PATCHING PANDA ETNA Triple Multimode Analog Filter User Manual

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INTRODUCTION

Etna is an advanced triple control analog multimode morphing filter, meticulously designed for precise and dynamic sound shaping. It allows for rapid or smooth transitions between diverse filter settings, known as snapshots.

Each snapshot comprehensively defines all of the filter's parameters, which can be adjusted either swiftly or gradually. These transitions are controlled through an applied voltage or clock and triggers, with the flexibility to use up to eight distinct stages for creating complex filtering effects in a variety of audio applications.

In addition to its morphing capabilities, Etna incorporates analog controls that enable real-time, expressive modifications to the parameters of each saved snapshot. This enhancement not only enriches the morphing process but also provides a tactile, live experience that adds significant depth and nuance to the audio output, making it a powerful tool for both studio and live performance settings.

INSTALLATION

- Disconnect your synth from the power source.
- Double check polarity from the ribbon cable. Unfortanetly if you damage the module by powering in the wrong direction it will not be covered by the warranty.
- After connecting the module check again you have connected the right way, the red line must be on the -12V

A:Audio input filter 1
B: Audio input filter 2
C: Audio input filter 3
D: FM input
E: CV input Freq 1
F: CV input Freq 2
G: CV input Freq 3
H: CV input Freq ALL
I: CV input Q
J: Edit all Snapshots BTN
K: Audio output filter 1
L: Audio output filter 2
M: Audio output filter 3
N: Audio output filter MIX
O: lock and trigger input
P: Reset input jack
Q: CV Freq 3 snapshot output
R: Play Btn
S: CV Position input jack
T: CV Lenght input jack
U: Rotatory encoder
V: Stage LED´s
W: Digital control Freq 1
X: Digital control Freq 2
Y: Digital control Freq 3
Z: Digital control Q for all
(**1**) Analog control Freq All
(**2**) Edit, Length, Position LED
(**3**) Digital control Amplitude 1
(**4**) Digital control Amplitude 2
(**5**) Digital control Amplitude 3
(**6**) Glide control
(**7**) Analogue control Freq 1
(**8**) Analogue control Freq 2
(**9**) Analogue control Freq 3
(**10**) Analogue control FM pot
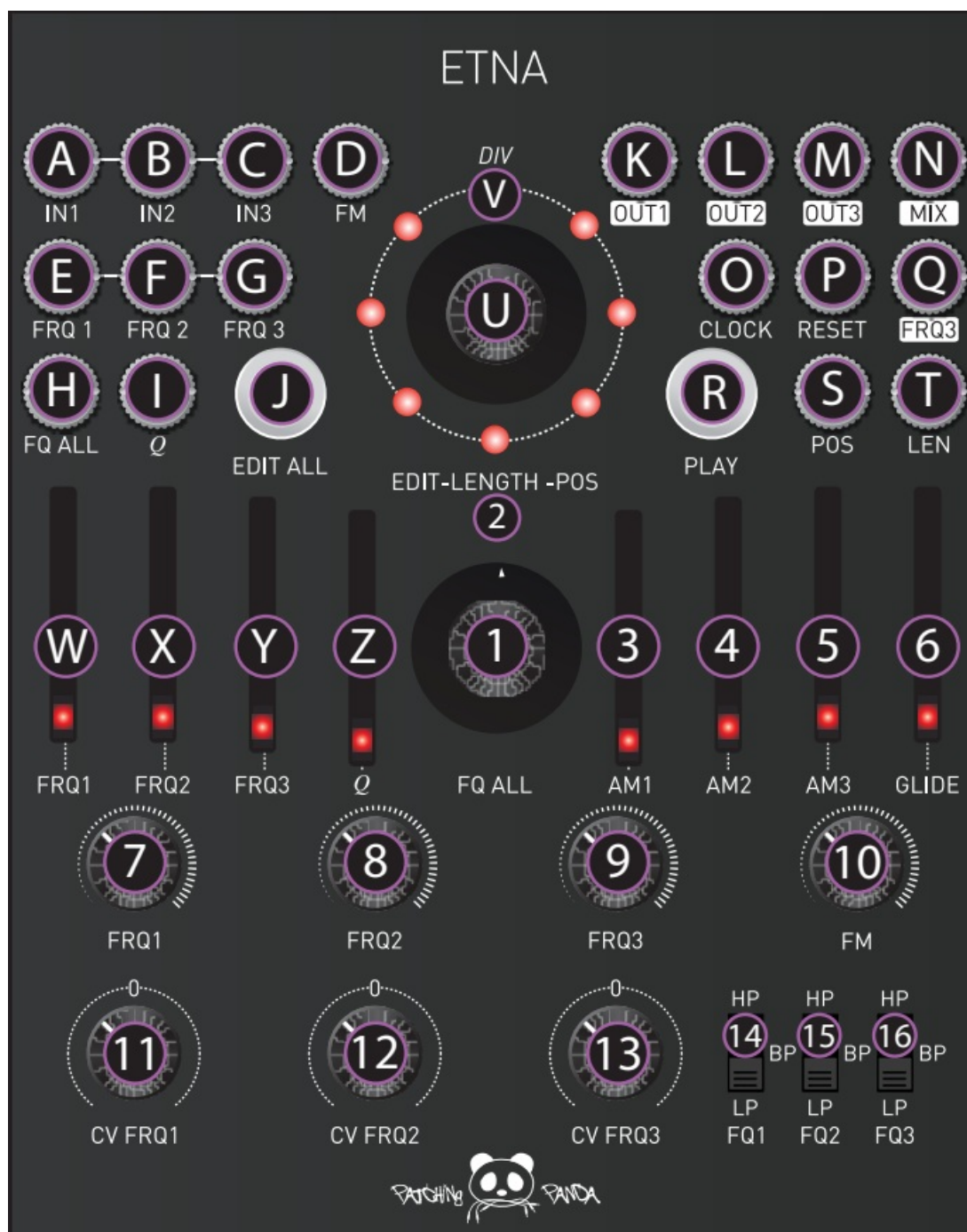(**11**) Analogue attenuverter Freq 1
(**12**) Analogue attenuverter Freq 2
(**13**) Analogue attenuverter Freq 3
(**14**) Filter 1 mode switch
(**15**) Filter 2 mode switch
(**16**) Filter 3 mode switch

