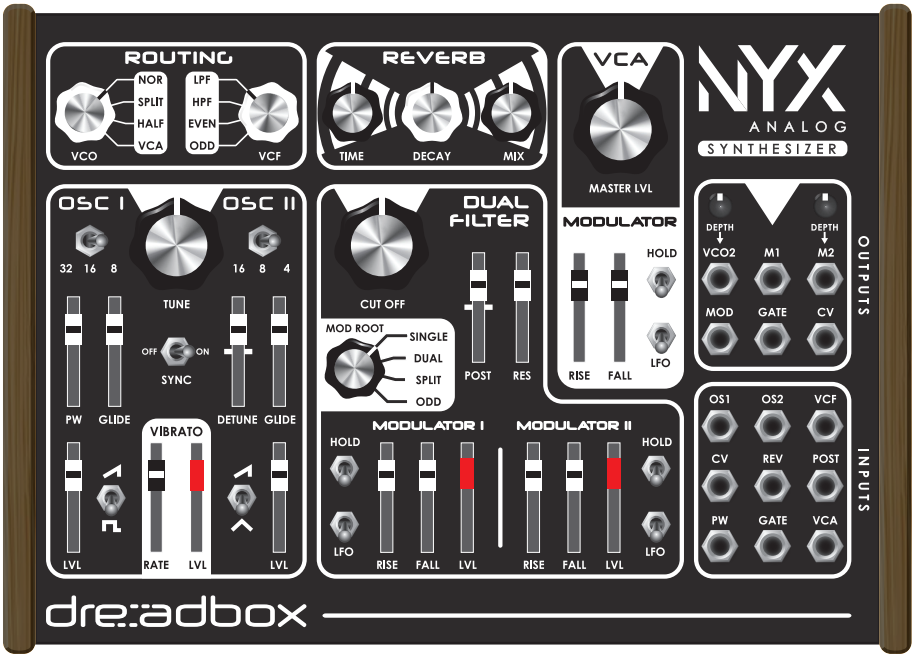


NYX
ANALOG
SYNTHESIZER

dre::adbox
USER'S MANUAL

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NYX
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SYNTHESIZER

