nQuencer

manual

Contents

Overview

nQuencer is a eurorack module that turns your 16n faderbank into a step sequencer.

When the nQuencer module receives a trigger at the Clock input it reads the state of the first 16n faderbank fader and outputs a corresponding voltage at Output 1. At the next clock signal it will read the second fader and so on until it reaches the end and loops back to the start.

In the default 16 step mode, a trigger at the Reset input or pressing and releasing the Reset Button will move back to the first step and Output 2 will output a gate for the sequence. Other modes use Reset and Output 2 for different functions.

If a fader is at the very bottom no gate will be generated for that step in modes that output gates. The last fader that isn't at the bottom determines the length of the sequence. This behaviour can be altered in the settings.

The 4x4 grid of LEDs shows the current step(s) in the sequence or the settings when in settings mode.

Installation

** WARNING **
Always turn off your eurorack system and 16n faderbank before connecting or disconnecting the i2C cable at either end. Failure to do so can cause damage.

1. Ensure your 16n faderbank is set to i2c follow mode:
   a. Connect it via USB to a computer
   b. Visit https://16n-faderbank.github.io/editor/ in Google Chrome
   c. Click on Edit Config
   d. In the Device Options tab, set I2C Leader/Follower to Follower and click Update Controller
2. Turn off your eurorack system before installing the module
3. Turn off your 16n faderbank
4. Connect the power ribbon cable with the red stripe nearest the text "RED" on the back of the module and secure it in your case
5. Connect a stereo 3.5mm to 3.5mm cable between the nQuencer and 16n faderbank i2c sockets
6. Power on your eurorack system and 16n faderbank

Settings

Press and hold the Reset button for around 3 seconds until the LED remains lit to enter settings mode. Use the faders to adjust settings and press the Reset button again to exit settings. Settings are saved when you exit settings mode and will be restored if you turn your eurorack system off and on again.

Fader 1 - Mode

1. Sixteen Steps
   - Uses all 16 faders for a 16 step sequence
   - Output 2 outputs a gate for the sequence
   - Reset input & Button move back to the first step
2. Two Eights
   - Two eight step sequences (faders 1 - 8 and 9 - 16)
   - Output 2 outputs CV for the second sequence
   - Reset input & Button move back to the first step
   - In Alternative Reset mode Reset Input advances the second sequence instead of the Clock input
3. Transpose
   - Two eight step sequences (faders 1 - 8 and 9 - 16)
   - The value from the second sequence (up to 1v) is added to the value from the first sequence
   - Output 2 outputs a gate for the sequence
   - Reset Input & Button move back to the first step
   - In Alternative Reset mode Reset Input advances the second sequence instead of the Clock Input
   - Can be configured to add a random value up to the value of the second sequence to the first sequence rather than the exact amount by editing the [Configuration File](#)
4. DJ
   - Two eight step sequences but only one at a time
   - Output 2 outputs a gate for the sequence
   - Reset Input moves back to the first step and the Reset Button toggles between the sequences
   - In Alternative Reset mode Reset Input toggles between the sequences and Reset Button moves back to the first step

Fader 2 - Sequence Direction

1. Up
2. Down
3. Up Down
4. Random

Fader 3 - Probability

Sets the probability of a note firing from 100% at the bottom to 0% at the top. If a note does not fire, the CV output does not change and no gate is output.

Fader 4 - Output Voltage Range

The voltage output by nQuencer when the fader is at the top - 1v, 2v, 3v or 4v. Transpose mode adds up to 1v to this.

Fader 5 - Fader Behaviour

Changes the behaviour of the sequence when a fader is at the bottom.

1. Note Off, Variable Length
   - Fader at the bottom doesn't generate a gate (in modes that output a gate)
   - Length of sequence determined by the last fader that isn't at the bottom
2. Note Off, Fixed Length
   - Fader at the bottom doesn't generate a gate (in modes that output a gate)
   - Length of sequence fixed at the max for the mode
3. Zero Volt, Variable Length
   - Fader at the bottom outputs 0v and a gate (in modes that output a gate)
   - Length of sequence determined by the last fader that isn't at the bottom
4. Zero Volt, Fixed Length
   - Fader at the bottom outputs 0v and a gate (in modes that output a gate)
   - Length of sequence fixed at the max for the mode

In Two Eights mode 0v is always output for faders at the bottom.

Fader 6 - Gate Length

Sets the length of the gate output on output 2 (for modes that support it) from a very short trigger at the bottom to 2 seconds at the top.

Fader 7 - Alternative Reset Input

Changes the Reset Input to alternative mode (see Mode for details). Alternative Reset Input is disabled if this fader is at the bottom and enabled when at the top.

Fader 13 - Quantiser Root

Sets the root note for the Quantiser:

Bottom   Top

C	C#	D	D#	E	F	F#	G	G#	A	A#	B

Fader 14 to 16 - Quantiser Mode

By default the output is quantised to the nearest semitone. This can be adjusted using faders 14 to 16 and the last fader changed determines the mode used.

	Fader 14	Fader 15	Fader 16
1	Chromatic (Semitone)	Dorian	Major Pentatonic
2	Ionian (Major)	Phrygian	Minor Pentatonic
3	Aeolian (Natural Minor)	Lydian	Blues
4	Harmonic Minor	Mixolydian	Disabled (Unquantised)

Configuration File

Additional settings are available by connecting the module to a computer with a USB cable. With your eurorack system powered on, the module will show up as a drive on the computer with a text file called 'nquencer.txt'. Edit the text file and save it to make changes, then eject the device on your computer or power off and on your eurorack system to load the changes.

