

# Python MCU

Mackie Host Controller written in Python

© 2011 [Martin Zuther](#)

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# 1 Mackie Control

**Mackie Control** (abbreviated to MCU), its predecessor **Logic Control** and their respective extension units (**XT**) are control surfaces that use a proprietary MIDI protocol to control digital audio workstations (DAWs), especially their mixing sections. However, these control surfaces have two drawbacks: they are definitely not cheap and require quite a bit of space. If these are no restrictions to you, by all means go and try them.

If, on the other hand, you have a certain lack of money or available space (or you have a controller that is simply too good to be exchanged for an MCU), you might have found just the application you need. It might not support your MIDI hardware controller yet, but if you know a bit of **Python** (or a programmer who does) it should be pretty easy to change that.

## 2 Installation

Download and install the latest version of [Python 2.6](#) on your computer. As of December 2011, there is no Python 2.6.7 installer for Microsoft Windows. Users of this operating system should download [Python 2.6.6](#), instead.

Please also download and install these libraries:

- [PySide](#) (version 1.0.5 or above)
- [pygame](#) (version 1.9.1 or above; please note that pygame's MIDI implementation is still in its infancy and may thus occasionally crash **Python MCU**)

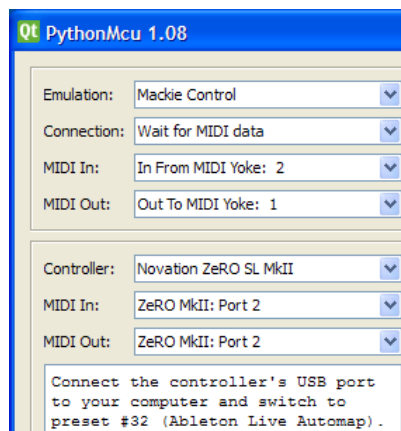
You'll also need virtual MIDI ports or cables to connect **Python MCU** to your DAW and hardware controller. I have successfully used **MidiYoke NT** (Microsoft Windows) and **JACK** (GNU/Linux), but others may work just as well.

When you're done, open the directory `src` with your file manager and run the application by double-clicking on the file `PythonMcu.py`. To get rid of the annoying console window on Microsoft Windows, try double-clicking on `PythonMcu.pyw`, instead.

# 3 Running Python MCU

Here's a word of warning. Although I have taken precautionary steps, there is some inherent risk that your controller might be destroyed by running **Python MCU** (mine was, once, when I was trying to change a lot of code at once). So please read the license in [chapter 8](#) before you run **Python MCU**, especially the sections *Disclaimer of Warranty* and *Limitation of Liability*.

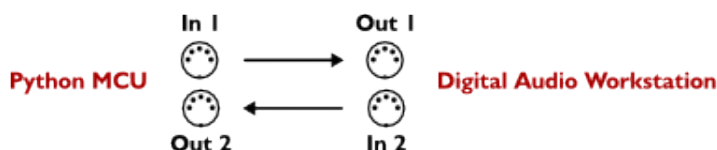
That being said, here's how to set up **Python MCU**...



**Emulation:** Choose between “Logic Control” and “Mackie Control”. The latter should be fine for most current DAWs. The extension units “Logic Control XT” and “Mackie Control XT” have been added for completeness, but I don’t think you’ll ever need them.

**Connection:** Defaults to “Challenge / Response” for “Logic Control” and “Wait for MIDI data” for “Mackie Control”. If you’re having trouble connecting to your DAW, try changing this setting.

**MIDI In/Out:** The virtual MIDI cables that connect **Python MCU** to your DAW. I freely admit that it’s not easy to understand the routing of virtual MIDI cables, so I recommend using the first cable to send data from **Python MCU** to your DAW and the second one to send data from your DAW to **Python MCU**:



This way, you can simply look at the screen-shots in this document and set up **Python MCU** and your DAW accordingly.

**Controller:** Select your hardware controller and the MIDI ports it provides or is connected to. There is a text field directly below which might give you some hints on connecting your controller to **Python MCU**.

## 4 Hardware controllers

For the controller assignments of your hardware, please have a look at `doc/Controllers.pdf`.

### 4.1 Novation ZeRO SL MkII

This adaption makes good use of preset #32 (Ableton Live Automap), so you either have to select this preset whenever you want to use **Python MCU** or set it up as your default preset.

Whenever you press the **Automap** button, **Python MCU** temporarily stops to let you do your thing in **Automap**. When you're done, simply press the **Automap** button again.

