NEO TRINITY

AUTOMATABLE MODULATION HUB

BASTL INSTRUMENTS



NEO TRINITY

6 CHANNELS OF GESTURAL MUSIC-MAKING

Neo Trinity is a 6-channel compact modulation hub with great musical complexity achievable with simple gestures. Each of the 6 channels can be either LFO, envelope generator or a CV knob recorder, while their main parameter can be automated with the REC button.

Each channel also features a recordable trigger generator with an algorithmic fill feature to get the inspiration started or to make things polymetric and keep your patches ever changing. Use the SHIFT button to change modulation shapes and sync selected or all channels to an internal or external clock.

Neo Trinity has been designed with performance in mind, so it includes channel mutes and allows for storing whole presets as banks.

While the core mechanics of the module are very straightforward, the inclusion of assignable CV inputs exponentially increases the complexity of the module's behavior. Control some or all channels in different ways with the META IN, and utilize channels' E and F dedicated inputs. The inputs can control the main parameter in positive or inverted way, control the output amplitude, act as an external trigger or a trigger for internal Sample & Hold function. The CV knob recorder mode also acts as a quantizer and when combined with the CV inputs it turns into a handy voltage processor.

FEATURES

- 6 independent channels of either LFO, ENV or CV
- Indication per channel
- Unipolar (0–5V) or bipolar (-5V to +5V) mode per channel
- LFO shapes (with smoothing): saw, triangle (sine), ramp, pulse, random (smooth)
- LFO range: 260s–180Hz
- LFO sync (RATE knob sets divider)
- ENV shapes: decay, attack, variable, pulse
- ENV range: 1ms–8s
- ENV retrigable or non-retrigable
- ENV slew limiter mode (or AHR envelope with gates)
- CV mode with quantization (ON/OFF, 8 scales, 2V or 5V range, smoothing)
- All modes have automatable RATE knob and trigger sequences
- Independent length of automation per channel (2–64 steps)
- Clock-quantized or non-quantized trigger recording
- Algorithmic trigger fill generator (6 algorithms with a knob parameter)
- Mute per channel
- Memory for 6 banks (all settings and automations)
- Clock Reset input for automation (can be turned OFF – per channel)
- CLK channel for setting tempo or for dividing/multiplying external clock
- Internal CLK generator range: 35 BPM–420 BPM
- CLK IN and CLK OUT connectors
- META IN CV input – assignable independently to some or all channels
- Channels E and F feature dedicated CV inputs
- All CV inputs have adjustable function: positive/negative and attenuated RATE modulation, bipolar VCA at channel output, TRIG input (slew input), Sample & Hold (for triggered stepped waveforms)
- Firmware updates via USB-C

- User calibration of outputs and inputs (for quantizer precision)
- CV/GATE recording on channels E and F
- Full MIDI, MIDI to CV and CV to MIDI implementation via pin connectors on the back side via 1999 expander module
- Chaining multiple Neo Trinities via back side pin connectors
- MIDI recording of CV/GATE pairs

TECHNICAL DETAILS

- 8 HP
- PTC fuse and diode protected 10 pin power connector
- 24 mm deep
- Current consumption: +12 V: <100 mA; -12 V: <35 mA

Quick Start

6 CHANNELS – 3 MODES

Neo Trinity is a 6-channel modulation source.

Each channel can be set to either **LFO**, **ENV** or **CV** mode.
LFO primarily serves for repeating simple modulation shapes.
ENV mode is for rhythmic triggered modulation.
CV mode serves for recording the knob movements and creating pitch sequences.

1. **Channel outputs**
Patch them to modulate stuff
Lights indicate channel voltage

2. **Channel buttons**
Press to select the channel

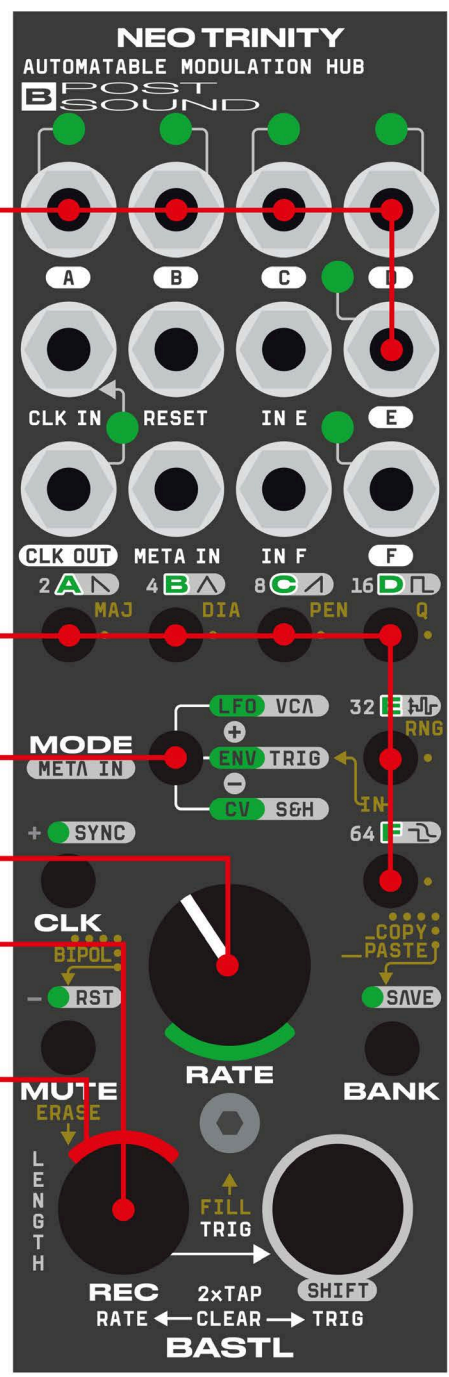
3. **MODE button**
Press to change the mode of the selected channel

4. **RATE knob**
Adjust the main parameter of the selected channel

5. **REC button**
Hold REC+turn RATE to automate RATE
Hold REC+hit SHIFT to record triggers

REC light
Indicates active automation

6. **CLEAR the automation**
Double tap REC to clear the automation of RATE knob
Double tap SHIFT to clear the trigger automation



SHIFT **+A/B/C/D/E/F** = shape

The surface level operation is super easy:

1.

Use the outputs to modulate your other modules.

2.

To select a channel press one of the **A/B/C/D/E/F** channel buttons.

3.

To change a mode of the selected channel press the **MODE** button.

4.

Use the **RATE** knob to set the main variable of the selected channel

5. AUTOMATE

Each channel has an independent sequencer for automating its RATE knob and for adding trigger events.
Hold REC and move the **RATE knob** to record automation.
Hold REC and tap **SHIFT** to record a trigger into the sequence.

6.CLEAR

Is it doing too much stuff?
REC light indicates that there is an automation present.
Double tap REC to remove automation of the RATE knob.
Double tap SHIFT to remove all the recorded triggers.

CHANGE SHAPE

Further you can change the shape or mode-specific settings by holding **SHIFT** and pressing the **ABCDEF** buttons – see the symbols in the silver background on the panel.

SYNC

Sync LFO to clock by holding SHIFT and pressing CLK.

Each channel is completely independent, but some or all can be influenced together either by the CLK or by the META CV input.

That is it for a quick introduction.
Here is a quick reference of features; all are later explained in detail.

Now, let's dive deeper into each section.

Channel Settings

mute/unmute channel	**MUTE+A/B/C/D/E/F**
chanel shape /mode-specific settings	SHIFT **+A/B/C/D/E/F**
sync LFO to CLK IN	SHIFT **+CLK**
channel reacts to reset	SHIFT **+MUTE**
META IN mode	SHIFT **+MODE** (> 2s to disable)
E/F input mode	**EF+MODE** (> 2s to disable)
set channel bi-/unipolar	**A/B/C/D/E/F+MUTE**
quantize channel trigs	**A/B/C/D/E/F+CLK**

CLK channel

start/stop clock	**MODE**
set CLK IN divider	SHIFT **+A/B/C/D/E/F**
adjust CLK IN divider	SHIFT **+CLK/MUTE (+/-)**
tap tempo	**REC+** SHIFT

Automation

record RATE automation	**REC+**turn **RATE**
clear RATE automation	2× **REC**
record TRIG automation	**REC+** SHIFT
trigger without recordings	SHIFT **+REC**
clear TRIG automation	2× SHIFT
set automation length	**REC+A/B/C/D/E/F**
adjust automation length	**REC+CLK/MUTE**
generate trigger fill	**REC+** SHIFT **+**turn **RATE**
trigger fill algorhitm	**REC+** SHIFT **+A/B/C/D/E/F**
rotate trigger sequence	**REC+** SHIFT **+CLK/MUTE**
erase automation parts	**MUTE+REC** while held

Memory

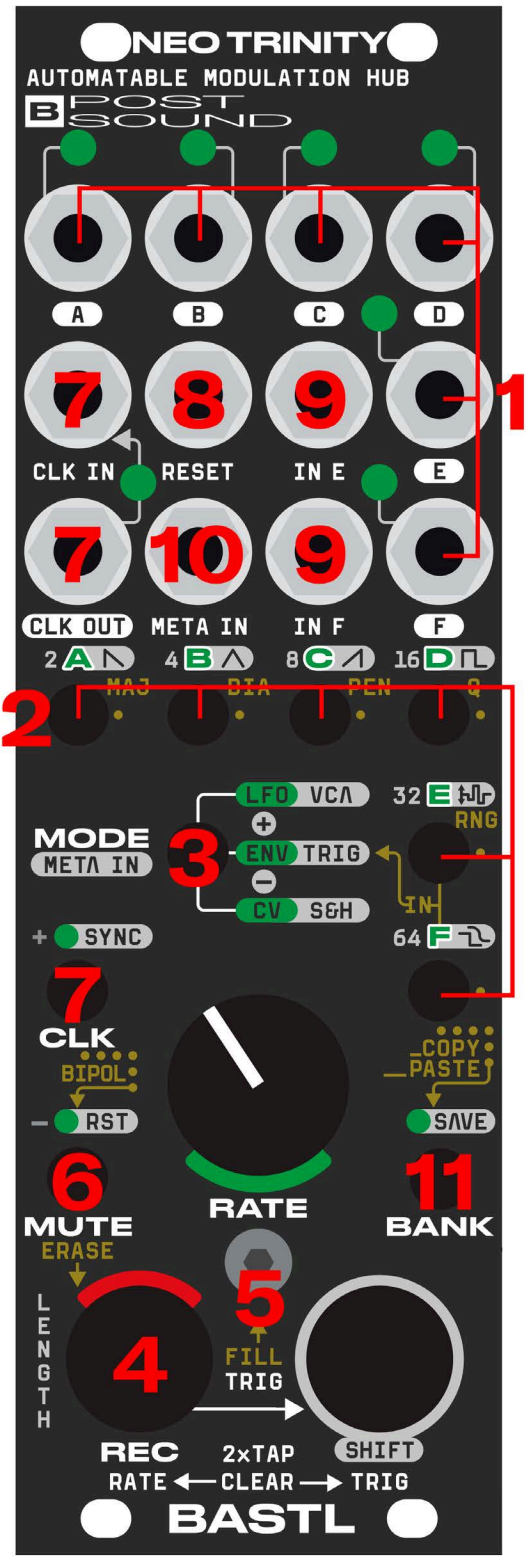
save bank	SHIFT **+BANK**
copy channel	< 2s **A/B/C/D/E/F+BANK**
paste channel	> 2s **A/B/C/D/E/F+BANK**
load bank	< 2s **BANK+A/B/C/D/E/F**
save bank to	> 2s **BANK+A/B/C/D/E/F**
load bank at the end of sequence	**BANK+CLK+A/B/C/D/E/F**

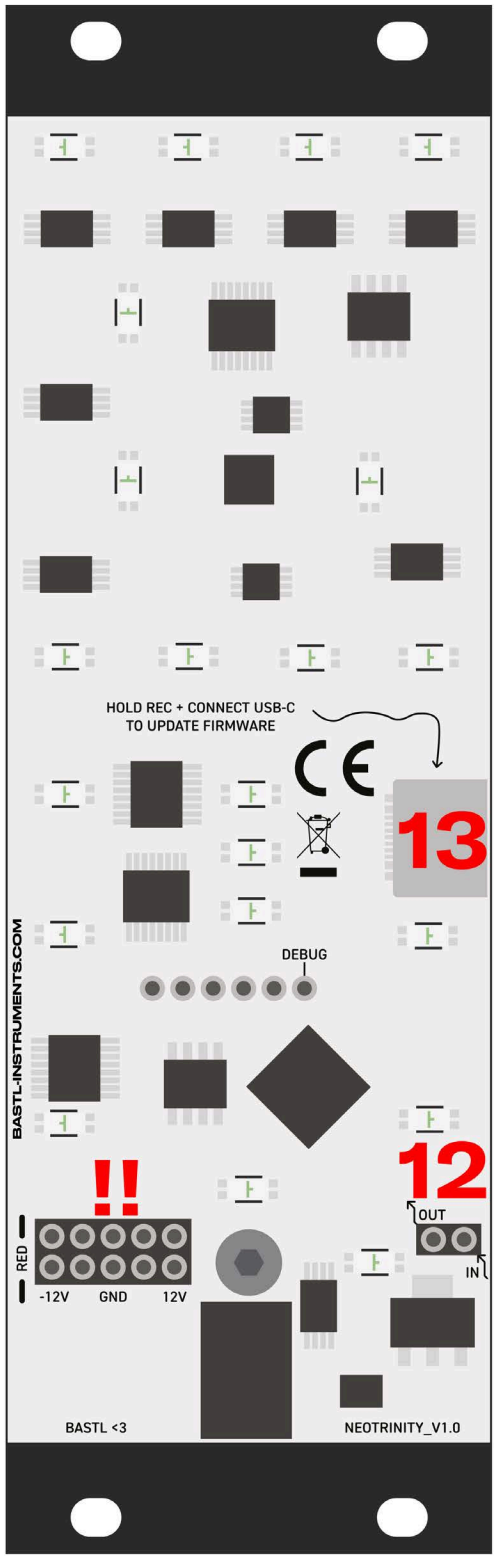
‼ POWER ‼

Before connecting the ribbon cable to this module, disconnect your system from power! Double-check the polarity of the ribbon cable and that it is not misaligned in any direction. The red wire should match the -12V rail both on the module and the bus board.

! please make sure of the following:
- you have a standard pinout eurorack bus board
- you have +12V and -12V rails on your bus board
- the power rails are not overloaded by current
- this module requires current: +12V: <100 mA; -12V: <35 mA

Although there are protection circuits on this device, we do not accept any responsibility for damages caused by the wrong power supply connection.
After you've connected everything, double-checked it, and closed your system (so no power lines can be touched by hand), turn on your system and test the module.


NEO TRINITY
AUTOMATABLE MODULATION HUB
BASTL POST SOUND
A
B
C
D
7
8
9
1
CLK IN
RESET
IN E
E
7
10
9
CLK OUT
META IN
IN F
F
2 A
4 B
8 C
16 D
2
MAJ
BIA
PEN
Q
MODE
META IN
3
LFO VCA
ENV TRIG
CV S&H
32 E
RNG
IN
64 F
SYNC
7
CLK
BIPOL
RST
COPY
PASTE
SAVE
6
MUTE
ERASE
RATE
11
BANK
LENGTH
4
5
FILL
TRIG
REC
2×TAP
SHIFT
RATE ← CLEAR → TRIG
BASTL


HOLD REC + CONNECT USB-C
TO UPDATE FIRMWARE
13
DEBUG
BASTL-INSTRUMENTS.COM
!!
12
OUT
IN
RED
-12V
GND
12V
BASTL <3
NEOTRINITY_V1.0

1 CHANNEL OUTPUTS

Use the outputs for modulating CV destinations across your modular system.
The outputs have a range of -5V to +5V in bipolar mode and 0V to +5V in unipolar mode. They are updated at a rate of 4kHz (4000 times per second).
The lights at the outputs indicate the voltage by changing their intensity and polarity: green = positive, red = negative. The outputs can be calibrated to match the V/OCT inputs of your sound sources. See the calibration section for more details.

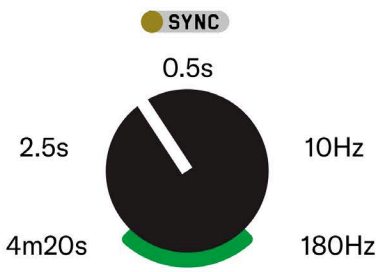
2 CHANNEL BUTTONS

Press the individual channel buttons to select a channel; the corresponding letter icon (A/B/C/D/E/F) will light up. All settings on the module are then applied to the selected channel. The light under the RATE knob indicates the voltage and polarity of the output of the currently selected channel.

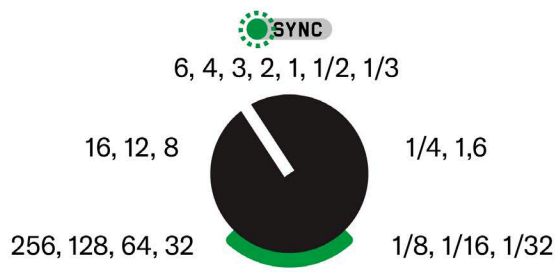
3 MODES

LFO MODE

LFO MODE is primarily for repeating simple modulation shapes but with some exciting automation possibilities on top.



LFO DURATION/FREQUENCY



LFO CLK DIVIDER

Use the RATE knob to set the speed of the LFO. If SYNCed, the RATE knob sets the divider to the tempo.

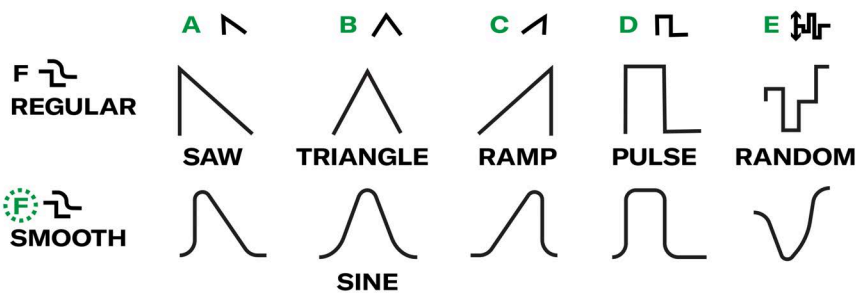
SYNC

Hold SHIFT and press CLK to SYNC the LFO to the clock. While holding SHIFT, the SYNC indicator will light up if the function is on. Pressing SHIFT and CLK deactivates the SYNC function.

