

SonicProjects  
**OP-X PRO**

**MANUAL**



[www.sonicprojects.ch](http://www.sonicprojects.ch)

## Introduction

Congratulations on the purchase of the SonicProjects OP-X PRO!

The OP-X PRO has the same basic engine as the OP-X while offering a multimode filter and a lot of additional features and tuning options.

The technical structure of this synth is quite unique. The engine is based on six totally independent voices which correspond to the voice boards of the original. There's no voice cloning used to achieve polyphony as it is usually the case in vst instruments. Each voice is built separately, each voice has its own signal path and each voice differs slightly in its parameter settings and sound - as it is present too in the original. This imperfectness is one of the main reasons for the organic and lively character of the old faithful originals.

Although this is a great thing for some sounds (especially pads), it's not so great for others (brass, fm, ...). While you had to tune the voice cards of the original by trimpot adjustments, the voices of the op-x can be tuned by the touch of four global buttons - separately for oscillators, filters, envelopes and portamento times. The original did just provide an autotune button, which tuned the oscillators. The rest was influenced by temperature and aging processes. In the OP-X PRO you can additionally tweak the tuning of the voices to your liking with virtual trimpots. They represent the real trimpots of the original's voice boards which normally had to be tuned by a service technician from time to time.

With the the op-x you get total control over the tuning - as you might have wished it from any analog synth of the past - without missing the organic feeling. You can mix tuned oscillators, detuned filters etc. There are no limits. Even the spread knob, which effects a continuous and proportional detuning, can be used for polyphonic sounds, also in combination with the knob detune.


We call this concept Separate Voice Design (SVD).

You can learn more about it on this site which includes a lot of audio clips:  
<http://www.sonicprojects.ch/obx/separatevoicedesign.html>

A welcome consequence of the separate voice design is the presence of stereo pan controls for each voice. This popular feature of old analog synths allows mind blowing real stereo without deluting chorus or delay effects.

A further thought had to go to the filter. The old discrete SEM filter was highly appreciated because it didn't loose gain or thickness in high resonance settings and had an extraordinary precious balanced sound and great depth. The filter of the op-x is specially designed and tries to copy this character. The OP-X PRO furthermore implements a parallel multimode filter with continuous blending from high pass to band pass to notch. Like in the old SEM there's too a continuous blending from the low pass mode (12/24dB switchable) to the multimode filter with notch effect in 50/50 setting when blended to high pass.

## Installation

 OP-X PRO 1.2 Installer

3'040 KB Application

Doubleclick the installer and follow the instructions.

The installer will look for the shared vst plugins folder. You can also browse your computer for the vst plugins folder manually. The plugin will be installed in a subfolder named „SonicProjects“. The installer will also create a folder named „SonicProjects“ in your start menu. You will find the pdf manual and the uninstaller there.

Note: You need a vst host to run the plugin. It can't be run standalone. If you don't have a one then have a look at our dedicated site where we have listed some tested and recommended free vst hosts including short guides:  
<http://www.sonicprojects.ch/obx/freevsthost.html>

After first loading in your host you have to enter your personal id and key data to unlock the plugin. After successful unlocking the plugin loads, but still without sound. **You have to reload the plugin now.** From then on it will work.

If the key data was not entered correctly nothing happens when you click on „enter key“. Be sure to enter the whole line containing name AND four digits id number in the „User ID“ field:

User ID:

Use copy and paste for the license key to avoid typing mistakes. If you have problems with the reg window disappearing then deactivate „always on top“ for your plugin window. You can alternatively load the plugin first by clicking on „try demo“ and then enter your data by clicking on the blue window.

Remove the plugin:

Use the uninstaller in the „SonicProjects“ folder in the start menu.



## License and copyright

The plugins are bound to the registered user. It's not allowed to pass them on to third persons. Each plugin contains a hidden serial that allows to identify and trace the original user in case of irregular distribution.

## The voice LEDs



These LEDs indicate voice activity. Each voice has its appropriate LED. That means, when a voice is receiving trigger data to play, its appropriate LED shines. In unisono mode, all six LEDs are glowing at the same time.

The original has these LEDs too, but mounted on the individual voice boards in the inside of the device. With their help, you could see that a voice was working correctly.

## The MANUAL section:



### **VOLUME**

Master volume. Its setting is stored with the preset.

### **TUNER**

The individually and slightly detuned voices can be tuned here. Read the intro for comprehensive info on the voice tuning.

### **OSC**

Tunes the oscillators. In released state, each voice is slightly and individually detuned as it would be on startup in the original. More subtle detunings can be achieved with the spread knob which also works in polyphonic mode.

### **FILT**

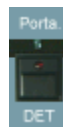
Tunes the filters. In released state, the filter cutoff of every voice is slightly different, as it is the case in every original device that is not freshly serviced. These detunings can be altered for each voice with the FILT trimpot row in the MANUAL section (see MANUAL and „Tuning Trimpots“).



### ENV

Tunes the attack and decay times of the filter envelopes. In released mode, the attack and release time of every voices' filter envelope is slightly different. This gives organic life to pad and sweep sounds. These times can be tuned with the DEC / REL trimpot rows above the keyboard. See „Additional Knobs row“ and „Tuning Trimpots“ for more information.

The fourth element of the op-x' tuning capabilities is located in the additional functions section below the filters section: the portamento detuner "**Port DET**". See "PORTAMENTO", "ADDITIONAL FUNCTIONS SECTION" and „Tuning Trimpots“ section for detailed info.



### SPREAD

Spreads the oscillator tuning of the voices - good for fattening up unisono sounds, but also usable for more controlled detune of polyphonic sounds.



### FILT Trimpots

These trimpots let you tune the filters of voice one to six. This setting is only active when the FILT tune button is released (detuned mode). The standard detuning is the 12 o'clock setting (and this means not tuned equally). You can hear the settings with resonance set to a high amount. More info about the trimpot tuning can be found in the „Tuning Trimpots“ section of the manual.

Learn more about the benefits of slightly different filter settings for each voice on this dedicated site including a lot of audio examples:

<http://www.sonicprojects.ch/obx/separatevoicedesign.html>

## The CONTROL section



### **PORTAMENTO**

Also called "glide" sometimes. Makes the pitch change continuously between the notes. Short settings in unisono sounds makes the sound "squeak". The function also works in polyphonic mode. The portamento can be detuned with "Porta DET" in the additional functions section (below filters section). In released "Porta DET" mode, the portamento times of each voice are equal. In pushed mode, the times vary from voice to voice which was typical for the original. The result in unisono mode is a special sort of "depth" while gliding. In polyphonic mode it will result in the typical analog portamento feel.

### **UNISON**

Stacks all six voices of the first voice bank for fat solo sounds. Use the spread knob or release the osc tune knob to fatten up the sound.

### **OSC 2 DETUNE**

Fine tuning for oscillator 2. This is used to produce beats when both oscillators are on. This results in a fat sound.

### **Trimpot**

The trimpot below the detune knob lets you adjust the subtle beats between oscillator 1 and 2. In zero setting this is really zero which is actually never the case in real hardware devices. In this setting the sound is determined by the random phase difference between oscillator 1 and 2. Fully turned right there are subtle and individual beats for each voice as it is normally the case in hardware devices even in „tuned“ mode. This setting brings back the real hardware feel to the virtual world. For absolutely equal and not phase determined tuning you have to use the „SYNC“ button in the oscillators section. So there are in fact three variants for „tuned“ mode.

Also Have a look at the „Oscillators tuning“ sub-section in the „Tuning trimpots“ section of the manual.

## The MODULATION section



This is the section where the main LFO is controlled and routed to the desired modulation aims. For the modulation lever, there's a separate and independent sine LFO (rate control above levers). If wished, the modulation lever can be switched back to the main LFO as it is in the original device (ADDITIONAL FUNCTIONS SECTION, "Wheel LFO").

