Owner's Manual

EREBUS

DUOPHONIC ANALOG SYNTHESIZER

V3

3 Oscillators
Triple Ring Mod
Lo-Fi Echo Effect
12dB Multimode Filter
35 modular patch points

Handcrafted with infinite luv
in Athens, GR

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Erebus V3.0 / Release Date: 22.10.2018

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Following in the tradition of the Erebus V1 and V2, Dreadbox proudly presents the Erebus V3, a duophonic, analog synth bringing you all the sonic exquisiteness of the earlier versions, but with even a few more tricks up its sleeve, including:

- Three voltage controlled oscillators
- A 12db resonating, multimode LP/HP filter
- A unique Triple Ring modulator effect
- Extensive modulation options with 35 patch points
- An analog clock signal generator
- Up to 3 LFOs
- Two ADSR envelopes for shaping both the VCF and VCA
- A white noise generator
- A Patachable Sample and Hold circuit
- A lo-fi echo/delay effect
- Background automatic tuning

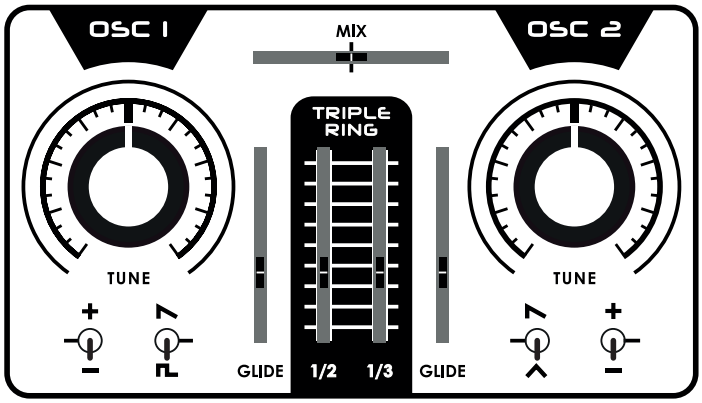
Manual written by Max and Yiannis Diakoumakos

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The Oscillators

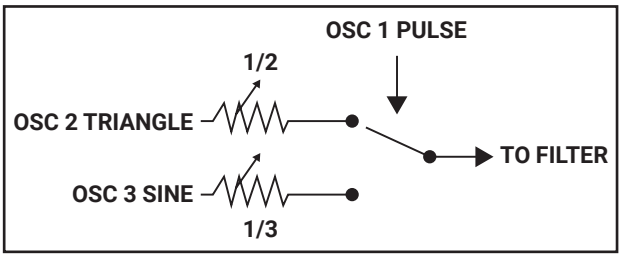
The Erebus v3 is equipped with 3 voltage-controlled, analog oscillators (VOCs). Both **OSC 1** and **OSC 2** offer identical controls and features, except **OSC 2** offers a triangle wave instead of a pulse wave. **OSC 3** has a total of 6 wave forms, white noise, and allows a greater range of tuning.

OSC 1 and OSC 2 Controls:

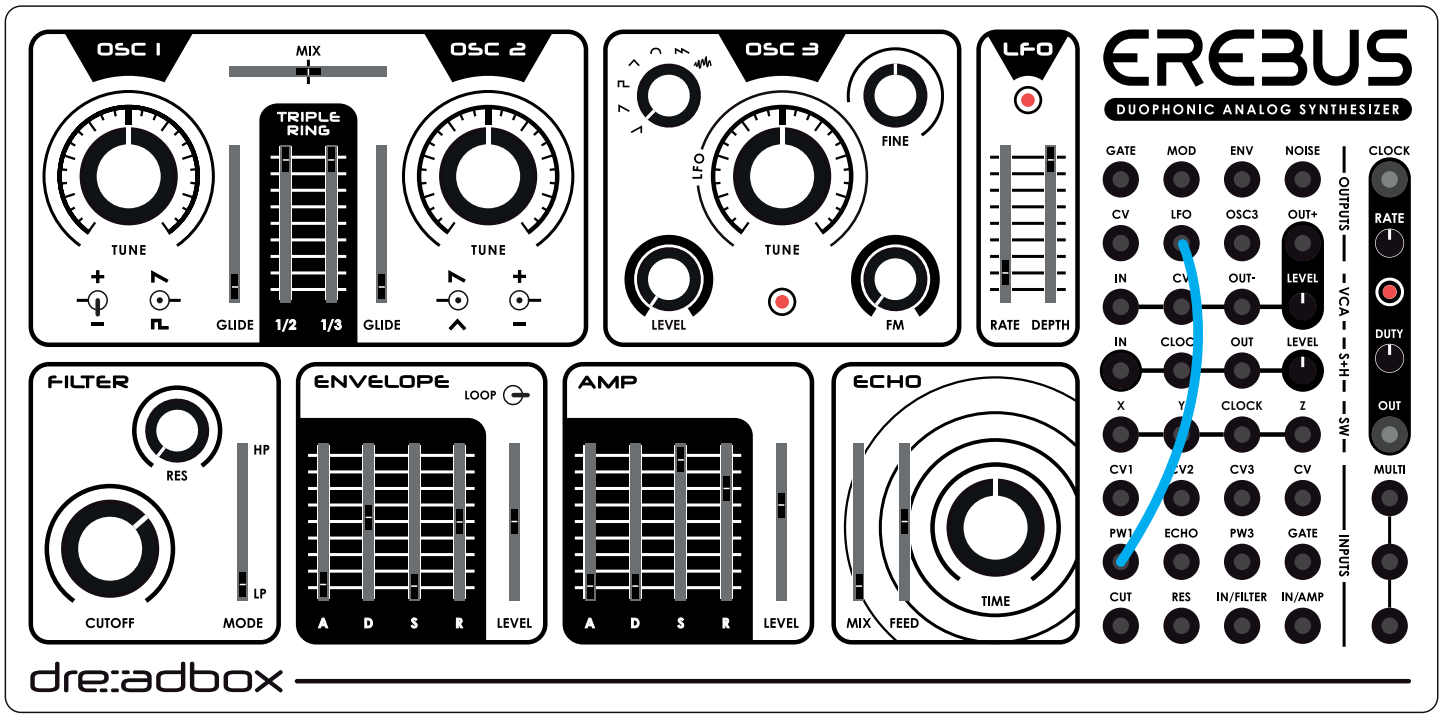


1. **TUNE** knob - allows for precise tuning of the VCO approx. ± 11 semi tones.
2. **Octave Switch** - to transpose the VCO pitch over 3 octaves.
3. **Wave Select** Switch - to select either the saw wave or pulse wave for OSC 1 or the saw wave or triangle wave for OSC 2. If neither wave is selected, the VCO is turned off.
4. **GLIDE** slider - allows independent control of the glide amount for each VCO.
5. **MIX** - controls the mix or comparative loudness between both OSC 1 and OSC 2. If either **VCO1** or **VCO2** is switched off, then the **MIX** control doesn't affect the remaining oscillator (it will play at maximum volume).
6. **TRIPLE RING** - the first slider (**1/2**) controls the amount of the modulation from OSC 1 on OSC 2 The second slider (**1/3**) controls the amount of the modulation for OSC 1 to OSC 3. For those who would like to get more technical information about this:

We use the triangle of **OSC 2** and the sine of **OSC 3**. Then, there is a switch that shifts between those two, on the rate of **OSC 1** pulse. When the pulse is on a high state, **OSC 3** is on, when it's on a low state, **OSC 2** is on. So keep in mind, the **PW1** patch will drastically affect the sound of the triple ring. Triple ring, is best used individually, without any other sound sources ON.



Some of the deepest bass sounds can be achieved from this part. Here is an example you **MUST** try. *Make sure that the Oscillators are tuned with precision.*



OSC 3 Controls:



1. **Wave Select** knob - sets OSC 3 to one of 6 wave forms including saw-up, saw-down, modulatable pulse wave, triangle, sine, double saw, as well as a white noise source.
2. **TUNE** - allows for course tuning of OSC 3 from as low as 0.01 (letting the VCO also act as an LFO) up to 15kHz
3. **FINE** - controls finer tuning of OSC 3 ±11 semitones
4. **LEVEL** - controls the amplitude (loudness) of OSC 3 in the overall mix.
5. **FM** - controls the amount of frequency modulation from OSC 3.

About OSC 3 PWM and Double saw wave (super saw)

There are 2 waveforms that can be affected by the **PW3** patch point. The Square Wave and the Double Saw (a.k.a. Super Saw).

