

Xbox360 Controller Plugin

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The Xbox360Controller plugin is designed for the Xbox360 wired and wireless controllers. The Xbox360 controller works on XP SP1 (or greater), Vista and Windows7.

The wireless controller communicates with the pc by using a small "Microsoft Xbox360 Wireless Receiver For Windows" that plugs into the USB port on pc. You cannot use the USB charging cable that comes with some Wireless controllers. That is for charging only and does not pass any signals to the pc.

The plugin currently supports the Microsoft Xbox360 Controllers. If you have a different one, you can go to the Config Screen in Mach3 and put in the VendorId and ProductID of your controller. You then have to exit and restart Mach before it will work.

Support has also been added for hardware from ajaxcnc.com by using InSigs[] commands.

Before using the plugin, you should make sure your Controller is recognized by Windows. If you plug the controller in, Windows should say "found Xbox360 controller". If so, then you should see 1 green light in the upper left quadrant of the large button in the center of the controller. This means Windows found it and installed it as the first controller. If you get a "found new hardware" message then you have 2 choices.

1. You can let Windows go out on the Internet and find the drivers (it will find them) or
2. Cancel, disconnect the controller, and then go download the drivers and install them. The file you need is "Xbox360_32Eng.exe" from Microsoft's web site. Then reconnect the controller and Windows should recognize it.

The plugin requires that there only be 1 Xbox360 controller and that it is the first one (Green light upper left quadrant). The plugin goes in the \Mach3\Plugins folder.

When you start Mach, if Mach cannot see an Xbox360 controller, you will get a startup message to that effect. You need to fix that problem first. Once it is fixed, Mach should start with no message. When you go to the Config plugins page, you may see the Xbox360Controller plugin with a red X in front of it. Click it to enable it. You will then get a message saying that the Controller is not available. That just means you have to exit Mach and restart it before the Controller will work. It checks a number of things on startup and you can't just enable it in the middle of Mach and have it work. When you are on the Config plugins page and receive the message, you can still go to

the Controller page and pick all the options that you want and save them. Then leave Mach and restart it.

If you get an error message such as file not found when you start Mach, then you may need to download the Nov2007 (or later) DirectX SDK. It will upgrade your pc to DirectX 9.0C and will install some Xbox360 header files. You can run "DXDIAG" from the "Run" choice in "Start". That will tell you what version of DirectX you have. If you are below 9.0C, you should install the SDK. It is called "directx_nov2007_redist.exe". It is available on Microsoft's website. The process for installing the SDK is to start the exe and let it unzip to a folder such as C:\Temp\SDK. When it is done, go to the folder and run the setup exe. It will install the DirectX files necessary to upgrade your pc to DirectX 9.0C. When it is done, you can erase the folder where you unzipped it (such as C:\Temp\SDK). If you are at 9.0C and are still receiving the error message, then go ahead and install the Nov2007 DirectX SDK.

When you are on the Config page of the plugin, you should see a grey box that shows you what controller the plugin sees. You may find that helpful.

The Config page allows you to assign a number of options to the various buttons. You can also assign whichever axis you want to the Thumbsticks. The ThumbPad (next to the left Thumbstick) is Incremental jog for the left Thumbstick. If you want to Incremental jog the right Thumbstick then you have to assign that to the buttons.

When you are using the Controller, if the batteries get too low or the Controller becomes disconnected, it will be disabled. You will have to exit Mach, fix the problem and restart Mach.

The triggers on the lower front are set to increase Jog speed when used with the Thumbsticks. For example, if you are jogging with one of the Thumbsticks and then press either (not both) trigger, the jog speed will increase depending upon how much you pull the trigger. The left trigger works in conjunction with the left Thumbstick and the right trigger works with the right Thumbstick. You will only see the jog speed increase if you have set the Slow Jog Rate to less than 100%.

If you select "Enable Triggers As Safety Switch" then the triggers act as a safety switch. They no longer work as Jog Override. When they are operating as Safety Switches, you have to press and hold either trigger while operating any other switch or button to make the button or switch work.

The 2 Thumbsticks control Axis movement and you can assign them to any axis you want. If you select the Reverse Direction checkbox then the Thumbsticks will move in the opposite direction for the default. The Reverse direction is designed to be used for machines where the head moves instead of the table such as Plasma cutters or CNC routers.

The ThumbPad (next to the left Thumbstick) is Incremental jog for the left Thumbstick. If you want to Incremental jog the right Thumbstick then you have to assign that to one of the buttons.

Functionality added in 2.3.3 changed the way the Controller handled jogging. The following is a description of the new way of jogging.

