

JoMoX SunSyn Analog Synthesizer

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Analog Awakening

Yes, it is now available. For everybody! The JoMoX SunSyn: analog, mighty and powerful. Since its introduction in 1999, many long months passed before the first deliveries were made, but now the SunSyn enjoys continuous availability. With over three years of development, it is finally time for a detailed review.

For many people, the popular analog synthesizers of the 70's and 80's remain milestones in synthesizer design and performance. Used by nearly every musician during those years, these analog wonders left their unique sonic stamp on countless productions and even continue to do so today. With the SunSyn, the Berlin-based synthesizer manufacturer, JoMoX, shows that true analog synthesizer design is definitely not limited to nostalgia.

First of all, we must offer congratulations because the full design, programming, quality-control and service is handled by a two-man team at JoMoX. Put another way, every single SunSyn is a very personal piece of gear rather than a mass manufactured product from the far east.

Overview and multimode

The desktop-shaped SunSyn is housed in a solid silver/white metal casing with a temperature sensitive cooling system.. After removing the nice wooden side pieces, it is easy to mount the SunSyn into a 19" rack if desired. The front panel features 35 solid, orange labeled pots for spontaneous realtime access. Important: Wonderfully, there are no double functions (one function only for each knob)!

Only a few parameters and the multimode make use of the LC-display and the four additional soft controller knobs. On the back, one will find all the ins and outs, including eight balanced individual outputs and two audio inputs. In multimode there is dynamic voice allocation. Each part can be directed to an individual out and receive its own midi-channel. It is planned that future updates will realize keyboard and dynamic zones, fixed voice allocation and addressable stereo outputs with panning function.

Oscillator section

Four oscillators per voice provide massive sonic basics. Two of them are voltage controlled in best Moog tradition. They can be individually adjusted in octave (32'-2') and waveform, and they can be hard-synced if desired. Besides sawtooth and squarewave, each one features a variable and modulatable pulsewave. VCO2 can be course- and fine-tuned with dedicated knobs to achieve detuning effects.

Both additional oscillators (digital RCO's) make use of digitally sampled waveforms that can be looped and played back. The flash-rom contains seven sets of 248 waveforms each - a big fat internal selection from which to start. Comparatively short waves are used...each waveset's data has the size of 64 Kbyte (16 bit/44.1k), which is more or less equivalent to a Prophet VS and considerably less than a sampler. In the foreseeable future, user-created waveforms in WAV-format will be importable into the unit. A PC-cardslot for all data-transfer is integrated into the SunSyn's real panel.

Both RCO's have to use the same waveset but can have access to different samples. They are not limited to the playback of just one sample. Instead, sequences of samples can be played back and forth. In 'fine loop mode' sixteen samples are played in cycle, beginning with the startwave. In 'coarse loop' the loop-length increases with a corresponding number of waves and a mathematical scheme determines the selected and played waves. The maximum loop length is not limited to sixteen waves, but all waves have to be successive.

Even though only short samples are used, they increase the sonic capabilities of the SunSyn enormously, particularly when one parameter sets the playback direction and another sets the tuning of each RCO within a range of +/-20 semitones. All four oscillators can be individually adjusted in volume, a noise generator (switchable pink- and white-noise) and a stereo-input for external audio signals with switchable envelope-follower are also onboard. A switchable synchronization of RCO and VCO is planned for a future update, whereby the RCO's will be synced to their corresponding VCO, and the variations and modulations of the main-oscillators will affect the playback of the samples. Since this synchronization works globally for all RCO's, it will have to be enabled or disabled on all sounds when using it in multimode.

Filter section

The analog filter of the SunSyn is a true innovation in synthesizer design and differs clearly from the competitors. Basically, it is a 4-pole-filter with switchable high and lowpass characteristics for each pole. typically, analog filters achieve their slope by serially adding up several identical elements (poles). The legendary Moog-cascade adds up four lowpass elements that each cuts the signal above the cutoff frequency with a slope of 6db/oct. Usually, the global cutoff knob controls all elements in common which results in a total slope of 24db/oct.

