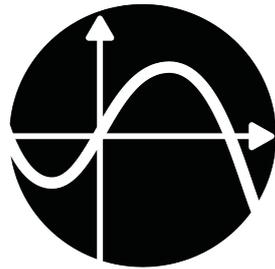


# dialog audio



modulation  
processor  
3244

## Modulation Processor 3244 User Guide

V1.3

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# 1 Introduction

The Modulation Processor (MP3244) audio software plug-in is especially designed for synchronizing and modulating hardware synthesizer parameters within a digital audio workstation (DAW).

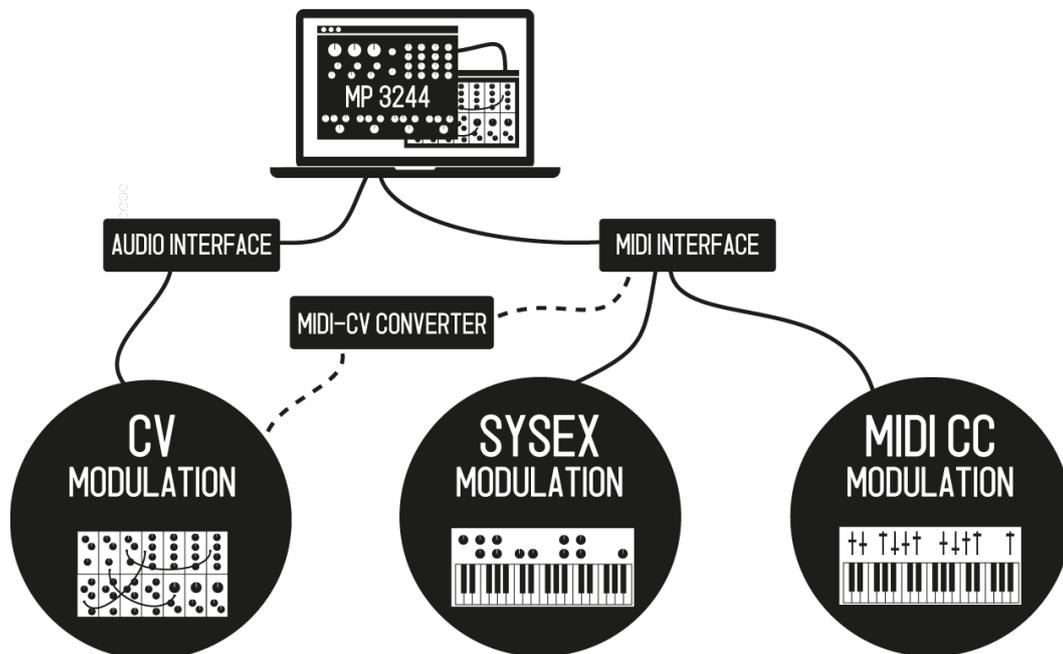
The modular structure of the plug-in allows you to create various modulations, which can be sent to any parameters of your synthesizers and other audio equipment.

Depending on your audio hardware setup, different connection possibilities are given:

Audio gear with MIDI inputs can be controlled via MIDI Continuous Controller messages (MIDI CC), or via MIDI System Exclusive messages (SysEx).

For audio gear that can be controlled via Control Voltages (CV), you either can use your audio interface (if DC-coupled) or you can use a MIDI to CV converter.

Furthermore the MP3244 can be used to modulate software synthesizers and audio plug-ins within the DAW, to give extended modulation possibilities.



## 2 Installation

### 2.1 Mac OS X

#### Requirements

- OSX 10.7 or higher with Intel Processor
- AU (Audio Unit), VST 2.4 or VST3 compatible host, or Pro-Tools 10.0 or higher

#### Install

- Download ModulationProcessor3244\_V\*\_Mac.zip, unpack and run the installer. The installer will copy the plug-in into the appropriate directory. All available versions will be installed by default (VST 32/64bit, AU 32/64bit, AAX 32/64bit).

