

USER'S MANUAL

ORIGIN



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1 SPECIAL MESSAGE SECTION

1.1 Generalities

This device uses an external power adapter. Do not connect this product to any other power supply or adapter than the one described in this manual, specially recommended by ARTURIA.

WARNING:

Do not place this product in a place or position where one might walk on, trip over or roll anything over the power or connecting cords.

The use of an extension cord is not recommended! If you must use one, make sure that the cord has the ability to handle maximum current needed by this product. Please consult a local electrician for more information on your power requirements.

This product should be used only with the components supplied or recommended by ARTURIA. When used with any other components, please observe all safety markings and instructions that accompany the accessory products.

Specifications Subject to Change:

The information contained in this manual is believed to be correct at the time of printing. However, ARTURIA reserves the right to change or modify any of the specifications without notice or obligation to update existing units.

IMPORTANT:

Always follow the basic precautions listed below to avoid the possibility of serious injury or even death from electrical shock, damages, fire or other risks.

The product used either alone or in combination with an amplifier, headphones or speakers, may be able to produce sound levels that could cause permanent hearing loss. DO NOT operate for long periods of time at a high level or at a level that is uncomfortable. If you encounter any hearing loss or ringing in the ears, you should consult an audiologist.

NOTICE:

Service charge incurred due to a lack of knowledge relating to how a function or feature works (when the unit is operating as designed) are not covered by the manufacturer's warranty, and are therefore the owner's responsibility. Please study this manual carefully and consult your dealer before requesting service.

1.2 Precautions

Precautions include, but are not limited to, the following:

1. Read and understand all the instructions.
2. Always follow the instructions on the instrument.

3. Before cleaning the instrument, always remove the electrical plug from the outlet, as well as the USB cable. When cleaning, use a soft and dry cloth. Do not use gasoline, alcohol, acetone, turpentine or any other organic solutions; do not use liquid cleaner, spray or a too wet cloth.
4. Do not use the instrument near water or moisture, such as a bathtub, sink, swimming pool, or similar place.
5. Do not place the instrument in an unstable position where it might accidentally fall over.
6. Do not place heavy objects on the instrument. Do not block sinks or holes of the instrument; these locations are used for air circulation to prevent the instrument from overheating. Do not place the instrument near a heat sink or any place of poor air circulation.
7. Only use the recommended specified AC/DC adaptor.
8. Make sure the line voltage in your location matches the input voltage specified on the AC/DC power adaptor.
9. Do not open and insert anything on the instrument, which may cause fire or electrical shock.
10. Do not splash any kind of liquid onto the instrument.
11. Always take the instrument to a qualified service center. You will invalidate your warranty if you open and remove the cover, and improper assembly may cause electrical shock or other malfunction.
12. Do not use the instrument during a thunder and lightning storm; otherwise it may cause long distance electrical shock.
13. Do not expose the instrument to hot sunlight.
14. Do not use the instrument when there is a gas leak nearby.
15. ARTURIA is not responsible for any damage or data loss caused by improper operation of the instrument.

Handling CD-ROMs:

Avoid touching or scratching the shiny underside (encoded surface) of the disc. Damaged or dirty CD-ROM disc may not be read properly. Keep your CD-ROMs clean, using a commercially available CD cleaner.

2 INTRODUCTION

Congratulations and thank you for your purchase of the ARTURIA ORIGIN synthesizer!

You now own what is perhaps the best sounding, most versatile and most powerful synthesizer on the planet. We strove to put virtually all our synthesizer and TAE® technology making know-how into one instrument. The new ARTURIA ORIGIN synthesizer not only gives you the latest and greatest sounds and sequences, it gives you powerful, easy-to-use tools for playing, combining and controlling these dynamic sounds/sequences in real time, as you perform!

Before you explore and play the ARTURIA ORIGIN instrument, take time to read through this manual carefully, it's packed with important information on how to get the most from this amazing instrument.

Dive in now and... enjoy!

2.1 Origin overview

Origin is a digital analog emulation hardware synthesizer.

Equipped with 53 knobs, 81 buttons, 1 joystick, a value knob and an informative backlit color LCD display, Origin makes it easy to modify the sound as you perform, and to enjoy a versatile range of real-time editing possibilities.

Origin contains 400 factory program presets and 600 user editable program presets. Each program consists of a set of modules (oscillators, filters, mixers, envelopes, LFOs, etc...) and connections routed to one or more of the up to four VCAs. This structure allows you to create incredibly rich sounds. Each program can be played by the step sequencer or the Arpeggiator and connected to up to three effect slots.

Additionally, a Multi mode allows you to stack up to four programs for layering sounds, as well as assign a specific MIDI channel for up to four part multitimbral operation.

2.2 Check the latest update!

You have in your hands a fully functional product, tested and validated by different quality control procedures.

Never the less, ARTURIA will keep on making it even better. New modules, new instrument templates, new features, potential bug fixes, ARTURIA has a team of people working on Origin and will provide upgrades to the Origin Update file and the Origin Connection computer application.

We urge you to check the latest update version available on:

<http://www.arturia.com/evolution/en/downloads/updates.html>

Even if you've just purchased your brand-new Origin unit, we may have posted a free improved version of the firmware/software since it was shipped from the factory.

2.3 TAE®

TAE® is ARTURIA's outstanding technology dedicated to the digital reproduction of analog circuits used in vintage synthesizers.

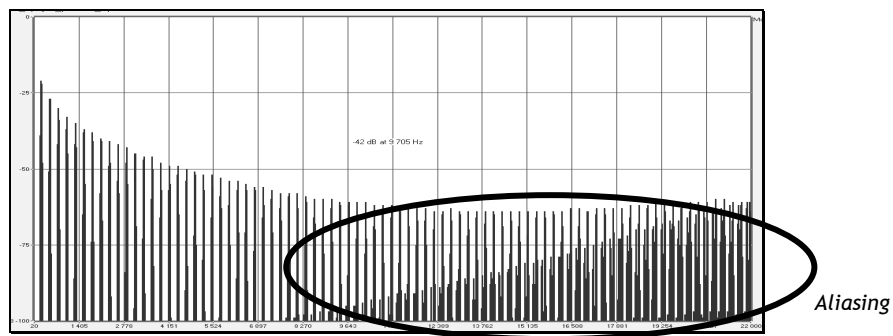
When implemented in software code, TAE® algorithms guarantee authentic emulation of hardware specifications. This is why the Origin hardware synthesizer and all of ARTURIA's software synthesizers offer an unparalleled sound quality.

TAE® combines four major advances in the synthesis domain:

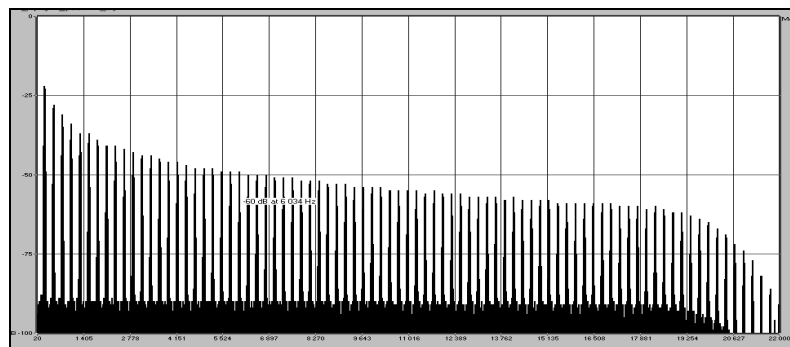
2.3.1 Aliasing-free oscillators

Standard digital synthesizers produce aliasing in high frequencies, especially when using Pulse Width Modulation or FM.

TAE® allows the production of totally aliasing-free oscillators in all contexts (PWM, FM...), without extra processing costs.



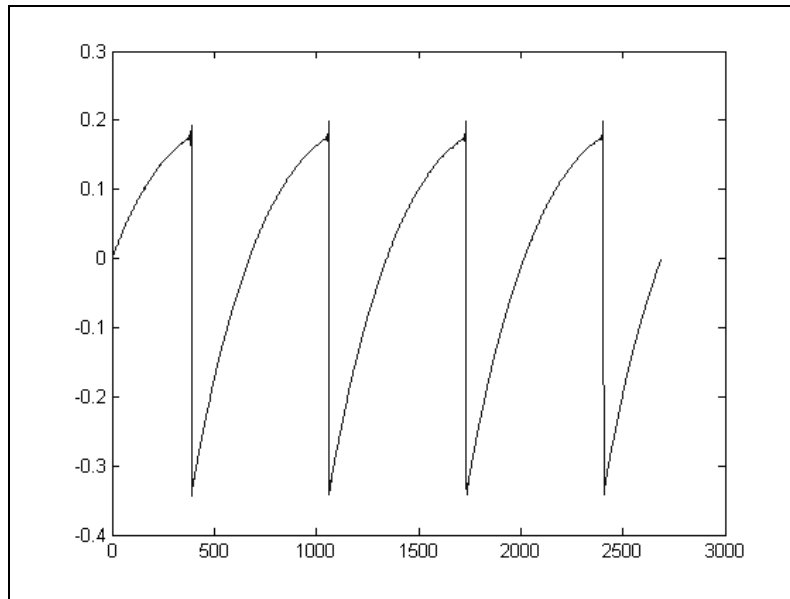
Linear frequency spectrum of an existing well-known software synthesizer



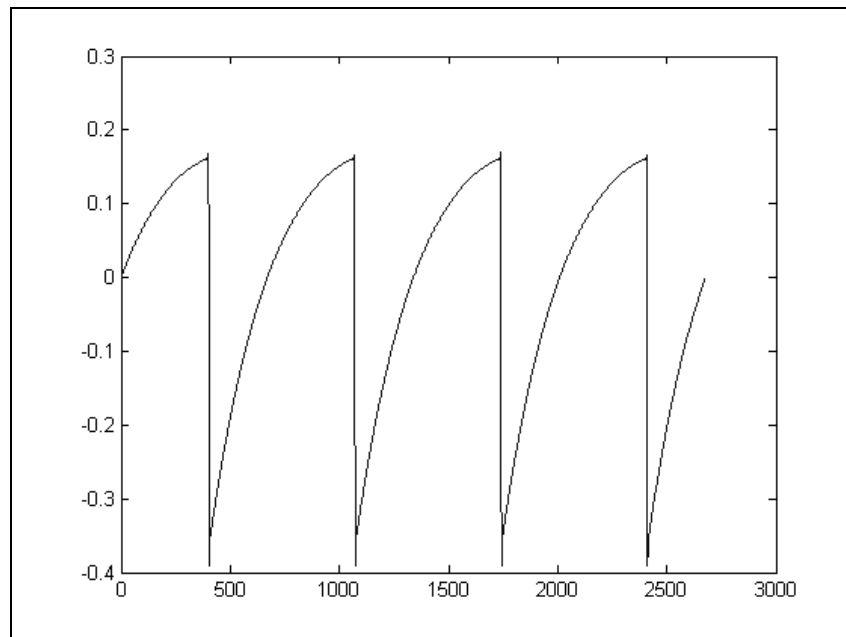
Linear frequency spectrum of the ORIGIN oscillator made with TAE

2.3.2 A better reproduction of analog oscillator waveforms

The waveforms produced by the oscillators in analog synthesizers are marked by the presence of a capacitor in the circuits. The discharge of the capacitor results in a light bend in the original waveform (notably on sawtooth, triangular and square waveforms). TAE® allows the reproduction of this capacitor discharge. Below is the analysis of a waveform from one of the original instruments that ARTURIA's software emulates, and that of the Origin. Both are equally deformed by the distortion caused by the capacitor discharge.



Temporal representation of a “sawtooth” waveform of an analog synthesizer



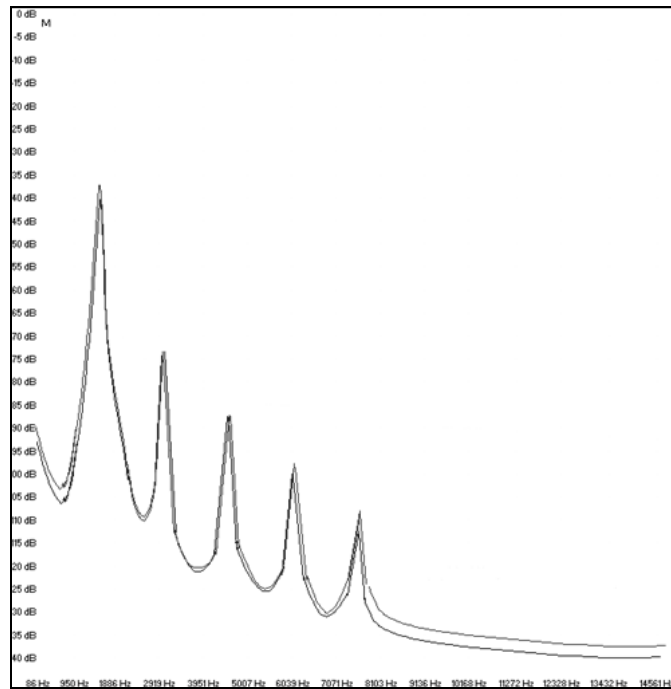
Temporal representation of a “sawtooth” waveform reproduced by TAE®

What’s more, the hardware analog oscillators were unstable. In fact, their waveform varies slightly from one period to another. If we add to this the fact that the starting point for each period (in Trigger mode) can vary with the temperature and other environmental conditions, we find one of the characteristics that contributed to the typical sound of vintage synthesizers.

TAE® reproduces the instability of oscillators, bringing a fatter and “bigger” sound.

2.3.3 Direct filter circuit modeling

Due to advances in DSP processing power, Origin can now employ direct filter modeling techniques to achieve unprecedented accuracy in the emulation of a hardware synthesizer's filter. By modeling the operation of the individual hardware components of the filter circuit, the warm nuances synonymous with analog sounds are recreated. The graph below is a frequency domain plot as just a single example of direct circuit modeling in action; it shows the generation of harmonics at multiples of the resonant frequency when the filter is in self-oscillation mode, for both one of ARTURIA's virtual instruments and the one it is emulating. These harmonics are characteristic for analog filters and are due to the non-linear behavior inherent to its analog circuitry. The harmonics generated add to the richness and warmth of the sound produced by the filter. As a result of the direct recreation of this analog circuitry, the same characteristics of the sound are present, thus giving the user a truly analog sound.



Comparison of harmonics generated by the filter circuits of the ORIGIN and a hardware synthesizer when in self oscillation

3 HARDWARE SETTINGS

3.1 How to put the Origin synthesizer in a rack.

The Origin synthesizer has been imagined to be used as a desktop unit but you can also put it in a rack, if you wish. (This requires 6 empty rack units)

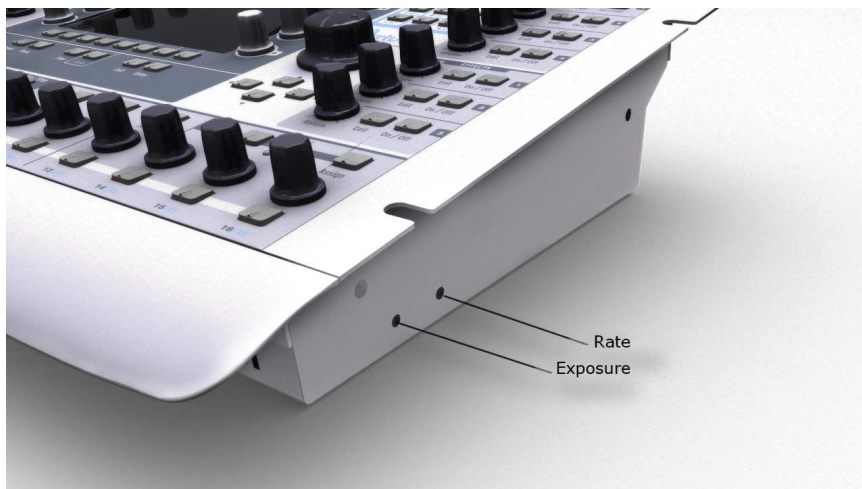
► To do this, unscrew the two wood sides and the hand rest of the instrument, then screw the Origin's ears into a rack cabinet.



Unscrew the two wood sides and the hand rest

3.2 How to set the screen orientation.

As the Origin synthesizer can be used in various work conditions (on stage, on a rack, on a table, etc.) you can change the optimal viewing angle of the screen for a more convenient visualization and use. To do this, unscrew the right wood side, and use a small flathead screwdriver to adjust the following controls:



► The left screw sets the exposure, which is the viewing angle at which colors are best seen. Change it slowly as it takes some time to stabilize.

► The right screw adjusts the refresh rate. This has a very subtle effect but is important for the general feeling of the screen: we recommend not to change it unless you encounter some specific problem.

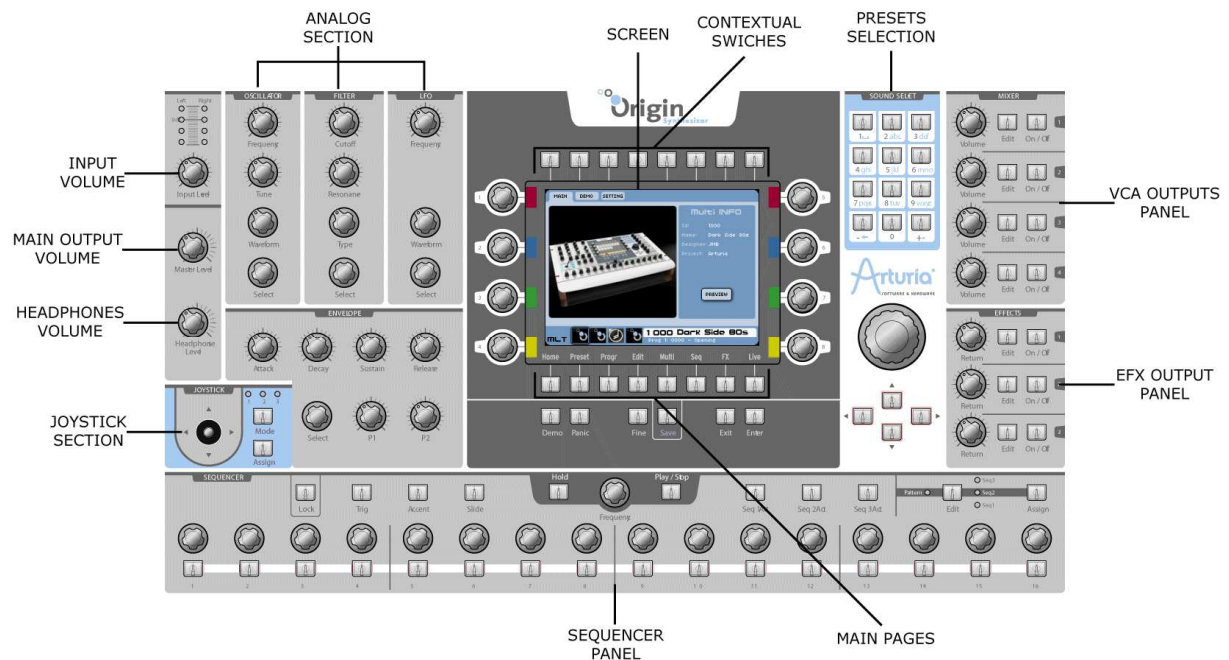
4 ORIGIN'S USER INTERFACE

This chapter explains all of the sections of Origin's user interface as follows:

The "Front panel" section explains the knobs and buttons of the front panel.

The "Rear panel" section explains the input/output jacks and switches of the rear panel.

4.1 Front panel



4.1.1 Output section

You can find all of the output volume controls in the output section.

- The [Master Level] knob adjusts the volume of the [Main] output.
- The [Headphones Level] knob adjusts the overall volume of the headphone output.

4.1.2 Input section

- The [Input Level] knob adjusts the input volume.
- The [Input bar graph] shows the level of the signal at Origin's audio inputs.

4.1.3 Joystick section

- The [Joystick] controls up to four assignable parameters on its two Y and X axes.
- The [Mode 1, 2, 3] button allows selection of one of three connection configurations for the joystick.
- The [Assign] button directs you to the [Joystick] assign page.

4.1.4 “Analog” section

The “Analog” section contains all of the physical controls for the main synthesis parameters.

4.1.4.1 Oscillator section

- The [Frequency] knob controls the “Coarse” frequency of the selected oscillator module.
- The [Tune] knob controls the fine tune of the selected oscillator module.
- The [Waveform] encoder selects the waveform of the selected oscillator module.
- The [Select] encoder selects the oscillator module to edit in the current [Program] preset.

4.1.4.2 Filter section

- The [Cutoff] knob controls the cutoff frequency of the selected filter module.
- The [Resonance] knob controls the resonance amount of the selected filter module.
- The [Type] encoder selects the filter type of the selected filter module.
- The [Select] encoder selects the filter module to edit in the current [Program] preset.

4.1.4.3 LFO section

- The [Frequency] knob controls the frequency of the selected LFO module.
- The [Waveform] encoder selects the waveform of the selected LFO module.
- The [Select] encoder selects the LFO module to edit in the current [Program] preset.

4.1.4.4 Envelope section

- The [Attack] knob controls the attack time of the selected envelope module.
- The [Decay] knob controls the decay time of the selected envelope module.
- The [Sustain] knob controls the sustain level of the selected envelope module.
- The [Release] knob controls the release time of the selected envelope module.
- The [Select] encoder selects the envelope module to edit in the current [Program] preset.
- The [Time] knobs controls the pre-decay time of the selected envelope module.
- The [Level] knob controls the pre-decay level of the selected envelope module.

NOTE: The CS-80 uses some specific parameters for its filter envelope: the “Initial level” and the “Attack Level”. These two parameters can be controlled by the [Time] and [Level] envelope knobs. (See the “Modules Description” Chapter 10 for more details)

4.1.5 “Screen” section

In this area you can find the LCD screen and its dedicated pages, buttons and features.

- The LCD screen shows you all of the edit features included in the Origin synthesizer. All features are organized on eight main pages for a more convenient access to functions and parameters.
- Directly below the LCD screen you can find the “main pages” buttons. These buttons take you directly to the corresponding page (labeled directly above) for direct access to Origin’s parameters. The eight buttons are labeled [Home], [Preset], [Progr], [Edit], [MULTI], [Seq], [FX] and [Live].
- Directly above the LCD screen you can find the “contextual” buttons. The function of these buttons depends on the selected main page. For their exact function within a specific page please refer to the page reference in this manual.
- The [Demo] button takes you directly to the Demo page to listen to Origin’s demo songs.
- The [Panic] button stops all currently playing notes (in case of a critical problem or malfunction).
- The [Fine] button toggles between normal (off) and fine tune mode (on). In fine tune mode the “data dial” and the screen encoders have a more precise scale to allow very precise fine tuning of parameters.
- The [Save] button opens the [Save/Save as] page.
- The [Exit] button exits from a screen section, menu or pop-up box.
- The [Enter] button confirms a selection or edited value.

4.1.6 Sound Select section

In this area you can find the dedicated features and controllers for preset and value selection.

- The key pads [0...9/abc...] allow the selection of presets by numbers or by cycling through letters to create a new preset name.
- The jog dial allows selecting a preset in the [Home] or [Preset] pages. More generally, this dial can be used for navigation and/or adjusting parameter values.
- The cursor buttons [▲/▼/▶/◀] also allow navigation within pages, screen sections and drop down menus.

4.1.7 Mixer section

In this panel, you can control the volume and the activity of the four “VCA” outputs of a Program preset as well as the four “Program” outputs on a “Multi” preset.

- The [Volume 1...4] knobs have two functions: in [Program] mode, they control the volume of the respective “VCA” outputs. In [MULTI] mode, they control the four “Program” outputs.
- The [Edit 1...4] buttons have two functions: in [Program] mode, they open the corresponding output module. In [MULTI] mode, they select the corresponding Program preset to edit.
- The [ON/OFF] buttons have two functions: in [Program] mode, they mute the corresponding output module. In [MULTI] mode, they mute the corresponding Program preset.

4.1.8 Effects section

With this panel, you can control the return volume and the activity of the three effect outputs of a Program preset.

- The [**Volume 1...3**] knobs control the return volume or dry/wet balance of the three effects. *(For more details, refer to chapter 7.3.2)*
- The [**Edit 1...3**] buttons jump directly to the “Fx1...3” slot on the [Effect] page.
- The [**ON/OFF**] button mutes or bypasses the selected effect. *(For more details refer to chapter 7.3.2)*

4.1.9 Sequencer section

In this panel, you can find all of the real-time sequencer controls.

- The [**Play/Stop**] button toggles the step sequencer on or off. When set to on, the step sequencer starts running when a note is pressed and stops when the last note is released.
- The [**Hold**] button toggles hold on or off. When hold is on, active and new notes are held until the hold button is switched off again.

***NOTE:** You can also use this function when the sequencer is not playing.*

- The [**Seq1...3 Act**] buttons activate or deactivate sub-sequences 1...3.
- The [**Edit> Seq1... Seq3, Pattern**] button selects the corresponding sequence for editing or, when [pattern] is selected, activates pattern selection mode.
- The [**Assign**] button opens the “assign” pop-up of the selected sub-sequence.
- The [**Lock**] button effectively switches the sequencer between “Groove” and edit modes. When active, it also prevents any encoder from changing the values of their respective step sequencer position. When deactivated, the sequencer is fully editable.
- The [**Trig**] button activates the key trigger on the current step of the selected sub-sequence.
- The [**Accent**] button triggers the accent envelope on the current step of the selected sub-sequence.
- The [**Slide**] button activates the slide function on the current step of the selected sub-sequence. It changes smoothly from the current value to the value of the next step in the sequence.
- The [**1...16**] encoders set the values of steps 1...16 (or 17...32).
- The [**1...16**] buttons have two functions: in [Edit Seq1...3], they select steps 1...16 (or 17...32). In [Pattern] selection mode, these buttons select a pattern preset 1...16.

4.2 The Origin Keyboard

For Origin Keyboard users, besides the obvious physical attributes of keyboard, pitch and modulation wheels, octave and ribbon controls - there are some unique features which are detailed below.

4.2.1 The Control Panel

The control panel for the Origin Keyboard is the same in function as the top panel of the Origin Desktop unit. It differs in that it connects to the keyboard through a sturdy hinge at the back edge of the keyboard housing. The two protrusions at the top corners allow for the control panel to be rotated down and rest on the rubber footings at the lower front edge of the keyboard. This provides clearance for the control panel above the ribbon control and key mechanism within a closed position. It also makes the keyboard more compact for packing and transport.

4.2.2 The Key Mechanism

The keyboard is a semi-weighted 61-key mechanism. It can create a full range of velocity and channel aftertouch values. The velocity and aftertouch response curves can be programmed through the SETTING -> Velocity/Aftertouch screen, available on the Home page. This allows you to tailor the response of the keyboard to your playing style. Details on programming velocity and aftertouch curves can be found later in this document.

4.2.3 Pitch and Modulation wheels

The pitch and modulation wheels are located to the left of the keyboard mechanism. As is standard with most keyboards, the pitch wheel is center-spring-loaded and the modulation wheel moves freely through its full range. Aside from the usual pitch bend functions, the pitch wheel can also be used as a general modulator, which is accessed from the Performance tab on the Program [Progr] page. The modulation wheel programming can also be accessed on that page. These features are described later in this document.

4.2.4 Octave switches

The octave switches allow you to access a wider range of notes than are available on the physical key mechanism. Press the [Up] button to shift the keyboard to a higher octave, and likewise press the [Down] button to shift the keyboard to a lower octave. The LEDs above the buttons indicate which octave the keyboard is currently playing.

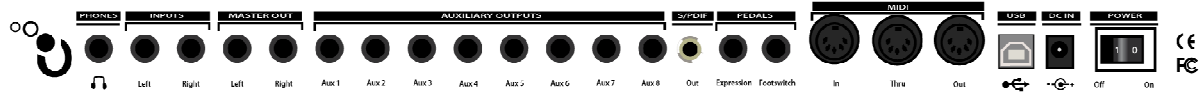
Note: The octave switches have a unique behavior in Multi mode. When engaged, the octave of each Zone is shifted but the split point stays in place. This is a feature of the Origin Keyboard that allows the split to remain in the physical key range while shifting the Program presets assigned to each slot. It prevents a split from being shifted out of range during performance.

4.2.5 Ribbon Control

The ribbon control is the most unique feature of the Origin Keyboard. It is located above the key mechanism and below the front panel display. It is labeled with indicators to show the center (or zero) point, as well as the range where contact with the ribbon will generate a value. The ribbon registers a single point of contact, so it takes an average of the outermost points where contact is made. The most recognized use of the ribbon control is for pitch tracking. However, there are many modulation options available through the Performance -> Ribbon Ctrl area of the Program [Progr] tab. Each mode is described in detail later in this document.

4.3 Rear panel

On this panel, you can find all the power, audio and MIDI connections.



From right to left you can see:

- The [Power] button turns the power on/off.
- [DC IN]: Connection to the included AC/DC 6.5V power adaptor.
- [USB]: Input for connection with a computer. It can be used for MIDI IN and OUT communications or for data transfer (e.g. preset dump, software updates...)

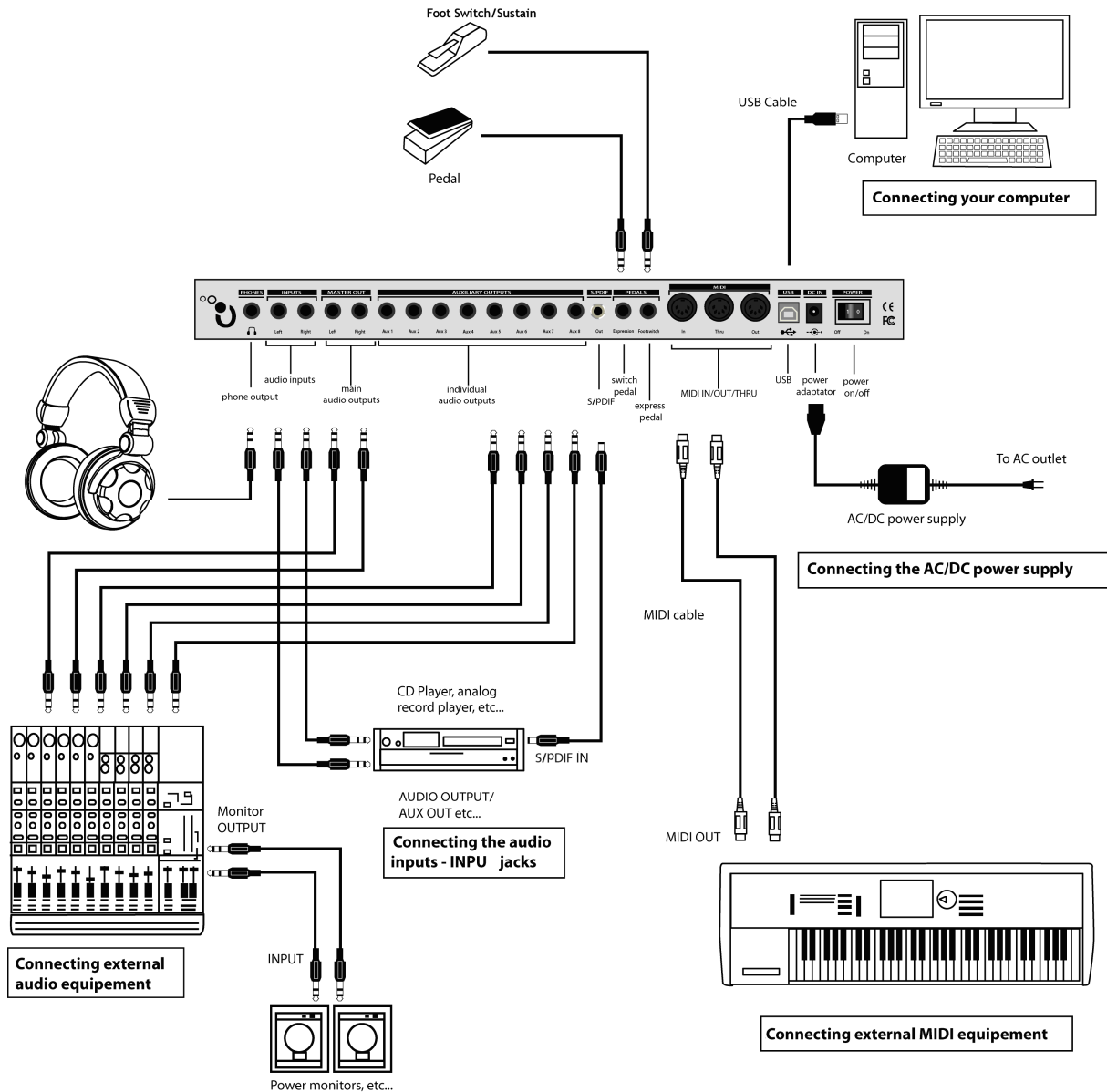
NOTE: The USB interface provides multi-port MIDI operations which are not available with a classic single MIDI connection.

- [MIDI In/Out/Thru]: Connectors used for the MIDI communication with other MIDI devices:
 - [In]: receives MIDI data from another device. Connect this to another device's MIDI Out (or Thru).
 - [Out]: sends MIDI data to another device, connect this to another device's MIDI In.
 - [Thru]: sends thru MIDI data received at the [MIDI In] port. This allows you to "chain" multiple MIDI devices.
- [Footswitch]: Pedal input. Works with any standard, normally open or normally closed momentary footswitch. It is usually used for a sustain pedal controller.
- [Expression]: Pedal input. This input can be connected to a standard expression pedal.
- [Auxiliary outputs 1-8]: These eight audio auxiliary balanced outputs are independent of the [MAIN] audio outputs. This way, you can process each of the program outputs in multi mode separately.
- [Master out L/R]: Origin's main balanced stereo outputs.
- [Inputs L/R]: These connectors are mainly used to connect external audio devices (CD player, synthesizers, etc.) so they can be processed through Origin's filters and effects.
- [Headphones]: ¼ inch stereo headphone output.

5 CONNECTIONS



WARNING! Make all your audio connections with the power off (on all units!). If you don't, you may damage your speakers, the Origin synthesizer or other audio equipment. Please use caution.



5.1 Connecting the AC/DC power supply

Connect the included AC/DC power supply to the Origin synthesizer. After you've connected the AC/DC power supply to Origin, plug it into an AC outlet.

5.2 Connecting Origin to headphones

Connect your headphones to Origin's [Phones] output. You can set the headphones output volume.

5.3 Connecting Origin's analog outputs to external audio equipment

5.3.1 Main Outputs

Connect Origin's 1/4 inch output jacks [MAIN Outputs] to your audio equipment (e.g., mixer or powered monitors).

Using these outputs, you can hear the main outputs of the program (using the [Program] mode) or the main output of the multi mixer (using the [MULTI] mode).

***NOTE:** Because there is no distinction between the two [Main Outputs] balanced jacks, you can use any of those outputs to when you are playing a mono sound*

5.3.2 Auxiliary Outputs

In [MULTI] mode:

the output of channel 1 of the Multi mixer is connected to the [Auxiliary Outputs] 1 and 2;

the output of channel 2 of the Multi mixer is connected to the [Auxiliary Outputs] 3 and 4;

the output of channel 3 of the Multi mixer is connected to the [Auxiliary Outputs] 5 and 6;

the output of channel 4 of the Multi mixer is connected to the [Auxiliary Outputs] 7 and 8.

In [Program] mode, the main stereo outputs of the program are directed to the [Auxiliary Outputs] 1 and 2.

***NOTE:** To take full advantage of Origin's capabilities, we recommend that you output in stereo.*

5.4 Connecting Origin to digital audio equipment

You can connect Origin's [SPDIF] output to your digital audio equipment (e.g. digital mixer).

***NOTE:** The digital audio input of your destination device (computer audio interface, D/A converter, etc) may require that you set the SPDIF input as the master clock source in order to hear the sound coming from the Origin. Consult your interface/device user's manual of for more information.*

5.5 Connecting pedals and switches

Two jacks ([EXPRESSION] and [FOOT SWITCH]) are provided so that you can connect both a foot switch and an expression pedal (both sold separately) to Origin for additional control.

5.6 Connecting external MIDI equipment

Origin can be used as a multitimbral MIDI sound module, or as a controller for other MIDI equipment.

5.6.1 Using Origin as a sound module

If you are using Origin as a sound module, use a MIDI cable to connect Origin's MIDI IN connector to the MIDI OUT connector of your external MIDI device. In the case of Origin Keyboard, you should also check that [SETTINGS] -> MIDI "Keyboard Mode" is set to [LOCAL OFF] so that the physical controls do not directly interfere with the incoming MIDI data.

5.6.2 Using Origin as a MIDI controller

If you want to control an external MIDI device from Origin's front panel, use a MIDI cable to connect Origin's MIDI OUT connector to the MIDI IN connector of your external MIDI device. In the case of Origin Keyboard, you should also check that [SETTINGS] -> MIDI "Keyboard Mode" is set to [LOCAL OFF] so that the physical controls are sent to the MIDI output directly.

5.6.3 MIDI channel settings - Getting ready to play

If you're using Origin as a sound module, you'll need to set Origin's global MIDI channel to match the MIDI channel of the external MIDI device that you've connected to.

To set Origin's global MIDI channel:

- ▶ Go to the [HOME] page and press the [SETTINGS] contextual menu button;
- ▶ Select the [MIDI] page by pressing the data dial or the [ENTER] button on the front panel;
- ▶ Set the [Program Mode Channel] to the desired value using the cursors or the data dial. Confirm by pressing the [Enter] button.

Note that the [Program Mode Channel] setting only applies to programs. Multis have their own MIDI channel assignment through the zones configuration, covered later in this manual.

If you are using a Multi to control several presets on their own MIDI channel, you should note that you can set that value in either of two places. You can change the value directly on the [SLOTS] screen in the Multi view, or navigate to the [ZONES] screen and adjust the MIDI channel assignment for each [ZONE].

Note: If you have more than one Multi slot assigned to the same zone, reassigning the channel will affect all slots assigned to that [ZONE].

5.7 Connecting your computer

Origin provides both MIDI connectors and a USB connector.

Both can transmit and receive MIDI data in the same way. Use the type of connection that is most appropriate for your setup.

Using the USB connection for data transfer between Origin and the computer is faster.

If you use MIDI cables to connect the Origin synthesizer to your computer, you'll need to purchase a separate MIDI interface of the appropriate type for your computer. For details on connecting the

MIDI interface to your computer and how to set up the MIDI ports, refer to the owner's manual for your MIDI interface.

5.8 Connecting the audio inputs - INPUT jacks

You can connect any audio source (synthesizer, CD player, output of a mixer, etc.) to the [INPUT] jacks. By using this connection, you can use Origin's effects to process the incoming audio.

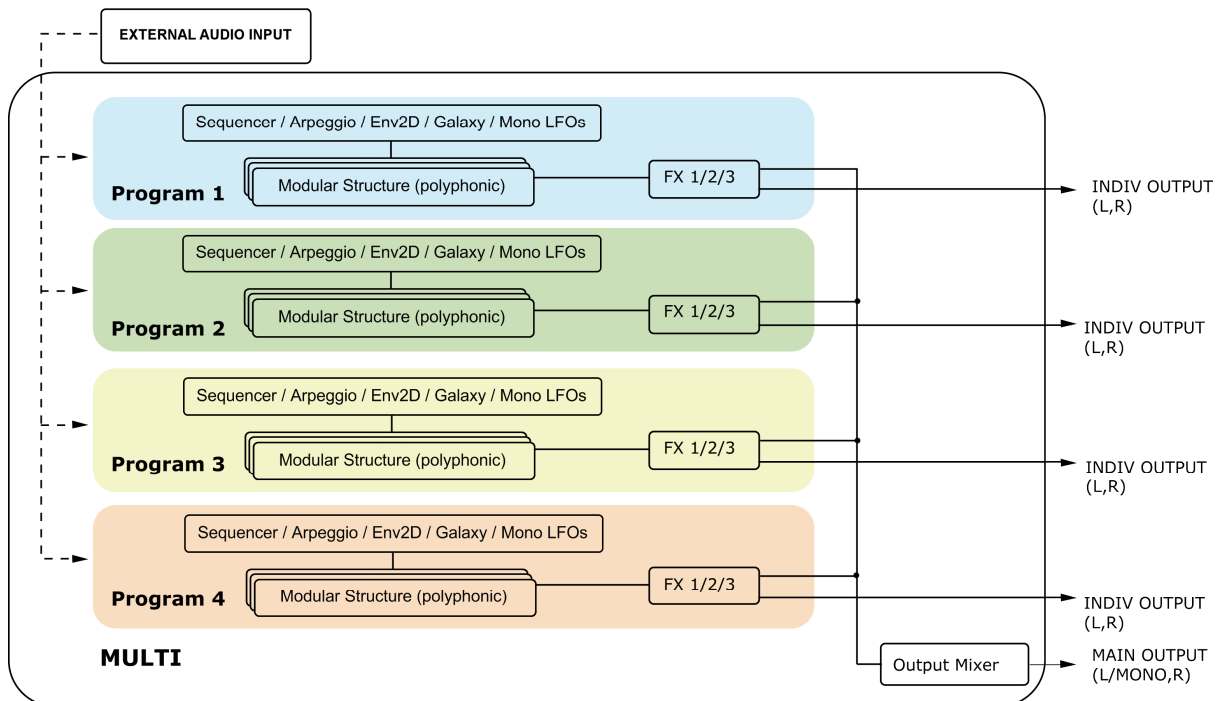
6 THE ORIGIN STRUCTURE

6.1 Overview of the global structure of Origin

The Origin synthesizer uses 2 different kinds of presets:

The Program preset uses a modular structure as the base of its synthesis. This modular structure allows you to easily create new and rich sounds, sequences and effects. These Program presets can be played by the step sequencer or the Arpeggiator and be connected to up to three effects slots.

The Multi preset allows you to assign up to four Programs in a new Zones configuration. You can assign a specific key range and MIDI channel to each Program for up to four parts of multitimbral operation. This is also useful for a variety of split and layering functions for live play.



The global Origin architecture

6.2 The Program preset

The Program preset includes the modular synthesis structure, which is the main part of the Origin instrument. You can access this area by pressing the [EDIT] button, just below the LCD screen.

The modular synthesis structure allows you to venture into one of the most powerful technologies for sound creation.

First, you can choose the basic audio modules:

- Up to **9 oscillators** (based on the Minimoog, ARP 2600, CS-80, Jupiter-8 and Prophet VS synthesizers, plus a special Origin oscillator)
- A new tone wheel generator for classic organ sounds.
- Up to **4 filters** (based on the Minimoog, ARP 2600, CS-80 and Jupiter-8 filters plus a special Origin filter).
- 1 Ring modulator
- 1 Bode frequency shifter
- 1 Joymixer
- Up to 4 mixers
- Up to 4 independent **output amplifiers (VCAs)**

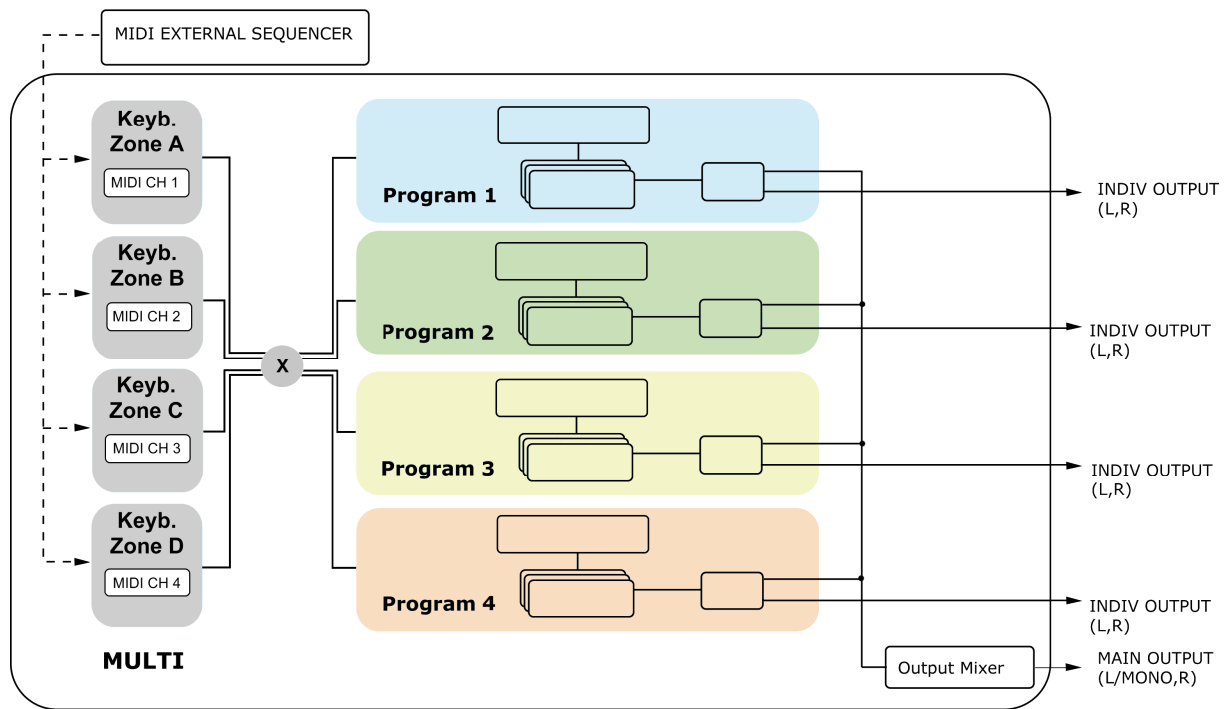
With the modulation modules you can connect to those audio modules:

- Up to **8 ADSR** and special **IL-AR-ADR** envelopes
- Up to 4 Voice LFOs
- One keyboard follower with four independent outputs
- 1 Keyboard trigger
- 8 CV Modulators

The graphically displayed preset below is an example of a basic synthesizer structure including:

- **4 oscillators** (including a sync connection between the oscillators 1 and 2)
- 1 mixer
- 1 filter
- 1 VCA
- 3 LFOs
- 2 envelopes
- 1 keyboard follower

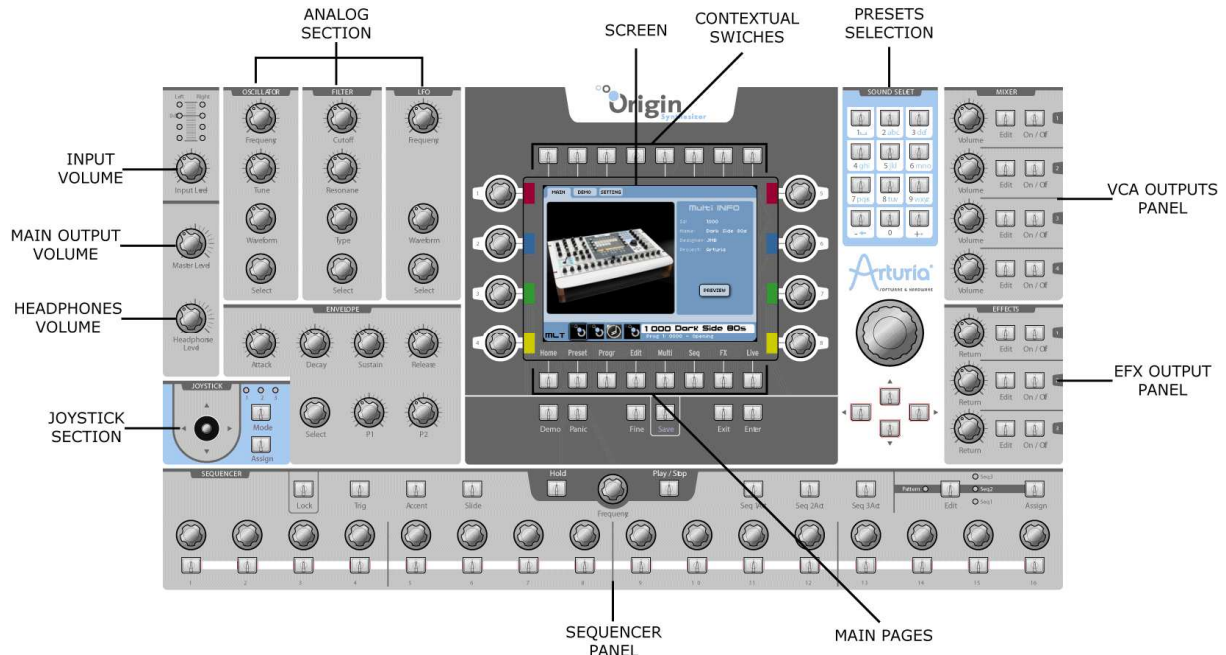
The red lines are the audio connections, the green ones are the modulation connections and the yellow ones are the keyboard follow and keyboard trigger connections.



