

MATRIX

version 2

KONTAKT library based on the best sounds of OBERHEIM MATRIX-1000 analog synth

The screenshot displays the MATRIX v2 software interface, which is a Kontakt library based on the Oberheim Matrix-1000 analog synth. The interface is organized into several sections:

- Top Bar:** Includes a key icon, a dropdown menu for "MX Dreamy KeyPad", and a "Tune" knob set to 0.00. It also shows "Output: st. 1", "Voices: 0 Max: 64", "MIDI Ch: [A] 1", and "Memory: 31.64 MB".
- Navigation:** Features tabs for "SYNTH", "ARP", "FX EDIT", and "SYSTEM".
- OSC (Oscillator):** Contains controls for "s.sl", "semi", "fine", and "pan". It indicates "OSC: (2 Groups)".
- FILTER:** Includes "cutoff" (511.1 Hz), "reso" (0.0 %), and "FLT1" (Filter Envelope). It also has "A", "D", "S", "R" envelope sliders and an "Env filter" knob (33.2%).
- AMP (Amplifier):** Features "key", "A", "D", "S", "R" envelope sliders and an "A.crv" knob.
- FX (Effects):** Includes "EQ", "DIST", "dly", "rvb", and "COMP" controls.
- MOD (Modulation):** Contains "mod. wheel", "aftertouch", "velocity", and "random" sections with various knobs and sliders for "cutoff", "reso", "lfo1", "lfo2", "amp atk", "fit dec", "cutoff", "s.start", and "External modulators".
- LFO (Low-Frequency Oscillator):** Includes two LFO sections (LF01 and LF02) with "shape", "rate", "delay", "pitch", "cutoff", "vol", and "pan" controls, and a "sync" checkbox.
- PERF (Performance):** Includes "unison" controls for "voice det.", "solo", "legato", and "glide".



DINK NOISE
STUDIO

MATRIX

Kontakt Edition

version 2.12

users guide

by Andras Haasz

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Introduction

Thank you for choosing MATRIX!

MATRIX is a Kontakt sampling library based on the best sounds of the legendary analogue synthesizer of Oberheim.

The design goal was to develop an ergonomic user interface to our sound library that utilizes the advanced features of Kontakt. The result is a flexible synthesizer which offers fat and warm analogue sounds like the original hardware, but with the comfort of a software environment.

Requirements

MATRIX v2 requires the **full retail version of Kontakt 5.51** (or higher version), it is not compatible with the free Kontakt Player.

Note: the 5.51 version of Kontakt still runs on OSX 10.8 (Mountain Lion) or Windows 7.

Installation

Unpack the downloaded package, and place the "MATRIX" folder in your Kontakt's sampler library folder. Important: you can place the MATRIX folder anywhere you want, just don't change the library's internal structure!

MATRIX contains two main sub-folders and one zip file:

- 1) **MX Instruments** folder: contains all instrument patches (nki files) of the library in 6 categories. You can load these patches using Kontakt's internal browser, or you can drag and drop from Finder/Explorer.
- 2) **samples** folder: stores all samples and configuration data of the library (you don't have to deal with it).

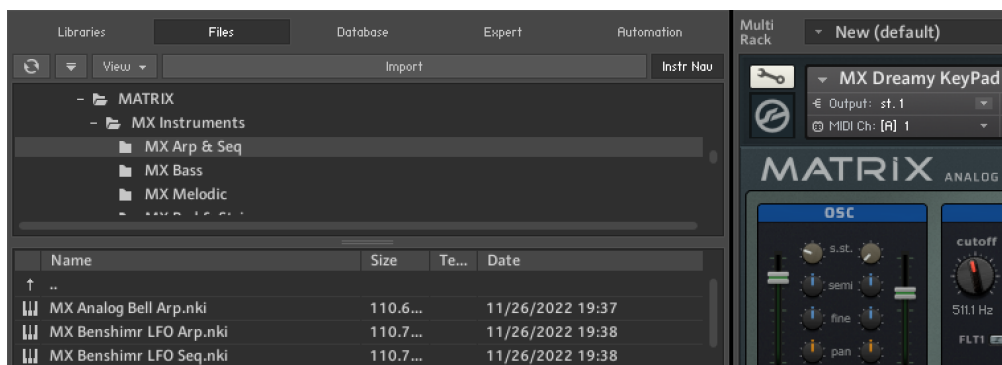
MX Instruments - no automation.zip: this file contains the nki patches without the Automation IDs. If you don't want to use the automation feature of MATRIX, you can replace the original patches in the MX Instrument folder with these ones. Please note that Automation IDs and MIDI CC automation are completely different and independent from each other!

