



Shenzhen Sangmutan Motor Co, .ltd.

ADD: B of 2F Building C,Yongqi Science Park,Lezhujiao Village
XiXiang, Baoan, Shenzhen

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SPECIFICATION

Brushless DC Motor and Driver for Small CNC Milling and Drilling Machine

Product Overview:

Power : 1100W ,1500W ,2200W

Speed Range : 400rpm-10000rpm

Features : This series of Brushless DC Motor Drive Unit is designed as specific systems for some small milling machine. This control system with perfect function, simple operation, capability of anti-interference, energy saving, low breakdown rate and easy maintenance which can achieve maximum torque and smoothness when at low speed. The whole system include brushless DC Motor (92BLM-GM-300HA,123BLM-IN-300HA) and brushless DC motor driver(BLMC-1100-300H, BLMC-2200-300HA), Function Board(SMT-1100), SMT-LCD , as shown in Figure F1-1. Before the installation, Please choose the brushless DC motor with voltage, power and speed of the corresponding driver.

Application : Lathe , Milling Machine , Drilling Machine

Market: Demanding of Machine Tools in domestic and abroad is higher day by day , Brushless motors has become the mainstream driving device in the European and American market as its stable performance, low noise, no electromagnetic interference

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24-hour business line : **15899766518**

E-mail : info@sangmutan.com

Website: www.sangmutan.com

Sales hot Line : +86-0755-29785329-138

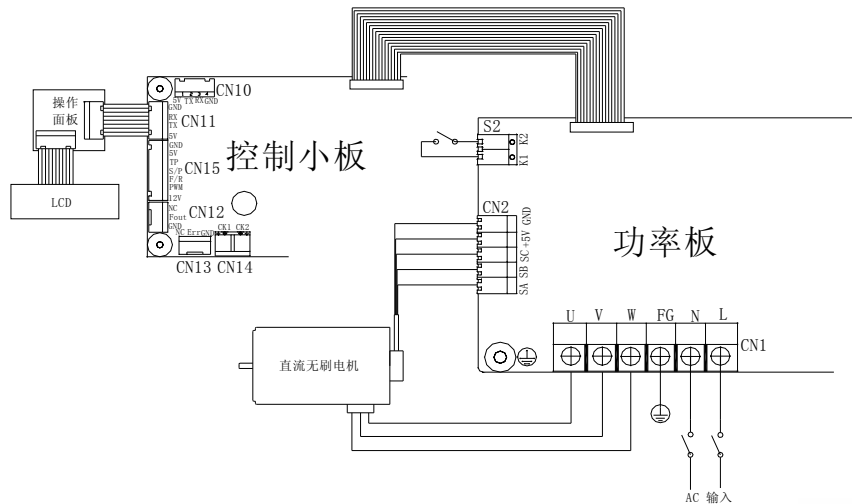
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F1-1

**Please read safety warning below carefully before
Installing and operating this controller**



- 1、 This product should be installed and serviced by a qualified technician , electrician ,or electrical maintenance person familiar with its operation and the hazards involved
- 2、 Insulated adjustment tools must be used when working under power .Do not touch the PCB board and junctions when working under power
- 3、 All output and input terminals are NOT isolated from the incoming supply

Type Model:

Brushless motor	Voltage (V)	Power	Speed (RPM)
92ET-BLM-300HA-SMT	AC220V/110V	500W	3500RPM、 6000RPM
92ET-BLM-300HA-SMT	AC220V/110V	750W	6000RPM、 12000RPM
92GM-BLM-300HA-SMT	AC220V/110V	1100W	3500RPM, 6000RPM
123HM-BLM-300HA-SMT	AC220V/110V	1500W	3000RPM, 6000RPM
123IN-BLM-300HA-SMT	AC220V/110V	2000W	4000RPM, 6000RPM
123IN-BLM-300HA-SMT	AC220V/110V	2200W	3500RPM, 6000RPM

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Remarks: Various parameters of the above are present in accordance with our customer's specific technical requirements for customer development, such as the above parameters do not meet your requirements, we can independently developed specifically brushless motor and controller system for your products suitable for your



Photos of brushless motor and control driver

The First Unit:

DC Brushless Motor Drive Controller Unit (CNC Machine, Mechanical Equipment)

Main function:

- ◆ start, stop, accelerate or decelerating, forward and reverse function
- ◆ A LCD displays real-time speed, the current state, protection

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A flow, over-voltage, overload, voltage protection function

- ◆ Provide the user interface should choose function. Panel
- ◆ Should provide 485 interface and TTL interface, which can be conveniently and communication
- ◆ With a sudden stop machine, electric switch, protective mask open doors limit protection

一、brushless DC motor driver features

- ◆ AC220V power supply for
- ◆ Rated power 2200W, rated current of 12A, maximum current of 18A
- ◆ rated speed to 6000RPM, speed range of 400-6000RPM, acceleration time 5S.
- ◆ PID closed-loop speed and current dual-loop regulator, speed-loop control accuracy of $\pm 1\%$
- ◆ has a limited flow, start-up failed, blocking switch, the module protection
- ◆ have the machine stop switch, protective masks, opening the door electronically controlled limit protection
- ◆ LCD display with the actual speed machine tool spindle and the work of the drive, and speed showed an accuracy of $\pm 2\%$
- ◆ regulating the use of key board drives the work of the state, operation is simple and convenient
- ◆ outside the user interface used to control the work of the drive, and easy to implement digital control of the working drive.