The MIDI structure of the Origin Multi preset

7 QUICK START

This chapter will introduce you to the general principles of the Origin synthesizer. You will find basic examples of the different interfaces of the synthesizer meant for first time users. A precise and detailed description of all the parameters and controllers will be given in the following chapters.



The complete view of Origin's front panel

The ORIGIN synthesizer contains several demo songs, numerous programs, and a wide range of advanced features and functions.

For a quick introduction to all this fun, follow along with this Quick Start guide.

7.1 Turning on the power and adjusting the volume

- ▶ After connecting the AC/DC power adaptor, set the rear panel [Power ON/OFF] switch to "On". The start-up screen appears in the display, when the machine is ready, the [Home] page is displayed. Each time you turn the power on, ORIGIN will be in the Multi Play mode.
- ▶ Turn on the other audio equipment that's connected to ORIGIN.



Turn the power "On"

NOTE: When you're ready to turn the power off, first decrease the main volume of the connected equipment to 0 (e.g. an external audio mixer), then press the [ON/OFF] switch on the ORIGIN's rear panel to turn off the power.

7.2 Adjusting the volume

- ▶ Begin with the [Main Level] knob fully rotated to the left-most position. Play a few notes on the keyboard and gradually raise the volume to an appropriate level.
- ▶ If you are using headphones, connect them on the [Headphones] jack, on the rear panel and adjust the [Headphones Level] knob.



Set the volume to an appropriate level

7.3 Demo playback

ORIGIN contains several demo songs that take advantage of its rich sounds and expressive potential.

- ▶ On the [Home] page, press the [Demo] contextual button (located in the top of the central screen) to go to the Demo page.
- ▶ Use the jog dial to select the first demo song ["*Demo Electro*"] and press this dial (or press the [Enter] button) to start the song.
- ▶ To stop the song, press the jog dial (or press the [Exit] button).
- ▶ You can select another song using the jog dial or the cursor buttons. To listen to it, follow the steps above.



Select the demo song

7.4 Playing Program presets

The presets allow you to choose synthesis parameters as well as the player settings (monophonic, polyphonic...), sequencer, effects parameters and more with a single selection.

In Origin, a Program contains all the parameter settings of the synthesizer, the various real-time controllers configuration (ex: velocity, aftertouch, pitch-bend, controller assignments...) as well as the effects and the sequencer settings necessary to reproduce the sound.

Origin is delivered with more than 400 factory Program presets that allow you to become acquainted with the sounds of the synthesizer. You can also create a new sound from the Preset window.

To become more familiar with the various sounds offered in Origin, we are going to select the preset 050, named “Reso_Pad”.

- ▶ Remaining on the [Home] page, select the number “0050” by turning the jog dial or using the “+” or “-“buttons, located in the [Sound Select] section.



Select the preset on the [Home] page, thanks to the jog dial.

- ▶ Alternatively, you can type the numbers manually using the numeric key pad in the [Sound Select] section.

NOTE: For listening to the current preset before loading, you can use the [Preview] option. To do this, press the jog dial to start the preview.

When you press the [Preset] button, the [Preset] page displays. It displays a list of all the presets and details of the currently selected preset. Above the preset list there are two drop down menus labeled [Key 1] and [Key 2]. Here you can select search criteria to filter out sounds that do not match your criteria. This way you can quickly find the sounds you need. We'll select the “Reso_Pad” using the search criteria.

- ▶ Press exit to navigate through the preset page and use the jog dial or “cursors” to scroll to [Key 1]. Press the jog dial or the [Enter] button to select it.
- ▶ On [Key 1], choose the criteria [Sound Designer]. Upon selecting a sound designer, only his (her) sounds is displayed. We'll choose [JMB].
- ▶ Following the above steps, select [Key 2] and choose [Type]. Here you can select which types of sounds are displayed. We're looking for a pad, so we'll scroll down to choose [Pad].
- ▶ The “Reso_Pad” (among others) displays in the preset list as matching the criteria. Highlight it using the jog dial or cursors and select it by pressing the jog dial or the [Enter] button.

NOTE: You can also use the [▲/▼] buttons, situated above the wheel to go through the different presets and [▶/◀] to scroll faster.



Select the preset on the [Preset] page, thanks to the key pad

7.5 Editing the preset

To edit a preset, we are going to start with a basic example.

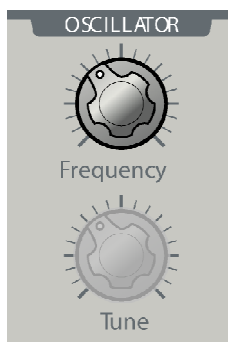
► Edit the brightness of the “Reso_Pad” sound with the [Cutoff] knob of the filter. To do this, turn the knob located in the [Filter] slot, on the “Analog section”, to the right or the left. The timbre of the sound becomes more or less bright. Change the knob to your liking.



Change the cutoff of the sound

► In the same way, you can increase or decrease the frequency of oscillator 1 by turning [Frequency] knob on the [Oscillator] panel. To adjust the frequency of oscillator 2 turn the [Select] encoder on the same section so that the screen pop-up displays [Osc 2 - Coarse Tune ...]. Press the

encoder to validate your choice. Now the [Frequency] knob (actually the entire [Oscillator] section) is assigned to oscillator 2.



Setting the frequency of oscillator 1

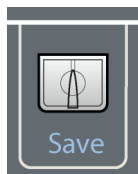
NOTE: You can set the volume of the four VCAs directly with the [Volume] knobs located in the [Mixer] panel, on the right of the Origin interface. In this area, you can also directly mute their activity by using the [ON / OFF] switches.

7.6 Saving your Program

By making just a few modifications, you have already edited the Program “Reso_Pad”. You can now save the sound you’ve just created. Origin allows you to create up to 600 User Programs.

Their numbers begin at 400 and proceed to 999.

► To choose another destination number for the sound, simply click the [Save] button. This button is located in the bottom of the central screen, under the Pages buttons.

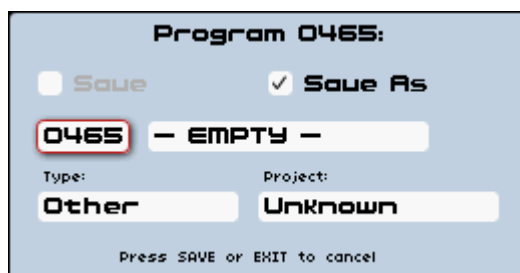


Press the [Save] button

► Then, choose its location. For example, select the number [600]. The name [-EMPTY-] appears on the screen.

► Press on the jog dial and select the rename area.

► Press the key pads them as you wish in the three sections.



Saving as a preset

- ▶ To save a “User” preset, click on the “Save” icon in the tools bar: the new settings are saved in the preset currently selected without changing the name (if the preset being edited is part of the factory presets, the “Save” icon is disabled).



WARNING! It is important to realize that changing the name of a preset does not create a new one! Only the name of the preset being edited is modified.

7.7 Add a module to your preset

Origin is a modular synthesizer which means that it allows you to build your own synthesis structure. You can do this by adding different modules into a virtual RACK and make all the needed connections between them to make your sound. This way, you will explore one of Origin’s most interesting features, allowing you to create an infinite variety of sounds.

To have access to these features, go to the [Edit] page by pressing the button of the same name under the LCD screen. The [Edit] page displays all the modules that make up the currently selected program.

The [Edit] page offers two different interfaces: [RACK] and [PATCH]. You can toggle between them using the two left buttons above the LCD screen.

The [RACK] interface is very basic: it shows a basic layout of all the modules that make up a program without their connections.



The [RACK] view

The [PATCH] interface shows the synthesis diagram with all used modules with their audio, modulation and trigger’s connections. It is the best way to a global view of your sound construction.

The differences between these two interfaces are only graphical, they share the same functionality. Both can be used to create your own synthesis structure and you can always toggle between them.

Let’s take the [RACK] interface to add a new oscillator to our current program.

- ▶ Press the [Add] Button to open the modules choice menu. Choose the option [Oscillator], press the jog dial and choose the [Minimoog] oscillator.
- ▶ Open the module interface by pressing the jog dial. As mentioned in the name of the module itself, it shows a Minimoog oscillator like interface.

▶ Select the [FM] slot on the right panel by using the [▶] arrow, under the jog dial and select the [Add Connection] > [Keyboard Follow] > [Audio 1] option. In this way, the pitch of the oscillator follows the keyboard range.

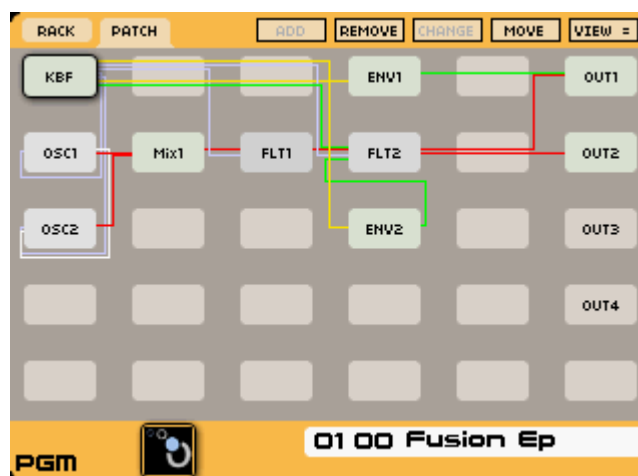
▶ *Note: if you have System Page 1: Auto Connect -> ON then the key follower connection will be made for you by default.*

▶ In the same way, go to the [Outputs] slot and choose the [Minimixer 1] > [Audio 1] option. The audio output of the oscillator will be connected to the mixer.

▶ You can set the range and the pitch of the oscillator by selecting the [Range], [Coarse] or [Fine] parameters with the dedicated knobs, on the [Oscillator] panel of the “Analog” area.

▶ You can set the audio input mix of the three oscillators by opening the [Minimixer 1] module. To do this, select the desired [Gain 1, 2 or 3] knob by using the [▲/▼] arrows or turn the jog dial to set the dedicated volume.

Finally open the [PATCH] interface, the following synopsis displays our example sound creation for this preset:



The [PATCH] interface

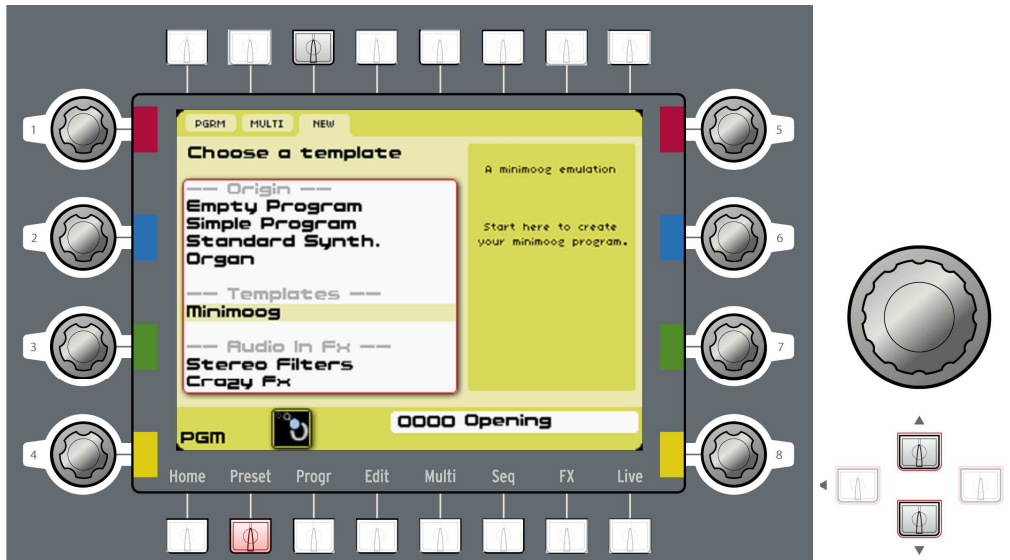
7.8 Using the Minimoog template

Instead of making your own modular structure, you can also use the synthesizers templates included in the machine. This way you can start playing and tweaking straight away.

▶ To load the Minimoog template, go to the [Preset] page. On the top left of the page you can find three page tabs; [PGRM], [MULTI] and [NEW].

▶ Press the contextual button situated directly above [NEW].

▶ On the [NEW] tab you can open different synthesizer templates, for this quick start we will use the Minimoog template.



Select a new Minimoog template preset

- ▶ Select the Minimoog using data dial or the cursors, then press the data dial or the enter button.
- ▶ You are now redirected to the edit page which displays a basic representation of the original Minimoog. Before we dive into the features accessible through the LCD screen, let's just play the template first using the dedicated hardware buttons.



The Minimoog template interface

There is already a sound loaded so you can start playing straight away.

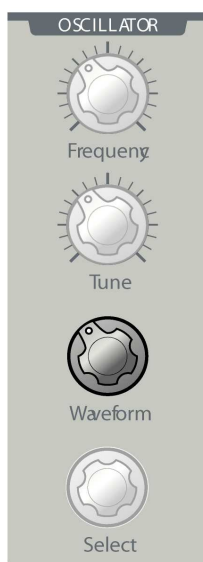
To modify the sound a bit more to our personal taste, try turning the [Cutoff] and [Resonance] knobs on the [Filter] section of the "Analog Section", on the front panel.



Turning the [Cutoff] and [Resonance] knobs on the [Filter] section

After that you can tweak the oscillator using the dedicated [Oscillator] section next the [Filter] section.

- ▶ Using the [Waveform] encoder, you can browse through the different waveforms offered by the Minimoog.
- ▶ The waveform knob only influences oscillator 1 however, and we'd like to be able to control the other oscillators using the hardware knobs as well. To do this, turn the [Select] encoder on the [Oscillator] section. This way you can browse through the different oscillators to select them for editing. The hardware knobs in the [Oscillator] section are always assigned to the selected oscillator. Press the [Select] encoder to access more parameters.



When the overall sound is the way you want it to be, you can start shaping its amplitude and spectrum over time using the [Envelope] section. By default, the amplitude envelope is selected for editing.

- ▶ To change this, turn the [Select] encoder in the [Envelope] section and choose the envelope you want to edit. Press the [Select] encoder to access more parameters.

Now we will use some of the features included in the template which are not found on the original Minimoog. We will modulate the filter frequency using the velocity so that when we strike a key hard, the sound will be brighter.

- ▶ To do this, go to the [Edit] page where the Minimoog interface is displayed and browse through the different sections using the jog dial or the cursors.



The Filter settings

- ▶ Go to the [Modulation Matrix] section and press the data dial or the [Enter] button. You will be presented with a pop-up allowing you to route 8 different modulation sources to 8 different targets.
- ▶ Using the jog dial, move to the left slot of the upper row and press the data dial. From the pop-up menu, select the [Velocity] control. Now go to the right slot of the upper row and select [Cutoff] using the same method.



Select the velocity modulation source

The knob in the middle allows you to change the amount of the modulation.



Set the velocity modulation amount

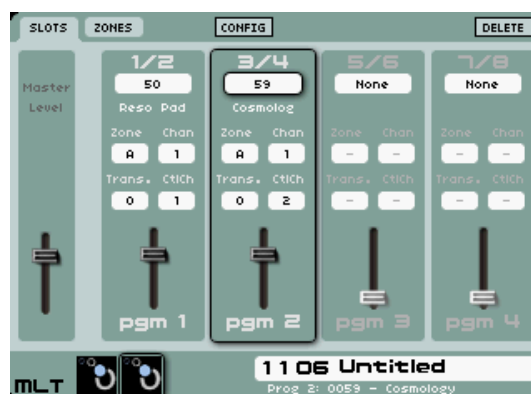
- ▶ Set it around 3 o'clock. Now the filter opens up more as you play louder on your keyboard, this makes your sound more dynamic and lively.
- ▶ Feel free to explore the other possibilities offered by the modulation matrix to create your own unique sounds.

7.9 The Multi mode

The [MULTI] mode allows you to use up to four programs on separate keyboard zones. Alternatively you can layer up to four programs, or use a combination of both (using a maximum of 4 programs).

To add some “breath” to our current preset (“Reso_Pad” preset n°0050), we’ll use the [MULTI] mode to layer it with a pad.

- ▶ Open the [MULTI] page by pressing the [MULTI] button, under the LCD screen.
- ▶ On the first mixer slot, the current sound is “Reso_Pad”. Select the second slot by using the “▶” button and press the “value” dial. A pop-up screen appears asking you to transform the current preset in a [MULTI] preset.
- ▶ Press “Enter” to confirm the creation of the [MULTI] preset.
- ▶ Select the preset n°0059 named “Cosmology” on the second mixer slot by pressing on the jog dial and using the [▲/▼] arrows. Press the jog dial another time to validate this choice.



The new [MULTI] preset

- ▶ Now, the “Cosmology” preset plays with the “Reso_Pad” in a layering fashion.
- ▶ You can now set the volume of this new layer by turning the second [Volume] knob, on the [Mixer] panel.



Set the volume of the second layer

- ▶ Now you can save your new [MULTI] preset by pressing the [Save] button which will prompt you to also save each Program preset in a new memory slot (see chapter 1.6 for more details).

7.10 Using the step sequencer

Each sequence in a program consists of three sub-sequences which can be used to modulate different parameters. This way, you can easily set up complex sequenced modulations; all controlled directly using Origin’s [Sequencer] section.

Origin provides more than 200 sequencer presets that you can assign to any of the existing programs.

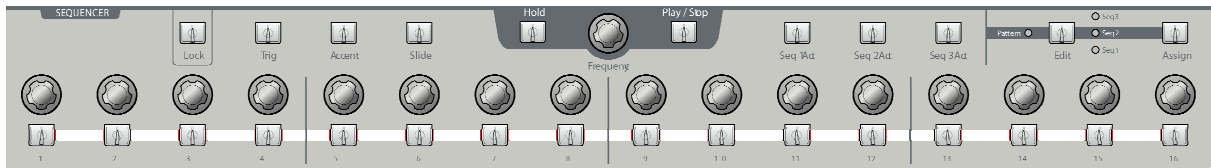
To explore the main possibilities of the sequencer, we’ll start with a simple bass sound. Let’s choose the n°0001, “3 Osc” Program preset. This is a Minimoog bass sound. Note how the sequencer defaults to [GROOVE] mode, which allows you to select sequenced patterns from the 16 button positions. It also allows you to loop certain groups of the pattern for musical effects. This will be explained in greater detail later in this manual. For now we’ll stick with the basics.

We’ve already programmed all the connections with the sequencer for you (feel free to reroute the connections to anywhere you want later). The pitch of the oscillators is connected on the first sub-sequence. The cutoff frequency of the filter is routed to the second sub-sequence. What’s more, the trigger of the filter envelope (envelope 2) is also controlled by sub-sequence 2.

When the sequence is being edited, the step parameters are controlled as follows:

- 16 encoders that set the modulation level for each step of a sub-sequence.
- The [Frequency] knob allows you to control the speed of the sequencer. (This is ignored when [Settings > System (page 2) > Global Synchro] is set to “MClock”)
- [Trig], [Accent] and [Slide] switches for connecting these musical effects to each steps.
- [Play / Stop] switch to activate or stop the sequencer run.
- [Seq1 / Seq2 / Seq 3] switches activate or deactivate the corresponding sub-sequence.

- [Edit > Seq1, Seq2, Seq3 > Pattern] switch selects which sub-sequence can be controlled by the [Sequencer] section. When [Pattern] is selected, this button activates pattern selection mode.

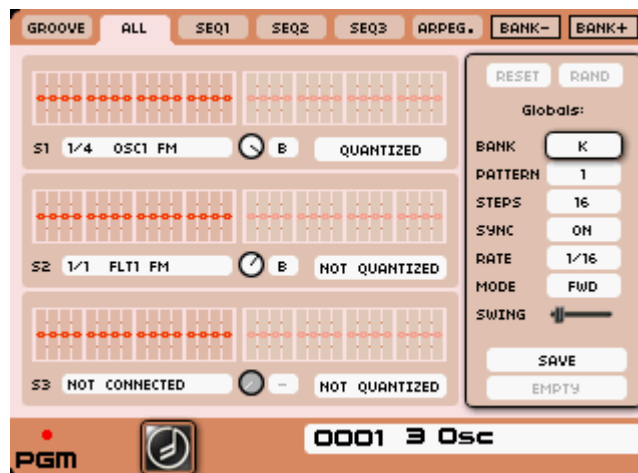


The sequencer parameters panel

To get started right away, activate the [Play / Stop] switch (it's active when the switch lights up in red). Also, make sure that the [Edit > Seq1, Seq2, Seq3 > Pattern] switch is set to [Pattern]. When you press a note on the keyboard, the sequencer starts, directly affecting the sound. To toggle between different sequences, press one of the 16 switches at the bottom of the sequencer panel. This way, you toggle between all the 16 sequences within a bank on-the-fly.

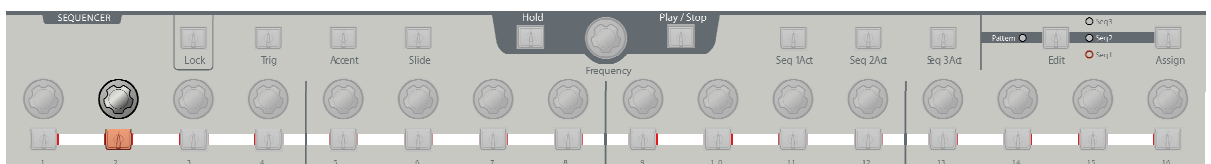
Next, we will discuss how to make our own sequences with Origin.

► In order to understand the sequencer's programming, we will start with a very simple sequence. Go to the [Sequencer] page by pressing the [Seq] button below the LCD screen. On this page you see the three sub-sequences, plus a number of configurations at the right. In this configuration section, select [Bank] K and [Pattern] 1. As you can see, all sub-sequences are empty.



A blank sequence page

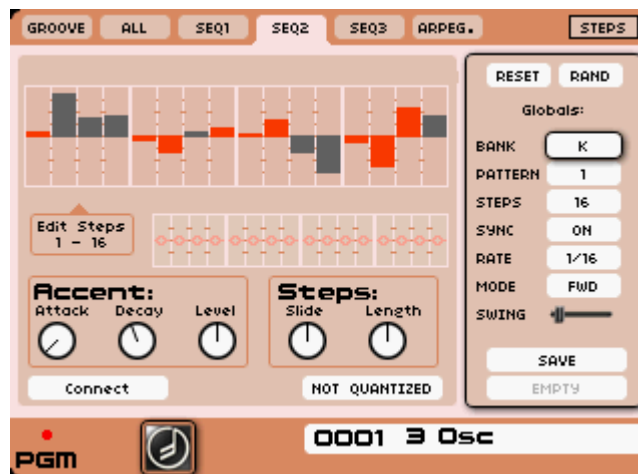
► Press the [Edit > Seq1, Seq2, Seq3 > pattern] switch on the [Sequencer] panel to select [Seq 1]. By moving one of the 16 knobs at the bottom of the [Sequencer] section, you can set an integer value for the corresponding step of sub-sequence 1. This value is the amount of semitones added or subtracted from the note played on the keyboard at that particular step. This way you can use the sequencer to create melodies.



Set the pitch values for each steps

► Following the steps above, select [Seq 2]. This sequence is connected to the filter cutoff frequency. As above, you can tweak the knobs to your liking. Note that when changing a value, instead of an integer, a decimal number between -1 and +1 appears. When modulating the filter

cutoff, the modulation doesn't need to be quantized to produce a tuned note. However, if you want quantized filter modulation, or unquantized oscillator modulation, you can activate or deactivate this function for each sequence separately.



Tweak the knobs of the Seq 2 line

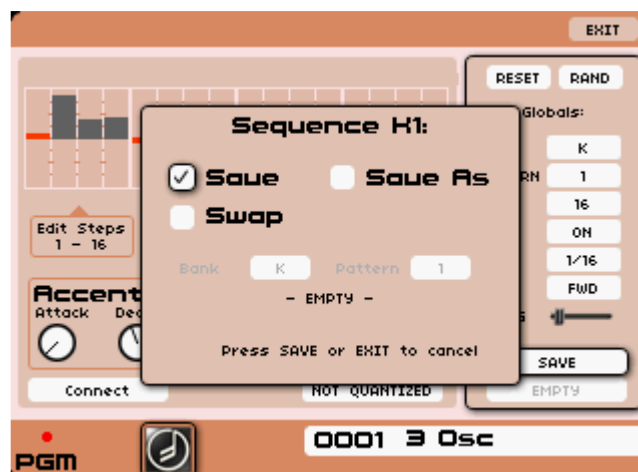
- ▶ Now, let's trigger envelope 2 using sub-sequence 2. Press the [Trig] button to enter trigger edition mode. Select the steps on which you want the envelope to be triggered, by pressing one of the [1...16] buttons. You can hear the envelope 2 starting on these steps to bring some different rhythm motifs.

NOTE: You can change the values of the [Decay] and/or [Sustain] parameters on the "analog panel" to hear a better result within the current sequence.

Now, let's save the program with its sequence.

- ▶ Press the [Save] button. A dialog box appears, allowing you to save your Program preset on an empty user slot. At the bottom of the dialog the "Save Sequence (H01)" is checked by default. Press the [Save] button one again to confirm the saving action.
- ▶ Another dialog box then appears allowing you to save the sequence.
- ▶ Select the current [K] bank and the [01] sub-bank for your sequence.
- ▶ If you wish to save your sequence on another place, select the [Save as] option and choose another memory bank (from I to P) and number (from 1 to 16)
- ▶ Press the [Save] button to confirm the saving action.

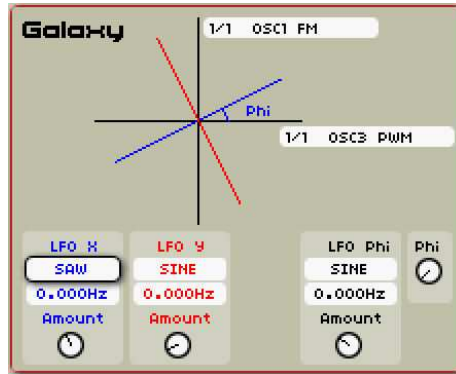
NOTE: When you save your Program sound, the appropriate sequence will be saved with it.



Save sequence as

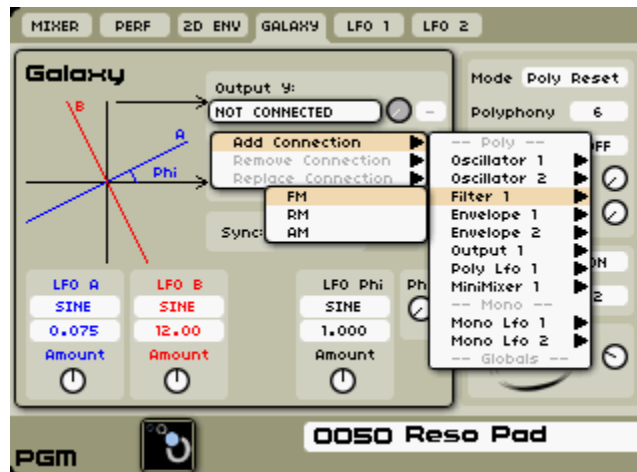
7.11 Adding modulation with the Galaxy module

Galaxy is capable of creating very complex modulations by using the interaction of 3 LFOs. For this example, let's take again the program nr 050, "Reso_Pad".



The "GALAXY" module

- ▶ Open the [Progr] page and press on the [GALAXY] contextual menu button (on the top of the LCD screen) to show its interface.
- ▶ The interface shows two connection menus. Choose the lower one to assign parameters to be modulated by LFO X. For our example, we'll use [Filter 1, FM (Frequency modulation)]. Turn the amount knob of LFO X to its right-most position and adjust the waveform and speed to your liking.



Connect Filter 1 FM on Galaxy

- ▶ Following the steps above, select a parameter for LFO Y (for example [Oscillator 1, FM]), and adjust the LFO to your liking.
- ▶ [LFO X] and [LFO Y] now act as two independent LFOs. When you now dial in the amount of [LFO Phi] and set its frequency, all three LFOs start to interact, which generates an interesting modulation pattern. Play around with different waveforms and different speeds to hear the results that can be obtained.

7.12 The effects section

A section of 3 effects slots allows you to add up to 3 master effects to a preset. They are accessed by pressing the [Effect] page button situated below the LCD screen.

The available effects are:

- BitCrusher - creates a type of distortion based on reduction of digital resolution
- Chorus - capable of producing a shimmering chorus to a harsh flanging effect
- Delay - a stereo delay effect with various feedback and sync controls
- Distortion - three distinct types, from analog-styled saturation to hard clipping
- Dual Phaser - all-pass filter/mod affect that can operate in parallel or serial mode
- Rotary Speaker - a classic revolving speaker effect with slow/fast control
- ParamEQ - vintage-styled EQ to shape the overall sound of your preset
- RingMod - a ring modulator effect with its own A/R envelope
- Reverb - adds ambiance to the sound

For our sound, we'll choose the "Chorus" for the [Effect 1] slot and "Delay" for the [Effect 2] slot.

7.12.1 Chorus

The Chorus allows doubling and slight detuning of sounds with some cyclic movement in order to make the sound deeper and livelier.

- ▶ Adjust the knob [Dry/Wet] of the Chorus to balance between the original sound and the treated sound.
- ▶ Next, turn the knob [Rate] of the Chorus to set the speed of the oscillations.
- ▶ Finally, set the Depth of the Chorus by turning the [Depth] knob.

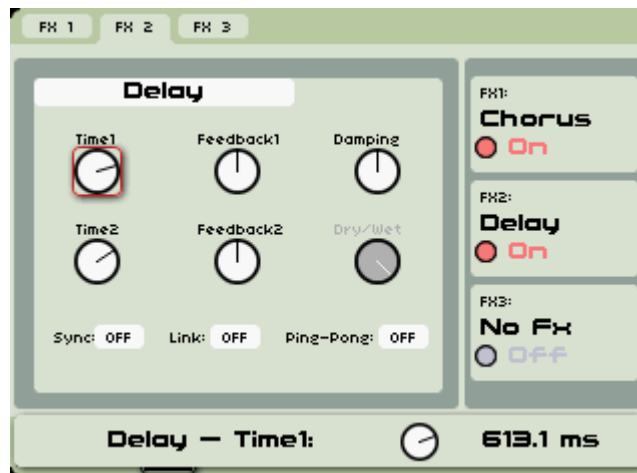


Set the Depth of the Chorus

7.12.2 Delay

The Delay brings a stereo echo effect that adds space to your sound. It possesses independent settings for speed and the number of repetitions on the right and left channel. Therefore it is possible to create a big number of rhythmic combinations between the repetitions. The delay times can be synced to the MIDI tempo of your sequencer.

- ▶ Set the [Dry/Wet] knob of the Delay to balance between the original and the treated sound
- ▶ Set the [Link] option to “Off” and turn the 2 knobs [TIME 1]/[TIME 2] to set the speed of the repetitions for the left and right side: (Time Left/Time Right)
- ▶ It is also possible to set the number of repetitions for each side ([Feedback1] and [Feedback2])



Turn the 2 knobs [TIME 1] and [TIME 2] of the delay times

NOTE: You can set the volume of the three effects directly with the [Return] knobs located in the effect panel, on the right of the Origin interface.

In this area, you can also directly open the desired effect slot by pressing the [Edit] switches and bypass their activity by using the [ON / OFF] switches.

8 EDITING PAGES

This chapter will introduce you to the details of Origin's editing pages. You can have a direct access to these pages by pressing one of the 8 buttons placed under the LCD screen.

From left to right you can find:

- The [Home] page
- The [Preset] page
- The [Program] page
- The [Edit] page
- The [Multi] page
- The [Sequencer/Arpeggio] page
- The [Effects] page
- The [Live] page

To navigate within the selected page, you can press the [◀/▶] or [▲/▼] buttons to select the desired location and press the [Enter] button to select activate the field for editing. Likewise, you can use the jog dial cycle through fields on the screen and press the dial to select the desired location to edit. The field, when selected, will highlight with a red border to show that it is the active location for editing.

Once selected, a quick turn of the jog dial will change the parameter. And pressing the dial (or the [ENTER] button) will commit the new value in that location.

8.1 Home page

8.1.1 Overview

The [Home] page is the starting point for navigating through Origin's pages. Here you can browse, select and preview any of the available presets. In the [Demo] tab you can find factory demo songs that make extensive use of the multi mode. You can also view and edit various system parameters through the [SETTINGS] tab. This section of the manual describes all of these features and functions in detail.



The home page

8.1.2 Main tab

This section of the manual will focus on the [MAIN] tab while the following sub-sections of the manual will describe the other tabs in greater detail.



The [Main] tab

On the main tab, you can browse directly through Origin's presets in a variety of ways.

Using the jog dial you can quickly scroll through the list of presets. A number displayed in black means that its corresponding preset is currently loaded. When you scroll through the presets using the data dial you only scroll the numbers which are displayed in red. A number displayed in red means that its corresponding preset is not currently loaded. When you stop on a number, it automatically loads the corresponding preset after 1 second.

Another method is pressing the [Sound Select] key pad. By pressing the numbers you can directly jump to the preset of your choice.

- ▶ If you press a 4 digit number, the corresponding preset can immediately be loaded. When you press a 3, 2 or 1 digit number, the number you've just typed blinks in red and loads within two seconds. For example if you press 0-0-5-2, preset 52 is directly loaded. When you only press 5-2, number 52 blinks in red and the corresponding preset is loaded after two seconds.
- ▶ By pressing the [+] and [-] keys you can increment or decrement the preset number by 1 on each press. The corresponding preset is directly loaded.

The right area of the [MAIN] tab provides basic information on the selected preset through the [PROGRAM/MULTI INFO]. This area shows [PROGRAM INFO] when a [PROGRAM] preset is selected (location 0000-0999) and shows as [MULTI INFO] when a MULTI preset is selected (location 1000-1255). When a PROGRAM is selected, the panel shows the preset ID, name, designer, project type and synth template.



The [PROGRAM INFO] area

When a [MULTI] is selected, the panel shows the preset ID, name, designer and project.

In the lower portion of the [MAIN] tab you can also see the preset number and name in the lower right corner of the display area. In the lower left corner you can see a graphic representation of the [PROGRAM] template that is selected.

For a PROGRAM, you can see [PGM] in the lower left corner of the display area and one graphic that represents the type of synthesizer template used as the basis for the preset.

Likewise, when a MULTI is selected, you can see [MULTI] in the lower left corner of the display with up to four graphics representing the four slots within the multi program corresponding to the type of PROGRAM templates used within the current MULTI preset.

When a PROGRAM is selected, the [PROGRAM INFO] panel contains a [PREVIEW] button. Selecting this allows you to hear a sequenced performance that demonstrates the selected preset. If the PROGRAM uses a step sequencer preset, the PREVIEW trigs the sequenced pattern.

To listen to a PREVIEW, simply load a preset as described above and press the jog dial or the [Enter] button. The PREVIEW plays until it completes or it can be manually stopped by again pressing the jog dial or the [Enter] button on the front panel. This is a very good way to gain a quick first impression of the sound characteristics of Program presets that are provided with your Origin synthesizer.



The Program [Preview]

8.1.3 Demo tab

The [DEMO] tab is a great place to quickly become acquainted with your Origin synthesizer.

- ▶ To access the demo page directly, either select the [Demo] tab on the [Home] page or press the [Demo] button on the front panel from any page on the Origin.



The [Demo] page

- ▶ Press the [Demo] front panel button to play the first demo in the list of available songs.
- ▶ The [Demo] button can be used to stop songs as well.

When a demo is playing, the back light behind the [Demo] button is active and the selected demo has a red square at the far right of its name.

A green triangle denotes that the demo is ready to play, and the red square denotes that the demo is playing.



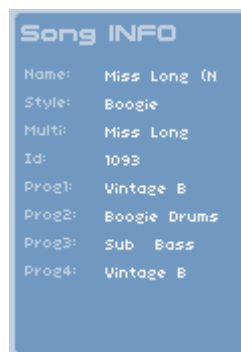
The red square denotes that the demo is playing

If the demo concludes without being stopped manually, the icon to the right of the name automatically switches from a red square to a green triangle.

▶ You can choose a demo manually by using the [▲/▼] keys or the jog dial on the front panel and then select the [Enter] button, press the jog dial or press the [Demo] button on the front panel to start the selected [Miss Long] demo song.

▶ To stop the currently playing demo song, select the [Enter] button, press the jog dial or press the [Demo] button on the front panel.

The right side of the [Demo] tab contains [Song INFO] data. This includes the song name, style, selected multi, preset ID, as well as the Program presets used within the multi. This can be helpful in identifying individual sounds that may spark your interest or provide you with inspiration to create your own sounds.



The song info

8.1.4 The Settings tabs

The [SETTING] tab contains several sub-tabs of its own, which are shown at the top of the LCD screen when the [SETTING] tab has been selected. These include the [MIDI], [SYSTEM 1], [SYSTEM 2], and [RESET] screens - as well as a [RESET] control and the aforementioned [HOME] tab in the upper right of the LCD screen.

In the case of the Origin Keyboard, there is also a [VELOCITY/AFTERTOUCH] screen which allows definition of sensitivity of the keyboard velocity and aftertouch, as well as defines the global behavior of the Duophonic Aftertouch mode.

Each of these functions will be described below.



The [SETTING] tabs

8.1.4.1 The MIDI page

The global Origin's [MIDI] settings include the global MIDI channels, response to controllers and program change activity, as well as assignment of data to various ports. For the Origin Keyboard, there is also a control that sets whether LOCAL ON is active, allowing your keyboard to be used with a sequencer or other external equipment.



The global [MIDI] settings

- **[Keyboard Mode]** (only on Origin Keyboard): "LOCAL ON"/"LOCAL OFF": The LOCAL ON mode sets the keyboard and all controls (such as pitch bend, modulation, ribbon, foot switch and expression pedal) to affect the synthesizer directly. LOCAL OFF mode sends all MIDI data directly to the MIDI/USB port without triggering any sound or control. The latter mode is recommended for use with a sequencer or other external equipment. When the Keyboard Mode is set to [LOCAL ON], the MIDI output of Origin Keyboard is either on the Program Mode channel (if Origin is in Program mode) or given by the zones configuration (if Origin is in Multi mode). If the Keyboard Mode is set to [LOCAL OFF], all MIDI data generated by Origin will be on the Program Mode channel, whatever the current preset is.
- **[Program Mode Channel]:** 1-16: The Program Mode channel only concerns Program presets, it determines to which MIDI channel the Program presets responds. For the Multi presets, the MIDI input channel is set on the per-program basis within the Multi page. The default value is 1.

- **[Master Control Channel]:** 1-16: The Master Control Channel is used to receive global preset changes (Program Change and Bank Select MIDI messages). In Multi mode, sending such a message to Origin on the Master Control Channel will result in a change of the entire Multi preset, instead of changing the preset on one slot.
- **[Global Synchro]:** Inter, MClck: The global synchronization can either be controlled internally or through MIDI Clock data from another device (in most cases, a host sequencer). The default value is [Inter].
- **[Receive Control Change]:** ON/OFF: This setting determines whether MIDI controller data influences parameters of Origin presets. When set to [OFF], this setting overrides any configuration in the MIDI EDIT settings tab of the [Live] page. The default value is [ON].
- **[Send Control Change]:** ON/OFF: This setting determines whether the Origin sends Control Change MIDI data from its front panel, and in the case of the Origin Keyboard, any real time control data from the physical controls to the MIDI/USB output. When set to [OFF], this setting overrides any configuration in the MIDI EDIT settings tab of the [Live] page. The default value is [ON].
- **[Receive Program Change]:** ON/OFF: This setting determines whether the Origin responds to MIDI program change commands. The default value is [ON]. Global program change commands must be sent to the Master Control Channel, but if the current mode is Program mode, Program Changes are also accepted on the Program Mode Channel. In Multi mode, Program Changes can also be sent on the Control Channels of each of the 4 Multi slots, in order to change a sound inside a Multi.
- **[MIDI In to USB out]:** ON/OFF: This setting controls whether data present at the MIDI input is echoed to the USB output. This is useful in the case where an external MIDI device is connected to the Origin and needs to be sent to the USB input for situations such as recording by a DAW application. The default setting is [OFF].
- **[USB In to MIDI Out]:** ON/OFF: This setting controls whether data present at the USB input is echoed to the MIDI output. This is useful in the case where an external MIDI device is connected to the Origin and needs to be controlled by MIDI data from the USB input for situations such as playback from a DAW application. The default setting is [OFF].
- **[MIDI In to MIDI Out]:** ON/OFF: This setting controls whether MIDI data at the input is echoed to the MIDI output. This is useful in the case where an MIDI device is connected to the Origin and is set to receive MIDI data in the manner of a MIDI THRU port. Care should be taken to not create a MIDI loop in this case. The default setting is [OFF].

8.1.4.2 *The System 1 page*

The global [SYSTEM 1] page includes a place to enter the Owner Name as well as eight fields that control various aspects of Origin's operation. All of the fields and their respective values are described below.



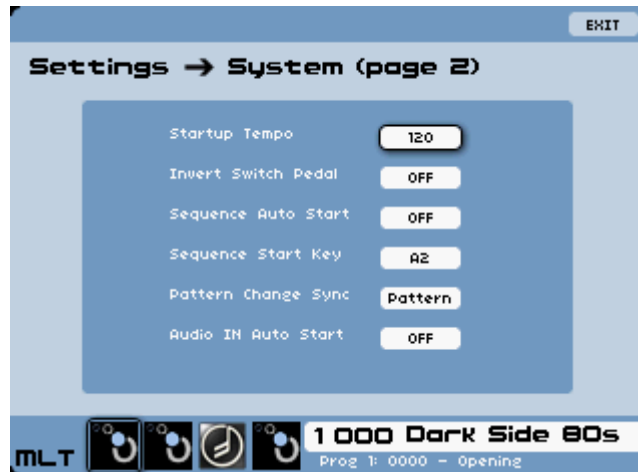
The [SYSTEM 1] page

- [Owner Name] In this location you can enter your name or any other string of characters and numbers. It is used as the default name for “designer” in the presets you create. To enter a name, highlight the owner name field using the cursor buttons or jog dial and press [Enter]. You can use the numeric keypad to enter a name, when finished, press the jog dial or the [Enter] key again to validate your choice.
- [Knobs Mode]: HOOK, SNAP: [HOOK] mode means that a parameter in a preset is not changed until its corresponding physical controller (or MIDI controller mapped to that parameter) sweeps through the preset value. When the physical controller reaches the preset value, the parameter directly tracks the movement of the physical controller. [SNAP] mode means that a parameter in a preset immediately tracks to its corresponding physical controller position (or MIDI controller mapped to that parameter) as soon as it detects a new value. The default value is [SNAP].
- [Global Transpose]: -24 to +24: This setting allows you to set the global transpose value for all notes that play based on MIDI notes coming in through the MIDI input or USB input. This control is separate from program-level Master Tune as well as transpose values that are programmed within a multi. The default value is [0].
- [Global Tune] 420 to 460: The Global Tune allows you to set Origin’s main tune to a value other than the A=440Hz that is common practice today. This setting affects all presets on the Origin. Again, like the Global Transpose value above, this control is separate from the Voice/Unison Detune controls on the program level. The default value is [440].
- [Last Preset ON]: ON/OFF: When set to on, this setting configures Origin to automatically select the preset that was active the last time the unit was turned off. If this is set to the default OFF condition, Origin always loads the multi preset 1000 at startup. The default value is [OFF].
- [Screen Brightness]: 0 to 6: This setting controls the level of back light behind the LCD screen. The default value is [6].
- [Memory Protect]: ON/OFF: When this setting is set to on, the memory cannot be written anymore. The [SAVE] button is disabled. This can be useful to ensure that some presets are not overwritten by mistake. The default value is [OFF].
- [Auto Connect]: ON /OFF: When this setting is set to on, Origin automatically makes the most vital connections necessary when creating your own programs. For example, the oscillator and filter frequencies are connected to the keyboard follow, the envelope trigger inputs are connected to the keyboard trigger etc. When this setting is turned off, no automatic connections are made. The default value is [ON].

There are some additional information fields in the lower right area of the display. Software ID and Serial Numbers are provided for reference when updating software. It can also be useful for troubleshooting when requesting support from and providing information to ARTURIA.

8.1.4.3 The System 2 page

The [System 2] page allows control over global time synchronization, default internal tempo, global sequencer controls and audio input default settings. All of the fields and their respective values are described below.