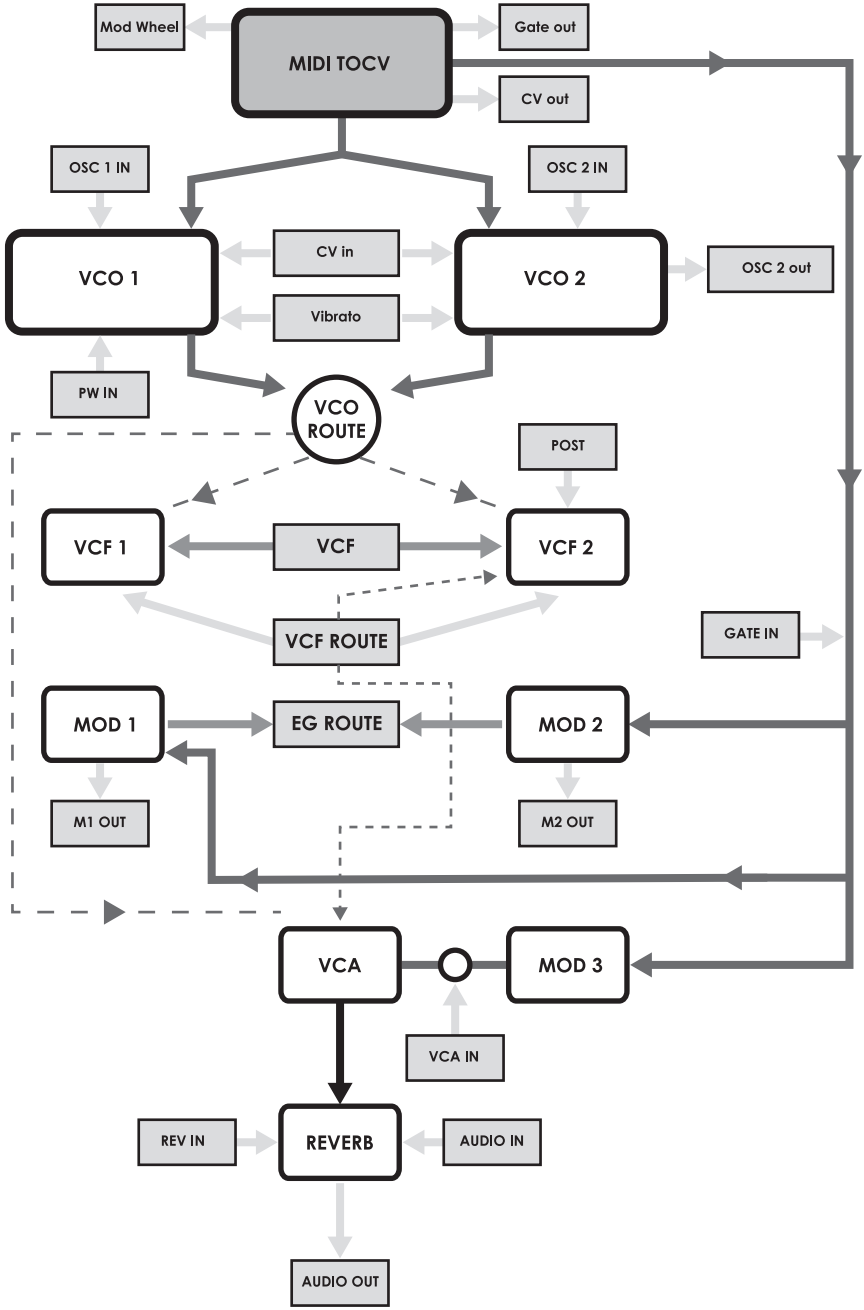
INTRODUCTION

Thank you for purchasing the Dreadbox NYX desktop synthesizer !
The NYX is an analog synthesizer with various patching options. It's 100% analog (except for the Midi interface and the reverb effect) and 100% handmade, only with Through Hole components. It's a versatile synth machine, capable of producing some huge bass sounds, piercing leads and great ambience! Advanced synthesis knowledge is required to successfully use the Nyx.
It is strongly suggested that you read the rest of the manual to get the most out of this machine.

Yannis Diakoumakos,
Dreadbox developer

Athens -Greece
January 2017

SCHEMATIC DIAGRAM



1. Paraphony

We call Paraphonic Synthesis, when the oscillators can work in polyphony but the signal path is common for all voices. In NYX we have 2 voices sharing the same filter and VCA. But to be more specific :

- 1 key pressed : both oscillators will play the pressed note
- 2 keys pressed : Oscillator 1 will play the low note, Oscillator 2 will play the high note
- 3 or more keys pressed: Oscillator 1 will play the low note, oscillator 2 will play the 2nd lowest note and all the other notes will be ignored.

You can set Nyx into unison mode, but to do so you need to access a DIP switch inside the unit. Open the bottom cover. You will see the 4 possition DIP switch on your left. Switch 4 is fro unison / paraphony. When ON, Nyx plays in paraphony.

2. Midi interface

NYX Midi interface will allow the following actions:

- Note(s) on / off. Gate out patch, converts midi gate-to analog gate

- Pitch tracking up to 5 octaves (C -1 up to C 4). The pitch is converted to 1v/ocv which can be accessed via the CV1 - CV2 outputs.

- 2 voice paraphony or Unison mode (for unison turn the internal DIP switch NO4 off)