SHAPE

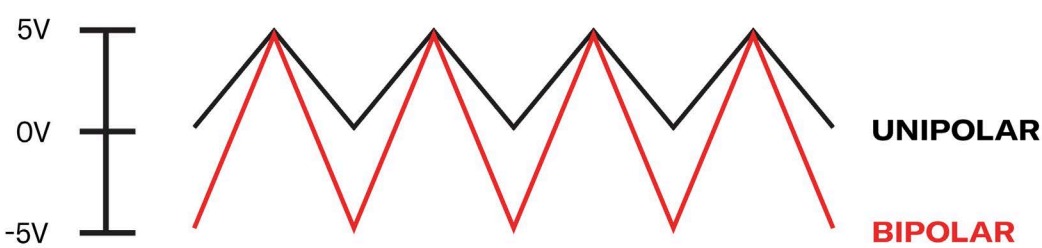
Hold SHIFT and press the channel buttons A, B, C, D, E to select an LFO shape.
Holding SHIFT, press F for smoothing the selected shapes. That is especially useful to avoid clicks in the VCAs and other sensitive modulation destinations.

- A - saw (smooth saw)
- B - triangle (sine)
- C - ramp (smooth ramp)
- D - pulse (smooth pulse)
- E - random (interpolated random)
- F - enables/disables smoothing of shapes above.



UNIPOLAR / BIPOLAR

Hold the respective channel button A/B/C/D/E/F and press the MUTE button to set the selected channel as BIPOLAR (MUTE light ON) with an amplitude of -5V to +5V or UNIPOLAR (MUTE light OFF) with an amplitude of 0V to +5V.

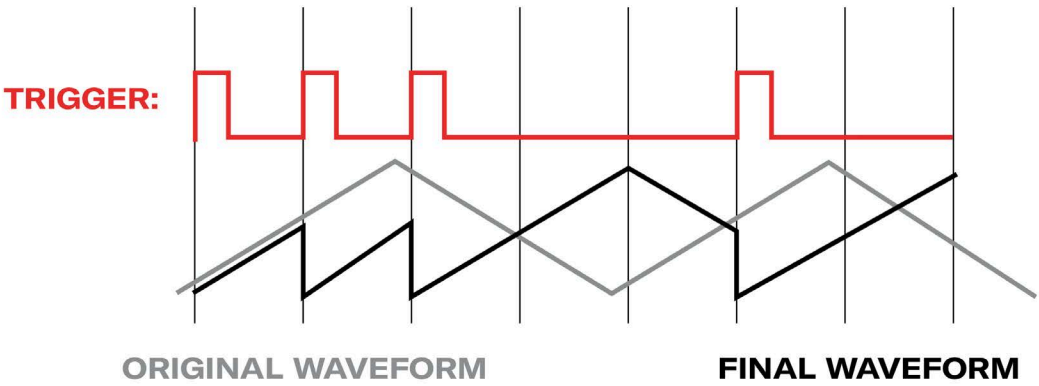


AUTOMATE

You can create complex modulations by automating the RATE knob or by inserting LFO reset triggers.

Automate the RATE knob by holding REC and turning the RATE knob (press 2x REC to clear the knob automation). Automating synced LFO will result in rhythmical variations.

Record LFO reset triggers by holding REC and tapping SHIFT (press 2x SHIFT to clear the trigger automation).
Hold SHIFT and press REC to reset the LFO without recording triggers into the automation.

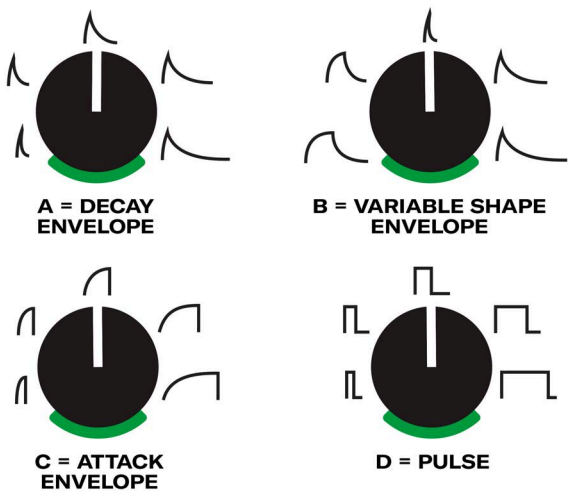


ENV MODE

ENV MODE excels at rhythmic triggered modulation, but it can also be used as a slew limiter or to elongate triggers.

RATE AND SHAPE

The RATE knob sets the duration of the envelope and it does it differently for the 4 different shapes: A/B/C/D.
Hold SHIFT and press A/B/C/D to select the shape of the envelope.



- A - RATE sets the decay of the envelope
- B - variable shape envelope
  - RATE increases the decay of the envelope clockwise from the center position
  - RATE increases both the attack and decay of the envelope counter-clockwise from the center position
- C - RATE sets the attack of the envelope
- D - RATE sets the pulse duration

TRIGGER

Hold SHIFT and press REC to trigger the envelope without recording triggers into the automation. When the envelope is in the slew/AR mode holding the REC button after holding shift will result in gates.

AUTOMATE

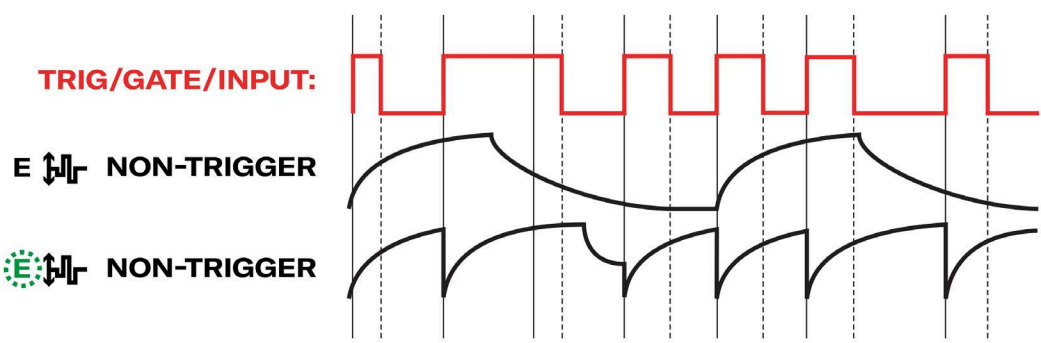
Record envelope triggers to the automation by holding REC and tapping the SHIFT button (press 2x SHIFT to clear the trigger automation).

Automate the duration of the envelope by holding REC and turning the RATE knob (press 2x REC to clear the knob automation).

BEHAVIOR

Hold SHIFT and press the E/F channel buttons to modify the envelope's behavior. While holding SHIFT, the E/F icon will light up, if the function is on:

- E - toggle retrigger enable/disable
  - When the envelope **retriggers,** it will reset to its beginning point with every detected trigger. This is useful for keeping the rhythm intact.
  - When the envelope **does not retrigger,** it will finish its shape before accepting new triggers. This is great if you want to use the envelope duration to alter the rhythm it produces. Combine it with RATE automation for the fullest potential.

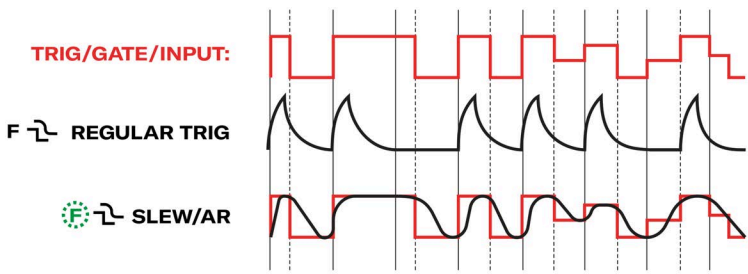


- F - SLEW/AR mode
  - When the envelope is in the **regular triggered** mode, it will only detect triggers on the rising edge of the input and then it will render the whole envelope shape.
  - When the **SLEW** behavior is activated, the envelope will try to match exactly the input voltage, but slowly, with the attack and decay settings applied for the rising and falling times. This is useful for creating sliding sequences, and with the RATE automation, it can produce very interesting effects.

NOTE: The IN E/F or META IN has to be set to TRIG mode for the SLEW to take effect with various voltages.

This specific behavior allows you to use the envelopes as **AR** (attack-release) envelopes. Such an envelope will respect the duration of the input gate. It will render an attack when the gate goes high and a release when it goes low.

NOTE: With SLEW enabled, when recording trigger automation by holding REC and pressing and holding SHIFT, the sequencer records durational gates instead of trigger events.



NOTE: In ENV mode, the envelopes are always unipolar and cannot be switched to bipolar.

CV MODE

CV MODE is designed for recording the knob movements and creating pitch and gate sequences. It can also serve as a powerful voltage processing utility.

RATE

Use the RATE knob to set the voltage at the output.

AUTOMATE

Automate the output by holding REC and turning the RATE knob (press 2x REC to clear the knob automation).
Hold REC and tap or hold SHIFT to record continuous output gates, instead of trigger events (press 2x SHIFT to clear the automation).
Hold SHIFT and press or hold REC to perform manual gates without recording triggers into the automation.

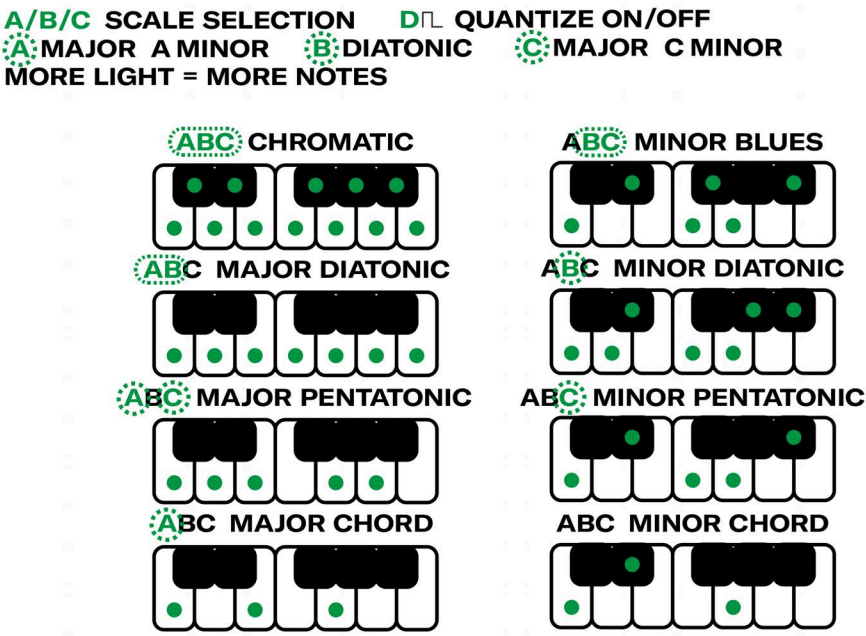
QUANTIZATION

Hold SHIFT and press A, B, C, D channel buttons to control quantization:

- D - toggles quantization ON/OFF
- A - switch between major (light ON) and minor (light OFF) scale
- B & C - combinations of these select which kind of scale is used

TIP: In general, the more A/B/C lights are on, the more notes are in the scale.

Scale examples are in the key of C:

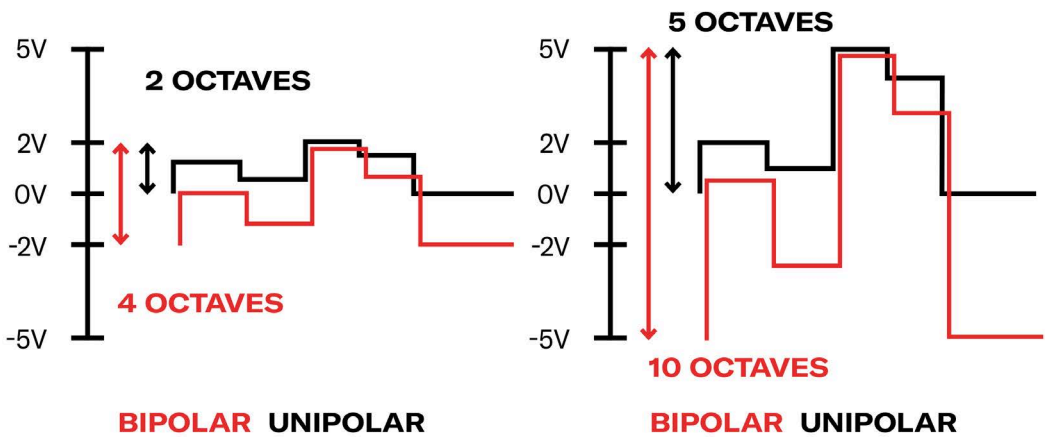


NOTE: To transpose into a different key, tune your oscillator's root note to the desired key. Refer to the calibration procedure to match your CV channel with your oscillator and ensure accurate tuning.

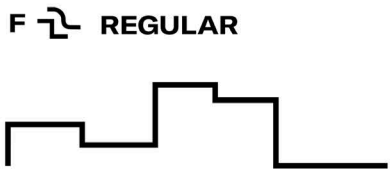
BEHAVIOR

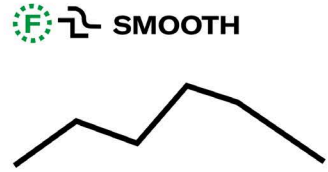
Hold SHIFT and press the E/F channel buttons to modify the behavior of the CV mode:

- E - toggles the voltage range between 5V (ON) and 2V (OFF). When combined with the unipolar/bipolar setting (A/B/C/D/E/F+MUTE), it provides various octave ranges.



- F - toggles between smooth linearly-interpolated automation (ON) and a regular stepped sequence (OFF)





UNIPOLAR / BIPOLAR

Hold the respective channel button A/B/C/D/E/F and press the MUTE button to set the selected channel as BIPOLAR (MUTE light ON) with an amplitude of -5V to +5V or UNIPOLAR (MUTE light OFF) with an amplitude of 0V to +5V. Combine it with the range setting (SHIFT+E) to achieve varying octave range.

CV MODE AS A VOLTAGE PROCESSOR UTILITY

You can utilize IN E/F or META IN as inputs for the CV mode, allowing you to process external voltages. Here are some tips:

1. Use regular or inverted input modes (or attenuated versions of them) to offset input signals with the RATE knob. It also comes in handy for voltage inversion.
2. Same as No.1 but with the quantizer activated, this mode functions as a quantizer. Using multiple channels in CV mode via META IN allows you to create quantized linked polyphonies.
3. Switch the selected input into VCA mode with quantization OFF (SHIFT+D), set to bipolar (A/B/C/D/E/F+MUTE), and 5V range (SHIFT+E). In this configuration, the RATE knob will attenuvert the incoming signal. Since it operates as a bipolar VCA, the signals essentially multiply each other, and it doesn't matter which signal is which.
4. Use no input and solely adjust the RATE knob to create a positive or negative voltage offset. This way, you´ll be able to reconfigure various modules.

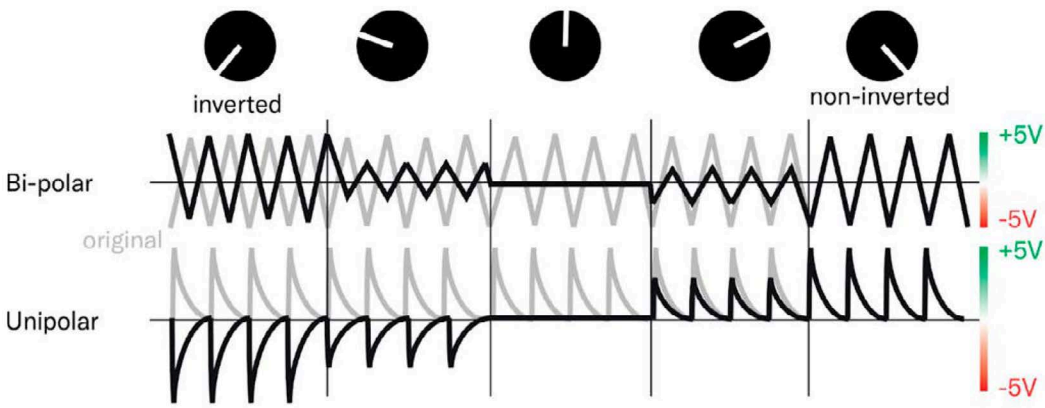
ATTENUATION / ATTENUVERSION

Modulation depth is very important in the modular context and although the Eurorack format typically requires the inputs to have attenuators/attenuvertors, many of the modern modules have simple open inputs.Therefore, NeoTrinity comes with built in solutions that don't require any external modules.

You can attenuvert the channel's output by holding the A/B/C/D/E/F button and turning the RATE knob. Fully clockwise is the default un-attenuated signal. It gets attenuated towards 12 o'clock and inverts counter-clockwise.
NOTE: Changing channel MODE or changing the UNIPOLAR/BIPOLAR setting will reset the attenuversion value to fully positive (CW).

NOTE 2: When using CV mode with Quantisation ON, the attenuversion will be done before the quantizer, so you can use it creatively to adjust your melodies without the melodies going out of tune.

Attenuversion
A/B/C/D/E/F + RATE



4 AUTOMATION

There are two components to automation in each of the modes:

1. **RATE AUTOMATION:** Hold the REC button and turn the RATE knob to start recording the automation for the main parameter. It will influence the channel speed, decay, or value in the various channel modes.
2. **TRIG AUTOMATION:** Hold REC and tap the SHIFT button to input rhythmic information into the automation sequencer. It will add resets, envelope triggers, or gates in the various channel modes.

Once either automation is recorded, the REC light turns ON.

After recording RATE automation, use the RATE knob to offset the recorded sequence. Park the RATE knob in the middle to maintain the original recorded automation sequence.

Double tap REC to **CLEAR** the recorded RATE automation.
Double tap SHIFT to **CLEAR** the TRIG automation.
While holding MUTE, press and hold REC to **ERASE** only specific parts of the automation (erasing while holding both buttons).

AUTOMATION LENGTH

Hold REC and press channel buttons A/B/C/D/E/F to change the length of the automation sequence to 2/4/8/16/32/64 steps.
Hold REC and press CLK (+) or MUTE (-) to adjust the length of the sequence in finer steps.

NOTE: The CLK light blinks shortly at the beginning of the recorded automation sequence.

