

Mach3 Control Board Troubleshooting Guidance

This document works for Mach3 software-based controller such as NVCM/NVUM_SP/NVUM/NVEM/UC300/EC300/EC500. The purpose of this document is to assist in troubleshooting to determine the problem when a Mach3 control board is not working.

1.0 Power on

NVCM/NVUM_SP/NVUM/UC300. These controllers only available to power by USB interface. Some Mach3 controller can be connected to a 24V DC power. In order for the controller to be recognised 24V power supply needs to be connected to the voltage terminals of the controller.

It is best to use a power supply with current indication if possible.

Check whether your controller is overheated when power on.

USB Powered	Controller board is hot over 40° C	Hardware issue, check the overheated position, mark it and feedback to supplier.
	Controller board is under 40° C	Hardware is OK, go to next step
24V DC Powered	Controller board is hot over 40°	Hardware issue, check the overheated position, mark it and feedback to supplier.
	Controller board is under 40°	Hardware is OK, go to next step
	The current of the 24V PSU over 0.3A	Maybe hardware issue
	The current of the 24V PSU under 0.3A	Hardware is OK, go to next step

2.0 Connect to computer

Connect the controller board to the computer via the USB interface.

The USB controller boards use the HID universal driver, it can be recognized as an HID device without installing additional drivers.

At this point, we only need to open the windows device manager and expand the HID device tree. There are many HID devices on each computer, such as keyboards and mice etc. To determine which HID is our "USB Mach3 Controller", we can check the changes in the HID device tree while connecting and disconnecting the "USB Mach3 Controller".