### **RATE**

Regulates the LFO rate. The rate response is logarithmical. If the LFO is synchronized to song tempo (which can be done in the ADDITIONAL FUNCTIONS section with the LFO button, III for triolic behaviour), the knob will react in three big steps (multiplied by the song tempo).

The waveforms: Several waveform buttons can be switched on at the same time. This will combine the chosen waveforms to a resulting new wave by adding their outputs to each other.

The available waveforms:

### **SINE**

Switches on the sine wave of the LFO.

### **SQUARE**

Switches on the square wave of the LFO.

### **S/H**

Switches on the sample & hold wave of the LFO. Technically explained, white noise is "sampled" with the speed of the LFO rate. This results in a random step wave.



### **FREQUENCY DEPTH**

Regulates the modulation intensity of the LFO to the oscillators and the filter. The response of this knob is specially designed. In the first quarter, you have double logarithmic response which allows to make finest adjustments in very low modulation settings, e.g. for almost imperceptible oscillator vibrato. The rest of the scale does react linear for fast changes.

### **OSC 1**

Switches the above regulated LFO output to oscillator 1 pitch.

### **OSC 2**

Switches the above regulated LFO output to oscillator 2 pitch.

### **FILTER**

Switches the above regulated LFO output to the filter cutoff. The influence amount is dependent on the filter cutoff. Low cutoff settings result in lower LFO influence. This is again a copied behaviour of the original.

### **PULSE WIDTH DEPTH**

Regulates the modulation intensity of the LFO output to the pulse width of the oscillators pulse waves and the amplifier. Its influence is added to the "WIDTH" setting in the oscillators section.

### **OSC 1**

Switches the above regulated LFO output to oscillator 1 pulse width.

### **OSC 2**

Switches the above regulated LFO output to oscillator 2 pulse width.

### **AMP**

Switches the above regulated LFO output to the amplifier (volume).



## The OSCILLATORS section



### PITCH 1

Sets the pitch of oscillator 1 in five octave steps (QUA mode). In LIN mode the frequency can be adjusted continuously.

### The waveforms:

Other than in the original both waveforms can be switched on at the same time. This is again for problem free VST automation. Both waves activated results in pulse wave (the same as squ pushed only). However, both buttons **released** results in a SINE wave. This is designed for yamaha type FM.

### SAW

Switches on the saw wave of oscillator 1

### SQU

Switches on the pulse wave of oscillator 1

### SINE

The SINE wave will be activated when both buttons are **released**.

### WIDTH

Manual regulation of the pulse width of both pulse waves. Modulations for each pulse wave are added individually.

### PITCH 2

Sets the pitch of oscillator 2 in semitones. The range is five octaves and three semitones. If sync is on, the sync spectrum can be controlled with this knob.

### SAW

Switches on the saw wave of oscillator 2

### SQU

Switches on the pulse wave of oscillator 2

### SINE

The SINE wave will be activated when both buttons are **released**.



## X-MD

Cross modulation. This is sort of a simple frequency modulation between oscillator 1 and oscillator 2. The result is a disharmonic spectrum. The sound is determined by the selected waves, the relation of the oscillators frequencies to each other and the modulation amount, regulatable with "X-Md" trimpot. In most cases, the pitch knob of oscillator 2 is used to regulate this. If the frequency of oscillator is modulated (by LFO or filter envelope - described later), the sound will change dynamically. If you want to hear only the FM output, you can switch off oscillator 2. Switch the black osc2 control from „QUA“ (quantized) to „LIN“ (linear) for continuous tone search.

For Yamaha type FM, release the wave buttons (both) for the **SINE** waves to become active. For a little bit more presence, the wave of oscillator 2 can be switched to SQU (Pulse). For even more clearness, the activation of ring modulation (ADDITIONAL FUNCTIONS section, "RING") is recommended.

In the ADDITIONAL FUNCTIONS section, there is a special function to give some additional movement to crossmod sounds: When you switch on the "ENV" button, the modulation depth is influenced by the amp envelope. (The same can be done with ring modulation - see later).

## SYNC

Hard sync. Oscillator 2 is synchronized by oscillator 1. Everytime the oscillator 1 wave amplitude crosses zero, the oscillator 2 wave amplitude is set to zero too. The sonic result is the well known and famous sync sound with rich harmonics. As it is with cross modulation, changes of the oscillator 2 pitch results in changes in the spectrum. The whole thing gets interesting too if oscillator 2 is modulated.

## QUA / LIN (black rectangles)

Click them to change from quantized (QUA; Osc1: octaves, Osc2: semi tones) frequency control to continuous / linear (LIN) frequency control. This will have an affect on both the main buttons and the trimpots.

## FQ1 / FQ2

Fine adjustment of the frequencies of oscillator 1 and 2. The response is dependent on the black rectangles setting (QUA / LIN - see above).

## XMD

Sets the amount of switched on x-modulation (cross modulation) AND switched on ring modulation (additional buttons section).

## The FILTER section



A specially designed 12/24db low pass filter with an accompanying parallel multimode filter tries to do its best to emulate the famous SEM sound. The SEM filters became famous with the beige SEM-Modules and the SEM based Four- and Eightvoice. The OB-X was the last Ob. synth that was equipped with this discrete design (but without multi mode). Later models, beginning with the OB-Xa, got the standard Curtis Chips. One of the special things of the SEM filters is that in high resonance settings, the sound remains as fat as in zero resonance settings. This is a wonderful thing for pads and sweeps. The old SEM filters had no self oscillation, so you won't find it here too. The classic SEM design (continuous blending from 12dB lowpass to highpass which results in notch filtering in the 50/50 setting - with separate choosable bandpass position) has been enhanced with switchable 12/24 dB LP mode (24 dB switch in the additional buttons section) and a continuously (!) adjustable multi-mode pole (only high pass in the SEM) that lets you blend from high pass over band pass to notch. Not enough with this the LP-multimode mix can be modulated by the main LFO and the filter envelope. This all gives you tremendous subtle control over tone as you have never experienced before.

### **CUTOFF**

Regulates the filter cutoff frequency.

### **RESON.**

Regulates the filter resonance. If self oscillation is activated (see above, small lamp shines) the filter will produce a sine wave at the highest setting.

### **ENV AMT**

Regulates the amount of the filter envelope influence on the cutoff frequency. This is added to the cutoff setting.

### **OSC1**

Switches oscillator 1 to the filter.

### **OSC2 HALF**

Switches half of the volume of oscillator 1 to the filter.



### **OSC2 FULL**

Switches the full volume of oscillator 1 to the filter.

If both knobs are activated, there's a slight volume push.  
You can fine-tune the amount using vst automation (drag the dedicated line).

### **NOISE HALF**

Switches half of the volume of the white noise generator to the filter.

### **NOISE FULL**

Switches the full volume of the white noise generator to the filter.

If both knobs are activated, there's a slight volume push.  
You can fine-tune the amount using vst automation (drag the dedicated line).

### **KEY**

Keyboard tracking. It makes the filter cutoff follow the key position, which means that every note has the same amount of harmonics. When the resonance is in a high setting, you can hear the filters' beginning feedback pitch follow the keyboard. Try the preset named "Noise Whistle" to hear this. The keyboard tracking amount can be adjusted with the „KEY“ trimpot. Fully turned right the filter pitch follows the keyboard chromatically.

### **MIX trimpot**

This trimpot lets you blend from 12/24 dB low pass (left or zero position) to the multimode filter (high pass - band pass - notch, dependent on the TYPE setting). With the multimode filter set to high pass the 12 o'clock position of the MIX trimpot results in classic SEM notch filtering (one small band missing). In this notch mode resonance can be added without loss of contour (which is not possible in the multimode filters' notch position).

