µcls

4HP expansion module for Lattice

Manual revision 04/11/2018

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Overview

µcls is a 4HP expander for Lattice, the12-step sequencer. µcls adds to Lattice:
- Gate output each time the connected Lattice progresses to a new step.
- A forward / reverse playback mode for Lattice, selectable by CV or the dedicated button.
- A random step trigger input that selects a random step on the connected Lattice when it receives a trigger or gate.
- A step-select CV input that can take a positive voltage envelope or LFO and selects the corresponding voltage stage on Lattice.

Installation

Tenderfoot Electronics modules are designed to be used with a Eurorack-compatible case and power supply. Before installing a new module into your case, please ensure that your power supply and case have sufficient space and available capacity to power the module.
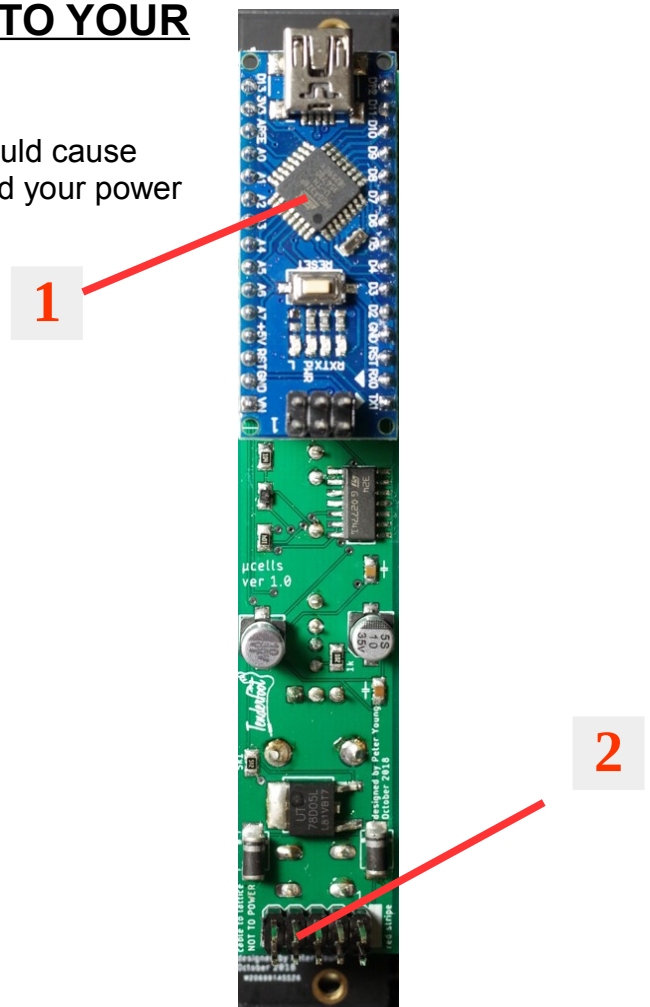
µcls draws its power directly from the Lattice module that it is connected to.

NEVER PLUG µcls DIRECTLY INTO YOUR RACK'S POWER SUPPLY!

Plugging µcls directly into your power supply could cause irreparable damage to both the module itself and your power supply.

The rear of the module reveals:
(1) the arduino-based microcontroller
(2) the cable connection header

Before installing or removing a module from your rack, ensure that you turn off the power supply for the case. If a module is removed or installed while the rack power supply is switched on, it could cause serious damage to either the module, or power supply, or both.

Connecting the cable to the module:

When connecting the ribbon cable to the back of the module, make sure you attach it to the 10-pin header in the correct orientation. The red stripe of the ribbon cable should line up with the side of the connection header labelled "stripe". Incorrectly orientating the ribbon cable could cause damage to your µcls module, Lattice module, or possibly even your power supply.

Image illustrates the location of the ribbon cable header on the rear of the Cells module.

