Ichiro Toda's

Synth1

v1.12

unofficial

User Manual

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Introduction to Synth1

Synth1 is VST 2.0 compatible software synthesizer plug-in for computer music use.

Functionally, Synth1 is modeled after the Clavia Nord Lead 2X (the famous "Red Synth"). Incredibly well, Synth1 reflects the character of this instrument, but also brings many new features, including:

- 2 oscillators + 1 sub-oscillator, FM mod, ring mod, sync, mod envelope, phase shift
- 4 types of filters, resonance, saturation
- 2 LFOs (synchronized with host)
- arpeggiator (synchronized with host)
- tempo delay (synchronized with host), stereo chorus/flanger, effect unit, EQ, pan
- poly/mono/legato mode, portamento, unison
- 32 notes polyphony
- 128 presets per bank, bank browser
- automation, MIDI CC control
- thorough optimization for light CPU load using SSE instructions, etc.

With Synth1, you are about to begin a journey into the world of *virtual analog* synthesis. *Analog* because the Synth1 mimics traditional analog synthesizers in a way no one thought was possible. *Virtual* because the Synth1 is a digital, computer instrument, remaining true to the traditional analog concept, and still managing to go beyond it! The end result is a clean-sounding synth with a nice sizzle and bite. But not all the magic lies in the sound creation. A major part is also in its GUI - simple, comprehensive, intuitive, and easy to operate.

Operational Environment and Limitations

Compatible CPU

The x86/x64 CPU that supports SSE2 is necessary.

Compatible OS

Windows XP, Windows Vista 32Bit (developed on Windows Vista HP sp2). The OS except the stated is unconfirmed. Windows98 is not supported.

Compatible Hosts

Reaper, Ableton Live, SONAR, Cubase, FL Studio. The hosts except the stated are unconfirmed.

Plugin Format

VSTi2.0

Sampling Frequency

Arbitrary.

Limitations

Not multitimbral.

Installation and Uninstallation

Installation

A case of the first time use

1. Initialize the settings by running the provided initialization tool "initsettings.exe".
2. The VSTi DLL is called “Synth1 VST.dll”. Copy this file to the VST plug-in folder of the host application.
   For example, if your favorite sequencer is Cubase, you should copy "Synth1 VST.dll" to "C:\Program Files\Cubase SX\Vstplugins" directory.

Installation is now complete. Please confirm that Synth1 appears in the plug-in menu of the host application.

Transition to the new version

1. Please execute the succession tool (reg2ini.exe) and generate the configuration (synth1.ini) file when upgrading from the version before Synth1 v1.11.
2. Please overwrite-copy the plug-in file "Synth1 VST.dll" to a VST plug-in folder.

Installation is now complete.

Uninstallation

Delete the folder which contains "Synth1 VST.dll" from the VstPlugins folder of the host application. You should also delete the setup information file:

APPDATA\Daichi\Synth1\synth1.ini
ex) C:\Users\userName\AppData\Roaming\Daichi\Synth1\synth1.ini

It is not the problem even if you do not delete this file.

Operation

Basic Operation

Panel size and color

For ease of operation, you can change the size of the user interface panel (up to 250%), as well as the background and text color. These options are accessed via the opt button in the bottom of the panel --> Panel Size, Color Customize.
* If you change the panel size, please close and reopen the window once. In some host applications, the panel does not change until you have reopened the song file.

Knobs

When you left-click a knob, a slider appears for manipulation. Minute adjustments can also be made by using the mouse wheel. To close the slider, right-click it or perform a left-click in a different place.

Changing programs

In the lower part of the panel there is a LCD which displays the program name. Click it to open an overview of banks / programs. Left-click the desired program to select it. Right-click to cancel.

Outline

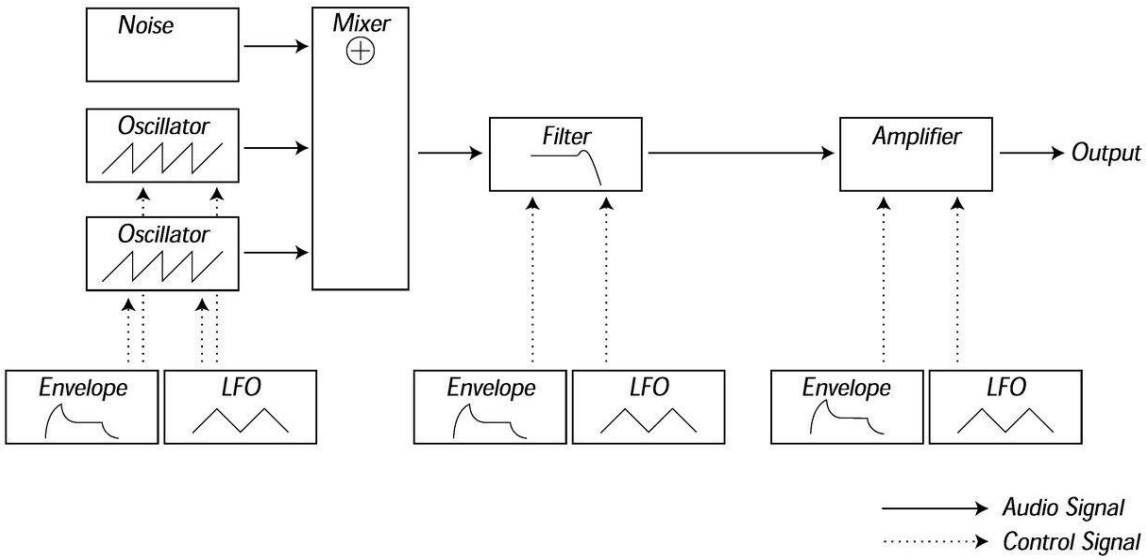
About subtractive synthesis

Subtractive synthesis is one of the oldest and most widely spread forms of synthesizing sounds. It is the method employed in such classics as the Moog synthesizers, the Sequential Prophet-5 and 10, Arp synthesizers, most Oberheim synthesizers, the Roland Jupiter models, the TB-303 etc; the list is practically endless. Even new digital instruments such as workstations and sample playback devices employ many of the basic principles of subtractive synthesis.
With the Synth1, Ichiro Toda introduced a new concept: a modern digital instrument that combined a faithful reproduction of the behavior of the old analog favorites with the convenience and stability of the new design. The Synth1 takes this concept even further, adding valuable new features and functionality.

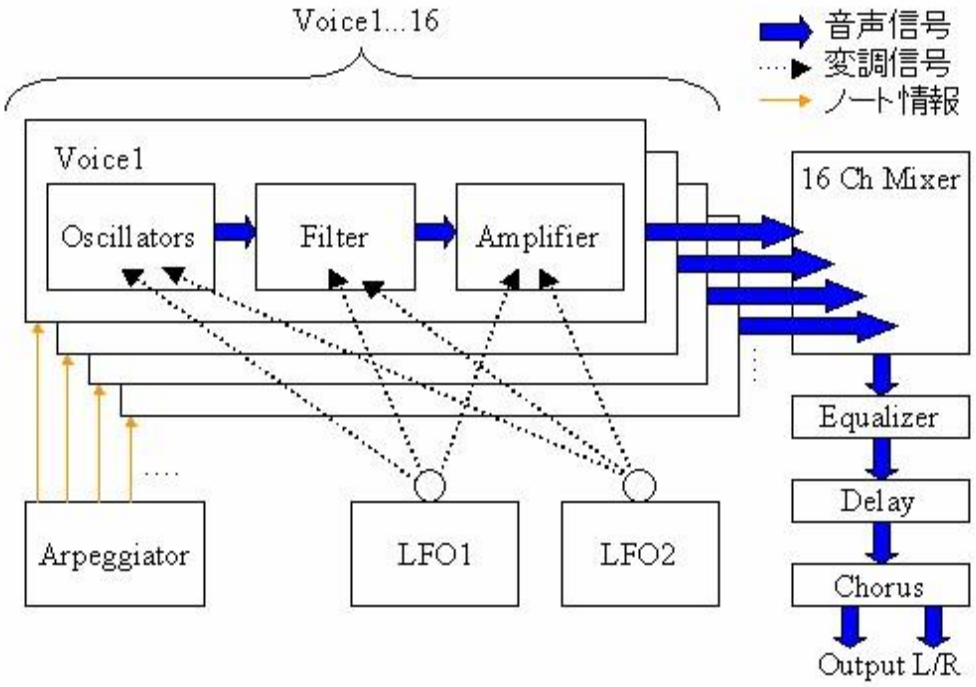
The “building blocks”

Subtractive synthesis started its life in *modular synthesizers*, large cabinets housing separate electronic modules, connected via patch cords. With the advancement of technology, the functionality of many of these modules could be put onto one single circuit board. But

functionality-wise, subtractive synthesizers are still built out of the same modules (or building blocks) as they were decades ago. The same stays even for the VSTi.
Main building blocks of any subtractive synth are: Oscillator, Filter, Amplifier, Envelopes and LFO. There are many ways in which these modules can be connected in a synthesizer, but the one in the picture below is a basic and common one, used in the Nord Lead 2X (although the illustration depicts far from all the possibilities of that instrument!)



Note that the horizontal lines indicate the way the sound travels. The vertical lines indicate control signals. The envelopes for example only *modulate* (control*)* the oscillator, filter and amplifiers, they do not affect the sound directly.
The structure of Synth1 (v1.06) is shown below. The section with 16 voices simulates an analog synth with 2 VCOs. In this version, Synth1 also had an arpeggiator, equalizer, delay and chorus.



Parameters ID Structure

Ver	1.00-1.04	1.05	1.06	1.07	1.08	1.09-1.10	1.11	1.12
00	osc1 shape	osc1 shape	osc1 shape	osc1 shape	osc1 shape	osc1 shape	osc1 shape	osc1 shape
01	osc2 shape	osc2 shape	osc2 shape	osc2 shape	osc2 shape	osc2 shape	osc2 shape	osc2 shape
02	osc2 pitch	osc2 pitch	osc2 pitch	osc2 pitch	osc2 pitch	osc2 pitch	osc2 pitch	osc2 pitch
03	osc2 tune	osc2 tune	osc2 tune	osc2 tune	osc2 tune	osc2 fine tune	osc2 fine tune	osc2 fine tune
04	osc2 kbd track	osc2 kbd track	osc2 kbd track	osc2 kbd track	osc2 kbd track	osc2 kbd track	osc2 kbd track	osc2 kbd track
05	osc mix	osc mix	osc mix	osc mix	osc mix	osc mix	osc mix	osc mix
06	osc sync	osc sync	osc sync	osc sync	osc sync	osc2 sync	osc2 sync	osc2 sync
07	osc ring modulation	osc ring modulation	osc ring modulation	osc ring modulation	osc ring modulation	osc2 ring modulation	osc2 ring modulation	osc2 ring modulation
08	osc pulse width	osc pulse width	osc pulse width	osc pulse width	osc pulse width	osc pulse width	osc pulse width	osc pulse width
09	osc key shift	osc key shift	osc key shift	osc key shift	osc key shift	osc key shift	osc key shift	osc key shift
10	osc mod env on/off	osc mod env on/off	osc mod env on/off	osc mod env on/off	osc mod env on/off	osc mod env on/off	osc mod env on/off	osc mod env on/off
11	osc mod env amount	osc mod env amount	osc mod env amount	osc mod env amount	osc mod env amount	osc mod env amount	osc mod env amount	osc mod env amount
12	osc mod env attack	osc mod env attack	osc mod env attack	osc mod env attack	osc mod env attack	osc mod env attack	osc mod env attack	osc mod env attack
13	osc2 p.env decay	osc2 p.env decay	osc mod env decay	osc mod env decay	osc mod env decay	osc mod env decay	osc mod env decay	osc mod env decay
14	filter type	filter type	filter type	filter type	filter type	filter type	filter type	filter type
15	filter attack	filter attack	filter attack	filter attack	filter attack	filter attack	filter attack	filter attack
16	filter decay	filter decay	filter decay	filter decay	filter decay	filter decay	filter decay	filter decay
17	filter sustain	filter sustain	filter sustain	filter sustain	filter sustain	filter sustain	filter sustain	filter sustain
18	filter release	filter release	filter release	filter release	filter release	filter release	filter release	filter release
19	*filter freq.	*filter freq.	*filter freq.	*filter freq.	*filter freq.	*filter freq.	*filter freq	*filter freq
20	*filter resonance	*filter resonance	*filter resonance	*filter resonance	*filter resonance	*filter resonance	*filter resonance	*filter resonance
21	filter amount	filter amount	filter amount	filter amount	filter amount	filter amount	filter amount	filter amount
22	filter kbd track	filter kbd track	filter kbd track	filter kbd track	filter kbd track	filter kbd track	filter kbd track	filter kbd track
23	filter distortion	filter distortion	filter saturation	filter saturation	filter saturation	filter saturation	filter saturation	filter saturation
24	filter velocity switch	filter velocity switch	filter velocity switch	filter velocity switch	filter velocity switch	filter velocity switch	filter velocity switch	filter velocity switch
25	amp attack	amp attack	amp attack	amp attack	amp attack	amp attack	amp attack	amp attack
26	amp decay	amp decay	amp decay	amp decay	amp decay	amp decay	amp decay	amp decay
27	amp sustain	amp sustain	amp sustain	amp sustain	amp sustain	amp sustain	amp sustain	amp sustain
28	amp release	amp release	amp release	amp release	amp release	amp release	amp release	amp release
29	amp gain	amp gain	amp gain	amp gain	amp gain	amp gain	amp gain	amp gain
30	amp velocity sens.	amp velocity sens.	amp velocity sens.	amp velocity sens.	amp velocity sens.	amp velocity sens.	amp velocity sens	amp velocity sens
31	arpeggiator type	arpeggiator type	arpeggiator type	arpeggiator type	arpeggiator type	arpeggiator type	arpeggiator type	arpeggiator type
32	arpeggiator oct. range	arpeggiator oct. range	arpeggiator oct. range	arpeggiator oct. range	arpeggiator oct. range	arpeggiator oct. range	arpeggiator oct range	arpeggiator oct range
33	arpeggiator beat	arpeggiator beat	arpeggiator beat	arpeggiator beat	arpeggiator beat	arpeggiator beat	arpeggiator beat	arpeggiator beat
34	arpeggiator gate	arpeggiator gate	arpeggiator gate	arpeggiator gate	arpeggiator gate	arpeggiator gate	arpeggiator gate	arpeggiator gate

35	delay time	delay time	delay time	delay time	delay time	delay time	delay time	delay time
36	delay feedback	delay feedback	delay feedback	delay feedback	delay feedback	delay feedback	delay feedback	delay feedback
37	delay level	delay level	delay level	delay level	delay level	delay dry/wet	delay dry/wet	delay dry/wet
38	play mode type	play mode type	play mode type	play mode type	play mode type	play mode type	play mode type	play mode type
39	play mode portament	play mode portament	portament time	portament time	portament time	portament time	portament time	portament time
40	pitch bend range	pitch bend range	pitch bend range	pitch bend range	pitch bend range	pitch bend range	pitch bend range	pitch bend range
41	lfo1 destination	lfo1 destination	lfo1 destination	lfo1 destination	lfo1 destination	lfo1 destination	lfo1 destination	lfo1 destination
42	lfo1 type	lfo1 type	lfo1 type	lfo1 type	lfo1 type	lfo1 type	lfo1 type	lfo1 type
43	lfo1 speed	lfo1 speed	lfo1 speed	lfo1 speed	lfo1 speed	lfo1 speed	lfo1 speed	lfo1 speed
44	lfo1 depth	lfo1 depth	lfo1 depth	lfo1 depth	lfo1 depth	lfo1 depth	lfo1 depth	lfo1 depth
45	osc1 fm modulation	osc1 fm modulation	osc1 fm modulation	osc1 fm modulation	osc1 fm modulation	osc1 FM	osc1 FM	osc1 FM
46	lfo2 destination	lfo2 destination	lfo2 destination	lfo2 destination	lfo2 destination	lfo2 destination	lfo2 destination	lfo2 destination
47	lfo2 type	lfo2 type	lfo2 type	lfo2 type	lfo2 type	lfo2 type	lfo2 type	lfo2 type
48	lfo2 speed	lfo2 speed	lfo2 speed	lfo2 speed	lfo2 speed	lfo2 speed	lfo2 speed	lfo2 speed
49	lfo2 depth	lfo2 depth	lfo2 depth	lfo2 depth	lfo2 depth	lfo2 depth	lfo2 depth	lfo2 depth
50	wheel lfo1 depth sens.	wheel lfo1 depth sens.	wheel lfo1 depth sens.	wheel lfo1 depth sens.	wheel lfo1 depth sens.	midi ctrl sens1	midi ctrl sens1	midi ctrl sens1
51	wheel lfo1 speed sens.	wheel lfo1 speed sens.	wheel lfo1 speed sens.	wheel lfo1 speed sens.	wheel lfo1 speed sens.	midi ctrl sens2.	midi ctrl sens2	midi ctrl sens2
52	chorus delay time	chorus delay time	chorus delay time	chorus delay time	chorus delay time	chorus delay time	chorus delay time	chorus delay time
53	chorus depth	chorus depth	chorus depth	chorus depth	chorus depth	chorus depth	chorus depth	chorus depth
54	chorus rate	chorus rate	chorus rate	chorus rate	chorus rate	chorus rate	chorus rate	chorus rate
55	chorus feedback	chorus feedback	chorus feedback	chorus feedback	chorus feedback	chorus feedback	chorus feedback	chorus feedback
56	chorus level	chorus level	chorus level	chorus level	chorus level	chorus level	chorus level	chorus level
57	lfo1 on/off	lfo1 on/off	lfo1 on/off	lfo1 on/off	lfo1 on/off	lfo1 on/off	lfo1 on/off	lfo1 on/off
58	lfo2 on/off	lfo2 on/off	lfo2 on/off	lfo2 on/off	lfo2 on/off	lfo2 on/off	lfo2 on/off	lfo2 on/off
59	arpeggiator on/off	arpeggiator on/off	arpeggiator on/off	arpeggiator on/off	arpeggiator on/off	arpeggiator on/off	arpeggiator on/off	arpeggiator on/off
60	equalizer tone	equalizer tone	equalizer tone	equalizer tone	equalizer tone	equalizer tone	equalizer tone	equalizer tone
61	equalizer freq.	equalizer freq.	equalizer freq.	equalizer freq.	equalizer freq.	equalizer freq.	equalizer freq	equalizer freq
62	equalizer level	equalizer level	equalizer level	equalizer level	equalizer level	equalizer level	equalizer level	equalizer level
63	equalizer Q	equalizer Q	equalizer Q	equalizer Q	equalizer Q	equalizer Q	equalizer Q	equalizer Q
64	chorus type	chorus type	chorus type	chorus type	chorus type	chorus type	chorus type	chorus type
65	delay on/off	delay on/off	delay on/off	delay on/off	delay on/off	delay on/off	delay on/off	delay on/off
66	chorus on/off	chorus on/off	chorus on/off	chorus on/off	chorus on/off	chorus on/off	chorus on/off	chorus on/off
67	0	lfo1 tempo sync	lfo1 tempo sync	lfo1 tempo sync	lfo1 tempo sync	lfo1 tempo sync	lfo1 tempo sync	lfo1 tempo sync
68	0	lfo1 key sync	lfo1 key sync	lfo1 key sync	lfo1 key sync	lfo1 key sync	lfo1 key sync	lfo1 key sync
69	0	lfo2 tempo sync	lfo2 tempo sync	lfo2 tempo sync	lfo2 tempo sync	lfo2 tempo sync	lfo2 tempo sync	lfo2 tempo sync
70	0	lfo2 key sync	lfo2 key sync	lfo2 key sync	lfo2 key sync	lfo2 key sync	lfo2 key sync	lfo2 key sync
71	0	osc mod env dest.	osc mod dest.	osc mod dest.	osc mod dest.	osc mod dest.	osc mod dest	osc mod dest
72	64	osc1,2 tune	osc1,2 tune	osc1,2 tune	osc1,2 tune	osc1,2 fine tune	osc1,2 fine tune	osc1,2 fine tune