Image 1. HID Device Tree

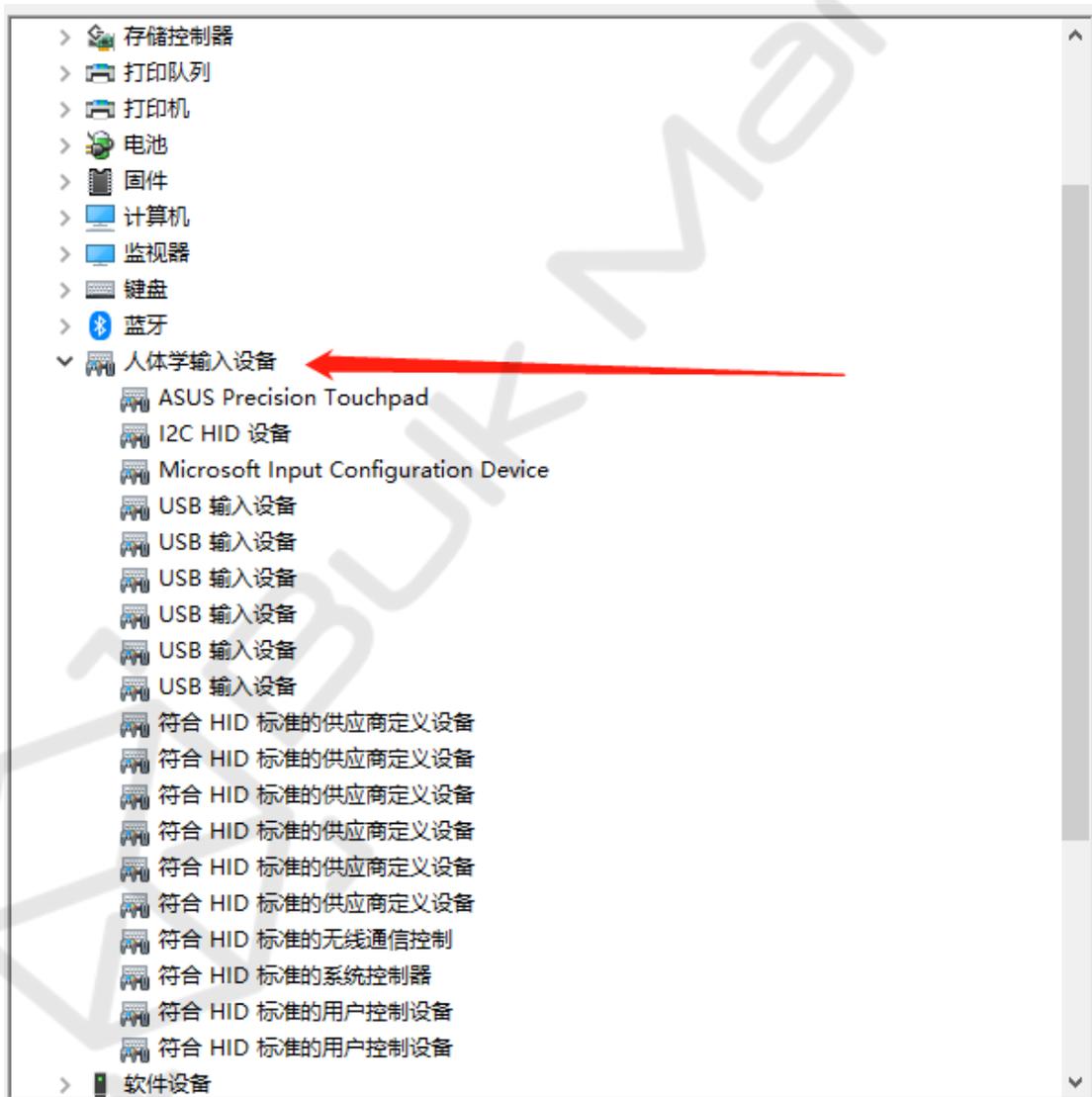