**i** Notice: some hosts require a restart to find the installed plug-in. Maybe a rescan is also required! Ableton Live: if the plug-in does not show up after a plug-in rescan, try to disable and re-enable VST plug-in support.

#### Uninstall

- Delete the plug-in in following directories:  
/Library/Audio/Plug-Ins/Components/DA\_ModulationProcessor3244.component  
/Library/Audio/Plug-Ins/VST/DA\_ModulationProcessor3244.vst  
/Library/Audio/Plug-Ins/VST3/DA\_ModulationProcessor3244.vst3  
/Library/Application Support/Avid/Audio/Plug-Ins/ DA\_ModulationProcessor3244.aaxplugin

### 2.2 Windows

#### Requirements

- Windows XP or higher
- SSE 2 compatible processor (Pentium II or higher, or an AMD equivalent)
- VST 2.4 or VST3 compatible host, or Pro-Tools 10.0 or higher

#### Install

- Download ModulationProcessor3244\_V\*\_Win.zip and unpack.

**Install VST:** Run Install\_VST\_32bit.exe for the 32 bit version. Run Install\_VST\_64bit.exe for the 64 bit version. Please check with your host's manual to see if it takes 32 or 64 bit plug-ins. You can also install both bit versions.

The wizard will guide you through the installation and allows you to choose the directory path where you want to install the plug-in. If you do not choose a directory the standard directory will be /Program Files/Steinberg/VstPlugins and /Program Files (x86)/Steinberg/VstPlugins for the 32bit versions on a 64bit operating system.

**Install AAX:** Run Install\_AAX.exe for the Pro-Tools versions. This will install 32bit and 64bit version.

The wizard will guide you through the installation and allows you to choose the directory path where you want to install the plug-in. If you do not choose a directory the standard directory will be /Program Files/Common Files/Avid/Audio/Plug-Ins.

**i** Notice: some hosts require a restart to find the installed plug-in. Maybe a rescan is also required! Ableton Live: if the plug-in does not show up after a plug-in rescan, try to disable and re-enable VST plug-in support.

#### Uninstall

- Delete the plug-in in the directory where you have installed it.

## 3 Registration & Activation

To use the full version of the plug-in you need to purchase a software license. As soon you received your software license key by email you can activate the plug-in.

### 3.1 Activate Online

If your DAW is connected to the Internet the activation is very simple.

Go to: Register -> Activate Online

1. Copy your SOFTWARE-LICENSE-KEY into the product license field and activate. The plug-in will connect to the Dialog Audio server and activate itself. For your freedom no further connections will be made by the plug-in.
2. You're all set!

### 3.2 Activate Offline

In case you have no Internet access on your DAW you can activate the plug-in offline.

Go to: Register -> Activate Offline

1. Copy the SERIAL-NR into a text file and save on a USB drive.
2. Go to a computer with internet access and go to this web page:  
[http://dialogaudio.com/authenticate\\_offline.php](http://dialogaudio.com/authenticate_offline.php)
3. Copy your SOFTWARE-LICENSE and your SERIAL-NR into the appropriate fields and generate the PRODUCT-KEY
4. Copy the PRODUCT-KEY back to the USB drive. Back at your DAW copy the PRODUCT-KEY into the corresponding field and activate.
5. You're all set!



**Notice:** if you have more than one instance loaded in the host, you might need to reload these instance to make sure all instances are activated.

