

The STS-17 Synthesizer V.1.5

The Space Transition Synthesizer

now enhanced with Advanced Transition System



This synthesizer is featuring the Wave-Transition method for absolute unique Soundscapes & Textures. A very straight userinterface with 3 "Lazy"-Buttons for randomizing different sets of parameters so programming this synthesizer is incredibly easy. The Transition method adds a stunning new dimension and motion for an evolving sound changing completely it's characteristics.

The basic features are:

- Four digital PCM-wave oscillators powered by 120 selectable waveforms
- two filters (24db Lowpass and 12 db Highpass, both mixable)
- two ADSR-style envelope generators
- three LFO (bpm-synced)
- one Sample & Hold (bpm-synced)
- one bpm-synced, pan modulated delay
- two "Transit" and one "Shift" engine
- User SF2 loadable

Although this is an amazingly "simple" structured synthesizer it gains its astounding sound from the Transition method between the oscillators. As there are even some waves like Waterflow, Rainy and Jungle the STS is also suited for ambient soundscapes or even industrial noises. More to come!

New since Version 1.5: as additional bonus to the registered version there is the option to load wave files now into the STS-17 thus the STSw-17 is no longer needed.

The features of the STS-17 Synthesizer in detail

The sound-sources

Four **digital oscillators** have a set of 120 selectable PCM-waves as soundsource. Each oscillator has a **[Level:]**-knob and can be set to -1/0/+1 octaves. The **[Vividise]**-knob is there to make digital waveforms more vivid.

The outstanding feature of this synthesizer is the adjustable transition from one wave to the next via the **[Transit >]**, **[Shift]** knobs and with Ver 1.7 the advanced system with adjustable **[End]**point plus modulation on this separate for each section. For details see illustration and explanations below.



Hints:

Some waves are marked "nl" = non looped variation or "h" ~half sample looped. The usage of -nl marked waves is best on Osc. 1 as such one-shot samples are probably no longer playing when time has elapsed to 3rd or 4th oscillator unless there are quite short Transit-settings used for all four oscillators. List of waves at the end of man.

The **[Lazy?!]** knob in this section changes at random waves, Transit-settings, Vividise, Mix-amount of the signal to Filter and direct output as well as the Mod-Amount to this Mix-setting. Level and Octave setting are not touched.

You can set 'Transition' to Off with the respective button and the STS is just like a normal 4 oscillator synthesizer. Each oscillator has a [Mute] button so it is easier to select waves in certain cases.

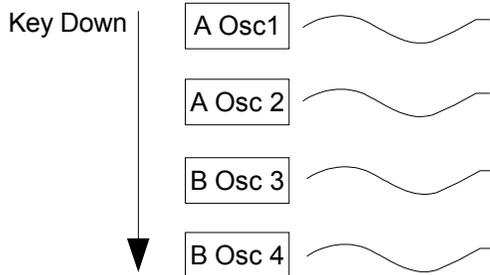
New since 1.1b: Timed PitchShift for each oscillator up or down 1 octave each. PStime sets the time for PitchShift while the PS-On button switches on/off (via MIDI by CC#64 - Hold Pedal)

The output of the oscillators can be send to the filter-section and unmodified to the Master output section mixable by the **[Dir:Fil]** knob of each section. This can also be modulated. When set to modulation the knob serves to control the amount of modulation otherwise it controls the amount of signal to Filter and/or unfiltered i.e direct to Master output section. Also the signal can be routed separately to LowPass (LP) or HighPass (HP) or both (Mix) filters!

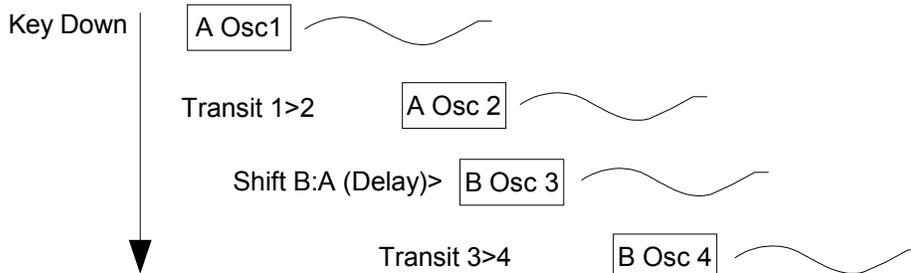
By the button User SF2 you can load SF2-Soundfont files to each oscillator and switch directly between internal and User sounds. the registered version can also load wavfiles directly into the STS-17. (see notes at end)

