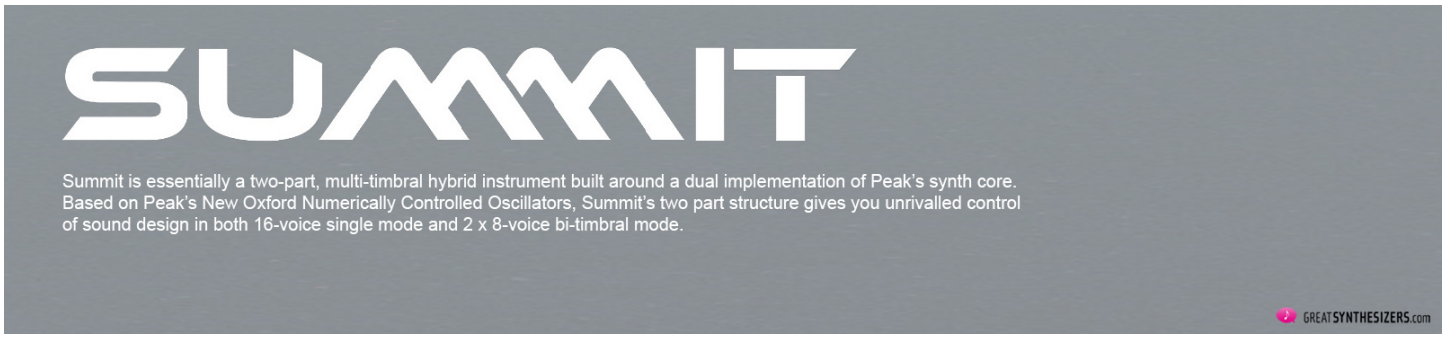
Novation SUMMIT – an OSCar synthesizer with 16 voices?

Novation is a fascinating company. Its Bass Station II – that top mono-synth that appeared a few years ago – has set a new standard in the modern analog world. Now that British company has waged a move into the polyphonic keyboard area. Its latest product – SUMMIT – is a 16-voice / dual-engine synth with a sound architecture that reminds us of the legendary OSCar synthesizer. SUMMIT has enormous potential. And an inspiring sound.



Based on a no-compromise, no-restrictions concept, SUMMIT is designed to meet the demands of todays serious electronic musicians. This polyphonic analog (ok, hybrid) synth, fitted with a 61-note keyboard, has been sorely needed for many years.

But let's start at the beginning. Bass Station II, put on the market in 2013, is still an extremely successful Novation product. Its polyphonic rack version, the 8-voice synthesizer PEAK, followed in 2016 and commands a much improved sound architecture. Building on that, the 2019 keyboard version has a double PEAK engine – 16 voices (!) – with Dual / Layer mode and other goodies. Voilà – the SUMMIT.

[Note: There seem to be some interesting parallels between the Summit and the DSI Prophet-12. And IF there is a competitor to the Novation synth right now, it's probably the Sequential Rev2 with 16 voices. This instrument has just 2 oscillators per voice, no wavetables and a slightly reduced modulation matrix, but comes with its own 64-note step-sequencer – in addition to the arpeggiator. And it's price is slightly lower, too. Another possible competitor to Summit is the Korg Prologue-16.]

Back to SUMMIT. Our initial reference to the OSCar is provocative, of course, but, on the other hand, OSCar developer Chris Huggett *is* on the Novation team these days. Many SUMMIT details bear his signature: Digital oscillators with analog sound quality and “extra” additional waveforms, an analog dual filter with separation control, loopable ADSR envelopes (now DAHDSR, to be exact), saturation (overdrive), an arpeggiator, rubber parts here and there, slim and tightly packed pots, etc. Aspects typical of the OSCar and now part of SUMMIT.

[A *special* specialty that was *not* adopted in Novation’s synthesizer line, though, is the possibility of additive synthesis. This fiddly, but creative OSCar option remains unrivalled.]

Drawing on abundant resources

Outstanding in SUMMIT: 16 analog / hybrid voices, a dual-engine system (SPLIT / LAYER sound combinations with 8 voices), 3 oscillators per voice – a total of 48 oscillators (!), a comprehensive filter section, 3 envelopes and 4 LFOs, an impressive modulation matrix with 16 slots, an FX section with distortion, delay, chorus and reverb … which is a lot.

But would you like more? A separate modulation matrix for the effects section, excellent performance options – a 61-note keyboard, freely assignable wheels, two animation functions, an extensive arpeggiator / chord section, a CV-Mod-IN (for integrating modular systems), MIDI, USB, …

Admittedly, these are just the keywords, the facts. The sound? Huge! Ok, ok, sensitive ears might perceive the one or the other minimal distortion in high audio ranges. And it is quite possible that competitors – a Moog ONE synthesizer, for example – may offer a little more “bass in the bass”. Everything possible …

Nonetheless, the SUMMIT player draws on abundant resources. Consider the meaty mono-analog sounds, the brilliant unison lead sounds, excellent pads and polyphonic modulations, atmospheres à la “outer space”, all those wavetable textures, FX sounds, ultra-slow sound movements – the SUMMIT LFOs finally allow oscillator drifting, for minutes (!) at a time, massive filter sweeps and much, much more.

