

The miniscope MKII

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Overview

The **miniscope MKII** is a reasonably faithful reproduction of an old-timey, monophonic, no-presets, 100 percent analog synth. In fact, it's virtually identical to the miniscope (see previous chapter). Apart from a new coat of paint, the miniscope MKII also has a better-sounding filter, which however does make it a bit more prone to overloading during polyphonic operation. If you run into this problem, simply turn down the individual oscillator levels.

What It's Got

Three oscillators whose pitch and waveform are independently adjustable, a **glide** function, a **noise generator** producing full-spectrum or tuned noise, a **mixer** section for the oscillators and noise generator, an **amp envelope**, a **resonant low-pass filter** with its own envelope, and **six sinewave LFOs** – one for each oscillator, one for all three, one each for filter and amp.

What Else It's Got

MIDI control including – of course – note play, plus velocity sensitivity, pitch bend and mod wheel response, and the ability to **assign MIDI controllers to all controls** on the front panel. Adjustable **polyphony**. Nameable **presets** – however many you want – which **store and recall all front panel settings**. Always in tune (if you want it that way), no hum or noise (unless you *want* hum

and noise), weighs nothing, requires no keyboard stand. And, if one miniscope MKII happens not to be enough – just add another one into your project.

The Most Important Things To Know

The **main volume control** is in the upper left corner, just where you *wouldn't* expect to find it.

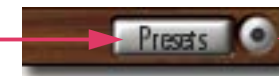
The **MIDI channel** "text fader" control is front-row center. Click *and hold* with the left mouse button *directly* on the value, then move the mouse up and down to change it.

The **Preset List** is opened/closed via the button at top right (next to the **Minimize** button, which hides the synth).

The **Global** switch opens/closes a control panel which is discussed later in this chapter.



Show/hide Preset List



Minimize

Mixer / Oscillators / Noise



Although visually separate, the Oscillator Bank and Mixer sections, together with the Mod Wheel and Glide controls, form a single functional unit which is described here in full.

Mixer

The first thing to note is that each oscillator has its own **Volume** knob in the Mixer section – nice for balancing the oscillators against one another – and **its own On/Off switch (blue) next to the volume knob**. Make sure the switch is on (flipped right) *and* the volume turned up before you start adjusting the other controls of an oscillator!

Oscillators

There are three oscillators. They are identical to one another and can be adjusted completely independently of one another. Oscillator **pitch** can be set in whole octaves via the **Range** selector at left and fine-tuned via the **Oscillator 1 - Oscillator 3** knobs.

The **Waveform** selector lets you dial in sine, triangle, sawtooth up, sawtooth down and pulse waveforms. The **PW** (Pulse Width) slide control directly below the waveform selector affects the pulse waveform. Full left produces a square wave (symmetrical pulse width). Moving the slider to the right causes the pulse width to become progressively narrower.

Oscillator LFOs

Oscillator pitch can be modified by any one of sinewave LFOs 1-3 as selected by the **LFO** slide switch. The **LFO** knob controls the amount of effect produced by the LFO. Note the **LFO On/Off switch**, which must be flipped to the right in order for the LFO to have any effect here. Assign a different LFO to each oscillator to get nice fat chorus-like sounds (with small LFO amounts) or extreme sound effects (with large LFO amounts). The speed controls for these LFOs are in the Modifiers section.

Noise

Included with the oscillators is a noise generator. Like the oscillators, it has its own **Volume** knob and **On/Off** switch in the Mixer section. It can produce plain white noise, or "tuned" noise which has been passed through a dedicated filter.

The **Noise** knob tunes the filter – it has no effect on white noise. The **Key Follow** control likewise affects only tuned noise, since it adjusts the tracking of the filter tuning in response to keyboard position. Mid-scale settings produce "normal" oscillator-like pitch tracking.



Mod Wheel / Glide

Mod Wheel

Best for vibrato effects is the **Mod Wheel LFO**, which affects the pitches of all oscillators in common. Its controls are located in the lower left corner of the miniscope MKII.