However, this typical limitation has been overcome with the SunSyn, because each pole has its own knob for cutoff-control, in addition to the global cutoff. Think of this for a moment: You can continuously alter the slope of the filter by detuning the poles against each other. For example, set frequency of pole 1-3 to the same value and open pole 4 completely and you get an 18db-filter. But this is just for starters because each pole can be set to high- or lowpass characteristics. By combining hi- and lowpass filters, you can achieve bandpasses and notch filters with variable slope and symmetry.

With the press of a button, the SunSyn filter can be set to 2-pole configuration. This might seem to be a bit confusing at first, since you'll achieve the same by

opening two poles completely. But also at this point, you will find something outstanding: The filter resonance always runs through all of the four poles before it is returned to the filter input. So the resonance characteristics of the SunSyn can be controlled very precisely in the open sounding 2-pole mode since also in this case, the intensity of feedback is influenced by the supposedly-not-working poles 3 and 4.

Again, that's not all: Not found in any other analog synthesizer is the capability to morph continuously between two completely different filter settings plus corresponding envelope settings. With the simple press of a button, you can store a complete setting on one of the two A/B positions. (Not yet included into the continuous parameter-alteration is the switching between high- and lowpass.) One disadvantage: The morphing can not be stored as part of a program. It is therefore just a temporary parameter within a performance. The filter section is a masterpiece and one of the most flexible solutions ever realized in analog technology. With its nearly unlimited number of filter slopes and characteristics, the SunSyn sets a new definition of the multimode filter concept. Compared to usual multimode-filters, you might have to think a bit more, but you will be able to get many, previously impossible results.

Modulations matrix

Another specialty of the SunSyn is its analog modulation matrix with four routable settings. An analog-based and programmable conception of this kind has never existed before. Here we find a well made bridge between an analog modular system and a digital modulation-matrix. The comfort of the programmable routing is combined with the sonic qualities and flexibility of the analog circuitry. Beside typical routings, such as pulse width modulation, the more extreme types of modulation, such as frequency and ring modulation never fail to create sonic wonders, especially when the digital waveforms of the RCO's come into play.

Operation is of the matrix easy and very clearly laid out. In four columns (laid out

left to right), one selects via button: modulation-source A, a second additional modulation-source B, a so called modifier (is multiplied with the sum of A / B) and the destination of the modulation. The selected modulation-path is visualized with LED's in each column and function. One option per column is possible, the intensity is adjusted with a connected soft-encoder and the LC-display. In practice, this approach is easy, fast and very easy to see and understand. The special capability of modulating modulation-sources themselves conquers new sonic worlds. For instance, you can modulate the filter envelope-intensity by an RCO. This option is hard to find even on modular systems, not to mention the ease of programmability.

With fast analog modulations (for instance, frequency modulation of the filter from an oscillator) the difference from software based modulations is plain to hear in terms of sonic quality. In the SunSyn, the envelopes are generated via true analog circuitry and thus are absolutely free from stepping qualities. Only the two LFO's of each voice (5 wave shapes) are generated digitally. The maximum frequency here goes up to 150Hz which is not very fast but fine enough for amplitude and frequency modulations. According to JoMoX, the frequency can be raised to 500Hz with the help of a future update. For panorama modulation, there is another very simple LFO.

Both ADSR-envelopes are permanently routed to filter cutoff and VCA. Next to this, we have four completely freely definable midi-modulations. A selectable controller can have bidirectional access to one of 32 destinations. These can be oscillator-pitch, all mixer-levels, the filter and its individual poles, all envelope-parameters and the level. For each modulation, one can choose between linear, logarithmic and exponential scalings.

We still have not reached the limits because velocity also can be routed eight times to the above mentioned parameters and destinations. If you still not satisfied, record the movements of the front panel knobs as fixed midi-controllers into your sequencer.