TIME-QUANTIZED / NON-QUANTIZED TRIG AUTOMATION

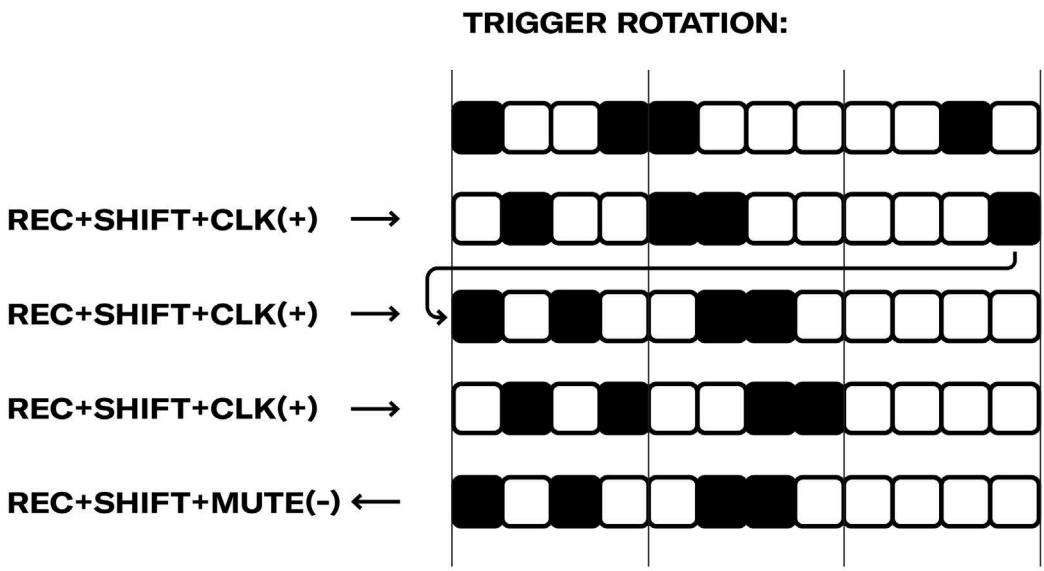
By default, all recorded triggers (or gates) are quantized to the clock. You can toggle the quantization OFF/ON separately for each channel.

Hold the channel button A/B/C/D/E/F and press the CLK button to make the corresponding channel's triggers **QUANTIZED** (CLK light ON) or **NON-QUANTIZED** (CLK light OFF).

NOTE: "Non-quantized" triggers are technically still quantized, but the resolution is very high (24x the clock cycle).

TRIGGER ROTATION

You can shift the entire TRIG automation sequence forward or backward by holding both REC and SHIFT and pressing CLK (+) or MUTE (-). Each tap represents one step.



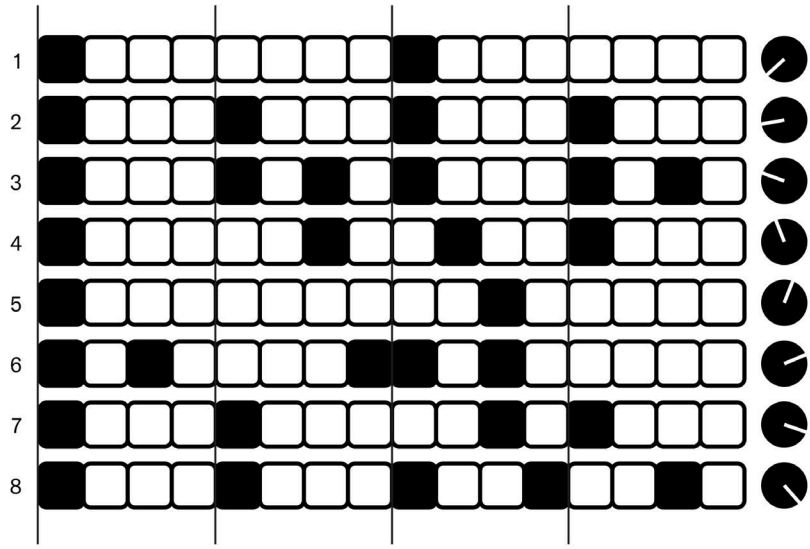
5 ALGORITHMIC TRIG FILL GENERATOR

Hold REC, press and hold SHIFT, and don't release them. Now, press one of the channel buttons A/B/C/D/E/F to select an algorithm that will be used to generate the sequence. Then, when you move the RATE knob, you will generate an algorithmic TRIG FILL sequence based on the position of the knob.

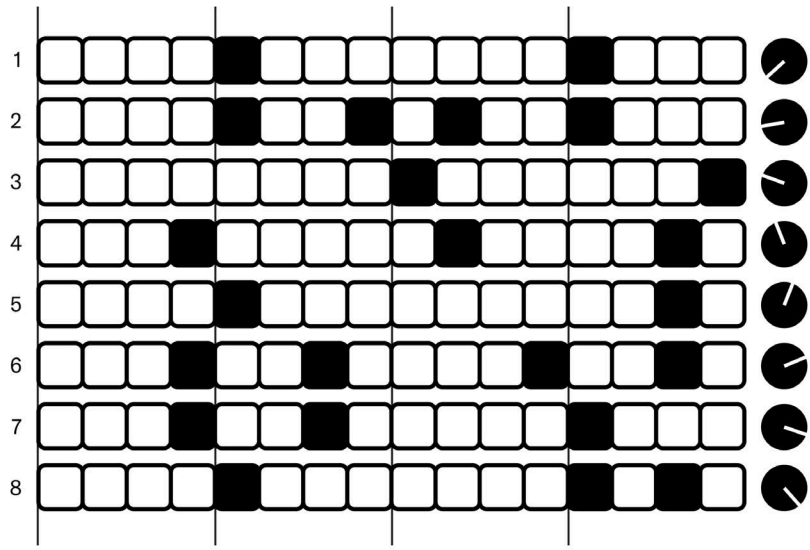
The generated algorithmic TRIG automation behaves the same way as the manually recorded one. That means generating triggers in ENV mode, gates in CV mode and resets in LFO mode. You can also shift, clear or erase the algorithmic automation.

The available algorithms are:
A - 8 common kick drum patterns (the RATE knob selects the pattern)
B - 8 common snare drum patterns (the RATE knob selects the pattern)
C - 8 common hi-hat drum patterns (the RATE knob selects the pattern)
D - divider algorithm will generate regular triggers similar to clock/divider patterns. When using non-quantized TRIG automation, the dividers can also create clock multiplications.
E - euclidean pattern generates the most equal distribution of a number of triggers (set by the RATE knob position) over a number of steps (the automation length)
F - random pattern generates a number (set by the RATE knob position) of randomly placed triggers over a number of steps (the automation length)

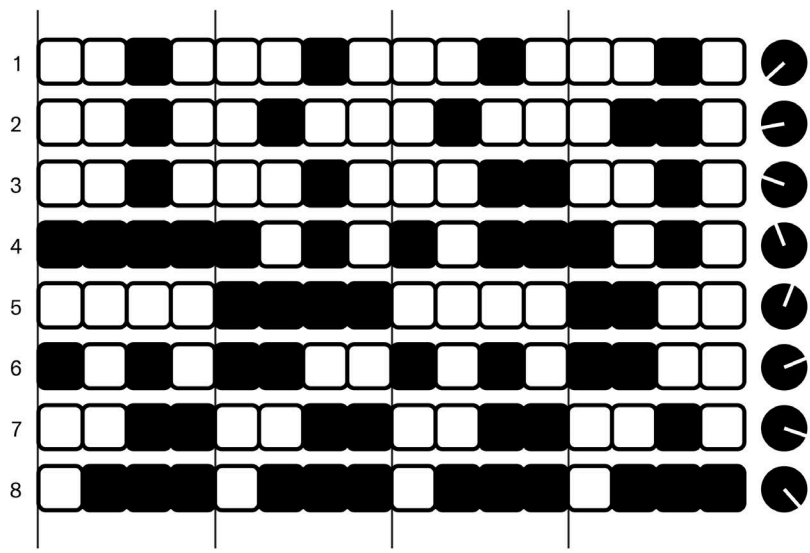
BASS DRUM PATTERNS



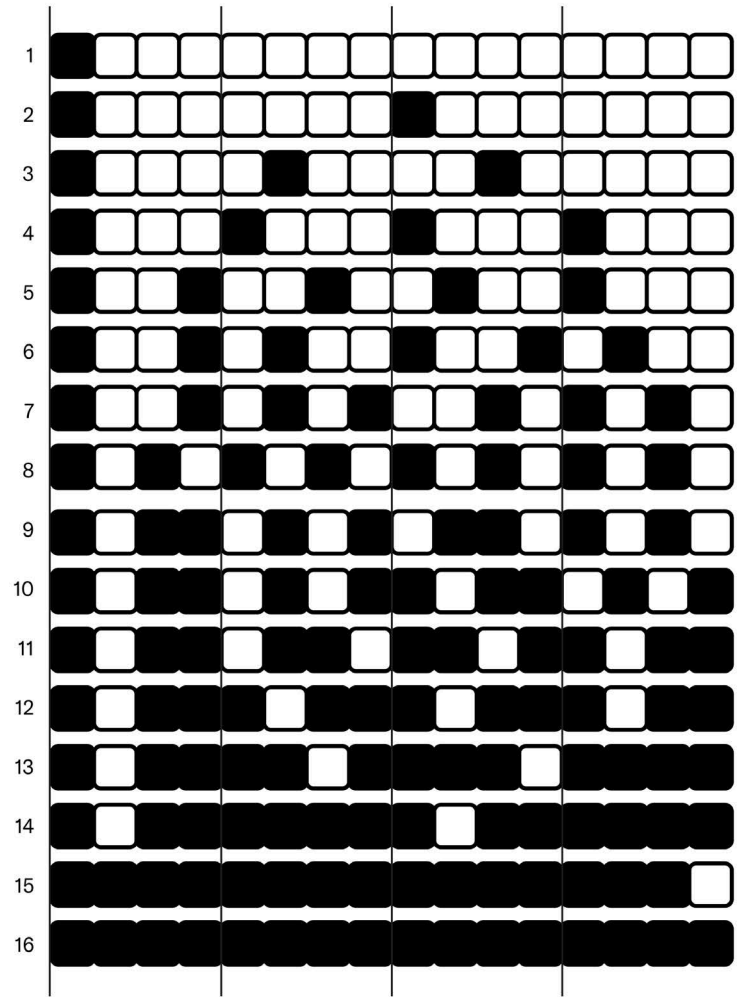
SNARE DRUM PATTERNS



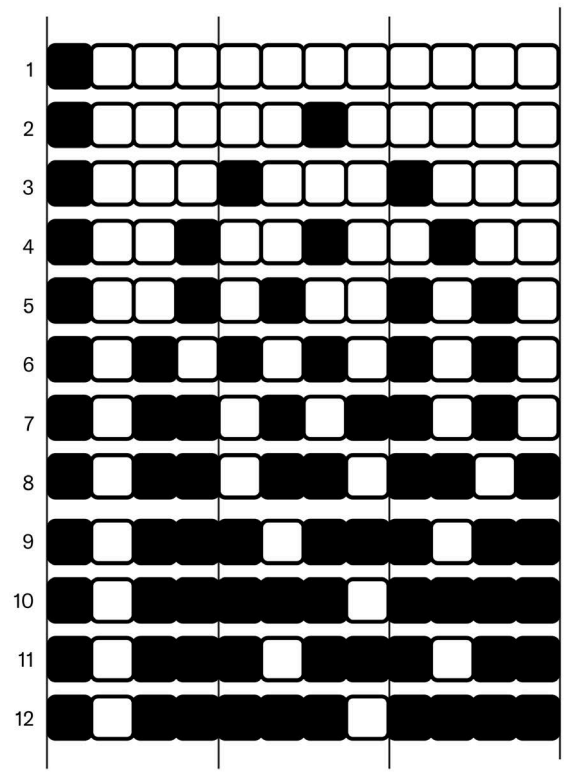
HI-HAT PATTERNS



EUCLIDIAN PATTERNS 16 STEPS



EUCLIDIAN PATTERNS 12 STEPS



6 MUTE

Hold the MUTE button and press corresponding channel buttons to mute (light OFF) or unmute (light ON) any channel.

NOTE: when the selected channel is muted, then holding SHIFT and pressing REC will result in gate outputted at the channel's output regardless of the MODE.

7 CLK CHANNEL

The clock channel controls the module's clock.
Press CLK to enter clock channel settings. Press CLK again or press any other channel button A/B/C/D/E/F to leave.

CLK OUT sends out the clock Neo Trinity is running on and indicates it with the nearby light. The output voltage range is 0V to +5V.

CLK IN receives an external clock. The maximum accepted clock frequency is 50Hz.
If CLK IN is not connected, the module generates its own clock = **INTERNAL CLK MODE**.
If CLK IN is connected, the CLK channel acts as a divider/multiplier = **EXTERNAL CLK MODE**.

INTERNAL CLK MODE

Turn the RATE knob to select the clock speed.



Hold REC and tap SHIFT to define the **TAP Tempo** (set the speed by tapping SHIFT). The final clock will be 4 times faster, assuming the clock is 16th notes and you are tapping quarter notes.

EXTERNAL CLK MODE

The internal clock is ignored when a jack is plugged into CLK IN.

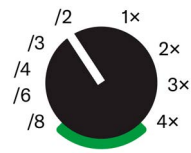
Select the external clock multiplier/divider factor by holding SHIFT and pressing one of the channel buttons A/B/C/D/E/F:

- A - 8 divider
  - substep 6 divider
- B - 4 divider
  - substep 3 divider
- C - 2 divider
- D - normal 1x
- E - 2x multiplier
  - substep 3x multiplier
- F - 4x multiplier

Hold SHIFT and press CLK (+) or MUTE (-) to browse the substeps with odd numbered divider/multiplier factors.

NOTE: The multiplier/divider change may take a few clock cycles to finish, since the module is first completing the current multiplication/division cycle.

Turn the RATE knob to select a multiplier/divider.



CLK DIVIDER/MULTIPLIER

Hold REC and tap SHIFT to enter the multiplier/divider factor by **tapping** as in the internal clock mode(TAP Tempo). The clock rate will be multiplied by 4 and the closest multiplier/divider will be selected.

START/STOP

Press MODE to start/stop the clock and the automation sequences. The automation sequences will start playing from the beginning when you re-start the clock. Recording any automation on any channel will re-start the clock if it was stopped.

NOTE: The CLK light blinks shortly at the beginning of the automation sequence of the selected channel.

8 RESET

Use the RESET input to reset the automation sequencers (they go to their beginning = first step). All channels have the possibility to ignore the reset input and run independently. Hold SHIFT and press the MUTE button to set the selected channel to listen to the RESET input (MUTE light ON) or ignore it (MUTE light OFF).

NOTE: When any channel is the ENV mode and it listens to RESET, it will produce a trigger on the first step when Neo Trinity was previously stopped manually (pressing MODE on CLK channel) and starts playing.

INPUTS

The straightforward mechanics of Neo Trinity attain vast complexity with the use of its configurable inputs.
Channels E and F have their dedicated inputs, while the META IN can affect one or several channels at once in various ways. See the Patch Tips section to learn the core ideas behind the individual input modes.

9 IN E AND IN F

Channels E and F have their dedicated inputs affecting only their respective channels.
Hold the channel button E or F and short-press MODE to cycle through the available **input modes (see below)**.
Hold the channel button E or F and long-press MODE to disable the input for the selected channel.

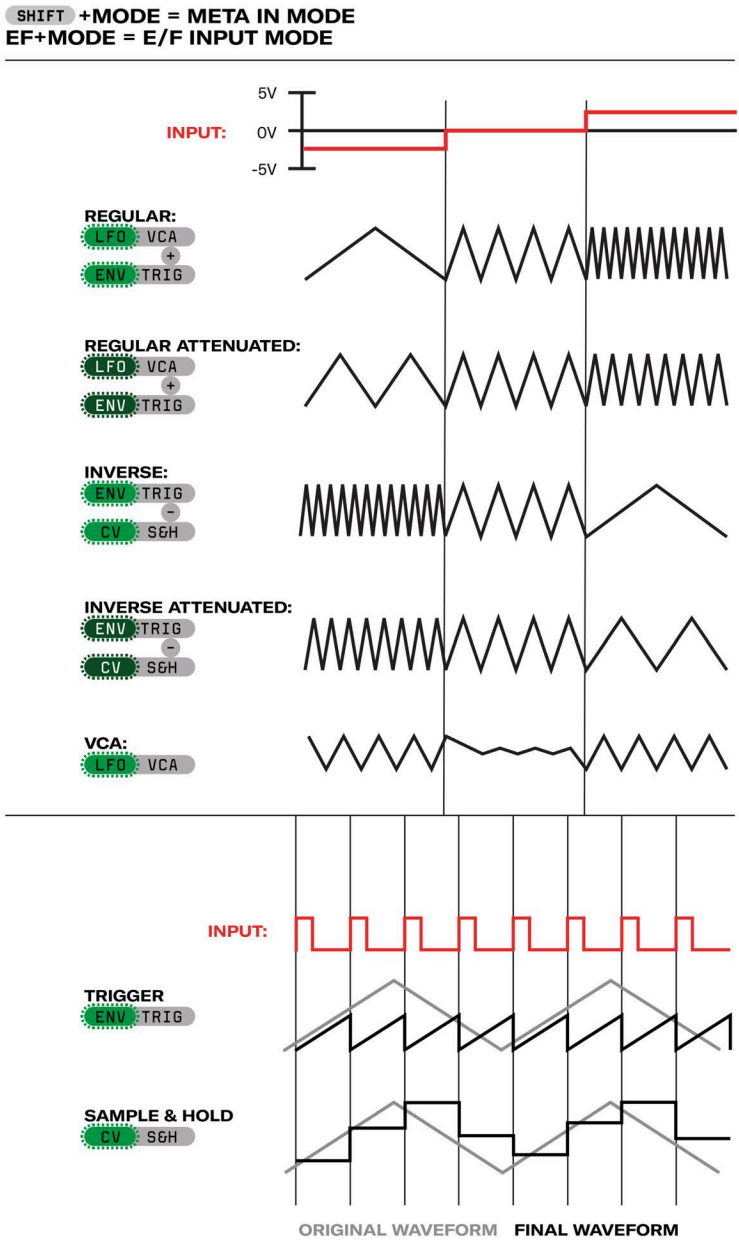
10 META IN

META IN is an input that can affect some, none or all the channels.
Hold SHIFT and short-press MODE to cycle through the **INPUT MODES** for the selected channel.
Hold SHIFT and long-press MODE to **DISABLE** the META IN for the selected channel.
NOTE: All the inputs are updated at a rate of 4kHz (4000 times every second).

INPUT MODES

The same input modes are available for IN E/F and META IN. You will cycle thru these different modes:

- Regular: affects the position of the RATE knob
  (LFO+ENV lights ON)
- Regular attenuated: affects the position of the RATE knob, but less
  (LFO+ENV lights dimmed)
- Inverted: inversely affects the position of the RATE knob
  (ENV+CV lights ON)
- Inverted attenuated: inversely affects the position of the RATE knob, but less
  (ENV+CV lights dimmed)
- VCA: affects the output amplitude of the channel – the input voltage is proportional to the output amplitude (behaves as a bipolar VCA, the input and the channel output get multiplied)
  0V = silent output, +5V = normal output, -5V = inverted output
  (LFO light ON)
- TRIG: detects the rising edge of trigger signals and then triggers the envelope or resets the LFO. Trigger is detected when the voltage on the input passes a threshold from below 2V to above 2V.
  When ENV is in the SLEW mode, it detects the various voltages the envelope slews to.
  (ENV light ON)
- Sample & Hold: On the rising edge at the input, S&H remembers the current output value of the channel and holds it until the next rising edge is detected. S&H is only rendered if a jack is detected at the corresponding input; otherwise the channel will be unaffected.
  (CV light ON)



V/OCT

In LFO and CV mode, the regular input mode acts as a V/OCT input. For LFO mode, it means that applying 1V will make the LFO 2x faster, 2V will make it 4x faster etc. Using the LFO in audio rate can turn it into a lo-fi audio oscillator.