The **Super Saw**, sounds like an one octave up Saw (and it actually is), if the **PW3** is not used. But when the **PW3** is modulated, interesting things will happen. The Double Saw will start shifting octave up/down and it will also sound like a PWM , but with a Saw Wave.

OSC 3 Key tracking

OSC 3 will always follow the Pitch of **OSC 1**. This includes the key track and the octave change. You can have **OSC 3 free of tracking**, by inserting a dummy patch cable to the **CV3** patch input.

How to Tune the oscillators with precision

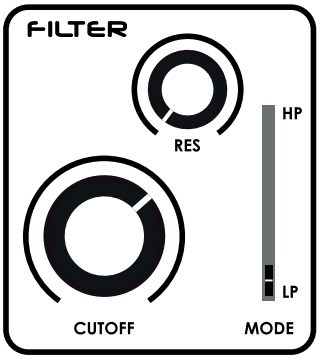
Let the unit warm up for **5 minutes** and have the **DIP1 ON** (on the back panel, so as the autotune is active). Usually, **OSC 1** Tune should be at 50%. Then turn on **OSC 2**, and with a starting point of the tune knob at 50%, try syncing them. **OSC 2** will not be exactly at 50%, but it will need to be slightly left or right (differs from unit to unit) to be in tune. Then close **OSC 2** and bring **OSC 3** in. Set the **FINE** knob at 50%, and then with the **TUNE** knob try to get the oscillators in sync (this should be at about 11:30 o'clock). Afterwards, with the **FINE** tune, you can get them in tune with precision.

If at any point you think that the oscillators have lost their scaling, leave the unit to rest for 5-10 sec (the autotuning will start only when the amp envelope is fully closed - so it's a good idea to set a release time of 0 to the amp) and the autotuning process will be completed in the background.

Also, always remember that the tune knobs are analog, and will not follow the autotuning. You have to manually set them, so as the unit is in tune.

The Filter

The Erebus V3 has a 2-pole, state variable filter with both 12dB/oct (2-pole) low pass (LP) and high pass (HP) settings.



Filter Controls:

1. **CUTOFF** knob - sets the cutoff frequency of the filter
2. **RES** knob - controls the amount of resonance (sometimes referred to as Q) to the filter cutoff frequency
3. **MODE** slider - balances the amount of signal from the high pass and the low pass filters. With the slider position fully closed, only the signal through the **LP** filter will be heard. With the slider position fully open, only the signal through the **HP** filter will be heard. The area in between, is a **Notch** mode.

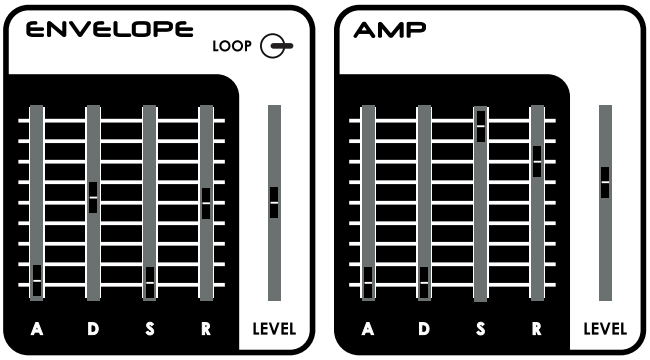
The filter can self-oscillate, starting when the resonance is above 3 o' clock. The sound of the self oscillation will be much different in the 2 filter modes. **HP** has a more agressive sound. The filter has no obvious note tracking, but you can easily achieve that via patching.

Envelopes and AMP

The Erebus V3 offers two digital (actually this is the only digital part of the synth) linear **A-D-S-R** envelopes, dedicated to the filter and amplifier respectively. The first envelope (labeled "**ENVELOPE**"), is hard-wired to control the filter cutoff, but it can also be patched so as to modulate a number of other targets. The second envelope (labeled "**AMP**") is hard-wired to control only the voltage-controlled amplifier (VCA) or the loudness of the patch over time.
The Filter envelope time, varies from 10ms up to 60 sec, for each of the stages.