Filter Structure

Etna comprises three analog multi-mode filters, including a low-pass filter with a 24 dB/octave (4-pole) slope, a band-pass filter, and a high-pass filter with a 12 dB/octave (2-pole) slope. The filter circuits deliver ultra-clean sound due to the low distortion of the SSI2164, combined with rail-to-rail op-amps to maximize the threshold without distorting the waveforms.
Etna's filters include a Q compensation circuit, ensuring that increasing resonance does not cause the output volume to drop.
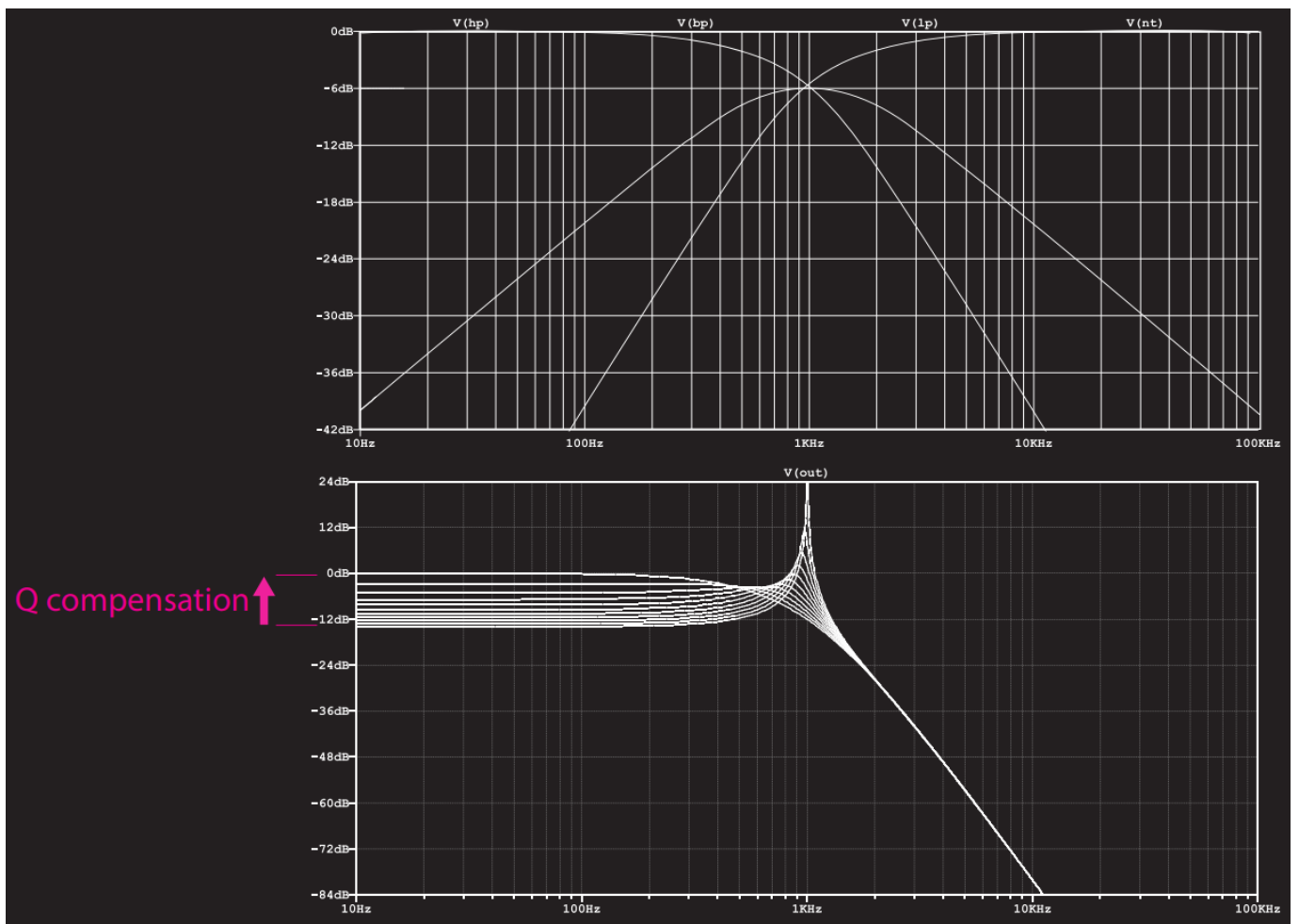
Morphing thru the snapshots

