



## Introduction

Welcome to the SonicProjects OP-X PRO-3 manual!

OP-X PRO-3 is the follower and big brother of OP-X PRO-II offering a completely new logically structured interface and fullfills countless collected wishes from our users all around the world. The result should be beyond your dreams!

The synth offers 10 filter types, 5 envelopes, 4 LFOs, added modulation effects, a voice boards view, a very powerful new preset browser offering search, category tagging and favourites, and last but not least an extremely powerful modulation matrix!

The synth comes pre-installed with 3'000 awesome signature presets offering the whole huge(!) existing OP-X PRO-II library including ALL existing reload banks as well as 300 new presets. A new alphabetically sorted famous patches library offers no less than 475 famous 80s patches including many new ones!

The included library alone has an estimated value of around \$600 if you compare it to what you pay for high quality soundsets on the 3rd-party sounds market.

### Included versions:

To make the synth a go for everyone no matter if you have a weak or powerful computer or if you adore/prefer the original sound of OP-X PRO-II and just want to have all the new features on top, or prefer an updated sound engine a single license gives access to a bunch of alternative sub-versions of the synth:

#### OP-X PRO-3

Compared to the former OP-X PRO-II this one has an improved oversampled engine featuring a smoother more "polished" sound which also can go brighter. CPU use about 2.3 times OP-X PRO-II.

#### OP-X PRO-3 ECO

This one has the 100% original sound of OP-X PRO-II and only uses about half the CPU of the max CPU one described above. It nevertheless offers all the tons and tons of new features except for the MAX brightness mode which misses here. CPU use just about 1.2 times OP-X PRO-II.

#### OP-X PRO-3 LC

This one only is recommended if you urgently even need lower CPU use. This version misses features. It offers no matrix modulation section and also misses the new filter types. CPU use about the same as OP-X PRO-II.

#### OP-MTX

This is an identical clone of the max CPU version just featuring a different name and different unique plugin-id which makes it possible to install it alongside one of the low CPU versions above to have all options available.

## GUI / feature differences in the sub-versions

On the interface the different versions can be told apart by looking at these controls:

### OP-X PRO-3 / OP-MTX

Has the modulation-matrix opener („Matrix“) as well as MAX brightness and above the 24db button the modes „Hard“ and „MG“. „Hard“ btw is the same as the 24dB mode in OP-X PRO-II which in fact wasn't fully 24dB:



### OP-X PRO-3 ECO

Compared to the max CPU version this one misses the MAX brightness mode



### OP-X PRO-3 LC

This cut-down lowest-CPU one misses the modulation matrix, the MAX brightness mode as well as the additional 24db filter modes (MG, 24dB here again is the same as the 24dB mode in OP-X PRO-II):



## Interface Views

Let's have a look at the different interface appearances dependent on which sections are opened:

### Main View



Main view – fresh instantiation state or after closing and re-opening GUI

Sections from top left to bottom right: Top-bar, Master, Arpeggiator, LFO (in which also opens the Modulation Matrix with further Envelopes and LFOs) Filter, Oscillators, Envelopes, Voice-Management (two parts)

### Matrix / FX opened



Modulation matrix (Matrix button) and effects (EDIT) opened

## Boards View



Boards view - shows the 12 voice boards with electronics and trimpots which also shows the inner workings of the synth.

However, all the controls except for the filter envelope trimpots (which you anyway hardly need to reach anytime) and the boards reset controls are mirrored in the voice management section at the bottom right of the main interface.

## Presets



Presets opened - max 128 categories/banks and some special purpose search functions in "---user---". Immediate access (without loading any banks – there aren't any bank files anymore) to up to 16'384 presets.

## What's new in OP-X PRO-3 compared to OP-X PRO-II?

### Interface:

- A completely re-organized logically structured interface which bunches related controls together in clearly outlined function groups
- No more hidden functions and mapped parameters using un-mapping tricks to create separate controls or clearly show options
- The seamless tuning options formerly done by clicking a label above a button and dragging the mouse vertically (as e.g. for seamless autotune or seamless osc levels) now offer dedicated visible trimpots
- As a small "convenience"-change to make things more logical and coherent, the tune/autotune button/seamless control for portamento now works not inverted anymore. So activated means tuned (applied auto-tune) and not de-tuned.
- The panning modulation knob now also offers a quick-reset-button to immediately switch panning modulation off if needed
- Despite these massive changes these tricks allow for full direct former patches compatibility and allowed to furthermore neathlessly use the huge existing sound-library
- The synth even is backward compatible for the "old" common parameters. The new parameters simply won't have an effect back in OP-X PRO-II. The only exception is the settings for the pitchbend and modulation wheels which now doesn't use presets anymore but is being converted to separate split parameters which won't convert backwards (so you have to set the pitchend/ modwheel preset manually) and the displayed patch name which isn't a separate parameter here anymore but linked to the file name. So you had to set this one manually too sometimes. But we guess porting patches back to OP-X PRO-II won't really be your main goal...
- While OP-X PRO-II already had a huge parameter count (142 parameters in total) the new synth now has an almost unbelievable number of 199 parameters without the need of a patches format transition since we originally designed the format for future upgrade by spending it a maximum number of 256 parameters

- Despite this immense number of parameters the synth still is a one-page synth except for the very rarely used filter-envelope-trimpots which aren't anymore on the main interface but can be found on a new "Boards" page which shows the inner synth structure based on 12 separate voice boards, and the new Matrix-Modulation section which can be opened in the LFOs section and so just covers the controls for LFO1 (main LFO) and LFO2 (lever LFO)

### Patch-Browser:

- A completely re-worked much easier to use patch-browser which only uses single presets and no banks anymore, but still can emulate banks by grouping presets in folders of up to 128 presets per folder which appear as directly choosable category on

the left. Apart from the standard bank folders there are also four special purpose folders below "---user---" which offer a category menu on the right and allow to search for categories or set categories either globally (3\_FAVOURITES and 3\_SEARCH) or local (2\_SAVED and 3\_RELOAD). Furthermore you can turn any folder into a category folder which can contain more than 128 presets by including "\_EE\_" in its name.

- This allows to immediately access up to 16'384 presets within seconds without the need of loading banks and also allows to search patches by categories (sound type) locally or globally since all more than 5'000 preset files (about 3'000 unique presets, some in more than one bank) are pre-categorized!

- The synth is directly compatible to all former OP-X PRO-II presets (so still uses the existing .opxpreset format) and since it uses no banks anymore allows to import OP-X PRO-II banks (.opxbank) which after importing automatically creates a folder by default named the same as the imported bank and with all its included presets saved in the same order as single presets within this folder. The original order is preserved by adding order prefixes (#001 #002 #003 etc. followed by a space) which then later on are being hidden both in the preset list and in the preset name field

- This auto-detect prefix trick also would allow you to (manually) bring a set of presets in any wished order if you wish to have a different order than the two available as standard, which are alphabetic and sorted by saving date (upon activating the RFR button in the top-bar)

- The mentioned RFR (=refresh) button in the synth's top-bar does several things at once: First on it on each click refreshes the folders list on the left in case you manually created a new folder. Dependent on the chosen folder it additionally does some other things: In 2\_SAVED it sorts presets by save date (1st click: newest on bottom, 2nd click: on top) instead of alphabetical order. This helps to trace which preset was saved as the last. In a normal bank folder that contains no factory presets (detected by ordering prefix #001 etc. of the first preset) it also sorts the presets by save date (newest on bottom). In 3\_SEARCH it makes the name field at the top left show the preset's original folder instead of the preset name. In 3\_FAVOURITES it does the same and additionally hides the fav dots if you visually prefer this, 2nd click: dots still hidden but again shows name.

- Of course you don't need to import any of the former factory and reload banks since these altogether already are imported and available on installation. The base banks from the root area of the OP-X PRO-II pre-installed banks library have the prefix "B\_" (for "Base"), the banks from the "Downloaded" folder (including ALL reloads from the banks reload site) the prefix "D\_" (for "Downloaded") and the banks from the "Extrabanks" folder the prefix "E\_". So you only still need to import your own custom banks if you should have such banks. Single presets can be placed and used directly without any importing/conversion by simply putting them in a newly created folder within the folders section and hit (and again de-activate for standard alphabetical order) the RFR button on top in order the new folder is being listed

- One folder should not contain more than 128 presets since the right pane of the patch browser only can show a maximum of 128 presets. This on one hand is to avoid the need for annoying scrolling, and on the other hand is needed to preserve the MIDI standard of a maximum of 128 presets for a bank in order the program change via MIDI CC feature (kept from OP-X PRO-II) still works

- The patch name both shown in the patch list and in the patch-name-field on top no longer is an own independent parameter but is the same as the file save name (minus the order prefix #001 etc. if this is used) which also is more common

- Saving presets: Clicking on the SAVE button saves the preset into the dedicated 2\_SAVED folder by default. The default save file name is the same as the name shown in the name field at the top left, but also still can be changed in the save file dialogue. To keep the save name as short that it fits the preset name field it's recommended to type in the new name in the name field (confirm by hitting enter) prior to saving. In OP-X PRO-3 the shown preset name in the name field now isn't an independent parameter anymore but is the same as the save file name. You later on also can set a category for each saved file by clicking on SET in the menu on the right which will list all not yet categorized presets in this folder. To set a category choose a category on the right and then click on SAVE. The tagged preset then will disappear from the SET list. The RFR button on top sorts the saved presets by save date (newest on top - standard is alphabetical) which can be handy to trace the last saved preset.

- Mark favourites: To mark a preset as favourite click the FAVO button on top. In presets view this adds a .dot in front of the preset name. To un-favour again simply click the button once more. The presets that were marked as favourite will be listed then in the 3\_FAVOURITES folder which also allows to filter by category which helps to target presets once you have many favourites. Listing initially is slow since more than 5'000 preset files have to be scanned. But from then on it will be faster since the search result is kept in RAM. After setting a favourite it will have to re-scan again, so the first launch of the favourite folder then again will be slow. From then on again faster. To remove a favourite from the favourites list either click on DEL or FAVO. Clicking RFR on top shows the favourite's original folder name instead of the preset name and at the same time makes the dots disappear if you prefer this visually.

- SEARCH: The 3\_SEARCH folder triggers a global search function and lets you list all patches from all folders (more than 5'000) and filter by category if needed. After initial folder choosing and also after switching categories you can type in a search term in the name field to find a specific preset within the chosen category or in all presets. SET lists all not yet categorized presets found in the entire library.

- 3\_RELOADS is dedicated to put new presets released by SonicProjects

- DEL deletes a chosen preset. But it deletes is savely, which means it's not irretrievably erased but thrown into the trash bin of your system and so later on still could be recovered

- There's no rename function, but to rename a patch simply again save it with a new name and then delete the old one

- The patch-change-smoother now not only applies to patch changes via increment/decrement buttons and MIDI CC program change but also to manually picking presets in the list. Patch-change smoother means that before switching a patch the audio quickly fades of, all notes are realised, only then the patch is switched, and then audio is faded in again. So you now have smooth artefact-free patch change operation all accross the field

## Synth-Engine:

- Improved very smooth sound quality (max CPU version only) without sacrificing the typical warm and full signature-sound and character of the synth and without increasing the CPU use by very far so that the synth still is light on CPU measured by its awesome sound! The ECO and LC versions offer the 100% original sound and use less CPU.

- An added brightness mode "Max" (max CPU version only) which allows the synth to get even brighter than the previous maximum brightness mode "brilliant" if needed

- 2 new added filter types: "24db" = fully 24db with OB character (the OP-X PRO-II 24db mode in fact wasn't fully 24db), and MG = moog type 24db with less bass amount in high resonance setting) both with and without filter self-oscillation. The previous 24dB mode of OP-X PRO-II is named "Hard" here. So there's a total of none less than 7 filter types now (LP 12db, LP Hard, LP 24dB, LP MG, High Pass, Band Pass, Notch), if you count the added self-oscillation as additional mode even 10 filter types! And this all offering seamless transition / mixing between LP (12db/Hard/Hard SO,24dB, 24dB SO,MG, MG SO) and multimode (HP,BP,NO) and even seamless transition between the multimode modes! Not to stop with this, apart from the fixed-mapped modulation of the filter mix by LFO1 or filter envelope you can freely modulate both in the new mod-matrix (more to this one later)!

- Effects-Section: An added preset-based awesome sounding modulation unit (so no parameters/fixed modes) already heavily beloved in our Stringer plugin which offers Chorus, Double-Chorus (CE1), Flanger, Chorus-Flanger, Phaser, and finally 5 different Ensemble effect types (ENS, ENS1, ENS2, ENS3, ENS4) from which 3 were directly modeled after the original circuit of the ARP Solina!

- Envelopes-section: An added dedicated fully independent pitch-envelope (voice based, so times 12). That's however not all since the matrix modulation section (see later) offers another 2 envelopes (one polyphonic, one monophonic) which adds up to a total of 5 envelope generators!

- Main LFO: An added fastly accessible key-tracking trimpot for pulse with modulation in order to make the depth of pulse with modulation depend on the key pitch - which allows to tame the overly deep modulation impression in lower key registers if needed. But this only is the hard-wired direct way on the standard synth-interface. This all and much more of course also can be done in the new modulation matrix! See later. Regarding modulation matrix, this section also will offer two additional LFOs (one global, one voice-based, so times 12) which together with the lever LFO adds up to a total of 4 LFOS!

- Unisono: The legato-mode (LEG) now not only offers last note priority (as it's the case in OP-X PRO-II) but on demand also lowest note and highest note priority. Standard (La/Lo/H button deactivated) still is last which in our opinion ist the most widely useable. But now you have all options if needed.

- Aftertouch: The aftertouch input (key pressure) now is smoothed so that you won't hear stepping even when the used controller only has a low aftertouch resolution. This especially makes aftertouch filter cutoff (so open the filter by key pressure) sound much smoother and better

- The "Boards" page now offers a little button that activates voice reset on song start - which means that upon song start the voices always are reset to voice 1 / all voices cleared, so that - if you like - always have the exact same start situation regarding voices on song start. This can be important if you use a lot of voice-based detunings or even detunings in a pitched melody effect (filter in high resonance setting) which cycles through the voices. Without a reset on song start you'll always have a different random starting point within the voices (since allocation is rotating). With activated reset this will be always the same/starting at voice 1. You also can manually reset the voices on the fly anytime using the small "Manual Reset" button

- The "Levers" section (or better said section for settings for pitch-wheel and modulation wheel) now no longer uses 32 presets but splits the settings for pitch-wheel and modulation-wheel to separate parameters using software based conversion. This allows you now to set the interval or mode separately for pitchbend up, pitchbend down and modulation wheel by clicking into the dedicated square field which toggles through the available modes. To quickly set the pitchbend interval the same for both up and down you can grab the little trimpot. To quickly switch between the two most common modes 2 semitones Up/down and one octave up/down you can use the square button below. The individually clickable intervals/modes for both pitchbend up and down are: 1 - 12 semitones (12 only comes at the very end), 2 octaves, 3 octaves 4 octaves and vibrato (M). For the modulation wheel it's vibrato (M), filter (F), 2 (2 semitone up) and new 12 (12 semitones up for oscillator 2 only - e.g. suitable to control sync sounds). These however are only the quickly accessible fixed modes! The new matrix modulation section (see below) now also allows to completely detach the pitchbend and modulation levers, for the pitchbend wheel even separately for up and down (!) and map things freely in the modulation matrix, and this for pitchbend on demand even separately for pitchbend up and pitchbend down! This gives you INCREDIBLE possibilities! So you e.g. could blend from lowpass to highpass by pitchbend up, widening spread by pitchbend down, etc. etc. It's only limited by your fantasy! This is very handy for basic controller keyboards which don't offer knobs but only the obligatory pitchbend and modulation wheels. Which with you now can do whatever you want. Only limited by your fantasy!

- Below the octave-switcher (note: voltage-based, so affects key-tracking if activated) there's now an additional button which lets you lower the base-pitch by two octaves (you then still can switch individual octaves with the octave switches above) which can be wanted/needed/useful in some situations when the pitch tends to become high-ish (e.g. when using the arpeggiator with four octaves which always go upwards) and you can't get low enough with the octave switcher to achieve a comfortable pitch range.

- MIDI learn now allows to learn one source to several targets as often demanded

Arpeggiator:

The arpeggiator now offers a new "digital" display which dependent on the chosen preset now shows which knob is mapped to which function in the chosen preset (which changes). Furthermore pedal hold (quickly depress and again release the damper/sustain pedal within less than half a second - which can be used to activate and deactivate hold hands-free while playing, starting/stopping the 8-step sequencer in the "Record" preset) now is labeled as a function and can be switched off on demand (standard is on). Also now you also can use the pedal to fix a manual chord in the manual chord preset (inspired by the chord hold function of OB-X).

## Matrix Modulation:

Finally - yes! oh yes! there's now an expandable fully-blown extremely sophisticated matrix modulation section (button to expand at the top of the LFO section, only covers the LFO section when opened, LED shows if it's active or not when closed) which offers not less than 5 matrix modulation slots (the upper two with polyphonic sources, the 3 lower ones monophonic sources) which let you freely assign modulation connections using many sources and targets per slot. This opens incredible possibilities!

The five slots are called Mx1 to Mx5 (Matrix 1 to Matrix 5). Each section offers a source and destination slot, and in the middle controls for the amount (Amt), divide the amount by 10 (0,1) and invert (+/-) which give you all control you need and this very quickly and intuitively. The 2 polyphonic source slots offer 14 sources and 17 destinations, and the 3 monophonic source slots offer 13 sources and 23 destinations.

To increase the possibilities the matrix-modulation section offers two additional envelopes (one polyphonic, one mono, optimized for modulation via quick controls) as well as two additional LFOs (one monophonic - fully blown including 4 different waveforms (WF), key trigger (KT), sync to song tempo (SN), and one polyphonic, so per-voice (so in fact 12 LFOs) as available in Matrix-12) offering key trigger and 4 waveforms. The matrix modulation section also offers buttons to detach the pitchbend wheel (individually for up and down!) and the modulation wheel from their fixed mapped wiring - in order to freely map stuff in the matrix.