The amount of this LFO is controlled by **MIDI Mod Wheel messages**, so the effects of the settings described below will be seen only when you move your keyboard's Mod Wheel away from its zero position.

(For test purposes when editing presets, or in general if you find it more convenient, you can use the Mod Wheel control in the Global panel as an **onscreen substitute mod wheel** in place of an external physical mod wheel.)

The **LFO Depth** control here actually adjusts the sensitivity to mod wheel messages and **must be set higher than zero** for mod wheel motions to have any effect. The Mod Wheel **LFO Speed** control affects *only* this LFO.

The Mod Wheel LFO **affects only the oscillators**, but is completely independent from the individual oscillator LFOs. It can be used together with them or by itself, and is not affected by the individual oscillator LFO On/Off switches.



Glide

The Glide controls, tucked away off to the left below the main volume control, likewise **affect the pitch behavior of all oscillators**.

As always, the **On/Off** switch must be flipped to the right to activate Glide.

When Glide is turned on, oscillator pitches will glide smoothly from one note to the next instead of jumping instantaneously.

The **Glide** knob controls glide speed, with higher settings corresponding to *lower* speeds – in keeping with the old style. Note that glide speed doesn't depend upon how far the glide has to go. If you play notes which are close to one another on the keyboard, the glide takes relatively little time, and you'll need to turn the control up past 5 in order to even hear it. Lower settings are good for making big ELP-style pitch jumps which don't take forever to get there.



Modifiers

The **complete oscillator/noise mix** emerging from the Mixer section goes through a **Modifiers section** consisting of a **low-pass filter and an amplifier** before finally making it to the output of the miniscope MKII. The Modifiers section also includes the **speed controls for all LFOs** (except the Mod Wheel LFO).

Amplifier (Loudness Contour)

The Amplifier is controlled by a standard note-triggered ADSR (Attack-Decay-Sustain-Release) envelope, by note velocity, and by a dedicated amplifier LFO.

The **Sustain** control sets the level which the envelope ultimately gets to following the attack and decay phases, and where it stays for as long as a key is held down.

The **Attack**, **Decay** and **Release** controls are rate controls which determine how quickly the envelope level goes up or down in their respective envelope phases. Again in keeping with the old style, higher settings correspond to slower rates (or longer times).

The envelope starts at zero when a note is played and rises at the rate determined by the Attack control. The attack phase ends when the envelope reaches its "peak" level, which corresponds to the maximum Sustain setting of 10. Next comes decay phase, in which the envelope



falls at the rate determined by the Decay control, until it reaches the level set by the Sustain control. Now comes the sustain phase, in which the envelope level stays put for as long as the key is held down. (If the Sustain control happens to be set to maximum, then the decay phase is basically skipped.) When the key is released, the envelope falls back to zero at the Release rate – even if it was still in attack or decay phase.

Adjusting the **Env Keyf** (Key Follow) control away from zero causes the envelope rates to change to varying degrees in response to keyboard position. The basic idea is to be able to mimic acoustic instruments such as the piano, in which higher notes decay more quickly, but by setting Env Keyf to negative values you can produce the opposite effect.

The **Amplifier level** can also be affected by an LFO. As with the oscillators, there is both an **on/off switch** for this effect and a control which adjusts the **intensity** of the effect when turned on. The Amplifier LFO speed control is in the LFO Frequencies group at the bottom of the Modifiers section.

