 25% of the total number of employees; The company introduced advanced processing equipment at home and abroad, set up a high standard dust-free workshop, circuit board using automatic electronic equipment production and welding, to avoid the failure rate caused by human welding; The company's various refined production process, to ensure that the company factory products 100% qualified!





Chuan ken with continuous innovative technology, you create a safe and harmonious world, from raw material supply to finished products, no matter from which part of, we always insist that the world is changing, the quality of the same.

Enterprise Qualification

海纳百川 | Be tolerant to diversity
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Quality is the life of the company promote corporate culture, and implementing the quality assurance system, external to convey the spirit of enterprise, establish a brand concept. To ensure the quality of products, the company with first-class production and testing equipment. We have the world's most advanced production equipment. The use of a new concept of machine industry strong technical force, production to meet international standards of high quality final



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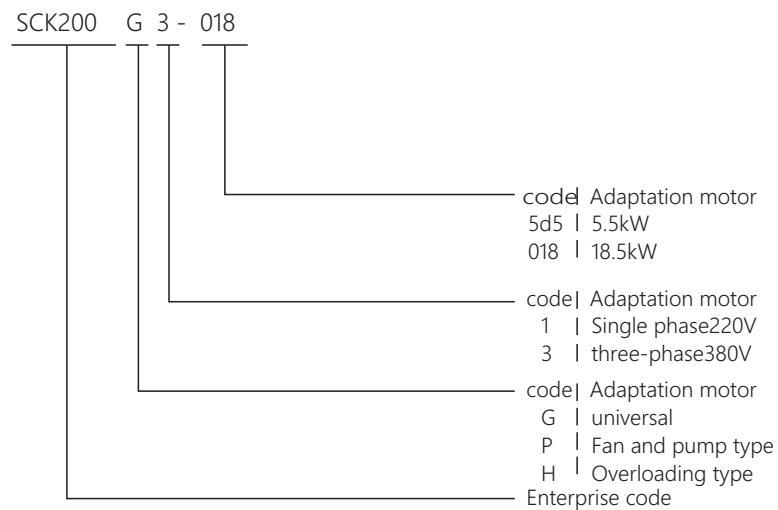




SCK series ▶

Inverter

▶ Model selection definition



▶ Standard platform series

- ▶ SCK100 series frequency converters: voltage grade 220V, power range 0.4~2.2kW
380 v voltage level, the range of 0.75 ~ 7.5 kW power
- ▶ SCK200 series high-performance vector inverter: voltage grade 220V, power range 0.4~2.2kW
380 v voltage level, the range of 0.75 ~ 630 kw power

▶ Special series

- | | | |
|-----------------------------------|------------------------------------|--|
| ▶ Lifting inverter | ▶ Rotary cutting machine frequency | ▶ Printing industry |
| ▶ Special converter for grate | ▶ Air compressor special frequency | ▶ Tension control special inverter |
| ▶ Textile frequency changer | ▶ High frequency output | ▶ Machine tool spindle |
| ▶ Converter for injection molding | ▶ Constant pressure water supply | ▶ Woodworking high speed milling machine |



SCK series Inverter

Typical industry application

Air compressor industry



- High performance vector frequency conversion
- Closed loop constant pressure control
- Multi-machine network control
- Energy saving up to 20%~50%
- Intelligent sleep and low pressure wake up
- Intelligent sleep and low pressure wake up, air compressor energy-saving integrated cabinet program is optional

Injection molding machine industry



- Integrated energy-saving control cabinet or plastic injection machine inverter program is optional
- Asynchronous servo scheme and double closed loop synchronous servo scheme are optional
- No high pressure throttling, overflow energy loss, energy saving rate up to 25%~70%
- Soft start tracking operation, extend the service life of injection molding machine
- Independent air duct design, rear parts, top fan can be easily removed, easy to maintain;

Printing and packaging industry



- High performance vector control/torque control to achieve constant linear speed, constant tension control
- Tension sensor, speed encoder, no speed encoder, can widely replace torque motor, dc motor and magnetic clutch
- Dynamic torque current control, fast response
- Coil diameter calculation special function, automatic calculation of the current coil diameter
- Double station free switch function, suitable for coating machine, paper machine, printing machine.

