

CNC3D Commander | Connected.. NighthawkCNC 2.2 (4 Axis)

COM COM5 | Silico Refresh Disconnect

My Tools Create

Settings About Help

MachineJob

X	0.000	-3.673
Y	0.000	-4.499
Z	0.000	2.500

F 0 R 0 G G90 S OFF O G54 B

Home MachineGo to Zero (XY)Set JobZero Job

Y+Z+

My Buttons

X-X+

Y-Z-

Probing

Coolant Flood

Coolant Mist

Distance: 100 mmDistance: 5 mm

Speed: 5000 mm/mSpeed: 1000 mm/m

Emergency Stop

Limit / Trigger Status:

X Y Z

Controller Status:

Idle

Unlock

Hold

Run a G-code job

Customer

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

Load Job

Setup JobInfo / TraceView JobRun Job

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

FilenameSize

Refresh

Upload Job

Delete Job

Run SD Job

SD card not found, Please eject and reinsert your SD card and click on 'Refresh'.

Waiting for job... 0%

Immediate Overrides

Feed Rate:

-10%

-1%

100%

+1%

+10%

Reset

Spindle:

-10%

-1%

100%

+1%

+10%

Reset

Spindle Control

ON: M3 S: 1000

ONOFF

Manual Command

Send

Easy machine setup Wizard

1. Your machine2. Axis Setup3. Limit switches & probing4. Homing5. Machine limit setup

About this Wizard

This wizard was created for setting up your machine for the first time, It also contains a handy set of tools that you can use at any time.

It is recommended to visit every section of this wizard if you have a brand new machine. Please note; you may not need to do this if your machine supplier advises you that your machine is already preconfigured from factory.

PLEASE NOTE: This wizard assumes your machine is mechanically working as it should.

What machine do you have?

Choose your machine type from the list. If you are unsure if your controller is setup correctly, you can choose to overwrite with a factory profile. Please only do this if you are certain your machine is not programmed already. Opting to choose "Other GRBL Machine" will make steps per millimeter very small and slow.

Machine Type

CNC3D QueenBee (Factory Settings)
QB2 High Precision (Factory Settings)
QB2 High Speed (Factory Settings)
Metal Storm (Factory Settings)
YouCarve CNC (Factory Settings)
SharpCNC - Belt Drive (Factory Settings)
SharpCNC - Screw Drive (Factory Settings)

Overwrite machine settings

Go to Axis Setup >>

Use this E-stop if something isn't right, it's on every window.

Emergency Stop

Unlock

Close wizard

Use this to unlock after hitting E-stop

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Y -10.000 -10.000
Z 0.000 0.000
F 0 R 0 G G91 S OFF O G54 B
Home Machine Go to Zero (XY) Set Job Zero Job
Y+ Z+ My Buttons
X- X+ Probing
Y- Z- Coolant Flood
Coolant Mist
Distance: 10 mm Distance: 5 mm ☐ Keys / Pad
Speed: 5000 mm/m Speed: 1000 mm/m

Limit / Trigger Status:
X Y Z A P D F M
Controller Status:
Idle Unlock Hold

Run job Data Log Macros Offsets Profiles Measurements Axes Peripherals Arcs Operation Connections/ESP32
Machine profiles
Upload a Profile to your machine for quick setup or Save your current machine profile.

Profile name
CNC3D QueenBee (Factory Settings)
QB2 High Precision (Factory Settings)
QB2 High Speed (Factory Settings)
Metal Storm (Factory Settings)
YouCarve CNC (Factory Settings)
SharpCNC - Belt Drive (Factory Settings)
SharpCNC - Screw Drive (Factory Settings)
My current machine

Save Rename Delete View Import Export Send to Machine

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Distance: 10 mm Distance: 5 mm ☐ Keys / Pad
Speed: 5000 mm/m Speed: 1000 mm/m

Limit / Trigger Status:
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Controller Status:
Idle Unlock Hold

Run job Data Log Macros Offsets Profiles Measurements Axes Peripherals Arcs Operation Connections/ESP32
Type of operation
From GRBL versions 1.1f and above, you can choose to operate your CNC with either a Spindle or a Laser. You must set this option specific to the type of operation you want to use. Don't forget to change back once you swap back again as the results may be unexpected.
[More info on Laser operation](#)

Operate using: Spindle
Maximum Speed/Power: 1000
Minimum Speed/Power: 0

These values do not represent actual power but the resolution of the min and max values. a lower number in maximum has less resolution. typical max values can be 255, 1000 or your maximum spindle RPM.

