# STM32 CNC 6 Axis Card

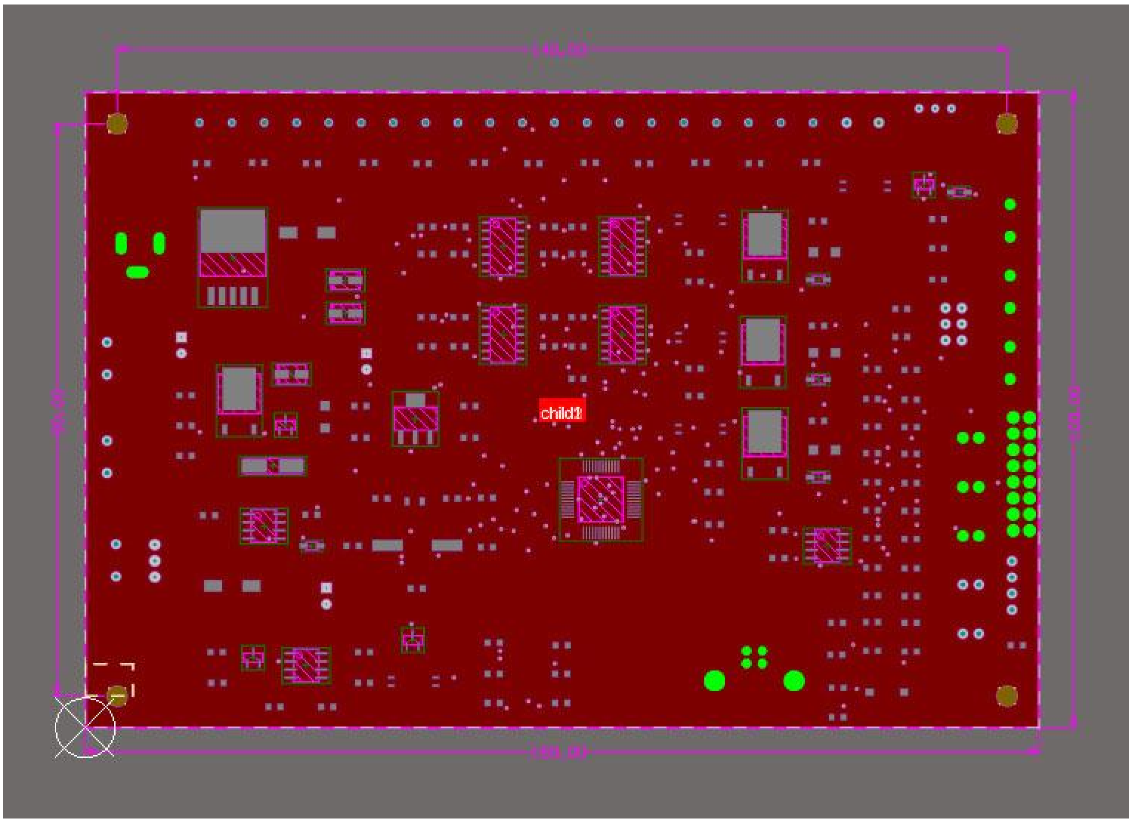
## Features

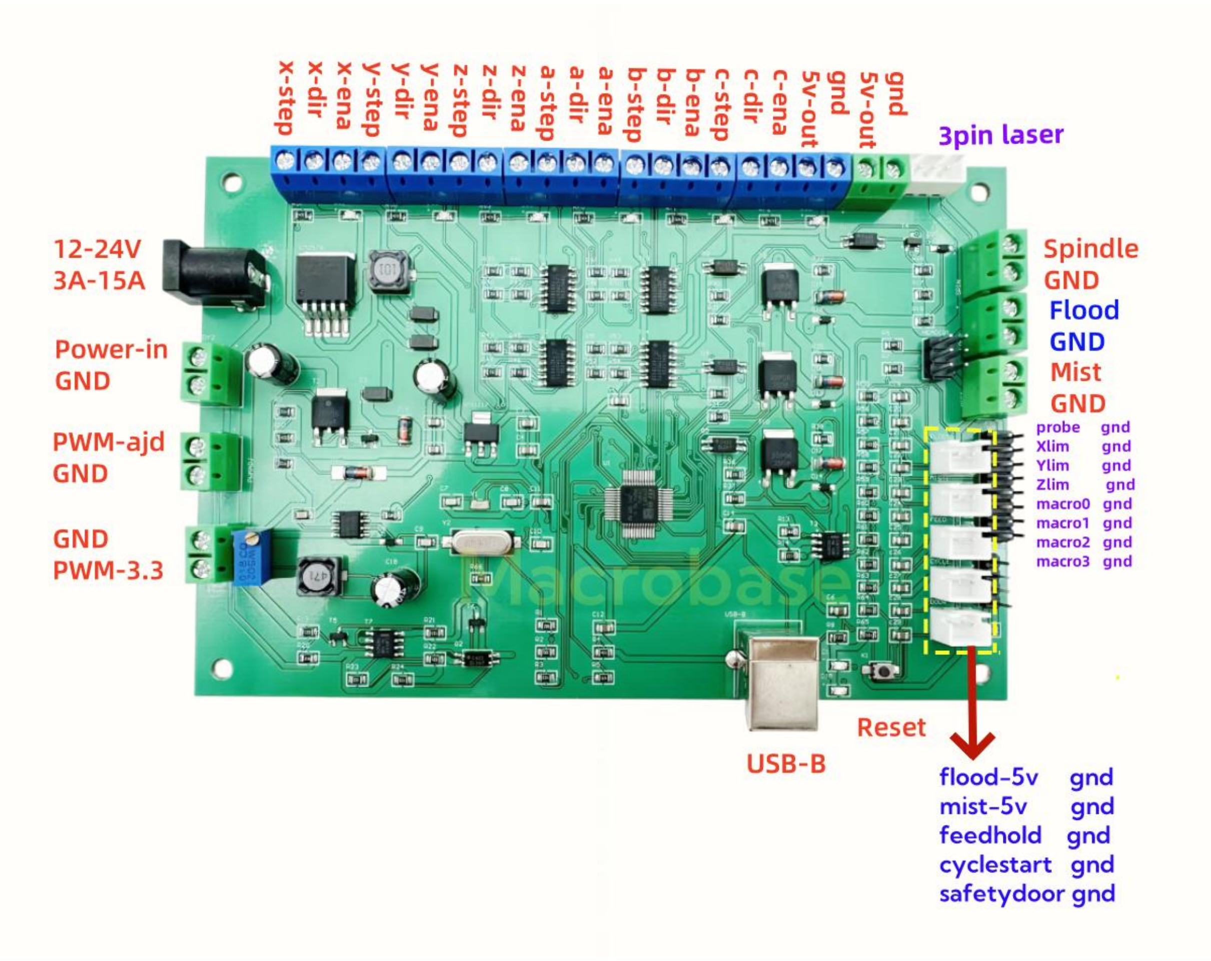
- Adopt STM32 32 bits high-speed processor,Arm-cortex-m.
- Compatible with Fluidnc,Candle,Bcnc,CNC3D COMMANDER...