Hoisting crane



- Professional design of lock logic timing function, to ensure comfort and safety of the brake at the moment of opening, no "overshoot" phenomenon on the upside, no "weightlessness" on the moment of descent.
- Acceleration and deceleration s-curve can be selected to guarantee the ride comfort. The acceleration and deceleration time and operation frequency can be adjusted to ensure the accurate flat floor of the building lift.
- Release brake setting can ensure the start of the motor. Different frequency of release brake can be set. Starting current and current detection time can ensure the size of lifting torque to prevent chute phenomenon.
- The inverter has perfect protection functions such as phase loss protection, under-voltage protection, over-current protection, over-heat protection, overload protection and brake lock output protection.

Machine tool industry



- Rich comprehensive functions, excellent servo characteristics, it can be used in different CNC systems, can achieve synchronous control; High-speed response; Low speed high torque cutting, high speed constant power cutting
- The maximum speed of asynchronous servo can reach 8000r/min; Synchronous servo can be weakly magnetic 2~3 times
- The scheme of permanent magnet synchronous direct drive motor used in high precision nc machine tool is supported
- Spindle open loop control: a variety of vector control methods for various machine tools

SCK series ▶ Inverter

► Typical industry application

Wood processing



- Built-in rotary cutting machine, skin rolling machine, peeling machine process algorithm
- Unique vector control algorithm, dynamic torque current control, fast response to load changes
- Automatically adjust the feed speed of the rotary cutter according to the position of the rotary cutter
- Online setting of rotary cutting process parameters, online modification of functional parameters to view
- Wide application range of voltage, especially suitable for rural power grid conditions of the occasion, stable and reliable work

Textile industry



- Reduce breakage rate and improve production efficiency
- Special external radiator, easy to clean cotton wool
- Unique swing frequency function, suitable for yarn winding equipment
- Abundant indication signal: full sand indication, broken line indication, off power indication

Stone processing



- Simple and convenient operation, installation line reduction
- Smooth running curve, reduce plate damage rate, start smooth
- Reduce mechanical damage and maintenance cost
- Constant tension control of internal anti-break rope, main and auxiliary operation function of frequency

Oil field



- Special frequency converter for pumping unit, no energy feedback or energy consumption braking
- More advanced process algorithm, higher power saving effect, less harmonic and reactive current
- Can provide outdoor digital control cabinet, thermostatic control cabinet can be in the field high
- Rich and flexible monitoring functions

Constant pressure



- Excellent PID function, according to the actual water consumption, automatic water pressure detection
- Centralized constant pressure water supply: built-in one towed multiple water supply expansion card,
- Constant pressure is maintained in the system at any flow
- PID has sleep and wake function, built-in bypass system
- High efficiency and energy saving, stable pressure, high feedback too low, under - voltage protection
- Avoid frequent start and stop, and start smooth, reduce the impact of the pump, increase the service life of the pump

Technical specification

project		specifications
Basic function	highest frequency	Vector control: 0~300HzV/F control: 0~3000Hz
	Carrier frequency	0.5kHz~16kHz carrier frequency can be automatically adjusted
	Input frequency resolution	Digital setting: 0.01Hz Simulation setting: maximum frequency ×0.025%
	control mode	Open loop vector control (SVC), closed loop vector control (FVC), V/F control
	Starting torque	G model: 0.5hz /150% (SVC);0 hz / 180% (FVC) P-type machine: 0.5Hz/100%
	Speed range	1 : 100 (SVC) 1 : 1000 (FVC)
	Steady speed precision	±0.5% (SVC) ±0.02% (FVC)
	Torque control accuracy	+5% (FVC)
	Overload capacity	G-type machine: 150% rated current 60s;180% rated current, 3s P-type machine: 120% rated current 60s;150% rated current, 3s
	Torque increase	Automatic torque lifting;Manual torque increases by 0.1%~30.0%
	V/F curve	Three ways: linear;Multipoint;V/F curve of type N (1.2, 1.4, 1.6, 1.8, 2)
	V/F separation	Two ways: full separation and half separation
	Acceleration deceleration	Four kinds of acceleration and deceleration time range: 0.00s~65000s.
	Dc brake	Dc braking frequency: 0.00Hz~ maximum frequency Braking time: 0.0s~36.0s Braking action current value: 0.0%~100.0%
	Inching control	frequency range: 0.00Hz~50.00Hz.Inching acceleration and deceleration time: 0.00s~65000s
	PLC, multi-speed operation	Up to 16 speed runs through built-in PLC or control terminal
	Built-in PID	It is convenient to realize process control closed-loop control system
	Voltage adjustment (AVR)	When the network voltage changes, it can automatically protect the output voltage constant
	Over drain rate control	The current and voltage are automatically limited during operation
	Fast current limiting function	Minimize overcurrent fault, protect inverter normal operation
	Torque limitation	The characteristics of "excavator" automatically limit the torque during operation to prevent frequent overcurrent trip;The closed - loop vector mode can realize torque control