This illustration should be helpful to understand the 'Transition' Mode

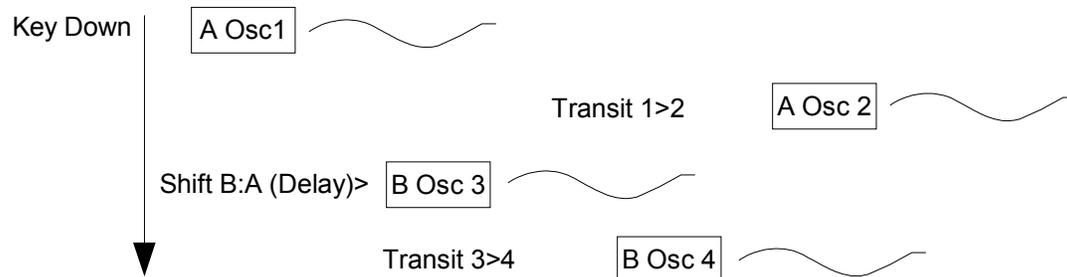
With Transition 'Off' all Oscillators start sounding at once and the STS is just like a normal 4 oscillator synthesizer



With Transition 'On' Oscillators start sounding in succession depending on the settings of the Shift and Transit knobs



You even can set it to this succession



In this case Osc A:2 is the last to sound at full level if 'Transit 1>2' is set to very long 'Shift' quite short and 'Transit 3>4' quite short also.

The [Shift]-knob actually delays the soundoutput of section B oscillators 3 & 4. If set to 0 (turned down to left position) there will be no Shift (like Transition Off) but the Transit is working depending on the setting of the two Transit knobs.

In addition to this the Advanced Transition system allows to have the sound transit back to Osc. 1 and Osc. 3 respectively which is adjusted by the slider End 1:2 or End 3:4. So pressing a key will have the sound from Osc 1 first, transiting to Osc. 2 and according to the setting of End 1:2 slider transit back to Osc 1 or not - so there might be a mix of both oscillators after transition ends. Even further this can be modulated by a bpm-synced LFO with normal and inverted option. The same is valid for section B Osc. 3 and 4.

Filter & Modulation section

The signal of digital oscillators can be routed to a 24 dB LowPass and/or 12dB High-Pass Filter both with resonance (Q). You can shift between the LP and HP-mode by slider **[LP:HP]**. Cutoff frequency **[Cut]** and Resonance **[Q]** are adjustable for each filter separately with the respective sliders.



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

The **[A]** **[D]** **[S]** **[R]** envelope generator lets you adjust the way the filter works on the incoming signal with **Attack**, **Decay**, **Sustain** and **Release** providing the shape on filtering. With the **[EnvAmt]** – slider you can adjust the amount of this modulation on the filter. You won't need Release here much or this envelope at all, as the modulations by LFO and S&H provide a far more interesting motion in sound. The Release is quite CPU-hungry - a remedy is given at the end of Outputsection.

As further modulation-sources serve one LFO and one Sample & Hold generator synced to host-clock. The **[Mod]** buttons activate the modulation-sources to the respective destinations with an adjustable amount from the **[Amt=>]** knobs. (+ is normal modulation while - is inverted modulation.)

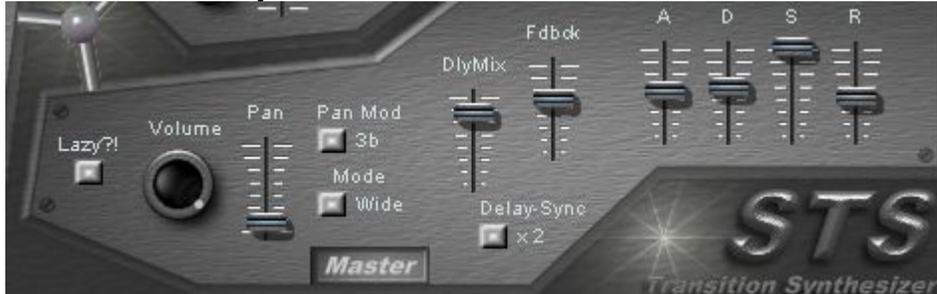
The **Sample & Hold** generator provides a random modulation signal like pulses at varying levels instead of a continuous / foreseeable modulation from a selected wave of the **LFO**. With the **[Seed-Src]** button you can change the characteristics of the S&H pulses: Less (peaks), More (peaks) and Up & Dn types for ascending or descending motion preferably at lower rates.