11 BANKS

Neo Trinity offers 6 banks (A/B/C/D/E/F) that can hold all settings of all channels, including the RATE and TRIG automation.
The currently selected bank is signalized when holding down the BANK button.

Hold BANK and press a channel button A/B/C/D/E/F to load a bank.
Hold SHIFT and press BANK to save the currently selected BANK (or hold BANK and press SHIFT).
Hold BANK and long-press a different channel button to save the current BANK to that selected bank slot.
Hold BANK and CLK and then press a channel button A/B/C/D/E/F to load that selected bank at the end of the automation sequence.

COPY AND PASTE

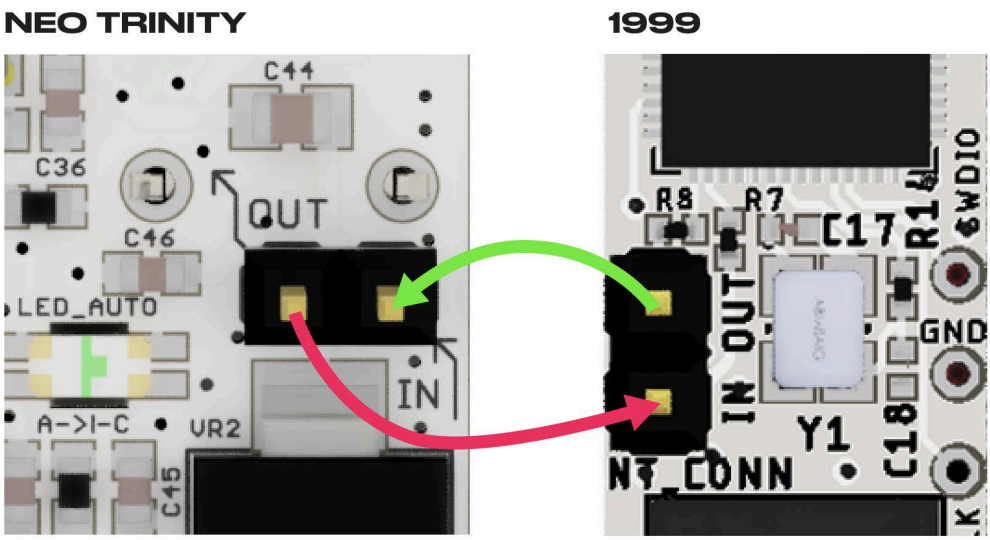
You can copy and paste the settings of a single channel at a time.

To copy a channel, hold the corresponding channel button A/B/C/D/E/F and short-press the BANK button.
To paste the copied channel, hold the destination channel button A/B/C/D/E/F, and then press and hold BANK for more than 2 seconds.
NOTE: You can also change BANKS between copy and paste and then paste the copied channel to several locations.

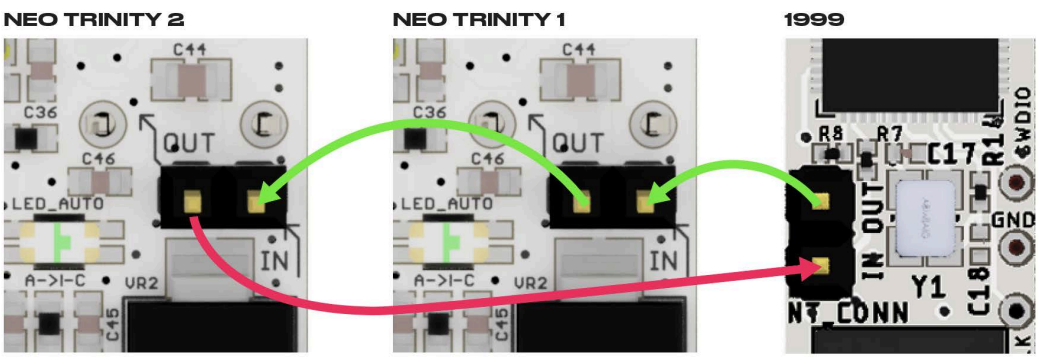
12 IN/OUT EXPANSION HEADER

The In/Out header is a digital interface for future interaction between multiple Bastl modules. Most notably you can use it to connect 1999 TRS MIDI and USB MIDI expander to unlock full MIDI functionality.
Always connect module IN to OUT and vice versa. Only one 1999 Expander per chain is allowed.

SINGLE NEO TRINITY AND EXPANDER

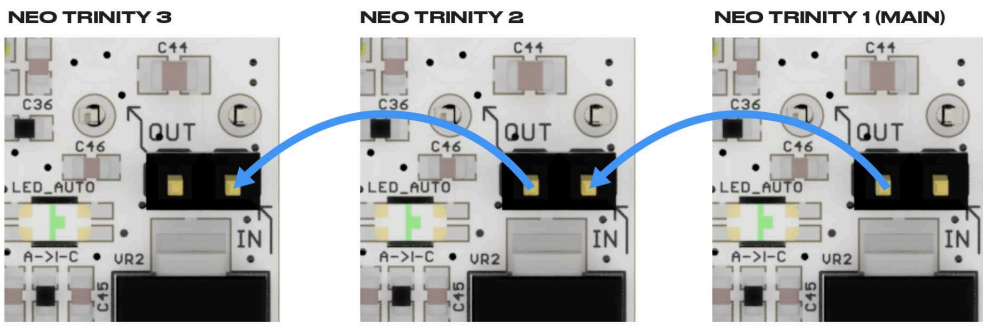


TWO OR MORE NEO TRINITY MODULES AND EXPANDER



TWO OR MORE NEO TRINITY MODULES WITHOUT EXPANDER

Use this to share the clock. The Neo Trinity #1 is the clock source, use it to start/stop the clock etc. Patch an analog clock into the #1 to distribute it between the others.



***Don't make a looped connection**: When using Neo Trinity modules without Expander don't connect the output of the last one to the input of the first one to prevent an infinite MIDI messages loop.*

13 FIRMWARE UPDATE

1. Unconnect the module from your rack. Hold the REC button and plug in a USB-C cable connected to your computer. The REC light should glow red, and the CLK OUT light pulse slowly.
2. Neo Trinity will show up as a mass storage device on your computer.
3. Copy the firmware update *.uf2 file to the Neo Trinity virtual disk drive. Wait and don't disconnect the module until a successful update is indicated by the module automatically resetting and displaying the new firmware version number.

FIRMWARE VERSION (ON STARTUP)

The initial release version 1.0 is indicated by the channel A light ON at startup. The next firmware version will be indicated as "B" and so on. See the Release Notes for more information.

The exact firmware build number is accessible in Factory Test mode.

HOW TO UPDATE 1999 EXPANDER FIRMWARE (RECOMMENDED METHOD)

1. Turn off your eurorack.
2. Disconnect the module.
3. **Set the DEVICE/HOST slider switch to the top position (DEVICE).**
4. While holding the SET button, connect the module to your computer using the front USB-C.
5. Copy the UF2 firmware file onto the RPI-RP2 drive.
6. After the file is uploaded, the drive disconnects itself and the module LEDs will quickly flash.
7. Reconnect the module to the eurorack and turn it on.

HOW TO UPDATE 1999 EXPANDER FIRMWARE (QUICK METHOD)

1. Turn off your eurorack.
2. **Set the DEVICE/HOST slider switch to the top position (DEVICE).**
3. While holding the SET button, connect the module to your computer using the front USB-C.
4. Copy the UF2 firmware file onto the RPI-RP2 drive.
5. After the file is uploaded, the drive disconnects itself.
6. Turn on your eurorack.

USER CALIBRATION

OUTPUT CALIBRATION

The goal of the user calibration is to pair the V/OCT inputs of your oscillator with one of the Neo Trinity channels. This way allows the quantizer to achieve a much higher level of precision.

1. Hold MODE at power-up to enter User calibration mode.
2. Connect a tuner so it listens to your oscillator. Tune the oscillator to a root note of your choice in the bass region.
3. Connect the output of the desired Neo Trinity channel to the V/OCT input of your oscillator.
4. Press the corresponding channel button to select the calibrated channel.
5. Use the MODE button to cycle between 0V (CV light ON), 2V (ENV light ON) and 5V (LFO light ON).
6. Use the CLK (+) and MUTE (-) buttons for fine increments/decrements of the calibration. Hold the SHIFT button and press +/- buttons for larger steps.
7. With every octave tuning point, check your tuner and use the +/- buttons to tune your Neo Trinity perfectly. Go through the tuning points several times.
8. Hold the MODE button for over 5 seconds to leave User calibration mode. The calibration is stored in the memory.

INPUT CALIBRATION

1. Hold MODE at power-up to enter the User calibration mode.
2. To calibrate any of the CV inputs (META IN, IN E or IN F), use the output of a selected channel and plug it into any of the three CV inputs. These inputs will be calibrated automatically, and the REC light will blink to confirm.
3. Hold the MODE button for over 5 seconds to leave User calibration mode. The calibration is stored in memory.

BOOT SETTINGS

FORMAT MEMORY

Hold BANK on power-up. All the custom banks, channels and clock settings are erased.

FACTORY CALIBRATION

Hold BANK+MODE on power-up. Factory calibration is cleared. Now, you need to calibrate the unit to use the module again. Channel A is being calibrated automatically. Wait for the blinking. When the blinking starts, Neo Trinity is waiting for you to:

1. Connect Channel A to META IN
2. Unplug the cable from META IN and plug it into IN E
3. Unplug the cable from IN E and plug it into IN F
4. Unplug the cable from Channel A and plug it into Channel B
5. Unplug the cable from Channel B and plug it into Channel C
6. Unplug the cable from Channel C and plug it into Channel D
7. Unplug the cable from Channel D and plug it into Channel E
8. Unplug the cable from Channel E and plug it into Channel F

The device is now calibrated and continues into Factory test mode.
Hold MODE or power-cycle the module to exit the test mode.

FACTORY TEST MODE

Hold SHIFT on power-up to enter the Factory test mode, where you can test the user interface. Most inputs and outputs are already tested during the Factory calibration.

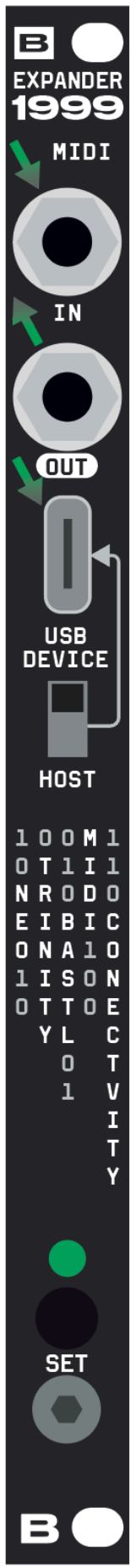
When you press a button, the light close to the button should temporarily turn ON; the REC and CLK OUT lights should turn ON when the REC button is pressed. Pressing the MODE button cycles through the Mode lights.

RATE knob controls the RATE light below it and cycles all outputs between -5V and 5V in 1V steps (light intensity and color varies accordingly).

CLK IN can be tested by patching a cable from CLK OUT into CLK IN – when CLK IN receives a clock signal (by tapping REC), the CLK light will come ON. The RESET input can be tested in the same way, by patching a cable from CLK OUT into it. MUTE light goes ON when the RESET input receives a signal.

NOTE: When the test mode is starting, the exact firmware build version is shown as a right-aligned binary number (A-F). Exit the test mode by long pressing MODE or power cycling the module.

1999 EXPANDER



TRS MIDI

TRS MIDI In and Out are both Type A connections and require TRS 3.5mm stereo jack cables to work.
To use with 5 DIN MIDI you will need a Type A adapter. The TRS MIDI input does not share ground with the modular system and is optically isolated, therefore avoids most USB ground noise issues.

USB MIDI

The USB connector has a switch with two modes:
USB Device Mode is used when connecting to USB Host inputs: your computer, phone or some other devices that support the Host functionality. Typically a USB Device would be your MIDI Controller or a synth, so the 1999 will be seen as such device and it will receive and send MIDI.

USB Host Mode is perfect if you want to connect a USB Device to your modular system. That can be your MIDI Controller or a synth. The 1999 will supply up to 5V 0.75A power for the device and will receive and send MIDI Information.

!DO NOT use **USB Host Mode** when **connecting** to another **USB Host** such as your computer**!**

NOTE: Technically you can connect a USB hub in the host mode and connect your device to it. However it will only pick the first connected device since it can only handle one USB device at a time.

TIP: If you are running into grounding USB noise issues consider using the TRS MIDI Input instead of USB MIDI.

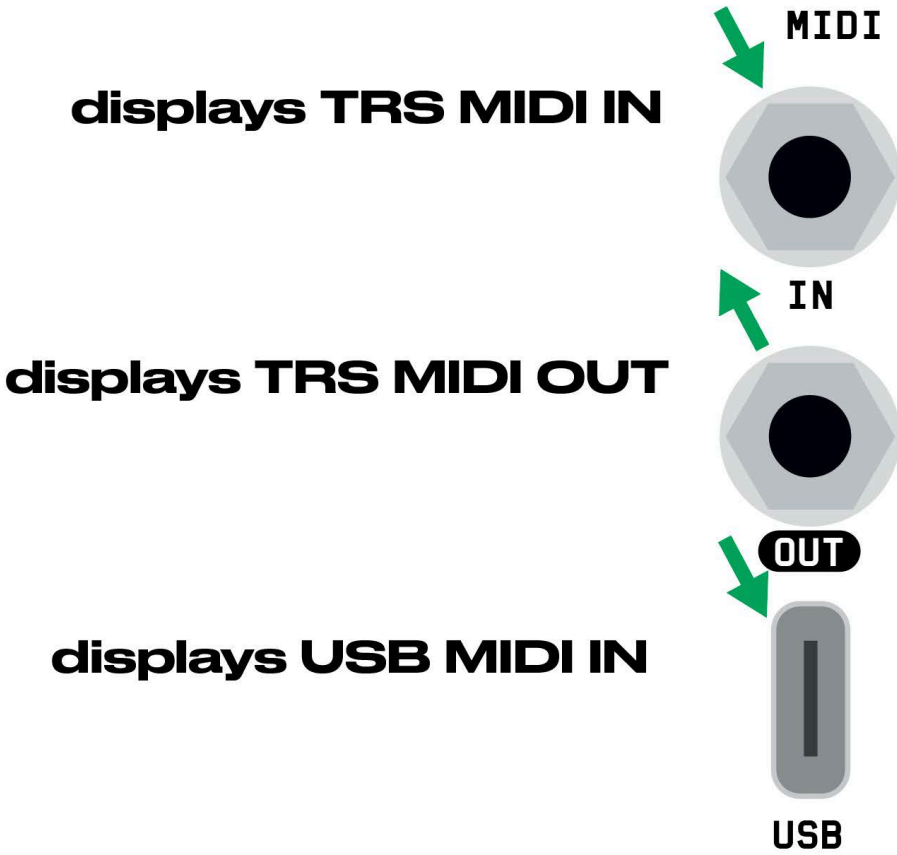
Forced USB Host mode is a special non-standard USB mode where the 1999 can be in the USB Host mode without

providing power to the hosted device. This can help reduce USB noise in some setups where the noise doesn't come from the ground loop but from the power line. To activate it, hold the SET button for over 60 seconds. When activated the SET light will always be red when holding the SET button.
Now you can turn off the power for the hosted device by setting the switch to the upper (DEVICE) position.
To deactivate hold it again for 60 seconds.

DISPLAYING MIDI

3 lights show MIDI information, helping to understand and troubleshoot the stream of MIDI data.
TRS MIDI In light shows the incoming MIDI traffic on this input, displaying both clock and other messages such as notes, CCs, pitch bend etc.
TRS MIDI Out light displays outgoing MIDI traffic from the Neo Trinity.
USB MIDI In light displays **incoming** MIDI traffic on this input.

NOTE: Because USB MIDI is both input and output, Neo Trinity MIDI Out is also sent via USB. However it is the same MIDI as on the TRS MIDI OUT so it is only displayed on that light only. Both connections can be used simultaneously.

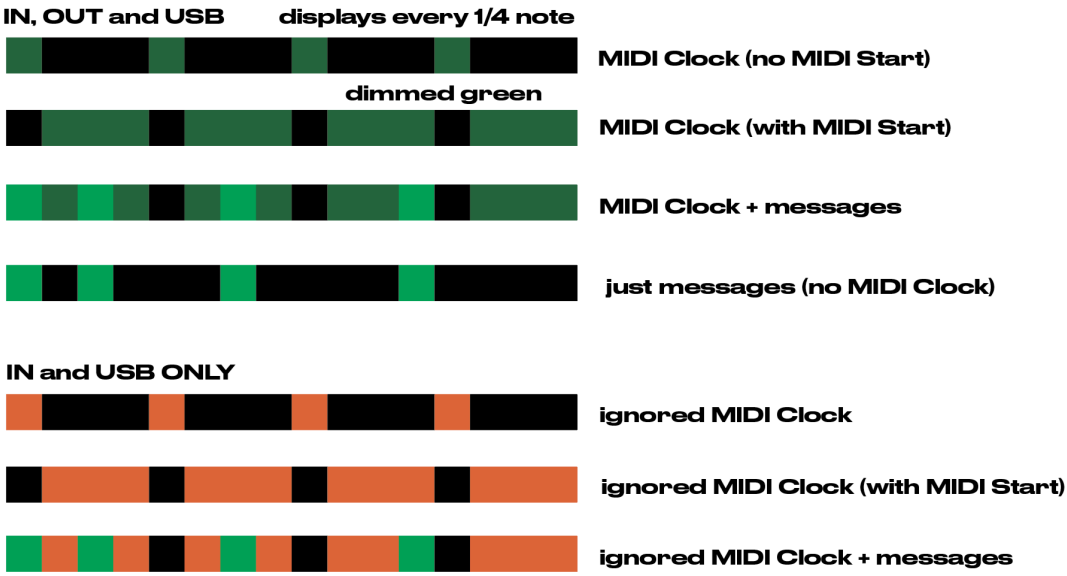


Main MIDI messages are displayed by a brief green blink. MIDI clock messages are displayed with dimmed green light. If MIDI clock is ignored on specific TRS or USB input it will be still displayed, but in a dimmed orange color.

Note On/Off, MIDI CC, Pitch Bend

MIDI Clock

ignored MIDI Clock



NEO TRINITY CLOCK

Neo Trinity has the following clock prioritisation:

CLK IN > MIDI Clock > Internal clock

If you want to use CLK IN you simply plug in a cable and it will automatically switch to it.

