The ASET-2121 Synthesizer V.1.3
The MythoSpheric Space Synthesizer
for Pads, Textures, Soundscapes & Athmospherics

This synthesizer has been developed to provide a wide variety of sounds for Pads, Textures, Soundscapes & Athmospherics at a rather CPU-friendly performance. Typically it (8-voice version) uses only around 12% on a 2.53 Ghz PVI CPU running at 400Mhz frontsidebus. Another goal of the deveopment has been to have all control-elements onscreen for a direct and userfriendly access. There are straight modulation-routings with some unconventional options like modulating the amount of an LFO by another one for more vivid textures.
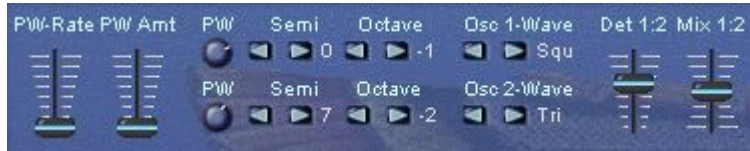
The basic features are:
two analogstyle oscillators featuring Sine, Triangle, Saw, Ramp and Square(Pulse) waves
two digital PCM-wave oscillators powered by 65 different waveforms
two filfters (24db Lowpass and 12 db Low/Highpass selectable)
three ADSR-style envelope generators
two LFO with three adjustable amounts routed to nine different destinations (bpm-syncable)
one Sample & Hold with three amounts routed to nine different destinations (bpm-syncable)
one vLFO (for very low frequency modulations)
one chorus for the digital oscillators
one synced Cross-Stereo-delay (with feedback modulated by vLFO, LFO1, S&H or manually)
four Lazy?!-buttons to randomize sets of parameters (incl. one unnamed modifying all sections)

You will see that even with this quite „simple" synth-structure you can achieve not only a voluminous but also very complex and impressive sound due to the efficient modulations.

The features of the ASET-2121 Synthesizer in detail

The sound-sources

Two analogstyle oscillators (1 & 2) are featuring Sine, Triangle, Saw, Ramp and Square waves

If set to Square-wave the width of Pulse can be adjusted manually **[PW]** for each oscillator or be modulated by [**PW-Rate**] (dedicated LFO) and **[PW Am**ount**]** or to bpm-syncable LFO 2. Each oscillator is tunable at different octave-settings and semitones.
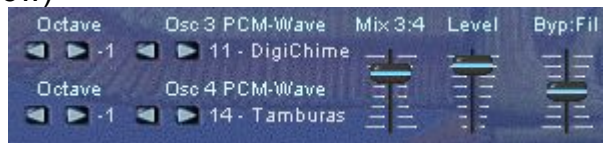
There is a fine detuning **[Det 1:2]** between oscillator 1 and 2 for a more vivid sound. The **[Mix 1:2]**-slider serves to adjust the level between both oscillators while the **[Level]**-slider determines the overall volume of both oscillators. Now the signal is routed to the 24db LowPass (LP) filter with adjustable Cutoff frequency **[Cut 1]** and Resonance **[Q 1]**.

With the **[A] [D] [S] [R]** envelope generator you can adjust the way the filter works on the incoming signal with **A**ttack, **D**ecay, **S**ustain and **R**elease providing the shape on filtering. With the **[EnvAmt]** – slider you can adjust the amount of this modulation on the filter.

Please keep in mind that this envelope amount interacts with the other modulations routed to this filter. So if you notice there is hardly any modulation from other sources please check the setting of this slider.

Both **digital oscillators** (Osc 3 & Osc 4)have a set of 47 different selectable PCM-waves as soundsource (see list below)

Each oscillator can be set to different octaves where Osc 3 also affects Osc 4 (so you have an extra octave up/dn) the **[Mix 3:4]** -slider serves two adjust the volume between both oscillators, while the **[Level]** slider serves to set the overal volume and the **[Byp:Fil]** slider mixes the signal to the filter or directly to the output-section.
Waveforms marked with "nl" are non looped variations present; -h ~half sample looped.

The signal of the digital oscillator can be enriched by a Chorus effect.

Activate with **[Chorus]** switch and there are 9 types (s1-s4 are very slow!) available by the **[Type]** button. Also adjustable are **[Depth]** , [**Delay**] and **[Fe**ed**back] .**

The signal of digital oscillators is routed to a 12dB filter with Low- and High-Pass characteristic. You can shift between the LP and HP-mode by slider **[LP:HP].** Cutoff frequency **[Cut 2]** and Resonance **[Q 2]** are adjustable.

Please keep in mind the Q - resonance of this filter might sound a bit sharp when a lot modulation-amount is sent to it.

With the **[A] [D] [S] [R]** envelope generator you can adjust the way the filter works on the incoming signal with **A**ttack, **D**ecay, **S**ustain and **R**elease providing the shape on filtering. With the **[EnvAmt]** – slider you can adjust the amount of this modulation on the filter working in both directions (+ and - amount) as reflected by the slider type.