- Keyboard retrigger on the modulators

- Pitch wheel for 1 + 1/2 tone up/down. This is also transmitted on the CVoutput

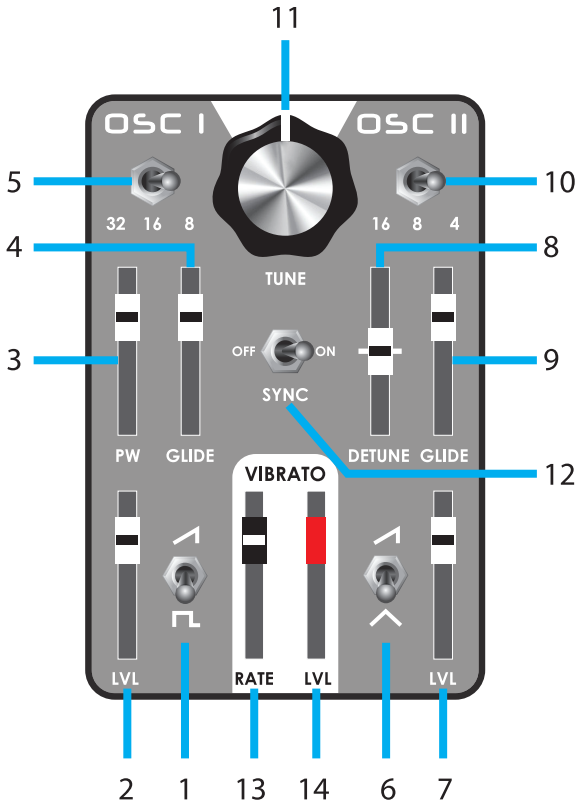
- Modulation wheel (accessible only via patch) 0- 5v

- Midi channel selection OMNI or 2-7. The midi channel can be changed via a DIP switch located inside the NYX (see page 13).
All off -> OMNI
2 on -> MIDI ch 2
1,2 on -> MIDI ch 3
3 on -> MIDI ch 4
1,3 on -> MIDI ch 5
2,3 on -> MIDI ch 6
All on -> MIDI ch 7

- Midi through function (the polyphony is not transmitted)

3. Oscillators

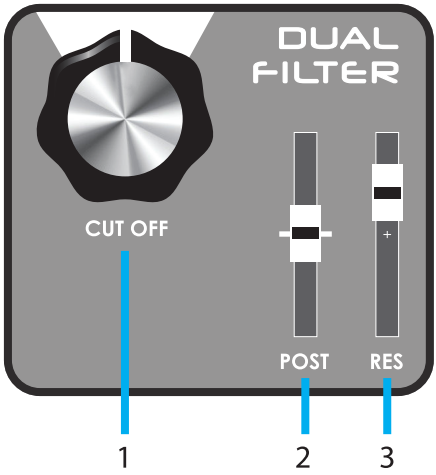
NYX's oscillators need about 5 to 20 minutes to warm up. You can just turn on the synth and play but the tuning will change during that time. They use the standard 1V/oct voltage source or a midi keyboard to track correctly. By default the Tune and Detune knobs and slider should point at about midway.



1. VCO1 Wave
2. VCO1 Level
3. VCO1 Pulse Width
4. VCO1 Glide
5. VCO1 Octave Selection
6. VCO2 Wave
7. VCO2 Level
8. VCO2 Detune
9. VCO2 Glide
10. VCO2 Octave Selection
11. Tuning for both VCOs
12. Sync VCO2 to VCO1
13. Vibrato Rate
14. Vibrato Level (for both VCOs)

4 . Voltage Controlled Filter

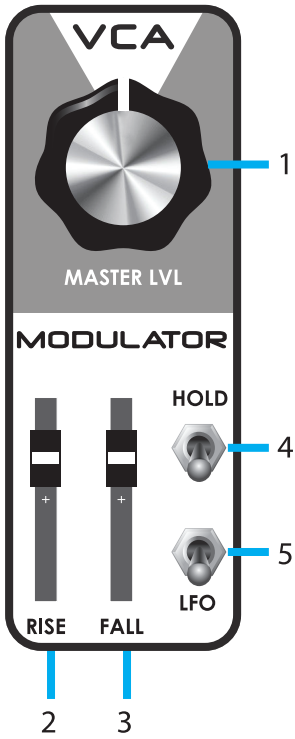
NYX uses a Dual VCF system, in order to achieve various timbres. Both of these are 2-pole (12dB/oct), but combined can achieve up to 24dB/oct filtering.
For more info please refer to the "Routing" section (page 9).



1. Cut Off: controls both Filters

2. Post Cut: the Cut Off of the 2nd Filter
(in some cases must be kept in a midway position)

3. Resonance : controls both filters



5. Voltage Controlled Amplifier

NYX's VCA has a modulator identical to the other 2 filters' modulators (modulator 1 and 2). For more info on how to use this one, please refer to the "modulators" section (page 8).