The Hardware

At 100 cm width, 31 cm depth, 9.5 cm height (including pots) and 11.9 kg weight, SUMMIT is a very handy synth. The construction – it's Novation (!) – is high quality. No wiggly pots. Switches with just the right pressure point, 2-color LEDs (orange and blue), wooden side panels – the SUMMIT has an essence of elegance.

Admittedly, with two minor flaws. The eight long faders (envelopes) are minimally shaky, and the feel of the rubber buttons on the far left is a little wobbly (which is actually what the material in question is all about).

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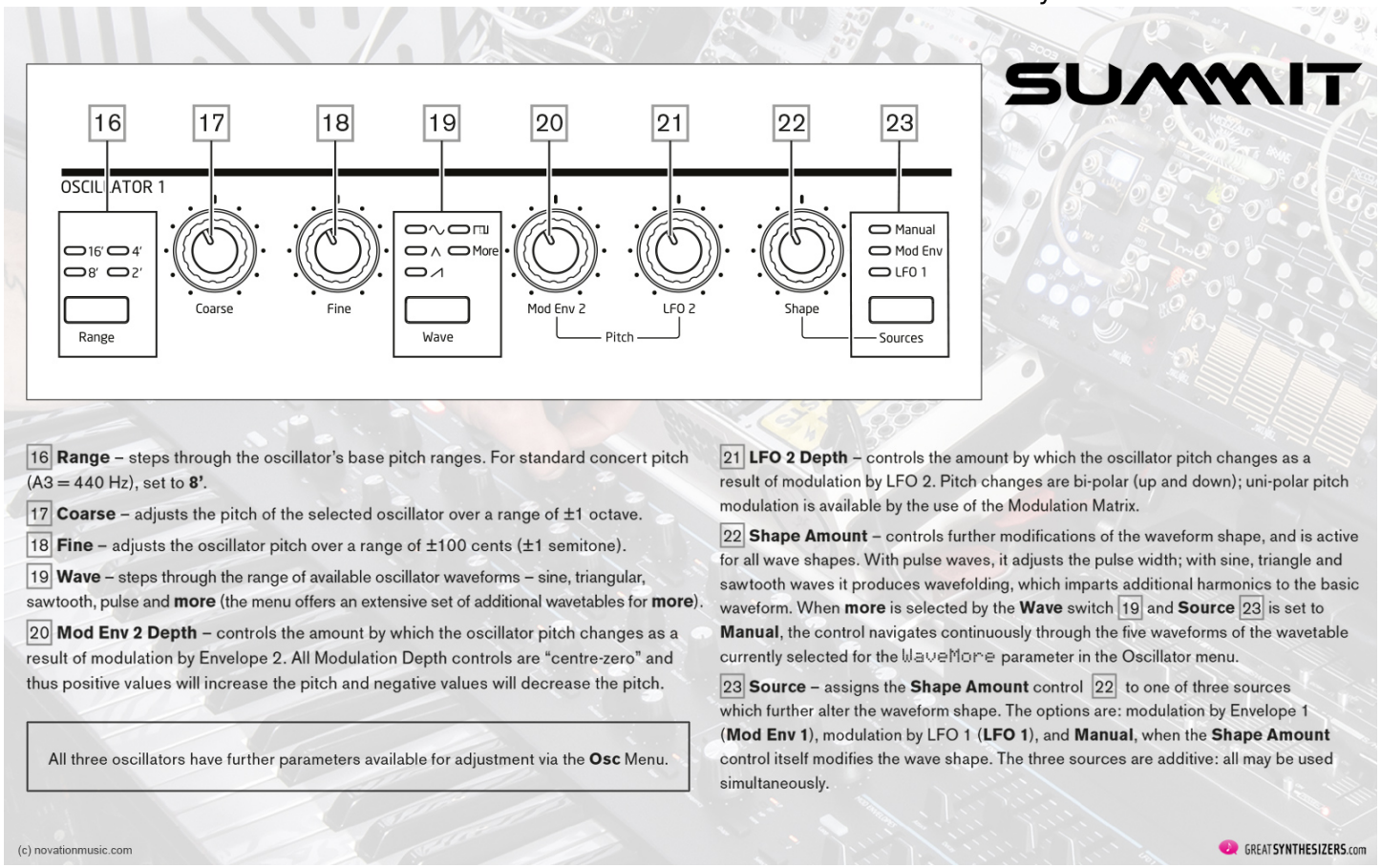
The hard rubber edging the lower surface provides SUMMIT with excellent traction. Solid sockets and a 3-pin power plug on the back. All details you would expect of a professional synthesizer.