Now to the matrix itself: First on the individual slots also can modulate the amount of other slots - which gives you incredible flexibility! Like this you e.g. can map a polyphonic envelope to a source in one of the two polyphonic matrix slots, leave the amount at zero, and then map one of the 3 monophonic LFOs to the amount with one of the 3 monophonic source matrix slots. Like this you can send the monophonic LFO source to each voice individually and modulate the amount individually per voice, e.g. for a voice-individual LFO delay! Just as an example.

Furthermore all 5 slots also offer fixed value as source, which e.g. let you increase a parameter range if you're not pleased by its given limits. Also, the polyphonic slots - and we think this is probably sort of a world-premiere - also can use the trimpots of the voices as modulation source! If autotune is applied to one of the four autotune parameter groups (cutoff, portamento time, filter envelope decay, filter envelope release) the dedicated trim pots have no effect/are out of use and so free for a different purpose, So you could use these to individualize ANY parameter in a voice separately for each voice-pair (1-77, 2-8, etc.)!

What all you do with this is only limited by your fantasy. Also, there are further unusual targets like spread, panning modulation, filter mix or even filter type! Also to mention is that regarding pitchbend you can map pitchbend up and pitchbend down separately to individual destinations!

As you can clearly see now this new matrix modulation section offers you INCREDIBLE possibilities. If there's anything you can't do in the standard synth interface then you probably can do it here.

Note that the top-right "Global N" button must be switched on in order the set modulations have any effect. This has the big advantage that you anytime quickly can deactivate the whole modulation matrix preserving the settings which are still there in the background. The activity led too is mirrored on the outside of the section so that you also can see if the matrix is active when the section is closed. This is important, since adding virtual voltages to the parameters also will change their behaviour.

It all works exactly the same as in a real analog synth. Applying modulation to a parameter won't change its control. It will apply virtual voltages in the background which you can see and which may change the behaviour or range of a dedicated button or knob. That's why a global quick matrix-deactivation button is really important. It lets you check the "original state" versus the altered state. Did we forget anything? Let's hope not. The modulation matrix gives you INCREDIBLE freedom and possibilities. There's virtually nothing that can't be done.

New Presets:

Finally, the synth includes 300 new awesome presets showing off some of the new features! The library also contains an extended Famous 80s A-Z section at the very bottom of the categories which offers no less than 475 alphabetically sorted famous 80s sounds including many new ones!

POSTSCRIPT:

As you could see, we tried to include and fulfill ALL of the user's demands and wishes we collected over the years - so: more logical interface, no hidden features, better preset management with favourites and categories, modulation effects, voice-reset on song start, improved sound quality, even more famous 80s presets, modulation matrix, in-synth switchable interface size, one source to several destinations midi learn

Now, after these introductory sites, let's come to the synth's sections:

## The TOP BAR



## Interface Switcher:



Click it, click on the preferred interface / GUI size (orange border = current), and then close and re-open the interface - and you'll have the new size

The big size generally offers the best and sharpest quality. It can be used in screens which at least have Full HD (1920 x 1080) resolution



## Bank Import:



Clicking on this icon lets you import an own custom OP-X PRO-II bank if you should have any. This will create a new folder/category by default named the same as the bank, and extract it presets as single presets into the folder (since

OP-X PRO-3 only works with single presets), sorted with a #001 #002 etc. prefix (followed by a space) to maintain the original order in the bank. These prefixes will be filtered out in the presets view the same as the category and favourite tags. All the OP-X PRO-II factory banks are sorted in the same way btw. You also can use this method to manually create own folders featuring a dedicated presets order if you should want to have this.

Note that you don't need to import ANY OP-X PRO-II factory or reload bank since ALL of these already are included on installation!

This really only is needed for your own custom banks if you should have any. Single .opxpreset presets can be used directly since OP-X PRO-3 uses the exact same format.



### **Preset Name Field:**

This has three functions:

1. It shows the name of the chosen preset (which other than in OP-X PRO-II is the same as the file name, so no independent parameter).
2. It lets you click into it and type in a suitable preset name for saving an edited preset with a new custom name. This also only could be done in the save dialogue. However doing it prior to saving already here has the advantage that you choose a name which actually fits the name field
3. In the SEARCH and category folders you can type in a search term if indicated. Please always confirm by hitting enter afterwards.

### **Number Field:**

The number field shows you the number/position of the chosen preset within the category/folder. In standard bank folders (no category menu) this is 1 to 128. In category folders it's 1 to maximum 103.

The same as in OP-X PRO-II, you can "learn" this field to a knob on your controller to target presets within the current bank using a single rotary knob.

For this click on the LEA button below LEARN in the top-bar, move the knob on your controller/keyboard, and then click on the number (also works vice-versa). Upon turning the knob the preset only will change when you stop turning the knob. To unlearn click on LEA, then the number, and then on RES.



### Increment/decrement buttons (<< >>):

These let you toggle forward or backwards within the presets of the currently chosen bank/category. The same as by picking presets directly with the mouse in the presets list the "preset-change-smoother" will do its work - which before the actual switching quickly fades off audio, releases all notes, then switches the preset, and finally fades in audio again - all to make preset changes smooth and free of ugly audible artefacts.

The same as with the number field you can learn these two buttons to physical knobs or buttons for comfortable remote presets switching directly from your midi keyboard without the need of grabbing the mouse.

For this again click on LEA below LEARN in the top-bar, then move the knob or button for toggling forward on your keyboard/controller, and then click the increment (>>) button. The same then for the decrement (<<) button with a different control.

To unlearn again first on click on LEA, then click the button you want to unlearn, and then click on RES near the LEA button.

### PRESETS Down-Arrow:

Opens and closes the Presets-List view. Is blue when opened. Another click again closes the list.

### SAVE:

Saves the currently chosen preset to the 2\_SAVED folder. It opens a file-dialogue for this which defaults as saving location to this folder so that you can do it quickly without changing anything. Of course, if you want to save to an other custom folder you still could change the destination.

You can adapt/change the saved file name (which now also is the displayed preset name) in the file dialogue - BUT it's recommended to already doing this prior to saving by typing in a new suitable name in the preset name field (and confirm by hitting enter). This has the big advantage that you always choose a name which actually fits the field and won't be cut off later.

Saving a preset won't move you away from where you are. If you forgot which preset you saved last in \_SAVED you can activate the RFR button (top-bar) which changes the order from alphabetic to save time (1st click: bottom, 2nd top).



### FAVO:

Marks a preset as favourite which is indicated by a .dot in front of the preset name. To de-favour again simply click once more.

Example:



Presets marked as favourite are listed in [3\\_FAVOURITES](#) and here can be filtered by category which can help once you have many favourites. More on page 4. To remove a favourite in the list either click DEL or on FAVO. Listing initially and after setting a new favourite is slow since > 5'000 files have to be scanned, but then turns faster.

Activating the RFR button shows the preset's original folder name and hides the fav dots; 2nd click: dots still hidden but again shows the preset name

### DEL:

Deletes a saved preset from [2\\_SAVED](#) or another folder if it's not a factory presets folder. It's save delete, which means the deleted preset is being moved to the recycle bin and still could be restored in case you deleted it by mistake.

In macOS direct restore from the trash bin unfortunately isn't possible if it was an app that deleted the file. But you still can put it back manually.

You can't delete factory presets using this button. All presets which have an #001 #002 etc. ordering prefix (which all factory presets have to preserve the original order of the banks) can't be deleted - so also the presets in imported banks which are sorted in the same way. Of course you still could delete them manually on the hd in your computer's file explorer/finder.

You'll also use DEL in case you want to re-name an own preset since there's no rename function. So to re-name one of your saved presets or favourites simply type in a new name in the name field and save again (or alternatively change the same only in the save file dialogue) and then use DEL to delete the previous one with the old name.



## RFR:

This button does 2 or 3 things at the same time:

### Always and on every click:

Refreshes the folders list on the left in case you manually created a new folder

**2\_SAVED:** Sorts presets by date (standard = alphabetical) - 1st click: newest on bottom, 2nd click; newest on top; Bank folder not containing factory presets: Newest on bottom

**3\_SEARCH:** Shows the preset's original folder name in the name field instead of name

**3\_FAVOURITES:** 1st click: Hides the fav dots and shows the preset's original folder name; 2nd click: dots still hidden but again shows the preset name

## BOARDS:

"Opens-up" the synth to have a look at its inner workings which are the voice boards with all the electronics and trimpots on them.

What's also in here is the voice pans, the voice allocation unit that distributes incoming note events to the voice boards and the autotune unit which sends offset-voltages to the boards to tune them no matter in what state the trimpots are. More in the dedicated "Bords" section.

The boards view mainly helps to understand how the voice management of the synth works under the hood (which btw. always has been like this, even already in the very early OP-X models - simply not disclosed in this way).

But it also offers some controls you won't find mirrored on the main interface, which include the filter envelope trimpots and the voice board reset buttons.

So, yes, almost all of the actual CONTROLS you find here in their actual place in the synth's inner working are mirrored in the voice management section on the main interface (bottom right) for easy and fast access.

So the only actually NECESSARY reason to open the boards view is if you want to change the default detuning of the filter envelope trimpots (which you however hardly anytime will have to do since the default detuning is perfectly usable and you can switch or seamlessly blend between tuned and detuned on the main interface) and the voice reset buttons which let you re-set the voice allocation unit to start at voice board 1 manually or on song start if needed.



### CC (RCE):

This button (default state RCE) lets you process incoming CC data in different ways e.g. to avoid the well-known "value-jumps". States:

#### RCE (= Receive):

Incoming CC data isn't processed / leaved as it is

#### REL (=RELATIVE):

Only adds or subtracts incoming CC data which avoids value jumps. Incoming MIDI CCs don't change the controls abruptly to the current value (which can lead to the well known value jumps), but instead adds or subtracts the relative movement of the external controller to the GUI control. So there are no value jumps any more.

Advantage:

No value jumps, immediate reaction to a controller movement

Disadvantage:

You need to turn the knob fully up and down to again reach the full value range, dependent on the direction and relative values

#### FET (=FETCHED):

Value changes only when its state is surpassed / fetched. This is a second way to avoid value jumps. Incoming MIDI CCs don't change the controls abruptly to the current value, but will only start to change the GUI control when it „fetches“ its current value, or in other terms, overrides its value.

Advantage:

No value jumps, always access to full value range

Disadvantage:

Values only will start being changed after having „fetched“ the current value

#### BLO:

Blocks incoming CC data except for sustain/damper pedal (CC 64) and Modulation (CC 01). Can help to trace CC related issues.

Both methods (relative and fetched) actually were used in the old voltage controlled polysynth with saving capabilities (digital part) to avoid value jumps when the state of a physical knob was different than the recalled value.



### **LEARN: LEA**

This button lets you learn knobs or buttons on the synth's interface to physical knobs or buttons on a hardware MIDI keyboard or controller. The knobs or buttons must send out MIDI CC (Continuous Controller) data for this.

To learn a control simply click on LEA (which opens a display saying "CC Learn..."), move a knob or button on the synth's interface, and then move the physical knob or button on your MIDI keyboard or controller you want to learn it to. The display disappears. Done!

To again unlearn a single control again click on LEA, move the control, and then click on RES. Done!

To un-learn ALL learned controls at one click on RES and keep it depressed for about 4 seconds until the display says "Reset done!"

Note that you also can learn switching of presets to CCs. More in the dedicated section.

### **LEARN: RES**

Reset. Lets you un-learn a single control or all at one.

To un-learn a single control again click on LEA, move the control, and then click on RES. Done!

To un-learn ALL learned controls at one click on RES and keep it depressed for about 4 seconds until the display says "Reset done!"

### **EFFECTS: EDIT**

Opens the effects edit view (which hides the BOARDS, CC and LEAN controls) which lets you edit the parameters of the effects which include reverb, delay and modulation. More on the next page.

### **EFFECTS: ON**

Activates (button shines blue) or deactivates the effects section. This e.g. also lets you prepare an effects setting in the "background" and only activate it on demand. Note that this button in the background acts continuously as most controls, so learned to a knob you could blend in effects seamlessly.



## Effects EDIT

### MOD

This is the new section for modulation effects. It offers 10 awesome sounding fixed modulation presets derived from our "Stringer". It's pre-reverb / delay.

The 4 buttons let you navigate within these presets.

Left button (red):

Switches the modulation effects off.

2nd button from left:

Directly jumps to the preset "Chorus" (CHO)

3rd button from left:

Directly jumps to the preset "Ensemble 1" (ENS1)

4th button from left (outer-right):

Toggles forward within the presets list.

### Presets list:

**OFF:** No effect / bypass

**CHO:** Chorus

**DLCHO:** Double Chorus (Inspired by CE-1)

**ENS:** Standard Ensemble Effect

**FLA:** Flanger

**CHOFLA:** Chorus-Flanger, which is a Chorus with feedback

**PHASE:** Phaser

**ENS1:** Generic Ensemble Effect

**ENS2:** Solina Ensemble Effect Type1

**ENS3:** Solila Ensemble Effect Type2

**ENS4:** ARP Omni Ensemble Effect

The Solina and Omni Ensemble effects were cloned after the real hardware.



### 1/1000 DISPLAY

This display shows the delay time in milliseconds when clicking on the DEL delay time trimpot on the right of the SYNC button. When the DEL trimpot is not tweaked the display just shows an „1“ which has no meaning. Delay time can vary from 0 to 1000 ms. If SYNC is on, the delay time only will change in big quantized steps.

### DEL

The left side „DEL“ trimpot regulates the amount of the delay effect, which is always added to the dry signal. So it might be necessary sometimes to reduce the main volume when the delay level is very high to avoid clipping. There will only be an audible effect when „EFFECTS ON“ is active and the delay time is greater than 0.

### RVB

The left side „RVB“ trimpot regulates the amount of the reverb effect, which is always added to the dry signal. So it might be necessary sometimes to reduce the main volume when the reverb level is very high to avoid clipping. There will only be an audible effect when „EFFECTS ON“ is active and the reverb size parameter (SIZ) is greater than 0.

The effect parameters can be found on the right side of the SYNC knob. As already mentioned the levels get inactive when EFFECTS ON is inactive, but they are immediately recalled when EFFECTS ON is active. So you can prepare a whole effects setting including absolute delay and reverb levels and make it active on demand with EFFECTS ON.

### DEL: SYNC

With this knob you can synchronize the delay to the song tempo or to the arpeggiator. If the arpeggiator is on it will be synced automatically to the arpeggiator instead of to the song tempo. Since the arpeggiator itself can be synchronized to the song tempo (done by activating the „Sync“ button in the Arpeggiator section), both can be synced at the same time. There are three modes of synchronization:

**SYNC** (blue): even/normal synchronization

**3**: Triolic (triple note) synchronization

**DOT**: Dotted (punctuated) synchronization

When sync is active the delay time only will react in big steps, based on the current measure and mode. Delay time only can be regulated in a linear way as long as the maximum delay time of 1000 ms is not overridden. If so the delay time will be halved which can lead to even mode again.



Now let's advance to the controls on the right side of SYNC, which are the actual effect parameters. The small triangle in the black bar between the delay and reverb controls serves for launching a useful presets choice. More about the presets on the next page

Left side: **delay** parameters:

### **DEL**

Lets you regulate the delay time from 0 to 1000 ms. While clicking on it the current value is displayed in the 1/1000 number display. The display will return to 1 afterwards again, but the 1 has no meaning. Since it's only a mono delay there's only one control for delay time. When SYNC is on, the delay time only will change in big steps, determined by the song/arpeggiator tempo and the used synchronization mode (even, triolic, dotted).

If the synchronization mode overrides the available maximum delay time of 1000 ms, the delay time automatically is halved, which can lead to even mode instead of dotted or triolic. So use the lower possible setting then.

The delay is not interpolated, so delay time changes can't be performed neathlessly. To avoid artefacts the delay output is automatically stopped as long as the delay time is changed. So it's not suited for realtime tempo changes in synchronized mode.

### **FBK**

Lets you regulate the delay feedback. Set to maximum this can lead to endlessly repeated delays, so be careful with it.

**Preset triangle:** See next page.

Right side: **reverb** parameters:

### **SIZ**

Lets you regulate the reverb size from 0 to very big (cathedral like).

### **WID**

Lets you regulate the stereo width of the reverb signal. Note that the reverb has an m->s design, so also a mono sound can become stereo.

### **DMP**

Lets you regulate the damping of the reverb, which in the real world is given by the material of the reflecting walls. For very crisp sound you may use more damping to avoid a harsh sounding reverb tail.

Delay and reverb always work in parallel, so they don't feed each other.



As you will have noticed in your experiences so far it can take some time to set the controls for a suitable effect setting for the current sound, including the levels and the effect parameters, even if there only are a few, especially if the controls all are in default 0 setting in untreated patches.

That's why we've implemented a very handy quick presets choice, which allows to set all controls including levels by a single mouseclick.

The preset settings have been chosen based on favoured settings used in already existing patches, and too with the aim to include often used standard settings.

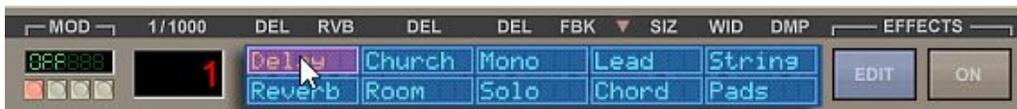
This lets you immediatly put an effect over a dry preset, and try out different settings on the fly by stepping through the available presets.

The only pre-condition is that EFFECTS ON is set to active. Levels are set too by choosing a preset, but not too high to rather stay subtle than forced, so you may adjust them to a higher level once a preset is finally chosen.