Instruments of MATRIX

The library function (when you see your installed libraries in the "Libraries" menu of Kontakt) works only with NI's own products. Native Instruments kept the rights for this feature and they don't allow 3rd party developers to release sound libraries that can be recognized by the program without Native Access.

But this doesn't really matter as you can still use our libraries, just click on the "Files" tab (near the libraries in the Kontakt's menu), and you can use Kontakt's internal browser to locate MATRIX.

You can drag'n'drop the **.nki** patches into the rack (right panel) and use them. When a patch is loaded, you can also use the small triangle icons near the patch name to load next/previous patches.



The Kontakt instruments of MATRIX (.nki files) can be found in the **MX Instruments** folder, distributed in 6 categories:

- [All layers]
- MX Arp & Seq
- MX Bass
- MX Melodic
- MX Pad & String
- MX SFX

The *[All Layers]* is a special folder for sound designers. It contains all of the instrument layers (or groups, in Kontakt terminology) separately. The patches are "clean", without any filter effect and with default envelope settings. They can be useful if you want to create new sounds from scratch.

Please note that these categories are not carved in stone, they're just our approach. For example you can use a bass sound as lead, or a pad as monosynth lead when you tweak it a bit... it's really up to you!

Features of MATRIX

- ergonomic user interface using more than 100 custom made knobs, faders and switches to control the most important parameters of the synth
- programmable arpeggiator with 4 pattern slots
- fully editable effects: equalizer, 2 types of distortion, delay, 2 types of reverb, comp
- 30 different types of filters in 3 real-time switchable filter slots
- 2 independent LFOs with tempo sync option, allowing modulation for 4 destinations: pitch, filter, volume and pan
- modulation options for external sources: velocity, mod-wheel, aftertouch, random.
- customizable global MIDI implementation for 24 controllers*
- host automation for 24 controllers*
- template load/save option for sound design

* the following 24 parameters can be controlled via MIDI control change messages or host automation:

filter cutoff, filter resonance, filter type, filter env amount, filter attack, filter decay, filter sustain, filter release, amp attack, amp decay, amp sustain, amp release, OSC1 volume, OSC2 volume, FX delay amount, FX reverb amount, LFO1 speed, LFO2 speed, Arp mode, Arp pattern select, Solo on/off, Legato on/off, Glide on/off, Gliding time

Controlling parameters

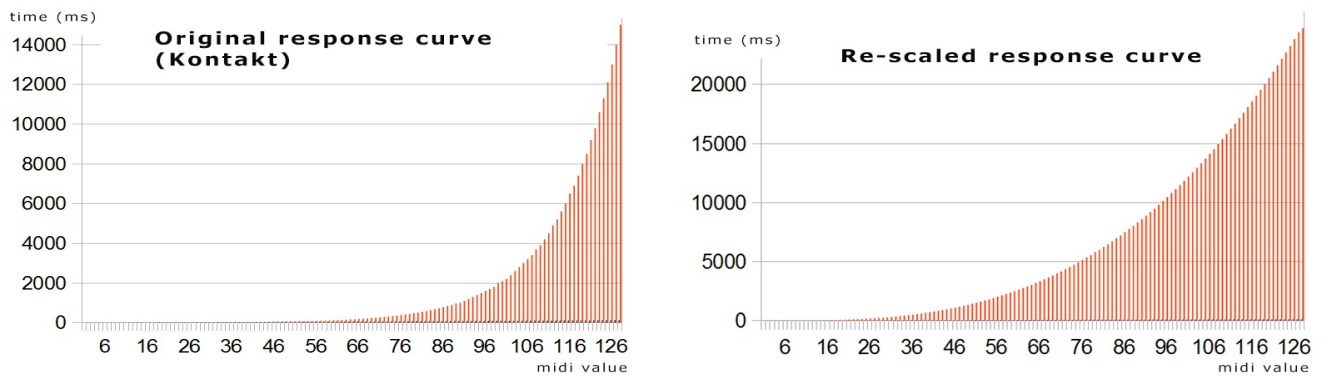
Knobs, faders, and numerical displays can be controlled by left-clicking on them, and dragging the mouse up or down in a vertical direction (except some horizontal sliders). Hold down shift while turning knobs to slow down the movement, in order to set precise values. Use Ctrl+Click to set controls to their default position.