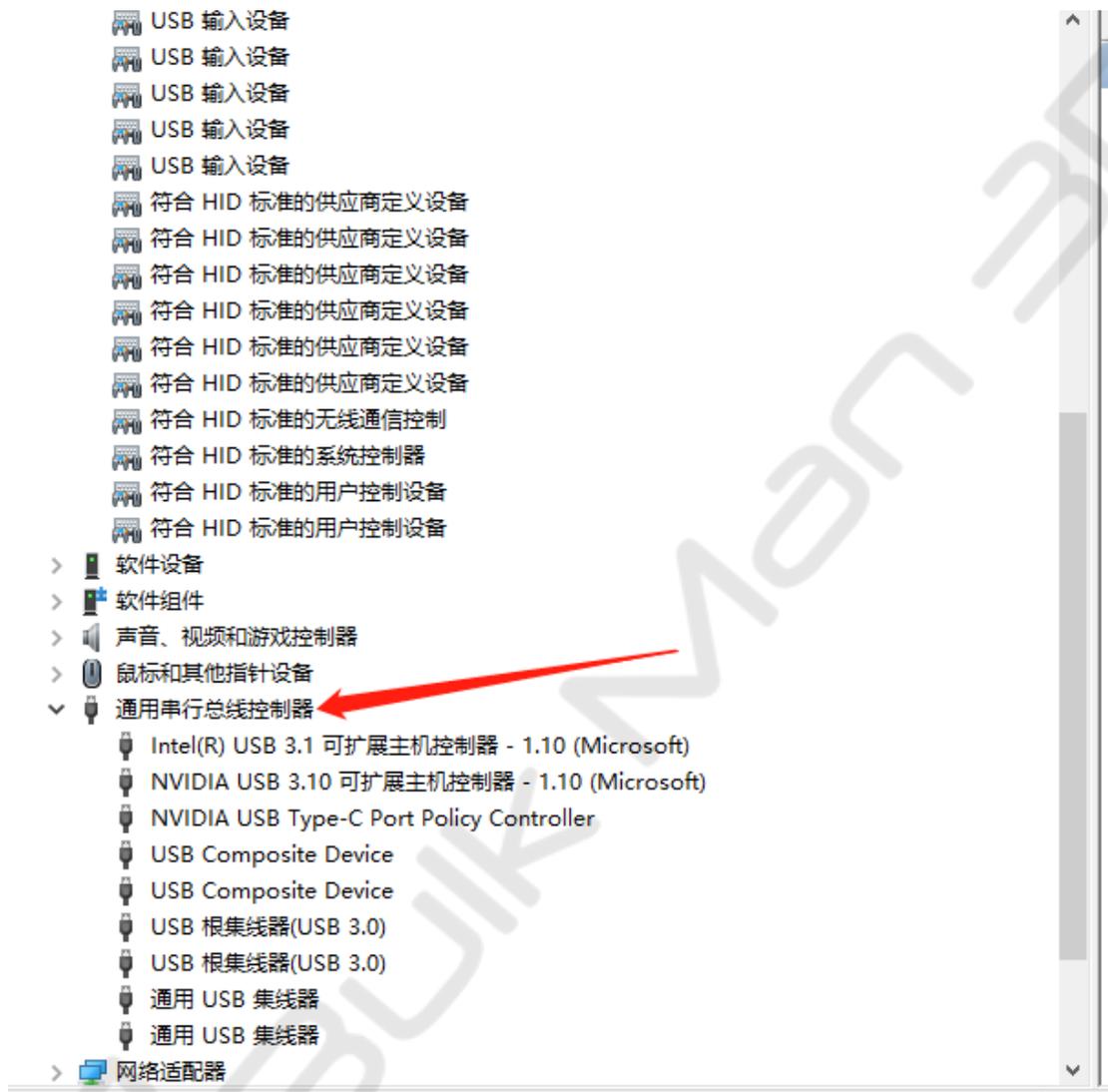