Signal processing
Change the way your GRBL controller talks to different types of stepper drivers. NOTE: Do not change these settings unless you are certain you absolutely must.

Step pulse: 10 10 recommended
Step idle delay: 255 255 recommended

Update Operation settings

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COM COM5 | Silicoi Refresh Disconnect
My Tools Create Settings About Help

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Y	-10.000	-10.000
Z	0.000	0.000

F 0 R 0 G G91 S OFF O G54 B

Home Machine Go to Zero (XY) Set Job Zero Job

Y+ Z+

X- X+

Y- Z-

Distance: 10 mm Distance: 5 mm
Speed: 5000 mm/m Speed: 1000 mm/m

EMERGENCY STOP

Limit / Trigger Status:

X Y Z A P D F M

Controller Status:
Idle Unlock Hold

Run job Data Log Macros Offsets Profiles Measurements Axes Peripherals Arcs Operation Connections/ESP32

Machine Limits / Homing

Setup your limit switches and homing cycle settings here. [More info on Limits and Homing](#)

☐ Enable Homing

☒ Invert homing X Homing Feed: 25 mm/m
☒ Invert homing Y Homing Seek: 500 mm/m
☒ Invert homing Z Homing debounce: 250 msec
Homing Pull off: 3 mm

Homing order (click # to set)

1. Z
2. XY
3.
4.

Homing axis offsets

X offset: 0.00
Y offset: 0.00
Z offset: 0.00

Dual axis homing: (none) ?

Limit switch type:
Normally Closed
☐ Enable Soft limits ?
☐ Enable Hard limits ?

Maximum travel limits ?

X Max travel: 1500.00
Y Max travel: 1500.00
Z Max travel: 200.00

Torch Height control

Coming soon to the Nighthawk controller!
Target voltage: 0.00 V
Delta voltage: 0.00 V
Max step size: 0.00 mm
Pierce height: 0.00 mm
Max Z height: 0.00 mm
Min Z height: 0.00 mm

Probe type

Probe connection type:
Normally Closed

Update peripheral settings

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COM COM5 | Silicoi Refresh Disconnect
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Y+ Z+

X- X+

Y- Z-

Distance: 10 mm Distance: 5 mm
Speed: 5000 mm/m Speed: 1000 mm/m

EMERGENCY STOP

Limit / Trigger Status:

X Y Z A P D F M

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Idle Unlock Hold

Run job Data Log Macros Offsets Profiles Measurements Axes Peripherals Arcs Operation Connections/ESP32

General Offsets

X Y Z

G54: 10.000 -10.000 0.000 Zero all MPOS
G55: 0.000 0.000 0.000 Zero all MPOS
G56: 0.000 0.000 0.000 Zero all MPOS
G57: 0.000 0.000 0.000 Zero all MPOS
G58: 0.000 0.000 0.000 Zero all MPOS
G59: 0.000 0.000 0.000 Zero all MPOS

Tool length Offset: 0.000 Zero

Special Offsets

G28
Current Values
X: 0.000
Y: 0.000
Z: 0.000

Set G28 to current position

G30
Current Values
X: 0.000
Y: 0.000
Z: 0.000

Set G30 to current position

Refresh Offsets

Update General Offsets

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Machine Job

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Y	-10.000	-10.000
Z	0.000	0.000

F 0 R 0 G G91 S OFF O G54 B

Home Machine Go to Zero (XY) Set Job Zero Job

Y+ Z+ X- X+ Y- Z-

Distance: 10 mm Distance: 5 mm Speed: 5000 mm/m Speed: 1000 mm/m

Limit / Trigger Status: X Y Z A P D F M

Controller Status: Idle Unlock Hold

EMERGENCY STOP

Y Axis

Y Steps per mm: 200.000

Are you new to your CNC?

