

Lattice

12- step multi-directional CV sequencer

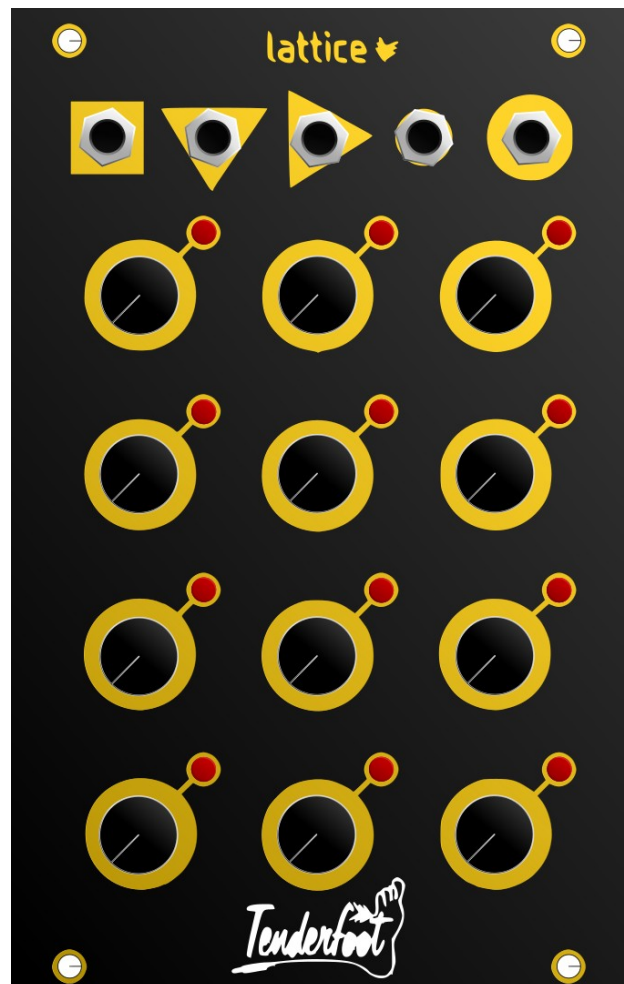




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Overview

Lattice is a 16HP 12-step sequencer composed of a 4x3 grid of steps that can be navigated horizontally, vertically or sequentially from step 1 to step 12. Sending a trigger into one of the 3 progression inputs will move the sequencer forward a single step. This will result in a 3-step, 4-step or 12-step sequence depending on the input used. The Lattice starts to become much more interesting when a combination of the 3 progression inputs are used, opening the doors to much more complex melodic sequences.