[Note: Some instruments of the first batch of Summit synthesizers have problems with the data encoder next to the display. It can behave inconsistently and skip values. Novation is preparing to arrange a replacement and will contact registered users. See the Summit Encoder Page for more information.]

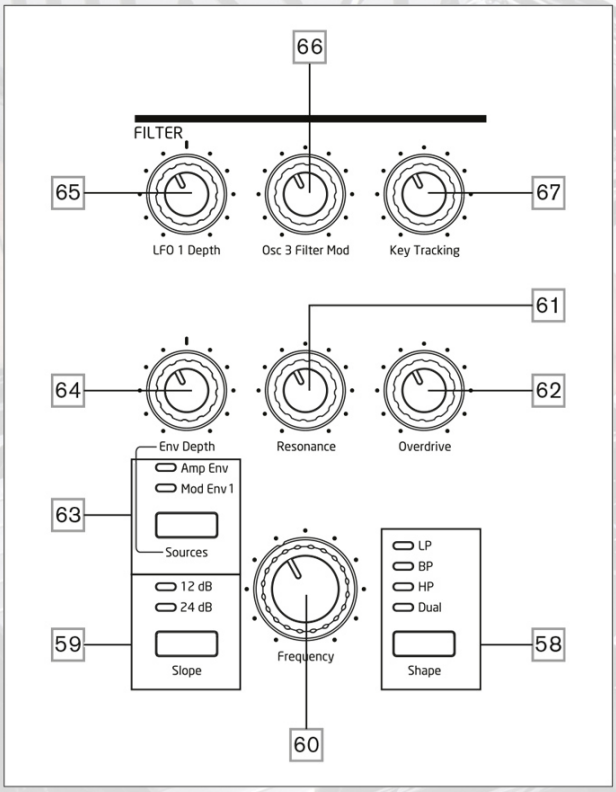
The Voice Architecture

3 oscillators per voice are available in the **oscillator section**. Superb. They each offer the common analog waveforms sine, triangle, sawtooth, pulse with PWM and – simply choose “MORE” – a selection of a whopping 60 wavetables (like *BS sine, String, Glassy, Spirals, Random, BassOrgn, Granular Steel, Zing, Acid, Grime, Sunrise,* etc.).



A specialty is certainly SHAPE control, which enables a change in timbre of each (!) waveform, and which sets the OSC positioning within the wavetable. SHAPE is manually adjustable and can also be voltage-controlled.

The mixing of the various sound sources lies – as usual – right before the filter section. Or putting it another way: The signals from VCO 1, VCO 2, VCO 3, NOISE and RING-MOD can be continuously combined in the SUMMIT **mixer section**. An external audio signal (stereo) can also be fed in …



58 **Shape** – steps through the three basic types of filter: low-pass (**LP**), band-pass (**BP**) or high-pass (**HP**); selecting **Dual*** opens a menu page (**Voice** Menu Page 4), where nine more options, based on series or parallel combinations of two filter types operating simultaneously may be selected.

59 **Slope** – sets the slope of the filter to either **12dB** or **24dB** per octave.

60 **Frequency** – large rotary knob controlling the filter's cut-off frequency (LP or HP), or its centre frequency (BP).

61 **Resonance** – adds resonance (an increased response at the filter frequency) to the filter characteristic.

62 **Overdrive** – adds a degree of pre-filter distortion to the mixer output.

63 **Source** – assigns the **Env Depth** control 64 to one of two sources which can modulate the filter frequency. The options are modulation by the amplitude envelope (**Amp Env**) or one of the mod envelopes (**Mod Env 1**). The two sources are additive: and may be used simultaneously.

64 **Env Depth** – controls the amount by which the filter frequency is modified by the envelope currently selected by **Source** 63. The two sources may have different values of depth. **Env Depth** is a centre-zero control and thus both positive and negative variations may be imposed on the filter frequency by each modulating source.

65 **LFO 1 depth** – controls the amount by which the filter frequency is modified by LFO 1. **LFO 1 Depth** is a centre-zero control and thus the filter frequency can be made to vary both positively and negatively.

66 **Osc 3 Filter Mod** – allows the filter frequency to be modulated directly by Oscillator 3.

67 **Key Tracking** – controls the amount by which the keyboard position of the note being played varies the filter frequency between 0 and 100%.

* Dual Filter = LP > HP, LP > BP, HP > BP, LP + HP, LP + BP, HP + BP, LP + LP, BP + BP, HP + HP

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A remarkbale MultiMode filter lies at your disposal in the **filter section**. A warm invitation to sound research. As can be seen in the graphic above, the dual filter combinations in particular indicate great sonic potential. But even the "ordinary" LowPass filter is convincing. In self-resonance, the filter turns into a pure sine wave that can be played tonally throughout the entire keyboard.