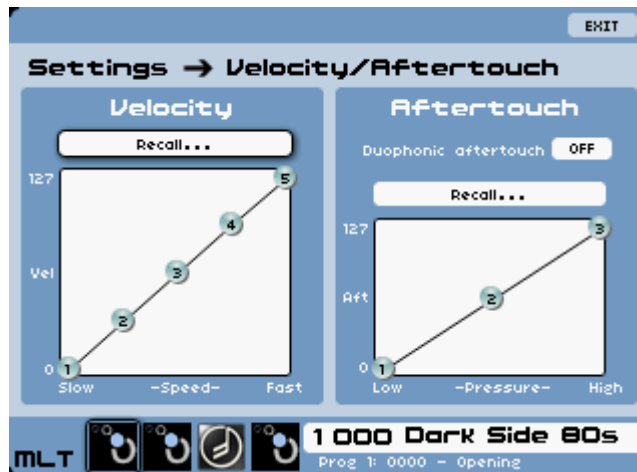


The [System 2] page

- **[Startup Tempo]:** 20-300 BPM: The startup tempo parameter sets the default tempo of the internal clock, loaded when Origin starts. The default value is [120].
- **[Invert Switch Pedal]:** ON/OFF: This setting allows the foot switch input on the rear panel of the Origin to respond to a pedal that is oriented in a “normally open” configuration. If your foot pedal is responding “backwards” to the expected behavior, try changing this setting to reverse the polarity. Default value is [OFF].
- **[Sequence Auto Start]:** ON/OFF: This setting controls whether a preset containing a sequence starts as soon as it is loaded. If this is [ON] then any preset that has an assigned step sequence will start. This includes any presets that are part of a multi. Default value is [OFF]
- **[Sequence Start Key]:** ON/OFF: This setting is related to [Sequence Auto Start] and sets the key value that is triggered when [Sequence Auto Start] is [ON]. Default value is A2.
- **[Pattern Change Sync]:** None/Step/Pattern: This setting controls how the sequencer behaves when in [GROOVE] mode. When a new pattern is selected, the Origin can either make the switch when the current sequence is complete [Pattern], or when the transition to the next step is made [Step] or instantly as soon as the new pattern position is selected [None]. The default value is [Pattern]
- **[Audio IN Auto Start]:** ON/OFF: This setting determines whether the audio inputs are active when the Origin is started. Default value is [OFF]

8.1.4.4 Velocity/Aftertouch page (Origin Keyboard only)

This page is only available on the Origin Keyboard. It allows you to set the overall response of the keyboard velocity and aftertouch curves to suit your needs. It also controls the behavior of the Duophonic Aftertouch feature that is unique to the keyboard version of the Origin. The programming for this page is described below.



The [Velocity/Aftertouch] page

- **[Velocity]:** This section of the page allows the user to set the overall velocity response of the keyboard. Use the Alpha dial to select each node and use the joystick to set the value for that segment of the scale. The range of each node is limited by the settings of the adjacent nodes and/or the boundaries of the grid. Note that you can also navigate to the [Recall...] menu and select any of the pre-defined curves.
- **[Aftertouch]:** This section of the page allows the user to set the overall aftertouch response of the keyboard. Use the Alpha dial to select each node and use the joystick to set the value for that segment of the scale. The range of each node is limited by the settings of the adjacent nodes and/or the boundaries of the grid. Note that you can also navigate to the [Recall...] menu and select any of the pre-defined curves.
- **[Duophonic Aftertouch]:** OFF/LOW/HIGH/LAST: This setting allows you to tailor the behavior of aftertouch to affect only one note. This provides a semi-polyphonic aspect to aftertouch that can add a great deal of dynamics to a passage. [OFF] sets the entire range of played/held notes to be affected by the aftertouch modulation settings. [LOW] means that only the lowest note is affected by aftertouch control. [HIGH] means the opposite, where the highest played/held note is affected by the overall aftertouch value. [LAST] sets the most recently played note to be modulated by aftertouch. [HIGH] is the default.

8.1.4.5 Reset control

The [Reset] control is not a screen, but a button to return all of the SYSTEM settings to factory settings with a single action.



The [Reset] control

8.1.4.6 Exit button

This is a context sensitive button that allows you to navigate out of an individual Settings page back to the main screen. Simply press the right-most context button at the top of the LCD to return to the previous screen.

8.2 Preset page

8.2.1 Overview

The [Preset] page enables you to select presets by various criteria, in order to quickly narrow the search for the right type of sound for your music. This portion of the manual will detail the selection process for programs and multis, and will provide a bit of background on some of the logical and technical distinctions in the Origin's preset management structure.



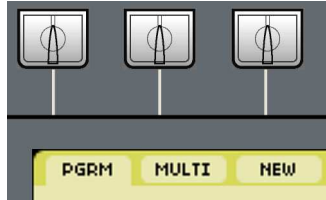
The [Preset] page

Regardless of whether a Program or Multi is selected (described below), the general display layout is similar. The left side of the display shows fields for selection criteria and a window with a range of preset numbers and names. One preset in this window is always highlighted. The right side of the display shows the info of the highlighted preset, with the information differing slightly between Programs and Multis. Both preset types display preset ID, preset name, designer and project. Program info displays additionally: synth template, CPU load, bank, and linked sequencer preset (shows “none” when no sequencer preset is linked). Multi info shows a list of all the Programs used in the Multi.

The bottom of the Preset page is the same as the Home Page. You can find the currently selected preset number and name in the lower right corner of the display area. Likewise, you will see a graphic representation of the program template that is selected. For individual programs, you can see “PGM” in the lower left corner of the display area and one graphic that represents the type of synthesizer template used as the basis for the patch. When a multi is selected, you can see “Multi” in the lower left corner of the display with up to four graphics. These graphics represent the four slots within the multi and correspond to the type of template used for each program within the multi.

8.2.2 The three types of presets - Program, Multi and New

There are two tabs within the [Preset] Page, Program [PGRM] and Multi [MULTI]. When you select a preset within a certain numeric range, the [Preset] page automatically "jumps" to the appropriate tab as needed to show the correct Program/Multi data. Selecting a preset number from 0000-0999 jumps to the [PGRM] tab (if it is not already the active tab), values from 1000-1255 jumps to the [MULTI] tab (if it is not already the active tab).



The preset tabs

8.2.2.1 Program Preset

The Program is the name used to describe the base level sound production entity within the Origin synthesizer. When you are creating the next monster preset in the [Edit] or [Progr] pages, you're editing on a Program level. A Program contains all synthesizer modules, including sound generation and real time control functions. Additionally each program can link to a sequence, and has individual settings for the Arpeggiator, the effects, the Galaxy, 2D envelope and LFOs.



The [Program] preset tab

8.2.2.2 Multi Preset

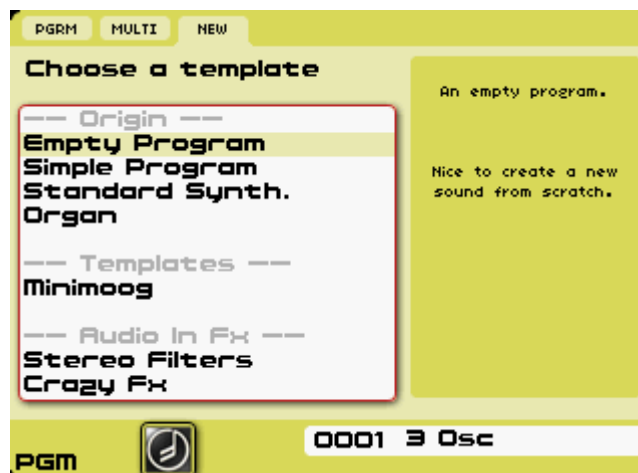
A [MULTI] consists of a selection of up to four Program presets along with various settings for use in both live performance and host sequencing/recording situations.



The [MULTI] preset tab

8.2.2.3 New Preset

The [NEW] preset function allows you to create a new Program preset “from scratch”.



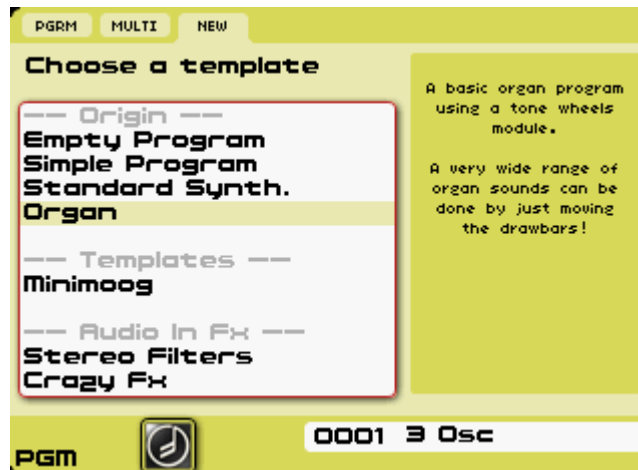
[NEW] preset tab

“Empty Program” includes the minimal number of modules on the [Edit] page for beginning a new preset: one [Keyboard] and one [Output] module.

“Simple Program” is the smaller synthesizer structure to begin a patch. It is often nice to start from a simple sound to build more complex sounds.

“Standard Synth” is a common synthesizer structure. Many sounds can be created from this patch from basses to pads.

You may also choose an Organ template, which uses a new “Tone Wheel” module as its basis.



Selection of a new [Organ] template

You can also create a new preset using the [Minimoog] template. This is a ‘pre-built’ modular structure, recreating the sound and functionality of this vintage analog synthesizer. The panel of the modeled synthesizers is graphically displayed in the [Edit] page.

Template offers a convenient tool for tweaking your favorite synthesizer straight away without having to create it from scratch.

The [Minimoog] template is the first template included in the initial firmware version of Origin. Other synthesizer templates (the ARP 2600, the CS-80 and the Jupiter-8) will be offered with future updates of the Origin.

A third category of template is directly dedicated to create a new program using the Audio in connection to an external audio signal coming from a sampler or another instrument. (For example a guitar). In order to have the Audio In signal processed, you must press a key on your keyboard or activate the “Audio IN Auto Start” feature in the “Settings > System (page 2)” page.

Using the “Stereo Filters” templates, the audio inputs are directly connected into two filters. Those filters are connected in parallel thru 2 output VCAs modules. This preset uses 3 effects: Distortion, delay and reverb.

The “Crazy Fx”, the audio inputs are connected into a bode frequency shifter and thru two filters (one 4 Pole high pass and a 4 pole Low pass) modules connected in serial. This preset uses pre connected to three effects: distortion, Delay and Stereo Phaser.

If you wish ear those effects modules, you just have to turn the [ON/OFF] buttons of the hardware [Effects] panel “On”.

8.2.2.4 Factory and User Presets

Origins can store 1000 Programs (in slots 0000-0999) and 256 Multis (in slots 1000-1255). The first 400 slots are factory programs. They cannot be overwritten. The first 100 Multi slots are factory multis. They cannot be overwritten. The remainder of those locations are available as “User” Preset slots. Some programs and Multis are also delivered on these ones but they can be overwritten. The Memory Protect setting on the SYSTEM page controls whether memory locations can be overwritten by your edits. If the Memory Protect setting is ON, then it is not possible to save any program, multi or sequence. The [SAVE] button is then disabled. Otherwise, it is possible to save and overwrite “User” Preset slots. An edited Factory Preset that you choose to save automatically selects the “Save Program As” dialog and present the first available “-EMPTY-” preset location. You can also use the Dump function from Origin Connection software in order to move presets into and out of the Origin from a host computer.

Aside from Program and Multi Presets, there are also 128 Factory Sequence patterns and 128 User Sequence patterns available through the Sequencer page.

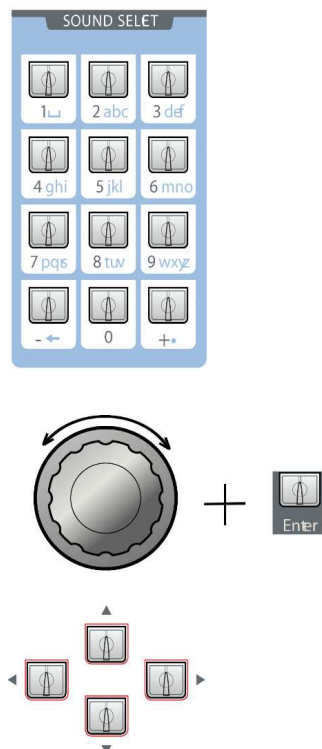
8.2.3 Loading a Preset

Scrolling through the presets on the preset page works mostly the same way as on the home page.

- ▶ By turning the jog dial you can quickly scroll through the list of presets. The current selected preset is highlighted in black. To load the preset you want, highlight it and press the jog dial or the [Enter] button on Origin's front panel.
- ▶ Another method is pressing the [Sound Select] key pad.
- ▶ By pressing the numbers you can directly jump to the preset of your choice.
- ▶ When you press a four digit number, the corresponding preset is loaded immediately.
- ▶ When you press a 3, 2 or 1 digit number, the number you've just typed blinks in red and loaded within two seconds.

For example, when you press 0-0-5-2, preset 52 is directly loaded. When pressing only 8-3, number 83 blinks in red and the corresponding preset is loaded after two seconds.

- ▶ By pressing the [+/-] keys you can increment or decrement the preset number by 1 on each press. The corresponding preset is directly loaded.
- ▶ If the [Preset] page is open, you can also use the [▲/▼] cursors to scroll through the presets. They can be used in the same way as the [+/-] keys. By each press you can decrement or increment one step in the preset list and the preset is directly loaded. The [▶/◀] cursors allow you to scroll through lists of presets, this allows for faster searching. Using these controllers, the preset is not loaded automatically. To load the preset, press the data "dial" or the [Enter] button.



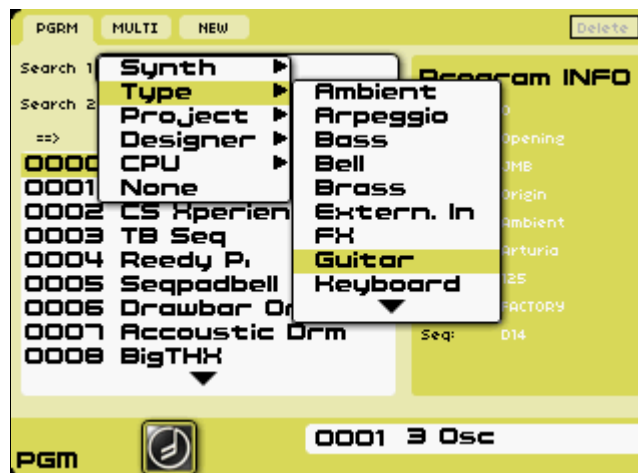
The different ways for the presets selection

8.2.4 Program and Multi Filters

8.2.4.1 Program filtering

The PROGRAM tab [PGRM] offers two filters for narrowing down the selection of presets to the relevant sub-set of programs that fit your search criteria. Those filters are set in the "Key 1" and "Key 2" fields. As values are selected for those fields, the number and range of presets in the PROGRAMS window is automatically shifted to correspond to the filter criteria. Once you have selected a key category for one field, it is not available in the other key field. Below is a listing of the Key categories and their respective values.

- [Synth]: Origin, Minimoog (future firmware versions will offer more ARTURIA Classic Analog Synth templates)
- [Type]: Ambient, Arpeggio, Bass, Bell, Brass, FM, FX, Guitar, Keyboard, Lead, Pad, Percussive, Sequence, String, Other.
- [Project]: a range of Factory and User created projects, for representing individual collections of presets that may span over other criteria.
- [Designer]: the names or abbreviated "handles" of various Factory and third party sound designer. This is also where "Owner Name" is located to help you quickly located your own User Presets.
- [CPU]: <30%, 40-75%, >75%
- [None]: Resets the selection criteria to an empty value.



[Program] filters

8.2.4.2 Multi filtering

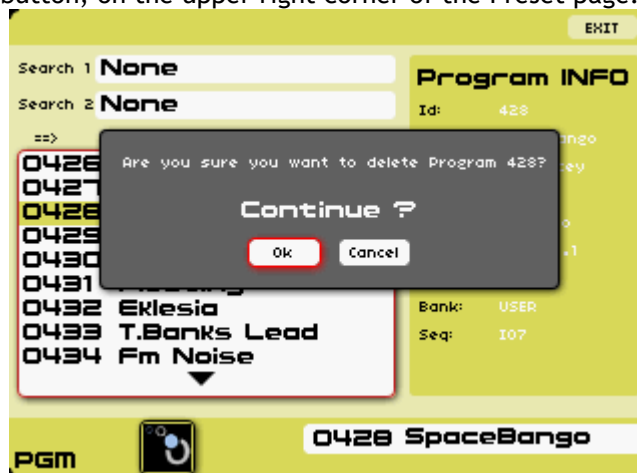
The [MULTI] tab has one Key field, which is for limiting the selection of presets to specific Projects. Once that value is set, the number of Multi presets is narrowed down to the appropriate selection.



[MULTI] filter

8.2.4.3 Delete a preset

You can delete a User Program (any preset location above [0399]) or Multi location (above [0999]) by pressing the Delete button, on the upper right corner of the Preset page.



Delete a Program

8.3 Program page

8.3.1 Overview

The Program [Progr] page contains a range of functions, settings and values that have overall impact on the selected preset. Some of the controls available on this page are duplicates of hardware controls that are on the front panel of the Origin, such as the audio and Fx [MIXER] sections.



The program page

Five tabs are available along the top left of the LCD screen: the [MIXER], [PERF], [2D ENV], [GALAXY], [LFO1] and [LFO2]. The following section describes all these tabs in detail.

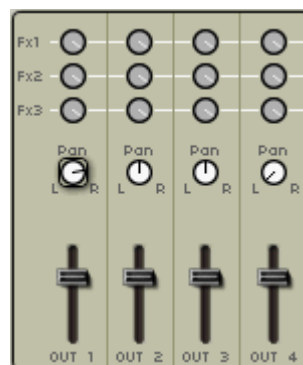


The [Program] page's tabs

8.3.2 Audio and FX Mixer

The [Mixer] tab allows you to adjust the volume, panning and FX routing of all output VCAs ([Out 1, 2, 3 and 4]).

The left part of the mixer tab is composed of four identical columns representing the settings for each VCA. On the top you can find the [FX 1, 2 and 3] knobs, in the middle the pan knob and at the bottom the volume slider. The functioning of these knobs differs slightly depending on the current mode of the mixer. Origin's effect mixer offers two modes to route the VCAs to the effects: [Parallel] and [Serial]. The currently selected mode is displayed in the middle section of the mixer tab. Below we will describe the functioning of both modes in more detail.



The output and fx mixer panel

8.3.2.1 Parallel routing

In [Parallel] mode, Origin's FX mixer works in a send/return configuration often found on mixing desks. For each VCA you can control the amount of signal sent to all individual effects. The outputs of all the effects are mixed with the "dry" output signals and then sent to the [Main] output. In this mode the knobs function as follows:

- **[FX 1, 2, 3]:** These knobs control the amount of signal sent to the corresponding effect. When [pre] is selected on the [pre/post] switch in the middle section (*see below*), these knobs function pre-fader. This means that the amount of signal sent to the effects is not influenced by the volume slider of the VCA. For example if one VCA has its volume slider all the way at the bottom, it can still be heard through the effects. When [post] is selected (post fader configuration) the amount of signal sent to the effects is influenced by the main volume slider of the VCA. This means that when a VCA has its volume slider all the way at the bottom, it cannot send any signal to the effects.
- **[Pan]:** These knobs control the panoramic placement of the VCA. This knob controls the same parameter as the pan knob found on the corresponding VCA module in the [Edit] page.
- **[Pre/Post]:** If this switch is set to [pre], the FX 1, 2 and 3 knobs are configured pre-fader. This means that the volume slider has no effect on the amount of signal sent to the effects. If set to [post], the FX 1, 2 and 3 knobs are configured post-fader. This means that adjusting the volume of the VCA also adjust the amount of signal sent to the effects.
- **[Ret 1, 2, 3]:** (returns) These knobs set the amount of effect signal sent to Origin's main outputs for each of the three available effects.



The Parallel mode

8.3.2.2 Serial routing

In series mode, the outputs of all VCAs are mixed to one stereo signal. This signal is then sent to FX 1. The output of FX 1 is sent to FX 2, the output of FX 2 is sent to FX 3. The output of FX 3 is sent to the [Main] output. In this mode, the [FX 1, 2, 3] knobs and the [pre/post] switch are grayed out (since they have no effect) and the [Ret] knobs change to [D/W] (see below).

- **[Pan]:** These knobs control the panoramic placement of the VCA. This knob controls the same parameter as the pan knob found on the corresponding VCA module in the [Edit] page.
- The VCA volume slider at the bottom sets the volume of the corresponding VCA. This knob controls the same parameter as the volume slider found on the corresponding VCA module in the [Edit] page. This knob can also be controlled using the corresponding

hardware knobs found on the [Mixer] section of Origin's front panel, if Origin is in [Program] mode.

- [D/W]: (dry/wet) these knobs control the balance between unprocessed (dry) signal and signal processed by the corresponding effect (wet). When turned fully left, you hear no effect, when turn fully right you only hear the processed signal. These knobs control the same parameter as the [Dry/wet] knobs on the [FX] page. You can also use the hardware knobs found on the [Effects] section of Origin's front panel to control this parameter.

8.3.3 Performance tab

The [Perf] tab is a new set of controls as of version 1.2 of the Origin firmware. It is used to control settings for features such as pitch bend, modulation, expression pedal, aftertouch - and in the case of the Origin Keyboard - ribbon control.



The [Perf] tab (for the Origin Keyboard)

8.3.3.1 Ribbon Control (Origin Keyboard only)

The Ribbon Control feature is ***specific to the Origin Keyboard*** instrument. This portion of the Performance tab will not appear on an Origin Desktop unit. This feature area allows the Origin Keyboard owner to set the specific behavior of the ribbon on a Program preset. Because the [Mode] setting has an effect on the range of parameters that are available, each mode will be described, and the parameters that correspond to that [Mode] will follow. Below is a detailed description of each setting.

Pitch Bend

In this mode, the ribbon controls the pitch of the Program preset. It directs the control of pitch through the keyboard follower module, so any program that is not attached to the keyboard follower output will ignore the ribbon control in this mode.

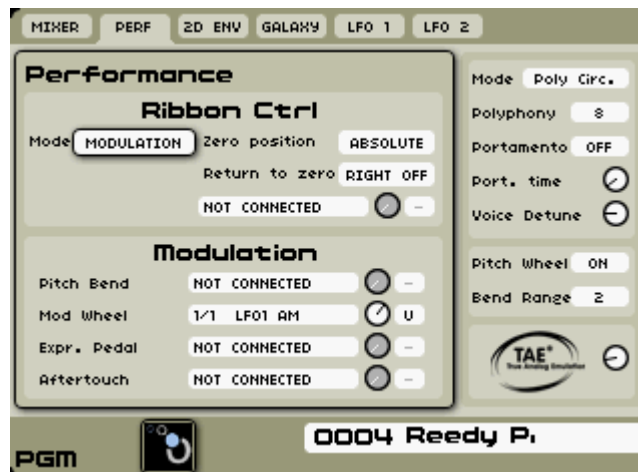


Ribbon Control [PITCH BEND] Mode

- **[Zero Position]: ABSOLUTE/RELATIVE:** When the value is set to [ABSOLUTE], the position of your finger along the ribbon is taken as an absolute value from the zero point at the center of the strip and the keys you're playing/holding on the keyboard. That, along with the Ribbon Range value determines the offset from the played note(s). When the value is set to [RELATIVE] then the start value is taken as the zero point - regardless of where you first placed your finger on the ribbon control strip. From that position, movement along the ribbon is then adjusted in ratio to the range set with the "Ribbon Range" feature.
- **[Return to zero]: INSTANT/FAST/SLOW/NONE:** [INSTANT] means that the pitch value returns to zero as soon as the ribbon is released. [FAST] creates a quick, smooth transition back to the zero point when the ribbon is released. The [SLOW] setting creates a more sloped portamento back to the zero point. [NONE] means that the pitch change is held in place even after the ribbon is released.
- **[Quantize]: ON/OFF:** An [OFF] setting means that the pitch bend has a portamento (smooth) response to the ribbon, while [ON] means that a glissando (semi-tone stepped) effect is achieved in the pitch of the Program preset. Default is [OFF].
- **[Ribbon range]: 1-48:** This value sets the plus/minus range of the ribbon.

Modulation

In [MODULATION] mode, the ribbon behaves as another control source for a range of parameters throughout the Program preset. Many of the controls are the same as above, with a few key exceptions, explained below:



Ribbon Control [MODULATION] Mode

- **[Zero Position]: ABSOLUTE/RELATIVE:** When the value is set to [ABSOLUTE], the position of your finger along the ribbon is taken as an absolute value from the zero point at the center of the strip. It is somewhat akin to jumping instantly to a position on the modulation wheel. When the value is set to [RELATIVE] then the start value is taken as the zero point - regardless of where you first placed your finger on the ribbon control strip. From that position, movement along the ribbon is then adjusted within the limits of the modulation range.
- **[Return to zero]: INSTANT/FAST/SLOW/NONE:** [INSTANT] means that the modulation value returns to zero as soon as the ribbon is released. [FAST] creates a quick, smooth transition back to the zero point when the ribbon is released. The [SLOW] setting creates a more sloped modulation to the zero point. [NONE] means that modulation position is held in place even after the ribbon is released.
- **[Destination]:** Just like the sound modules within the Program preset, you can set a variety of destinations for the ribbon control in [MODULATION] mode. Select the field and "Add Connection" where you'll see an array of choices. Once a destination is

selected, a scaling factor as well as Uni-polar or Bi-polar control can be selected for each connection.

Self Trigger

The most recognizable use for [SELF TRIGGER] mode is to create a sound reminiscent of the Beach Boy's "Good Vibrations" solo. There the ribbon was used to control both the pitch of the sound as well as the trigger for the start of the note. Here, a simplified set of controls are used.



Ribbon Control [SELF TRIGGER] Mode

- **[Note Velocity]:** 1-127: The virtual knob control allows you to set the initial velocity that is initially sent when the ribbon is touched. Default value is 64.
- **[Base note]:** This sets the pitch that will be triggered when the finger touches or crosses the center point of the ribbon.
- **[Ribbon range]:** 1-48: This value sets the plus/minus range of the ribbon.

Off

This is the simplest mode to explain and understand - if set to [OFF] then the ribbon has no effect on the Program preset.



Ribbon Control [OFF] Mode

8.3.3.2 Modulation

This section of the [Perf] tab affects both the Origin Desktop and the Origin Keyboard.

- **[Pitch Bend]:** This sets additional modulation destinations for the Pitch Wheel separately from the [Pitch Wheel] and [Bend Range] controls on the right side of the screen. Use the connection menu to select the modulation destinations for your Program preset. Note that you can set the modulation amount and scale it as either Uni-polar or Bi-polar controls, but in the case of using the pitch wheel for alternate forms of modulation, a Bi-polar control seems to be the best match. However, it is up to you to use which over mode you wish for each assigned modulation destination. Note that if you are using this connection, you may want to deactivate the default pitch-bend behavior of the pitch wheel, in the right section of the page.
- **[Mod Wheel]:** As is implied by the label, this allows for a range of modulation destinations to be assigned, with the source being the modulation wheel. Use the standard menu controls to select the modulation destinations for your Program preset. Note that you can scale the amount for either a Uni-polar or Bi-polar direction, but in the case of using the modulation wheel, a Uni-polar setting seems to fit the basic mode of operation. But again it is up to you to make the choice for each destination, depending on the desired result.
- **[Expr. Pedal]:** This setting sets the modulation destinations from the expression pedal input. As noted above, you can set the modulation amount for each connection and scale it as either a Uni-polar or Bi-polar control, but in the case of using an expression pedal, a Uni-polar setting seems to fit that mode of control. As with the other suggestions above, you can make your own choice for each destination, depending on the desired result.
- **[Aftertouch]:** The connections created here respond to aftertouch input. You can scale each connection as either Uni-polar or Bi-polar controls, but in the case of using aftertouch, a Uni-polar setting seems to map to that type of control. Bear in mind that with the Origin Keyboard that this setting will be directly influenced by the general [SETTINGS -> Velocity/Aftertouch] screen (described earlier in this document). The number of voices that are affected by aftertouch modulation on the Origin Keyboard will depend on the Duophonic Aftertouch settings. For the Origin Desktop unit, however, these settings will affect all voices equally when aftertouch messages are sent to the Program MIDI channel.

8.3.4 2D Envelope tab

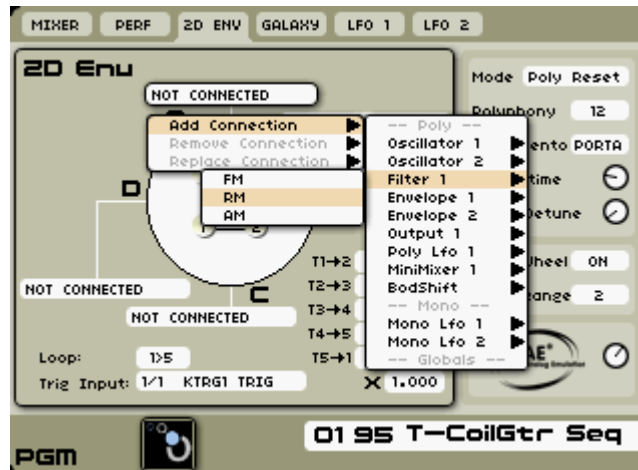
The advanced 2D Envelope provides a sophisticated loop-able multistage modulator that can shape 4 modulation destinations within a preset on the Program level.



The advanced 2D Envelope

- ▶ To choose a modulation destination for the four modulation slots, select the desired connection box thanks to the jog dial and the [▲/▼] buttons. Press on the jog dial again (or on the [Enter] button) to open the destination menu. Choose a destination ([VCF1 FM] for example) using the jog dial and press on it again to validate this choice.

Note: the modulation polarity and amount is not available in this page, but you can change them by opening the connection's destination module, and finding the other end of the connection.

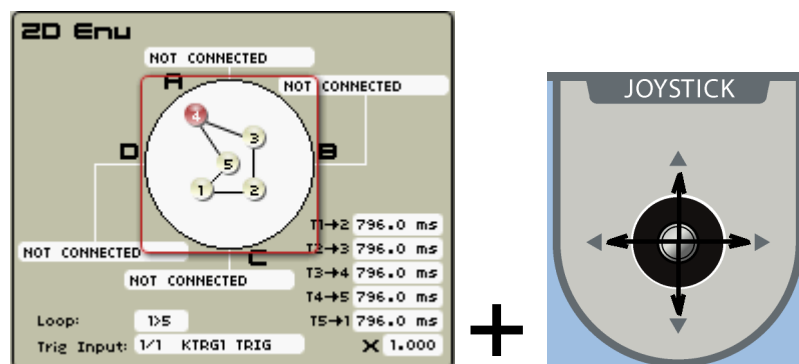


Choose a modulation destination

Each “axis” of the 2D envelope can be assigned to a destination (or group of destinations). Likewise, each stage of the envelope can be placed anywhere within range of those four axis points, using the joystick to set each location.

The 2D envelope is composed of five editable points, numbered 1, 2, 3, 4 and 5.

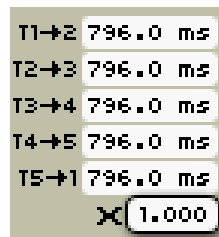
- ▶ To position the five points, select the diagram component at the center of the page: the selected points becomes red. Use the jog dial to select the point you want to move, then use the joystick to choose a position for the point.



Slide the joystick to choose a position for the points

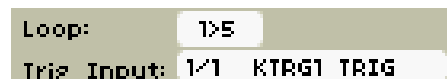
The other parameters are used to control how the envelope goes from one point to another:

- **[T_{x→y}]**: The T_{x→y} values set the duration of the transition between each point. The values can range from 0 to 13600 ms.
- **[X]**: The X setting is a multiplier parameter. The default value is 1, which means that the actual times are those given by the [T_{x→y}] parameters. If the value is different from 1, all the actual Env2D times will be given by the [T_{x→y}] value multiplied by the X parameter.



The time settings

- **[Loop]**: The [Loop] parameter controls the order of the points. The value “1>5” means that the envelope will start at point 1, then go to point 2, 3, 4, 5, then loop back to point 1, and so on. The value “1><5” means that the envelope starts at point 1, then goes to point 2, 3, 4, 5, then goes backwards to point 4, then 3, 2, 1, and so on.



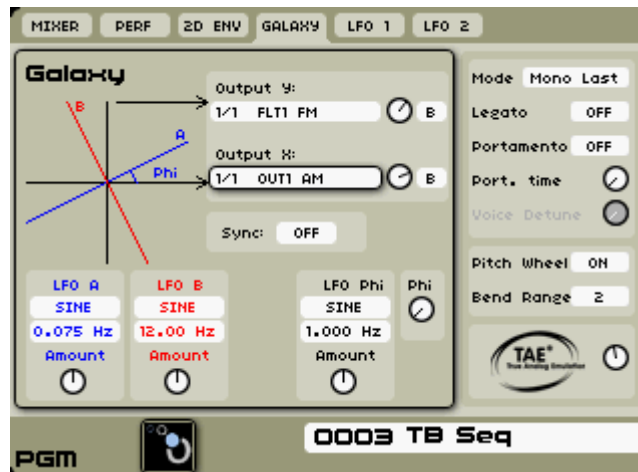
The [Loop] mode

- **[Trig input]**: In the case where this input is not connected, the envelope is free-running, like an LFO. In this case it will never stop looping. If the input is connected, then the envelope will start looping when the trigger signal is ON, and will go to a release stage when the trigger signal is OFF. In the release stage, the 2D Envelope goes to the point 5, using the time T4→5, whatever the current point or segment is.

8.3.5 Galaxy tab

The Galaxy module is able to create very complex and interesting modulation signals by using the interaction of three LFOs.

The three Galaxy LFOs are named LFO A, LFO B and LFO Phi. The output of LFO A can be thought of as a point moving on the A axis of an A/B plane. Likewise, the LFO B output can be thought of as a point moving on the B axis in the same plane. When we combine these two points we can construct a point floating through the plane, which has its A coordinate described by LFO A and its B coordinate described by LFO B.



The Galaxy tab

The Galaxy [Output X] is the projection of this point on the X axis of an X/Y plane. [Output Y] is the projection of this point on the Y axis of the X/Y plane. If the [phi] knob is set to zero, A/B and X/Y are identical. By changing phi, we can rotate the A/B plane with respect to the X/Y plane. However, when phi is static (not modulated), the outputs of the Galaxy is still quite simple waveforms.

Using LFO Phi, we can automate the phi parameter, which can give interesting and complex modulation signals, especially when all LFOs have an individual frequency.

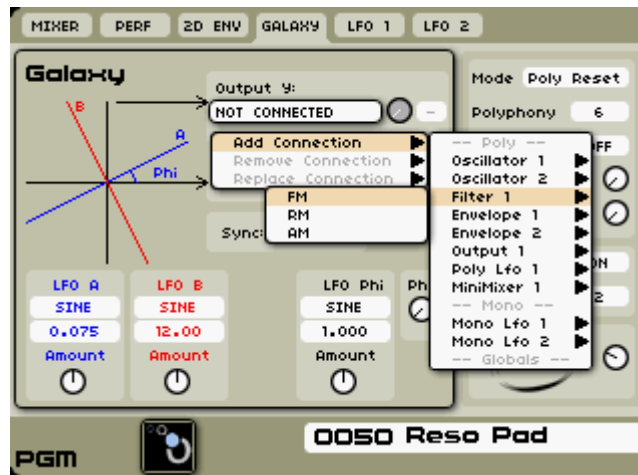
The Galaxy module has the following global parameters

- [Sync]: This selection box allows you to sync the frequency of the Galaxy LFOs to the internal or external clock.
- [Phi]: This knob allows you to manually set the angle between the A/B and X/Y plane.

All three Galaxy LFOs have the following identical parameters:

- The upper selection box (directly under the LFOs name) selects the waveforms of the respective LFO. The galaxy LFOs offer four waveforms: sawtooth (saw), square, sine and triangle (tri).
- The middle selection box sets the frequency of the corresponding LFO.
- The lower [Amount] knob sets the amplitude of the corresponding LFO.
- Output connections
- [Output Y]: The Y projection modulation output.
- [Output X]: The X projection modulation output.

► To choose a modulation destination for the [Output Y] and [Output X] modulation slots, select the desired connection box thank to the jog dial and the [▲/▼] buttons.



Galaxy's modulation output connections

- ▶ Set the waveforms and the frequencies of the respective LFOs using the [▲/▼] buttons and to the jog dial.



Set the waveforms and the frequencies of the respective LFOs

- ▶ Set the initial position of the Phi angle using the [▲/▼] buttons and to the jog dial.



Set the initial position of the Phi angle

8.3.6 Mono LFO tabs

Origin offers two “program” (mono) LFOs, that can be used to modulate many parameters in a program. On top of that, the LFO itself can be modulated, for example by the modulation wheel or the joystick.



The Program LFO interface

Both the [LFO 1] and [LFO 2] tab offer the same controls, so we'll describe only [LFO 1] here:

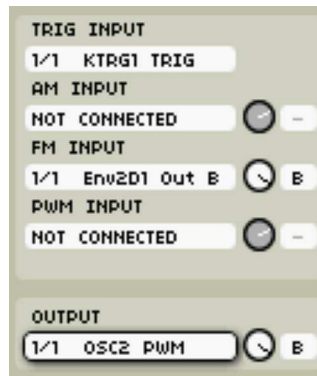
- **[Freq]:** This knob sets the frequency (or rate) of the LFO. When the sync selection box is switched to [ON] the frequency is synced to the internal or external clock
- **[Width]:** This knob changes the width (or symmetry) of the [Square] and [Tri] waveforms. When another waveform is selected this knob has no effect.
- **[Delay]:** This knob determines the delay time between a trigger at the [Trig input] (see below) and the beginning of the LFO “action”. (This does not restart the LFO phase)
- **[Fade in]:** This knob sets the transition time between the end of the delay and the point where the LFO reaches its normal amplitude. When this knob is set to zero, the LFO directly applies full modulation when delay time is over. The fade in can be used to introduce a transition period between null and the defined level.
- **[Sync]:** This selection box allows you to sync the LFO to the internal or external clock. When sync is on, turning the [Freq] knob chooses only frequencies that are integer multiples or divisions of the master tempo. When sync is set to off, the [Freq] knob has its own (logarithmic) scale.
- **[Shape]:** This selection box allows you to select the shape (or waveform) of the LFO. Origin's LFOs offer 5 waveforms; sine, triangle (tri), sawtooth (saw), square and random.



The Program LFO settings

- ▶ Set the waveforms and the frequencies of the Program LFO using the [▲/▼] buttons or the jog dial.
- ▶ Set the input connections:
 - **[Trig input]:** This input allows you to trigger the delay period of the LFO. When a trigger signal is received here, the LFO will start, beginning with an possible delay or fade-in period.

- **[AM input]:** This input modulates the amplitude of the LFO. You can for example connect it to the mod wheel, so the LFO will have no effect when the mod wheel is down, and full effect when the mod wheel is up.
 - **[FM input]:** This input modulates the frequency of the LFO. You can for example connect it to a Galaxy output to create very complex modulation signals.
 - **[PWM input]:** This input modulates the pulse width (or symmetry) of the LFO. This input is only active when the square or triangle waveform is selected.
- Set the output connections:
- **[Output]:** This is the output of the LFO, you can connect it to the modules you want to be modulated by the LFO.



The Program LFOs connections

8.3.7 Common section

The common area is located on the right side of the display, and contains the same information regardless of which tab is selected within the Program page. Below is a listing and general description of its parameters and value ranges.

- To go on the common area interface, navigate to the right using the arrows or the jog dial.



The Global settings of the program

8.3.7.1 Mode (Performance mode)

This selection box sets the play mode used for the current program. Each mode responds in its own way to performance input:

- **[Poly Circ.]** (Polyphonic circular) This mode selects a “new” voice in the polyphony range every time a note is played, even when the same key is played successively. In certain circumstances this has the effect of allowing decaying notes to complete their envelope cycle, with newly struck notes starting from the initial envelope point.

- **[Poly Reset]** (Polyphonic reset) This mode takes the first available voice that is not being held open by a NOTE ON event or the sustain pedal. This means that a note in mid-release can be “opened” again by a new note. Poly circular and poly reset have their own impact on the sound of the program, depending on the performer’s approach and the amount of polyphony (as it affects voice stealing).
- **[Mono Low]:** Mono mode with priority to the lowest note. This means that if two notes are presented at the same time it is the lowest note that is played.
- **[Mono High]:** Mono mode with priority to the higher note. This means that if two notes are presented at the same time it is the higher note that is played.
- **[Mono Last]:** Mono mode with priority to the last note. This means that if two notes are presented at the same time it is the last note that is played.

***NOTE:** The field underneath [Mode] changes context from “Polyphony” to “Legato” depending on whether a polyphonic or monophonic mode is selected.*

8.3.7.2 Common parameters

- **[Legato/Polyphony]:** When a poly mode is selected (see above), this selection box is named polyphony and sets the maximum amount of voices that can play simultaneously. When a mono mode is selected, this selection box is named legato and toggles legato mode on or off. When legato is on, the [kbd] (keyboard) module sends no trigger when a new notes is played while another is held. If legato is off, the [kbd] module always sends a trigger when a new note is played.
- **[Porta/Gliss]:** This selection box turns the portamento/glissando On or Off. These features are emulated from the Yamaha CS-80 analog synthesizer. If the feature is on, each newly struck voice glides from its previous pitch to its new pitch in the time specified by [Port. Time]. If the feature is set to glissando, then the glide from note to note will be on a by-semitone basis. Portamento creates a smooth, continuous transition between notes.
- **[Port. Time]:** This knob sets the portamento/glissando time (see above). This is the duration of the slide from the starting note to the ending note. The speed of the slide will depend on the size of the interval between the starting note and the ending note.
- **[Voice Detune]:** This knob sets the range of detune of each voice. This parameter is very interesting when it’s used with a polyphonic mode. It sets a random detune setting for each note.
- **[Pitch Wheel]:** This selection box determines if the current program responds to pitch bend messages. The pitch wheel value will continue to be available in the “Pitch Bend” modulation signal.
- **[Bend Range]:** This selection box sets the range of the pitch bend wheel, in semitones. For example, “2” means that the pitch bend range is +/- 2 semitones.
- **[TAE[®]]:** This knob sets the amount for the TAE[®] circuitry applied to the oscillators and filter modules. This gives your sound a more realistic “analog” feel.

8.4 Edit page

The [Edit] page is the nerve center of the Origin Program preset. From here, you assemble oscillators, filters, envelopes and other processors and modifiers along with all of the related routing in order to create the core of your sound.

Since the number of combinations and permutations is nearly limitless, this section will focus on the “primitives”, i.e. the basic functions and controls that are available within the Edit page. Specific descriptions of the modules will be covered in chapter 9 of this manual.

Here, in the upper menu bar, as in all other Origin pages, rounded buttons on the left are used for tab selection, while rectangular buttons on the right are used as function buttons/switches.

Understanding how each of these functions operates within the context of each view is important to getting the most out of programming presets for the Origin directly through the front panel controls.

8.4.1 Rack View

The [Rack] View is the default view when you open the [Edit] page. It should be familiar to those of you that have ever seen an original analog modular system or a virtualized rack in any of a broad range of desktop audio applications. There are three rows of eight module slots, making a total of 24 positions where modules can be instantiated. However, it should be noted that you are limited to population of 20 modules per program.



The [Edit] page: the [Rack] view

As modules are added and deleted in the program, the view automatically re-positions certain modules in the virtual rack. This includes re-grouping the analog oscillators, filters, VCAs, envelopes and LFOs for clarity within the view. All other modules are appended to the next available (empty) slot within the view. When you add a module to an “open” slot in the [rack] view, it either “shuffles” into the correct position or it “snaps” to the first available open slot in the [rack] view.

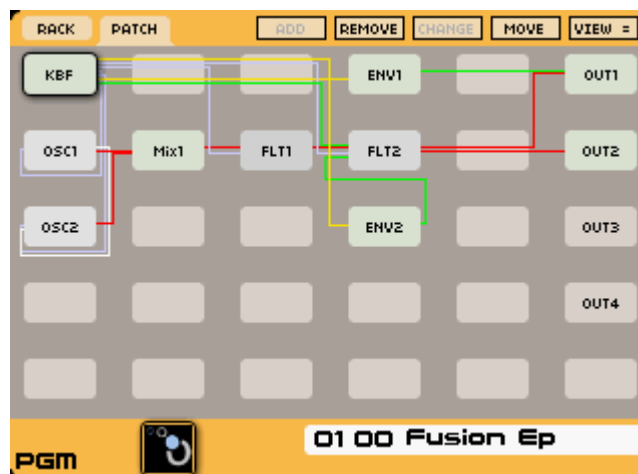
The virtual analog modules that are based on the classic synthesizer emulations of ARTURIA's world-class plug-ins (Minimoog V, CS-80 V, ARP 2600 V, Jupiter-8V and Prophet-V/V5) are labeled and have the general look and feel of the classic synths they emulate. This helps not only with the organization of the preset, but the visible rack controls also provide an indication of the modules configuration. All rack view parameters visually track the movement of the hardware controllers that relate to them.

This can be very helpful in providing a quick snapshot view of a program's relative settings for rapid selection and detailed editing of various modules. Aside from using the [rack] view to understand the general organization of your program, you can also use it as a means to view the Live knob assignments to some of the main synthesizer controls that are displayed on a module.

When a Live knob is assigned to a virtual control that is visible in the [rack] view, you can see the targeted virtual control take on the color of the assigned Live knob.

8.4.2 Patch View

The [patch] tab, accessible with the second button in the upper left corner of the LCD screen allows you to switch to the [patch] view. Switching between views has no effect on the sound or functioning of your patch, it is just another way to display the current preset.



The [Edit] page: the [Patch] view

The [patch] view differs from the [rack] view in the following points:

The [patch] view shows all the connections between the modules. Each type of connection has its own color:

- Audio connections are *red*,
- Modulation connections (except keyboard follow connections) are *green*,
- Trigger connections are *yellow*,
- Sync connections are *white*,
- Keyboard follow connections are modulation connections, but since they are quite common, they have their own color: *light blue*.

It has more module positions available within the display (30, 4 of which are normalized to VCA slots, regardless of whether the VCA is used).

Contrary to the [rack] view, you can place the modules anywhere on the grid. This allows you to arrange the modules so to have a more convenient visualization of the control and audio routing. As such, there are additional controls in the patch view that are not available in the rack view, the [move] and [view] controls, which will be described below.

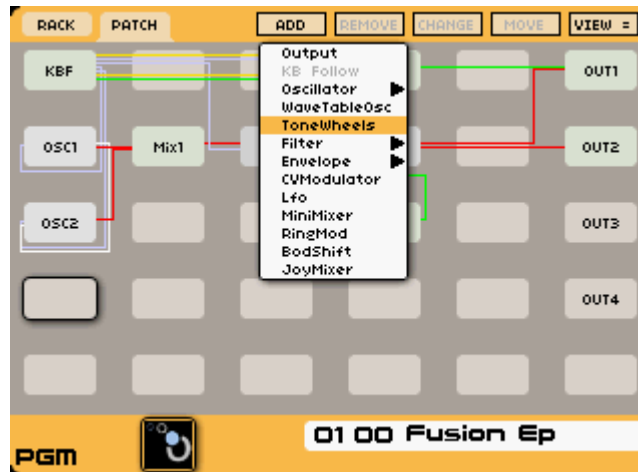
In the [patch] view, the modules have no visible controls; you have to open the module to see its state.