  (GRBL only 1.1f is available)
- Support XYZABC six stepper drivers.
- Support Homing,software/hardware endstop,Z probe.
- Support 3pin laser.Adjustable voltage PWM output.
- Support 12V-24V DC

  Auto-cut off power when voltage exceeding 30V.

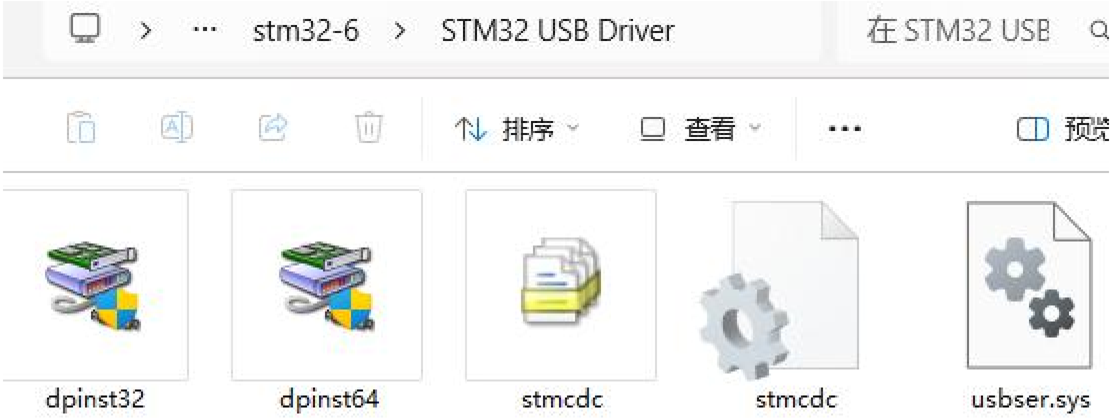
  Automatically select external power supply as the main control input power, and prevent reverse power transmission,protect USB port.


child1


x-step
x-dir
x-ena
y-step
y-dir
y-ena
z-step
z-dir
z-ena
a-step
a-dir
a-ena
b-step
b-dir
b-ena
c-step
c-dir
c-ena
5v-out
gnd
5v-out
gnd
3pin laser
12-24V
3A-15A
Power-in
GND
PWM-ajd
GND
GND
PWM-3.3
Spindle
GND
Flood
GND
Mist
GND
probe gnd
Xlim gnd
Ylim gnd
Zlim gnd
macro0 gnd
macro1 gnd
macro2 gnd
macro3 gnd
Macrobase
Reset
USB-B
flood-5v gnd
mist-5v gnd
feedhold gnd
cyclestart gnd
safetydoor gnd

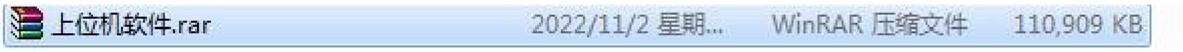
| | |
|---|---|
| PROBE | Z-probe |
| X-LIM | X limit, On |
| Y-LIM | Y limit, On |
| Z-LIM | Z limit, On |
| GND | XYZ axis limit com, Z-probe |
| PWM-ADJ | PWM voltage adjustment |
| COM | PUL-,EAN-,DIR- of stepper drivers |
| X-PUL | X-PUL+ |
| X-ENA | X-ENA+ |
| X-DIR | X-DIR+ |
| PWM3.3 | Output 3.3v PWM |