The image below shows the correct orientation of the red stripe on the ribbon cable when connected to a Lattice sequencer. The PCB is marked with a bold white stripe, and the word "stripe" to indicate proper orientation.
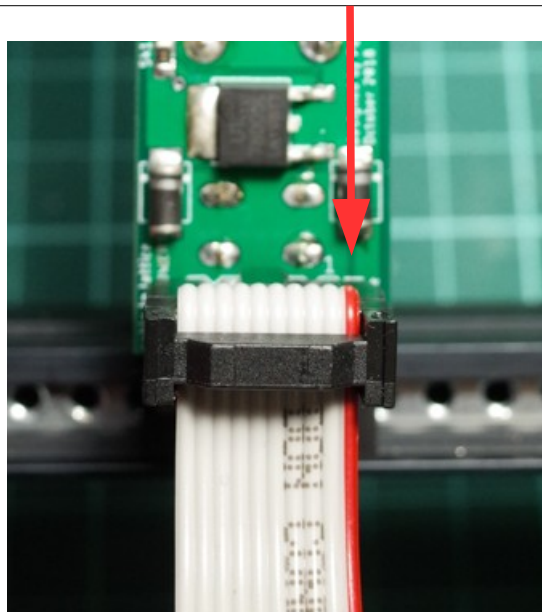
The other end of the ribbon cable attaches to the connector on the rear of the Lattice module labelled "expander". Again **ensure the red stripe of the cable lines up with the bold stripe printed beside the expander header on the Lattice.** Once again, failing to connect the 2 modules together correctly could damage both of them, and possibly even your power supply.
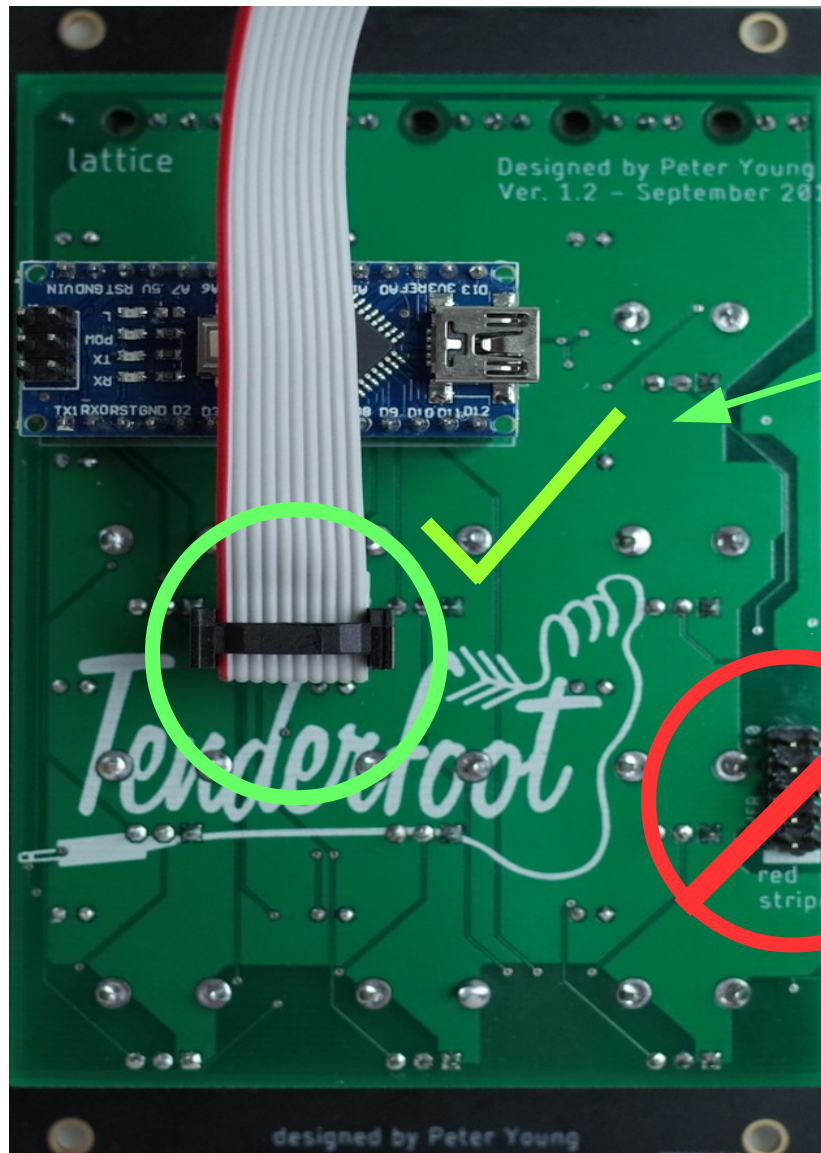
This image shows the correct place to connect the µcls ribbon cable to the back of a Lattice module (shown in green).