1. Total Amplitude of the Synthesizer

2. Attack Time

3. Decay or Release Time (depending on the HOLD)

4. ON HOLD: Attack-Release (otherwise Attack-Decay)

5. ON LFO: Retrigger (use as an LFO), otherwise use as a standard envelope

6. Modulators

NYX has 3 identical (over control) envelope generators or LFOs. These differ from one another only over their times.

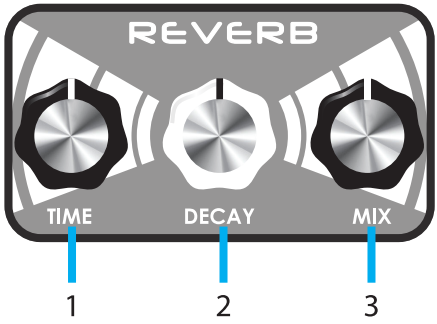
MOD1: Mid range Speed
MOD2: Fast Range Speed
VCA MOD: Slow Range Speed

GATE	HOLD	LFO	RESULT
Don't care	OFF	OFF	ATTACK/DECAY
Don't care	ON	OFF	ATTACK/RELEASE
Don't care	OFF	ON	LFO
LOW	ON	ON	LFO
HIGH	ON	ON	MAX STATE

When the Modulators are into LFO state, their speed and wave shape, depend on the RISE and FALL Sliders.

7. Reverb

NYX is equipped with a Reverb effect designed by **Crazy Tube Circuit**.
(www.crazytubecircuits.com)
It is based on the algorithm of Splash MK3.



1. Pre-delay Time. This will also affect the brightness of the reverb

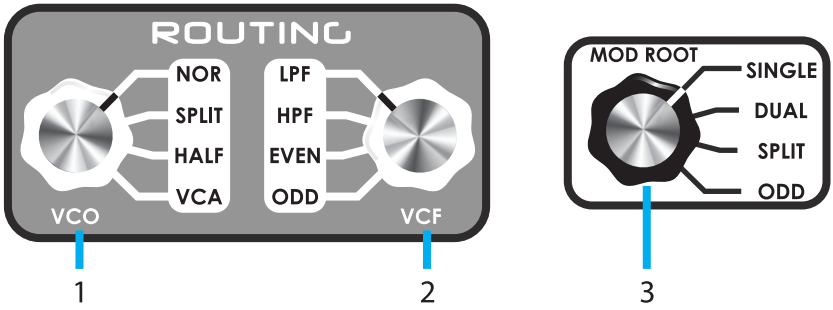
2. Decay: Reverb's decay time. At max it's eternal

3. Mix: Blends between dry and wet sound

8. Routing

There are 3 rotary switches that will determine how NYX will sound and behave.

WARNING!
In some cases and combinations, you might not get sound at all or the required result.



1. VCO ROUTING
NOR: Both VCOs are being sent to the 1st VCF
SPLIT: VCO1 to VCF1 and VCO2 to VCF2
HALF: Both VCOs are being sent to the 2nd VCF
VCA: Both VCOs are being sent directly to VCA

2. VCF ROUTING
LPF: VCF1 is set to LOW PASS and in series with VCF2 again set to LOW PASS
HPF: VCF1 is set to HIGH PASS and in series with VCF2 again set to HIGH PASS
EVEN: Both VCFs are set to LOW PASS and are set PARALLEL
ODD: VCF1 is set to LOW PASS, VCF2 is set to HIGH PASS and they are set in PARALLEL

3. MOD ROUTING
SINGLE: Modulator 1 controls both VCFs
DUAL: Both Modulators 1 and 2 go to both VCFs
SPLIT: Modulator 1 controls VCF1 and Modulator 2 controls VCF2
ODD: Modulator 1 controls both VCFs and Modulator 2 controls VCF2

EXAMPLES

A. Standard setting with a 24dB/oct VCF

VCO R → NOR*
VCF R → LPF or HPF
MOD R → SINGLE

Set Post Cut at 12 o'clock

*When at HALF you convert the filter into a 12dB/oct

B. Split Oscillators into each Filter (control each filter individually)

VCO R → SPLIT
VCF R → EVEN or ODD
MOD R → SPLIT
Use POST CUT to adjust an Offset between filters

C. Four Sound Sources

VCO R VCA
VCF R EVEN
MOD R Don't care (SPLIT could be nice though)
Resonance at max
Patch CV out to VCF input
Use POST CUT to place an offset between Resonance
Use Cut Off to tune resonance

9. Patching

NYX's right side is dedicated to patching. Learning to patch needs lots of experimentation. We strongly suggest spending lots of time and trying as much connections as possible. You will find out that lots of the synth's possibilities come from it.
Patching is divided in 2 areas:

A. OUTPUTS - those patches only send voltage. You can send their CV to other devices, but first be sure that the receiver can accept such a voltage.