Any line in the file that starts with a # is a comment. To alter a setting, remove the # from the start of the line and set the value to the required setting.

FADERBANK_ADDRESS - Your 16n faderbank should have the default i2c address but if for any reason it doesn't, you can set the hexadecimal address.

I2C_OUT_ADDRESS - If outputting the sequence over i2c, set the hexadecimal i2c address of the destination device here

I2C_OUT_TYPE - If outputting the sequence over i2c, set the destination device type here (*DISTING_EX / JUST_FRIENDS / PLAITS*)

I2C_OUT_VELOCITY - Sets the velocity in volts used when outputting the sequence over i2c e.g. "3.3" or "5"

I2C_OUT_ADDITIONAL - Additional i2C configuration (see i2c Output)

TRANSPOSE_MODE - By default the transpose mode will add the second sequence to the first. Change this setting to *UPTO* to add a random value up to the value of the second sequence to the first sequence.

FADER_OFF_MAX - Sets the value under which a fader is considered to be all of the way down. You can adjust this setting if you find that you still get gates output when faders are down. Start by setting it to 100 and then reduce it as low as you can while still not getting any unexpected gates. The default value is 30.

To restore the default settings file you can delete the file and then eject the device from your computer or power off and on your eurorack system and the original file will be recreated.

I2c Output

nQuencer can output the sequence over i2c to the following supported modules:

Expert Sleepers Disting EX

- The default i2c address for the Disting EX is 0x31 but you can check/change the value in the settings
- nQuencer sends 0x51 pitch messages and 0x52 / 0x53 note on / off messages to channel 1 (and channel 2 for the second sequence in Two Eights mode)
- Add EX.CHAN to I2C_OUT_ADDITIONAL in the Configuration File to use 0x68, 0x69 and 0x6A messages. This allows you to use the second folder for the second sequence in Two Eights mode when using the Disting EX SD Multisample algorithm

Mannequins Just Friends

- The default i2c address for Just Friends is 0x70 but it can be set to 0x75
- nQuencer sets the Just Friends MODE to 1 (Synthesis/Geode) when powered on. After you change the I2C_OUT_TYPE to JUST_FRIENDS in the Configuration File, turn your eurorack system off and on again
- nQuencer sends JF.NOTE pitch messages to use Just Friends channels polyphonically. Add JF.VOX to I2C_OUT_ADDITIONAL in the Configuration File to use JF.VOX and send to just channel 1 (In Two Eights mode the second sequence is sent to the second channel)

Mutable Instruments Plaits

We've released a modified firmware for Mutable Instruments Plaits which allows it to receive i2c message here - https://github.com/rwmodular/mutable_instruments_eurorack/tree/master/alt_firmwares

- The default i2c address for Plaits is 0x49
- nQuencer sends note information and by default sets the Plaits Level based on the gate length
- Add PLAITS.TRIG to I2C_OUT_ADDITIONAL in the Configuration File to send triggers to Plaits instead of setting the Level

Ensure that the supported module is updated with the latest firmware and connect its i2c pins to those on the back of the nQuencer module - SDA to SDA, SCL to SCL and GND to GND

Updating Firmware

To update the firmware on the module:

1. Connect a USB cable from the module to a computer while the power cable is connected to your eurorack system (with the power turned off).
2. Press and hold the small button on the right hand edge of the module while powering on your eurorack system. The module will now show as a drive on your computer containing a .HTM and .TXT file. If it contains the nquencer.txt file, you have not entered programming mode and will need to repeat this step.
3. Copy the firmware UF2 file onto the module. When it has finished, the module will disconnect and reboot with the new firmware.

Updating the firmware will not change saved settings, the configuration file or calibration settings.

Calibration

To calibrate the nQuencer outputs, press and hold the Reset button while powering on your eurorack system. When you release the button, the LED will remain lit.

Use faders 1 and 2 on the 16n faderbank to coarse and fine tune Output 1 and faders 3 and 4 to tune Output 2. Adjust them until 1 volt is output on both. Press the Reset button and repeat the process for a 3 volt output and then press the Reset button again to exit calibration and save the settings.

Troubleshooting

If you are getting unexpected gates output when faders are at the bottom, you may need to configure the fader minimum value.

1. Patch your nQuencer module so that it has a clock, the outputs are being used and it is connected to your 16n faderbank
2. Put all faders at the bottom
3. Connect the 16n faderbank to your computer via USB
4. Visit https://16n-faderbank.github.io/editor/ in Google Chrome
5. Click on Edit Config
6. In the Device Options tab, increase the 'Fader Minimum raw value' slightly and click Update Controller
7. Repeat steps 5 & 6 until you get no gates output

Thanks

nQuencer would not be possible without the 16n faderbank originally created by Brian Crabtree, Sean Hellfritsch, Tom Armitage & Brendon Cassidy. Additionally, a huge thankyou to Arthur at AtoVproject for your help and support during the development of this module.

USB →

4
3
2
1

Root

4. Disabled
3. Blues
2. Minor Pent
1. Major Pent

4. Mixolydian
3. Lydian
2. Phrygian
1. Dorian

4. Harmonic Min.
3. Aeolian
2. Ionian
1. Chromatic

Alt Reset In

Gate Length

Fader Behaviour:
4. Zero Volts, Fixed Length
3. Zero Volts, Variable Length
2. Note Off, Fixed Length
1. Note Off, Variable Length

Output Voltage Range:
4. 4v
3. 3v
2. 2v
1. 1v

Probability

Direction:
4. Random
3. Up Down
2. Down
1. Up

Mode:
4. DJ
3. Transpose
2. Two Eights
1. Sixteen Steps