The **envelope section** comes with 3 envelopes: AMP ENV and MOD ENV 1 / MOD ENV 2. These are directly tweakable via the two sets of ADSR faders. In addition, delay and hold can also be brought into play via the (separate) ENV menu. All envelopes have a loop function, a feature which has enriched the synthesizer world since the OSCar, or since the Wasp actually, or – even before that – since the early EMS synthesizers at the end of the 1960s. Good things last forever …

Modulation-Matrix and other extras

16-slot Modulation Matrix *

Display	Controlling Source
Direct	The **Depth** control (10; select Row 4)
ModWheel	Mod Wheel
AftTouch	Keyboard aftertouch
ExprPED1	Expression pedal connected at PEDAL 1 input
BrthPED2	Expression pedal connected at PEDAL 2 input
Velocity	Keyboard velocity
Keyboard	Key position on keyboard
Lfo1+	LFO 1 waveform varies controlled parameter in a positive sense
Lfo1+/-	LFO 1 waveform varies controlled parameter both positively and negatively
Lfo2+	LFO 2 waveform varies controlled parameter in a positive sense
Lfo2+/-	LFO 2 waveform varies controlled parameter both positively and negatively
AmpEnv	Amplitude envelope
ModEnv1	Modulation envelope 1
ModEnv2	Modulation envelope 2
Animate1	Animate Button 1
Animate2	Animate Button 2
CV +/-	CV input varies controlled parameter both positively and negatively
Lfo3 +	LFO 3 waveform varies controlled parameter in a positive sense
Lfo3 +/-	LFO 3 waveform varies controlled parameter both positively and negatively
Lfo4 +	LFO 4 waveform varies controlled parameter in a positive sense
Lfo4 +/-	LFO 4 waveform varies controlled parameter both positively and negatively
BndWhl+	Pitch Bend wheel up increases parameter
BndWhl-	Pitch Bend wheel up decreases parameter

MOD SOURCES

Display	Controlling Source
O123Ptch	Frequency of all three oscillators
Osc1Ptch	Oscillator 1 frequency
Osc2Ptch	Oscillator 2 frequency
Osc3Ptch	Oscillator 3 frequency
Osc1VSnc	Oscillator 1 VSync level
Osc2VSnc	Oscillator 2 VSync level
Osc3VSnc	Oscillator 3 VSync level
Osc1Shpe	Oscillator 1 Shape Amount
Osc2Shpe	Oscillator 2 Shape Amount
Osc3Shpe	Oscillator 3 Shape Amount
Osc1 Lev	Oscillator 1 level
Osc2 Lev	Oscillator 2 level
Osc3 Lev	Oscillator 3 level
NoiseLev	Noise source level
Ring Lev	Ring Modulator output level (RM inputs are Osc 1 and Osc 2)
VcaLevel	Overall synth output level
Filt Drv	Pre-filter Overdrive
FiltDist	Post-filter Distortion
FiltFreq	Filter cut-off frequency (or centre frequency when Shape=BP)
Filt Res	Filter Resonance
Lfo1Rate	LFO 1 frequency
Lfo2Rate	LFO 2 frequency
AmpEnv A	Attack time of Amplitude envelope
AmpEnv D	Decay time of Amplitude envelope
AmpEnv R	Release time of Amplitude envelope
ModEnv1A	Attack time of Modulation envelope 1
ModEnv1D	Decay time of Modulation envelope 1
ModEnv1R	Release time of Modulation envelope 1
ModEnv2A	Attack time of Modulation envelope 2
ModEnv2D	Decay time of Modulation envelope 2
ModEnv2R	Release time of Modulation envelope 2
FM O1>O2	Depth of Frequency modulation applied to Oscillator 2 by Oscillator 1*
FM O2>O3	Depth of frequency modulation applied to Oscillator 3 by Oscillator 2*
FM O3>O1	Depth of frequency modulation applied to Oscillator 1 by Oscillator 3*
FM Ns>O1	Amount of noise modulation applied to Oscillator 1*
O3>FiltF	Degree of control of filter cut-off/centre frequency by Oscillator 3*
Ns>FiltF	Degree of control of filter cut-off/centre frequency by noise source*
FfreqSep	Difference between the frequencies of two filters when used in combination

* with two sources per slot

MOD DESTINATIONS

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All of these many knobs, faders and wheels, all of these possibilities of direct intervention are balm on the tired musician's soul. But it's the **modulation matrix** which makes SUMMIT what it is: a major peak (sic!) in the sound universe. 22 sources can be routed to 38 destinations. Each of the 16 modulation matrix slots allows the use of "two" modulation sources for one destination. That should be more than sufficient for lifelong sound research. Note the details on the list above.