Image 2. Universal Serial Bus Controller



Connect "USB Mach3"	One more HID appear on HID Tree	"USB Mach3" device can be correctly identified
	No changes on computer	"USB Mach3" device cannot be identified Hardware issue or your computer is not compatible
	Expand the "Universal Serial Bus Controller", if you see an exclamation mark under it then there is an error with the port or device.	"USB Mach3" device cannot be identified Probably Hardware issue
Disconnect "USB Mach3"	A HID is missing from the HID Tree	"USB Mach3" device can be correctly identified
	No changes on computer	"USB Mach3" device cannot be identified Hardware issue or your computer is not compatible

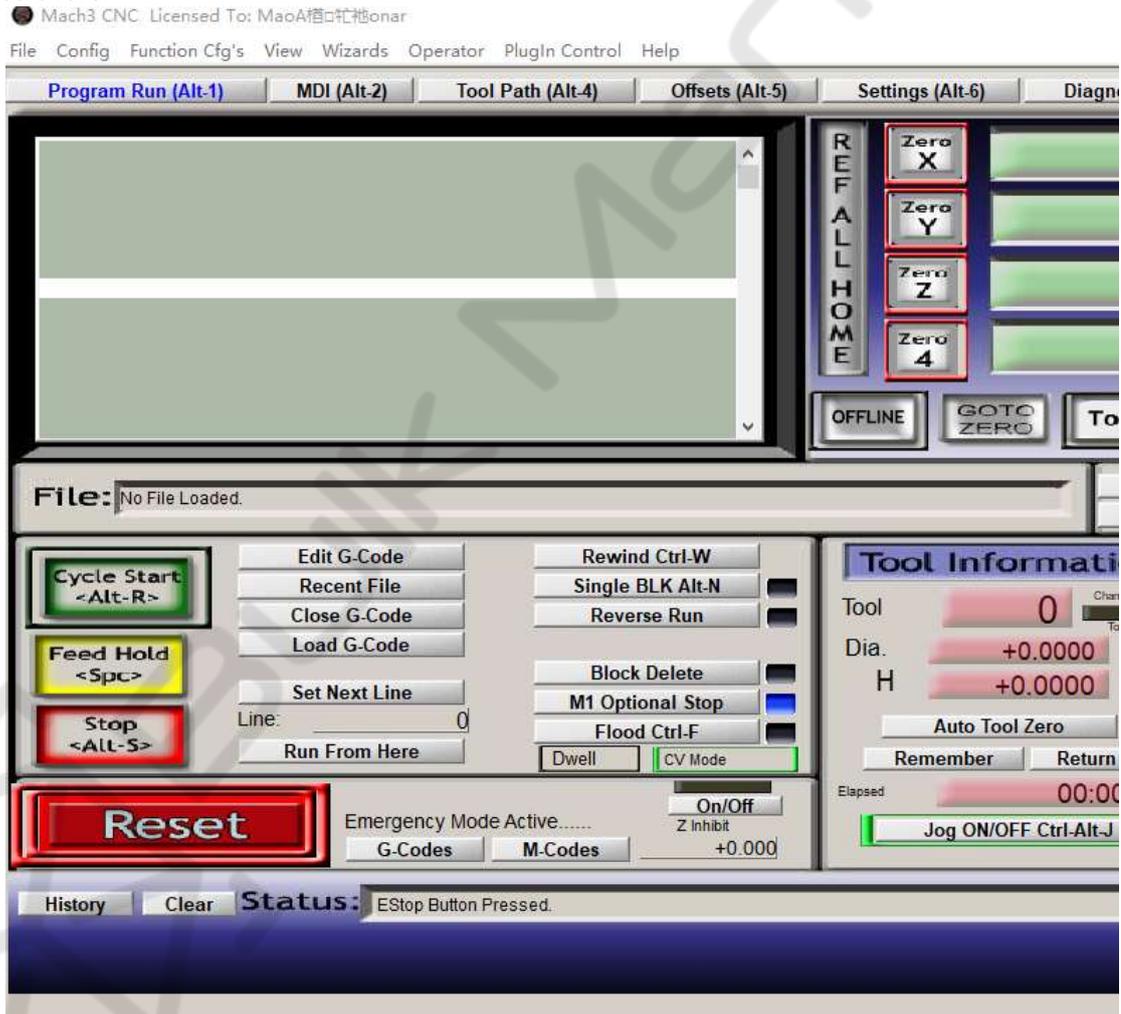
To determine whether your controller board is faulty, the inspection in this step is crucial.

3.0 Mach3 Software Detection

You must download the Mach3 plugin and extract the zip file so that you obtain the dll file. Then move the dll file to your Mach3 folder, typically this is C:/Mach3/. You can find the plugin file on our resources page (<https://bulkman3d.com/resources/>)

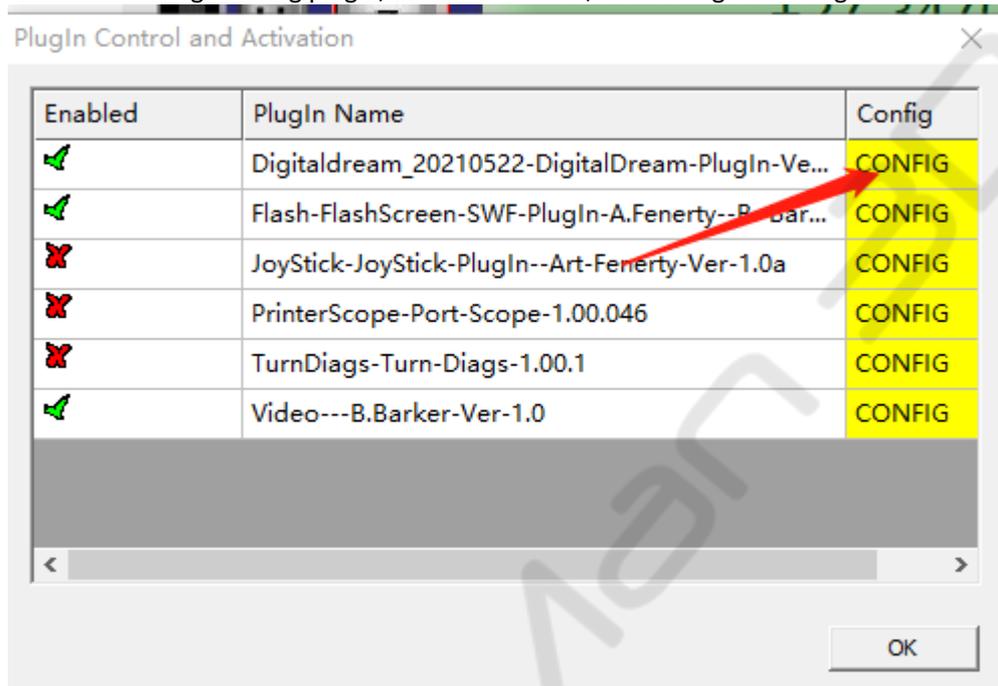
Open the Mach3 software after copying the dll file to the plugin folder.