# Install STM32 USB Driver


> ··· stm32-6 > STM32 USB Driver
在 STM32 USB
排序
查看
···
预览
dpinst32
dpinst64
stmcdc
stmcdc
usbser.sys

## Software

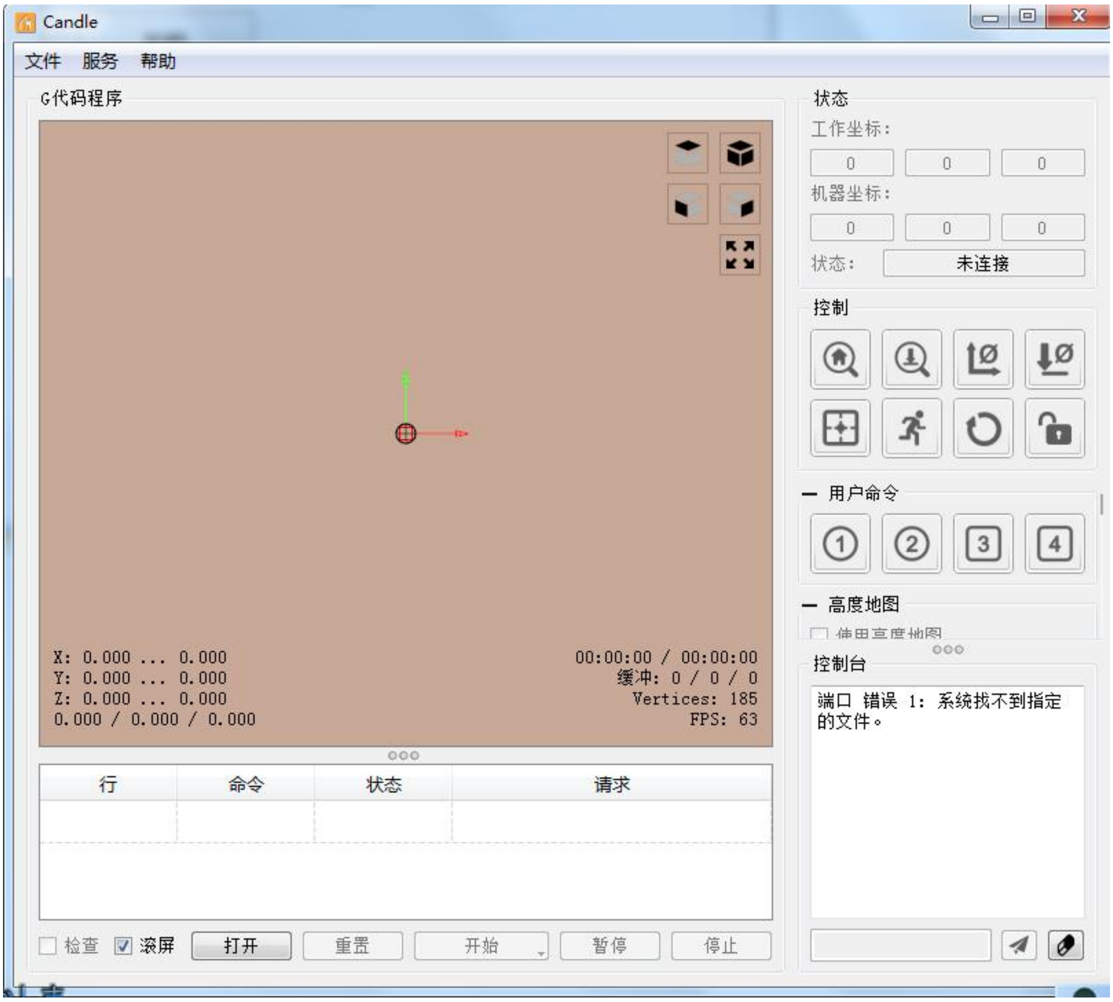
Candle,CNC3dCommander and Bcnc.