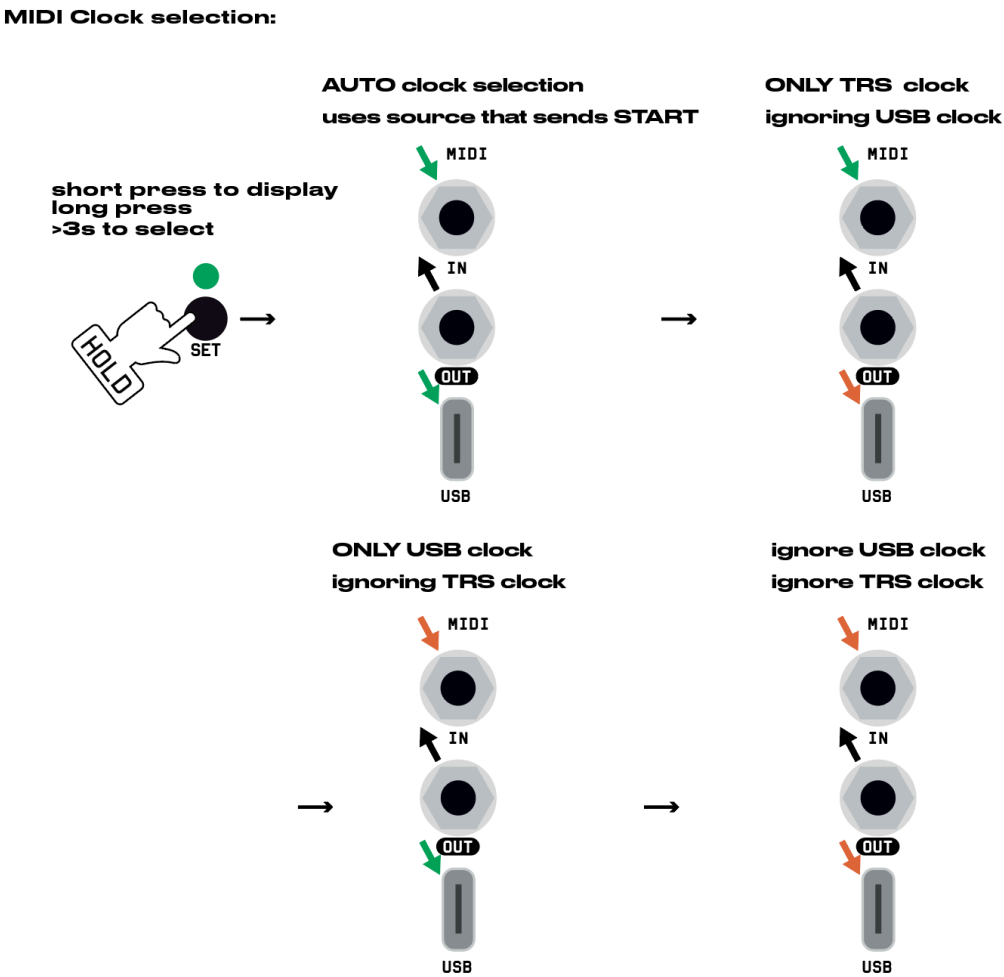
Using **MIDI Clock** as your source It will only work if **CLK IN jack is NOT connected**.

The MIDI Out on the 1999 will reflect the current clock source of the Neo Trinity, including sending Start and Stop messages. This means you can use CLK IN and RST with another sequencer and the Neo Trinity will translate it to MIDI clock.

NOTE: When the MIDI Clock stops arriving the Neo Trinity will switch back to Internal clock, but the Clock generator will be stopped. To restart the internal clock press the CLK button to go to the CLK channel and then press the blinking MODE button to start the clock. See Neo Trinity Clock channel for more information.

SWITCHING MIDI CLOCK SOURCE - TRS OR USB

1999 Expander will handle selecting the source of the MIDI Clock.
Hold the SET button to display the source of MIDI Clock. Hold the SET button for longer than 3s to change the priority:



TIP: If you want to prioritise the internal Clock of the Neo Trinity over MIDI Clock you will need to use 1999 to ignore both MIDI Clock sources.

NEO TRINITY MIDI IMPLEMENTATION

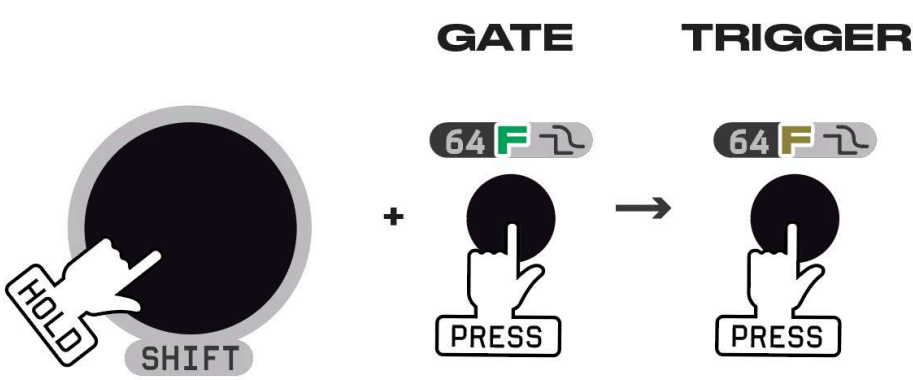
The MIDI implementation is designed to integrate well with grooveboxes that use MIDI output channels.
It assumes the groovebox or controller has MIDI settings allowing you to set the MIDI channel.

MIDI TO CV FUNCTIONALITY

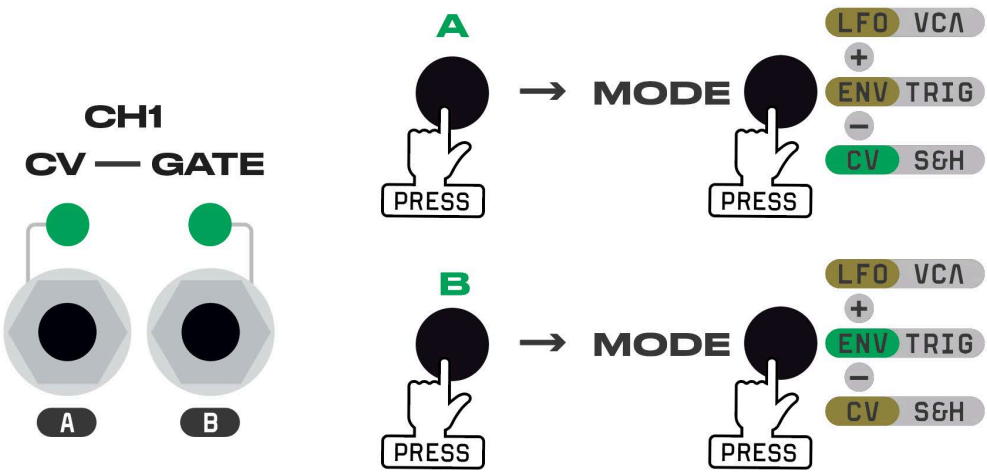
Channels A/B , C/D and E/F are CV/GATE pairs

A,C,E will only output CV when in **CV mode.**
B,D,F will only output GATE/ENVELOPE when in **ENV mode.**

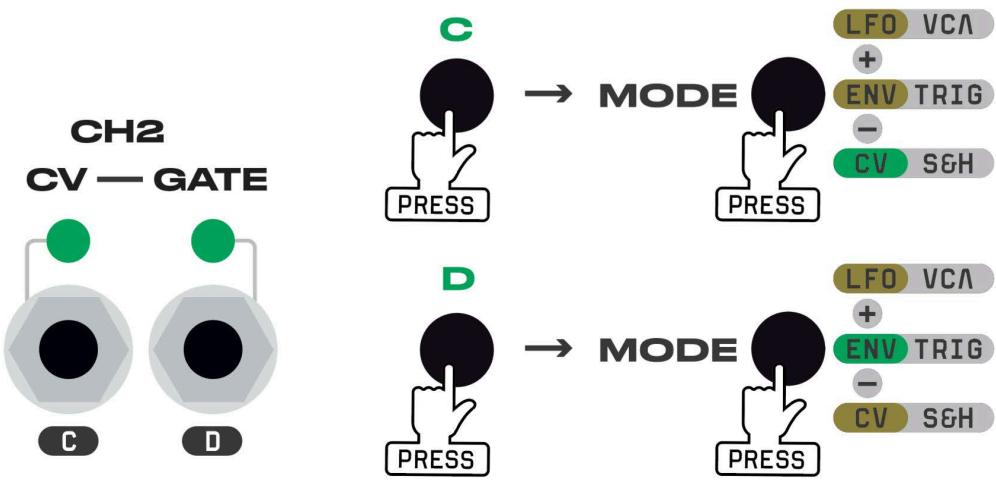
When **SLEW** mode is activated in the **ENV mode** the channels will create **gates** based on Note On and Note Off messages. Otherwise they will respond to **NOTE ON triggers**.



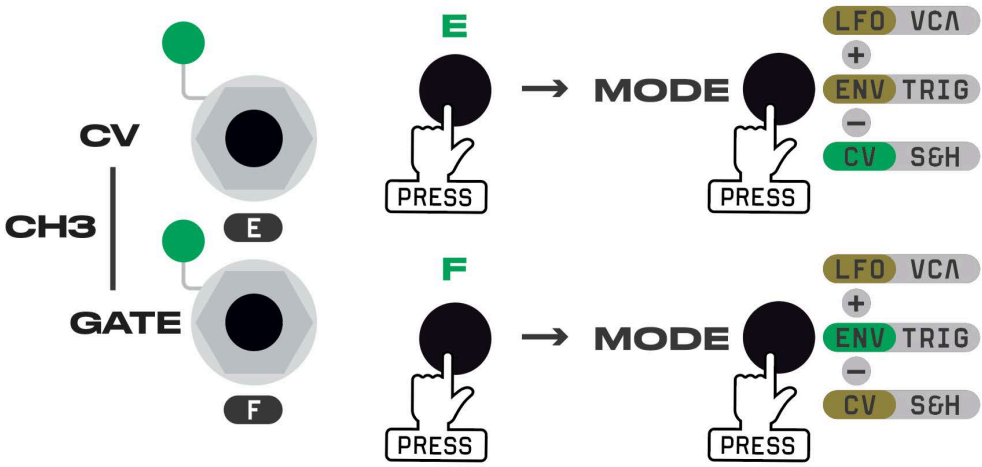
The Neo Trinity channels will respond to MIDI on different MIDI channels differently:
Simple CV/GATE
A/B pair is set to MIDI CH1



C/D pair is set to MIDI CH2



E/F pair is set to MIDI CH3



NOTE: If CV quantizer is turned ON on the CV channel the CV output will be quantized to a scale. SHIFT+D (activates and deactivates quantizer), while SHIFT+ABC (turning all lights on) is the chromatic quantizer.

Receiving a MIDI note on channels A, C and E in CV mode will overwrite the RATE knob position. Turning the knob or receiving CC02 will overwrite the note pitch CV.

TIP: Knowing the channels only respond to MIDI on specific MODES, you can disable the MIDI by using a different mode, or simply not send MIDI on their channels.

MIDI CCS

Sending mod wheel **CC01** (or CC22) on MIDI CH1 will directly set the position of the **RATE knob** on channel B, **CC02** will do the same on **channel A**. If automation is recorded this will offset the automation the same way the RATE knob would. Similarly on MIDI Channel 2: **CC01** (or CC22) will set RATE on **channel D** and **CC01** will set RATE on **channel C**. Similarly on MIDI Channel 3: **CC01** (or CC22) will set RATE on **channel F** and **CC01** will set RATE on **channel E**.

NOTE: The reason for CC01 to control the “gate” channel is that you can use the mod wheel to change the envelope decay or its rate. CC02 would overwrite the pitch information and that can be useful sometimes but not so widely.

CC00 is a **Bank Change** and it will be interpreted on any MIDI channel. It will load one of the 6 Neo Trinity banks.

More CCs are assigned to changing LFO/ENV shapes etc. See the full table.

SUSTAIN PEDAL – CC64

In the classic gate channels the CC64 controls the sustain pedal and will work as expected. It holds the note until the pedal is released. (Only affects incoming MIDI notes. Doesn’t affect any internally generated stuff.)

PITCH BEND

When channels represent MIDI notes they react to pitch bend message on their channel with range of 7 semitones.

MIDI OUTPUT (TRS)

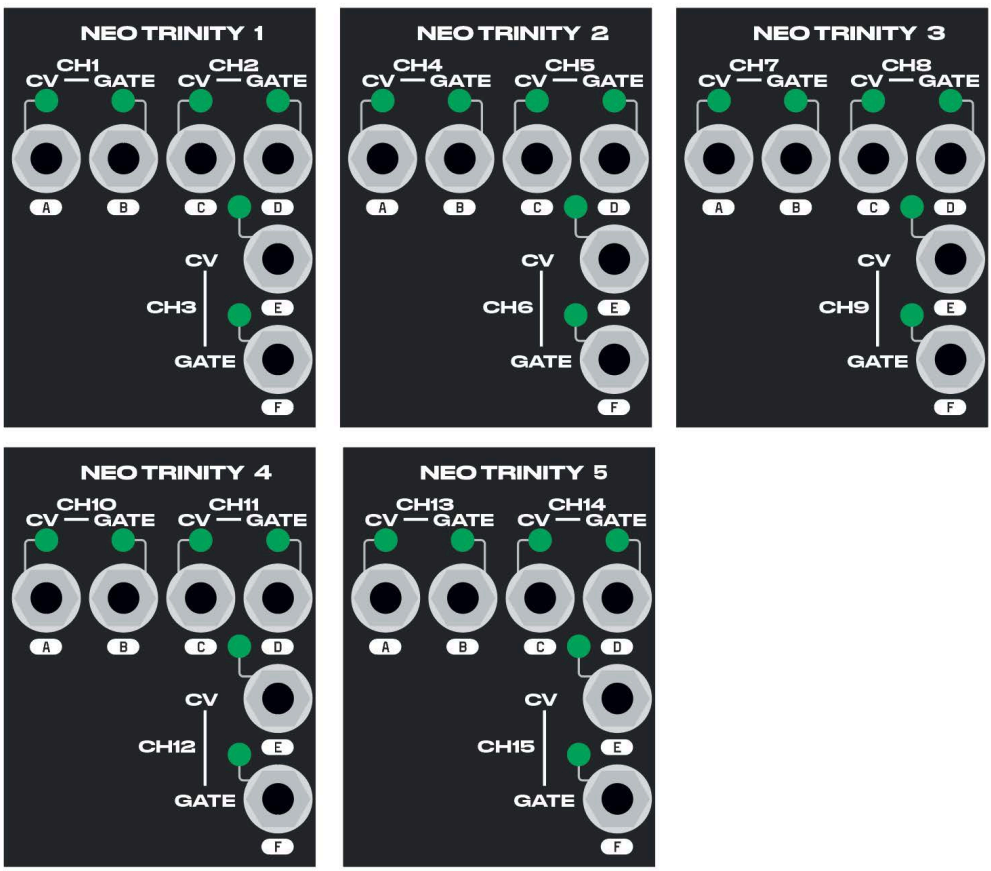
Clock/Start/Stop – always uses selected clock source: Either forwarding MIDI clock or converting external CLK IN clock or the internal clock to MIDI clock.

If channels A/B, C/D or E/F are used as CV/GATE pairs it will send **MIDI Notes** on their corresponding MIDI channels. When **BANK** is changed CC00 on MIDI channel 1 is sent.

On the selected channel the position of the RATE knob is sent out as CCs. See the full table.

CHAINING SEVERAL NEO TRINITIES

When you connect the expander to more chained Neo Trinities, they will automatically be addressed on the following MIDI channels.



The MIDI channels on the first Neo Trinity will be 1,2,3, on the second module it will be 4,5,6, on third 7,8,9, and so on.

REALTIME RECORDING MIDI AND CV

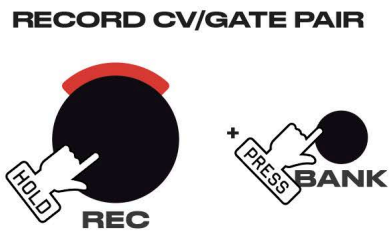
Neo Trinity can now record CV/GATE sequences either from the MIDI input or on channels E/F from the CV inputs.

Always records a CV/GATE pair AB, CD, EF

- For **CV/pitch** use channels **A**,**C** or **E**
  - set them to CV mode
  - disable quantization (SHIFT+D)
  - enable 5V range (SHIFT+E)
- For **GATE/trigger/envelope** use channels **B**, **D**, or **F**
  - set them to ENV mode
  - for outputting gates/triggers select the square shape (SHIFT+D) or use other shapes for envelopes
  - set to either trigger or gate (SHIFT+F)

TIP: It is a good idea to set the same sequence length to both the CV and GATE channel, but their length is not restricted and can be set independently for more experimental sequencing.

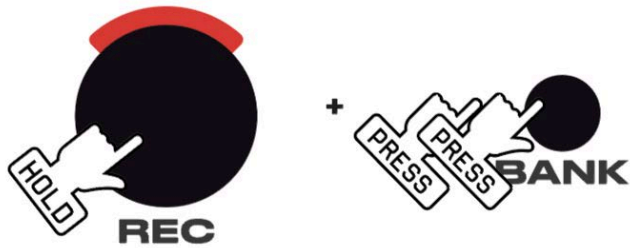
REC+BANK - starts recording from input (keeps recording – REC blinks)





Pressing **REC** stops the recording.
REC+2xBANK clears recordings on both CV and gate outputs of the selected channel.

CLEAR CV/GATE RECORDING



NOTE: Neo Trinity records on all the CV/GATE channels simultaneously. That means it would record to A/B pair even if channel C is selected. However it will only record if there are MIDI notes on these channels that means if there are no MIDI notes nothing gets recorded.

The recording overwrites the current CV automation and adds to the trigger automation.

On channels A,B,C and D it records only from MIDI input. On channels E and F it records from both MIDI input and E IN/F IN CV inputs (CV takes priority).

NOTE: MIDI input is only recorded when selected channels actually respond to MIDI.

On the GATE (envelope) channel press SHIFT + F to change trig/gate recording behaviour:

- Envelope in **trigger** mode records **triggers**
  - doesn't overwrite triggers while a MIDI note is held.
- Envelope in **slew** mode records **gates**
  - overwrites gates while MIDI note is held.
  - turns off time quantization (to prevent joining/merging notes).

NOTE: When recording pitch sequence you should set the range of the CV channel to 5V (SHIFT+E). If the range is set to 2V the pitch will be still previewed in the 5V range when

recording, but when played back the sequence will be limited to 2V. This can be also used creatively.