### **TYP trimpot**

Lets you continuously blend the multimode filter from high pass (left or 7 o'clock position) over band pass (12 o'clock position) to notch (right position). The blending curve is logarithmic so that the pure bandpass mode can be located more easily. This continuous blending option gives you the possibility to change modes on the fly without hard sound steps and also lets you adjust tone and high/low frequency amount very detailed. You can e.g. take a bit away the lows of the lopass mode blending a bit towards the bandpass mode for a slimmer sound. The modes in extreme positions:



**HP (high pass):** Filters away the low frequency and leaves the high frequencies. Used for slim and thin sounding stuff to fit the arrangement/mix.

**BP (band pass):** Only lets pass a narrow frequency band. The resulting sound is well known from the guitar „wah-wah“ pedals. It sounds somehow similar to lowpass filtering but with reduced lows.

**NO (notch):** This is the opposite to the bandpass filtering. It cuts off a narrow band. It's quite a subtle effect. The resonance has to be set to zero to hear it (if not the hole is filled by the peak). See above for SEM notch mode w/ res.

### **KEY**

Lets you adjust the amount of keyboard tracking. The keyboard tracking has to be switched on for this (KEY button - see above). Keyboard tracking lets the filter cutoff frequency follow the keyboard (dependent on the played note). In max position this is chromatical (same as played notes), in zero position the cutoff does not follow any more. Keyboard tracking is being used to give all notes the same (or weighted) amount of brightness or partials, often present in natural instruments, or for tonal fm sounds.

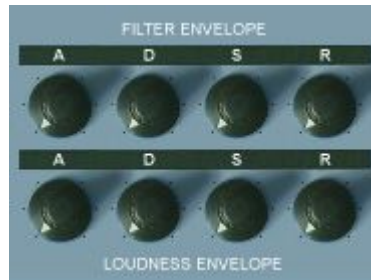
### **LFO (-MIX)**

Lets the main LFO modulate the filter mix setting. The effect is dependent on the MIX trimpot position. The audible result is less stiff than a simple cutoff modulation. Great for never heard stuff.

### **ENV (-MIX)**

Lets the filter envelope modulate the filter mix setting. The effect is dependent on the MIX trimpot position. The audible result is less stiff than a simple cutoff modulation. It can be combined with standard cutoff modulation. This option can produce very flattering and subtle sweeps.

## The ENVELOPES section



Nothing spectacular here, just an ADSR envelope for the filter on top and an ADSR envelope for the amp at the bottom. But nevertheless there is one thing to mention: The filter envelope can be used to modulate the oscillators pitch and the pulse width. The knobs for this are at the bottom left side named OM and PM (described later). This function was not present in the original.

ADSR of course means :

- A** Attack
- D** Decay
- S** Sustain
- R** Release

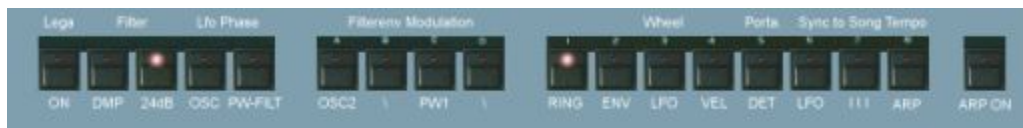
To hear the envelopes reaction set all ADSR controls to zero, switch on all tuning buttons in the tuner section (OSC, FILT, ENV), switch off the oscillators and switch on noise instead, set resonance to almost max position (but only almost to prohibit distortions), cutoff to zero and env amount to max, and play repeated notes. You will hear very short clicks (better audible with some reverb added). Increase then the amp envelope decay knob to max (the click will get punchier since there's more room for it) and then increase the cutoff (which brings punchy tonal bumps).

### Arpeggio mode

In arpeggio mode it can become necessary to adjust the amp envelope:

1. If the arpeggiator is on in polyphonic mode (unisono button not on), you have to regulate down the amp sustain to zero to separate the voices from each other.
2. If you hold the arpeggio with the damper pedal, it can become necessary to adjust the amp sustain to make the arpeggio sound the same as in non-holde mode (if wanted).

## The ADDITIONAL FUNCTIONS section (below filter)



In former days, you could save your settings here in 32 (4 x 8) memory locations. There was a cassette interface to backup the memory. Today, 29 years later, in the virtual world, we don't need this section anymore. This allows us to equip these free buttons with the control for various additional functions.

The abbreviations below the buttons are designed to remember what the specific button is for. We could not write a book below every button, so you have to know what the abbreviations refer to. You simply have to learn this (not a big deal):

### **Legat ON**

Switches on legato mode when playing unisono patches. In legato mode the pitch always jumps back to the remaining hold note and the notes are only retriggered if all keys are released. In non legato mode the pitch doesn't jump back and the notes are retriggered every time (more convenient for skilled piano players and essential for unisono bass sounds).

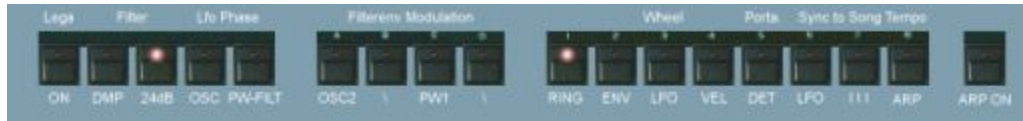
The legato mode was the standard unisono mode in many old analog synths. However the pitch normally only jumped back from one side (in the OB-X from down to up) while in the OP-X PRO it jumps back from both sides to a hold note - very practical. The legato mode was a common way of solo playing - holding one key as a center point and fiddle around in with the other fingers.

### **DMP**

Damps / reduces the filter cutoff by a fixed amount. This can be necessary if key tracking is switched on and the cutoff can't be lowered enough for very high notes. But it also can be used for fast high/low cutoff setting comparisons and immediate sequencer line mods.

### **24dB**

Switches the low pass filter effectiveness from 12dB (standard SEM mode) to 24 dB. The 24dB setting can be better for percussive sounds that need more effective filtering. It generally sounds a bit more present but also a bit colder. Not recommended for warm pads.



## Lfo Phase:

### OSC

Inverts the phase of the LFO modulation to the oscillators. This is helpful when the LFO is synchronized to a sequencer. If you want the LFO rise on 2 and 4 instead of 1 and 3, just push this button.

### PW-FILT

The same for pulse width and filter. The LFO phase to these two destination is inverted. Very important function again when synchronized to song tempo.

## Filterenv Modulation:

### OSC2

Makes the filter envelope modulate oscillator 2 only (if env modulation is activated). This is important for modulated sync- and crossmod sounds.

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Inverts the effect of the filter envelope modulation to the oscillators (if env modulation is activated).

### PW1

Makes the filter envelope modulate pulse width 1 only (if env modulation is activated).

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Inverts the effect of the filter envelope modulation to the pulse width (if env modulation is activated).

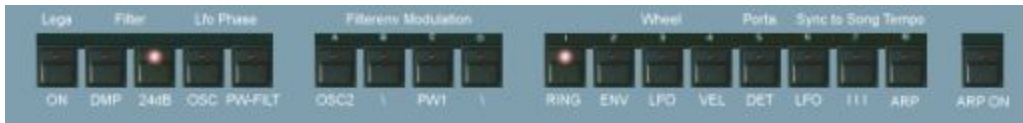
### RING

Switches on ring modulation. Ring modulation means, that the output of one oscillator is multiplied by the output of the other (not the pitch as it is with x-mod). This sounds a bit different to the cross modulation. Please note that both oscillators have to be switched on to hear a result. The amount of ring modulation is set in the oscillators section with the „X-MD“ trimpot (which also regulates the X-Mod amount). The ring modulation often can be used to brighten up sounds a bit, especially sine fm sounds.

### ENV

A very special feature that can be interesting in arpeggiator mode: When pushing this button, the output of the modulating oscillator for cross- or ringmodulation is taken after the amp, which means that the amp envelope has an influence on the sonic result. The influence can be heard when the decay and release times are short.