Do not plug µcls into the power header of the Lattice module.

Using the included screws, screw both modules back on to your rails, power up, and enjoy! If at any time you notice irregularities in the operation of the module, turn off the case and inspect all connections and cables.

Explanation of Features

µcls adds a number of features to your Lattice that are very easy to use once you understand what the different inputs do.

Gate output
µcls outputs a gate whenever the step changes on the connected Lattice.

Forwards / reverse toggle
A voltage input of over 2.5V will toggle the reverse mode on or off, making the connected Lattice module progress through steps either in it's regular direction, or reversed.

Random Step
Sending a trigger to this input will jump to a random step on the connected Lattice.

Forward / Reverse button
Pressing this button will toggle forwards and reverse step playback modes
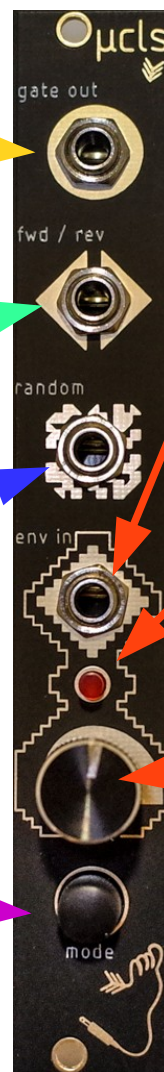
Envelope / CV input
This analogue input will select the active step of the connected Lattice depending on the voltage input. The scaling is quite low, so input signals may need attenuating. µcls only recognises positive voltages.

0V = step 1
3V = step 12

Envelope / CV LED indicator
This LED indicates the post-attenuator signal level being received by the "env in" input.

Envelope / CV input attenuator
Attenuates the voltage received by the module from the "env in" input.

Firmware Update Procedure

Occasionally we will release new firmware for our modules, this is either to improve certain aspects of their functioning, or to add entirely new features. The following procedure will show you how to update the firmware on the Lattice and any other arduino nano-based modules we produce.

Step1: Download x-loader **and** https://github.com/TenderfootElectronics.

X-loader is a very simple to use program for flashing .hex files to an arduino micro controller.

X-loader is available here… http://xloader.russemotto.com/

The latest firmware for the module will be made available in our GitHub repository here… https://github.com/TenderfootElectronics/

Step 2: Turn off and disconnect the module from the power supply or any expanders

Failure to disconnect the module from the power supply in your case, or any expansion modules will interfer with the communication with your computer, or even worse, cause damage to your module, case, computer, or any combination of the three.

Step 3: Connect the microcontroller of the module to your computer via USB

The connection will require a micro USB cable, and make sure your computer has recognised that a new device has been connected.


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Step 4: Run Xloader.exe on your computer and locate the .hex file

Step 5: Ensure the settings in Xloader are correct

Device: Duemilanove/Nano(ATmega328)

COM port: This will depend on your computer, usually it will be set correct by default. If there are problems however, try a different COM port.

Baud rate: It is important to set this to 57600, otherwise there will be a communication problem between your computer and the module.
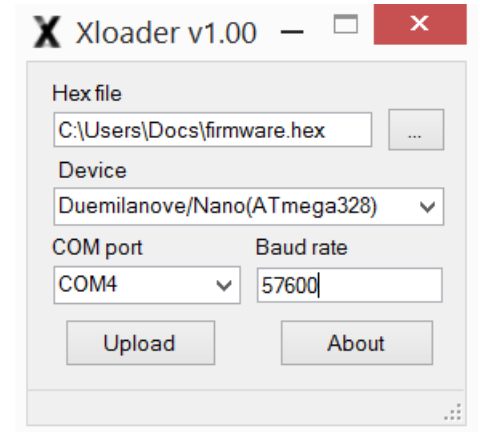
Step 6: Press "Upload" in the Xloader window

If there are no error messages in the prompt bar at the bottom, then you will have been successful at updating the firmware.

Step 7: Disconnect the USB from the module, reinstall into your case, and start making music again!

If you experience any problems with the firmware update process, or any other issues with your module, please don't hesitate to contact us at:

mailto:tenderfootelectronics@gmail.com