Tip: if you enable the info pane in Kontakt, it will display a description of each controller at the bottom when you move the mouse over them.



About the sliders

The ADSR envelope sliders in MATRIX have been modified and use a special response curve modeled after hardware synthesizers. As you can see on the picture below, the original Kontakt response curve is steeper and therefore the practically used upper area is narrower, which means that the control path is too short in the useful range. Our rescaled sliders give you more room in this range, allowing for more precise settings.



Without any mathematical explanation, in short: you will get a much more natural feeling.

The user interface

The MATRIX interface has four panels: SYNTH, ARP, FX EDIT and SYSTEM.

1. SYNTH panel

The SYNTH panel contains all synthesizer parameters and allows you to edit them.

The panel can be divided into 7 parts, these sections follow the typical logical order of analogue synthesizers.



As you can see, the controllers follows a certain colour scheme for the easy navigation:

- green: volume related controls
- light blue: pitch related controls
- red: filter related controls
- orange: pan related controls
- yellow: LFO related controls

OSC section

An instrument contains one or more groups. The OSC section provides control for volume, sample start offset, pitch tune (semitone and fine) and pan parameters according to the following rule: OSC1 controls the odd-numbered groups (group 1, 3, etc.), OSC2 controls the even-numbered groups (group 2, 4, etc.).

When only one group exists in the instrument patch, controls of OSC2 will be hidden.

By default, the max. allowed number of groups is 8. In most cases, it's more than enough. If you want to use (and control) more groups, you need to modify the following line in the script editor:

```
declare const $max_groups :=8
```



OSC volume: adjusts the group volume. This controller can be automated.

Sample start offset: adjusts the sample start offset.

Semi tune: transpose the OSC in semitone (+/- 12 st.)

Fine tune: fine tune the OSC in one cent steps (+/- 100 cents)

Pan: set the panorama of the OSC

FILTER section



Cutoff: adjusts the cutoff frequency.

Reso: adjusts the amount of resonance.

Filter type: switch among the 3 pre-loaded filter types. You can set the filter types on the system panel.

FILTER ADSR Envelope: controls the filter cutoff over time by adjusting the attack, decay, sustain and release of the filter envelope.

key: key track, determines how much the cutoff frequency is affected by the MIDI key number.

If it is set to 0, all notes share the same cutoff frequency as specified by the cutoff. Higher values move the cutoff frequency according to the key pressed.

Env filter: adjusts the envelope amount to the filter cutoff.

All controls of filter section (except the keyboard track knob) can be automated.

AMP section



Pan keyboard tracking: controls the connection between the pan and the key position.

Attack curve: adjust the curve shape of the Attack phase from concave (-) to convex (+). At middle position it is linear.

AMP Envelope: adjusts the attack, decay, sustain and release of the amplitude envelope. These controllers can be automated.

FX section

The FX section provides a quick access to the effects: you can enable or disable the eq, distortion and compressor, set the amount of delay and reverb. You can edit the effect parameters on the FX EDIT panel. The signal path leads from top to bottom.



EQ: Enables or disables the Solid G-type equalizer.

DIST: Enables or disables the distortion module (skreamer or jump).

DLY: adjust the amount of delay effect.

RVB: adjust the amount of reverb effect (traditional or convolution reverb).

COMP: enable or disable the compressor module.

MOD section

The mod section can be divided into 4 parts, according to the four external modulation sources: mod wheel, aftertouch, velocity and random generator.

Under the modulation source name you can see the intensity control knobs. Most of them are bipolar, which means you can adjust the modulation intensity in two direction: increase or decrease the modulated destination's value.



Mod wheel has five destinations: cutoff, resonance, LFO1 rate, LFO1 and LFO2 intensity.