Second, DC brushless motor drive unit on

2.1 Brushless DC Motor Driver

Motor drive can control the start, stop, acceleration, deceleration, forward, reverse, tapping, current limiting protection, stop, open doors electronically controlled power-off protection and turn off the protection of protective masks, it can be outside the user interface control.

Overload protection: motor load of more than 1.5 times the rated load immediately 30S downtime, protect the code at the same time show that E5.

2.2 key board

Key board through the function keys to control the operational status of the drive. Key point in the effective action will be issued a "drip" sound, a long time and even made the "drip, drip" sound, made null and void only a "drop" would not be able to voice. The key features are as follows:

1. **START** Starter drive control button
2. **STOP** control button to stop the drive
3. **FORWARD** drive control keys are running
4. **REVERSE** drive reverse run control button
5. "+" To accelerate the drive control keys

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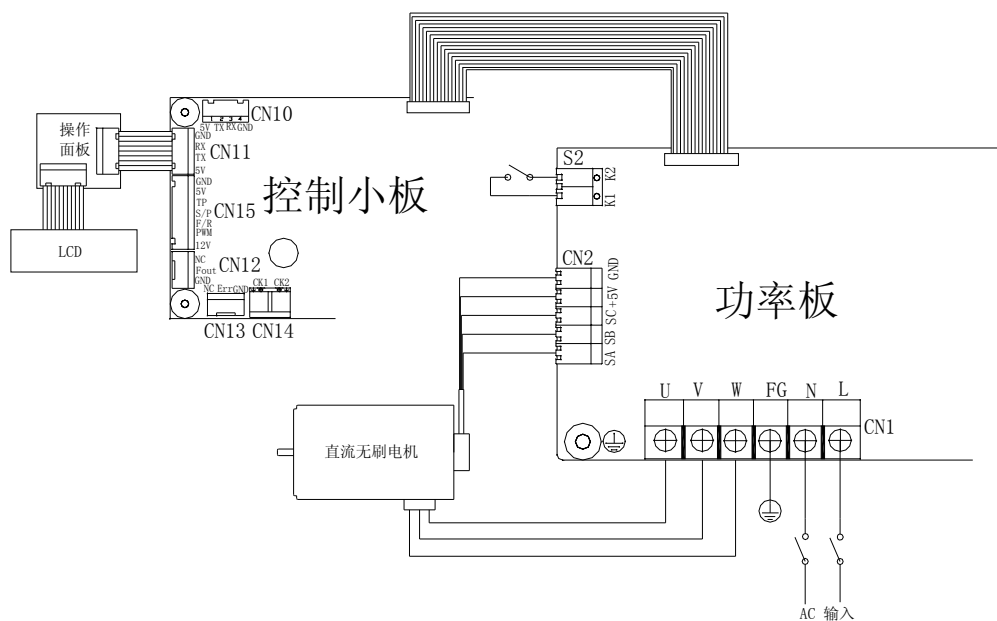
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6. "-" Keys to Deceleration the drive speed
 7. **TAPPING** Tapping drive control function
 8. Tapping features LED light-emitting diodes instructions
 9. Protective masks CON3 interface switch, short-circuit
- To enter the stop state, all button does not work, disconnect
By start-up device according to the system before the resumption of short-circuit state.

Controller wiring diagram is as follows:



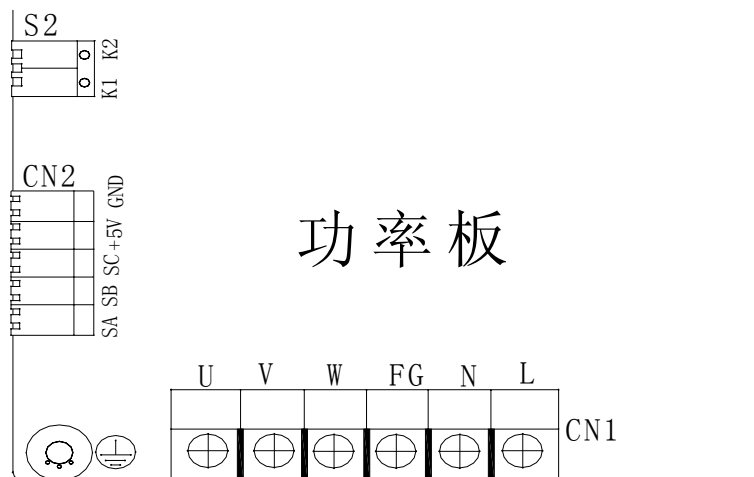


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一、 The controller description of the terminal block in Figure F1-1 and F1-2