## 4 Quick Start Guide

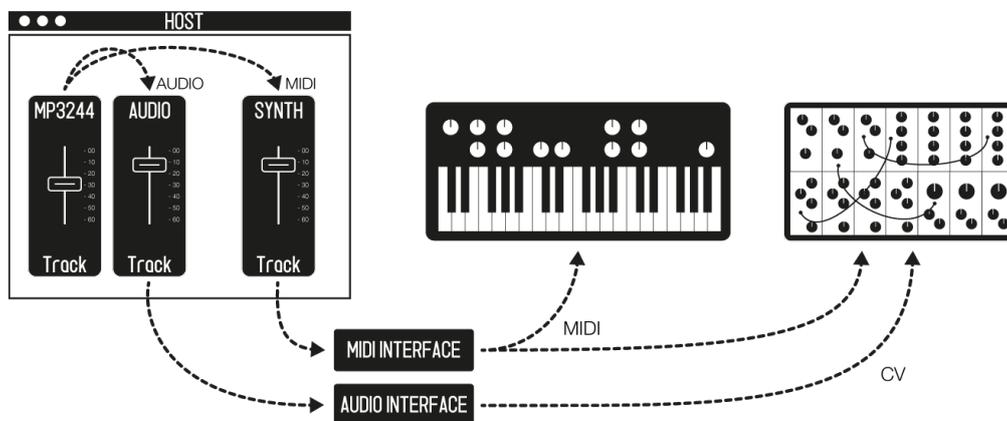
### 4.1 Basic Host Application Setup

The basic setup is for most host applications similar. Usually two tracks are needed. On one track you add the MP3244, on a second track you add the target device (external instrument, software instrument). A virtual MIDI connection needs to be made, to send MIDI messages from the MP3244 track to the target device track. All MIDI notes should be recorded on

the MP3244 track. This of course can vary, depending on your host application.

For CV signals additional audio tracks need to be added which receive the audio signal from the MP3244 and send these to a specific DC-coupled audio interface output.

Several DAW specific setup guides can be found on our website (see below).



- 1 Create a track for the Modulation Processor and add the plug-in.
- 2 Create a second track for the target device (external instrument, software synthesizer, etc.). For external instruments make sure that the MIDI connection is set correctly.
- 3 Make a virtual MIDI connection between the MP3244 track and the target device track. MIDI messages need to be sent from the MP3244 track to the target device track. All notes should be recorded on the MP3244 track.
- 4 For audio CV the MP3244 works as a multi channel plug-in. Additional audio AUX channels need to be added and be connect to a physical audio output on the audio interface (DC-coupled audio interfaces only!).
- 5 Continue with the sections described below!



**Online Help:** Detailed setup guides for several host applications can be found at:

<https://dialogaudio.com/modulationprocessor/#guides>

If you need any further help please feel free to contact us.

## 4.2 Control External Synthesizer via MIDI CC

Once the host setup is completed, MIDI messages can be sent to an external synthesizer (or device, such as a MIDI to CV converter). MIDI messages produced by the MP3244 are in most hosts sent to a second track, where an external instrument plug-in (or

whatever) takes care of sending the messages to the external device. Please make sure that you followed section 4.1 “Basic Host Application Setup” and looked up the online setup guides for your host!



- 1 Be sure that the FORMAT is set to MIDI CC. Choose the MIDI output DEVICE that is usually “MIDI TO HOST” (this may depend on host and setup).
- 2 Got to the DATA OUT section of VCA 1 and select a Continuous Controller (CC) number, which represents the parameter of your synthesizer, which you wish to modulate. You might need to refer to the synthesizers manual to look up the CC assignments. If your synth can process 14bit high resolution MIDI (MSB + LSB) for a specific parameter you can activate the HI RES option.  
Note: At the beginning the best way to go is modulating the VCF of your synth or any other parameter which is clearly distinguishable!
- 3 Press play in your DAW and press a key on your synthesizer. You should now hear the modulation.
- 4 In case the synth is not playing in time, or the entire device locks, you may need to reduce the rate, at which the messages are sent (MSG/SEC). Also please refer to section 5.6 “Output”.

## 4.3 Control External Synthesizer via SYSEX

Once the host setup is completed, SysEx messages can be sent to an external synthesizer (or device). SysEx messages produced by the MP3244 are in most hosts sent to a (virtual) MIDI port, due to the restriction that plug-ins are not allowed to pass SysEx messages directly into the host. Two scenarios are usually possible:

Scenario 1: send the messages directly to the MIDI interface port, where the synth is connected to (this only works on Mac, since

Windows does not allow to connect two devices to the same output port).

Scenario 2: send the messages to a virtual MIDI port, from there back into the host to an external instrument track and from there to the specific MIDI port where the synth is connected to.