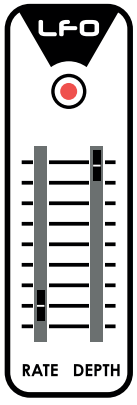
Note, that if the **AMP** envelope has a snappy or edgy setting, an audible click will be present, depending on the source's settings. This is normal, and expected and it is caused due to the snappiness of the envelope. To avoid that, you can add a little bit of attack and release to the curve.
Maximum **AMP** output level, with all sound sources at max, and filter wide open, is 4Vpp.

Envelope Controls:
1. On both envelopes, the **ADSR** sliders control the Attack, Decay, Sustain, and the Release stages of the envelopes.
2. The **LEVEL** sliders control how strongly the envelope affects the filter and the amplifier.
3. The **LOOP** switch lets the user set the envelope to loop from the end of the release stage, behaving like a LFO that can be shaped with the **A ,D ,S** controls.
The **R** will not affect the looping envelope.



Low Frequency Oscillators (LFOs)

The Erebus V3 has up to 4 separate LFO sources:

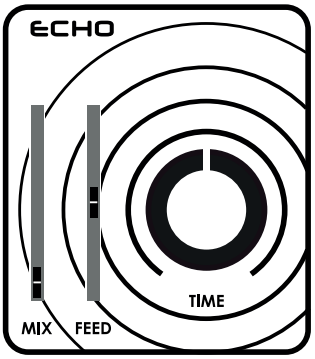


1. The dedicated **LFO** (pictured here) - offers a triangle wave that can be patched from **patch point 7**, labeled "**LFO**". Unless it's patched, the **LFO** is hardwired so as to equally modulate the frequency or pitch of all 3 Oscillators (**OSC 1, OSC 2, and OSC 3**). The **RATE** slider controls the **LFO Rate** from .0167 to 20 Hz.
2. The Filter envelope - when is set to loop, the envelope can be patched from **patch point 3** (labeled "**ENV**") so as to modulate other targets, for example an LFO.
3. **OSC 3** - can be tuned down to LFO range and variably sweep through saw (up-ramp and down ramp), pulse/square, triangle, sine, and double-saw waveforms.
4. **CLOCK** - can be used as a square wave LFO.

Echo

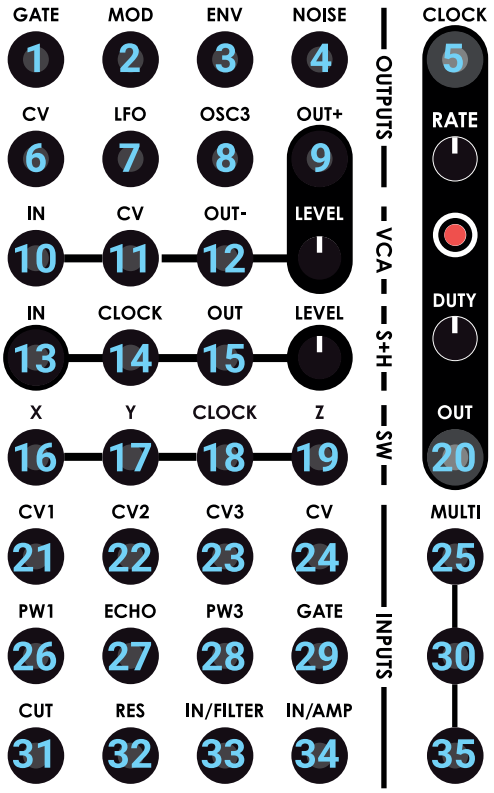
The Erebus V3 inherits the same lo-fi, classic delay from its earlier versions. Just like in the original Erebus, the effect can offer reverb, chorus, lo-fi echo, tape echo, pitch shifting modulations, or a standard delay.

Echo Controls:
1. The **MIX** slider controls the amount of dry and wet signal of the effect.
2. The **FEED** slider controls the amount of feedback to the signal.
3. The **TIME** knob lets you set delay times from 50ms up to about 400ms.