8.4.3 Editing Functions

The following section details the various functions also available within both views, which are positioned along the row of buttons at the top of the LCD screen.

8.4.3.1 Add

This button allows you to instantiate a new module within the program. When pressing it, a drop-down menu appears, allowing you to choose the module to add. Certain modules can be selected many times, while others (such as the Bode frequency shifter) can only be added once.



Add a module

For example, note that when you go to any preset, or if you create a new preset, that the [Keybd] module is not eligible to select from the Add list - it is “grayed out” in the drop down menu. This is because only one instance of the keyboard follower module can be instantiated, and it is the first module that is configured by default for any program. This is an example of what happens when you have reached the maximum number of instances for an individual module that a program can support.

Below is a summary listing of the modules available within the [Add] menu in the 1.2.5 firmware:

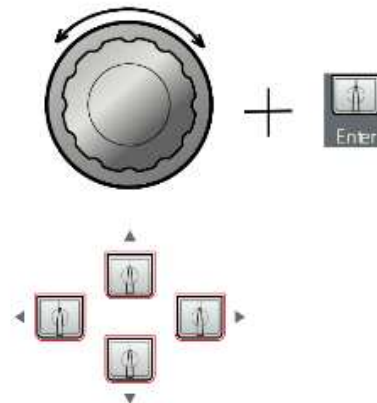
- 1 **KB Follow** module (keyboard follower)
- The **Oscillators** (up to 9 oscillator modules simultaneously):
 - Origin
 - ARP 2600
 - CS-80
 - Minimoog
 - Jupiter-8
- **WaveTableOsc** (up to 4 wavetable oscillator modules simultaneously)
- **ToneWheel** (up to 2 simultaneously)
- The **Filters** (up to 4 Filters modules simultaneously):
 - Origin
 - ARP 2600
 - CS-80
 - Minimoog

- Jupiter-8
- The **Envelopes** (up to 8 envelope modules simultaneously):
 - Origin ADSR envelope
 - CS-80 IL AL A D R envelope
- The **VCAs** (up to 4 VCA modules simultaneously)
- The **LFOs** (up to 4 LFO modules simultaneously)
- The **MiniMixer** (up to 4 minimixer modules simultaneously)
- 1 RingMod
- 1 BodShift
- 1 JoyMixer
- 8 CV Modulators

8.4.3.2 Open/Edit/Close a module

In order to perform detailed editing on a specific module in a view, you can open a module in order to access all of the available parameters and routing capabilities.

► Simply navigate to the desired module using the front panel [▲/▼] or [◀/▶] buttons or jog dial and then either press [Enter] or the jog dial to bring up the full view of the selected module.



Open a [Filter] module

► In order to modify a parameter, you can use the standard set of Origin navigation/selection controls ([▲/▼] or [◀/▶]/Enter/Exit buttons or jog dial)

NOTE: If you are editing one of the oscillators, filters, Envelopes or LFO modules, you can use the “Analog Section” front panel controls to edit the corresponding module. This can save a great deal of time by allowing you to access the most important parameters for certain modules directly from their dedicated front panel controls. In [Program] mode, the levels of each VCA are accessible as well, in the “Mixer Section”.

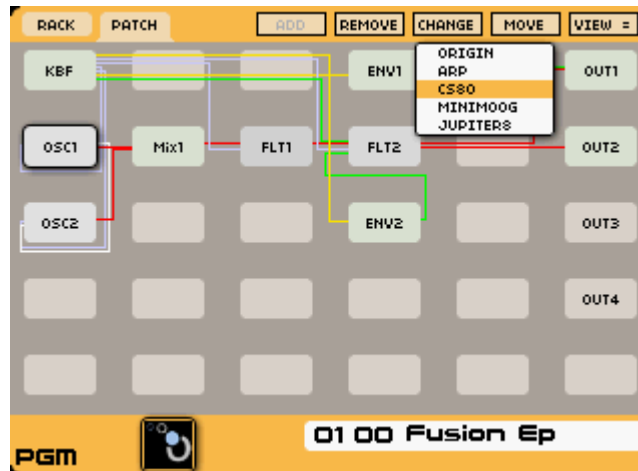
► First, you must ensure that the front panel controls have selected the module you wish to edit. Use the [Select] encoder to focus the front panel controls to the desired module.

► Once that is done, whether you are in the general [Rack] View or in the detailed editing view for the module, the “Analog” Section controls can be used to adjust the settings of the desired module.

However, note that care must be taken when using this mode of editing, as it is possible to have one module open for editing while the front panel controls are selected for another module, which can radically alter your sound before you discover the discrepancy (and could ruin an otherwise sublime editing session).

8.4.3.3 Change module

It is possible to exchange the virtual analog oscillators and filters, whether to adjust for routing/sound capabilities or to compensate for relative DSP/CPU consumption. There are also several types of envelopes.



Change an [Oscillator] module to a CS-80

When a module is selected/highlighted within the view, the [Change] button becomes active. When selected, the button transitions to a drop-down list that includes the following choices:

- Origin
- ARP (oscillators and filters only)
- CS-80
- Minimoog (oscillators and filters only)
- Jupiter-8 (oscillators and filters only)

To select an alternate choice, simply navigate to the desired selection using the jog dial or [▲/▼] or [◀/▶] buttons on the front panel and either press the jog dial or press the [Enter] button on the front panel to commit the change. Where similar routing and settings can be preserved, the “new” module adopts all of the settings and routing of the “old” module.

8.4.3.4 Move

The [Move] function is only available in the [patch] view. When pressing the [Move] button you can move the currently highlighted module to any position in the patch view. This can be useful when you have a complicated patch and want to get a clear overview of its structure.



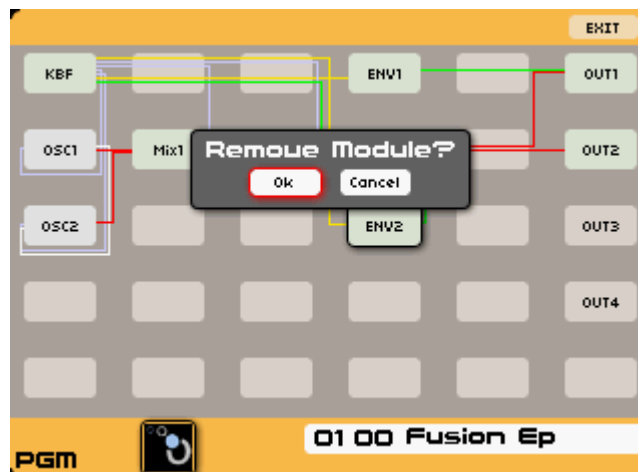
Moving a Filter module

- ▶ Highlight the module you wish to move using the jog dial or [▲/▼] or [◀/▶] buttons on the front panel of the Origin and press [Move].
- ▶ The [Move] button turns black and you can now move the highlighted module using the jog dial or [▲/▼] or [◀/▶] buttons.
- ▶ When you positioned the module to the desired location, press the [Move] button which will then return to its normal state.
- ▶ Note that moving modules has no effect in the [Rack] view, nor does it have any impact on the sound or functioning of your patch.

8.4.3.5 Remove

The second button along the top of the LCD panel allows you to delete a module from the view.

- ▶ Simply highlight the targeted module using the jog dial or [▲/▼] or [◀/▶] buttons on the front panel of the Origin, and press the [Remove] button.



Removing a module

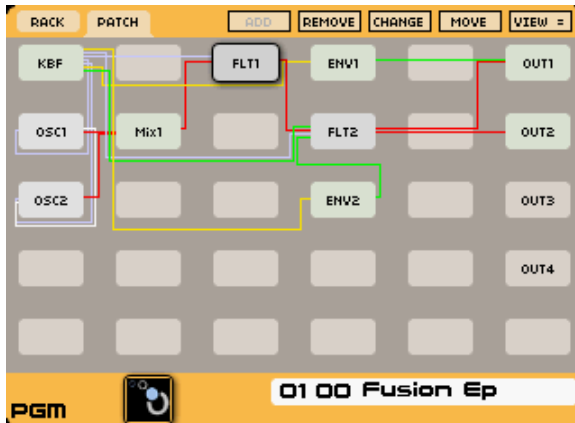
NOTE: If you have an empty RACK slot highlighted, the [Remove] button is inactive.

- ▶ A pop-up displaying “Remove Module?” appears. To confirm removing the module, select “OK” (selected by default) and press the jog dial or the [Enter] button.

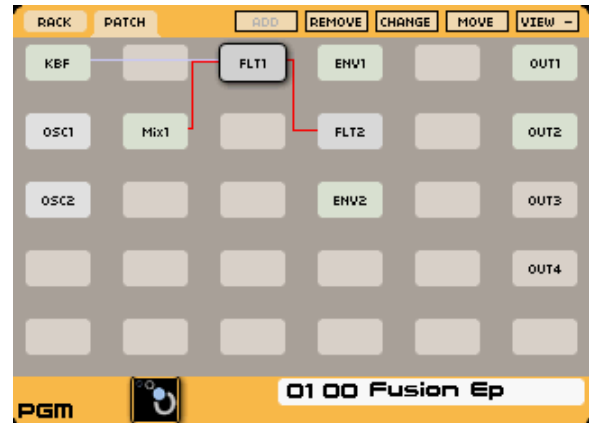
► Likewise, if you have changed your mind or have pressed the [remove] button by mistake, simply select the [Exit] button on the front panel, or you can navigate to the [Cancel] button on the confirmation pop-up and select it with the jog dial or [Enter] button.

8.4.3.6 View

The [View] function only available in the [Patch] view. If the default setting (View =) is selected, the [Patch] view graphically displays all the connections in the current program. If (View -) is selected, only the connections concerning the currently highlighted module are displayed.



All the connections are visible



Connections concerning the highlighted module

8.4.4 Save a Program preset

Once you have edited a Program preset to your satisfaction, and wish to save it for later recall, use the [Save] button on the front panel to commit the changes to the Origin's User memory. Note that the [Memory Protect] value in the [SYSTEM SETTINGS] page can have an effect on whether and in what memory location you can save your changes.

If this setting is OFF, then saving a change to a User preset will automatically commit to the same memory location. Regardless of the [Memory Protect] setting, you cannot save to Factory preset locations. You can save/load presets in locations 0400-0999 for Programs and [1100-1255] for Multis when [Memory Protect] is set to OFF.



The [Memory protect] setting

- ▶ To save a program, press the [Save] button, under the main screen. The [Save] screen appears showing the selected “Save” box.



The save button

- ▶ Press the [Save] button again to save the current Program.

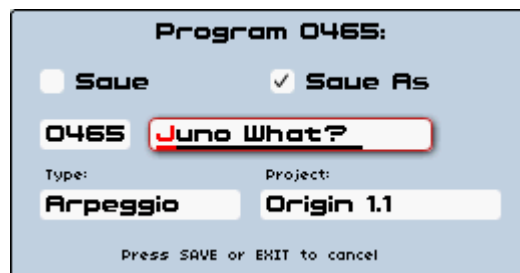


Save a program

8.4.4.1 Save as / name a new Program preset

Press the [Save] button, you are automatically directed to the [Save Program/Multi As] screen to commit your changes to a new User preset memory location. Any existing User Preset location cannot be overwritten.

- ▶ You can select the preset memory slot by activating the [Save as] box using the [◀/▶] cursors.
- ▶ Confirm this selection by pressing the [Enter] button.
- ▶ This directs you to the location number of the new preset. Turn the jog dial to select a new location number (or use the key pads). Then, press the [Enter] button to validate the number selection.



Saving a Program as

- ▶ Then, go to the change the name, press the different key pads to enter the characters you wish - letters or numbers- and press the [Enter] button to validate the name entry.
- ▶ Then select the [Type] of sound and [Project] name for later sorting within the Preset’s filters browser.
- ▶ If you select [NEW] then you can create a new project entry that can then be selected in the future and available as a search value while browsing for presets.
- ▶ Use the [Sound Select] key pad or jog dial or even [◀/▶] buttons to select the name of your new project, and commit the value by either pressing the jog dial or selecting the [Enter] button on the front panel, then continue to commit the new preset to the selected memory location.

NOTE: The [Designer] value for this preset is saved automatically from the "Owner Name" field of the [SYSTEMS SETTINGS] page.

8.5 Multi page

The [MULTI] page allows you to configure a group of up to four Origin [Program] presets for a variety of uses: for example live performance, using several programs in layering or split combinations, as well as MIDI sequencing and recording. Each program can have its own zone setting for transposition, key range, volume and MIDI channel.

Origin comes with 100 multi presets and has another 156 user locations to store your own multis. Like [Program] presets, you can export and import banks of multis using the Dump function. (see section 9.1 of this manual for more information)

You can get a sense of the power of Origin multis through experimenting with the Factory presets. Try using them with your host sequencer or recording application - or - try some as splits and layers on your keyboard or other MIDI controller in a live performance context.



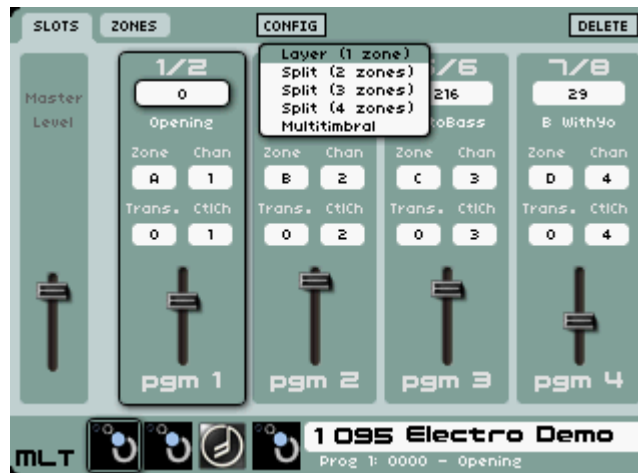
The Multi Page

- ▶ To quickly select a Factory [MULTI] preset, simply choose any preset location between 1000 and 1099 (from any page) using the [Sound Select] numeric keypad. Alternatively you can navigate to the [Preset] page for a more detailed search.
- ▶ There are two main tabs in the Multi page, the [SLOTS] tab and the [ZONES] tab. There is also a [CONFIG] context switch, described below:

8.5.1 The Config context menu

- ▶ The [CONFIG] context menu allows you to select from a common set of configurations, allowing quick set up of your Multi. Also, you can also start with one of the preset [CONFIG] selections and edit settings in the following screen to customize the Multi to your specific needs.

- Layer (1 zone): Zone A only, all active slots are assigned to the same Zone and MIDI channel
- Split (2 zones): This creates a low and high split at C3 and assigns each slot to a zone. Zones A and B active only, both assigned to MIDI channel 1.
- Split (3 zones): Zones A, B and C with the same MIDI channel, split at C2 and C4, with slots assigned to each zone.
- Split (4 zones): Splits at C2, C3, and C4 with each slot assigned to its own zone, all assigned to MIDI channel 1.
- Multitimbral: All four zones are fully active across their entire range, with each their own MIDI channel assignment (1-4)



The [Config] context menu

8.5.2 The Slots tab

The [Slots] tab of the Multi page is the default tab that appears when you first select a Multi. It contains all of the top-level information about each slot's assignments. Each field is described below:

- **[Program]:** [0000-0999]: The first field in the slot is where the preset is assigned. Highlight and select the field to be taken to a program selection screen. There you can navigate through the patches to make your choice, and once chosen you are taken back to the Multi [Slots] tab where you will see the preset number loaded in the slot.
- **[Zone]:** [None, A, B, C, D]: This is the keyboard zone assigned to the program. All notes coming through that keyboard zone (i.e. notes are between the zone's low note and high note) will be played by this program, as well as all controllers (Pitch wheel, pedals, aftertouch...) coming through that zone (i.e. are enabled on the zone with the corresponding on/off switch in the zone configuration page).

Note: When more than one program is assigned to the same zone, they are always played together, so they are in a layering configuration. To make a split, you can assign programs to different zones with non-overlapping ranges (low and high notes).

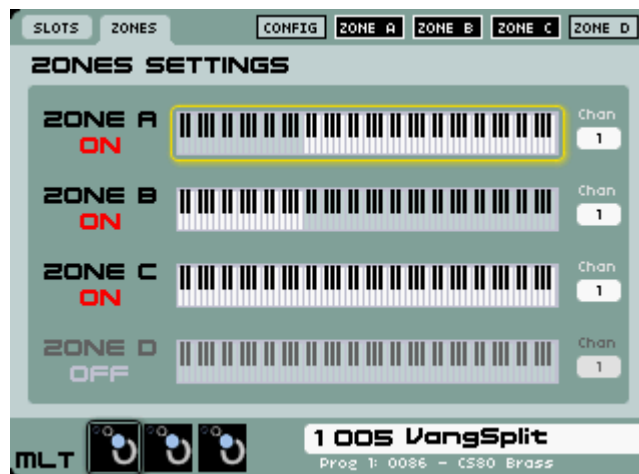
- **[MIDI Channel]:** [1-16]: This control is the MIDI channel of the current selected zone. It is the most important MIDI channel when in Multi mode. It is a shortcut for the Zone MIDI channel found in the [Zones] tab. So, for example if all programs are assigned to the same keyboard zone, this parameter is the same for all programs. This is the MIDI channel that is used to receive keyboard data: notes, but also pitch bend messages, modulation wheel, aftertouch messages, expression pedal, hold pedal, and ribbon controller (for Origin Keyboard only).

Note: There are 7 types of events (notes, aftertouch, pitch bend, mod wheel, exp pedal, hold pedal, ribbon) that are considered "zone" events, while other Control Changes are "program events".

Note also: For Origin Keyboard, all active zones are played, regardless of their MIDI channel (the keyboard is in a kind of omni mode). But when playing with notes or other "zone event", for each active zone, a MIDI message is generated at the MIDI and USB outputs, using the respective Zone MIDI Channel. However, if [Local OFF] is selected in the MIDI settings, the keyboard will only generate simple messages at the MIDI and USB outputs, ignoring the zones' settings and channels.

- **[Transpose]:** [-24 to +24]: Set the transpose for the assigned slot's program. It only transposes sound on the corresponding program. Therefore, you can have two slots assigned to the same zone, but each slot can have its own transpose value.
- **[Control MIDI Channel]:** [1-16]: This MIDI channel is specific to each program (unlike Zone Channel which is specific to each zone), and is used to receive CC (Control Change) messages for automation. It can also be used to receive Bank Select and Program Change messages, in order to change the current program in a given slot of the multi. Also, when turning Origin knobs and encoders in Multi mode, CCs are sent to the Control MIDI Channel of the focused program (if the "Send CC" setting is ON, and if a CC number is linked to the parameter being modified in the Live page).

8.5.3 The Zones Tab

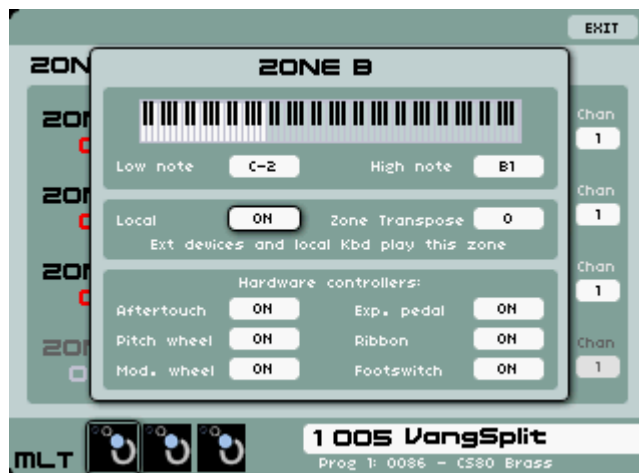


The [Zones] tab

- **[Zone] [ON/OFF]:** Each zone can be enabled/disabled from this tab. There is a context button along the top of the screen that allows each zone to be switched. When a zone is not active, the programs assigned to the zone won't react to external or internal events; on Origin Keyboard, the corresponding programs won't play when playing on the keyboard. On both Origin Keyboard and Origin Desktop, incoming MIDI data won't be forwarded to programs.
- **[Channels]:** This is the zone-level MIDI channel assignment for handling "zone events". As noted above, There are 7 types of events (notes, aftertouch, pitch bend, mod wheel, exp pedal, hold pedal, ribbon) that are considered "zone" events, while other Control Changes are "program events".

8.5.4 Zone Configuration

For each zone there is a configuration context screen that appears when the zone is selected. Each zone has parameters that are set to indicate which performance events (notes, controllers, pedals...) should reach the programs assigned to that zone.



The zones configuration page

- **Low note and High note:** these control the zone range. All notes between these two boundaries will be played by programs assigned to the zone. Notes outside the range are ignored.

Note: You can use a MIDI input device to set the key range by selecting the respective field and striking a key on your keyboard. This allows for quick zone setup on either the Origin Keyboard or an external MIDI device controlling the Origin Desktop unit.

- **Zone Transpose:** this is a general transposition for the keyboard zone. All programs assigned to the zone are transposed. This control is independent from the transpose control at the Multi slot level.
- **Local Mode (Origin Keyboard ONLY) [ON/OFF]:** If ON, this zone will react both to the Origin integrated Keyboard and to external MIDI. If OFF, the zone will react only to external MIDI. This can be useful in order to set up a multi where one zone is played using the Origin Keyboard, and another zone is played using another master keyboard.

Note: if the global MIDI settings are set to "LOCAL OFF" in the Home->Settings->MIDI page, then even if a zone is set to local "ON", it won't react to the Origin Keyboard. The global setting has higher priority.

- **Hardware controllers: [ON/OFF]:** these switches are used to set whether a zone (and all its assigned programs) should handle each controller.

Example: let's say you make a split with 2 zones, with a bass on the left hand and a lead on right hand. You have mono aftertouch on your keyboard and a hold pedal connected. You can use these switches so to have the aftertouch act only on the lead, and the hold pedal act only on the bass.

8.5.5 Creating a Multi preset

- ▶ There are two ways to create a new Multi preset, you can start with an empty multi or create a new multi from a program. Both methods are described in more detail below.

- ▶ To create a new empty multi preset, navigate to the [Preset] page and press the [MULTI] tab. The left section of the preset page now displays all multi presets on your Origin. To create your own, simply navigate to an “Empty” preset and load it. You can now start adding programs to this new multi in the program page (see below).
- ▶ To create a new multi from a Program preset, first load the Program preset you want to use for your new multi. When this program is loaded, navigate to the [Multi page]. On this page you can see the multi mixer with your current program loaded in the first slot. At this point, you haven’t created a multi yet.
- ▶ Navigate to the second slot of the multi mixer and press the [Enter] button or the data dial. A pop-up appears: “Create a new multi?”



Create a Multi preset

- ▶ When pressing [Ok], a new multi is created in the first available empty multi preset location. You are also directly redirected to a page similar to the preset page where you can select a program to add to your multi. The program you select is loaded into slot 2. You can now add more programs to your multi or tweak it using the functions of the multi mixer.

***NOTE:** If all user Multi presets are still written, you can overwrite an existing Multi preset. Otherwise, you have to dump your [MULTI] preset on your computer using the Origin software.*

8.5.6 Adding programs (presets 0000 - 0999) to a multi

- ▶ To add a program to your current Multi, go to the [MULTI] page. On the top of each of four slots in the multi mixer the name and number of the program used in that slot is displayed (shows ‘none’ if no program is loaded).
- ▶ Navigate to the slot of interest and press the selection menu displaying “None”. Alternatively you can press a selection menu of a slot which has a program loaded, this replaces the program.
- ▶ A screen appears that functions similar to the [PRGM] tab on the [Preset] page, here you can choose the program you want to load in the selected slot (see chapter 6.2 for more details on the preset page).



Select a new Program on a Multi preset

8.5.7 The different uses of the Multi

The [MULTI] page offers three possibilities to configure a group of up to four Origin [Program] presets for a variety of uses: layering, split combinations and MIDI sequencing and recording.

8.5.7.1 Layering

The Layering mode allows playing several Programs simultaneously. This is very useful for creating some very big and complex presets. For example you can put a Program having a very fast attack on the first slot and a second one adding a long sweep and several complex modulations.

This combination of presets provides a sound result which could be impossible to get on a single Program preset.

► To create a Multi preset using a layering between several Program presets, simply use the same [Zone] for each Mixer slot. In this way, all Programs play simultaneously. This can be done easily by choosing the “Layer” entry in the [Config] context menu.

8.5.7.2 Split

The Split mode allows playing several Programs on different parts of the keyboard. For example, you can put a bass Program preset on the 2 first octaves and a lead Program preset on the upper range of your keyboard. This is a very useful mode for live performance.

Creating a Multi preset using a split between 2 Program presets is very simple:

Press the [Config] context menu, and select the “Split (2 zones)” entry, then go into the [Zones] tab and adjust the split point of the zones if the default one does not match your needs.

- You can also assign manually each slot to different zones, and configure the zones range to your liking (for example from [C-2] to [B2] for the zone A, and from [C3] to [C8] for the zone B).
- Set the same MIDI channel for both mixer slots (for example set them to “1”).

8.5.7.3 MIDI multitimbral mode

The MIDI multitimbral mode allows playing several Programs on different MIDI channels. This mode is useful for creating arrangements using an external MIDI host sequencer.

► Assign different zones with different MIDI channels to each mixer slot: for example assign the first one to the zone A with channel “1”, the second one to the zone B with channel “2”, and so on. This can be done in a faster way by choosing the “Multi-timbral” entry in the [Config] context menu.

8.5.8 Volume and front panel mixer in Multi mode

The audio level for each Program preset within the Multi is represented in the Multi [MIXER] screen by the slider displayed at the bottom of each slot.

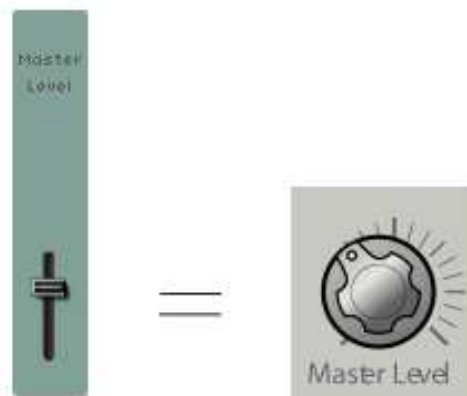
NOTE: The audio output signal of each Multi slot is directed automatically to its own Auxiliary outputs jacks. The audio output of the first slot goes to the Auxiliary outputs 1/ 2, the second slot goes to Auxiliary outputs 3/ 4, the third slot goes to Auxiliary outputs 5/6 and the fourth slot goes to Auxiliary outputs 7/8. This allows you to make the mix of the current programs more convenient using an external hardware mixer or directly inside a host audio sequencer.

- ▶ However, there is also a more direct method for setting the level of each Program within a Multi, and that is by directly changing the Volume knob in the [MIXER] section of the Origin front panel. As you would expect, each Volume knob corresponds to each Program slot in the Multi.
- ▶ Once you've set the volume levels to the desired balance, save the Multi and the values is recalled when you load the Multi preset.
- ▶ The [ON/OFF] buttons on Origin's front panel mixer can be used to toggle programs on or off. This setting is saved with the multi and recalled when you load it again.



The hardware Multi mixer

- ▶ The [Main Out] correlates with the Master Level knob on the front panel of the Origin. Simply set the desired overall level (the ratio/balance of audio levels for the Program presets within the Multi is preserved) and save the Multi preset. This volume level can be recalled when the Multi is reloaded.



The [Main Out] correlates with the Master Level knob

8.5.9 Editing Programs from the Multi page

The Multi mode allows you to navigate into program-level settings. However, with the added sophistication of the Multi mode comes a slightly different approach to accessing and editing those individual programs.

The [Edit] button in the [MIXER] section of the Origin front panel provides access to each individual Program, such as the step sequencer, JOYSTICK, the Advanced 2D Envelope, Galaxy module, and Program level LFOs, as well as FX and individual program parameters.

Likewise, when switching between slots in the Multi, the context of the active screen in the LCD display is preserved. For instance, if you are looking at the Galaxy settings for [PGM 1], and then select the [Edit] button for the [PGM 2] on the Origin front panel, the “focus” of the Origin front panel shifts to the settings that correspond to the second slot, and the Galaxy tab of the [PROGRAM] page for [PGM 2] are displayed in the LCD.

This can be helpful in comparing the same areas of presets across the Program locations of the Multi. It can also be helpful when switching between slots during a live performance when the [Live] page is activated.

8.5.10 Saving a Multi

Once you have created or edited your Multi, you can then save it to an available memory slot in the Origin for later recall.

▶ Press the [Save] button on the front panel and you are directed to a screen that prompts you to save the Multi, as well as its corresponding Programs and any Sequencer presets that may have been used for one of those Programs.



Save a Multi preset

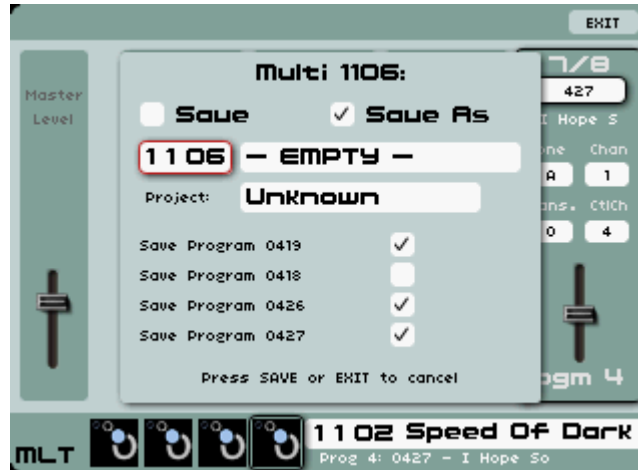
- ▶ If you have edited one (or several) programs inside a Multi Preset, you can save those programs as a new one exactly in the same way you should work on the Program mode.
- ▶ Press the [Save] button again to validate the Save function.

NOTE: If you used Factory Program presets, you can be prompted to save them to a User preset location. This allows you to later edit them freely within the context of the Multi. Likewise with the sequencer presets, in the case where a Factory preset is used, you are prompted to save the step sequencer pattern to a new memory location.

8.5.11 Multi Save As

You can change the location place or (and) the name of the current multi preset by using the [Save As] option.

- ▶ Select the [Save As] box using the [◀/▶] cursors.
- ▶ Confirm this selection by pressing the [Enter] or the jog dial buttons.



Select the [Save as] box and select a new location number

- ▶ This directs you to the location number of the new preset. Turn the jog dial to select a new location number (or use the key pads). Then, press the [Enter] button to validate the number selection.
- ▶ Then, go to the change the name, press the different key pads to enter the characters you wish - letters or numbers- and press the [Enter] button to validate the name entry.
- ▶ Select the [Project] box using the jog dial or [▲/▼] or [◀/▶] buttons. Choose a name for the project. If you select [NEW] then you can create a new project entry that can then be selected in the future and available as a search value while browsing for presets.



Choose a name for the project

- ▶ Press the [Save] button again to validate the save function.

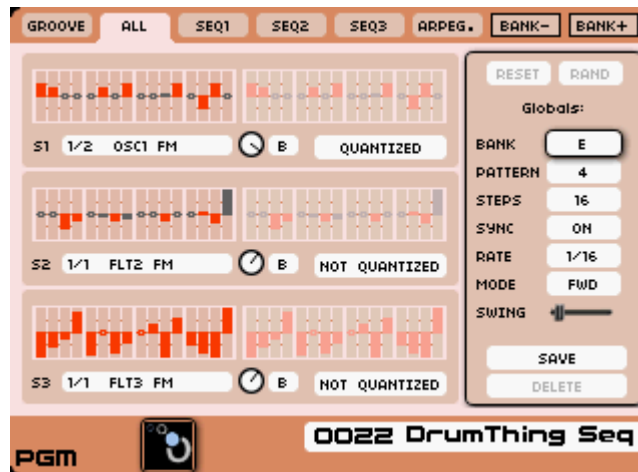
8.6 Sequencer page

The Sequencer [Seq] page gives access to 2 important program-level modules: the Step Sequencer and the Arpeggiator. The Step Sequencer is configured through the [Groove], [All], [Seq1], [Seq2] and [Seq3] tabs, while the Arpeggiator is configured in the [Arpeg.] tab.

8.6.1 The Step Sequencer

The step sequencer uses up to 32 steps. It allows the creation of several melodic lines (when one of the three available modulations is affecting the frequencies of the VCO), as well as creation of dynamic modulations of other parameters such as the cutoff frequency of a VCF, or on the square waveform width of a VCO.

The interface of the sequencer consists of three main parts:



The sequencer page

8.6.1.1 The sequencer's hardware real time controllers

All of the real-time controls concerning the sequencer are based on the hardware [SEQUENCER] section located in the bottom of the front Origin panel. These controllers allow you to set all the most important parameters of the step sequencer. Also note that some of these controls have additional function when the sequencer is in [GROOVE] mode, to aid real time play.



The hardware controllers of the sequencer

- The [Play/Stop] button toggles the sequencer “on” or “off”. When set to “on”, the sequencer starts running when a note is pressed, and stopped when the last note is released.

- The [Hold] button toggles hold “on” or “off”. When hold is “on”, the current playing sequence loops until the [Hold] button is pressed again. When the sequencer is not running, the [Hold] button acts much like changing the state of a sustain pedal.
- The [Frequency] encoder sets the speed of the sequencer if the Origin is set to “internal clock” mode. If the Origin is in external clock [MCLOCK] mode, the encoder has no effect on the step sequencer tempo.



The [Play/Stop], [Hold] buttons and the [Frequency] encoder

- The [Seq1...3 Act] buttons activate or deactivate sub-sequence 1...3.
- The [Edit > Seq1... Seq3, Pattern] button selects the corresponding sequence for editing or, when [Pattern] is selected, activates pattern selection mode.
- The [Assign] button opens the “assign” pop-up of the selected sub-sequence.



The [Seq1...3 Act], [Edit] and [Assign] buttons

- The [Trig] button behaves differently depending on whether the [LOCK] button is active (also known as “Groove mode”). When the sequencer is “locked” in Groove mode, the Trig button acts as a control that switches the “loop” function on and off. When the [LOCK] is deactivated, the Trig button sets the steps in a programming mode to show (and modify) whether each step sends a trigger as the cycle reaches that position. In this mode, if the light for a step is active, then it will send a trigger when that step plays as part of the sequence. To prevent the step from sending a trigger, simply press the button at that step position, and you will see the backlight dim and the position for that step in the LCD screen turn gray. This indicates that the step will not send a trigger when played.

NOTE: The [Trig] output of the sequencer is usually connected to an envelope (which is then connected to a filter cutoff or a VCA volume control, for example).

- The [Accent] button also serves dual purposes. When in Groove mode it is used as a multiplier for the range of steps that are active for a given “loop”. This means it will expand the number of steps that will loop when the Trig button is activated. When [LOCK] is deactivated, the Accent button is used to activate that editing mode for the sequence. It behaves very similarly to the [Trig] function. Once selected, simply activate the desired steps where the accent envelope is to be triggered for each step of the selected sub-sequence. The button for each step will indicate which steps will send the value, and a red dot will display on the LCD screen to indicate which step will send the accent.

NOTE: Connect the accent input to a filter cutoff frequency FM output to get the famous TB303’s accent effect.

- The [Slide] button also performs double-duty. When the sequencer is locked in “Groove mode”, the Slide button acts as a divider for the loop function. Each time it is pressed, the division reduces the number of sequence positions that are looped when the function is active. When unlocked, the [Slide] button performs its primary function, which is to select and modify which steps along the sequence pattern will “slide” from

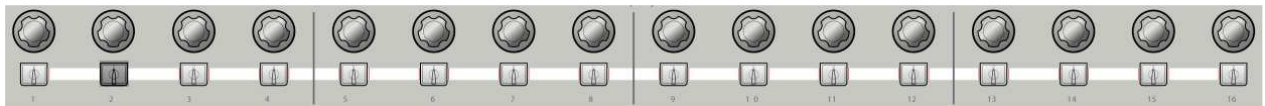
one position to the next. It gives an effect of portamento between the selected step and the following step, which is most obvious when assigned to pitch, but can also be assigned to other parameters to create other effects.

- The [Lock] button effectively switches the sequencer between “Groove” and edit modes. When active, it also prevents any encoder from changing the values of their respective step sequencer position. When deactivated, the sequencer is fully editable.



The [Trig], [Accent], [Slide] and [Lock] buttons

- The [1...16] encoders set the value of step 1...16 (or 17...32). They contain bi-directional values (positive or negative).
- The [1...16] buttons have two functions: in [Edit Seq1...3], they select step 1...16 (or 17...32). In [Pattern] selection mode, these buttons select a pattern preset 1...16.



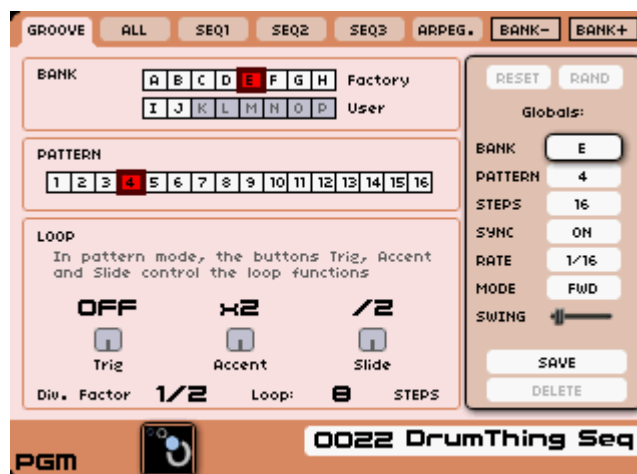
The step sequencer buttons and encoders

8.6.1.2 Edit a sequence

The editable parts of the sequencer are located on the [Sequencer] page and its sub tabs. These can be reached by pressing the [Seq] button under the LCD screen. The settings on the sequencer page allow you to edit several advanced parameters that cannot be accessed from the front panel.

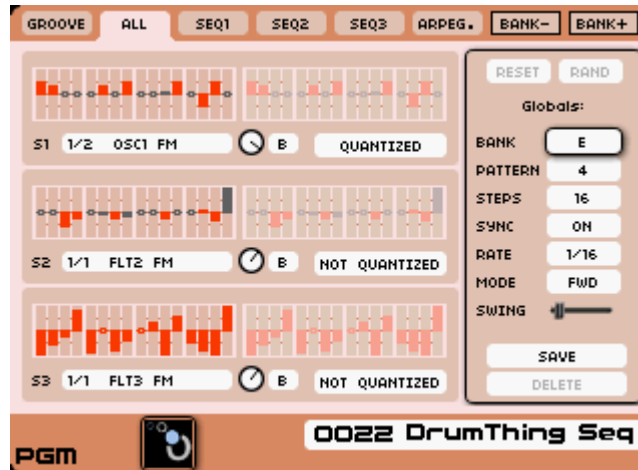
Five tabs are available for editing the sequencer. You can find them above the main screen:

- The [Groove] tab displays some information that is useful for live situations: the currently selected bank and pattern, as well as the status of the [Loop] features.



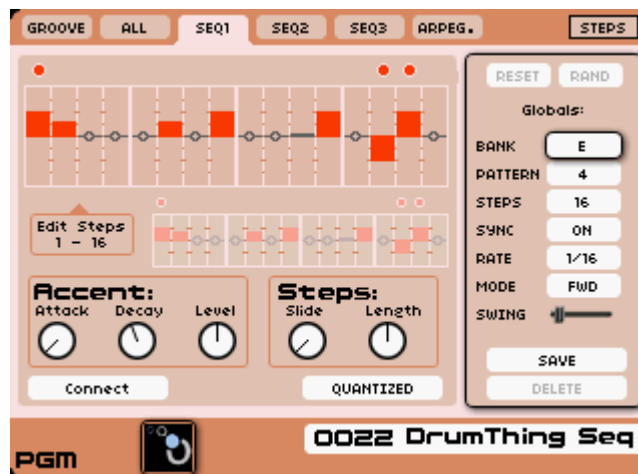
The [Groove] page

- The [All] tab gives you an overview of the sub [Seq] 1, 2 and 3 screens.



The [All] sequences page

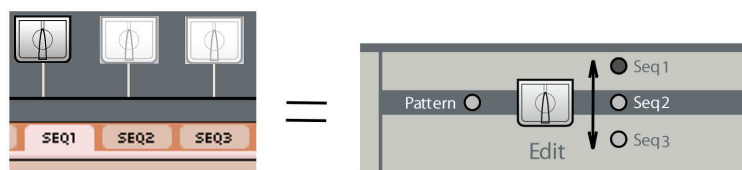
- The [Seq 1 ... 3] tabs select the corresponding sub-sequence 1...3 for editing. On the left part of the screen, you can see the parameters of the selected sub-sequence.



The [Seq 1] tab page

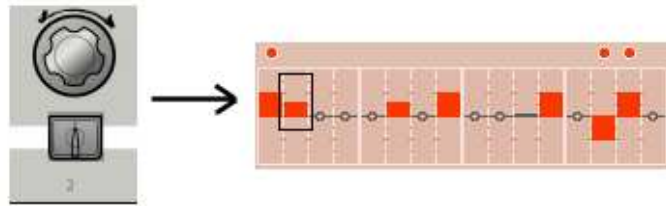
8.6.1.3 Edit a sub-sequence

The sub-sequence edition screens allow you to go deeply and precisely into the sequencer settings. To edit a particular sub-sequence, press the [Seq 1 > 3] tabs to select the corresponding sub-sequence 1...3. You can also press the sequencer [Edit] button several times to catch the desired sub-sequence 1...3.



Select a sequence

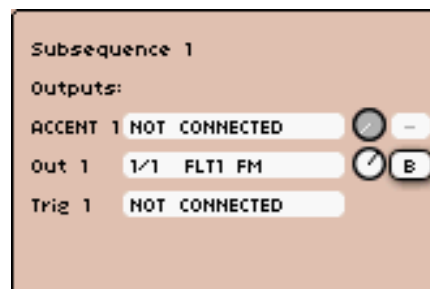
The center of the screen shows graphical bars corresponding to the steps 1...32 settings values for the three sub-sequences. They reflect the settings coming from the [1...16/17...32] encoders.



Setting the step 2 parameter

NOTE: The corresponding step value is displayed on a popup which appears on the Program title bar (on the bottom of the screen) when an encoder is touched.

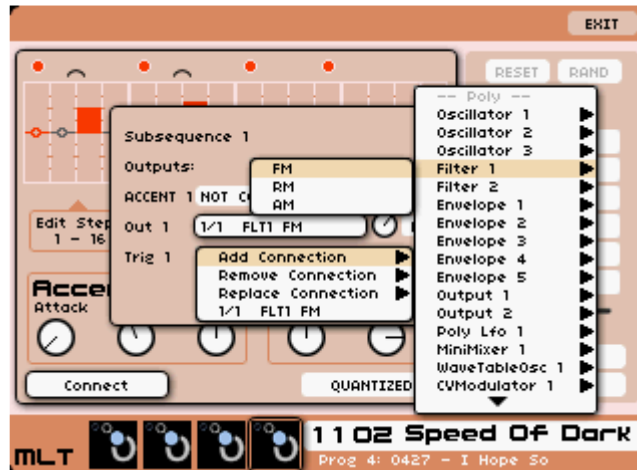
- The [Connect] button allows you to display the sequencer connections dialog box. To open it, either navigate to the [Connect] button and press [Enter] or the jog dial, or press the [Assign] switch in the sequencer section of the front panel.



The connections and amount settings

- You will find three types of output connections available for each sub-sequence:
 - **[Accent 1...3]:** This is the output of the accent envelope. This signal depends on the configuration of the accent for the current sub-sequence (see below). This envelope can be activated and deactivated separately for each step of the sub-sequence.
 - **[Out 1...3]:** This is the main sequencer modulation output. Connect this to pitch inputs in order to have melodic sequences, or to the volumes in order to use the sequencer encoders to set the “velocity” of a drum sound. You can also connect it to any other parameter to obtain complex modulation patterns. This output depends on the value of each step.
 - **[Trig 1...3]:** This is the trigger signal delivered by the current sub-sequence. This signal turns ON when the sequencer enters a step where the Trig is activated, then it turns OFF depending on the steps length. Connect it to the envelopes [Trig] input for standard, melodic or rhythmic operation.
- The “Amount” knobs allows setting the modulation levels of the sub-sequence outputs, while the [B] (for “bipolar”) or [U] (for “Unipolar”) selector allows you to set the polarity of the selected modulation.

NOTE: You can make several connections on the same sub-sequence output. However the total number of possible connections within a program is limited.



Add a connection for the Accent (the Filter 1 FM input)

The parameters found on the main sub-sequence edition page will allow you to adjust the behavior of the accent envelope and the slide, and other general properties of the sub-sequence:



The modulation settings of the sub-sequence

- The [Accent] settings bring an additional modulation to the selected step using a simple “Attack”/“Decay” (AR) envelope. The accent envelope can be connected to any modulation input, via the [Connect] dialog box. It has three parameters:
- The [Attack] knob sets the Attack time of the accent envelope.
- The [Decay] knob sets Decay time of the accent envelope.
- The [Level] knob sets the amplitude of the accent envelope.
- The [Slide] knob sets the portamento time between the selected step and the following step.
- The [Length] knob sets the length of the pulses for the gates (this setting affects all the steps of the selected sub-sequence).
- The [Quantized /Not Quantized] option allows you to activate the quantization of the steps by semi tones.

8.6.1.4 The [Globals] settings of the sequencer

The [Globals] sequencer section include:



The [Globals] edit section of the sequencer

- The memory location of the current pattern:
 - 8 factory Banks named from [A] to [H], and 8 user Banks named from [I] to [P]
 - Each bank contains 16 patterns [1...16]

- The factory sequence banks are organized the following way:
 - **Bank [A]:** Bass-line sequences
 - **Bank [B]:** TB sequences
 - **Banks [C], [D], [E], [F]:** miscellaneous sequences used by factory presets
 - **Banks [G], [H]:** drum sequences

- **[Steps]:** The number of steps within the current pattern from [1] to [32]
- **[Sync] (ON/OFF):** is this parameter is ON, the sequencer is synchronized to the Origin tempo (which may be either an internal tempo or an external clock). Otherwise, the sequencer can have a independent rate.
- **[Rate]:** Sets the subdivision of the steps length from the internal or MIDI tempo, if [Sync] is ON. If [Sync] is OFF, this parameter sets the sequencer speed in BPM.
- **[Mode]:** This parameter allows to select the playing mode of the sequence:
 - **[FWD]** The sequence plays forward
 - **[BWD]:** The sequence plays backward
 - **[FWD/ BWD]:** The sequence plays forward and backward
 - **[FWD/ BWD 2]:** The sequence plays forward and backward; the first and last steps are played twice, so the period of the sequence is twice the period of a [FWD] sequence.