All in all, the modulation-capabilities of the SunSyn are rich and very clearly laid

out. A disadvantage might be the limitation to having just two envelopes. JoMoX should add up the capability to control the startwave of the RCO's in order to achieve wave-scans just like the Waldorf Microwave.

Sound

The SunSyn stands directly in the tradition of the big vintage flagships. It is one of the most powerful synthesizers ever built. What leaves the outputs is pure and direct subtractive synthesis without useless or embellishing additions. The sound quality of this Berlin-based monster leans towards the MemoryMoog, Sequential Prophet5, Oberheim Matrix12 and Roland Jupiter8. However, the SunSyn is no copy of these legends, but an absolutely individual and unique synthesizer. Its in-your-face directness may sound at first a bit raw to the ear that has been spoiled by effects. But the SunSyn is always present in a mix. Especially hard and fat sounds are absolutely convincing. Talk about powerful basses - thanks to the SunSyn's four oscillators, the MemoryMoog should be the only competitor that might come close to this level. And when in unison-mode, 32 oscillators put out their sonic energy simultaneously, and there's no containing this beast!

The fully discrete envelopes of the SunSyn are definitely faster than in units with software generated modulations, ie. Oberheim Xpander, ProphetT8 or some other newer gear. With an attack time of 0.8ms, it is more than twice as fast as the Alesis Andromeda. Thus, cutting edge percussive sounds are as easy to create as punchy power basses.

Thanks largely to the enormously flexible filter section and the number of modulations, sonic capabilities open up that are unparalleled by analog synthesizers. On top of this, the RCO's offer a remarkable spectrum of digital waveforms. Together with the loop-functions and the future capability to load custom samples, one can achieve totally unique hybrid sounds that remind one of a Prophet VS or Waldorf (Micro)Wave.

Just one thing...you should not expect everything from this powerhouse: soft and

silky, transparent and sugar-sweet pads might be easier to find in another synthesizer. Here JoMoX fulfills their own claim again - similar to the XBase09, the SunSyn is no all-rounder but a true specialist on the highest level.

Competitors

The synthesizer market is big, but the availability of new polyphonic analog synthesizers is quite limited. The Alesis Andromeda convinces with a well made combination of design, ergonomics, vast synthesis capabilities and realtime-controllers. On its technical side, we find sixteen voices and outputs, a dual filter section and internal effects. And especially these latter two features are exactly why the Andromeda has a completely different sound character. The Andromeda sounds more modern in the direction of virtual analog synthesizers that often also use dual-multimode filters and an internal effects sections. The resulting sonic impressions differ clearly from the organic but incomparably powerful SunSyn, which proudly renounces such sonic pampering.

We will at this point refrain from further comparison to the product group of virtual-analog units. The sonic difference between the SunSyn and a dsp-machine is clear, without denying the qualities of Virus, Q, Supernova II, or Nord Lead 3. The SunSyn sounds different: more direct and solid in the basses with fine, round, warm harmonics at the same time. The SunSyn shows the typical characteristics of high quality analog sound sources: warmth, punch, and the capability to cut through in a mix. Everybody who is looking for this kind of sonic character will surely be satisfied.

Conclusion

With the SunSyn, JoMoX presents the ultimate statement in analog synthesizer design. Additionally, in doing so, a couple of features have been realized that cannot be found in any other synthesizer. The technical realization is a well-done combination of state-of-the-art technology and typical characteristics of vintage analog design. The SunSyn features all the sonic qualities that one expects from a

high-end vintage unit, boxed in a reliable and new unit with warranty and support. Thus, the SunSyn is also higher priced than its secondhand brothers.
Ulf Kaiser / Keys

“The physical experience”

Alec Empire, Master of the brutal Electro-sound.