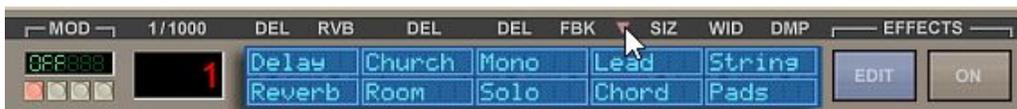
The blue presets window can be opened and closed by clicking on the small down arrow (or triangle) in the black bar between the effect units:



Now you can choose an effect by clicking into one of the preset rectangles. The setting gets immediatly active. So you can check out different settings on the fly and listen to the audible result while playing:



To close the window again click a second time on the down arrow:



Since the presets are very usable, either directly, or with a bit of additional tweaking, you will quickly notice that you'll soon won't do without them any more. Let's have a brief overview what's there:



### Delay only:

**Delay:**  
A simple usable 500ms delay without any reverb

### Reverb only:

**Reverb:**  
A usable standard reverb with medium size

**Church:**  
A very big and warm reverb with a long tail, like in a church or cathedral

**Room:**  
A very short and transparent reverb, comparable to an empty room

**Mono:**  
A vintage type mono reverb; can be a nice contrast to stereo presets

### Reverb and Delay:

**Solo:**  
Church reverb (warm and long) combined with some standard delay. Very well suitable for all kinds of solo sounds that need to take off.

**Lead:**  
A smaller and more transparent reverb combined with standard delay. Suitable for less washed out rock leads that need to keep some bite.

**Chord:**  
A fat sounding reverb/delay combination for punchy polyphonic patches similar to Jump!

**String:**  
A subtle and warm sounding reverb/delay combination that can give strings some added room feeling.

**Pad:**  
A fat and warm sounding reverb/delay combination that is especially suitable to fatten pads and make them creamy and „hovering“.

Of course these are only bold descriptions to make it easier to remember a preset. Of course you can use any preset for anything if it suits well!

## MASTER SECTION



### Aftertouch

Lets you apply channels aftertouch (mono) for vibrato and cutoff.

Note that you also can do custom aftertouch setups in the Modulation Matrix!

A Vib:

Amount of aftertouch to vibrato

A Filt:

Amount of aftertouch to filter cutoff

### Master Tune

Global master tuning. The setting is per preset and so also can be saved with the preset. Click the grey calib button on the right to set the trimpot back to perfect center (= standard tuning)

### Pitch / Mod / Oct / Bend Os2

These controls serve for quick and easy setup of the pitchbend and modulation wheels.

Note that these only are the fast and easy preset settings. In the Modulation Matrix you can deactivate these and freely map any settings of choice including any offered target parameter if you wish to!



### **Pitch / Mod / Oct / Bend Os2**

Now, after the short introductory on the previous page let's see what all the controls here do:

Controls below "**Pitch**" / above "**Bend**":

The upper field sets what happens upon pitchbend up.  
Click into the field to toggle through the presets.

The numbers are intervals from 1 to 12 semitones.

Note that 12 only comes at the very end.

12 with two points is two octaves, with 3 points 3 octaves, 4 points 4 octaves!  
M means modulation (vibrato).

The lower field is the same for pitchbend down.

The button at the bottom commonly switches both fields between the two probably mostly used settings 2 semitones up/down (2) and one octave up/down (12).

The trimpot lets you commonly (so both up and down) scroll through the presets/intervals for both fields.

### **Os2:**

The button above Os2 makes pitchbend only go to Oscillator 2, e.g. for sync



### Mod:

The field below "Mod" says what happens upon moving the modulation wheel.

Again click into the field to switch through the presets:

M = modulation (vibrato)

F = filter cutoff

2 = pitchbend 2 semitones up

12 = pitchbend one octave up only for oscillator 2, e.g. to control sync

Again note that you can completely deactivate these presets in the Modulation Matrix and map any custom setup including any provided parameter by yourself if you wish so!

### Oct:

The upper 3 buttons set the base octave.

Note that the same as in the real early synths this is no MIDI transformation but adding or subtracting voltage, which means this also will affect filter key tracking if you applied this!

So for "sound-neutral" octave transformation use the octave transpose buttons on your MIDI keyboard.

The new lower button lowers pitch by two octaves, which can be useful e.g. in presets using arpeggios which always go upwards.



### **F-LOW / F-HIGH:**

These two controls let you set the range (lowest/highest) if you use the velocity to filter function below.

### **VEL / FEnv / AMP:**

This button lets you either activate velocity to filter cutoff or amp

Blue: Velocity goes to filter cutoff

Red: Velocity goes to amp

If it goes to filter (blue) you can set the range with the two knobs above.

Velocity to amp always is full range and depends on the master volume and the velocity curve on your master keyboard..

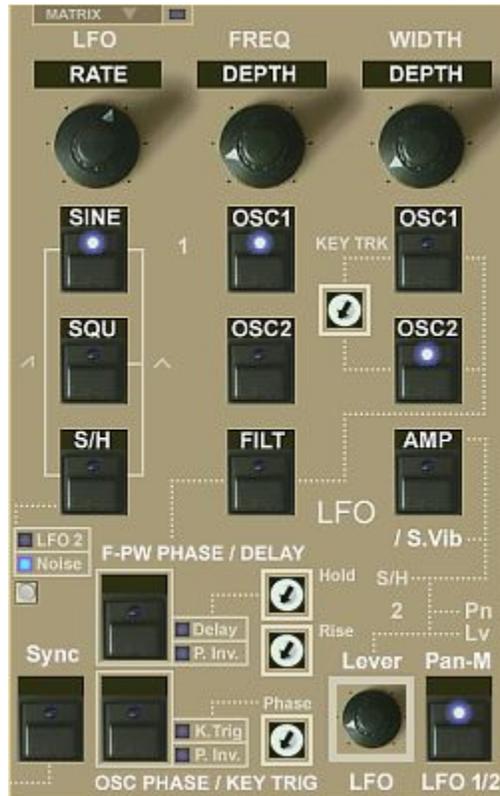
Note that these only are the quick-presets.

In the Modulation Matrix you can map any other stuff to velocity if you wish!

### **Sync Triolic:**

This button switches sync (if activated) for both LFO and Arpeggiator to triolic mode, which means the tempo is tripled.

## MODULATION SECTION



This section on one hand presents the two main LFOs which are:

### LFO 1 (upper):

This is the main LFO offering the most features

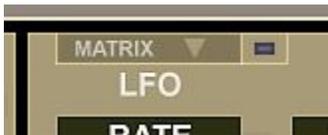
### LFO 2 (bottom right):

Lever LFO, mainly used for the modulation wheel, but dependent on the Pan-M / LFO 1/2 button also for panning modulation

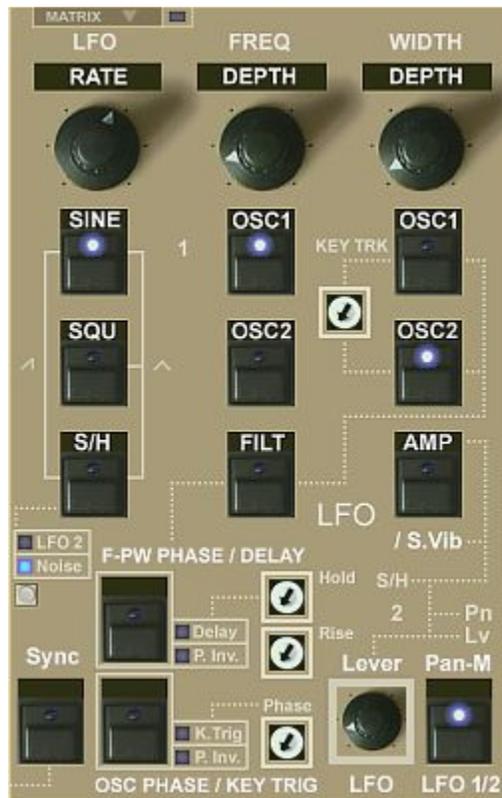
Note that both of these LFOs independently from the targeting set here also can be used as source in the Modulation Matrix!

### Matrix:

On the other hand you can expand the sophisticated Modulation Matrix in this section by clicking the "Matrix"-down-arrow button at the top left:



The LED on the right indicates if the Matrix is switched on if it's closed. Note that the LC version has no matrix and so misses this control.



Now let's check the controls of these two main LFOs.

### LFO1

This one offers the most features and controls:

#### RATE

Regulates the LFO rate. The rate response is logarithmical. If the LFO is synchronized to song tempo (which can be done by activating the "Sync" button at the bottom left), 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 either will combine the chosen waveforms to a resulting new wave by adding their outputs or, corresponding to the printed marking below the buttons, it will result in a new pure waveform (sawtooth or triangle).

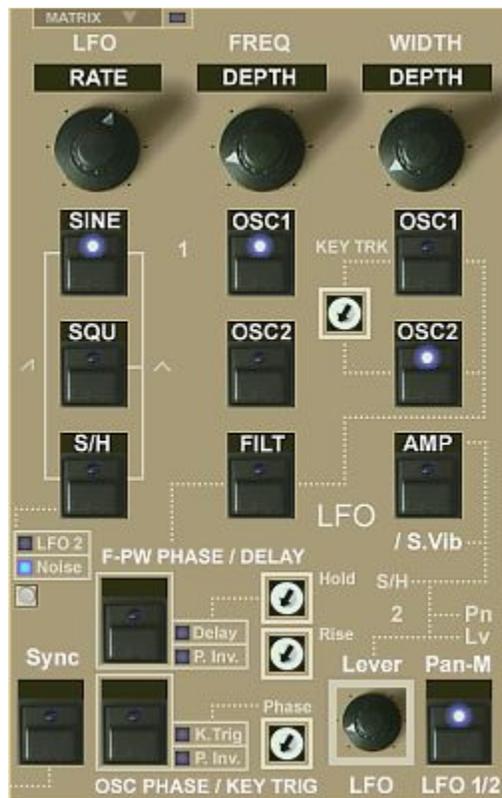
The available waveforms:

#### 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" (if source is set to "Noise") with the speed of the LFO rate. This results in a random step wave.

## LFO 2 / Noise:

You can choose between two sources to be sampled with this button:

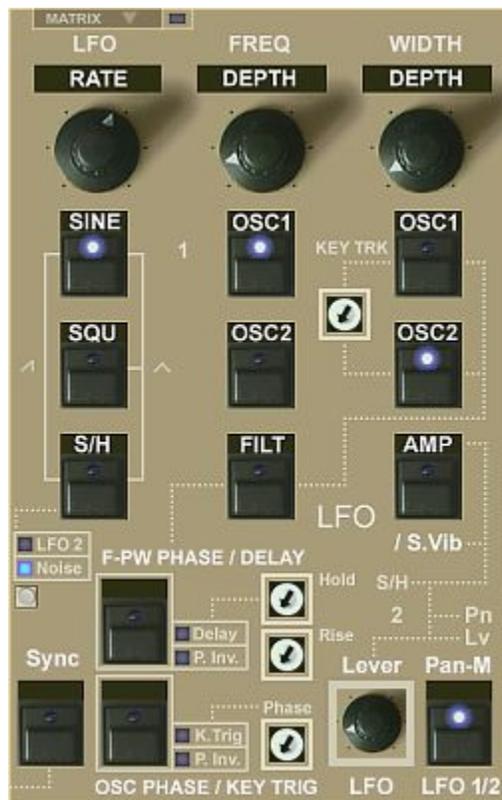
### LFO 2:

Samples the lever LFO (LFO2, bottom right in this section) which leads into a repeated pattern. This function is inspired by the OB-8 in which this feature was called "Sampled Vibrato"

### NOISE:

This is the more common "standard" way of S/H-implementation which samples noise. This leads to the famous randomized pattern, e.g. used in the opening of Rush's "The Camera Eye"

The "Sampled Vibrato" function (sampling source: LFO 2) in OP-X PRO-II originally was mapped into the AMP button. In OP-X PRO-3 we unmapped this function with some trickery into a separate control for easier understanding, but in the background it's still linked with the AMP button. That's why it's still labeled / S.Vib there and also still can be activated from there.



**SAW: SINE & S/H**

If the SINE and S/H button are activated at the same time, the LFO wave will become a rising sawtooth.

You can convert it to a falling sawtooth separately for Oscillators or Filter & Pulse Width by activating the dedicated PHASE buttons below ("P. Inv" = Phase Invert LED activated).

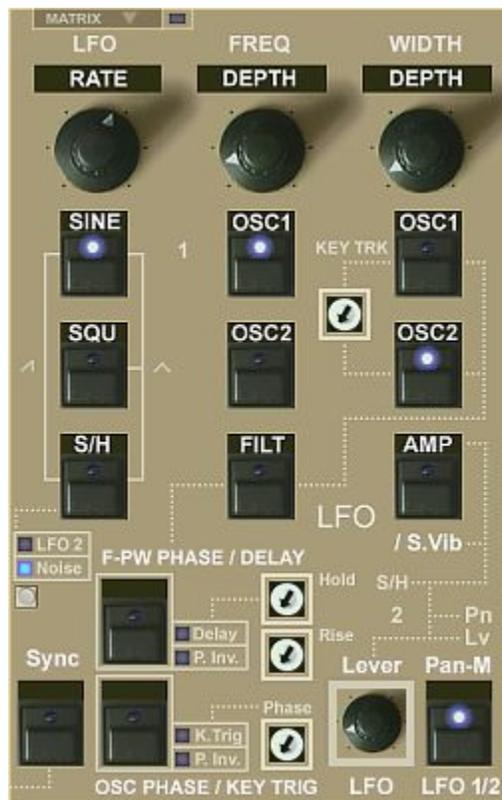
**TRIANGLE: SINE & SQU & S/H**

If all three buttons are pushed, the LFO wave will become a triangle wave.

While this wave is similar to the sine wave it has a different behaviour in the extreme positions. A triangle wave does keep its rising and falling speed always the same and changes its direction abruptly at the max and min.

A sine wave in on the other hand constantly changes its rising and falling speed. It's flat at the extreme position and then becomes faster and faster until half way, then slows down again.

While a sine wave is more convenient for a natural sounding vibrato a triangle is better for very slow modulations, e.g. of the filter cutoff frequency. Combined with the very slow possible LFO speed this can lead to great sounding slightly moving patches.



Further waveform button combinations:

The other combinations will not switch on a new waveform. The waveforms will be added then to each other, which will result in a combined waveform which can deliver a quite interesting sonic result. Just experiment or try preset patches using it.

So the left combinations are:

- Sine & Square (gives a wider modulation with rounded edges)
- Square & S/H (the square is being randomized with steps)

### **FREQ DEPTH**

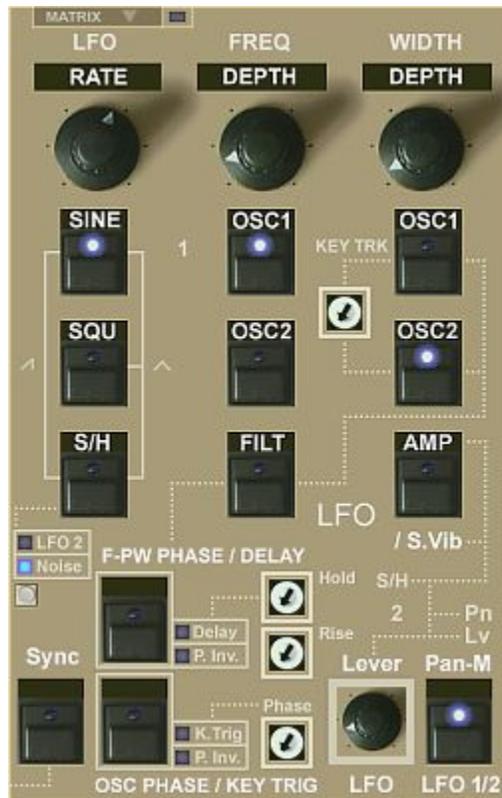
Regulates the modulation intensity of the LFO to the oscillators and the filter. The response of this knob is specially designed. In the first quarter, you have double logarithmic response which allows to make finest adjustments in very low modulation settings, e.g. for almost imperceptible oscillator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



### FILT

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 is behaviour copied from the analog originals.

### 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.

### KEY TRK

Key tracking for pulse with modulation. Using this control you can easily make the audible modulation depth even across the keyboard.

### OSC 2

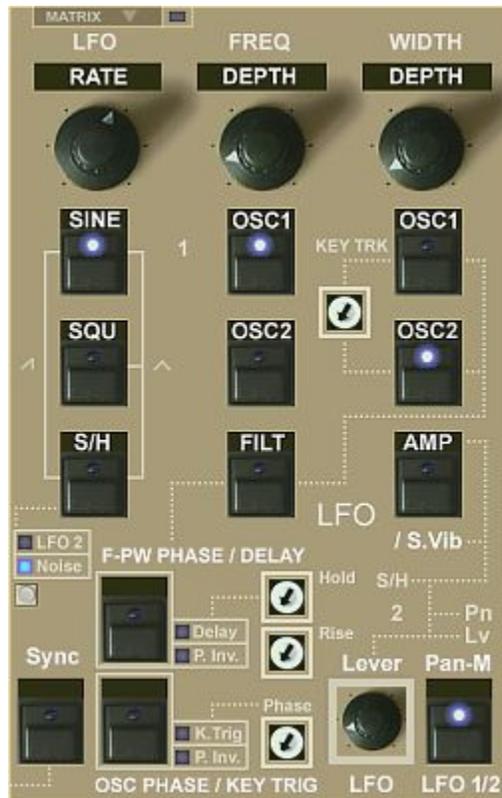
Switches the above regulated LFO output to oscillator 2 pulse width.

### AMP

Switches the above regulated LFO output to the amplifier.

### / S.Vib:

In OP-X PRO-II the Sample Vibrato function (LFO2 as sampling source for S/H) was mapped into this button and still could be accessed from here. Now there's a separate control however for this below S/H. Both are linked.



## SYNC

This synchronizes the LFO to the song tempo.

The LFO RATE knob then will be quantized and only reacts in big steps which are divisions or multiples of the set tempo in the sequencer.

The "Sync Triolic" button in the MASTER section just on the left sets sync to triolic mode, which means the speed is tripled.

## F-PW PHASE / DELAY

This button can activate both phase inversion of the LFO1 modulation to Filter & Pulse Width ("P-Inv") and also can activate LFO Delay ([Delay](#)).