SCK series ►

Inverter

Personal function	Excellent performance	Current vector control to achieve asynchronous motor and synchronous motor control
	Instantaneous stop	Voltage decrease is compensated by the energy feedback from the load
	Rapid current limiting	Avoid frequency converter frequent overcurrent fault
	Virtual IO	Five groups of virtual DIDO, can achieve simple logic control
	Timing control	Timing control function: set the time range from 0.0Min to 6500.0Min
	Multiple motor switching	Two sets of motor parameters, can achieve two motor switching control
	Multithreaded bus support	Current support: rs-485 bus, later will support profibus-dp, canOpen and other buses
	Motor overheat protection	PG card interface can input the motor temperature simulation quantity
	Multi-encoder support	Support differential, open collector, UVW, rotary transformer, sine and cosine encoders
	Background software	Through virtual oscilloscope, the internal state of inverter can be monitored graphically
Run	Command source	Operation panel is given, control terminal is given, serial communication port is given
	Frequency source	10 frequency sources: digital given, analog voltage given, analog current given, pulse given, serial port given.Can be switched through a variety of ways
	Auxiliary frequency source	10 auxiliary frequency sources.It
	The input terminals	Standard: 6 digital input terminals, 1 support up to 50kHz high-speed pulse input 2 analog input terminals, 2 support 0~10V voltage input or 0~20mA current input expansion capacity
	The output terminals	Standard: 1 high speed pulse output terminal (optional open collector), support 0~50kHz square wave signal output 1 digital output terminal 2 sets of relay output terminals 1 analog output terminal, 1 support 0~20mA current output or 0~10V voltage output expansion capacity
Display and keyboard operation	LED display	Display parameters
	LCD display	Optional, Chinese/English prompt operation content
	Parameters of the copy	Rapid replication of parameters can be achieved through LCD operation panel options
	Key locking	Implement partial or full key lock, define the scope of some keys to prevent misoperation
	Protection function	Short circuit detection of the upper motor, input and output phase loss protection, over-current protection, over-voltage protection, overload protection, etc
Environment	Use place	Indoor, not directly exposed to the sun, no dust, corrosive gas, combustible gas, oil mist
	The altitude	Below 1000m, above 1000m derogated use
	Environment temperature	-10 °C~ +40°C (ambient temperature is 40°C~50°C, apply for derating)
	Humidity	Less than 95%RH, no condensation
	Vibration	Less than 5.9m/s ² (0.6g)
	Storage temperature	- 20°C ~ +60°C

Working principle

PLC card is a multi-functional micro PLC specially developed for frequency converter. PLC can be integrated into frequency converter through expansion card.

The traditional special inverter needs to change the bottom layer to realize the special plane function, and the PLC card only needs to write different ladder diagram program, no need to change the bottom layer to realize the special plane function.



PLC card

Source

- ◆ Input / 4 out, can share inverter I/O (8 in / 4 out) and 2AI / 2AO
- ◆ compatible with MX1H instruction set
- ◆ basic instruction processing speed is 0.084us/ step
- ◆ integrated instruction processing speed is 1K steps /ms
- ◆ program capacity 12K steps, 2K bytes power off to maintain
- ◆ with PID command, constitute a closed loop system, inverter more reliable

Communication

- ◆ RS485 port, Modbus programming
- ◆ Modbus/ free port /MXLink network

Programming environment

- ◆ Support ladder diagram, statement table, sequence function diagram
- ◆ Chinese editing environment, user program software encryption



PLC card

PLC

- ◆ Inverter built-in PLC card is equivalent to a inverter plus a powerful PLC, PLC card compatible with the inverter I/O and 2 analog input and 2 analog output, more simple and convenient, save a lot of cost.
- ◆ PLC card can read and write inverter parameters directly through the internal protocol, communication speed up to 1~2ms
- ◆ PLC card can use a special register to read and write customers need voltage, current, speed and other signals,

SCK200 series universal inverter

► Product overview

SCK200 series universal vector inverter, simple operation, excellent vector control performance, High cost performance and easy to maintain, and in printing, textile, machine tools and packaging machinery, water supply, fan and many other areas of outstanding performance.