Patch Bay

The Erebus V3 has **35 patch points,** offering endless routing and modulation possibilities.
The Patch Bay is consisted of 7 major parts:



GENERAL INPUTS

21. **CV1** : CV for OSC 1
22. **CV2** : CV for OSC 2
23. **CV3** : CV for OSC 3 - When this is patched, the keyboard tracking is disabled
24. **CV** : CV for all Oscillators
26. **PW1** : Pulse width for OSC 1 - This must never be plugged in and not be connected to another patch, otherwise the PW will produce unwanted noise
27. **ECHO** :CV for the echo time
28. **PW3** : Pulse width for OSC 3 - This must never be plugged in and not be connected to another patch, otherwise the PW will produce noise
29. **GATE** input : expects a 0-5V pulse. Do not use more than 5.5V gate signals
31. **CUT** : Filter cutoff CV- it is not a precise 1V/ocv tracking input
32. **RES** : Filter resonance CV. Expects a 0-5V CV. If a bi-polar CV is sent, it won't cancel it, but it will not be modulated properly
33. **IN/FILTER** : Filter's external audio signal input
34. **IN/AMP** : Amp's external signal input

GENERAL OUTPUTS

1. **GATE** output : sends 6,4V gate
2. **MOD**: Modulation wheel output, 0-5V Level
3. **ENV** : Filter's envelope output, 0-4V level
4. **NOISE**: White noise output
6. **CV** : 1V/ocv out (tracking from OSC 1 is sent - including octave change)
7. **LFO** output : when patched, the hardwired modulation to the oscillators will be eliminated
8. **OSC3** out put : when patched, the **LEVEL** knob in the **OSC 3** section is the amount sent to the patch and the hardwired connection to the filter input is disabled.

VC ANALOG WIDE RANGE CLOCK

5. **CLOCK** Rate CV input
20. **CLOCK** output

The **RATE** knob controls the clock frequency, from about 50 sec up to almost 2700HZ. As the clock is analog, this might vary from unit to unit. At 11:30 o'clock , you are entering the audio range (20hz)
The **DUTY** will control the % of time the clock is high. Be careful, as when DUTY is at the extremes, the clock will freeze.

A great way to use the VC clock is as an extra oscillator. There is not a 1V/ocv precision tracking, but it is nice to use it as a drone source.

VC AMPLIFIER / ATTENUATOR / INVERTER

9. **OUT+** : VCA non inverting output
10. **IN** :VCA input
11. **CV** : VCA CV input
12. **OUT-** : VCA inverting output

This is a simple but effective free VCA. As there is both an inverting and a none inverting input, this is even more handy to reverse voltages, like an envelope or a modulation wheel.

The VCA itself is logarithmic, and near the end of the Level range, you should get a +18db gain, or x10 gain on voltage. Unity gain is at about 3 o'clock. Maximum voltage is +/-10V output.

SAMPLE AND HOLD

13. **IN** : S+H in - white noise is hardwired unless patched
14. **CLOCK** : S+H clock input - clock out is hardwired unless patched
15. **OUT** : S+H output

This is a classic S+H circuit. Again, this is fully analog, with all the cons are pros that comes with. For example, the clock input it can accept, can be up to 9kHZ (!), but with very slow clocks some drifting must be expected.
By default, the input has the white noise hardwired, so you will get a random modulation at the output. Here is a nice tip. You can also use this as a digital kind of noise source. Try patching its output to the in/filter input or to the in/amp, set the **CLOCK** rate at max (**DUTY** not to extremes), and listen as you get a digital noise, where the clock rate changes the pitch.

ANALOG SWITCHER

16. **X** : Switch in or out
17. **Y** : Switch in or out
18. **CLOCK** : Switch clock - hardwired to clock out unless it is patched
19. **Z** : Switch in or out

This is an analog switch, where the clock determines whether the **X** is connected to the **Z** (clock low), or the **Y** is connected to the **Z** (clock high).
The **DUTY** of the clock will determine how long each side is connected.
You can either use **Z** as an input, and **X**, **Y** as an output, or the reverse.

Here is an example you **MUST** try:
Patch **NOISE -> X , OSC3 -> Y , Z -> IN/AMP**

Set a relative low clock rate (1 sec or something similar) , and DUTY at 50%. Close all other sound sources, but keep **OSC 3 LEVEL** knob at max. Also, do not set the noise wave for **OSC 3**. Then trigger the synth, and listen while **OSC 3** and **NOISE** are shifting the sound. Afterwards, change the **DUTY** and the relative time, each of this is on, will alter.
Finally, remove **OSC3 ->Y** patch, close the **OSC 3 LEVEL** knob, and set the **DUTY** so as the noise can only sound for a very small amount of time, like almost a click. Congrats, you just made a hi-hat!
You can now open some sound sources, and play along with it!