[P-Inv](#) LED active:

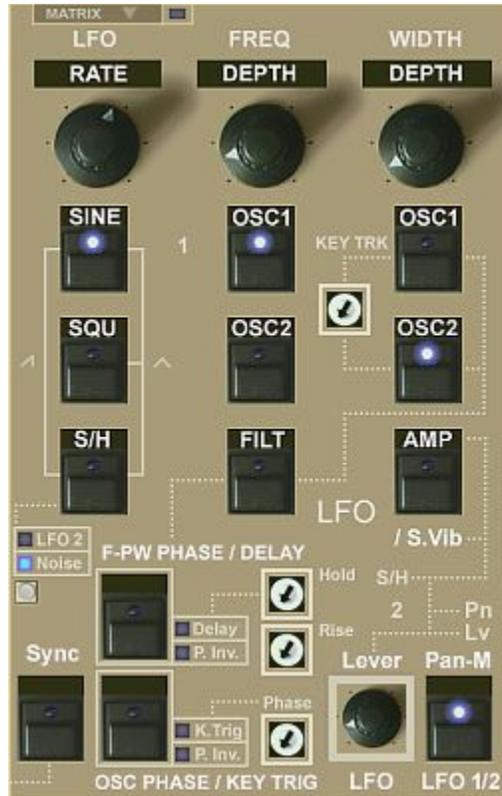
Inverts the LFO 1 modulation to Filter & Pulse, which e.g. turns rising sawtooth in falling sawtooth.

[Delay](#) LED active:

This applies the LFO delay function to LFO 1, which makes it start only delayed after releasing and again hitting a key. The delay time and behaviour is controlled with the two trimpots [Hold](#) and [Rise](#):

**Hold:** Sets the wait time until the modulation starts rising (0 - 10s)

**Rise:** Sets the rise time once rising has started after the waiting (hold) (0 - 10s)



### OSC PHASE / KEY TRIG

This button can activate both phase inversion of the LFO1 modulation to the Oscillators ("P-Inv") and also can activate key triggering (K. Trig).

**P-Inv** LED active:

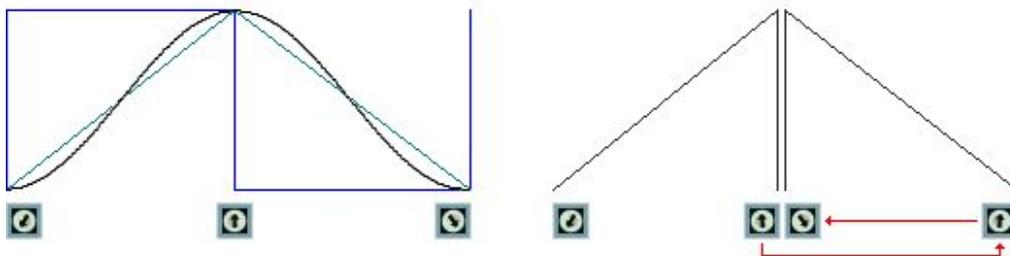
Inverts the LFO 1 modulation to the Oscillators (pitch), which e.g. turns rising sawtooth in falling sawtooth.

**K. Trig** LED active:

This applies key triggering to LFO 1, which means that the wave is being reset upon releasing all keys and hitting a new key. The wave then always starts at the same phase state which can be set with the **Phase** trimpot.

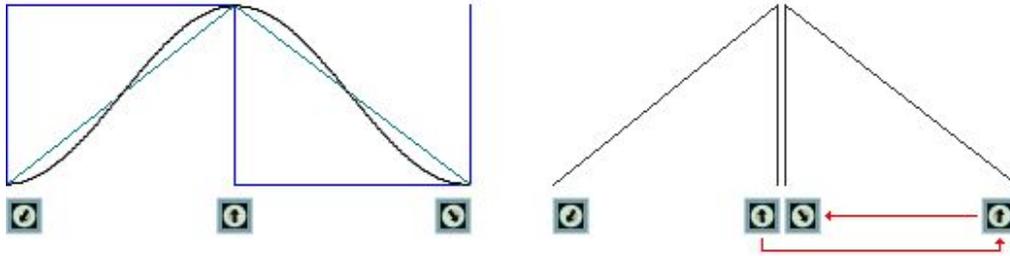
**Phase:**

Sets the starting phase state of the LFO 1 wave if key triggering is activated:



## FF Phase trimpot:

This is how the trimpot setting corresponds to the starting position within the active LFO waveform:



## Sine, Square, Triangle:

The zero position of the trimpot corresponds to the lowest point of the wave, in the square wave it's right after the rising flank which is more convenient, so that the entire part of that pole is performed. For starting at the opposite position of the chosen wave set the trimpot to 12 o'clock.

## Sawtooth:

Since the OSC invert function formerly (OP-X PRO-II) couldn't be accessed in the manual trigger mode, the phase trimpot can access all phase states of both the rising and the inverted falling sawtooth. The left half, from zero to almost 12 o'clock lets the starting point shift through the rising sawtooth wave. In the right half, the wave is inverted, and so is the mapping. To start the falling sawtooth at its top value set the phase trimpot to the maximum value. You can shift through the falling sawtooth by turning the trimpot from maximum back to almost 12 o'clock.

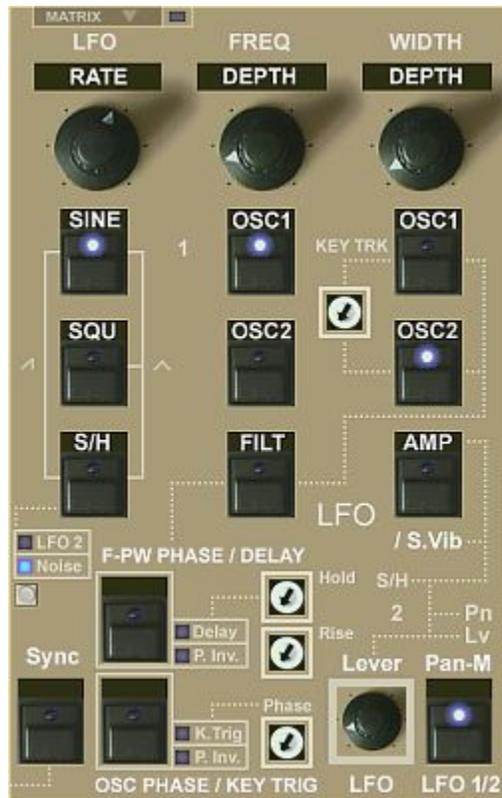
As you can see the trimpot was mapped to the phase states in the most useful way, which means that in the zero position there's always the most common starting phase state.

To get to know the phase shifting functionality a bit better you can e.g. activate LFO to oscillators, maybe half amount, with very slow LFO rate, and try out the trimpot's behaviour with different LFO waves. Don't forget to activate the manual trigger mode before (LED blue), otherwise there will be no effect.

These now were the incredible features of LFO1 which can be looked at as the main LFO since it offers the most features.

Note that LFO1 independently for the frequency and phase settings here can be used as modulation source in the Modulation Matrix.

Now let's come to LFO2:



Now let's have a look at the second LFO within this block, LFO 2:

### LFO2

LFO 2 at the bottom right of the MODULATION section is called "Lever LFO" since it's mapped to the modulation lever/wheel by default.

And it's also the sampling source for **S/H** if it's set to LFO 2 which results in "Sampled Vibrato" derived from OB-8, and also can be mapped to panning modulation.

But like LFO1 it can be used as independent modulation source in the Matrix.

Controls:

#### Lever LFO: (knob)

This knob sets the LFO speed. Waveform always is sine here.

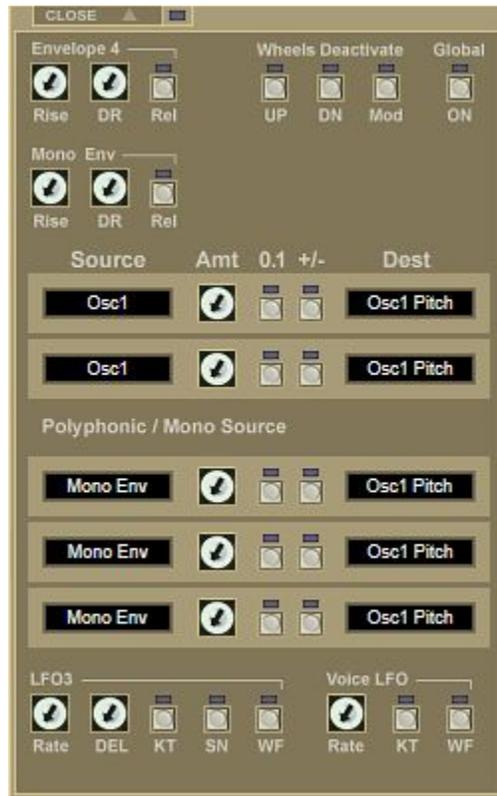
#### Pan-M / LFO 1/2: (button)

This button determines if the Panning Modulation feature in the voice management section uses LFO1 or LFO2, which at the same time inverts the source to the modulation lever/wheel:

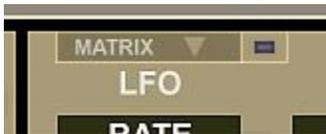
LED inactive: Pan-Mod source is LFO1, mod-wheel source is LFO2

LED blue: Pan-Mod source is LFO2, mod-wheel source is LFO1

## MODULATION MATRIX



Upon clicking the "Matrix" button at the top left the Modulation Matrix expands into the LFOs section:



The **LED** on the right side of the "Matrix" button is linked to the "**Global ON**" button at the top right of the matrix section and mirrors its state.

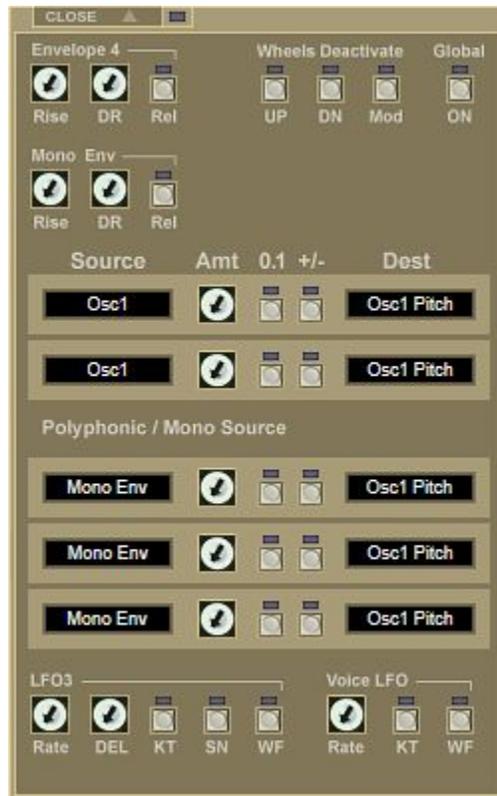
Like this you also know if the matrix is active or not when it's closed.

NOTE:

**THE CONTROLS OF THE MODULATION MATRIX WON'T DO ANYTHING IF GLOBAL ON ISN'T ACTIVATED!**

Exception is the 3 "Wheels Deactivate" buttons which also work when global on is deactivated.

The **Global ON** button also is very useful to quickly compare the before/after situation if you applied modulations in the Matrix. Upon deactivating global on all sent voltages are deactivated.



### Introductory to the Modulation Matrix:

The Modulation Matrix offers a total of 5 modulation slots to apply free modulation routings using many different sources and targets.

#### Upper 2 slots (Mx1, Mx2):

The upper two (separated) slots are Polyphonic Source Slots (Poly Source). A polyphonic source e.g. is key velocity or oscillator output.

#### Lower 3 slots (Mx3, Mx4, Mx5):

The three (separated) slots are Monophonic Source Slots (Mono Source). A monophonic source e.g. is channels aftertouch or mono envelope.

Furthermore the matrix section offers 2 additional specialized envelopes as well as 2 additional LFOs:

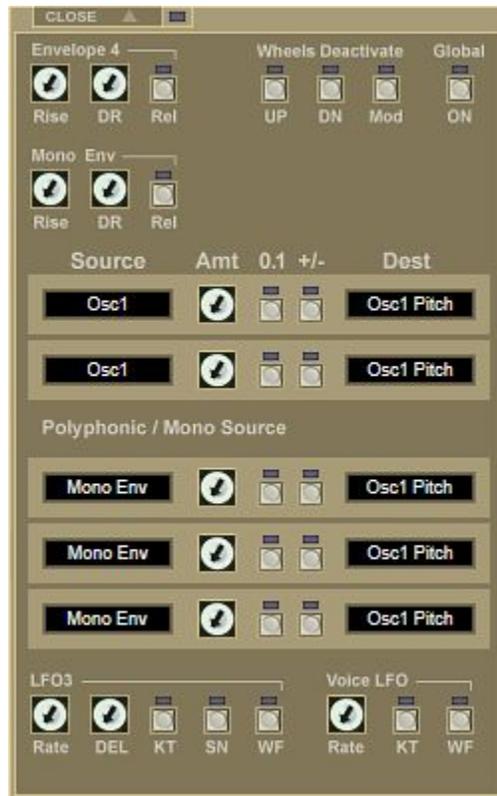
**Envelope 4:** An additional specialized polyphonic envelope (per voice)

**Mono Env:** An additional specialized monophonic envelope (so one global)

**LFO3:** An additional LFO - global / monophonic as LFO1 and LFO2

**Voice LFO:** This is an additional voice-based LFO, so in fact 12 LFOs

Last but not least the 3 "**Wheels Deactivate**" buttons allow to deactivate the interface-side pitch/mod wheels mapping in order for free mapping!



The modulation matrix isn't only there to create extremely complex sounds and trying parameter mappings the standard synth interface doesn't offer.

It also can be used as general problem solver.

#### Problem solver:

Anything you can't do with the offered standard parameters and controls?  
The chance is high that you can do it in the Matrix!

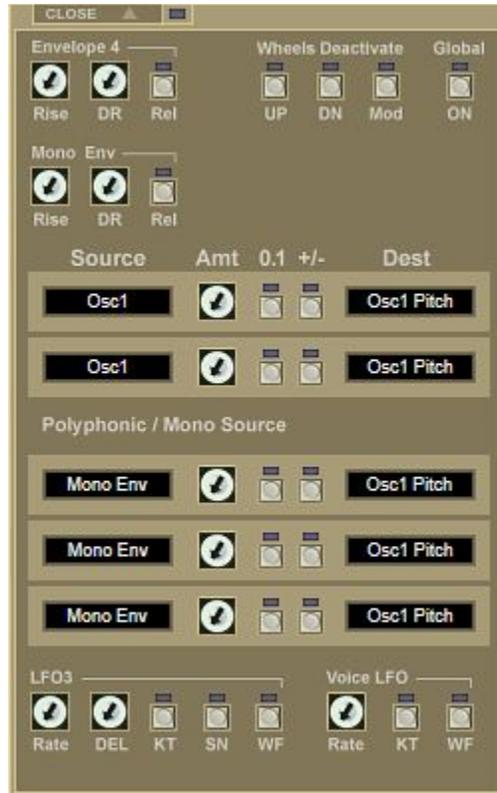
A parameter range is too low for you in a situation? No problem. In the matrix you can extend the range, and even add a fixed value if needed!

Need an additional envelope of LFO? Available in here!

#### Free Wheels Mapping:

You can't do what you want to achieve with the pitch/modwheels with the offered standard mappings or want to detach them completely? No problem, you all can do this in here!

You even can only partly un-map (e.g. only pitchbend up) a wheel and use pitchbend up and down independently as modulation source!



### How the Matrix works:

Since the synth emulates voltage controlled polyphonic synths the Modulation Matrix also acts strictly analog.

Which means:

What you apply here simply will be added or subtracted as virtual voltage to the current state of the parameters and function groups!

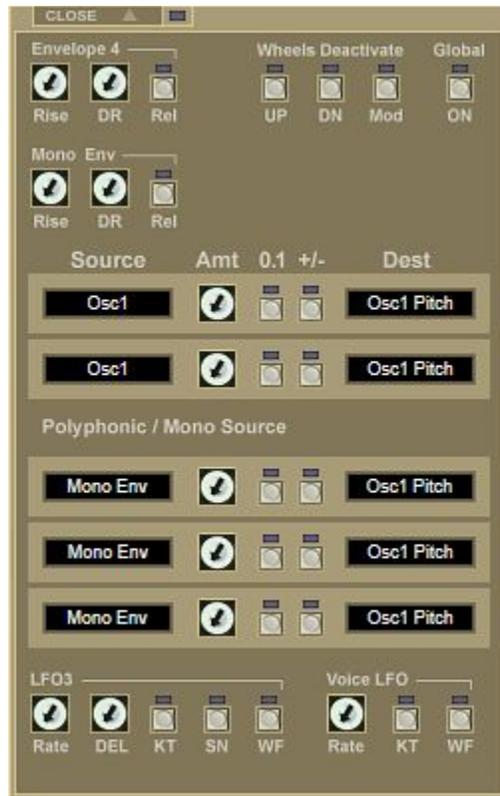
Always keep this in mind! This e.g. means that the behaviour of a knob on the interface will change and access a different range after sending additional voltage there!

So always think strictly analog!

The **Global ON** button at the top right luckily makes it easy to quickly compare the before / after state. So no matter what you've done here you always can return to the original unmodulated state without losing all your mappings.

### Inter-Modulation (Mx1 - Mx5 destinations):

Note that the slots (called **Mx1 - Mx5**) also can modulate each other! Some stuff even only can be done like this. e.g. transformation from mono source to an in the lower slots not provided polyphonic destination. For this simply set a polyphonic modulation (upper 2 slots) with amount 0 and modulate the slot's amount (Dest. Mx1/2) with a mono source from the 3 lower slots.



Now after this general introduction let's come to the actual controls:

#### Slots:

As mentioned, the upper 2 (Mx1, Mx2) are for polyphonic sources while the lower 3 (Mx3 - Mx5) are for monophonic sources.

All 5 share the same controls:

#### Source:

Sets the modulation source for this slot. Click into the field and choose one.