Please keep in mind that this envelope amount interacts with the other modulations routed to this filter. So if you notice there is hardly any modulation from other sources please check the setting of this slider.

The modulations sources

LFO 1 and **LFO 2** are basically the same with only slight differences.

The LFO-Rate can be adjusted manually or synced to host-clock at different division-settings (from 1/8 note to 8 bar length). Each LFO provides selectable waveforms.
There are three knobs available to set an amount of modulation to go to three destinations at the same time each. The knobs work in positve and negative direction, eg. from -10 to +10.

LFO1 can be adjusted a bit slower than LFO2. The modulation destinations differ in way to have the best possible combinations. So there was no need to build a more complex mod-matrix consuming more CPU-ressources. Instead of the switch-buttons there could have been amount knobs to each destination, but with an adjustable knob you could never be really sure to switch off a mod completely. So this was ensured by using switches.

The Sample & Hold generator is quite similar to an LFO. The main distinction is that it provides a random modulation signal like pulses at varying levels instead of a continous / forseeable mod from an LFO. With the **[Seed-Src]** button you can change the characteristics

of the sampled pulses: Less (peaks), More (peaks) and Up & Dn types for ascending or descending motion preferably at lower rates.
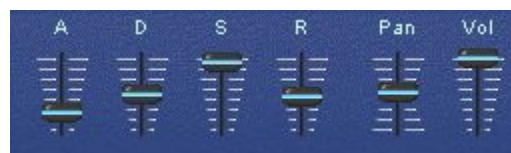

Remark: the modulation to [Mix3:4] modulates the level (mix) between the two digital oscillators, while [Byp:Fil] shifts the amount of level between filtered and unfiltered signal of the digital oscillators - very useful for interesting textures and athmos. Also the Rate can be set to be synced to the LFO.

The **vLFO** is there for very low frequency modulation and it controls the amount of the modulation of the destinations unless Pan, Mix3:4 or LP:HP is selected. Sent to LFO or S&H will lead to have an continouus increasing and decreasing amount of modulation at the target. So for example an LFO1-modulation will fade in and fade out continually. With subtle settings your sound will be vivid as never before.

The Output-section

The output section provides an **[A] [D] [S] [R]** envelope generator for shaping the overall signal with **A**ttack, **D**ecay, **S**ustain and **R**elease. With the **[Vol]** – slider you can adjust the overall output oft the ASET-2121 synthesizer.
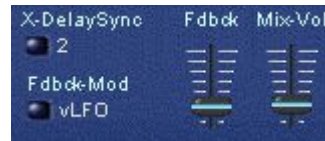

The **[Pan]** -slider serves to place the signal in stereo-panorama in a very special way as it will send the signal of the analog-style and digital oscillators into opposite direction automatically.

So to say it spreads the signal: the more you have the analogstyle osc. on the left the more the digital osc. are on the right and vice versa. As pan can be modulated by vLFO, S&H or LFO1 this provides motion to the stereo-position.

In addition to this the cross stereo delay puts the corresponding delay-signal to the opposite side. This delay is synced to host clock with five selectable division-settings.
Use the **[Mix-Vol]** – knob to adjust the amount of delayed signal to the normal signal.

The feedback amount can be set manually or be modulated dynamically by the vLFO, S&H or LFO1. This is a quite unique feature which serves to provide a subtle motion to the delayed signal how many times the incoming signal is repeated so it is varying from quite long to rather short repetitions depending on the amount of the modulations source's current value.
Remark: due to the conditions within the rate-setting of the mod-source are valid for halve the value here, so a setting of 8b = 8 bars on the vLFO will effect the feedback mod for 4 bars.

Just to solve the riddle why it's called ASET-2121

Other VSTI by H. G. Fortune are:
STS-11 Space Transition Synthesizer (2-Voice Free/ 7-Voice Registered version for 29,- Euro / 34,- U$)
There is a well a bundle with ASET-2121 and STS Synthesizer available at ShareIt
for 42,- Euro or 50 U$ **http://www.shareit.de/product.html?productid=300011685**

Wheel of Fortune (Freeware)
X-Wheel of Fortune (Freeware)
X-Wheel of Fortune Pro (35,- € available at **http://www.shareit.de/product.html?productid=221828)**

Official X-WoF site is at www.algomusic.nl
Homepage of X-Wof is found at www.flomo-art.de/se

One final remark: Actually the development of this VSTi has been started to have a synth as CPU-efficient companion to the ISIS-Machine providing some basic poly-synth sounds as well as pads and textures for our „Electronic Egypt Project"* to be presented live. But during the development it turned out to be a really versatile soundmonster ;-) and still rather CPU-efficient that further efforts were put on the GUI etc. ... all in all things went a way not being expected while starting the project.