INTERACTION BETWEEN CV AUTOMATIONS AND MIDI

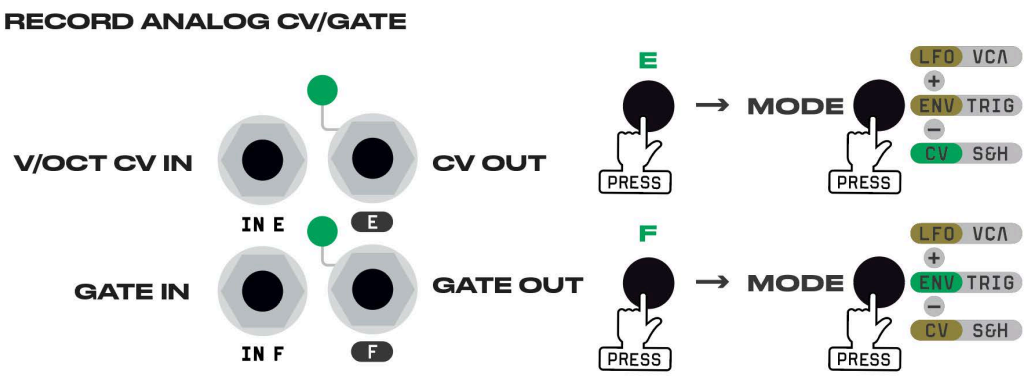
MIDI will temporarily override CV pitch automation while a MIDI note is held.

NOTE: if ENV is in SLEW mode it will override while note is held, otherwise it will send trigger and hold pitch until another trigger is dispatched by the Neo Trinity).

When interacting with the ENV channel outputting MIDI GATE the MIDI will simply mix with the automation and add triggers and gates.

RECORDING ANALOG CV/GATE FROM THE E IN AND F IN

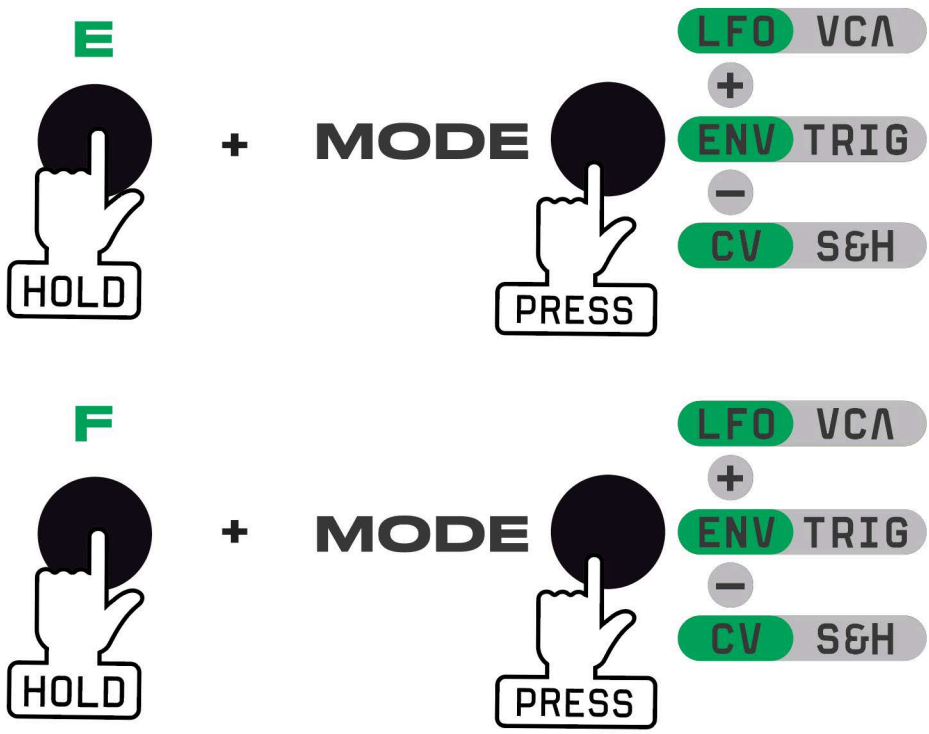
E is set to **CV**
F to **ENV**



E IN needs to be set to **ANALOG REC** mode (E+MODE until all 3 MODE lights are ON)

and

F IN needs to be set to **ANALOG REC** mode (F+MODE until all 3 MODE lights are ON)



On F channel enable/disable the slew option (SHIFT+F) to alter between TRIG and GATE recording:

- In TRIG mode - keep recording CV until new trigger is played.
- In GATE mode - keep recording CV until new gate is played.

REC+BANK will record the CV and GATE as a pair.

If a CV/GATE sequence has been recorded the CV/GATE will be overridden if a new TRIG/GATE note arrives.
In the TRIG mode - new TRIG on the input will take over recorded CV until another recorded TRIG is played.
In the GATE mode - high GATE on the input will take over recorded CV and GATE.

MIDI INPUT TABLE

NOTES AND GLOBAL MESSAGES

MESSAGE	MIDI CH	FUNCTION
Note On/Off	CH1	if A and B is CV/GATE(ENV) pair
Note On/Off	CH2	if C and D is CV/GATE(ENV) pair
Note On/Off	CH3	if E and F is CV/GATE(ENV) pair
CC00	any	load Bank
CC64	CH1/2/3	sustain pedal

MIDI CH1 – CHANNELS A AND B

CC	FUNCTION
CC01	B RATE knob (mod wheel)
	CHANNEL A – MODE COMMON
CC02	A RATE knob
CC03	A MODE
CC04	A MUTE
CC05	A BIPOLAR
CC06	A RESETABLE
CC07	A ATTENUVERSION
CC08	A QUANTIZE TRIGS
CC09	A SEQUENCE LENGTH
CC10	A TRIG GENERATOR MODE SELECTION (does not generate new sequence)
CC11	A TRIG GENERATOR VALUE (generates with every new CC, works in any mode)

	CHANNEL A – MODE SPECIFIC
CC12	A LFO SHAPE
CC13	A LFO SMOOTHING
CC14	A LFO SYNC
CC15	A ENV SHAPE
CC16	A ENV RETRIG
CC17	A ENV SLEWx
CC18	A CV QUANTIZER SCALE SELECT
CC19	A CV QUANTIZER ON/OFF
CC20	A CV RANGE
CC21	A CV SMOOTHING
	CHANNEL B – MODE COMMON
CC22	B RATE knob
CC23	B MODE
CC24	B MUTE
CC25	B BIPOLAR
CC26	B RESETABLE
CC27	B ATTENUVERSION
CC28	B QUANTIZE TRIGS
CC29	B SEQUENCE LENGTH
CC30	B TRIG GENERATOR MODE SELECTION (does not generate new sequence)
CC31	B TRIG GENERATOR VALUE (generates with every new CC, works in any mode)
	CHANNEL B – MODE SPECIFIC
CC32	B LFO SHAPE
CC33	B LFO SMOOTHING
CC34	B LFO SYNC
CC35	B ENV SHAPE
CC36	B ENV RETRIG

CC37	B ENV SLEW
CC38	B CV QUANTIZER SCALE SELECT
CC39	B CV QUANTIZER ON/OFF
CC40	B CV RANGE
CC41	B CV SMOOTHING

MIDI CH2 – CHANNELS C AND D

CC	FUNCTION
CC01	D RATE knob (mod wheel)
	CHANNEL C – MODE COMMON
CC02	C RATE knob
CC03	C MODE
CC04	C MUTE
CC05	C BIPOLAR
CC06	C RESETABLE
CC07	C ATTENUVERSION
CC08	C QUANTIZE TRIGS
CC09	C SEQUENCE LENGTH
CC10	C TRIG GENERATOR MODE SELECTION (does not generate new sequence)
CC11	C TRIG GENERATOR VALUE (generates with every new CC, works in any mode)
	CHANNEL C – MODE SPECIFIC
CC12	C LFO SHAPE
CC13	C LFO SMOOTHING
CC14	C LFO SYNC
CC15	C ENV SHAPE
CC16	C ENV RETRIG
CC17	C ENV SLEW
CC18	C CV QUANTIZER SCALE SELECT

CC19	C CV QUANTIZER ON/OFF
CC20	C CV RANGE
CC21	C CV SMOOTHING
	CHANNEL D – MODE COMMON
CC22	D RATE knob
CC23	D MODE
CC24	D MUTE
CC25	D BIPOLAR
CC26	D RESETABLE
CC27	D ATTENUVERSION
CC28	D QUANTIZE TRIGS
CC29	D SEQUENCE LENGTH
CC30	D TRIG GENERATOR MODE SELECTION (does not generate new sequence)
CC31	D TRIG GENERATOR VALUE (generates with every new CC, works in any mode)
	CHANNEL D – MODE SPECIFIC
CC32	D LFO SHAPE
CC33	D LFO SMOOTHING
CC34	D LFO SYNC
CC35	D ENV SHAPE
CC36	D ENV RETRIG
CC37	D ENV SLEW
CC38	D CV QUANTIZER SCALE SELECT
CC39	D CV QUANTIZER ON/OFF
CC40	D CV RANGE
CC41	D CV SMOOTHING

MIDI CH3 – CHANNELS E AND F

CC	FUNCTION
CC01	F RATE knob (mod wheel)
	CHANNEL E – MODE COMMON
CC02	E RATE knob
CC03	E MODE
CC04	E MUTE
CC05	E BIPOLAR
CC06	E RESETABLE
CC07	E ATTENUVERSION
CC08	E QUANTIZE TRIGS
CC09	E SEQUENCE LENGTH
CC10	E TRIG GENERATOR MODE SELECTION (does not generate new sequence)
CC11	E TRIG GENERATOR VALUE (generates with every new CC, works in any mode)
	CHANNEL E – MODE SPECIFIC
CC12	E LFO SHAPE
CC13	E LFO SMOOTHING
CC14	E LFO SYNC
CC15	E ENV SHAPE
CC16	E ENV RETRIG
CC17	E ENV SLEW
CC18	E CV QUANTIZER SCALE SELECT
CC19	E CV QUANTIZER ON/OFF
CC20	E CV RANGE
CC21	E CV SMOOTHING
	CHANNEL F – MODE COMMON
CC22	F RATE knob
CC23	F MODE

CC24	F MUTE
CC25	F BIPOLAR
CC26	F RESETABLE
CC27	F ATTENUVERSION
CC28	F QUANTIZE TRIGS
CC29	F SEQUENCE LENGTH
CC30	F TRIG GENERATOR MODE SELECTION (does not generate new sequence)
CC31	F TRIG GENERATOR VALUE (generates with every new CC, works in any mode)
	CHANNEL F – MODE SPECIFIC
CC32	F LFO SHAPE
CC33	F LFO SMOOTHING
CC34	F LFO SYNC
CC35	F ENV SHAPE
CC36	F ENV RETRIG
CC37	F ENV SLEW
CC38	F CV QUANTIZER SCALE SELECT
CC39	F CV QUANTIZER ON/OFF
CC40	F CV RANGE
CC41	F CV SMOOTHING

MIDI OUTPUT TABLE

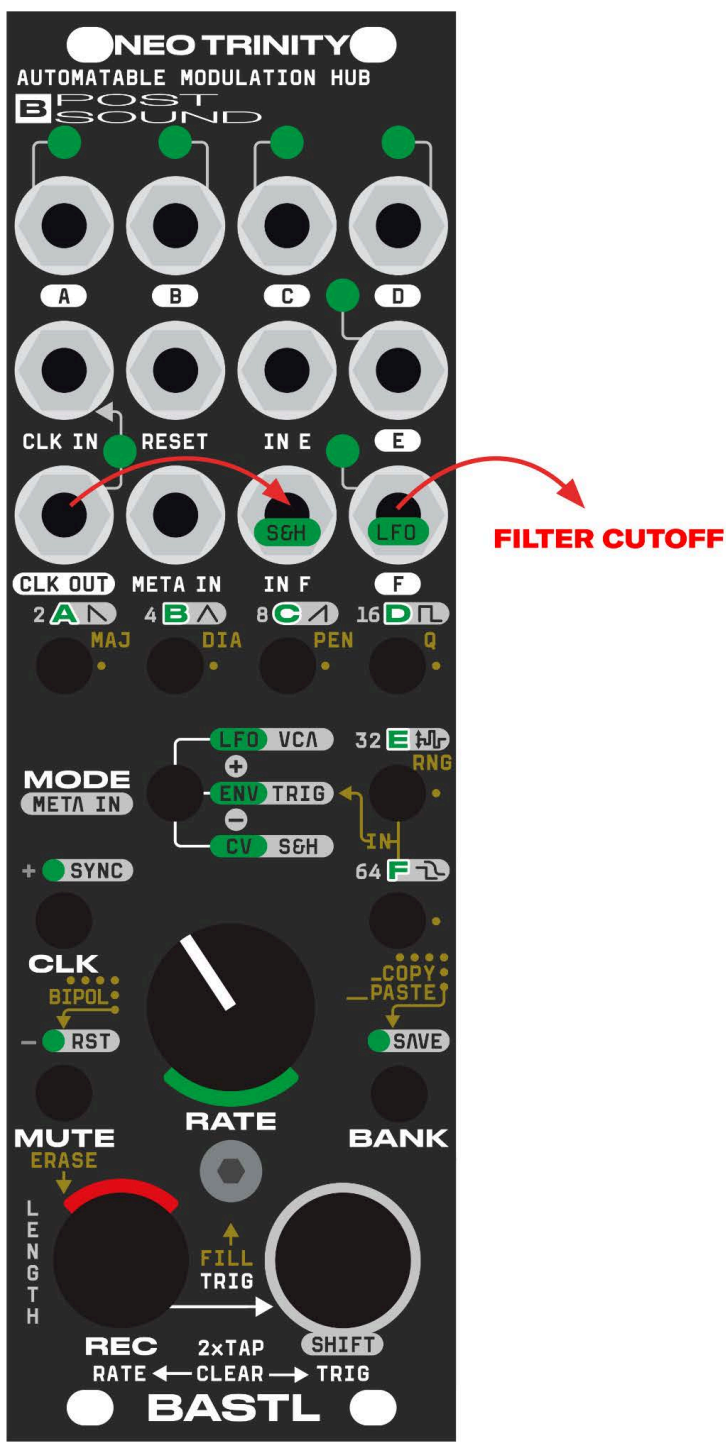
MESSAGE	MIDI CH	FUNCTION
Note On/Off	CH1	if A and B is CV/GATE(ENV) pair
Note On/Off	CH2	if C and D is CV/GATE(ENV) pair
Note On/Off	CH3	if E and F is CV/GATE(ENV) pair
CC00	CH1	on BANK change
CC01	CH1	B RATE knob
CC02	CH1	A RATE knob
CC01	CH2	D RATE knob
CC02	CH2	C RATE knob
CC01	CH3	F RATE knob
CC02	CH3	E RATE knob

NEO TRINITY PATCH TIPS

STEPPED LFO

- Set Channel F to TRIANGLE LFO (SHIFT+B)
- Set IN F to S&H mode (F+MODE)
- Patch CLK OUT to IN F

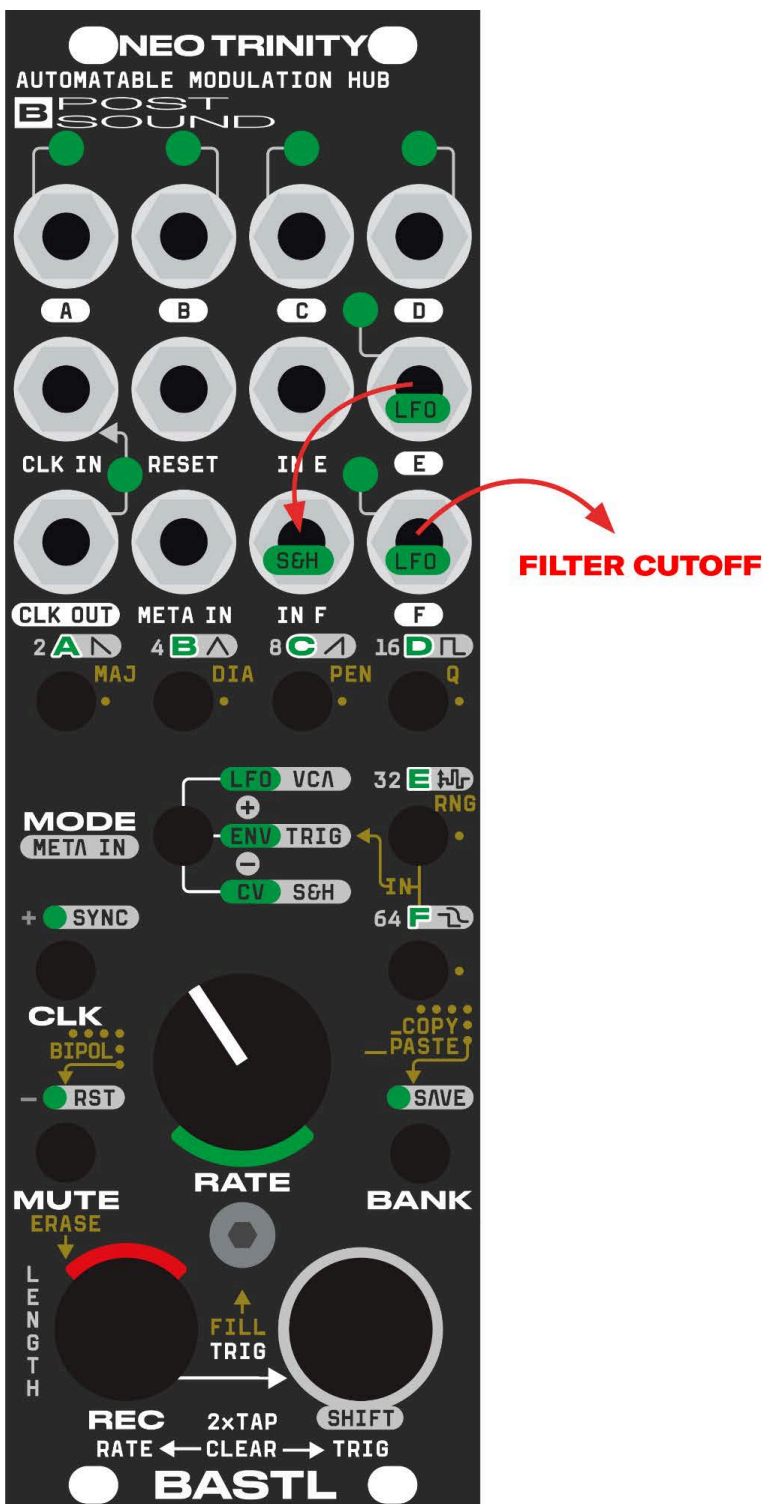
The triangle signal at the output F makes a new step each time the clock is dispatched, creating a staircase-shaped modulation.