#### Amt:

Sets the modulation amount. Can be customized with 0.1 and +/-

#### 0.1:

Divides the amount by 10 (one 10th) for a smaller range if needed

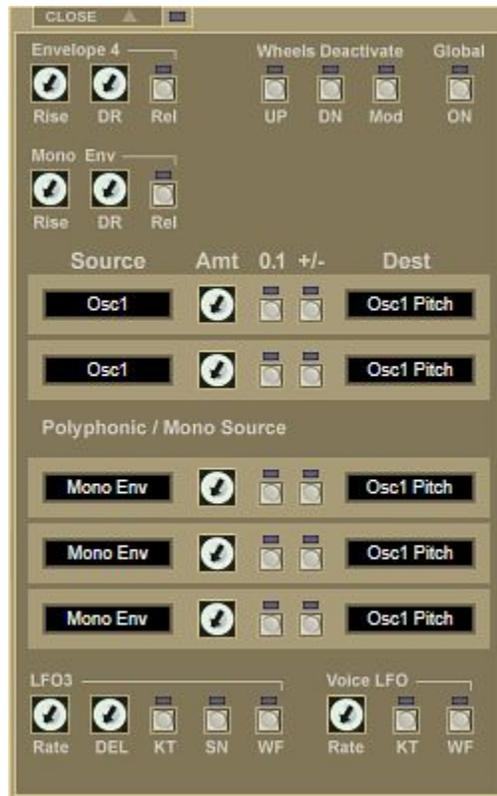
#### +/-:

Inverts the modulation, which e.g. leads to subtraction instead of addition

#### Dest:

Sets the slot's modulation destination. Click into the field and choose one.

**GLOBAL ON MUST BE ACTIVATED IN ORDER THE SLOTS WORK!**



### Global ON:

The set modulations only will have an effect if this button is activated. Its state is mirrored in the LED on the right of the Matrix opener so that you also know that the Matrix is active when it's closed.

### Wheels Deactivate:

With these 3 buttons you can deactivate the standard mapping of the main interface from the pitchbend and modulation wheels in order to be used as modulation sources without double destination. Of course you also can leave them activated if you want both at the same time.

The great thing is that you can deactivate pitchbend up and down separately and you also can use these separately as sources in the Matrix!

### Envelope 4:

This is the first extra envelope which the Matrix offers and it's numbered 4 since the main interface already offers 3 envelopes (filter, amp and pitch). The same as these it's a per-voice envelope.

Rise: Attack time if needed

DR: Combined Decay and Release

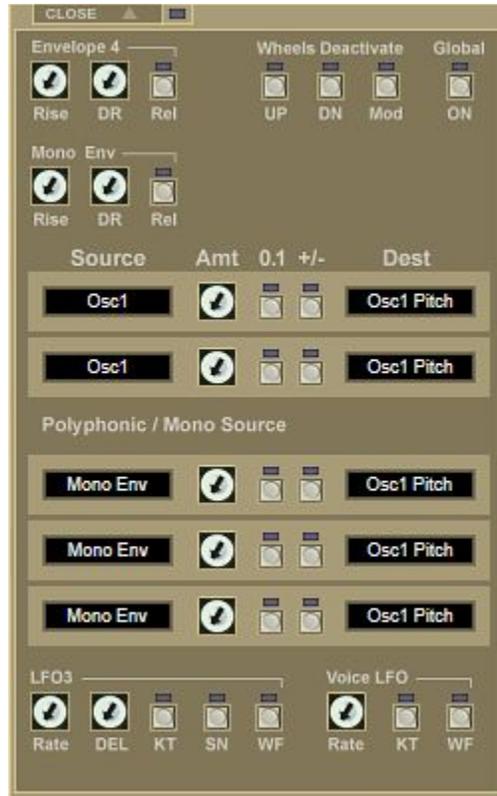
REL: Activates or deactivates Release and Sustain:

OFF: Release OFF Sustain OFF

Blue: Release ON Sustain OFF

Orange: Sustain ON Release ON

Green: Sustain ON Release OFF



### Mono Env:

This is the second extra Envelope (so the 5th in total) and unlike the other 4 is a global monophonic envelope. The controls are the same as for the polyphonic Envelope 4:

Rise: Attack time if needed

DR: Combined Decay and Release

REL: Activates or deactivates Release and Sustain:

OFF: Release OFF Sustain OFF

Orange: Sustain ON Release ON

Blue: Release ON Sustain OFF

Green: Sustain ON Release OFF

### LFO3:

This is the first extra LFO which too is a global LFO as LFO1 and LFO2.

Controls:

Rate: LFO rate, so the speed

DEL: LFO delay time (0 - 10s)

KT: Key trigger, which resets the wave on a new key hit if all were released

SN: Sync, which synchronizes the LFO to the song tempo

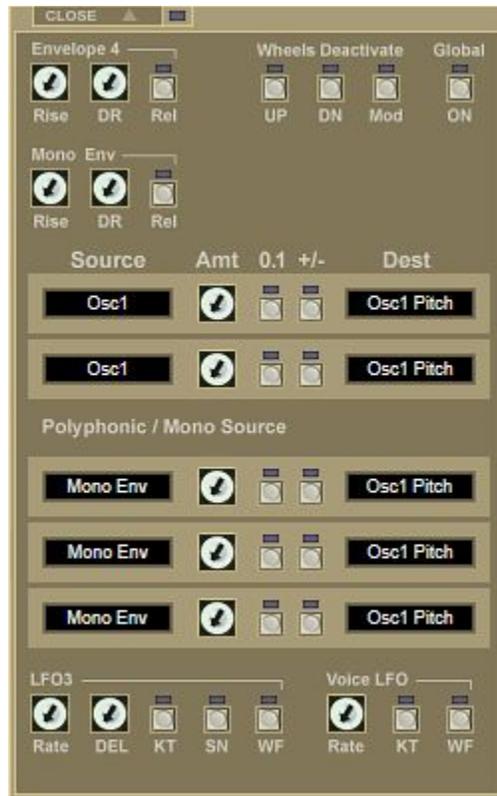
WF: Waveform, which is indicated by the colors:

OFF: Sine

Orange: Sawtooth (rising, for falling apply +/-)

Blue: Square

Green: Triangle



### Voice LFO:

This is the second extra LFO which is a polyphonic LFO and so is per-voice. So it's in fact it's 12 LFOs in total (one for each voice).

This is relatively unusual (normally LFOs are global), but this was offered in the Matrix-12, and so we wanted to include this option too.

Controls:

Rate: LFO rate, so the speed

KT: Key trigger, which resets the wave on a new key hit if all were released

WF: Waveform, which is indicated by the colors:

OFF: Sine

Orange: Sawtooth (rising, for falling apply +/-)

Blue: Square

### POSTSCRIPT:

As you could see in the previous pages the Modulation Matrix offers a LOT, and even possibilities you won't find anywhere else.

E.g. it's possible to use the trimpots on the voice boards as modulation source, which makes sense if they're inactive anyway because autotune is applied. Or you can apply a fixed value if needed. Or you can modulate unusual sources like Spread. Check the examples in the patches library!

## ARPEGGIATOR



What's entitled "Arpeggiator" here in fact is not only a normal arpeggiator but a very sophisticated MIDI processor offering 32 modes.

The 32 modes include:

- Normal Arpeggio (up/down/up&down/pitch order/input order/random)
- Manual Chord hold (as e.g. OB-X offered)
- Chord presets (16)
- An 8-step note sequencer
- Note doubling for fattening up tones (inspired by Crumar BIT99)

This all is cleverly and space-saving realized just using 4 knobs, which change its function dependent on the preset.

Coming from OP-X PRO-II you'll notice that there's now a fixed digital display instead of the popping-up displays. This digital display will always indicate above the knobs what their current function is right now.

This makes the use and understanding a lot easier.

### Mode Knob:

The knob on the right side of the number display always switches the modes and never changes its function as the other 3 knobs do. The current mode is shown in the broad display above the knob and the number.

The other knobs change their function depending on the current mode, which is indicated above the knobs. Also can be none (--).

Since the capacity of the digital displays is limited this info often ist shorted a bit. **SPeD** e.g. stands for Speed.

Further changes to OP-X PRO-II are the following:

- Hold is mirrored as separate button which is linked to Hold / ARP ON
- The dedicated Sync button is here and not anywhere else
- Pedal hold which was always active now can be deactivated on demand
- Chord hold now also can be fixed by pedal

Now after this introduction let's come to the actual controls as well as to all the provided modes:



### **Pedal Hold:**

This button is active by default and can be deactivated on demand.

Pedal hold is an extremely handy feature that allows to apply arpeggio hold hands-free (when the hands are busy playing) using the standard sustain/damper pedal (CC64).

To activate hold quickly depress and again release the sustain/damper pedal within less than half a second. To again deactivate hold do the same again.

This time filter allows to still use the damper pedal for applying sustain and holding notes if not depressed and released very quickly.

But as said, you can deactivate this function if it interferes with your damper pedal use, which e.g. can happen in sequencer use.

### **Pedal for Sequencer start/stop and Chord hold:**

This function however not only can be used to apply hold, but also to start and stop the 8-note sequencer (which is one of the modes), and new too to freeze a manually applied chord.

Once you learned how to use this feature you won't be able to do without this function anymore - promised!

### **Sync:**

Synchronizes the Arpeggiator to the song tempo. The speed knob(s) (labeled SPeD) then will be quantized and only react in big steps.

### **Hold:**

Holds the Arpeggio, starts and stops the sequencer, and freezes a manual chord, dependent on the mode. It's linked to the 3 states of the Hold / ARP ON button, and has been separated here for easier understanding.

Again note that you can do all the hold/start/stop stuff much more comfortably too with the sustain/damper-pedal if Pedal Hold is active.

### **Hold / ARP ON:**

Activates the Arpeggiator / MIDI Processor. Dependent on the mode this can make arpeggiating start or have a different effect like note doubling or note chording.

The 3rd deep red state (two clicks) is linked to "Hold" and and so also to the separated "Hold" button on the left.



### Knobs:

Now let's come to the core of the Arpeggiator / MIDI Processor which is controlled using just 4 knobs.

### Mode Knob:

The knob on the right side of the number display always sets the Mode of the processor and never changes its function. Which mode currently is chosen is displayed in the broad display section above.

### Parameter Knobs:

The other 3 knobs change their function dependent on the mode and state of the processor. Which one this is is displayed above the knobs. This also can be none (--). SPeD means Speed.

### Number Display:

The number display either is linked to the mode or to the changes of other knobs and doesn't really have a relevant meaning. But it clearly indicates at which position of the chosen modes (32 or 16) you are. It's always maximum 16 and will change the color of the dot if it's the other half (16/16).

### Digital Display:

If the Arpeggiator/MIDI Processor isn't switched on (Hold / ARP ON button) the display normally is dark. If you however close and re-open the interface it will be active which is a GUI-anomaly. This again will be set back if you change presets from a non-arpeggio to an arpeggio preset.

If some controls don't react this is caused by the clever separation/masking of before mapped parameters. To make it funktion again simply switch one preset further and back again.

## MODES

Now let's come to the 32 offered modes. As said these are switched with the knob on the right side of the number. There are 8 pre-indicators:

- **SP** = stepped arpeggio (mix between sequencer and arpeggiator)
- **rnd** = randomized arpeggio
- **ORD** = input order arpeggio (same as Jupiter-8)
- **Pch** = pitch order arpeggio (common style)
- **rEcord** = a simple 8-step note sequencer (record)
- **Chord rEc** = manual chord hold (chord rec)
- **Chord PrES** = preset chords (16 presets switched with the right knob)
- **double** = note doubling (to fatten up notes)

**uP** = up / **dn** = down / **ud** = up and down / **1 - 4** = number of octaves



Now let's dive into the exact meaning of these expressions as well into what the actual modes do.

First on to the post-indicators in the standard arpeggio presets:

**ORD (input order):**

The notes are played back in the same order as they were played in, like in the old jupiter 8 arpeggiator, leaving them in their original octave. Suitable for interesting, experimental and wild arpeggios.

**Pch (pitch order):**

The notes are auto-sorted by note pitch before they are arpeggiated, the common way of arpeggiating. Suitable for „Chopin-Style“ chord arpeggios or contolled electronic (double-note) arpeggios.

**rnd (random):**

Randomized play, which means the notes are sorted with a random function. This can be quite inspiring and animated. The jupiter had this feature too.

**up (up):**

The notes are arpeggiated upwards, octaves change upwards too. In order mode it's simply the original order.

**dn (down):**

The notes are arpeggiated downwards, octaves change downwards too, beginning from the highest point back to the base. In order mode the playing order is changing its direction.

**ud (up and down):**

Both combined, take the place of each others sequentially. The notes at the changing direction points are not repeated. Think of Chopin's piano etude 1, played perfectly, without any exercise.

Now let's come to the description of the modes which are switched with the knob on the right side of the number display:





### The modes:

Switched with the framed knob and displayed with the framed display: There are two banks of 16 presets, the first bank marked with a green point in front of the number.

#### .1: doubleE (Double)

Causes one key to play two notes at the same time with the same pitch. The additional note is distributed to the next free voice, in circular mode, as usual. Since no voice sounds exactly the same this makes the tone fat and lively. You can fatten it up by the „Spread“ knob which will cause a wider difference of the pitch between the two notes. Polyphony is halved of course, so it's useful to switch to 12-voice mode to still have a six-voice polyphony. The double mode can be arpeggiated by clicking a second time on „ARP ON“ (red state). The mode and speed controls are the two knobs on the left here.

#### .2: Chord PrES (Preset Chord)

One played key causes a pre-saved interval or chord being played. There are 16 presets available which can be chosen with the knob on the right side. The chord also can be arpeggiated by clicking on the „ARP ON“ button a second time which will turn the led deep red. The controls for the arpeggio mode and speed are to find now on the left. The arpeggio can be held with the „Hold“ button on the left, or with the damper pedal if pedal hold is active.

The chord presets (chosen with the knob on the right):

- .1: **Oct** = Octave: one added lower octave
- .2: **Oct 2** = Oct double: the same, but doubled
- .3: **Oct 3** = Oct Lower Upper: a lower plus an upper octave added
- .4: **UctU** = Oct Unison: the same, but 3x, using all 6 voices in 6-voice mode
  
- .5: **For** = Fourth: a fourth added
- .6: **For 2** = Fourth Double: the same but doubled
- .7: **ForU** = Fourth Unison: the same, but 3x, using all voices in 6-voice mode
- .8: **ForO** = Fourth Oct: a fourth plus and octave added
  
- .9: **Fth** = Fifth: a fifth added
- .10: **Fth2** = Fifth Double: the same but doubled
- .11: **FthU** = Fifth Unison: the same, but 3x, using all six voices in 6-voice mode
- .12: **FthO** = Fifth Oct: a fifth plus and octave added
  
- .13: **MAJ** = Major Chord: a major triad added
- .14: **Mnr** = Minor Chord: a minor triad added
- .15: **Mn7** = Minor Seven: a minor triad with a small seventh added
- .16: **Oct** = Penta Oct: four octaves added, two below and two above

How to Arpeggiate the Double and Preset Chord mode:

Click a second time on „ARP ON“ for this. The led will shine deep red now. The controls for mode and speed are the two on the left side of the number display now (because the regular ones have different functions in these modes).

The chord arpeggio modes:

The terms are the same as in normal (non-chord) arpeggio mode. The modes have been reduced to the 16 most important ones that also make sense in combination with chords. For details read the introduction of the arpeggiator section. Remember the three terms concerning order of playing which are not self declaring in any case:

**P** = Pitch:

The notes are automatically sorted by note pitch before being played

**O** = Input Order:

The notes are played back in the same order as they were played in

**r** = Random:

Randomized play, which means the notes are sorted with a random function

**uP** = up / **dn** = down / **ud** = up and down / **1 - 3** = number of octaves

The modes:

- .1: **P1uP** = Pitch 1 Oct Up
- .2: **P2uP** = Pitch 2 Oct Up
- .3: **P3uP** = Pitch 3 Oct Up
- .4: **P3dn** = Pitch 3 Oct Down
- .5: **P2dn** = Pitch 2 Oct Down
- .6: **P1dn** = Pitch 1 Oct Down
- .7: **P1ud** = Pitch 1 Oct Up Down
- .8: **P2ud** = Pitch 2 Oct Up Down
- .9: **P3ud** = Pitch 3 Oct Up Down
- .10: **O1uP** = Order 1 Oct Up
- .11: **O2uP** = Order 2 Oct Up
- .12: **O2dn** = Order 2 Oct Down
- .13: **O2ud** = Order 2 Oct Up Down
- .14: **O3ud** = Order 3 Oct Up Down
- .15: **r2ud** = Rand 2 Oct Up Down
- .16: **r1uP** = Rand 1 Oct Up

The directions (up, down, up down) always lead to the base. Up means the notes are played upwards beginning from the origin. Down means they are played downwards beginning at the highest octave towards the origin.

In order mode (O), downward direction causes the octave's internal playing order being inverted.

### .3: Chord rEc (= manual chord hold)

This mode allows to temporary hold a chord and play it with a single key. This feature can be found in some vintage polyphonic analog synths. In the OB-X this feature was hidden and handled with the hold and reset buttons. As in the original, the chord will get lost after changing the mode or switching the plugin off. It's a realtime feature which can't be saved within a preset. Use the chord presets for this.

How to hold an play back a chord:

Record chord:

The normal active state (led orange) of the „ARP ON“ button means record ready. Be sure you have not entered any notes already after switching into the step sequencer mode. Otherwise release the button completely (led dark) and set it in record mode again. Play and hold a chord on the keyboard. The reference point is always the middle c (C3, Note 60 or C'). This means: What will be saved is the relative distance to this reference note. If you need both hands for your chord you can also hold it with the damper pedal.

While holding the chord (manually or with pedal) either click a second time on the „ARP ON“ button which causes the led to shine deep red.

More comfortable however is holding the chord with the pedal-hold function (must be activated) by quickly depressing and again releasing the sustain/damper pedal within less than half a second.

The chord is fixed now and is ready to be played. You can release the keys or the pedal now.