Please make sure that you followed section 4.1 “Basic Host Application Setup” and looked up the online setup guides for your host!



- 1 Change the FORMAT to MIDI SYSEX. Choose the MIDI output DEVICE. On Mac this is usually your physical MIDI output port where your synth is connected to. On Windows this is usually a virtual MIDI port, which is connected to an external instrument within the host application.
- 2 Now it is probably time to refer to the synthesizers manual to look up the SysEx specifications, or to lookup SysEx messages from our website (see below).
- 3 Go to the DATA OUT section of VCA 1. Type the SYSEX message into the blank field. The string should look similar to:  

```
F0 41 36 01 21 20 01 22 XX F7
```

Note: At the beginning the best way to go is modulating the VCF of your synth or any other parameter which is clearly distinguishable!
- 4 Press play in your DAW and press a key on your synthesizer. You should now hear the modulation.
- 5 In case the synth is not playing in time, or the entire device locks, you may need to reduce the rate MSG/SEC, at which the messages are sent. Also please refer to section 5.6 “Output”.

### Creating a SysEx message

- Grab the SysEx specifications of your synthesizer. Look up the section where parameter changes are specified (e.g. “Remote Parameter Edit”)
- Every message has to start with F0 and end with F7
- If the specification requires a MIDI channel to be set, set the channel (Ch) according to your setup:

Ch01 = 00

...

Ch10 = 09

Ch11 = 0A

Ch12 = 0B

Ch13 = 0C

Ch14 = 0D

Ch15 = 0E

Ch16 = 0F

- Find the parameter which you want to modulate (e.g. VCF = 81)
- The parameter value has to be marked with xx. The plug-in will replace xx with the values processed
- For example this command F0 41 06 00 81 xx F7 is created by following specifications: 41=Manufacturer ID, 06=Device ID, 00=Midi Channel, 81=Parameter ID, xx=Parameter Value



**Online Help:** Further information and SysEx messages for some synthesizer can be found at:

[https://dialogaudio.com/modulationprocessor/sysex\\_info.php](https://dialogaudio.com/modulationprocessor/sysex_info.php)

If you need any further help please feel free to contact us.



**Notice:** getting the SysEx messages correct can take a while. Be patient, once you get this running your reward will be a perfectly syncing, fantastic sounding classic synthesizer!

## 4.4 Control External Synthesizer via CV

To modulate a synthesizer via Control Voltages (CV) you either need a DC-coupled audio interface or a MIDI to CV Converter (eg. Doepfer MCV 4). In case of a MIDI to CV converter please refer to the section 4.2 “Control External Synthesizer via MIDI CC”.

This section describes how to setup the plug-in with a DC-coupled audio interface.

Please make sure that you followed section 4.1 “Basic Host Application Setup” and looked up the online setup guides for your host!

**⚡ WARNING:** CV audio signals produced by the plug-in might damage your audio interface and/or other equipment such as synthesizers, speakers etc.! If you are unsure or do not know how to use this feature, please contact us before enabling this feature!

**🌐 Compatible Audio Interfaces:** Please check if your audio interface is DC-coupled and compatible and what type of cable is required:

[https://dialogaudio.com/modulationprocessor/device\\_info.php](https://dialogaudio.com/modulationprocessor/device_info.php)

- 1 For safety reasons the audio CV output option is disabled. You first need to enable the audio CV output option. Go to **SETTINGS > SETTINGS** and enable the option. If the plug-in is not yet registered go to **REGISTER > SETTINGS**.



- 2 Select **AUDIO CV** as the **FORMAT**.
- 3 Got to the **CV OUT** section of **VCA 1** and enable the output. You then need to setup your host application according to its specifications for multi-channel plug-ins. In order to setup correctly, you might need to add **AUX** channels within the **DAWs** mixer where the **MP3244** is located on. Each **AUX** channel can then be routed to a specific audio interface output.

