

# Flux Max4Live Devices & MIDI Setup

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## Installation

Flux should be connected to your PC via the USB port found on the Teensy behind the module or via the USB port of the 3hp USB expander.

## Max4Live Setup

Create a Max4Live folder anywhere on your computer and copy the Flux Max4Live devices into the folder. Open Ableton and select 'User Library' under 'Places'. Drag and drop all Flux Max4Live devices into your user library. To add a Flux device, drag and drop onto a MIDI track header.

*Please note: if you move the folder containing the devices you may need to repeat the procedure.*

Create your setup in Live before powering Flux. Flux will show as 'Flux' in the MIDI IO sections of each Ableton MIDI track.

## Live & Midi Channels

In the current version (11.0.2), each Live MIDI track can output MIDI data on one channel only. The Flux Max4Live devices have been designed modularly so that you can create multiple MIDI tracks to control the various Flux parameters. Any of the devices may be directed at a particular Flux channel by changing the 'MIDI To' parameter on your Ableton MIDI track. Only one device should be used per MIDI track. We suggest creating 4 MIDI tracks per Flux channel; one for the main UI controls and 3 for the modulation devices. The Midi outputs should be set as:

Flux Channel	'MIDI To' Setting (Main UI Device)	'MIDI To' Setting (Modulation Devices)
1	1	5
2	2	6
3	3	7
4	4	8

## MIDI Clock IO

MIDI timing over USB is imperfect due to the protocol's asynchronous design. If using a DAW, you may find that using Flux as the master clock and the DAW as the slave to be a more stable arrangement. We have not tested other setups but timing is stable using a dedicated MIDI clock generator to send clocking data to Flux as a Slave.

In V1.07, Flux sends MIDI Clock out info in internal clock mode and Burst mode. Flux will provide a steady MIDI clock but with MIDI's 24 PPQN, it may take some ticks to stabilise from a cold start depending on how the destination handles USB MIDI timing messages. Flux can sync to MIDI clock in MIDI clock mode.

You may find that decreasing your buffer size in your DAW improves MIDI clock stability if you have issues.

## Jitter Control

With firmware V1.07, Flux offers a parameter to control jitter in fixed BPM sessions. The parameter can be found on the config page (page 3 of the Flux main UI) titled 'JITT'. The 2 options are THRU (allow MIDI clock jitter to pass through to the module) and LOCK (lock the internal BPM calculations at the time of selecting LOCK preventing any MIDI clock inconsistencies from reaching the rhythm calculation algorithms). LOCK is intended to be used in fixed BPM sessions and should be activated when the sequencer is running and steady. Once locked, Flux continues to follow MIDI clock signals for general timing and progression through your sequence's steps. With the BPM calculation locked, the module produces stable and jitter free playback even when the incoming clock is less than ideal. With jitter locked, there is no 'settling time' when starting the sequencer and Flux will immediately playback at the correct BPM rather than taking a few ticks to settle when a start message is received.

*As of V1.07, jitter lock is no longer required for stable playback. The above info has been left for reference purposes. See below:*

Flux now auto stabilizes incoming clock data and will be stable, starting immediately without stabilisation ticks after the first start/stop of the session at a fixed BPM without the user taking any action. JITT is still available for creative purposes. The BPM calculation can be locked while the timing of step progression still references the incoming clock ticks. This allows you to freeze the length in time of a dense curved step (for example) while still having the ability to control the BPM. Triggers pushed outside of the step's limits using this method will be truncated.

## General Considerations

Flux provides thousands of MIDI destinations. There exists the potential for a huge amount of data to be travelling to the module from your MIDI device. If creating a device that can send all parameters simultaneously (resetting all parameters or randomizing all parameters etc), a millisecond or 2 delay between sending each MIDI message will make sure that there is no overflow of data during transmission. In the example devices, we have used a conservative 5 millisecond delay between batch updates to ensure that data is transferred without issue when the 'Sync' or 'reset' buttons are pressed.

## Max4Live Devices Overview



Figure 1 - Flux Channel Strip

The Channel Strip device offers MIDI control over the core (unmodulated) parameter values for all 16 steps of the Flux rhythm/CV UI. Select a step to edit with the 'StepSel' dial and enter your desired parameter values. The ON/OFF section can be used to mute the 3 rhythm and 1 CV hardware outputs for the channel. Use MIDI channels 1-4 to address Flux channels 1-4.

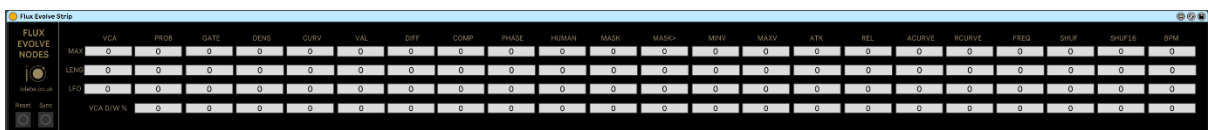


Figure 2 - Evolve Strip

The Evolve device offers control over all Evolve LFO parameters and should use MIDI channels 5-8 to send messages to Flux channels 1-4.

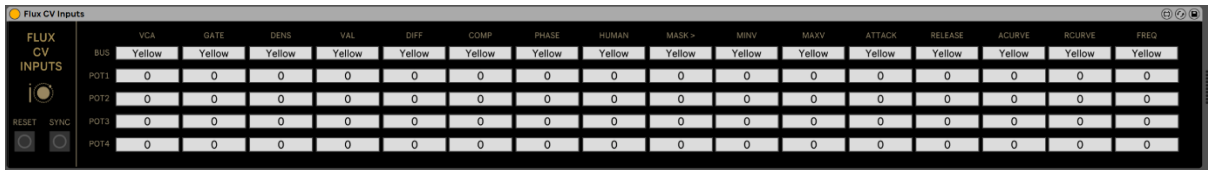


Figure 3 - CV Inputs

The CV Inputs device offers control over all CV modulation matrix nodes and should use MIDI channels 5-8 to send messages to Flux channels 1-4.

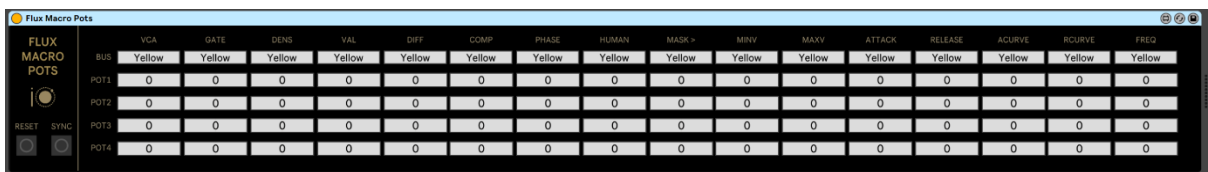


Figure 4 - Macro Pots

The Macro Pots device offers control over all Macro Pot modulation matrix nodes and should use MIDI channels 5-8 to send messages to Flux channels 1-4.

### **Support for Custom Devices**

Unfortunately, we do not have the resources to offer support for custom MIDI controller creations. We would love to see/hear the results of your experiments, but we cannot offer support in troubleshooting custom MIDI devices. Instead, we have created the Max4Live devices and accompanying documents to demonstrate building MIDI devices to control Flux. If you run into issues building a controller, please reference our Max designs to troubleshoot any issues that you face. We recommend paying particular attention to selecting steps to edit as discussed in the 'Designing MIDI Controllers for Flux' document. Please feel free to use our example devices as a starting point for your MIDI controller designs if using MAX.

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