► Technical indicators

Power range: single phase: 0.4kw ~ 2.2kw; Three phase: 0.75 kW to 400 kW

Output frequency: 0~400Hz

Speed range: 1:200

Control mode: no PG open loop vector control, V/F control

Operation mode: speed mode

Starting torque: 150% rated torque can be output at 0.25hz

► Product advantage

- 1, advanced vector control algorithm, low frequency start torque is large,
2. Built-in PID function forms a closed-loop control system
- 3, through the built-in simple PLC function automatically run multi-stage speed
4. Built-in automatic torque compensation function and deviation compensation function
5. Common dc bus
- 6, support a variety of frequency given mode, digital given, analog given, PID given, communication given, free switch through terminal keyboard given mode
- 7, Rich programmable input and output terminals
- 8, Can achieve instantaneous power failure without stopping
9. Unique address mapping function
- 10, can provide a variety of fault protection functions
11. Single-phase 0.4kw ~ 2.2kw braking unit can be optional: three-phase 0.4kw ~ 22kW brakingUnit standard built in

► Industry application

CNC lathe, grinding machine, drilling machine, textile machinery, printing and dyeing equipment, packaging and printing machinery.

SCK series ▴ Inverter

SCK100 series multi-function V/F inverter

► Product overview

Mini design, start the motor torque of 1Hz, output 100%, output current limit control, Bus voltage overvoltage control, to achieve a long time of trouble-free and non-stop operation.

► Technical indicators

Power range: single phase: 0.4kw ~ 2.2kw; Three phase: 0.75 kW to 3.7 kW

Output frequency: 0~400Hz

Control mode: V/F control

Starting torque: 100% rated torque can be output at 1Hz

Overload capacity: 150%1 minute :180%10 seconds;200% of 1 second

Protection functions: overcurrent protection, overvoltage protection, undervoltage protection, overload protection, overheating protection, etc



► Product advantage

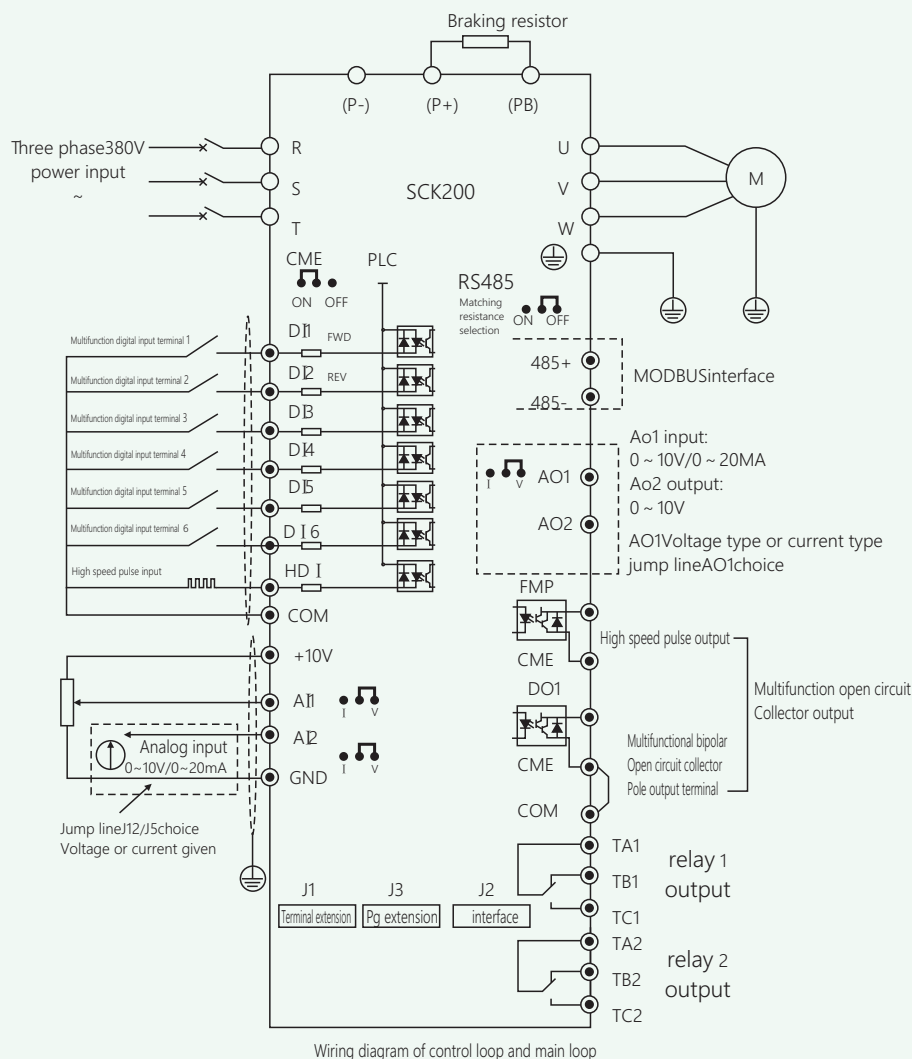
- 1, small size, compact structure
2. Modular design and stable performance
3. Through the built-in simple PLC function automatically run multi-speed,
3. Built-in PID function forms a closed-loop control system, and PID has the function of sleep awakening
- 4, through the built-in simple PLC function automatically run multi-speed, or external control terminal to achieve 8-speed operation
6. Two acceleration and deceleration curves: linear acceleration
- 7, perfect protection function, high efficiency heat dissipation design
8. The channel of running command switched synchronously at will
- 9, built-in address mapping function, internal mapping, external mapping function, can facilitate remote control and fast reading data, high response
10. With the function of frequency pendulum, timing meter