73	0	0	unison mode	unison mode	unison mode	unison mode	unison mode	unison mode
74	0	0	portament auto mode	portament auto mode	portament auto mode	portament auto mode	portament auto mode	portament auto mode
75	48/70	48/70	48/70	unison detune	unison detune	unison detune	unison detune	unison detune
76	0	0	0	osc1 super saw detune	osc1 super saw detune	osc1 detune	osc1 detune	osc1 detune
77	0	0	0	effect on/off	effect on/off	effect on/off	effect on/off	effect on/off
78	0	0	0	effect type	effect type	effect type	effect type	effect type
79	64	64	64	effect control1	effect control1	effect control1	effect control1	effect control1
80	64	64	64	effect control2	effect control2	effect control2	effect control2	effect control2
81	64	64	64	effect level/mix	effect level/mix	effect level/mix	effect level/mix	effect level/mix
82	0	0	0	delay type	delay type	delay type	delay type	delay type
83	66	66	66	delay time balance	delay time balance	delay time spread	delay time spread	delay time spread
84	64	64	64	64	unison pan spread	unison pan spread	unison pan spread	unison pan spread
85	24	24	24	24	unison pitch	unison pitch	unison pitch	unison pitch
86	45057	45057	45057	45057	45057	midi ctrl src1.	midi ctrl src1	midi ctrl src1
87	44	44	44	44	44	midi ctrl assign1	midi ctrl assign1	midi ctrl assign1
88	45057	45057	45057	45057	45057	midi ctrl src2	midi ctrl src2	midi ctrl src2
89	43	43	43	43	43	midi ctrl assign2	midi ctrl assign2	midi ctrl assign2
90	64	64	64	pan LR	pan LR	pan	pan	pan
91	0	0	0	0	0	osc phase shift	osc phase shift	osc phase shift
92	0	0	0	0	0	unison phase shift	unison phase shift	unison phase shift
93	2/4	2/4	2/4	2/4	2/4	unison voice num	unison voice num	unison voice num
94	16	16	16	16	16	polyphonic	polyphonic	polyphonic
95	0	0	0	0	0	0	osc1 sub gain	osc1 sub gain
96	1	1	1	1	1	1	osc1 sub shape	osc1 sub shape
97	1	1	1	1	1	1	osc1 sub octave	osc1 sub octave
98	64	64	64	64	64	64	64	delay tone

Parameters ID Order in Voice File

v1.04	v1.05	v1.06	v1.07	v1.08	v1.09	v1.10	v1.11	v1.12
0	0	0	0	0	0	0	0	0
45	45	45	45	45	45	45	45	45
1	1	1	76	76	76	76	76	76
2	2	2	1	1	1	1	1	1
3	3	3	2	2	2	2	2	2
4	4	4	3	3	3	3	3	3
5	5	5	4	4	4	4	4	4
6	6	6	5	5	5	5	5	5
7	7	7	6	6	6	6	6	6
8	8	8	7	7	7	7	7	7
9	9	9	8	8	8	8	8	8
10	10	10	9	9	9	9	9	9
11	11	11	10	10	10	10	10	10
12	12	12	11	11	11	11	11	11
13	13	13	12	12	12	12	12	12
14	71	71	13	13	13	13	13	13
15	72	72	71	71	71	71	71	71
16	14	14	72	72	72	72	72	72
17	15	15	14	14	91	91	91	91
18	16	16	15	15	14	14	95	95
19	17	17	16	16	15	15	96	96
20	18	18	17	17	16	16	97	97
21	19	19	18	18	17	17	14	14
22	20	20	19	19	18	18	15	15
23	21	21	20	20	19	19	16	16
24	22	22	21	21	20	20	17	17
25	23	23	22	22	21	21	18	18
26	24	24	23	23	22	22	19	19
27	25	25	24	24	23	23	20	20
28	26	26	25	25	24	24	21	21
29	27	27	26	26	25	25	22	22
30	28	28	27	27	26	26	23	23
59	29	29	28	28	27	27	24	24
31	30	30	29	29	28	28	25	25
32	59	59	30	30	29	29	26	26
33	31	31	59	59	30	30	27	27
34	32	32	31	31	59	59	28	28
65	33	33	32	32	31	31	29	29
35	34	34	33	33	32	32	30	30
36	65	65	34	34	33	33	59	59
37	35	35	65	65	34	34	31	31
66	36	36	82	82	65	65	32	32
64	37	37	35	35	82	82	33	33
52	66	66	83	83	35	35	34	34
53	64	64	36	36	83	83	65	65
54	52	52	37	37	36	36	82	82
55	53	53	66	66	37	37	35	35
56	54	54	64	64	66	66	83	83
60	55	55	52	52	64	64	36	36
61	56	56	53	53	52	52	37	98
62	60	60	54	54	53	53	66	37
63	61	61	55	55	54	54	64	66

38	62	62	56	56	55	55	52	64
39	63	63	60	60	56	56	53	52
40	38	38	61	61	60	60	54	53
50	39	39	62	62	61	61	55	54
51	40	74	63	63	62	62	56	55
57	50	40	90	90	63	63	60	56
41	51	73	77	77	90	90	61	60
42	57	50	78	78	77	77	62	61
43	41	51	79	79	78	78	63	62
44	42	57	80	80	79	79	90	63
58	43	41	81	81	80	80	77	90
46	44	42	38	38	81	81	78	77
47	67	43	39	39	38	38	79	78
48	68	44	74	74	94	94	80	79
49	58	67	40	40	39	39	81	80
	46	68	73	73	74	74	38	81
	47	58	75	75	73	73	94	38
	48	46	50	84	93	93	39	94
	49	47	51	85	75	75	74	39
	69	48	57	50	84	84	73	74
	70	49	41	51	85	85	93	73
		69	42	57	92	92	75	93
		70	43	41	40	40	84	75
			44	42	86	86	85	84
			67	43	50	50	92	85
			68	44	87	87	40	92
			58	67	88	88	86	40
			46	68	51	51	50	86
			47	58	89	89	87	50
			48	46	57	57	88	87
			49	47	41	41	51	88
			69	48	42	42	89	51
			70	49	43	43	57	89
				69	44	44	41	57
				70	67	67	42	41
					68	68	43	42
					58	58	44	43
					46	46	67	44
					47	47	68	67
					48	48	58	68
					49	49	46	58
					69	69	47	46
					70	70	48	47
							49	48
							69	49
							70	69
								70

Voice Parameters / Panel Reference

The descriptions below are presented in a sequence that follows the Synth1 voice file (sy1) parameters order. This includes the chapters from "Name, Color and Version" to "LFO".

Name, Color and Version

name

[default value initial sound]

This is the first voice parameter, its name.

color

[>=v1.05] [default value color=default]


color=red

color=blue

color=green

color=yellow

color=magenta

color=cyan

color=default

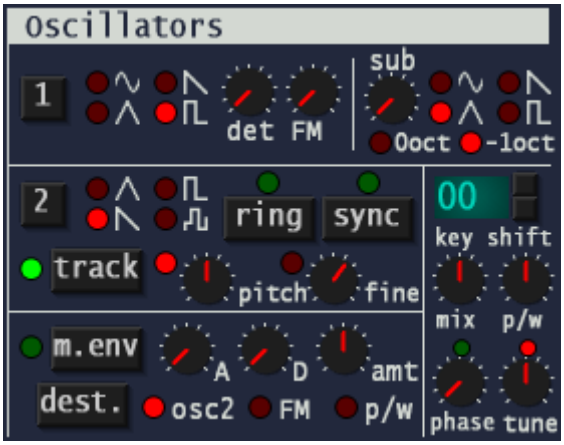
Since the version 1.05, Synth1 provides the option to choose the color for each voice in preset browser.

version

[>=v1.05] [default value ver=112]

This parameter is saved automatically with the voice.

Oscillators



The Oscillator is the only thing in a synthesizer that actually *produces* any sound (all the other modules only *shape* the sound). Oscillators are the basis of sound generation in subtractive synthesis. Synth1 includes two primary oscillators and one sub-oscillator, each with various modes and waveform types.

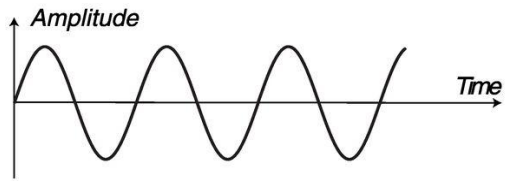
0 - osc1 shape

0 - 3 [default value 2]

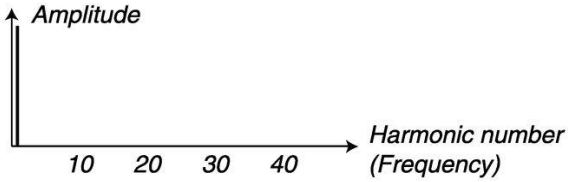
Select one of four basic waveforms for Oscillator 1. A red LED indicates the currently enabled waveform.

0 - sine

The Sine wave is the simplest waveform there is. It has no additional harmonics. It is suitable mostly for very soft sounds or for use with the FM, but can also be useful for creating organs, leads, and percussive/harp/piano types of sound.



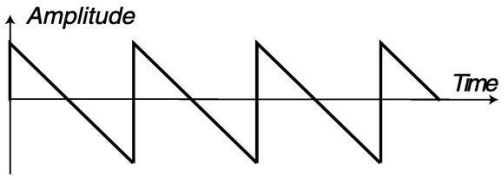
The pure sine wave with no additional harmonics



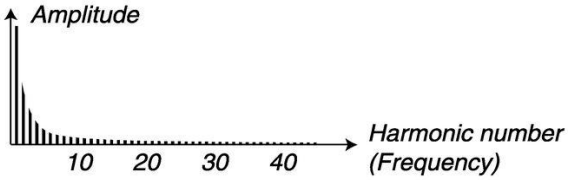
The frequency "spectrum" of a sine wave: only the fundamental frequency is present

1 - saw

The Sawtooth wave contains all harmonics and is the richest of the available waveforms. It is suitable for all sorts of sounds, from smooth strings and pads to rough basses and edgy leads. As you can see, the high harmonics have fairly high amplitude, giving brightness to this waveform.



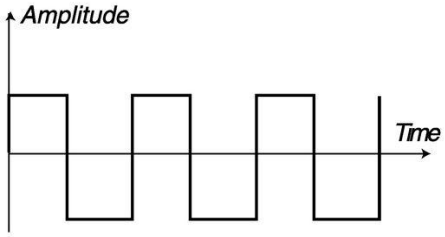
The sawtooth signal shape



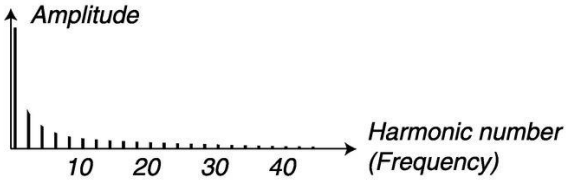
The sawtooth signal frequency spectrum

2 - pulse

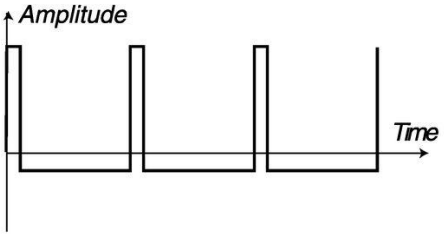
The Pulse wave contains only odd harmonics at 50% pulse width (Square wave). This waveform is special in that its harmonic content can be varied continuously, by adjusting the Pulse Width with the p/w knob. The Pulse wave can also be modulated by LFOs and the Modulation Envelope. This waveform is suitable for many types of sounds (vintage synths, strings, pads, smooth basses, leads, synced waves) and has a more "hollow" character than the Sawtooth wave.



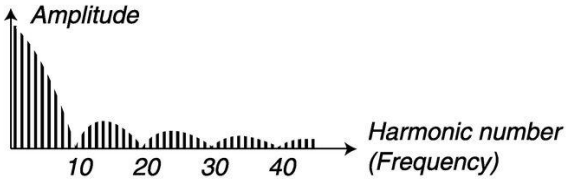
The pure square wave: a pulse wave with 50% pulse width



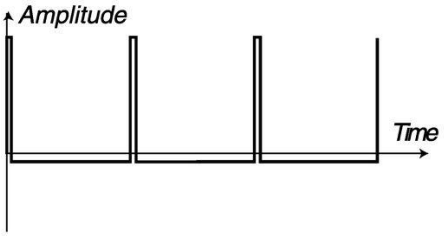
The frequency spectrum of a pure square wave. The signal contains only odd harmonics



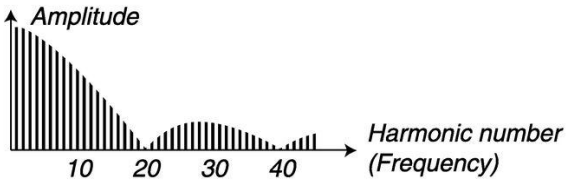
The pulse wave at 10% pulse width



The frequency spectrum at 10% pulse width. Now, also even harmonics are gradually introduced making the sound "sharper" but also "thinner"



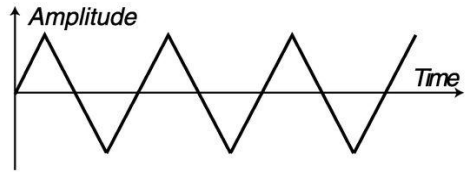
The pulse wave at 5% pulse width



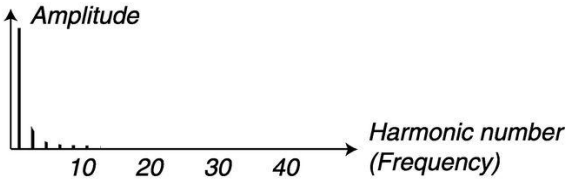
The narrower the pulse width, the more harmonics are present in the frequency spectrum

3 - triangle

The Triangle wave has a relatively weak, odd harmonics. This fact makes the tone pure, a bit like a flute, and gives the sound a slightly “hollow” character. Triangle wave is great for use with the FM, and also for creating basses, flutes, and smooth sounds.



The triangle wave

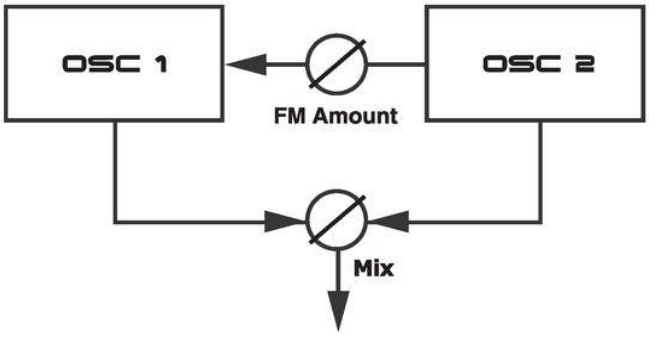


The frequency spectrum of the triangle wave contains only odd harmonics at fairly low levels

45 - osc1 FM

0 - 127 [default value 0]

This is classic “deep linear FM”. The FM function is a bit of depart from the “analog” concept of the Synth1, but as you will find, it is a very useful addition. When using FM, Oscillator 2 frequency modulates Oscillator 1. In FM speak, Oscillator 1 is the Carrier and Oscillator 2 is the Modulator. This means that changing the pitch of Oscillator 2 basically does not affect the pitch of the sound, but the timbre. To check this, use the ocs2 pitch knob (watch for the octave LED indicator): the octave settings will always retain the perfect interval.
A significant difference between the DX7 setup, is Synth1’s ability to use the Modulator (osc2) also in the final sound by using the osc mix (ID 5). To make it a 'pure' FM, set the mix knob to 100 : 0.
Another thing which is not available on most FM synths is the Filter. Among the other things, you can use the Filter (or EQ) to trim down the typical digital side effects (noises) in the FM sound.
The FM knob controls the amount of FM from Oscillator 2 to Oscillator 1.



For classic FM sounds, use Sine wave on Oscillator 1 and Triangle wave on Oscillator 2.
As the pitch of the Oscillator 2 can go very low, it can be used even as an additional LFO.
Please note that the amount of FM can be modulated from the Modulation Envelope and LFOs, and also controlled manually from the e.g. Modulation Wheel.
The FM knob will be putted out of operation when the Ring Modulation is activated.

76 - osc1 detune

[>=v1.07] 0 - 127 [default value 0]

This setting is used to adjust the tuning of Oscillator 1. Among other things, it can be particularly useful for creating “super saw” type of sounds.