H. G. Fortune

MIDI-Implementation of Continuous Controllers (CC) for sliders & knobs (from left to right each row)

	MIDI CC #	Valuerange	Remarks
Analogstyle Oscillator & Filter section			
PW-Rate	CC # 70	0 – 127	
PW-Amt	CC # 71	0 – 127	
PW Osc 1	CC # 72	0 – 64 – 127	64 = 0 (Midposition)
PW Osc2	CC # 73	0 – 64 – 127	64 = 0 (Midposition)
Det 1:2	CC # 74	0 – 127	
Mix 1:2	CC # 75	0 – 64 – 127	64 = 0 (Midposition)
Level	CC # 76	0 – 127	
Cut 1	CC # 77	0 – 127	
Q 1	CC # 78	0 – 127	
A	CC # 79	0 – 127	
D	CC # 80	0 – 127	
S	CC # 81	0 – 127	
R	CC # 82	0 – 127	
EnvAmt	CC # 83	0 – 127	
Digital Oscillator & Filter			
Depth (Chorus)	CC # 3	0 – 127	
Delay (Chorus)	CC # 1 (Mod-Wheel)	0 – 127	
Fdback (Chorus)	CC # 2 (Breath-Control)	0 – 127	
Chorus (On/Off)	CC # 69	0 / 127	0 = Off / 127= On
Mix3:4	CC # 85	0 – 64 – 127	64 = 0 (Midposition)
Level	CC # 86	0 – 127	
Fil:Byp	CC # 84	0 – 64 – 127	64 = 0 (Midposition)
LP:HP	CC # 94	0 – 64 – 127	64 = 0 (Midposition)

Cut 2	CC # 87	0 – 127	
Q 2	CC # 88	0 – 127	
A	CC # 89	0 – 127	
D	CC # 90	0 – 127	
S	CC # 91	0 – 127	
R	CC # 92	0 – 127	
EnvAmt	CC # 93	0 – 64 – 127	64 = 0 (Midposition)

LFO- & Main Out section

vLFO : Rate	CC # 12	0 – 127	valid in Man(ual) mode
S&H : Rate	CC # 13	0 – 127	valid in Man(ual) mode
LFO1 : Rate	CC # 14	0 – 127	valid in Man(ual) mode
LFO2 : Rate	CC # 15	0 – 127	valid in Man(ual) mode
A	CC # 29	0 – 127	
D	CC # 30	0 – 127	
S	CC # 31	0 – 127	
R	CC # 32	0 – 127	
Pan	CC # 10 (Pan)	0 – 64 – 127	64 = 0 (Midposition)
Vol (Overall Volume)	CC # 7 (Volume)	0 – 127	
vLFO : Amt 1	CC # 16	0 – 64 – 127	64 = 0 (Midposition)
vLFO : Amt 2	CC # 17	0 – 64 – 127	64 = 0 (Midposition)
S&H : Amt 1	CC # 18	0 – 64 – 127	64 = 0 (Midposition)
S&H : Amt 2	CC # 19	0 – 64 – 127	64 = 0 (Midposition)
S&H : Amt 3	CC # 20	0 – 64 – 127	64 = 0 (Midposition)
LFO1 : Amt 1	CC # 21	0 – 64 – 127	64 = 0 (Midposition)
LFO1 : Amt 2	CC # 22	0 – 64 – 127	64 = 0 (Midposition)
LFO1 : Amt 3	CC # 23	0 – 64 – 127	64 = 0 (Midposition)
LFO2 : Amt 1	CC # 24	0 – 64 – 127	64 = 0 (Midposition)
LFO2 : Amt 2	CC # 25	0 – 64 – 127	64 = 0 (Midposition)
LFO2 :Amt 3	CC # 26	0 – 64 – 127	64 = 0 (Midposition)
X-Delay: Fdbck	CC # 27	0 – 127	
X-Delay: MixVol	CC # 28	0 – 127	

List of PCM-Waves

001.AtkStrngA 002.WideSyn 003.MoogSaw 004.DigiPad 005.SynVoice 006.ChoirAhhs 007.Fem._Ooh 008.BottleChoir 009.MelotVox 010.EerieVox	011.DigiChime 012.D50X7 013.Hollow 014.Tambura2 015.Cymbalic 016.MetalWide 017.La_Bella 018.StormWind 019.Dark_Noise 020.Cold_Noise	021.Cymbalic-nl 022.MetalWi-nl 023.La_Bella-nl 024.LoopB 025.LoopB-nl 026.LoopD 027.LoopD-nl 028.LoopD-h 029.DWBA-01 030.DWEB-02	031.DWBH-03 032.DWGE-04 033.DWEE-05 034.DWEU-06 035.DWUE-07 036.DWZA-08 037.DWZG-09 038.DWHE-10 039.DWHZ-11 040.DWHH-12	041.DWTE-13 042.DWTZ-14 043.DWA0B-15 044.DWA0E-16 045.DWAZH-17 046.DWBDE-18 047.DWAT0-19 048.MonkVox 049.Hvy_Choir 050.KotoLoop	051.SynBras2 052.SynBas1 053.SynBas2 054.SynBas3 055.MoogySq 056.SynSquarA 057.SawPad 058.PWMPad 059.BriteSynA 060.Boadicea
					061.Majestico 062.ModChord 063.BottleSpctr 064.AtkBellish 065.AtkFMTube 066.Mystery