Each snapshot comprehensively defines all of the filter's parameters, which can be adjusted either swiftly or gradually.

The image is showing the digital controls

The LED ring indicates the snapshots where the settings of each filter are stored, modified, and activated.
On each snapshot the parameters to be adjusted to be played are:
Frequency from filter 1, filter 2 and filter 3
Amplitude from filter 1, filter 2 and filter 3
Resonance from all filters
Glide transition from the snapshots

To save a snapshot, adjust any slider. The value will be registered at that stage until you move the slider again.

Pressing the PLAY button (YELLOW LED) will synchronize playback with the clock according to the duration of the stages (RED LEDs). In STOP mode, rotating the ENCODER or sending CV to the POSITION input jack will move the PLAY LED (YELLOW LED).

Pressing EDIT ALL, any fader adjustment will be reflected on every snapshot.

By pressing the encoder you can switch from 3 different modes

🟢 **EDIT:** The Green LED shows the selected snapshot for editing while clock is playing.

🟠 **POSITION:** Rotating the encoder, along with the POS input jack, offsets Snapshot 1.

🔴 **LENGTH:** Rotating the encoder, along with the LEN input jack, adjusts the window size.

If the green LED is on, you can focus on that specific stage while the yellow LED (PLAY_LED) is playing. If the green LED mode is not selected, adjusting any parameter will affect the stage playing at that specific time.


Etna can be synchronized with an external clock by connecting a signal to the CLOCK input jack. It will advance to the next stage with each pulse, allowing you to send trigger patterns to play the snapshots. By holding the encoder for 3 seconds, you can divide the clock rate to enable slower morphing through the snapshots. Sending triggers to the RESET input jack will return the PLAY LED to Snapshot 1.

The internal clock is set to 120 BPM. However, it is intended to be used with an external clock for synchronization.

When the EDIT ALL button is activated, pressing the PLAY button will change the playback direction. The

playback modes available are FORWARD, PENDULUM, and RANDOM.

