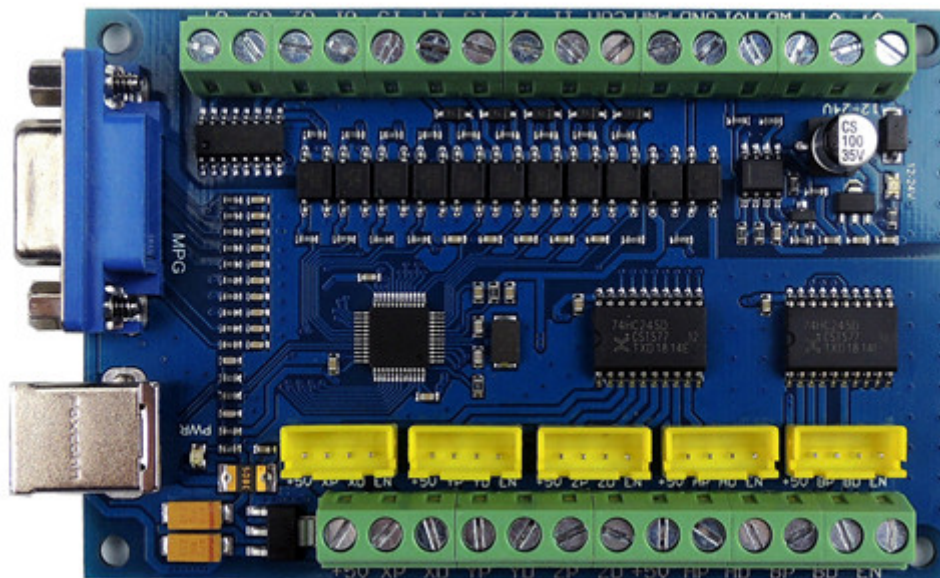


## Mach3 USB Motion Card (STB5100) Installation Manual



The motion control card for machine control, with strong professional. Requires the operator to have the relevant expertise! If used improperly, may appear an accident, please strictly follow the instructions and warnings to use this product if you are not sure, consulting engineers for help. First time users, if you are not familiar with the product and Mach3's software features when you test the product, make sure the machine's power switch on your hand, so that you can quickly turn off the power. Recommends that users install the emergency stop button and make sure the button's function is properly. Please strictly follow the instructions and warnings to use this product, otherwise any direct / indirect personal injury, our company does not assume any responsibility.

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## Features:

1. Support for Windows XP, Windows 7 32/64bit, Windows8, Windows10 operating system;
2. Applicable to all versions of mach3 software;
3. Support for CNC controlled 5-Axis, can connect five stepper motor driver or servo driver;
4. The maximum output pulse frequency is 100KHz, and the pulse width can automatically change with the pulse frequency, which can be applicable to the closed-loop driver of strict requirements on pulse.
5. Five optocoupler isolation input signal interfaces: limit switch, emergency stop switch, auto tool zero sensor, home switch, NPN sensor switch can be connected;
6. Inverter control signal interface (optocoupler isolation): Output 0-10V speed control signal, PWM speed control signal, spindle start control signal, used for mach3 software to control spindle's speed, start and stop;
7. Four universal output signal interfaces, the maximum output 500MA current, can drive relays, solenoid valves, used to control mist, pumps, cylinders and other equipments;
8. Support for external connect electronic hand wheel, use HDR15 interface to connect electronic hand wheel, used for manual control of machine tools;
9. Add the enable signal interface, can be used to control the driver enable signal;
10. The power of control card: voltage 12-24VDC, current more than 500MA