Mach in the Step Jog mode:

Thumbsticks will be in the Step Jog mode. Pressing Center Push Down switches on thumbsticks has no effect except that it will be remembered and when you shift to Cont mode in Mach then the thumbstick will jog accordingly.

Mach is in the Cont Jog mode:

1. If no Center Push Down Switches on thumbsticks have been pressed then thumbsticks will be in Cont Jog mode
2. If one (or both) of the Center Push down switches have been pressed then that thumbstick(s) will be in the Step Jog mode

This may seem a bit confusing at first. If you decide to use the Center Push Down switches, you would normally leave Mach in the Cont Jog Mode.

Example: You move in on your work quickly by using the thumbstick. When you get close to your work, you press the Center Push Down switch to shift into the Step Jog Mode and use the thumbstick to step jog into the work. When you are done cutting you then press the Center Push Down switch to change back to Cont Jog mode and rapid back out of the work.

The version 2.1 and higher includes support for the Smooth Stepper from Warp9 (www.warp9td.com).

The version 2.2 adds the following:

- a. Ability to disable diagonal movement of the axes with the thumbstick.
- b. Ability to use the RefAll Home key with the Smooth Stepper.
- c. Allows Wireless Controller to go into and out of sleep mode without requiring restart of Mach

Version 2.3 added the following:

- a. Added support for additional ProductIDs. See list earlier in the document.
- b. Tied all ProductIDs to grey box on Config page. The proper type should now show in the grey box.
- c. Enabled Custom Macros and OEM Codes.

Version 2.3.3 made the following changes:

- a. The 2nd box down on the left side of the Config screen was renamed from "Custom Macro #1" to "Custom Macro #2". The box worked properly. It was just named incorrectly.
- b. The key assignment of "Jog Mode Inc/Cont/MPG" was renamed to "Jog Mode Inc/Cont" and made to work better with the joysticks.
- c. The thumbsticks center push down switch was implemented and assigned to shift each thumbstick in and out of jog mode.
- d. Added better support for B and C axis assignments to thumbsticks.

Version 2.3.4 and 2.3.5 (2.3.4 was only for selected few for testing) made the following changes:

- a. Support was added for hardware from AjaxCNC.Com by adding InSigs[] commands.
- b. Support added for MadCatz GamePad.
- c. Fixed problem with Incremental Jogging via thumbstick not working correctly when Reverse direction is set on the Config screen.

Version 2.3.7 added the following:

- a. VendorId and ProductId support was moved from being hard coded internally to being 2 fields on the Config Screen that you fill in.
- b. "Enable Triggers As Safety Switch" was added. This allows you to set the controller so that you have to press one of the triggers while operating any other button or control.
- c. If you set one of the buttons to "Lock/Unlock Controller" , when you press the button to Unlock the controller, it will give you a short rumble to let you know the controller is again active.

Version 2.3.8 fixed the following problem:

- a. If you are moving an axis with the controller thumbsticks and the controller loses connection with the computer (green light on center globe goes out), then Mach will continue the movement. Connection can be lost if 1. The controller or receiver becomes disconnected, 2. the batteries get too low, 3. The wireless controller moves out of range of the receiver. This new version will stop all movement that was started by the controller if it becomes disconnected.

Version 2.3.9 added the following:

- a. The following button options : Macro-XBtn1, Macro-XBtn2, Macro-XBtn3, Macro-XBtn4, Macro-XBtn5, Macro-XBtn6, Macro-XBtn7, and Macro-XBtn8
You can write a macro and name it "Macro-XBtn1.mls" or "Macro-XBtn2.mls" and so on. You would then save it in the Macros folder. You would then assign the Xbox controller button to the macro name. When Mach3 is running, you would press the button and the macro would run. This

requires a fairly current version of macro. This functionality was not implemented in earlier versions. This tends to work better than the Custom Macro #1 and #2 options that previously existed. The Custom Macro choices are still available as button choices.

Custom Macro choice and how to use:

Write a custom Macro and put it in the \Macros folder (or the subfolder under Macros). A custom Macro may be written in Notepad. A simple example would be

Code "G00 z0.0"

Code "G00 X0 Y0"

The Macro needs to be saved with a name such as M798.m1s. The 798 may be any acceptable unused number. I would suggest something in the 700 – 799 range. You would then start Mach and go to the Config plugins page and select "Config" for the Xbox360 Controller. You may now select a button of your choice and assign it to "Custom Macro #1" (or #2) and put the number in the "Custom Macro # 1" box or ("Custom Macro #2" box). You enter the number without the M or .m1s. In the example above, you would enter 798.

The following items are not available:

1. Large silver button in the center of the controller. That is not available to the pc
2. Audio

Hopefully, you will find this plugin useful.