When you hit a single key now the entered notes will be played together with the played note, causing a chord. Of course this will reduce polyphony accordingly. So it can be helpful to switch to 12-voice master polyphony. Of course you can play the chords also polyphonic, however voices will be used up quite fastly like that. Nevertheless this can lead to extremely rich and fat chords which would not be possible with normal playing.

If you want to clear the current chord just release the „ARP ON“ button, set it active again (orange) and enter a new chord. Alternatively release it by again quickly depressing and again releasing the pedal.

If nothing is entered then the saved chord remains until mode is switched. If some notes of the old chord should remain nevertheless then do the same and additionally switch the mode forward and back again. If you have used preset chords before the last used preset chord will remain in the chord memory. That's because the two modes share the temporary chord memory.

Manual chords can't be permanently saved or arpeggiated. Use the preset chord presets (mode .2) for this.

#### .4: rEcord = Record (8-step sequencer)

A nice little feature which can be quite funny. It's a very simple note sequencer with 8 steps at most. You can record a short sequence of notes, play them back then with variable speed and edit it on the fly using the keyboard by just entering new notes. It's similar to the former OP-X sequencer, but playback will only start after activating it. This makes it easier to enter the perfect line. Recording, playing back and editing work like this:

##### Record notes:

The normal active state (led orange) of the „ARP ON“ button means record ready. Be sure you have not entered any notes already after switching into the step sequencer mode. Otherwise release the button completely (led dark) and set it in record mode again. Play a short line of 8 notes at most (but it can be less), one note after each other (chords are not supported). The speed of entering does not matter, each new note will simply be saved within the next memory place. If you made a mistake, just release the „ARP ON“ knob once more completely (led dark) and set it to record active again.

##### Play back and edit sequence:

If you are pleased with your entered line then click a second time on „ARP ON“ which will cause the led to shine deep red. The line will be repeatedly played back now. You can set the playback speed with the knob labeled SPeD. You can edit the sequence on the fly by just entering new notes on the keyboard. Editing work in circular mode, which means that every newly entered note causes the next step to be ready for overwriting. The length of the sequence will stay fixed to the length of initial entering.

Alternatively, and that's very handy, you can start and stop the playback by quickly depressing and releasing the damper pedal within less than half a second if pedal hold is activated.

Of course you can synchronize the speed to the song tempo, just activate the „Sync“ button (III additionally for triolic mode). The speed knob will react now in big steps, dependent on the song tempo.

Now the „normal“ (except mode 1, 2 and 3) arpeggio modes will follow. They all can be synchronized to song tempo as well (read section right above):

#### .5: Pch 4 dn = Pitch 4 Oct Down

Arpeggiate, notes sorted by pitch, range 4 octaves, direction down

#### .6: Pch 3 dn = Pitch 3 Oct Down

Arpeggiate, notes sorted by pitch, range 3 octaves, direction down

#### .7: Pch 2 dn = Pitch 2 Oct Down

Arpeggiate, notes sorted by pitch, range 2 octaves, direction down

#### .8: Pch 1 dn = Pitch 1 Oct Down

Arpeggiate, notes sorted by pitch, range 1 octave, direction down

.9: Pch 1 ud = Pitch 1 Oct Up Down

Arpeggiate, notes sorted by pitch, range 1 octaves, direction up & down

.10: Pch 2 ud = Pitch 2 Oct Up Down

Arpeggiate, notes sorted by pitch, range 2 octaves, direction up & down

.11: Pch 3 ud = Pitch 3 Oct Up Down

Arpeggiate, notes sorted by pitch, range 3 octaves, direction up & down

.12: Pch 4 ud = Pitch 4 Oct Up Down

Arpeggiate, notes sorted by pitch, range 4 octaves, direction up & down

.13: Pch 4 uP = Pitch 4 Oct Up

Arpeggiate, notes sorted by pitch, range 4 octaves, direction up

.14: Pch 3 uP = Pitch 3 Oct Up

Arpeggiate, notes sorted by pitch, range 3 octaves, direction up

.15: Pch 2 uP = Pitch 2 Oct Up

Arpeggiate, notes sorted by pitch, range 2 octaves, direction up

.16: Pch 1 uP = Pitch 1 Oct Up

Arpeggiate, notes sorted by pitch, range 1 octave, direction up

Second bank (without green point):

1: Ord 4 dn = Order 4 Oct Down

Arpeggiate, notes sorted by input order, range 4 octaves, direction down

2: Ord 3 dn = Order 3 Oct Down

Arpeggiate, notes sorted by input order, range 3 octaves, direction down

3: Ord 2 dn = Order 2 Oct Down

Arpeggiate, notes sorted by input order, range 2 octaves, direction down

One octave down was left out because it only will cause the playing order being inverted which is rather irritating than being useful.

4: Ord 1 dn = Order 1 Oct Up Down

Arpeggiate, notes sorted by input order, range 1 octave, direction up & down

5: Ord 2 ud = Order 2 Oct Up Down

Arpeggiate, notes sorted by input order, range 2 octaves, direction up & down

6: Ord 3 ud = Order 3 Oct Up Down

Arpeggiate, notes sorted by input order, range 3 octaves, direction up & down

7: Ord 4 ud = Order 4 Oct Up Down

Arpeggiate, notes sorted by input order, range 4 octaves, direction up & down

8: Ord 4 uP = Order 4 Oct Up

Arpeggiate, notes sorted by input order, range 4 octaves, direction up

9: Ord 3 uP = Order 3 Oct Up

Arpeggiate, notes sorted by input order, range 3 octaves, direction up

10: Ord 2 uP = Order 2 Oct Up

Arpeggiate, notes sorted by input order, range 2 octaves, direction up

11: Ord 1 uP = Order 1 Oct Up

Arpeggiate, notes sorted by input order, range 1 octaves, direction up

Randomized presets:

12: rnd 3 ud = Rand 3 Oct Up Down

Arpeggiate, notes sorted by random function, range 3 octaves, direction up & down

13: rnd 1 uP = Rand 1 Oct Up

Arpeggiate, notes sorted by random function, range 1 octave, direction up

Step modes:

These were adopted from the former OP-X arpeggiator, but made easier handlable with switchable hold, steps number range from 1 to 8 and optional single or double note repeat for all step numbers. **The stepped mode is only active when hold is switched on** („ARP ON“ red).

The number of steps in hold mode is limited then by the setting of the „SP\_1“ knob on the left side of the number display. SP\_1 = 1 step, SP\_2 = 2 steps, SP\_3 = 3 steps, SP\_4 = 4 steps and so on.

Steps mode is similar to the step sequencer mode, but playback is always on. Entered notes are written into the step sequencer's memory places in circular mode (one step after another, returning to the first one after the last one). The number of played back steps is being limited by the „Stp“ knob. Range is from 1 to 8. The sequencer's memory places are free by default, so they have to be filled before the maximum number of steps is played back. If the number of steps is being reduced, the upper notes will be cropped (but they stay in the memory). This steps mode e.g. can be interesting if you want to have a fixed amount of used notes in an arpeggio to fit a specific metre without the risk to leave the groove by playing too many notes in a chord. But it can also be interesting for one-finger „freehand“ playing and interesting new lines.

Next page: the 3 actual step modes

Now the three available step modes (be sure to read the introduction about the step modes on the previous page):

#### 14: SP rP 2 = Steps Rep 2

Steps mode (read introduction on previous page);

The steps are played back upwards and downwards repeatedly, plus the steps at the extreme positions are repeated.

The steps mode is only active when hold is on („ARP ON“); The number of steps can be set with the „SP\_1“ knob on the left

#### 15: SP rP 1 = Steps Rep 1

Steps mode (read introduction on previous page);

The steps are played back upwards; the first step is being repeated; (with „Stp“ set to 7 this is the original OP-X mode at maximum steps setting)

The steps mode is only active when hold is on („ARP ON“); The number of steps can be set with the „SP\_1“ knob on the left

#### 16: SP = Steps

Steps mode (read introduction on previous page);

The steps are played back upwards;

This is the way the original OP-X arpeggiator used to work from steps 2 - 6; (for step 7 take mode .15 with steps set to 7)

The steps mode is only active when hold is on („ARP ON“); The number of steps can be set with the „SP\_1“ knob on the left

If hold is not active all three step modes will behave the same as mode 11 (Order 1 Oct up).

Final thoughts on the Arpeggiator/MIDI-Processor:

You will see once you have learned how to operate and what the modes mean it's a breeze to use. The sequence of modes has been arranged to get as smooth morphing between the modes as possible (that's why the octave range is rising and falling rather than always beginning from one while switching through the modes). Often used presets, first of all the double mode, are placed at the extreme positions, so you can access them in any situation in a very short time without precise tweaking (for Double mode: just turn the modes knob fully left and activate „ARP ON“, then you're there already).

Also give polyphony a thought. In most cases there's no use to switch on more voices than six, especially when the release phase is cropped anyway. for some stuff however extended polyphony can be useful.

If you are in six-voice mode, you almost have a six-step sequencer with controls for each of the six steps. E.g. you can set then the filters individually in detuned mode with the white trimpots on the left. Also experiment with oscillator detuning, the „Spread“ function, the pan settings and the pan modulation which can make your sequence pretty animated.

## FILTER SECTION



This section offers you an extremely capable morphable multimode filter offering a total of **10 filter types**.

Other than in OP-X PRO-II the section now contains ALL related controls and should be easily understandable.

### Dual Filter Design

The design of the filter is a classic dual filter design as in the SEM.

It consists of two separate parallel filters between which you can blend seamlessly. So you can mix them. This results in an infinite number of mixed modes.

**Filter A** (left side):

Filter A is a **lopass** filter which itself offers 7 different filter types.

**Filter B** (right side):

Filter B offers **Hipass**, **Bandpass** and **Notch** between which you can morph seamlessly! The 3 little grey buttons however allow you to target them directly unmixed in pure form.

**MIX:**

The MIX trimpot lets you seamlessly blend between the two filters which will result in mixed filter types.

In 50% mix of Lopass and Hipass you e.g., get Notch filtering, which however sounds different than the Notch in filter B and also allows for resonance!

The filter MIX finally even can be automated by LFO (LFO1) or Envelope (Filter Envelope), or in the Modulation Matrix by other sources!



New let's have a look at the controls in the FILTER section:

**Reset:**

Re-sets the MIX, TYP, LFO and ENV trimpots to zero for pure lopass

**CUTOFF:**

Filter Cutoff. Sets the opening or frequency of the filter.

**RESON.:**

Resonance. Sets the resonance of the filter. Dependent on the chosen lopass mode the filter can start to self-resonate at maximum position.

**ENV AMT:**

Envelope Amount. Sets the amount of modulation by the filter envelope.

Signal Source Amount Controls:

Oberheim-typical the controls for this are to find in the filter's section:

**OSC1:**

Switches full or zero amount of oscillator 1 to the filter input.

Alternatively, the amount also can be regulated seamlessly with the trimpot below which is linked to the button. Using this trimpot a popping-up display will show the amount value from 0 - 127. The LED state of the linked button changes at 50% (so 63 to 64).

**OSC2 HALF:**

Switches the half amount (50%) of oscillator 2 to the filter input. Since this here is no toggle-switch implementation you can add this to the activated FULL button if wished which results in a volume boost.



### **OSC2 FULL:**

Switches full or zero amount of oscillator 2 to the filter input.

Alternatively, the amount also can be regulated seamlessly with the trimpot below which is linked to the button. Using this trimpot a popping-up display will show the amount value from 0 - 127. The LED state of the linked button changes at 50% (so 63 to 64).

### **NOISE HALF:**

Switches the half amount (50%) of the noise generator to the filter input. Since this here is no toggle-switch implementation you can add this to the activated FULL button if wished which results in a volume boost.

### **NOISE FULL:**

Switches full or zero amount of the noise generator to the filter input.

Alternatively, the amount also can be regulated seamlessly with the trimpot below which is linked to the button. Using this trimpot a popping-up display will show the amount value from 0 - 127. The LED state of the linked button changes at 50% (so 63 to 64).

In OP-X PRO-II these seamless control options (trimpots) still were hidden.

### **KEY:**

Activates keyboard tracking to filter cutoff.

This can be used to make the filter open the more the higher the played key is.

### **KEY trimpot:**

Sets the amount from 0% to 100% for key tracking if it's activated. At 100% the filter pitch exactly follows the keyboard. Which means, if you set the filter to self-resonating mode you can play a correctly pitched melody with it. This can become necessary for constant sounding sine FM.



### **DMP:**

Stands for "Damp" which originally was the only function of this button.

But in its current configuration it controls how wide the filter can be opened and how the frequency behaves in the top frequency range.

This can have a great influence on the overall sound character (since it also affects modulations) and also sets the maximum brightness.

The modes:

#### **OFF / LED inactive:**

This is the original OP-X mode which slightly tames down / limits the filter in the high frequency range which results in a very pleasing warm sound. In most cases you'll be completely happy with this setting.

#### **Button LED blue - no upper LEDs active**

In this mode the filter is damped down a bit, which e.g. can be useful in combination with activated key tracking.

#### **Clear LED active:**

In this mode the filter can be almost fully opened for clear transparent tone. In OP-X PRO-II this setting was fully opened, but since OP-X PRO-3 can go brighter it had to be cut down a bit in order patches sound identical.

#### **Brill LED active:**

Brilliant. This is the same as Clear, but the top range additionally is a bit boosted for more edge.

#### **MAX:**

This new mode is the maximum possible brightness and lets the filter open fully into the ultra-sonic range to let the synth use the full brightness capability of the oversampled engine.



Note that the MAX brightness mode isn't available both in the ECO and LC versions. In these the modes are shifted one step, resulting in "Brill" being the max, and "Damp" having a selector LED.

#### 24db:

Originally (in OP-X PRO-II) only used to activate 24dB mode and self-oscillation this button now switches between 7 different lopass filter modes (including self-osc variants) which give you enormous flexibility!

The modes:

**OFF / LED inactive = 12dB warm**

In deactivated state you have the original warm sounding 12dB mode

**Hard = 12dB brighter more edge**

This is equivalent to the 24dB mode in OP-X PRO-II which actually wasn't fully 24 dB. It's a 12dB mode that sounds harder/clearer and has more "edge".

**24dB = Oberheim Type 24dB**

This mode gives you true 24dB filtering with Oberheim character, so not losing bass in high resonance setting

**MG = Moog Type 24dB**

This 24dB mode sounds quite a bit different and has less bass in high frequency setting, which gives you even more options.

#### Self Osc LED:

Upon clicking the button in Hard, 24dB and MG mode a second time this additionally activates filter self-oscillation at maximum resonance setting (indicated with the self-osc LED) which results in another different character.

Self -oscillation also can be used for filter effects or in combination with 100% key tracking as additional partial (drawbar) for organ sounds.



So the 7 available lopass modes are:

- 12dB warm
- 12dB hard without self-oscillation
- 12dB hard with self-oscillation
- 24 dB OB style without self-oscillation
- 24 dB OB style with self-oscillation
- 24 dB MG style without self-oscillation
- 24 dB MG style with self-oscillation

Note that you can learn the 24dB button to a rotary control in a MIDI keyboard or controller which lets you scroll for-and backwards through the 7 types!

#### **MIX:**

Lets you seamlessly blend between the lopass filter on the left and the multimode (hipass/bandpass/notch) filter on the right.

In the in-between-positions this results in mixed filter-types, like e.g. notch with 50% mix of lopass and hipass. This notch however sounds different than the notch in the multimode filter and allows for resonance!

This MIX trimpot furthermore can be automated by LFO1 and Filter Envelope (hard-wired) and if wanted also in the Matrix by any other source!

#### **TYP:**

This trimpot lets you seamlessly blend (!) between hipass, bandpass and notch, again resulting in mixed modes in between! In order to quickly and easily access the "pure" positions we spent the **NO** (notch), **BP** (bandpass) and **HP** (hipass) calibration buttons.

#### **LFO / ENV**

Modulates the filter MIX with LFO 1 and/or Filter Envelope. As mentioned already you of course also can map any source to MIX in the Mod-Matrix!

## OSCILLATORS SECTION



This section offers two oscillators each offering 4 different waveforms as well as some hard-wired modulation options. The controls:

### **PITCH 1:**

Sets the pitch of oscillator 1. The range is 5 octaves.

By default it's quantized in octaves (historic correct), but upon switching the small black QUA button from QUA to LIN below it will become seamless, which can be needed for sine FM.

**WIDTH:** Sets the pulse width from 50% (zero) to 0% (max) for both oscillators.

### **PITCH 2:**

Sets the pitch of oscillator 2. The range is 5 octaves and 3 semitones.

By default it's quantized in semitones (historic correct), but upon switching the small black QUA button from QUA to LIN below it will become seamless, which can be needed for sine FM.

### **SAW / SQU / sine / triangle**

These buttons set the waveforms. SAW is sawtooth, SQU is "square", but actually variable pulse (with set with WIDTH), the sine icon for sine, and the triangle icon for triangle.

NOTE that clicking one of the triangle icons always sets both oscillators to triangle and sets the pulse width knob to max, which is due to compatibility reasons for OP-X PRO-II sounds which used this hidden access method.

### **X-MD:**

Activates X-Mod / Cross-Modulation between oscillator 1 and 2. X-Mod is sort of a simple frequency modulation. The audio output of oscillator 2 modulates the frequency of oscillator 1.

The amount if this modulation is set with the XMD trimpot below. If both oscillators are set to sine wave you can do yamaha-type FM!



**SYNC:**

When activated oscillator 2 is synchronized by oscillator 1. Classic hard-sync used in many famous sounds!

**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 too is set in the XMD trimpot. trimpot (which also sets the X-Mod amount).

Ring modulation often also can be used to brighten up sounds a bit, especially sine fm sounds, or to add a bit of "dirt".

**FQ1 / FQ2:**

Fine adjustment of the frequencies of oscillator 1 and 2.

**QUA / LIN:**

By clicking into these black quares you can switch the oscillator pitch adjustment from quantized to linear individually for oscillator 1 and oscillator 2.