上位机软件.rar 2022/11/2 星期... WinRAR 压缩文件 110,909 KB

## 1.Candle

Unzip candle and open candle.exe



Candle
文件
服务
帮助
G代码程序
状态
控制
用户命令
高度地图
使用高度地图
控制台
行
命令
状态
请求
检查
滚屏
打开
重置
开始
暂停
停止

☐ 检查 ☑ 滚屏

工作坐标: 0 0 0

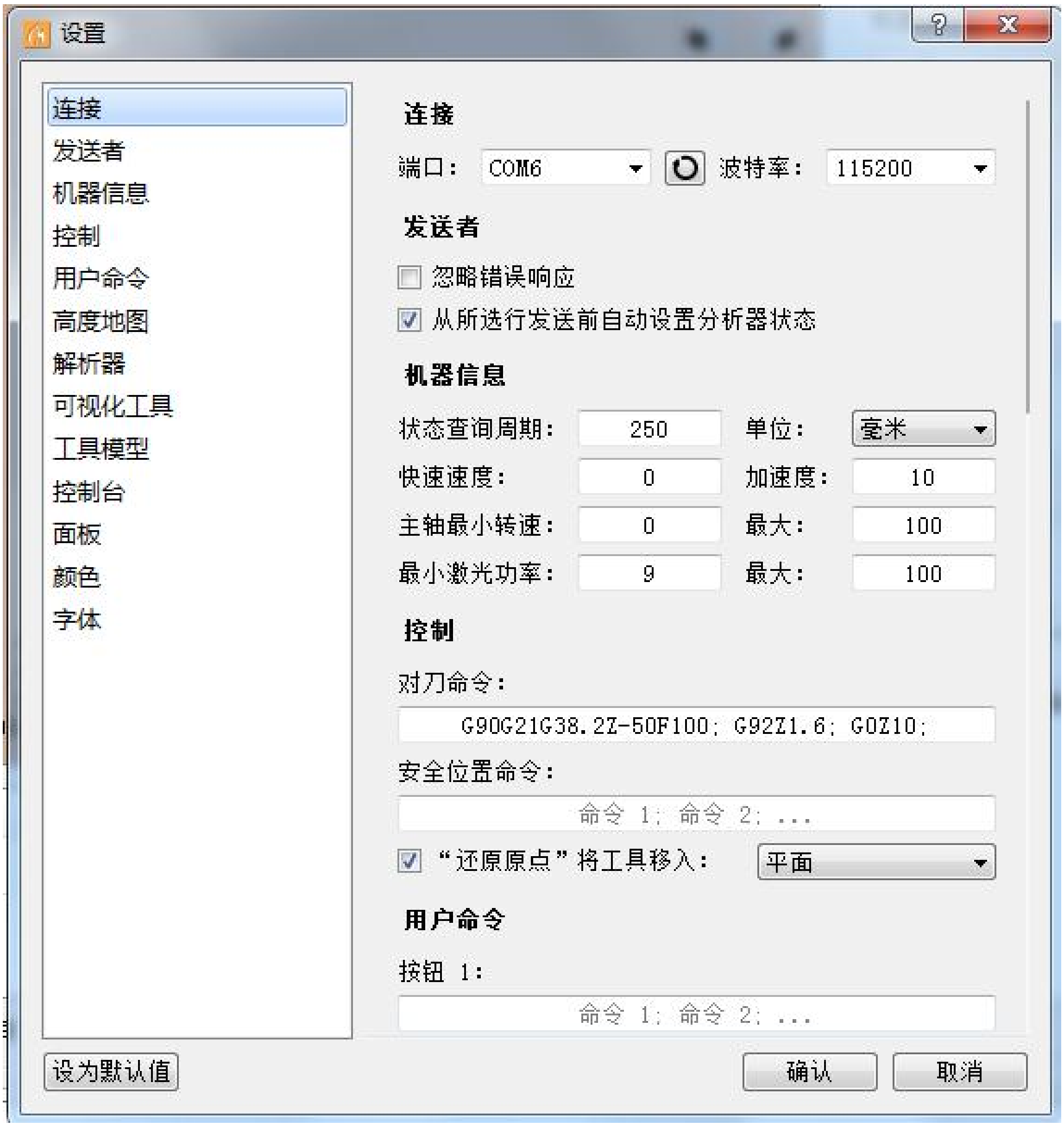
机器坐标: 0 0 0

状态: 未连接

X: 0.000 ... 0.000
Y: 0.000 ... 0.000
Z: 0.000 ... 0.000
0.000 / 0.000 / 0.000

00:00:00 / 00:00:00
缓冲: 0 / 0 / 0
Vertices: 185
FPS: 63

```
端口 错误 1: 系统找不到指定的文件。
```


设置
连接
发送者
机器信息
控制
用户命令
高度地图
解析器
可视化工具
工具模型
控制台
面板
颜色
字体
设为默认值
确认
取消

**连接**

端口：COM6 波特率：115200

**发送者**

□ 忽略错误响应

☑ 从所选行发送前自动设置分析器状态

**机器信息**

| | | | |
|---|---|---|---|
| 状态查询周期： | 250 | 单位： | 毫米 |
| 快速速度： | 0 | 加速度： | 10 |
| 主轴最小转速： | 0 | 最大： | 100 |
| 最小激光功率： | 9 | 最大： | 100 |

**控制**

对刀命令：

```
G90G21G38.2Z-50F100; G92Z1.6; G0Z10;
```

安全位置命令：

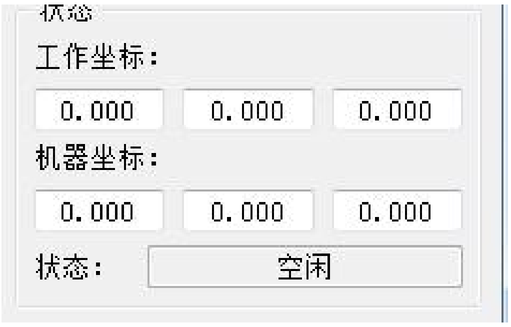
命令 1; 命令 2; ...

☑ “还原原点”将工具移入：平面

**用户命令**

按钮 1：

命令 1; 命令 2; ...