### Wheel LFO

The extra modulation wheel LFO can be switched off here. In this case, the wheel (or lever) is routed to the main LFO instead.

### VEL

This button switches velocity sensitivity on. The velocity will have an effect on the filter envelope. Combined with the filterenv modulation, not only the cutoff can be velocity controlled, but also pitch and pulse width (dependent on the **OM** and **PM** settings). The velocity range and response can be regulated in the additional knobs row with „Floor“ and „Ceil“.

### Porta DET

Portamento detune. In released "Porta DET" mode, the portamento times of each voice are equal for snappy "squeek". In pushed mode, the times vary from voice to voice which was typical in the original. The sonic result in solo sound is a special sort of "depth" while gliding. If you really need to you can alter the voices' individual portamento detunings with the dedicated trimpot row in the Levers section (POR). Have a look at the „Levers“ and „Tuning Tutorial“ section in this manual for more details.

Portamento detune is absolutely essential to capture the magic of many old polyphonic analog synths. OP-X PRO even goes a step further than the hardware by letting you choose the „state of service“. Have a look at the tuning tutorial to learn more about the fine tuning of this feature.

### Sync to Songtempo:

#### LFO

Synchronizes the LFO to the song tempo of the sequencer. In this mode, the RATE knob will react in three big steps only, dependent on the tempo. Note, that the phases of the individual LFO sections can be inverted (OSC / PF).

#### III

Switches on triolic synchronization mode (multiples of three notes per beat).

#### ARP

Synchronizes the Arpeggiator to the song tempo of the sequencer. In this mode, the Speed knob will react in three big steps only, dependent on the song tempo.

#### ARP ON

See next page

## ARP ON

This button switches the arpeggiator on. A second click (led shines red) causes the arpeggiator to switch to hold sequence mode.

Normal arpeggio (led orange):

The notes are played back in the same order and place as they were played in. The range is one octave. The speed can be varied with the „Speed“ knob above the keyboard. You can also synchronize the arpeggiator to the song tempo with the „ARP“ button below „Sync to song tempo“. The arpeggio can be hold with the damper pedal. You have to adjust sustain and release for this mode if the hold line should sound exactly the same.

Step sequencer mode (led red):

When you play a new note, it will be saved in one of the memory locations of a six step sequencer. Every new note is saved in the next memory location. When all six locations are full, it will be saved to location 1 again. Right above the keyboard you can find two dedicated knobs: The **Speed** knob regulates the playback speed. The **Steps** button varies the amount of steps repeatedly played. In the minimal setting, this number is 2, in the max 7. In the 7-mode the first step of the 6-step sequencer is being repeated.

The arpeggiator can be used in unison and polyphonic mode. If you are in polyphonic mode, you have to **turn the amp envelope sustain to zero** to separate each voice from the others. Done so, you can play with the filter envelope, the amps attack and decay and also with the voice pans.

So you have in fact the following modes to choose from:

1. ARP ON orange, steps other than max (turn a bit anti-clockwise):

- normal input order arpeggio (one octave up);
- note that the steps knob has no effect in this state
- hold with damper pedal (adjust amp sustain if necessary)

A quite practical feature is that the polyphony will be fixed once the hold pedal is active. This allows to stay in the current metre without paying attention to the number of notes played at the same time. To change the fixed number simply release the hold pedal and start with a new number which can be fixed then again with the hold pedal. Adjust the amp sustain knob to match the release of the two states if needed.

2. ARP ON red:

- step sequencer, 2 - 6 steps, 6 steps with one step repeated (max)
- release with damper pedal (returns to hold mode)
- steps knob sets the amount of played steps (2 - 6, 6 + 1 rep)

## The ADDITIONAL KNOBS row (above Keyboard)



You won't find the knobs above the keyboard in the original. These are all additional functions or functions which were only accessible after opening the case of the device. From left to right:

### **LFO**

Regulates the speed of the separate modwheel sine-LFO. It's routed to the modulation lever (or wheel in modern terms). This LFO can be switched to the panning modulation instead with the „Wheel LFO“ button in the additional buttnd section if you need a separate lfo for it. Then the main lfo will be routed to the lever modulation instead.

### **Aftertouch:**

#### **A Vib.**

Regulates the aftertouch (key pressure) influence on the oscillator vibrato. This is driven by the LFO switched to the modulation wheel.

#### **A Filt.**

Regulates the aftertouch (key pressure) influence on the filter cutoff. Great for expression.

### **Envmod:**

#### **OM**

Regulates the amount of the filter envelope modulation to the oscillators. Have a look at the ADDITIONAL FUNCTIONS section description for further options (OSC, \). This is a prophet synth speciality.

#### **PM**

Regulates the amount of the filter envelope modulation to the pulse width. Have a look at the ADDITIONAL FUNCTIONS section description for further options (PW, \). This is a prophet synth speciality too.

### **TUNE**

Master tune. The default setting is center (mid). The pitch can be adjusted up to one half tone down (turn left) or up (turn right) to adapt the overall pitch to acoustic instruments with deviating tuning.



## DEC / REL

Trimpot controls for the decays (DEC) and releases (REL) of the filter envelope. These trimpots let you tune the slightly different decay and release settings of the filter envelopes in detuned mode (ENV button in tuner section released) for each voice channel (1 to 6 from left to right). This setting will only have an effect in detuned mode (ENV released). The envelopes in real old hardware synths never did close for each voice with the exact same speed which gave sweeps a special life and richness. This could be annoying for brass (and other) sounds however, so the envelopes detuning can be switched off with one button in the OP-X for these sounds (with the „ENV“ button in the MANUAL section). The manual tuning of the filter envelopes is definitively something for specialists or folks that want to copy their hardware device 1:1. Especially in downsweeping stacked unisono sounds these settings have a huge effect on the overall sound - a good example for it is the famous „Tom Sawyer“ sound from Rush. Without these slightly different envelope times this famous sweep will sound stiff and unreal because all old analog synths had these slight offsets. For a detailed tutorial for envelope tuning have a look at the „Tuning Trimpots“ section of this manual.

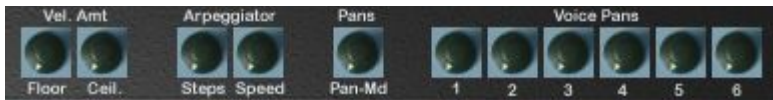
## Voice mute



These buttons let you individually mute single voices. If polyphony is switched to more than six voices.

This feature is mainly used for the following two tasks:

1. Create less fat unisono sounds or real mono patches: By lowering the number of involved voices the sound gets less fat but more transparent. Leaving only one voice active will allow to imitate mono-synths (e.g. Odyssey or Minimoog). Works only when unisono is switched on of course.
2. For tuning individual voices by listening to them alone and comparing them to other ones (also switch unisono mode for this). Read more about it in the comprehensive tuning tutorial section of the manual.



### **Vel. Amt: Velocity Amount:**

With the two knobs below „Vel. Amt“ the velocity amount to the filter envelope can be controlled in detail. These knobs only have an effect if the VEL button above is activated and velocity is available. In running arpeggio mode velocity is not available.

### **Floor**

Sets the lowest point of velocity - it's the filter envelope (=cutoff) setting if velocity is zero.

### **Ceil.**

(Ceiling) This sets the maximal influence position of the velocity towards the filter envelope.

### **Steps / Speed**

Steps sets the number of played back steps in sequencer mode (ARP ON: red), from 2 to 6 and 6 + step 1 repeated. Speed regulates the speed. More infos in the ADD FUNCTIONS: ARP ON section.