QUA = quantized

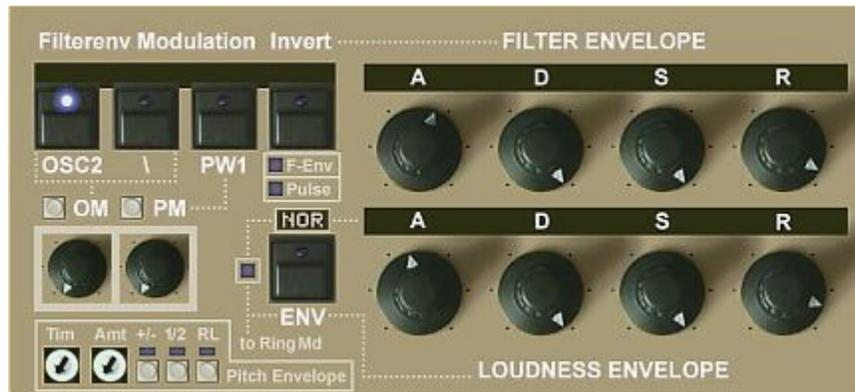
LIN = linear

In QUA setting the oscillator 1 pitch adjustment is historically correct quantized in octaves, and oscillator 2 too historically correct in semitones.

Linear frequency adjustment can become crucial for sine FM in order to be able to seamlessly access all possible "tones".

POSTSCRIPT: As you can see the oscillators sections already offers many possibilities to shape the basic oscillator sound before filtering.

## ENVELOPES SECTION



This section offers the 3 main envelopes (filter, amp and pitch) and their hard-wired modulation features.

Note that the Modulation Matrix offers 2 further envelopes resulting in a total of 5 envelopes! So you won't run out of envelopes that quickly.

The controls of the 3 envelopes:

### FILTER ENVELOPE

#### A / D / S / R:

Of course means: Attack, Decay, Sustain and Release.

Both the filter envelope and the amp envelope are very fast as their analog models, so can have very short attack times.

Check this preset which demonstrates this:  
opxpro2 lib / B\_Testpatches / Preset 2 "Envelope Test"

#### Filterenv Modulation:

These controls set hard-wired modulations of the filter envelope as well as the behaviour of the envelope itself. The controls are:

##### OSC2:

Modulation only goes to oscillator 2 if activated

\:

Modulation to oscillators is inverted

##### PW1:

Pulse width modulation only goes to oscillator 1 if activated

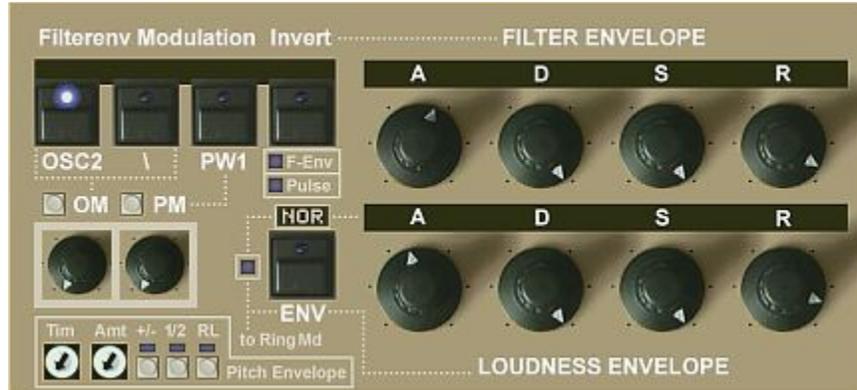
##### Invert:

F-Env LED active: The filter envelope itself is inverted

Pulse LED active: Pulse width modulation is inverted

##### OM / PM:

The modulation amounts are set with these two knobs. OM = Oscillator Mod. / PM = Pulse Width Mod. Buttons: Set the knobs back to 0.



## LOUDNESS ENVELOPE

### A / D / S / R:

Of course again means: Attack, Decay, Sustain and Release. Also this envelope can have very short attack times as its analog model.

Check this preset which demonstrates this:  
opxpro2 lib / B\_Testpatches / Preset 2 "Envelope Test"

### ENV / NOR:

These buttons offer different functions and behaviours for the amplifier envelopes indicated in the black text box on top and the LED on the left:

**NOR:** Normal behaviour. No additional stuff.

**MOD:** The output of the loudness envelope goes to Ring Mod

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. It can be heard when the decay and release times are short.

**LIN:** The attack of the loudness envelope is set from logarithmic to linear, which can be useful for slow attack pads or strings

## PITCH ENVELOPE

This additional envelope (code: Envelope 3) is specialized for pitch modulation

**Time:** Attack and Release time (if release is activated)

**Amt:** Modulation amount

**+/-:** Inverts the modulation direction

**1/2:** Determines if the modulation goes to both oscillators or only to 1 or 2

**OFF:** osc 1 and 2 / **Blue:** Osc 2 only / **Red:** Osc 1 only

**RL:** Activates release (same time as attack)

POSTSCRIPT: Note that the Modulation matrix offers 2 further envelopes which sums up to a total of 5 envelopes!

## VOICE MANAGEMENT SECTION



This section offers the controls for the voice management of the synth.

These in fact are mostly mirrored or led-to-the-interface controls from the inner workings (voice boards etc.) of the synth which allows for direct access without having to "open" the synth first.

### General Structure:

The voice system of the synth consists of 12 separate voices (each sitting on a separate voice board) which are grouped into an upper (1-6) and lower (7-12) voice bank.

This system was inspired by the Matrix-12 which in fact consisted of two chained-up 6-voice expanders controlled by the same interface, which in the inside also physically were separated into an upper and a lower board.

Upper voice bank: Voices	1	2	3	4	5	6
Lower voice bank: Voices	7	8	9	10	11	12

To make editing easier and giving better overview the 12 voices of the synth are controlled on a 6-voice-base, which means that always the corresponding voices of the upper and lower voice bank (so 1-7, 2-8, 3-9, 4-10, 5-11, 6-12) are edited in common.

So you create your panning and tuning setup on a 6-voice base which then is mirrored in the other 6 voices, which makes it very easy to expand or restrict polyphony without additional tuning work.

It's all as cleverly set up that you'll never notice a sound-change upon changing master polyphony on the fly.



That's why you'll always only see 6 controls despite it's a 12-voice synth.

To fully understand how the voice system works open the "Boards" view ("Boards" button in the top-bar). Most controls mirrored here can be found there in their actual physical place in the electronics.

Now let's come to the actual controls:

#### **1 - 2 - 3 - 4 - 5 - 6:**

These buttons can deactivate or activate always the two linked voice boards of the upper and lower voice bank. So 1 for voices 1 and 7, 2 for voices 2 and 8, 3-9, 4-10, 5-11, 6-12

In combination with the master polyphony button on the right this allows to set up custom polyphony settings e.g. just using 1 voice board (for this master polyphony must be set to 6), 4, 5 (emulating Prophet-5), etc.

Again, check the "Boards" view to understand the actual inner workings.

In old OB-X synths the voice-boards could be individually activated with dip-switches in the inside of the synth after opening the belt. The voice-mute buttons are a representation of these.

#### **Master Polyphony:**

Sets the base master polyphony, so how many voices the voice allocation unit addresses. Can be set to 6, 8 or 12.

In the 8-voice setting the middle voices 9 and 10 of the lower voices are included to avoid tuning repetitions.

The voice-mute buttons on the left can customize this base setting by deactivating voice-pairs of choice.



**Small grey buttons above the black knobs:**

These are calibration-buttons for the voice-panning knobs below. They allow you to quickly set all 6 panning-knobs to a new setting.

The panning presets include (from left to right):

**Preset 1: Mono**

Sets all panning knobs below to perfect center resulting in mono sound

**Preset 1: Standard Stereo**

Calibrate the controls to an evenly spread (lrlrlr) not extreme very usable stereo setting which can save you a lot of manual work

**Preset 2: All Pans Left**

Sets all pans to full left. Can be useful in combination with panning modulation to achieve a tremolo-like effect.

**Preset 3: Experimental 1**

Experimental pans setting number 1: L - L - R - L - L - R

**Preset 4: Experimental 2**

Experimental pans setting number 2: hL - R - hL - hR - hL - R

**Preset 5: Left to right**

Pans setting that lets arpeggios move from left to right in the stereo field

**Preset 6: Alternating**

Pans setting that lets arpeggios continuously travel between left and right

**Small Trimpot:**

Seamlessly "spreads" all panning knobs in common which is extremely useful



### **Pan-Md:**

Panning modulation. A very unique feature which not even Matrix-12 offered. This feature modulates each panpot individually with either LFO1 or LFO2. Which one is set at the bottom right of the LFO section.

The resulting effect depends on the current setting of the pan-knobs. At center position nothing will happen. The further they are panned the further they will be modulated.

Since this happens individually per pan-pot the panning modulation can have a different direction for each pan, which results in an extremely lively and rich sound. The very first preset (Matrix Softstrings II) is a good example.

The effect audibly "kicks-in" at some point upon increasing the knob. The little grey button sets it back too zero if wanted, which helps to deactivate panning modulation just with one mouse-click if needed.

Note that panning modulation also is a choosable target in the Modulation Matrix, so you're not limited to LFO 1 and 2 as modulation sources!

### **White Trimpots:**

These are the tuning trimpots for Filter Cutoff.

These are mirrored to the outside from the inner voice-boards of the synth. Check the "Boards" view to see their original position in the electronics.

There are only 6 (despite the synth has 12 voices) since one always controls the two corresponding voices from the upper (1-6) and lower (7-12) voice-board in common, so 1-7, 2-8, 3-9, 4-10, 5-11, 6-12.

**Note that the filter tuning trimpots only have an effect if filter autotune isn't applied fully! Autotune wipes-out their influence.**



### Filt. / Tuned / buttons:

These can calibrate the white filter cutoff trimpots  
 Filt sets the trimpots back to center (= untuned), Tune tunes them.

**Note that center position does NOT mean tuned!**  
**This is the factory standard detuning.**

If you tune them so that the filter cutoff is exactly the same on each voice-board (which can be done automated using the "Tune" button) they will have various different positions.

### Why this?

Well, it's exactly how it is in REAL voltage controlled polyphonic synths since OP-X PRO-3 exactly clones their engines, and so the tuning trimpots aren't just an effect as often falsely copied by other manufacturers.

When the voice boards of real analog voltage controlled synths were manufactured all the electronic devices were soldered on the voice boards, also the many trimpots. Coming from the factory all trimpots initially have the same position. Buy some and check this!

Because of device tolerances the voice boards, even having the exact same circuit and devices, didn't all sound exactly the same - and THAT's the actual reason trimpots were included. Using the trimpots a technician then tuned the boards to sound even, which led into various settings of the trimpots.

So in the original synths the trimpots weren't mounted to DETUNE the boards but to TUNE them! Keep this in mind!



### AUTOTUNE SECTION:

The autotune function was used in the old original voltage controlled polyphonic synths to flatten-out remaining differences between the boards (since manual tuning isn't perfect) by adding offset voltages.

In older synths there only was autotune available for oscillator pitch and not for filters and other parameters. In later synths like Matrix-12 there also was an autotune function for the filters and other parameters.

In OP-X PRO-3 there's an autotune function for these 4 parameters:

- Filters
- Filter Envelope decay and release
- Portamento times
- Oscillator pitch

Other than in the originals autotune not only can be switched on but also OFF, and it also can be applied seamlessly using the trimpots below.

#### **FILT:**

Applies autotune to the filters of the voice-boards. Trimpot: seamless control.

#### **ENV:**

Applies autotune to the filter envelope decay and release of the voice-boards. Trimpot: Seamless blending between untuned and tuned.

#### **POR:**

Applies autotune to the portamento times of the voice-boards. TP: seamless

#### **OSC:**

Applies autotune to the oscillators pitch of the voice-boards. TP: seamless



FF Autotune:

So you always can either just fully switch on and off autotune for each parameter group which makes quick audible comparison fast and easy

And/or you can go seamlessly from untuned to tuned using the trimpot below the autotune button. Button and trimpot are linked, so the buttons LED state will change after surpassing 50%.

Note that fully applied autotune wipes-out the influence of the trimpots by adding offset-voltages, so if autotune is fully applied the voice-trimpots will have no effect anymore!

In 99% of all cases you however anyway don't need to change the settings of the trimpots at all since the implemented factory detuning (= 12' oclock factory position) is perfectly usable since it's cloned from a real synth.

In normal case you do tuning and detuning just with the autotune buttons and their linked seamless tuning trimpots.

You only have to edit the trimpots if you either don't like the factory detuning and want to set up a custom one, or if you e.g. want to achieve a dedicated "melody" effect with the filter trimpots.

#### **SPREAD:**

Evenly spreads the pitches of the voices away from each other. This both applies in unisono and non-unisono mode.

In unisono mode this masks the sound fatter.

In non-unisono mode this leads to a detuning that sounds similar to warm-up-drift detuning. Detuning done with the OSC autotune in comparison clones the untuned switching-on state of a not tuned synth before applying autotune.



### **PORTAM:**

Portamento time. It's historic-correct polyphonic portamento. Using portamento detuning (POR button) you also can achieve the famous "smearing"-effect.

### **UNI:**

Unisono. This makes one note trigger ALL voices of the upper voice bank which leads into a fat lead sound. Use SPREAD to fatten it up.

Unisono always is 6-voice since the common sound has been perfectly balanced over one voice-bank which consists of 6 voices. Since it sounds extremely fat already using 6 voices you'll never miss more involved voices.

To make unison sound narrower you can exclude voices by deactivating the blue voice-mute buttons at the top of the section on the left. Like this you can include 1, 2, 3, 4, 5 or 6 voices in unison.

### **LEG:**

Switches on legato mode. This works both in unison and non-unison mode. When legato is activated the pitch springs back to the last, lowest or highest held note dependent on the state of the La / Lo H button above.

### **La / Lo / H:**

Sets the note priority in legato mode.

La = last note (off), Lo = lowest note (blue), H = highest note (red)

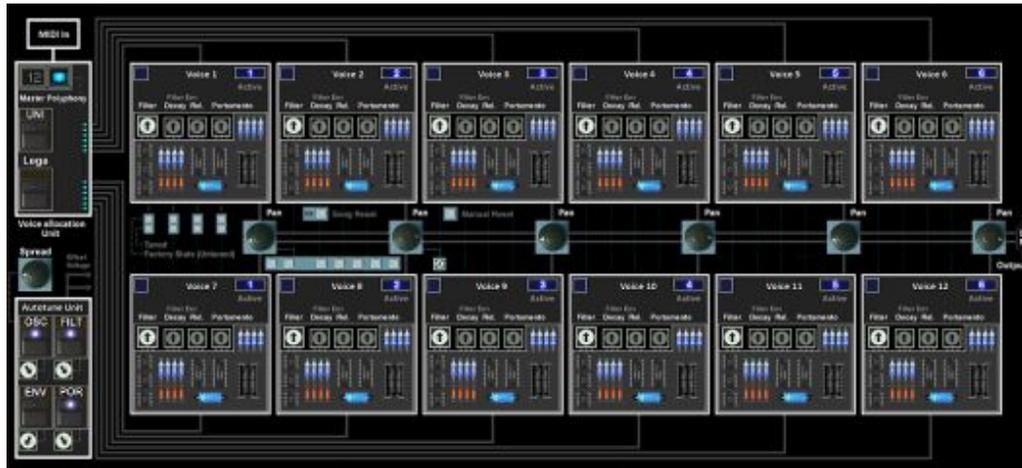
### **OSC 2 DET:**

Detunes oscillator 2 to achieve variable beating

### **Beats DCO / VCO:**

This sets the beating behaviour between osc1 and osc2 when evenly tuned. In left position it's no beats like in a DCO, and fully opened it's VCO behaviour in which there always is some left beating different from board to board.

## BOARDS



Upon clicking the "boards" button in the top-bar the synth "opens-up" and presents its inner life and workings.

This includes the 12 separate voice-boards including all their electronics and trimpots as well as the voice pans the voices' output is fed in, as well as the voice allocation unit and the autotune unit.

All controls shown here at their actual place in the electronics are mirrored in the voice-management section on the main interface at the bottom right, except for the filter envelope trimpots and the voice reset buttons.

The boards view mainly helps to understand how the synth works (which is exactly the same as a real analog voltage controlled polysynth of the 80s) but also offers some controls not available on the main interface including the filter envelope trimpots and the voice reset buttons.

Now let's come to the individual sections:

### Voice Allocation Unit:

This section distributes incoming notes to the boards in circular order

### Autotune Unit:

Sends offset-voltages to the boards to wipe-out differences no matter of trimpot settings and so can comfortably tune an detune parameters.

### Voice-Boards:

The 12 voice-boards each with the same electronics and trimpots

### The Voice Pans:

Always the linked upper and lower boards are fed into these

### Voice Reset Buttons:

Can re-set the voice board / allocation unit to start (voice 1) manually or upon song start if needed / wanted

## Voice Allocation Unit



This section distributes the incoming notes to the individual voice boards. This is done in circular way, so a new note always goes to the next free activated voice board. This leads to a rich and lively sound.

The controls here are mirrored in the voice management section of the main interface at the bottom right. So check this one to learn more about the actual controls.

What's not included here is the legato note priority modes which only are available on the main interface.

And technically seen the voice-mute-buttons which sit on the individual voice boards actually would be in this unit since exclusion of voices from the distribution technically isn't done on the boards themselves but in the voice allocation unit.

It however was easier and better understandable doing this small not-real-life-compromise since these also would not have fit in here.

But one aspect of the placing on the boards is correct, namely that the voice mutes apart from exclusion from the allocation also mute the audio output of the voice board(s).

So think of the voice mute buttons also talking to the voice allocation unit to change its allocation targets accordingly.

Namely, if you "mute" or better said deactivate a voice (respectively the upper and corresponding lower voice board at the same time) this makes the allocation unit skip these deactivated voices and send the distributed note to the next activated and free voice board.

This all is important for the understanding of how the system works.

## Autotune Unit



The autotune unit can send offset-voltages to the individual voice boards to wipe-out differences no matter in what setting the tuning trimpots are.