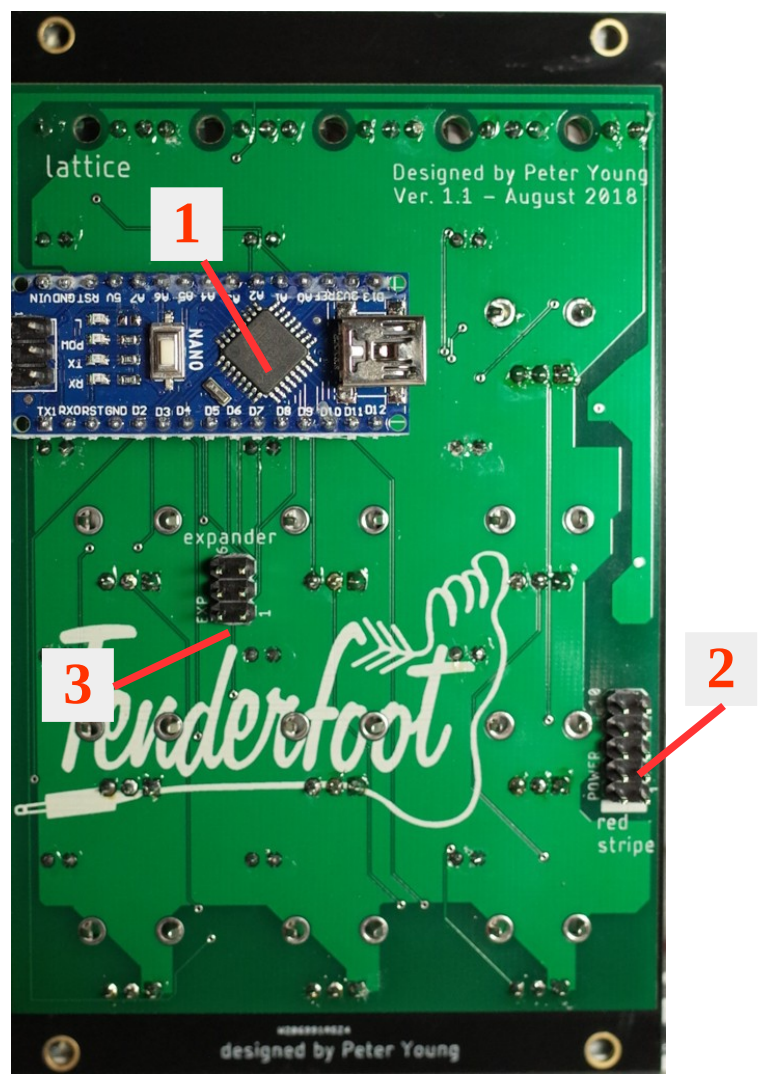
Installation

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.

The Lattice draws from the +12V and -12V rails, and has an onboard 5V regulator for any circuitry which requires it, so can be used in cases without a 5V rail.

Failure to adequately power your modules may result in damage to your modules or power supply. If you are unsure, please contact us before proceeding.

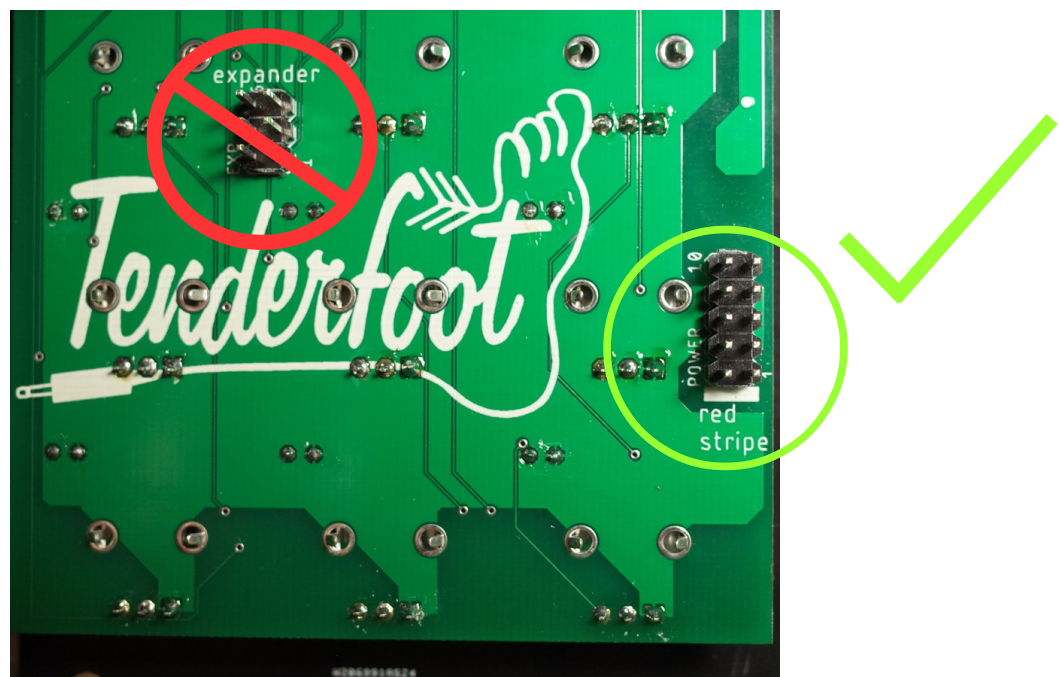
The rear of the module reveals:
(1) the arduino-based microcontroller
(2) the power header
(3) the expander header