► Industry application

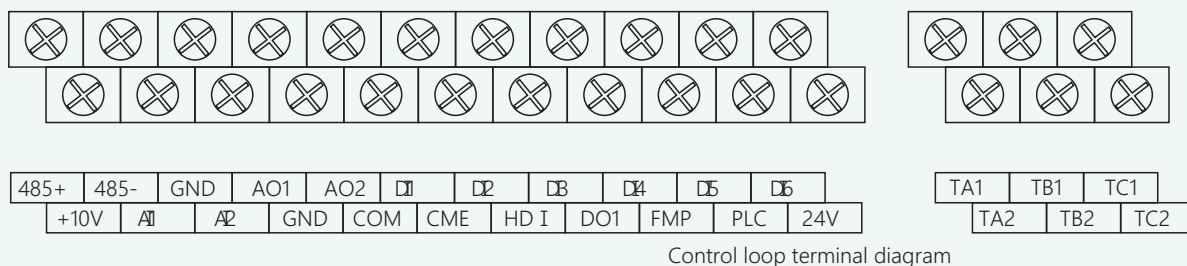
Widely used in textile machinery, printing machinery, packaging machinery, food machinery, reflow welding and assembly lines, especially for various OEM applications.

SCK series ▸ Inverter

► Control circuit and main circuit wiring description



Control loop terminal layout



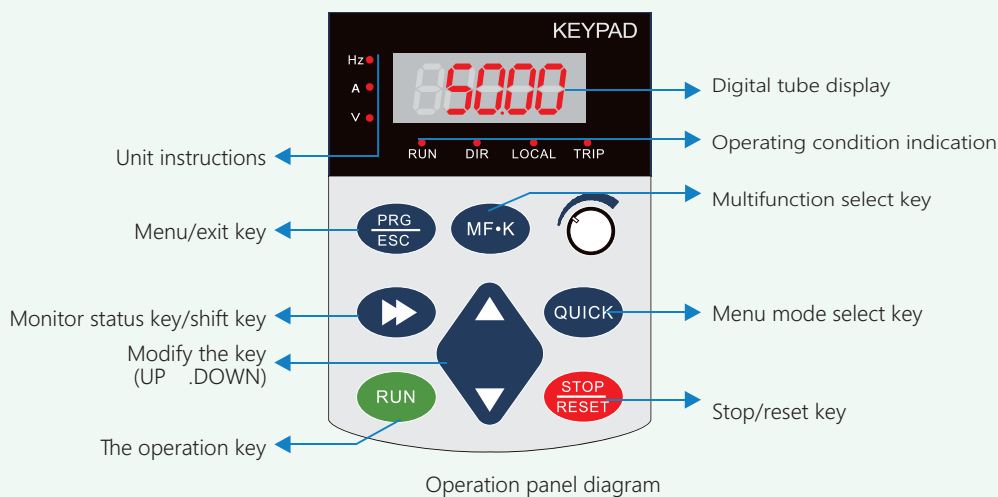
Control loop terminal description

category	Terminal symbols	Terminal name	Functional specifications
power supply	+10V- GND	External +10V power supply	Supply +10v power to the outside, maximum output current: 10mA Alt is generally used as the working power source of external potentiometer, and the resistance range of potentiometer is 1kΩ ~ 5kΩ
	+24V- COM	External +24V power supply	To provide a +24v power supply, generally used as a digital input and output terminal operating power and External sensor power supply; Maximum output current: 200mA
analog input	AI1- GND	Analog input terminal 1	1. Input range: DC 0V ~ 10V/0mA ~ 20mA, from AI1 on the control board Jumper selection decision. 2, input impedance, voltage type 22 kΩ, 500 Ω current input.
	AI2- GND	Analog input terminal 2	1. Input range: DC 0V ~ 10V/0mA ~ 20mA, jump from AI2 on the control board Line selection decision. 2, input impedance, voltage type 22 kΩ, 500 Ω current input.
Digital input	D I 1	Digital input1	1, optical lotus isolation, compatible with bipolar input 2, input impedance: 4.4 kΩ 3. Voltage range when level input: 9V ~ 30V
	D I 2	Digital input2	
	D I 3	Digital input3	
	D I 4	Digital input4	
	D I 5	Digital input5	
	D I 6	Digital input6	
	HD I	High speed pulse input	.Maximum input frequency: 50kHz
Output analog	AO1- GND	Analog output 1	The jumper J6 selection on the control board determines the voltage or current output. Output voltage range: 0V ~ 10V Output current range: 0mA ~ 20mA
