ASI Gamepad

This page is deprecated; the new home of this documentation is https://micro-manager.org/wiki/ASI_Gamepad_Plugin

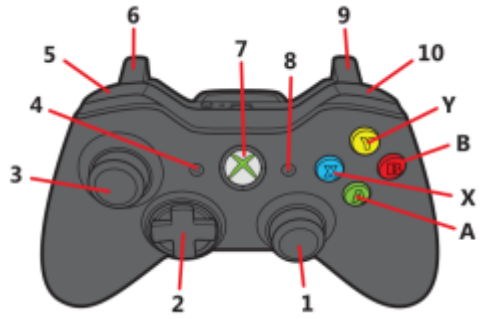
ASI Gamepad is a Micro-Manager plugin that adds support for an XBox Gamepad. It lets users assign device properties to thumb sticks and Beanshell scripts to button presses. It is part of Micro-Manager 1.4.x builds as of 24-Oct-2018 and can be found in the menu Plugins > Device Control > ASI Gamepad. To our knowledge it has not yet been ported to MM 2.0; any help doing so would be greatly appreciated.

ASI Gamepad

Requirements

- Micro-Manager 1.4.x as of 24-Oct-2018 or later
- OS Windows 7 and above
- Xbox One controller (tested) or XBox 360 controller (not tested)

Gamepad Layout

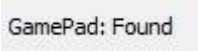


XBox gamepad layout

1. Right Thumbstick X/Y
2. Directional pad or DPAD
3. Left Thumbstick X/Y
4. Back button
5. Left shoulder button
6. Left trigger
7. Home button
8. Start button
9. Right trigger
10. Right shoulder button
11. Y,B,A,X buttons

Plugin GUI explained

Gamepad Status



Gamepad status

The controller/gamepad isn't added thru the hardware config wizard , instead the plugin when launched looks for it. Then it displays the message “GamePad:NOT Found”,“..FOUND”,“..Connecting” and “..Error Connecting” accordingly.

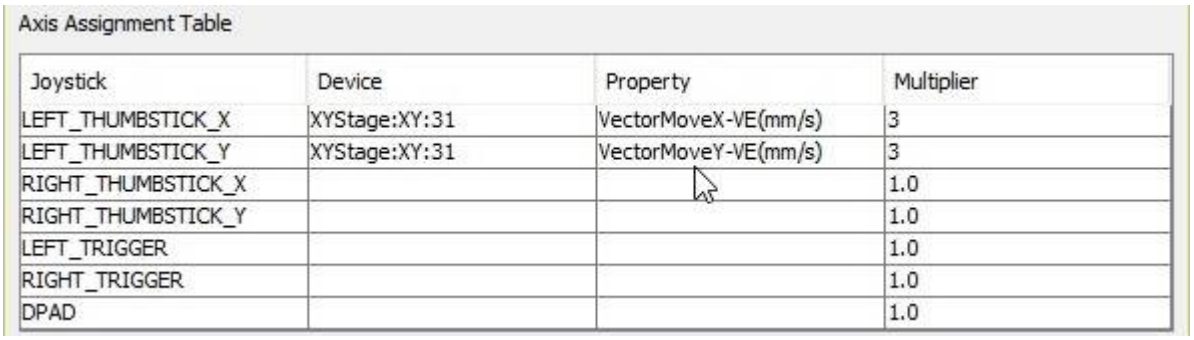
If you already have the gamepad paired, press the HOME button. The button lights up, blinks a few times and once its connected to the PC it glows solid. Moments later the plugin will update the status to “GamePad:Found”

Save and Load Buttons

Save and Load button

The button and joystick assignments aren't automatically saved by the plugin between session , so use these buttons to save and load all thumb stick and button assignments.

Axis Assignment Table



Axis Assignment Table

Joystick	Device	Property	Multiplier
LEFT_THUMBSTICK_X	XYStage:XY:31	VectorMoveX-VE(mm/s)	3
LEFT_THUMBSTICK_Y	XYStage:XY:31	VectorMoveY-VE(mm/s)	3
RIGHT_THUMBSTICK_X			1.0
RIGHT_THUMBSTICK_Y			1.0
LEFT_TRIGGER			1.0
RIGHT_TRIGGER			1.0
DPAD			1.0