We've made it easy to get your new machine setup quickly and easily using our new machine Wizard.

Go to New machine wizard

My machine is already setup

☒ Don't ask me again. Wizard can be accessed from 'Operations' tab

Step Calculator

Quickly estimate your steps per millimeter for your machine.

Please ensure to enter these values on each respective axis before Tuning.

Note: This is just a calculator and will not change any settings.

Motion Type:

Microstepping:

Suggested Steps

0

Update Measurement settings

CNC3D Commander | Connected.. NighthawkCNC 2.2 (4 Axis)

COM COM5 | Silico Refresh Disconnect My Tools Create Settings About Help CNC3D

Machine Job

X	10.000	6.327
Y	-10.000	-14.499
Z	0.000	2.500

F 0 R 0 G G91 S OFF O G54 B

Home Machine Go to Zero (XY) Set Job Zero Job

Y+ Z+ X- X+ Y- Z-

Distance: 10 mm Distance: 5 mm Speed: 5000 mm/m Speed: 1000 mm/m

Limit / Trigger Status: X Y Z A P D F M

Controller Status: Idle Unlock Hold

EMERGENCY STOP

Stored Macros

Easily execute a collection of presaved commands using DaveScript.

Scripting Help

Macro Name

Test macro

```
@var newX
@var newY = 12.76
%newX% = 12
@var feedval
%feedval% = calc(%newX% + %newY%)
G90
G1 X%newX% Y%ympos# F%feedval%
```

Run Delete Rename Open File Record Update Save New Clear text

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COMCOM5 | SilicoiRefreshDisconnect

My ToolsCreateSettingsAboutHelp

CNC3D

MachineJob

X	10.000	10.000
Y	-10.000	-10.000
Z	0.000	0.000

F0R0G G91S OFFO G54B-

Home MachineGo to Zero (XY)Set JobZero Job

Y+Z+My Buttons

X-X+Probing

Y-Y-Z-Coolant Flood

Distance: 10 mmDistance: 5 mmKeys / Pad

Speed: 5000 mm/mSpeed: 1000 mm/m


Limit / Trigger Status:
X Y Z A P D F M

Controller Status:
IdleUnlockHold


EMERGENCY STOP

Run jobData LogMacrosOffsetsProfilesMeasurementsAxesPeripheralsArcsOperationConnections/ESP32


Y Axis

Y Steps per mm: 200.000XY Motor Tune

X Axis

X Steps per mm: 200.000

Z Axis

Z Steps per mm: 200.000

More info on this tabUpdate Measurement settings

Step Calculator

Quickly estimate your steps per millimeter for your machine.

Please ensure to enter these values on each respective axis before Tuning.

Note: This is just a calculator and will not change any settings.

Motion Type:
Microstepping:

Suggested Steps
0

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COMCOM5 | SilicoiRefreshDisconnect

My ToolsCreateSettingsAboutHelp

CNC3D

MachineJob

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Distance: 10 mmDistance: 5 mmKeys / Pad

Speed: 5000 mm/mSpeed: 1000 mm/m

Limit / Trigger Status:
X Y Z A P D F M

Controller Status:
IdleUnlockHold

EMERGENCY STOP

Run jobData LogMacrosOffsetsProfilesMeasurementsAxesPeripheralsArcsOperationConnections/ESP32

Manage connections / ESP32 features

This section applies to our NighthawkCNC / ESP32 controllers, You can configure your Wifi and Bluetooth options here and set controller specific options for certain ESP32 controllers like microstepping and motor current.
[Click here to learn more about our Nighthawk CNC controllers](#)

ConnectionsCurrent/Microstepping

Please note: this section does NOT apply to the Nighthawk controller. It is designed for other ESP32 controllers that use programmable drivers.