B. INPUTS - those patches can only receive voltage. It's safe to send much more voltage than indicated (see specs or chap. 9B) but it won't always have results.

NEVER CONNECT
AN OUTPUT WITH ANOTHER OUTPUT or AN INPUT WITH ANOTHER INPUT
This might cause serious damage to the unit and
we will not take any responsibility.



VCO2: Sends the pure VCO2 selected wave (max level is +/- 5V)

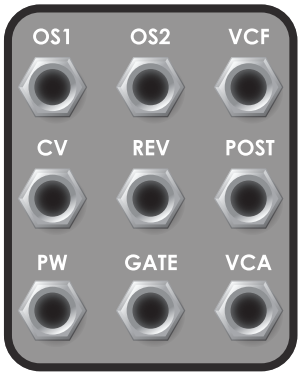
M1: Modulator 1 unattenuated output (0-8V range)

M2: Modulator 2 Sattenuated output (Max level is 0-8V)

MOD: Modulation Wheel output (0-5V range)

GATE: 0-5V Range

CV: Sends the midi to CV (1V/oct)



OS1: Controls VCO1 Pitch 1V/oct (+/- 12V range)

OS2: Controls VCO2 Pitch 1V/oct (+/- 12V range)

VCF: Controls both filters' frequency (+/- 12V range)

CV: Controls both VCOs' Pitch 1V/oct (+/- 12V range)

REV: Controls the pre-delay and tone of the reverb (0-5V range)

POST: Controls the 2nd VCF's frequency (+/- 12V range)

PW: Controls VCO1 Pulse Width (+/- 5V range)

GATE: Sends a 0-5V pulse to trigger the modulators

VCA: Controls the VCA's level

10. Polychain

You can polychain 2 NYX units or a Nyx with an erebus.

Setting the NYX's order:
You need to program each unit to set their playing order. One of these should have Oscillators 1 and 2 and the other unit oscillators 3 and 4. By default every NYX is set to play oscillator 1 and 2. To change this, follow this process:
1. Open the bottom cover.
2. Plug in the power supply. If you change between unison and paraphony mode (II) 4 times in the first 10 seconds (for example if the switch is in the Unison mode when you plug the power go - II - unison- II-unison)the Nyx will be set 2nd in order. To Set its order back to normal, repeat this process.

Voicing priority:
1 key pressed : All voices follow the same note.
2 keys pressed: All voices will follow the low note, oscillator 2 follows the 2nd note
3 keys pressed: All voices will follow the low note, oscillator 2 follows the 2nd note and oscillator 3 follows the 3rd note
4 keys pressed: 1st oscillator will follow the low note, oscillator 2 follows the 2nd note, oscillator 3 follows the 3rd note, oscillator 4th follows the 4th note.

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Specifications

- 15VDC POWER INLET: Accepts +15VDC, 1A at 2,5mm center pin (units that have a serial number above #1000)

- MONO AUDIO IN (6,3mm TS-UNBALANCED): Accepts up to 3v p/p inputs

- MONO AUDIO OUT (6,3mm TS-UNBALANCED): 10v p/p output max

- PATCHES (3,5mm mono)
- Gate In/Out: 0 - 5V
- Os1,Os2, CV in: works best at 1V/oct, can accept from +/-12V
- CV Out: 1V/oct, starting at 0V, maximum is 5V
- Mod Wheel Out: 0-5V
- Modulators Out (M1, M2): 0-8V range
- Reverb CV In (REV): 0-5V max
- VCA cv in: 0-5V (suggested max +/-12V)
- VCF, POST CV In: 0-5V (suggested max +/-12V)

Suggested room temperature for best oscillator stability: 22°-30° Celsius

Weight: 1,4 kgr
Size: 225mm X 160mm X 65mm