1 - osc2 shape

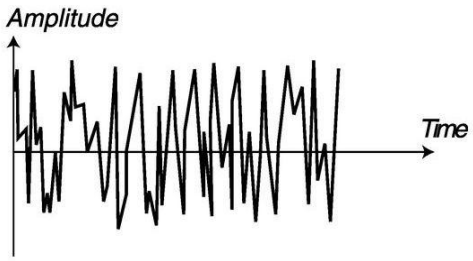
1 - 4 [default value 1]

 1 - saw
 2 - pulse
 3 - triangle

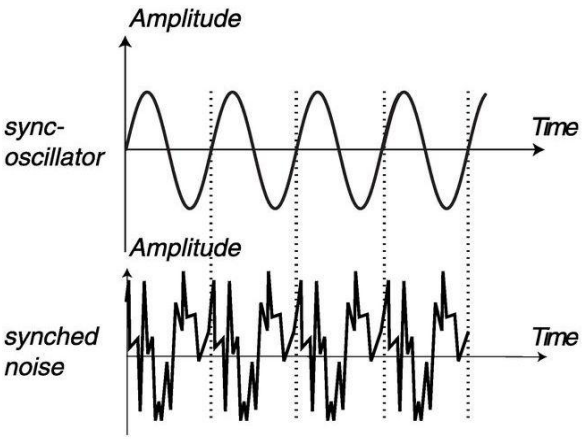
The first three waveform alternatives for Oscillator 2 are identical to the corresponding waveforms of Oscillator 1 (see above). Oscillator 2 also has another waveform, the Noise:

 4 - noise (s&h)

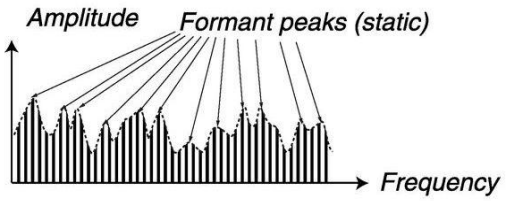
With Noise selected, Oscillator 2 produces noise (useful for vintage, ambient FX or percussion sounds) rather than a pitched waveform. *Note that the color of noise cannot be changed directly via pitch knob (or any other like track, fine or key shift).* For this you can use the other parameters, such as, for example, the filter settings (as for all other sound from the Synth1). In this case, the further you turn the frq knob clockwise, the brighter the noise will be. All the way to the right, its frequency characteristic is very close to that of white noise (where all frequencies are represented with equal energy).
If Sync is activated (see below), selecting Noise will produce very special signals with non-transposed formant spectrum with strong “body resonance” characteristics. The reason ‘synced noise’ works at all is that it’s the same series of frequencies that are synced (repeated over and over). In a traditional analog system this function wouldn’t work since the noise is totally random. *Please note that the noise is not affected by LFOs, Modulation Envelope or e.g. Modulation Wheel, even when these have Oscillator 2 selected as modulation destination.*



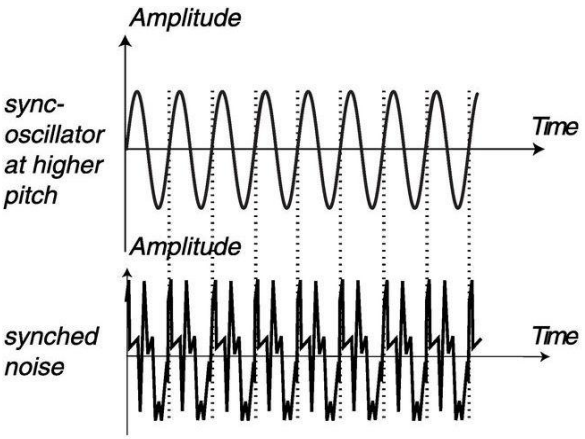
Non-synched white noise contains all frequencies at equal levels.



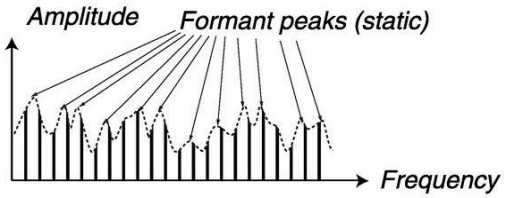
The synched noise repeats itself each time the sync oscillator starts a new period



Synched noise produces a special type of digital waveforms with static "body resonance" characteristics



Here, the noise signal is the same as before, only now the sync oscillator has higher pitch



Synched noise at higher pitch. As you can see, the formant peaks are the same even tough the pitch is higher

2 - osc2 pitch

0 - 127 (-60s - +60s) [default value 64]

This setting is used to adjust the tuning of Oscillator 2, relative to Oscillator 1. The setting is in semitone steps. The range is from 5 octaves below Oscillator 1, to 5 octaves above Oscillator 1. However, the full range may not be available, depending on the Key Shift setting (parameter 9). To aid you in setting the value, the LED above the knob lights up when the tuning is in perfect octaves. *Please note that you can modulate the pitch of Oscillator 2 in various ways: from the LFOs, the Mod Env and from the Mod Wheel, for example. This can be used to create harmonically varying timbres with a very characteristic sound. Sync and Ring can be activated at the same time.*

[0=1|18=19|36=37|54=55|72=73|90=91|108=109]
[octave indicator 0/13/26/39/51/64/77/89/102/115/127]

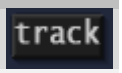
3 - osc2 fine tune

0 - 127 (-62cent - +61cent) [default value 81]

This parameter is for tuning the Oscillator 2, just as the pitch knob is. The difference is that this parameter operates *in cents*. The slight difference in pitch, which can be achieved with this option, will make the sound “richer”. The LED above the knob will flash briefly when you set fine to zero.

[0=62/63/64/65/66]

4 - osc2 kbd track



0 - 1 [default value 1]

0 - Off

When this parameter is turned *Off*, Oscillator 2 will always play the same pitch. There are mainly three situations when this is useful:
• When Sync is activated (in this mode, the basic pitch of the sound is determined by Oscillator 1 anyway).
• When FM or Ring Modulation are used, to get inharmonic sounds with very varying timbre across the keyboard.
• For special effects and percussion sounds, supposed to sound the same all across the keyboard.

1 - On

When this parameter is *activated*, Oscillator 2 will have different pitches when you play different keys, just as Oscillator 1 always does.

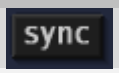
5 - osc mix

0 - 127 (100:0 - 0:100) [default value 64]

Set the output balance between Oscillator 1 and 2 with the mix knob:
• Left: 100% Oscillator 1 signal
• Middle: 50% Oscillator 1 signal, 50% Oscillator 2 signal
• Right: 100% Oscillator 2 signal

[50:50 (0)=63/64]

6 - osc2 sync



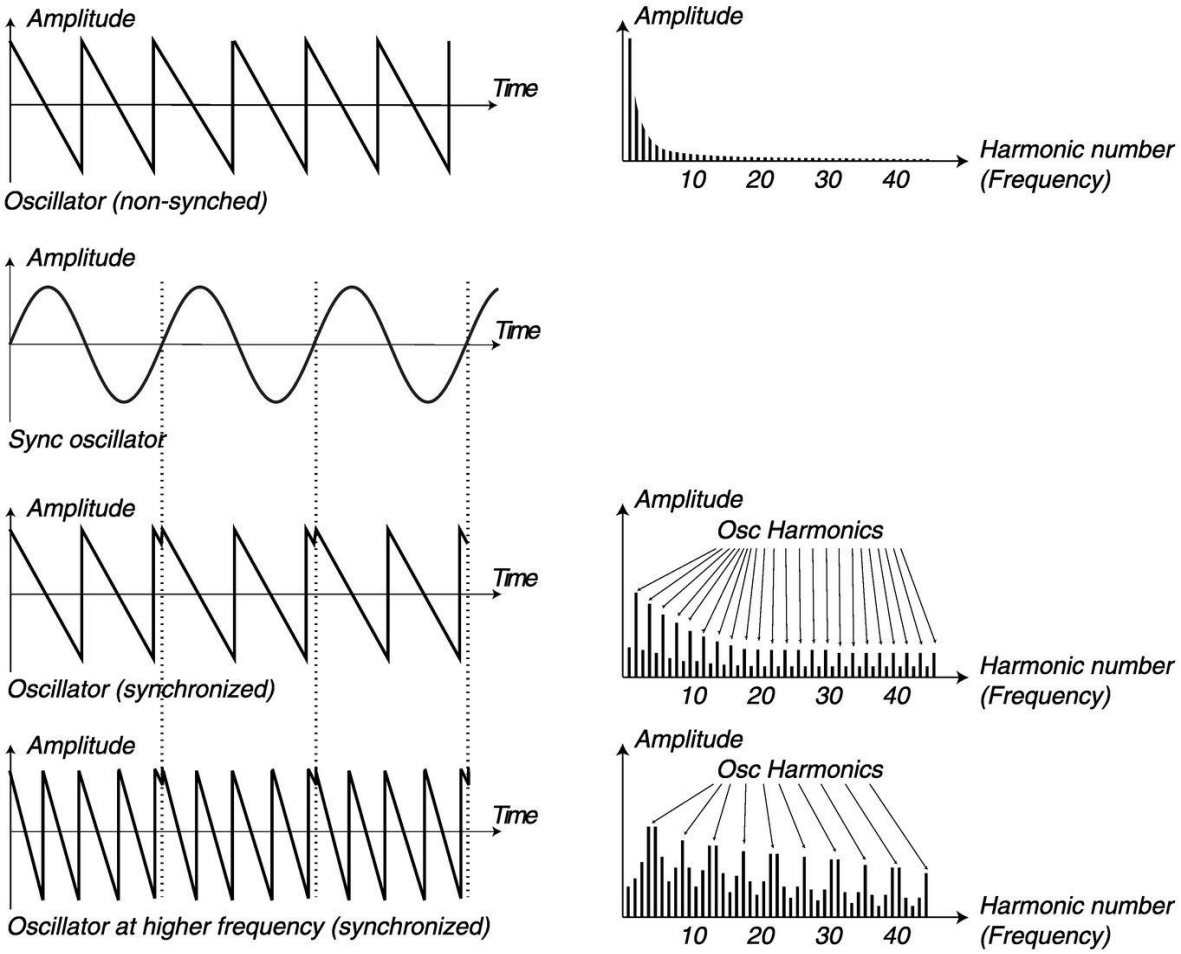
0 - 1 [default value 0]

0 - Off

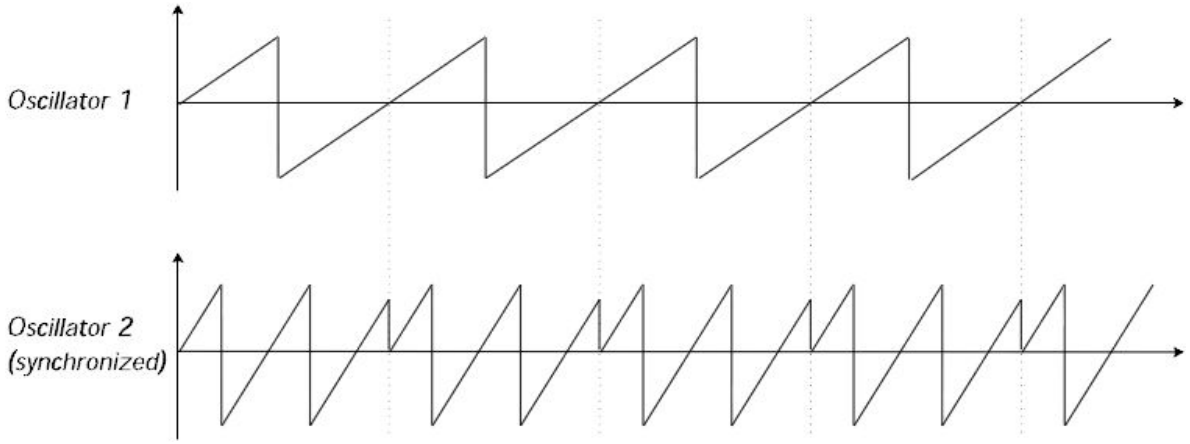
1 - On

In this mode, Oscillator 2 is “synced” to Oscillator 1. This means that each time a period in Oscillator 1’s waveform starts, Oscillator 2 is forced to start over with a new period, as well.

Example: a sawtooth wave synched by a sync oscillator. The sawtooth wave is restarted every time the sync oscillator begins a new cycle. The resulting signal gets deep resonance in its harmonics.

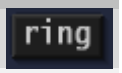


The effect of this is that if Oscillator 2 has a higher frequency than Oscillator 1, it will get a complex waveform that depends both on its own pitch and on that of the other oscillator.



Obviously, the Sync function can give some very interesting, even hursh and fuzzy effects on the Oscillator 2 sound. The easiest way to try this out is probably to activate Sync, and adjust the pitch knob for Oscillator 2 while holding down a note. In this mode the osc2 fine tune control will not determine the pitch shift, but rather the harmonic content of the wave. When trying out Sync, make sure you listen to Oscillator 2, since this is the one affected by the changes!

7 - osc2 ring modulation



0 - 1 [default value 0]

0 - Off

1 - On

This is a function (also known as Amplitude Modulation), where the waveforms of the two oscillators are multiplied. The result is an inharmonic sound, which is great for metallic or bell-like timbres, uplift sounds and cool house/techno effects. When trying out Ring Modulation, make sure you listen to Oscillator 2, since it is mainly this that is affected by the timbre changes! Turning the Oscillator 2 pitch knob will change the timbre, much as with FM. However, with Ring Modulation, this will *also* affect the pitch of the sound! This means that activating Ring Modulation may result in a sound with a completely different pitch than the “normal” sounds. To check this, use the ocs2 pitch knob (watch for the octave LED indicator): the octave settings will *not* retain the perfect interval, so if you want the pitch to be perfect you must adjust it manually. *When Ring Modulation is activated, you cannot use the FM knob.*

8 - osc pulse width

0 - 127 [default value 64]

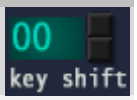
This function only has any effect if Pulse wave is selected for any of the Oscillators (or both). It adjusts the Pulse Width of the Pulse waves. There's only one Pulse Width setting, and it is common for both Oscillators.

• When you turn the knob all the way to the right you get a perfect Square wave which has a characteristic "hollow" quality.

• When you turn the knob to the left, the sound gets progressively thinner.

Please note that the Pulse Width can be modulated by LFOs , Modulation Envelope, and the Modulation Wheel, for example. This creates a sweeping "chorus-like" effect suitable for pads and string sounds.

9 - osc key shift

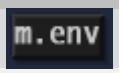


-24 - +24 (-24s - +24s) [default value 0]

This setting is used to transpose the pitch of Oscillator 1 and 2, over a range of 4 octaves. Of course, this affects the pitch of the whole instrument.

Note: Low/high octave settings in combination with extreme tune settings for Oscillator 2 may produce pitches outside the hearing range.

10 - osc mod env on/off



0 - 1 [default value 0]

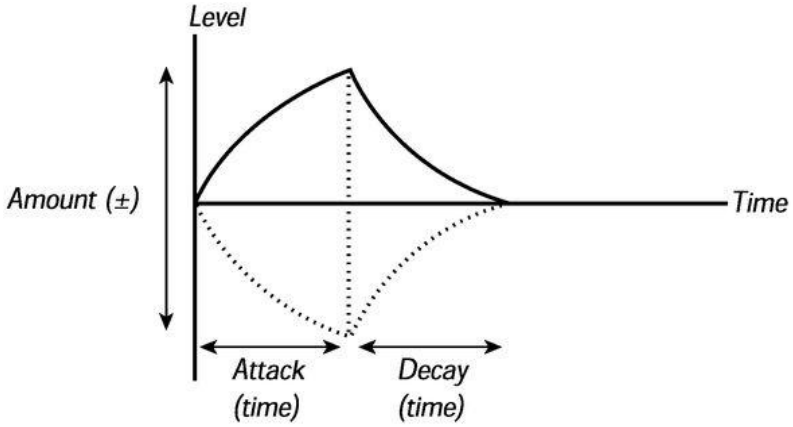
0 - Off

Turn *Off* the effect of the Modulation Envelope. While this is the same as setting Modulation Envelope Amount to its central position, this method is simply quicker.

1 - On

This is a simple type of envelope only comprising Attack, Decay and Amount controls. Therefore, it is called an AD-envelope. In effect, the AD-envelope behaves like an ADSR-envelope with Sustain set to zero. This type of envelope, often with amount and inversion controls, is suitable when you want to affect the start of the sound only. The difference between the way this envelope works

compared to the other is that it will start over from “zero” each time you press a new key, regardless of which value it had when you released the key.



11 - osc mod env amount

0 - 127 (-64 - +63) [default value 64]

This is used to set to what degree the Modulation Envelope should affect the destination. This knob is bi-polar, that is, a zero amount is in the middle (twelve o’clock). Turning it left introduces a negative envelope and turning it right gives you a positive envelope.

[0=64]

12 - osc mod env attack

0 - 127 [default value 0]

This is used to set the time it takes for the envelope to reach its “full level” after you have pressed a key.

13 - osc mod env decay

0 - 127 [default value 0]

When the attack phase is over, the envelope drops back to zero level. The decay knob is used to set how long this should take.

71 - osc mod dest

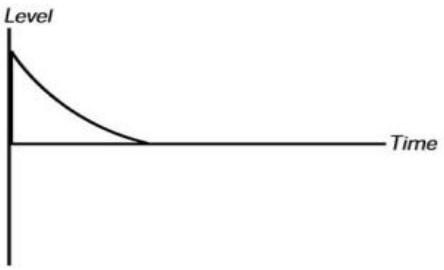
dest. osc2 FM p/w

[>=v1.05] 0 - 2 [default value 0]

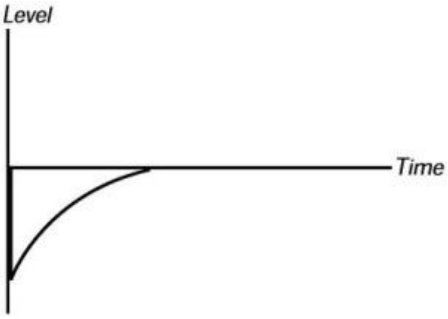
osc2 0 - osc2

When this is selected, the Modulation Envelope changes the pitch of Oscillator 2. This can be used in a number of situations. For example:
• With Sync to create distinct sweeping sounds.
• With FM for effect type sweeps.
• To create “bleeps” in the beginning of a brass type of sounds. A few examples:

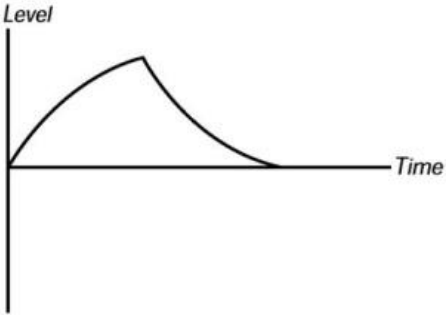
- If Attack is set to zero, and you have a positive Amount setting, Oscillator 2 pitch will decay down to normal pitch as set with the decay knob.