### **P-Md**

This knob replaces the X-Md knob of the OP-X which has moved into the oscillators section. This knob allows you to modulate the voice pans of each voice with the sine wave of the main LFO. Although all pans are modulated by the same LFO, the effect is independent for each voice and is determined by its individual pan setting. The pan will be modulated from the present pan setting to the opposite pan side to the same maximal amount as the original side - like a mirror, going through the 12 o'clock setting. So if the voice pan is set to 12 o'clock itself the pan modulation will have no effect. If the pan is in the minimal or maximal setting the modulation will have the maximal effect. The direction is always determined by the „start“ position, so the modulation directions can be opposite for each voice. This gives you tremendous possibilities that go beyond the already great „fixed“ individual panning option.

Examples:

1. All pans set to full left: this will result in a classic panning tremolo effect
2. Alternately left / right setting (the best not full) for each voice: this will result in a lively and slightly moving stereo impression; this will even improve if some pans are set to 12 o'clock or if each pan is slightly different.

Turning the P-Md knob from zero (manual and fixed panning) to right there will be a point of „kicking in“ of the effect. From this point on the modulation depth is increased. For „normal“ and manual pan setting this knob must be set to zero. Set tis knob back to full zero for normal (manual) panning.

### **The voice pans:**

This was a very popular feature in old analog synths. In contrast to many old synths, the controls can be accessed on the surface and also can be stored with the preset. The panpots also can be automated. In the original device, these pots sat on a board in the inside of the case. **For non modulated manual setting the P-Md knob on the left has to be set to zero** (section see above).

**1** Pan setting for voice 1

**2** Pan setting for voice 2

**3** Pan setting for voice 3

**4** Pan setting for voice 4

**5** Pan setting for voice 5

**6** Pan setting for voice 6

Some possible ways of using the pans:

1. Wide stereo in polyphonic mode:

Set the pans repeatedly fully left and fully right (1 left, 2 right, 3 left...)

2. Wide stereo in polyphonic mode with analog flavour:

Set the pans repeatedly fully left and fully right (1 left, 2 right, 3 left...) and alter the settings a bit from voice to voice

3. Analog mono:

Set the pans to center, but not exactly - vary the settings a bit from voice to voice - the sound will become more natural like this

4. Broad unisono:

Set the pans repeatedly fully left and fully right (1 left, 2 right, 3 left...) - the unisono patch will become smooth, big and broad

5. Panning arpeggio:

Set the pans increasingly from fully left (voice 1) to fully right (voice 6). The arpeggio will move now from far left to far right in the stereo field.

## The LEVERS section



The levers section contains several global controls, including keyboard and lever animation, pitch and modulation levers with dedicated controls plus the octave setting.

### LEVERS

A speciality of old oberheim synths was that they had two vertically working levers instead of the popular wheels invented by moog. The **modulation lever** is on the left side. In the original it only worked downwise. In the OP-X, it can be moved up- and downwise. Upwise, the modulation is inverted (hearable only in a relative time context). The **pitch lever** is on the right side. It reacts vice versa than a popular wheel. Downwise movement highers pitch, upwise movement lowers pich.



### POR

Portamento tuning trimpots

The OP-X does handle the portamento for each voice separatly (like in the real hardware). So the portamento times can be different for each voice. In old analog hardware synths the prtamento times almoust always were differing slightly which resulted in a rich and „smearly“ portamento sound especially in stacked unison mode. While this effect is subtle when using short portamento times (but nevertheless makes a huge difference) it gets very obvious when the portamento time is increased. Some voices will „land“ earlier while others follow a bit later. This was very typical for old OB synths and it's present too in the OP-X since the internal structure is almoust the same.

In detuned mode (with activated Porta. DET button in the additional buttons row) the voices' individual slightly different portamento times can be tuned with these trimpots. This is something for absolute specialists and probably won't be used most of the time by most users since the standard detuning setting is perfectly usable. But it's there if you need it - one never knows. If you want to copy your favourite portamento glide from an old record up to the last acribic detail you can do this here. Have a look at the „Tuning Trimpots“ section in this manual for a short tuning tutorial.



### **Os2**

Oscillator 2 only. When switched on, the pitchwheel (or whatever it is called) does change the pitch of oscillator 2 only. This is great for controlling sync sounds. Try the preset "SyncSolo Pitchwheel" to explore this.

### **+12**

This button serves for setting the pitchwheel interval between two semitones (released) and one octave (blue).

### **Oct.**

Switches the keyboard octave (three octave range). Be careful handling it in vst automation mode because of the "radio button" switch mode. This anyway is a parameter that is set once and won't be changed while playing in normal case. Better use your masterkeyboard's transpose function for realtime key range changes.

### **Keyboard and lever animation controls:**

The keyboard and levers of the OP-X PRO react to the computer mouse. They also react to midi data. The response to midi data can be switched off for keyboard and levers separately. The controls:



Top: Switches off the keyboard's response to midi data.

Bottom: Switches off the levers' response to midi data.

While keyboard animation looks nice for demo purpose it's not really needed for actual playing. Active keyboard animation can cause a tad bit higher cpu load because the gui has to „work“ too. **So it's recommended to switch it off if you don't actually need it.**

**The midi data response of the keyboard can cause interference noises (especially in unison sounds). Switch off the keyboard midi response (top button) in that case.**



## Tuning Trimpots



This section will make you familiar with the handling of the added tuning trimpots in the OP-X PRO.

In the real original device these tuning trimpots could be found on the voice boards in the inside of the device. They had to be tuned from time to time by a service technician or the experienced musician. The goal of this procedure was to make all voices sound identical. From the today's point of view the slight imperfectness and differences in sound between the voices, caused by device tolerances and aging processes, gave those old analog synths the organic, rich and lively character that got lost a bit in the newer synths with digitally controlled voltages.

These fixed slight differences were furthermore overlapped by the warming up drift which got normally stable after some minutes.

For some sounds these slight detunings were great, especially for pads and slow sweeps, but also for stacked solo sounds which sound way more rich and smooth if not only the oscillators but also the filters, the envelopes and the portamento times are spread a bit - you can try this out in the OP-X PRO to hear the difference. For other sounds however these detunings were annoying, especially for fm (which needs absolutely equal tuning for chromatic playing) and snappy brass sounds which need precise settings. So in the past there was no other way than changing the synth for those different tonal characters since a full tuning was a very time intensive process.

In the OP-X PRO you have all this too, but with total immediate control, one fingertip tuning and saving option. So every preset can sound like a different synth in fact, with variable age or service state.

The consequence of this is that OP-X PRO does really feel and sound like real hardware and can also be tuned like the old glorious analog synths.

The detuning options are split up into four independent sections that can be individually tuned or detuned: oscillators (common for osc1 and osc2), filters (cutoff), filter envelopes (decay and release times) and portamento times.

For each of these sections two states can be chosen: tuned or detuned. This can be chosen in the MANUAL section (OSC/FILT/ENV) and the additional buttons section (Porta. DET). In the detuned mode the tuning is represented by the settings of the dedicated trimpots (one per voice channel), in tuned mode these have no effect any more. It's important to know that the standard 12 o'clock setting of the trimpots means not tuned at all - it only represents the standard detuning implemented by Sonicprojects.

In the OP-X PRO you have now the possibility to alter these detunings to your liking. If you e.g. feel that the filter of one voice opens a bit too high for your taste you can tweak it down a bit. The detuning settings will be saved with the current patch and have no global effect. Every patch can have its own individual detuning.

The buttons to switch the sections from tuned to detuned mode:

Oscillators, filters and filter envelopes:



In released mode the sections are in detuned mode, in pushed mode (led shining) the sections are tuned and will override the trimpot settings

Portamento times:



This button does react vice versa: in pushed mode the portamento times are detuned (trimpots setting), in released mode the times are tuned and will override the trimpot settings.

In pushed (=detuned) mode you will get that famous smeary portamento sound from the old days which gives a special depth.