F1-1

CN1						CN2					S2	
Electrical Wiring			Power Supply			Hall sensor					Function switch line	
U	V	W	FG	N	L	SA	SB	SC	+5V	GND	K1	K2

各接线端子功能说明:

Function of the terminal block

CN1- U, V, W, respectively, then the U-phase motor, V-phase, W phase; FG then the earth,

N then zero line, L line of fire then.

CN2-Hall sensor, respectively, from the electrical terminals of the Hall sensor line

S1 of the K1, K2 can be used for the threshold switch, stop switch, such as the protective effect, as long as the K1, K2 short circuit, the controller immediately stop working.

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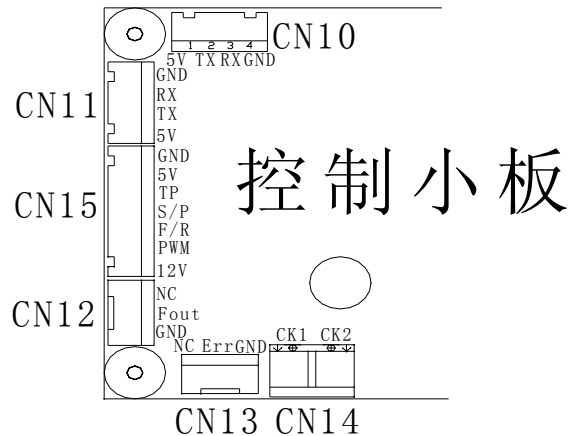


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二、 Small plate of the interface controller terminal function



F1-2: 控制小板端子口功能及实物图

CN10				CN11				CN12		
485 Serial communication port				TTL Serial communication port				Speed signal output		
5V	TR	RX	GND	5V	TR	RX	GND	NC	Fout	GND



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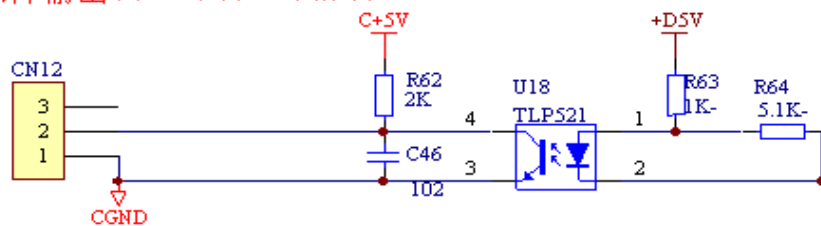
CN13			CN14	CN12						
Errorsignal output			Outside the user interface to enable port	Outside the user interface board						
NC	Err	GND	Short CK1 , CK2 outside interface enabled	12V	PWM	F/R	S/P	TP	5V	GND

CN10—485 Serial communication port Can be easily prepared with the realization of other high-line, so that intelligent controller, to facilitate better operation of more simple

CN11—Ordinary TTL serial port

CN12-speed signal output can be used to detect the motor speed, a pulse for 1RPM

转速脉冲输出口，每转一个脉冲



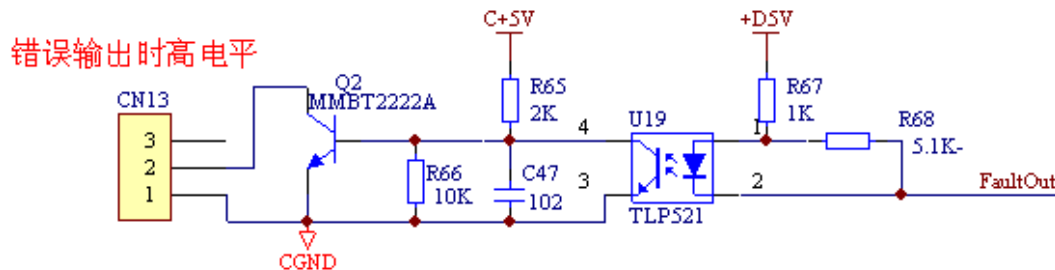
CN13-error signal output when there is under-voltage, over-current, stall, start-up failure, the output high



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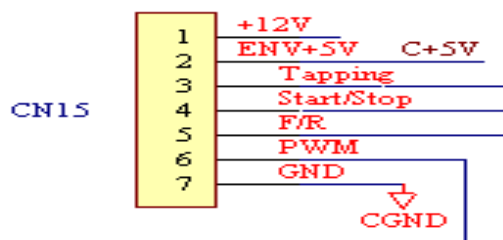
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CN14-serial / external user interface to choose the port when the port open, use serial communication to achieve control of the controller, when the port short-circuit, serial failure, **CN15** effect.