- If Amount instead is set to a negative value, the pitch will rise up to “normal”.



- If Attack and Decay are both used and you have a positive Amount setting, the sound will start at normal pitch when you press the key, rise and then “fall back”.



FM 1 - FM

When this is selected the Modulation Envelope is routed to the amount of FM modulation. Varying the amount of FM changes the harmonic contents of the sound, so this can be used to have the timbre change pretty much like when the Filter Envelope is used to change the Filter Frequency.
Please note that this parameter operates as a supplement to the FM amount setting in the Oscillator section.

p/w 2 - p/w

When this is selected, the Modulation Envelope changes the Pulse Width of the waveform from the Oscillators (provided any of them have Pulse wave selected).

72 - osc1,2 fine tune

[>=v1.05] 0 - 127 (-62cent - +61cent) [default value 64]

Adjust the pitch of the Oscillators in cents. Of course, as well as the Key Shift parameter, this setting will also affect the pitch of the whole instrument. The advantage of voice Fine Tuning becomes especially obvious when you want to create a layered voice with multiple instances of Synth1.

[0=62/63/64/65/66]

91 - osc phase shift

[>=v1.09] 0 - 127 [default value 0]

This great option is used to adjust (shift) and fix the phase relations at the moment of triggering Oscillators 1 and 2. This parameter can affect the consistency, color and the fullness of sound.
If you move the knob all the way to the left (zero value), the phase is *not* fixed (many real analog synths have the same “drift” or difference of the phase).
To hear the changes in effect, after each change in value you should press the key again.

95 - osc1 sub gain

[>=v1.11] 0 - 127 [default value 0]

This is used to adjust the gain of the Sub-oscillator. When the level of the Sub-oscillator is raised, the main volume is automatically adjusted to stay unchanged, with the volume of Oscillator 1 proportionally lowered.
Notes:
• *FM modulation also affects the Sub-oscillator, as well as the Oscillator 1.*
• *In Unison mode, the Sub-oscillator is also multiplied, like the Oscillator 1.*
• *The Sub-oscillator does not influence the AM modulation.*

96 - osc1 sub shape

[>=v1.11] 0 - 3 [default value 1]

 0 - sine
 1 - triangle
 2 - saw

The first three waveform alternatives for Sub-oscillator are identical to the corresponding waveforms of Oscillator 1 (see above).

 3 – pulse

The Pulse wave of the Sub-oscillator is always a Square wave, regardless of a p/w parameter.

97 - osc1 sub octave

[>=v1.11] 0 - 1 [default value 1]

 0 - 0oct

The Sub-oscillator retains the same pitch as the Oscillator 1.

 1 - -1oct

The pitch of the Sub-oscillator is one octave under the pitch of the Oscillator 1.

Filter

The Filter is the most important section for transforming the frequency response and shaping the overall timbre of the sound. It is used to remove or emphasize frequencies in a spectrum. A filter is a bit like an amplifier that is applied differently to different parts of the spectrum. For example, a filter might make low frequencies louder, while at the same time making high frequencies weaker.

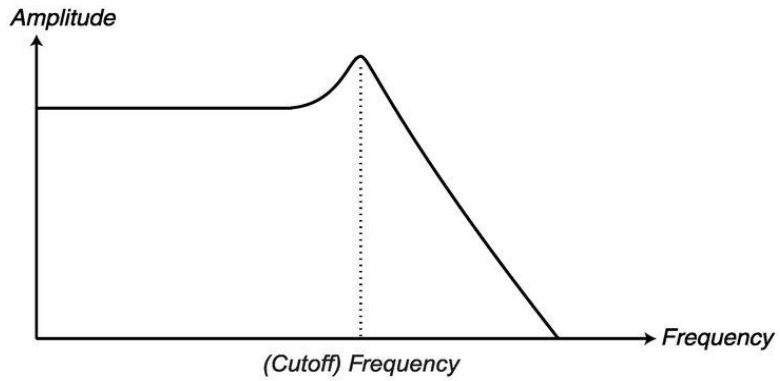
14 - filter type

0 - 3 [default value 1]

Note: Clavia Nord Lead 2(X) has two more filter types: Notch+LP (regular) and Notch+HP ("super secret"). To emulate this filter types on Synth1 you can try to use LP12 or HP12 filter types in combination with Equalizer: Level = 33, Q = 127, Freq = level of the Filter Frequency.

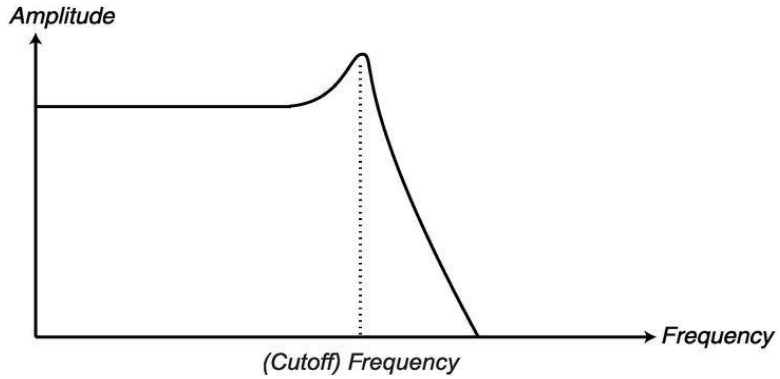
LP12 0 - LP12

LP stands for Low-pass. A Low-pass filter lets low frequencies pass and cuts out higher frequencies. Exactly which frequencies get cut out is determined by the Filter Frequency setting (and various other controls, as described below).
In the 12dB Low-pass mode, the filter has a gentle roll-off curve (12dB=2poles). This mode leaves more harmonics than the 24dB variation discussed below. This type of filter has been used in various Oberheim synthesizers and others. It is the most common synthesizer filter, since it can be used to "round off" the sharp sound of Sawtooth waves and Pulse waves.



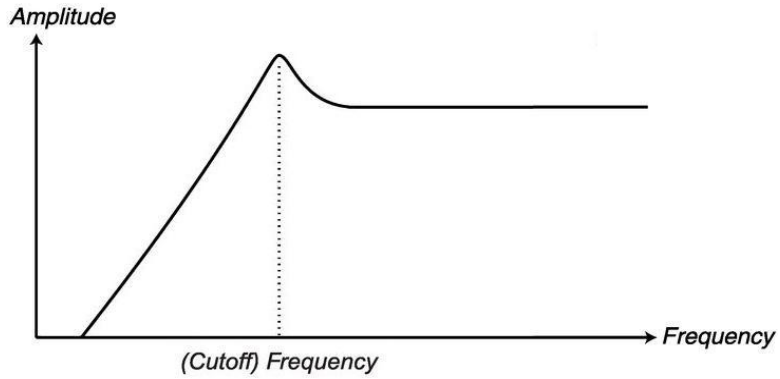
LP24 1 - LP24

This is the classic synth filter used in the Minimoog and Prophet-5, among others. It cuts out high frequencies rather drastically (24db=4 poles).



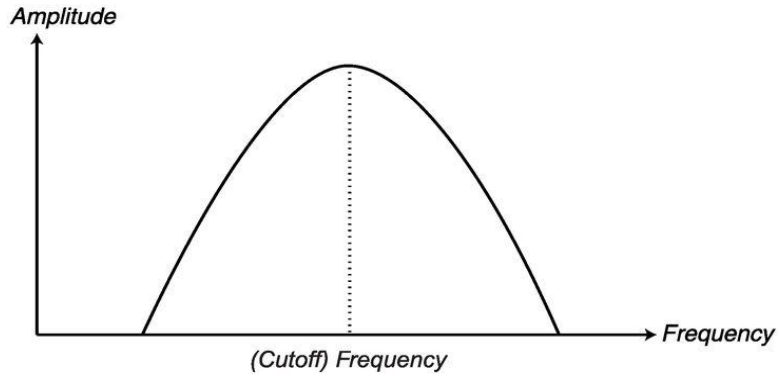
HP12 2 - HP12

HP stands for High-pass. This filter is the opposite of the Low-pass filter, that is, it lets the high frequencies pass and cuts out low frequencies. The filter has a gentle curve.



BP12 3 - BP12

BP stands for Band-pass. In this mode the filter let's frequencies in the "mid-range" band pass through, while lower and higher frequencies are cut out. Each "slope" in this filter has a 12dB (2-pole) roll-off.



15 - filter attack

0 - 127 [default value 0]

16 - filter decay

0 - 127 [default value 64]

17 - filter sustain

0 - 127 [default value 32]

18 - filter release

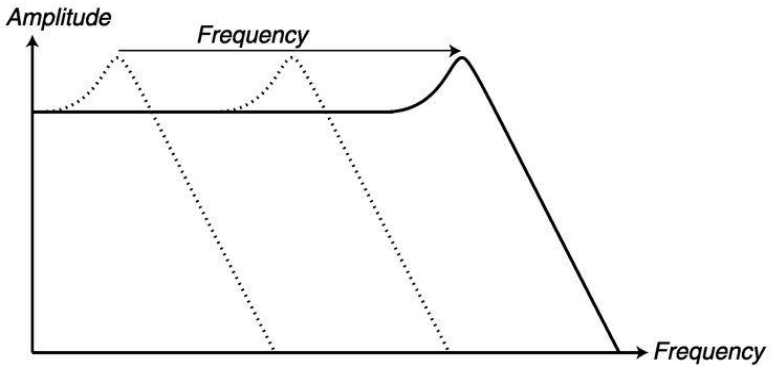
0 - 127 [default value 64]

These are Attack, Decay, Sustain and Release parameters for the Filter Envelope. They are identical in functionality to the settings of the Amplifier Envelope, described below.

19 - *filter freq

0 - 127 [default value 81]

This is the overall control for which part of the frequency spectrum the filter should operate in. If you for example select a Low-pass filter and turn the frq knob clock-wise, more and more high-frequency material will be allowed to pass through the filter.



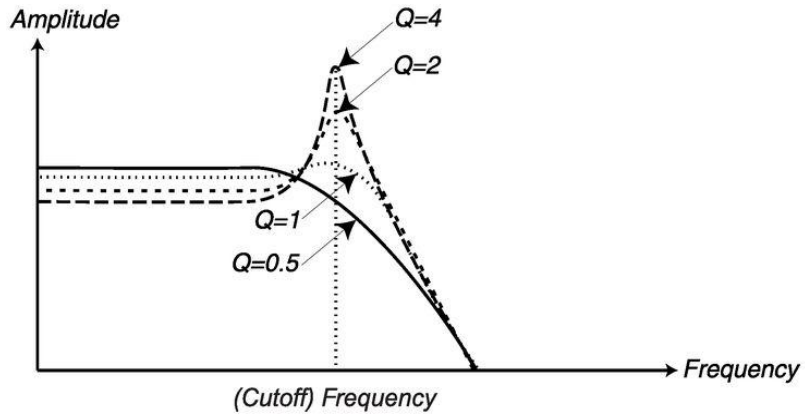
The more you "open" a low-pass filter, the more high-frequent the output signal

Changing the cutoff frequency is often referred to as “sweeping the filter”. This is probably one of the most important ways of shaping the timbre of a synth sound. Further, by using an envelope, you can for example have a high cutoff at the beginning of a sound which is then gradually lowered (the filter “closes” as the sound decays). This would emulate the way most plucked string sound (piano, guitar etc) behave; the amplitude of the harmonics decreases as the sound decays. *Please note that if the Filter Envelope Amount setting is raised from its zero position, turning the frq knob might not change the sound as expected. For more info, see parameter ID 21 below.*

20 - *filter resonance

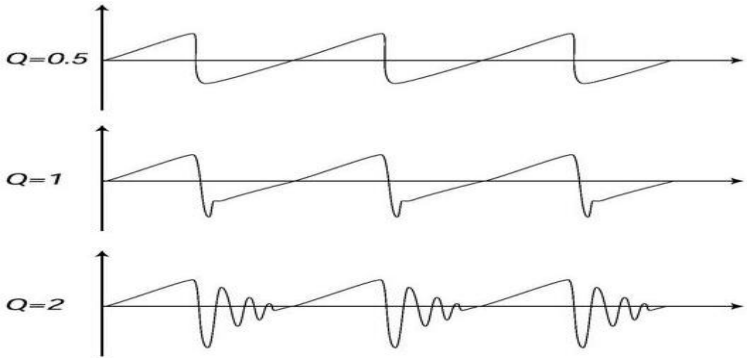
0 - 127 [default value 14]

This control is used to emphasize the amplitude of the frequencies at, and close to, the cutoff frequency. If you are using a Low-pass filter, increasing resonance will emphasize frequencies around the set Filter Frequency and de-emphasize the rest of the frequency spectrum, making the sound thinner. Further raising the res knob will make the sound resonant to a point where the filter will start to self-oscillate (that is produce sound of its own, just like an oscillator), adding a ringing quality to the sound. Exactly where in the frequency spectrum this “ringing” appears, depends on the Filter Frequency setting.

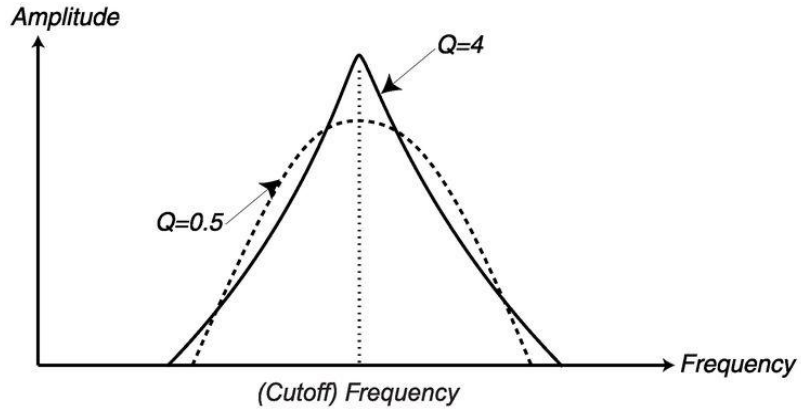


The figure shows a 24 dB lowpass filter with different resonance amounts (Q-values). Q=0.5 represents zero Resonance amount and Q=4 maximum amount.

High Filter Resonance values are also visible in the waveform. They appear as a “superimposed” waveform with a frequency equivalent to the filter’s cutoff frequency. The three examples above show the same wave with increased resonance.



If you add resonance to a sound and then vary the cutoff frequency (for example with an envelope) you will get a very typical synthesizer sound.
If you have the High-pass or LP+Notch filter selected (see the Filter Type note above), increasing the resonance will work pretty much as with the LP filter.
When you use the Band-pass filter, adjusting the Filter Resonance also adjusts the width of the pass-band. When you raise the resonance, the band where frequencies are let through, will become narrower.

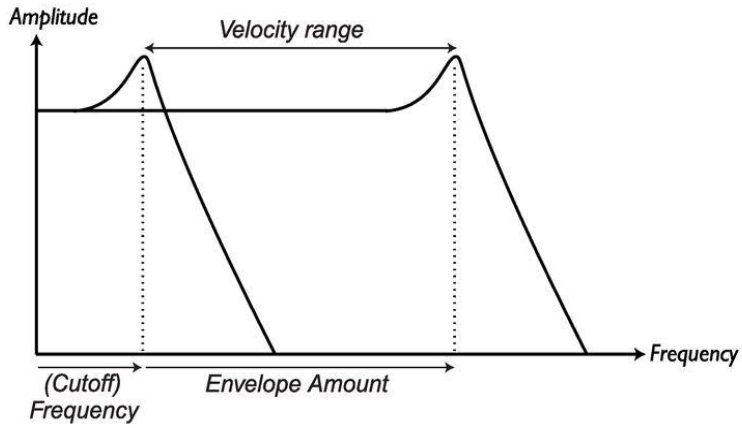


The figure shows a band-pass filter with different resonance amounts (Q-values).
Q=0.5 represents zero Resonance amount and Q=4 maximum amount.

21 - filter amount

0 - 127 (-63 - +64) [default value 128 (out-of-range, should be 127)]

This is used to set to what degree the Filter Envelope (see below) should affect the filter. The more you turn this knob to the right or left, the more drastic the effect.
This knob operates in addition to the Filter Frequency setting. This means that if you for example set the frq knob half-ways, the filter will be already half-open the moment you press a key. The positive amt setting then can be used to open the filter *further*.



Set the initial cutoff frequency with the FREQUENCY *knob. The Envelope Amount value is added to the initial cutoff value. If you select* VELOCITY, *the Envelope Amount value changes with Keyboard Velocity.*

Negative values of the Filter Envelope Amount will naturally lead to the closure of the filter.

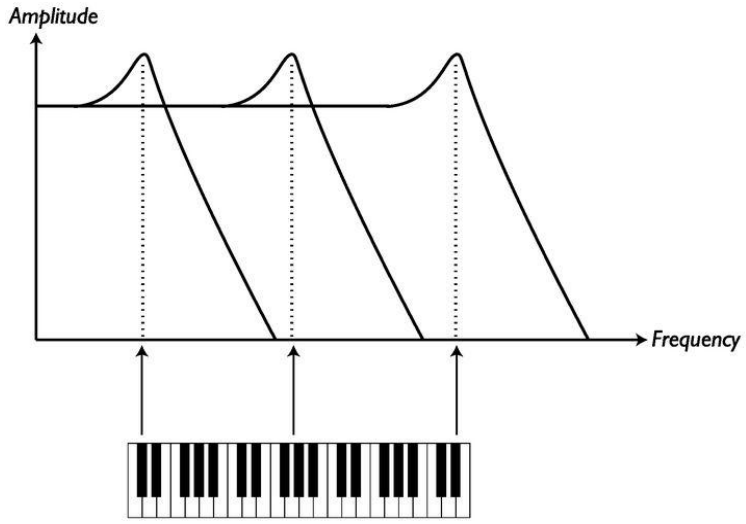
Let's take another example of the relation between Filter Frequency and Filter Envelope Amount: If the frq knob is already turned fully right, the positive amt setting has no effect at all, since the filter is already fully open the moment you press the key.