### Multi-Channel Configuration

In **AUDIO CV** mode the plug-in functions as a multi-channel plug-in with following configurations:

- Main Out: No output (usually)
- AUX 1 = VCA 1      AUX 2 = VCA 2      AUX 3 = VCA 3      AUX 4 = VCA 4

## 4.5 Control Internal Synthesizer via MIDI CC

Once the host setup is completed, MIDI messages can be sent to an internal synthesizer (in-host software). In most hosts MIDI messages can be sent from one plug-in to another plug-in via track MIDI in and

outputs. Please make sure that you followed section 4.1 “Basic Host Application” and looked up the online setup guides for your host!



- 1 Be sure that the FORMAT is set to MIDI CC. Select the MIDI output DEVICE and set it to “MIDI TO HOST”.
- 2 Got to the DATA OUT section of VCA 1 and select a Continuous Controller (CC) number, which represents the parameter of your synthesizer, which you wish to modulate.  
 If your virtual synth has a MIDI learn function you can choose any number. Enable MIDI learn function on the synth and click on the desired parameter. Go to the MP3244 and “twiddle” the VCA1 GAIN knob. The synth should now receive the CC messages. As soon you are finished, turn the MIDI learn function off.  
 If your synth does not provide any MIDI learn function you need to grab the synth manual and see if and what MIDI CCs are available. To modulate the CC you need to select the specific CC number within the VCA1 of the MP3244.  
 If your synth can process 14bit high resolution MIDI (MSB + LSB) for a specific parameter you can activate the HI RES option.
- 3 Press play in your DAW and press a key on your synthesizer. You should now hear the modulation.

## 4.6 Connecting Modules

Connecting modules is easily made with “drag & drop” Just click on one of the connection pins and drag to another connection pin. Keep

in mind that an input can only be connected to one output, but one output can be connect to several inputs.



- 1 Click on an output pin and move your mouse to an input pin.
- 2 As soon you are over the destination pin click on it. The connection will be made. You also can use drag and drop to connect pins.
- 3 To see all of your connection activate the ROUTING button. For simplicity you always can add connections even when the ROUTING button is not activated!
- 4 To remove a connection you need to have “Routing” activated. To proceed just double click the line which you want to remove.

## 4.7 Output Oscilloscope

Sometimes it is very useful to see what is happening. For this reason you have an oscilloscope for each VCA.



- 1 Click on the number, which corresponds to the VCA, which you want to see. Enjoy your created waveforms visually!

## 4.8 Creating Custom Waveforms

You have the freedom to create up to 10 custom waveforms to use with one of the LFO's.



- 1 Select the WAVE EDITOR button.
- 2 Choose one of the waveform slots you wish to edit. If you want to draw precisely you can activate SNAP to grid button.
- 3 As soon you completed the drawing you can select the waveform in one of the LFO's.

## 4.9 Avoiding MIDI Jitter Guideline

While the Modulation Processor 3244 is capable to process heavy modulations, MIDI overflow can easily occur on hardware devices which may lead to jittering. By considering following points you can keep jitter as low as possible. This guideline is proposed to give

you a rough overview of the type and amount of messages you can send to a hardware device. Please note that this guideline is not applicable if you send messages to in-host software devices, since message rates within host can be much higher.

- I. Avoid overflowing your MIDI interface. Restrict the amount of messages send to a single output of a MIDI interface to following:
  - a. 8 x CC, @ 32 messages / second  
OR
  - b. 4 x 14bit (high resolution) CC, @ 32 messages / second  
OR
  - c. 2 x SysEx (10bit), @ 32 messages / second
- II. Avoid overflowing your (vintage) MIDI devices. Lower the amount of messages sent per second to devices which have slow MIDI processing (e.g. 10 – 20 messages / second).
- III. Avoid sending unneeded MIDI messages. E.g. while recording a device which is modulated, make sure to not send any unneeded MIDI messages to other devices on the same MIDI port.
- IV. Try to keep the amount of messages sent per second between 20 – 50 messages.
- V. Keep your MIDI daisy chains short. This results in more potential messages which can be sent to each synth.