	AO2- GND	Analog output 2	Output voltage range: 0V ~ 10V
Digital output	DO1- CME	Digital output 1	Lotus isolation, open collector output Output voltage range: 0V ~ 24V Output current range: 0mA ~ 50mA Note: the digital input point CME and the digital input point COM are internally isolated, but when they leave the factory CME and COM have been internally shorted (DO1 now defaults to +24V drivers).
	FM- COM	High speed pulse output	Constrained by function code b4-00 "FM terminal output mode selection", when used as a high-speed pulse output, Max. 50kHz: when output as open collector, same as DO1 specification
Relay output	TA1- TB1/TA2-TB2	Normally closed contacts	Contact driving capability: AC250V, 3A, COSφ=0.4. DC 30V, 1A
	TA1- TC1/TA2-TC2	Often beginning terminal	
Secondary interface	J1	card interface	With optional card (I/O expansion card, such as PLC card) interface
	J3	PGCard interface	OC, differential, UVWABZ, rotation, etc
	J2	Interface	Panel outlet interface

SCK series▶ Inverter

► Operation display interface

The operation panel can be used to modify the functional parameters of the inverter, monitor its working status and control its operation (start and stop).



Function indicator light description

RUN : When the light is off, the inverter is in the state of shutdown. When the light is on, the inverter is in the state of operation.

LOCAL : The light off indicates the keyboard operation and control state, the light on indicates the terminal operation and control state

DIR : Positive and negative turn indicator light, the light is in the state of positive turn.

TRIP : When the light is on, it is in torque control mode, when the light is slow flashing, it is in tuning state

2) Unit indicator light: Hz: frequency unit;A: current unit;V: voltage unit;