[0=63]

22 - filter kbd track

0 - 127 [default value 64]

With this parameter set to zero, the Filter Frequency setting is constant regardless of where on the keyboard you play.
When Filter Keyboard Track is activated, the frq setting will be higher for higher notes.
The reason for using the keyboard track is related to basic acoustics. If you raise the pitch of a waveform, the harmonics naturally raise in frequency. If the Filter Frequency is then constant, the sound will be perceived as getting muddier the higher up the keyboard you play. To avoid this effect and ensure a constant harmonic spectrum for all keys, use Filter Keyboard Track.



The figure shows how the Frequency value changes according to where on the keyboard you play when KBD TRACK *is activated.*

23 - filter saturation

0 - 127 [default value 0]

When this is activated, the sound is slightly distorted, which generates additional side harmonics and creates a rawer, more screaming sound. Using the Filter Saturation effect will make the voice louder, brighter, and sounding much like it is processed with a tube distortion effect.

24 - filter velocity switch

0 - 1 [default value 1]

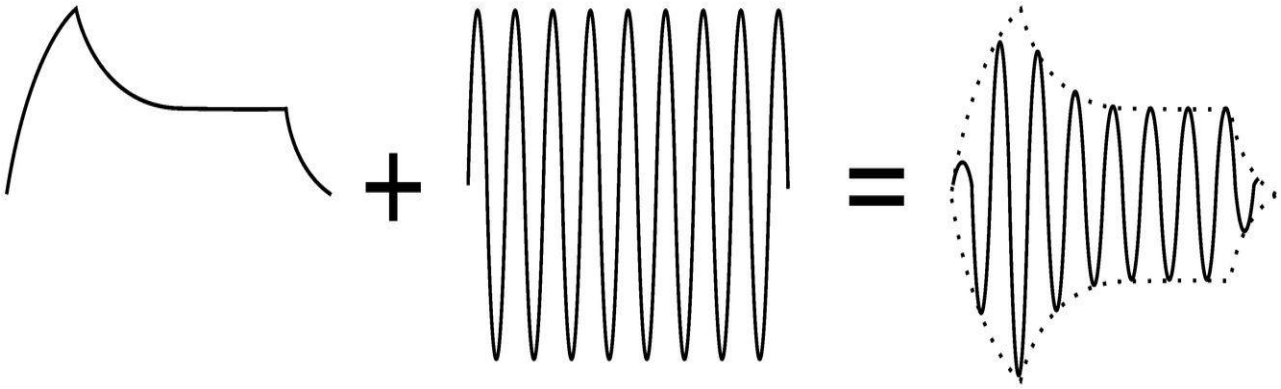
0 - Off

1 - On

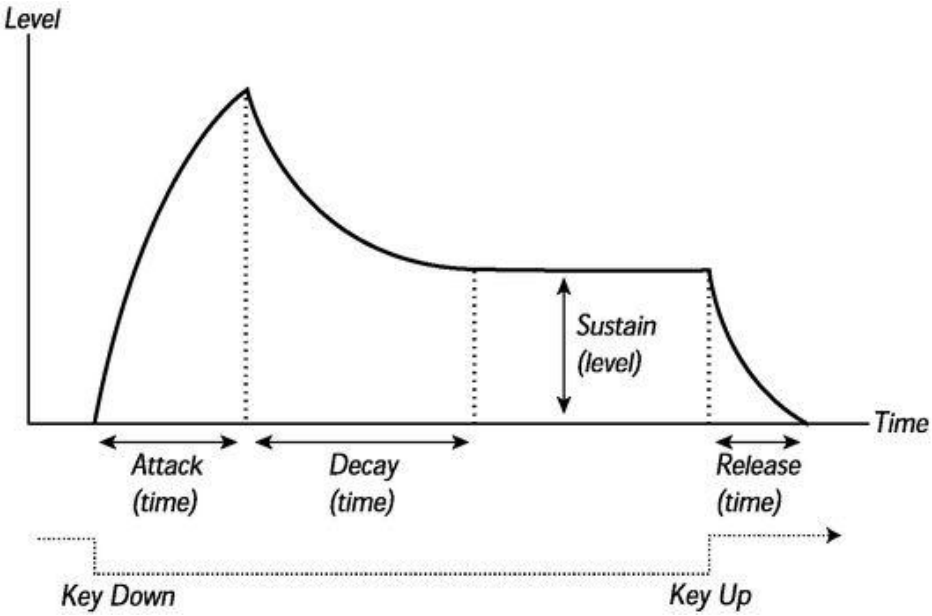
When this switch is activated, the Filter Envelope Amount varies with Velocity (how hard you play the keyboard). *For this switch to have any effect, the amt knob can't be set to zero.*

Amplifier

An Amplifier is most often used at the final stage of a synth signal chain, to control volume. By modulating the Amplifier with an envelope, the sound can be given its basic “shape”. In fact, the “volume shape” is one of the most important factors to how we identify the sound. By setting up a proper Volume Envelope you can make a sound “soft”, “hard”, “plucked” “static” etc.

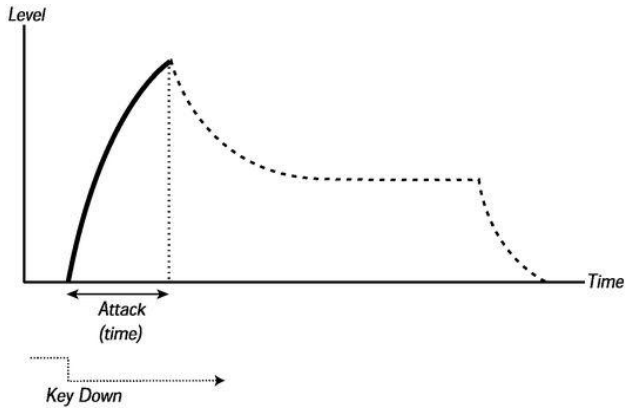


The Volume Envelope curve determines how the amplitude of the waveform changes over time.



25 - amp attack

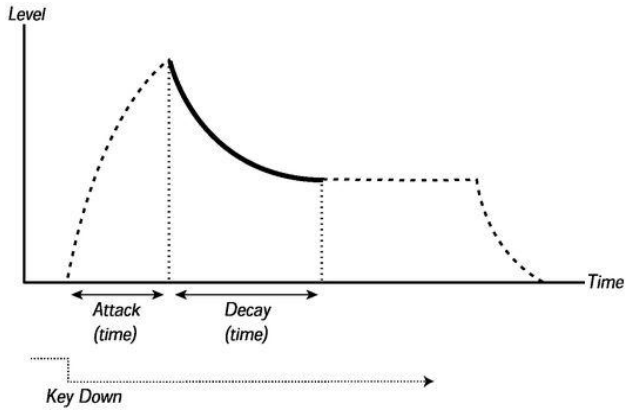
0 - 127 [default value 64]



This control is used to adjust how long it should take for the sound to reach full volume after a key has been pressed. If the knob is turned fully counter-clockwise, the attack is almost instantaneous. If the knob is turned all the way to the right, it lasts many seconds.
If you for example have an envelope controlling volume, raising the Attack value will give the sound a "softer" character. If you have the envelope routed to the filter, it might give the sound a "wah" type of start.
Note: a very short Attack time can produce a click in the beginning of the sound. This is a normal physical phenomenon. To eliminate any click, just increase the Attack time slightly.

26 - amp decay

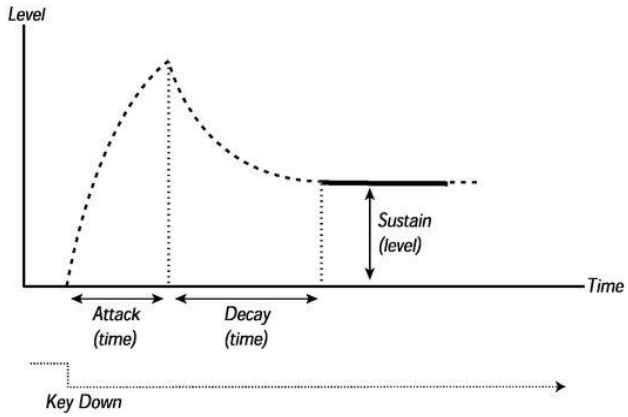
0 - 127 [default value 64]



After the attack phase is finished (and you haven't released the key), the Decay begins. During the Decay phase, the sound decreases in level, and continues to do so until it reaches the Sustain level (see below). The Decay knob is used to adjust how long this should take.

27 - amp sustain

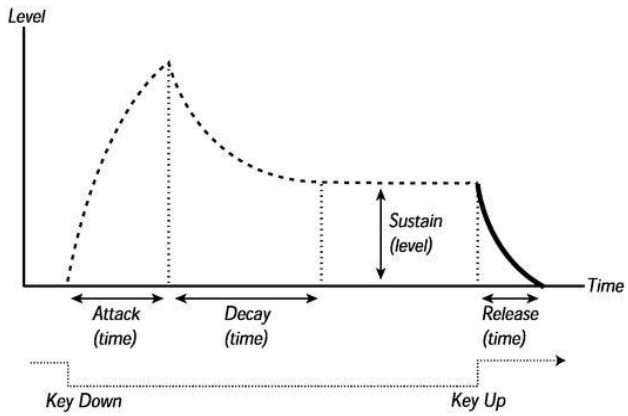
0 - 127 [default value 107]



This is the level the sound will reach after the Decay phase. Once this has happened, the sound will stay steady at this volume until the key is released. Please note that the Sustain parameter is used to set a *level,* while Attack, Decay and Release all are used to set *times*.
If you for example want to create a flute sound, you would have a fairly high Sustain setting on your Volume Envelope, since a flute tone basically stays at a steady level for as long as you play it. On the other hand, for a piano sound, you would want a Sustain level of "0", since a piano sound decays to silence if you hold the key long enough.

28 - amp release

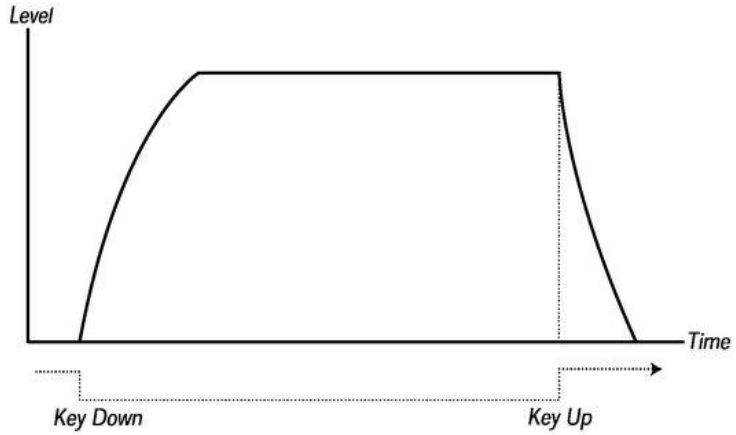
0 - 127 [default value 64]



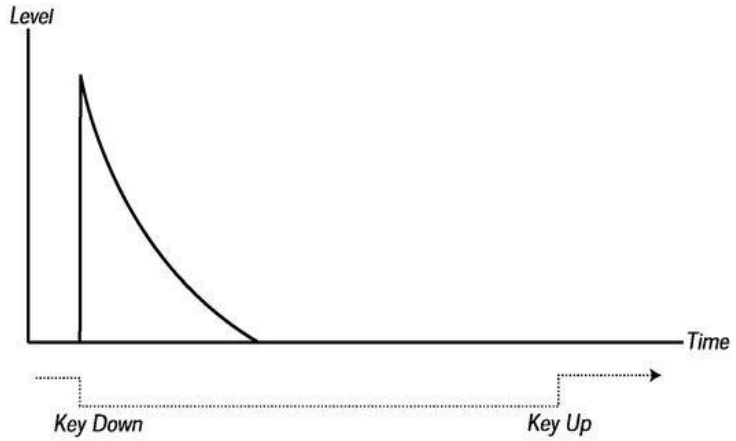
This knob is used to adjust how long time it should take for the sound to decay to silence *after* you have released the key. *Note: a very short Release time could produce a click in the end of the sound (when you release the key(s)). This is a normal physical phenomenon. To eliminate any click, just increase the Release time slightly.*

ADSR Envelope Behavior

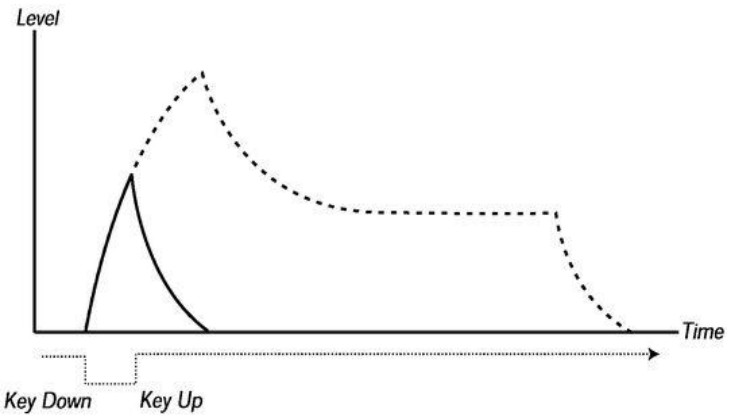
If you set the Sustain to full level, the Decay setting is of no importance since the volume of the sound is never lowered (until you release the key).



If you set the Sustain to 0, the sound will become silent after the Decay phase is finished. With short Attacks and moderate Decay times, this can be used to simulate the behavior of a plucked string instrument (guitar, piano etc.) where the sound always decays to silence after a while.



If a key is released before the envelope has completed one or more stages, the envelope will jump directly to the Release stage at the corresponding level.



29 - amp gain

0 - 127 [default value 107]

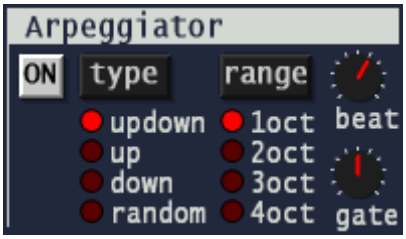
This is used to adjust the overall Level of the Sound. This parameter is mainly used to balance one Program against another.

30 - amp velocity sens

0 - 127 [default value 64]

Amplifier Velocity Sensitivity can make the volume react to velocity. With this parameter, you can adjust how much the amplitude changes according to the velocity of the note played. Turn left to decrease the sensitivity and thus the volume change; turn right to increase it. Another interesting way to make a Program velocity sensitive is to activate the Velocity switch in the Filter section (ID 24). This makes the Filter Envelope Amount vary with striking force, to a pre-determined degree.

Arpeggiator



Synth1 provides parameters to control direction, range, speed, and note length of the arpeggio.

59 - arpeggiator on/off

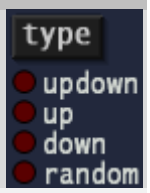
0 - 1 [default value 0]

0 - Off

1 - On

This indicates that Arpeggiator is *On*. If you now, for example, take a chord and hold the keys depressed, the notes in the chord will be played back repeatedly, one after the other.

31 - arpeggiator type



1 - 4 [default value 1]

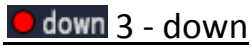
Select in which direction the arpeggio should run.

1 - updown

In this mode, the keys pressed on the keyboard will be played one after the other, from bottom to top and downwards.

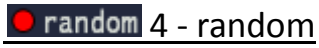
2 - up

The notes will be played one after the other, from bottom to top.



3 - down

The notes will be played one after the other, from top to bottom.

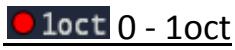


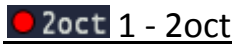
4 - random

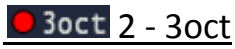
In this mode, Synth1 will create random arpeggios from the chords you play on the keyboard. This means that the notes in the chord are played back one at a time, but in random order and in random octaves (if the Arpeggiator Octave Range is greater than 1).

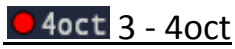
32 - arpeggiator oct range

0 - 3 [default value 0]



0 - 1oct


1 - 2oct


2 - 3oct


3 - 4oct

This is used to set the Arpeggiator Octave Range, as the panel indicates.

33 - arpeggiator beat

0 - 18 (1note - 32/3note) [default value 11]

This control adjusts the speed of the arpeggio. It can be varied from a whole note to extremely short “delay” times (32/3 note).

34 - arpeggiator gate

0 - 127 [default value 64]

This parameter controls arpeggio notes length. It must be set to the value of at least 1 for a sound to occur. If the knob is turned all the way to the right, the notes sound without interruption, which is effective in combination with Legato and Portamento modes.
Note: The value of 127 can make some problems, so you should use 126.

Tempo Delay

Delay is a popular effect that repeats the sound in rhythm. The key to using Delay effectively is to keep it in sync with the tempo. That is exactly what Synth1 provides - the Tempo Delay.

65 - delay on/off

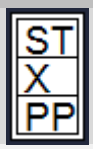
0 - 1 [default value 1]

0 - Off

1 - On

Effect *On/Off* switch.

82 - delay type



[>=v1.07] 0 - 2 [default value 0]

0 - ST

Stereo Delay uses two mono delays, one for the left channel and one for the right. The dry signal is fed into *both* of the delays. *Remember that this type of delay needs a 'real stereo' signal (not two identical or just panned mono signals) to work as a Stereo delay! Otherwise, the effect is Mono.*

1 - X

In Cross-Feedback Delay, any non-mono input runs through a stereo delay but with the echoes crossing over to the opposite side of the input that generated them.

2 - PP

Ping-Pong Delay also uses two mono delays, but the dry signal is fed into just *one* of them. The output of delay1 then feeds the input of delay2, which feeds back delay1 to create extra repeats.

35 - delay time

0 - 19 (0.1ms - 1note) [default value 8]

The Delay Time ranges from 0.1ms (ultra short) and then from 1/32 note triplets to a whole note.

83 - delay time spread

[>=v1.07] 0 - 127 (0:100ms - 100:0ms) [default value 66]

This parameter is used to determine the time of the delay-processed sound shifting between the left and the right channel.