Microstepping	Motor current (Run)	Motor current (Idle)	Stallguard
X: 1/16	X: 0.25	X: 0.13	X: 16.00
Y: 1/16	Y: 0.25	Y: 0.13	Y: 16.00
Z: 1/16	Z: 0.25	Z: 0.13	Z: 16.00
A: 1/16	A: 0.25	A: 0.13	A: 16.00

Update driver settings

CNC3D Commander | Connected.. NighthawkCNC 2.2 (4 Axis)

COM COM5 | Silicoi Refresh Disconnect

My Tools Create Settings About Help

Machine Job

X 10.000 10.000
Y -10.000 -10.000
Z 0.000 0.000

F 0 R 0 G G91 S OFF O G54 B -

Home Machine Go to Zero (XY) Set Job Zero Job

Y+ Z+ My Buttons
X- X+ Probing
Y- Z- Coolant Flood
Coolant Mist

Distance: 10 mm Distance: 5 mm ☐ Keys / Pad
Speed: 5000 mm/m Speed: 1000 mm/m

EMERGENCY STOP

Limit / Trigger Status:
X Y Z A P D F M
Controller Status:
Idle Unlock Hold

Run job Data Log Macros Offsets Profiles Measurements Axes Peripherals Arcs Operation Connections/ESP32

Manage connections / ESP32 features
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Connections Current/Microstepping

Wireless connectivity: Wifi - Connect to existing network

Wireless Settings Protocol Settings Bluetooth

Host Settings
Hostname: NighthawkCNC
Video Tutorial
☐ Relevant options only

Wifi (Access Point) Settings
SSID: NighthawkCNC IP Address: 192.168.0.1
Pass: Channel: 1
☐ Show Password
For security reasons passwords can only be reset, not retrieved.
Leave these fields blank if you do not want to reset the passwords.

Wifi - (Station) Settings
SSID: CNC3D IP Address: 192.168.20.155
Pass: Subnet: 255.255.255.0
☐ Show Password Gateway: 192.168.20.1 Mode: STATIC
Show Wifi List
Wifi Wizard

Update Connection settings

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My Tools Create Settings About Help

Machine Job

X 10.000 10.000
Y -10.000 -10.000
Z 0.000 0.000

F 0 R 0 G G91 S OFF O G54 B -

Home Machine Go to Zero (XY) Set Job Zero Job

Y+ Z+ My Buttons
X- X+ Probing
Y- Z- Coolant Flood
Coolant Mist


Distance: 10 mm Distance: 5 mm ☐ Keys / Pad
Speed: 5000 mm/m Speed: 1000 mm/m

EMERGENCY STOP

Limit / Trigger Status:
X Y Z A P D F M
Controller Status:
Idle Unlock Hold

Run job Data Log Macros Offsets Profiles Measurements Axes Peripherals Arcs Operation Connections/ESP32

Axis direction
Change your CNC axis direction settings for easy use with a variety of software packages like Easel. Please see the diagram below of the ideal orientation your axes should travel in.



☐ Invert Y axis
☒ Invert X axis
☐ Invert Z axis

Update Axis direction

Axis acceleration and maximums
Fine tune the acceleration and set the maximum speed of each axis for optimal performance.

Y Axis
Acceleration: 150 mm/m²
Max speed: 2400 mm/m

X Axis
Acceleration: 150 mm/m²
Max speed: 2400 mm/m

Z Axis
Acceleration: 150 mm/m²
Max speed: 1500 mm/m

Update acceleration and maximums

CNC3D Commander | Connected.. NighthawkCNC 2.2 (4 Axis)

COMCOM5 | SilicoRefreshDisconnectMy ToolsCreateSettingsAboutHelpCNC3D

MachineJob

X10.0006.327

Y-10.000-14.499

Z0.0002.500

F0R0G G91S OFFO G54B-

Home MachineGo to Zero (XY)Set JobZero Job

Y+Z+

X-X+

Y-Z-

Distance: 10 mmDistance: 5 mmSpeed: 5000 mm/mSpeed: 1000 mm/m

EMERGENCY STOP

Limit / Trigger Status:

X

Y

Z

A

P

D

F

M

Controller Status:

IdleUnlockHold

Run jobData LogMacrosOffsetsProfilesMeasurementsAxesPeripheralsArcsOperationConnections/ESP32

Data Log

CommandStatus

✓G91 G21 G01 Y-10 F5000MovingAxis

✓G91 G21 G01 X10 F5000MovingAxis

✓G91 G21 G01 Y10 F5000MovingAxis

✓G91 G21 G01 X-10 F5000MovingAxis

✓G91 G21 G01 X10 F5000MovingAxis

✓G91 G21 G01 Z5 F1000MovingAxis

✓G91 G21 G01 Z-5 F1000MovingAxis

✓G91 G21 G01 X10 F5000MovingAxis

✓G91 G21 G01 X-10 F5000MovingAxis

✓G91 G21 G01 Y-10 F5000MovingAxis

PauseClearExport

CNC3D Commander | Connected.. NighthawkCNC 2.2 (4 Axis)

COMCOM5 | SilicoRefreshDisconnectMy ToolsCreateSettingsAboutHelpCNC3D

MachineJob

X10.00010.000

Y-10.000-10.000

Z0.0000.000

F0R0G G91S OFFO G54B-

Home MachineGo to Zero (XY)Set JobZero Job

Y+Z+

X-X+

Y-Z-

Distance: 10 mmDistance: 5 mmSpeed: 5000 mm/mSpeed: 1000 mm/m

EMERGENCY STOP

Limit / Trigger Status:

X

Y

Z

A

P

D

F

M

Controller Status:

IdleUnlockHold

Run jobData LogMacrosOffsetsProfilesMeasurementsAxesPeripheralsArcsOperationConnections/ESP32

Junction deviation

Junction deviation is used by the acceleration manager to determine how fast it can move through line segment junctions of a G-code program path. For example, if the G-code path has a sharp 10 degree turn coming up and the machine is moving at full speed, this setting helps determine how much the machine needs to slow down to safely go through the corner without losing steps.

[More info on Junction deviation](#)

Junction deviation: 0.010 mm

Arc tolerance

Grb1 renders circles, arcs, and helices by subdividing them into teeny tiny lines, such that the arc tracing accuracy is never below this value. You will probably never need to adjust this setting, since 0.002mm is well below the accuracy of most all CNC machines.

[More info on Arc tolerance](#)

Arc Tolerance: 0.002 mm

Update cornering settings

An easy endmill management system to track your suppliers and feeds & speeds for specific tools.
To start, click "New Toolbox" to add a new Toolbox and add a Toolset to add a Tool to.

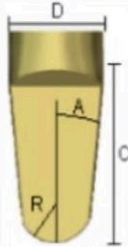
Close

New Toolbox

Import Toolbox

- [-] CNC3D TurboCut
 - + 2F Straight cut (Timers / Foams)
 - + "V" Carving bit
 - [-] Tapered ballnose endmills
 - 0.25mm (Timbers)
 - 0.5mm (Timbers)
 - 0.75mm (Timbers)
 - 1mm (Timbers)
 - 1.5mm (Timbers)
 - 2mm (Timbers)
 - + 1F UpCut (Aluminium & Brass)
 - + 1F UpCut (Plastics)
 - + 1F & 2F DownCut (Timbers)
 - + 1F Compression (Timbers)
 - + 1F "V" engraving
 - + 2F "V" engraving
 - + 4F Roughing (Alloys)
 - + 2F Spiral ballnose

Tapered BN



Description: 0.5mm (Timbers)

Tool #: 1

URL link: <https://www.cnc3d.com.au/product-pag> GO!

Unit: mm/min

Diam (D): 4.000

Rate unit: inches

Step Down: 0.500

Feed rate: 2500

Step Over: 7 %

Plunge rate: 1000

Spindle RPM: 24000

Angle (A): 5.700

Radius (R): 0.500

Cut length (C): 15.503

Notes:

PLEASE NOTE: The settings provided here are conservative and indicative only in order to accomodate our entire machine range. You may wish to adjust any values to suit your machine.

Delete

Update