INTERFERENCE STEPPED LFO

- Set Channel F to TRIANGLE LFO
- Set IN F to S&H mode (F+MODE)
- Patch Channel E output to IN F
- Set channel E as PULSE LFO

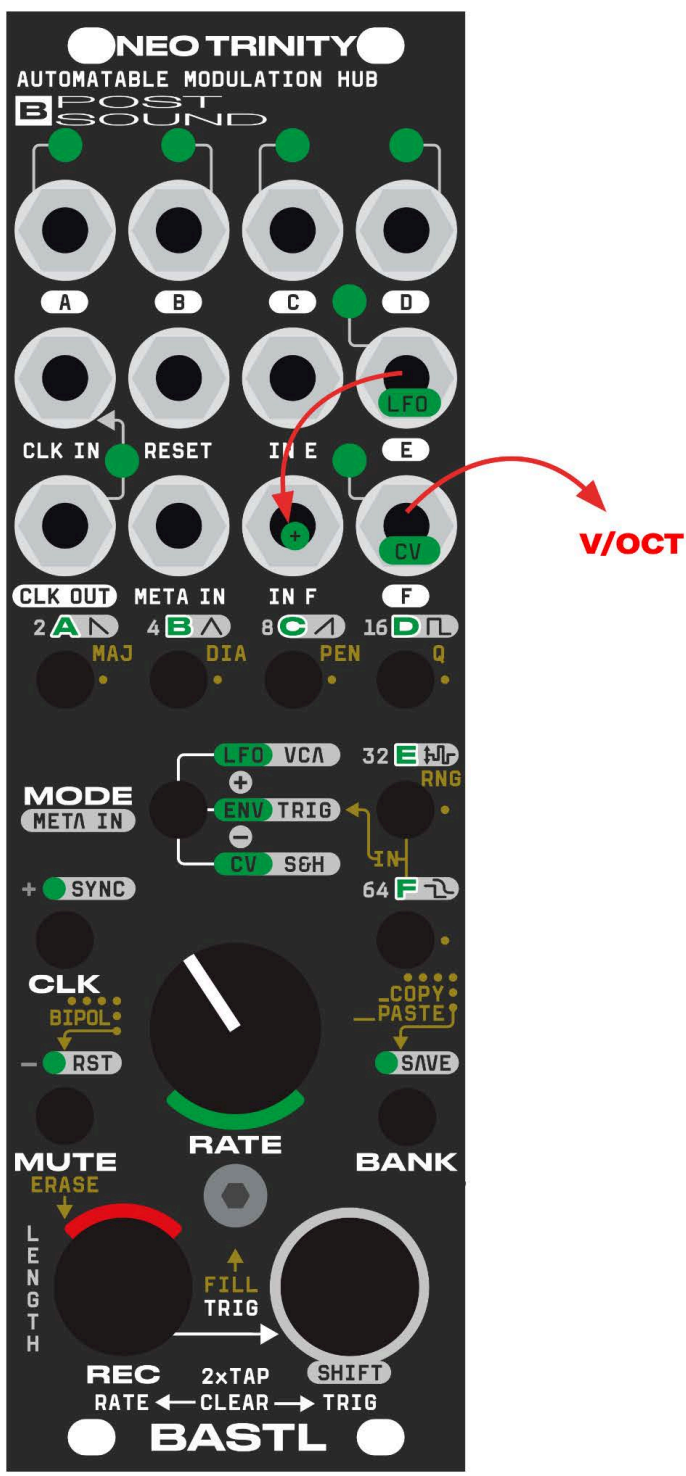
Use the output F to modulate filter cutoff or anything else. Play with the two frequencies of LFO E and LFO F (synced or unsynced) to create various interference stepped patterns at the output F.



QUANTIZED LFO/RANDOM

- Set channel F to CV mode, with quantization activated (SHIFT+ D and SHIFT+ABC to set the scale, F+MUTE to set unipolar mode)
- Set IN F to regular (+) mode (F+MODE)
- Set channel E to LFO mode (any shape or random: SHIFT+A/B/C/D/E)
- Patch E to IN F

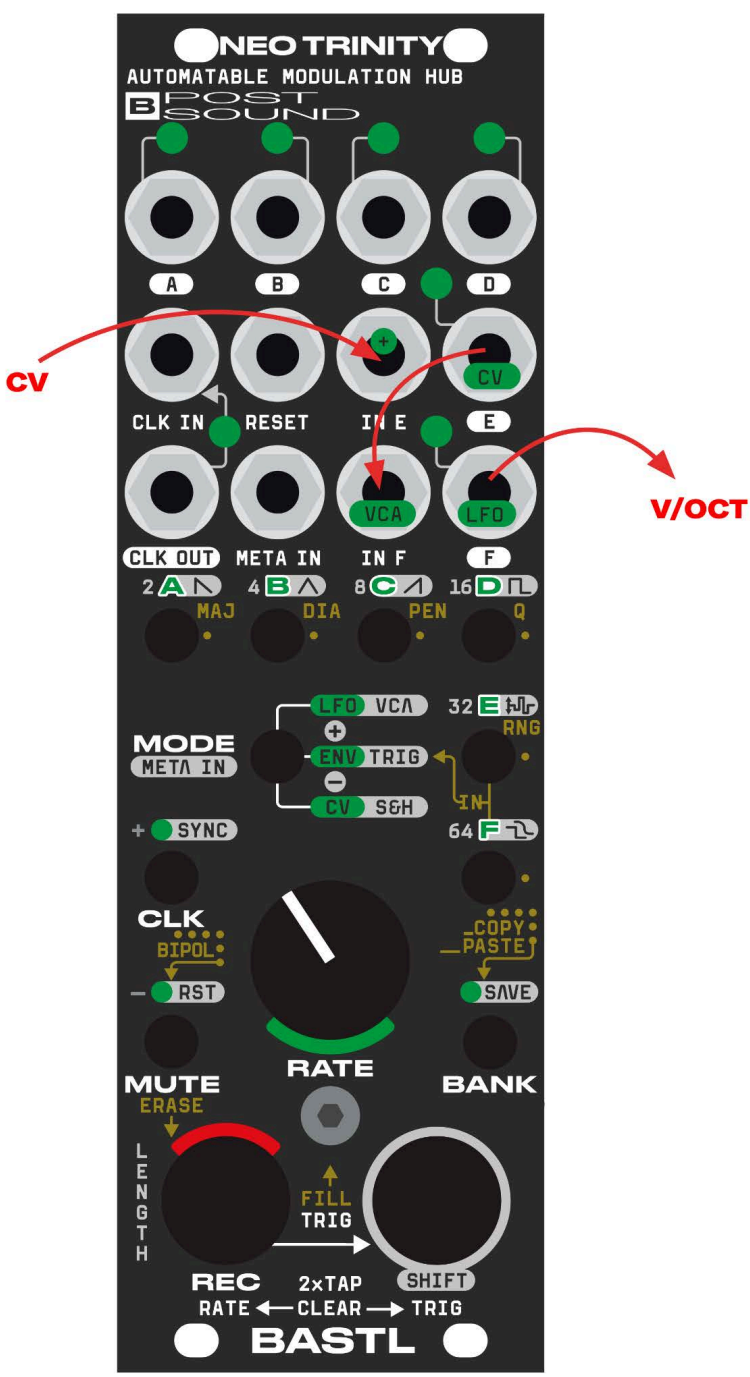
The output F generates various melodies and arpeggios to control V/OCT input of an oscillator.



MODULATED ATTENUVERSION

- Set channel F to LFO mode (triangle or any shape: SHIFT+A/B/C/D/E)
- Set IN F to VCA mode (F+MODE)
- Set channel E to CV mode
- Patch E to IN F
- Set IN E to + mode (E+MODE)

If output F is modulating a filter, then the RATE knob on channel E would function as an input attenuverter for that filter. Use channel E to automate the depth of the filter modulation or patch an external CV to IN E for external modulation.



DETUNED LFOS

- Set channels A, B, C and D in LFO mode (triangle or any shape: SHIFT+A/B/C/D/E)
- Set A, B, C, and D RATE to a similar frequency (select channel+move RATE)
- Set META IN for A to regular, for B to regular attenuated, for C to inverted attenuated, and for D to inverted mode (select channel and press SHIFT+MODE)
- Turn off META IN for channels E and F (select channel and long-press SHIFT+MODE)
- Set channel F to CV mode
- Patch channel F into META IN

Use F to detune the A, B, C, and D LFOs.



TRIGGERED MULTI-RANDOM

- Set channels A, B, C, and D to LFO mode (random shape: SHIFT+E)
- Set A, B, C, and D RATE to high frequency (select channel+move RATE)
- Set META IN for A, B, C, and D to S&H mode (select channel and press SHIFT+MODE)
- Turn off META IN for channels E and F (select channel and long-press SHIFT+MODE)
- Patch a trigger into META IN

Channels A, B, C, and D will generate new random voltage each time a TRIG arrives at the META IN.



MULTI-AMPLITUDE LFO CONTROL

- Set channels A, B, C, and D to LFO mode (triangle or any shape: SHIFT+A/B/C/D/E)
- Set META IN for A, B, C, and D to VCA mode (select channel and press SHIFT+MODE)
- Deactivate META IN for channels E and F (select channel and long-press SHIFT+MODE)
- Set channel F to CV mode
- Patch channel F into META IN

Use the channel F output to set the amplitude of all A, B, C, and D LFOs.



TRIGGERED ENVELOPE

- Set channel E to ENV mode
- Set IN E to TRIG mode (E+MODE)
- Send a trigger to IN E

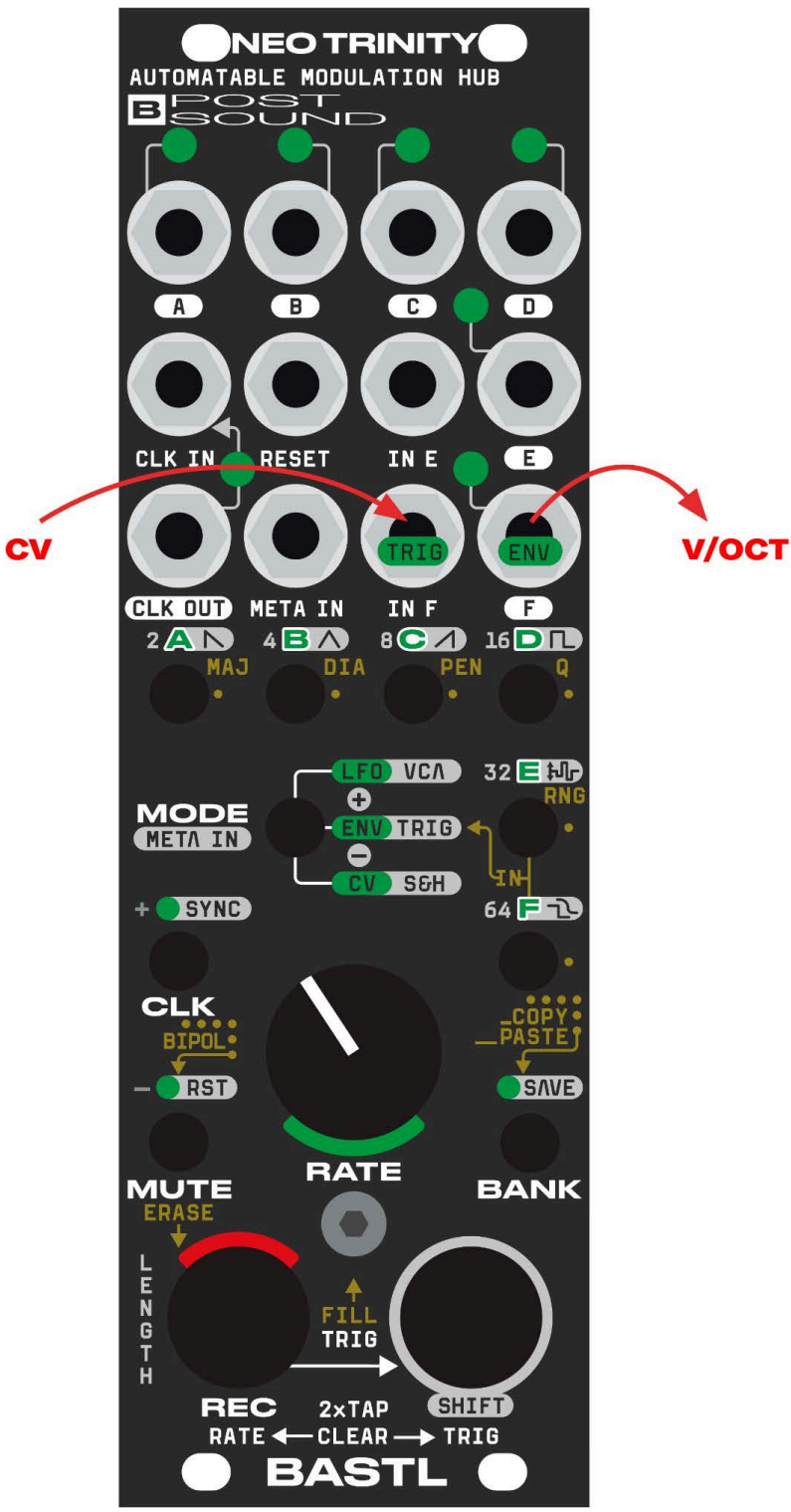
Use an external trigger to trigger the channel E envelope. The envelope will function as an AD envelope. Activate the SLEW mode (SHIFT+F) and set gates instead, and the envelope will behave as an AR envelope (best used as the variable shape envelope).



SLEW GENERATOR

- Set channel F to ENV mode
- Set IN F to TRIG mode (F+MODE)
- Set ENV shape to variable (SHIFT+B)
- Activate SLEW mode for channel F (SHIFT+F)
- Send a CV to IN F

Use channel F as a slew limiter for the external CV. Automate the RATE knob of channel F to have a variable slew in time.



TRIG TO GATE RHYTHM VARIATOR

- Set channel F to ENV mode
- Set IN F to TRIG mode (F+MODE)
- Set ENV shape to PULSE (SHIFT+D)
- Set ENV to NON-RETRIG mode (SHIFT+E)
- Send a trigger to IN F

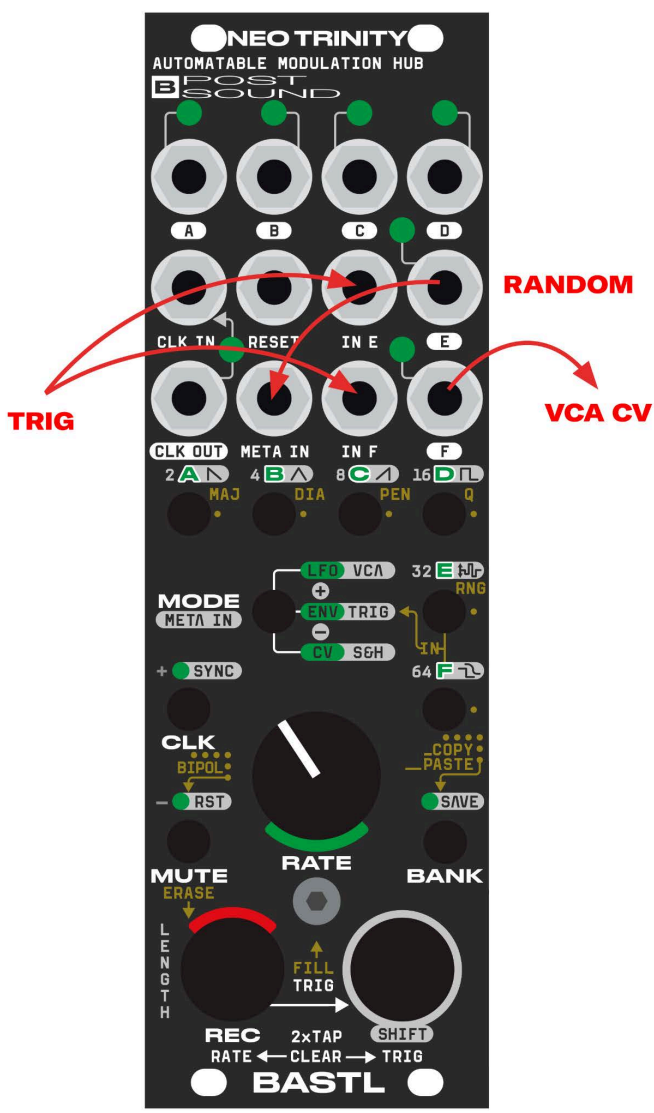
Use an external trigger to trigger the channel F envelope. RATE sets the gate length, and the envelope will only retrigger when the GATE ends. This will start skipping incoming triggers, adding variability to your rhythm. Automate the RATE knob for the most variability.



RANDOM AMPLITUDE ENVELOPE

- Set channel F to ENV mode
- Set IN F to TRIG mode (F+MODE)
- Set ENV shape to variable (SHIFT+B)
- Set META IN for channel F to VCA (SHIFT+MODE)
- Deactivate META IN for all other channels (select channel and long-press SHIFT+MODE)
- Set channel E to LFO mode (RANDOM or other shape: SHIFT+A/B/C/D/E)
- Set channel E to unipolar mode (E+MUTE)
- Set IN E to S&H mode (E+MODE)
- Patch E to META IN
- Send a trigger to IN E and IN F

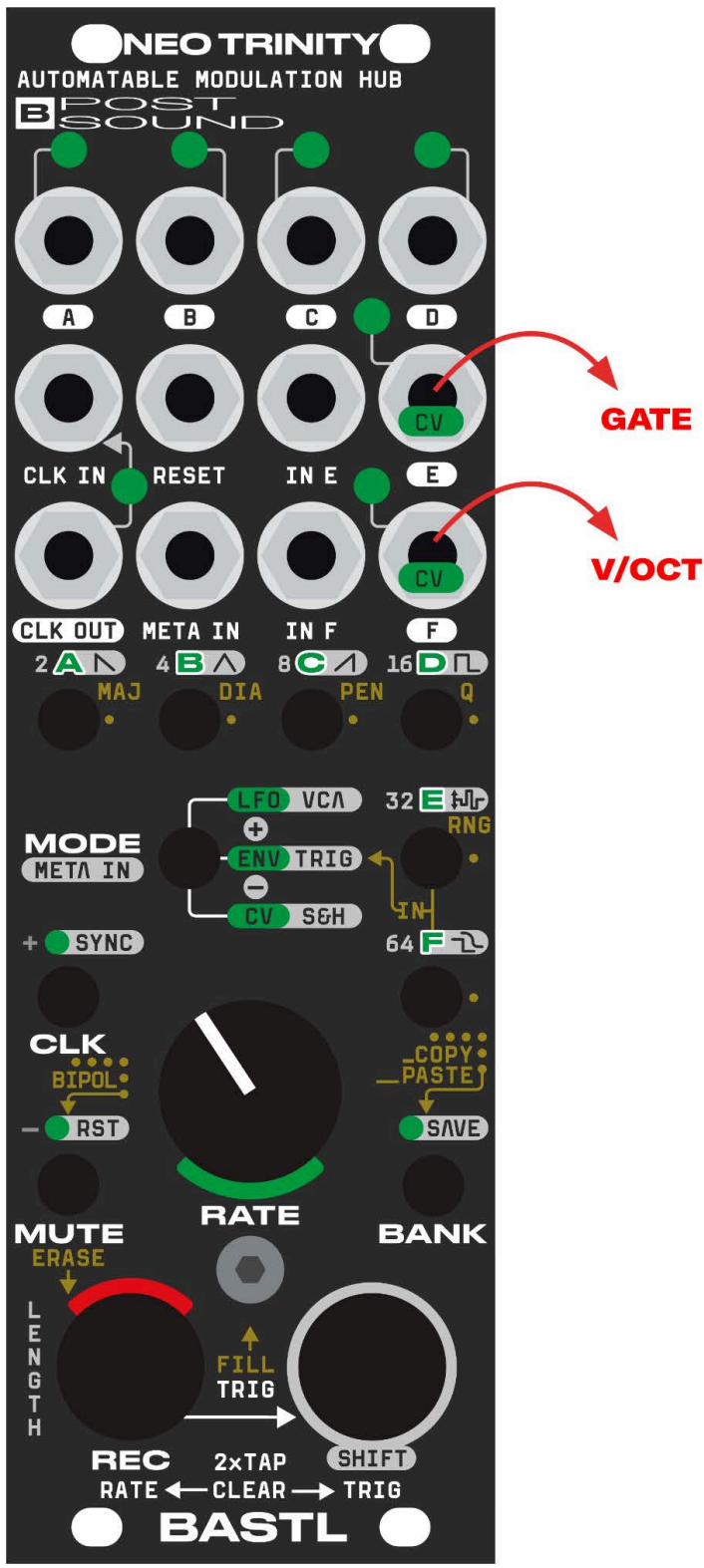
Channel E will randomly control the amplitude of the envelope generated by channel F, producing a new amplitude only when a new trigger comes in (due to the S&H).