1. EC300 / **UC300** / EC500 these three models have connection link indicator lights. After opening Mach3, the link indicator light will come on, after closing Mach3 link light will go off. If there is no change to the link indicator light check the plugin file is in the Mach3 folder.
2. When you open Mach3, ensure the "Reset" button is not engaged. Disconnect your controller board and then connect it to computer again, the "Reset" button will be engaged automatically (see below on pic 5). If there is no such change, change your computer or reinstall the mach3 software.



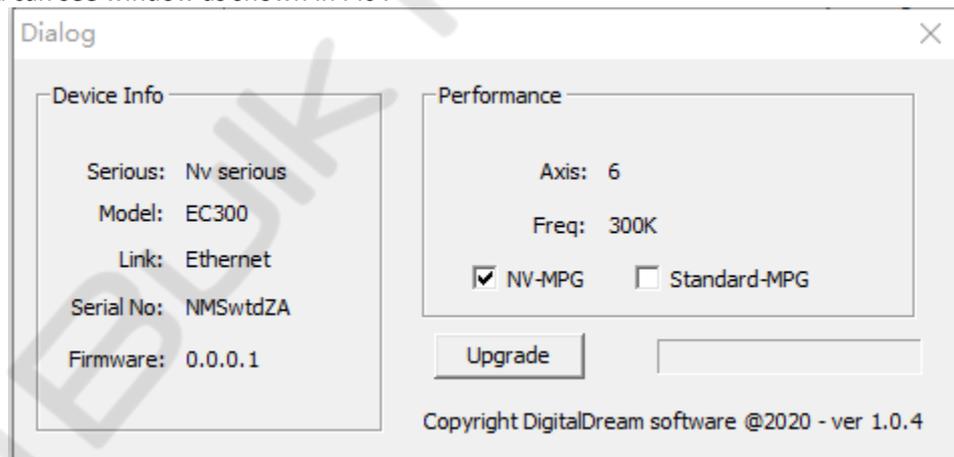
Pic 5. Disconnect and then connect the device, "Reset" button will be engaged