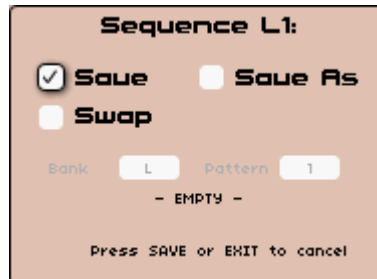
- The **[Swing]** setting shifts in time the even steps of the sequence (steps 2, 4, 6, 8, etc). This parameter is very useful to add “groove” to a sequence for house music, for example.

8.6.1.5 Save and Save as a sequence

256 pattern memories are available on the Origin sequencer. They are divided in 128 Factory patterns and 128 User patterns.

They are placed on sixteen banks (from “A” to “H” for the Factories banks and from “I” to “P” for the User’s banks), composed of sixteen patterns each.

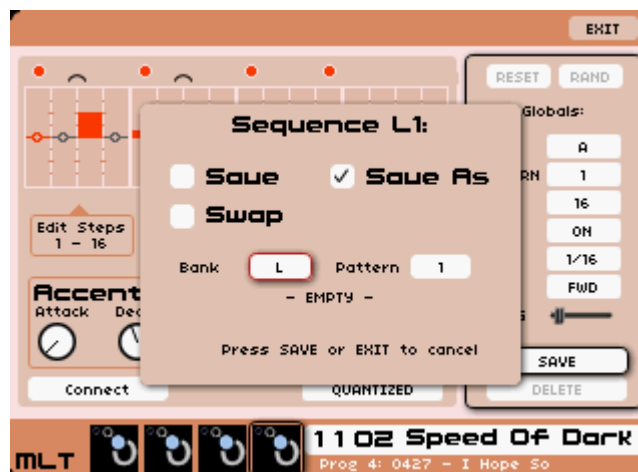
- ▶ To save the current edited pattern, select the [Save] button, on the bottom of the [Global] section, using the jog dial or using the [▲/▼] buttons. Then press on the jog dial or on the [Enter] button to open the [Save] box.
- ▶ The [Save] option allows to save directly the current pattern on its own memory.



The [Save] option



WARNING! This option is not enabled for the Factory patterns.



The [Save as] option

- ▶ The [Save as] option allows to save the current pattern on another memory space. By default, the Bank used for the last pattern save is selected.
- ▶ Choose a new bank letter using the jog dial, and press the jog dial again or the [Enter] button to validate the choice. Then choose a memory number from [1 to 16] using the jog dial, and press the jog dial again or the [Enter] button to validate the choice.



WARNING! You have to save your current Program to validate its sequence link with the current pattern.

8.6.1.6 The Swap option

The [Swap] option allows you to exchange two sequences together to reorganize your bank of sequences.

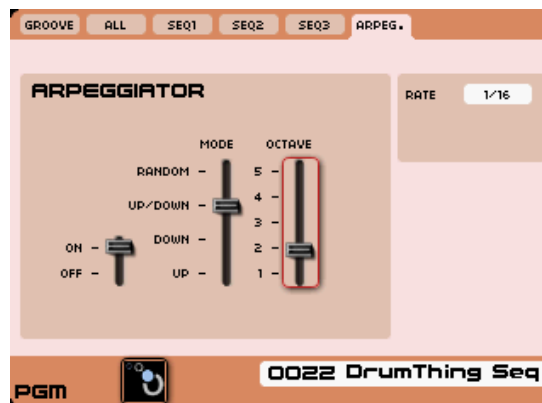
8.6.1.7 Delete a sequence pattern

You can erase the current sequence pattern. This option will re-initialize all the saved settings of the selected pattern:

- ▶ Select the [Delete] button, on the bottom of the [Global] section, using the jog dial or using the [◀/▶] buttons. This action opens the [Delete] dialog box. Then press again on the jog dial or the [Enter] button to erase the pattern and close the [Delete] box.

8.6.2 The Arpeggiator

This page is accessible with the [ARPEG.] tab and shows the Arpeggiator settings. The Arpeggiator allows to turn played chords into an arpeggio made of the same notes of the chord, played in the same order.



The [Arpeggio] page

- The [ON/OFF] switch allows to turn ON and OFF the Arpeggiator.
- The [Mode] selection controls play order of notes within the arpeggio:
 - [UP] plays the arpeggio from lowest to highest
 - [DOWN] plays the arpeggio from highest to lowest
 - [UP/DOWN] plays the arpeggio up and down
 - [RANDOM] plays the arpeggio randomly
- The [Range] selector allows choosing the range of 1...5 octaves for the Arpeggiator:
 - [1] plays the sequence in the octave where the original notes are held
 - [2] transposes the arpeggio across two octaves
 - [3] transposes the arpeggio across three octaves
 - [4] transposes the arpeggio across four octaves
 - [5] transpose the arpeggio across five octaves

NOTE: *The Arpeggiator settings are saved when you save your current Program.*

8.7 Effects page

8.7.1 Overview

The Effects [FX] section of Origin is as integral to its sound as any of its other features and capabilities. Aside from the exceptional quality of these effects, there's the added benefit of synchronizing time-based parameters to the same internal or MIDI clock as the general synthesizer.

You can have direct hands-on control over the effects using the knobs and buttons in the hardware [EFFECTS] section of the front panel as well as the ability to assign parameters to the front panel LIVE encoders (see section 9.8 of this manual for more information).

Beyond the additional dimension of control and “finish” that the effects offer to internal sounds, also remember that the physical audio inputs on the Origin allow you to use it as a standalone hardware effects unit (as well as route external sources through the synthesis modules). This not only establishes the Origin as a complete solution for the road warrior, but also makes it even more useful and interesting in a studio environment as well.



The [FX] page

Up to three effects can be employed per program, which are routed through a combination of serial, parallel, and even independent assignments from the four VCA outputs of the program to the physical outputs of the Origin. The routing scheme is controlled within the [PROGRAM] page.

Because the routing of the effect can have a profound impact on the end result of the sound, it would be worthwhile to try different routings with some of the presets by adjusting the virtual sends on the [MIXER] tab of the [PROGRAM] page. You can also gain insight into how a particular effect impacts the sound by turning it off or reducing the return level from the [EFFECTS] section of the front panel. From that you can gain a sense of the (sometimes subtle and other times dramatic) role that the effects can play in any given scenario.

8.7.2 FX page layout, navigation and general control

The [FX] page display is divided into two areas. The left side of the display shows details of the selected [FX] tab. The right side of the display shows summary information on the selected effect for FX 1-3. Use the top left buttons above the display to access specific tabs for FX 1-3, respectively. As on all other pages, the bottom of the display area shows the standard preset information, preset name and number - and in the case of a multi, an arrangement of thumbnail images for the occupied slots with the active program highlighted.

On each FX tab you can choose one of the following effects: Chorus, Delay, Reverb, Distortion, Dual Phaser, Bit Crusher, Rotary Speaker, Parametric EQ, Ring Modulator. You can use the Chorus, Delay, Reverb and Rotary Speaker only on one tab at a time. However, you can use the Distortion, Dual Phaser, Bit Crusher, Ring Modulator and Parametric EQ in as many FX instances as you like. If you plan to arrange your effects in a serial routing (i.e. FX 1 into FX 2, etc) then you should plan the ordering of your effects to take advantage of their cumulative effect.

For quickly setting return or dry/wet levels, as well as activating or bypassing effects, the easiest method is to use the [EFFECTS] front panel controls. Simply adjust the correct return knob to adjust the effects returns or press the ON/OFF button to deactivate the effect completely. When you select the front panel Edit button for an FX slot, the corresponding FX page and tab is immediately displayed, regardless of the page/tab was previously selected. When you press the [Edit] button while the corresponding tab is already open, a drop down menu appears that allows you to select the effect.

8.7.3 Effects modules in detail

Each effect and its related controls are described below.

8.7.3.1 BitCrusher

The BitCrusher effect uses a data reduction technique in order to modify the sound. Depending on the settings, it can both change the character of the original sound as well as introduce aliasing noise to the signal.



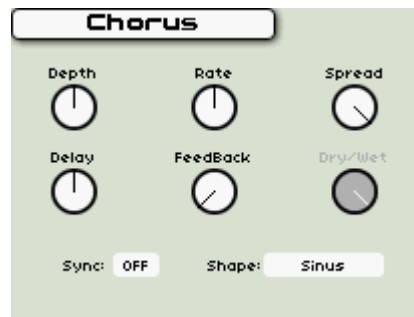
The BitCrusher effect

The resulting sound from this effect is decidedly “digital” in nature, which makes it somewhat unique in the range of effects available on the Origin. Here is a brief description of the deceptively simple controls that create its unique sound.

- **[Bit Depth]:** 1-16: Changes the word length of the in-coming signal. 16=no effect, 1=fully reduced waveform. Default is 8.
- **[Downsample]:** 0-10: Modifies the base sample rate of the signal by factors. This introduces aliasing and inharmonic artifacts as the value increases. Default is 2.
- **[Dry/Wet]:** This virtual knob controls the mix of the processed and original signal. This knob is only active if the program mixer is configured in a serial setting. In this case you can also control this parameter using the [Return] knobs in the [Effects] section on Origin's front panel. If the mixer is configured in parallel setting, the [dry/wet] knob is grayed out (always 100 % wet).

8.7.3.2 Chorus

The Chorus is a stereo effect that delays and continuously modulates the pitch of the original signal in small amounts with an internally controlled LFO. You can make the sound "wider" by modifying several parameters that increase the difference in the effect between the right and left channels. There are six virtual knob controls and two field selections (switches) that provide a substantial range of sonic control. Remember that you can also assign "Live" front panel encoders to any of these virtual knobs for real time control of the effect during performance.

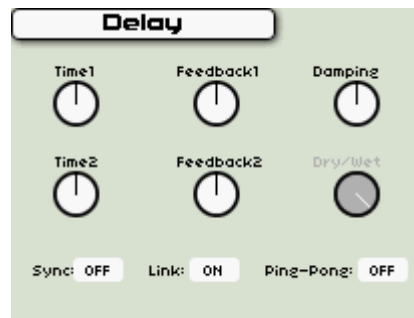


The chorus effect

- **[Depth]:** This parameter sets the amount of LFO modulation. The higher this parameter is, the more audible the effect will be.
- **[Rate]:** This parameter sets the base rate of LFO modulation for both channels.
- **[Spread]:** This parameter varies the delay between channels. Large value settings for this slightly increase the gap between Delay time in the right and left channel, creating a "wider" effect.
- **[Delay]:** This parameter sets the amount of time before the modulated signal is introduced back into the sound path.
- **[Feedback]:** This parameter takes a portion of the modulated signal and returns it to the beginning of the delay line, which creates a comb filtering or "flanged" effect. Higher settings increase the amount of returned signal, and therefore increase the amount of comb filtering.
- **[Dry/Wet]:** This virtual knob controls the mix of the processed and original signal. This knob is only active if the program mixer is configured in a serial setting. In this case you can also control this parameter using the [Return] knobs in the [Effects] section on Origin's front panel. If the mixer is configured in parallel setting, the [dry/wet] knob is grayed out (always 100 % wet).
- **[Sync]:** If set to ON the base rate of the Chorus LFO synchronizes to multiples of either the internal clock or MIDI clock (depending on the SYSTEM SETTINGS tab of the HOME page). If this setting is set to OFF, the base rate of the internal LFO can be set independently.
- **[Shape]:** This switch controls whether the internal LFO is based on a sine wave or a low frequency noise signal.

8.7.3.3 Delay

The Origin delay is a stereo effect that can create a wide variety of sound results. It features independent settings for the left and right channel, a damping circuit emulating vintage tape delays plus a ping-pong configuration. Remember that you can also assign “Live” front panel encoders to any of these virtual knobs for real time control of the effect during performance.



The delay

- **[Time1]:** Controls the amount of time between the original signal and the delay for the left channel.
- **[Feedback1]:** Controls the amount of the processed signal that's fed back into the left input for a greater number of “echo” cycles.
- **[Time2]:** Controls the amount of time between the original signal and the delay for the right channel.
- **[Feedback2]:** Controls the amount of the processed signal that's fed back into the right input for a greater number of “echo” cycles.
- **[Damping]:** Reduces the amount of high frequency content each time the signal is processed through a feedback loop, therefore creating a darker sound for continuing echoes in the processing chain.
- **[Dry/Wet]:** This virtual knob controls the mix of the processed and original signal. This knob is only active if the program mixer is configured in a serial setting. In this case you can also control this parameter using the [Return] knobs in the [Effects] section on Origin's front panel. If the mixer is configured in parallel setting, the [dry/wet] knob is grayed out (always 100 % wet).
- **[Sync]:** If set to ON the delay time of both channels synchronize to multiples of either the internal clock or MIDI clock (depending on the SYSTEM SETTINGS tab of the HOME page,). If this setting is set to OFF, the delay times can be set independently.
- **[Link]:** This setting, when ON causes Time1 and Time2 to track simultaneously when one or the other is changed. This also applies to Feedback1 and 2. If [Ping-Pong] (see below) is set to [on], this setting is grayed out and has no effect.
- **[Ping-Pong]:** When this setting is set to ON, the input of the delay is mixed to a mono signal and sent to the left delay line. The feedback path of the left delay line is fed into the right delay line and vice versa. This creates the effect of a sound “bouncing” between your speakers. In this mode, the delay times can be set independently and the feedback knobs are linked.

8.7.3.4 Distortion

This particular effect has the simplest set of controls of all FX within the Origin. Yet, it can have a profound impact on the sound. You can use this to add mild saturation to a pad - or, you can go full bore and turn a lead sound into a screaming monster.

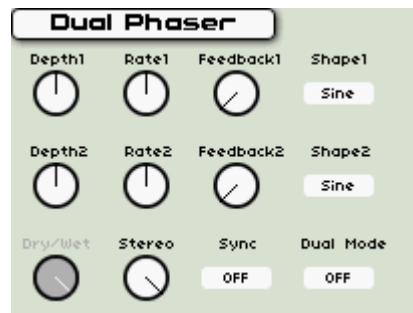


The Distortion effect

- **[Drive]:** This knob sets the amount of drive (distortion) of the effect. Higher values yield a more distorted sound.
- **[Type]:** [Tube, Clip I, Clip II]: These settings dictate the onset and amount of distortion, according to the amount of signal present at the input. The “Tube” setting is new as of firmware release 1.1 and creates a more subtle “saturated” effect, modeled after analog tube distortions. Clip II generates a more pronounced distortion effect than Clip 1. Default setting is Tube.

8.7.3.5 Dual Phaser

The Dual phaser module provides a classic phasing sound similar to the analog phasing pedal effects. You can use it for many different purposes, from wild effects to the classic phasing of the 70’s (Genesis, Pink Floyd, Yes, Weather Report...). Origin’s dual phaser includes two phasers that can operate in parallel or serial modes.



The dual phaser

- **[Rate 1 / 2]:** These knobs set the rate of the internal LFO for phaser 1 and 2.
- **[Depth 1 / 2]:** These knobs set the modulation depth for phaser 1 and 2
- **[Feedback 1/2]:** These knobs set the amount of feedback for phaser 1 and 2
- **[Dry / Wet]:** This virtual knob controls the mix of the processed and original signal. This knob is only active if the program mixer is configured in a serial setting. In this case you can also control this parameter using the [Return] knobs in the [Effects] section on Origin’s front panel. If the mixer is configured in parallel setting, the [dry/wet] knob is grayed out (always 100 % wet).
- **[Stereo]:** This knob sets the stereo width of the phaser effect

- **[Shape 1 / 2]:** This switch controls whether the internal LFO is based on a sine wave or a low frequency noise signal.
- **[Sync]:** If set to ON the delay time of both channels synchronizes to multiples of either the internal clock or MIDI clock (depending on the SYSTEM SETTINGS tab of the HOME page, see section 9.1 of the manual for more information). If this setting is set to OFF, the delay times can be set independently.
- **[Dual mode]:** If this switch is set to ON, the two phasers are configured in a serial connection (i.e. the output of phaser 1 is fed into phaser 2). When set to OFF, both phasers work in parallel.

8.7.3.6 Rotary Speaker

The Rotary Speaker effect has been carefully modeled after the most popular style of jazz organ speaker cabinets. It emulates two rotating speakers, one for treble and one for bass. The resulting sound is a complex interaction of tremolo, vibrato and chorus, with speed and mix controls to tailor your sound and shape your live performance.



The Rotary Speaker effect

Though it is most commonly associated with organs, the Rotary Speaker can also be used with a wide variety of other keyboard sounds as well.

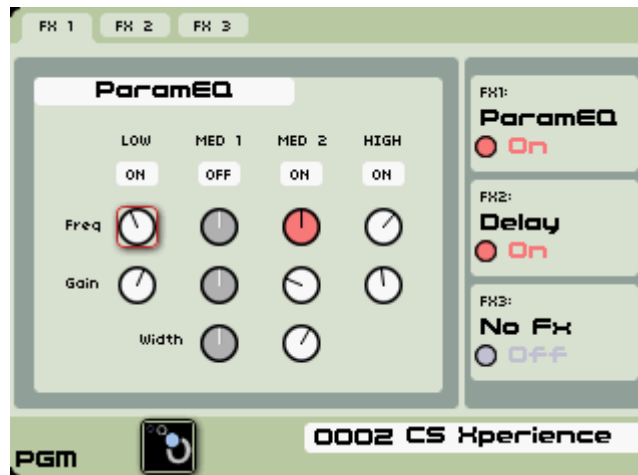
- **[Slow/Fast]:** Sets the rate of the speaker effect.

Note: You can assign this control to one of the live knobs on the front panel of the Origin to transition the speaker rotation speed as you perform. Simply turn the assigned knob and the “switch” immediately toggles from the Slow to Fast and back again.

- **[Mix]:** Sets the relative level of bass to treble speaker rotation.
- **[Dry / Wet]:** This virtual knob controls the mix of the processed and original signal. This knob is only active if the program mixer is configured in a serial setting. In this case you can also control this parameter using the [Return] knobs in the [Effects] section on Origin’s front panel. If the mixer is configured in parallel setting, the [dry/wet] knob is grayed out (always 100 % wet).

8.7.3.7 ParamEQ

This effect is based on a classic analog EQ design. It is considered “semi-parametric” because the high and low bands are shelf controls while the mid bands are fully parametric.



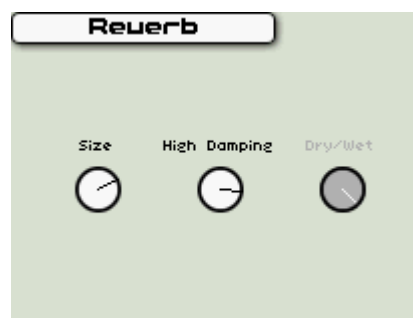
The ParamEQ effect

This EQ is not only useful for imparting a specific tone color on a source sound; it can also be used to re-balance an effect such as a delay or reverb send that is processed separately from the original. In order to modify the parameters for any section of the EQ, it first must be switched ON at the top of each section. Then the controls become active and can be navigated and modified. Each control is described below.

- [ON/OFF]: Activates each section of the EQ.
- [LOW]: The Frequency range is different from the other bands. It only sweeps from 20Hz to 1000Hz. Gain ranges from -20dB to 10dB.
- [MED 1]: Frequency [Freq] range is from 20Hz to 20KHz. Gain ranges from -20 to 10dB. Width ranges from 0.700 to 4.000.
- [MED 2]: Frequency [Freq] range is from 20Hz to 20KHz. Gain ranges from -20 to 10dB. Width ranges from 0.700 to 4.000.
- [HIGH]: Frequency [Freq] range is from 20Hz to 20KHz. Gain ranges from -20 to 10dB.

8.7.3.8 Reverb

This is a relatively straightforward stereo reverb effect with a decidedly “digital” flavor. With the three available controls you can add a measure of depth to a sound that cannot be obtained with other effects. Remember that you can also assign “Live” front panel encoders to any of these virtual knobs for real time control of the effect during performance.



The Reverb effect

- [Size]: Sets the overall number of “reflections” that appear across the stereo field. Higher settings make for a “larger” reverb effect.

- **[High Damping]:** This knob sets the amount of damping applied to the high frequencies in the reflections. Positioned at the left, this knob causes a more 'dark' reverb, when turned to the right the reverb becomes more 'bright'.
- **[Dry/Wet]:** This virtual knob controls the mix of the processed and original signal. This knob is only active if the program mixer is configured in a serial setting. In this case you can also control this parameter using the [Return] knobs in the [Effects] section on Origin's front panel. If the mixer is configured in parallel setting, the [dry/wet] knob is grayed out (always 100 % wet).

8.7.3.9 Ring Modulator

The RingMod effect emulates the ring modulator from the Yamaha CS-80. It uses a shaped sine wave modulator in a manner very similar to the original hardware.



The Ring Modulator effect

As a ring modulator on the effects section, this differs from Program preset-level ring modulation in that it affects all played notes at the same time. Also note that there is a basic envelope for controlling the shape of the effect. Below is a brief description of each control.

- **[Speed]:** 0.020Hz-6000Hz: Controls the initial frequency of the internal signal modulator.
- **[Attack]:** 6ms-5850ms: Controls the speed of the ring modulation frequency change. This is triggered when the first note is played (i.e. a program-level key trigger).
- **[Release]:** 6ms-5850ms: Controls the speed of the ring modulation frequency decline. This release begins as soon as the attack portion of the envelope is finished.
- **[Env Amount]:** 0Hz-3000Hz: Sets the frequency change that the AR envelope imposes on the modulator.
- **[Dry/Wet]:** This virtual knob controls the mix of the processed and original signal. This knob is only active if the program mixer is configured in a serial setting. In this case you can also control this parameter using the [Return] knobs in the [Effects] section on Origin's front panel. If the mixer is configured in parallel setting, the [dry/wet] knob is grayed out (always 100 % wet).

8.8 Live page

8.8.1 Overview

The Live page is the place where you can set macro-level edits for each area of the analog section, as well as configure the joystick and view the assignment of the rotary encoders placed on each side of the LCD panel. The “Live” tab within the Live page can be particularly important while jamming, but can also be a boon when manipulating a program during sequencing or recording.

The Live page also allows access to tabs that enable you to set the routing of MIDI controllers to various destinations within the Origin, as well as a tab for setting the joystick layout for each of three modes of operation.

When you look at the Live page display area, you can see a series of tabs along the top of the LCD screen. These tabs are selected by the corresponding button along the top of the LCD screen. These include:

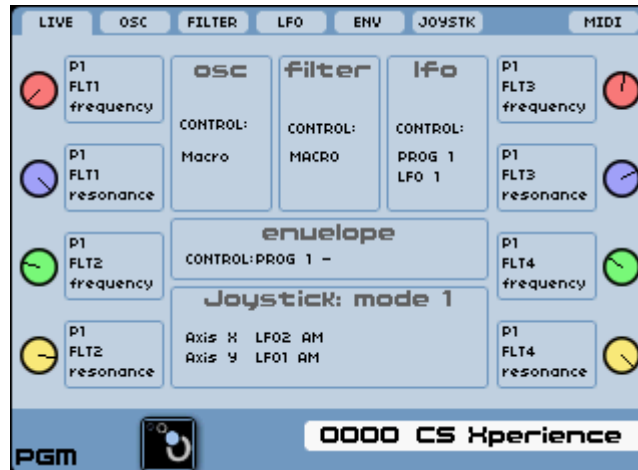
- The [Live] tab (which is the default for the Live page)
- The Macro tabs ([OSC], [FILTER], [LFO], and [ENV])
- The Advanced Joystick [JOYSTK] tab
- The MIDI Edit [MIDI] tab.



The [Live] page

8.8.2 The Live tab

The [Live] tab shows an overview of all the front panel assignments of the current program. By itself it has no functions and is only intended to give an overview.



The [Live] page details

This page is divided into three sections:

- The far left and right sections show the assigned parameter of the 8 individual live encoders.
- The top middle section of the screen shows which modules are assigned to “analog section” controllers.
- The lower middle section shows the parameters that are assigned to the currently selected joystick mode.

8.8.3 Macro Edit tabs

Origin’s macro functionality is a convenient way of controlling multiple parameters with one single controller. This can come in very handy when you want to quickly control a sub selection of oscillators without changing all oscillators. Each sub-section of the “analog section” of Origin’s front panel (Oscillator, Filter, LFO and Envelope) has a macro mode.

You can select the macro mode of a sub section, for example the [Oscillator] section, turn its [Select] encoder all the way to the right until the display shows [Macro oscillator] and press the [Select] encoder. When you now turn the [Frequency] or [Tune] knob, all oscillators affected by macro control tracks the movement of the knob. The following sections of this manual will describe how to configure the macro edit modes for each area of the analog section of the front panel of your Origin.

On each of the OSC, FILTER, LFO and ENV tabs, you will find the following elements:

- On the left, there are some knobs that show the current macro value of the most important settings for the chosen module type (OSC, FILTER, LFO or ENV). To change the macro values, just use the front panel controls from the OSCILLATOR, FILTER, LFO or ENVELOPE section, after having selected the “MACRO” module with the [Select] encoder.
- In the middle, a list of the instantiated modules of the chosen type (OSC, FILTER, LFO or ENV) allows you to choose on which modules the Macro knobs should act. To

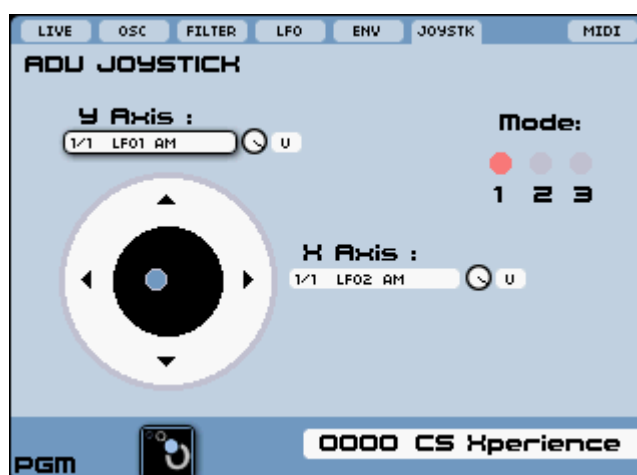
select/deselect a module, select the list and press [Enter] or the jog dial, then using the jog dial or the arrows, highlight the module you wish to select/deselect, and press [Enter] or the jog dial to select/deselect the module. Then leave the list by pressing [Exit].

- The **[Control Type]** parameter allows to choose how the various modules' parameters are affected by the Macro parameter. In "Absolute" mode, when turning a Macro knob, all affected parameters will take the exact value of that knob. For example, this is useful for pitches: in "Absolute" mode, moving the Macro Oscillator pitch knob will change the pitches of all selected oscillators together, so they will always be well tuned. In "Relative" mode, turning a Macro knob will increase or decrease the affected parameters according to their current value, without changing the difference of value between each module.

8.8.4 Advanced Joystick

8.8.4.1 Overview

The [Joystick] tab is the place where the destination of the X and Y axis of each joystick "mode" is selected and edited. You can jump to this tab directly by selecting the [Assign] button in the [JOYSTICK] area of the front panel of the Origin.

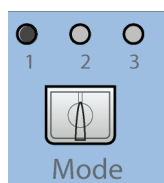


The [Advanced Joystick] page

8.8.4.2 Modes

Each [Mode] of the joystick is simply a distinct layer of two-dimensional control that can be directed to nearly any destination within the Program preset.

The hardware [Mode] button (located in the [Joystick] section) is used to select the [Modes 1/2/3] for the joystick that is the target of your edit.



The [Mode] button

Likewise, each axis can be directed to more than one destination, each with their own polarity ([B] for Bipolar or [U] for Unipolar) and scaling factor to “tune” the range of modulation to your creative needs.

From a performance perspective, this provides an astonishing variety of real time control options with the joystick alone.

8.8.4.3 Selecting and configuring control destinations

The process for selecting output for the joystick is similar to the method used to set input and output destinations within modules in the Edit page.

- ▶ Simply highlight the desired axis for a given “mode” and either press the jog dial or the [Enter] button on the front panel to open up a context-sensitive list of modulation control destinations.
- ▶ Select the desired destination and note that it is not listed in the axis field. Once you have selected the destination, you may wish to set the scaling factor in order to smooth the amount of effect that the movement of the joystick along its axis will have on the destination.
- ▶ Finally, set the polarity by highlighting the field to the right of the virtual scaling knob and select either [B] (for Bipolar) or [U] (for Unipolar).

NOTE: You can select more than one destination for any given axis in any particular joystick mode. Each destination can have its own scaling factor and “B/U” setting. This can make for some extremely varied, subtle, and complex levels of control - and puts the “advanced” the Advanced Joystick.

8.8.5 MIDI Mappings

The MIDI Mappings tab allows you to set the individual controllers that are routed to the various destinations within the Program preset.

Note: Home->Settings->MIDI->“Receive Control Change” must be set to “ON” for the program preset to respond to its assigned incoming MIDI data. The same applies for “Send Control Change”, if you wish to use the Origin front panel knobs as a MIDI control source. When the configuration for MIDI Mappings is correct, the Origin will respond to incoming controls but the knobs as they appear on the LCD screen will not change.



The [MIDI edit] page

Simply select the window that contains the list of MIDI controllers, and focus the selection on one of the MIDI entries. Once you enter, a context menu pops up that allows you to select which parameter will be controlled by a particular MIDI control.



Loading a MIDI mapping

Once you have saved your MIDI Mapping configuration, you can use the Save or Save As dialog to use it with other Program Presets.

Note: There is a bit of distinction in how incoming MIDI controller messages are handled in Program versus Multi mode. In Program mode, the "Program Mode Channel" on the Home->Settings->MIDI page dictates on which channel the control is sent and received. When in Multi mode, the Control MIDI Channel of the focused program controls which MIDI channel is sent when a MIDI mapped front panel control is changed. Moreover, all programs can receive incoming Controller Change messages at the same time, each on its own Control MIDI Channel.

One of the advantages of this type of setup is the ability to create independent MIDI Mappings for each Program that is slotted in a Multi. With independent MIDI Channel assignments, each Program preset receives and responds to MIDI control independently in real time. This is particularly useful when recording the front panel changes from the Origin into a host sequence for later editing and playback.

8.8.6 Encoders

8.8.6.1 Overview

The Origin includes 8 rotary encoders, located in each side of the main screen, which can be assigned to control a wide variety of parameters within a Program. This is a very powerful feature of the Origin that allows you to modify elements deep within the synthesis architecture for real time control.



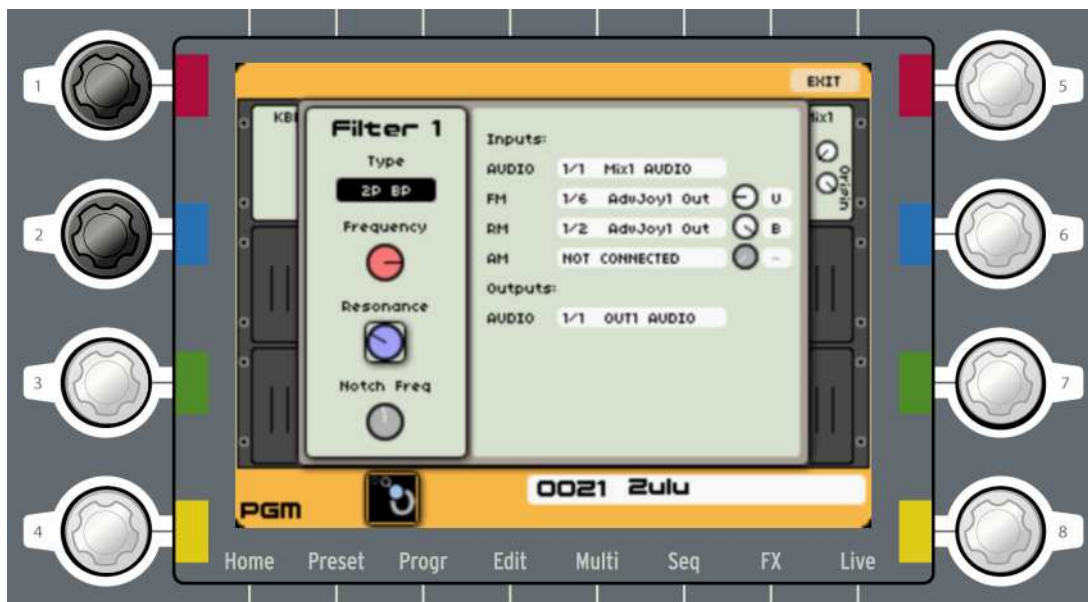
The screen encoders and their assignments

So, aside from all of the dedicated controls for the Analog Section, the step sequencer, the joystick as well as FX and audio output levels, the encoders allow you to access many other useful features from the front panel.

8.8.6.2 Assigning Live Encoders from the front panel

The primary method for assigning a Live Encoder to a parameter is to use the front panel controls directly. The Live Encoders operate much like the jog dial in that it is both a rotary control *and* a selection control (by pressing on the knob).

- ▶ To assign a Live Encoder, simply navigate to the [Progr], [Edit] or [FX] pages and choose the desired parameter, select the virtual knob or slider on the screen you wish to control.
- ▶ Then press down on the desired Live encoder until you feel a “click” underneath the knob and see the selected parameter changes color to reflect the encoder you have selected.



Assigning the left “red” and “blue” encoders to filter 1

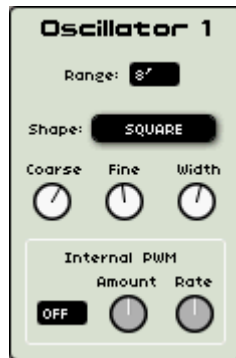
NOTE: The Live Encoder has a corresponding color within the display; red, blue, green and yellow - and when you select a particular destination it changes to the color that corresponds to the control that is assigned to it. Also note that when you return to the Live tab on the Live page, the new assignment is now reflected in the location of the display corresponding to that Live Encoder.

9 MODULES

In this chapter you will find a description of all the modules included in the modular structure, the [Edit] page (when an Origin program preset is selected).

All modules offer two different panels: a controllers panel and a connections panel.

The left panel includes all the dedicated real time parameters showing the main parameters of the module; for example, the oscillator's range, coarse and fine tune, pulse width and waveform selection parameters.



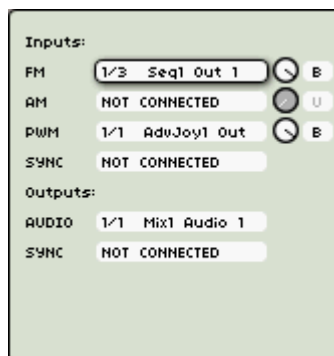
The left panel of an oscillator module

- ▶ As a general principle, to set the parameters of the modules, press the [◀/▶] /or [▲/▼] buttons to select the desired knob of dialog box and press the jog dial to validate the selection (highlighted in red).
- ▶ Then, turn the dial to set the parameter.

NOTE: If you wish to manually edit an oscillator, filter, VCA, LFO and envelope modules, you can use the hardware dedicated knobs or encoders situated included on the “analog control” panel, on the left of the LCD screen.

Each module has audio and modulation inputs and outputs.

The right panel includes all the dedicated [Inputs] and [Outputs] audio or modulation connections.



The right panel of an oscillator module

To select the modulation input menus:

- ▶ Go to the “connection” menu's box using the jog dial or the [▲/▼] or the [◀/▶] buttons.
- ▶ Press the jog dial or the [Enter] button to open the menu and select a new modulation input.

- ▶ Use the jog dial to cycle through the menus. When you have found the appropriate menu, you can either press the jog dial, the [Enter] button or the [Exit] button.

***NOTE:** You can make several connections on the same port. The total number of connections within one program is limited. Anyway, the limit should be high enough so to never disturb you.*

- ▶ To set the value of the modulation amount, use the jog dial to cycle through the values of the appropriate amount. Changing values takes immediate effect. Press again the jog dial, or the [Enter] button, to commit the value.

9.1 Modular synthesis modules

Here is a description of the synthesis modules available in the modular structure. You can find them by pressing the “Edit” page.

There are classified in two categories:

- ▶ The **sound modules**, including the oscillators, filters, mixers, ring modulators, and the output VCAs (Voltage Controlled Amplifiers);
- ▶ The **modulator modules**, including the LFOs, envelopes, CV modulators, etc.
- ▶ Some of these synthesis modules emulate filters and oscillators from some of the best synthesizers in history such as the Minimoog, ARP 2600, Jupiter-8 and the CS-80. By using them, you can create your own new hybrid synthesizer or emulate a classic synth in your own unique way.

9.1.1 The sound modules

9.1.1.1 Oscillators

The oscillator module is the starting point for the creation of a sound on a synthesizer. The VCO (for Voltage Controlled Oscillator) is the generic word used for the oscillator module in subtractive synthesis. The oscillator generates a sound signal that is characterized by its waveform. We can think of the oscillator’s waveforms as a violin string that always resonates.

You can set the frequency of the oscillator using its pitch parameters and the keyboard follow.

***NOTE:** You can use up to nine oscillators in a Program.*

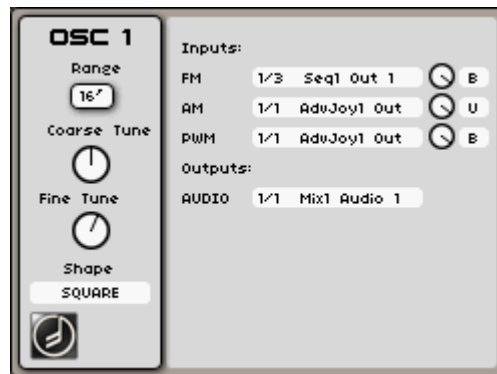
Minimoog oscillator

This oscillator is an emulated version of the oscillator module found on the original Minimoog synthesizer. The Minimoog was introduced in the 70’s and was among the first portable and playable synthesizers. Today, it is highly sought after because of its unique and fat sound. Some of MiniMoog famous players include: Herbie Hancock, Kraftwerk, Chick Corea, Rick Wakeman, Keith Emerson and Apollo 440. This oscillator has some very particular sound characteristics.

The original Minimoog oscillator doesn’t offer any pulse width setting for its square waveform. That’s why it offers three different sorts of rectangle waveforms: The [Square] which is not a perfect square (it doesn’t give a perfect hollow sound - its original pulse width isn’t at 50% but rather around 47%, what gives it a very particular sound), the [Wide rectangle] and [Narrow rectangle].

***NOTE:** Origin’s Minimoog oscillator offers a pulse width modulation input that was not available on the original Minimoog.*

The Minimoog oscillator also offers a very unique waveform: the “Asymmetric triangle” (called [saw tri]). This waveform produces a timbre between the triangle and the sawtooth, especially suitable for smooth lead sounds.



The Minimoog oscillator

The pitch:

The pitch defines the oscillator frequency. You can set this frequency with 3 controllers:

- The **[Range]** selector determines the fundamental frequency expressed in feet. 32' brings the lowest audible frequencies; 2' brings the highest audible frequencies. The “LOW” setting lets you use the oscillator as a low frequency oscillator (LFO) to modulate other parameters.
- The **[Fine tune]** knob allows you to tune the oscillator more precisely. This can be used to create detuning effects.
- The **[Coarse tune]** knob adjusts the frequency of the oscillator in semi-tones. This knob ranges from minus 2, to 2 octaves above the fundamental frequency.

The waveforms:

The Waveforms define the sonic characteristic of the oscillators sound.

- The **[sawtooth]** presents the richest audio signal of the waveforms. It contains all of the harmonics at decreasing volume levels in high frequencies. Its sound is ideal for brass sounds, bass sounds or rich lead and pads.
- The **[square]** possesses a more «hollow» sound than the sawtooth. It only contains odd harmonics with lower amplitudes for higher harmonics. This waveform can be used for sub-bass sounds that come out well in the mix (the square oscillator is often set an octave below that of the sawtooth), wood sounds (clarinet, if the square signal is a little filtered), etc.
- The **[Wide rectangle]** is a rectangle waveform which has a pulse width setting at around 35%.
- The **[Narrow rectangle]** is a rectangle waveform which has a pulse width setting at around 15%.
- The “Asymmetric triangle” (called **[saw tri]**) is a specific waveform on the Minimoog. This waveform produces a timbre between the triangle and a sawtooth. This waveform is very usable for smooth and soft lead sounds or basses for example.
- The **[triangle]** can be considered as a filtered (and soft) square signal. It contains only odd harmonics at very low amplitudes. Use this waveform for example for sub basses and flute sounds.
- The “White noise” waveform (**[white no]**) produces acoustic energy across a broad spectrum of frequencies with no discernible “fundamental” or harmonic signature. For

this reason, the noise module is used to create different noises like the imitation of wind or special effects.

***NOTE:** On the original Minimoog, the noise module output was situated directly on the “mixer” section. We have replaced the noise output directly on the waveform selector for more convenient use. You can find this original configuration on the Minimoog template.*

The input connections:

- **[FM]:** The FM modulation allows you to modulate the frequency of the oscillator. You can connect for example a LFO for vibrato effects, or use another oscillator for FM sounds. This can yield interesting results for inharmonic sonorities like bell sounds, but it can also be quickly distorted if you introduce a square or sawtooth signal.
- **[AM]:** This input allows you to modulate the level of the audio output of the oscillator. You can use for example a LFO to create tremolo effects or an envelope to control the output level over time.

***NOTE:** This is referred to as a “multiplying input”. In this case it is often better to use a Unipolar modulation sources when attached to this input. When in doubt, give it a try and see what works for you!*

***ALSO NOTE:** The high frequency modules outputs (such as oscillators) are not available at the AM input. If you wish to generate non-harmonic frequency components like metallic sounds, you can use the dedicated [Ring modulator] module.*

- **[PWM]:** This input allows you to modulate the pulse width of the square signal. This input is only active when the square waveform is selected. It allows you to modify the waveform cycle with for example an envelope or LFO. The pulse width modulation creates spectrum modifications comparable to a chorus effect if you use an LFO.
- The **[Amount]** knob allows you to set the depth of the selected modulation.
- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the selected modulation.

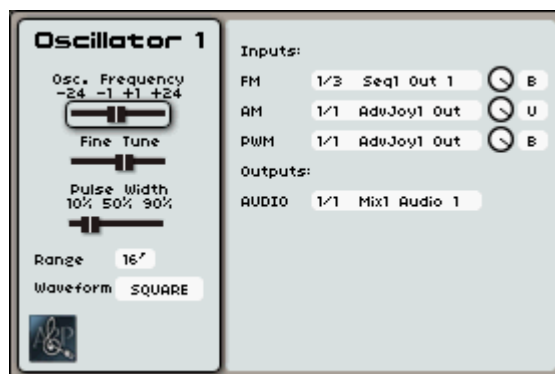
The Output connections:

- This is the **[Audio]** output of the oscillator. You can for example connect this output to a mixer module to mix the oscillator with other audio modules. Alternatively you can connect it directly to a filter or output module.

ARP 2600 oscillator

This oscillator is an emulated version of the oscillator module found on the ARP 2600. Unlike most other synths in the 70's, the ARP 2600 had semi-modular design. This offered a great tweakability, and through the ARP technology, a great sound. Some of ARP 2600s famous players include: Herbie Hancock (listen to his famous “Chameleon” bass), Underworld, Steve Porcaro, Mike Oldfield, Joe Zawinul (using two, one for each hand), and so on...

The sound of the ARP oscillator can be very precise and sharp (especially due to its precise tuning when compared to, for example, the Moog oscillators). This is especially true for the sawtooth waveform which sounds more “aggressive” than the other oscillators.



The ARP 2600 oscillator

The Pitch:

The pitch is defined by the oscillator frequency. You can set the frequency with 3 controllers:

- The **[Osc. frequency]** slider adjusts the frequency of the oscillator in semi-tones. This knob ranges from minus 2, to 2 octaves above the fundamental frequency.
- The **[Fine tune]** slider allows you to tune the oscillator more precisely. It ranges from -1 to +1 semitone.
- The **[Range]** selector determines the fundamental frequency expressed in feet. 32' brings the lowest audible frequencies; 4' brings the highest audible frequencies. The "LOW" setting lets you use the oscillator as a low frequency oscillator (LFO) to modulate other parameters.

The waveforms:

The waveforms define the sonic characteristic of the oscillator's sound.

- The **[sawtooth]** presents the richest audio signal of the waveforms. It contains all of the harmonics at decreasing volume levels in high frequencies. Its sound is ideal for brass sounds, bass sounds or rich lead and pads.
- The **[square]** possesses a more "hollow" sound than the sawtooth. It only contains odd harmonics with lower amplitudes for higher harmonics. This waveform can be used for sub-bass sounds that comes out well in the mix (the square oscillator is often set an octave below that of the sawtooth), wood sounds (clarinet, if the square signal is a little filtered), etc.
- The **[sine]** is the purest available waveform. It contains only one harmonic referred to as the "fundamental". Use it for example to reinforce the low end of a bass sound or as a modulation source in FM routings.
- The **[triangle]** can be considered as a filtered (and soft) square signal. It contains only odd harmonics at very low amplitudes. Use this waveform for example for sub basses and flute sounds.
- The **[white no]** ("white noise") waveform produces acoustic energy across a broad spectrum of frequencies with no discernible "fundamental" or harmonic signature. For this reason, the noise module is used to create different noises like the imitation of wind or special effects.
- The **[PW]** knob allows you to manually modify the waveform cycle of the square wave. This setting is only available when the square waveform is selected.

The Input connections:

- **[FM]:** The FM modulation allows you to modulate the frequency of the oscillator. You can connect for example a LFO for vibrato effects, or use another oscillator for FM

sounds. This can yield interesting results for inharmonic sonorities like bell sounds, but it can also be quickly distorted if you introduce a square or sawtooth signal.

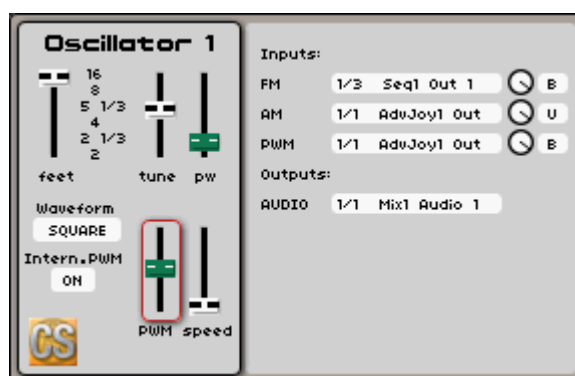
- **[PWM]:** This input allows you to modulate the pulse width of the square signal. This input is only active when the square waveform is selected. It allows you to modify the waveform cycle with for example an envelope or LFO. The pulse width modulation creates spectrum modifications comparable to a chorus effect if you use an LFO.
- The **Amount** knob allows you to set the depth of the selected modulation.
- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the selected modulation.

The Output connections:

- **[Audio]:** This is the audio output of the oscillator. You can for example connect this output to a mixer module to mix the oscillator signal with other audio modules. Alternatively you can connect it directly to a filter or VCA module.