## Tuning Tutorial

The following section will get you acquainted with the tuning procedure for each of the four sections. In fact a full tuning is not necessary in the OP-X PRO since you can tune the sections by a fingertip with the above described buttons. But it will help you to understand the functionality of the trimpots so that you can make use of them when you need to.

Filter trimpots:

Most important and probably used sometimes for immediate tweaking or experimental sequencer lines. In monophonic mode (only one voice active) the trimpots also can be used for very detailed cutoff control.

Env trimpots:

Probably not used most of the time, but very useful if one voice sweeps down a bit too slow for your taste in a dedicated patch.

Portamento trimpots:

Only for real cracks that want to copy their hardware devices 1:1.

## Oscillators tuning



There are no trim pots to tune the oscillators. The reason for this is that the detuning can be controlled continuously by the spread knob which is also active in polyphonic mode.

So there are four choices actually:

1. OSC tune button released, spread set to zero. In this state the OP-X sounds like a hardware device after switching on before the autotune process. Can be great for very dirty sounds.
2. OSC tune button pushed, spread set to zero. This is the fully tuned mode, good for polyphonic sounds that should be purely tempered.
3. OSC tune button pushed, spread set to a variable amount. In this setting the spread knob gives you continuous control from fully tuned (zero) to detuned. You can make polyphonic sounds slightly unpure like this and fatten up stacked unisono sounds.
4. Last but not least you can even mix spread and button detune with not always predictable result.

A further thought went to the relative detunings between oscillator 1 and 2 for each voice. The „normal“ way to handle this is the OSC2 Detune (OSC2 Det.) knob in the CONTROL section.

The detuning of oscillator 2 will produce beats with increasing frequency from zero to max position that will fatten up the sound and make it lively.

While in software synths the zero setting really allows absolutely equal tuning this was almost impossible in real hardware synths. There were always slow beats remaining even in the „equally tuned“ position, caused by temperature drifts and the fact that no voice did have the exact same zero point.

If you want to have this back in the software OP-X PRO you have to turn the white trimpot below the osc2 det knob to max position. In this setting there will be left very slow beats even if the osc2 det knob is set to zero. The frequency of these beats also are a bit different from voice to voice, just like in the real hardware device. It has to be mentioned that in absolutely equally tuned mode (trimpot and osc2 det det to zero) there nevertheless will be different relative phase settings between osc1 and 2 for each voice which are accidental and will have an influence on sound. For absolutely even phase equal tuning you have to push the „SYNC“ button in the oscillators section additionally.

## Filters tuning



Slightly different cutoff settings for each voice can result in a more lively and rich sound for both pads and stacked unisono sounds. In released FILT tune button mode, the filter settings of the OP-X PRO vary slightly from voice to voice. This standard detuning corresponds to the 12 o'clock setting of the FILT trimpots. So 12 o'clock setting does not mean tuned.

To hear the filter settings of each voice set the resonance to a high level and reduce the cutoff to about 13 o'clock. You will hear the filter resonance „sing“ now, and stepping through the voices (playing repeated notes) will result in a little „melody“. With self oscillation switched on you will hear it the best. Which voice is presently playing you can see looking at the voice leds. The trimpots correspond to voices one to six from left to right. Tweak the trimpots on the fly to change the „melody“ or stop repeating notes and hold one note and then tweak the dedicated trimpot.

If you want to know how much the detuned mode differs from the tuned one for each voice you just have to push and release again the FILT tune button while holding a note. Switching there and back from detuned to tuned mode you can alter the voice's trimpot until the tuning in tuned and detuned mode is equal. Then you can see the offset difference.

This can be done even more comfortably without stepping through the voices and stopping when you activate the unisono mode (which will play all voices at the same time) and then mute all voices except the one you want to tune.

If you want to act as a service technician of the old analog days then take the challenge to tune all filters from voice one to six like this. Once tuned you can set up your own individual filters detuning. Don't forget to save it with the current patch since this won't have a global effect.

If you want to exactly copy the sound of your old six voice hardware synth (e.g. XPander or six voice OB-X / OB-Xa / OB-8) then you simply have to match the settings from voice to voice from the hardware device to the OP-X PRO. So you will have to set your hardware synth to the same resonance and cutoff setting as the OP-X before tweaking the trimpots of the OP-X. You can save then the patch as a root patch for a dedicated synth sound. It's all up to your phantasy in fact.

After successful tuning the trimpots will look like this:



## Envelopes tuning



Slightly different decay and release times in the filter envelopes of each voice can give long downsweeps a more organic and lively character. Unisono downsweeps with detuned times are broader, fatter and richer as it would be with absolutely equal times. These slight detunings were very typical for old polyphonic analog synths and can be heard going on in many famous sounds.

However there are sounds where these differences are unwished or even disturbing - e.g. brass. So the detunings can be switched off by the touch of a button (ENV in the MANUAL section).

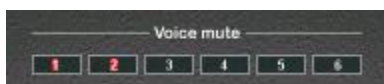
The OP-X PRO furthermore lets you alter the implemented standard detuning to your liking - should this be to copy a particular sound in every detail or to copy the behaviour of an existing real analog synth. The standard detuning corresponds to the 12 o'clock setting of the ENV trimpots. So 12 o'clock setting means not tuned. The trimpots setting will only have an effect when the ENV tune button is released.

The meaning of the abbreviations:

DEC: Decay - tunes the decay time of the voice's filter envelope

REL: Release - tunes the release time of the voice's filter envelope

If you want to tune the envelopes you do it the best always comparing one envelope to a reference one. First release the ENV tune button in the MANUAL section to get in detuned mode. Switch to unisono mode then and mute all voices except your chosen reference voice and the one you want to compare to it. Set the resonance to a high level, set cutoff to zero and env amount to max. In the envelopes section set the filter envelope attack and sustain to zero, the amp envelope attack to zero too and the sustain and decay to max. If you want to tune the release times you also have to set the amp release to max. Then you can e.g. take decay 1 as a reference point and compare a chosen voice to it. Then tweak the decay or release trimpot of the voice you want to tune. You will clearly hear when the two voices close with the same speed.



After full tuning procedure your trimpots will look like this:



## Portamento tuning



Although it was not an intention actually the portamento times of old voltage controlled analog synths always did differ a bit from voice to voice. This results in kind of a „smear“ glide sound in stacked unisono patches which is very charming and was very typical. Using extremely long portamento times this also had an effect in polyphonic sweeps over several octaves - some voices did „land“ earlier and others „went home“ later - also very typical.

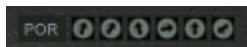
You can activate this effect with the „Porta. DET“ button in the additional buttons row. In released mode the portamento times of all voices are equally tuned. If the button is pushed the portamento times differ a bit from voice to voice - just as it is the case in the real world. This standard detuning setting is represented by the 12 o'clock setting of the POR tune trimpots - so 12 o'clock means not tuned.

The trimpots allow you to alter these times to your liking - may it be to copy your favourite sound or an existing hardware synth in all its individual behaviour.

In most cases however the standard setting will be perfectly usable since it's tempered to copy some well known sounds.

If you nevertheless really want to tune the portamento times by yourself you do this the best again in unisono mode always comparing two voices to each other (one as reference point). If the two times are equal the glide won't „smear“ any more.

To choose the right reference point it might help to know how the trimpots would look if they were equally tuned to the tuned mode:



So it's recommended to take voice 5 as reference point since this one is as well as not detuned. This will leave enough action headroom for tweaking the trimpots.

## LOAD AND SAVE SOUNDS

OP-X PRO comes with a huge collection of additional soundbanks in steinberg fxb format. This is the standard format and can be read by almost all existing vst hosts. The banks collection is included in the download package. Put it to a place that suits you best.

The banks folder contains an text info file where the contents of the banks are briefly described. The names of the bank always begin with the prefix "opxpro\_" followed by the name of the bank.

The banks are not being loaded by the plugin itself. This has to be done with your vst host. Almost all vst hosts support loading of fxb banks. So you have to browse and load the banks from your vst host.