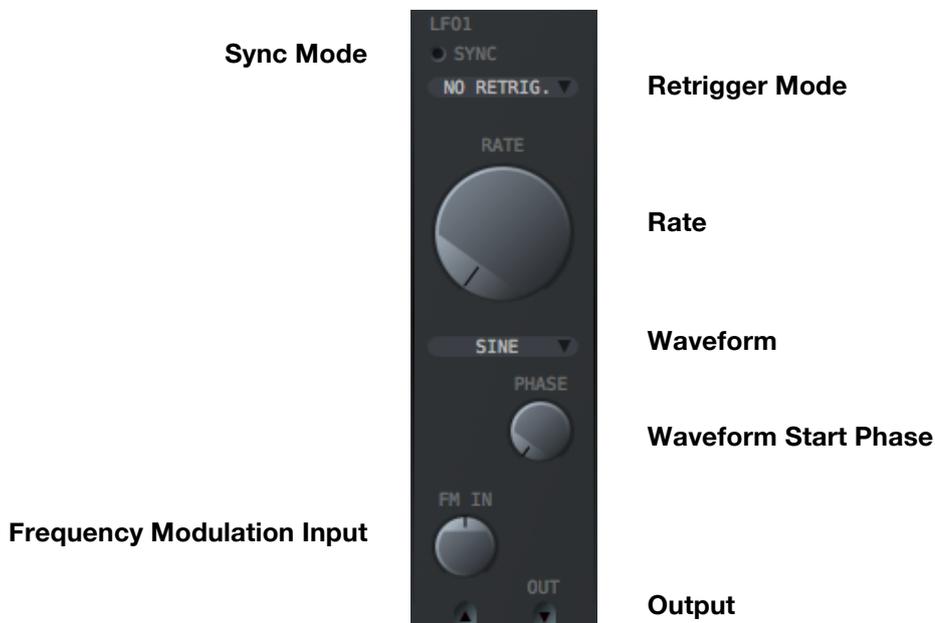
**Avoiding MIDI Jitter** : For additional information about MIDI jitter you can check out our note about “Avoiding MIDI Jitter, During Continuous Parameter Modulations”.

[https://dialogaudio.com/modulationprocessor/jitter\\_guide.php](https://dialogaudio.com/modulationprocessor/jitter_guide.php)

## 5 The Modules

### 5.1 Low Frequency Oscillator (LFO)

There are three LFO's available to generate modulation data.



#### Sync Mode

The LFO offers a synchronized and a free running mode.

**Sync Mode:** In sync mode the LFO rate is synced to the host. The LFO rate will then be set in measures of bars.

**Free Running Mode:** In free running mode the LFO rate is not related to the host. Rates will then be set in seconds.

#### Retrigger Mode

The LFO offers three different retrigger modes.

**No Retrig:** In this mode the LFO will run continuously, without any option to retrigger.

**Note Retrig:** In this mode the LFO will start a new waveform cycle as soon a new note on event occurs. The start angle of the waveform will depend on the time when the event occurs. Keep in mind that in sync mode the start angle can shift depending on the note on event.

**Cycle Retrig:** In this mode you can choose a host synchronized cycle when the LFO should retrigger. This is only available when the LFO is free running.

#### Rate

The rate will set the speed of the LFO. In sync mode the rate will be set in bars. In free running mode the rate will be set in seconds.

#### Waveform

Typical wave forms such as sine, square, triangle can be selected.

Additionally you can select a random sine (rnd sine) or a random square (rnd square) where internally the output amount from these two waveforms is randomly modulated. To use one of the custom created waveforms select them accordingly.

**Waveform Phase**

The start angle of the wave can be set between 0 and 360 degrees. Depending on the other settings this allows you to adjust the start phase of the waveform.