CS-80 oscillator

This oscillator is an emulated version of oscillator found on the Yamaha CS-80 synthesizer. Due to the characteristics of the waveforms, the CS-80 oscillator has a unique “natural” sound. Using this module, Origin is capable of generating the analog strings, brass and pads the CS-80 was famous for, while weighing only a fraction of the original synth. The CS-80 has been used by, for example, Vangelis, Stevie Wonder, Brian Eno, Peter Gabriel and Daft Punk.



The CS-80 oscillator

The Pitch:

The pitch is defined by the oscillator frequency. You can set the frequency with 2 controllers:

- The **[feet]** slider sets the range frequency of the oscillator expressed in feet. 16' brings the lowest frequencies, 2' brings the highest audible frequencies.
- The **[tune]** slider allows you to tune the oscillator more precisely. It ranges from minus 1 to 1 semitone.

The waveforms:

The waveforms define the sonic characteristic of the oscillators sound.

- The **[sawtooth]** presents the richest audio signal of the waveforms. It contains all of the harmonics at decreasing volume levels in high frequencies. Its sound is ideal for brass sounds, bass sounds or rich lead and pads.
- The **[square]** possesses a more «hollow» sound than the sawtooth. It only contains odd harmonics with lower amplitudes for higher harmonics. This waveform can be used for

sub-bass sounds that comes out well in the mix (the square oscillator is often set an octave below that of the sawtooth), wood sounds (clarinet, if the square signal is a little filtered), etc....

- The **[sine]** is the purest available waveform. It contains only one harmonic referred to as the “fundamental”. Use it for example to reinforce the low end of a bass sound or as a modulation source in FM routings.
- The **[white no]** (“white noise”) waveform produces acoustic energy across a broad spectrum of frequencies with no discernible “fundamental” or harmonic signature. For this reason, the noise module is used to create different noises like the imitation of wind or special effects.
- The **[PW]** slider allows you to manually modify the waveform cycle of the square wave. This feature is only available when the square waveform is selected.

The Input connections:

- **[FM]**: The FM modulation allows you to modulate the frequency of the oscillator. You can connect for example a LFO for vibrato effects, or use another oscillator for FM sounds. This can yield interesting results for inharmonic sonorities like bell sounds, but it can also be quickly distorted if you introduce a square or sawtooth signal.
- **[PWM]**: This input allows you to modulate the pulse width of the square signal. This input is only active when the square waveform is selected. It allows you to modify the waveform cycle with for example an envelope or LFO. The pulse width modulation creates spectrum modifications comparable to a chorus effect if you use an LFO.
- The **Amount** knob allows you to set the depth of the selected modulation.
- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the selected modulation.

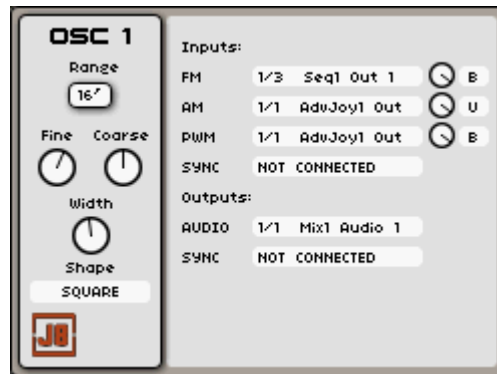
The Output connections:

- **[Audio]**: This is the audio output of the oscillator. You can for example connect this output to a mixer module to mix the oscillator signal with other audio modules. Alternatively you can connect it directly to a filter or VCA module.

Jupiter-8 oscillator

This oscillator is an emulation of the oscillators used in Roland’s Jupiter-8 synthesizer. With 8 notes polyphony and an extensive array of features, the Jupiter-8 was capable of generating a wide variety of sounds. To this day, it is still heard on numerous records thanks to its warm analog sound. Famous players include: Howard Jones, Tears for Fears, Ultravox, Michael Jackson (used on his “Thriller” album), Moby, David Bowie and Alicia Keys.

The Jupiter-8 oscillator has one of the most “surgical” sound from all the VCO’s (for Voltage Controlled Oscillator). All the waveforms are very close to the mathematical waveforms we can have in laboratory oscillators. Its tune is also very stable contrary to most of other analog VCOs modules.



The Jupiter-8 oscillator

The Pitch:

The pitch is defined by the oscillator frequency. You can set the frequency with 3 controllers:

- The **[Range]** selector determines the fundamental frequency expressed in feet. 32' brings the lowest audible frequencies; 2' brings the highest audible frequencies. The "LO" setting lets you use the oscillator as a low frequency oscillator (LFO) to modulate other parameters.
- The **[Fine tune]** knob allows you to tune the oscillator more precisely. This can be used to create detuning effects.
- The **[Coarse tune]** knob adjusts the frequency of the oscillator in semi-tones. This knob ranges from minus 2, to 2 octaves above the fundamental frequency.

The waveforms:

The waveforms define the sonic characteristic of the oscillators sound.

- The **[Sawtooth]** presents the richest audio signal of the waveforms. It contains all of the harmonics at decreasing volume levels in high frequencies. Its sound is ideal for brass sounds, bass sounds or rich lead and pads.
- The **[Square]** possesses a more «hollow» sound than the sawtooth. It only contains odd harmonics with lower amplitudes for higher harmonics. This waveform can be used for sub-bass sounds that come out well in the mix (the square oscillator is often set an octave below that of the sawtooth), wood sounds (clarinet, if the square signal is a little filtered), etc....
- The **[Triangle]** can be considered as a filtered (and soft) square signal. It contains only odd harmonics at very low amplitudes. Use this waveform for example for sub basses and flute sounds.
- The **[Sine]** is the purest available waveform. It contains only one harmonic referred to as the "fundamental". Use it for example to reinforce the low end of a bass sound or as a modulation source in FM routings.
- The **[White no]** ("white noise") waveform produces acoustic energy across a broad spectrum of frequencies with no discernible "fundamental" or harmonic signature. For this reason, the noise module is used to create different noises like the imitation of wind or special effects.
- The **[PW]** slider allows you to manually modify the waveform cycle of the square wave. This feature is only available when the square waveform is selected.

The Input connections:

- **[FM]:** The FM modulation allows you to modulate the frequency of the oscillator. You can connect for example an LFO for vibrato effects, or use another oscillator for FM

sounds. This can yield interesting results for inharmonic sonorities like bell sounds, but it can also be quickly distorted if you introduce a square or sawtooth signal.

- **[AM]:** This input allows you to modulate the level of the audio output of the oscillator. You can use for example a LFO to create tremolo effects or an envelope to control the output level over time.

***NOTE:** This is referred to as a “multiplying input”. In this case it is often better to use a Unipolar modulation sources when attached to this input. When in doubt, give it a try and see what works for you!*

***ALSO NOTE:** The high frequency modules outputs (such as oscillators) are not available at the AM input. If you wish to generate non-harmonic frequency components like metallic sounds, you can use the dedicated [Ring modulator] module.*

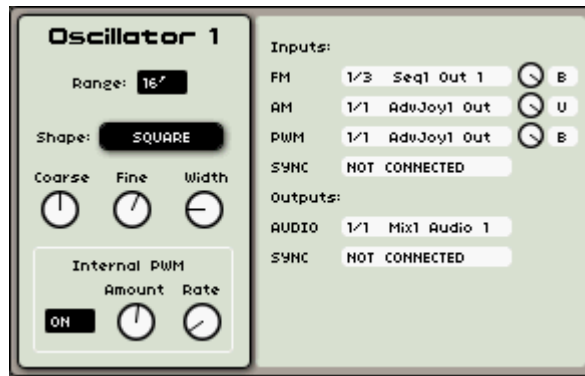
- **[PWM]:** This input allows you to modulate the pulse width of the square signal. This input is only active when the square waveform is selected. It allows you to modify the waveform cycle with for example an envelope or LFO. The pulse width modulation creates spectrum modifications comparable to a chorus effect if you use an LFO.
- **[Sync]:** At this input you can establish a sync connection between the Jupiter oscillator and any other one. When the other oscillator completes one period, the Jupiter oscillator is reset to its starting phase. When the two oscillators are not in tune, this phase reset causes sudden jumps in the waveform which generates the typical sharp sync sound.
- The **Amount** knobs allow you to set the depth of the selected modulation.
- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the selected modulation.

The Output connections:

- **[Audio]:** This is the audio output of the oscillator. You can for example connect this output to a mixer module to mix the oscillator signal with other audio modules. Alternatively you can connect it directly to a filter or VCA module.
- **[Sync]:** This is the sync output of the oscillator. It can be connected to another oscillator to establish a sync connection. When the oscillator completes one period, the oscillator selected at this input is reset to its starting phase. When the two oscillators are not in tune, this phase reset causes sudden jumps in the waveform which generates the typical sharp sync sound.

Origin oscillator

This oscillator is a special “low CPU cost” Origin oscillator. This module offers very good sound characteristics for a low CPU cost. You can use it for a very “big” preset including lots of audio modules.



The Origin oscillator

The Pitch:

The pitch is defined by the oscillator frequency. You can set the frequency with 3 controllers:

- The **[Range]** selector determines the fundamental frequency expressed in feet. 32' brings the lowest audible frequencies; 2' brings the highest audible frequencies. The "LOW" setting lets you use the oscillator as a low frequency oscillator (LFO) to modulate other parameters.
- The **[Fine]** knob allows you to tune the oscillator more precisely. This can be used to create detuning effects.
- The **[Coarse]** knob adjusts the frequency of the oscillator in semi-tones. This knob ranges from minus 2, to 2 octaves above the fundamental frequency.

The waveforms:

The waveforms define the sonic characteristic of the oscillators sound.

- The **[sawtooth]** presents the richest audio signal of the waveforms. It contains all of the harmonics at decreasing volume levels in high frequencies. Its sound is ideal for brass sounds, bass sounds or rich lead and pads.
- The **[square]** possesses a more «hollow» sound than the sawtooth. It only contains odd harmonics with lower amplitudes for higher harmonics. This waveform can be used for sub-bass sounds that come out well in the mix (the square oscillator is often set an octave below that of the sawtooth), wood sounds (clarinet, if the square signal is a little filtered), etc.
- The **[triangle]** can be considered as a filtered (and soft) square signal. It contains only odd harmonics at very low amplitudes. Use this waveform for example for sub basses and flute sounds.
- The **[sine]** is the purest available waveform. It contains only one harmonic referred to as the "fundamental". Use it for example to reinforce the low end of a bass sound or as a modulation source in FM routings.
- The **[white no]** ("white noise") waveform produces acoustic energy across a broad spectrum of frequencies with no discernible "fundamental" or harmonic signature. For this reason, the noise module is used to create different noises like the imitation of wind or special effects.
- The **[Width]** knob allows you to manually modify the waveform cycle of the square wave. This feature is only available when the square waveform is selected.

The modulation inputs:

- **[FM]:** The FM modulation allows you to modulate the frequency of the oscillator. You can connect for example a LFO for vibrato effects, or use another oscillator for FM sounds. This can yield interesting results for inharmonic sonorities like bell sounds, but it can also be quickly distorted if you introduce a square or sawtooth signal.
- **[AM]:** This input allows you to modulate the level of the audio output of the oscillator. You can use for example a LFO to create tremolo effects or an envelope to control the output level over time.

***NOTE:** This is referred to as a “multiplying input”. The output volume changes logarithmically with a linear change to the input. So in this case it is often better to use a Unipolar modulation sources when attached to this input. When in doubt, give it a try and see what works for you!*

***ALSO NOTE:** The high frequency modules outputs (such as oscillators) are not available at the AM input. If you wish to generate non-harmonic frequency components like metallic sounds, you can use the dedicated [Ring modulator] module.*

- **[PWM]:** This input allows you to modulate the pulse width of the square signal. This input is only active when the square waveform is selected. It allows you to modify the waveform cycle with for example an envelope or LFO. The pulse width modulation creates spectrum modifications comparable to a chorus effect if you use an LFO.
- **[Sync]:** At this input you can establish a sync connection between the Origin oscillator and any other one. When the other oscillator completes one period, the Jupiter oscillator is reset to its starting phase. When the two oscillators are not in tune, this phase reset causes sudden jumps in the waveform which generates the typical sharp sync sound.
- The **Amount** knobs allow you to set the depth of the selected modulation.
- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the selected modulation.

The Output connections:

- **[Audio]:** This is the audio output of the oscillator. You can for example connect this output to a mixer module to mix the oscillator signal with other audio modules. Alternatively you can connect it directly to a filter or VCA module.
- **[Sync]:** This is the sync output of the oscillator. It can be connected to another oscillator to establish a sync connection. When the oscillator completes one period, the oscillator selected at this input is reset to its starting phase. When the two oscillators are not in tune, this phase reset causes sudden jumps in the waveform which generates the typical sharp sync sound.

Wavetable Oscillator

The Wavetable Oscillator is an emulated version of the wavetable oscillators used in the Sequential Circuits Prophet VS. This oscillator has 96 different waveforms and is therefore capable of producing sounds not possible with conventional VCO's. The original Prophet VS used four of these oscillators which could be mixed by a joystick.

This configuration was capable of creating interesting and highly controllable sonic spectra. Using Origin's Joymixer, you can emulate the same configuration.



The Wavetable oscillator

The Pitch:

The pitch is defined by the oscillator frequency. You can set the frequency with 3 controllers:

- The **[Range]** selector determines the fundamental frequency expressed in feet. 32' brings the lowest audible frequencies; 2' brings the highest audible frequencies. The "LOW" setting lets you use the oscillator as a low frequency oscillator (LFO) to modulate other parameters.
- The **[Fine]** knob allows you to tune the oscillator more precisely. This can be used to create detuning effects.
- The **[Coarse]** knob adjusts the frequency of the oscillator in semi-tones. This knob ranges from minus 2, to 2 octaves above the fundamental frequency.

The waveforms:

The waveforms define the sonic characteristic of the oscillators sound. The wavetable oscillator is based on the Prophet VS oscillator circuit. It uses digital waveforms sampled from diverse sources: acoustic instruments, voice, and assorted sound effects. These waveforms give you access to a sound palette much greater than that of most analog synthesizers.

- The **[Table]** selection box selects one of the 96 wavetables included in the oscillator.

The Input connections:

- **[FM]:** The FM modulation allows you to modulate the frequency of the oscillator. You can connect for example an LFO for vibrato effects, or use another oscillator for FM sounds. This can yield interesting results for inharmonic sonorities like bell sounds, but it can also be quickly distorted if you introduce a square or sawtooth signal.
- **[AM]:** This input allows you to modulate the level of the audio output of the oscillator. You can use for example a LFO to create tremolo effects or an envelope to control the output level over time.
- The **Amount** knobs allow you to set the depth of the selected modulation.
- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the selected modulation.

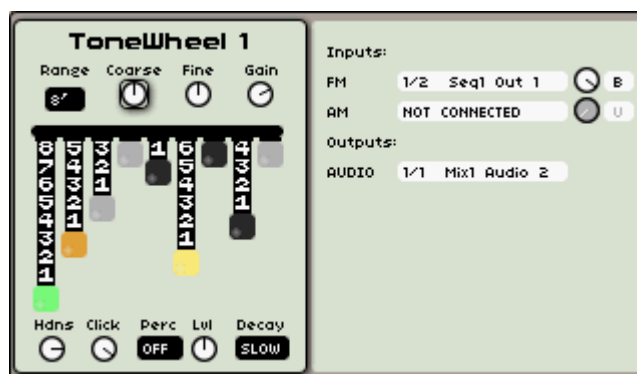
The Output connections:

- **[Audio]:** This is the audio output of the oscillator. You can for example connect this output to a mixer module to mix the oscillator signal with other audio modules. Alternatively you can connect it directly to a filter or VCA module.

NOTE: The oscillator's parameters can also be controlled in real time with the dedicated hardware knobs located in the **[Oscillator]** section. This section can be found at the top left of the front panel interface.

ToneWheel Module

The ToneWheel module is the latest addition to the Origin core sound production architecture. It provides an authentic sound source for classic organ presets, but should also be considered as an additive synthesis resource in a modular Program. There are nine sliders, a common configuration for traditional organs of this style.



The parameters of the ToneWheel module provide options that allow a great deal of control over the resulting sound.

- **[Range]:** Lo/32'/16'/8'/4'/2': Sets the base octave of the Principal (3rd) harmonic, which is the fundamental of the ToneWheel's range. Default is 8'.
- **[Course]:** -24 to +24 semi-tones: Sets the number of semi-tones that the ToneWheel is shifted relative to the value that is input from the Keyboard Key Follow (or other FM input). Default is 0
- **[Fine]:** +/- ¼ tone: Sets the amount of fractional pitch shift of the ToneWheel module, relative to the value that is input from the Keyboard Key Follow (or other FM input). Default is 0
- **[Gain]:** 0.000 to 1.000: Sets the gain that is sent from the audio output of the module. Default is 0.500
- **[bourdon]:** 1-8: First slider, which sets the level of the sub-octave.
- **[quint]:** 1-8: Second slider, which sets the level of the 5th above the sub-octave.
- **[principal]:** 1-8: Third slider, the fundamental of the ToneWheel.
- **[octave]:** 1-8: Fourth slider, the octave above the fundamental.
- **[hazard]:** 1-8: Fifth slider, the 12th (octave plus 5th) above the fundamental.
- **[block flote]:** 1-8: Sixth slider, two octaves above the fundamental.
- **[tierce]:** 1-8: Seventh slider, two octaves plus a major third above the fundamental.
- **[larigot]:** 1-8: Eighth slider, two octaves plus a fifth above the fundamental.
- **[siffloote]:** 1-8: Ninth slider, three octaves above the fundamental.
- **[hardness]:** 0-100%: Depending on the registration of drawbars, can add a bit of edge to or sometimes even a bit of nasal quality to the overall sound.
- **[Click]:** -100 dB to 0 dB: Sets the amount of key click that comes through when a new note is played.
- **[Perc]:** Off/2nd/3rd: Selects which harmonic is used to create the distinctive 'percussion' sound that is the hallmark of this style of organ. Note that this portion of the sound is distinct from an individual note "click" in that it only appears when the first note of a

passage is struck, and is not heard again until all notes are released and a new note is pressed. This often creates a unit legato-like effect of the organ in the hands of a skilled player.

- **[Lvl]:** 0.000 to 1.000: Sets the level of the [Perc] sound.
- **[Decay]:** Slow/Fast: Sets the amount of decay for the [Perc] sound.

The module has straightforward input and output controls:

- **[FM]:** The FM input allows you to control the frequency of the ToneWheel. The default connection is the keyboard follower output. But you are not limited to traditional roles for the ToneWheel in the Origin. You can connect anything from an LFO to a step sequencer output. Let your imagination be your guide.
- **[AM]:** This input allows you to modulate the level of the audio output of the ToneWheel. You can use for example a LFO to create tremolo effects or an envelope to control the output level over time.
- **[Audio Output]:** This is the output control point for the ToneWheel. The default configuration is connected the VCA output of the program preset. Again, you can use your own creativity and choose to craft your own sonic creation by routing the module into others within the Program preset.

9.1.1.2 Filters

The audio output signal generated by an oscillator is generally directed to a filter module or VCF (Voltage Controlled Filter). It is this module that we use to control the sound by filtering (attenuating) certain harmonics from the raw oscillator signal. It can be considered as a sophisticated equalizer that attenuates, depending on the filter type, a range of frequencies specified by the cutoff frequency. A low pass filter attenuates frequencies above the cutoff frequency. High pass filter attenuate frequencies below the cutoff frequency. A band pass filter is a combination of a high pass and low pass filter, attenuating frequencies above and below the cutoff frequency. The notch filter is the inverse of a band pass filter; it attenuates frequencies around the cutoff frequency.

The removal of frequencies is not absolute but progressive, and depends on the filtering slope. This filtering slope is expressed in decibels per octave (or dB/Oct). For example a 12dB/Oct low pass filter attenuates frequencies one octave above the cutoff frequency with 12dB, two octaves above the cutoff frequency with 24dB etc. Most filters used in classic analog synthesizers have 24 dB/Oct or 12 dB/Oct slopes. The filter slope can also be expressed in poles; you can calculate the slope in dB/Oct by multiplying the number of poles with six. For example, a 1-pole filter has a 6 dB/Oct slope and a 4-pole filter a 24 dB/Oct slope.

The Origin synthesizer offers a great variety of filters. Most of them are emulated versions of the filter modules used in some of the best analog hardware synthesizers: the Minimoog, the ARP 2600, the Jupiter-8 and the CS-80.

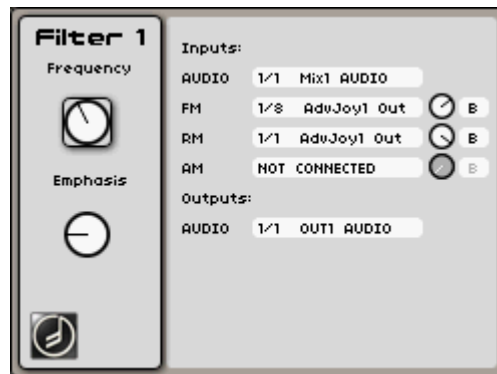
In addition there is a special low CPU cost Origin filter module. It offers very good sound characteristics for a low CPU cost. You can use it in a very “big” preset including lots of audio modules.

NOTE: You can use up to four filters in a Program.

Minimoog filter

This filter is an emulated version of the filter module found on the original Minimoog synthesizer. The Minimoog was introduced in the 70's and was among the first portable and playable synthesizers. Today, it is highly sought after because of its unique and fat sound. Some of MiniMoog's famous players include: Herbie Hancock, Kraftwerk, Chick Corea, Rick Wakeman, Keith Emerson and Apollo 440.

The Minimoog filter offers a very particular sound thanks to its ladder structure. The resonance response is also sounding more “smooth” than an ARP’s one for example. Without any resonance... the sound is one of the fattest ever!!!



The Minimoog filter

- The **[Frequency]** knob sets the cut-off frequency of the filter.
- The **[Emphasis]** knob (also called “resonance” or “Q”) sets the amplification amount of frequencies close to the cut-off frequency. The other frequencies are either unchanged (below the cut-off frequency) or reduced (above the cut-off frequency). When you increase the emphasis, the cutoff frequency is more and more amplified. At very high emphasis values, the filter starts to self oscillate, giving a sort of “whistle” sound.

The Input connections:

- **[Audio]**: This is the audio input of the filter. You can connect it to the output of an oscillator or a mixer if you use several oscillators (or other audio modules).
- **[FM]**: This input allows you to connect sources to modulate the cut-off frequency of the filter. The envelope or LFO are the most common modules to modulate the cutoff frequency. The result is interesting for filter sweeps or “wah-wah” like sonorities.
- The **Amount** knob allows you to set the depth of the selected modulation.
- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the selected modulation.

The Output connections:

- **[Audio]**: This is the audio output of the filter. It can be connected to another filter (for a serial filter connection) or directly to a VCA input.

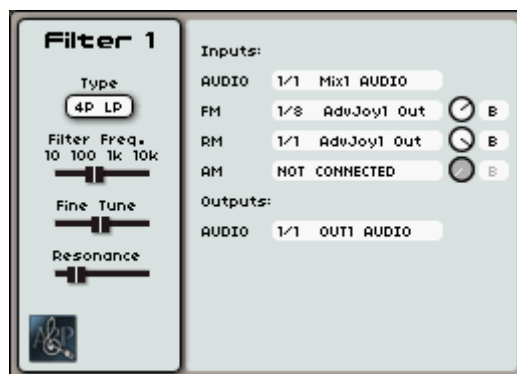
ARP 2600 filter

This filter is an emulated version of the filter found used by ARP in the 70’s. Unlike most other synths in the 70’s, the ARP 2600 had semi modular design. This offered a great tweakability, and due to the ARP technology, a great sound. Some of ARP 2600s famous players include: Herbie Hancock (listen to his famous “Chameleon” bass), Underworld, Steve Porcaro, Mike Oldfield and Joe Zawinul (using two, one for each hand).

The 12 dB/octave filter was produced on the early Odyssey synthesizers (the “white” version). This filter has a very smooth behavior, and unlike most 4-pole filters, does not attenuate the low end with increased resonance settings. It is very suitable for bass and lead sounds.

The original 4-pole low pass filter was based around a cascade of integrators. It was the standard ARP filter in 1976-1977, appearing in the Mk3 Odyssey, the ARP 2600 (“orange” version), Axe, Omni, Avatar, Quadra, etc...

The ARP filter can be very selective and, in some ways, it can be very aggressive if you use a lot of resonance!



The ARP filter

- The [Filter Freq.] slider sets the cut-off frequency of the filter.
- The [Fine Tune] slider allows you to tune the cutoff frequency more precisely. This setting is mostly effective when the filter is self oscillating (see below).
- The [Resonance] slider sets the amplification amount of frequencies close to the cut-off frequency. The other frequencies are either unchanged (below the cut-off frequency) or reduced (above the cut-off frequency). When you increase the resonance, the cutoff frequency is more and more amplified. At very high resonance values, the filter starts to self oscillate, giving a sort of “whistle” sound.
- The [Type] box selects the type of filter. It offers 2 types:
 - [2P L], a 2-pole (12 dB/Oct) low pass filter.
 - [4P L], a 4-pole (24 dB/Oct) low pass filter.

The Input connections:

- [Audio]: This is the audio input of the filter. You can connect it to the output of an oscillator or a mixer if you use several oscillators (or other audio modules).
- [FM]: This input allows you to connect sources to modulate the cut-off frequency of the filter. The envelope or LFO are the most common modules to modulate the cutoff frequency. The result is interesting for filter sweeps or “wah-wah” like sonorities.
- The Amount knob allows you to set the depth of the selected modulation.
- The Bipolar or Unipolar selector allows you to set the polarity of the selected modulation.

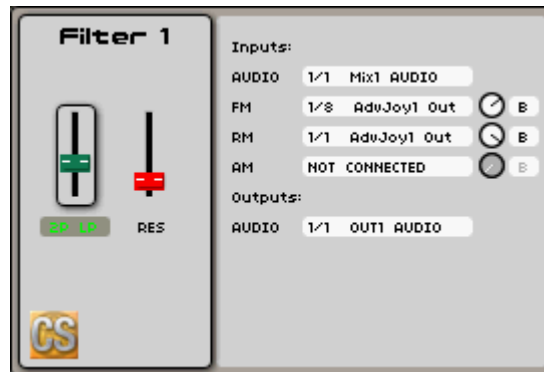
The Output connections:

- [Audio]: This is the audio output of the filter. It can be connected to another filter (for a serial filter connection) or directly to a VCA input.

CS-80 filter

This filter is an emulated version of filter found on the Yamaha CS-80 synthesizer. Like the oscillators, the filter has a very natural sound. When using this module, Origin is capable of generating the analog strings, brass and pads the CS-80 was famous for, while weighing only a fraction of the original synth. The CS-80 has been used by for example: Vangelis, Stevie Wonder, Brian Eno, Peter Gabriel and Daft Punk.

NOTE: The original CS-80 synthesizer used a serial HPF and LPF configuration for a very unique sound result. Depending on the cut-off frequencies of both filters, this configuration allows you to get a band pass filter effect. You can get this sound result on Origin by connecting two CS-80 filters modules in series. Choose a high pass filter on the first and a low pass filter on the second filter.



The CS-80 filter

- The green Frequency slider sets the **cut-off frequency** of the filter.
- The red slider sets the resonance [**RES**] amount of the filter
- The Type: the selection box under the Frequency slider selects the type of filter. It offers you 2 types, both have a 12dB/Oct slope.
 - [**LPF**] (Low pass filter). This filter progressively attenuates frequencies above the cut-off frequency.
 - [**HPF**] (High pass filter). This filter acts as the inverse of a low pass filter. It progressively attenuates frequencies below the cut-off frequency.

The Input connections:

- [**Audio**]: This is the audio input of the filter. You can connect the output of an oscillator or a mixer if you use several oscillators (or other audio modules).
- [**FM**]: The FM modulation allows you to modulate the cutoff frequency of the filter. The envelope or LFO are the most common modules to modulate the cutoff frequency. The result is interesting for filter sweeps or “wah-wah” like sonorities.
- The **Amount** knob allows you to set the depth of the selected modulation.
- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the selected modulation.

The Output connections:

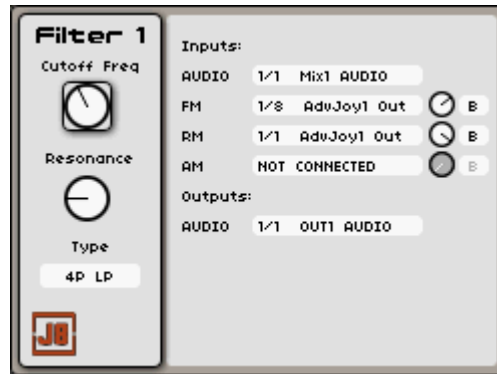
- [**Audio**]: This is the audio output of the filter. It can be connected to another filter (for a serial filter connection) or directly to a VCA input.

Jupiter-8 filter

This oscillator is an emulation of the filter used in Roland’s Jupiter-8 synthesizer. With 8 note polyphony and an extensive array of features, the Jupiter-8 was capable of generating a wide variety of sounds. To this day, it is still heard on numerous records due to its warm analog sound. Famous players include: Howard Jones, Tears for Fears, Ultravox, Michael Jackson (used on his “Thriller” album), Moby, David Bowie and Alicia Keys.

The Jupiter-8 filter is one of the most beautiful and thin analog filters. Unlike most other analog filters, the Jupiter-8 filter doesn’t self-oscillate with higher resonance settings. Due to it’s

somewhat less aggressive behavior compared to for example the ARP filter, the Jupiter filter is very versatile and can be used for various types of sound. On top of that, you'll don't have to worry about overloading your mix with a high resonance peak!



The Jupiter-8 filter

- The **[Frequency]** knob sets the cut-off frequency of the filter.
- The **[Resonance]** knob sets the amount of resonance (also called “Q”). The resonance determines the amount of amplification of frequencies close to the cut-off frequency. The other frequencies are either unchanged (below the cut-off frequency) or reduced (above the cut-off frequency).
- The **[Type]** selection box selects the filter type. It offers three types:
 - **[4P LP]** or **[2P LP]** (Low pass filter). In this mode the filter progressively attenuates frequencies above the cut-off frequency. **[4P LP]** selects a 4-pole (24dB/Oct) slope, **[2P LP]** selects a 2-pole (12dB/Oct) slope.
 - **[HPF]** (High pass filter). This filter acts as the inverse of a low pass filter. It progressively attenuates frequencies below the cut-off frequency. This filter has a 1-pole (6dB/Oct) slope.

NOTE: The original Jupiter-8 synthesizer lines use a special serial 1-pole HPF and a 2p/4p LPF connection. You can emulate this configuration by connecting two Jupiter-8 filter modules in series. Choose a high pass filter on the first and a low pass filter on the second filter.

The Input connections:

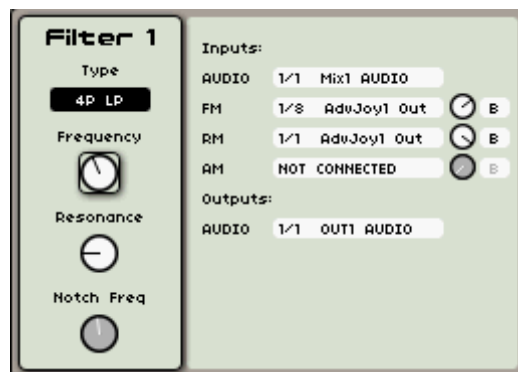
- **[Audio]:** This is the audio input of the filter. You can connect it to the output of an oscillator or a mixer if you use several oscillators (or other audio modules).
- **[FM]:** This input allows you to connect sources to modulate the cut-off frequency of the filter. The envelope or LFO are the most common modules to modulate the cutoff frequency. The result is interesting for filter sweeps or “wah-wah” like sonorities.
- The **Amount** knob allows you to set the depth of the selected modulation.
- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the selected modulation.

The Output connections:

- **[Audio]:** This is the audio output of the filter. It can be connected to another filter (for a serial filter connection) or directly to a VCA input.

Origin filter

This filter is a special “low CPU cost” Origin filter. This module offers very good sound characteristics for a low CPU cost. You can use it for a very “big” preset including lots of audio modules.



The Origin filter

- The [Frequency] knob sets the cut-off frequency of the filter
- The [Resonance] knob sets the amplification amount of frequencies close to the cut-off frequency. The other frequencies are either unchanged (below the cut-off frequency) or reduced (above the cut-off frequency). When you increase the resonance, the cutoff frequency is more and more amplified. At very high resonance values, the filter starts to self oscillate, giving a sort of “whistle” sound.
- The [Type] selection box selects the filter type. It offers a wide variety of filter types:
 - [4P LP] or [2P LP] select a low pass filter. In this mode the filter progressively attenuates frequencies above the cut-off frequency. [4P LP] selects a 4-pole (24dB/Oct) slope, [2P LP] selects a 2-pole (12dB/Oct) slope.
 - [4P HP], [2P HP] or [1P HP] select a high pass filter. This filter acts as the inverse of a low pass filter. It progressively attenuates frequencies below the cut-off frequency. [4P HP] selects a 4-pole (24dB/Oct) slope, [2P HP] selects a 2-pole (12dB/Oct) slope and [1P HP] selects a 1-pole (6dB/Oct) slope
 - [2P BP] or [4P BP] select a band pass filter. A band pass filter is a combination of a high pass and low pass filter, attenuating frequencies above and below the cutoff frequency. You can for example use it to make a sound more “pinched”. [2P BP] selects a 2-pole (12db/Oct) slope, [4P BP] selects a 4-pole (24dB/Oct) slope.
 - The [Notch] filter is the opposite of the band pass filter. It eliminates the frequencies inside a band of frequencies. The resonance allows you to accentuate the sag of a band of frequencies.

The Input connections:

- [Audio]: This is the audio input of the filter. You can connect it to the output of an oscillator or a mixer if you use several oscillators (or other audio modules).
- [FM]: This input allows you to connect sources to modulate the cut-off frequency of the filter. The envelope or LFO are the most common modules to modulate the cutoff frequency. The result is interesting for filter sweeps or “wah-wah” like sonorities.
- [RM]: This input allows you to connect sources to modulate the resonance of the filter.
- The Amount knob allows you to set the depth of the selected modulation.
- The Bipolar or Unipolar selector allows you to set the polarity of the selected modulation.

The Output connections:

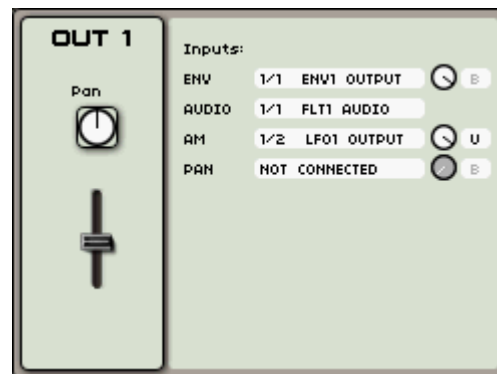
- **[Audio]:** This is the audio output of the filter. It can be connected to another filter (for a serial filter connection) or directly to a VCA input.

NOTE: All filter parameters can also be controlled real time with the dedicated hardware knobs located in the [Filter] section, at the top Left of the LCD screen.

9.1.1.3 Output (amplifiers)

The output receives an audio signal coming from for example a filter or oscillator. This module adjusts the overall volume and allows you to pan the sound before sending it to the effects section.

NOTE: You can use up to four outputs on a Program.



The VCA (output) module

Origin's output module has the following controllers:

- The **[Volume]** slider sets the overall volume of the audio signal.

NOTE: The output volume parameter can be also controlled in real time with the dedicated hardware [Volume] knobs located in the [Mixer] section, on the top right of the front panel.

- The **[Pan]** determines the panoramic placement of the audio signal.

The Input connections:

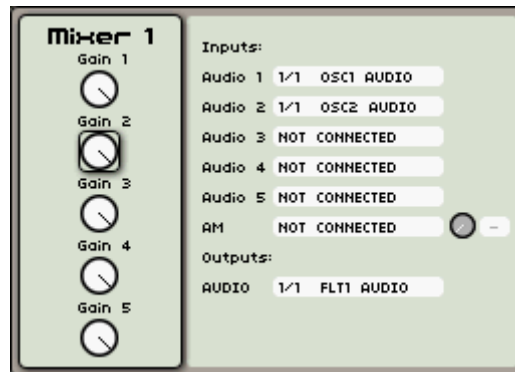
- **[Env]:** This is the dedicated input for the envelopes. Output 1 is automatically connected to Envelope 1 when this module is available on the modular structure of the Program. This input can also be connected to the [Accent] envelopes of the sequencer.
- **[Audio]:** This is the dedicated input for an audio module.
- **[AM]:** This input allows you to modulate the amount of amplification. An LFO or keyboard velocity is used for this kind of modulation. Connecting the velocity allows you to control the volume of your sound over with the keyboard. An LFO can be used for “tremolo” effects.
- **[Pan]:** This input allows you to modulate the panoramic placement of the audio output. Here you can for example connect an LFO for “auto pan” effects.
- The **Amount** knob allows you to set the depth of the selected modulation.

- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the selected modulation.

9.1.1.4 *Minimixer*

The Minimixer allows you to set and mix the volume of 5 audio modules. The most common use of the mixer is to set the output volume from several VCO outputs.

NOTE: You can use up to four mixers in a Program.



The Minimixer

The Input connections:

- **[Audio 1 to 5]:** These are the dedicated inputs for audio modules.
- **[AM]:** This input allows you to modulate level of the audio output of the Minimixer. You can for example connect it to an LFO to get “tremolo” effects.
- The **Amount** knob allows you to set the depth of the selected modulation.
- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the amount of modulation.

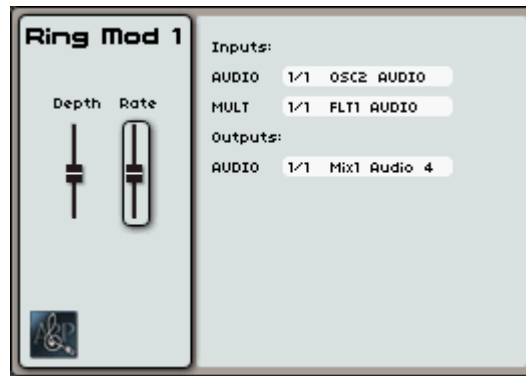
The Output connections:

- **[Audio]:** This is the audio output of the mixer. It can be connected to for example a filter or directly to an output module.

9.1.1.5 *Ring modulator*

The ring modulator multiplies two signals to create non-harmonic frequencies. It is then easy to produce metallic sounds.

When the [MULT] input is not connected, the input signal is multiplied by an internally generated sinusoid signal for which the frequency can be set with the [Rate] slider. The modulation amplitude and subsequently the effect amplitude obtained can be set with the [Depth] button. Once connected, the [MULT] input becomes the source of the multiplicative signal, and the [Rate] slider is not useful anymore.



The ring modulator

- **[Depth]:** Controls the cross-fade between the modulated signals and the dry signal.
- **[Rate]:** Controls the frequency of the internal sine wave generator, in case the **[MULT]** input is not connected.

The Input connections:

- **[AUDIO]:** This is the dedicated input for an audio module.
- **[MULTI]:** This is the dedicated input for a Multiplicative signal connection

The Output connections:

- **[AUDIO]:** This is the output connection of the Ring modulator.

9.1.1.6 Bode Frequency shifter

The Bode Frequency Shifter is one of the most wanted and famous modules from Moog modular systems. It has been produced at a very small number of units in the early 70's.

This module is used for a linear translation of the frequencies contained in the input signal. Because of this linearity, the initial harmonic relations are totally modified. It is easy with this module to produce metallic sounds.

There are three available outputs: two for each of the translations possible (negative and positive), the other for a mix of the two, the mix is set with the "Mix" button.

The translation rate, which is to say the difference in frequencies, is set with the "frequency" button. Following the selected scale ("scale" selector), the button gives a different gap. The scale also influences the amplitude and type of modulation.

In the exponential position, the translation goes from 2Hz to 1,024Hz, the modulation being exponential. In the other positions (5, 50, 500, 5k), the translation will be of a maximum of 5Hz, 50Hz, 500Hz or 5,000 Hz, in positive or negative.



The Bode shifter

- [Scale]: setting parameter for the basic scale frequency
- [Amount of Shift]: setting parameter for the frequency transition
- [Mixture]: Mix between the positive and negative translations

The Input connections:

- [AUDIO]: This is the dedicated input for an audio module.
- [FM]: The FM modulation allows you to modulate the frequency from the Bode frequency shifter.
- The Amount knob allows you to set the depth of the selected modulation.
- The Bipolar or Unipolar selector allows you to set the polarity of the amount of modulation.

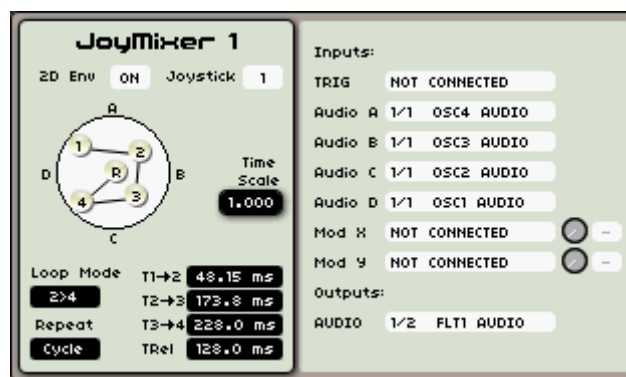
The Output connections:

- [MIX]: Mix of negative and positive translations output connection
- [Audio A]: Positive translation output connection
- [Audio B]: Negative translation output connection

9.1.1.7 Joymixer

The [Joymixer] lets you mix the four audio sources (e.g. oscillators, filters) in order to enrich and develop the sound. This mix is done with a joystick moving between four points (A, B, C, and D) representing the maximum volume of each of the audio sources. You can also automate the modulation of the X and Y axis by connecting modulation sources (e.g. LFO, envelopes...). The mix can also be dynamically automated by an envelope defining four periods, each of which corresponds to a position to which the joystick can be programmed.

The 2D envelope emulates the movements of the joystick designating a time to each of the four movements (points 1 to R) and during the length of a note.



The joy(stick)mixer

To position the four points on the virtual joystick area, on the screen:

- ▶ Select the joystick area with the [◀/▶] /or [▲/▼] buttons and press the jog dial to validate the selection (highlighted in red).
- ▶ Move the joystick to the place you want. The first point of the joystick moves on the screen (value “4” is indicated at first). Select the second point by pressing the [◀/▶] or [▲/▼] buttons and do the same for the other points.

From there, the only modifiable parameters are the durations of the movements of the joystick between each point labeled “T1-2” to “TRel”.

- [Env 2D]: This button activates the 2D Envelope

- **[Joystick]:** OFF/1/2/3: Selects which “Mode” of the front panel Joystick will influence/control the settings for this instance of the Joy Mixer.
- **[Loop mode]:** The LOOP mode function applies a loop between some points of the envelope (OFF, 1>4; 2>4; 3>4 or 1<>4; 2<>4; 3<>4). When the key is released, the loop is interrupted, and goes from the last reached point to point R.
- **[Repeat]:** The “REPEAT” function repeats the movement cycle of the joystick (from 1 to 7, or indefinitely Cyclic).
- **[T1→2...TRel]:** Set the 5 values of times for automate the movements of the joystick between each point.

The Input connections:

- **[Trig]:** Input trigger signal connection for the 2D envelope. If this is not connected, then the envelope is free-running. When connected, the envelope starts when the note is triggered, and when released the envelope moves from its current point in the envelope/loop process and transitions directly to point R.
- **[Audio A...D]:** These are the dedicated inputs for an audio module on each of the 4 joystick directions.
- **[Mod X]:** Connect a modulation sources to automate the modulation of the X axis.
- **[Mod Y]:** Connect a modulation sources to automate the modulation of the Y axis.
- The **Amount** knob allows you to set the depth of the selected modulation.
- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the amount of modulation.

The Output connections:

- **[Output]:** This is the output connection of the JoyMixer.

9.1.2 The modulation modules

Without the action of modulation modules, the sound that you obtain is uniform, without life and without any end! The oscillator delivers a sound signal (the audio output of a waveform) of a fixed pitch in a continuous manner. To get a playable and pleasant sound, you have to add some real time or cyclic modulations on your audio modules like envelopes, LFOs or joystick.

9.1.2.1 Keyboard Follower

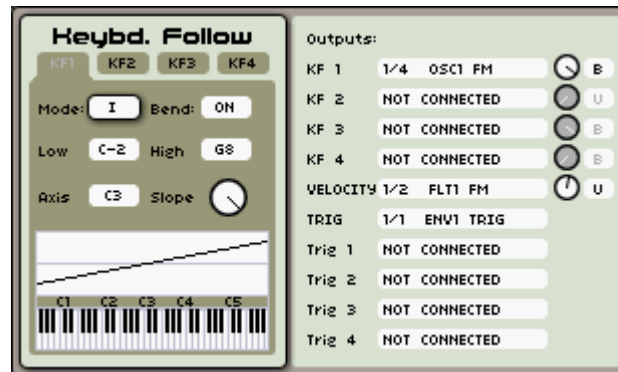
The Keyboard Follower module is important not only for use with a keyboard but just about any device that sends MIDI NOTE ON commands. This module first scales the input signal according to the follower’s basic range setting. Then it quantizes the scaled input signal to the closest exact note which fits in the semitone scale (following the *well tempered* scale) set by the range controls of the follower.

Origin supports up to four keyboard following inputs. This allows you to create a variety of control sources to scale controllers that can benefit the sound by having a non 1-to-1 relationship to the played note. Common examples are filter cutoff scaled at declining slope in order to more closely simulate the behavior of a traditional instrument. The options are numerous from this common starting point.

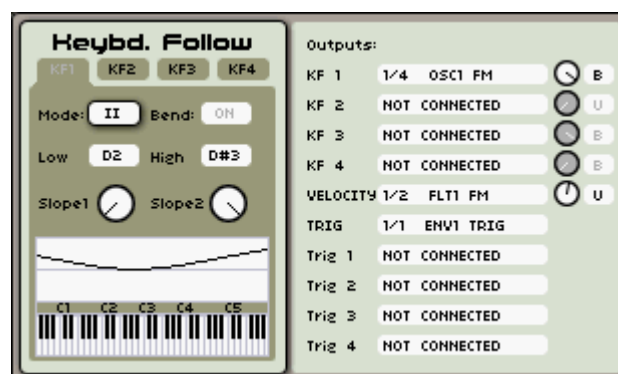
Each of the keyboard follows can generate a trigger signal. Two displays allow the choice of a low and high note. When the keyboard detects a note between these 2 limits, the trigger signal is active as long as the note remains active. When the note is outside of the limits, the trigger signal remains inactive. If the notes selected for the upper and lower limits are set such that the lower note is

higher than the upper, then the note detected by the keyboard must be outside of the limits to activate the trigger signal.

Each Keyboard Follow tab has a mode as well as a slope setting. The slope controls change depending on the mode settings, and the axis control that sets the zero crossing point of the key follower scale.