How this is done depends on your vst host. Generally look for "load or import (fxb) bank". This function in most cases can be accessed either by an icon or menu in the plugin window itself or can be found in the vst hosts' "plugin" menu. Some examples:

Cubase/Nuendo:

File -> Load bank (on top of the plugin window); v4: import fxb bank

Herman Seib VSTHost:

Plugin -> Load bank

Orion Platinum:

Click on folder icon on the right of the presets chooser

Ableton Live:

Click on chooser below title bar

Create custom patches:

1. Tweak an existing preset or set up a new sound from scratch
2. Save the preset as fxp to a place you like and give it a name

Load the fxps:

You can load the fxps (presets) into any location of an existing bank by file -> load preset or plugin -> load program. There's an empty bank in the banks collection called "opxpro\_empty" that can serve as empty root bank.

Create your own banks:

1. Load the opx\_empty bank
2. Load your saved presets (see above) into this bank
3. Save the bank to a place you like and give it a suitable file name

## TIPS AND TRICKS

Some collected experience based tips and tricks that we'd like to share to help you to make the best possible use of the synth:

### Fine tuning of button parameters

While the button based parameters are only two state on the gui, they are in fact continuous inside the engine. This allows to fine tune them using vst automation or midi cc and you can also save this setting with the preset. This e.g. allows continuous mixing of the oscillators and noise to the filter instead of just off/half/full. If you e.g. only want to have a tad bit of noise just activate vts automation reading in your sequencer and raise the „NOISE HALF“ or „NOISE FULL“ line a tad bit. Alternatively you can do this too with continuous midi cc remote control. The knob state on the gui will change when the fifty percent amount is surpassed. This of course also allows continuous automation or cc control of a two-state parameter. Other applications: set a different interval for pitch bending (tweak the +12 parameter) or set independent lfo modulation amounts for oscillators and filters (turn the freq depth fully clock wise and tweak the button parameters individually). Nice trick, isn't it?

### Using ring modulation for more presence and dirt

Apart from the „normal“ application the ring modulation feature can be used to give a sound just a tad bit more presence and dirt. Just set the x-mod amount trimpot to its minimum level (or a very small amount) and activate ring modulation. Carefully increase the amount for a little bit more effect (but still just a tad bit). Apart from the multiple detuning features this is another tool for subtle manipulation of the tone.

### Explore the additional banks

Be aware that the factory soundset of OP-X PRO is just a small excerpt of all available sounds and possibilities. It is highly recommended to take the time to check out the additional banks which are delivered with the synth. Check the previous chapter to learn how to load them. The OP-X PRO is able to produce an incredible wide palette of sounds, probably more than you would suppose. It can sound like a Jupiter 8, Prophet 5, Synthex, SH-2000 - just check the dedicated banks (opxpro\_jupiter8, opxpro\_prophet5 etc.). It can sound big and powerfull, but also smooth and even innocent. Check the opxpro\_famous bank if you are out for all those famous 80ies sounds. Also check out the factory bank of the smaller brother OP-X (opxpro\_opxfactory20) which contains a nice and usable collection of classic sounds (a lot of „pissed off“ obie sounds here). Don't miss the newest additions like opxpro\_matrixreload (which is one of our favourites), opxpro\_percfmanalog or opxpro\_mixedanalog.

Also check the user area of OP-X PRO then and when - we regularly release new sounds and banks for free download here. The banks released before the 1.2 update are already included in the shipped library:

<http://www.sonicprojects.ch/opxpro/userarea.html>



## Using the filter trimpots for animated sequencer lines

Apart for subtle manipulation of polyphonic and stacked unisono sound, the filter trimpots can be „abused“ to fine adjust the cutoff settings of each of the six steps individually while using the sequencer mode (arp on pushed to red). Lower the main cutoff, raise resonance, release the „FILT“ button in the tuner section and play around with the trimpots. You will be able to produce nice animated sequencer lines with this trick.

## Using the detuning features to fine tune sounds

The multiple detuning features are one of the most powerful tools of OP-X PRO if you learn to use them. You won't find those in this form in another synth. They allow the synth to sound lively, organic, natural and smooth - just like a real analog polysynth. So it's highly recommended to take some time to really get to know and understand those features. Once understood you will begin to use them intuitively on the fly, and you will ask yourself how you could live without them before.

We've set up a dedicated website that tries to describe the strenghts and use of the separate voice design (SVD) with a lot of illustrating audio clips:

<http://www.sonicprojects.ch/obx/separatevoicedesign.html>

Remember the detuning features cover four parameter groups:

- oscillator frequencies
- filter cutoffs
- filter envelope times
- portamento times

A short summary (details on the website above) of possible situations where sounds benefit from the separate voice design with its slightly different (and tunable) settings for each of the six voices:

Sweeps:

Slightly different rising and falling times of the filter envelopes for each voice make the sound more lively and organic.

Pads::

Slightly different cutoff settings and a tad bit detuned (using spread) oscillators make the sound more analog, lively and characterful

Solos:

High resonant stacked solo sounds sound much more gentle and less stiff with spreaded cutoffs. Otherwise they can sum up and sound stiff.

Portamento:

Detuned portamento times give that famous „smear“ known from old analog unisono sounds and real analog feel in polyphonic use.

## VST automation

Every single parameter of the OP-X PRO can be vst automated as you know it from other vstis. How this is done depends on your vst sequencer. Example Cubase: Push the write button on top of the vst plugin window (R), start the sequencer and tweak the controls you want to automate. To read the written data, go back to the zero position, push the read button on top (R) and start the sequencer. The automated controls will move now according to the written data which itself also can be edited.

While knob automation always works fine, some sequencers have problems with button automation (not only with the op-x). They only react to changes and don't write down the buttons' beginning state. You can tweak the written curves manually to fix the problem. Have a look at the „Levers“ section in this manual for important details about lever automation.

## MIDI CC Implementation

The OP-X PRO lets you remote control most parameters via Midi Continuous Controller Data (Midi CC). This is normally handled by a knobs and button equipped midi keyboard. For first trials, the MIDI CC Implementation follows the popular standard **Pro53** implementation, which is available as preset in almost every midi keyboard. OP-X PRO now supports full midi cc feedback for endless encoders with parameter settings dump on program change. This allows for remote control without value jumps. The plugin's midi output has to be routed back to the controller device for this application.

Information for former OP-X PRO 1.1 users: The controllers for the octave switches and triolic sync to song tempo have been reassigned to more important real time functions. Octaves can be more comfortably switched with the transpose function of your master keyboard. The controller for volume has been transposed to a deeper number. It's only standard seven in the receptor version because some hosts tend to reset this controller. The original number however still works too. The CC implementation has been completed. Almost all parameters except the tuning trimpots are now remote controllable.