**Frequency Modulation Input**

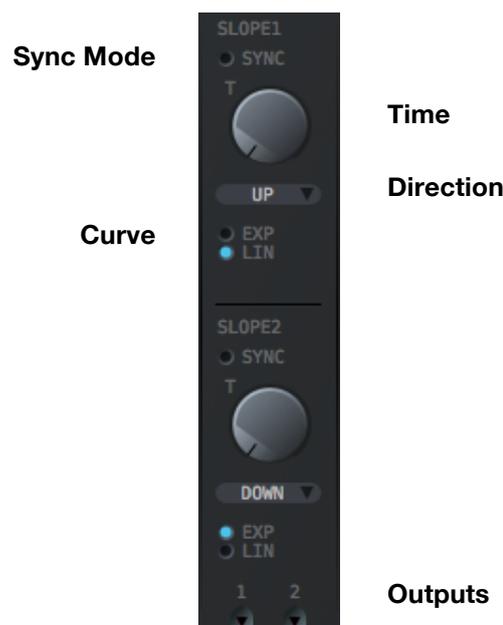
Each LFO has a frequency modulation input. You can connect any output of the other modules to this input. The amount of how much of the incoming signal is used to modulate the frequency can be set from 0 to 1 or negative from 0 to -1, which means that the frequency will go slower.

**Output**

The output of the LFO can be connected to any input of the other modules.

## 5.2 Slope Generator

The slope generator module is quite unique and is somewhat comparable to an envelope generator with a single attack or decay. If the curve is set to “up” the generator will run from minimum to maximum, and will stay at the maximum until a new note event occurs. If the curve is set to “down” the generator will start from the maximum and will run to the minimum.

**Sync Mode**

The slope generator offers a synchronized and a free running mode.

**Sync Mode:** In sync mode the time of the slope generator is synced to the host. The time will then be set in measures of bars.

**Free Running Mode:** In free running mode the time of the slope generator rate is not related to the host. Rates will then be set in seconds.

**Time**

This will set the time of how long the generator needs from the note on event to reach the final state. In sync mode the time will be set in bars. In free running mode the time will be set in seconds.

**Direction**

The curve of the slope generator can either go up or down.

**UP:** The curve will go from 0 to 1.

**DOWN:** The curve will go from 1 to 0.

**Curve**

The curve of the generator can either be linear or exponentially.

**EXP:** In exponential mode the curve will first grow slow and at the end fast until the maximum is reached.

**LIN:** In linear mode the curve will grow steady until the maximum is reached.

**Outputs**

The slope generator module has two outputs. The outputs can be connected to any input.

**Output 1:** The output marked with 1 is the output of the upper slope generator.

**Output 2:** The output marked with 2 is the output of the lower slope generator.



Notice: a note on event only triggers this module.

## 5.3 Envelope Generator

Up to four envelope generators can be used to create the desired modulation.

**Sync Mode**

The slope generator offers a synchronized and a free running mode.

**Sync Mode:** In sync mode the time of the slope generator is synced to the host. The time will then be set in measures of bars.

**Free Running Mode:** In free running mode the time of the slope generator rate is not related to the host. Rates will then be set in seconds.

**Attack Time**

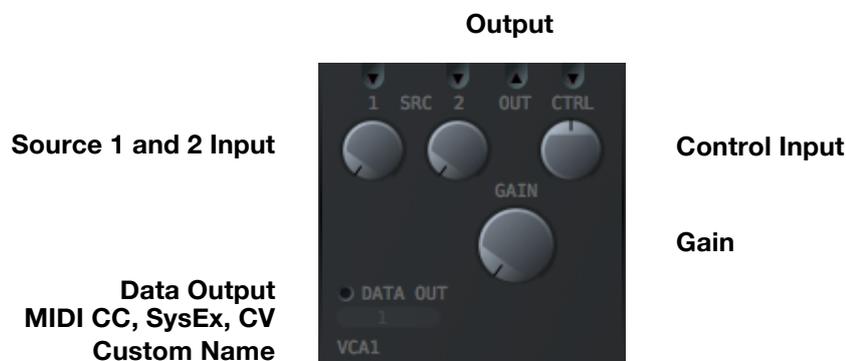
This will set the time of how long the generator needs to reach the end of the attack state. In sync mode the time will be set in bars. In free running mode the time will be set in seconds.