The Keyboard Follower 1 output in mode I



The Keyboard Follower 1 output in mode II

How the keyboard follower works

- **[Mode]:** Selects one of two modes. Mode I is a traditional low-to-high scale while Mode II can be biased into a U-shaped curve or a reverse high-to-low scale for situations where that type of programming is required.
- **[Bend]:** Activates sensitivity to the pitch bend.
- **[Low]:** Selects the low note of the generator for the trigger of the keyboard follow.
- **[High]:** Selects the high note of the generator for the trigger of the keyboard.
- **[Axis]:** This is present only in Mode I: Selects the axis note of the keyboard follow.
- **[Slope]:** Sets the slope of the keyboard follow. In Mode I, a single Slope control is used to select the angle of the keyboard scale. In Mode II, there are two Slope controls, one for each end of the keyboard follower curve. This can be used to set a U-shaped curve (positive or negative) or the user can also set an inverted scale by setting Slope 1 to the highest value and Slope 2 to the lowest value.

- **[KF 1-4]:** Main key level output for tabs KF1-4. This can be thought of as the main note-level “control voltage output” for each note as it’s played within each KF tab’s range.
- **[TRIG]:** main trigger output that produces a result regardless of the settings of tabs KF1-KF4.
- **[Trig 1-4]:** Main key trigger output for tabs KF1-4. This can be thought of as the main note-level “gate output” for each note as it’s played within each KF tab’s range.

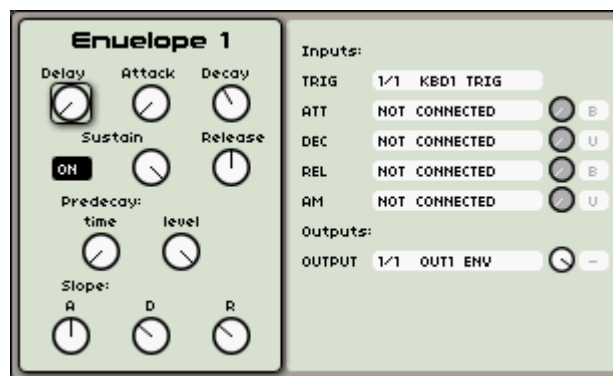
Note: One idea for using multiple Keyboard Follower tabs is for program-level splits and layers. Also, a simple drum kit can be created, defining a separate note/range for each sound.

9.1.2.2 ADSR Envelope

The ADSR envelopes allow you to develop one or several time function parameters.

The ADSR envelope is composed of four successive sequential periods: Attack time, Decay time, Sustain voltage, and the Release time. When you send the signal for the note (by pressing the key on the keyboard) the envelope begins the sequence beginning with “Attack”, then “Decay”, and stays in the “Sustain” as long as the note is active. When the note is released the envelope finishes with the “Release” parameter.

The envelope1 is automatically connected to the first VCA by default and controls the volume amplitude.



The Origin ADSR envelope

- **[Attack]:** Sets the attack time when a note is triggered ON. This control is affected by default to the hardware [Attack] knob, located in the [Envelope] area.
- **[Decay]:** Sets the decay time during the note’s hold period. This control is affected by default to the hardware [Decay] knob, located in the [Envelope] area.
- **[Sustain]:** Sets the sustain level during the note’s hold period. This control is affected by default to the hardware [Sustain] knob, located in the [Envelope] area.
- **[Release]:** Sets the release time when a note is triggered OFF. This control is affected by default to the hardware [Release] knob, located in the [Envelope] area.
- **[Pre decay Time]:** Sets the intermediate decay time. This control is affected by default to the hardware [Pre-Decay Time] knob, on the [Envelope] area.
- **[Pre decay Level]:** Sets the intermediate decay level. This control is affected by default to the hardware [Pre-Decay Level] knob, on the [Envelope] area.
- **[Slope]:** Sets the slopes for the envelop Attack, decay and Release parameters.

The Input connections:

- **[Trigg]:** Input trigger signal connection for the envelope.

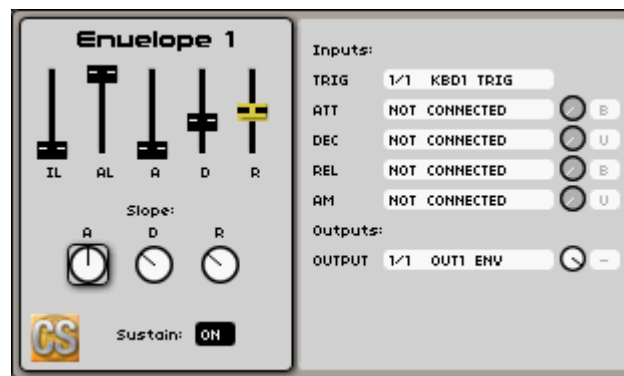
- **[Att]**: Modulation Input connection for the attack time of the envelope.
- **[Dec]**: Modulation Input connection for the Decay time of the envelope.
- **[Rel]**: Modulation Input connection for the Release time of the envelope.
- The **Amount** knob allows you to set the depth of the selected modulation.
- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the amount of modulation.

The Output connections:

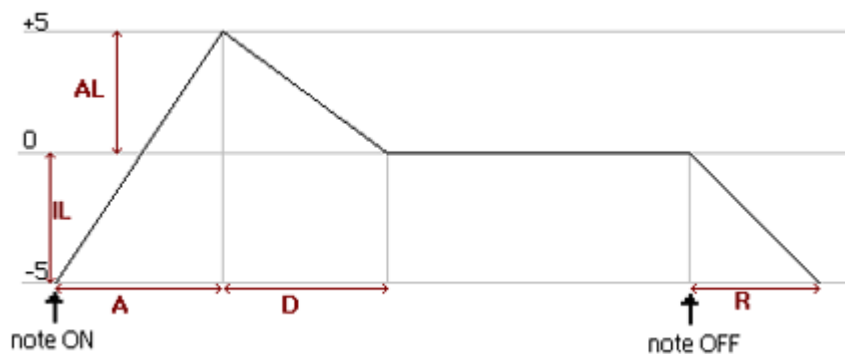
- **[Output]**: This is the output connection of the Envelope.

9.1.2.3 CS-80 ILAL Envelope

This CS-80 ILAL envelope is a unique adaptation for Yamaha’s classic synth that allowed for unique control of the filter cutoff. “IL” stands for “Initial Level” and “AL” stands for “Attack Level”. These two levels are centered on the baseline filter cutoff frequency. It can be thought of as though the envelope moves the filter cutoff “around” the base frequency setting.



The CS-80 IL-AL-A-D-R envelope



The behavior of the CS-80 envelope

Of course with the modular architecture of the Origin you are not limited to using this envelope as a simple filter control. It can be useful in a variety of situations, but for the purposes of this document we will stick with a basic description of each parameter and control point.

- **[IL]**: Initial Level - the starting point of the envelope, usually starting below the center point of the nominal control voltage.

- **[AL]:** Attack Level - The secondary point of the initial attack, running from the center point to the maximum level for the envelope.
- **[A]:** Attack - sets the length of time that it takes to move the envelope from the beginning of the IL segment to the end of the AL segment.
- **[D]:** Decay - sets the length of time from the peak of the attack to center point for the envelope.
- **[R]:** Release - sets the length of time from the center point to the IL level after the note is released.
- **[Sustain]:** ON/OFF: determines whether the envelope will hold sustained notes between the end of the Decay [D] and beginning of the release [R]. If this is set to OFF then the envelope runs its course without regard to manually held notes or notes held by use of foot switch/MIDI CC64.

The Input connections:

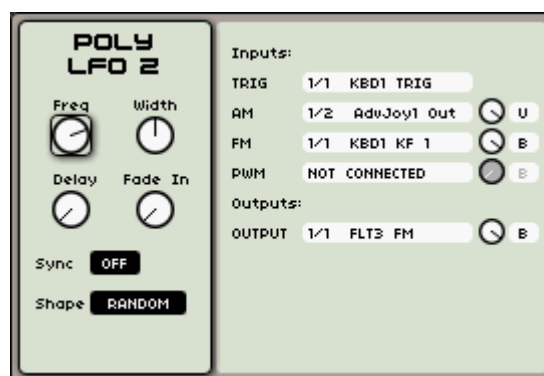
- **[TRIG]:** Input trigger signal connection for the envelope.
- **[ATT]:** Modulation Input connection for the attack time of the envelope.
- **[DEC]:** Modulation Input connection for the Decay time of the envelope.
- **[REL]:** Modulation Input connection for the Release time of the envelope.
- **[AM]:** Amplitude modulation input for the envelope.

The Output connections:

- **[Output]:** This is the output connection of the Envelope.

9.1.2.4 LFO

The low frequency oscillator (LFO) is one of the most used as a modulation source. It allows you to create variations in a sound parameter in a cyclical way to generate effects such as: a vibrato effect when the LFO modulates the frequency of an oscillator; a “wah-wah” effect when it modulates the cut-off frequency of a filter; a tremolo effect when it modulates the volume of a VCA; etc.



The poly(phonic) LFO

- **[Rate]:** setting parameter for the LFO frequency
- **[Shape]:** This is the selection for the audio output of the three wave forms:
 - Saw tooth
 - Triangle

- Square
- Sine
- Random
- **[PW]**: knob which sets the pulse width of the square signal or the phase of the triangle and the sawtooth waves.
- **[Delay]**: setting parameter for delay time setting after a keyboard Trigg.
- **[Fade in]**: setting parameter of the time constant for the increase of modulation.
- **[Sync]**: tempo (internal or MIDI) synchronization ON/OFF

The Input connections:

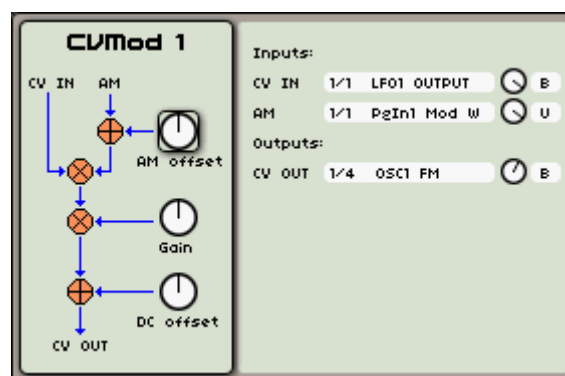
- **[Trigg]**: input trigger signal connection for the envelope.
- **[AM]**: this input allows you to modulate the audio output from the LFO. An LFO or envelopes are the most common modulator modules for this kind of modulation
- **[FM]**: the FM modulation allows you to modulate the frequency from the LFO. The LFO or envelopes are the most common modulator module for FM. The result is interesting for changing the rate of the LFO for special effects or random frequency modulations.
- **[PWM]**: this modulation changes the pulse width of the square signal or the phase of the triangle and the sawtooth waves.
- The **Amount** knob allows you to set the depth of the selected modulation.
- The **Bipolar** or **Unipolar** selector allows you to set the polarity of the amount of modulation.

The Output connections:

- **[Output]**: This is the output connection of the LFO.

9.1.2.5 CV Modulator

The CV Modulator allows the user to adjust a modulation control voltage as it is transmitted to a new destination. The user can adjust the overall gain, scale and offset of the control signal as it passes through this module.



The CV Modulator

If you wish to control a parameter with an LFO or the joystick, and adjust that modulation in real time, you will need a CV modulator to accomplish this. For example, if you wanted to control an external modulator to a filter envelope, send the envelope output to the CV IN, assign the controller (joystick, LFO, mod wheel...) to the CVMod "AM", and the CV OUT to the filter control input. Then the knobs on the CV modulator interface would allow you to set how much the

controller modulates the parameter. This is a simple example but the applications are numerous. With that in mind, the parameters for the CVMod are as follows:

- **[AM Offset]:** Scales the amount of amplitude modulation coming in through the AM input, which affects the CV signal.
- **[Gain]:** Control the amount of signal presented at the CVMod output after the CV and AM signals have been mixed.
- **[DC Offset]:** adjusts the “center” range of a modulated signal “up” or “down” to suit the overall range of the destination that will be modulated by the final CV signal.

The Input connections:

- **[CV IN]:** Primary control voltage input for the module. Bear in mind that multiple inputs can be summed and scaled at this point, even before the signal is processed through the module.
- **[AM]:** Amplitude modulation input for the CV signal. Again, this connection can receive multiple inputs and scaling for each source as they enter the module.

The Output connections:

- **[CV OUT]:** This is the output connection of the CVMod. Note, again, that you can select more than one location - and scale them at the output as they are attached to each destination.

10 THE MINIMOOG TEMPLATE

10.1 What is a template?

Instead of creating your own modular structure, you can also use the synthesizer templates included in the Origin. These are ‘pre-built’ modular structures, recreating the sound and functionality of vintage analog synthesizers. The panel of the modeled synthesizers is graphically displayed in the [Edit] page. Templates offer a convenient tool for tweaking your favorite synths straight away without having to create it from scratch.

The first firmware version of Origin offers the Minimoog template.

10.2 Minimoog story

In the late 1960’s, sound synthesis was an art that had to be performed on large modular systems, which didn’t really look like synthesizers as we know them today. On these systems, synthesizing just a single note was already quite a task and therefore, synthesis was a specialist affair at that time. On top of that, these modular systems were quite big and by no means practical (if not impossible) to use for live performance. Nevertheless, they were capable of producing an infinite variety of sounds yet to be heard (up to this day). For this reason, bands like the Beatles and Tangerine Dream were known to use the possibilities of analog synthesis.

To make analog synthesis a more practical and understandable for a wider range of musicians, Dr Bob Moog and his company Moog Music developed the Minimoog synthesizer. This synthesizer was a small (44 notes) portable keyboard with a pre-wired synthesis structure. Though it didn’t offer as many possibilities as the modular systems it did offer the great and warm sound Moog was already famous for. Due to the fact that it was practical, affordable, relatively simple and most of all sounded very good, it became a great success and was played by the likes of: Pink Floyd, Herbie Hancock, Chemical Brothers and Kraftwerk.

In 1981 the production of the Minimoog stopped, and due to the introduction of the digital synthesizers its popularity decreased in the late ‘80s. However in the second half of the 90’s the warm sound associated with analog synthesizers began to attract musicians again. The old MiniMoog then became highly sought, and still is nowadays considered as one of the best synthesizers ever.

Within Origin’s Minimoog template, you can find the same functionality, layout and most important, the same fat sound as the original Minimoog. On top of that, Origin offers additional features compared to the original design, for example a modulation matrix, polyphony and of course comprehensive MIDI control.

10.3 Using the Minimoog template

This chapter will introduce you to the details of the Minimoog template editing sections.

- ▶ To load the Minimoog template, go to the [Preset] page.
- ▶ On the top left of the page you’ll find three page tabs; [PGRM], [MULTI] and [NEW]. Press the contextual button situated directly above [NEW].
- ▶ On the [NEW] tab you can open different synthesizer templates, select the Minimoog using the jog dial or the cursors, then validate by pressing the jog dial or the [Enter] button.

You are now redirected to the [Edit] page which displays a basic representation of the original Minimoog. Before we dive into the features accessible through the LCD screen, let's just play the template first using the dedicated hardware buttons.

There is already a basic sound loaded so you can start playing straight away.

- ▶ To modify the sound a bit more to your personal taste, try turning the [Cutoff] and [Resonance] knobs on the [Filter] section of the front panel.
- ▶ After that you can tweak the oscillator using the dedicated [Oscillator] section next the [Filter] section. Using the [Waveform] encoder, you can browse through the different waveforms offered by the Minimoog.

This only influences Oscillator 1 however, and we'd like to be able to control the other oscillators using the hardware knobs as well.

- ▶ To do this, turn the [Select] encoder on the [Oscillator] section. This way you can browse through the different oscillators to select them for editing.
- ▶ When the LCD screen displays the oscillator you wish to edit, press the [Select] encoder. Now the hardware knobs in the [Oscillator] section are assigned to the oscillator you've just selected.
- ▶ When the overall sound is the way you want it to be, you can start shaping its amplitude and spectrum over time using the [Envelope] section.

By default, the amplitude envelope is selected for editing.

- ▶ To change this, turn the [Select] encoder in the [Envelope] section. When the LCD screen displays the envelope you want to edit, press the [Select] encoder.

Now, we will use some of the features included in the template which are not found on the original Minimoog. We'll modulate the filter frequency using the velocity so that when we strike a key hard, the sound will be brighter.

- ▶ To do this, go to the [Edit] page where the Minimoog interface is displayed. You can browse through the different sections using the jog dial or the cursors. Go to the [Modulation Matrix] section and press the data dial or the [Enter] button.

You will be presented with a pop-up allowing you to route 8 different modulation sources to 8 different targets.

- ▶ Using the jog dial, move to the left slot of the upper row and press the jog dial. From the pop-up menu, we'll select [Velocity].
- ▶ Now go to the right slot of the upper row and select [Cutoff] using the same method.
- ▶ The knob in the middle allows you to change the amount of the modulation. Set it around 3 o'clock. Now the filter opens up more as you play louder on your keyboard, this will render your playing more dynamic and lively. Feel free to explore the other possibilities offered by the modulation matrix to create your own unique sounds.

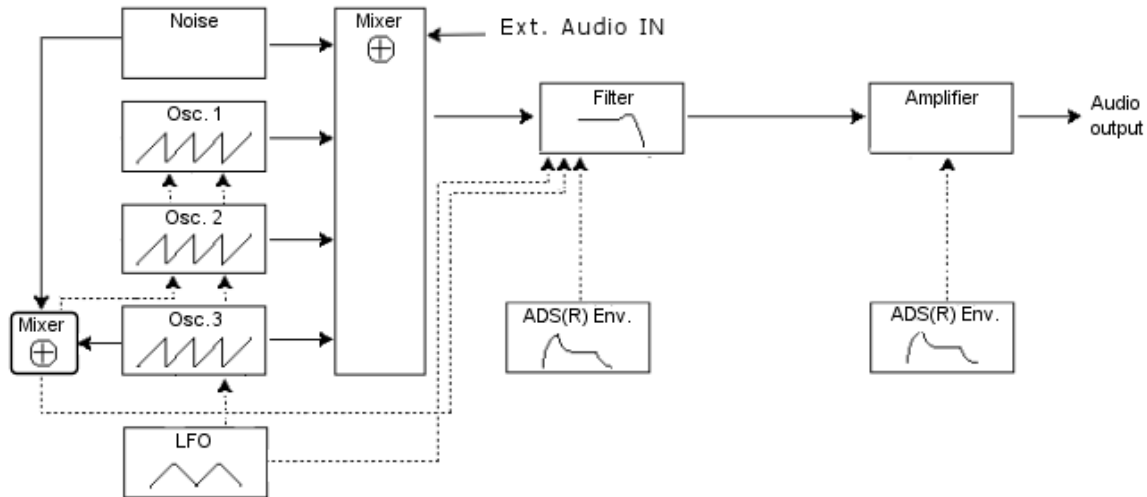
10.3.1 Minimoog structure

The Minimoog template offers the following modules:

- **3 Oscillators** (Oscillator 3 can also be used as modulator)
- Noise generator
- External input
- 24 dB/Oct resonant **lowpass filter**

- Mixer
- 2 ADS(R) envelopes
- VCA (amplifier)

The Minimoog template uses a quite classic subtractive synthesis structure graphically displayed below:



Three independent oscillators provide the main sound source for the Minimoog template. Their waveform and pitch can be set independently from the other oscillators. Oscillator 3 can also be used to modulate the frequency of the other oscillators, or even the filter cut-off frequency.

The audio signals from the three oscillators are sent to the mixer where their individual volumes can be set. The mixer also provides volume controls for the noise generator and the external input. The mix of all audio sources is then sent to the filter, which has its own dedicated envelope. After the filter, the signal is amplified in the VCA module, again with its dedicated envelope.

The mix of oscillator 3 and the noise generator can also be used as a modulation signal. The mix between these two signals can be set with the [Mod. Mix] knob and the amount of modulation is controlled by the modulation wheel. The modulation of the filter and oscillators can be independently switched On and Off.

The external LFO which is added to the original Minimoog structure can be routed to virtually any destination within the Minimoog template using the modulation matrix. The modulation matrix also allows using other sources as modulators, for example the filter envelope or the aftertouch.

The FX mixer on the [Program] page and the [FX] page work with the Minimoog template in the same way as any other program. This means that you can freely use Origin's built in effect in combination with the Minimoog template. The Minimoog template uses VCA 1.

10.3.2 The interface

To view the interface of the Minimoog template, go to the [Edit] page. The [Edit] page shows the main interface which is a graphic representation of the original Minimoog. This main interface shows the following screen sections:

- Modulation matrix
- LFO
- Controls
- Oscillator bank
- Mixer

- Filter and Modifiers
- Output
- Keyboard control (next to the keyboard)



The main interface of the Minimoog template

- ▶ To navigate to a certain screen section in order to modify the containing parameters, highlight it on the main interface using the jog dial or the cursor keys.
- ▶ To open the highlighted screen section, press the jog dial or the [Enter] button.

This opens a pop-up on top of the Minimoog interface which allows you to modify its containing parameters.



Open the oscillator bank

- ▶ You can press the [exit] button anytime to return to the main interface of the Minimoog template (only works on the [Edit] page).

Below is a detailed description of each screen section of Origin's Minimoog template

10.3.2.1 Oscillator Bank

This section contains all the parameters of the three independent oscillators of the Minimoog template.



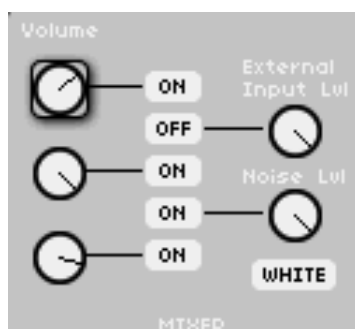
The oscillator bank

The oscillator bank is organized into three rows, each row corresponding to one oscillator. From top to bottom you can find oscillator 1, 2 and 3. Below is a listing of the available parameters.

- **[Range]:** The three selection boxes in the column below [range] at the far left set the range of each oscillator. It is specified in feet and runs from '32 (lowest possible range) to '2 (highest possible range). Oscillator 3 also offers a [Lo] position; as set, oscillator 3 can be used as an LFO.
- **[Sync]:** This top-centered switch activates or deactivates the synchronization of oscillator 2 to oscillator 1 (only available on oscillator 1).
- **[Fine]:** These knobs control the fine tuning of the corresponding oscillator (only available on oscillator 2 and 3).
- **[Coarse]:** These knobs control the coarse tuning of the corresponding oscillator (only available on oscillator 2 and 3).
- **[Waveform]** The three selection boxes in the column below [waveform] at the far right set the waveform of each oscillator. The following waveforms are available: TRI (triangle), TRI SAW (asymmetric triangle), SAW (sawtooth), SQUARE, WIDE RECT (wide rectangle), NAR RECT (narrow rectangle).
- **[Osc3 Control]:** This switch at the bottom activates or deactivates the keyboard follow for oscillator 3.
- **[Osc Modulation]:** This switch at the bottom activates or deactivates the frequency modulation of oscillator 1 and 2 by oscillator 3.

10.3.2.2 Mixer

The mixer sets the balance between all the sound sources of the Minimoog template before the signal is sent to the filter.

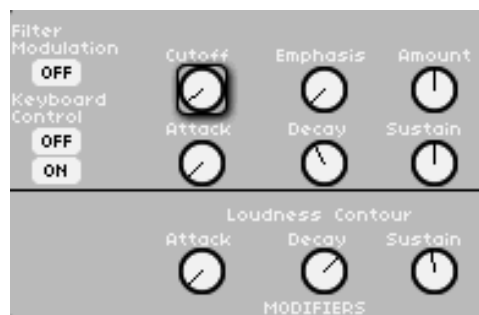


The mixer

- **[Volume]:** The three knobs, in the column below [Volume] at the far left, set the oscillators volume. From top to bottom they control Oscillator 1, 2 and 3.
- **[External Input Lvl]:** This knob sets the external input volume of the Minimoog template (the source connected to [Input 1] on Origin's rear panel).
- **[Noise Lvl]:** This knob sets the noise generator volume.
- **[White/Pink]:** This selection selects the noise type produced by the noise generator: [White] selects white noise; [Pink] selects pink noise.
- **[ON/OFF]:** As expected, the five [ON/OFF] switches turn their corresponding sound source On or Off. From top to bottom they control Osc1, External input, Osc2, Noise generator, and Osc3.

10.3.2.3 Filter / Modifiers (envelopes)

The upper section (above the black line) contains the settings for the filter and the filter envelope. The lower section contains the settings for the amplitude envelope.



The filter and Modifiers (envelopes)

Here are the parameters for the upper section:

- **[Filter Modulation]:** This switch activates or deactivates the modulation of the filter cutoff by oscillator 3.
- **[Filter Control]:** These two switches control the modulation of the filter cutoff by the keyboard follow. There are four different settings for the keyboard follow:
 - When **both switches** are set to [off], the filter is not modulated by the keyboard follow.
 - If only **the upper switch** is set to [on], the filter cutoff tracks the keyboard frequency by 33%.
 - If only **the lower switch** is set to [on] the filter cutoff tracks the keyboard frequency by 66%.
 - If **both switches** are set to [on], the filter cutoff tracks the keyboard frequency by 100%.
- **[Cutoff]** This knob controls the cutoff frequency of the filter (i.e. the frequency at which the filter starts to attenuate, see chapter 7 for more information on the filters)
- **[Emphasis]** This knob (also called “resonance” or “Q”) sets the amplification amount of frequencies close to the cut-off frequency. The other frequencies are either unchanged (below the cut-off frequency) or reduced (above the cut-off frequency).
- **[Amount]:** (amount of contour): This knob sets the amount of filter modulation by the filter envelope.
- **[Attack]:** This knob sets the attack time of the filter envelope.
- **[Decay]:** This knob sets the decay time of the filter envelope.

- **[Sustain]:** This knob sets the decay time of the filter envelope.

The lower section contains the “ADS”-type amplifier envelop, which includes:

- **[Attack]:** This knob sets the attack time of the amplitude envelope.
- **[Decay]:** This knob sets the decay time of the amplitude envelope.
- **[Sustain]:** This knob sets the decay time of the amplitude envelope.

10.3.2.4 Output (VCA amplifier)

This section contains settings for overall volume and voice structure of the Minimoog template.



The output

It contains the following parameters:

- **[Volume]** This knob sets the overall volume of the Minimoog template.
- **[Unison]** This knob sets the number of unison voices. At values higher than 1, multiple voices are assigned to the same keyboard pitch which can create a “bigger” sound. Note however that the maximum polyphony decreases as the number of unison voices increases.
- **[Voice Detune]** This knob sets the amount of detuning of multiple unison voices. By detuning multiple unison voices you can obtain a “bigger” and “fatter” sound.
- **[Polyphonic]** This selection box chooses between different voice assign modes.

10.3.2.5 Controllers

These parameters control the main tune, glide time and modulation output mix.



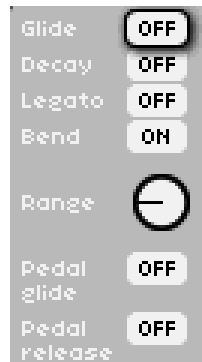
The controllers

- **[Tune]:** This knob adjusts the main tune of the Minimoog template. In the default center setting, the Minimoog template is tuned to 440Hz which is the most common tuning in modern music.

- **[Glide]:** This knob controls the glide (or portamento) time. If the [glide] switch in the keyboard section is set to [ON] (see below *Keyboard section*), this knob determines the time a voice takes to glide from its previous pitch to a newly struck pitch.
- **[Mod. Mix]** (modulation mix): This knob determines which signal is used for the filter or oscillator modulation. It sets a mix between oscillator 3 at the fully left position and a low frequency noise signal at the fully right position.

10.3.2.6 Keyboard section

This section contains all the settings concerning the interaction between your MIDI keyboard and the Minimoog template.



The keyboard control section

- **[Glide]:** This switch toggles the glide (or portamento) On or Off.
- **[Decay]:** If this switch is set to on, the filter and loudness envelopes each have a release time which is equivalent to their decay time. When set to off, the envelopes have no release.
- **[Legato]:** This switch turns the legato mode On or Off (this settings has no effect if a polyphonic mode is selected in the [Output] section). In legato mode, playing a note while another note is still held doesn't retrigger the envelopes. If this setting is set to Off, each new note retriggers the envelopes.
- **[Bend]:** This switch determines whether the Minimoog template responds to pitch bend commands.
- **[Range]:** This knob sets the pitch bend range for the Minimoog template (has no effect if the [Bend] switch is set to [OFF]).
- **[Pedal glide]:** This switch activates or inhibits the glide action for the pedal.
- **[Pedal release]:** This switch activates or inhibits the release action for the pedal.

10.3.2.7 Modulation matrix

The modulation matrix allows you to route up to 8 different modulation sources to up to 8 different destinations within the Minimoog template. It is organized in 8 rows: each row contains a source selector, a modulation amount knob and a destination selector. By default all selectors are set to [OFF] and all modulation amounts knobs are set to zero position.



The modulation matrix

The left **[Source]** selectors are drop down menu's that allows you to select a source to modulate the aligned destination.

The central **[Amount]** knob sets the amount of modulation applied to the designated destination. In central position there is no modulation, the left positions set a negative modulation, the right positions a positive modulation.

The right **[Destination]** selectors are drop down menu's that allows you to select a destination to be modulated by the designated source.



Select a destination connection

10.3.2.8 LFO

This section contains the settings for the mono LFO of the Minimoog template. It was not available on the original Minimoog.



The Minimoog's LFO

- **[Rate]**: This knob sets the rate (or frequency) of the LFO. When the **[MIDI Sync]** selection box (see below) is switched to **[ON]** the rate is synced to the internal or external clock

- **[Shape]:** This selection box allows you to select the shape (or waveform) of the LFO. Origin's LFOs offer 5 waveforms: [Sine], triangle [Tri], sawtooth [Saw], [Square] and [Random].
- **[Sync]:** This selection box allows you to sync the LFO to the internal or external clock. When sync is On, turning the [Rate] knob chooses only frequencies that are integer multiples or divisions of the master tempo. When sync is set to Off, the [Rate] knob has its own (logarithmic) scale.

11 THE BASICS OF SUBTRACTIVE SYNTHESIS

Subtractive synthesis appeared at the end of the 1960's, giving birth to the first analog synthesizers: Moog, Sequential Circuits (the Prophet Series), ARP, EMS, Oberheim, Roland (Jupiter or SH series), Yamaha (CS series) and Korg (MS and PS series). During the 1980's, the purely analog subtractive synthesis model of the first keyboards was progressively replaced by wave table oscillators (Prophet VS) or sample based instruments.

As an owner of the Origin synthesizer, you now have access to an immense sonic generation possibilities, where subtractive synthesis is coupled with the analog oscillators and the wave table generators.

THE BASICS

Of all the forms of audio synthesis, subtractive is one of the oldest, and to this day, the most frequently employed by sound designers and musicians alike. This is due to the simplicity with which complex sounds can be created, over the more unwieldy forms of synthesis techniques, such as additive or granular, to name but two. As a basic overview to subtractive synthesis, one may consider any sound created either in nature or on your synthesizer of choice, as consisting of a number of sine waves, or harmonics grouped together. In subtractive synthesis, we start with a harmonically rich sound such as a saw wave, and through filtering, we remove the sine waves (or harmonics) that we do not want. This as you can imagine is a great deal more complex than simply turning a filter control knob!

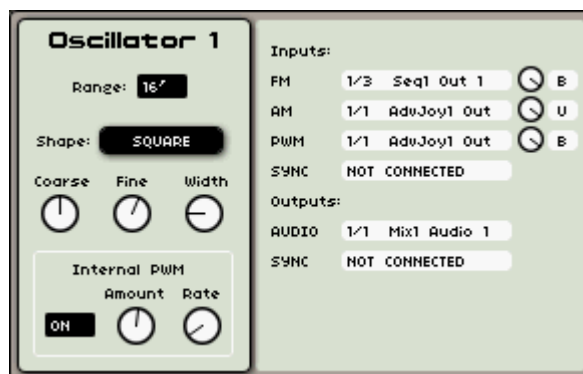
11.1 The three main elements of the sound

11.1.1 The Oscillator or VCO

The oscillator or VCO (**Voltage Controlled Oscillator**) is the starting module (with the noise module which is often classed among the oscillators) for the creation of a sound on an analog system.

The two main goals of the oscillator module are to generate the initial sound signal through a waveform generator, and to give a basic fixed pitch to this resulted sound.

We can think of the oscillator like a violin string that once stroked or plucked, vibrates to create its sound.



An Oscillator module on Origin

The main oscillator settings are:

11.1.1.1 The Pitch

The pitch is determined by the oscillation frequency. You can set the frequency of the oscillator with 2 controllers:

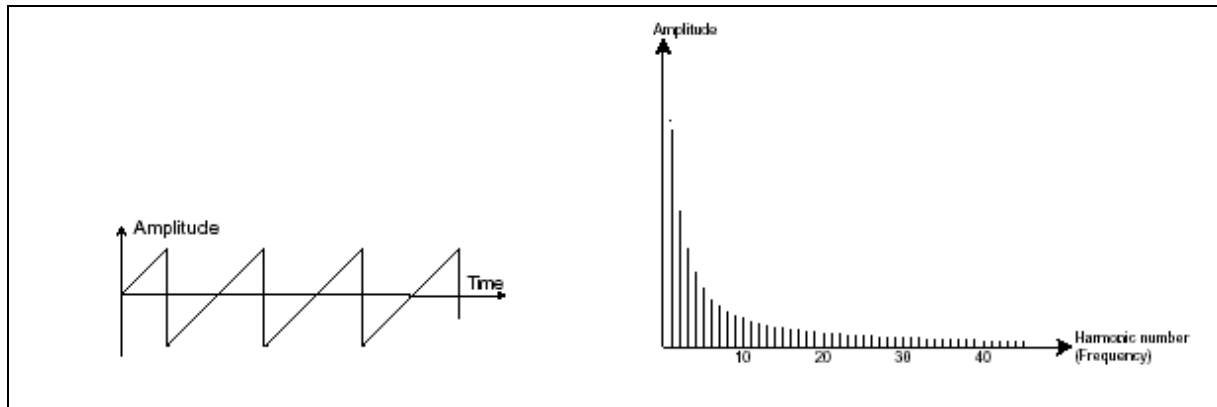
- The **tuning** parameter ([FREQUENCY]), which allows you to tune the oscillator by semi-tones in a range of 5 octaves.
- The **fine tuning** parameter ([FINE]), which finely tunes the oscillator upwards by a semi-tone. This parameter gives a bit more life to your sound when you use several oscillators simultaneously, due to difference in frequencies between the oscillators.

11.1.1.2 The Waveform

It is the **waveform** which determines the harmonic richness of the audio signal.

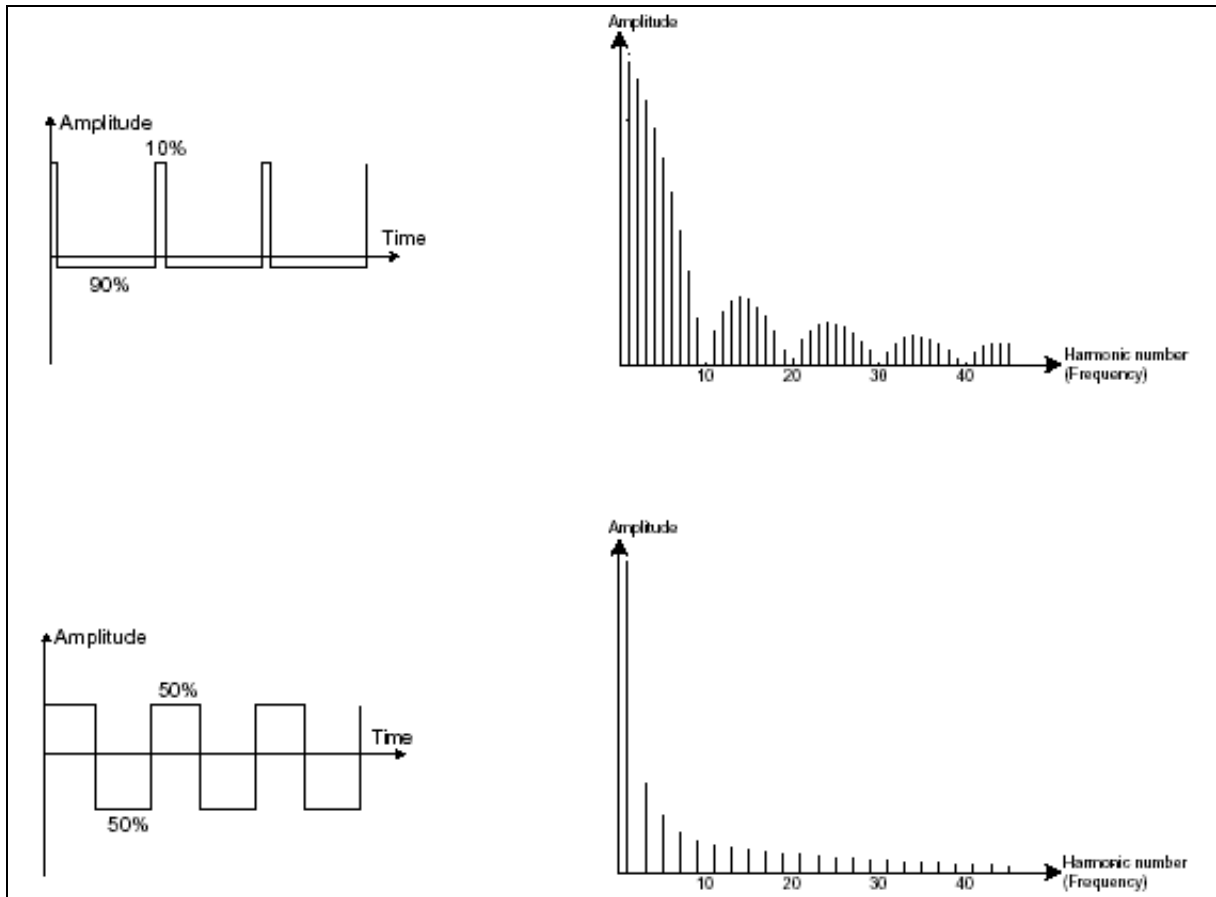
On Origin, 5 waveforms are available:

- The **sawtooth** presents the richest audio signal of the 3 waveforms (it contains all of the harmonics at decreasing volume levels in high frequencies). Its sound is ideal for brass sounds, percussive bass sounds or rich accompaniments.



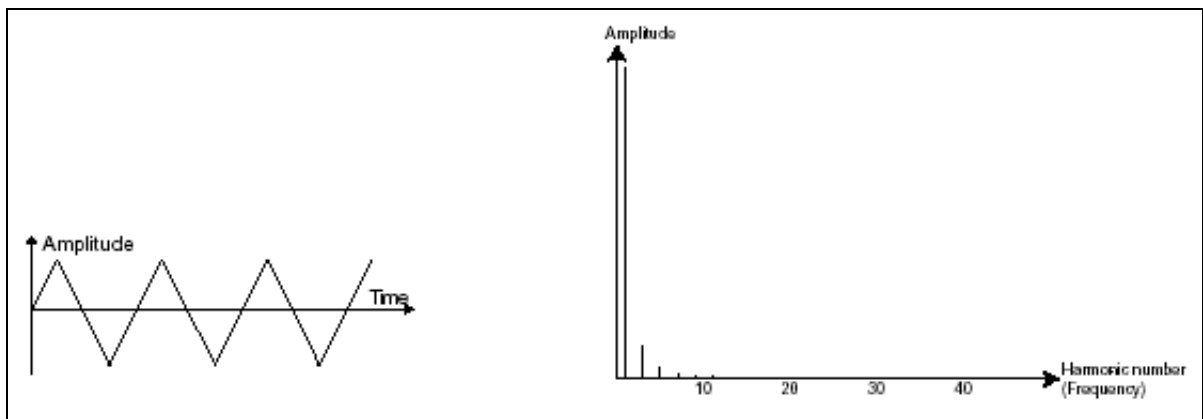
The sawtooth waveform

- The **square** possesses a more “hollow” sound than the sawtooth (it only contains odd harmonics) but none the less, its rich sound (notably in low frequencies) can be used for sub-bass sounds that comes out well in the mix (the square oscillator is often set an octave below the sawtooth), wood sounds (clarinet, if the square signal is a little filtered), etc.
- **PWM (Pulse Width Modulation)** is a setting that allows you to modify the waveform cycle (or wave length). This can be done manually with the help of a knob [PW] or by modulation (with an envelope or LFO). This pulse width variation translates to a spectrum modification, resembling a waveform change.



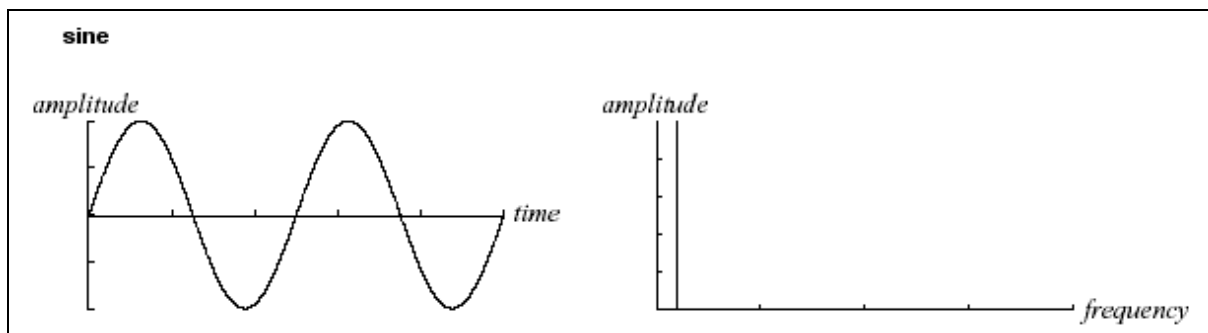
The Pulse Width Modulation (PWM) waveform

- The **triangle** can be considered like a very filtered (and soft) square signal. It is very low in harmonics (odd only) and is very useful for creating sub basses, flute sounds, etc.



The triangle waveform

- The **sinusoid** is the purest of them all. It is a single harmonic and produced a very “damped” sound. It can be used to reinforce the low frequencies of a bass sound or as a frequency modulator in order to create harmonics that don’t exist in the original waveforms.



The sinusoid waveform

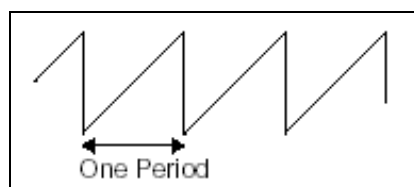
- The **noise** signal spectrum has all frequencies at an equal volume level, often referred to as “white noise”. For this reason, the noise module is used to create different noises like the imitation of wind or special effects. White noise is the richest of noises. Pink noise is also regularly present on synthesizers. It is less rich in the high frequencies than white noise. The audio output of noise can also be used as a modulation signal (especially when strongly filtered) to create random cyclic variations. On hard-wired synthesizers, the noise module is either integrated into the oscillator (its audio output being placed to compliment the waveform outputs), or within the mixer directing the signals towards the filter.

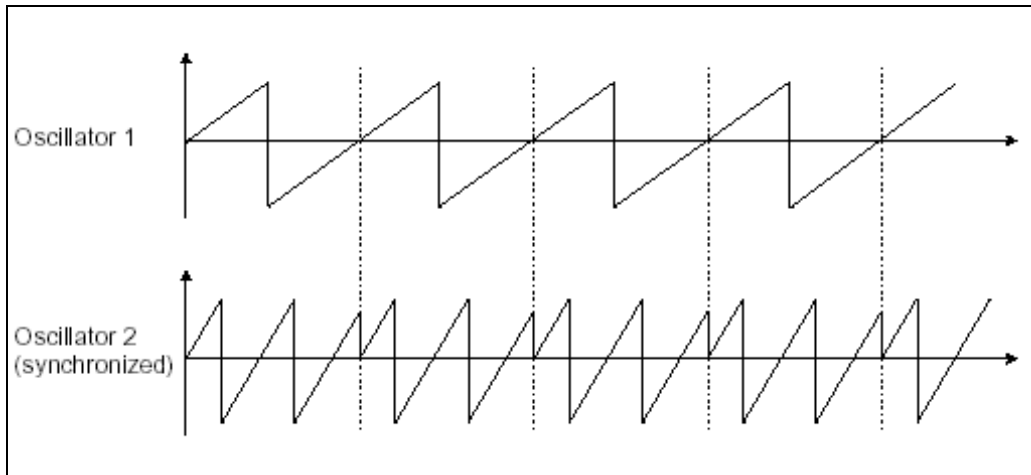


Waveforms on Origin's Oscillator

11.1.1.3 Synchronization

The **synchronization** of an oscillator with another creates more complex waveforms. If for example, you synchronize oscillator2 with oscillator1, oscillator2 restarts a new period every time the first oscillator completes its period, even if oscillator2 has not fully completed its current cycle (this signifies that it is not tuned to the same tonality!) The more you tune oscillator2 upwards, the more you can encounter composite waveforms.

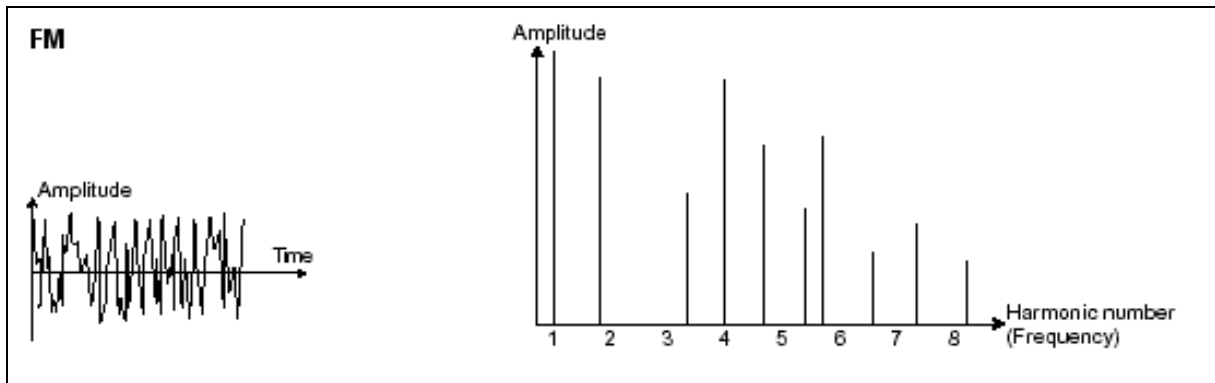




Here, oscillator2 is synchronized with the first and tuned to with double the tonality. The resulting waveform is unique in that it cannot be created by standard synthesis techniques such as layering or filtering.

11.1.1.4 Frequency modulation

Frequency modulation [FM] can be created between 2 oscillators by connecting the audio output from a first sinusoidal oscillator to the modulation input of a second oscillator. On the Prophet V, if you turn the modulation rate ring, you can obtain a sound richer in harmonics. If you introduce a square or sawtooth signal, the result can be quickly distorted... but interesting for enharmonic sonorities like bell sounds or special effects for example.