MULTIPLIER

25. Multiplier point
30. Multiplier point
35. Multiplier point

A simple multiplier, to double CV outputs. **DO NOT try to patch 2 outputs here!**

The MIDI Interface and DIP Switch

The Erebus V3 has a relatively simple MIDI interface, as it is an improvisation synthesizer, where the extensive patch bay use, is needed so as to get the most out of it.
Both **MIDI IN** and **MIDI THRU** jacks can translate MIDI input as described in the table below. Please note that **MIDI THRU** will not transfer the MIDI ground. This is needed for some gear in order to work properly. If that is the case, avoid using the **MIDI THRU**.
Also, the **MIDI THRU** can be used to send a second MIDI device to control the Erebus at the same time. Here is the complete list that the MIDI interface will handle:

- Note tracking
- Gate on/off
- Pitch wheel
- Mod wheel
- Channels from OMNI up to 7.

MIDI CHANNELS
In order to change the MIDI channel, just use the DIP switch located on the back panel of the Erebus V3. For the MIDI selection, we use **DIP 3,4, and 5.**

OMNI 3,4,5 off
CH1 5 on
CH2 4 on
CH3 4,5 on
CH4 3 on
CH5 3,5 on
CH6 3,4 on
CH7 3,4,5 on

UNISON / DUOPHONIC MODE
Erebus V3 is a Duophonic synthesizer, but it can also be used in standard Unison (mono) mode. In order to change between the 2 modes, use the **DIP switch 2** on the back panel. By default when 2 is off, Paraphonic mode is enabled.

When in paraphonic mode, by hitting a single key all VCOs will follow this note, but by hitting a second at the same, it will have **OSC 1** and **OSC 3** playing the low note, and **OSC 2** playing the higher note. This is always a low note priority. In duophonic mode, envelopes are always on a retrigger mode. Normally, when releasing 2 pressed notes, all sources will follow the note last pressed. You can avoid this, by releasing the note at the exact same time (there is a 5ms delay for that). Some practice is needed in order to fully master this.

In Unison or mono mode, only one note will follow, and when hitting a second note at the same time will not have any effect, unless it is higher than the one already pressed (high note priority). Envelopes on this mode are always without retrigger.

AUTOTUNING
When **DIP 1** is On, the background autotuning is active. This means that whenever the **AMP** envelope is at a rest, (the release stage must have ended!) the autotuning will kick in, after 1 second. This will calibrate the scaling of the oscillators, so as they are constantly in tune. Each calibration takes about 2-3 seconds and it will run in an endless loop. After just 1 calibration, the unit is ready to play, but it is strongly suggested that you allow the synth to warm up for at least 5 minutes before playing.

You can deactivate this by setting **DIP 1** to off position. This will force the unit to make a single autotune - regardless the AMP state. For example, have **OSC 1** on, set the filter to a wide open state and the sustain and release of the AMP at max. Press a key and immediately turn the **DIP 1** off. This will do a single audible autotuning process.

The only reason to set the **DIP 1** to the off position, is the need to use the **OSC 3** output for modular purposes with other gear, as when the **AMP** is low, the **OSCs** will be calibrated and they will shift in octaves. Thia might be a rare occassion and most of the times you will want the **DIP 1** set to on. Nontheless, if you have to do it, let the unit warm up for 20 minutes, and then you can turn the **DIP 1** off, with confidence that the Oscillators are in tune.

SYSEX UPDATE
DIP 6 is used to update the firmware of the unit. When a new firmware update is announced, along with the firmware file, there will be instruction on how to install it.
For now, all you need to know, is to never set **DIP 6** on, and if you do so, turn it off and reset the unit (turn the power supply on/off). You cannot damage the unit, it will not respond properly when **DIP 6** is ON.