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 power cable to the module:

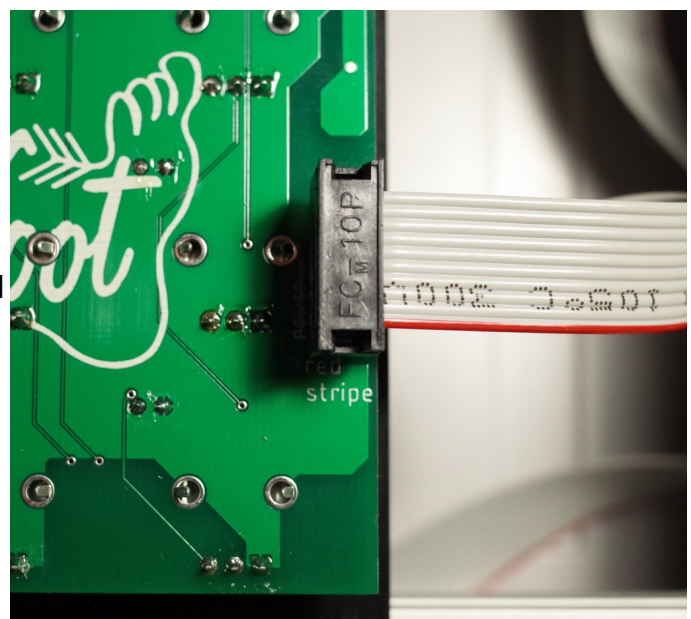
When connecting the ribbon cable to the back of the module, make sure you attach it to the 10-pin header that is labelled “POWER” towards the lower-right side of the PCB. Connecting the power cable to the expander header will irreparably damage the micro-controller of your module.



The POWER header is labelled at one end with a bold stripe, and the words “red stripe”. Align the red stripe on the ribbon cable with the “red stripe” label on the PCB.

Once the cable is attached to the module, connect the 16-pin end of the cable to your case's power supply, again ensuring the red stripe lines up with that of the power supply PCB.

Using the included screws, screw the module 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

The lattice is a very simple sequencer to use once you understand what the different inputs do.

Each of the inputs will trigger once when a voltage of over 3V is sent to them. Once that voltage drops back down below 3V, that input will be able to receive another trigger pulse. The Lattice trigger inputs are able to accept audio-rate inputs, which can give some interesting results.

First let's look at the numbered **potentiometers**. They will control the voltage output of each step from 1 to 12. The red LED beside each potentiometer will indicate which step is currently selected.

Input A moves the sequencer to the next step in numerical order. ie. 1-2-3-4-5-6-7-8-9-10-11-12 and back around to step 1 again.

Input B moves the sequencer down one position to the step immediately below the current step. ie. 1- 4-7-10 and back to 1.

Input C moves the sequencer one step to the right, and will loop back to the start of the row ie. 1 – 2 – 3 and back to 1 again.

Input D is the reset, and will always move the sequencer back to step 1.

Output E is the output of the module, where the control voltage generated by the sequencer is sent to. This is where you attach the module you wish to modulate (for example, the 1V/oct input of a VCO can be patched directly to the output of the Lattice here).



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.

Step 1: Download x-loader and <https://github.com/TenderfootElectronics/Lattice>.

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/Lattice>

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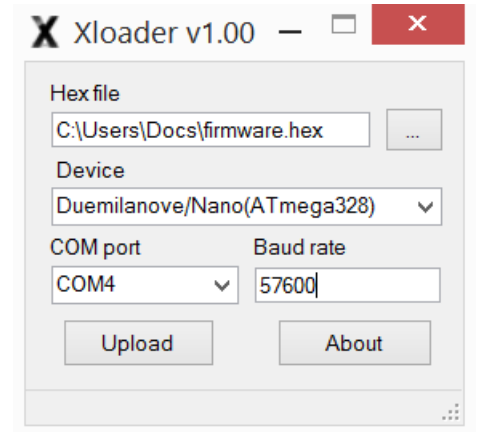
Step 4: Run Xloader.exe on your computer and locate the .hex file

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>