工作坐标：

| | | |
|---|---|---|
| 0.000 | 0.000 | 0.000 |

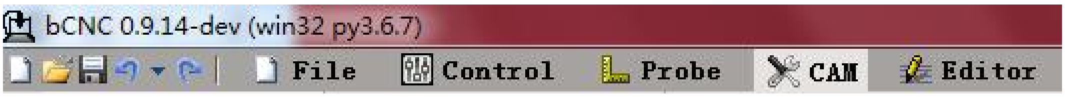
机器坐标：

| | | |
|---|---|---|
| 0.000 | 0.000 | 0.000 |

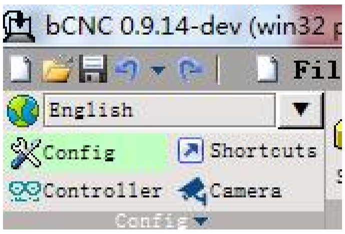
状态：空闲

## 2. BCNC

Plug control board to PC via USB cable,and enter bcnc.exe

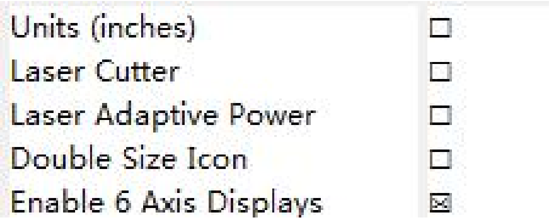

bCNC 0.9.14-dev (win32 py3.6.7)
File
Control
Probe
CAM
Editor

Click CAM,select language.


bCNC 0.9.14-dev (win32 p
Fil
Config
Shortcuts
Controller
Camera
Config

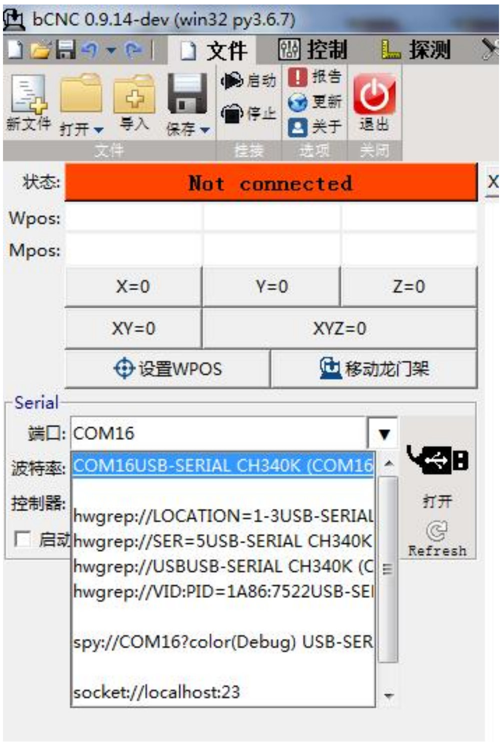
English

Enable 6 axis display,then reboot software.

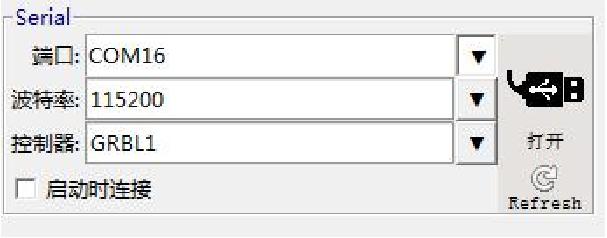


Units (inches) ☐
Laser Cutter ☐
Laser Adaptive Power ☐
Double Size Icon ☐
Enable 6 Axis Displays ☒

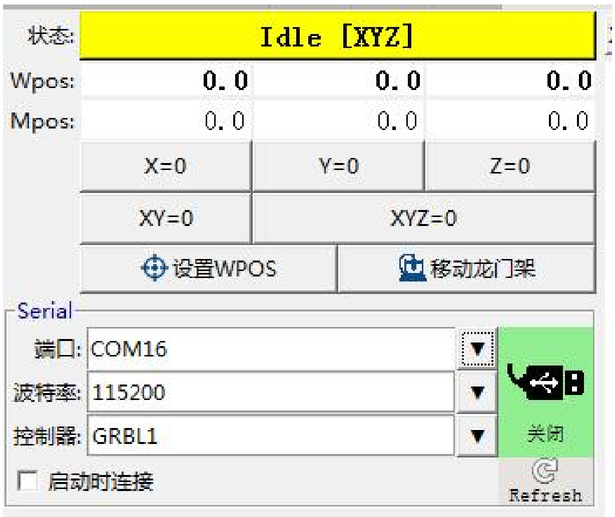
Click file,select COM and open it.


bCNC 0.9.14-dev (win32 py3.6.7)
文件
控制
探测
新文件
打开
导入
保存
启动
停止
报告
更新
关于
退出
文件
连接
选项
关闭
X=0
Y=0
Z=0
XY=0
XYZ=0
设置WPOS
移动龙门架
打开
Refresh

状态: Not connected
Wpos:
Mpos:
Serial
端口: COM16
波特率:
控制器:
☐ 启动时连接
COM16USB-SERIAL CH340K (COM16
hwgrep://LOCATION=1-3USB-SERIAL
hwgrep://SER=5USB-SERIAL CH340K
hwgrep://USBUSB-SERIAL CH340K (C
hwgrep://VID:PID=1A86:7522USB-SEI
spy://COM16?color(Debug) USB-SER
socket://localhost:23