Aftertouch has three destinations: filter cutoff, LFO1 & LFO2 intensity. Please note that LFO1 and LFO2 intensity knobs are shared between the modulation wheel and the aftertouch, you can switch between the two sources by pressing the small button below the knobs.

Velocity has five destinations: volume, cutoff, amplitude envelope's attack, filter envelope's decay and sample start offset. These controls can help to make your sounds livelier while playing. They are bipolar.

Random generator has three destinations: pan, cutoff and sample start offset. As you can see, these controllers are unipolar, since the random generators are already bi-directional. Please note that setting sample start offset controls only makes sense when the playback mode is set to sampler, they don't work in DFD (direct from disk) mode.

LFO section

Low Frequency Oscillators (LFOs) generate periodic (or random) signals, which are typically used for modulation across all kinds of synthesizers and samplers. Their name stems from the old modular analogue synthesizers, where they first originated: it was meant to reflect that their typical operating frequency was the only thing that set them apart from the audio oscillators (which were mostly just being referred to as "oscillators"), since otherwise, they worked pretty much the same, and had similar controls. While audio oscillators generate signals in the audible range of 20 Hz up to 20.000 Hz, LFOs provide a much lower range. MATRIX has two independent LFOs, see the picture.



shape: displays the waveform of the LFO's. The available waveforms are sine, triangle, rectangle, sawtooth and random.

sync: synchronize the LFO to the host tempo

rate: adjusts the LFO frequency. When sync is off, the frequency range is 0.1 -210 Hz. If sync is on, the actual frequency depends on the host tempo, you can set it in the 4/4 – 1/256 range.

delay: if this value is greater than zero, the LFO will not start the waveform right away when a note is received, but rather smoothly ramps it up over time. This works great on human-like vibratos.

Both LFOs have 4 destinations: pitch, cutoff, volume and pan. These controllers are bipolar. Please note that the LFOs' modulation intensity is also controlled by the Mod-wheel/Aftertouch intensity knobs, so when you turn a modulation knob and don't hear any changes, check them too.

PERF section

The Performance section allows you to set parameters for the behavior of notes when played from a MIDI keyboard.



Unison provides a chorus type effect and thus an overall fat sound, when playing a note. Unison has two parameters: voice and detune.

Please note that unison voices will reduce the available polyphony.

voice: the number of voices played simultaneously when playing a note.

detune: the unison voices are slightly detuned, this parameter adjusts the amount of detune.

solo: enables a monophonic mode, i.e., only one note is audible at a time. This works well with both legato and glide. It is useful for replicating monophonic synthesizers.

legato: enables legato mode. As long as a key is pressed in legato mode, the attack phase of a successive note will not be triggered, but the current note will pitch-bend to the second note's value. Legato works only when solo mode is set to on.

glide switch: turns pitch slides on or off. The time of the glide can be controlled with the control knob.

2. ARP panel

The arpeggiator is a module that generates melodic or rhythmic patterns from one or more keys pressed. It uses the host's tempo and automatically steps through a sequence of notes based on the input notes.



Arp mode slider: you can choose among 3 modes.

On enables the normal arpeggiator mode. **Hold** will latch all played keys. **Hold+-** will latch all played keys and subsequently played keys will be added to or taken away from the note buffer. **Off** turns the arpeggiator off.

Steps: sets the number of steps of the rhythmic pattern between 2 and 32.

Rhythm Grid: sets the rhythmic pattern of the arpeggiated notes. The columns set the velocity of each note. If a column is set to 0 (by ctrl+clicking on a table column), the step will not be played. The actual velocity depends on the *Fix Velocity* button, the length of the pattern can be set with *Steps*. Tip: right-click and drag the mouse to create a continuous velocity ramp.

Fix velocity: when enabled, played velocities are ignored and taken from the columns in the rhythmic grid. When it is off, played velocities will be scaled by the columns of the rhythmic grid.

Note order: defines the pattern for the order in which notes are arpeggiated.

Pattern select: you can choose from 4 different pattern variations, they have dedicated buttons: P1, P2, P3, P4. The pattern select knob can be automated.

Save: saves the complete arpeggiator settings to the disk.

Load: loads a previously saved settings from the disk.

Rate: adjust the tempo of the arpeggiator in rhythmical values, synced to the master clock. T stands for triplet.