3. Open the menu config-> config plugin, as shown in Pic 6, click config beside digital dream.



Pic 6 plugin config

4. Then you can see window as shown in Pic 7

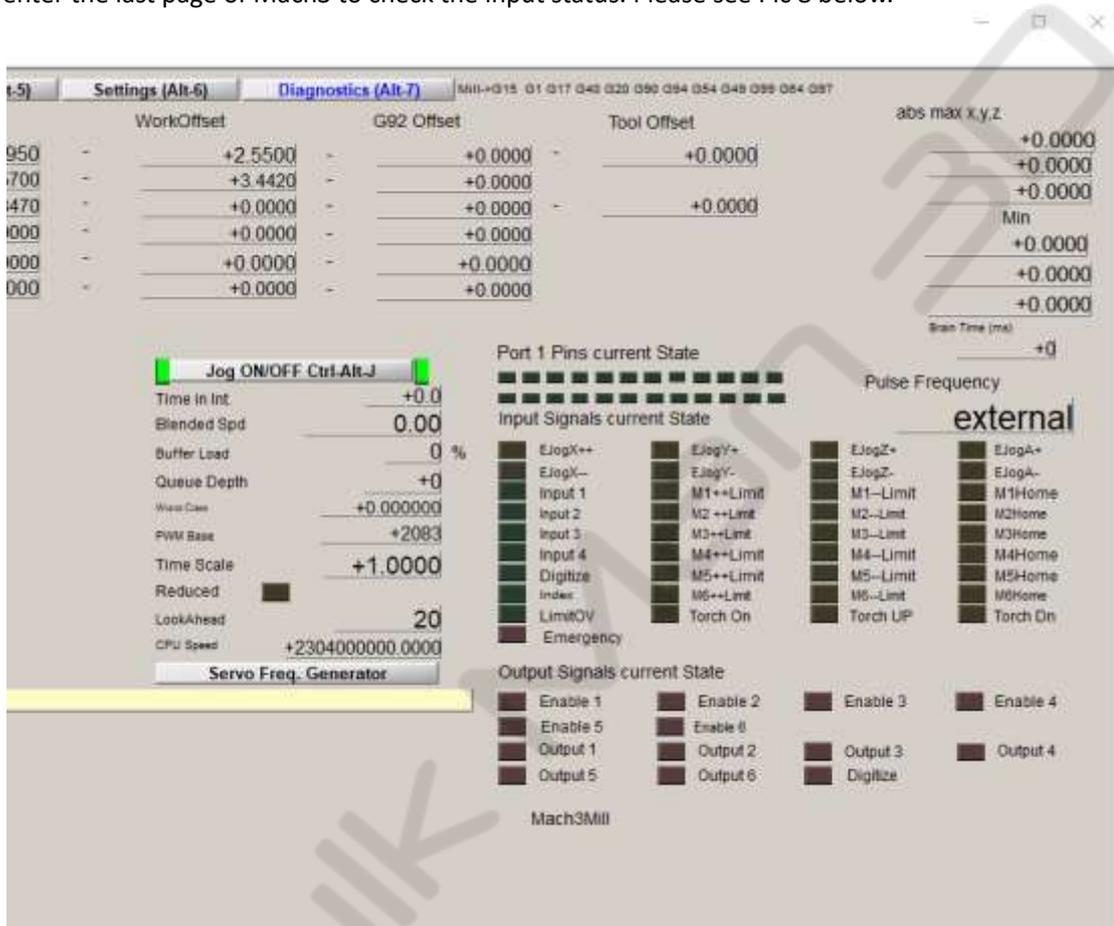


Pic 7 config

If the controller board is working properly, it will display information such as model, link, serial NO., axis, maximum frequency etc.

If there is no information displayed, it means the control board does not connect to Mach3 correctly. At this point you need to go back to section 2.0 of this guide for troubleshooting. If it is not a hardware issue, it is most likely that your computer is not compatible or the Mach3 software does not match the controller board, and you will need to reinstall it.

- If all the above tests are normal but your controller board is still not working, please press alt-7 to enter the last page of Mach3 to check the input status. Please see Pic 8 below.



Pic 8 Mach3 input output

If all the above tests are normal but your controller board is still not working, check the colour of "limit" or "emergency" in the diagnostics tab. If they are highlighted this indicates they are engaged. You should adjust the input settings or switch the input switch to ensure these blocks are all black (not engaged), so that the controller board can work normally.

4.0 Summary

- Check the temperature of your controller board and the current when power on.
- Check whether the computer/windows can recognize the device
- Check whether the computer/windows can recognize the device with "Mach3 plugin-config" (Pic 6)
- Check IO Setting

UC300 and NVUM are produced and programmed by the same manufacturer. If after following this troubleshooting guide your controller board is still not recognised by the computer, please email one of the following for escalated technical support:

For NVUM: 729816532@qq.com

For UC300: sky@ddcnc.com or info@ddcnc.com