Serial
打开
Refresh

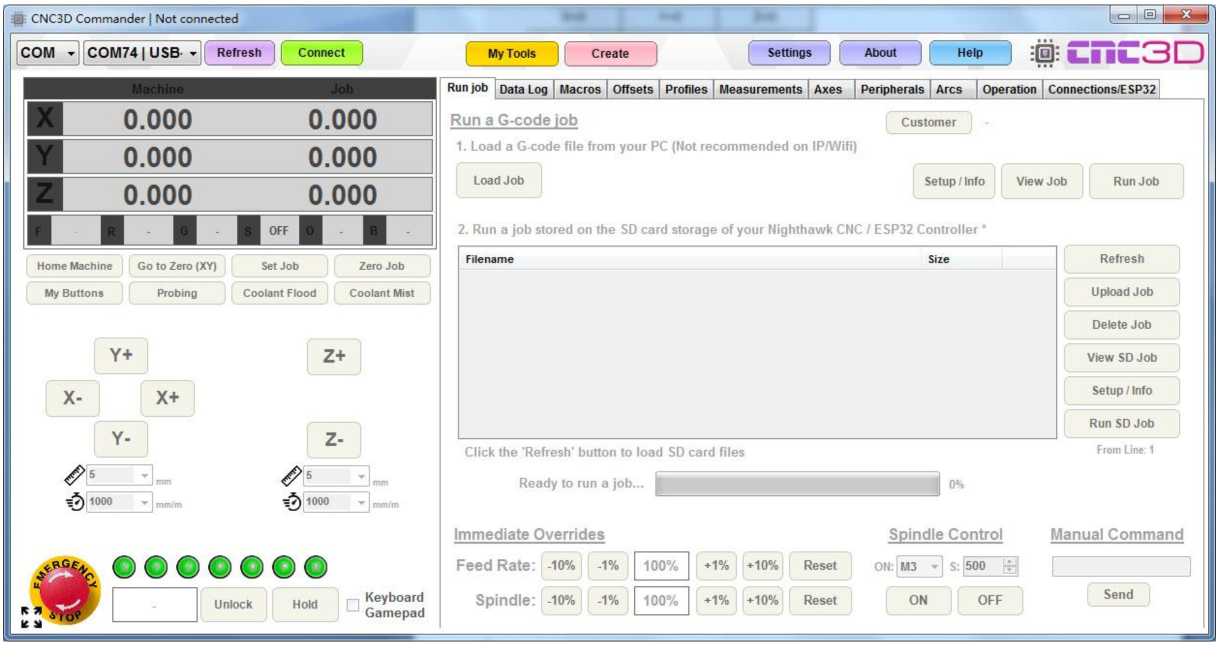
端口: COM16
波特率: 115200
控制器: GRBL1
☐ 启动时连接


X=0
Y=0
Z=0
XY=0
XYZ=0
设置WPOS
移动龙门架
Serial
关闭
Refresh

状态: Idle [XYZ]
Wpos: 0.0 0.0 0.0
Mpos: 0.0 0.0 0.0
端口: COM16
波特率: 115200
控制器: GRBL1
☐ 启动时连接

# 3.CNC3d Commander

Open CNC3dcommander as below


COM
Refresh
Connect
My Tools
Create
Settings
About
Help
CNC3D
Run job
Data Log
Macros
Offsets
Profiles
Measurements
Axes
Peripherals
Arcs
Operation
Connections/ESP32
Machine
Job
X
Y
Z
F
R
G
S
O
B
Home Machine
Go to Zero (XY)
Set Job
Zero Job
My Buttons
Probing
Coolant Flood
Coolant Mist
Y+
X-
X+
Y-
Z+
Z-
mm
mm/m
EMERGENCY STOP
Unlock
Hold
Keyboard Gamepad
Run a G-code job
Customer
Load Job
Setup / Info
View Job
Run Job
Filename
Size
Refresh
Upload Job
Delete Job
View SD Job
Setup / Info
Run SD Job
Immediate Overrides
Feed Rate:
Spindle:
-10%
-1%
+1%
+10%
Reset
Spindle Control
ON:
S:
ON
OFF
Manual Command
Send