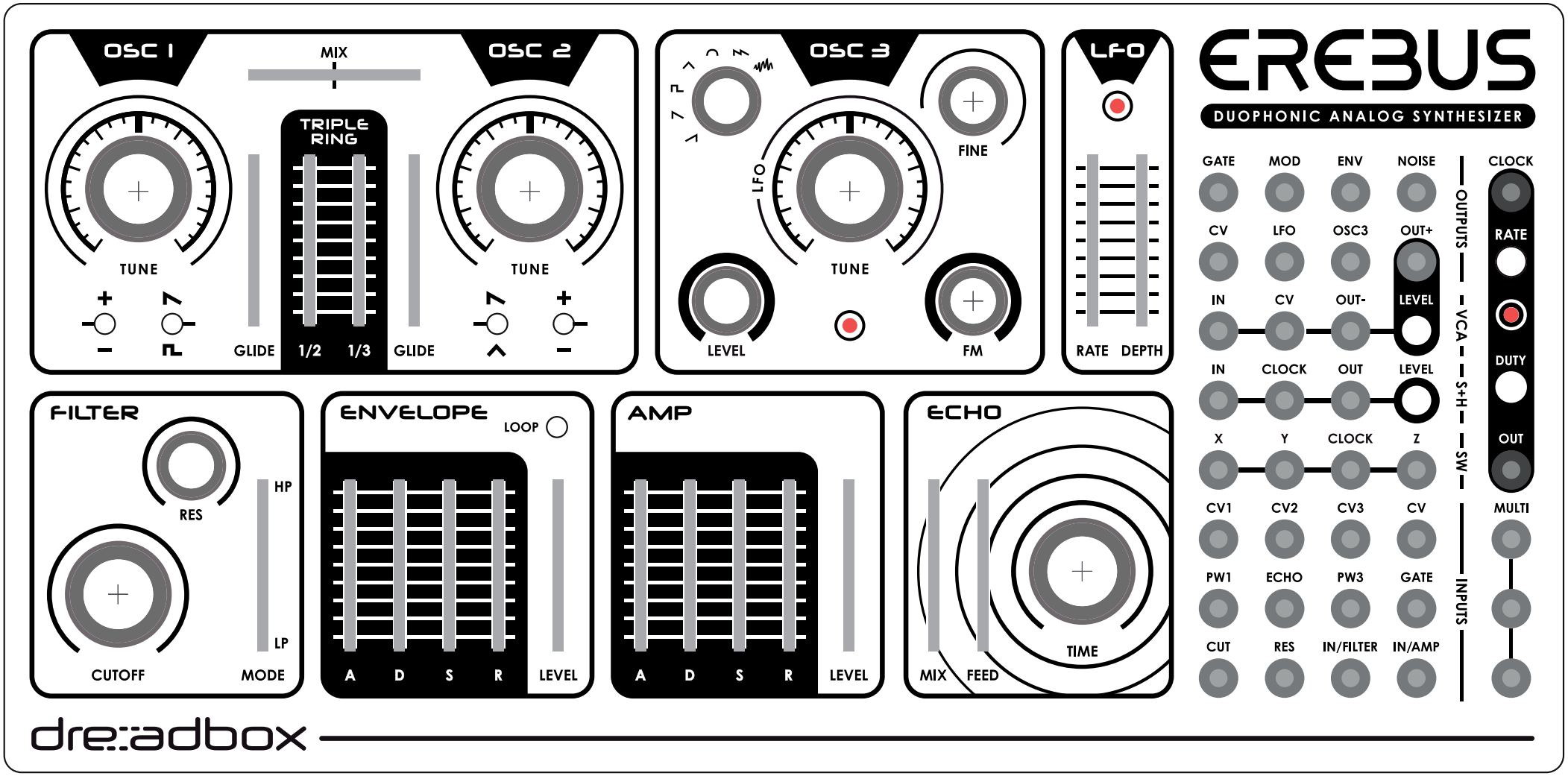
Limited Warranty

Dreadbox warrants this product to be free of defects in materials or construction for one year from the date of purchase. Proof of purchase is necessary when the warranty claim is made. Malfunctions resulting from improper power supply voltages, backward or faulty cable connection, abuse of the product or any other causes determined by Dreadbox to be the fault of the user, are not covered by its warranty (normal service rates will be applied). All defective products will be replaced or repaired at the discretion of Dreadbox. Products must be returned directly to Dreadbox with the customer paying the shipping costs. Dreadbox implies and accepts no responsibility for harm to a person or apparatus through the operation of this product.
Please contact **support@dreadbox-fx.com** for the return to manufacturer authorization, or for any other technical questions or concerns.

Kindly note that the wooden sides and the screen printing are done by hand, which means that natural differences or imperfections are normal and expected.

WARNING!
Do not open the unit
Use a Dust cover
Turn off the synthesizer when you are not using it
Keep the original packaging

PRESET : .....



Notes :