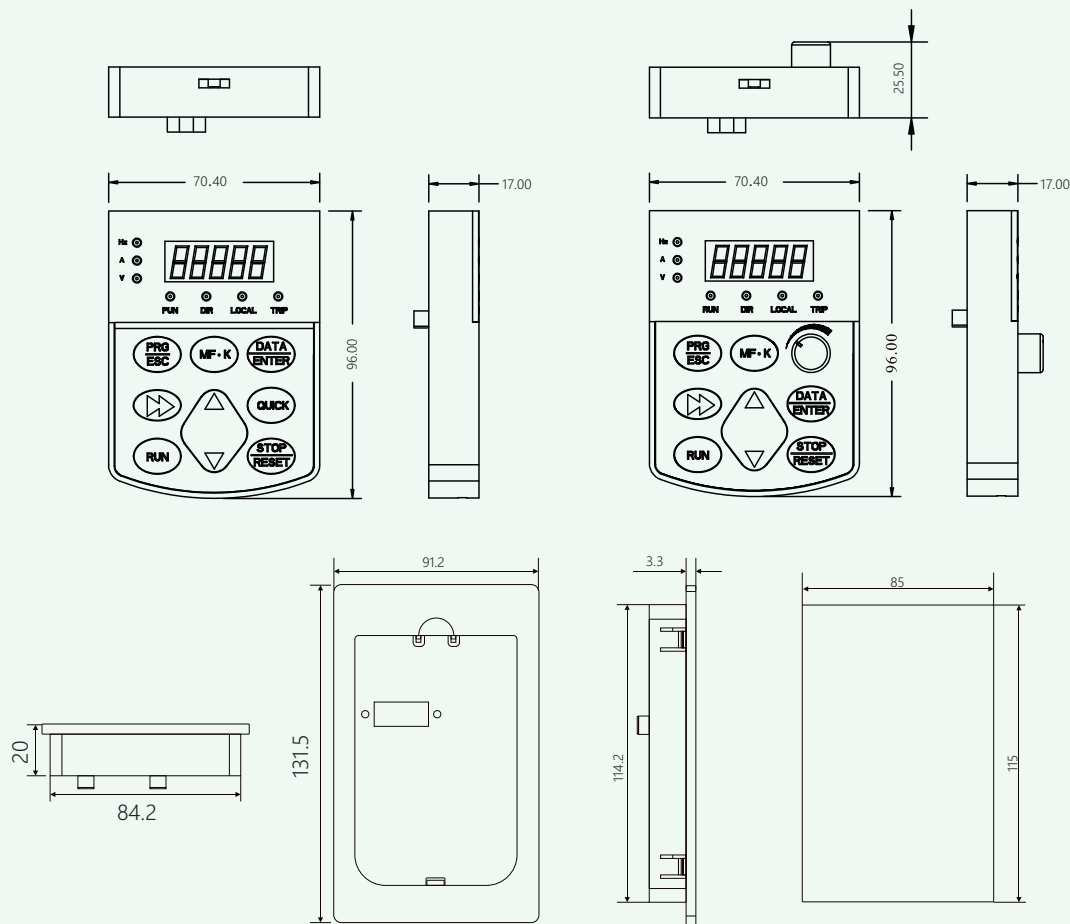
3) Digital display area: 5-digit LED display can display the set frequency, output frequency, various monitoring data and alarm code.

4) keyboard button description table

Keyboard menu

Key	Name	Function
PRG/ESC	Programming key	First level menu entry or exit
DATA/ENTER	Identify key	Step by step enter the menu screen and confirm the setting parameters
△	Increasing key	Increment of data or function code
▽	Descending key	Decrement of data or function code
⇨	Shift key	Display parameters can be selected cyclically under the stop display interface When modifying the parameters, you can select the modification bit of the parameters.
RUN	Operation key	In keyboard mode, used to run operations.
STOP/RESET	Stop/reset	In the running state, press this key to stop the operation.In the fault alarm state, it can be used for compound operation.The characteristics of the key are governed by the function code b9-00.
MF.K	Multifunction select key	Select function switch according to b9-01
QUICK	Menu select key	Switch between different menu modes according to the a0-08 median value

► External keyboard (keyboard holder) shape and installation hole size



External keyboard (keyboard holder) shape and installation hole size

► Choose accessories

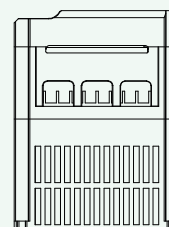
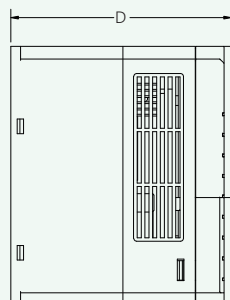
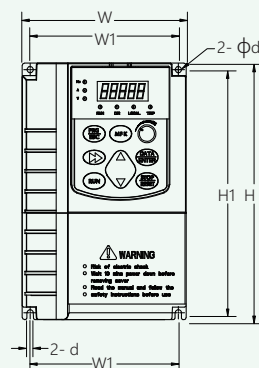
If you need the following optional parts, please specify when ordering.