The **LFO section** is also impressively equipped with a whopping 4 LFOs. However, it is not the number of available modulation sources that counts, it's their features and their way of implementation within the sound architecture.

The speed of the main LFOs (also known as LFO 1 / LFO 2) has been divided into 2 frequency areas – LOW and HIGH – and there's SYNC, too. This is not new in itself, but the HIGH range reaches enormous heights (for the generation of metallic or vocoder-like sounds) and LOW extends *really* far into the sub-audio range.

Unfortunately, there is no precise information about the individual ranges in LFO frequency ("from … Hertz to … Hertz"). Nonetheless, LOW in particular was designed to oscillate so slowly that it could emulate *"the natural, temperature-related change in frequency with analog oscillators"*. Which SUMMIT does really well.

FM (Frequency Modulation) possibilities pose a particularly productive aspect: OSC 3 > OSC 1, OSC 1 > OSC 2, and OSC 2 > 3. Again, FM can be controlled manually, or by using MOD ENV 1 or LFO 1. And SUMMIT has further FM options, which may be configured through the menu system.

Being that each individual oscillator can be modulated in many ways (directly via the control panel knobs or within the modulation matrix), and being that OSC 3 can be used to modulate filter frequency, amazing experimental situations arise by just going around a couple of corners.

Animation allows for two sound variations. Changes in sound occurs at the push of a button, whereby *what* is varied is determined by the user. The Animation system is a feature that some readers might recognize from various Ensoniq synthesizers. HOLD maintains the variation constant, even when the Animation button is released.

The **Multi Mode area** is ingeniously designed. Two sounds can be combined in LAYER / SPLIT / DUAL mode. Although, DUAL, however, is a bit confusing. In this mode, the whole keyboard is assigned to *either* sound A *or* sound B (selected by the A and B buttons). The *second* part of DUAL actually applies to the effect section (used for external signal processing) or the external audio signal.

In Multi Patch Mode, the A / B buttons are illuminated, the color reflecting Part A or Part B in the synth controls. Part A is indicated by blue, Part B by orange*. So you always know immediately which of the two parts / sounds you are working with. Pressing both A+B (“Both” Mode) results in the color white (well … we’d call it light-blue). In this mode, both sounds can be tweaked simultaneously. A great performance option.

[* It’s not only the A / B and LAYER / SPLIT / DUAL buttons that change color, but the wheels as well – which enables a clear and *immediate* identification of the currently selected part / sound. This system of visual feedback is absolutely intuitive and plays an essential role in the overall SUMMIT workflow.]

The **loop function** of the 3 envelopes should be pointed out again, as a very useful addition to the 4 LFOs and other modulation sources. Loop causes the AHD phases of the envelopes to be retriggered a number of times, the number being defined by the Repeats parameter in the Env menu (1 – 126, ON).

Loop plays a tremendously important role in the filter department, where AMP ENV or MOD ENV 1 can be used for filter frequency modulation. And since individual parts of the envelopes can be modulated themselves – thus changing the loop effect permanently and dynamically – changes in sound can be unexpected and drastic.

The **arpeggiator section** occupies a substantial part of the user panel. Comprehensive and yet intuitively programmable, the tool is a must-have on board of a synthesizer of SUMMIT calibre. There's the important KEY LATCH button (HOLD), a knob for TEMPO, RHYTHM (choose one of the 33 different patterns based on the notes played), GATE (note length) and – of course – OCTAVE range and (Arp) TYPE.

The arpeggiator has further parameters available for adjustment via the Arp Menu. These include basic settings such as clock source, sync rate, swing, and the important ARP Velocity mode.

Finally, a quick look at the **effects department**: Chorus, Delay, Reverb and Distortion. These high-quality effects (a warm sounding chorus, a reverb with endless reverberation, …) hone the SUMMIT sound.

BYPASS turns the effects section off, which is what we regularly do, but simply because the SUMMIT sound is so massive – not because of any poor sound quality of the effects. There's simply no need for additional effects, especially in LAYER Mode.