外用户控制输入



CN15—Outside the user interface control port when the short-circuit **CN14**, launching the user control signal

- ① External +12 V power supply
- ② External +5 V power supply
- ③ **Tapping** external low-level functions, the tapping function of effective motor to 1000RPM / m; high power or open invalid
- ④ Start / stop in the shutdown state to a negative pulse start, turned down in a negative pulse stopped, a negative pulse every time a status change
- ⑤ Positive / negative inversion pulse every time a status change
- ⑥ PWM control input-pin 500-5KHz of the PWM control signal 10% - 90% of the minimum speed can be controlled to the highest (Recommended frequency: 1KHz)
- ⑦ External power supply ground

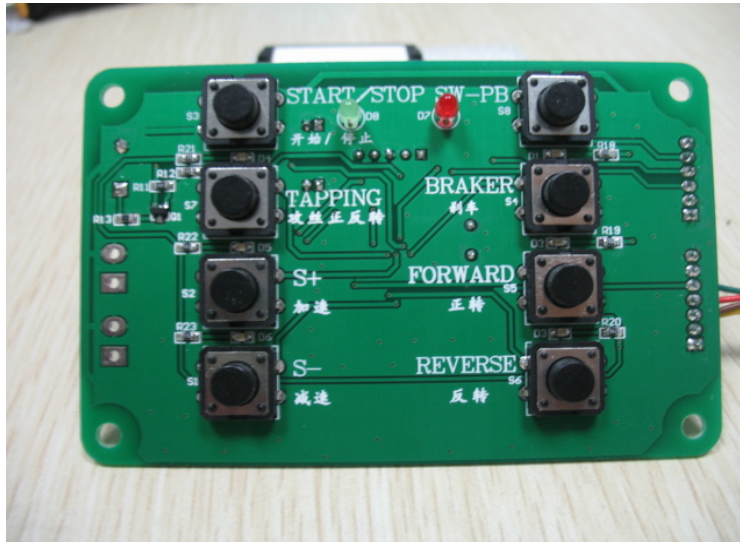


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三、Key board



按键板实物图

1. System in accordance with the wiring diagram to connect after a good line, or if the SA at this time SQ1, SB1 are closed to disconnect SQ2. The buzzer sounded a "drop", LCD display "0000, FOR, STOP", key board "FORWARD, REVERST, TAPPING, START" keys are valid, machine tool spindle and the spindle motor speed ratio of 1:1, indicating Speed is a motor speed of 1:1.
2. Press "START" key to switch the drive motor is displayed is the lowest speed to 400RPM \pm 10% runs, start-up time. For the most high-speed motor 6000RPM \pm 1%.
3. Every move the "+" allows a driver to increase motor speed 20RPM, long press "+" key to drive fast so that motor speed to 6000RPM. Every time "-" button allows drive motor speed decreased when the rules and to accelerate the contrary.
4. "FORWARD" for the motor drive control keys are run. "REVERST" motor-driven reverse run control button. Switching the direction of each motor deceleration to 1000 before the first switch, switch automatically after the completion of the restoration to the original speed of the speed.
5. "TAPPING" for tapping keys with non-tap switch. Every time a state switch. Tapping into the light when the LED diode. 1000-6000RPM when tapping the state can directly switch to the

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non-tapping, and tapping the state of non-state switch to tapping speed switch automatically dropped from 1000RPM to keep upon completion, the drive will speed 1000-6000RPM add to switch positive / negative when , allows drive motor speed can be automatically dropped from 1000RPM to accelerate the switch to after the completion of 1000RPM rotational speed and maintain. Tapping keys on the board when the "FORWARD, REVERST" invalid, use the CN2 terminal on the drive external button switch S2 is / reverse, each point is a movement to switch / reverse.

6. Drive in any state by the "STOP" to enter the stop state, and the current state of memory, when the key board "FORWARD, REVERST, START" effective , "+,-, TAPPING "null and void. The next by the "START" button to stop the automatic recovery when the rotational speed before.

7. Overload protection: motor load of more than 1.5 times the rated load down immediately 30S, also showed protection code E5

8. Drive in any state as long as the work of "SQ1, SB1" one disconnect switch, drive off immediately. At the same time, work lost state drive.

9. Key board drives the four positioning holes to be fixed with the lathe cutting insulation to increase the insulation strength of tablets. Button plate and fixed parts lathe preferred plastic material.