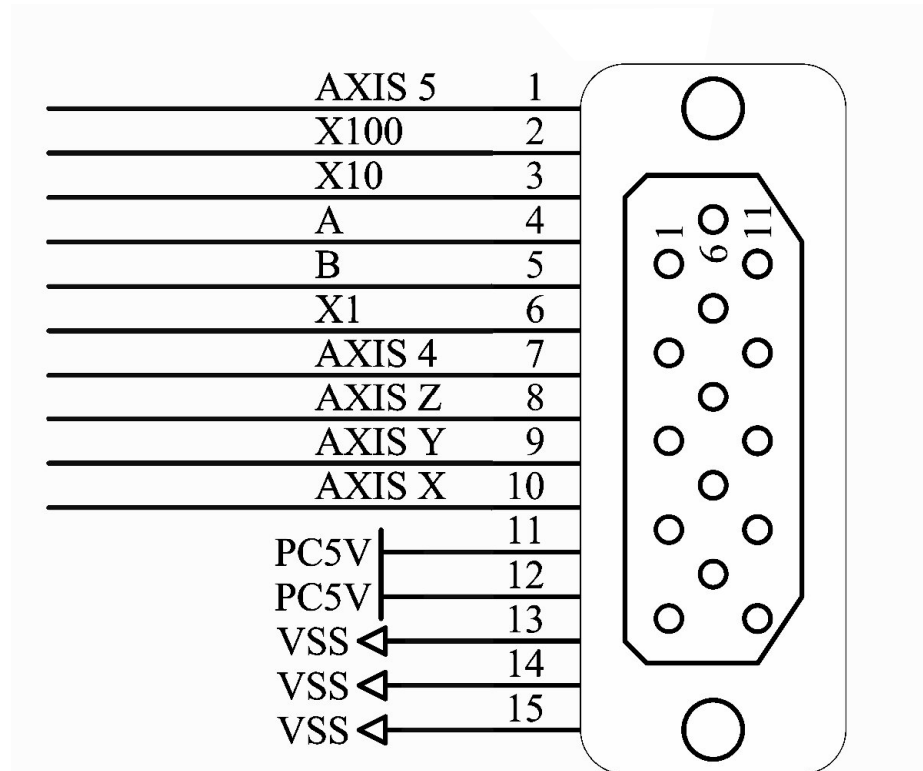
## PCB mark Description:

Mark	Description
+5V	+5V Driver signal common
XP	X Axis Pulse signal
XD	X Axis Direction signal
YP	Y Axis Pulse signal
YD	Y Axis Direction signal
ZP	Z Axis Pulse signal
ZD	Z Axis Direction signal
AP	A Axis Pulse signal
AD	A Axis Direction signal
BP	B Axis Pulse signal
BD	B Axis Direction signal
EN	All Axis Enable signals
Mark	Description
V+	Positive power supply 12-24V
V-	Negative power supply 0V
FWD	Inverter Control signal: Start/Forward
AVI	Inverter Control signal:0-10V Speed control signal
GND	GND=V-=0V
PWM	PWM Signal
Mark	Description

COM	COM=V-=GND=0V
I1	Input signal interface 1
I2	Input signal interface2
I3	Input signal interface3
I4	Input signal interface 4
I5	Input signal interface 5
O1	Output signal interface 1
O2	Output signal interface 2
O3	Output signal interface 3
O4	Output signal interface 4
<b>Mark</b>	<b>Description</b>
12-24V LED	Power input indication LED
PWR LED	USB power indication LED
MPG	MPG Hand wheel interface