CNC3D Commander | Not connected

COM74 | USB

X 0.000 0.000
Y 0.000 0.000
Z 0.000 0.000

S OFF

5 mm, 1000 mm/m

1. Load a G-code file from your PC (Not recommended on IP/Wifi)

2. Run a job stored on the SD card storage of your Nighthawk CNC / ESP32 Controller *

Click the 'Refresh' button to load SD card files

From Line: 1

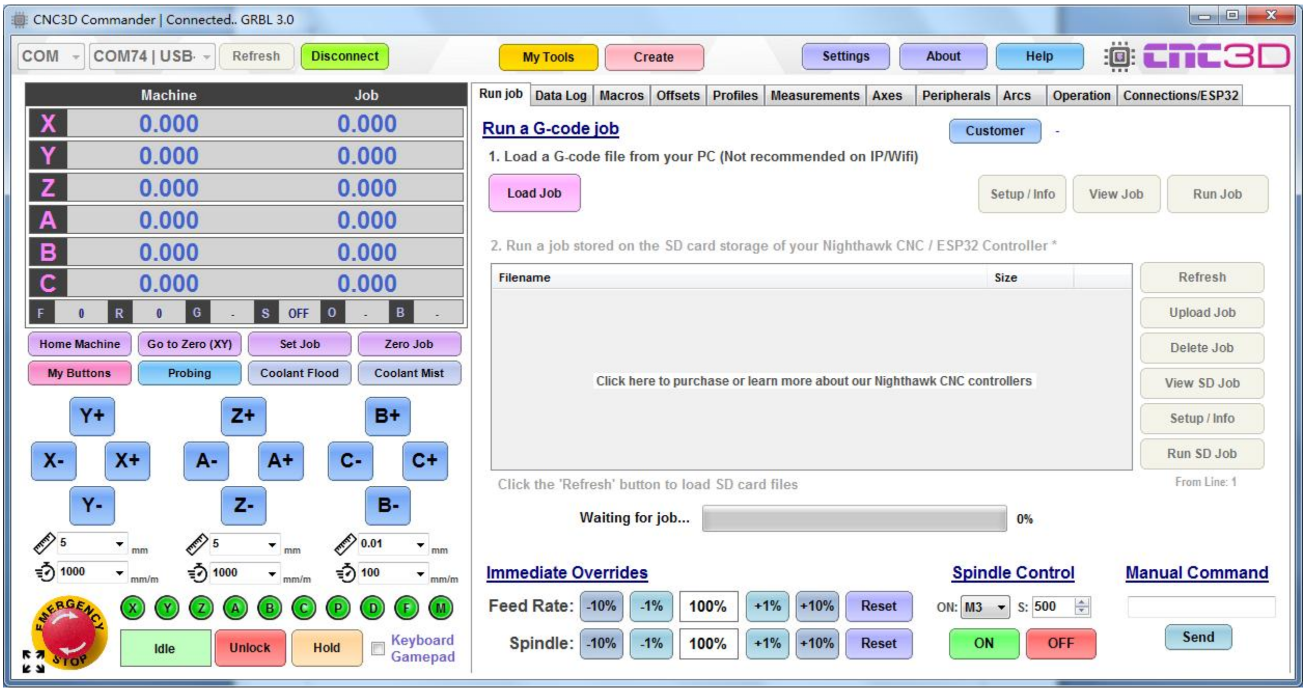
Ready to run a job... 0%

Feed Rate: 100%

Spindle: 100%

ON: M3 S: 500

Connect control board and reflash.


COM
Refresh
Disconnect
My Tools
Create
Settings
About
Help
CNC3D
Run job
Data Log
Macros
Offsets
Profiles
Measurements
Axes
Peripherals
Arcs
Operation
Connections/ESP32
Machine
Job
X
Y
Z
A
B
C
F
R
G
S
O
B
Home Machine
Go to Zero (XY)
Set Job
Zero Job
My Buttons
Probing
Coolant Flood
Coolant Mist
Y+
X-
X+
Y-
Z+
A-
A+
Z-
B+
C-
C+
B-
mm
mm/m
X
Y
Z
A
B
C
P
D
F
M
EMERGENCY STOP
Idle
Unlock
Hold
Keyboard Gamepad
Run a G-code job
Customer
Load Job
Setup / Info
View Job
Run Job
Filename
Size
Refresh
Upload Job
Delete Job
View SD Job
Setup / Info
Run SD Job
Immediate Overrides
Feed Rate:
Spindle:
-10%
-1%
+1%
+10%
Reset
Spindle Control
ON:
S:
ON
OFF
Manual Command
Send