The full Midi CC Charts:

<b>sorted by cc number</b>	<b>*different order</b>	<b>control present</b>
001	Modulation Lever	Pro53: compatible
005	Portamento	Pro53: compatible
007	Volume	Receptor version (see intro)
011	Volume	Standard version (see intro)
016	Wheel LFO Rate	
017	Aftertouch Vib	
018	Aftertouch Filt	
020	LFO Freq Depth	Pro53: PolyMod Source Filt Env
021	LFO PW Depth	Pro53: PolyMod Source Osc B
022	OscTune	Pro53: PolyMod Dest Freq A
023	FiltTune	Pro53: PolyMod Destb PWidth A

024	EnvTune	Pro53: PolyMod Dest Filter
025	Port Detune	Pro53: LFO Midi Sync
026	LFO Rate	Pro53: compatible
027	LFO Sine	Pro53: compatible *
028	LFO Square	Pro53: compatible *
029	LFO S/H	Pro53: compatible *
030	Damp	Pro53: LFO Envelope Trigger
031	LFO Sync	
032	Arp Sync	
033	PM	
034	OM	Pro53: WheelMod LFO-Noise Mix
035	LFO to Osc1	Pro53: compatible
036	LFO to Osc2	Pro53: compatible
037	LFO to PW1	Pro53: compatible
038	LFO to PW2	Pro53: compatible
039	LFO to Filter	Pro53: compatible
040	Pitch Osc1	Pro53: compatible
041	Saw Osc1	Pro53: compatible
042	Pulse Osc1	Pro53: compatible
043	Pulse Width	Pro53: compatible (OSC A)
044	Sync	Pro53: compatible
045	Osc1 On	Pro53: compatible (not continuous)
046	Osc2 Full	Pro53: compatible (not continuous)
047	Noise Full	Pro53: compatible (not continuous)
048	Arp Speed	Pro53: Mixer External Input
049	Arp Steps	
050	Pitch Osc2	Pro53: compatible
051	Osc2 Detune	Pro53: compatible
052	Saw Osc2	Pro53: compatible
053	Osc2 only	Pro53: Oscillator B Triangle
054	Pulse Osc2	Pro53: compatible
055	X-Mod Depth	Pro53: Oscillator B Pulse Width
056	X-Mod	Pro53: Oscillator B Low Freq
057	Ring	Pro53: Oscillator B Key Follow
058	LFO to Amp	
059	Unisono	Pro53: compatible
060	Velo Floor	
061	Velo Ceil.	
062	ARP Hold	
063	P-Mod	
068	Lega ON	
070	Cutoff	Pro53: compatible
071	Resonance	Pro53: compatible
072	Env Amt	Pro53: compatible
073	Key Track	Pro53: compatible (not continuous)
074	Osc2 Half	Pro53: Filter HPF Mode
075	A Filter	Pro53: compatible
076	D Filter	Pro53: compatible
077	S Filter	Pro53: compatible
078	R Filter	Pro53: compatible
079	Noise Half	Pro53: Filter Envelope Invert
080	A Amp	Pro53: compatible

081	D Amp	Pro53: compatible
082	S Amp	Pro53: compatible
083	R Amp	Pro53: compatible
084	+12	Pro53: Amplifier Hold
085	Arp On	Pro53: Release on/off
086	Velocity	Pro53: compatible
087	Spread	Pro53: Analog
088	Master Tune	Pro53: compatible
089	ENV	
090	O2o	
091	OM neg.	
092	P1o	
093	PM neg.	
094	LFO Osc Phase	
095	PW-FILT Phase	
096	W-LFO 1/2	
097	24 dB	
105	Filter Mix	Pro53: Delay Effect Time
106	Filter Type	Pro53: Delay Effect Spread
107	LFO to Filter Mix	Pro53: Delay Effect Depth
108	ENV to Filter Mix	
109	Key Track Amt	
111	Pan1	Pro53: Delay Effect Low Cut
112	Pan2	Pro53: Delay Effect High Cut
113	Pan3	Pro53: Delay Effect Invert (not continuous)
114	Pan4	
115	Pan5	Pro53: Delay Effect On (not continuous)
116	Pan6	Pro53: Delay Effect Wet
118	Volume	Pro53: Delay Effect Midi Sync (not continuous)

### sorted by function groups:

#### manual

007	Volume	Receptor version (see intro)
011	Volume	Standard version (see intro)
118	Volume	Pro53: Delay Effect Midi Sync (not continuous)
022	OscTune	Pro53: PolyMod Dest Freq A
023	FiltTune	Pro53: PolyMod Destb PWidth A
024	EnvTune	Pro53: PolyMod Dest Filter
087	Spread	Pro53: Analog

#### control

005	Portamento	Pro53: compatible
059	Unisono	Pro53: compatible
051	Osc2 Detune	Pro53: compatible

## modulation

026	LFO Rate	Pro53: compatible
020	LFO Freq Depth	Pro53: PolyMod Source Filt Env
021	LFO PW Depth	Pro53: PolyMod Source Osc B
027	LFO Sine	Pro53: compatible *
028	LFO Square	Pro53: compatible *
029	LFO S/H	Pro53: compatible *
035	LFO to Osc1	Pro53: compatible
036	LFO to Osc2	Pro53: compatible
039	LFO to Filter	Pro53: compatible
037	LFO to PW1	Pro53: compatible
038	LFO to PW2	Pro53: compatible
058	LFO to Amp	

## oscillators

040	Pitch Osc1	Pro53: compatible
043	Pulse Width	Pro53: compatible (OSC A)
050	Pitch Osc2	Pro53: compatible
041	Saw Osc1	Pro53: compatible
042	Pulse Osc1	Pro53: compatible
056	X-Mod	Pro53: Oscillator B Low Freq
055	X-Mod Depth	Pro53: Oscillator B Pulse Width
044	Sync	Pro53: compatible
052	Saw Osc2	Pro53: compatible
054	Pulse Osc2	Pro53: compatible

## filter

070	Cutoff	Pro53: compatible
071	Resonance	Pro53: compatible
072	Env Amt	Pro53: compatible
045	Osc1 On	Pro53: compatible (not continuous)
074	Osc2 Half	Pro53: Filter HPF Mode
046	Osc2 Full	Pro53: compatible (not continuous)
079	Noise Half	Pro53: Filter Envelope Invert
047	Noise Full	Pro53: compatible (not continuous)
073	Key Track	Pro53: compatible (not continuous)

105	Filter Mix	Pro53: Delay Effect Time
106	Filter Type	Pro53: Delay Effect Spread
109	Key Track Amt	
107	LFO to Filter Mix	Pro53: Delay Effect Depth
108	ENV to Filter Mix	

### envelopes

075	A Filter	Pro53: compatible
076	D Filter	Pro53: compatible
077	S Filter	Pro53: compatible
078	R Filter	Pro53: compatible
080	A Amp	Pro53: compatible
081	D Amp	Pro53: compatible
082	S Amp	Pro53: compatible
083	R Amp	Pro53: compatible

### additional functions

068	Lega ON	
030	Damp	Pro53: LFO Envelope Trigger
097	24 dB	
094	LFO Osc Phase	
095	PW-FILT Phase	
090	O2o	
091	OM neg.	
092	P1o	
093	PM neg.	
057	Ring	Pro53: Oscillator B Key Follow
089	ENV	
096	W-LFO 1/2	
086	Velocity	Pro53: compatible
025	Port Detune	Pro53: LFO Midi Sync
031	LFO Sync	
032	Arp Sync	

III Arp LFO: not remote controllable

085	ARP On	Pro53: Release on/off
062	ARP Hold	

## additional knobs

016	Wheel LFO Rate	
017	Aftertouch Vib	
018	Aftertouch Filt	
034	OM	Pro53: WheelMod LFO-Noise Mix
033	PM	
088	Master Tune	Pro53: compatible
060	Velo Floor	
061	Velo Ceil.	
049	Arp Steps	
048	Arp Speed	Pro53: Mixer External Input
063	P-Mod	
111	Pan1	Pro53: Delay Effect Low Cut
112	Pan2	Pro53: Delay Effect High Cut
113	Pan3	Pro53: Delay Effect Invert (not continuous)
114	Pan4	
115	Pan5	Pro53: Delay Effect On (not continuous)
116	Pan6	Pro53: Delay Effect Wet

## levers

001	Modulation Lever	Pro53: compatible
053	Osc2 only	Pro53: Oscillator B Triangle
084	+12	Pro53: Amplifier Hold

Octave: not remote controllable; use your master keyboards' transpose function for this

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Special thanks go to:  
Reuben Flounders, Mariano Saulino, Jeff McClintock, Rod McQuarrie,  
Robin Adams, J.M. Maechler, Matthew Basset and everyone else who  
has contributed to the OP-X PRO development in any way

We'd also like to thank our customers for their enthusiasm and support



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