Octave: sets the octave displacement, i.e. the distribution of the arpeggio pattern in various octaves. The arpeggio pattern cycles from the played octave to the octave set upwards.

Duration: sets the duration of the arpeggiated MIDI notes in percent. This will only change the length of the MIDI notes, not the volume envelope.

Swing: offsets every other step by the specified amount percentage in order to create a swing feel. Positive values delay every other step, negative values push every other step forward.

Strike: sets the number of strikes of each note of the note buffer. When Strike is set to a value other than 1, each note of the note buffer will be repeated by the amount specified with *Strike*.



3. FX EDIT panel

The FX edit panel gives you access to the effects settings, you can customize all parameters of the following effects: equalizer, 2 types of distortion module, delay, 2 types of reverb, compressor and limiter.



The **Solid EQ** is modelled on high quality analogue circuitry. It is a 4-band parametric EQ and offers the choice of bell or shelf style control of the low and high frequency bands.



The **Jump Amp** effect simulates the classic tone of British guitar amplifiers. It is ideal for creating smooth, singing lead sounds.

Skreamer offers an alternate overdrive algorithm that sounds warm and smooth.

You can switch between Skreamer and Jump by clicking on the switch at the bottom.

Delay offers a delay line that can optionally be synced to the tempo and provides an adjustable feedback level, a low-pass filter, and a pan control for ping-pong like echo effects. If you don't use the tempo syncing feature, the available delay range is 5 to 2900 ms. Delay times lower than 20 ms are not discernible as delays, but can produce interesting comb filtering effects.



Reverb simulates the natural reverberation that occurs when a sound source is placed in an acoustic environment, thus adding a feeling of spaciousness to the sound.

Convolution (or IR Reverb) is a mathematical process that allows you to replicate the acoustical behavior of a room or a hardware reverb unit for use with your own signals. To accomplish this, a short audio recording of a wide-band signal played through the system is fed into the convolution processor. This recording is usually a normal audio file, called impulse response. **MATRIX** provides 32 types of impulse responses, you can select them from a drop-down list.

You can switch between algorithmic reverb (RVB) and IR reverb (CONV) by clicking on the switch at the bottom.

Compressor is a dynamic tool which automatically reduces the level of loud passages in a signal, thereby affecting the signal's dynamic range.

It's a useful tool for many common tasks - for instance, it can be used for reducing level peaks, thus allowing the overall signal volume to be turned up without making it clip, or in other words, increasing the average volume of a signal. By careful adjustment of the attack and release times, it can also modify signal transients, allowing you to add punch to weak-sounding drums or taming exaggerated "clicking" in percussion sounds. Care must be taken though, too much compression can result in a rather strained and weak sound.

On the Compressor's box, you can see a switch: **Limiter**. This is a separated module (it can work even if the compressor is disabled) and acts as a 'safety net' to keep short signal peaks from overloading the system, which would result in audio clipping.

4. SYSTEM panel

The SYSTEM panel contains some useful tools and allows you to configure the MIDI implementation of MATRIX.



PITCHBEND section

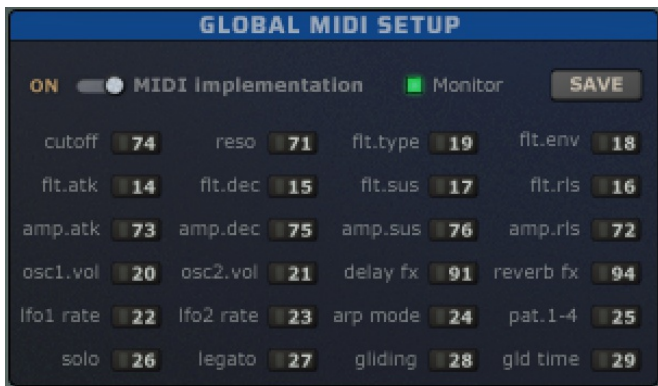
The pitch bend wheel is used to temporarily shift the pitch up- or downwards. When released, it automatically jumps back to center position. The up & down parameters specify the maximum value of how many semitones a sound is pitch shifted up or down, when the pitch bend wheel is turned up or down.

GLOBAL MIDI SETUP

These settings are global, thus when you save, they'll apply to the whole MATRIX library.