**So if autotune is fully applied the trimpots won't have any effect anymore!**

Autotune can be applied to:

**OSC** = Oscillator Pitch

**FILT** = Filter Cutoff

**ENV** = Decay and Release of the filter envelopes

**POR** = Portamento times

Trimpots:

With the trimpots below you also can apply autotune seamlessly. So you can seamlessly blend between untuned and tuned.

**Spread:**

Spread is involved here since it too is a global tuning feature.

Spread in comparison to OSC eventually spreads the pitches of the voices away from each other, which sounds similar to warm-up-drift detuning.

OSC in released state (not tuned) corresponds to the state of a not tuned synth after switching on before autotune and has a chaotic detuning.

Both Spread and OSC detuning/tuning even can be mixed!

In most cases you do all tuning and detuning just with the autotune controls which switch or blend between the factory detuning and tuned state. The trimpots only are needed if you want to edit the factory detuning.

All these controls of the autotune unit are mirrored in the voice management section of the main interface at the bottom right.

## Voice-Boards



The 12 voice boards all have the same electronics and tuning trimpots.

### LED:

The blue LED at the top left light up when the voice board receives a note to play from the voice allocation unit. Technically seen this is a trigger signal and the note's pitch is set by a dedicated voltage.

### Active-Button:

The button on the top right above "Active" (also called voice-mute-button) can deactivate or activate the board. Deactivation means the board's output is muted and the board is excluded in the voice allocation unit, and so will be skipped.

As you'll notice the "Active" buttons of the upper and corresponding lower voice (1-7, 2-8, 3-9, 4-10, 5-11, 6-12) are linked. So if you deactivate the upper board the lower will be deactivated too.

### Tuning-Trimpots:

There are 4 tuning trimpots which allow to tune the board if you like to do this manually or to edit the factory default detuning.

**Note that center position / 12'oclock does NOT mean tuned! This is the factory mounting state BEFORE tuning the board!**

When a board was soldered the soldered trimpots coming from the factory all had the same position. The trimpots were used to wipe-out the device tolerances and make all boards sound even - so to TUNE the boards - not to DETUNE them!

**Filter:** Tunes the filter cutoff

**Decay:** Tunes the filter envelope decay

**Rel:** Tunes the filter envelope release

**Portamento:** Tunes the portamento time



NOTE:

**Normally there's no need at all to change the trimpots!**

**Peolpe always think they have to tweak the trimpots to detune the synth, but that's wrong and would be very cubersome and slow!**

In most cases you'll aply detuning with the buttons and trimpots of the auto-tune Unit, which let you switch or blend between tuned and detuned state.

The individual detunings of the boards in detuned state can be edited on demand with the tuning trimpots if you don't like the factory default detuning or want to achieve a special effect.

**Again, note that the 12'oclock setting doesn't mean tuned!**

12'oclock is the untouched factory state of the trimpots after soldering on the boards BEFORE tuning.

Tuning finally only had do be applied at all because the individual boards all sounded a bit different because of device tolerances.

So the trimpots weren't used to DETUNE the boards but to TUNE them!

So the 12'oclock setting of all trimpots you'll see here in the boards view means the boards aren't (yet) tuned and so each board has a litte bit different sound, which can be wiped out on demand with the autotune controls.

Upper-Lower-Board-Linking:

As mentioned already before, to make editing easier, for easier overview and to fit the controls on the main interface for easy editing, always the upper and the corresponding lower board are edited in common.

This makes editing fast and easy and since it's all clevery implemented this has no negative side effects on the overall sound. What you've done in the upper 6 voices simply repeats in the lower 6, so it's like two identical chanined synths. To avoid repetition 8-voice masterpoly e.g. involves voices 9 and 10.

## Pans and Voice Reset Buttons



### Pan-Pots:

Always the upper voice board and corresponding voice board of the lower voice bank are fed into the same panning control.

The pan-control places the voices in the stereo field and then feeds the signal into the stereo output bus.

So the corresponding upper and lower voice (1-7, 2-8, 3-9, 4-10, 5-11, 6-12) always share the same pan setting.

The 7 little vertical buttons and the little trimpot on the right can change and calibrate all 6 panpots in common.

Both the pan-pots and these calibration controls also are available in the voice management section of the main interface at the bottom right.

To learn more about both read the dedicated section.

### Song Reset / Manual Reset:

These two little buttons were inspired by a dedicated user-request.

Since the voice allocation is circular and so always a new voice board is targetted upon the next note the sound is all the time varying a bit going through the voices if detuning is active. So if you e.g. start playing a song in a sequencer the starting sound is random, in fact as it was the case with real analog synths.

There are situations however when you want to always have the exact same starting position within the "detunings-sequence". For this there now are two controls:

#### Song Reset:

If this one is activated the voice allocation unit is being re-set on song.start, which means all notes are re-set and allocation begins at board 1.

#### Manual Reset:

This little button allows to do the same manually anytime if needed / wanted

## PRESETS



Upon clicking the "Presets" button in the top-bar the presets view opens

The new presets browser is much more comfortable to use and is entirely based on single preset files, not anymore banks.

The format of the used single preset files however still is the same as in OP-X PRO-II, which is .opxpreset files.

These could be used furthermore in this massively extended synth since we originally designed the format to hold a maximum of 256 parameters from whose OP-X PRO-II "only" used 142. OP-X PRO-3 now uses 199 of them, which is a massive parameter count!

The exact use however nevertheless is a bit different since the shown preset name in the patch name field isn't anymore a separate parameter but the same as the file name.

The patch name however still is saved in the preset as parameter in case you want to use the preset in OP-X PRO-II.

So yes: patches saved with OP-X PRO-3 even are **backward compatible** to OP-X PRO-II - which means OP-X PRO-II can open patches saved with OP-X PRO-3. OP-X PRO-II simply won't be able to do all the new parameters. It only will do the parameters it itself has, so the cutting quantity. And extended parameters simply will be cut at the max available state.

The same by the way is also the case with the ECO and LC versions.

So yes: You even could use OP-X PRO-3 as generally easier understandable and more logically programmer for OP-X PRO-II!



### Left Pane:

In the left pane there are the categories (formerly banks) which on the disk are single folders containing physical presets or triggering a search function. By grabbing the scrollbar you can scroll downwards in the banks/categories list reaching further banks that can't be seen.

The browser can show up to 128 folders, each containing up to 128 (standard bank folder) or more (category folder) presets or trigger a search function.

The folders always are sorted alphabetically.

The browser can handle up to 16'384 presets (128x128) which can be accessed immediately without having to load banks and also allows to search and categorize presets and set favourites.

On the disk these folders can be found in this place:

**Windows:** [MyComputer->](#)

[C:\Users\Public\Documents\SonicProjects\OP-X PRO-3\Presetbase](#)

[C:\Users\Public\Documents\SonicProjects\OP-MTX\Presetbase \(OP-MTX\)](#)

**Mac:** [Go->Computer->Macintosh HD->](#)

[/Users/Shared/SonicProjects/OP-X PRO-3/Presetbase](#)

[/Users/Shared/SonicProjects/OP-MTXI/Presetbase \(OP-MTX\)](#)

The installer initially places a **Presetbase\_BACKUPINI** folder which then is re-named by the plugin to **Presetbase** if none exists. This avoids overwriting and messing up custom tagged presets. Another installation places another **Presetbase\_BACKUPINI** which then however won't be renamed and serves as backup for the original state.

To move to a new computer keeping all tags move the entire "Presetbase" folder.

### Right Pane:

In the right pane the presets which the chosen folder (bank) contains or which the triggered search function found are shown/listed

## Preset-Browser: Folder Types

There are two folder types and 4 special purpose folders in "----user----"

### Normal bank-emulating folder

- Should not contain more than 128 preset files since only 128 will be shown
- RFR sorts by date (standard is alphabetical) if it's not a factory bank or imported bank
- If the first preset is detected having an order prefix ( #001 etc.) RFR is deactivated
- Suitable for emulating a bank (use #001 #002 etc. prefix to create an order)
- Presets list loaded very fast (faster than in category banks)
- Suitable for full-range MIDI CC program change (since it's max. 128 presets)
- Also suitable for own little separated themed preset collections
- Standard folder format for imported .opxbank banks

### Category folders:

- A category folder can contain more than 128 presets and shows a menu on the right
- Because of the menu a maximum of 103 presets can be shown at once
- Scroll to the next or previous page by clicking on << or >> at the list's start/end
- The menu allows to filter the presets by category tags if set for the presets
- To set category flags click on SET which will list not yet tagged presets (local/global)
- Choose a preset, set a suitable category and then click on SAVE (below EDIT)

### Local category folders:

#### Category folder containing \_EE\_ in name

- If the browser detects EE in the folder name any folder becomes a category folder

#### 2\_SAVED

- Presets are saved into this folder by default if you click on SAVE (top-bar)
- After saving a preset or also later you may set a category flag for the saved presets
- RFR: sorts by save date instead of alphabetical (1st click: bottom, 2nd: top)

#### 3\_RELOADS

- This folder is conceived to put newly released presets from the manufacturer

### Global category folders:

#### 3\_SEARCH

- Doesn't contain physical presets but triggers a search for the entire presets library
- This means all existing folders are scanned for presets (> 5'000) which then are listed
- RFR on shows the original bank's name in the name field instead of the preset name
- Lets you filter ALL existing presets by pre-set category or set a category for all not set
- Since more than 5'000 files have to be scanned initially listing is slower here
- After first loading it will be faster (since in ram) until you set a favourite or save a preset
- After initial folder or category choosing you can type in a search term

#### 3\_FAVOURITES

- The same as 2\_SEARCH but set to list the favourites (marked by dots) by default
- RFR on hides the fav dots and shows the original bank's name in the name field
- A second click on RFR: dots still hidden but again shows the preset name

## Preset-Browser: Tagging System

The presets browser can tag presets with a category (sound type) and tag presets as favourite.

For this it simply adds a cross followed by two letters (after a space) at the end of the file name (before the file extension) for the category (example: **#br** for Brass) and if the preset was marked as favourite additionally a **#fav** after another space.

Example for a brass type file:

Warm Brass **#br**.opxpreset

If the preset additionally was marked as favourite **#fav** is added:

Warm Brass **#br #fav**.opxpreset

In browser view these tags automatically are hidden.

The **#fav** tag in browser view is replaced by a dot in front of the preset name:

.Warm Brass

The used tags for categories are:

#ar = Arpeggio  
#ba = Bass  
#br = Brass  
#cl = Clavinet  
#dr = Drums  
#ef = Effects  
#ep = E-Piano  
#le = Leads  
#lf = Lfopads  
#or = Organ  
#ot = Other  
#pa = Pads  
#pe = Percussive  
#sa = Samplehold  
#sb = Stabs  
#st = Strings  
#sw = Sweeps

#fav = Favourite

The browser only can set one category tag per preset (plus favourite), but it detects and hides any existing - so you theoretically could manually add several.

If you think a preset is tagged wrongly then you can re-tag it by choosing it, going to the 3\_SEARCH folder, click SET directly, choose a category and click SAVE.

This system may not be the fastest since it's realtime-search, but it's transparent and always accurate, and fully compatible to former .opxpreset presets.



More infos to the patch browser:

- Both changing patches with the increment/decrement (<< >>) buttons as well as picking them with the mouse in the list, or switched by MIDI CC (see last pages) always activates the patch-change smoother.

The **patch-change smoother** detects a targetted patch change and then quickly fades out audio and releases all notes before the actual patch change, then switches the patch, and then finally again fades in audio - all within a part of a second. This eliminates possible ugly audible artefacts.

In OP-X PRO-II this still didn't work with direct picking. In OP-X PRO-3 this now works all the time upon every patch-change.

- If you have own custom OP-X PRO-II presets (format: **.opxpreset**) you can use these directly. Simply put them into the `_SAVED` folder or create an extra folder (make it show up then by clicking in RFR) and put them there.

- If you also should have own custom OP-X PRO-II banks (format `.opxbank`) you want to use with OP-X PRO-3) then you can **import** them by clicking on the greyed-out icon or the right of the GUI-switcher at the op left

This will create a new folder by default named the same as the bank (but you can change this by editing the save name) and extract the bank's presets as single presets into the folder, sorted in the bank's original order using a **#001 #002 etc.** prefix (each followed by a space). These prefixes later on will be hidden in the browser view. All the OP-X PRO-II factory banks use the same sorting method. The same as factory presets these presets can't be deleted with DEL and also won't be sorted by save time upon clicking the RFR button, which also would not works since it's the virtually same save time for all.

**Note that you don't need to import ANY of the OP-X PRO-II factory banks or reload banks since these all already are there!**



The contents of the patches library:

First on the library contains ALL existing OP-X PRO-II factory and reload banks ever released by us, so no need to import any of these! You can find the OP-X PRO-II library below these separators:

opxpro2lib:

All the factory banks of the root area in OP-X PRO-II's banks

pro2reloads:

All the banks of the "Downloaded" folder including all so far released banks from the banks reload site

pro2extra:

The banks from the "Extrabanks" folder

New contents and other folders:

DEFAULTBANK:

At the top there's an all new factory bank containing tons of brand new sounds

DEFPROII:

This is the original OP-X PRO-II factory bank cloned to also sit near the top

FAMOUS:

This is a clone of the original "Famous" bank but extended with new patches

MODMATRIX:

This one contains examples for the modulation matrix and other new features

NEWPRESETS:

This folder contains 128 new presets alphabetically sorted. Note that these aren't the only new presets since there are also many new 80s presets!

The contents of the patches library FF:

## 2\_SAVED:

This is the folder where presets using the SAVE button are saved. It can hold more than 128 presets and has a category menu which allows to tag your saved presets with categories and sort by categories. More on page 84.

## 3\_FAVOURITES:

This is the folder where all presets you marked as favourite (using FAVO) are listed. Note that this folder doesn't contain any physical presets. You can make the preset's original folder location display in the name field by activating the RFR button on top which then also hides the fav-dots. More on page 84.

## 3\_RELOADS

Put new presets released from SonicProjects here.

## 3\_SEARCH

This folder doesn't contain any physical presets but the same as the 3\_FAVOURITES folder triggers a search function, this time not only for favourites but for all presets in the library. RFR makes the original folder show. More on page 84.

### featured:

This section contains "featured" banks from the OP-X PRO-II library which we want to point out / present on top. These also can be found in the full library below.

### opxpro2 lib:

All the factory banks of the root area in OP-X PRO-II's banks

### pro2 reloads:

All the banks of the "Downloaded" folder including all so far released banks from the banks reload site

### pro2 extra:

The banks from the "Extrabanks" folder

## famous A-Z

This is a HUGE collection of alphabetically sorted famous 80s patches similar to the "Famous Complete Collection", but still extended with dozens of new famous 80s patches, resulting in a total of 475 alphabetically sorted famous patches!

This section makes it easy to find a dedicated famous 80s patch.

The \_FAMOUS folder on top only contains 128 favourites.

Plus: These patches in opposite to all other factory patches don't have an #001 #001 #001 etc. sorting prefix and so are sorted alphabetically by the browser.

This means that you still could extend this famous 80s patches library with new presets by putting them into the correct folder and moving the surplus ones one folder further (to keep a maximum of 128 patches per folder) and they will fit it sorted alphabetically immediatly accessible!



Final words on the patches library:.

As you could learn on the previous pages the included patches library has a lot to offer and includes the whole **18-years-long history** of widely praised patches design!

Compared to what you typically pay for similar quality banks on the 3rd-party sounds marked the included library has an estimated compare value of more than \$600!

You can learn more about the former OP-X PRO-II library included here on this dedicated site which offers infos, audioclips and videos for each bank:

<https://www.sonicprojects.ch/opxpro2/banksinfo.html>

Reload banks were released here:

<https://www.sonicprojects.ch/opxpro2/userarea.html#Newest>

Since all these thousands of sounds and all the many new ones now can be accessed almost immediately within seconds, searched through by categories and search terms and can be tagged OP-X PRO-3 now really serves as a massive easy-to-use sound-tank for your productions.

Note that all 5'333 included preset files in 103 folders (about 3'000 unique presets, many in more than one folder) are pre-tagged!

The OP-X PRO-3 presetbrowser manages to maintain and emulate the former banks and at the same time allows for search and tagging - and this 100% upward and even partly downwards compatible to all former OP-X PRO-II sounds!

To get more detailed infos about the patch-browser related controls in the top-bar check the dedicated chapter in the manual.

## Hidden Program change learn features:

In the top-bar section further above we already discussed how you can learn the increment/decrement buttons and the program number display to CCs for remote switching of patches:

- Learning the increment/decrement (<<>>) buttons to switch presets forward or backward remotely using buttons or knobs on your controller/MIDI keyboard
- Learning a knob on your keyboard/controller to the preset number display which allows to access programs using a single rotary knob

## Now there's two further hidden methods:

1. Sending a before prepared program change on demand
2. Let programs switch directly/hard-linked to CCs without a safety-delay as used in the preset number learn method (rotary control) in order to use a MIDI program change to CC converter to send program changes by standard MIDI program changes which the synth doesn't support

## Prepared CC program change

This function uses two controls, one to set the program number that should be sent, and another to trigger the sending.

1. Learn a knob to set a prepared number which later on will be sent:
  1. Click on LEA below LEARN in the top-bar
  2. Move the knob on your controller that should be used for this
  3. Click on the FILT text of the FILT button in the autotune section
2. Learn a knob or button to trigger the sending of this number:
  1. Click on LEA below LEARN in the top-bar
  2. Move the button or knob on your controller that should be used for this
  3. Click on the ENV text of the ENV button in the autotune section

## Direct unbuffered CC program change

NOTE: This will lead to overflow if used with a knob!  
So only use this for MIDI Program Change -> CC conversion setups.

1. Click on LEA below LEARN in the top-bar
2. Send the CC which will be the transformed MIDI Program Change
3. Click on the OSC text of the OSC button in the autotune section



**Impressum:**

The featured product is a product from:

SonicProjects

Company site:

<https://www.sonicprojects.ch/>

Product site:

<https://www.sonicprojects.ch/opxpro3/>

YouTube:

<https://www.youtube.com/sonicprojects>

Facebook:

<https://www.facebook.com/SonicProjectsSoftware/>

All rights reserved