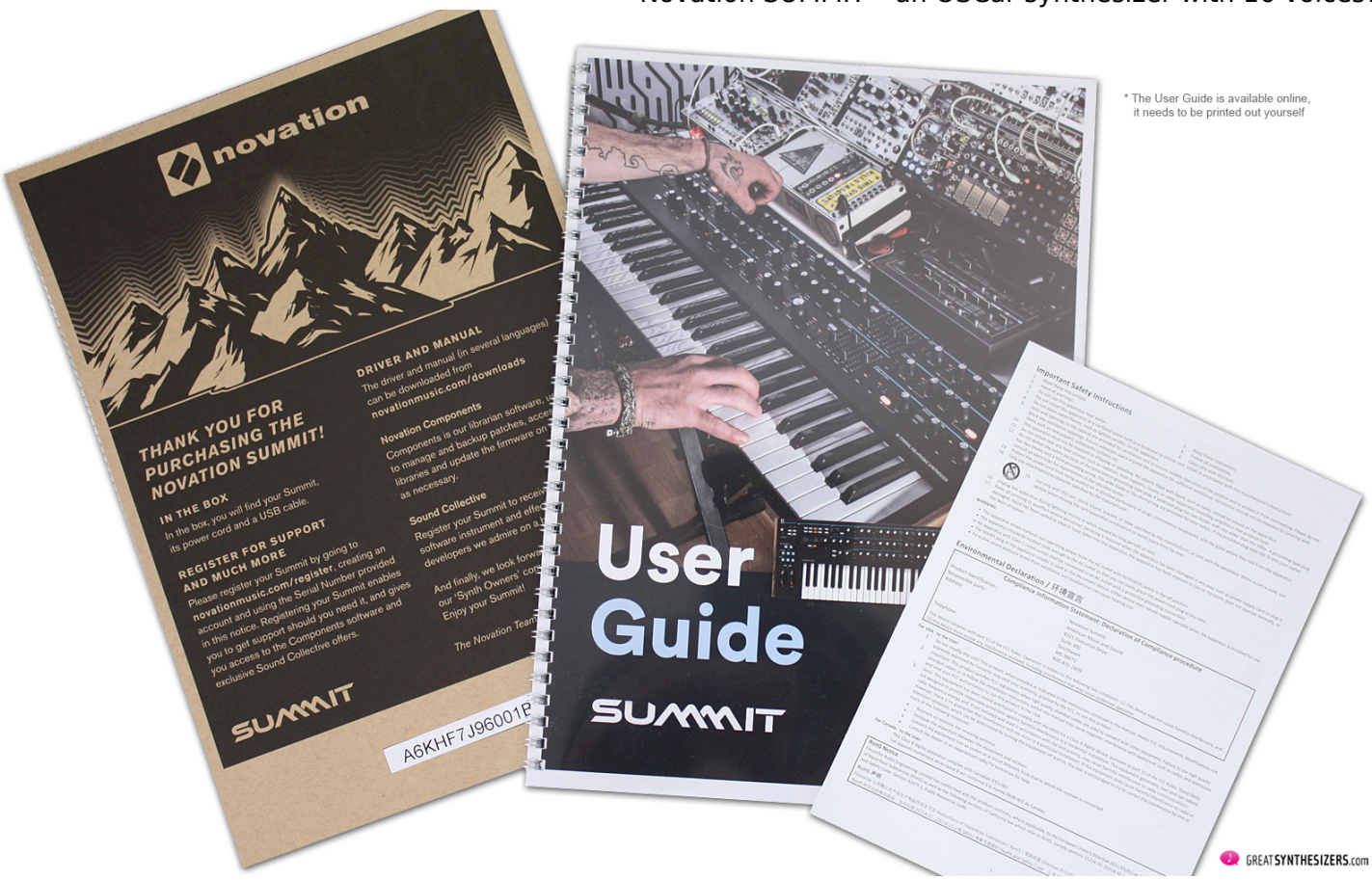
Unlimited Performance

Although the above heading may be a bit boring, the following content is that by no means. SUMMIT is one of the (very few!) synthesizers which actually offer intuitive workflow. Of course*, every* instrument is some way intuitive. That's a given. But the SUMMIT player never feels that the intuitive process has reached its limit.

Care for an example? Try this. Sit down, get started. Choose mono mode … or polyphonic? … whatever you like (there are 5 playing modes), select Sound A here, Sound B there, set both sounds a few octaves lower (transpose switch right above the wheels), assign the wheels (press MOD and quickly program one of the SLOTs), start the arpeggiator, press KEY LATCH for continuous playing, choose one of the dual filter types (VOICE / FILTER area), adjust the stereo panorama setting – the so-called spreading (a wonderful effect) … one thing leads to another, not a single look at the manual is necessary.

A manual that – as we have already said – is unfortunately not included. A matter of common practise these days, under the aspects of paper consumption and environmental protection. But some musicians feel lost without a manual at their disposal. Which is also an indication that the musician is really using the instrument as it was designed to be used – as a creative tool.

Be that as it may: The SUMMIT User Guide actually *is* available online, the user just has to print it out. Tricky thing, since even in size A4 the text is t-i-n-y. Maybe font size 7 or 8. If you are not afraid of space, consider using paper size A3. Aside from that, the manual is absolutely excellent. Another indication of how comprehensively and user-friendly the SUMMIT concept has been carried out.



The well-specified sound architecture and intuitive performance possibilities are rounded off by a clever selection of connections:

- AUDIO Out R / L Main
- AUDIO Out R / L Aux
- AUDIO In R / L
- Headphones
- PEDAL 1 (freely assignable)
- PEDAL 2 (freely assignable)
- CV Mod In (freely assignable)

Furthermore, there’s:

- MIDI IN / OUT / THRU
- USB

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The two R / L outputs are a blessing. In LAYER / SPLIT mode each part can have its own stereo channel, assuring particularly wide sound textures and pads, for example. Or stereo filter modulations with panorama movements.