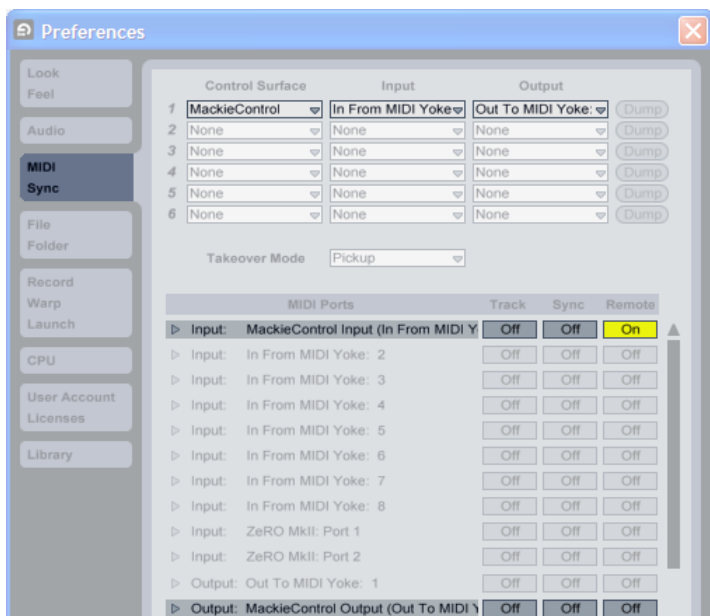
You may also connect a sustain pedal to the “control pedal” input and use it to alternately start and stop playback in your DAW. If it doesn't work, you'll have to change the preset: Edit → Sustain Pedal → Ports: **ComnPORT** and Midi-Chan: **ComnCHAN**. Don't forget to save your changes...



# 5 Digital Audio Workstations

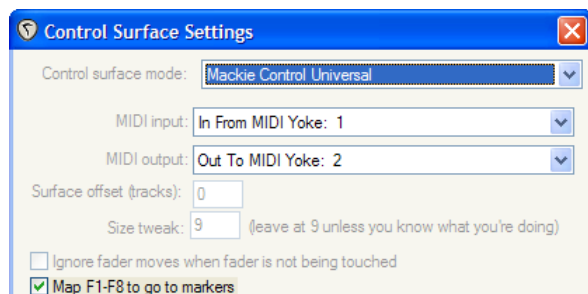
## 5.1 Ableton Live

**Emulation:** Mackie Control (Wait for MIDI data)



## 5.2 Cockos Reaper

**Emulation:** Mackie Control (Wait for MIDI data)



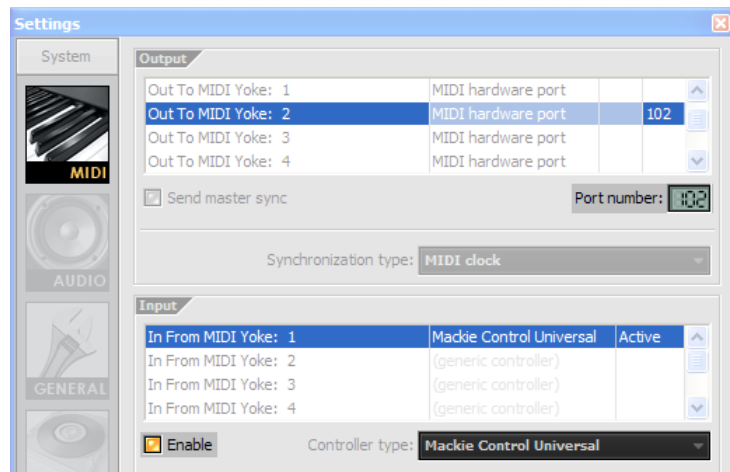
## 5.3 Emagic Logic

**Emulation:** Logic Control (Challenge / Response)



## 5.4 Image-Line FL Studio

**Emulation:** Mackie Control (Wait for MIDI data)



# **6 Tested configurations**

## **6.1 Hardware controllers**

- Novation ZeRO SL MkII

## **6.2 Microsoft Windows XP**

- Ableton Live 8
- Cockos Reaper 4
- Emagic Logic Platinum 5
- Image-Line FL Studio Pro 10

## **6.3 Apple Mac**

I haven't got a Mac, but things should work just as well. Please report working configurations to me. Thanks!

## **6.4 GNU/Linux**

- ardour 2 (*skipped a lot of commands, though*)

# 7 Extending Python MCU

**Python MCU** consists of three parts:

- the **MackieHostControl** class communicates with a connected sequencer using the Mackie Control protocol, translating the raw protocol to something much easier to read and use
- the generalised **MidiControllerTemplate** class and its more specific relatives handle all the details of sending data to and receiving data from your hardware controller, again translating raw protocols to something easier to read and use
- finally, the **McuInterconnector** class connects the **MackieHostControl** and **MidiControllerTemplate** classes (and thus your DAW and hardware controller) with each other

This modular design means that the application happily works away with the irrelevant implementation details being effectively hidden from you. As long as you adhere to the internal protocol, you may easily add your own controller to **Python MCU** by deriving a class from **MidiControllerTemplate**.

If all this means nothing to you, go find yourself a Python programmer (or learn Python yourself, it's rather easy and a lot of fun!). As long as you know the relevant MIDI implementation of your hardware controller and worked out a suitable layout of its buttons and controllers, hooking into **Python MCU** is pretty simple. If you don't believe me, just have a look into the `src/Hardware` directory.

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Version 3, 29 June 2007

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