GLIDE is a linear slope time in milliseconds, calculated from the ADC registered value to the next stage ADC value. The glide time ranges from 0 to 500 ms. The clock needs to be adjusted according to the gliding time. For example, if a 5-second maximum glide is selected, the clock should be set to 3 BPM, 4/4 time, base 16. If a higher clock frequency is selected, the gliding will be interrupted by the clock.
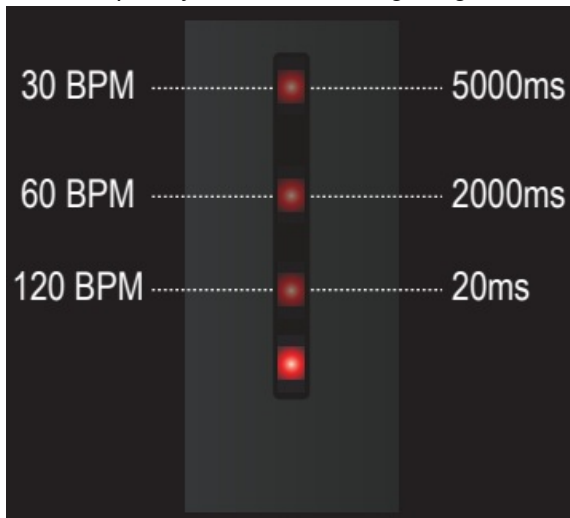
The FREQ3 output jack outputs the snapshot data from the FREQ3 slider, with a range from 0V to 9V.

The image displays the analog controls and outputs for the filters.
These controls will sum the values with the digital adjustments, enabling real-time, expressive modifications to the parameters of each saved snapshot. This attribute not only enriches the morphing process but also delivers a tangible, live interaction that injects substantial depth and intricacy into live performance settings.

The audio input and Frequency CV input jacks are daisy-chained, with each frequency cutoff CV input having a dedicated attenuverter.
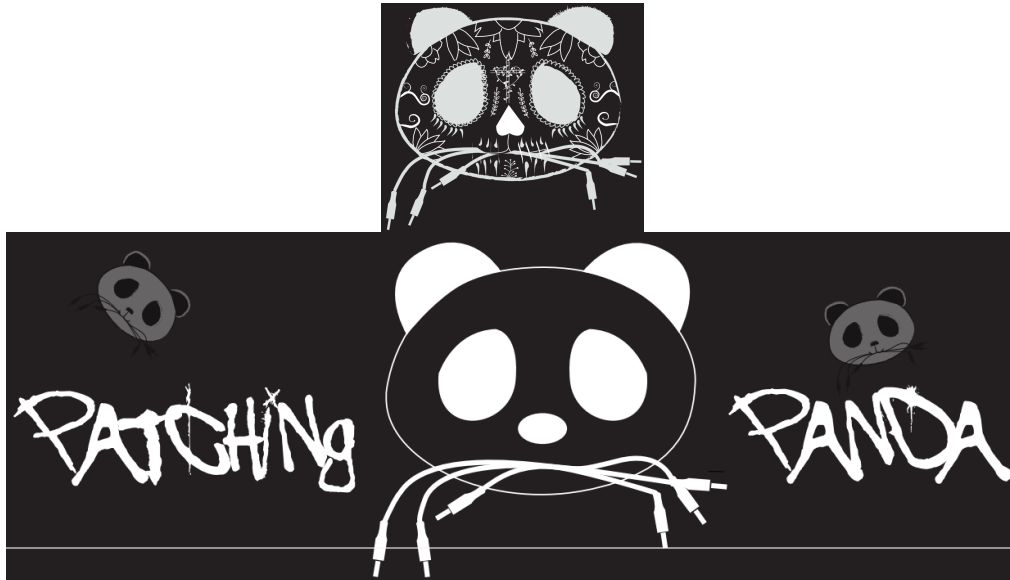
The FREQ ALL, FREQ ALL CV input, and FM input will drive all three filters simultaneously, with the FM input CV having a dedicated attenuator control.

Each filter can be switched between low-pass (LP), band-pass (BP), and high-pass (HP).

The images shows 10VPP and 18VPP, which are related to the individual outputs.
When resonance is increased, the signal can reach up to 18VPP.

Resonance with gain compensation

10VPP   18VPP

In the MIX output, each channel is decreased to 8VPP to provide more range on the AM sliders and prevent distortion. If resonance is high on certain stages, the AM sliders should be adjusted to avoid clipping.

Documents / Resources

PATCHING PANDA ETNA Triple Multimode Analog Filter [pdf] User Manual
ETNA Triple Multimode Analog Filter, ETNA, Triple Multimode Analog Filter, Multimode Analog Filter, Analog Filter, Filter

References

- **User Manual**