CV MOD IN – another highlight. Any control voltage from external sources (preferably from Eurorack modules, hence the 3.5 mm socket) can be used positively / negatively as a modulation source in the onboard modulation matrix. A nice aspect that lets you combine different synthesizer systems and implement some tricky interaction.

The Sounds

High-quality sounds. Flexible. Alive. SUMMIT sometimes reminds us of its ancestor, the OSCar. That interesting balance between digital and analog character – with a clear tendency in this direction or that, depending on synth programming – is striking. It also explains the enormous diversity of SUMMIT sound potential.

The overdrive – you've got this feature in 3 (!) different areas within the synth – also ensures the typical mix of warmth and aggressiveness in the class of an OSCar. This is an aspect that we unfortunately took too little into account in the attached sound examples.

As a particularly outstanding part of the instrument, however, we would like to focus once again on the oscillators:

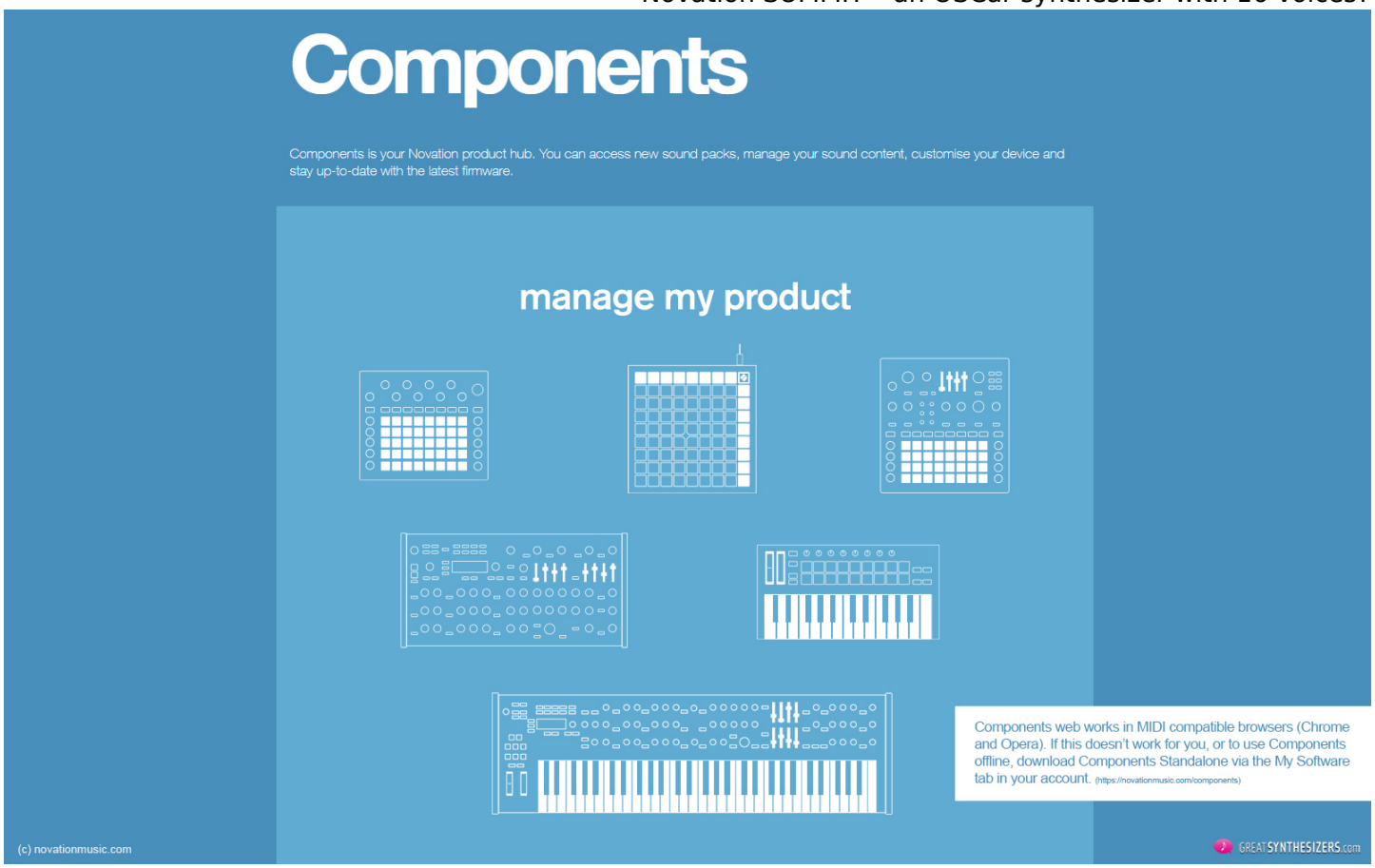
"Central to SUMMIT is the use of a high-powered processor component called a Field Programmable Gate Array (FPGA). ***FPGA-based Numerically Controlled Oscillators*** *running at 24 MHz* ***generate waveforms indistinguishable from those produced by analogue oscillators****."*
(www.novationmusic.com)

In fact, the oscillator's basic waveforms (saw, pulse, …) sound persuading and believably *analog*. With the help of the ultra-slow LFOs, natural drifts in the beat-behavior of the oscillators can be programmed easily.