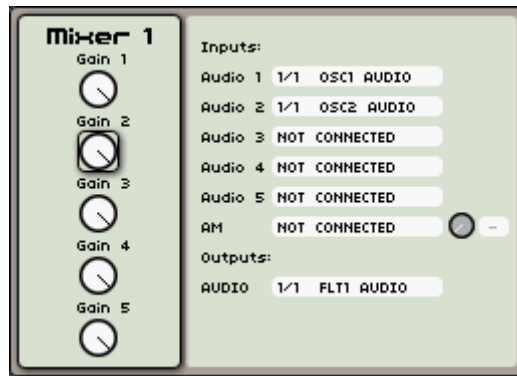
Example of Frequency Modulation (FM)

11.1.2 The Mixer

The audio signal generated by an oscillator (the waveform) is generally directed towards a filter module (**Voltage Controlled Filter**).

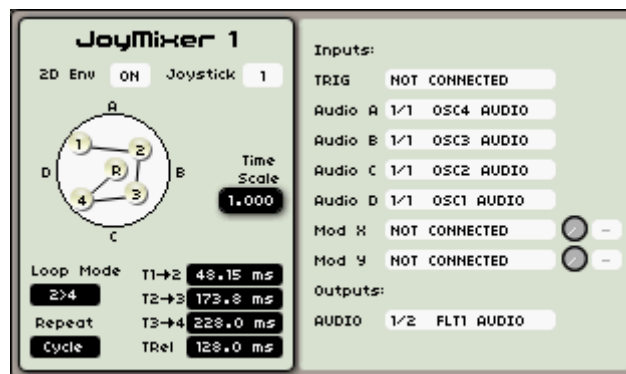
Origin contains two types of mixers:

- The [**Minimixer**] where you can individually set the volume coming from up to 5 oscillators (or any other audio sources). The [**Minimixer**] doesn't have a modulation input so the settings are done manually.



The Minimixer on Origin

- The [JoyMixer], this mixer sets the volume of the four oscillators' outputs (or any other audio sources). The mix is done with a joystick which moves between four points within a diamond shape. Each point (A, B, C or D) corresponds to the maximum volume of each oscillator. The [JoyMixer] can also be automated by a four parameter envelope or by other modulation sources which can be connected in the modulation matrix.



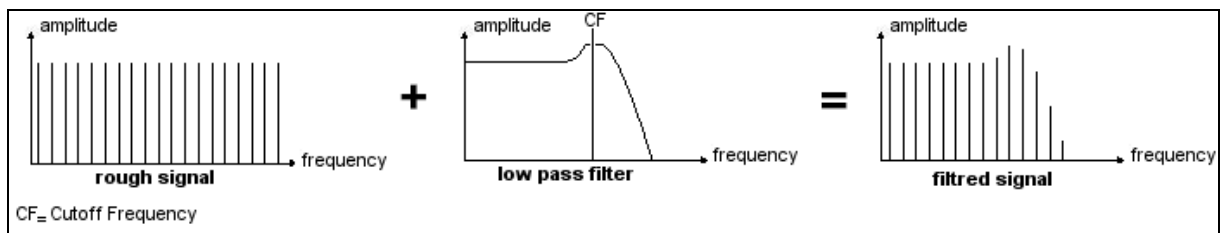
The JoyMixer on Origin

11.1.3 The filter or VCF

The audio signal generated by an oscillator (the waveform) is next generally directed to a filter module or VCF (**Voltage Controlled Filter**). It is this module that we use to control the sound by filtering (by removing or subtracting certain frequencies, which explains the name given to this type of synthesis) the harmonics situated around a cut-off frequency. It can be considered to be a sophisticated equalizer that reduces, depending on the filter type, the high or low frequencies of a sound.

The removal of undesirable frequencies at the cut-off frequency is not done suddenly but progressively, depending on the filtering slope. This filtering slope is expressed in decibels per octave (or dB/Oct). The filters used in classic analog synthesizers have 24 dB/Oct or 12 dB/Oct slopes.

Origin gives you access to several types of filtering: 6, 12 and 24 dB/Oct slopes.

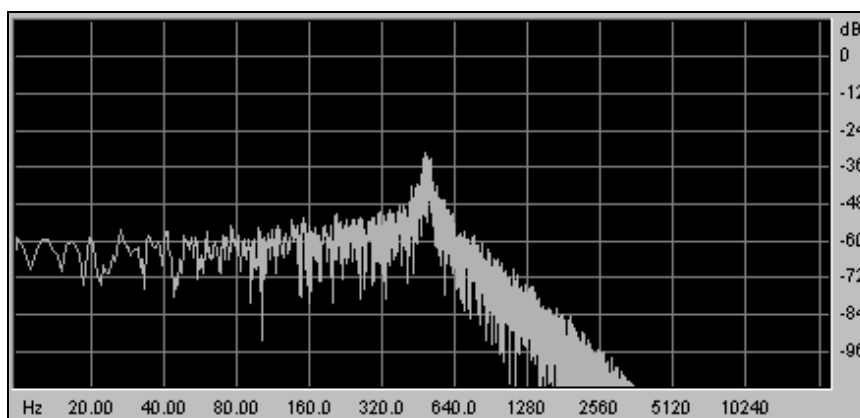


The removal of undesirable frequencies at the cut-off frequency

11.1.3.1 The filter types

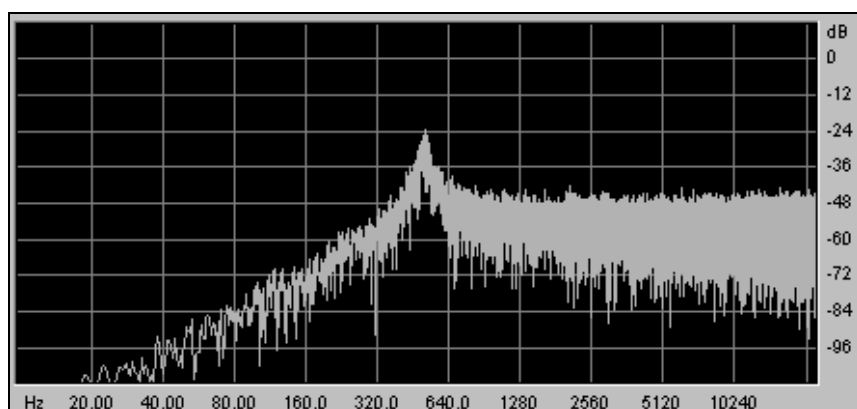
Let's have a look at some of these filters properties:

- The low-pass filter (LP) progressively removes high frequencies above the assigned frequency limit (the cut-off frequency) and allows the sound below the cut-off to pass through unchanged. Depending on the setting we can hear the sound becoming more or less “brilliant”, more or less “dampened”. This is the type of filtering that you can mostly find on synthesizers that use subtractive synthesis. It can be found on most of the recent analog and digital synthesizers.



Low Pass Filter

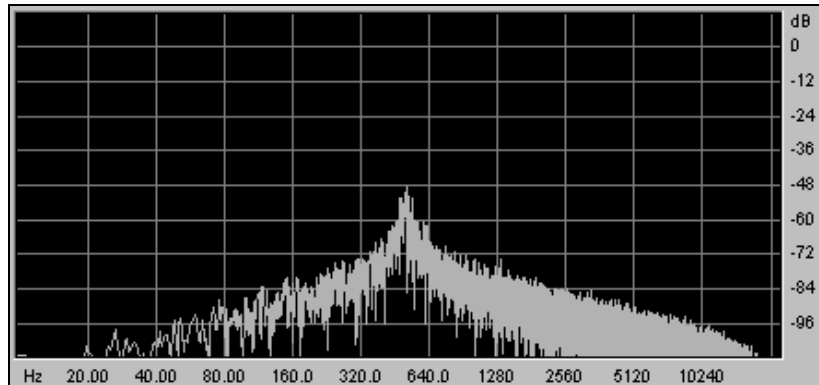
The high-pass [HP] filter acts symmetrically to that of the low pass filter. It eliminates frequencies below the cut-off frequency.



High Pass Resonant Filter

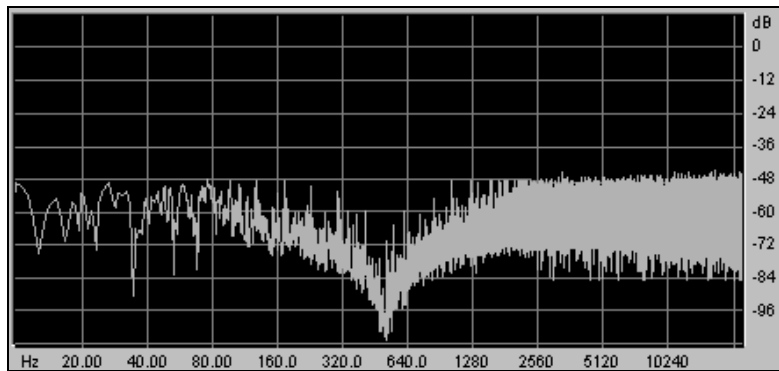
- The band pass [BP] filter is the combination of a low pass filter and a high pass filter: it eliminates the frequencies found on either side of the cut-off frequency. Use it to make

a certain band of frequencies that you wish to emphasize appear. This makes the sound more “pinched”.



Band Pass Filter

The [Notch] is opposite to that of the pass band filter. It eliminates the frequencies inside a band of frequencies. The resonance allows you to accentuate the sag of a band of frequencies.



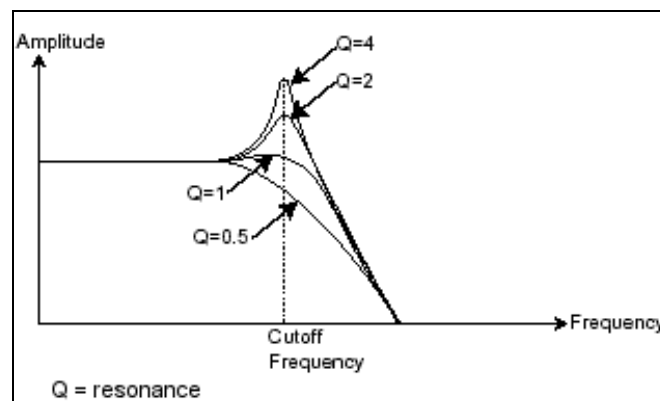
The Notch filter

11.1.3.2 Resonance

A second setting to compliment the cut-off frequency: the resonance (you can also find it called “emphasis” or “Q” - for Quality of filtering).

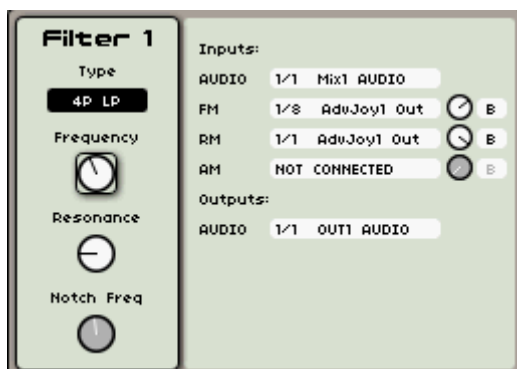
The resonance amplifies frequencies close to the cut-off frequency. The other frequencies remaining are either unchanged (below the cut-off frequency) or reduced (above the cut-off frequency).

When you increase the resonance, the filter becomes more selective, the cut-off frequency is amplified, and the sound begins to “whistle”.



The resonance amplifies frequencies close to the cut-off frequency

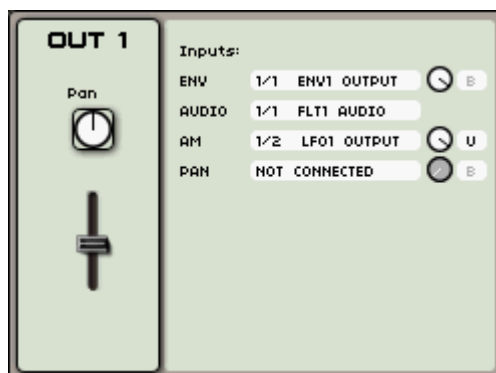
With a high resonance level, the filter begins to produce a sound close to a sine waveform. At this stage, the use of a key follow is very important as you can create a melody by tuning the cut-off frequency of the filter with the frequency of the oscillators.



The Origin's Filter module

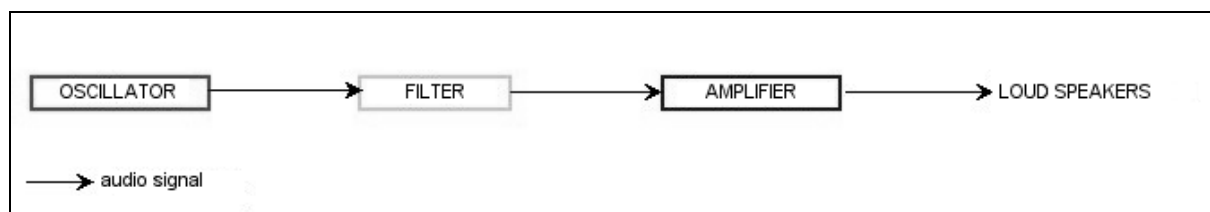
11.1.4 The amplifier or VCA

The amplifier (VCA for **V**oltage **C**ontrolled **A**mplifier) receives the audio signal coming from the filter (or directly from the oscillator if it is not being filtered) to be adjusted before the volume is sent to the speakers.



The Origin's VCA

In conclusion, here is a diagram that should help you to understand the composition of a basic sound:



Basic sound signal path

11.2 Other modules

11.2.1 The keyboard

If we stop here, the sound that you can obtain is uniform, without life and without an end! The oscillator delivers a sound signal (the audio output of a waveform) of a fixed pitch in a continuous manner. In the diagram above, the only way to stop this quickly unpleasant sound is to lower the filter cut-off frequency so that it becomes more and more damp until it finally disappears; or simpler yet, lower the volume of the amplifier!

► To start and stop the sound, and this at the tone that we require, we use a keyboard trigger [Trig] that is connected both to the VCA through a gate and to the frequency of the oscillators. This “plays” the sound as soon as a key is pressed, and mute it when released. Of course, this connection is made through MIDI (it replaces the “gate” type of connections on analog synthesizers, which trigger the note when a key is pressed and stop it when released).

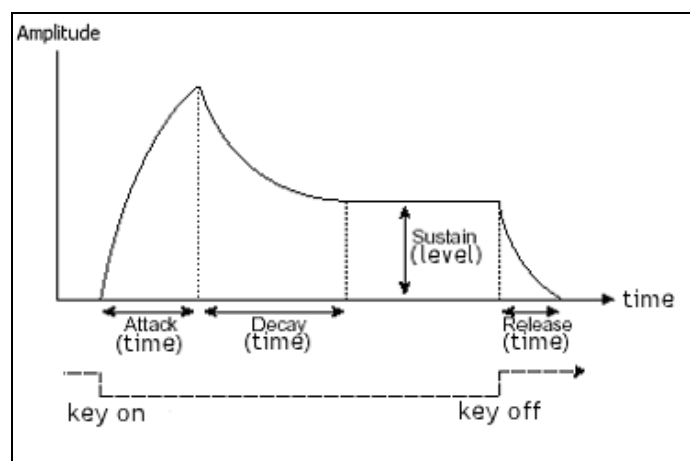
► For the notes to tune correctly to the notes of the keyboard, you must apply a “keyboard following” modulation [KF 1...4], replacing the 1volt/octave control present on most analog synthesizers. (*Take a look at the Keyboard follow module [KBF]*)

11.2.2 The envelope generator

The envelope generator, connected to the amplifier, is used to sculpt the sound when we press a key on the keyboard and ends after the note is released.

The most common modules developed use 4 settings that we can vary:

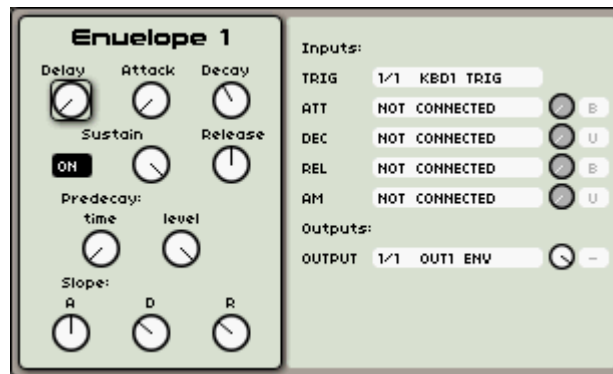
- The **Attack** is the time that the sound takes to reach its maximum volume once we have pressed a key on the keyboard.
- The **Decay** (fall) is the time that the sound takes to diminish after the attack portion is complete.
- The **Sustain** (hold) is the maximum volume level that the sound reaches after the decay is complete.
- The **Release** is the time that the sound takes to diminish once the key has been released.



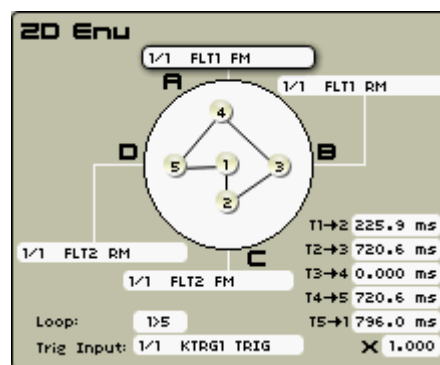
The ADSR Envelope

Both envelopes of the [Joymixer] and [2D envelop] contain 5 points numbered 0 to 4. The 0 corresponds to the initial level of the parameter associated to the envelope. The Release

corresponds to point 4. Points 1 through 4 contain two parameters (filter envelope only): the LEVEL and the RATE. Point 0 only has the LEVEL parameter.



The ADSR envelope on Origin



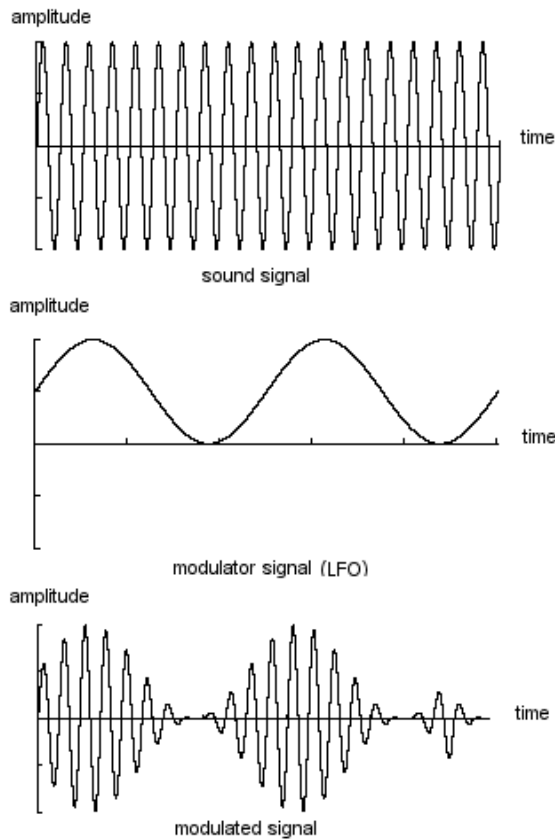
The 2D envelope on Origin

11.2.3 The low frequency oscillator

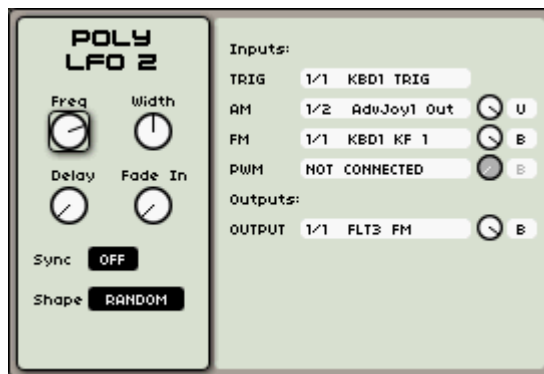
The LFO (*Low Frequency Oscillator*) possesses more or less the same characteristics of the classic oscillator but it only produces frequencies lower than 20 Hz. In other words, you won't hear the pitch of its sound directly. It creates a cyclic modulation on the setting to which it is connected.

For example:

- If the sine waveform from an LFO modulates the volume of an amplifier, the sound increases in volume then disappears in a varying manner following the speed (the frequency) of this LFO. This produces a tremolo effect.
- A sine waveform from an LFO modulating the frequency of an oscillator would produce a vibrato effect.
- With an LFO sinusoid wave modulating the cut-off frequency of a lightly resonant low-pass filter, you can obtain a "wah-wah" effect.



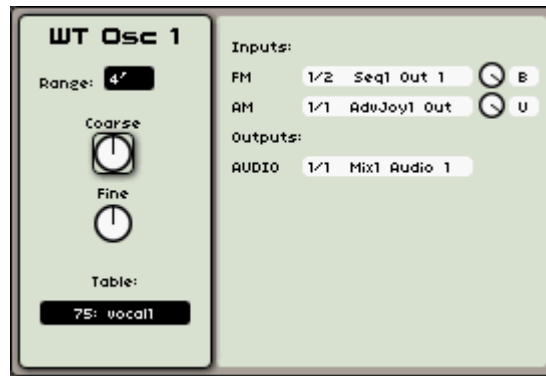
The LFO used as a tremolo effect



The LFO module on Origin

11.3 Complements to Wavetable Synthesis

The Origin synthesizer uses the wave table synthesis technology on the same principles as subtractive synthesis. The difference resides in the type of oscillators used: the Wavetable oscillator (based on the original Prophet VS synthesizer) uses sonic samples saved and stocked in memory, and the older synthesizers using generators of the sawtooth, sine, and square waved form. These samples were recorded from different acoustic (instruments, voice) or electronic (noise, atonal sounds, basic wave forms) sources and allow you to enrich the sonic pallet offered in the “analog” oscillators while remaining complementary.



The wavetable oscillator of Origin

12 ORIGIN CONNECTION - USER'S MANUAL

12.1 Introduction

The Origin Connection is a software, running under Mac OS X or Windows XP/Vista, which provides several services to Origin users:

- Storage and management of the presets created on Origin;
- Origin firmware updates.

12.1.1 Preset storage and management

The preset manager allows to make a backup of the sounds from the machine and to share its presets. The user is able to create Backup files which represent an exact copy of all the presets in Origin.

It also works with Sound Banks of presets. The main difference between Sound Banks and Backups is that the number of presets in a Sound Bank is not limited. In a Sound Bank, the user can add or delete as many presets as he wants. Contrarily, it is impossible to add or delete presets in a Backup.

A Sound Bank is divided in three levels:

- Multis
- Programs
- Sequences

Each level is independent. For instance, if you add a multi into a Sound Bank, you will not find the programs that this multi uses in the Program level, these programs are saved with the Multi and you can't access them. In this way, you will be sure to get exactly the same Multi you saved when you reload it onto Origin. It is the same thing for the Programs linked to a Sequence.

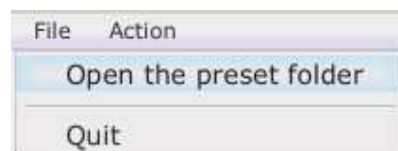
The Sound Banks and Backups are stored in the application preset folder.

Typically:

(for Windows users) C:\Program Files\ARTURIA\Origin Connection\Presets\
(for Mac OS X users) /User/Documents/Origin Connection/Presets/

There are two subfolders: **Sound Banks** for the sound banks, and **Backup** for the dumps.

You can directly open the Origin Connection Preset folder by selecting the **File > Open the preset folder** menu.



Open the Origin Connection Preset folder

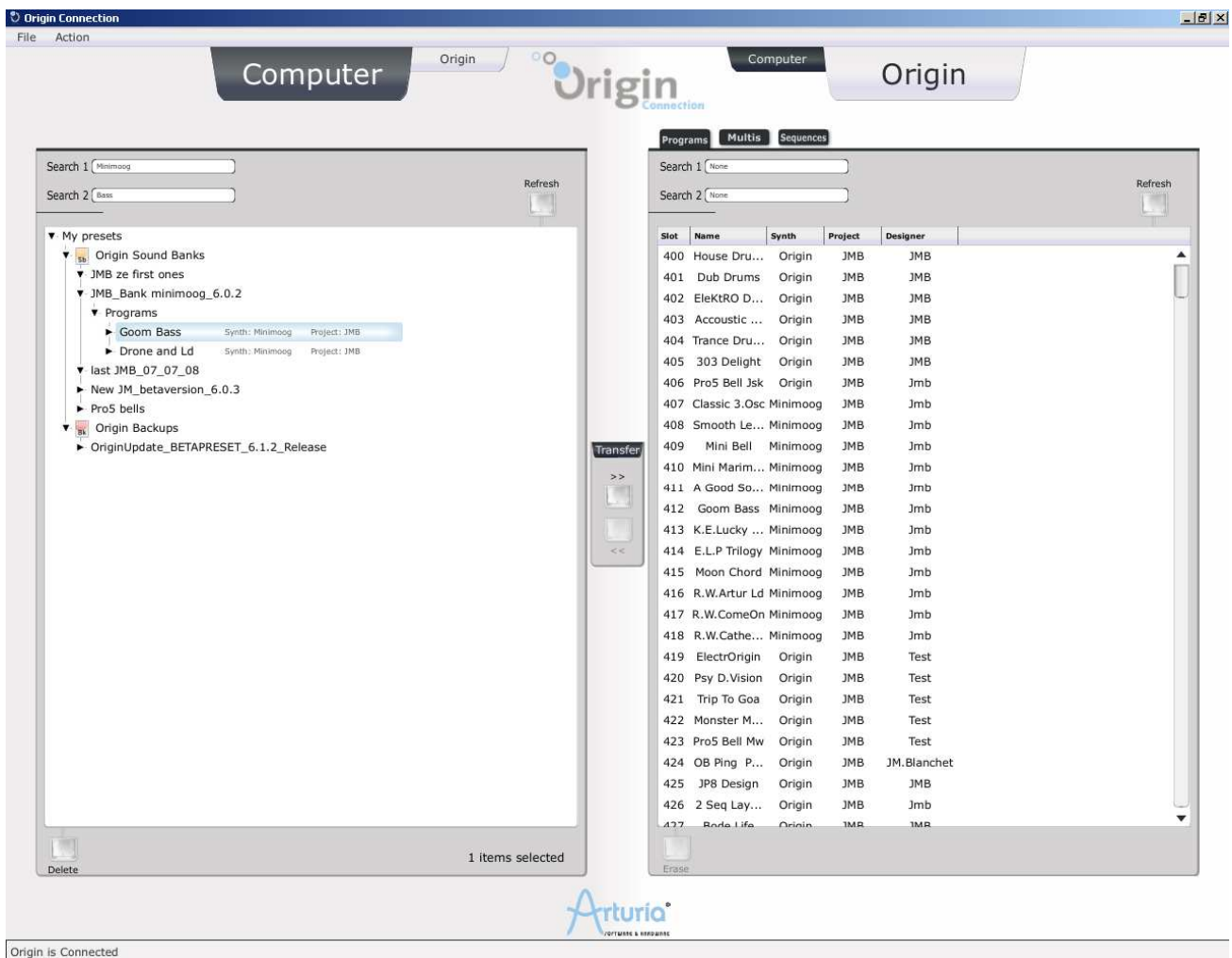
12.1.2 Origin Update

This function gives the possibility to update the firmware inside Origin. The principle is that you can download update file from our website and send it through this application.

12.2 Interface Description

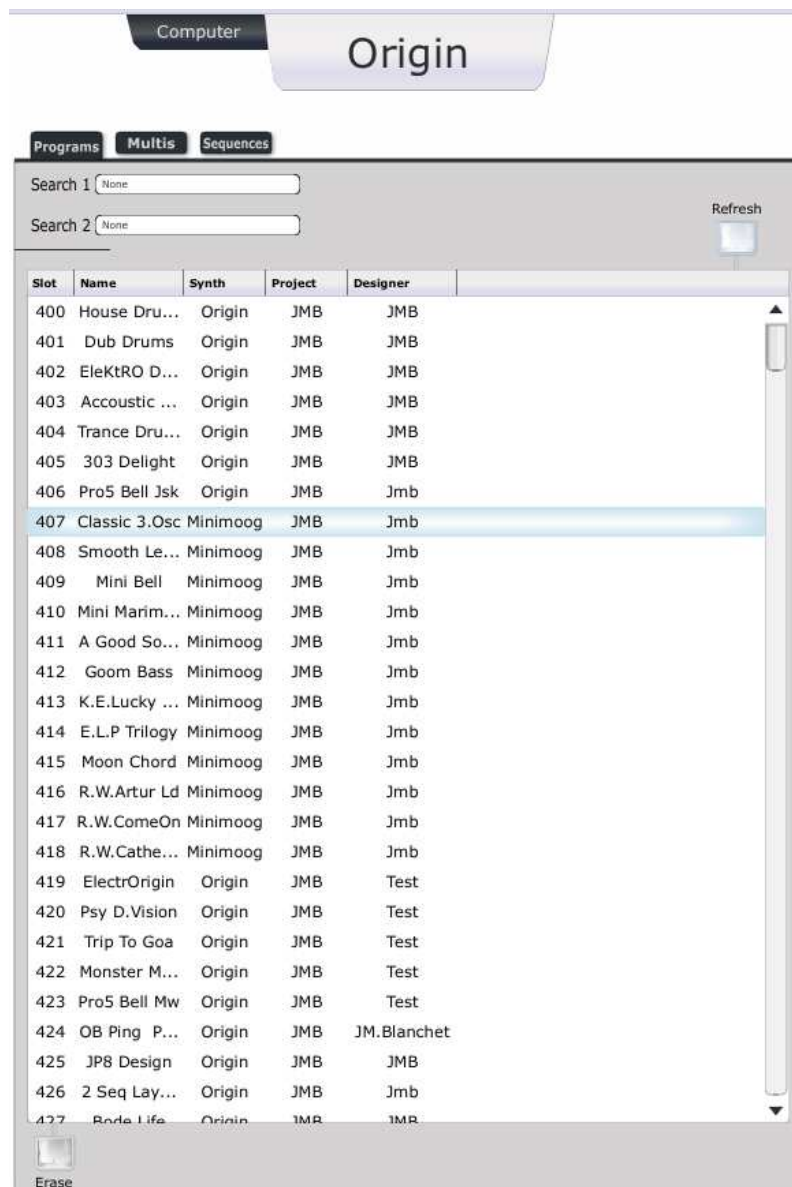
12.2.1 Main panel

This figure shows the Origin Connection's main panel. It is composed of two sub panels. Each panel can be a description of the computer data (Computer panel) or the Origin data (Origin panel). When the user launches the application, a Computer panel is showed on the left and an Origin panel on the right. There is a status bar at the bottom which gives some info to the user.



Origin Connection main panel

12.2.2 Origin panel



The Origin panel

The Origin Panel is composed by 5 buttons and a list which is a representation of the User presets currently stored in the Origin. The user can see the programs, the multi or the sequences. He has to select what he wants to see by clicking on the tab at the top of the panel.

Here is a simple description of the buttons:

- **[Computer]**: switch to a Computer or Origin Panel.
- **[Program / Multi / Sequences]**: these three buttons allow users to overview among Program, Multi or Sequence folders to find presets on those categories.
- **[Refresh]**: refreshes the data showed in the panel. Useful if this seems to be out of sync.
- **[Search 1 / 2]**: these two buttons are key search buttons. It allows users to select among keys to find presets. The keys are Synth (Origin, Minimoog...), Type (Ambient, Arpeggio, Bass, Bell...), Project or Designer.

- [Erase]: erases the selected program(s) on Origin.

12.2.3 Computer panel



Computer panel

The Computer Panel is composed by 5 buttons and a tree style navigator. The navigator allows the user to find presets among his Banks and Dumps. Here is a simple description of the buttons:

- [Origin / Computer]: switch to an Origin or Computer panel.
- [Search 1 / 2]: key search buttons (idem than this type of button in Origin panel).
- [Refresh]: refreshes the content of the panel.
- [Delete]: deletes the selected items.

The list of dumps and banks in the Computer panel corresponds to the file in the directory **Backups** and **Sound Banks** in the user preset folder. On each one, you will find all your Programs, Multi and Sequence presets.

12.3 Uses cases and menus

12.3.1 Introduction

In this section we will see how to use the application. The first step is the connection. The best way to do this is to connect Origin to the computer with the USB cable **before** launching the application.

When the application starts up, it downloads information about the presets. It can take a little time. As long as loading is processing, the Origin panel is disabled. After that, the Origin panel is enabled and it shows all the user presets.

If, for any reason, the connection is broken (for instance the USB cable is disconnected) or if you launch Origin Connection without any Origin connected, the Origin panel will be automatically disabled and no transfer between the computer and Origin is possible. Nevertheless, it is possible to make transfer between Backups and Sound Banks. You have to click on the machine's switch button.

12.3.2 New sound banks

► To create a new Bank, click on the menu **Action > Create new Sound Bank** and choose the name of the new Bank. Then the bank appears in the computer navigator.



Creating a new sound bank

12.3.3 Backup

12.3.3.1 Creating new Backup

- To create a new Backup, you have to click on the menu **Action > Get new Backup**. Then you are invited to choose the name of the new Backup.
- When you click on [OK] button the Backup process starts. It takes from one minute to several depending on the number of presets to be saved.
- You can cancel the Backup process by pressing the cancel button on the progress window.

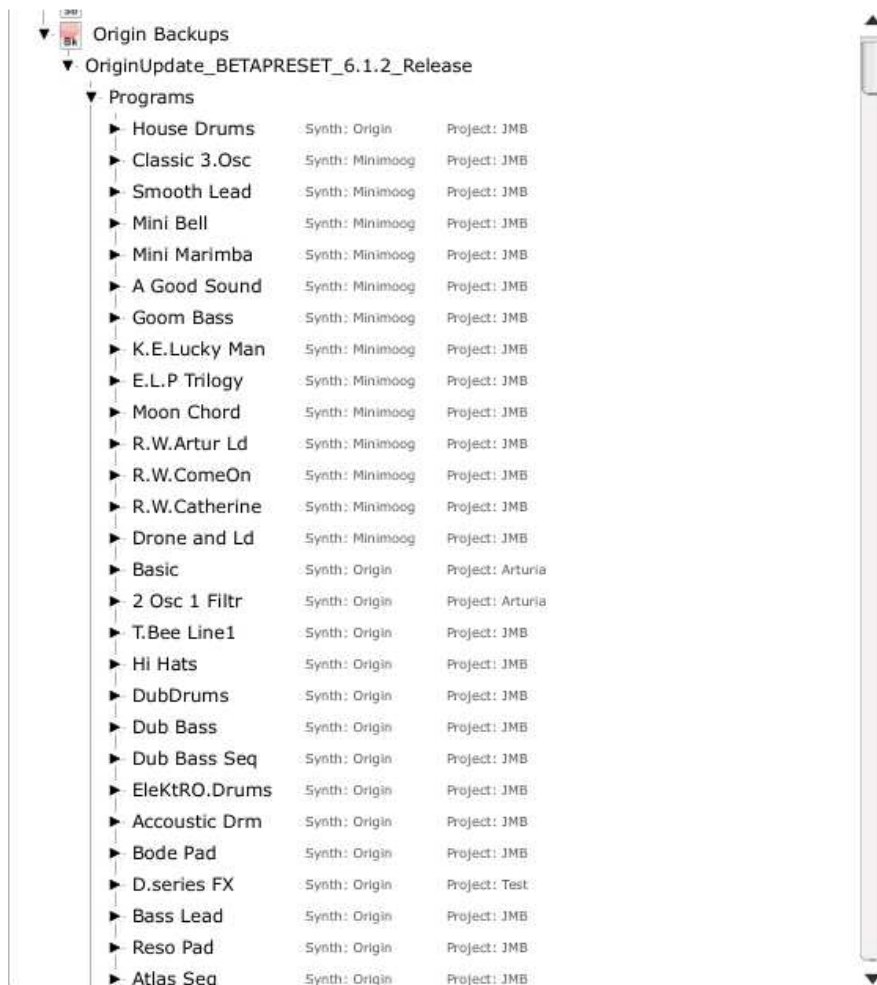


Creating a new backup



Backup progress window

At the end of the transfer, the Backup can be found in the Computer panel navigator.



Backup in the Computer navigator

12.3.3.2 Reloading Existing Backups

- ▶ To reload an existing Backup on Origin, you have to click on the menu **Action > Reload Existing Backup**.
- ▶ Choose Backup to be able to reload all Dumps. When the [OK] button is clicked, the process starts. The process time is approximately the same as the backup time.



Reload an existing backup

WARNING! It's impossible to cancel a backup reload after it starts, so it is highly recommended to make a Backup of the preset currently on Origin before reloading an old one. It is the surest way not to lose presets.

12.3.4 Preset transfer

There are 4 types of transfer:

- From Origin to Computer
- From Computer to Origin
- From Origin to Origin
- From Computer to Computer

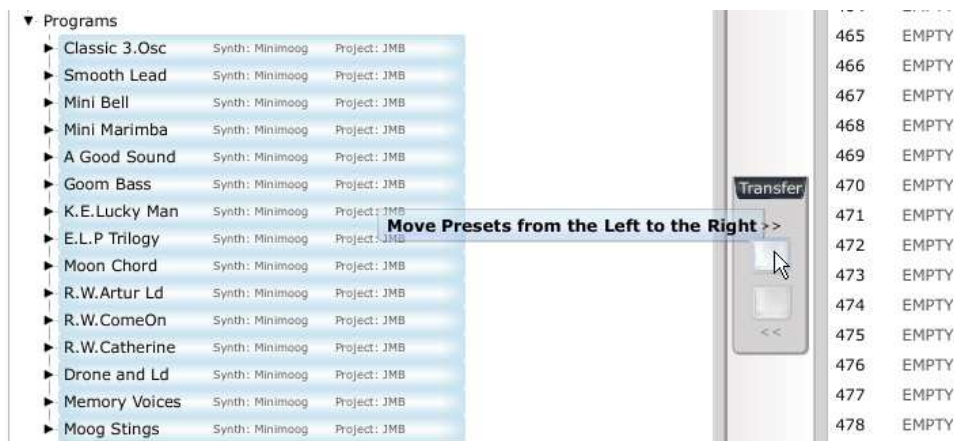
12.3.5 Origin to Computer transfer

This type of transfer corresponds to the sending of presets from Origin into Bank and **NOT** into Backups (it is forbidden).

There are two ways to do this:

- With a “drag and drop” operation;
- By clicking on the transfer buttons.

The selected preset(s) is (are) added in the list of the Bank presets:



Transfer by clicking on the “transfer” button

The sequence level is different from the other ones. This is because the sequences are just identified by their slot. Consequently, the sequence number in a Bank is limited to 128 (from I1 to P16). In the same way, a Bank can not contain two sequences from the same slot. For instance, if you are trying to send the sequence K2 to a Bank which already has a K2 sequence, a pop-up will appear and ask him if you want to overwrite it.

12.3.6 Computer to Computer transfer

This type of transfer is useful for you to sort your preset in the Banks. The principle is the same than in the Origin to Computer transfer. You can “drag and drop” or use the transfer button to add the preset into his Bank.

12.3.7 Origin to Origin transfer

This type of transfer is useful to move programs on Origin.

If you drag a preset on another on, the application swaps them.

If you have selected a program linked to a multi, the application adverts you that this multi will be modified.

12.3.8 Computer to Origin transfer

This type of transfer is different of the others. The main reason is because there are space impositions on Origin which mostly do not apply a computer.

It can be either transfer presets from Bank to Origin or from Backup to Origin.

There are also two ways to do this:

- ▶ With a “drag and drop” operation;
- ▶ By clicking on the Transfer buttons

But the result is different:

- ▶ If you drag the selected preset(s), the application locates it (them) into the slot(s) he chose;
- ▶ If you choose the Transfer button, the application sends the preset(s) into the next empty slots available.

The process is also different for each type of preset:

- **Program:** if the program contains a sequence, you have to select the destination slot of the sequence. (Fig 3.5)
- **Multis:** for each program composing the Multi, you have to select the destination slot. (Fig 3.6)
- **Sequence:** you just have to select the sequences then drag them, or press the transfer button.

12.4 Preset erase

▶ To erase one or more presets on Origin, the user has to use the Erase function. Just select the preset(s) and press the erase button. The slots corresponding to selected presets will become empty.

▶ It is the same thing for deleting presets in Banks, you will just need to select the presets and press the Erase button.



Erase a preset

⚠ WARNING! You will not forget that the erased presets will not be repaired; there is no “trashcan” or similar function in Origin, so use this feature with great care!

12.5 Origin update

- ▶ To update the firmware of Origin you have to go in the menu **Action > Origin Update**.
- ▶ Then select the update file through a file browser. Instructions are displayed on the computer's screen, to be followed. The firmware update generally takes about 20 minutes, but it may take more time depending on the computer's performance.



The firmware update menu



WARNING! *Never interrupt the update process once the operation starts! It could produce some irremediable troubles on the Origin's DSP.*

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13.2 FCC INFORMATION (USA)

Important notice: DO NOT MODIFY THE UNIT!

This product, when installed as indicate in the instructions contained in this manual, meets FCC requirement. Modifications not expressly approved by ARTURIA may avoid your authority, granted by the FCC, to use the product.

IMPORTANT: When connecting this product to accessories and/or another product, use only high quality shielded cables. Cable (s) supplied with this product **MUST** be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

NOTE: This product has been tested and found to comply with the limit for a Class B Digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide a reasonable protection against harmful interference in a residential environment. This equipment generate, use and radiate radio frequency energy and, if not installed and used according to the instructions found in the users manual, may cause interferences harmful to the operation to other electronic devices. Compliance with FCC regulations does not guarantee that interferences will not occur in all the installations. If this product is found to be the source of interferences, which can be determined by turning the unit “OFF” and “ON”, please try to eliminate the problem by using one of the following measures:

Relocate either this product or the device that is affected by the interference.

Use power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter(s).

In the case of radio or TV interferences, relocate/ reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to coaxial cable.

If these corrective measures do not bring any satisfied results, please the local retailer authorized to distribute this type of product. If you cannot locate the appropriate retailer, please contact ARTURIA.

The above statements apply **ONLY** to those products distributed in the USA.

13.3 CANADA

NOTICE: This class B digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulation.

AVIS: Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

13.4 EUROPE



This product complies with the requirements of European Directive 89/336/EEC.

14 APPENDIX

14.1 General Specifications

Operating sampling frequency		44,1, 48 kHz
Modes		Program / Multi
Sound generator	Sound generation system	TAE [®]
	Polyphony	32 voices (1)
	Sound Structure	<ul style="list-style-type: none"> • Synth (modular structure): _ up to 9 oscillators (including analog emulations from the Minimoog, ARP 2600, CS-80 and JP8); _ up to 4 wavetables oscillators emulated from the Prophet VS; _ up to 2 tone-wheel oscillators (additive synthesis, emulated from vintage organs) _ up to 4 filters (switchable multimode filters including analog emulations from the Minimoog, ARP 2600, CS-80 and JP8. 1, 2 and 4-poles LP, HP, BP and Notch modes); _ up to 4 output VCAs; _ up to 5 mixers (4 "Minimixer" and 1 "Joystick mixer"); _ 1 Ring Modulator; _ 1 Bode Shifter (analog emulation from the Moog Modular), _ up to 4 poly LFO and 2 mono LFO; _ up to 8 ADSR Envelopes modules or CS-80 IL-AL-A-D-R envelopes; _ 1 Galaxy module; _ 1 2D envelope. _ 8 CV Modulators <ul style="list-style-type: none"> • Minimoog template: _ up to 3 oscillators; one 4-poles LP resonant filter, one mixer; _ 2 envelopes; one LFO and one modulation matrix.
Effects	Number and types of effects	9 effects including: chorus, delay (stereo & ping pong), reverb, distortion (3 different types), dual phaser, ring modulator (analog emulation from the CS-80), parametric EQ, bit crusher, rotary speaker (emulation of a Leslie speaker)
	Structure of effects	3 effect slots per Program with serial and parallel structures
Step sequencer	Structure	Three 32 steps free assignable sub-sequences
	Play modes	One shot, loop (forward, backward; forward and backward)
Arpeggiator	Play modes	Up, down, Up & down, random
Programs	Number of Programs	1000 programs (400 Factory and 600 User Programs)
	Program structure	1 synth modular or template (Minimoog) structure 3 effect slots 1 sequence
Multi	Number of Multis	256 (100 Factory and 156 User multis)
	Multi structure and modes	Up to 4 Programs slots with Layering, split and MIDI multi modes
Keyboard (Origin Keyboard only)		61 notes with after touch and velocity
Controllers	Laptop / Rack version	21 potentiometers, 33 encoders, 1 joystick
	Keyboard version	21 potentiometers, 33 encoders, 1 joystick, 1 pitch bend wheel, 1 modulation wheel, 1 ribbon controller
Audio Input/output connections	Audio Inputs	2 audio inputs: 6.35 jacks
	Audio outputs	1 headphone output: 6.35 stereo jack 2 main audio outputs: 6.35 balanced jacks 8 individual auxiliary outputs: 6.35 balanced jacks
Control inputs		1 foot controller and 1 footswitch controller (6.35 balanced jacks)
MIDI		IN, OUT, THRU connectors, USB 2 connector
Main screen		320x236 pixels LCD with 32,768 colors
Power supply		6.5VDC 3.85A
Dimensions (W × D × H)	Origin Laptop/ Rack	482 x 290 x 87 mm
	Origin Keyboard	1020 x 325 x 420 mm
Weight	Origin Laptop/ Rack	8 kg
	Origin Keyboard	18 kg

14.2 MIDI implementation chart

Function		Transmitted	Recognized	Remarks
Basic Channel:	Default	1-16	1-16	Memorized
	Changed	1-16	1-16	
Note Number			0-127	
True Voice		*****	0-127	
Velocity:	Note On	1-127	1-127	
	Note Off	64	X	
Aftertouch:	Poly (notes)	0 / X*	0	
	Mono (channel)	0 / X*	0	
Pitch bend		0 / X*	0	
Control Changes:	0, 32	0	0	Program change
	1	0 / X*	0	Modulation Wheel
	2	0	0	Breath Controller
	4	0	0	Foot Controller
	6	0	0	Data Entry
	7	0	0	Main volume
	10	0	0	Panpot
	11	0	0	Expression
	64	0	0	Damper
	65	0	0	Portamento
	71, 74	0	0	Resonance, Brilliance
	82	0	0	Foot Switch
	98, 99	0	0	RRPN (LSB, MSB)
Program Change		0-127	0-127	
System Common:	Song Position	X	X	
	Song Select	X	X	
	Tune	X	X	
System Internal Clock		0	0	
Aux Messages:	Local ON/OFF	0	0	
	All Notes Off	0	0	

* Origin Keyboard / Origin Laptop