Alec Empire represents the digital hardcore, either with his project Atari Teenage Riot or as solo artist. Current release: “Intelligence & Sacrifice” (Digital Hardcore Recordings)

“My productions deal with the physical experience, the punch, the power, the distortion and the basses below 80Hz. The SunSyn convinced me from the very first moment. I was struck by its very unique sound which offers timbres from hard, fat basses to psychedelic drug sounds. Currently, I use it on nearly all of my productions. It plays the starring role in the current remixes of Primal Scream and Korn. Also, on my new album “Intelligence & Sacrifice” I’ve been using the SunSyn very often. The SunSyn fits perfectly in huge PA’s, especially when they are driven to their limits and start to compress and distort. This is an important fact in live use, one often forgotten in the discussion of laptop vs. analog.”

“Definitely unique sound”

Soundtrack composer Hans Zimmer

Hans Zimmer is currently the most successful soundtrack composer in Hollywood. He recently won an oscar for the soundtrack of “Gladiator”.

“Not long ago, I decided to purchase a SunSyn after taking into account all analog competitors on the market. One main reason for this decision was the fact that discrete design is used instead of integrated circuits. Over the years, I’ve been working with lots of analog synthesizers based on IC’s, (for instance,

Curtis). However, with the SunSyn, the very unique sound attracted me and is very satisfying. The SunSyn's modulation-features might be a bit more limited compared to some competitors, but it has the most sonic character.”

“Analog is not analog”

Jürgen Michaelis, Developer of the SunSyn

Jürgen Michaelis is the father of the SunSyn. This ambitious project needed five years of developing time. We asked him about his motivations.

What is so special with the SunSyn from your point of view?

Jürgen Michaelis: The SunSyn is a true original with creative power due to its innovative capabilities. It is certainly not a virtual copy of anything which has gone before. At JoMoX, sonic quality is the most important issue. So the SunSyn attracts musicians with high expectations in analog sound aesthetics. It separates itself from other instruments with its unique sonic spectrum and its specialties in filter and modulation design. The sound is very versatile and always keeps the utmost analog warmth.

Could you give us some idea about the SunSyn's history?

J.M.: The initial idea was to couple 30 years old synthesizer concepts with completely updated, discrete design: Concepts without compromises, where the designers used their ears instead of their computers. An example can be the Oberheim 4 Voice, MiniMoog or the Roland Promars. I used these designs for some basic guidance, however I never patterned the SunSyn after a specific design. The SunSyn was a completely new design that took me five years, combining the good old technologies with modern knowledge to produce a very innovative product. The idea of using discrete circuits stands in stark contradiction to the use of industrial made IC's (e.g.Curtis). Analog is not always analog! Discrete circuits sound different, much more human and individual and to my ears, not as analytical.

Is this the reason for the high price?

J.M.: Regarding the enormous effort in design and parts with a complete user interface, the SunSyn is far from being overpriced. Comparable units from the past had less power and higher prices. There has never been an analog synthesizer of this complexity at this price. Certain price realities have not changed with discrete circuit design - the necessary parts still cost a considerable amount. Comparing the SunSyn with a DSP-based unit is thus not fair. To me, many virtual instruments suffer from a lack of innovation. Too often existing features are simply copied into new devices to keep the costs low. But will a cheap copy ever become a classic with value? A JoMoX instrument will perfectly coexist with computers for decades.

Overview

Distribution SchneidersBüero, Berlin

Internet www.jomox.de

Price aprox. 3390,-E (\$3,495.00)

Concept Eight voice polyphonic, multitimbral, real analog synthesizer

Specs 2 VCO's and 2 digital oscillators (RCO's) per voice.

Noise, glide, multimode filter with four poles, 2 ADSR envelopes,

2 LFO's, 4x analog modulation-matrix, filtermorphing, arpeggiator

Connections: Stereo-out (1/4" jack, balanced), 8 voice-outs (1/4" jack, balanced),

2 inputs (1/4" jack, balanced), headphone, control and holdpedal, MIDI-in/out/through, power, PC-cardslot

Pros: very individual analog sound and groundbreaking, unique functions

Cons: limited to eight voices, and relatively expensive