CNC3D Commander | Connected.. GRBL 3.0

COM74 | USB

X 0.000 0.000
Y 0.000 0.000
Z 0.000 0.000
A 0.000 0.000
B 0.000 0.000
C 0.000 0.000

F 0 R 0 S OFF

5 mm, 1000 mm/m; 5 mm, 1000 mm/m; 0.01 mm, 100 mm/m

1. Load a G-code file from your PC (Not recommended on IP/Wifi)

2. Run a job stored on the SD card storage of your Nighthawk CNC / ESP32 Controller *

Click here to purchase or learn more about our Nighthawk CNC controllers

Click the 'Refresh' button to load SD card files

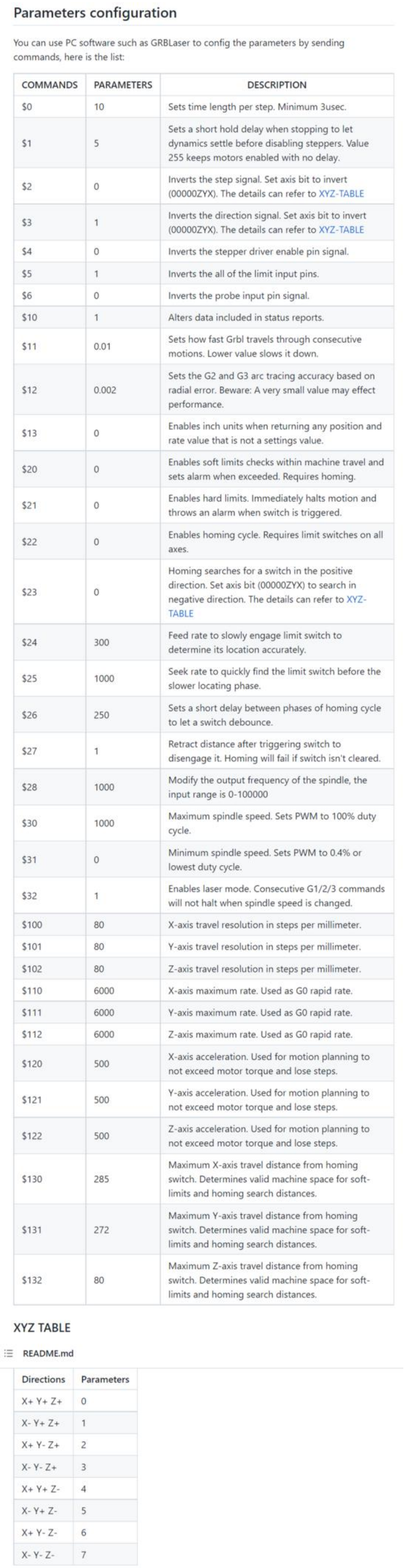
From Line: 1

Waiting for job... 0%

Feed Rate: 100%

Spindle: 100%

ON: M3 S: 500



## Parameters configuration

You can use PC software such as GRBLaser to config the parameters by sending commands, here is the list:

| COMMANDS | PARAMETERS | DESCRIPTION |
|---|---|---|
| $0 | 10 | Sets time length per step. Minimum 3usec. |
| $1 | 5 | Sets a short hold delay when stopping to let dynamics settle before disabling steppers. Value 255 keeps motors enabled with no delay. |
| $2 | 0 | Inverts the step signal. Set axis bit to invert (00000ZYX). The details can refer to XYZ-TABLE |
| $3 | 1 | Inverts the direction signal. Set axis bit to invert (00000ZYX). The details can refer to XYZ-TABLE |
| $4 | 0 | Inverts the stepper driver enable pin signal. |
| $5 | 1 | Inverts the all of the limit input pins. |
| $6 | 0 | Inverts the probe input pin signal. |
| $10 | 1 | Alters data included in status reports. |
| $11 | 0.01 | Sets how fast Grbl travels through consecutive motions. Lower value slows it down. |
| $12 | 0.002 | Sets the G2 and G3 arc tracing accuracy based on radial error. Beware: A very small value may effect performance. |
| $13 | 0 | Enables inch units when returning any position and rate value that is not a settings value. |
| $20 | 0 | Enables soft limits checks within machine travel and sets alarm when exceeded. Requires homing. |
| $21 | 0 | Enables hard limits. Immediately halts motion and throws an alarm when switch is triggered. |
| $22 | 0 | Enables homing cycle. Requires limit switches on all axes. |
| $23 | 0 | Homing searches for a switch in the positive direction. Set axis bit (00000ZYX) to search in negative direction. The details can refer to XYZ-TABLE |
| $24 | 300 | Feed rate to slowly engage limit switch to determine its location accurately. |
| $25 | 1000 | Seek rate to quickly find the limit switch before the slower locating phase. |
| $26 | 250 | Sets a short delay between phases of homing cycle to let a switch debounce. |
| $27 | 1 | Retract distance after triggering switch to disengage it. Homing will fail if switch isn't cleared. |
| $28 | 1000 | Modify the output frequency of the spindle, the input range is 0-100000 |
| $30 | 1000 | Maximum spindle speed. Sets PWM to 100% duty cycle. |
| $31 | 0 | Minimum spindle speed. Sets PWM to 0.4% or lowest duty cycle. |
| $32 | 1 | Enables laser mode. Consecutive G1/2/3 commands will not halt when spindle speed is changed. |
| $100 | 80 | X-axis travel resolution in steps per millimeter. |
| $101 | 80 | Y-axis travel resolution in steps per millimeter. |
| $102 | 80 | Z-axis travel resolution in steps per millimeter. |
| $110 | 6000 | X-axis maximum rate. Used as G0 rapid rate. |
| $111 | 6000 | Y-axis maximum rate. Used as G0 rapid rate. |
| $112 | 6000 | Z-axis maximum rate. Used as G0 rapid rate. |
| $120 | 500 | X-axis acceleration. Used for motion planning to not exceed motor torque and lose steps. |
| $121 | 500 | Y-axis acceleration. Used for motion planning to not exceed motor torque and lose steps. |
| $122 | 500 | Z-axis acceleration. Used for motion planning to not exceed motor torque and lose steps. |
| $130 | 285 | Maximum X-axis travel distance from homing switch. Determines valid machine space for soft-limits and homing search distances. |
| $131 | 272 | Maximum Y-axis travel distance from homing switch. Determines valid machine space for soft-limits and homing search distances. |
| $132 | 80 | Maximum Z-axis travel distance from homing switch. Determines valid machine space for soft-limits and homing search distances. |

### XYZ TABLE

README.md

| Directions | Parameters |
|---|---|
| X+ Y+ Z+ | 0 |
| X- Y+ Z+ | 1 |
| X+ Y- Z+ | 2 |
| X- Y- Z+ | 3 |
| X+ Y+ Z- | 4 |
| X- Y+ Z- | 5 |
| X+ Y- Z- | 6 |
| X- Y- Z- | 7 |