36 - delay feedback

0 - 127 [default value 40]

Delay Feedback Level is used to feed the echoes back into the input for multiple repeats. The higher parameter value produces the greater number of repeats. With certain delay time settings, higher Delay Feedback settings can also produce reverb-like qualities.

98 - delay tone

[>=v1.12] 0 - 127 [default value 64]

Effectively, this parameter behaves like a High-pass/Low-pass filter used to determine the Delay's Tone. Moving the tone knob to the left will result in a high-cut, moving it to the right will produce a low-cut of the wet signal.

37 - delay dry/wet

0 - 127 (0% - 100%) [default value 20]

With d/w knob, you can adjust the balance between the original signal and the delay-processed sound. Setting this parameter to zero will turn *off* the effect.

Chorus / Flanger

Flanging and Chorus are delay-based sound effects, although here the time delay is minimal (up to 30ms on Synth1). The special care of the delay-lines interpolation was taken to minimize aliasing. This Synth1's unit is modeled quite accurately as a linear feed-forward Comb Filter, which modulates the response frequencies arising from the superposition of a direct + delayed signal(s), constrained to consist of an "infinite series" of harmonically, *uniformly spaced notches*. Motion of the notches over time is essential to the effect, and this motion is classically periodic.
Synth1's Flanging effect produces a sound which can grow from a subtle sweeping, metallic tone, to a "jet plane whoosh" effect. Chorus effect adds a subtle warmth and depth to the sound, and it is commonly used to make an amalgam of sounds that has a rich, shimmering quality (although you can go for some extreme effects, too). You can also use this unit for a vibrato effect.
Please note that the difference between Chorus and Flanging effects is mainly in time delay (ID 52).

66 - chorus on/off

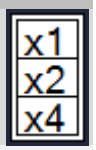
0 - 1 [default value 1]

0 - Off

1 - On

Effect *On/Off* switch.

64 - chorus type



1 - 4 [default value 2]

1 - x1

Select One-stage effect. This setting results in a monaural effect suitable for achieving Flanging.

2 - x2 

4 - x4

Select Two-stage or Four-stage mode. These are suitable for producing a "voice multiplying" effect.

52 - chorus delay time

0 - 127 (0.05ms - 30ms) [default value 64]

Set the Delay Time of the effect. A shorter time results in a more flanging-like effect.
Varying the time delay causes notches to sweep up and down the frequency spectrum.

53 - chorus depth

0 - 127 [default value 64]

This is used to control the level of modulation (notch Depth).

54 - chorus rate

0 - 127 (0.01Hz - 400Hz) [default value 50]

The delay-line is typically modulated by the LFO. With this parameter you can set the Rate of modulation (the Speed of notch movement).

55 - chorus feedback

0 - 127 (-99% - +97%) [default value 64]

This control sets the Level of Feedback from the output to the input of the delay-line, thereby creating a feed-back Comb Filter in addition to the feed-forward Comb Filter. Part of the output signal fed back to the input (a "re-circulating delay-line") is producing a resonance effect which further enhances the intensity of the peaks and notches. The phase of the fed back signal can be inverted, producing more sound variations.

56 - chorus level

0 - 127 [default value 40]

Use this parameter to adjust the Level of the Chorus / Flanger unit. The levl knob set to zero acts like turning *off* the effect.

Equalizer / Pan

This is a classic Parametric Equalizer, capable of making much more precise adjustments to the sound than the other, less complex equalizers like Graphic Equalizer.

60 - equalizer tone

0 - 127 [default value 64]

This is used to set the cut-off of the Low-pass/High-pass filter. Turn the tone knob to the left to reduce the higher frequencies (high-cut). Turn it right to reduce the lower frequencies (low-cut). For every voice other than the kick drum and bass guitar types, you will find that the slight moving of the tone knob to the right can be very useful. In a mix, low frequencies fast becoming "muddy", so it is important to be aware of this fact and keep your voices “sparkling”.

61 - equalizer freq

0 - 127 (50Hz - 16KHz) [default value 64]

With this parameter, you can define where the center of the Equalizer Frequency range will be.

62 - equalizer level

0 - 127 (-25.2dB - +24.8dB) [default value 64]

This allows you to adjust the Level of Equalization. You can either boost a frequency or attenuate it. However, just because you can boost doesn’t mean you necessarily should: in most cases, it is better to pull down the frequencies. When you increase a frequency, the plug-in has to create extra sounds that weren’t there before. When you attenuate, you’re just reducing a part of the existing sound, so it stays more natural and realistic. Bear in mind that it is always a good idea to try the subtractive approach first.
Please note that the middle position of the level knob indicates that there is no equalizing.

63 - equalizer Q

0 - 127 [default value 64]

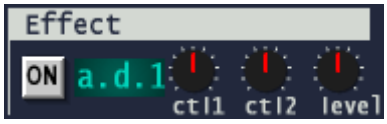
Set the Q curve (bandwidth) of the Equalizer. Turning the Q knob left will flatten (widen) the curve, so it will pretty well encompass more of the spectrum. Turning it right will make the curve steeper (narrower), so it will affect a smaller range of frequencies.
When cutting a frequency, it is best to make it narrow (higher Q) and a bit deeper; if you are boosting it, than it is better for a bandwidth to be wider (low Q) but shallower (in other words, use the Equalizer Level “sparingly”).
If you have some problematic frequencies in your voice (or frequencies conflicting with other instruments), you should probably try this method:
• Set the Q knob and the level knob to their maximum value.
• Perform a “sweep” along the spectrum until the problem sound becomes prominent.
• Reduce the gain and change the Q to a satisfying control level.

90 - pan

[>=v1.09] 0 - 127 (L100% - R100%) [default value 64]

This parameter determines the Pan position of the voice. Along with its conventional use, it is proved to be very useful when creating layered voices with multiple instances of Synth1.

Effect



The Effect Unit of the Synth1 brings a multitude of effects:
• Analog Distortion 1 provides even order harmonic distortion with negative feedback and low-frequency damping.
• Analog Distortion 2 uses standard “soft clipping" of the audio signal, which distorts the shape of its waveform and adds overtones. It can simulate warm, saturated, overdriven tube sounds, but can also generate drastic distortions.
• Digital Distortion is a high-resolution digital distortion effect, capable of producing very unique, bold and modern distorted sound.
• Bit Crusher / Decimator is a low-resolution digital distortion effect. You can use it to emulate the sound of early digital audio devices, to create artificial aliasing by dividing the sample rate, or to distort signals until they are unrecognizable.
• Phaser is perfect for adding a beautiful warm animation and movement to the sound. As with the flanging, the periodic motion of the notches over time is also essential for this effect. In some way, Phaser is similar to Flanger, but it is definitely much more subtle and “otherworldly”, than pronounced and natural as the Flanger tends to be.
Phaser can be defined as a linear filter which modulates the frequencies of a set which contains the limited number of *non-uniformly spaced notches*. This definition typically excludes such devices where the all-pass section is a delay-line (like Flanger, for example). The number of all-pass filters (usually called *stages*) varies from one to six. This determines the number of notches in the sound, affecting its general character. Additionally, the output can be fed back to the input for a more intense sound, creating a resonant effect by emphasizing frequencies between notches. This involves feeding the output of the all-pass filter chain back to the input. Note that the peaks between the notches are sharper when there's feedback, giving a distinct sound.
• Ring Mod / AM effect can produce complex, bell-like inharmonic sounds. It has a built-in Oscillator that is multiplied with the input signal to produce the effect. The ring-modulated output contains added frequencies generated by the sum and the difference of two signals frequencies.
• Compressor has depth, attack and level controls. It is simple, but surprisingly effective.

77 - effect on/off

[>=v1.07] 0 - 1 [default value 0]

0 - Off

1 - On

Effect *On/Off* switch.

78 - 81 effect unit

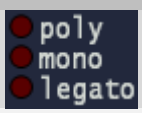
a.d.1	comp.
a.d.2	ph.1
d.d.	ph.2
deci.	ph.3
r.m.	ph.4

78 - effect type	79 - effect control1	80 - effect control2	81 - effect level/mix
0 - 9 [default value 0]	0 - 127 [default value 64]	0 - 127 [default value 64]	0 - 127 [default value 64]
a.d.1 0 - a.d.1 Analog Distortion 1	dist amount	LPF cut-off	level
a.d.2 1 - a.d.2 Analog Distortion 2	dist amount	LPF cut-off	level
d.d. 2 - d.d. Digital Distortion	dist amount	LPF cut-off	level
deci. 3 - deci. Bit Crusher / Decimator	sample rate	bit depth	mix
r.m. 4 - r.m. Ring Mod / AM	mod freq	none	mix
comp. 5 - comp. Compressor	comp depth	attack time	level
ph.1 6 - ph.1 One-stage Phaser	LFO depth	LFO freq	feedback [0%=64]
ph.2 7 - ph.2 Two-stages Phaser	LFO depth	LFO freq	feedback [0%=64]
ph.3 8 - ph.3 Four-stages Phaser	LFO depth	LFO freq	feedback [0%=64]
ph.4 9 - ph.4 Six-stages Phaser	LFO depth	LFO freq	feedback [0%=64]

Note: The "level" and the "mix" are different: while the "level" will mute the whole instrument when it is set to zero (basically, it acts like main volume), the "mix" will adjust the dry/wet amount.

Voice

38 - play mode type



0 - 2 [default value 0]

The Play Mode is used for deciding exactly how your keyboard playing should be interpreted by the synthesizer:

0 - poly

This mode allows you to play chords.

1 - mono

This makes the instrument monophonic. But if you press a key without releasing the previous one, the envelopes are still retriggered, like when you release all keys and then press a new one. Furthermore if you press a key, hold it, press a new key and then release it, the first note is also “retriggered”.

2 - legato

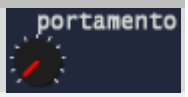
This also makes the instrument monophonic. Furthermore, if you press a key without releasing the previous one, the pitch will change, but the envelopes will not retrigger. That is, there will be no new “attack”.

94 - polyphony

[>=v1.09] 1 - 32 [default value 16]

This determines how many notes you can play simultaneously in Poly mode.

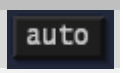
39 - portament time



0 - 127 [default value 0]

This is used to set how long it should take for the pitch to slide from one pitch to the next. If you don't want any Portamento at all, set this knob to zero.

74 - portament auto mode



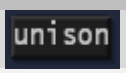
[>=v1.06] 0 - 1 [default value 0]

0 - Off

1 - On

When Auto is activated (LED is lit), the pitch only slides if you play legato, that is if you play a new key before releasing the previous one.
The effect of Auto Portamento is pretty obvious when you have selected Mono or Legato Play Mode. If, on the other hand, Poly mode is selected, the Portamento effect will be slightly unpredictable if Auto is *on*. Therefore, turning *off* Auto in Poly mode is recommended.

73 - unison mode



[>=v1.06] 0 - 1 [default value 0]

0 - Off

1 - On

When Unison Mode is activated more than one voice will be played when you press a key. This gives you a "fatter" sound.

93 - unison voice num

[>=v1.09] 2 - 8 [default value 2]

This parameter determines how many voices should be stacked on each key in Unison Mode. Regardless of the Play Mode setting, you can use up to 8 voices per key. *However, be aware that the multiplied voices can reduce polyphony and the CPU processing power.*

75 - unison detune

[>=v1.07] 0 - 127 [default value 22]

Detune the unison voices for a fatter, chorusing-like effect. Higher values give increased detuning. *It might be interesting to notice that the Nord Lead 2X automatically detunes two (for Poly mode) or four voices (for Mono or Legato mode) to a level of approx. 16, when it is set to work in Unison Mode. Therefore, you can consider the level of 16 to be the optimal, all-round level for any voice.*

84 - unison pan spread

[>=v1.08] 0 - 127 (-64 - +63) [default value 64]

Use this to get a wide unison voices stereo image, with the emphasis on the left (negative settings) or the right (positive settings) channel. To enhance the lushness of the stereo image even more (or to achieve something like so-called Haas effect), you can combine the Unison Pan Spread (at its maximum left or right level) with a Cross Delay, configured to have a short time (e.g. 32/3), d/w knob set to about 66%, fdbk knob positioned “below two repeats”, and the sprd knob set between 5 and 6ms.
On Clavia Nord Lead, Unison Pan Spread parameter doesn’t exist as it is pre-set to the maximum.

[0=64]

85 - unison pitch

[>=v1.08] 0 - 48 (-24s - +24s) [default value 24]

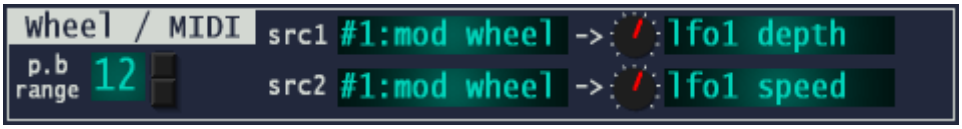
This is used to set the pitch of the additional voices evoked by the Unison Mode.

92 - unison phase shift

[>=v1.09] 0 - 127 [default value 0]

This is used to adjust and fix phase relations at the moment of triggering additional, Unison Mode Oscillators. This knob should not be effective unless you “immobilize” the phase in the Oscillator section. For more information, see parameter ID 91.

Wheel / MIDI



40 - pitch bend range

0 - 24 (0s - 24s) [default value 12]

This allows you to set the Pitch Bender Range.

86 - midi ctrl src1

#1:mod wheel	#8:balance
#2:breath ctl	#9:ctrl9
#3:ctrl3	#10;pan
#4:foot ctrl	#11:expression
#5:porta time	chan a.touch
#6:data entry	pitch bend
#7:volume	

[>=v1.09] 45057 - 57344 [default value 45057]

#1:mod wheel 45057 - mod wheel
#2:breath ctl 45058 - breath ctrl
#3:ctrl3 45059 - ctrl3
#4:foot ctrl 45060 - foot ctrl
#5:porta time 45061 - porta time
#6:data entry 45062 - data entry
#7:volume 45063 - volume
#8:balance 45064 - balance
#9:ctrl9 45065 - ctrl9
#10;pan 45066 - pan
#11:expressic 45067 - expression
chan a.touch 53248 - aftertouch pitch bend 57344 - pitch bender

As the panel indicates, here you can select the MIDI Control Source - Control Function, Aftertouch or Pitch Bender - to be routed towards one of the possible destinations (see below).

50 - midi ctrl sens1

0 - 127 (-100% - +100%) [default value 74]

MIDI Control Sensitivity defines what percentage of destination parameter setting can be changed using the Control Source.
Please note that the Control Source routing works as addition to the basic setting of the parameter it is routed to. If you for example route the Modulation Wheel to the filter, and the filter is already fully open, moving the Control Sensitivity knob towards the positive values has no effect.

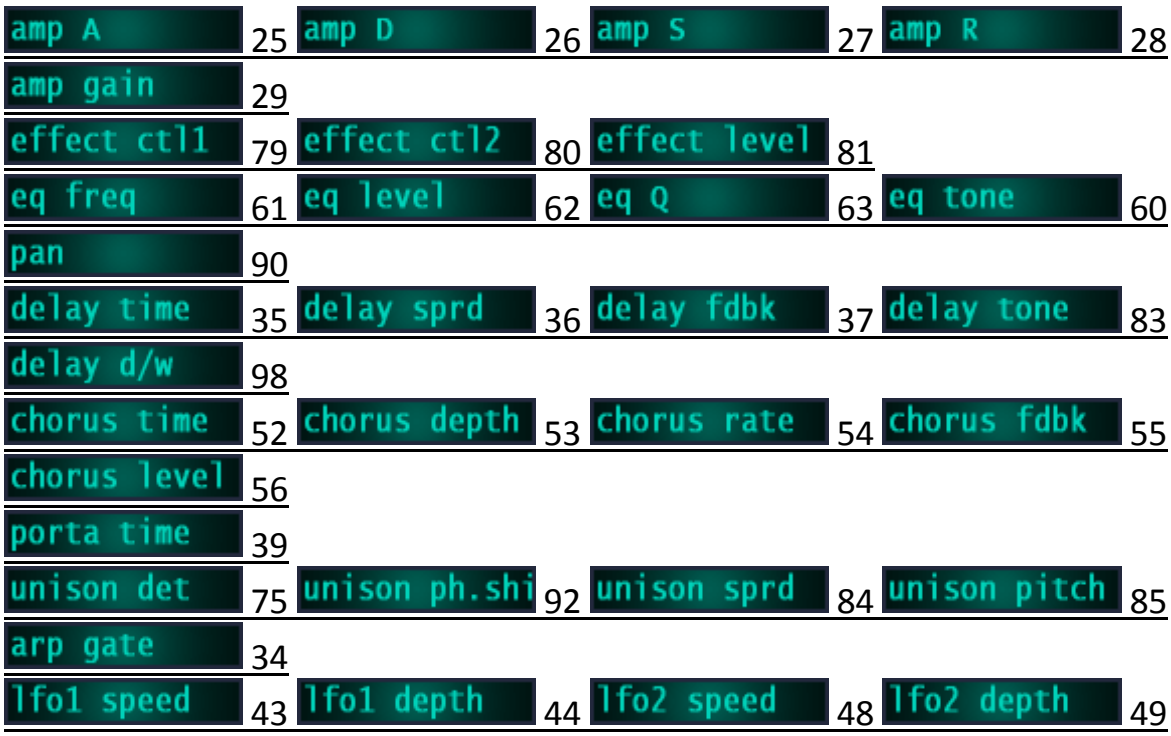
87 - midi ctrl assign1

---	amp A	chorus rate
osc1 det	amp D	chorus fdbk
osc1 FM	amp S	chorus level
osc1 sub	amp R	porta time
osc2 pitch	amp gain	unison det
osc env A	effect ctl1	unison ph.shift
osc env D	effect ctl2	unison sprd
osc env amt	effect level	unison pitch
osc mix	eq freq	arp gate
osc p/w	eq level	lfo1 speed
osc ph.shift	eq Q	lfo1 depth
filter A	eq tone	lfo2 speed
filter D	pan	lfo2 depth
filter S	delay time	
filter R	delay sprd	
filter frq	delay fdbk	
filter res	delay tone	
filter amt	delay d/w	
filter sat	chorus time	
filter trk	chorus depth	

[>=v1.09] -1 - 98 [default value 44]

This is a list of 52(!) parameters that can be assigned to/controlled using the Control Source.