Axis assignment tbale

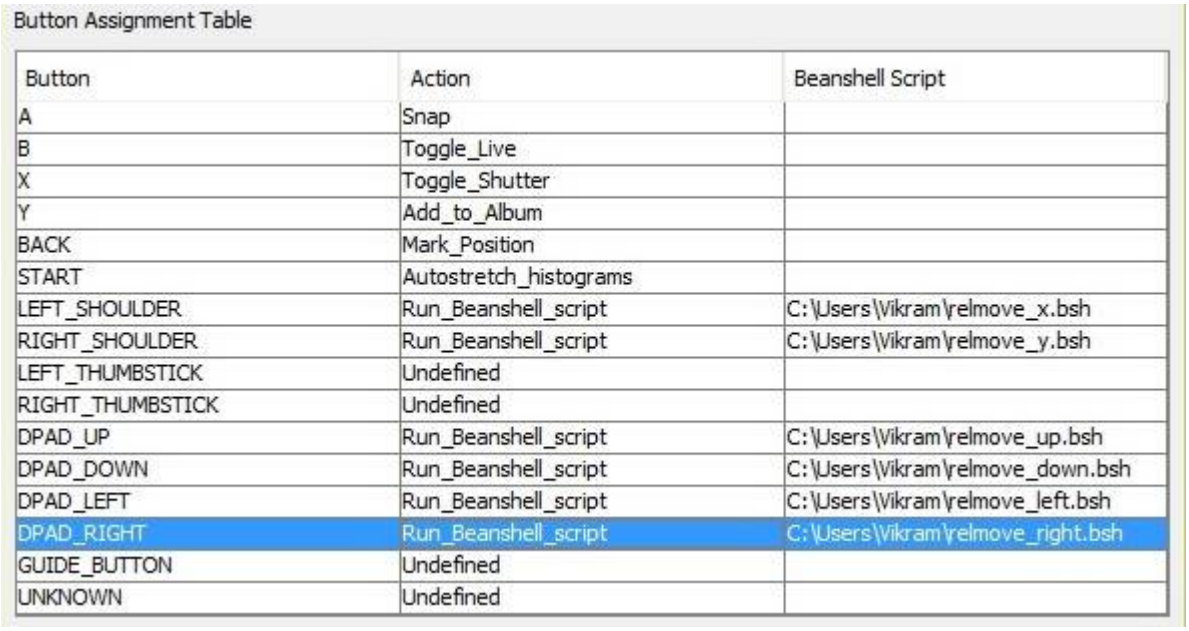
Axes are analog controls on the gamepad.

- The Two thumb sticks return a decimal point value between +1 to -1.The thumb sticks also have two axis each X and Y.
- The triggers return a decimal point value between 0 to +1.
- The DPAD can be read both as a button or axis , it returns a value of “-1” when not pressed. “1” when Up is pressed, “3” when right is pressed, “5” when down is pressed and “7” when left is pressed.

Using the axis assignment table user can pick a device and device property that is adjusted when the axis is moved.

A common use of these controls is to move a stage. For this assign the axis to a stage's vector move property. In the case of an ASI's XYstage the property “VectorMoveX-VE(mm/s)” and “VectorMoveY-VE(mm/s)” are appropriate. They accept input in mm/sec and typical max value for the property is 4-5mm/sec. So here the multiplier column comes handy, when a multiplier of 3 is picked. Then the thumbstick deflection which varies from +1 to -1 , turns into +3 to -3 , and when applied to the device property , the stage will move +3 mm/sec to -3 mm/sec.

Button Assignment Table



Button Assignment Table

Button	Action	Beanshell Script
A	Snap	
B	Toggle_Live	
X	Toggle_Shutter	
Y	Add_to_Album	
BACK	Mark_Position	
START	Autostretch_histograms	
LEFT_SHOULDER	Run_Beanshell_script	C:\Users\Vikram\relmove_x.bsh
RIGHT_SHOULDER	Run_Beanshell_script	C:\Users\Vikram\relmove_y.bsh
LEFT_THUMBSTICK	Undefined	
RIGHT_THUMBSTICK	Undefined	
DPAD_UP	Run_Beanshell_script	C:\Users\Vikram\relmove_up.bsh
DPAD_DOWN	Run_Beanshell_script	C:\Users\Vikram\relmove_down.bsh
DPAD_LEFT	Run_Beanshell_script	C:\Users\Vikram\relmove_left.bsh
DPAD_RIGHT	Run_Beanshell_script	C:\Users\Vikram\relmove_right.bsh
GUIDE_BUTTON	Undefined	
UNKNOWN	Undefined	

Button assignment table

Unlike the axes controls, buttons have only two states, pressed or unpressed. The Action column of the Button assignment table lets user pick from a list of predefined actions (like Snap, Live view toggle etc) or “Run_Beanshell_script” to specify a beanshell script to be run on the button press. The path to the script is specified with the 3rd column. Clicking on it displays a File Chooser dialog box and user can navigate and pick the script to run.

A common way to setup the DPAD would be to move a stage on presses. For this make 4 different beanshell scripts with the following codes `gui.setRelativeXYStagePosition(X# in um,Y# in um);` each with a different move and assign them to the DPAD buttons like this:

```
gui.setRelativeXYStagePosition(1000,0);

gui.setRelativeXYStagePosition(-1000,0);

gui.setRelativeXYStagePosition(0,1000);

gui.setRelativeXYStagePosition(0,-1000);
```

For example scripts click here

Source code

Source code is under the BSD license and can be found at https://valelab4.ucsf.edu/trac/micromanager/browser/plugins/Gamepad/src/com/asiimaging/asi_gamepad.

software, micromanager, gamepad