Inverter accessories

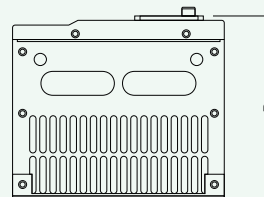
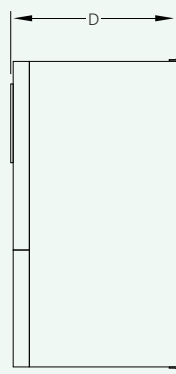
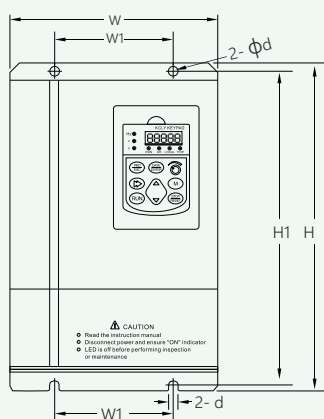
Name	model	Function	Note
Built-in brake unit	Product model rear belt "-b"	Single phase from 0.4kw to 2.2kw Three - phase from 0.75kW ~ 15kW built-in brake unit is standard configuration	
External brake unit		22kW and above external brake unit	
Energy feedback unit		Energy saving products	
The rectifier unit		nverter common bus	

SCK series ▸ Inverter

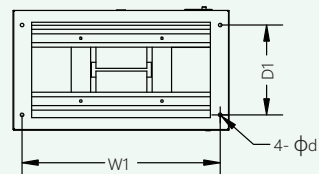
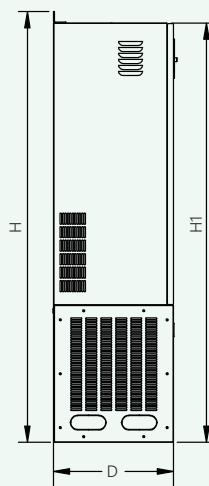
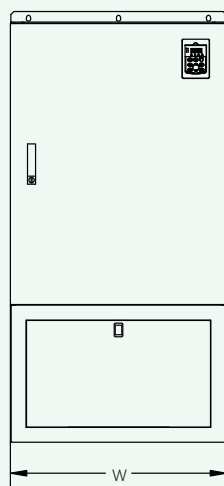
➤ Overall dimensions



Schematic diagram of plastic structure dimensions and installation dimensions



Sheet metal structure outline dimensions and installation dimensions schematic diagram



Cabinet type machine structure dimensions and installation dimensions schematic diagram

SCK series Inverter

► The shell structure of various models is as follows:

	Single phase220V	Three-phase220V		Three-phase380V	
models	0.4kW ~ 2.2kW	0.4kW ~ 3.7kW	5.5kW~75kW	0.75kW~18.5kW	22kW~400kW
shell type	Plastic structure	Plastic structure	Sheet metal structure	Plastic structure	Sheet metal structure

► Inverter appearance and mounting hole size

Frequency converter model	Shape and mounting dimension(mm)						
	W	W1	H	H1	D	D1	Φd
three-phase220V							
SCK200G1- d75	85	74	141.5	130.5	113	- -	Φ4.5
SCK200G1- 1d5							
SCK200G1- 2d2							
three-phase380V							
SCK200G3- d75/P3- 1d5	118	118	185	175.5	157	- -	Φ4.5
SCK200G3- 1d5/P3- 2d2							
SCK200G3- 2d2/P3- 004							
SCK200G3- 004/P3- 5d5	160	148	247	235	177	- -	Φ5.5
SCK200G3- 5d5/P3- 7d5							
SCK200G3- 7d5/P3- 011							
SCK200G3- 011/P3- 015	220	126	349	334	194	- -	Φ7
SCK200G3- 015/P3- 018							
SCK200G3- 018/P3- 022							
SCK200G3- 022/P3- 030	260	160	470	4350	218	- -	Φ7
SCK200G3- 030/P3- 037							
SCK200G3- 037/P3- 045							
SCK200G3- 045/P3- 055	390	260	600	570	240	- -	Φ10
SCK200G3- 055/P3- 075							
SCK200G3- 075/P3- 090	475	345	700	670	239	- -	Φ12
SCK200G3- 090/P3- 110							
SCK200G3- 110/P3- 132	585	450	930	890	380	- -	Φ12
SCK200G3- 132/P3- 160							
SCK200G3- 160/P3- 185							
SCK200G3- 185/P3- 200							
SCK200G3- 200/P3- 220	650	420	1060	1010	385	- -	Φ14
SCK200G3- 220/P3- 250							
SCK200G3- 250/P3- 280							
SCK200G3- 280/P3- 315							
SCK200G3- 315/P3- 355	800	680	1360	1270	400	- -	Φ14
SCK200G3- 355/P3- 400							
SCK200G3- 400/P3- 450							
SCK200G3- 450/P3- 560	900	480	1790	1760	480	- -	Φ14
SCK200G3- 560/P3- 630							