Quick guidance to the attached sound files. How about a simple, yet stunning analog BASS, quickly created in layer mode, with a true stereo sound? Listen to “Double (Layer) PWM”, “Double (Layer) SAW” and “Double (Layer) TRI”. How about a wavetable pad with some powerful solo sounds, arpeggiator lines and FX sounds? Listen to “Atmosphere 1”. How about an exotic, strangely nasal lead line? We recommend “Oriental Solo”.

Need an example for SUMMIT’s out-of-phase LFOs? Try “Free Run LFO”. And how about THE analog string sound? “SOFT Strings 1” is what you’re looking for. Finally, we would like to point out two special sound elements of the attached files: that wavetable sound that reminds us of “a deep piano sound in the bass range” – listen to “VOCAL Wavetable”, and that hammer-like unison sound in “Atmosphere 2”.

Listening to the soundfiles, one could imagine a dozen instruments in action. But in reality there’s only SUMMIT. High-quality sounds. Flexible. Alive.



The presets (384 single patches / 384 multi patches) were made by well-known synthesizer nerds, such as Legowelt, Enrico Cosimi, Peter Dyer, Tim Mantle, Patricia Wolf … to name just a few.

“Components”, Scales and Micro Intervals

Components – a software that is available free of charge either online or in an offline version (download) – allows, among other things, the external management of SUMMIT sounds.

“Components is your Novation product hub. You can access new sound packs, manage your sound content, customise your device and stay up-to-date with the latest firmware.” (https://novationmusic.com)

Components is also very important in connection with the Tuning Tables. 16 of these self-programmable scales can be created and then saved in SUMMIT. Strictly speaking, there are 17 scales, scale 0 is the basic well-tempered scale on which all factory presets are based.

The other Tuning Tables, however, are just a copy of the well-tempered scale and must be programmed by the user. The good thing is, that you have a completely free hand when arranging your own, individual scales. Consider micro intervals, consider macro intervals …

Conclusion

From our point of view, SUMMIT is a *Must-Have* for synth nerds. Excellent hardware, a high-quality sound concept and, above all, intuitive workflow. All that with 16 voices plus Layer / Split possibilities and many, many extras. Novation isn't exxagerating when they assert that this is the best-sounding synthesizer they've ever designed:

> ***"[This] sixteen voice polyphonic, bi-timbral synthesiser [is] the best sounding synth Novation has ever made."*** (User Guide, page 4)

Congratulations!

Addendum 05/2020: Novation now offers a free Wavetable editor for PEAK and SUMMIT.
Further Info: novationmusic.com/en/news/wavetable-editor-peak-summit

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Thanks are due to Musikhaus Hieber Lindberg for supplying the SUMMIT for this report.

50+ minutes of sound files are attached. SUMMIT is the dominating sound tool. Rhythmic accompaniments show up here and there (Roland R8 drums), a bass line from Korg appears in “Volca Bass”, and an extra rotary solo sound from GeneralMusic S3 is heard in “MashUp”. Enjoy listening!

1. SOFT Strings 1
2. Double (Layer) PWM
3. Atmosphere 1
4. Volca Bass
5. Free Run LFO
6. VOCAL Wavetable
7. Double (Layer) SAW
8. Strange Organ
9. Oriental Solo
10. VOCAL ext CV mod
11. SOFT Strings 2

12. Atmosphere 2
13. Simple Pulse
14. Arpeggio 1
15. Hymn
16. Noises
17. MashUp
18. Brutal Sync
19. Ring Modulation
20. Double (Layer) TRI
21. BandPass VCF
22. Brass
23. Arpeggio 2
24. Atmosphere 3
25. Atmosphere 4

Novation SUMMIT

Polyphonic Hybrid Synthesizer
with analog / digital sound character
and 16 voices with split / layer function

Price:
approx. 2,299 USD / 2,099 Euros
(02/2024)

Website Manufacturer:
www.novationmusic.com

Link / Comparison:
Modal Argon8 Test Report
UDO Audio SUPER 6 Test Report
Novation Bass Station II Test Report
Korg Prologue-16 / Prologue-8 Test Report

Open / Download:
Novation SUMMIT photo (3800 x 1800 px)