The **[Lazy?!]** knob changes at random values of all sliders and knobs in this section.

Note: Since Ver. 1.7 the LP:HP slider plus it's modulation is controlling the output of both filters. So there might setting where you probably won't hear a sound. But as this can be modulated this is useful for e.g. gating-effects!

The Output-section

The output section provides an [A] [D] [S] [R] envelope generator for shaping the overall signal with **Attack**, **Decay**, **Sustain** and **Release**.



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. This pan can be modulated by an LFO providing motion to the stereo-position with a **Wide** or **Medium** amount. In addition to this the delay puts the corresponding delay-signal to the opposite side. This delay is synced to host clock with five selectable division-settings. Use the **[DlyMix]** – slider to adjust the amount of delayed signal to the normal signal and the **[Feedback]** slider to adjust the repetitions. The **[Vol]** – knob lets you adjust the overall output of the STS-11 synthesizer - lower if you experience distortion.

The **[Lazy?!]** knob changes at random values of sliders and knobs in all sections excluding the waves and Transit-settings of the oscillators.

Hint: Using long release settings will increase CPU-usage - remedy: set release to 0 at filter ADSR, lower release at ADSR in master section and raise delay MixLvl instead. So in most cases a release just below half way up of the slider will be sufficient to get a fading on the sound.

!! Due to the different structure patches from the prior STS 1.1b can't be used within the STS-17 !!

Credits and further info

The STS-17 Synthesizer has been created by H. G. Fortune with Synthedit by Jeff McClintock. The GUI-graphics have been done by **Vera Kinter** (Brno, Czech Republic) who also did create patches.

STS-17 free is limited to 2 voices.

The STS-17 - 7 voice version is as Bonus within the HG Fortune Classics Legacy Set comprising:

STS-21 Pro
ProtoPlasm TS Pro
LaserBlade

Homepage: www.hgf-synthesizer.de

Yours H. G. Fortune

MIDI-Implementation of Continuous Controllers (CC) for sliders & knobs

	MIDI CC #	Valuerange	Remarks
Osc1 Lvl	CC # 12	0 – 127	
Osc2 Lvl	CC # 13	0 – 127	
Osc3 Lvl	CC # 14	0 – 127	
Osc4 Lvl	CC # 15	0 – 127	
Transit 1>2	CC # 72	0 – 127	
End 1:2	CC # 70	0 – 127	
Shift	CC # 73	0 – 127	
Transit 3>4	CC # 74	0 – 127	
End 3:4	CC # 71	0 – 127	
Vividise	CC # 75	0 – 127	
A Dir:Fil	CC # 94	0 – 64 – 127	64 = 0 (Midposition)
B Dir:Fil	CC # 95	0 – 64 – 127	64 = 0 (Midposition)
LP:HP	CC # 86	0 – 64 – 127	64 = 0 (Midposition)
Cut LP	CC # 87	0 – 127	
Q LP	CC # 88	0 – 127	
Cut HP	CC # 81	0 – 127	
Q HP	CC # 82	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 – 127	
Mod Cut LP Amt	CC # 77	0 – 127	
Mod Q LP Amt	CC # 78	0 – 127	
Mod Cut HP Amt	CC # 83	0 – 127	
Mod Q HP Amt	CC # 84	0 – 127	
Mod L:H Amt	CC # 79	0 – 127	
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)
Volume (Overall Volume)	CC # 7 (Volume)	0 – 127	
X-Delay: Fdbck	CC # 27	0 – 127	
X-Delay: DlyMixl	CC # 28	0 – 127	