<b>Decay Time</b>	This will set the time of how long the generator needs to reach the end of the decay state. In sync mode the time will be set in bars. In free running mode the time will be set in seconds.
<b>Sustain Level</b>	This will set the level during the sustain phase.
<b>Release Time</b>	This will set the time of how long the generator needs to reach the end of the release state. In sync mode the time will be set in bars. In free running mode the time will be set in seconds.
<b>Curve</b>	The curve of the generator can either be linear or exponentially. <b>EXP:</b> In exponential mode the curve of the envelope behaves like a classic exponential envelope generator. <b>LIN:</b> In linear mode the envelope curve is straight between each point.
<b>Output</b>	The output of the envelope generator can be connected to any input of the other modules.

 Notice: a note on event only triggers this module.

## 5.4 Voltage Controlled Amplifier (VCA)

The VCA is the final and actual output stage of the modulation processor.



<b>Source 1 &amp; 2 Input</b>	The source inputs can be connected to any output of the other modules. If both inputs are connected the signals are mixed together. The amount of the input signal can be set for each source.
<b>Control Input</b>	The control input can be used to control the source inputs. The amount of the control input can either be positive or negative. If the amount is positive the initial gain will raise as soon as a control level is received. If the amount is negative the initial gain will fall as soon as a control level is received. This input is usually connected to an envelope generator.

<b>Gain</b>	The gain setting is the initial gain for the entire output level. All operations are calculated from the initial gain. Use this to set the initial modulation level.
<b>Output</b>	The output can be used to route the VCA output to another module. This is especially useful when more than two source signals should be mixed. For this the output can be routed to a second VCA.
<b>Data Output</b>	If no modulation data output is required, the VCA data output can be turned off. The module can still be used for internal processing and the output can be routed to any other module.
<b>MIDI CC, SysEx, CV</b>	Depending on the FORMAT setting the VCA can either sent a specific MIDI CC number or a specified SYSEX data string. If the FORMAT is set to AUDIO CV nothing can be selected here. If the receiving device is capable to process 14bit high resolution MIDI (MSB + LSB), the HI RES option can be activated. Usually only the MSB CC (first value) needs to set, LSB is automatically set according to the MIDI specifications. However, if the device has an unusual MSB + LSB configuration, LSB can be set to the specific CC.
<b>Custom Name</b>	For each VCA the module name can be edited (e.g. VCA > FILTER) to easily remember which parameter the output is targeting.

## 5.5 MIDI Input

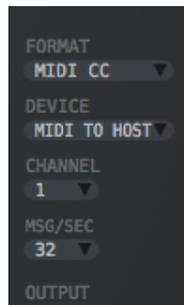
With the MIDI input module specified midi data can be received by the Modulation Processor and be routed to any input.



<b>MIDI CC 1 &amp; 2</b>	Two independent MIDI CC values can be used to route to any input. The desired CC number has to be set.
<b>Note Velocity</b>	To use the velocity of an incoming note on event, this output can be routed to any input.

## 5.6 Output

This module defines the type and destination of the modulation processor signal outputs.



### Output Format

### MIDI Output Device

### MIDI Channel

### Messages Per Second

#### Output Format

According to the receiving device the output format can be set here. Select MIDI CC if the receiving device can be modulated by CC messages. Select SYSEX if the receiving device can be modulated by SYSEX messages. Select AUDIO CV if the receiving device can be modulated by CV signals.

#### MIDI Output Device

This defines the physical MIDI output device. All available devices are listed. Select the according device where the modulation data should be send to.

**MIDI TO HOST:** If an external instrument plug-in, a virtual instrument or other plug-ins should be modulated this has to be chosen.

#### MIDI Channel

Depending on the studio setup the according channel has to be chosen where the data should go.

#### Messages Per Second

This sets the rate at which messages are sent to a device. For external devices “32” messages per second are recommended. If the device (e.g. classic synth) has a slow MIDI processing unit, the rate may be reduced to “10” – “20” messages per second, to prevent jitter or even a locked device. Also please refer to 4.9 “Avoiding MIDI Jitter Guideline”. For internal software devices up to “100” messages per second can be used. Please keep in mind that this dose not applies to plug-ins for external instruments!

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