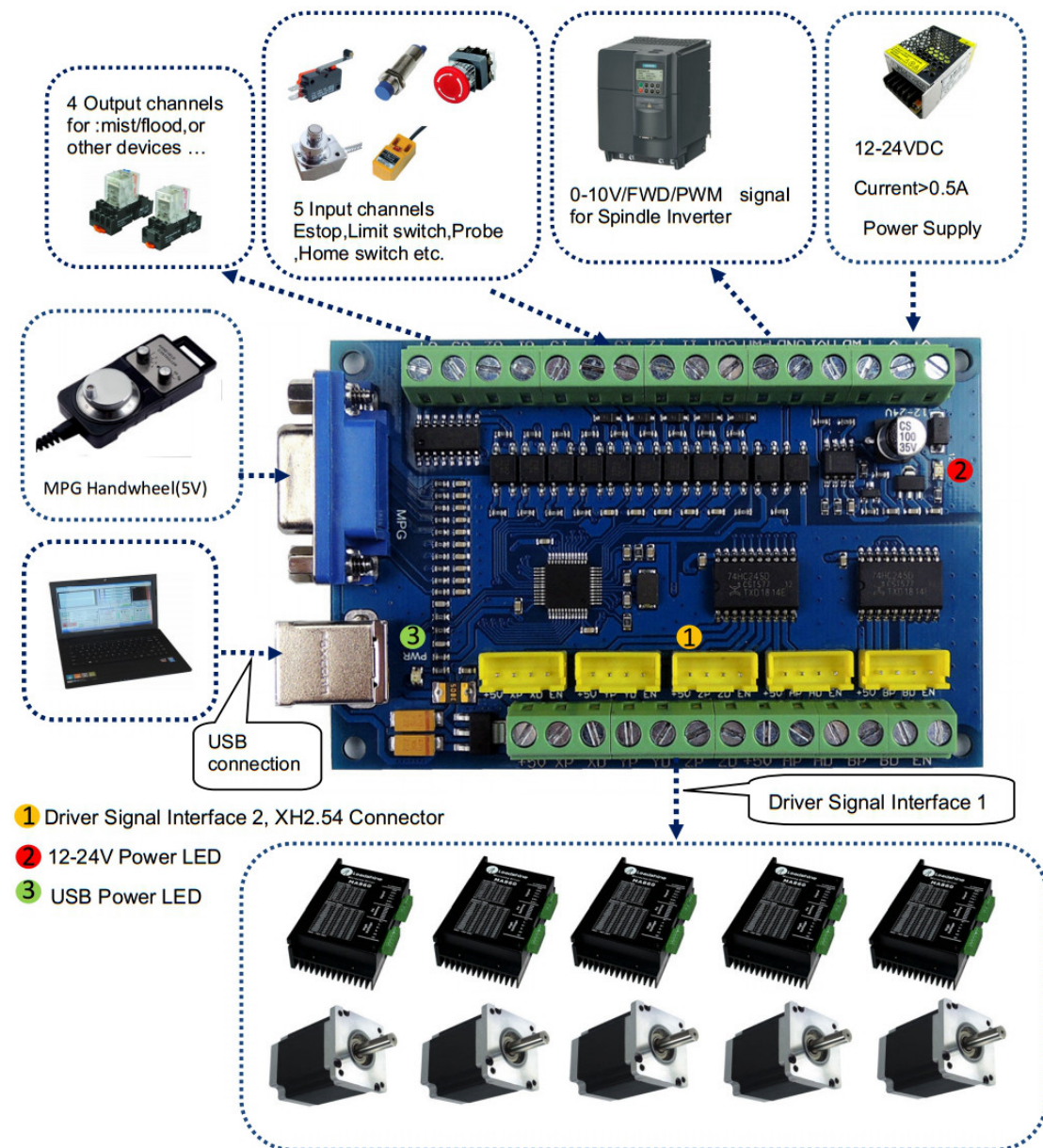
## MPG Interface pin definition

Support for external connect electronic hand wheel, use HDR15 interface to connect electronic hand wheel, Interface pin definition as shown below, You can weld the hand wheel connector according to the definition, or you can contact us to buy the hand wheel that has been welded.:

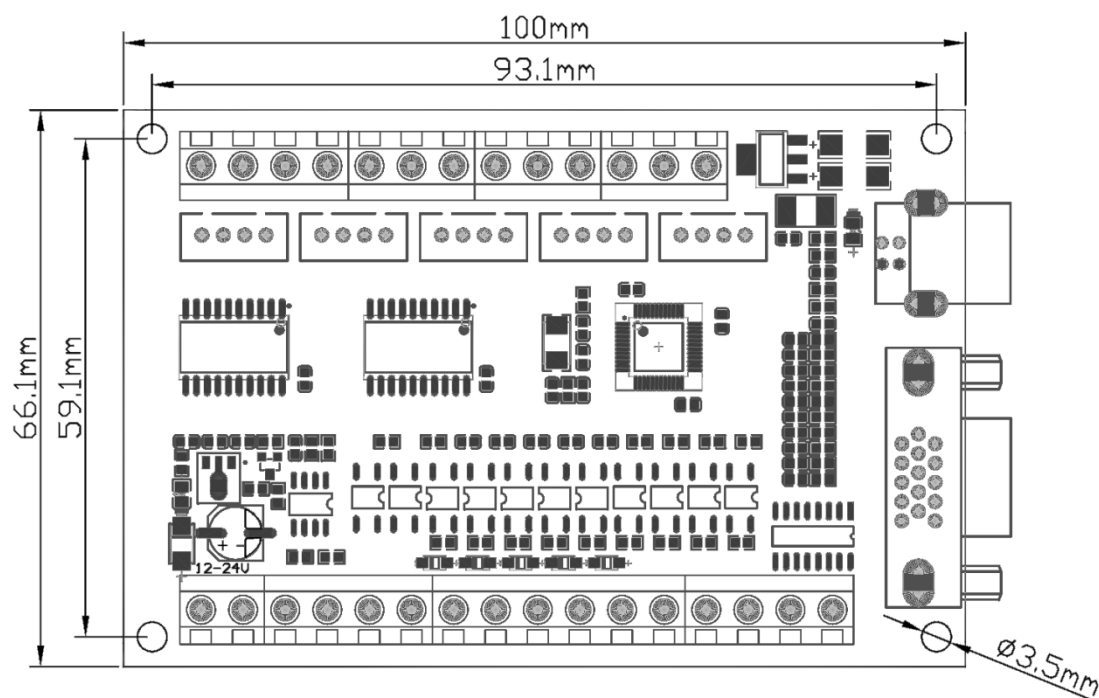


Note: The hand wheel does not directly control the motor operation, but controls the motor through software. When the electronic hand wheel is rotated, the software coordinates will change.

## Basic connection diagram (an Overview):



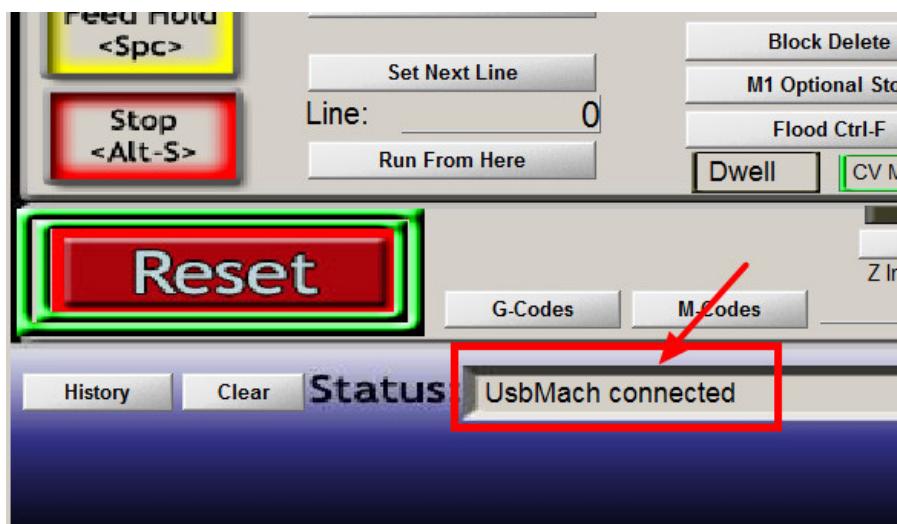
## Mechanical dimensions diagram:



## FAQ and Software Usage Tips:

### 1. How to know the motion control card whether connected to the software?

The motion card is successfully connected. There will be have a prompt in the mach3 status bar, as shown below:



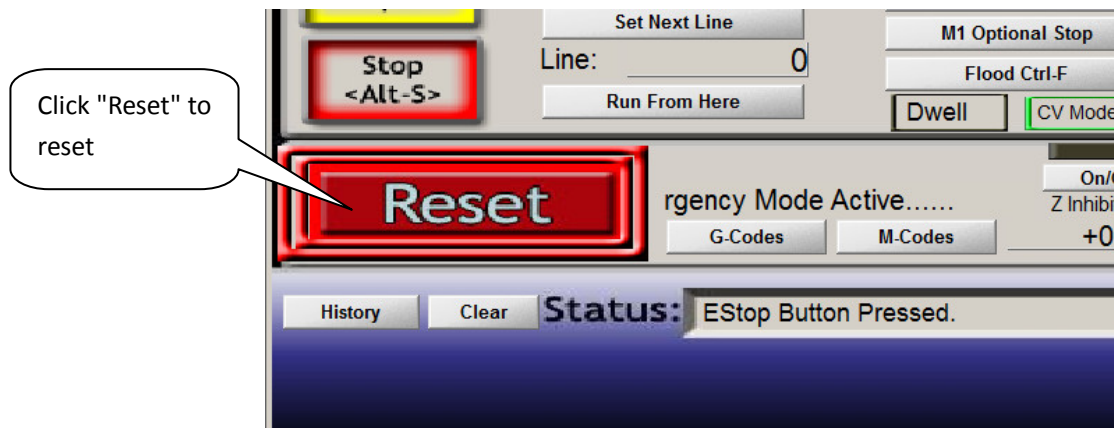
PS: Many tips will be prompted in the status bar, pay attention to view when using

### 2. About the mach3 “Reset” button

If "Reset" is flashing ,the software will not work. If it cannot be reset, please check if the motion

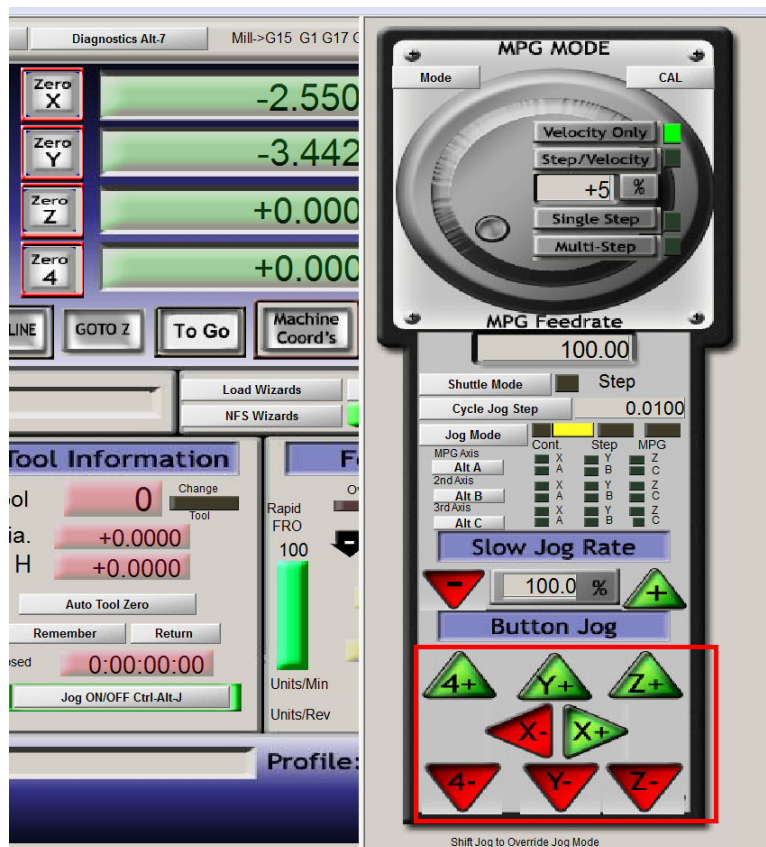


control is connected, Check software input settings.



### 3. How to bring up the MPG interface

Press the **"Tab"** button on the keyboard to bring up the MPG interface. Click on each axis button to manually control the motor work, as shown below.



### 4. Other suggestion:

If you are not familiar with mach3 and motion control card, it is recommended that you connect 1 axis first. After this axis works, then connect other axis.