Midi implementation: when it's enabled, the engine monitors the incoming MIDI CC messages to provide MIDI automation for the dedicated controls. You can set the control change number to each of them that is available on the list. The default setup is based on the GENERAL MIDI rules, but you can freely overwrite them according to your midi controller's settings.

If you prefer host automation and don't want to use MIDI CC messages for controlling the synth, you can turn it off, and MATRIX won't listen to these CC messages.



Monitor: Midi monitor is a little tool to check the incoming MIDI CC messages. If you turn it on, the incoming control change messages will be displayed on the status line of Kontakt. It can be useful if you want to configure your setup, but not sure of the settings of your MIDI controller. Just turn a knob, and you will see its setting.

SAVE: the save button saves all settings of this section to the disk.

Using our midi implementation method has a great benefit in comparison to Kontakt's own "Learn MIDI" function: it is global. When you set it once, it will apply to all patches in the library!

TEMPLATE section



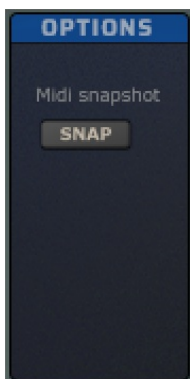
This section is a toolkit for sound design: you can reset all settings (starting from scratch), or transmit an instrument's settings to another instrument.

RESET: sets all synth controllers to the default value. Since this function clears all custom settings, you have to click on this button twice for safety reasons.

SAVE: saves all all parameters of the SYNTH panel and FX panel to the disk. Arpeggio, keyrange and pitch-bend settings won't be saved.

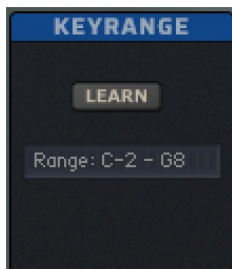
LOAD: loads the previously saved parameters from disk. If you tick the "include FX" checkbox, the FX settings will be loaded as well.

OPTIONS



Midi snapshot: this is an experimental tool, it sends all of the automatable controllers' position to the midi out using control change messages. Some MIDI keys (for example Kontrol S series) supports two way communication, with this button you can transfer the automatable controllers' settings to the keyboard. In order to properly operate this function you need to configure and enable midi out in the Kontakt's preferences.

KEYRANGE



This function can be useful for building a split keyboard instrument, allowing you to play, for example, a solo lead on the right hand and an accompanying bass or pad chords on the left hand.

The **LEARN** button allows you to set the active keyrange simply by pressing the MIDI keys you wish to assign them to. To use the function press the **LEARN** button once, and then press the desired min AND max notes on your midi keyboard. If you wish to clear the key range values, you can simply click the LEARN button twice without playing any keys and the keyrange will return to the default settings.

FILTER SETUP



You can set up three filters here choosing from 30 different types. Click on the drop-down lists and select the filter type you wish for the three available slots. These setting will be saved and loaded when you use the TEMPLATE save and load functions.

MIDI implementation chart

The default control change (CC) numbers are the factory default settings. You can change them on the global settings of system panel.

Kontakt uses some controls that can't be changed: **CC 1** (Modwheel), **CC 10** (Main Pan), **CC 7** (Volume).

Parameter name	CC number	Value
Filter Env Attack	14	0-127
Filter Env Decay	15	0-127
Filter Env Release	16	0-127
Filter Env Sustain	17	0-127
Filter Env Amount	18	0-127 (bipolar)
Filter type	19	0-42: Filter 1 43-84: Filter 2 85-126: Filter3 127: off
Osc 1 Volume	20	0-127
Osc 2 Volume	21	0-127
LFO1 rate	22	0-127
LFO2 rate	23	0-127
Arp mode	24	0-31: off 32-63: on 64-95: hold 96-127: hold+
Arp pattern select	25	0-31: PT1 32-63: PT2 64-95: PT3 96-127: PT4
Solo mode	26	0-63: off 64-127: on
Legato mode	27	0-63: off 64-127: on
Glide	28	0-63: off 64-127: on
Gliding time	29	0-127
Filter resonance	71	0-127
Amp Env Release	72	0-127
Amp Env Attack	73	0-127
Filter cutoff	74	0-127
Amp Env Decay	75	0-127
Amp Env Sustain	76	0-127
Delay FX amount	91	0-127
Reverb FX amount	94	0-127