CV AND GATE SEQUENCER

- Set channels E and F to CV mode
- Use channel F with quantizer (SHIFT+ D) and automate its RATE
- Send output E to the V/OCT pitch input of your oscillator

Use channel E as a gate recorder (REC+SHIFT) for rhythm information for your envelopes.



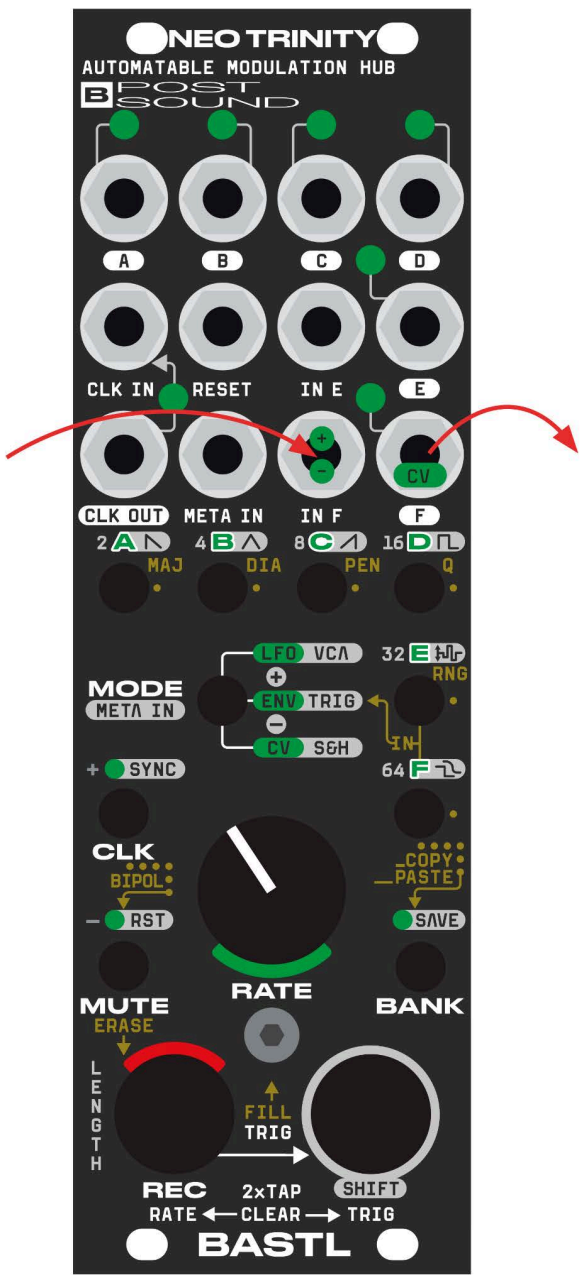
VOLTAGE PROCESSOR

- Set channel F to CV mode
- Set IN F to regular or inverted mode (F+MODE)
- Send a signal to IN F

Use the channel F output to create a processed CV. This is useful if you want to offset a CV with the RATE knob.

If you want to attenuate and offset (convert a bipolar signal to unipolar), then select regular attenuated mode for IN F. You can also invert signals by setting IN F to the inverted mode.

Inverted offset conditioning is also possible by combining the RATE offset and the inverted input mode. This is useful for ducking/side-chain compression envelopes and such.



ATTENUVERTER

- Set channel F to CV mode
- Set channel F to bipolar mode (F+MUTE)
- Set IN F to VCA mode (F+MODE)
- Send a signal to IN F

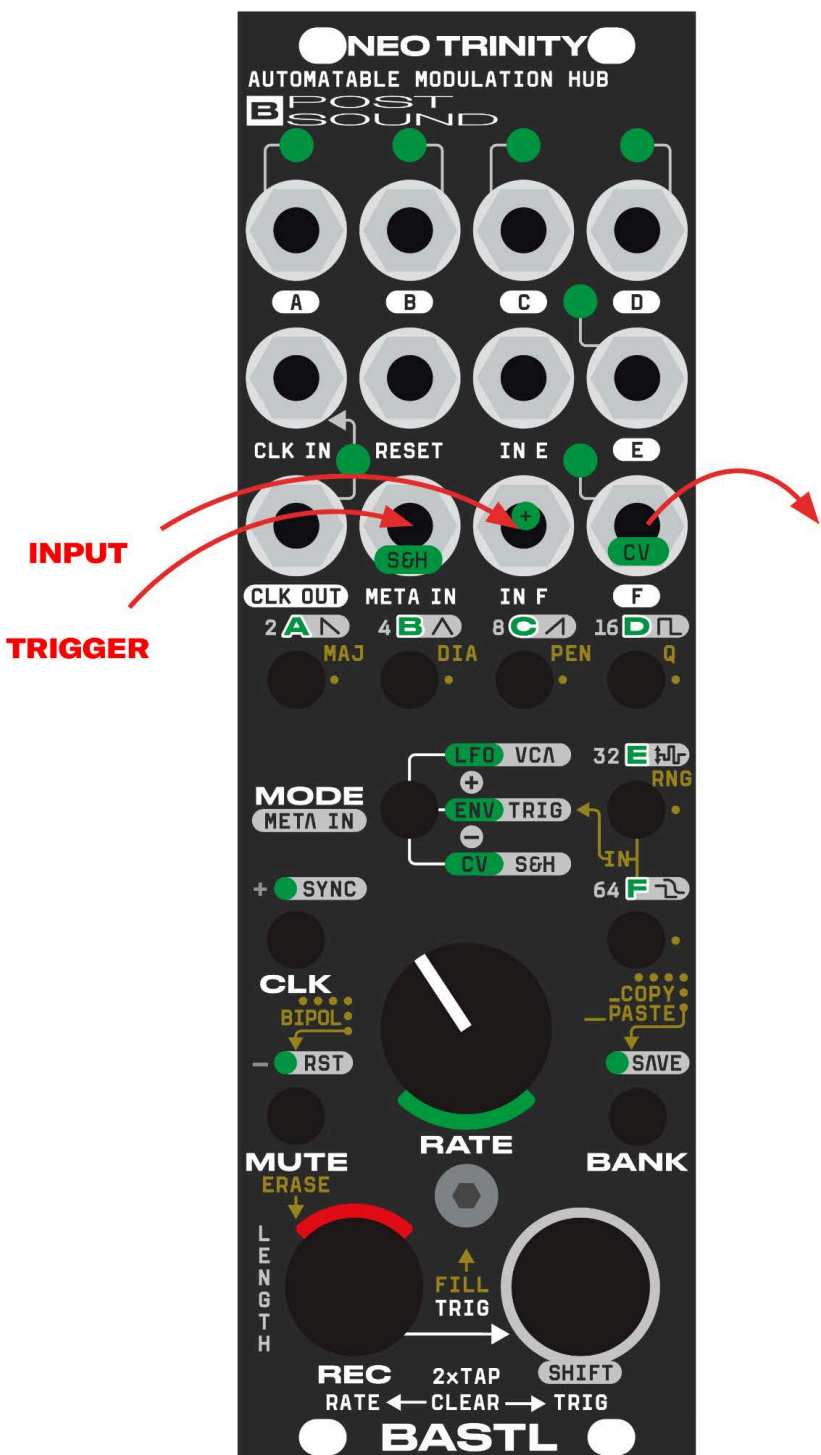
Use the F output to create an attenuated version of the input signal by turning the RATE knob. This works because, in the bipolar VCA mode, the CV and processed signals are interchangeable. Combine this with the Voltage processor patch above, or automate the RATE and get creative.



TRIGGERED QUANTIZER

- Set channel F to CV mode
- Set IN F to regular (+) mode (F+MODE)
- Set META IN to S&H mode for channel F and turn it OFF for all other channels (SHIFT+MODE)
- Send a signal to IN F

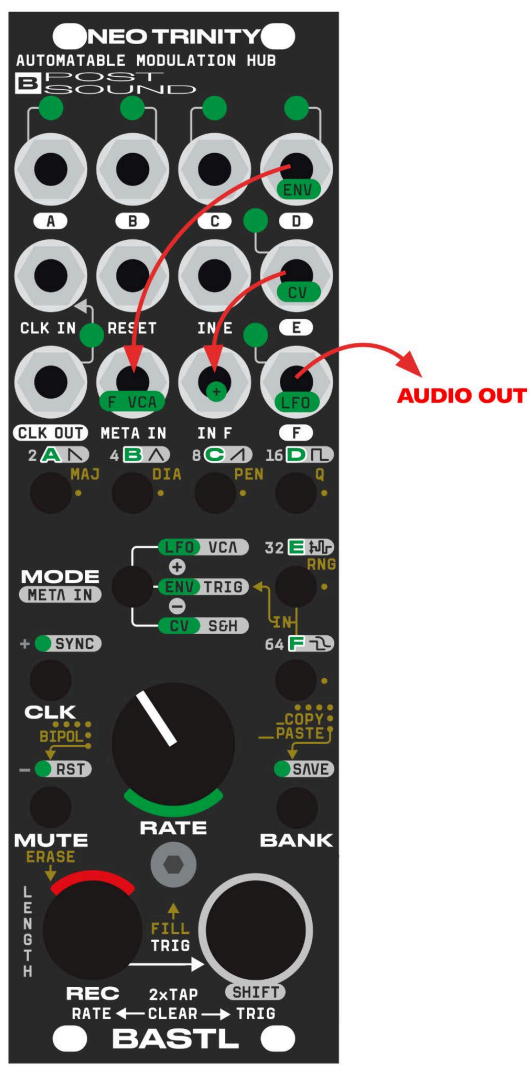
The idea of this patch is to change pitch only when a new trigger is detected. This could be useful for rhythmically precise pitch quantization or for creating melodic variations.



LO-FI VCO VOICE

- Set channel F to LFO mode (any shape except random: SHIFT+A/B/C/D)
- Set IN F to regular (+) mode (F+MODE)
- Set META IN for channel F to VCA mode and turn it OFF for all other channels (SHIFT+MODE)
- Set channel E to CV mode
- Use the quantizer on channel E (SHIFT+D, SHIFT+ABC to change scale)
- Patch output E to IN F
- Set channel D to ENV mode
- Patch output D to META IN to control the amplitude of channel F

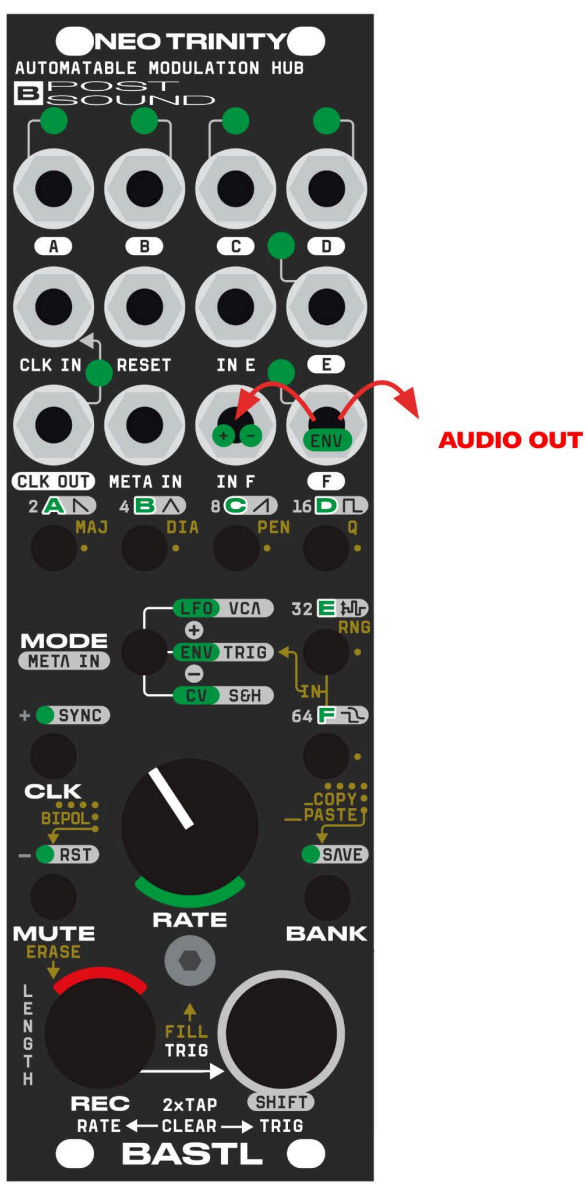
Use channel E to sequence the pitch of channel F as a LO-FI VCO and use channel D as an envelope to control the amplitude of channel F via META IN. This way, you can get a nice LO-FI-sounding oscillator voice.



ENVELOPE LINEAR/SUPER-EXPONENTIAL CURVE

- Set channel F to ENV mode
- Set IN F to regular or inverted mode (F+MODE) or their attenuated variants

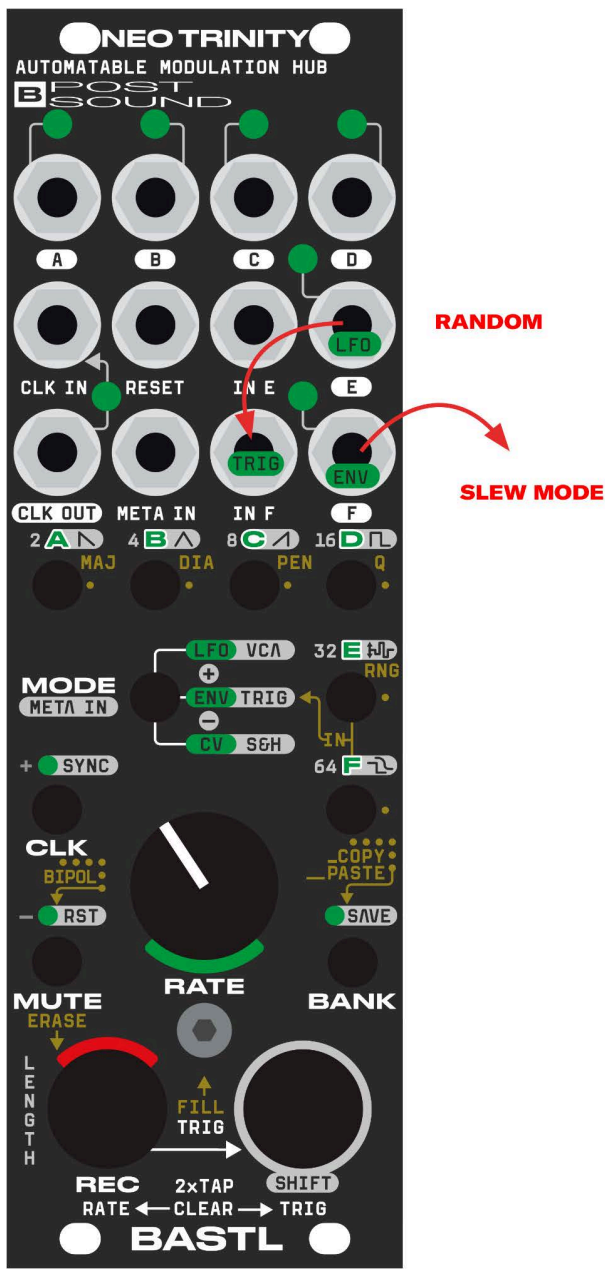
Self-patching the envelope into its RATE input will alter the curve of the envelope.
The regular (+) mode will make the envelope linear.
Regular attenuated (+) mode will make it something between linear and exponential.
The inverted mode will exaggerate the exponential curve, while the inverted attenuated mode will do it a little bit less. Please note that all these patches will influence the envelope duration set by the RATE knob.
NOTE: This patch will not work as expected for the variable shape because its rate control has a macro on it, but it will create some unusual shapes.



SLEWED SMOOTH RANDOM

- Set channel E to LFO mode (random, no smoothing: SHIFT+E)
- Set channel F to ENV mode with the SLEW behavior ON (SHIFT+F)
- Set variable shape envelope for channel F (SHIFT+B)
- Set IN F to TRIG mode (F+MODE)
- Patch E to IN F

Use channel E to generate stepped random voltages. Channel F will act as a slew limiter – turn the RATE knob to the left. Fine Tuning the RATE of channels E and F will yield various results of slewed smooth random voltage.



CREDITS

Development Team: Václav Mach, Václav Peloušek, Martin Klecl
Main Testers: John Hornak, Juha Kivekäs
Beta Testers: Peter Edwards, Leoš Hort, Arbis Krabs, Stefano Manconi, Wes Langill, Jakob Holm, Antonín Gazda, Matěj Mžourek, Martin Vondřejc, Pavlo Shelemba, František Hruška, Bogdan Raczynski, Martin Klecl, Russell Butler, Sergiu Juravle, Oliver Torr, Niels Doucet, Leo Hivert, Florian Helling, David Žáček, Milan Říha, Jiří Březina, John Dinger, Patrik Veltruský, Tomáš Niesner, Michal Synovec, Michal Křipač, Wes Langill
Management: John Dinger
Graphic Design: Anymade Studio

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