---	-1						
osc1 det	76	osc1 FM	45	osc1 sub	95	osc2 pitch	02
osc env A	12	osc env D	13	osc env amt	11	osc mix	05
osc p/w	08	osc ph.shift	91				
filter A	15	filter D	16	filter S	17	filter R	18
filter frq	19	filter res	20	filter amt	21	filter sat	23
filter trk	22						



88 - midi ctrl src2

[>=v1.09] 45057 - 57344 [default value 45057]

The same description as for the src1 (ID 86).

51 - midi ctrl sens2

0 - 127 (-100% - +100%) [default value 74]

The same description as for the sens1 (ID 50).

89 - midi ctrl assign2

[>=v1.09] -1 - 98 [default value 43]

The same description as for the assign1 (ID 87).

LFO

An LFO is an Oscillator, just like the ones that produce the sound in a synthesizer, but with two main differences:
• The LFO produces very low frequencies, most often below the hearing range (16Hz).
• The LFO is not used to produce sound, instead it is connected to other modules to provide modulation of parameters. If you for example route an LFO to Oscillator pitch, you get a vibrato. If you route it to the Filter's Cutoff Frequency you get a wah-wah type of effect. And if you route it to the Amplifier of an instrument you get a tremolo.

The three basic parameters for an LFO are *Waveform*, *Rate* (frequency) and *Amount*:
• The waveform determines the type of vibrato, for example "regular" (Triangle or Sine), Ramp (Sawtooth) or Random.
• The Rate determines the Speed of the vibrato.
• The Amount controls to what degree the LFO affects its destination.

57 - lfo1 on/off

1 1

0 - 1 [default value 1]

1 0 - Off

This setting indicates that LFO is turned *Off*.

1 1 - On

This setting indicates that LFO is turned *On*.

41 - lfo1 destination

1 - 7 [default value 2]

This is used to set which parameter the LFO should affect:

osc2 1 - osc2

This routes the LFO to the pitch of Oscillator 2 only. This can for example be used together with Sync to create a “pulsating” change in timbre.

osc1,2 2 - osc1&2

This routes the LFO to the frequency of both Oscillators, in equal amounts. Together with the Triangle waveform this creates traditional vibrato.

filter 3 - filter

This routes the LFO to the Filter Frequency. This can for example be used for wah-wah effects (Triangle wave) and for auto repeating sounds (Sawtooth wave).

amp 4 - amp

When this is selected, LFO produces a wave routed to the volume, for tremolo effects.

p/w 5 - p/w

This routes the output of the LFO to the Pulse Width of both Oscillators. For this to have any effect, Pulse wave must of course be selected for at least one of the Oscillators. This destination can be used with an LFO Triangle waveform to create a “chorus-like” sound, suitable for strings and pads.

FM 6 - FM

This routes the LFO to the FM Amount, for special timbre changes.

pan 7 - pan

This routes the LFO to the Pan, for special Pan effects.

42 - lfo1 type

0 - 5 [default value 1]

This button is used to select the shape of the output from the LFO:

 0 - saw

This creates a Ramp which can be used for example for auto-repeats when applied to the filter.

 1 - triangle

 5 - sine

These are suitable for “normal” vibrato effects, sweep effects, and for classic pulse width modulation.

 2 - square

This is a waveform for “abrupt” modulation changes, suitable for trills, distinct tremolos, etc.

 3 - random (s&h)

This adds stepped random modulation to the destination. This is mainly useful for effect sounds.

 4 - random (smoothed)

This adds smooth random modulation to the destination. This is mainly useful for effect sounds.

43 - lfo1 speed

0 - 127 [default value 64]

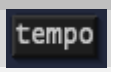
This is used to set the Frequency of the LFO, in other words the Speed of the modulation.

44 - lfo1 depth

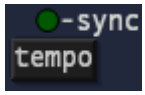
0 - 127 [default value 0]

This is used to set to what extent the signal from the LFO should be routed to the destination. In other words, this parameter determines the Amount of modulation. Turn the amt knob to the right for more pronounced vibrato/tremolo/wah-wah.

67 - lfo1 tempo sync

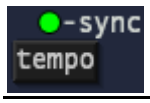


[>=v1.05] 0 - 1 [default value 0]



0 - Off

In this mode, the LFO is not synced to the sequencer (host) tempo. On the other hand, using this setting and “unusual” Speed values, can lead to interesting rhythmic effects.

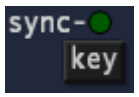


1 - On

This is used to “hard sync” the LFO to the tempo of the song.

68 - lfo1 key sync

[>=v1.05] 0 - 1 [default value 0]



0 - Off

With the Key Sync *Off*, the LFO wave is continuous, so that subtle differences will occur even when you play the same note repeatedly. *The phase angle at which the LFO begins oscillation is carried over smoothly from the preceding note.*

1 - On

In this mode, LFO begins at the same start point of the wave cycle each time you play a note.
Note: Depending on the other voice settings, sometimes you may not be able to hear much difference between the Off and On setting.

58 - lfo2 on/off

0 - 1 [default value 1]

 0 - Off
 1 - On

The same description as for the LFO1 (ID 57).

46 - lfo2 destination

1 - 7 [default value 5]

 1 - osc2
 2 - osc1&2
 3 - filter
 4 - amp
 5 - p/w
 6 - FM
 7 - pan

The same description as for the LFO1 (ID 41).

47 - lfo2 type

0 - 5 [default value 1]

 0 - saw
 1 - triangle
 5 - sine
 2 - square
 3 - random (s&h)
 4 - random (smoothed)

The same description as for the LFO1 (ID 42).

48 - lfo2 speed

0 - 127 [default value 64]

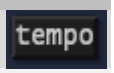
The same description as for the LFO1 (ID 43).

49 - lfo2 depth

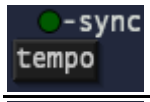
0 - 127 [default value 64]

The same description as for the LFO1 (ID 44).

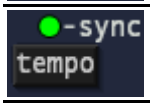
69 - lfo2 tempo sync



[>=v1.05] 0 - 1 [default value 0]



0 - Off

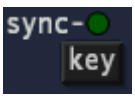


1 - On

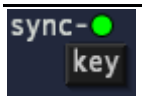
The same description as for the LFO1 (ID 67).

70 - lfo2 key sync

[>=v1.05] 0 - 1 [default value 0]



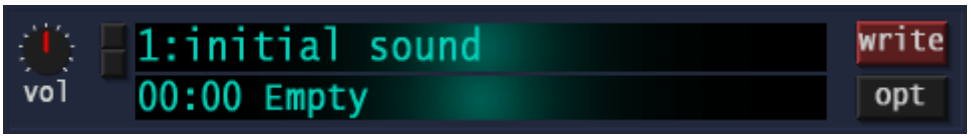
0 - Off



1 - On

The same description as for the LFO1 (ID 68).

Common Settings



You can use this menu to control the general settings such as the changing or saving of programs.

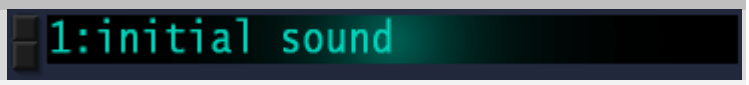
The program management

The program management of Synth1 can handle 128 programs in each Internal bank (0-99), giving a total of 12800 possible Internal programs. Each program is saved as a single “num.sy1” file. The folders which store the programs divide them into banks. These folders can be changed in the Options window, or (faster) by modifying ini file (see below).
Since the latest (1.12) version, Synth1 is capable to read the zip-compressed sy1 files. Two or more folders can be included in one zip file. After putting the zip file in External bank folder (default is "zipbank"), you will be able to select the voices from the preset browser window.
Please note that External banks are read-only. It is not possible to write files into the External bank.

vol

Set the master volume of the instrument.

program

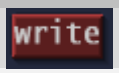


Change the program. Click the LCD to open an overview, and select the desired bank / program. You can also use the Up or Down buttons on the left.

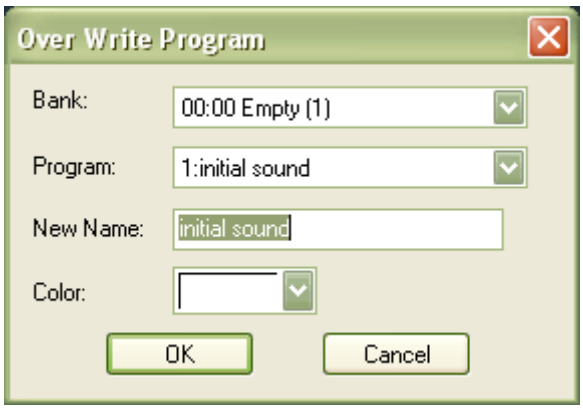
bank

Click the LCD to change the bank.

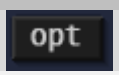
write



Write the present program to a file. Click to open a dialog box, and then select the program you wish to overwrite.



opt



Open the Options dialog box (see below).

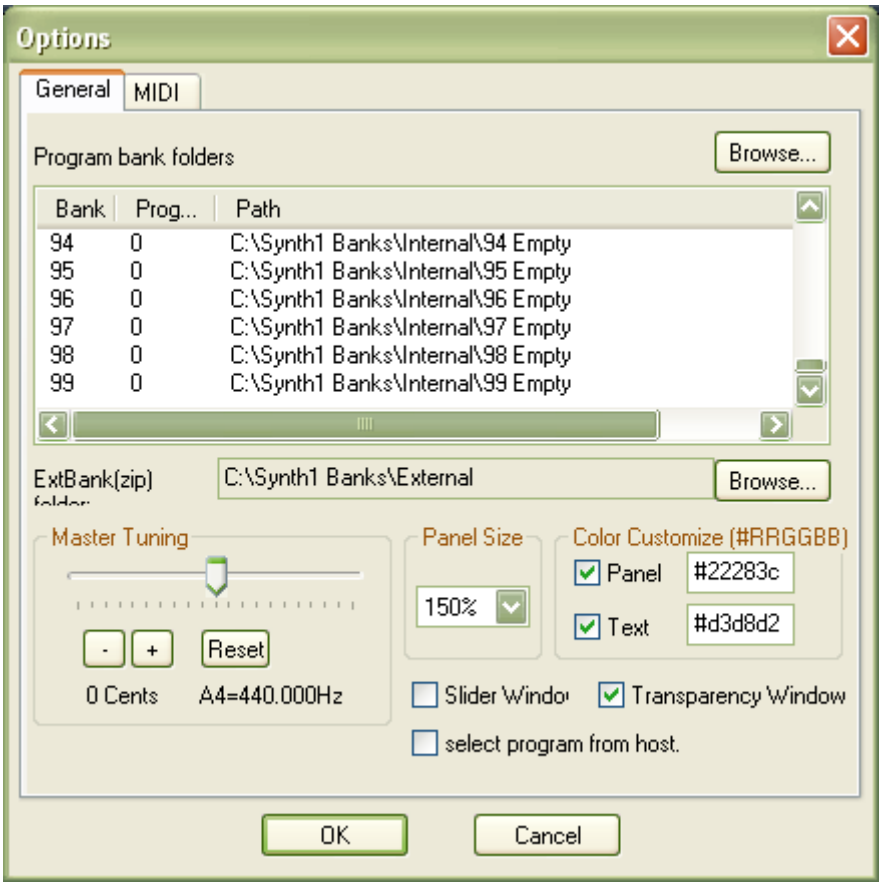
[Shift] + opt

Start MIDI CC Learn mode. Use desired switch or knob on Synth1, and then on your master keyboard. Synth1 has now “learned” the MIDI message from a master keyboard. Click [Shift] + opt again to exit. When done, go to Options\MIDI\Control Change Map and click Save to store your new CC map.

Options

In the Options window you can adjust General settings and MIDI settings. These parameters are common for all (multiple) instances of Synth1 in the host program.

General



These are the settings for program folder locations, and also for the user interface options. They are, as you can see, pretty much self-explanatory.
Notes:
The user interface color is set with HTML-type values (#RRGGBB).
The option to select the program from host can cause some unexpected problems.

Bank Path Fast Add

For v1.12, you need to edit the "Synth1.ini" file, which is on Windows XP located in:
C:\Documents And Settings\<username>\Application Data\Daichi\Synth1
Open it in Notepad and there you can add the paths to your bank folders, for example:
bankfolder99=C:\Synth1 Banks\Internal\99 Empty
zipfolder=C:\Synth1 Banks\External

Colors+

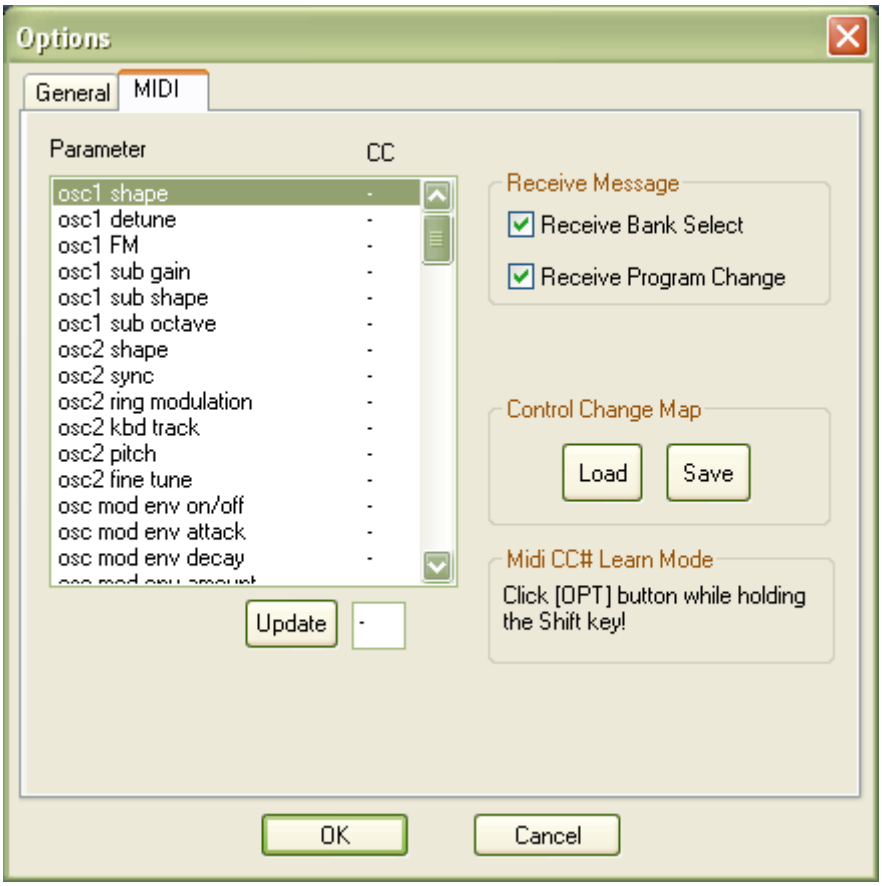
82328-Purple
22283-Dark Dark Blue
44428-Dark Purple Blue
82333-Rusty Red
33333-Crusty Black
12246-Bright Blue
00582-Dark Green
27777-Teal BlueGreen
66666-Light Charcoal Grey
88888-Grey+++
77002-Dark Red+
59037-Bright Purple
69572-Dark Copper
71185-Purple Berry
68830-Slime Green
68977-Algae Green
98111-Blood Red+
00088-Hot Bright Blue
00876-Mutant Green
15583-Dark Forrest Green
80372-Dark Burnt Orange
94800-Yellow Bronze
91003-Indian Red+
71140-Dark Dark Dark Red+
44815-Dark Slime Green
05529-KooL Dark Blue
99113-Blood Red2+
37368-Dark BlueBerry
22991-Gator Green+
66159-Puturple
82500-Dark Copper2
97881-Gold Rush
12957-Dark Pastel Green
55712-Dark Green Pewter
74592-Golden Brown
49508-Nice Blue+
99152-NordLead2 Red++
98112-NordLead2 Red2++
66678-BlueGreyA
d9d1a1-NORD Tan++
f4f7f5-Powder White+++
f4b4f7-Powder Pink
c57d34-Super Burnt Orange
c5d407-Hyper Bright Yellow
c94193-Pussy Pink

d6b822-Dark Yellow
a92b40-Red Sherbert(Nord)+++
e7e55b-Milky Lemon
8f44c1-Milky Lavender
70e482-Lime Sherbert
1b55e0-BlueBerry02
b7b7b7-OFF White
90d117-Neon GreenEllow
000b4c-MidNight Blue+
44fd21-Super Neo Green
4d79a1-Dark Powder Teal+
23d8b1-SeaWeed Aqua
0398b1-NordLead BLUE+++
0398e2-NORD Blue02+++
0398a6-OLD NORD BLUE+++
0398fa-Supa Nord Blue+++
098f98-Another Nord Blue+++
1d9bd8-Perfect Nord BLUE+++
d994d1-Pretty Pinky
c7d7d8-Light Grey White+
dd8676-NordLead Pink Red+++
bbbb88-TanWhite
cfca82-Light Beige+
ff5202-NEON Orange
c93f44-Red KooL-AiD+
f4f7f5-Nice White+++
21f7f2-Neon Teal Aqua+
f7f7f7-Bleach White+++

TEXT Colors+

c8c8c8-Default
c5d8f1-Super Light Powder Blue+
a1d5b8-Dark Pastel Green
d3d8d2-Light Grey
d9d1a1-Light Tan
a9d9a8-Puke Green
695948-Dark Copper
391283-Bright Dark Blue+
991522-Nord Red1+
981129-Nord Red2+
229919-Gator Green
448155-OLD Green+
373681-Dark Blue+

MIDI



Receive Message

Normally the program will change when a MIDI bank select or program change message is received. You can tell Synth1 to ignore these messages, so that no program change occurs.