List of Waves in the STS-Synthesizer

<i>General</i>	<i>Single-Cycle Synth</i>	<i>Complex-Loops</i>	<i>Noise & Nature</i>
001.^BriteSynA 002.^AtkStrngA 003.^DarkStrngA 004.^WideSyn 005.^MoogySaw 006.^MoogySq 007.^DigiPad 008.^SynSquarA 009.^SynVoice 010.^ChoirAhh 011.^FemalOoh 012.^MelotVox 013.^EerieVox 014.^MonkyVox 015.^MaleVox 016.^BlowinV 017.^VocSpectral 018.^SynFlute 019.^SynClarinet 020.^Syn-Sax 021.^SynBras2 022.^SynFat 023.^SynBas1 024.^SynBas2 025.^SynBas3	026.~SynBA01 027.~SynEB02 028.~SynBH03 029.~SynGE04 030.~SynEE05 031.~SynEU06 032.~SynUE07 033.~SynZ008 034.~SynZA09 035.~SynZE10 036.~SynZG11 037.~SynHE12 038.~SynHZ13 039.~SynT014 040.~SynTE15 041.~SynTZ16 042.~SynA0B17 043.~SynA0G18 044.~SynA0E19 045.~SynABH20 046.~SynABE21 047.~SynAG022 048.~Syn-G01 049.~Syn-G02 050.~Syn-G03 051.~Syn-G04 052.~Syn-G05	053.*Al_Saria 054.*di_Motou 055.*SwirlyHole 056.*SpaceAbyss 057.*SpaceSpectr 058.*ArcaneSpect 059.*Spaceballs 060.*Bubbles 061.*Sparkling 062.*Mystery 063.*Mystery-nl 064.*DarkBell 065.*DarkBell-nl 066.*La_Bella 067.*La_Bella-nl 068.*Cymbalic 069.*Cymbalic-nl 070.*MetalWide 071.*MetalWi-nl 072.*RhytmoLp 073.*KotoicLp 074.*Sitar 075.*Sitar-nl 076.*Tambura 077.*Al_iksir	078.#NoizSpectr 079.#Cold_Noise 080.#Dark_Noise 081.#StormWind 082.#MetlCrash 083.#MetlCrash-nl 084.#MetalHit 085.#MetalHit-nl 086.#Blupps 087.#ALoop 088.#ALooph 089.#ALoop-nl 090.#BLoop 091.#BLoop-nl 092.#Flowater 093.#Watery 094.#Thunder-nl 095.#Rainy 096.#Seaside 097.#Falcon 098.#Jungle 099.#Tropica 100.#BigRoar 101.#Baby_Kong 102.#Juno'sBird 103.#Werewolf
			<i>Added to Ver. 1.4</i> 104 ModChord 105 Chord2 106 Belling 107 H2O-Phone 108 BellMagic 109 ArcaneRealms 110 DipTubeNoiz 111 BottleSpctr 112 Fair Lightll 113 PPG OrgVox 114 PPGVox 115 BottleChoir 116 Thick Pad 117 PWM Pad 118 Saw Pad 119 Punchy 120 CS-Analog

Appendix on Soundfonts SF2 and wave files

General note: place all SF2 and wavefiles you want to use into the subdir which has been created by the STS-17 (e.g. C:\somewhere\VSTplugins\HGF\STS-17\) you can also have subdirs there. The VSTi will automatically

point to this STS-17 subdir so it is more convenient to load files from there.

Note on SF2-files:

Although you can use basically any SF2 around there are two limitations: the internal SF-Player does support only one layer from an SF2-preset or instrument (the bottom one as seen in Vienna) and the synthfunctions of the SB-hardware are not supported as a specific SB soundcard is not needed.

Notes on Loading wave files

(NOTE: it is only available with the registered copy of the STS Transition Synthesizer!)

it is possible since Ver 1.5 to load wavefiles (loops supported) directly into the STS-17 serving as oscillators/soundsources.

Anyway this feature is useful for testing wavefiles within the STS-17 so you can do a quite easy selection of waves to be gathered into an SF2 file later as it is more convenient to switch between different waves rather than loading a wave from somewhere on your harddisk. Also this setting is stored and restored when loading that SF2 on next startup again.

HINT: When storing a patch the location of the wavefiles loaded is stored as well in order to reload these when switching to that preset. So You should keep in mind that deleting wavefiles used within presets will lead to an error-message! **Due to this it is more advisable to use single patches stored as .fxp rather than complete banks stored as .fxb.** Worst case might be when loading a complete bankfile (.fxb) with stored information of files now deleted will lead to a whole bunch of error-messages. Now You know about it so it is up to You to take care in advance. So SF2 files are a better solution in handling a whole bunch of samples.

The STS-17 wave file capability **is obviously not made to play drumloops, basslines or melodic loops** used typically by programs like Magix Music Maker (tm) although there might be a few (better: very few) exceptions as always are.

Best results will be when using looped instrumentsamples, FX-sounds or samples alike those used within the STS. Ideally waves to be played should be tuned to C (best is C4 or C5) in order to correspond to the MIDI-keys on a keyboard. It is best to use monosamples, stereosamples can be used but will be processed as mono-signals. Stereosound is done at the outputsection.

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