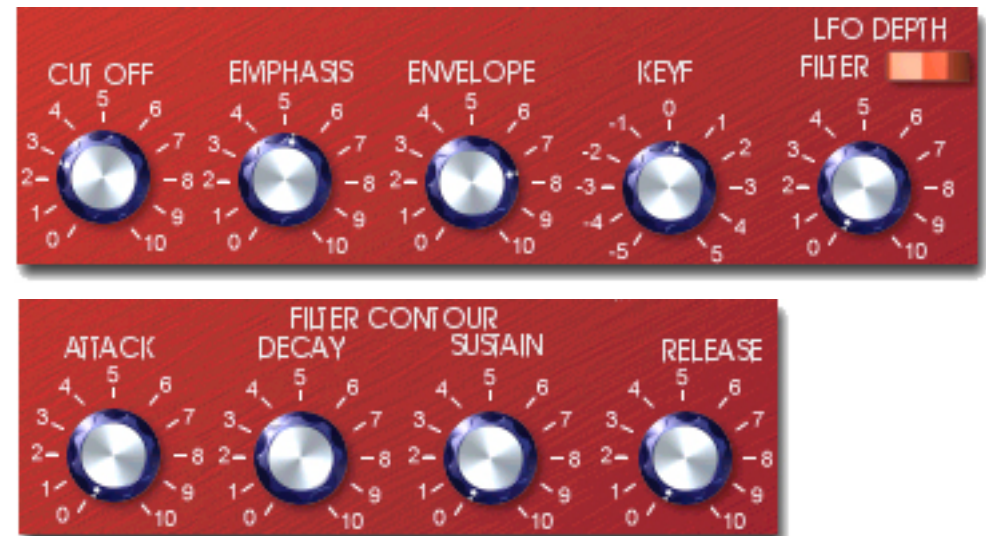
Last but not least, Amplifier volume is affected by **note velocity**. This is a "default" feature for which there is no control.

Filter (Filter Contour)

Almost all of the features described for the Amplifier apply to the Filter as well. Only the features which are different or are unique to the filter are described here.

The Filter section includes controls for filter **cutoff frequency** and resonance (**Emphasis**) – the amount of boost near the cutoff frequency.

The Filter envelope affects the filter cutoff frequency. It has the same controls as the Amplifier envelope. However, unlike the Amplifier envelope, it is based not on a level of zero, but instead on the level set by the Filter Cutoff control. This means that the Filter envelope can "open up" the filter by raising the cutoff, but can't "close it down" further than the Cutoff setting itself.



Since the Filter envelope is not the only filter control, but rather an "extra" effect which works relative to the Filter Cutoff setting, there is also an **Envelope** control which lets you adjust the amount of effect the Filter envelope has on the filter. **Make sure this control isn't set to zero** before you start adjusting the Filter envelope controls!

As with the Amplifier, there is a **dedicated LFO for filter cutoff**. The Depth knob, on/off switch and speed control are all as per the Amplifier LFO.

Unlike the Amplifier, note velocity has no effect upon the Filter.

LFO Speed (LFO Frequencies)

The **speed controls for all LFOs**, except for the Mod Wheel LFO, are grouped together at the bottom of the Modifiers section.

LFO 1, LFO 2 and LFO 3 are the **Oscillator LFOs**, which can be assigned to individual oscillators via the LFO select switches in the Oscillator section. **LFO Filter** and **LFO Amp** are the dedicated filter and amplifier LFOs. The depth controls for these LFOs appear in the control groups of their respective destinations.

Not appearing here is the speed control for the Mod Wheel LFO. This control is in the Mod Wheel Section.

As noted elsewhere, the miniscope MKII has **sinewave LFOs only** – there are no LFO waveform select controls.



Global

This control panel is opened and closed via the Global switch at bottom center (next to the MIDI channel select window).

Pitch Bend Range sets the range of pitch bend produced by incoming MIDI Pitch Bend messages. This adjustment is in semitones, up to a maximum of 12 (one octave).

Transpose adjusts the pitch of the entire miniscope MKII in semitone steps, up to a maximum of 12 up or down.

The **Mod Wheel** is an onscreen version of a standard mod wheel. Use it just as you would the real thing. It's convenient if you don't have a external controller keyboard handy, or if you don't want to bother with it while editing presets. Note that MIDI Mod Wheel messages are assigned to this control, which will therefore **move all by itself** when these messages are received.

Don't be fooled by the Global label here – these settings, like all others in the miniscope MKII, are stored in presets and recalled by them.



Connections

MIDI In  Audio output
MIDI Out

Project window (module) representation



Minimized (icon) representation