Control Change Map

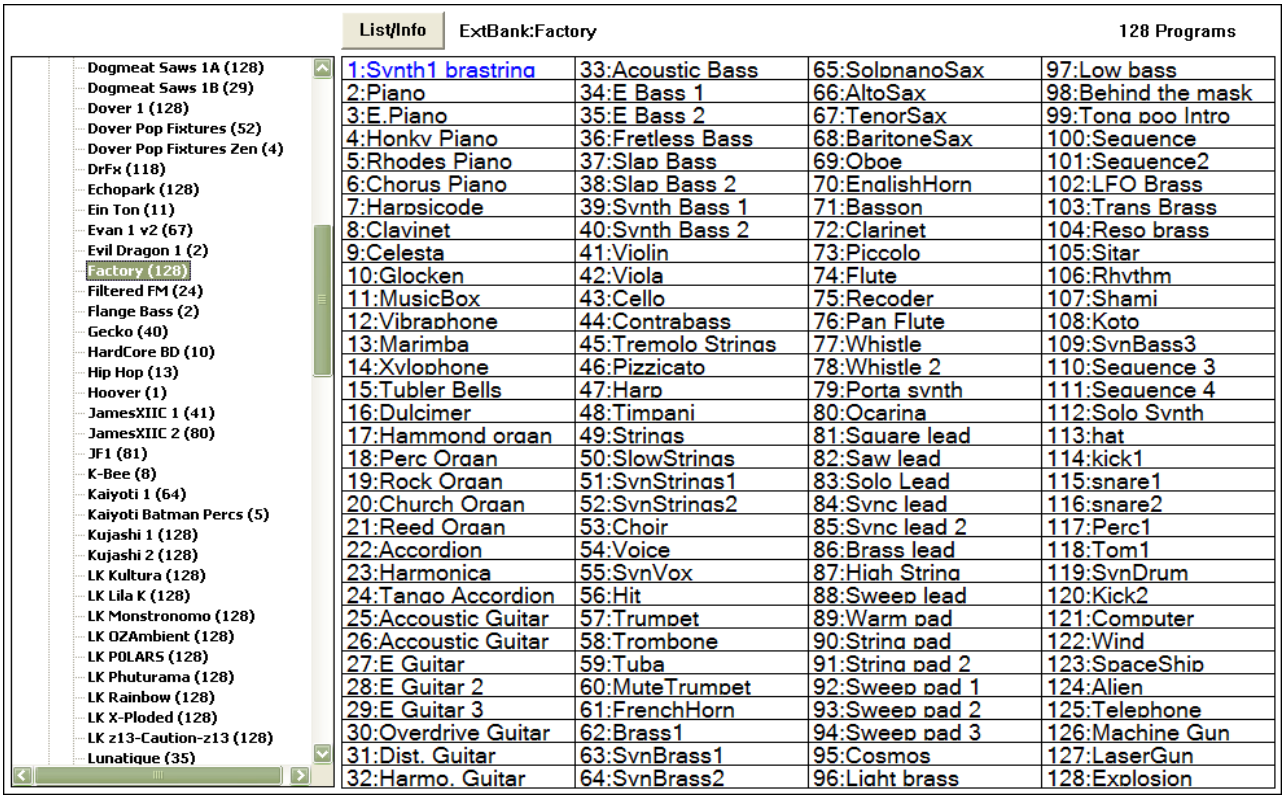
Since the version 1.06, Nord Lead 2 CC map is available. Please use the Load button to load it. To create your own maps, select the desired parameter, type-in the CC number and click the Update button. When done, click Save to store your map. *Please note that the CC number must be unique for each parameter. You can't control two or more parameters with one CC.*

MIDI CC# Learn Mode

See the Common Settings\[Shift] + opt description above.

Presets

Factory Presets



- Dogmeat Saws 1A (128)
- Dogmeat Saws 1B (29)
- Dover 1 (128)
- Dover Pop Fixtures (52)
- Dover Pop Fixtures Zen (4)
- DrFx (118)
- Echopark (128)
- Ein Ton (11)
- Evan 1 v2 (67)
- Evil Dragon 1 (2)
- Factory (128)
- Filtered FM (24)
- Flange Bass (2)
- Gecko (40)
- HardCore BD (10)
- Hip Hop (13)
- Hoover (1)
- JamesXIIC 1 (41)
- JamesXIIC 2 (80)
- JF1 (81)
- K-Bee (8)
- Kaiyoti 1 (64)
- Kaiyoti Batman Percs (5)
- Kujashi 1 (128)
- Kujashi 2 (128)
- LK Kultura (128)
- LK Lila K (128)
- LK Monstronomo (128)
- LK OZAmbient (128)
- LK POLARS (128)
- LK Phuturama (128)
- LK Rainbow (128)
- LK X-Ploded (128)
- LK z13-Caution-z13 (128)
- Lunatique (35)

List/Info ExtBank:Factory 128 Programs

1:Synth1 brastring	33:Acoustic Bass	65:SolpanoSax	97:Low bass
2:Piano	34:E Bass 1	66:AltoSax	98:Behind the mask
3:E.Piano	35:E Bass 2	67:TenorSax	99:Tona poo Intro
4:Honky Piano	36:Fretless Bass	68:BaritoneSax	100:Sequence
5:Rhodes Piano	37:Slap Bass	69:Oboe	101:Sequence2
6:Chorus Piano	38:Slap Bass 2	70:EnglishHorn	102:LFO Brass
7:Harpsicode	39:Synth Bass 1	71:Basson	103:Trans Brass
8:Clavinet	40:Synth Bass 2	72:Clarinet	104:Reso brass
9:Celesta	41:Violin	73:Piccolo	105:Sitar
10:Glocken	42:Viola	74:Flute	106:Rhythm
11:MusicBox	43:Cello	75:Recoder	107:Shami
12:Vibraphone	44:Contrabass	76:Pan Flute	108:Koto
13:Marimba	45:Tremolo Strings	77:Whistle	109:SynBass3
14:Xylophone	46:Pizzicato	78:Whistle 2	110:Sequence 3
15:Tubler Bells	47:Harp	79:Porta synth	111:Sequence 4
16:Dulcimer	48:Timpani	80:Ocarina	112:Solo Synth
17:Hammond organ	49:Strings	81:Square lead	113:hat
18:Perc Organ	50:SlowStrings	82:Saw lead	114:kick1
19:Rock Organ	51:SynStrings1	83:Solo Lead	115:snare1
20:Church Organ	52:SynStrings2	84:Sync lead	116:snare2
21:Reed Organ	53:Choir	85:Sync lead 2	117:Perc1
22:Accordion	54:Voice	86:Brass lead	118:Tom1
23:Harmonica	55:SynVox	87:High String	119:SynDrum
24:Tango Accordion	56:Hit	88:Sweep lead	120:Kick2
25:Accoustic Guitar	57:Trumpet	89:Warm pad	121:Computer
26:Accoustic Guitar	58:Trombone	90:String pad	122:Wind
27:E Guitar	59:Tuba	91:String pad 2	123:SpaceShip
28:E Guitar 2	60:MuteTrumpet	92:Sweep pad 1	124:Alien
29:E Guitar 3	61:FrenchHorn	93:Sweep pad 2	125:Telephone
30:Overdrive Guitar	62:Brass1	94:Sweep pad 3	126:Machine Gun
31:Dist. Guitar	63:SynBrass1	95:Cosmos	127:LaserGun
32:Harmo. Guitar	64:SynBrass2	96:Light brass	128:Explosion

Synth1's Factory Bank tries to simulate a GM set by referring to a SC-88 Pro. Alas, the first half of the presets did not turned out so well. Although some of the presets could come in handy, they are included more as a reference. The unique sounds from 81 upwards might be more useful. If you like YMO, try loading program 98 and playing the high IV major chord from "Behind the Mask"!

Web Resources: Free Synth1 Banks

There are literally thousands of free Synth1 presets from across the net. However, it might be better not to waste too much time: the sooner you focus on your own sound creations, the quicker you become more familiar with the instrument. And therein lies the real pleasure!

Version History

Ver1.12 (2010.5.23)

- It corresponded to an external bank (ZIP file).
  - It came to be able to read the ZIP file that compressed the .sy1 file.
  - It comes to be able to select it from the patch selection window of Synth1 only by putting the zip file on the external bank folder (default is "zipbank").
  - Two or more folders can be included in one zip file with the hierarchy.
  - It is not possible to write it in an external bank. It is only for reading.
- The preservation place of the set up information was changed from the Windows registry to the ini file.
  - The event that the set up information was not preserved on 64bit OS or it was not possible to refer occurred. I think this event to be ameliorable.
  - Therefore, when the setting of existing Synth1 is succeeded, it is necessary to execute set succession tool (reg2ini,exe).
  - The reference) The ini file is "APPDATA\Daichi\Synth\synth1.ini" .
- GUI
  - The method of selecting the bank in the patch selection window corresponding an external bank was changed to the tree view form.
  - Memo (readme.txt) of each bank folder was confirmed and it preserved it in the patch selection window.
  - It was able to be set whether to use a transparent window on the patch selection screen etc. by an optional dialog.
- Sound Engine
  - High-pass/Low-pass filter was added to Delay's feedback loop.
- BugFix
  - Problem that slider was displayed in LCD parts at setting that doesn't use slider window.

Ver1.11 (2010.5.9)

- Sound Engine
  - The sub oscillator was added.
    - The same pitch as oscillator1 or one octave under can be selected.
    - When OSC1 is eight multiple unison, the suboscillator becomes similar, too.
    - FM modulation also influences the suboscillator as well as OSC1.
    - The suboscillator doesn't influence the AM modulation.
    - When the amount of the suboscillator is raised, the entire volume is automatically adjusted not to grow.
    - The wave pulse of the suboscillator always becomes a square wave regardless of a pulse width parameter.

    - The saw wave was changed from rising type to the descent type.
        - To operate the suboscillator effectively, it changed.
        - The amplitude value by 0 phases changed from 0 to +1.
    - The accuracy of the envelope of Amplifier has been improved.
    - The limiter algorithm of Filter is changed, and the noise has been improved only a little.
    - The performance of OSC1 at eight unisons has been improved a little.
- System requirements
    - It did not operate in CPU that did not support SSE2.
        - It seems to cause the expansion of the source code when keeping supporting it any further. To our regret, it was assumed operation off the subject.
        - The error message is displayed in the upper part of the panel when operating with CPU that doesn't correspond, and the sound is not generated.
- Small improvement and change of GUI
    - A part of objection of the parameter name was corrected.
    - The patch selection window etc. were shut with the escape key.
- BugFix
    - Problem of operation of sustaining pedal
    - Problem that old FM setting value remained at voice trigger
    - Problem that loudness at unison has changed in old version
    - Problem that gain knob of Amplifier did not occasionally work
    - Problem that patch change with program change spin button was not made good after it writes it in another bank
    - Problem with thing that Synth1 window flickers according to environment
    - Problem that position where parameter selection window etc. are displayed does clip to primary monitor in multimonitor environment

Ver1.10 (2010.5.4)

- The switch which chose the right or wrong of the patch choice from the vst host GUI was added to an optional dialogue.
    - The phenomenon that patch choice mechanism of the vst host side became unstable in occurred frequently. It is the result that expanded the number of the banks to 100. The switch is a thing to avoid this phenomenon.
    - When this switch is on, tone choice is possibility from the vst host GUI; (as before). However, depending on the vst host, a patch is not chosen, and there is a thing kept waiting for several seconds.
    - When this switch is off, you cannot choose a patch from vst host GUI. However, the trouble mentioned above does not occur.
    - It is by default off.
- BugFix
    - The problem that pingpong delay did not become effective.
    - The problem that failed in the conversion of the patch of Synth1 of the old version.
    - The problem that a patch name did not synchronize with a VST host between Synth1

well.
- When did over of a mouse in voice status; the problem that mouse shape became the hand shape.

Ver1.09 (2010.5.1)

- A phase control function was added.
  - The "phase" knob in the Oscillatos section immobilizes phase relations in the trigger of oscillator 1 and oscillator 2 and adjusts it. The phase is not fixed if I finish turning a knob to the left (like conventionally).
  - The "phase" knob in the Voice section immobilizes phase relations in the trigger of oscillators done unison and adjusts it. This knob should not be effective unless I immobilize phase in an oscillator section.
  - I think that I am easy to make the base sounds with a feeling of weight if I adjust the parameter mentioned above and the number of the unison voices, the unison detune.
- The number of the polyphonic was expanded to 32.
  - The number of the polyphonic became the parameter every patch.
- The number of the unison voice was expanded to 8.
  - Regardless of the voicing mode, you got possible to set the number of the unison voices with less than eight freely.
- The assignment function to LFO of modulation wheel was improved.
  - You can assign major MIDI control change and the channel after touch to arbitrary synthesizer parameter.
  - I coped with a sense to the minus direction.
- I changed effect of the unison mode knob exponentially.
  - It is easy to have come to do control of the small detune width.
- Small improvement / a change of GUI
  - It was easy to look and changed the fonts such as patch select windows.
  - The color of the LCD was changed to be able to brighten a little.
  - I made drawing of the LED simple and improved easiness in seeing.
  - The panel size of the default became 150%.
  - Voice status (disabled / key on / key off / ready) was displayed.
  - I revised some words of the dialogue.
  - The Lissajous indication function was abolished.
  - The size of the panel was expanded to 250%.
- BugFix
  - The problem that a screen flickers for an instant when I carry out a change to preset in Reaper.
  - The problem that all parameters were not displayed in a dialogue of the MIDI control assignment.

Ver1.08 (2010.4.23)

- The DXi version became the discontinued.
    - Because the maintenance of the development environment was difficult, I abolished the DXi version.
- The Synth1 Installer became the discontinued.
    - Because there was not the necessity, with the abolition for DXi, I abolished the installer. On the other hand, I attach tool (initsetteings.exe) initializing the setting (windows registry) such as bank folders. When you use Synth1 for the first time, please initialize setting with this tool.
- The number of the banks was expanded to 100.
    - The setting initialization tool does the setting to bank00 - 09, but does not set bank10 - 99. When you use bank10 - 99, prepare a folder by yourself, Please set it in an optional dialog.
- BugFix
    - Correspondence of the malfunction that the MIDI tab of the optional dialogue is replaced by without permission.
    - Just after a tone save, time when a program change was not performed fixed the bug that there was.

Ver1.07 (2006.5.3)

- Play Mode
    - Unison stereo spread added.
    - Unison pitch added.
- Effect
    - Phaser added.
- GUI
    - Added switch Lissajous.
    - Improved overall rendering performance.
- Other internal process improvement, etc.

Ver1.07 (beta) (2006.3.26)

- BugFix
    - Startup noise problem fixed.

Ver1.07 (alpha2) (2005.10.16)

- GUI
    - Window slider knob added in display settings options.

- BugFix
    - Fixed crash in Dxi.

Ver1.07 (alpha) (2005.10.1)

- Oscillators
    - OSC1 8 multiple detune added.
    - OSC2 pitch smoothing added.
    - PW of LFO changed from -PI to +PI.
- Filter
    - Negative values for AMOUNT added.
- LFO
    - PAN destination added.
- Effect added.
- Equalizer
    - PAN (L-R) added.
- Tempo Delay
    - During the delay time sound changes like tape echo.
    - No following changes and additions to stereo version.
    - Normal stereo type (ST), cross-feedback (X), Ping Pong (PP).
    - Added a subtle shift parameters of left and right delay (spread).
    - Old level knob is replaced with adjustable balance between original sound and delay sound (d / w).
- Chorus/Flanger
    - The total change in internal processing, noise free sound.
    - Expanded the range of RATE variation (0.01Hz～400Hz).
    - Ultra short time (0.05ms) added (low-frequency boost in conjunction with the feedback).
    - Feedback + / - change is applied.
- Play Mode
    - Added Unison detune.
- Other various internal processes optimization

Ver1.06 (2003.9.20)

- about sound
    - unison mode
    - portament auto mode
    - smooth vcf freq knob
    - vcf resonance feedback
    - vcf distortion -> saturation
    - modify vcf velocity
    - vco S/N up (for sine, triangle)

    - modify Delay<->Chorus/Flange patching.
    - modify Chorus/Flanger algorithm
    - modify portament effect (linear->exponential)
    - modify noise when mono mode
- about MIDI
    - receive MIDI control change
    - read/write Control Change Map
    - Midi Control Learn mode (click [OPT] with pressing [Shift])
    - Control Map for nordlead2
- BugFix
    - Fixed a bug that hangup when tempo cahnge. (DXi)
    - Fixed a bug that arpegiator tempo becomes later and later..
    - Fixed a bug that synth1 parameter is out of VSTi range. (for Muzie)
    - Fixed a bug that the hostapplication is crushed when the Synth1 starts. (VSTi)
    - etc..

Ver1.05a (2002.11.17)

- about sound
    - Arbitrary Sampling Frequency
    - Master Tune
    - Modulation envelope -> FM,Pulse Width
    - Smooth FM modulation
    - OSC2 fine unit-> cent
    - OSC1,2 fine tune
    - modify sync+FM
    - modify sync noise reset
    - Noise generator on each voice
    - LFO tempo sync,key sync
    - LFO maximum speed up
    - LFO dest => FM
    - modify delay noise.
    - modify attack time
    - modify volume,gain.sustain
    - modify velocity
    - etc.
- about MIDI
    - Sustain Pedal
- BugFix
    - modify mod env max value
    - modify chorus memory buffer
    - modify pitch env & portament combination
    - modify arp range is hidden by FruityLoops randomize function
    - modify LFO random

- about GUI
    - change delay arpegiator tempo display.
    - LCD slider/selection.
    - direct select LED
    - each program has color attribute.
    - change slider length.
    - default panel size ->130%
    - change knob size.
    - click bank LCD->select program/li>
    - change some slider diplay
    - legart x->legato o

Ver1.04a (2002.11.8)

- SONAR+Synth1 Fixed a bug on Audio Export and TrackDown

Ver1.04 (2002.10.30)

- Fixed a bug that caused a crash upon using SynthEdit with Synth1

Ver1.03 (2002.10.28)

- Fixed a GDI resource leak and improved stability in Win98/Me
- Compacted the memory used for graphics

Ver1.02 (2002.10.27)

- Fixed a bug that prevented proper selection of the waveshape for LFO in VSTi mode
- Fixed a memory leak that occurred after use in VSTi mode
- Added the option of changing the color and size of the user interface
- Adjusted the position of dialog boxes
- Added display of graduation on knobs; minor graphics changes.
- Narrowed slider displays to reduce the overlap with the neighboring controls
- Fixed lack of clipping correction for filters when used with a non-SSE processor

Ver1.01 (2002.10.15)

- VSTi compatibility
- Added the option of ignoring MIDI messages

- Adjusted the position of dialog boxes

Ver 1.0 (2002.10.9)

- First registered version

Support

Info

The latest info will be available on the following home page. Please make a visit:

http://www.geocities.jp/daichi1969/

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